TPC BenchmarkÔ C
Full Disclosure Report
for
Dell PowerEdge 2500
Using
Microsoft SQL Server 2000 8.0 Standard Edition
and
Microsoft Windows 2000 Server

Third Edition
Submitted for Review
Dec 13, 2001

This revision of the 11/20/01 result, which was a repricing with subsitution of the 10/31/01, is submitted by requirement of the TAB.

First Printing, OCT 31, 2001

Dell believes that the information included in this document is accurate as of the publication date. The information in this document is subject to change without notice. Furthermore, Dell is not responsible for any errors contained within this document.

The pricing information given in this FDR is accurate as of the publication date, OCT 31, 2001 and is generally available.

Benchmark results are highly dependent upon workload, specific application requirements, and system design and implementation. Relative system performance will vary as a result for 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. Actual performance experienced by a particular customer may vary due to differences in system layout and configuration, hardware and/or software revision levels, and background system activity. The content of this document is for informational purposes only.

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ C test conducted on Dell PowerEdge 2500. The tests were run in a client/server configuration using a PowerEdge 1400 as the client. The operating system used for the benchmark was Microsoft Windows 2000 Server on the database server and Microsoft Windows 2000 Server on the client. The database was Microsoft SQL Server 2000 Standard Edition. Microsoft COM+ provided the database connection queues. All tests were done in compliance with Revision 3.5 of the Transaction Processing Council's TPC Benchmark™ C Standard Specification. Two standard TPC Benchmark™ C metrics, transactions per second (tpmC) and price per tpmC ($/tpmC) are reported and referred to in this document. The results from the tests are summarized below.

Hardware	Software	Total System Cost	tpmC	$/tpmC	Availability Date
Dell PowerEdge 2500 1 Processors	Microsoft Windows 2000 Server SQL Server 2000 Standard Edition	$53,302	11320.02	$4.70	OCT 31, 2001

Auditor

The results of the benchmark and test methodology used to produce the results were audited by Lorna Livingtree of Performance Metrics and have fully met the TPC-C rev 3.5 specifications.

Additional copies of this Full Disclosure Report can be obtained from either the Transaction Processing Performance Council or Dell at the following address:

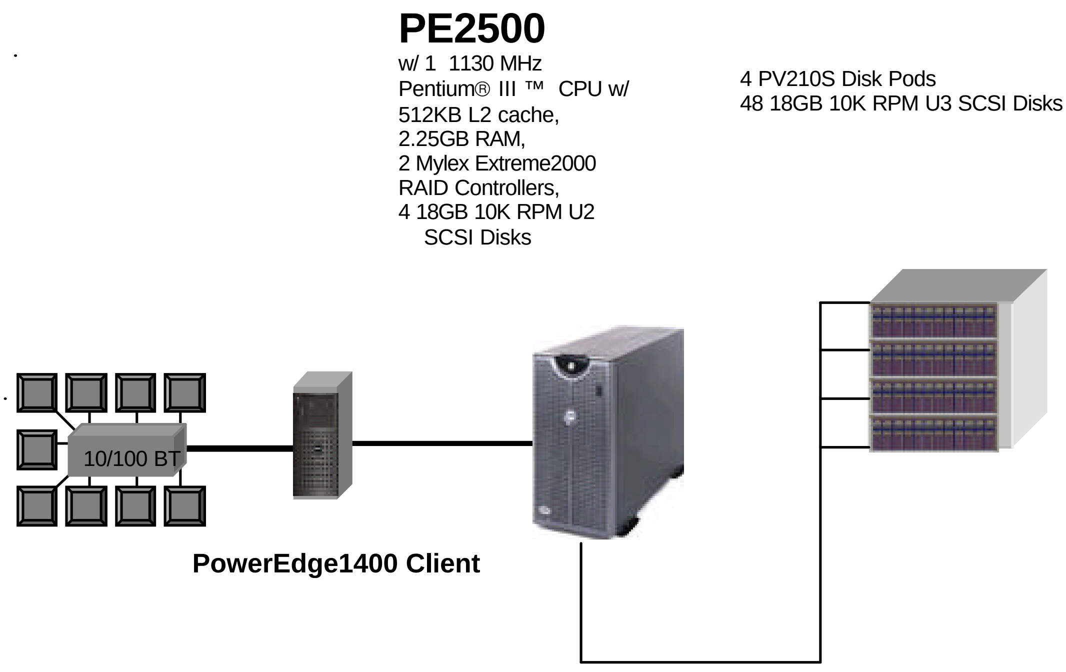
Transaction Processing Performance Council (TPC)
c/o LoBue&Majdalany
404 Balboa Street
San Francisco, CA 94118, USA
Phone: (415) 750-8350, fax 751-4829
www.tpc.org

or

Dell
1 Dell Drive
Round Rock, TX 78682
Attention: Mike Molloy

DELL	**PowerEdge 2500** **Client/Server w/1 PE1400 Front End** Revised 12/13/2001		TPC-C Rev 5.0 Report Date OCT 31, 2001
Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$53,203	**11,320.02 tpmC**	**$4.70/ tpmC**	OCT 31, 2001

Processors	Database Manager	OS	Other Software	Number of Users
1 x Pentium® III™ Processors 1130 MHz 512KB L2 Cache	Microsoft SQL Server 2000 Standard Edition	Microsoft Windows 2000 Server	Windows 2000 Server w/ COM+ Internet Information Server 5.0 Microsoft Visual C++	9,120



System Component	Server		Each Client	
Processors Cache	1	Pentium® III ™ @ 1130MHz w/ 512KB L2	1	Pentium® III @ 1000MHz w/ 256 KB L2
Memory		2304 MB		512 MB
Disk Controllers	2 2	Mylex ExtremeRAID 2000 Adaptec On-Board	1	Adaptec On-Board
Disk Drives	1 52	9 GB SCSI 18 GB SCSI	1	9 GB
Total Storage		880 GB		9 GB
Other	1 1 1	10/100 BT internal NIC CD-ROM Tape Backup Unit	1 1	

Dell	PowerEdge 2500	TPC-C REV 5.0 EXEC. SUMMARY PAGE 2 OF 2
	Client/Server	Report Date: 31-Oct-01

Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware							
Dell PowerEdge 2500 includes:	220-6475		1	1,308	1	1,308	74
Pentium III 1.13 GHz /512KB L2 - 1 processor							
2 GB RAM, 4 x 512MB DIMMS	311-6574		1	1,996	1	1,996	
256 MB RAM, 2 x 128MB DIMMS	311-6567		1	219	1	219	
6 Bay HD Back Plane	311-6578		1	179	1	179	
Non-Redundant Power Supply	310-0846		1	199	1	199	
9 GB U160M SCSI 10K RPM Hard Drive	340-1937		1	249	1	249	
Tape Backup Unit	340-2559		1	699	1	699	
Dell 15" Monitor	320-0960		1	149	1	149	
Extreme RAID 2000 PCI SCSI 4 channel RAID controller***	08P3834	Computer Giar	3	1,299	4	5,196	
					Subtotal	10,194	74
PowerVault Disk Subsystem							
PV210S, U3 SCSI, PS, Rack mount	220-4099, etc.		1	2,674	4	10,696	3,05
SCSI Cables	310-0313		1	49	4	196	
18 GB U160M SMRT SCSI 10K RPM Hard Drive *	340-6639		1	249	52	12,948	
					Subtotal	23,840	3,05
Server Software							
SQL Server 2000 Sta. Edition, Per processor licensing **		Microsoft	2	4,999	1	4,999	6,28
Windows 2000 Server, 25 Client Licenses **		Microsoft	2	738	1	738	
					Subtotal	5,737	6,28
Client Hardware							
Dell PowerEdge 1400SC, 1GHz Pentium III w/ 256KB L2	220-2333		1	786	1	786	39
512MB RAM, 1 DIMM	311-1194		1	408	1	408	
9GB LVD SCSI Hard Drive,	340-1964		1	249	1	249	
Ether Express PRO 100+ Ethernet Adapter	430-1970	Intel	1	59	1	59	
Dell 15" Monitor	320-0960		1	149	1	149	
					Subtotal	1,651	39
Client Software							
Windows 2000 Server, 5 Client Licenses **		Microsoft	2	738	1	738	
Visual C++ Professional 6.0 Win32 **		Microsoft	2	549	1	549	
					Subtotal	1,287	
User Connectivity							
Crossover Cable 6ft***	CLB514	OCSUSA	4	2	3	6	
					Subtotal	6	
					Other Discounts	-	
					Total	**42,715**	**10,48**

Notes: * Maint. included in PowerVault 210S disk pod or PV650F/630F fibre channel disk pod
** All Microsoft maintenance is covered by the maintenance costs of Microsoft SQL Server
*** 10% or minimum 2 spares are added in place of onsite service (products have a five year return-to-vendor warranty) Pricing: 1 - Dell 2 - Microsoft 3 - Computer Giants 4 - OCSUSA

Audited by Lorna Livingtree, Performance Metrics Inc.

Three-Year Cost of Ownership:	**$53,203**
tpmC Rating:	**11320.02**
$ / tpmC:	**4.70**

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 specifications. If you find that the stated prices are not available according to these items, please inform the TPC at pricing@tpc.org.

MQTh, computed Maximum Qualified Throughput	11320.02 tpmC

Response Times (in seconds)	Average	90th	Max
- Neworder	0.50	0.75	5.53
- Payment	0.28	0.46	3.94
- Order Status	0.36	0.56	5.49
- Delivery (interactive portion)	0.15	0.26	0.84
- Delivery (deferred portion)	0.69	1.14	2.11
- Stock-Level	3.43	4.65	11.24
- Menu	0.15	0.27	0.96

Response time delay added for emulated components	Menu 0.15 Resp 0.15

Transaction Mix, in percent of total transactions

- New-Order	44.85%
- Payment	43.02 %
- Order-Status	4.04 %
- Delivery	4.05 %
- Stock-Level	4.04 %

Keying/Think Times (in seconds),	Min		Average		Max	
- New-Order	18.02	0.0	18.02	12.06	18.04	120.40
- Payment	3.02	0.0	3.01	12.03	3.04	120.40
- Order-Status	2.02	0.0	2.01	10.07	2.04	100.40
- Delivery	2.02	0.0	2.01	5.06	2.04	50.40
- Stock-Level	2.02	0.0	2.01	5.06	2.03	50.40

Test Duration

- Ramp-up time	10 minutes
- Measurement interval	120 minutes
- Number of checkpoints	1
- Checkpoint interval	30 minutes
- Number of transactions (all types) completed in measurement interval	3,150,939

Table of Contents

Introduction

Document Structure

The TPC Benchmark C Standard Specification Revision 3.5, written and approved by the Transaction Processing Performance Council (TPC), determines the contents of this report. The format of this report is based on this specification. Most sections of this report begin with the specification requirements printed in italic type, immediately followed by the detail in plain type of how Dell complied with the specification. Where extensive listings are required (such as listing of code), a note is included which references an appendix containing the listing.

Benchmark Overview

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.

System Overview

The hardware configuration used in this TPC-C test is a Dell PowerEdge 2500 server driven by a Dell PowerEdge 1400 client. The client and server are networked together via a CAT 5 Cross-over Cable. Six remote terminal emulator (RTE) systems (PowerEdge 2200's) emulate 9,120 users executing the standard TPC-C workload. The RTE's are connected to the client through a 10/100 BaseT switch. The switch connects to the client machine at 100 BaseT and to the RTE machines at 10Mbit/sec, half duplex. Microsoft Windows 2000 Server was the operating system used on the server and client systems. Microsoft SQL Server 2000 Standard Edition was the database on the server machine.

The PowerEdge 2500 motherboard uses the ServerWorks High End-SL (HE-SL) chipset and can hold up to two Pentium® III Xeon™ processors (1130 MHz with 512 KB L2 cache on each). The system has 8 PCI I/O slots (2 x 64bit/66MHz; 4 x 64-bit/33MHz; 2 x 32-bit/33MHz). The measured configuration used 2.25 Gbytes of RAM, which was achieved by using four 512 Mbyte DIMMs and two 128 Mbyte DIMMs.

The PowerEdge 2500 has an integrated Adaptec AIC-7899 U160 SCSI controller to which was attached one 9 GB disk drive containing the operating system. In addition, two Mylex ExtremeRAID 2000 4-channel RAID controllers were installed in two PCI slots and connected to 4 PowerVault 210S disk pods, which can hold 12 disks each and a single onboard 6-bay (split backplane) enclosure. The 4 pods were filled with 48 18 GB disks, all containing the database data. Additionally, the onboard enclosure held 4 disk drives. These 4 disk drives were mirrored using RAID 10 and were configured for transaction log data. Finally the embedded Intel PRO/100+ server adapter provided a connection to the client.

The client had a single Pentium® III processor at 1000 MHz with 256 Kbytes of L2 cache. The client had 512 Mbytes of RAM, one 9 GB hard disk, one add-on Intel Ether Express Pro100+ PCI Ethernet adapter and one onboard Intel 8255x-based PCI Ethernet adapter. On each client the Intel Ethernet adapter was connected to the RTE machines through a 10/100 BaseT switch and the Intel Pro NIC was connected to the Database Server through a crossover cable. The client was driven through 12 network segments. 760 emulated users were run on each network segment for a total of 9,120 emulated users. The network segments between the switches and RTEs were fixed at 10 Mbit/sec, half duplex.

General Items

Test Sponsor

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

Dell was the test sponsor of this TPC Benchmark™ C.

Application Code and Definition Statements

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

The application consists of the Microsoft Benchcraft Remote Terminal Emulator (RTE) program emulating a set of users entering TPC-C transactions through web browsers, and communicating with the Client machine running the Microsoft Internet Information Server (IIS) web server. The Client machine use the COM+ transaction monitor to communicate with the database server machine.

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

The web Client code is listed in Appendix A.

Parameter Settings

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

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

This requirement can be satisfied by providing a full listing of all parameters and options.

Appendix C contains all the database, Windows 2000 Server, and Internet Information Service parameters used in this benchmark.

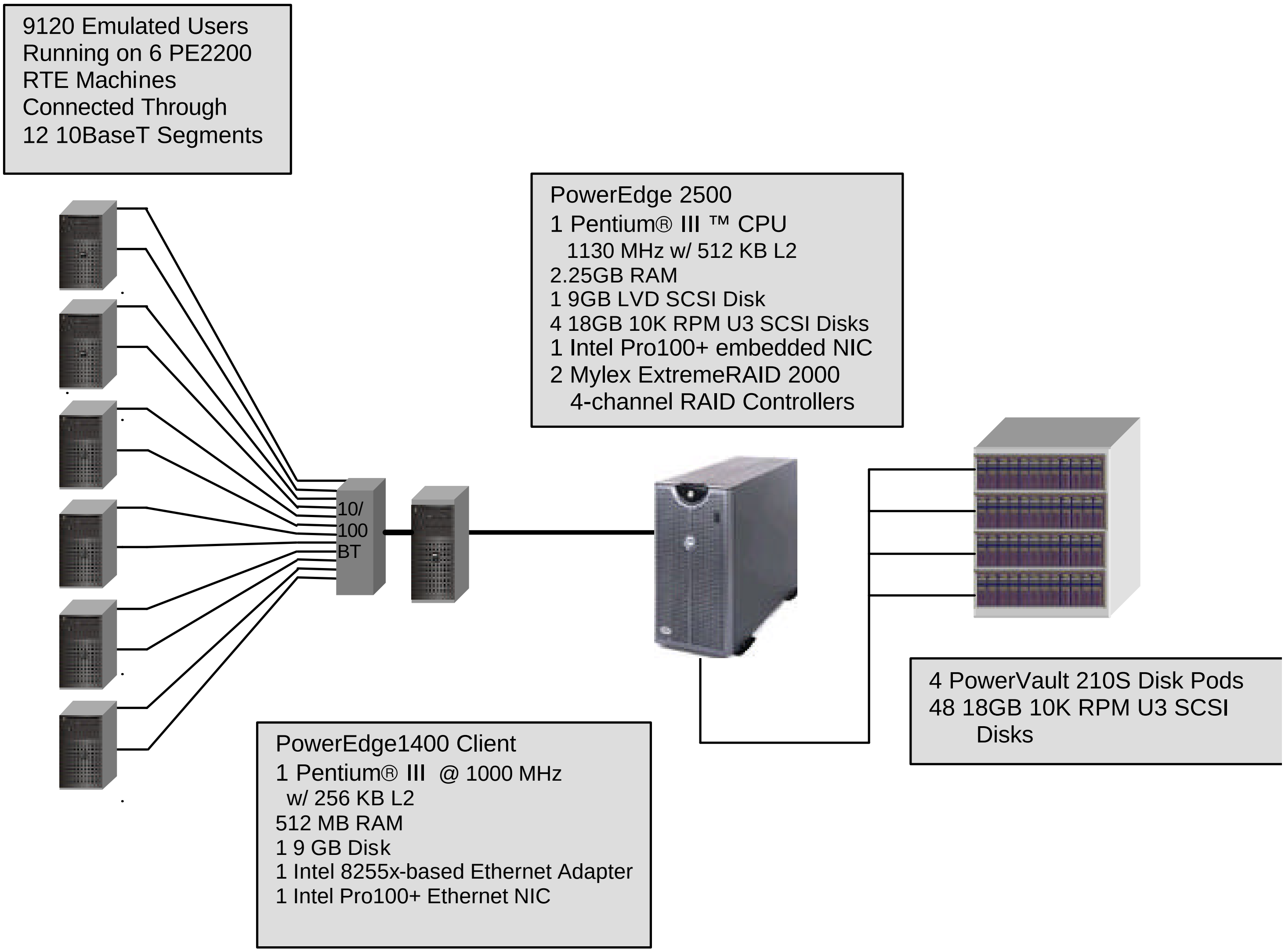
Appendix D contains the 60 day space calculations.

Configuration Diagrams

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

Figures 1 and 2 respectively show the measured and priced full client/server configurations. The system under test (SUT) in the measured system was identical to what was priced.

Figure 1: Measured Configuration



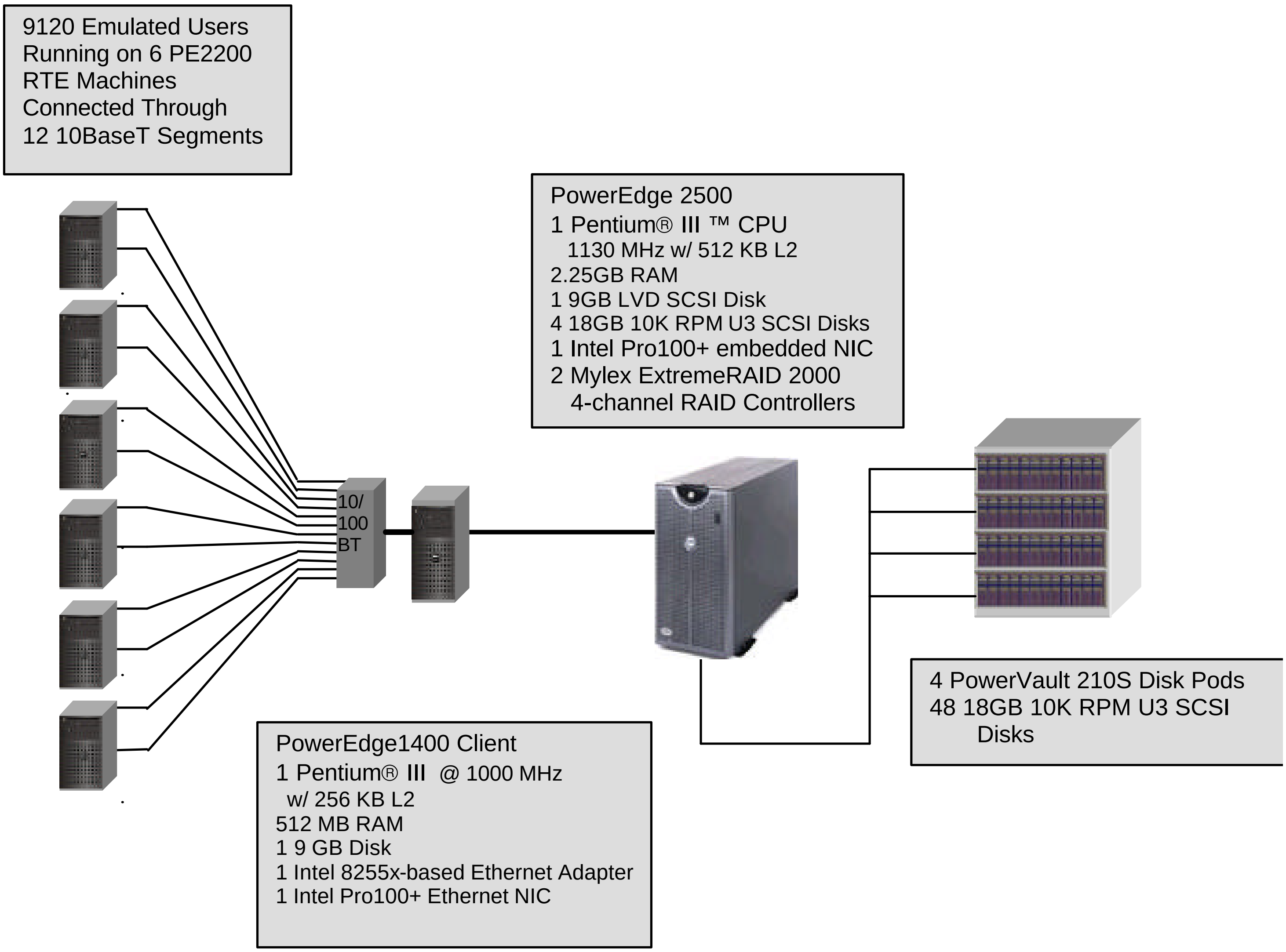
9120 Emulated Users
Running on 6 PE2200
RTE Machines
Connected Through
12 10BaseT Segments

PowerEdge 2500
1 Pentium® III ™ CPU
1130 MHz w/ 512 KB L2
2.25GB RAM
1 9GB LVD SCSI Disk
4 18GB 10K RPM U3 SCSI Disks
1 Intel Pro100+ embedded NIC
2 Mylex ExtremeRAID 2000
4-channel RAID Controllers

4 PowerVault 210S Disk Pods
48 18GB 10K RPM U3 SCSI
Disks

PowerEdge1400 Client
1 Pentium® III @ 1000 MHz
w/ 256 KB L2
512 MB RAM
1 9 GB Disk
1 Intel 8255x-based Ethernet Adapter
1 Intel Pro100+ Ethernet NIC

Figure 2: Priced Configuration



9120 Emulated Users
Running on 6 PE2200
RTE Machines
Connected Through
12 10BaseT Segments

PowerEdge 2500
1 Pentium® III ™ CPU
1130 MHz w/ 512 KB L2
2.25GB RAM
1 9GB LVD SCSI Disk
4 18GB 10K RPM U3 SCSI Disks
1 Intel Pro100+ embedded NIC
2 Mylex ExtremeRAID 2000
4-channel RAID Controllers

4 PowerVault 210S Disk Pods
48 18GB 10K RPM U3 SCSI
Disks

PowerEdge1400 Client
1 Pentium® III @ 1000 MHz
w/ 256 KB L2
512 MB RAM
1 9 GB Disk
1 Intel 8255x-based Ethernet Adapter
1 Intel Pro100+ Ethernet NIC

Clause 1 -- Logical Database Design Related Items

Table Definitions

Listings must be provided for all table definition statements and all other statements used to set-up the database. (8.1.2.1)

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

Physical Organization of the Database

The physical organization of tables and indices, within the database, must be disclosed. (8.1.2.2)

The measured configuration used 53 disk drives. The organization is shown in Table 5: Data Distribution.

Insert and Delete Operations

It must be ascertained that insert and/or delete operations to any of the tables can occur concurrently with the TPC-C transaction mix. Furthermore, any restriction in the SUT database implementation that precludes inserts beyond the limits defined in Clause 1.4.11 must be disclosed. This includes the maximum number of rows that can be inserted and the maximum key value for these new rows. (8.1.2.3)

Insert and delete functionality was fully operational during the benchmark.

Horizontal and Vertical Partitioning

While there are a few restrictions placed upon horizontal or vertical partitioning of tables and rows in the TPC-C benchmark (see Clause 1.6), any such partitioning must be disclosed. (8.1.2.4)

Partitioning was not used in this benchmark.

Replication

Replication of tables, if used, must be disclosed (see Clause 1.4.6). (8.1.2.5)

Replication was not used in this benchmark.

Table Attributes

Additional and/or duplicated attributes in any table must be disclosed along with a statement on the impact on performance (see Clause 1.4.7). (8.1.2.6)

No additional attributes were used in this benchmark.

Clause 2 -- Transaction and Terminal Profiles Related Items

Random Number Generation

The method of verification for the random number generation must be described. (8.1.3.1)

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

Screen Layout

The actual layouts of the terminal input/output screens must be disclosed. (8.1.3.2)

The screen layouts are based on those in Clauses 2.4.3, 2.5.3, 2.6.3, 2.7.3, and 2.8.3 of the TPC-C Standard Specification. There are some very minor differences based on the fact that this is a web client implementation.

Terminal 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). (8.1.3.3)

The terminal features were verified by allowing the auditor to manually execute each of the five transaction types, using Microsoft Internet Explorer version 3.0.

Intelligent Terminals

Any usage of presentation managers or intelligent terminals must be explained. (8.1.3.4)
Comment 1*: The intent of this clause is to describe any special manipulations performed by a local terminal or workstation to off-load work from the SUT. This includes, but is not limited to: screen presentations, message bundling, and local storage of TPC-C rows.*
Comment 2*: This disclosure also requires that all data manipulation functions performed by the local terminal to provide navigational aids for transaction(s) must also be described. Within this disclosure, the purpose of such additional function(s) must be explained.*

Application code involved in the manipulation of data was run on the client. Screen manipulation commands in the form of HTML were downloaded to the web browser, which handled input and output presentation graphics. A listing of this code is included in Appendix A. Microsoft Internet Information Service assisted in the processing and presentation of this data.

Transaction Profiles

The percentage of home and remote order-lines in the New-Order transactions must be disclosed. (8.1.3.5)
The percentage of New-Order transactions that were rolled back as a result of an unused item number must be disclosed. (8.1.3.6)
The number of items per orders entered by New-Order transactions must be disclosed. (8.1.3.7)
The percentage of home and remote Payment transactions must be disclosed. (8.1.3.8)
The percentage of Payment and Order-Status transactions that used non-primary key (C_LAST) access to the database must be disclosed. (8.1.3.9)
The percentage of Delivery transactions that were skipped as a result of an insufficient number of rows in the NEW-ORDER table must be disclosed. (8.1.3.10)

Table 1: Transaction Statistics

Transaction	Function	Value
New Order	Home Warehouse Items	99.00%
	Remote Warehouse Items	1.00%
	Rolled Back Transactions	0.99%
	Average Lines Per Order	10.00
Payment	Home Warehouse	84.97%
	Remote Warehouse	15.03%
	Non-Primary Key Access	60.02%
Order Status	Non-Primary Key Access	60.07%
Delivery	Skipped Transactions	0

Transaction Mix

The mix (i.e., percentages) of transaction types seen by the SUT must be disclosed. (8.1.3.11)

Table 2: Transaction Mix

Transaction	Percentage
New Order	44.85%
Payment	43.02%
Order Status	4.04%
Delivery	4.05%
Stock Level	4.04%

Deferred Delivery Mechanism

The queuing mechanism used to defer the execution of the Delivery transaction must be disclosed. (8.1.3.12)

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

The source code is listed in Appendix A.

Clause 3 -- Transaction and System Properties Related Items

ACID Tests

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. (8.1.4.1)

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 shell 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 ten (10) minutes and included a checkpoint. The shell 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 seven 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 transactions and insure database consistency after recovery from any one of the failures listed in Clause 3.5.3.

Durable Media Failure

For convenience, durability from media failure was demonstrated on a 10 Warehouse database having similar characteristics to the fully scaled database. The standard driving mechanism was used to generate the transaction load of 100 users for the Loss of Data. The fully scaled database under full load would also have passed the following test.

Loss of Data

Loss of data was demonstrated on the full database with 1100 warehouses. The standard driving mechanism was used to generate the transaction load of 9120 users for the test. To demonstrate recovery from a permanent failure of durable media containing TPC-C tables, the following steps were executed:

1. The database was backed up using SQL Server backup facilities.
2. A sum of D_NEXT_O_ID was taken.
3. 9120 users were logged in to the database and ran transactions.
4. One disk drive in the data array was removed causing SQL Server errors.
5. The RTE was allowed to continue running. Completed transactions enroute from the clients were recorded. Error messages began appearing on the RTE screen.
6. The RTE was stopped.
7. SQL Server was stopped and restarted and a dump of the transaction log was taken.
8. SQL Server was stopped, Windows 2000 was shutdown and the machine powered off.
9. The failed disk was replaced.
10. The machine was powered up, Windows 2000 and SQL Server were started.
11. The TPC-C database was dropped and restored from backup.
12. The transaction log was restored and transactions rolled forward.
13. A new count of D_NEXT_O_ID was taken.

15. This number was compared with the number of new orders reported by the RTE.

Instantaneous Interruption and Loss of Memory/Loss of Log

Instantaneous Interruption and Loss of Memory were demonstrated on the full database with 1100 warehouses in a single test. The standard driving mechanism was used to generate the transaction load of 9,120 users for the test. To demonstrate recovery an instantaneous system interruption caused by powering off the Server, the following steps were executed:

1. The full database was used.
2. A sum of D_NEXT_O_ID was taken.
3. 9,120 users were logged in to the database and ran transactions.
4. The system was run is steady state for 5 minutes
5. One disk drive in the transaction log array was removed with no effect on Windows 2000 or SQL Server.

6. The system ran for an additional 5 minutes.

6. The Server was powered off by normal means, causing instantaneous interruption.

7. The RTE was allowed to continue running. Completed transactions enroute from the clients were recorded. Error messages began appearing on the RTE screen.
8. The RTE was stopped.
9. The server was powered on again and rebooted.
10. SQL Server was restarted and automatically recovered.
11. A new count of D_NEXT_O_ID was taken.
12. This number was compared with the number of new orders reported by the RTE

Clause 4 -- Scaling and Database Population Related Items

Table Cardinality

The cardinality (e.g., the number of rows) of each table, as it existed at the start of the benchmark run (see Clause 4.2), must be disclosed. If the database was over-scaled and inactive rows of the WAREHOUSE table were deleted (see Clause 4.2.2), the cardinality of the WAREHOUSE table as initially configured and the number of rows deleted must be disclosed. (8.1.5.1)

The database was originally built with 1100 warehouses. The performance run used 912 warehouses and this is verified by runcheck

Table 3: Table Cardinality

Table	Cardinality as Benchmarked
Warehouse	1,100
District	11,000
Customer	33,000,000
History	33,000,000
NewOrder	9,900,000
Orders	33,000,000
OrderLine	329,998,919
Item	100,000
Stock	110,000,000
Deleted Warehouses	0

Constant Values

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

Table 4: Constant Values

Function	Constant C Value
C_LAST (Build)	123
C_LAST (Run)	208

Data Distribution

The distribution of tables and logs across all media must be explicitly depicted for the tested and priced systems. (8.1.5.2)

The Database was built using a total of 53 disks: 48 18 GB for data, 4 18 GB for log, and 1 9GB for OS and application software. The data drives were configured as hardware RAID 0. Logs were configured as hardware RAID 10. Mylex ExtremeRAID 2000 RAID Controller 2 was configured with 48 disk drives in a single logical drive. Mylex ExtremeRAID 2000 RAID Controller 1 contained 4 18GB drives. Each Windows 2000 data drive contained 3 partitions: partition 1 for customer/stock, partition 2 for miscellaneous, and partition 3 for backup. Partitions 1 and 2 were RAW file systems and partition 3 was formatted NTFS. The details are shown in Table 5.

Table 5: Data Distribution

W2K Disk Administration	Adaptec 7899 Configuration					
Disk **0 8673MB**	On-Board Controller # **1**					
Partition	On-Board		Channels			
1	Internal	SCSI ID	0			
C: OS **NTFS** **8673 MB**		0	A0-1			
		1				
		2				
		3				

W2K Disk Administration	MYLEX EX2000P Configuration					
Disk **1 34320MB**	Controller # **1**					
Partition	Slot# **1**		Channels			
1		SCSI ID	A	B	C	D
S: LOG **Unknown** **34320MB**		0	A1-1			
		1	A2-1			
		2				
		3		A1-2		
		4		A2-2		
		5				
		8				
		9				
		10				
		11				
		12				
		13				

W2K Disk Administration			MYLEX EX2000P Configuration					
Disk **2 823680MB**				Controller # **2**				
Partition			Slot# **2**		Channels			
1	2	3		SCSI ID	A	B	C	D
E: **CS1** **Unknown** **68096MB**	**F:** **MS1** **Unknown** **37888MB**	**X:** **NTFS** **717690.8MB**		0	A1-1	A1-13	A2-9	A3-5
				1	A1-2	A1-14	A2-10	A3-6
				2	A1-3	A1-15	A2-11	A3-7
				3	A1-4	A1-16	A2-12	A3-8
				4	A1-5	A2-1	A2-13	A3-9
				5	A1-6	A2-2	A2-14	A3-10
				8	A1-7	A2-3	A2-15	A3-11
				9	A1-8	A2-4	A2-16	A3-12
				10	A1-9	A2-5	A3-1	A3-13
				11	A1-10	A2-6	A3-2	A3-14
				12	A1-11	A2-7	A3-3	A3-15
				13	A1-12	A2-8	A3-4	A3-16

***Comment**: Detailed diagrams for layout of database files on disks can widely vary, and it is difficult to provide exact guideline suitable for all implementations. The intent is to provide sufficient detail to allow independent reconstruction of the test database. The two figures below are examples of database layout descriptions and are not intended to depict or imply any optimal layout for the TPC-C database.*
8.1.5.3 A statement must be provided that describes:

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

Microsoft SQL Server 2000 Enterprise Edition is a relational DBMS.

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

Partition Mapping

The mapping of database partitions/replications must be explicitly described.
***Comment**: The intent is to provide sufficient detail about partitioning and replication to allow independent reconstruction of the test database. (8.1.5.4)*
An description of a database partitioning scheme is presented below as an example. The nomenclature of this example was outlined using the CUSTOMER table (in Clause 8.1.2.1), and

has been extended to use the ORDER and ORDER_LINE tables as well.

The database was not replicated.

60 day Space Calculation

Details of the 60 day space computations along with proof that the database is configured to sustain 8 hours of growth for the dynamic tables (Order, Order-Line, and History) must be disclosed (see Clause 4.2.3). (8.1.5.5)

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

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

The results of the above steps yielded a requirement of 55.0193 GB (including mirror) to sustain the log for 8 hours. Space available on the transaction log volume was 67.03 GB (including mirror), indicating that enough storage was configured to sustain 8 hours of growth.

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

The details of the 180-day space requirement is shown in Appendix D.

Clause 5 -- Performance Metrics and Response Time Related Items

Measured TpmC

Measured tpmC must be reported. (8.1.6.1)

Measured TpmC	11320.02
Price per TpmC	$4.70

Response Times

Ninetieth percentile, maximum and average response times must be reported for all transaction types as well as for the Menu response time. (8.1.6.2)

Table 6: Transaction Response Times

Transaction	Average	90%	Maximum
New Order	0.50	0.75	5.53
Payment	0.28	0.46	3.94
Order Status	0.36	0.56	5.49
Interactive Delivery	0.15	0.26	0.84
Deferred Delivery	0.69	1.14	2.11
Stock Level	3.43	4.65	11.24
Menu	0.15	0.27	0.96

Think Times & Key Times

The minimum, the average, and the maximum keying and think times must be reported for each transaction type. (8.1.6.3)

Table 7: Transaction Key Times

Transaction	Minimum	Average	Maximum
New Order	18.02	18.02	18.04
Payment	3.01	3.02	3.04
Order Status	2.01	2.02	2.04
Delivery	2.01	2.02	2.04
Stock Level	2.01	2.02	2.03

Table 8: Transaction Think Times

Transaction	Minimum	Average	Maximum
New Order	0.00	12.02	120.40
Payment	0.00	12.03	120.40
Order Status	0.00	10.05	100.40
Delivery	0.00	5.04	50.40
Stock Level	0.00	5.05	50.40

Response Time Distribution Curves

Response Time frequency distribution curves (see Clause 5.6.1) must be reported for each transaction type. (8.1.6.4)

Figure 2: New Order Response Time Distribution

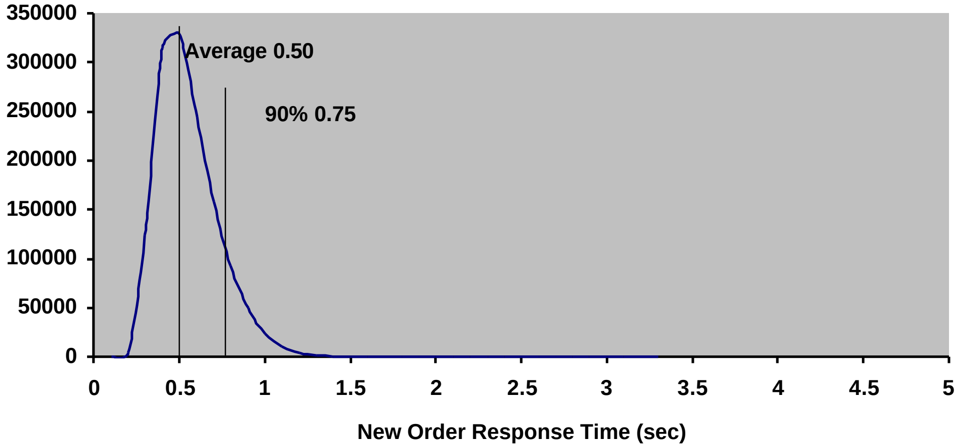


Figure 3: Payment Response Time Distribution

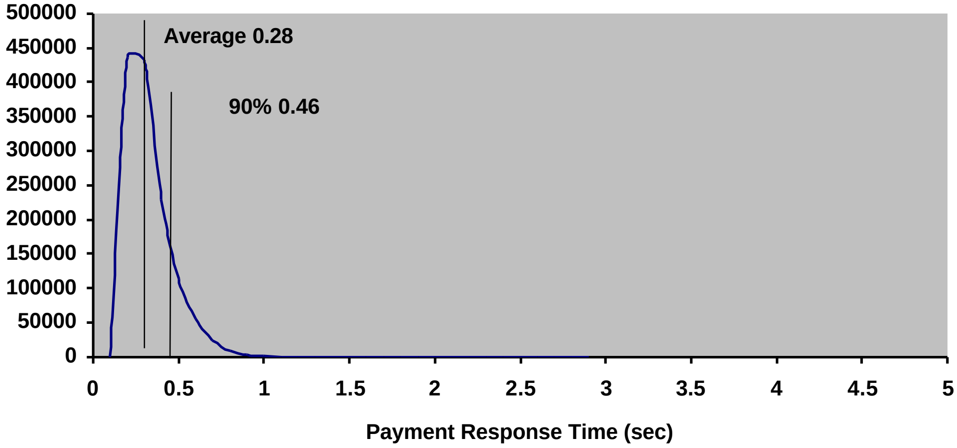


Figure 4: Order Status Response Time Distribution

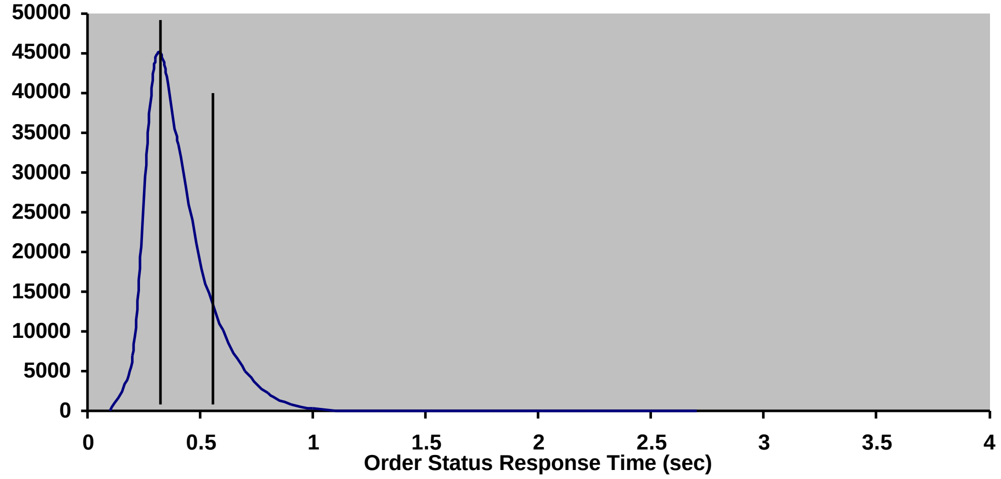


Figure 5: Delivery Response Time Distribution

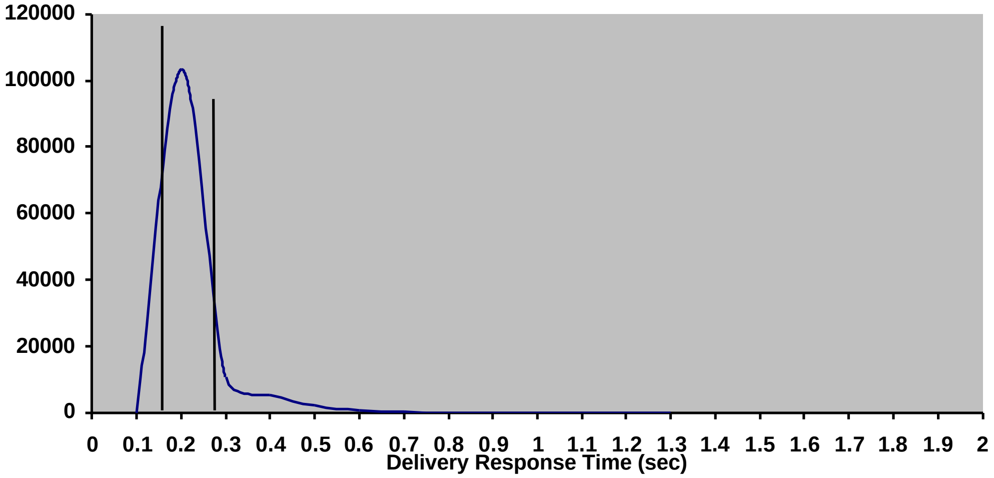
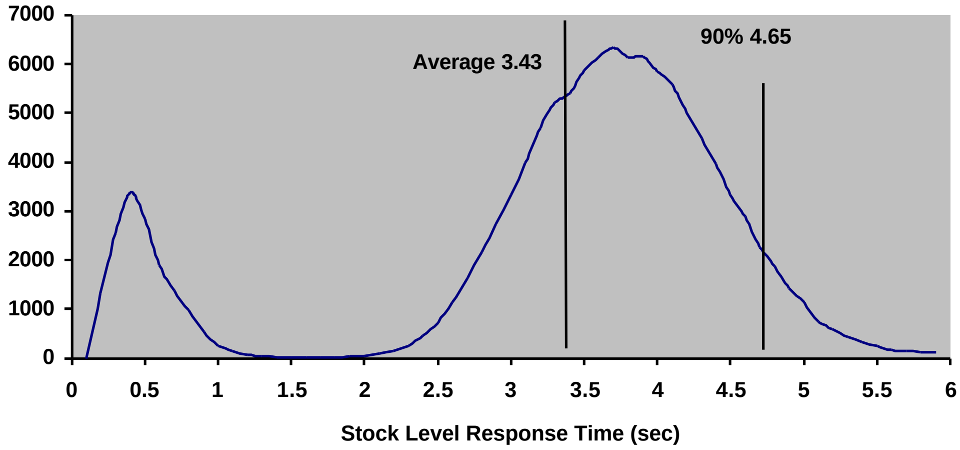


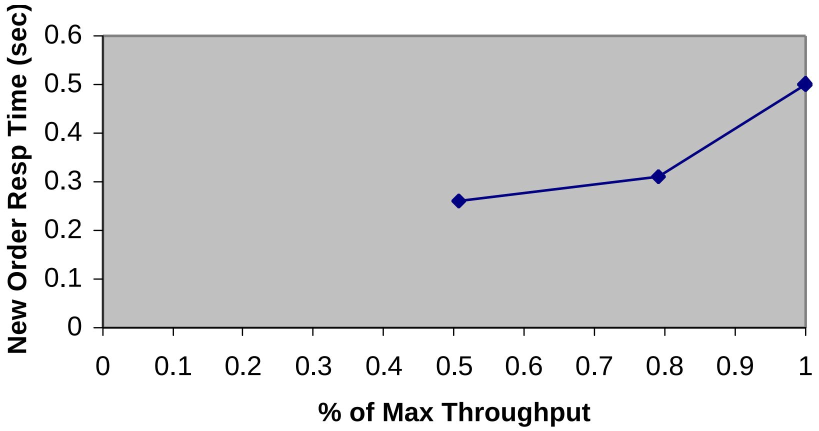
Figure 6: Stock Level Response Time Distribution



New-Order Response Time vs. Throughput Graph

The performance curve for response times versus throughput (see Clause 5.6.2) must be reported for the New-Order transaction. (8.1.6.5)

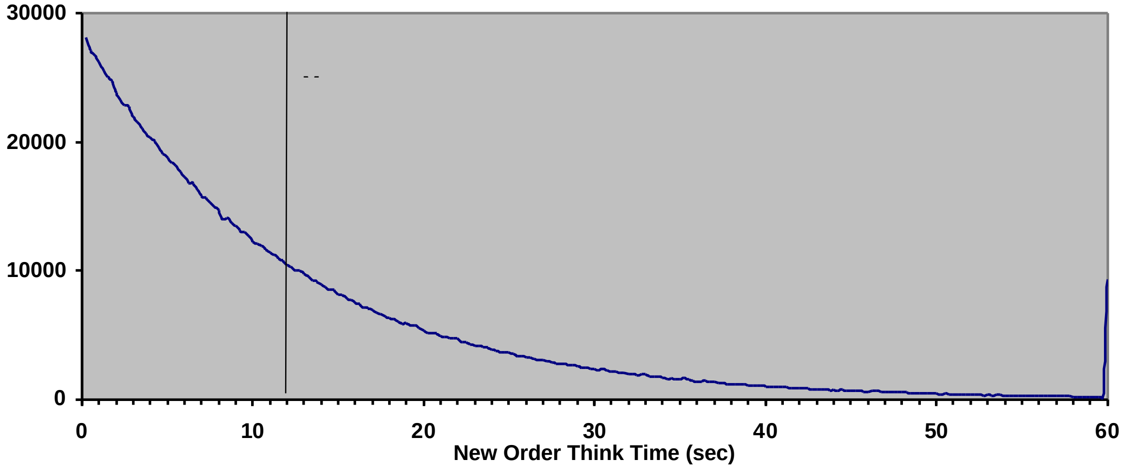
Figure 8: New Order Response Time vs. Throughput



New-Order Think Time Distribution Graph

Think Time frequency distribution curves (see Clause 5.6.3) must be reported for the New-Order transaction (8.1.6.6)

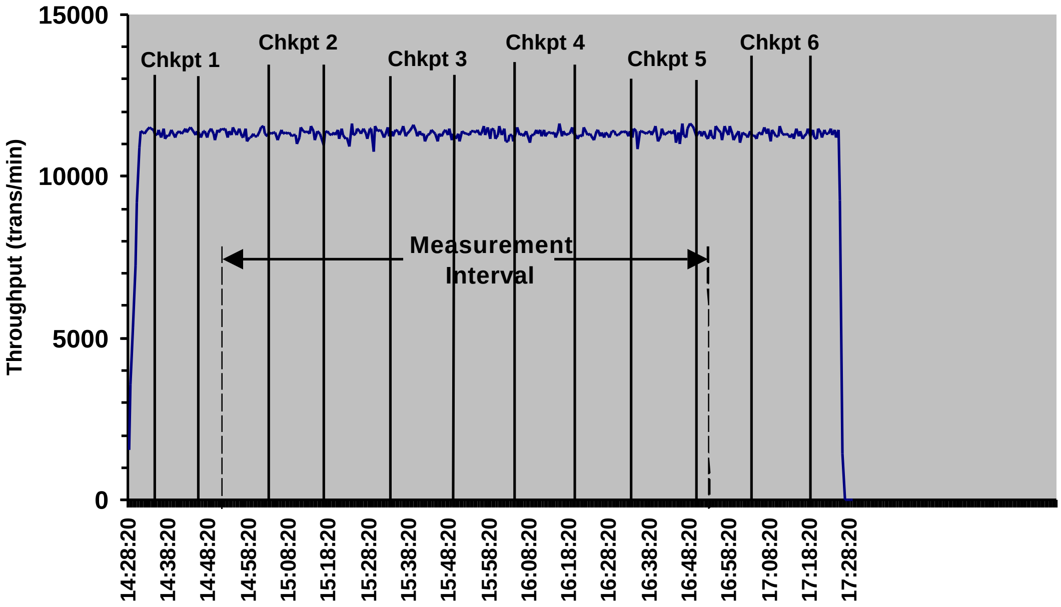
Figure 9: New Order Think Time Distribution



Steady-State Graph

A graph of throughput versus elapsed time (see Clause 5.6.5) must be reported for the New-Order transaction. (8.1.6.8)

Figure 10: New Order Throughput vs. Time



Steady-State Methodology

The method used to determine that the SUT had reached a steady state prior to commencing the measurement interval (see Clause 5.5) must be described. (8.1.6.9)

Steady state was determined using real time monitor utilities from both the operating system and 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. (8.1.6.10)

The RTE generated the required input data to choose a transaction from the menu. This data was timestamped. The menu response for the requested transaction was verified and timestamped in the RTE log files.

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

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

The RTE transmissions were sent to the web-based application program running on the client machines through Ethernet LANs. These web clients managed the emulated web browser interface as well as all requests to the database on the server. The applications communicated with the database server over another Ethernet LAN using the COM+ transaction monitor and Microsoft SQL Server DBLIB library and RPC calls.

To perform checkpoints at specific intervals, we set SQL Server *recovery interval* to the maximum allowable value and wrote a script to schedule multiple checkpoints at specific intervals. By setting the TRACE FLAG #3502, SQL Server logged the checkpoint beginning and ending time in the ERRORLOG file. The script included a wait time between each checkpoint equal to the measurement interval, which was 30 minutes. The checkpoint script was started manually after the RTE had all users logged in and sending transactions.

At each checkpoint, Microsoft SQL Server wrote to disk all memory pages that had been updated but not yet physically written to disk. Upon completion of the checkpoint, Microsoft SQL Server wrote a special record to the recovery log to indicate that all disk operations had been satisfied to this point.

Measurement Period Duration and Checkpoint Duration

The start time and duration in seconds of at least the four (4) longest checkpoints during the measurement interval must be disclosed (see clause 5.5.2.2(2)) (8.1.6.11)
A statement of the duration of the measurement interval for the reported Maximum Qualified Throughput (tpmC) must be included. (8.1.6.12)

	Start	**End**	**Duration**
Measurement Interval	14:49:25	16:49:25	7,200
1st Checkpoint	15:14:13	15:17:27	194
2nd Checkpoint	15:34:08	15:48:37	869
3rd Checkpoint	16:04:03	16:18:22	859
4th Checkpoint	16:33:58	16:48:12	854

Transaction Mix

8.1.6.13 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. (8.1.6.13)

The RTE was given a weighted random distribution that was not adjusted during the run.

The percentage of the total mix for each transaction type must be disclosed. (8.1.6.14)

Table 9: Transaction Mix

Transaction	Percentage
New Order	44.90%
Payment	43.01%
Order Status	4.02%
Delivery	4.05%
Stock Level	4.02%

Other Metrics

The percentage of New-Order transactions rolled back as a result of invalid item number must be disclosed. (8.1.6.15)
The average number of order-lines entered per New-Order transaction must be disclosed. (8.1.6.16)
The percentage of remote order-lines entered per New-Order transaction must be disclosed. (8.1.6.17)
The percentage of remote Payment transactions must be disclosed. (8.1.6.18)
The percentage of customer selections by customer last name in the Payment and Order-Status transactions must be disclosed. (8.1.6.19)
The percentage of Delivery transactions skipped due to there being fewer than necessary orders in the New-Order table must be disclosed. (8.1.6.20)

Table 10: Transaction Statistics

Transaction	Function	Value
New Order	Home Warehouse Items	99.00%
	Remote Warehouse Items	1.00%
	Rolled Back Transactions	1.00%
	Average Lines Per Order	10.00
Payment	Home Warehouse	84.97%
	Remote Warehouse	15.03%
	Non-Primary Key Access	60.02%
Order Status	Non-Primary Key Access	60.07%
Delivery	Skipped Transactions	0

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

RTE Parameters

The RTE input parameters, code fragments, functions, etc. used to generate each transaction input field must be disclosed. (8.1.7.1)
Comment: *The intent is to demonstrate the RTE was configured to generate transaction input data as specified in Clause 2.*

The RTE input parameters are listed in Appendix C - Tunable Parameters.

Emulated Components

It must be demonstrated that the functionality and performance of the components being emulated in the Driver System are equivalent to that of the priced system. The results of the test described in Clause 6.6.3.4 must be disclosed. (8.1.7.2)

No components were emulated.

Benchmarked and Targeted System Configuration 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 software and hardware functionality being performed on the Driver System, and its interface to the SUT must be disclosed (see Clause 6.6.3.6). (8.1.7.3)

The driver system performed transaction data generation and communication to the client through the standard web browser (HTTP) protocol. It also captured and timestamped the SUT output data for post-processing of the reported metrics. No other functionality was included on the driver system.

Figures 1 & 2 of this report contain detailed diagrams of both the benchmark configuration and the priced configuration.

Network Configuration

The network configurations of both the tested services and the proposed (target) services which are being represented and a thorough explanation of exactly which parts of the proposed configuration are being replaced with the Driver System must be disclosed (see Clause 6.6.4). (8.1.7.4)

The network configurations of the benchmarked and priced configurations were identical.

Network Bandwidth

The bandwidth of the network(s) used in the tested/priced configuration must be disclosed. (8.1.7.5)

The bandwidth of the tested and priced networks were as follows:

- 10 BaseT (10 Mbit/sec) network segments between the RTE/Emulated Users and the switch.
- Cross-over cable between the Client and Server.

Operator Intervention

If the configuration requires operator intervention (see Clause 6.6.6), the mechanism and the frequency of this intervention must be disclosed. (8.1.7.6)

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

Clause 7 -- Pricing Related Items

Hardware and Software List

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

Pricing source(s) and effective date(s) of price(s) must also be reported. (8.1.8.1)

The total 5-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. (8.1.8.2)

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 Date

The committed delivery date for general availability (availability date) of products used in the price calculations must be reported. When the priced system includes products with different availability dates, the reported availability date for the priced system must be the date at which all components are committed to be available. (8.1.8.3)

Hardware Availability Date:	OCT 31, 2001
Software Availability Date:	OCT 31, 2001

Measured TpmC

A statement of the measured tpmC, as well as the respective calculations for 5-year pricing, price/performance (price/tpmC), and the availability date must be included. (8.1.8.4)

Maximum Qualified Throughput:	11,320.02 tpmC
Price Performance Metric:	$4.70

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. (8.1.8.5)

This system is priced for the United States of America.

Usage Pricing

For any usage pricing, the sponsor must disclose (8.1.8.6):

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

Comment*: Usage pricing may include, but is not limited to, the operating system and database management software.*

The component pricing based on usage is shown below:

- 2 Microsoft Windows 2000 Server Licenses
- 1 Microsoft SQL Server 2000 Standard Edition License.
- 1 Microsoft Visual C++ 32 bit Edition
- 3 Year Support for Hardware Components.

System Pricing

System pricing should include subtotals for the following components: Server Hardware, Server Software, Client Hardware, Client Software, and Network Components used for terminal connection (see Clause 7.2.2.3). Clause 6.1 describes the Server and Client components. An example of the standard pricing sheet is shown in Appendix B. (8.1.8.7)
System pricing must include line item indication where non-sponsoring companies' brands are used. System pricing must also include line item indication of third party pricing. See example in Appendix B. (8.1.8.8)

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.

Clause 9 -- Audit Related Items

Auditor

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. (8.1.9.1)
A review of the pricing model is required to ensure that all components required are priced (see Clause 9.2.8). The auditor is not required to review the final Full Disclosure Report or the final pricing prior to issuing the attestations letter. (8.1.9.2)

This TPC-C benchmark has been audited by Lorna Livingtree of Performance Metrics.

Availability of the Full Disclosure Report

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

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

Transaction Processing Performance Council
c/o Shanley Public Relations
777 North First Street, Suite 6000
San Jose, CA 95112-6311
www.tpc.org

or:

Dell
One Dell Way
Round Rock, TX 78682
Attention: Mike Molloy

Auditor’s Letter of Attestation

October 26, 2001

Mike Molloy
Senior Manager, Server Performance Analysis
Dell Computer Corporation
One Dell Way
Round Rock, TX 78682

I have verified on-site and by remote the TPC Benchmark™ C for the following configuration:

Platform:	PowerEdge 2500
Database Manager:	Microsoft SQL Server 2000 Standard Edition
Operating System:	Microsoft Windows 2000 Server
Transaction Monitor:	Microsoft COM+

Servers:				
CPU’s	Memory	Disks (total)	90% Response	TpmC
1 Pentium III @ 1.13 Ghz	Main: 2.256 GB Cache: 512KB	1 @ 9.1GB (OS) 52 @ 18GB	0.75	11,320.02
1 Client:				
1 Pentium III @ 1 Ghz	Main: 512 MB Cache: 256K	1 @ 9.1GB	Na	Na

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

- The transactions were correctly implemented.
- The database files were properly sized and populated.
- The database was properly scaled with 1100 warehouses of which 912 were active during the measured interval.
- The ACID properties were successfully demonstrated.
- Log loss and data loss durability were demonstrated on the full SUT.
- Input data was generated according to the specified percentages.
- Eight hours of mirrored log space was present on the tested system.
- Eight hours of growth space for the dynamic tables was present on the tested system.
- The data for the 60 day space calculation was verified.
- The controller cache was disabled on the log controller.
- The steady state portion of the test was 120 minutes.

- One checkpoint was taken before the measured interval.
- Four checkpoints were taken during the measured interval.

Auditor Notes:

None.

Sincerely,

Lorna Livingtree

Lorna Livingtree
Auditor

Appendix A - Application Source Code

tpcc.dll ISAPI DLL Source Code

isapi_dll/src/tpcc.def

```
LIBRARY TPCC.DLL

EXPORTS

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

Isapi_dll/src/tpcc.h

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

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

#define TP_MAX_RETRIES
         50


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

//This macro is used to prevent the compiler error unused formal parameter
#define UNUSEDPARAM(x) (x = x)


//This structure defines the data necessary to keep distinct for each terminal or client
connection.
typedef struct _CLIENTDATA
{
         int                          iNextFree;
         //index of next free element or -1 if this entry in use.
         int                          w_id;
         //warehouse id assigned at welcome form
         int                          d_id;
         //district id assigned at welcome form

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

         CTPCC_BASE         *pTxn;

} CLIENTDATA, *PCLIENTDATA;


//This structure is used to define the operational interface for terminal id support
typedef struct _TERM
{
         int                          iNumEntries;
         //total allocated terminal array entries
         int                          iFreeList;
                  //next available terminal array element or -1 if none
         int                          iMasterSyncId;
         //syncronization id
         CLIENTDATA         *pClientData;
         //pointer to allocated client data
} TERM;

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


         enum WEBERROR
         {
                  NO_ERR,
                  ERR_COMMAND_UNDEFINED,
                  ERR_D_ID_INVALID,
                  ERR_DELIVERY_CARRIER_ID_RANGE,
                  ERR_DELIVERY_CARRIER_INVALID,
                  ERR_DELIVERY_MISSING_OCD_KEY,
                ERR_DELIVERY_THREAD_FAILED,
                ERR_GETPROCADDR_FAILED,
                ERR_HTML_ILL_FORMED,
                ERR_INVALID_SYNC_CONNECTION,
                ERR_INVALID_TERMID,
                ERR_LOADDLL_FAILED,
                ERR_MAX_CONNECTIONS_EXCEEDED,
                ERR_MEM_ALLOC_FAILED,
                ERR_MISSING_REGISTRY_ENTRIES,
                ERR_NEWORDER_CUSTOMER_INVALID,
                ERR_NEWORDER_CUSTOMER_KEY,
                ERR_NEWORDER_DISTRICT_INVALID,
                ERR_NEWORDER_FORM_MISSING_DID,
                ERR_NEWORDER_ITEMID_INVALID,
                ERR_NEWORDER_ITEMID_RANGE,
                ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,
                ERR_NEWORDER_MISSING_IID_KEY,
                ERR_NEWORDER_MISSING_QTY_KEY,
                ERR_NEWORDER_MISSING_SUPPW_KEY,
                ERR_NEWORDER_NOITEMS_ENTERED,
                ERR_NEWORDER_QTY_INVALID,
                ERR_NEWORDER_QTY_RANGE,
                ERR_NEWORDER_QTY_WITHOUT_SUPPW,
                ERR_NEWORDER_SUPPW_INVALID,
                ERR_NO_SERVER_SPECIFIED,
                ERR_ORDERSTATUS_CID_AND_CLT,
                ERR_ORDERSTATUS_CID_INVALID,
                ERR_ORDERSTATUS_CLT_RANGE,
                ERR_ORDERSTATUS_DID_INVALID,
                ERR_ORDERSTATUS_MISSING_CID_CLT,
                ERR_ORDERSTATUS_MISSING_CID_KEY,
                ERR_ORDERSTATUS_MISSING_CLT_KEY,
                ERR_ORDERSTATUS_MISSING_DID_KEY,
                ERR_PAYMENT_CDI_INVALID,
                ERR_PAYMENT_CID_AND_CLT,
                ERR_PAYMENT_CUSTOMER_INVALID,
                ERR_PAYMENT_CWI_INVALID,
                ERR_PAYMENT_DISTRICT_INVALID,
                ERR_PAYMENT_HAM_INVALID,
                ERR_PAYMENT_HAM_RANGE,
                ERR_PAYMENT_LAST_NAME_TO_LONG,
                ERR_PAYMENT_MISSING_CDI_KEY,
                ERR_PAYMENT_MISSING_CID_CLT,
                ERR_PAYMENT_MISSING_CID_KEY,
                ERR_PAYMENT_MISSING_CLT,
                ERR_PAYMENT_MISSING_CLT_KEY,
                ERR_PAYMENT_MISSING_CWI_KEY,
                ERR_PAYMENT_MISSING_DID_KEY,
                ERR_PAYMENT_MISSING_HAM_KEY,
                ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,
                ERR_STOCKLEVEL_THRESHOLD_INVALID,
                ERR_STOCKLEVEL_THRESHOLD_RANGE,
                ERR_VERSION_MISMATCH,
                ERR_W_ID_INVALID
        };

class CWEBCLNT_ERR : public CBaseErr
{
        public:

                CWEBCLNT_ERR(WEBERROR Err)
                {
                        m_Error = Err;
                        m_szTextDetail = NULL;
                        m_SystemErr = 0;
                        m_szErrorText = NULL;
                };

                CWEBCLNT_ERR(WEBERROR Err, char *szTextDetail, DWORD dwSystemErr)
                {
                        m_Error = Err;
                        m_szTextDetail = new char[strlen(szTextDetail)+1];
                        strcpy( m_szTextDetail, szTextDetail );
                        m_SystemErr = dwSystemErr;
                        m_szErrorText = NULL;
                };

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

                WEBERROR m_Error;
                char            *m_szTextDetail;   //
                char            *m_szErrorText;
                DWORD           m_SystemErr;

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

};

//These constants have already been defined in engstut.h, but since we do
//not want to include it in the delisrv executable
#define  TXN_EVENT_START            2
#define  TXN_EVENT_STOP             4
#define TXN_EVENT_WARNING   6               //used to record a warning into the log

//function prototypes

BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call, LPVOID lpReserved);
void WriteMessageToEventLog(LPTSTR lpszMsg);
void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int *pCmd, int *pFormId, int
*pTermId, int *pSyncId);
void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void BeginCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int iTermId);
void ProcessCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int iTermId);
void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void ErrorMessage(EXTENSION_CONTROL_BLOCK *pECB, int iError, int iErrorType, char *szMsg,
int iTermId);
void GetKeyValue(char **pQueryString, char *pKey, char *pValue, int iMax, WEBERROR err);
int  GetIntKeyValue(char **pQueryString, char *pKey, WEBERROR NoKeyErr, WEBERROR
NotIntErr);
void TermInit(void);
void TermDeleteAll(void);
int  TermAdd(void);
void TermDelete(int id);
void ErrorForm(EXTENSION_CONTROL_BLOCK *pECB, int iType, int iErrorNum, int iTermId, int
iSyncId, char *szErrorText, char *szBuffer );
void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm);
void MakeStockLevelForm(int iTermId, STOCK_LEVEL_DATA *pStockLevelData, BOOL bInput, char
*szForm);
void MakeNewOrderForm(int iTermId, NEW_ORDER_DATA *pNewOrderData, BOOL bInput, char
*szForm);
void MakePaymentForm(int iTermId, PAYMENT_DATA *pPaymentData, BOOL bInput, char *szForm);
void MakeOrderStatusForm(int iTermId, ORDER_STATUS_DATA *pOrderStatusData, BOOL bInput,
char *szForm);
void MakeDeliveryForm(int iTermId, DELIVERY_DATA *pDeliveryData, BOOL bInput, char
*szForm);
void ProcessNewOrderForm(EXTENSION_CONTROL_BLOCK*pECB, int iTermId, char *szBuffer);
void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void ProcessStockLevelForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA *pNewOrderData);
void GetPaymentData(LPSTR lpszQueryString, PAYMENT_DATA *pPaymentData);
void GetOrderStatusData(LPSTR lpszQueryString, ORDER_STATUS_DATA *pOrderStatusData);
BOOL PostDeliveryInfo(short w_id, short o_carrier_id);
BOOL IsNumeric(char *ptr);
BOOL IsDecimal(char *ptr);
void DeliveryWorkerThread(void *ptr);
```

isapi_dll/src/tpcc.rc

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

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

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

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

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

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

VS_VERSION_INFO VERSIONINFO
 FILEVERSION 0,4,0,0
 PRODUCTVERSION 0,4,0,0
 FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
 FILEFLAGS 0x1L
#else
 FILEFLAGS 0x0L
#endif
 FILEOS 0x40004L
 FILETYPE 0x2L
 FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInfo"
    BEGIN
        BLOCK "040904b0"
        BEGIN
            VALUE "Comments", "TPC-C HTML DLL Server (DBLIB)\0"
            VALUE "CompanyName", "Microsoft\0"
            VALUE "FileDescription", "TPC-C HTML DLL Server (DBLIB)\0"
            VALUE "FileVersion", "0, 4, 0, 0\0"
            VALUE "InternalName", "tpcc\0"
            VALUE "LegalCopyright", "Copyright © 1997\0"
            VALUE "OriginalFilename", "tpcc.dll\0"
            VALUE "ProductName", "Microsoft tpcc\0"
            VALUE "ProductVersion", "0, 4, 0, 0\0"
        END
    END
    BLOCK "VarFileInfo"
    BEGIN
        VALUE "Translation", 0x409, 1200
    END
END

#endif    // !_MAC


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

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

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

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

#endif    // APSTUDIO_INVOKED


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

IDD_DIALOG1 DIALOG DISCARDABLE  0, 0, 186, 95
```

```
STYLE DS_MODALFRAME | WS_POPUP | WS_CAPTION | WS_SYSMENU
CAPTION "Dialog"
FONT 8, "MS Sans Serif"
BEGIN
    DEFPUSHBUTTON   "OK",IDOK,129,7,50,14
    PUSHBUTTON      "Cancel",IDCANCEL,129,24,50,14
END


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

#ifdef APSTUDIO_INVOKED
GUIDELINES DESIGNINFO DISCARDABLE
BEGIN
    IDD_DIALOG1, DIALOG
    BEGIN
        LEFTMARGIN, 7
        RIGHTMARGIN, 179
        TOPMARGIN, 7
        BOTTOMMARGIN, 88
    END
END
#endif    // APSTUDIO_INVOKED

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



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


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

isapi_dll/src/tpcc.cpp

```
/*       FILE:             TPCC.C
 *                                    Microsoft TPC-C Kit Ver. 4.20.000
 *                                    Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                    Version 4.10.000 audited by Richard Gimarc,
Performance Metrics, 3/17/99
 *
 *       PURPOSE: Main module for TPCC.DLL which is an ISAPI service dll.
 *       Contact: Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                 4.20.000 - reworked error handling; added options for COM and Encina
txn monitors
 */

#include <windows.h>
#include <process.h>
#include <tchar.h>
#include <stdio.h>
#include <stdarg.h>
#include <malloc.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <sys\timeb.h>
#include <io.h>
#include <assert.h>

#include <sqltypes.h>

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

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

#include "..\..\common\txnlog\include\rtetime.h"
#include "..\..\common\txnlog\include\spinlock.h"
#include "..\..\common\txnlog\include\txnlog.h"

// Database layer includes
#include "..\..\db_dblib_dll\src\tpcc_dblib.h"          // DBLIB implementation of
TPC-C txns
#include "..\..\db_odbc_dll\src\tpcc_odbc.h"            // ODBC implementation of
TPC-C txns

// Txn monitor layer includes
#include "..\..\tm_com_dll\src\tpcc_com.h"                        // COM Services
implementation on TPC-C txns
#include "..\..\tm_tuxedo_dll\src\tpcc_tux.h"           // interface to Tuxedo
libraries
#include "..\..\tm_encina_dll\src\tpcc_enc.h"           // interface to Encina
libraries

#include "httpext.h"                                    //ISAPI DLL information
header
#include "tpcc.h"                                       //this dlls specific
structure, value e.t. header.


#define   LEN_ERR_STRING     256

// defines for Make<Txn>Form calls to distinguish input and output flavors
#define  OUTPUT_FORM       0
#define INPUT_FORM 1

char              szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

//Terminal client id structure
TERM     Term = { 0, 0, 0, NULL };

// The WEBCLIENT_VERSION string specifies the version level of this web client interface.
// The RTE must be synchronized with the interface level on login, otherwise the login
// will fail.  This is a sanity check to catch problems resulting from mismatched
versions
// of the RTE and web client.
#define WEBCLIENT_VERSION "410"

static  CRITICAL_SECTION        TermCriticalSection;

static  HINSTANCE hLibInstanceTm = NULL;
static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB   *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC         *pCTPCC_ODBC_new;
TYPE_CTPCC_TUXEDO  *pCTPCC_TUXEDO_new;
TYPE_CTPCC_ENCINA   *pCTPCC_ENCINA_new;
TYPE_CTPCC_ENCINA   *pCTPCC_ENCINA_post_init;
TYPE_CTPCC_COM          *pCTPCC_COM_new;

// For deferred Delivery txns:

CTxnLog                                 *txnDelilog = NULL;
        //used to log delivery transaction information

HANDLE                                  hWorkerSemaphore   =
INVALID_HANDLE_VALUE;
HANDLE                                  hDoneEvent
        = INVALID_HANDLE_VALUE;
HANDLE                                  *pDeliHandles           = NULL;

// configuration settings from registry
TPCCREGISTRYDATA        Reg;


DWORD                                   dwNumDeliveryThreads = 4;
CRITICAL_SECTION        DelBuffCriticalSection;         //critical section
for delivery transactions cache
DELIVERY_TRANSACTION    *pDelBuff               = NULL;
DWORD                                   dwDelBuffSize           = 100;
        // size of circular buffer for delivery txns
DWORD                                   dwDelBuffFreeCount;
        // number of buffers free
DWORD                                   dwDelBuffBusyIndex = 0;
        // index position of entry waiting to be delivered
DWORD                                   dwDelBuffFreeIndex = 0;
        // index position of unused entry

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

/* FUNCTION: DllMain
 *
 * PURPOSE:       This function is the entry point for the DLL.  This implementation is
based on the
 *                      fact that DLL_PROCESS_ATTACH is only called from the inet
service once.
 *
 * ARGUMENTS:     HANDLE  hModule                         module handle
 *                              DWORD   ul_reason_for_call reason for call
 *                              LPVOID  lpReserved
        reserved for future use
 *
 * RETURNS:               BOOL    FALSE                           errors
occured in initialization
```

```
 *                                              TRUE
        DLL successfully initialized
 */

BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call, LPVOID lpReserved)
{
        DWORD  i;
        char szEvent[LEN_ERR_STRING] = "\0";
        char szLogFile[128];
        char szDllName[128];

// debugging....
// DebugBreak();

        try
        {
                switch( ul_reason_for_call )
                {
                        case DLL_PROCESS_ATTACH:
                                {
                                        DWORD dwSize =
MAX_COMPUTERNAME_LENGTH+1;
                                        GetComputerName(szMyComputerName,
&dwSize);
                                        szMyComputerName[dwSize] = 0;
                                }

                                DisableThreadLibraryCalls((HMODULE)hModule);
                                InitializeCriticalSection(&TermCriticalSection);

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

                                dwDelBuffSize = min( Reg.dwMaxPendingDeliveries,
10000 );  // min with 10000 as a sanity constraint
                                dwNumDeliveryThreads = min(
Reg.dwNumberOfDeliveryThreads, 100 );  // min with 100 as a sanity constraint

                                TermInit();

                                // load DLL for txn monitor
                                if (Reg.eTxnMon == TUXEDO)
                                {
                                        strcpy( szDllName, Reg.szPath );
                                        strcat( szDllName, "tpcc_tuxedo.dll");
                                        hLibInstanceTm = LoadLibrary( szDllName
);
                                        if (hLibInstanceTm == NULL)
                                                throw new CWEBCLNT_ERR(
ERR_LOADDLL_FAILED, szDllName, GetLastError() );

                                        // get function pointer to wrapper for
class constructor
                                        pCTPCC_TUXEDO_new =
(TYPE_CTPCC_TUXEDO*) GetProcAddress(hLibInstanceTm,"CTPCC_TUXEDO_new");
                                        if (pCTPCC_TUXEDO_new == NULL)
                                                throw new CWEBCLNT_ERR(
ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                                }
                                else if (Reg.eTxnMon == ENCINA)
                                {
                                        strcpy( szDllName, Reg.szPath );
                                        strcat( szDllName, "tpcc_encina.dll");
                                        hLibInstanceTm = LoadLibrary( szDllName
);
                                        if (hLibInstanceTm == NULL)
                                                throw new CWEBCLNT_ERR(
ERR_LOADDLL_FAILED, szDllName, GetLastError() );
                                        // get function pointer to wrapper for
class constructor
                                        pCTPCC_ENCINA_new =
(TYPE_CTPCC_ENCINA*) GetProcAddress(hLibInstanceTm,"CTPCC_ENCINA_new");
                                        pCTPCC_ENCINA_post_init =
(TYPE_CTPCC_ENCINA*) GetProcAddress(hLibInstanceTm,"CTPCC_ENCINA_post_init");
                                        if (pCTPCC_ENCINA_new == NULL)
                                                throw new CWEBCLNT_ERR(
ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                                }
                                else if (Reg.eTxnMon == COM)
                                {
                                        strcpy( szDllName, Reg.szPath );
                                        strcat( szDllName, "tpcc_com.dll");
                                        hLibInstanceTm = LoadLibrary( szDllName
);
                                        if (hLibInstanceTm == NULL)
                                                throw new CWEBCLNT_ERR(
ERR_LOADDLL_FAILED, szDllName, GetLastError() );

                                        // get function pointer to wrapper for
class constructor
                                        pCTPCC_COM_new = (TYPE_CTPCC_COM*)
GetProcAddress(hLibInstanceTm,"CTPCC_COM_new");
                                        if (pCTPCC_COM_new == NULL)
                                                throw new CWEBCLNT_ERR(
ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                                }

                                // load DLL for database connection
                                if ((Reg.eTxnMon == None) ||
(dwNumDeliveryThreads > 0))
                                {
                                        if (Reg.eDB_Protocol == DBLIB)
                                        {
                                                strcpy( szDllName, Reg.szPath
);
                                                strcat( szDllName,
"tpcc_dblib.dll");
                                                hLibInstanceDb = LoadLibrary(
szDllName );
                                                if (hLibInstanceDb == NULL)
                                                        throw new
CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName, GetLastError() );

                                                // get function pointer to
wrapper for class constructor
                                                pCTPCC_DBLIB_new =
(TYPE_CTPCC_DBLIB*) GetProcAddress(hLibInstanceDb,"CTPCC_DBLIB_new");
                                                if (pCTPCC_DBLIB_new == NULL)
                                                        throw new
CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                                        }
                                        else if (Reg.eDB_Protocol == ODBC)
                                        {
                                                strcpy( szDllName, Reg.szPath
);
                                                strcat( szDllName,
"tpcc_odbc.dll");
                                                hLibInstanceDb = LoadLibrary(
szDllName );
                                                if (hLibInstanceDb == NULL)
                                                        throw new
CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName, GetLastError() );

                                                // get function pointer to
wrapper for class constructor
                                                pCTPCC_ODBC_new =
(TYPE_CTPCC_ODBC*) GetProcAddress(hLibInstanceDb,"CTPCC_ODBC_new");
                                                if (pCTPCC_ODBC_new == NULL)
                                                        throw new
CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                                        }
                                }

                                if (dwNumDeliveryThreads)
                                {
                                        // for deferred delivery txns:
                                        hDoneEvent = CreateEvent( NULL, TRUE /*
manual reset */, FALSE /* initially not signalled */, NULL );

        InitializeCriticalSection(&DelBuffCriticalSection);
                                        hWorkerSemaphore = CreateSemaphore(
NULL, 0, dwDelBuffSize, NULL );
                                        dwDelBuffFreeCount = dwDelBuffSize;

                                        InitJulianTime(NULL);

                                        // create unique log file name based on
delilog-yymmdd-hhmm.log
                                        SYSTEMTIME Time;
                                        GetLocalTime( &Time );
                                        wsprintf( szLogFile, "%sdelivery-
%2.2d%2.2d%2.2d-%2.2d%2.2d.log",
                                                          Reg.szPath,
Time.wYear % 100, Time.wMonth, Time.wDay, Time.wHour, Time.wMinute );
                                        txnDelilog = new CTxnLog(szLogFile,
TXN_LOG_WRITE);

                                        //write event into txn log for START
                                        txnDelilog-
>WriteCtrlRecToLog(TXN_EVENT_START, szMyComputerName, sizeof(szMyComputerName));

                                        // allocate structures for delivery
buffers and thread mgmt
                                        pDeliHandles = new
HANDLE[dwNumDeliveryThreads];
                                        pDelBuff = new
DELIVERY_TRANSACTION[dwDelBuffSize];
                                        // launch DeliveryWorkerThread to
perform actual delivery txns
                                        for(i=0; i<dwNumDeliveryThreads; i++)
                                        {
                                                pDeliHandles[i] = (HANDLE)
_beginthread( DeliveryWorkerThread, 0, NULL );
                                                if (pDeliHandles[i] ==
INVALID_HANDLE_VALUE)
                                                        throw new
CWEBCLNT_ERR( ERR_DELIVERY_THREAD_FAILED );
                                        }
                                }

                                break;

                        case DLL_PROCESS_DETACH:
                                if (dwNumDeliveryThreads)
                                {
                                        if (txnDelilog != NULL)
                                        {
                                                //write event into txn log
for STOP
                                                txnDelilog-
>WriteCtrlRecToLog(TXN_EVENT_STOP, szMyComputerName, sizeof(szMyComputerName));

                                                // This will do a clean
shutdown of the delivery log file
                                                CTxnLog   *txnDelilogLocal =
txnDelilog;
                                                txnDelilog= NULL;
                                                delete txnDelilogLocal;
                                        }

                                        delete [] pDeliHandles;
                                        delete [] pDelBuff;

                                        CloseHandle( hWorkerSemaphore );
                                        CloseHandle( hDoneEvent );

        DeleteCriticalSection(&DelBuffCriticalSection);
                                }

                                DeleteCriticalSection(&TermCriticalSection);

                                if (hLibInstanceTm != NULL)
                                        FreeLibrary( hLibInstanceTm );
                                hLibInstanceTm = NULL;

                                if (hLibInstanceDb != NULL)
                                        FreeLibrary( hLibInstanceDb );
                                hLibInstanceDb = NULL;

                                Sleep(500);
                                break;

                        default:
                                /* nothing */;
                }
        }
        catch (CBaseErr *e)
        {
                WriteMessageToEventLog( e->ErrorText() );
                delete e;
                TerminateExtension(0);
                return FALSE;
        }
        catch (...)
        {
                WriteMessageToEventLog(TEXT("Unhandled exception.  DLL could not
load."));
                TerminateExtension(0);
                return FALSE;
        }
```

```
        return TRUE;
}

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

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

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

        return TRUE;
}

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

BOOL WINAPI TerminateExtension( DWORD dwFlags )
{
        if (pDeliHandles)
        {
                SetEvent( hDoneEvent );
                for(DWORD i=0; i<dwNumDeliveryThreads; i++)
                        WaitForSingleObject( pDeliHandles[i], INFINITE );
        }

        TermDeleteAll();
        return TRUE;
}


/* FUNCTION: HttpExtensionProc
 *
 * PURPOSE:        This function is the main entry point for the TPCC DLL. The internet
service
 *                         calls this function passing in the http string.
 *
 * ARGUMENTS:      EXTENSION_CONTROL_BLOCK     *pECB    structure pointer to passed
in internet
 *
 *                         service information.
 *
 * RETURNS:                DWORD    HSE_STATUS_SUCCESS
        connection can be dropped if error
 *
        HSE_STATUS_SUCCESS_AND_KEEP_CONN      keep connect valid comment sent
 *
 * COMMENTS:       None
 *
 */

DWORD WINAPI HttpExtensionProc(EXTENSION_CONTROL_BLOCK *pECB)
{
        int                             iCmd, FormId, TermId, iSyncId;
        char                    szBuffer[4096];

        int                             lpbSize;
        static char             szHeader[] = "200 Ok";
        DWORD                   dwSize = 6;                     // initial value is
strlen(szHeader)
        char                    szHeader1[4096];


#ifdef ICECAP
        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(&DelBuffCriticalSection);
                                delivery = *(pDelBuff+dwDelBuffBusyIndex);
                                dwDelBuffFreeCount++;
                                dwDelBuffBusyIndex++;
                                if (dwDelBuffBusyIndex == dwDelBuffSize)
        // wrap-around if at end of buffer
                                        dwDelBuffBusyIndex = 0;

                                LeaveCriticalSection(&DelBuffCriticalSection);

                                pDeliveryData->w_id = delivery.w_id;
                                pDeliveryData->o_carrier_id =
delivery.o_carrier_id;


                                txnDeliRec.w_id = pDeliveryData->w_id;
                                txnDeliRec.o_carrier_id = pDeliveryData-
>o_carrier_id;
                                txnDeliRec.TxnStartT0 =
Get64BitTime(&delivery.queue);

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

                                //log txn
                                txnDeliRec.TxnStatus = ERR_SUCCESS;
                                for (int i=0; i<10; i++)
                                        txnDeliRec.o_id[i] = pDeliveryData-
>o_id[i];
                                txnDeliRec.DeltaT4 =
(int)(Get64BitTime(&trans_end) - txnDeliRec.TxnStartT0);
```

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

                                if (txnDelilog != NULL)
                                        txnDelilog->WriteToLog(&txnDeliRec);
                        }
                }
                catch (CBaseErr *e)
                {
                        char szTmp[1024];
                        wsprintf( szTmp, "Error in Delivery Txn thread.  %s", e-
>ErrorText() );
                        WriteMessageToEventLog( szTmp );

                        // log the error txn
                        txnDeliRec.TxnStatus = e->ErrorType();
                        if (txnDelilog != NULL)
                                txnDelilog->WriteToLog(&txnDeliRec);

                        delete e;
                }
                catch (...)
                {
                        // unhandled exception; shouldn't happen; not much we can
do...
                        WriteMessageToEventLog(TEXT("Unhandled exception caught in
DeliveryWorkerThread."));
                }
        }

ErrorExit:
        delete pTxn;
        _endthread();
}

/* FUNCTION: PostDeliveryInfo
 *
 * PURPOSE:        This function enters the delivery txn into the deferred delivery
buffer.
 *
 * RETURNS:                BOOL    FALSE   delivery information posted
successfully
 *                                         TRUE    error cannot post
delivery info
 */

BOOL PostDeliveryInfo(short w_id, short o_carrier_id)
{
        BOOL bError;

        EnterCriticalSection(&DelBuffCriticalSection);
        if (dwDelBuffFreeCount > 0)
        {
                bError = FALSE;
                (pDelBuff+dwDelBuffFreeIndex)->w_id                     = w_id;
                (pDelBuff+dwDelBuffFreeIndex)->o_carrier_id    = o_carrier_id;
                GetLocalTime(&(pDelBuff+dwDelBuffFreeIndex)->queue);

                dwDelBuffFreeCount--;
                dwDelBuffFreeIndex++;
                if (dwDelBuffFreeIndex == dwDelBuffSize)
                        dwDelBuffFreeIndex = 0;            // wrap-around if
at end of buffer
```

```
        }
        else
                // No free buffers.  Return an error, which indicates that the
delivery buffer is full.
                // Most likely, the number of delivery worker threads needs to be
increased to keep up
                // with the txn rate.
                bError = TRUE;
        LeaveCriticalSection(&DelBuffCriticalSection);

        if (!bError)
                // increment worker semaphore to wake up a worker thread
                ReleaseSemaphore( hWorkerSemaphore, 1, NULL );

        return bError;
}

/* FUNCTION: ProcessQueryString
 *
 * PURPOSE:        This function extracts the relevent information out of the http
command passed in from
 *                         the browser.
 *
 * COMMENTS:       If this is the initial connection i.e. client is at welcome screen
then
 *                                 there will not be a terminal id or current form
id.  If this is the case
 *                                 then the pTermid and pFormid return values are
undefined.
 */

void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int *pCmd, int *pFormId, int
*pTermId, int *pSyncId)
{
        char *ptr = pECB->lpszQueryString;
        char szBuffer[25];
        int i;

        //allowable client command strings i.e. CMD=command
        static char *szCmds[] =
        {
                "Process", "..NewOrder..", "..Payment..", "..Delivery..", "..Order-
Status..", "..Stock-Level..",
                "..Exit..", "Submit", "Menu", "Clear", "Stats", ""
        };

        *pCmd     = 0;                  // default is the login screen
        *pTermId = 0;

        // if no params (i.e., empty query string), then return login screen
        if (strlen(pECB->lpszQueryString) == 0)
                return;

        // parse FORMID, TERMID, and SYNCID
        *pFormId = GetIntKeyValue(&ptr, "FORMID", NO_ERR, NO_ERR);
        *pTermId = GetIntKeyValue(&ptr, "TERMID", NO_ERR, NO_ERR);
        *pSyncId = GetIntKeyValue(&ptr, "SYNCID", NO_ERR, NO_ERR);

        // parse CMD
        GetKeyValue(&ptr, "CMD", szBuffer, sizeof(szBuffer), ERR_COMMAND_UNDEFINED);

        // see which command it matches
        for(i=0; ; i++)
```

```
        {
                if (szCmds[i][0] == 0)
                        // no more; no match; return error
                        throw new CWEBCLNT_ERR( ERR_COMMAND_UNDEFINED );
                if ( !strcmp(szCmds[i], szBuffer) )
                {
                        *pCmd = i+1;
                        break;
                }
        }
}

/* FUNCTION: void WelcomeForm
 *
 */

void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
        char szTmp[1024];

        //welcome to tpc-c html form buffer, this is first form client sees.
        strcpy( szBuffer,  "<HTML><HEAD><TITLE>TPC-C Web Client</TITLE></HEAD><BODY>"
                                                "<B><BIG>Microsoft TPC-C Web
Client (ver 4.20)</BIG></B> <BR> <BR>"
                                                "<font face=\"Courier
New\"><PRE>"
                                                "Compiled: "__DATE__",
"__TIME__" <BR>"
                                                "Source:   "__FILE__"
("__TIMESTAMP__") <BR>"
                                                "</PRE></font>"
                                                "<FORM ACTION=\"tpcc.dll\"
METHOD=\"GET\">"
                                                "<INPUT TYPE=\"hidden\"
NAME=\"STATUSID\" VALUE=\"0\">"
                                                "<INPUT TYPE=\"hidden\"
NAME=\"ERROR\" VALUE=\"0\">"
                                                "<INPUT TYPE=\"hidden\"
NAME=\"FORMID\" VALUE=\"1\">"
                                                "<INPUT TYPE=\"hidden\"
NAME=\"TERMID\" VALUE=\"0\">"
                                                "<INPUT TYPE=\"hidden\"
NAME=\"SYNCID\" VALUE=\"0\">"
                                                "<INPUT TYPE=\"hidden\"
NAME=\"VERSION\" VALUE=\"" WEBCLIENT_VERSION "\">"
                            );

        sprintf( szTmp,    "Configuration Settings: <BR><font face=\"Courier New\"
color=\"blue\"><PRE>"
                                        "Txn Monitor            =
<B>%s</B><BR>"
                                        "Database protocol      =
<B>%s</B><BR>"
                                        "Max Connections        =
<B>%d</B><BR>"
                                        "# of Delivery Threads  =
<B>%d</B><BR>"
                                        "Max Pending Deliveries =
<B>%d</B><BR>"
                            , szTxnMonNames[Reg.eTxnMon], szDBNames[Reg.eDB_Protocol],
                            Reg.dwMaxConnections, dwNumDeliveryThreads, dwDelBuffSize
);
        strcat( szBuffer, szTmp);
        if (Reg.eTxnMon == COM)
        {
                sprintf( szTmp,    "COM Single Pool        = <B>%s</B><BR>",
                        Reg.bCOM_SinglePool ? "YES" : "NO" );
                strcat( szBuffer, szTmp);
        }
        strcat( szBuffer, "</PRE></font>");

        if (Reg.eTxnMon == None)
                // connection options may be specified when not using a txn monitor
                sprintf( szTmp,    "Please enter your database options for this
connection:<BR>"
                                                "<font face=\"Courier New\"
color=\"blue\"><PRE>"
                                                "DB Server    = <INPUT
NAME=\"db_server\" SIZE=20 VALUE=\"%s\"><BR>"
                                                "DB User ID   = <INPUT
NAME=\"db_user\" SIZE=20 VALUE=\"%s\"><BR>"
                                                "DB Password  = <INPUT
NAME=\"db_passwd\" SIZE=20 VALUE=\"%s\"><BR>"
                                                "DB Name      = <INPUT
NAME=\"db_name\" SIZE=20 VALUE=\"%s\"><BR>"
                                                "</PRE></font>"
                                 , Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, Reg.szDbName );
        else
                // if using a txn monitor, connection options are determined from
registry; can't
                // set per user.  show options fyi
                sprintf( szTmp,    "Database options which will be used by the
transaction monitor:<BR>"
                                                "<font face=\"Courier New\"
color=\"blue\"><PRE>"
                                                "DB Server              =
<B>%s</B><BR>"
                                                "DB User ID             =
<B>%s</B><BR>"
                                                "DB Password            =
<B>%s</B><BR>"
                                                "DB Name                =
<B>%s</B><BR>"
                                                "</PRE></font>"
                                 , Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, Reg.szDbName );
        strcat( szBuffer, szTmp);

        sprintf( szTmp,    "Please enter your Warehouse and District for this
session:<BR>"
                                        "<font face=\"Courier New\"
color=\"blue\"><PRE>" );
        strcat( szBuffer, szTmp);
        strcat( szBuffer,  "Warehouse ID = <INPUT NAME=\"w_id\" SIZE=4><BR>"
                                                "District ID  = <INPUT
NAME=\"d_id\" SIZE=2><BR>"
                                                "</PRE></font><HR>"
                                                "<INPUT TYPE=\"submit\"
NAME=\"CMD\" VALUE=\"Submit\">"
                                                "</FORM></BODY></HTML>");
}

/* FUNCTION: SubmitCmd
 *
```

```
 * PURPOSE:        This function allocated a new terminal id in the Term structure
array.
 *
 */

void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
        int                     iNewTerm;
        char            *ptr = pECB->lpszQueryString;

        char            szVersion[32]           = { 0 };
        char            szServer[32]            = { 0 };
        char            szUser[32]                      = "sa";
        char            szPassword[32]          = { 0 };
        char            szDatabase[32]          = "tpcc";

        // validate version field; the version field ensures that the RTE is
synchronized with the web client
        GetKeyValue(&ptr, "VERSION", szVersion, sizeof(szVersion),
ERR_VERSION_MISMATCH);
        if ( strcmp( szVersion, WEBCLIENT_VERSION ) )
                throw new CWEBCLNT_ERR( ERR_VERSION_MISMATCH );

        if (Reg.eTxnMon == None)
        {
                // parse Server name
                GetKeyValue(&ptr, "db_server", szServer, sizeof(szServer),
ERR_NO_SERVER_SPECIFIED);
                // parse User name
                GetKeyValue(&ptr, "db_user", szUser, sizeof(szUser), NO_ERR);
                // parse Password
                GetKeyValue(&ptr, "db_passwd", szPassword, sizeof(szPassword),
NO_ERR);
                // parse Database name
                GetKeyValue(&ptr, "db_name", szDatabase, sizeof(szDatabase), NO_ERR);
        }

        // parse warehouse ID
        int w_id = GetIntKeyValue(&ptr, "w_id", ERR_HTML_ILL_FORMED, ERR_W_ID_INVALID);
        if ( w_id < 1 )
                throw new CWEBCLNT_ERR( ERR_W_ID_INVALID );

        // parse district ID
        int d_id = GetIntKeyValue(&ptr, "d_id", ERR_HTML_ILL_FORMED, ERR_D_ID_INVALID);
        if ( d_id < 1 || d_id > 10 )
                throw new CWEBCLNT_ERR( ERR_D_ID_INVALID );


        iNewTerm = TermAdd();

        Term.pClientData[iNewTerm].w_id = w_id;
        Term.pClientData[iNewTerm].d_id = d_id;

        try
        {
                if (Reg.eTxnMon == TUXEDO)
                        Term.pClientData[iNewTerm].pTxn = pCTPCC_TUXEDO_new();
                else if (Reg.eTxnMon == ENCINA)
                        Term.pClientData[iNewTerm].pTxn = pCTPCC_ENCINA_new();
                else if (Reg.eTxnMon == COM)
                        Term.pClientData[iNewTerm].pTxn = pCTPCC_COM_new(
Reg.bCOM_SinglePool );
                else if (Reg.eDB_Protocol == ODBC)
```

```
			Term.pClientData[iNewTerm].pTxn = pCTPCC_ODBC_new(
szServer, szUser, szPassword, szMyComputerName, szDatabase );
		else if (Reg.eDB_Protocol == DBLIB)
			Term.pClientData[iNewTerm].pTxn = pCTPCC_DBLIB_new(
szServer, szUser, szPassword, szMyComputerName, szDatabase );
	}
	catch (...)
	{
		TermDelete(iNewTerm);
		throw;		// pass exception upward
	}

	MakeMainMenuForm(iNewTerm, Term.pClientData[iNewTerm].iSyncId, szBuffer);
}

/* FUNCTION: StatsCmd
 *
 * PURPOSE:	This function returns to the browser the total number of active
terminal ids.
 *			This routine is for development/debugging purposes.
 *
 */

void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
	int i;
	int	iTotal;

	EnterCriticalSection(&TermCriticalSection);

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

	LeaveCriticalSection(&TermCriticalSection);

	wsprintf( szBuffer,
			"<HTML><HEAD><TITLE>TPC-C Web Client Stats</TITLE></HEAD>"
			"<BODY><B><BIG> Total Active Connections: %d
</BIG></B><BR></BODY></HTML>"
			, iTotal );
}

char *CWEBCLNT_ERR::ErrorText()
{
	static SERRORMSG errorMsgs[] =
	{
		{	ERR_COMMAND_UNDEFINED,
	"Command undefined."
						},
		{	ERR_D_ID_INVALID,
	"Invalid District ID Must be 1 to 10."
			},
		{	ERR_DELIVERY_CARRIER_ID_RANGE,
	"Delivery Carrier ID out of range must be 1 - 10."
		},
		{	ERR_DELIVERY_CARRIER_INVALID,			"Delivery
Carrier ID invalid must be numeric 1 - 10."			},
		{	ERR_DELIVERY_MISSING_OCD_KEY,			"Delivery
missing Carrier ID key \"OCD*\"."
	},
		{	ERR_DELIVERY_THREAD_FAILED,
	"Could not start delivery worker thread."
			},
		{	ERR_GETPROCADDR_FAILED,
	"Could not map proc in DLL.  GetProcAddr error.  DLL="
	},
		{	ERR_HTML_ILL_FORMED,
	"Required key field is missing from HTML string."
	},
		{	ERR_INVALID_SYNC_CONNECTION,			"Invalid
Terminal Sync ID."
			},
		{	ERR_INVALID_TERMID,
	"Invalid Terminal ID."
						},
		{	ERR_LOADDLL_FAILED,
	"Load of DLL failed.  DLL="
					},
		{	ERR_MAX_CONNECTIONS_EXCEEDED,			"No
connections available.  Max Connections is probably too low."	},
		{	ERR_MISSING_REGISTRY_ENTRIES,			"Required
registry entries are missing.  Rerun INSTALL to correct."},
		{	ERR_NEWORDER_CUSTOMER_INVALID,
	"New Order customer id invalid data type, range = 1 to 3000."
	},
		{	ERR_NEWORDER_CUSTOMER_KEY,
	"New Order missing Customer key \"CID*\"."
			},
		{	ERR_NEWORDER_DISTRICT_INVALID,
	"New Order District ID Invalid range 1 - 10."
		},
		{	ERR_NEWORDER_FORM_MISSING_DID,
	"New Order missing District key \"DID*\"."
			},
		{	ERR_NEWORDER_ITEMID_INVALID,			"New
Order Item Id is wrong data type, must be numeric."		},
		{	ERR_NEWORDER_ITEMID_RANGE,
	"New Order Item Id is out of range. Range = 1 to 999999."
	},
		{	ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,		"New
Order Item_Id field entered without a corresponding Supp_W."	},
		{	ERR_NEWORDER_MISSING_IID_KEY,			"New
Order missing Item Id key \"IID*\"."
	},
		{	ERR_NEWORDER_MISSING_QTY_KEY,			"New
Order Missing Qty key \"Qty##*\"."
		},
		{	ERR_NEWORDER_MISSING_SUPPW_KEY,
	"New Order missing Supp_W key \"SP##*\"."
			},
		{	ERR_NEWORDER_NOITEMS_ENTERED,			"New
Order No order lines entered."
			},
		{	ERR_NEWORDER_QTY_INVALID,
	"New Order Qty invalid must be numeric range 1 - 99."
	},
		{	ERR_NEWORDER_QTY_RANGE,
	"New Order Qty is out of range. Range = 1 to 99."
	},
                {       ERR_NEWORDER_QTY_WITHOUT_SUPPW,
        "New Order Qty field entered without a corresponding Supp_W."
        },
                {       ERR_NEWORDER_SUPPW_INVALID,
        "New Order Supp_W invalid data type must be numeric."
        },
                {       ERR_NO_SERVER_SPECIFIED,
        "No Server name specified."
                                                },
                {       ERR_ORDERSTATUS_CID_AND_CLT,                    "Order
Status Only Customer ID or Last Name may be entered, not both."   },
                {       ERR_ORDERSTATUS_CID_INVALID,                    "Order
Status Customer ID invalid, range must be numeric 1 - 3000."      },
                {       ERR_ORDERSTATUS_CLT_RANGE,
        "Order Status Customer last name longer than 16 characters."
        },
                {       ERR_ORDERSTATUS_DID_INVALID,                    "Order
Status District invalid, value must be numeric 1 - 10."           },
                {       ERR_ORDERSTATUS_MISSING_CID_CLT,                "Order
Status Either Customer ID or Last Name must be entered."          },
                {       ERR_ORDERSTATUS_MISSING_CID_KEY,                "Order
Status missing Customer key \"CID*\"."
        },
                {       ERR_ORDERSTATUS_MISSING_CLT_KEY,                "Order
Status missing Customer Last Name key \"CLT*\"."                  },
                {       ERR_ORDERSTATUS_MISSING_DID_KEY,                "Order
Status missing District key \"DID*\"."
        },
                {       ERR_PAYMENT_CDI_INVALID,
        "Payment Customer district invalid must be numeric."
        },
                {       ERR_PAYMENT_CID_AND_CLT,
        "Payment Only Customer ID or Last Name may be entered, not both." },
                {       ERR_PAYMENT_CUSTOMER_INVALID,                   "Payment
Customer data type invalid, must be numeric."                     },
                {       ERR_PAYMENT_CWI_INVALID,
        "Payment Customer Warehouse invalid, must be numeric."
        },
                {       ERR_PAYMENT_DISTRICT_INVALID,                   "Payment
District ID is invalid, must be 1 - 10."
        },
                {       ERR_PAYMENT_HAM_INVALID,
        "Payment Amount invalid data type must be numeric."
                },
                {       ERR_PAYMENT_HAM_RANGE,
        "Payment Amount out of range, 0 - 9999.99."
                        },
                {       ERR_PAYMENT_LAST_NAME_TO_LONG,
        "Payment Customer last name longer than 16 characters."
        },
                {       ERR_PAYMENT_MISSING_CDI_KEY,                    "Payment
missing Customer district key \"CDI*\"."
        },
                {       ERR_PAYMENT_MISSING_CID_CLT,                    "Payment
Either Customer ID or Last Name must be entered."                 },
                {       ERR_PAYMENT_MISSING_CID_KEY,                    "Payment
missing Customer Key \"CID*\"."
        },
                {       ERR_PAYMENT_MISSING_CLT_KEY,                    "Payment
missing Customer Last Name key \"CLT*\"."
        },
```

```
                {       ERR_PAYMENT_MISSING_CWI_KEY,                    "Payment
missing Customer Warehouse key \"CWI*\"."
        },
                {       ERR_PAYMENT_MISSING_DID_KEY,                    "Payment
missing District Key \"DID*\"."
        },
                {       ERR_PAYMENT_MISSING_HAM_KEY,                    "Payment
missing Amount key \"HAM*\"."
        },
                {       ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY, "Stock Level;
missing Threshold key \"TT*\"."
        },
                {       ERR_STOCKLEVEL_THRESHOLD_INVALID,               "Stock
Level; Threshold value must be in the range = 1 - 99."            },
                {       ERR_STOCKLEVEL_THRESHOLD_RANGE,
        "Stock Level Threshold out of range, range must be 1 - 99."
        },
                {       ERR_VERSION_MISMATCH,
        "Invalid version field.  RTE and Web Client are probably out of sync." },
                {       ERR_W_ID_INVALID,
        "Invalid Warehouse ID."
                                                        },
                {       0,
                                        ""

                        }
        };

        char szTmp[256];
        int i = 0;
        while (TRUE)
        {
                if (errorMsgs[i].szMsg[0] == 0)
                {
                        strcpy( szTmp, "Unknown error number." );
                        break;
                }
                if (m_Error == errorMsgs[i].iError)
                {
                        strcpy( szTmp, errorMsgs[i].szMsg );
                        break;
                }
                i++;
        }

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

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

}

/* FUNCTION: GetKeyValue
 *
 * PURPOSE:        This function parses a http formatted string for specific key values.
 *
 * ARGUMENTS:      char                    *pQueryString       http string from
client browser
```

```
 *                                    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;
}
```

isapi_dll/src/resource.h

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc.rc
//
#define IDD_DIALOG1                     101

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        102
#define _APS_NEXT_COMMAND_VALUE         40001
#define _APS_NEXT_CONTROL_VALUE         1000
#define _APS_NEXT_SYMED_VALUE           101
#endif
#endif
```

common/src/ReadRegistry.cpp

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


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

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

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

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

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

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

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

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

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

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

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

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

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

        RegCloseKey(hKey);

        return FALSE;
}
```

common/src/ReadRegistry.h

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

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

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

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

BOOL ReadTPCCRegistrySettings( TPCCREGISTRYDATA *pReg );
```

common/src/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;

#define ERR_FATAL_LEVEL                        1
#define ERR_WARNING_LEVEL            2
#define ERR_INFORMATION_LEVEL3


#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


class CBaseErr
{
public:
        char     *m_szApp;
        char     *m_szMsg;
        char     *m_szLoc; // code location where the error occurred
        int               m_idMsg;

        CBaseErr(void)
        {
                m_idMsg           = 0;
                m_szMsg           = new char[m_szMsg_size];
                m_szApp           = new char[m_szApp_size];
                m_szLoc           = NULL;

                m_szMsg[0]        = 0;
                m_szApp[0]        = 0;

                GetModuleFileName(GetModuleHandle(NULL), m_szApp, m_szApp_size);
        }
        virtual ~CBaseErr(void)
        {
                if (m_szMsg)
                        delete [] m_szMsg;
                if (m_szApp)
                        delete [] m_szApp;
                if (m_szLoc)
                        delete [] m_szLoc;
        };

        CBaseErr(int idMsg)
        {
                m_idMsg         = idMsg;
                m_szApp         = new char[m_szApp_size];
                m_szMsg         = new char[m_szMsg_size];
                m_szLoc         = NULL;

                GetModuleFileName(GetModuleHandle(NULL), m_szApp, m_szApp_size);
                LoadString(GetModuleHandle(NULL), idMsg, m_szMsg, m_szMsg_size);
        }

        CBaseErr(LPCTSTR szMsg)
        {
                m_idMsg         = 0;
                m_szApp         = new char[m_szApp_size];
                m_szMsg         = new char[m_szMsg_size];
                m_szLoc         = NULL;

                GetModuleFileName(GetModuleHandle(NULL), m_szApp, m_szApp_size);
                strcpy(m_szMsg, szMsg);
        }

        void SetError(char *szMsg, LPCTSTR szLocation)
        {
                if (szMsg != NULL)
                        strcpy(m_szMsg, szMsg);
                else
                        m_szMsg[0] = 0;

                if (szLocation != NULL)
                {
                        delete [] m_szLoc;
                        m_szLoc = new char[strlen(szLocation)+1];
                        strcpy(m_szLoc, szLocation);
                }
                else
                {
                        delete [] m_szLoc;
                        m_szLoc = NULL;
                }
        }

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

                if (szStr)
                        j = wsprintf(szTmp, "%s\n",szStr);
                if (m_szLoc)
                        j += wsprintf(szTmp+j, "Location=%s\n",m_szLoc);
                if (m_szMsg)
                        j += wsprintf(szTmp+j, "%s\n", m_szMsg);
```

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

        char *GetApp(void) { return m_szApp; }
        char *GetMsg(void) { return m_szMsg; }
        char *GetLocation(void) { return m_szLoc; }

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

};

class CSocketErr : public CBaseErr
{
public:
        enum Action
        {
                eNone,
                eSend,
                eSocket,
                eConnect
        };

        CSocketErr(Action eAction, LPCTSTR szLocation);
        CSocketErr(int iError) { m_errId = iError; };
        int                     m_errId;
        Action  m_eAction;

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

class CSystemErr : public CBaseErr
{
public:
        enum Action
        {
                eNone,
                eTransactNamedPipe,
                eWaitNamedPipe,
                eSetNamedPipeHandleState,
                eCreateFile,
                eCreateProcess,
                eCallNamedPipe,
                eCreateEvent,
                eCreateThread,
                eVirtualAlloc,
                eReadFile,
                eWriteFile,
                eMapViewOfFile,
                eCreateFileMapping,
                eInitializeSecurityDescriptor,
                eSetSecurityDescriptorDacl,
                eCreateNamedPipe,
                eConnectNamedPipe,
                eWaitForSingleObject,
                eRegOpenKeyEx,
                   eRegQueryValueEx,
         };

         CSystemErr(Action eAction, LPCTSTR szLocation);

         void Draw(HWND hwnd, LPCTSTR szStr = NULL);

         int               m_errId;
         Action    m_eAction;

         int ErrorType() { return ERR_TYPE_OS;}
         int ErrorNum() { return m_errId;}
         char *ErrorText() { return m_szMsg; }
};

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

         int ErrorType() { return ERR_TYPE_MEMORY;}
         int ErrorNum() { return 0;}
         char *ErrorText() { return "Insufficient Memory to continue.";}
};
```

common/src/trans.h

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

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

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

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

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

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

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

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

         // output params
         EXEC_STATUS                           exec_status_code;
         TIMESTAMP_STRUCT    h_date;
         char                                  w_street_1[ADDRESS_LEN+1];
         char                                  w_street_2[ADDRESS_LEN+1];
         char                                  w_city[ADDRESS_LEN+1];
         char                                  w_state[STATE_LEN+1];
         char                                  w_zip[ZIP_LEN+1];
         char                                  d_street_1[ADDRESS_LEN+1];
         char                                  d_street_2[ADDRESS_LEN+1];
         char                                  d_city[ADDRESS_LEN+1];
         char                                  d_state[STATE_LEN+1];
         char                             d_zip[ZIP_LEN+1];
         char                                  c_first[FIRST_NAME_LEN+1];
         char                                  c_middle[MIDDLE_NAME_LEN + 1];
         char                                  c_street_1[ADDRESS_LEN+1];
         char                                  c_street_2[ADDRESS_LEN+1];
         char                                  c_city[ADDRESS_LEN+1];
         char                                  c_state[STATE_LEN+1];
         char                                  c_zip[ZIP_LEN+1];
         char                                  c_phone[PHONE_LEN+1];
         TIMESTAMP_STRUCT    c_since;
         char                                  c_credit[CREDIT_LEN+1];
         double                                c_credit_lim;
         double                                c_discount;
         double                                c_balance;
         char                                  c_data[200+1];
} PAYMENT_DATA, *PPAYMENT_DATA;

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

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

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


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

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

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

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

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

common/src/txn_base.h

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

#pragma once

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

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

                virtual PNEW_ORDER_DATA              BuffAddr_NewOrder()
        = 0;
                virtual PPAYMENT_DATA                BuffAddr_Payment()
        = 0;
                virtual PDELIVERY_DATA               BuffAddr_Delivery()
        = 0;
                virtual PSTOCK_LEVEL_DATA   BuffAddr_StockLevel()       = 0;
                virtual PORDER_STATUS_DATA  BuffAddr_OrderStatus()      = 0;

                virtual void NewOrder                () = 0;
                virtual void Payment                 () = 0;
                virtual void Delivery                () = 0;
                virtual void StockLevel              () = 0;
                virtual void OrderStatus    () = 0;
};
```

db_dblib_dll/src/tpcc_dblib.cpp

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

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

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

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

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

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

#define  DEFCLPACKSIZE                        4096

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

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

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."                                                    },
                { 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 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) || (++iTryCount > iMaxRetries))
                                throw;

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


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

        int                             iTryCount = 0;
        const BYTE              *pData;
```

```
        ResetError();

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

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

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

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

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


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

                                if (dbnumcols(m_dbproc) != 5)
                                        ThrowError(CDBLIBERR::eWrongNumCols);

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

                                if(pData=dbdata(m_dbproc, 1))

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

```
                                if(pData=dbdata(m_dbproc, 2))
                                        m_txn.NewOrder.OL[i].ol_stock =
(*(DBSMALLINT *) pData);
                                if(pData=dbdata(m_dbproc, 3))

        UtilStrCpy(m_txn.NewOrder.OL[i].ol_brand_generic, pData, dbdatlen(m_dbproc,
3));
                                if(pData=dbdata(m_dbproc, 4))
                                        dbconvert(m_dbproc, SQLNUMERIC, 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, 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, pData,
dbdatlen(m_dbproc,1), SQLFLT8, (BYTE *)&m_txn.NewOrder.w_tax, 8);
                        if (pData=dbdata(m_dbproc, 2))

                                dbconvert(m_dbproc, SQLNUMERIC, 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, 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) || (++iTryCount > iMaxRetries))
                                throw;

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


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, pData,
dbdatlen(m_dbproc,24), SQLFLT8, (BYTE *)&m_txn.Payment.c_credit_lim, 8);
                        if(pData=dbdata(m_dbproc, 25))
                                dbconvert(m_dbproc, SQLNUMERIC, pData,
dbdatlen(m_dbproc,25), SQLFLT8, (BYTE *)&m_txn.Payment.c_discount, 8);
                        if(pData=dbdata(m_dbproc, 26))
                                dbconvert(m_dbproc, SQLNUMERIC, 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) || (++iTryCount > iMaxRetries))
                                throw;

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


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, pData,
dbdatlen(m_dbproc,4),
                                                          SQLFLT8, (BYTE
*)&m_txn.OrderStatus.OL[i].ol_amount, 8);
                                if(pData=dbdata(m_dbproc, 5))
                                {
                                        datetime = *((DBDATETIME *) pData);
                                        dbdatecrack(m_dbproc, &daterec,
&datetime);

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

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

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

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

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

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


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

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

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

                        if(pData=dbdata(m_dbproc, 1))
                                m_txn.OrderStatus.c_id = (*(DBINT *) pData);
                        if(pData=dbdata(m_dbproc, 2))
                                UtilStrCpy(m_txn.OrderStatus.c_last, pData,
dbdatlen(m_dbproc,2));
                        if(pData=dbdata(m_dbproc, 3))
```

```
                                        UtilStrCpy(m_txn.OrderStatus.c_first, pData, 
dbdatlen(m_dbproc,3));
                                if(pData=dbdata(m_dbproc, 4))
                                        UtilStrCpy(m_txn.OrderStatus.c_middle, pData, 
dbdatlen(m_dbproc, 4));
                                if(pData=dbdata(m_dbproc, 5))
                                {
                                        datetime = *((DBDATETIME *) pData);
                                        dbdatecrack(m_dbproc, &daterec, &datetime);
                                        m_txn.OrderStatus.o_entry_d.year   = 
daterec.year;
                                        m_txn.OrderStatus.o_entry_d.month  = 
daterec.month;
                                        m_txn.OrderStatus.o_entry_d.day    = daterec.day;
                                        m_txn.OrderStatus.o_entry_d.hour   = 
daterec.hour;
                                        m_txn.OrderStatus.o_entry_d.minute = 
daterec.minute;
                                        m_txn.OrderStatus.o_entry_d.second = 
daterec.second;
                                }
                                if(pData=dbdata(m_dbproc, 6))
                                        m_txn.OrderStatus.o_carrier_id = (*(DBSMALLINT *) 
pData);
                                if(pData=dbdata(m_dbproc, 7))
                                        dbconvert(m_dbproc, SQLNUMERIC, 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) || (++iTryCount > iMaxRetries))
                                        throw;

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


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) || (++iTryCount > iMaxRetries))
                                throw;

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

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

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

db_dblib_dll/src/tpcc_dblib.h

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

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

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

class CSQLERR : public CBaseErr
{
        public:

                CSQLERR(void)
                {
                        m_msgno = 0;
                        m_msgstate = 0;
                        m_severity = 0;
                        m_msgtext = NULL;
                };

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

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

                int ErrorType() {return ERR_TYPE_SQL;};
                int ErrorNum() {return m_msgno;};
                char *ErrorText() {return m_msgtext;};

};

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

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

                        m_dberrstr = NULL;
                        m_oserrstr = NULL;
                };

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

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

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

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

                CTPCC_DBLIB_ERR( int iErr ) { m_errno = iErr; };

                int             m_errno;

                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);
```

tm_com_dll/src/tpcc_com.cpp

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

// needed for CoinitializeEx
#define _WIN32_WINNT 0x0400

#include <windows.h>

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

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

#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
```

```
#include "..\..\tpcc_com_all\src\tpcc_com_all_i.c"

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

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

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

        m_bSinglePool   = bSinglePool;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

void CTPCC_COM::NewOrder()
{
        VARIANT   vTxn_out;

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

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

void CTPCC_COM::Payment()
{
        VARIANT   vTxn_out;

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

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

void CTPCC_COM::StockLevel()
{
        VARIANT   vTxn_out;

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

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

void CTPCC_COM::OrderStatus()
{
        VARIANT   vTxn_out;

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

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

tm_com_dll/src/tpcc_com.h

```
/*      FILE:                   TPCC_COM.H
 *                                      Microsoft TPC-C Kit Ver. 4.20.000
 *                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                      not yet audited
 *
 *      PURPOSE:  Header file for TPC-C COM+ class implementation.
 *
 *  Change history:
 *                      4.20.000 - first version
 */

#pragma once

#include <stdio.h>
#include "..\..\tpcc_com_ps\src\tpcc_com_ps.h"

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

class CCOMERR : public CBaseErr
{
        private:
                char m_szErrorText[64];

        public:
                // use this interface for genuine COM errors
                CCOMERR( HRESULT hr )
                {
                        m_hr = hr;
                        m_iErrorType = 0;
                        m_iError = 0;
                }

                // use this interface to impersonate a non-COM error type
                CCOMERR( int iErrorType, int iError )
                {
                        m_iErrorType = iErrorType;
                        m_iError = iError;
                        m_hr = S_OK;
                }

                int                     m_hr;
                int                     m_iErrorType;
                int                     m_iError;

                // A CCOMERR class can impersonate another class, which happens if
the error
                // was not actually a COM Services error, but was simply transmitted
back via COM.
                int ErrorType()
                {
                        if (m_iErrorType == 0)
                                return ERR_TYPE_COM;
                        else
                                return m_iErrorType;
                }

                int ErrorNum() {return m_hr;}

                char *ErrorText()
                {
                        if (m_hr == S_OK)
                                sprintf( m_szErrorText, "Error: Class %d, error #
%d", m_iErrorType, m_iError );
                        else
                                sprintf( m_szErrorText, "Error: COM HRESULT %x",
m_hr );
                        return m_szErrorText;
                }
};

class DllDecl CTPCC_COM : public CTPCC_BASE
{
        private:
                BOOL m_bSinglePool;

                // COM Interface pointers
                ITPCC*                  m_pNewOrder;
                ITPCC*                  m_pPayment;
                ITPCC*                  m_pStockLevel;
                ITPCC*                  m_pOrderStatus;

                struct COM_DATA
                {
                        int ErrorType;
                        int error;
                        union
                        {
                                NEW_ORDER_DATA          NewOrder;
                                PAYMENT_DATA            Payment;
                                DELIVERY_DATA           Delivery;
                                STOCK_LEVEL_DATA  StockLevel;
                                ORDER_STATUS_DATA OrderStatus;
                        } u;
                } *m_pTxn;

                VARIANT m_vTxn;
        public:
                CTPCC_COM(BOOL bSinglePool);
                ~CTPCC_COM(void);

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

                void NewOrder           ();
                void Payment            ();
                void StockLevel         ();
                void OrderStatus  ();
                void Delivery           () { throw new CCOMERR(E_NOTIMPL); }
// not supported
};


inline void ReleaseInterface(IUnknown *pUnk)
{
        if (pUnk)
        {
                pUnk->Release();
                pUnk = NULL;
        }
}
```

```
// wrapper routine for class constructor
extern "C" __declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL);

typedef CTPCC_COM* (TYPE_CTPCC_COM)(BOOL);
```

tpcc_com_all/src/methods.h

```
/*      FILE:           METHODS.H
 *                              Microsoft TPC-C Kit Ver. 4.20.000
 *                              Copyright Microsoft, 1999
 *                All Rights Reserved
 *
 *                              not yet audited
 *
 *      PURPOSE:        Header file for COM components.
 *
 *  Change history:
 *              4.20.000 - first version
 */


enum COMPONENT_ERROR
{
        ERR_MISSING_REGISTRY_ENTRIES = 1,
        ERR_LOADDLL_FAILED,
        ERR_GETPROCADDR_FAILED,
        ERR_UNKNOWN_DB_PROTOCOL
};

class CCOMPONENT_ERR : public CBaseErr
{
        public:
                CCOMPONENT_ERR(COMPONENT_ERROR Err)
                {
                        m_Error = Err;
                        m_szTextDetail = NULL;
                        m_SystemErr = 0;
                        m_szErrorText = NULL;
                };

                CCOMPONENT_ERR(COMPONENT_ERROR Err, char
*szTextDetail, DWORD dwSystemErr)
                {
                        m_Error = Err;
                        m_szTextDetail = new
char[strlen(szTextDetail)+1];
```

```
                        strcpy( m_szTextDetail, szTextDetail );
                        m_SystemErr = dwSystemErr;
                        m_szErrorText = NULL;
                };

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

                COMPONENT_ERROR         m_Error;
                char                    *m_szTextDetail;
                char                    *m_szErrorText;
                DWORD                   m_SystemErr;

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


static void WriteMessageToEventLog(LPTSTR lpszMsg);


////////////////////////////////////////////////////////////////////
//////////
// CTPCC_Common
class CTPCC_Common :
        public ITPCC,
        public IObjectControl,
        public IObjectConstruct,
        public CComObjectRootEx<CComSingleThreadModel>
{
public:
BEGIN_COM_MAP(CTPCC_Common)
        COM_INTERFACE_ENTRY(ITPCC)
        COM_INTERFACE_ENTRY(IObjectControl)
        COM_INTERFACE_ENTRY(IObjectConstruct)
END_COM_MAP()

        CTPCC_Common();
        ~CTPCC_Common();

// ITPCC
```

```
public:
        HRESULT __stdcall NewOrder(             VARIANT txn_in,
VARIANT* txn_out);
        HRESULT __stdcall Payment(              VARIANT txn_in,
VARIANT* txn_out);
        HRESULT __stdcall Delivery(             VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall StockLevel( VARIANT txn_in, VARIANT*
txn_out);
        HRESULT __stdcall OrderStatus(          VARIANT txn_in,
VARIANT* txn_out);

        HRESULT __stdcall CallSetComplete();

// IObjectControl
        STDMETHODIMP_(BOOL) CanBePooled() { return m_bCanBePooled;
}
        STDMETHODIMP Activate() { return S_OK; }        // we don't
support COM Services transactions (no enlistment)
        STDMETHODIMP_(void) Deactivate() { /* nothing to do */ }

// IObjectConstruct
        STDMETHODIMP Construct(IDispatch * pUnk);

        // helper methods
private:
        BOOL            m_bCanBePooled;
        CTPCC_BASE      *m_pTxn;

        struct COM_DATA
        {
                int retval;
                int error;
                union
                {
                        NEW_ORDER_DATA          NewOrder;
                        PAYMENT_DATA            Payment;
                        DELIVERY_DATA           Delivery;
                        STOCK_LEVEL_DATA        StockLevel;
                        ORDER_STATUS_DATA       OrderStatus;
                } u;
        };

};

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

```
// CTPCC
class CTPCC :
        public CTPCC_Common,
        public CComCoClass<CTPCC, &CLSID_TPCC>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_TPCC)

BEGIN_COM_MAP(CTPCC)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

};


///////////////////////////////////////////////////////////////////
//////////
// CNewOrder
class CNewOrder :
        public CTPCC_Common,
        public CComCoClass<CNewOrder, &CLSID_NewOrder>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_NEWORDER)

BEGIN_COM_MAP(CNewOrder)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
//      HRESULT __stdcall NewOrder(          VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall Payment(           VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall StockLevel( VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall OrderStatus(       VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
};


        ///////////////////////////////////////////////////////////
/////////////////
// COrderStatus
class COrderStatus :
        public CTPCC_Common,
        public CComCoClass<COrderStatus, &CLSID_OrderStatus>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_ORDERSTATUS)

BEGIN_COM_MAP(COrderStatus)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
        HRESULT __stdcall NewOrder(          VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall Payment(           VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall StockLevel( VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
//      HRESULT __stdcall OrderStatus(       VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
};


///////////////////////////////////////////////////////////////////
//////////
// CPayment
class CPayment :
        public CTPCC_Common,
        public CComCoClass<CPayment, &CLSID_Payment>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_PAYMENT)

BEGIN_COM_MAP(CPayment)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
        HRESULT __stdcall NewOrder(          VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
//      HRESULT __stdcall Payment(           VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
```

```
        HRESULT __stdcall StockLevel( VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall OrderStatus(        VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
};


///////////////////////////////////////////////////////////////////
//////////
// CStockLevel
class CStockLevel :
        public CTPCC_Common,
        public CComCoClass<CStockLevel, &CLSID_StockLevel>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_STOCKLEVEL)

BEGIN_COM_MAP(CStockLevel)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
        HRESULT __stdcall NewOrder(           VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall Payment(            VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
//      HRESULT __stdcall StockLevel( VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall OrderStatus(        VARIANT txn_in,
VARIANT* txn_out) {return E_NOTIMPL;}
};
```

tpcc_com_all/src/resource.h

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc_com_all.rc
//
#define IDS_PROJNAME                    100
#define IDR_TPCC                        101
#define IDR_NEWORDER                    102
#define IDR_ORDERSTATUS                 103
#define IDR_PAYMENT                     104
#define IDR_STOCKLEVEL                  105
// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        202
#define _APS_NEXT_COMMAND_VALUE         32768
#define _APS_NEXT_CONTROL_VALUE         201
#define _APS_NEXT_SYMED_VALUE           106
#endif
#endif
```

tpcc_com_all/src/tpcc_com_all.cpp

```
/*       FILE:              TPCC_COM_ALL.CPP
 *                                   Microsoft TPC-C Kit Ver. 4.20.000
 *                                   Copyright Microsoft, 1999
 *             All Rights Reserved
 *
 *                                   Version 4.10.000 audited by Richard Gimarc,
Performance Metrics, 3/17/99
 *
 *       PURPOSE: Implementation for TPC-C Tuxedo class.
 *       Contact: Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                4.20.000 - updated rev number to match kit
 */

#define STRICT
#define _WIN32_WINNT 0x0400
#define _ATL_APARTMENT_THREADED

#include <stdio.h>
#include <atlbase.h>
//You may derive a class from CComModule and use it if you want to override
//something, but do not change the name of _Module
extern CComModule _Module;

#include <atlcom.h>
#include <initguid.h>
#include <transact.h>
#include <atlimpl.cpp>
#include <comsvcs.h>

#include <sqltypes.h>
#include <sql.h>
#include <sqlext.h>

#include "tpcc_com_ps.h"
#include "..\..\common\src\trans.h"                                        //tpckit
transaction header contains definations of structures specific to TPC-C
#include "..\..\common\src\txn_base.h"
#include "..\..\common\src\error.h"
#include "..\..\common\src\ReadRegistry.h"
#include "..\..\db_dblib_dll\src\tpcc_dblib.h"          // DBLIB implementation of
TPC-C txns
#include "..\..\db_odbc_dll\src\tpcc_odbc.h"            // ODBC implementation of
TPC-C txns
```

```
#include "resource.h"
#include "tpcc_com_all.h"
#include "tpcc_com_all_i.c"
#include "Methods.h"
#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
#include "..\..\common\src\ReadRegistry.cpp"


CComModule _Module;

BEGIN_OBJECT_MAP(ObjectMap)
        OBJECT_ENTRY(CLSID_TPCC, CTPCC)
        OBJECT_ENTRY(CLSID_NewOrder, CNewOrder)
        OBJECT_ENTRY(CLSID_OrderStatus, COrderStatus)
        OBJECT_ENTRY(CLSID_Payment, CPayment)
        OBJECT_ENTRY(CLSID_StockLevel, CStockLevel)
END_OBJECT_MAP()


// configuration settings from registry
TPCCREGISTRYDATA   Reg;
char                            szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB   *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC         *pCTPCC_ODBC_new;


/////////////////////////////////////////////////////////////////////////////
// DLL Entry Point

extern "C"
BOOL WINAPI DllMain(HINSTANCE hInstance, DWORD dwReason, LPVOID /*lpReserved*/)
{
        char szDllName[128];

        try
        {
                if (dwReason == DLL_PROCESS_ATTACH)
                {
                        _Module.Init(ObjectMap, hInstance);
                        DisableThreadLibraryCalls(hInstance);

                        DWORD dwSize = MAX_COMPUTERNAME_LENGTH+1;
                        GetComputerName(szMyComputerName, &dwSize);
                        szMyComputerName[dwSize] = 0;

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

                        if (Reg.eDB_Protocol == DBLIB)
                        {
                                strcpy( szDllName, Reg.szPath );
                                strcat( szDllName, "tpcc_dblib.dll");
                                hLibInstanceDb = LoadLibrary( szDllName );
                                if (hLibInstanceDb == NULL)
                                        throw new CCOMPONENT_ERR(
ERR_LOADDLL_FAILED, szDllName, GetLastError() );

                                // get function pointer to wrapper for class
constructor
                                pCTPCC_DBLIB_new = (TYPE_CTPCC_DBLIB*)
GetProcAddress(hLibInstanceDb,"CTPCC_DBLIB_new");
                                if (pCTPCC_DBLIB_new == NULL)
                                        throw new CCOMPONENT_ERR(
ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                        }
                        else if (Reg.eDB_Protocol == ODBC)
                        {
                                strcpy( szDllName, Reg.szPath );
                                strcat( szDllName, "tpcc_odbc.dll");
                                hLibInstanceDb = LoadLibrary( szDllName );
                                if (hLibInstanceDb == NULL)
                                        throw new CCOMPONENT_ERR(
ERR_LOADDLL_FAILED, szDllName, GetLastError() );

                                // get function pointer to wrapper for class
constructor
                                pCTPCC_ODBC_new = (TYPE_CTPCC_ODBC*)
GetProcAddress(hLibInstanceDb,"CTPCC_ODBC_new");
                                if (pCTPCC_ODBC_new == NULL)
                                        throw new CCOMPONENT_ERR(
ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                        }
                        else
                                throw new CCOMPONENT_ERR( ERR_UNKNOWN_DB_PROTOCOL
);
                }
                else if (dwReason == DLL_PROCESS_DETACH)
                        _Module.Term();

        }
        catch (CBaseErr *e)
        {
                WriteMessageToEventLog(e->ErrorText());
                delete e;
                return FALSE;
        }
        catch (...)
        {
                WriteMessageToEventLog(TEXT("Unhandled exception in object
DllMain"));
                return FALSE;
        }

        return TRUE;    // OK
}

/////////////////////////////////////////////////////////////////////////////
// Used to determine whether the DLL can be unloaded by OLE

STDAPI DllCanUnloadNow(void)
{
        return (_Module.GetLockCount()==0) ? S_OK : S_FALSE;
}

/////////////////////////////////////////////////////////////////////////////
// Returns a class factory to create an object of the requested type

STDAPI DllGetClassObject(REFCLSID rclsid, REFIID riid, LPVOID* ppv)
{
        return _Module.GetClassObject(rclsid, riid, ppv);
}
```

```
/////////////////////////////////////////////////////////////////////////////
// DllRegisterServer - Adds entries to the system registry

STDAPI DllRegisterServer(void)
{
        // registers object, typelib and all interfaces in typelib
        return _Module.RegisterServer(TRUE);
}

/////////////////////////////////////////////////////////////////////////////
// DllUnregisterServer - Removes entries from the system registry

STDAPI DllUnregisterServer(void)
{
        _Module.UnregisterServer();
        return S_OK;
}


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

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

    _stprintf(szMsg, TEXT("Error in COM+ TPC-C Component: "));
    lpszStrings[0] = szMsg;
    lpszStrings[1] = lpszMsg;

    if (hEventSource != NULL)
         {
        ReportEvent(hEventSource, // handle of event source
            EVENTLOG_ERROR_TYPE,  // event type
            0,                    // event category
            0,                    // event ID
            NULL,                 // current user's SID
            2,                    // strings in lpszStrings
            0,                    // no bytes of raw data
            (LPCTSTR *)lpszStrings,    // array of error strings
            NULL);                // no raw data

        (VOID) DeregisterEventSource(hEventSource);
    }
}

inline void ReleaseInterface(IUnknown *pUnk)
{
        if (pUnk)
        {
                pUnk->Release();
                pUnk = NULL;
        }
}

/* FUNCTION: CCOMPONENT_ERR::ErrorText
 *
 */

char* CCOMPONENT_ERR::ErrorText(void)
```

```
{
        static SERRORMSG errorMsgs[] =
        {
                { ERR_MISSING_REGISTRY_ENTRIES,      "Required entries missing
from registry."                               },
                { ERR_LOADDLL_FAILED,                          "Load of DLL
failed.  DLL="
        },
                { ERR_GETPROCADDR_FAILED,            "Could not map proc in DLL.
GetProcAddr error.  DLL="   },
                { ERR_UNKNOWN_DB_PROTOCOL,           "Unknown database protocol
specified in registry."              },
                { 0,
        ""
                                                      }
        };

        char szTmp[256];
        int i = 0;
        while (TRUE)
        {
                if (errorMsgs[i].szMsg[0] == 0)
                {
                        strcpy( szTmp, "Unknown error number." );
                        break;
                }
                if (m_Error == errorMsgs[i].iError)
                {
                        strcpy( szTmp, errorMsgs[i].szMsg );
                        break;
                }
                i++;
        }

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

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


CTPCC_Common::CTPCC_Common()
{
        m_pTxn = NULL;
        m_bCanBePooled = TRUE;
}

CTPCC_Common::~CTPCC_Common()
{
        if (m_pTxn)
                delete m_pTxn;
}

HRESULT CTPCC_Common::CallSetComplete()
{
        IObjectContext* pObjectContext = NULL;

        // get our object context
        HRESULT hr = CoGetObjectContext( IID_IObjectContext, (void **)&pObjectContext
);
        pObjectContext->SetComplete();
        ReleaseInterface(pObjectContext);
        return hr;
}

//
//      called by the ctor activator
//
STDMETHODIMP CTPCC_Common::Construct(IDispatch * pUnk)
{
        // Code to access construction string, if needed later...
        //      if (!pUnk)
        //              return E_UNEXPECTED;
        //      IObjectConstructString * pString = NULL;
        //      HRESULT hr = pUnk->QueryInterface(IID_IObjectConstructString, (void
**)&pString);
        //      pString->Release();

        try
        {
                if (Reg.eDB_Protocol == ODBC)
                        m_pTxn = pCTPCC_ODBC_new( Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                else if (Reg.eDB_Protocol == DBLIB)
                        m_pTxn = pCTPCC_DBLIB_new( Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, szMyComputerName, Reg.szDbName );
        }
        catch (CBaseErr *e)
        {
                WriteMessageToEventLog(e->ErrorText());
                delete e;
                return E_FAIL;
        }
        catch (...)
        {
                WriteMessageToEventLog(TEXT("Unhandled exception in object
::Construct"));
                return E_FAIL;
        }

        return S_OK;
}

HRESULT CTPCC_Common::NewOrder(VARIANT txn_in, VARIANT* txn_out)
{
        PNEW_ORDER_DATA         pNewOrder;
        COM_DATA                *pData;
        try
        {
                pData = (COM_DATA*)txn_in.parray->pvData;
                pNewOrder = m_pTxn->BuffAddr_NewOrder();

                memcpy(pNewOrder, &pData->u.NewOrder, sizeof(NEW_ORDER_DATA));

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

                VariantInit(txn_out);
                txn_out->vt = VT_SAFEARRAY;
                txn_out->parray = SafeArrayCreateVector(VT_UI1,
                                                                txn_in.parray-
>rgsabound->cElements,
                                                                txn_in.parray-
>rgsabound->cElements);
                pData = (COM_DATA*) txn_out->parray->pvData;

                memcpy( &pData->u.NewOrder, pNewOrder, sizeof(NEW_ORDER_DATA));

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

                pData->retval = e->ErrorType();
                pData->error = e->ErrorNum();
                delete e;
                return E_FAIL;
        }
        catch (...)
        {
                WriteMessageToEventLog(TEXT("Unhandled exception."));
                pData->retval = ERR_TYPE_LOGIC;
                pData->error = 0;
                m_bCanBePooled = FALSE;
                return E_FAIL;
        }
}

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

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

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

                VariantInit(txn_out);
                txn_out->vt = VT_SAFEARRAY;
                txn_out->parray = SafeArrayCreateVector( VT_UI1,
                                                                txn_in.parray-
>rgsabound->cElements,
                                                                txn_in.parray-
>rgsabound->cElements);
                pData = (COM_DATA*) txn_out->parray->pvData;

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

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

                pData->retval = e->ErrorType();
                pData->error = e->ErrorNum();
                delete e;
                return E_FAIL;
        }
        catch (...)
        {
                WriteMessageToEventLog(TEXT("Unhandled exception."));
                pData->retval = ERR_TYPE_LOGIC;
                pData->error = 0;
                m_bCanBePooled = FALSE;
                return E_FAIL;
        }
}

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

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

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

                m_pTxn->StockLevel();

                VariantInit(txn_out);
                txn_out->vt = VT_SAFEARRAY;
                txn_out->parray = SafeArrayCreateVector( VT_UI1,
                                                                txn_in.parray-
>rgsabound->cElements,
                                                                txn_in.parray-
>rgsabound->cElements);
                pData = (COM_DATA*)txn_out->parray->pvData;

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

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

                pData->retval = e->ErrorType();
                pData->error = e->ErrorNum();
```

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

HRESULT CTPCC_Common::OrderStatus(VARIANT txn_in, VARIANT* txn_out)
{
        PORDER_STATUS_DATA pOrderStatus;
        COM_DATA                        *pData;
        try
        {
                pData = (COM_DATA*)txn_in.parray->pvData;
                pOrderStatus = m_pTxn->BuffAddr_OrderStatus();

                memcpy(pOrderStatus, &pData->u.OrderStatus,
sizeof(ORDER_STATUS_DATA));

                m_pTxn->OrderStatus();

                VariantInit(txn_out);
                txn_out->vt = VT_SAFEARRAY;
                txn_out->parray = SafeArrayCreateVector( VT_UI1,
                                                                txn_in.parray-
>rgsabound->cElements,
                                                                txn_in.parray-
>rgsabound->cElements);
                pData = (COM_DATA*)txn_out->parray->pvData;

                memcpy( &pData->u.OrderStatus, pOrderStatus,
sizeof(ORDER_STATUS_DATA));

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

                pData->retval = e->ErrorType();
                pData->error = e->ErrorNum();
                delete e;
                return E_FAIL;
        }
        catch (...)
        {
                WriteMessageToEventLog(TEXT("Unhandled exception."));
                pData->retval = ERR_TYPE_LOGIC;
                pData->error = 0;
                m_bCanBePooled = FALSE;
```

```
                   return E_FAIL;
         }
}
```

tpcc_com_all/src/tpcc_com_all.def

```
; tpcc_com_all.def : Declares the module parameters.

LIBRARY      "tpcc_com_all.dll"

EXPORTS
         DllCanUnloadNow     @1 PRIVATE
         DllGetClassObject   @2 PRIVATE
         DllRegisterServer   @3 PRIVATE
         DllUnregisterServer@4 PRIVATE
```

tpcc_com_all/src/tpcc_com_all.h

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:18 2000
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


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

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

#ifndef __tpcc_com_all_h__
#define __tpcc_com_all_h__

/* Forward Declarations */

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

#endif   /* __TPCC_FWD_DEFINED__ */


#ifndef __NewOrder_FWD_DEFINED__
#define __NewOrder_FWD_DEFINED__

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

#endif   /* __NewOrder_FWD_DEFINED__ */


#ifndef __OrderStatus_FWD_DEFINED__
#define __OrderStatus_FWD_DEFINED__

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

#endif   /* __OrderStatus_FWD_DEFINED__ */


#ifndef __Payment_FWD_DEFINED__
#define __Payment_FWD_DEFINED__

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

#endif   /* __Payment_FWD_DEFINED__ */


#ifndef __StockLevel_FWD_DEFINED__
#define __StockLevel_FWD_DEFINED__

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

#endif   /* __StockLevel_FWD_DEFINED__ */


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

#ifdef __cplusplus
```

```
extern "C"{
#endif

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

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







extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_s_ifspec;


#ifndef __TPCCLib_LIBRARY_DEFINED__
#define __TPCCLib_LIBRARY_DEFINED__

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


EXTERN_C const IID LIBID_TPCCLib;

EXTERN_C const CLSID CLSID_TPCC;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_NewOrder;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_OrderStatus;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_Payment;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_StockLevel;

#ifdef __cplusplus

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

/* Additional Prototypes for ALL interfaces */

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all/src/tpcc_com_all.idl

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

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


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

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

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


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


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


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


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

};
```

tpcc_com_all/src/tpcc_com_all.rc

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

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

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

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

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

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

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

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

3 TEXTINCLUDE DISCARDABLE
BEGIN
    "1 TYPELIB ""tpcc_com_all.tlb""\r\n"
    "\0"
END

#endif    // APSTUDIO_INVOKED


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

VS_VERSION_INFO VERSIONINFO
 FILEVERSION 1,0,0,1
 PRODUCTVERSION 1,0,0,1
 FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
 FILEFLAGS 0x1L
#else
 FILEFLAGS 0x0L
#endif
 FILEOS 0x4L
 FILETYPE 0x2L
 FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInfo"
    BEGIN
        BLOCK "040904B0"
        BEGIN
            VALUE "CompanyName", "\0"
            VALUE "FileDescription", "tpcc_com_all Module\0"
            VALUE "FileVersion", "1, 0, 0, 1\0"
            VALUE "InternalName", "TPCCNEWORDER\0"
            VALUE "LegalCopyright", "Copyright 1997\0"
            VALUE "OriginalFilename", "tpcc_com_all.DLL\0"
            VALUE "ProductName", "tpcc_com_all Module\0"
            VALUE "ProductVersion", "1, 0, 0, 1\0"
            VALUE "OLESelfRegister", "\0"
        END
    END
    BLOCK "VarFileInfo"
    BEGIN
        VALUE "Translation", 0x409, 1200
    END
END

#endif    // !_MAC


/////////////////////////////////////////////////////////////////////////////
//
// REGISTRY
//

IDR_TPCC                REGISTRY DISCARDABLE    "tpcc_com_all.rgs"
IDR_NEWORDER            REGISTRY DISCARDABLE    "tpcc_com_no.rgs"
IDR_ORDERSTATUS         REGISTRY DISCARDABLE    "tpcc_com_os.rgs"
IDR_PAYMENT             REGISTRY DISCARDABLE    "tpcc_com_pay.rgs"
IDR_STOCKLEVEL          REGISTRY DISCARDABLE    "tpcc_com_sl.rgs"

/////////////////////////////////////////////////////////////////////////////
//
// String Table
//

STRINGTABLE DISCARDABLE
BEGIN
    IDS_PROJNAME            "tpcc_com_all"
END

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



#ifndef APSTUDIO_INVOKED
/////////////////////////////////////////////////////////////////////////////
//
// Generated from the TEXTINCLUDE 3 resource.
//
1 TYPELIB "tpcc_com_all.tlb"

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

tpcc_com_all/src/tpcc_com_all.rgs

```
HKCR
{
        TPCC.AllTxns.1 = s 'All Txns Class'
        {
                CLSID = s '{122A3128-2520-11D3-BA71-00C04FBFE08B}'
        }
        TPCC.AllTxns = s 'TPCC Class'
        {
                CurVer = s 'TPCC.AllTxns.1'
        }
        NoRemove CLSID
        {
                ForceRemove {122A3128-2520-11D3-BA71-00C04FBFE08B} = s 'TPCC Class'
                {
                        ProgID = s 'TPCC.AllTxns.1'
                        VersionIndependentProgID = s 'TPCC.AllTxns'
                        InprocServer32 = s '%MODULE%'
                        {
                                val ThreadingModel = s 'Both'
                        }
                }
        }
}
```

tpcc_com_all/src/tpcc_com_all_i.c

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

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:18 2000
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif
```

```
#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


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


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,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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


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

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:18 2000
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext, robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

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

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


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


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,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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

tpcc_com_all/src/tpcc_com_no.rgs

```
HKCR
{
	TPCC.NewOrder.1 = s 'NewOrder Class'
	{
		CLSID = s '{975BAABF-84A7-11D2-BA47-00C04FBFE08B}'
	}
	TPCC.NewOrder = s 'NewOrder Class'
	{
		CurVer = s 'TPCC.NewOrder.1'
	}
	NoRemove CLSID
	{
		ForceRemove {975BAABF-84A7-11D2-BA47-00C04FBFE08B} = s 'NewOrder
Class'
		{
			ProgID = s 'TPCC.NewOrder.1'
			VersionIndependentProgID = s 'TPCC.NewOrder'
			InprocServer32 = s '%MODULE%'
			{
				val ThreadingModel = s 'Both'
			}
		}
	}
}
```

tpcc_com_all/src/tpcc_com_os.rgs

```
HKCR
{
	TPCC.OrderStatus.1 = s 'OrderStatus Class'
	{
		CLSID = s '{266836AD-A50D-11D2-BA4E-00C04FBFE08B}'
	}
	TPCC.OrderStatus = s 'OrderStatus Class'
	{
		CurVer = s 'TPCC.OrderStatus.1'
	}
	NoRemove CLSID
	{
		ForceRemove {266836AD-A50D-11D2-BA4E-00C04FBFE08B} = s 'OrderStatus
Class'
		{
			ProgID = s 'TPCC.OrderStatus.1'
			VersionIndependentProgID = s 'TPCC.OrderStatus'
			InprocServer32 = s '%MODULE%'
			{
				val ThreadingModel = s 'Both'
			}
		}
	}
}
```

tpcc_com_all/src/tpcc_com_pay.rgs

```
HKCR
{
	TPCC.Payment.1 = s 'Payment Class'
```

```
        {
                CLSID = s '{CD02F7EF-A4FA-11D2-BA4E-00C04FBFE08B}'
        }
        TPCC.Payment = s 'Payment Class'
        {
                CurVer = s 'TPCC.Payment.1'
        }
        NoRemove CLSID
        {
                ForceRemove {CD02F7EF-A4FA-11D2-BA4E-00C04FBFE08B} = s 'Payment
Class'
                {
                        ProgID = s 'TPCC.Payment.1'
                        VersionIndependentProgID = s 'TPCC.Payment'
                        InprocServer32 = s '%MODULE%'
                        {
                                val ThreadingModel = s 'Both'
                        }
                }
        }
}
```

tpcc_com_all/src/tpcc_com_ps.h

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:10 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


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

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

#ifndef __RPCNDR_H_VERSION__
#error this stub requires an updated version of <rpcndr.h>
#endif // __RPCNDR_H_VERSION__

#ifndef COM_NO_WINDOWS_H
#include "windows.h"
#include "ole2.h"
#endif /*COM_NO_WINDOWS_H*/

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

#ifndef __ITPCC_FWD_DEFINED__
#define __ITPCC_FWD_DEFINED__
typedef interface ITPCC ITPCC;
#endif   /* __ITPCC_FWD_DEFINED__ */


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

#ifdef __cplusplus
extern "C"{
#endif

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

/* interface __MIDL_itf_tpcc_com_ps_0000 */
/* [local] */




extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_s_ifspec;

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

/* interface ITPCC */
/* [unique][helpstring][uuid][oleautomation][object] */


EXTERN_C const IID IID_ITPCC;

#if defined(__cplusplus) && !defined(CINTERFACE)

    MIDL_INTERFACE("FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : public IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else     /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE __RPC_FAR *QueryInterface )(
            ITPCC __RPC_FAR * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void __RPC_FAR *__RPC_FAR *ppvObject);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *AddRef )(
            ITPCC __RPC_FAR * This);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *Release )(
            ITPCC __RPC_FAR * This);

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
            ITPCC __RPC_FAR * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl __RPC_FAR *lpVtbl;
    };
```

```

#ifdef COBJMACROS


#define ITPCC_QueryInterface(This,riid,ppvObject)\
    (This)->lpVtbl -> QueryInterface(This,riid,ppvObject)

#define ITPCC_AddRef(This)  \
    (This)->lpVtbl -> AddRef(This)

#define ITPCC_Release(This) \
    (This)->lpVtbl -> Release(This)


#define ITPCC_NewOrder(This,txn_in,txn_out)    \
    (This)->lpVtbl -> NewOrder(This,txn_in,txn_out)

#define ITPCC_Payment(This,txn_in,txn_out)     \
    (This)->lpVtbl -> Payment(This,txn_in,txn_out)

#define ITPCC_Delivery(This,txn_in,txn_out)    \
    (This)->lpVtbl -> Delivery(This,txn_in,txn_out)

#define ITPCC_StockLevel(This,txn_in,txn_out)  \
    (This)->lpVtbl -> StockLevel(This,txn_in,txn_out)

#define ITPCC_OrderStatus(This,txn_in,txn_out) \
    (This)->lpVtbl -> OrderStatus(This,txn_in,txn_out)

#define ITPCC_CallSetComplete(This)   \
    (This)->lpVtbl -> CallSetComplete(This)

#endif /* COBJMACROS */


#endif    /* C style interface */



HRESULT __stdcall ITPCC_NewOrder_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Delivery_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_StockLevel_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_OrderStatus_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_CallSetComplete_Proxy( 
    ITPCC __RPC_FAR * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);



#endif   /* __ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER  VARIANT_UserSize(     unsigned long __RPC_FAR *, 
unsigned long            , VARIANT __RPC_FAR * ); 
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserMarshal(  unsigned long __RPC_FAR *, 
unsigned char __RPC_FAR *, VARIANT __RPC_FAR * ); 
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserUnmarshal(unsigned long __RPC_FAR *, 
unsigned char __RPC_FAR *, VARIANT __RPC_FAR * ); 
void                      __RPC_USER  VARIANT_UserFree(     unsigned long __RPC_FAR *, 
VARIANT __RPC_FAR * ); 

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all/src/tpcc_com_sl.rgs

```
HKCR
{
	TPCC.StockLevel.1 = s 'StockLevel Class'
	{
		CLSID = s '{2668369E-A50D-11D2-BA4E-00C04FBFE08B}'
	}
	TPCC.StockLevel = s 'StockLevel Class'
	{
		CurVer = s 'TPCC.StockLevel.1'
	}
	NoRemove CLSID
	{
		ForceRemove {2668369E-A50D-11D2-BA4E-00C04FBFE08B} = s 'StockLevel 
Class'
		{
			ProgID = s 'TPCC.StockLevel.1'
			VersionIndependentProgID = s 'TPCC.StockLevel'
			InprocServer32 = s '%MODULE%'
			{
				val ThreadingModel = s 'Both'
			}
		}
	}
}
```

tpcc_com_ps/src/dlldata.c

```
/*********************************************************
   DllData file -- generated by MIDL compiler 

        DO NOT ALTER THIS FILE

   This file is regenerated by MIDL on every IDL file compile.

   To completely reconstruct this file, delete it and rerun MIDL
   on all the IDL files in this DLL, specifying this file for the
   /dlldata command line option

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


#include <rpcproxy.h>

#ifdef __cplusplus
extern "C"   {
#endif

EXTERN_PROXY_FILE( tpcc_com_ps )


PROXYFILE_LIST_START
/* Start of list */
  REFERENCE_PROXY_FILE( tpcc_com_ps ),
/* End of list */
PROXYFILE_LIST_END


DLLDATA_ROUTINES( aProxyFileList, GET_DLL_CLSID )

#ifdef __cplusplus
}  /*extern "C" */
#endif

/* end of generated dlldata file */
```

tpcc_com_ps/src/tpcc_com_ps.def

```
LIBRARY      "tpcc_com_ps"

DESCRIPTION  'Proxy/Stub DLL'

EXPORTS
         DllGetClassObject       @1  PRIVATE
         DllCanUnloadNow         @2  PRIVATE
         GetProxyDllInfo         @3  PRIVATE
         DllRegisterServer           @4       PRIVATE
         DllUnregisterServer         @5       PRIVATE
```

tpcc_com_ps/src/tpcc_com_ps.h

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:10 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


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

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

#ifndef __RPCNDR_H_VERSION__
#error this stub requires an updated version of <rpcndr.h>
#endif // __RPCNDR_H_VERSION__

#ifndef COM_NO_WINDOWS_H
#include "windows.h"
#include "ole2.h"
#endif /*COM_NO_WINDOWS_H*/

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

#ifndef __ITPCC_FWD_DEFINED__
#define __ITPCC_FWD_DEFINED__
typedef interface ITPCC ITPCC;
#endif   /* __ITPCC_FWD_DEFINED__ */


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

#ifdef __cplusplus
extern "C"{
#endif

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

/* interface __MIDL_itf_tpcc_com_ps_0000 */
/* [local] */




extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_s_ifspec;

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

/* interface ITPCC */
/* [unique][helpstring][uuid][oleautomation][object] */
```

```
EXTERN_C const IID IID_ITPCC;

#if defined(__cplusplus) && !defined(CINTERFACE)

    MIDL_INTERFACE("FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : public IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else    /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE __RPC_FAR *QueryInterface )(
            ITPCC __RPC_FAR * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void __RPC_FAR *__RPC_FAR *ppvObject);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *AddRef )(
            ITPCC __RPC_FAR * This);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *Release )(
            ITPCC __RPC_FAR * This);

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
            ITPCC __RPC_FAR * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl __RPC_FAR *lpVtbl;
    };


#ifdef COBJMACROS


#define ITPCC_QueryInterface(This,riid,ppvObject)\
    (This)->lpVtbl -> QueryInterface(This,riid,ppvObject)

#define ITPCC_AddRef(This)  \
    (This)->lpVtbl -> AddRef(This)

#define ITPCC_Release(This) \
    (This)->lpVtbl -> Release(This)


#define ITPCC_NewOrder(This,txn_in,txn_out)    \
    (This)->lpVtbl -> NewOrder(This,txn_in,txn_out)

#define ITPCC_Payment(This,txn_in,txn_out)     \
    (This)->lpVtbl -> Payment(This,txn_in,txn_out)

#define ITPCC_Delivery(This,txn_in,txn_out)    \
    (This)->lpVtbl -> Delivery(This,txn_in,txn_out)

#define ITPCC_StockLevel(This,txn_in,txn_out)  \
    (This)->lpVtbl -> StockLevel(This,txn_in,txn_out)

#define ITPCC_OrderStatus(This,txn_in,txn_out) \
    (This)->lpVtbl -> OrderStatus(This,txn_in,txn_out)

#define ITPCC_CallSetComplete(This)   \
    (This)->lpVtbl -> CallSetComplete(This)

#endif /* COBJMACROS */


#endif   /* C style interface */
```

```
HRESULT __stdcall ITPCC_NewOrder_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Delivery_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_StockLevel_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_OrderStatus_Proxy( 
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_CallSetComplete_Proxy( 
    ITPCC __RPC_FAR * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);



#endif   /* __ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER  VARIANT_UserSize(     unsigned long __RPC_FAR *, 
unsigned long            , VARIANT __RPC_FAR * ); 
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserMarshal(  unsigned long __RPC_FAR *, 
unsigned char __RPC_FAR *, VARIANT __RPC_FAR * ); 
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserUnmarshal(unsigned long __RPC_FAR *, 
unsigned char __RPC_FAR *, VARIANT __RPC_FAR * ); 
void                      __RPC_USER  VARIANT_UserFree(     unsigned long __RPC_FAR *, 
VARIANT __RPC_FAR * ); 

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_ps/src/tpcc_com_ps.idl

```
/*      FILE:          ITPCC.IDL
 *                             Microsoft TPC-C Kit Ver. 4.20.000
 *                             Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                             not yet audited
 *
 *      PURPOSE:       Defines the interface used by TPCC. This
interface can be implemented by C++ components.
 *
 *  Change history:
 *             4.20.000 - first version
 */

// Forward declare all types defined
interface ITPCC;
import "oaidl.idl";
import "ocidl.idl";

        [
                object,
                oleautomation,
                uuid(FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B),
                helpstring("ITPCC Interface"),
                pointer_default(unique)
        ]
        interface ITPCC : IUnknown
        {

        HRESULT _stdcall NewOrder
                                                (
                                                [in] VARIANT  txn_in,
                                                [out] VARIANT *txn_out
                                                );

        HRESULT _stdcall Payment
                                                (
                                                [in] VARIANT txn_in,
                                                [out] VARIANT *txn_out
                                                );

        HRESULT _stdcall Delivery
                                                (
                                                [in] VARIANT txn_in,
                                                [out] VARIANT *txn_out
                                                );

        HRESULT _stdcall StockLevel
                                                (
                                                [in] VARIANT txn_in,
                                                [out] VARIANT *txn_out
                                                );

        HRESULT _stdcall OrderStatus
                                                (
                                                [in] VARIANT txn_in,
                                                [out] VARIANT *txn_out
                                                );

        HRESULT _stdcall CallSetComplete
                                                (
                                                );

    };  // interface ITPCC
```

tpcc_com_ps/src/tpcc_com_ps_i.c

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

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:10 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_
```

```
#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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


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

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:10 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext, robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

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

#ifdef __cplusplus
extern "C"{
#endif
```

```
#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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

tpcc_com_ps/src/tpcc_com_ps_p.c

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:10 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)
#define USE_STUBLESS_PROXY


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


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


#include "tpcc_com_ps.h"

#define TYPE_FORMAT_STRING_SIZE   997
#define PROC_FORMAT_STRING_SIZE   193
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

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

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00}} */
```

```
/* Object interface: IUnknown, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,
   GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    34,
    68,
    102,
    136,
    170
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0
    };

static const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *)-1 /* ITPCC::NewOrder */ ,
    (void *)-1 /* ITPCC::Payment */ ,
    (void *)-1 /* ITPCC::Delivery */ ,
    (void *)-1 /* ITPCC::StockLevel */ ,
    (void *)-1 /* ITPCC::OrderStatus */ ,
    (void *)-1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE
];

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x20000, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE
] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN32__)
#error  Invalid build platform for this stub.
#endif

#if !(TARGET_IS_NT40_OR_LATER)
#error You need a Windows NT 4.0 or later to run this stub because it uses these
features:
#error   -Oif or -Oicf, [wire_marshal] or [user_marshal] attribute.
#error However, your C/C++ compilation flags indicate you intend to run this app on
earlier systems.
#error This app will die there with the RPC_X_WRONG_STUB_VERSION error.
#endif
```

```

static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

         /* Procedure NewOrder */

                            0x33,              /* FC_AUTO_HANDLE */
                            0x6c,              /* Old Flags:  object, Oi2 */
/*  2 */ NdrFcLong( 0x0 ),  /* 0 */
/*  6 */ NdrFcShort( 0x3 ), /* 3 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/*  8 */ NdrFcShort( 0x1c ),/* x86 Stack size/offset = 28 */
#else
                            NdrFcShort( 0x20 ),/*  MIPS Stack size/offset = 32 */
#endif
#else
                            NdrFcShort( 0x20 ),/* PPC Stack size/offset = 32 */
#endif
#else
                            NdrFcShort( 0x28 ),/* Alpha Stack size/offset = 40 */
#endif
/* 10 */ NdrFcShort( 0x0 ), /* 0 */
/* 12 */ NdrFcShort( 0x8 ), /* 8 */
/* 14 */ 0x7,               /* Oi2 Flags:  srv must size, clt must size, has return, */
                            0x3,               /* 3 */

         /* Parameter txn_in */

/* 16 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 18 */ NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
#else
                            NdrFcShort( 0x8 ), /*  MIPS Stack size/offset = 8 */
#endif
#else
                            NdrFcShort( 0x8 ), /* PPC Stack size/offset = 8 */
#endif
#else
                            NdrFcShort( 0x8 ), /* Alpha Stack size/offset = 8 */
#endif
/* 20 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Parameter txn_out */

/* 22 */ NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 24 */ NdrFcShort( 0x14 ),/* x86 Stack size/offset = 20 */
#else
                            NdrFcShort( 0x18 ),/*  MIPS Stack size/offset = 24 */
#endif
#else
                            NdrFcShort( 0x18 ),/* PPC Stack size/offset = 24 */
#endif
#else
```

```
                            NdrFcShort( 0x18 ),/* Alpha Stack size/offset = 24 */
#endif
/* 26 */ NdrFcShort( 0x3da ),        /* Type Offset=986 */

         /* Return value */

/* 28 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 30 */ NdrFcShort( 0x18 ),/* x86 Stack size/offset = 24 */
#else
                            NdrFcShort( 0x1c ),/*  MIPS Stack size/offset = 28 */
#endif
#else
                            NdrFcShort( 0x1c ),/* PPC Stack size/offset = 28 */
#endif
#else
                            NdrFcShort( 0x20 ),/* Alpha Stack size/offset = 32 */
#endif
/* 32 */ 0x8,               /* FC_LONG */
                            0x0,               /* 0 */

         /* Procedure Payment */

/* 34 */ 0x33,              /* FC_AUTO_HANDLE */
                            0x6c,              /* Old Flags:  object, Oi2 */
/* 36 */ NdrFcLong( 0x0 ),  /* 0 */
/* 40 */ NdrFcShort( 0x4 ), /* 4 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 42 */ NdrFcShort( 0x1c ),/* x86 Stack size/offset = 28 */
#else
                            NdrFcShort( 0x20 ),/*  MIPS Stack size/offset = 32 */
#endif
#else
                            NdrFcShort( 0x20 ),/* PPC Stack size/offset = 32 */
#endif
#else
                            NdrFcShort( 0x28 ),/* Alpha Stack size/offset = 40 */
#endif
/* 44 */ NdrFcShort( 0x0 ), /* 0 */
/* 46 */ NdrFcShort( 0x8 ), /* 8 */
/* 48 */ 0x7,               /* Oi2 Flags:  srv must size, clt must size, has return, */
                            0x3,               /* 3 */

         /* Parameter txn_in */

/* 50 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 52 */ NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
#else
                            NdrFcShort( 0x8 ), /*  MIPS Stack size/offset = 8 */
#endif
#else
                            NdrFcShort( 0x8 ), /* PPC Stack size/offset = 8 */
#endif
#else
                            NdrFcShort( 0x8 ), /* Alpha Stack size/offset = 8 */
#endif
```

```
/* 54 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Parameter txn_out */

/* 56 */ NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 58 */ NdrFcShort( 0x14 ),/* x86 Stack size/offset = 20 */
#else
                            NdrFcShort( 0x18 ),/*  MIPS Stack size/offset = 24 */
#endif
#else
                            NdrFcShort( 0x18 ),/* PPC Stack size/offset = 24 */
#endif
#else
                            NdrFcShort( 0x18 ),/* Alpha Stack size/offset = 24 */
#endif
/* 60 */ NdrFcShort( 0x3da ),        /* Type Offset=986 */

         /* Return value */

/* 62 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 64 */ NdrFcShort( 0x18 ),/* x86 Stack size/offset = 24 */
#else
                            NdrFcShort( 0x1c ),/*  MIPS Stack size/offset = 28 */
#endif
#else
                            NdrFcShort( 0x1c ),/* PPC Stack size/offset = 28 */
#endif
#else
                            NdrFcShort( 0x20 ),/* Alpha Stack size/offset = 32 */
#endif
/* 66 */ 0x8,               /* FC_LONG */
                            0x0,               /* 0 */

         /* Procedure Delivery */

/* 68 */ 0x33,              /* FC_AUTO_HANDLE */
                            0x6c,              /* Old Flags:  object, Oi2 */
/* 70 */ NdrFcLong( 0x0 ),  /* 0 */
/* 74 */ NdrFcShort( 0x5 ), /* 5 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 76 */ NdrFcShort( 0x1c ),/* x86 Stack size/offset = 28 */
#else
                            NdrFcShort( 0x20 ),/*  MIPS Stack size/offset = 32 */
#endif
#else
                            NdrFcShort( 0x20 ),/* PPC Stack size/offset = 32 */
#endif
#else
                            NdrFcShort( 0x28 ),/* Alpha Stack size/offset = 40 */
#endif
/* 78 */ NdrFcShort( 0x0 ), /* 0 */
/* 80 */ NdrFcShort( 0x8 ), /* 8 */
/* 82 */ 0x7,               /* Oi2 Flags:  srv must size, clt must size, has return, */
                            0x3,               /* 3 */
         /* Parameter txn_in */

/* 84 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 86 */ NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
#else
                           NdrFcShort( 0x8 ), /*  MIPS Stack size/offset = 8 */
#endif
#else
                           NdrFcShort( 0x8 ), /* PPC Stack size/offset = 8 */
#endif
#else
                           NdrFcShort( 0x8 ), /* Alpha Stack size/offset = 8 */
#endif
/* 88 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Parameter txn_out */

/* 90 */ NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 92 */ NdrFcShort( 0x14 ),/* x86 Stack size/offset = 20 */
#else
                           NdrFcShort( 0x18 ),/*  MIPS Stack size/offset = 24 */
#endif
#else
                           NdrFcShort( 0x18 ),/* PPC Stack size/offset = 24 */
#endif
#else
                           NdrFcShort( 0x18 ),/* Alpha Stack size/offset = 24 */
#endif
/* 94 */ NdrFcShort( 0x3da ),        /* Type Offset=986 */

         /* Return value */

/* 96 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 98 */ NdrFcShort( 0x18 ),/* x86 Stack size/offset = 24 */
#else
                           NdrFcShort( 0x1c ),/*  MIPS Stack size/offset = 28 */
#endif
#else
                           NdrFcShort( 0x1c ),/* PPC Stack size/offset = 28 */
#endif
#else
                           NdrFcShort( 0x20 ),/* Alpha Stack size/offset = 32 */
#endif
/* 100 */0x8,              /* FC_LONG */
                           0x0,               /* 0 */

         /* Procedure StockLevel */

/* 102 */0x33,             /* FC_AUTO_HANDLE */
                           0x6c,              /* Old Flags:  object, Oi2 */
/* 104 */NdrFcLong( 0x0 ),  /* 0 */
/* 108 */NdrFcShort( 0x6 ), /* 6 */
```

```
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 110 */NdrFcShort( 0x1c ),/* x86 Stack size/offset = 28 */
#else
                           NdrFcShort( 0x20 ),/*  MIPS Stack size/offset = 32 */
#endif
#else
                           NdrFcShort( 0x20 ),/* PPC Stack size/offset = 32 */
#endif
#else
                           NdrFcShort( 0x28 ),/* Alpha Stack size/offset = 40 */
#endif
/* 112 */NdrFcShort( 0x0 ), /* 0 */
/* 114 */NdrFcShort( 0x8 ), /* 8 */
/* 116 */0x7,              /* Oi2 Flags:  srv must size, clt must size, has return, */
                           0x3,               /* 3 */

         /* Parameter txn_in */

/* 118 */NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 120 */NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
#else
                           NdrFcShort( 0x8 ), /*  MIPS Stack size/offset = 8 */
#endif
#else
                           NdrFcShort( 0x8 ), /* PPC Stack size/offset = 8 */
#endif
#else
                           NdrFcShort( 0x8 ), /* Alpha Stack size/offset = 8 */
#endif
/* 122 */NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Parameter txn_out */

/* 124 */NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 126 */NdrFcShort( 0x14 ),/* x86 Stack size/offset = 20 */
#else
                           NdrFcShort( 0x18 ),/*  MIPS Stack size/offset = 24 */
#endif
#else
                           NdrFcShort( 0x18 ),/* PPC Stack size/offset = 24 */
#endif
#else
                           NdrFcShort( 0x18 ),/* Alpha Stack size/offset = 24 */
#endif
/* 128 */NdrFcShort( 0x3da ),        /* Type Offset=986 */

         /* Return value */

/* 130 */NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 132 */NdrFcShort( 0x18 ),/* x86 Stack size/offset = 24 */
#else
```

```
                              NdrFcShort( 0x1c ),/*  MIPS Stack size/offset = 28 */
#endif
#else
                              NdrFcShort( 0x1c ),/* PPC Stack size/offset = 28 */
#endif
#else
                              NdrFcShort( 0x20 ),/* Alpha Stack size/offset = 32 */
#endif
/* 134 */ 0x8,                /* FC_LONG */
                              0x0,               /* 0 */

          /* Procedure OrderStatus */

/* 136 */ 0x33,               /* FC_AUTO_HANDLE */
                              0x6c,              /* Old Flags:  object, Oi2 */
/* 138 */ NdrFcLong( 0x0 ),  /* 0 */
/* 142 */ NdrFcShort( 0x7 ), /* 7 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 144 */ NdrFcShort( 0x1c ),/* x86 Stack size/offset = 28 */
#else
                              NdrFcShort( 0x20 ),/*  MIPS Stack size/offset = 32 */
#endif
#else
                              NdrFcShort( 0x20 ),/* PPC Stack size/offset = 32 */
#endif
#else
                              NdrFcShort( 0x28 ),/* Alpha Stack size/offset = 40 */
#endif
/* 146 */ NdrFcShort( 0x0 ), /* 0 */
/* 148 */ NdrFcShort( 0x8 ), /* 8 */
/* 150 */ 0x7,                /* Oi2 Flags:  srv must size, clt must size, has return, */
                              0x3,               /* 3 */

          /* Parameter txn_in */

/* 152 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 154 */ NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
#else
                              NdrFcShort( 0x8 ), /*  MIPS Stack size/offset = 8 */
#endif
#else
                              NdrFcShort( 0x8 ), /* PPC Stack size/offset = 8 */
#endif
#else
                              NdrFcShort( 0x8 ), /* Alpha Stack size/offset = 8 */
#endif
/* 156 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

          /* Parameter txn_out */

/* 158 */ NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 160 */ NdrFcShort( 0x14 ),/* x86 Stack size/offset = 20 */
#else
                              NdrFcShort( 0x18 ),/*  MIPS Stack size/offset = 24 */
#endif
#else
                              NdrFcShort( 0x18 ),/* PPC Stack size/offset = 24 */
#endif
#else
                              NdrFcShort( 0x18 ),/* Alpha Stack size/offset = 24 */
#endif
/* 162 */ NdrFcShort( 0x3da ),        /* Type Offset=986 */

          /* Return value */

/* 164 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 166 */ NdrFcShort( 0x18 ),/* x86 Stack size/offset = 24 */
#else
                              NdrFcShort( 0x1c ),/*  MIPS Stack size/offset = 28 */
#endif
#else
                              NdrFcShort( 0x1c ),/* PPC Stack size/offset = 28 */
#endif
#else
                              NdrFcShort( 0x20 ),/* Alpha Stack size/offset = 32 */
#endif
/* 168 */ 0x8,                /* FC_LONG */
                              0x0,               /* 0 */

          /* Procedure CallSetComplete */

/* 170 */ 0x33,               /* FC_AUTO_HANDLE */
                              0x6c,              /* Old Flags:  object, Oi2 */
/* 172 */ NdrFcLong( 0x0 ),  /* 0 */
/* 176 */ NdrFcShort( 0x8 ), /* 8 */
#ifndef _ALPHA_
/* 178 */ NdrFcShort( 0x8 ), /* x86, MIPS, PPC Stack size/offset = 8 */
#else
                              NdrFcShort( 0x10 ),/* Alpha Stack size/offset = 16 */
#endif
/* 180 */ NdrFcShort( 0x0 ), /* 0 */
/* 182 */ NdrFcShort( 0x8 ), /* 8 */
/* 184 */ 0x4,                /* Oi2 Flags:  has return, */
                              0x1,               /* 1 */

          /* Return value */

/* 186 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 188 */ NdrFcShort( 0x4 ), /* x86, MIPS, PPC Stack size/offset = 4 */
#else
                              NdrFcShort( 0x8 ), /* Alpha Stack size/offset = 8 */
#endif
/* 190 */ 0x8,                /* FC_LONG */
                              0x0,               /* 0 */

                              0x0
        }
    };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
    {
        0,
        {
```

```
                            NdrFcShort( 0x0 ), /* 0 */
/*  2 */
                            0x12, 0x0,         /* FC_UP */
/*  4 */ NdrFcShort( 0x3b0 ),        /* Offset= 944 (948) */
/*  6 */
                            0x2b,              /* FC_NON_ENCAPSULATED_UNION */
                            0x9,               /* FC_ULONG */
/*  8 */ 0x7,                /* Corr desc: FC_USHORT */
                            0x0,               /*  */
/* 10 */ NdrFcShort( 0xfff8 ),       /* -8 */
/* 12 */ NdrFcShort( 0x2 ), /* Offset= 2 (14) */
/* 14 */ NdrFcShort( 0x10 ),/* 16 */
/* 16 */ NdrFcShort( 0x2b ),/* 43 */
/* 18 */ NdrFcLong( 0x3 ),  /* 3 */
/* 22 */ NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 24 */ NdrFcLong( 0x11 ), /* 17 */
/* 28 */ NdrFcShort( 0x8001 ),       /* Simple arm type: FC_BYTE */
/* 30 */ NdrFcLong( 0x2 ),  /* 2 */
/* 34 */ NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 36 */ NdrFcLong( 0x4 ),  /* 4 */
/* 40 */ NdrFcShort( 0x800a ),       /* Simple arm type: FC_FLOAT */
/* 42 */ NdrFcLong( 0x5 ),  /* 5 */
/* 46 */ NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 48 */ NdrFcLong( 0xb ),  /* 11 */
/* 52 */ NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 54 */ NdrFcLong( 0xa ),  /* 10 */
/* 58 */ NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 60 */ NdrFcLong( 0x6 ),  /* 6 */
/* 64 */ NdrFcShort( 0xd6 ),/* Offset= 214 (278) */
/* 66 */ NdrFcLong( 0x7 ),  /* 7 */
/* 70 */ NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 72 */ NdrFcLong( 0x8 ),  /* 8 */
/* 76 */ NdrFcShort( 0xd0 ),/* Offset= 208 (284) */
/* 78 */ NdrFcLong( 0xd ),  /* 13 */
/* 82 */ NdrFcShort( 0xe2 ),/* Offset= 226 (308) */
/* 84 */ NdrFcLong( 0x9 ),  /* 9 */
/* 88 */ NdrFcShort( 0xee ),/* Offset= 238 (326) */
/* 90 */ NdrFcLong( 0x2000 ),        /* 8192 */
/* 94 */ NdrFcShort( 0xfa ),/* Offset= 250 (344) */
/* 96 */ NdrFcLong( 0x24 ), /* 36 */
/* 100 */NdrFcShort( 0x308 ),        /* Offset= 776 (876) */
/* 102 */NdrFcLong( 0x4024 ),        /* 16420 */
/* 106 */NdrFcShort( 0x302 ),        /* Offset= 770 (876) */
/* 108 */NdrFcLong( 0x4011 ),        /* 16401 */
/* 112 */NdrFcShort( 0x300 ),        /* Offset= 768 (880) */
/* 114 */NdrFcLong( 0x4002 ),        /* 16386 */
/* 118 */NdrFcShort( 0x2fe ),        /* Offset= 766 (884) */
/* 120 */NdrFcLong( 0x4003 ),        /* 16387 */
/* 124 */NdrFcShort( 0x2fc ),        /* Offset= 764 (888) */
/* 126 */NdrFcLong( 0x4004 ),        /* 16388 */
/* 130 */NdrFcShort( 0x2fa ),        /* Offset= 762 (892) */
/* 132 */NdrFcLong( 0x4005 ),        /* 16389 */
/* 136 */NdrFcShort( 0x2f8 ),        /* Offset= 760 (896) */
/* 138 */NdrFcLong( 0x400b ),        /* 16395 */
/* 142 */NdrFcShort( 0x2e6 ),        /* Offset= 742 (884) */
/* 144 */NdrFcLong( 0x400a ),        /* 16394 */
/* 148 */NdrFcShort( 0x2e4 ),        /* Offset= 740 (888) */
/* 150 */NdrFcLong( 0x4006 ),        /* 16390 */
/* 154 */NdrFcShort( 0x2ea ),        /* Offset= 746 (900) */
/* 156 */NdrFcLong( 0x4007 ),        /* 16391 */
/* 160 */NdrFcShort( 0x2e0 ),        /* Offset= 736 (896) */
/* 162 */NdrFcLong( 0x4008 ),        /* 16392 */
/* 166 */NdrFcShort( 0x2e2 ),        /* Offset= 738 (904) */
/* 168 */NdrFcLong( 0x400d ),        /* 16397 */
/* 172 */NdrFcShort( 0x2e0 ),        /* Offset= 736 (908) */
/* 174 */NdrFcLong( 0x4009 ),        /* 16393 */
/* 178 */NdrFcShort( 0x2de ),        /* Offset= 734 (912) */
/* 180 */NdrFcLong( 0x6000 ),        /* 24576 */
/* 184 */NdrFcShort( 0x2dc ),        /* Offset= 732 (916) */
/* 186 */NdrFcLong( 0x400c ),        /* 16396 */
/* 190 */NdrFcShort( 0x2da ),        /* Offset= 730 (920) */
/* 192 */NdrFcLong( 0x10 ), /* 16 */
/* 196 */NdrFcShort( 0x8002 ),       /* Simple arm type: FC_CHAR */
/* 198 */NdrFcLong( 0x12 ), /* 18 */
/* 202 */NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 204 */NdrFcLong( 0x13 ), /* 19 */
/* 208 */NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 210 */NdrFcLong( 0x16 ), /* 22 */
/* 214 */NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 216 */NdrFcLong( 0x17 ), /* 23 */
/* 220 */NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 222 */NdrFcLong( 0xe ),  /* 14 */
/* 226 */NdrFcShort( 0x2be ),        /* Offset= 702 (928) */
/* 228 */NdrFcLong( 0x400e ),        /* 16398 */
/* 232 */NdrFcShort( 0x2c4 ),        /* Offset= 708 (940) */
/* 234 */NdrFcLong( 0x4010 ),        /* 16400 */
/* 238 */NdrFcShort( 0x2c2 ),        /* Offset= 706 (944) */
/* 240 */NdrFcLong( 0x4012 ),        /* 16402 */
/* 244 */NdrFcShort( 0x280 ),        /* Offset= 640 (884) */
/* 246 */NdrFcLong( 0x4013 ),        /* 16403 */
/* 250 */NdrFcShort( 0x27e ),        /* Offset= 638 (888) */
/* 252 */NdrFcLong( 0x4016 ),        /* 16406 */
/* 256 */NdrFcShort( 0x278 ),        /* Offset= 632 (888) */
/* 258 */NdrFcLong( 0x4017 ),        /* 16407 */
/* 262 */NdrFcShort( 0x272 ),        /* Offset= 626 (888) */
/* 264 */NdrFcLong( 0x0 ),  /* 0 */
/* 268 */NdrFcShort( 0x0 ), /* Offset= 0 (268) */
/* 270 */NdrFcLong( 0x1 ),  /* 1 */
/* 274 */NdrFcShort( 0x0 ), /* Offset= 0 (274) */
/* 276 */NdrFcShort( 0xffffffff ),   /* Offset= -1 (275) */
/* 278 */
                            0x15,              /* FC_STRUCT */
                            0x7,               /* 7 */
/* 280 */NdrFcShort( 0x8 ), /* 8 */
/* 282 */0xb,                /* FC_HYPER */
                            0x5b,              /* FC_END */
/* 284 */
                            0x12, 0x0,         /* FC_UP */
/* 286 */NdrFcShort( 0xc ), /* Offset= 12 (298) */
/* 288 */
                            0x1b,              /* FC_CARRAY */
                            0x1,               /* 1 */
/* 290 */NdrFcShort( 0x2 ), /* 2 */
/* 292 */0x9,                /* Corr desc: FC_ULONG */
                            0x0,               /*  */
/* 294 */NdrFcShort( 0xfffc ),       /* -4 */
/* 296 */0x6,                /* FC_SHORT */
                            0x5b,              /* FC_END */
/* 298 */
                            0x17,              /* FC_CSTRUCT */
                            0x3,               /* 3 */
/* 300 */NdrFcShort( 0x8 ), /* 8 */
/* 302 */NdrFcShort( 0xfffffff2 ),   /* Offset= -14 (288) */
/* 304 */0x8,                /* FC_LONG */
                            0x8,               /* FC_LONG */
/* 306 */0x5c,               /* FC_PAD */
```

```
                            0x5b,              /* FC_END */
/* 308 */
                            0x2f,              /* FC_IP */
                            0x5a,              /* FC_CONSTANT_IID */
/* 310 */ NdrFcLong( 0x0 ),  /* 0 */
/* 314 */ NdrFcShort( 0x0 ), /* 0 */
/* 316 */ NdrFcShort( 0x0 ), /* 0 */
/* 318 */ 0xc0,              /* 192 */
                            0x0,               /* 0 */
/* 320 */ 0x0,               /* 0 */
                            0x0,               /* 0 */
/* 322 */ 0x0,               /* 0 */
                            0x0,               /* 0 */
/* 324 */ 0x0,               /* 0 */
                            0x46,              /* 70 */
/* 326 */
                            0x2f,              /* FC_IP */
                            0x5a,              /* FC_CONSTANT_IID */
/* 328 */ NdrFcLong( 0x20400 ),        /* 132096 */
/* 332 */ NdrFcShort( 0x0 ), /* 0 */
/* 334 */ NdrFcShort( 0x0 ), /* 0 */
/* 336 */ 0xc0,              /* 192 */
                            0x0,               /* 0 */
/* 338 */ 0x0,               /* 0 */
                            0x0,               /* 0 */
/* 340 */ 0x0,               /* 0 */
                            0x0,               /* 0 */
/* 342 */ 0x0,               /* 0 */
                            0x46,              /* 70 */
/* 344 */
                            0x12, 0x10,        /* FC_UP [pointer_deref] */
/* 346 */ NdrFcShort( 0x2 ), /* Offset= 2 (348) */
/* 348 */
                            0x12, 0x0,         /* FC_UP */
/* 350 */ NdrFcShort( 0x1fc ),         /* Offset= 508 (858) */
/* 352 */
                            0x2a,              /* FC_ENCAPSULATED_UNION */
                            0x49,              /* 73 */
/* 354 */ NdrFcShort( 0x18 ),/* 24 */
/* 356 */ NdrFcShort( 0xa ), /* 10 */
/* 358 */ NdrFcLong( 0x8 ),  /* 8 */
/* 362 */ NdrFcShort( 0x58 ),/* Offset= 88 (450) */
/* 364 */ NdrFcLong( 0xd ),  /* 13 */
/* 368 */ NdrFcShort( 0x78 ),/* Offset= 120 (488) */
/* 370 */ NdrFcLong( 0x9 ),  /* 9 */
/* 374 */ NdrFcShort( 0x94 ),/* Offset= 148 (522) */
/* 376 */ NdrFcLong( 0xc ),  /* 12 */
/* 380 */ NdrFcShort( 0xbc ),/* Offset= 188 (568) */
/* 382 */ NdrFcLong( 0x24 ), /* 36 */
/* 386 */ NdrFcShort( 0x114 ),         /* Offset= 276 (662) */
/* 388 */ NdrFcLong( 0x800d ),         /* 32781 */
/* 392 */ NdrFcShort( 0x130 ),         /* Offset= 304 (696) */
/* 394 */ NdrFcLong( 0x10 ), /* 16 */
/* 398 */ NdrFcShort( 0x148 ),         /* Offset= 328 (726) */
/* 400 */ NdrFcLong( 0x2 ),  /* 2 */
/* 404 */ NdrFcShort( 0x160 ),         /* Offset= 352 (756) */
/* 406 */ NdrFcLong( 0x3 ),  /* 3 */
/* 410 */ NdrFcShort( 0x178 ),         /* Offset= 376 (786) */
/* 412 */ NdrFcLong( 0x14 ), /* 20 */
/* 416 */ NdrFcShort( 0x190 ),         /* Offset= 400 (816) */
/* 418 */ NdrFcShort( 0xffffffff ),    /* Offset= -1 (417) */
/* 420 */
                            0x1b,              /* FC_CARRAY */
```

```
                            0x3,               /* 3 */
/* 422 */ NdrFcShort( 0x4 ), /* 4 */
/* 424 */ 0x19,              /* Corr desc:  field pointer, FC_ULONG */
                            0x0,               /*  */
/* 426 */ NdrFcShort( 0x0 ), /* 0 */
/* 428 */
                            0x4b,              /* FC_PP */
                            0x5c,              /* FC_PAD */
/* 430 */
                            0x48,              /* FC_VARIABLE_REPEAT */
                            0x49,              /* FC_FIXED_OFFSET */
/* 432 */ NdrFcShort( 0x4 ), /* 4 */
/* 434 */ NdrFcShort( 0x0 ), /* 0 */
/* 436 */ NdrFcShort( 0x1 ), /* 1 */
/* 438 */ NdrFcShort( 0x0 ), /* 0 */
/* 440 */ NdrFcShort( 0x0 ), /* 0 */
/* 442 */ 0x12, 0x0,         /* FC_UP */
/* 444 */ NdrFcShort( 0xffffff6e ),    /* Offset= -146 (298) */
/* 446 */
                            0x5b,              /* FC_END */

                            0x8,               /* FC_LONG */
/* 448 */ 0x5c,              /* FC_PAD */
                            0x5b,              /* FC_END */
/* 450 */
                            0x16,              /* FC_PSTRUCT */
                            0x3,               /* 3 */
/* 452 */ NdrFcShort( 0x8 ), /* 8 */
/* 454 */
                            0x4b,              /* FC_PP */
                            0x5c,              /* FC_PAD */
/* 456 */
                            0x46,              /* FC_NO_REPEAT */
                            0x5c,              /* FC_PAD */
/* 458 */ NdrFcShort( 0x4 ), /* 4 */
/* 460 */ NdrFcShort( 0x4 ), /* 4 */
/* 462 */ 0x11, 0x0,         /* FC_RP */
/* 464 */ NdrFcShort( 0xffffffd4 ),    /* Offset= -44 (420) */
/* 466 */
                            0x5b,              /* FC_END */

                            0x8,               /* FC_LONG */
/* 468 */ 0x8,               /* FC_LONG */
                            0x5b,              /* FC_END */
/* 470 */
                            0x21,              /* FC_BOGUS_ARRAY */
                            0x3,               /* 3 */
/* 472 */ NdrFcShort( 0x0 ), /* 0 */
/* 474 */ 0x19,              /* Corr desc:  field pointer, FC_ULONG */
                            0x0,               /*  */
/* 476 */ NdrFcShort( 0x0 ), /* 0 */
/* 478 */ NdrFcLong( 0xffffffff ),     /* -1 */
/* 482 */ 0x4c,              /* FC_EMBEDDED_COMPLEX */
                            0x0,               /* 0 */
/* 484 */ NdrFcShort( 0xffffff50 ),    /* Offset= -176 (308) */
/* 486 */ 0x5c,              /* FC_PAD */
                            0x5b,              /* FC_END */
/* 488 */
                            0x1a,              /* FC_BOGUS_STRUCT */
                            0x3,               /* 3 */
/* 490 */ NdrFcShort( 0x8 ), /* 8 */
/* 492 */ NdrFcShort( 0x0 ), /* 0 */
/* 494 */ NdrFcShort( 0x6 ), /* Offset= 6 (500) */
/* 496 */ 0x8,              /* FC_LONG */
                            0x36,              /* FC_POINTER */
/* 498 */ 0x5c,             /* FC_PAD */
                            0x5b,              /* FC_END */
/* 500 */
                            0x11, 0x0,         /* FC_RP */
/* 502 */ NdrFcShort( 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 */ 0x2,              /* FC_CHAR */
                            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 Sat Apr 08 16:40:10 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext, robust
    error checks: allocation ref bounds_check enum stub_data 
    VC __declspec() decoration level: 
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
```

```
//@@MIDL_FILE_HEADING(  )

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


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


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


#include "tpcc_com_ps.h"

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

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

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00}} */


/* Object interface: IUnknown, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,
   GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
```

```
    44,
    88,
    132,
    176,
    220
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0
    };

static const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *)-1 /* ITPCC::NewOrder */ ,
    (void *)-1 /* ITPCC::Payment */ ,
    (void *)-1 /* ITPCC::Delivery */ ,
    (void *)-1 /* ITPCC::StockLevel */ ,
    (void *)-1 /* ITPCC::OrderStatus */ ,
    (void *)-1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE
];

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x50002, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE
] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN64__)
#error  Invalid build platform for this stub.
#endif

static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

         /* Procedure NewOrder */

                            0x33,               /* FC_AUTO_HANDLE */
                            0x6c,               /* Old Flags:  object, Oi2 */
/*  2 */ NdrFcLong( 0x0 ),  /* 0 */
/*  6 */ NdrFcShort( 0x3 ), /* 3 */
#ifndef _ALPHA_
/*  8 */ NdrFcShort( 0x38 ),/* ia64 Stack size/offset = 56 */
#else
                            NdrFcShort( 0x30 ),/* axp64 Stack size/offset = 48 */
#endif
/* 10 */ NdrFcShort( 0x0 ), /* 0 */
/* 12 */ NdrFcShort( 0x8 ), /* 8 */
/* 14 */ 0x47,              /* Oi2 Flags:  srv must size, clt must size, has return,
has ext, */
                            0x3,                /* 3 */
/* 16 */ 0xa,               /* 10 */
                            0x7,                /* Ext Flags:  new corr desc, clt corr
check, srv corr check, */
/* 18 */ NdrFcShort( 0x20 ),/* 32 */
/* 20 */ NdrFcShort( 0x20 ),/* 32 */
```

```
/* 22 */ NdrFcShort( 0x0 ), /* 0 */
/* 24 */ NdrFcShort( 0x0 ), /* 0 */

         /* Parameter txn_in */

/* 26 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 28 */ NdrFcShort( 0x10 ),/* ia64 Stack size/offset = 16 */
#else
                            NdrFcShort( 0x8 ), /* axp64 Stack size/offset = 8 */
#endif
/* 30 */ NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

         /* Parameter txn_out */

/* 32 */ NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=24 */
#ifndef _ALPHA_
/* 34 */ NdrFcShort( 0x28 ),/* ia64 Stack size/offset = 40 */
#else
                            NdrFcShort( 0x20 ),/* axp64 Stack size/offset = 32 */
#endif
/* 36 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Return value */

/* 38 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 40 */ NdrFcShort( 0x30 ),/* ia64 Stack size/offset = 48 */
#else
                            NdrFcShort( 0x28 ),/* axp64 Stack size/offset = 40 */
#endif
/* 42 */ 0x8,               /* FC_LONG */
                            0x0,                /* 0 */

         /* Procedure Payment */

/* 44 */ 0x33,              /* FC_AUTO_HANDLE */
                            0x6c,               /* Old Flags:  object, Oi2 */
/* 46 */ NdrFcLong( 0x0 ),  /* 0 */
/* 50 */ NdrFcShort( 0x4 ), /* 4 */
#ifndef _ALPHA_
/* 52 */ NdrFcShort( 0x38 ),/* ia64 Stack size/offset = 56 */
#else
                            NdrFcShort( 0x30 ),/* axp64 Stack size/offset = 48 */
#endif
/* 54 */ NdrFcShort( 0x0 ), /* 0 */
/* 56 */ NdrFcShort( 0x8 ), /* 8 */
/* 58 */ 0x47,              /* Oi2 Flags:  srv must size, clt must size, has return,
has ext, */
                            0x3,                /* 3 */
/* 60 */ 0xa,               /* 10 */
                            0x7,                /* Ext Flags:  new corr desc, clt corr
check, srv corr check, */
/* 62 */ NdrFcShort( 0x20 ),/* 32 */
/* 64 */ NdrFcShort( 0x20 ),/* 32 */
/* 66 */ NdrFcShort( 0x0 ), /* 0 */
/* 68 */ NdrFcShort( 0x0 ), /* 0 */

         /* Parameter txn_in */

/* 70 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
```

```
/* 72 */  NdrFcShort( 0x10 ),/* ia64 Stack size/offset = 16 */
#else
                          NdrFcShort( 0x8 ), /* axp64 Stack size/offset = 8 */
#endif
/* 74 */  NdrFcShort( 0x3b6 ),       /* Type Offset=950 */

          /* Parameter txn_out */

/* 76 */  NdrFcShort( 0x6113 ),      /* Flags:  must size, must free, out, simple ref,
srv alloc size=24 */
#ifndef _ALPHA_
/* 78 */  NdrFcShort( 0x28 ),/* ia64 Stack size/offset = 40 */
#else
                          NdrFcShort( 0x20 ),/* axp64 Stack size/offset = 32 */
#endif
/* 80 */  NdrFcShort( 0x3c8 ),       /* Type Offset=968 */

          /* Return value */

/* 82 */  NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 84 */  NdrFcShort( 0x30 ),/* ia64 Stack size/offset = 48 */
#else
                          NdrFcShort( 0x28 ),/* axp64 Stack size/offset = 40 */
#endif
/* 86 */  0x8,            /* FC_LONG */
                          0x0,             /* 0 */

          /* Procedure Delivery */

/* 88 */  0x33,           /* FC_AUTO_HANDLE */
                          0x6c,            /* Old Flags:  object, Oi2 */
/* 90 */  NdrFcLong( 0x0 ),  /* 0 */
/* 94 */  NdrFcShort( 0x5 ), /* 5 */
#ifndef _ALPHA_
/* 96 */  NdrFcShort( 0x38 ),/* ia64 Stack size/offset = 56 */
#else
                          NdrFcShort( 0x30 ),/* axp64 Stack size/offset = 48 */
#endif
/* 98 */  NdrFcShort( 0x0 ), /* 0 */
/* 100 */ NdrFcShort( 0x8 ), /* 8 */
/* 102 */ 0x47,           /* Oi2 Flags:  srv must size, clt must size, has return,
has ext, */
                          0x3,             /* 3 */
/* 104 */ 0xa,            /* 10 */
                          0x7,             /* Ext Flags:  new corr desc, clt corr
check, srv corr check, */
/* 106 */ NdrFcShort( 0x20 ),/* 32 */
/* 108 */ NdrFcShort( 0x20 ),/* 32 */
/* 110 */ NdrFcShort( 0x0 ), /* 0 */
/* 112 */ NdrFcShort( 0x0 ), /* 0 */

          /* Parameter txn_in */

/* 114 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 116 */ NdrFcShort( 0x10 ),/* ia64 Stack size/offset = 16 */
#else
                          NdrFcShort( 0x8 ), /* axp64 Stack size/offset = 8 */
#endif
/* 118 */ NdrFcShort( 0x3b6 ),       /* Type Offset=950 */

          /* Parameter txn_out */
```

```
/* 120 */ NdrFcShort( 0x6113 ),      /* Flags:  must size, must free, out, simple ref,
srv alloc size=24 */
#ifndef _ALPHA_
/* 122 */ NdrFcShort( 0x28 ),/* ia64 Stack size/offset = 40 */
#else
                          NdrFcShort( 0x20 ),/* axp64 Stack size/offset = 32 */
#endif
/* 124 */ NdrFcShort( 0x3c8 ),       /* Type Offset=968 */

          /* Return value */

/* 126 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 128 */ NdrFcShort( 0x30 ),/* ia64 Stack size/offset = 48 */
#else
                          NdrFcShort( 0x28 ),/* axp64 Stack size/offset = 40 */
#endif
/* 130 */ 0x8,            /* FC_LONG */
                          0x0,             /* 0 */

          /* Procedure StockLevel */

/* 132 */ 0x33,           /* FC_AUTO_HANDLE */
                          0x6c,            /* Old Flags:  object, Oi2 */
/* 134 */ NdrFcLong( 0x0 ),  /* 0 */
/* 138 */ NdrFcShort( 0x6 ), /* 6 */
#ifndef _ALPHA_
/* 140 */ NdrFcShort( 0x38 ),/* ia64 Stack size/offset = 56 */
#else
                          NdrFcShort( 0x30 ),/* axp64 Stack size/offset = 48 */
#endif
/* 142 */ NdrFcShort( 0x0 ), /* 0 */
/* 144 */ NdrFcShort( 0x8 ), /* 8 */
/* 146 */ 0x47,           /* Oi2 Flags:  srv must size, clt must size, has return,
has ext, */
                          0x3,             /* 3 */
/* 148 */ 0xa,            /* 10 */
                          0x7,             /* Ext Flags:  new corr desc, clt corr
check, srv corr check, */
/* 150 */ NdrFcShort( 0x20 ),/* 32 */
/* 152 */ NdrFcShort( 0x20 ),/* 32 */
/* 154 */ NdrFcShort( 0x0 ), /* 0 */
/* 156 */ NdrFcShort( 0x0 ), /* 0 */

          /* Parameter txn_in */

/* 158 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 160 */ NdrFcShort( 0x10 ),/* ia64 Stack size/offset = 16 */
#else
                          NdrFcShort( 0x8 ), /* axp64 Stack size/offset = 8 */
#endif
/* 162 */ NdrFcShort( 0x3b6 ),       /* Type Offset=950 */

          /* Parameter txn_out */

/* 164 */ NdrFcShort( 0x6113 ),      /* Flags:  must size, must free, out, simple ref,
srv alloc size=24 */
#ifndef _ALPHA_
/* 166 */ NdrFcShort( 0x28 ),/* ia64 Stack size/offset = 40 */
#else
                          NdrFcShort( 0x20 ),/* axp64 Stack size/offset = 32 */
```

```
#endif
/* 168 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Return value */

/* 170 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 172 */ NdrFcShort( 0x30 ),/* ia64 Stack size/offset = 48 */
#else
                            NdrFcShort( 0x28 ),/* axp64 Stack size/offset = 40 */
#endif
/* 174 */ 0x8,               /* FC_LONG */
                            0x0,               /* 0 */

         /* Procedure OrderStatus */

/* 176 */ 0x33,              /* FC_AUTO_HANDLE */
                            0x6c,              /* Old Flags:  object, Oi2 */
/* 178 */ NdrFcLong( 0x0 ),  /* 0 */
/* 182 */ NdrFcShort( 0x7 ), /* 7 */
#ifndef _ALPHA_
/* 184 */ NdrFcShort( 0x38 ),/* ia64 Stack size/offset = 56 */
#else
                            NdrFcShort( 0x30 ),/* axp64 Stack size/offset = 48 */
#endif
/* 186 */ NdrFcShort( 0x0 ), /* 0 */
/* 188 */ NdrFcShort( 0x8 ), /* 8 */
/* 190 */ 0x47,              /* Oi2 Flags:  srv must size, clt must size, has return,
has ext, */
                            0x3,               /* 3 */
/* 192 */ 0xa,               /* 10 */
                            0x7,               /* Ext Flags:  new corr desc, clt corr
check, srv corr check, */
/* 194 */ NdrFcShort( 0x20 ),/* 32 */
/* 196 */ NdrFcShort( 0x20 ),/* 32 */
/* 198 */ NdrFcShort( 0x0 ), /* 0 */
/* 200 */ NdrFcShort( 0x0 ), /* 0 */

         /* Parameter txn_in */

/* 202 */ NdrFcShort( 0x8b ),/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 204 */ NdrFcShort( 0x10 ),/* ia64 Stack size/offset = 16 */
#else
                            NdrFcShort( 0x8 ), /* axp64 Stack size/offset = 8 */
#endif
/* 206 */ NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

         /* Parameter txn_out */

/* 208 */ NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out, simple ref,
srv alloc size=24 */
#ifndef _ALPHA_
/* 210 */ NdrFcShort( 0x28 ),/* ia64 Stack size/offset = 40 */
#else
                            NdrFcShort( 0x20 ),/* axp64 Stack size/offset = 32 */
#endif
/* 212 */ NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

         /* Return value */

/* 214 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
#ifndef _ALPHA_
```

```
/* 216 */ NdrFcShort( 0x30 ),/* ia64 Stack size/offset = 48 */
#else
                            NdrFcShort( 0x28 ),/* axp64 Stack size/offset = 40 */
#endif
/* 218 */ 0x8,               /* FC_LONG */
                            0x0,               /* 0 */

         /* Procedure CallSetComplete */

/* 220 */ 0x33,              /* FC_AUTO_HANDLE */
                            0x6c,              /* Old Flags:  object, Oi2 */
/* 222 */ NdrFcLong( 0x0 ),  /* 0 */
/* 226 */ NdrFcShort( 0x8 ), /* 8 */
/* 228 */ NdrFcShort( 0x10 ),/* ia64, axp64 Stack size/offset = 16 */
/* 230 */ NdrFcShort( 0x0 ), /* 0 */
/* 232 */ NdrFcShort( 0x8 ), /* 8 */
/* 234 */ 0x44,              /* Oi2 Flags:  has return, has ext, */
                            0x1,               /* 1 */
/* 236 */ 0xa,               /* 10 */
                            0x1,               /* Ext Flags:  new corr desc, */
/* 238 */ NdrFcShort( 0x0 ), /* 0 */
/* 240 */ NdrFcShort( 0x0 ), /* 0 */
/* 242 */ NdrFcShort( 0x0 ), /* 0 */
/* 244 */ NdrFcShort( 0x0 ), /* 0 */

         /* Return value */

/* 246 */ NdrFcShort( 0x70 ),/* Flags:  out, return, base type, */
/* 248 */ NdrFcShort( 0x8 ), /* ia64, axp64 Stack size/offset = 8 */
/* 250 */ 0x8,               /* FC_LONG */
                            0x0,               /* 0 */

                            0x0
        }
    };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
    {
        0,
        {
                            NdrFcShort( 0x0 ), /* 0 */
/*  2 */
                            0x12, 0x0,         /* FC_UP */
/*  4 */  NdrFcShort( 0x39e ),        /* Offset= 926 (930) */
/*  6 */
                            0x2b,              /* FC_NON_ENCAPSULATED_UNION */
                            0x9,               /* FC_ULONG */
/*  8 */  0x7,               /* Corr desc: FC_USHORT */
                            0x0,               /*  */
/* 10 */  NdrFcShort( 0xfff8 ),       /* -8 */
/* 12 */  NdrFcShort( 0x1 ), /* Corr flags:  early, */
/* 14 */  NdrFcShort( 0x2 ), /* Offset= 2 (16) */
/* 16 */  NdrFcShort( 0x10 ),/* 16 */
/* 18 */  NdrFcShort( 0x2b ),/* 43 */
/* 20 */  NdrFcLong( 0x3 ),  /* 3 */
/* 24 */  NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 26 */  NdrFcLong( 0x11 ), /* 17 */
/* 30 */  NdrFcShort( 0x8001 ),       /* Simple arm type: FC_BYTE */
/* 32 */  NdrFcLong( 0x2 ),  /* 2 */
/* 36 */  NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 38 */  NdrFcLong( 0x4 ),  /* 4 */
/* 42 */  NdrFcShort( 0x800a ),       /* Simple arm type: FC_FLOAT */
/* 44 */  NdrFcLong( 0x5 ),  /* 5 */
/* 48 */  NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 50 */  NdrFcLong( 0xb ),  /* 11 */
/* 54 */  NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 56 */  NdrFcLong( 0xa ),  /* 10 */
/* 60 */  NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 62 */  NdrFcLong( 0x6 ),  /* 6 */
/* 66 */  NdrFcShort( 0xd6 ),/* Offset= 214 (280) */
/* 68 */  NdrFcLong( 0x7 ),  /* 7 */
/* 72 */  NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 74 */  NdrFcLong( 0x8 ),  /* 8 */
/* 78 */  NdrFcShort( 0xd0 ),/* Offset= 208 (286) */
/* 80 */  NdrFcLong( 0xd ),  /* 13 */
/* 84 */  NdrFcShort( 0xe4 ),/* Offset= 228 (312) */
/* 86 */  NdrFcLong( 0x9 ),  /* 9 */
/* 90 */  NdrFcShort( 0xf0 ),/* Offset= 240 (330) */
/* 92 */  NdrFcLong( 0x2000 ),        /* 8192 */
/* 96 */  NdrFcShort( 0xfc ),/* Offset= 252 (348) */
/* 98 */  NdrFcLong( 0x24 ), /* 36 */
/* 102 */ NdrFcShort( 0x2f4 ),        /* Offset= 756 (858) */
/* 104 */ NdrFcLong( 0x4024 ),        /* 16420 */
/* 108 */ NdrFcShort( 0x2ee ),        /* Offset= 750 (858) */
/* 110 */ NdrFcLong( 0x4011 ),        /* 16401 */
/* 114 */ NdrFcShort( 0x2ec ),        /* Offset= 748 (862) */
/* 116 */ NdrFcLong( 0x4002 ),        /* 16386 */
/* 120 */ NdrFcShort( 0x2ea ),        /* Offset= 746 (866) */
/* 122 */ NdrFcLong( 0x4003 ),        /* 16387 */
/* 126 */ NdrFcShort( 0x2e8 ),        /* Offset= 744 (870) */
/* 128 */ NdrFcLong( 0x4004 ),        /* 16388 */
/* 132 */ NdrFcShort( 0x2e6 ),        /* Offset= 742 (874) */
/* 134 */ NdrFcLong( 0x4005 ),        /* 16389 */
/* 138 */ NdrFcShort( 0x2e4 ),        /* Offset= 740 (878) */
/* 140 */ NdrFcLong( 0x400b ),        /* 16395 */
/* 144 */ NdrFcShort( 0x2d2 ),        /* Offset= 722 (866) */
/* 146 */ NdrFcLong( 0x400a ),        /* 16394 */
/* 150 */ NdrFcShort( 0x2d0 ),        /* Offset= 720 (870) */
/* 152 */ NdrFcLong( 0x4006 ),        /* 16390 */
/* 156 */ NdrFcShort( 0x2d6 ),        /* Offset= 726 (882) */
/* 158 */ NdrFcLong( 0x4007 ),        /* 16391 */
/* 162 */ NdrFcShort( 0x2cc ),        /* Offset= 716 (878) */
/* 164 */ NdrFcLong( 0x4008 ),        /* 16392 */
/* 168 */ NdrFcShort( 0x2ce ),        /* Offset= 718 (886) */
/* 170 */ NdrFcLong( 0x400d ),        /* 16397 */
/* 174 */ NdrFcShort( 0x2cc ),        /* Offset= 716 (890) */
/* 176 */ NdrFcLong( 0x4009 ),        /* 16393 */
/* 180 */ NdrFcShort( 0x2ca ),        /* Offset= 714 (894) */
/* 182 */ NdrFcLong( 0x6000 ),        /* 24576 */
/* 186 */ NdrFcShort( 0x2c8 ),        /* Offset= 712 (898) */
/* 188 */ NdrFcLong( 0x400c ),        /* 16396 */
/* 192 */ NdrFcShort( 0x2c6 ),        /* Offset= 710 (902) */
/* 194 */ NdrFcLong( 0x10 ), /* 16 */
/* 198 */ NdrFcShort( 0x8002 ),       /* Simple arm type: FC_CHAR */
/* 200 */ NdrFcLong( 0x12 ), /* 18 */
/* 204 */ NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 206 */ NdrFcLong( 0x13 ), /* 19 */
/* 210 */ NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 212 */ NdrFcLong( 0x16 ), /* 22 */
/* 216 */ NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 218 */ NdrFcLong( 0x17 ), /* 23 */
/* 222 */ NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 224 */ NdrFcLong( 0xe ),  /* 14 */
/* 228 */ NdrFcShort( 0x2aa ),        /* Offset= 682 (910) */
/* 230 */ NdrFcLong( 0x400e ),        /* 16398 */
/* 234 */ NdrFcShort( 0x2b0 ),        /* Offset= 688 (922) */
```

```
/* 236 */ NdrFcLong( 0x4010 ),        /* 16400 */
/* 240 */ NdrFcShort( 0x2ae ),        /* Offset= 686 (926) */
/* 242 */ NdrFcLong( 0x4012 ),        /* 16402 */
/* 246 */ NdrFcShort( 0x26c ),        /* Offset= 620 (866) */
/* 248 */ NdrFcLong( 0x4013 ),        /* 16403 */
/* 252 */ NdrFcShort( 0x26a ),        /* Offset= 618 (870) */
/* 254 */ NdrFcLong( 0x4016 ),        /* 16406 */
/* 258 */ NdrFcShort( 0x264 ),        /* Offset= 612 (870) */
/* 260 */ NdrFcLong( 0x4017 ),        /* 16407 */
/* 264 */ NdrFcShort( 0x25e ),        /* Offset= 606 (870) */
/* 266 */ NdrFcLong( 0x0 ),  /* 0 */
/* 270 */ NdrFcShort( 0x0 ), /* Offset= 0 (270) */
/* 272 */ NdrFcLong( 0x1 ),  /* 1 */
/* 276 */ NdrFcShort( 0x0 ), /* Offset= 0 (276) */
/* 278 */ NdrFcShort( 0xffffffff ),   /* Offset= -1 (277) */
/* 280 */
                             0x15,              /* FC_STRUCT */
                             0x7,               /* 7 */
/* 282 */ NdrFcShort( 0x8 ), /* 8 */
/* 284 */ 0xb,               /* FC_HYPER */
                             0x5b,              /* FC_END */
/* 286 */
                             0x12, 0x0,         /* FC_UP */
/* 288 */ NdrFcShort( 0xe ), /* Offset= 14 (302) */
/* 290 */
                             0x1b,              /* FC_CARRAY */
                             0x1,               /* 1 */
/* 292 */ NdrFcShort( 0x2 ), /* 2 */
/* 294 */ 0x9,               /* Corr desc: FC_ULONG */
                             0x0,               /*  */
/* 296 */ NdrFcShort( 0xfffc ),       /* -4 */
/* 298 */ NdrFcShort( 0x1 ), /* Corr flags:  early, */
/* 300 */ 0x6,               /* FC_SHORT */
                             0x5b,              /* FC_END */
/* 302 */
                             0x17,              /* FC_CSTRUCT */
                             0x3,               /* 3 */
/* 304 */ NdrFcShort( 0x8 ), /* 8 */
/* 306 */ NdrFcShort( 0xfffffff0 ),   /* Offset= -16 (290) */
/* 308 */ 0x8,               /* FC_LONG */
                             0x8,               /* FC_LONG */
/* 310 */ 0x5c,              /* FC_PAD */
                             0x5b,              /* FC_END */
/* 312 */
                             0x2f,              /* FC_IP */
                             0x5a,              /* FC_CONSTANT_IID */
/* 314 */ NdrFcLong( 0x0 ),  /* 0 */
/* 318 */ NdrFcShort( 0x0 ), /* 0 */
/* 320 */ NdrFcShort( 0x0 ), /* 0 */
/* 322 */ 0xc0,              /* 192 */
                             0x0,               /* 0 */
/* 324 */ 0x0,               /* 0 */
                             0x0,               /* 0 */
/* 326 */ 0x0,               /* 0 */
                             0x0,               /* 0 */
/* 328 */ 0x0,               /* 0 */
                             0x46,              /* 70 */
/* 330 */
                             0x2f,              /* FC_IP */
                             0x5a,              /* FC_CONSTANT_IID */
/* 332 */ NdrFcLong( 0x20400 ),       /* 132096 */
/* 336 */ NdrFcShort( 0x0 ), /* 0 */
/* 338 */ NdrFcShort( 0x0 ), /* 0 */
/* 340 */ 0xc0,             /* 192 */
                            0x0,                /* 0 */
/* 342 */ 0x0,              /* 0 */
                            0x0,                /* 0 */
/* 344 */ 0x0,              /* 0 */
                            0x0,                /* 0 */
/* 346 */ 0x0,              /* 0 */
                            0x46,               /* 70 */
/* 348 */
                            0x12, 0x10,         /* FC_UP [pointer_deref] */
/* 350 */ NdrFcShort( 0x2 ), /* Offset= 2 (352) */
/* 352 */
                            0x12, 0x0,          /* FC_UP */
/* 354 */ NdrFcShort( 0x1e6 ),         /* Offset= 486 (840) */
/* 356 */
                            0x2a,               /* FC_ENCAPSULATED_UNION */
                            0x89,               /* 137 */
/* 358 */ NdrFcShort( 0x20 ),/* 32 */
/* 360 */ NdrFcShort( 0xa ), /* 10 */
/* 362 */ NdrFcLong( 0x8 ),  /* 8 */
/* 366 */ NdrFcShort( 0x50 ),/* Offset= 80 (446) */
/* 368 */ NdrFcLong( 0xd ),  /* 13 */
/* 372 */ NdrFcShort( 0x70 ),/* Offset= 112 (484) */
/* 374 */ NdrFcLong( 0x9 ),  /* 9 */
/* 378 */ NdrFcShort( 0x90 ),/* Offset= 144 (522) */
/* 380 */ NdrFcLong( 0xc ),  /* 12 */
/* 384 */ NdrFcShort( 0xb0 ),/* Offset= 176 (560) */
/* 386 */ NdrFcLong( 0x24 ), /* 36 */
/* 390 */ NdrFcShort( 0x104 ),         /* Offset= 260 (650) */
/* 392 */ NdrFcLong( 0x800d ),         /* 32781 */
/* 396 */ NdrFcShort( 0x120 ),         /* Offset= 288 (684) */
/* 398 */ NdrFcLong( 0x10 ), /* 16 */
/* 402 */ NdrFcShort( 0x13a ),         /* Offset= 314 (716) */
/* 404 */ NdrFcLong( 0x2 ),  /* 2 */
/* 408 */ NdrFcShort( 0x150 ),         /* Offset= 336 (744) */
/* 410 */ NdrFcLong( 0x3 ),  /* 3 */
/* 414 */ NdrFcShort( 0x166 ),         /* Offset= 358 (772) */
/* 416 */ NdrFcLong( 0x14 ), /* 20 */
/* 420 */ NdrFcShort( 0x17c ),         /* Offset= 380 (800) */
/* 422 */ NdrFcShort( 0xffffffff ),    /* Offset= -1 (421) */
/* 424 */
                            0x21,               /* FC_BOGUS_ARRAY */
                            0x3,                /* 3 */
/* 426 */ NdrFcShort( 0x0 ), /* 0 */
/* 428 */ 0x19,             /* Corr desc:  field pointer, FC_ULONG */
                            0x0,                /*  */
/* 430 */ NdrFcShort( 0x0 ), /* 0 */
/* 432 */ NdrFcShort( 0x1 ), /* Corr flags:  early, */
/* 434 */ NdrFcLong( 0xffffffff ),    /* -1 */
/* 438 */ NdrFcShort( 0x0 ), /* Corr flags:  */
/* 440 */
                            0x12, 0x0,          /* FC_UP */
/* 442 */ NdrFcShort( 0xffffff74 ),    /* Offset= -140 (302) */
/* 444 */ 0x5c,             /* FC_PAD */
                            0x5b,               /* FC_END */
/* 446 */
                            0x1a,               /* FC_BOGUS_STRUCT */
                            0x3,                /* 3 */
/* 448 */ NdrFcShort( 0x10 ),/* 16 */
/* 450 */ NdrFcShort( 0x0 ), /* 0 */
/* 452 */ NdrFcShort( 0x6 ), /* Offset= 6 (458) */
/* 454 */ 0x8,              /* FC_LONG */
                            0x39,               /* FC_ALIGNM8 */
```

```
/* 456 */ 0x36,             /* FC_POINTER */
                            0x5b,               /* FC_END */
/* 458 */
                            0x11, 0x0,          /* FC_RP */
/* 460 */ NdrFcShort( 0xffffffdc ),    /* Offset= -36 (424) */
/* 462 */
                            0x21,               /* FC_BOGUS_ARRAY */
                            0x3,                /* 3 */
/* 464 */ NdrFcShort( 0x0 ), /* 0 */
/* 466 */ 0x19,             /* Corr desc:  field pointer, FC_ULONG */
                            0x0,                /*  */
/* 468 */ NdrFcShort( 0x0 ), /* 0 */
/* 470 */ NdrFcShort( 0x1 ), /* Corr flags:  early, */
/* 472 */ NdrFcLong( 0xffffffff ),    /* -1 */
/* 476 */ NdrFcShort( 0x0 ), /* Corr flags:  */
/* 478 */ 0x4c,             /* FC_EMBEDDED_COMPLEX */
                            0x0,                /* 0 */
/* 480 */ NdrFcShort( 0xffffff58 ),    /* Offset= -168 (312) */
/* 482 */ 0x5c,             /* FC_PAD */
                            0x5b,               /* FC_END */
/* 484 */
                            0x1a,               /* FC_BOGUS_STRUCT */
                            0x3,                /* 3 */
/* 486 */ NdrFcShort( 0x10 ),/* 16 */
/* 488 */ NdrFcShort( 0x0 ), /* 0 */
/* 490 */ NdrFcShort( 0x6 ), /* Offset= 6 (496) */
/* 492 */ 0x8,              /* FC_LONG */
                            0x39,               /* FC_ALIGNM8 */
/* 494 */ 0x36,             /* FC_POINTER */
                            0x5b,               /* FC_END */
/* 496 */
                            0x11, 0x0,          /* FC_RP */
/* 498 */ NdrFcShort( 0xffffffdc ),    /* Offset= -36 (462) */
/* 500 */
                            0x21,               /* FC_BOGUS_ARRAY */
                            0x3,                /* 3 */
/* 502 */ NdrFcShort( 0x0 ), /* 0 */
/* 504 */ 0x19,             /* Corr desc:  field pointer, FC_ULONG */
                            0x0,                /*  */
/* 506 */ NdrFcShort( 0x0 ), /* 0 */
/* 508 */ NdrFcShort( 0x1 ), /* Corr flags:  early, */
/* 510 */ NdrFcLong( 0xffffffff ),    /* -1 */
/* 514 */ NdrFcShort( 0x0 ), /* Corr flags:  */
/* 516 */ 0x4c,             /* FC_EMBEDDED_COMPLEX */
                            0x0,                /* 0 */
/* 518 */ NdrFcShort( 0xffffff44 ),    /* Offset= -188 (330) */
/* 520 */ 0x5c,             /* FC_PAD */
                            0x5b,               /* FC_END */
/* 522 */
                            0x1a,               /* FC_BOGUS_STRUCT */
                            0x3,                /* 3 */
/* 524 */ NdrFcShort( 0x10 ),/* 16 */
/* 526 */ NdrFcShort( 0x0 ), /* 0 */
/* 528 */ NdrFcShort( 0x6 ), /* Offset= 6 (534) */
/* 530 */ 0x8,              /* FC_LONG */
                            0x39,               /* FC_ALIGNM8 */
/* 532 */ 0x36,             /* FC_POINTER */
                            0x5b,               /* FC_END */
/* 534 */
                            0x11, 0x0,          /* FC_RP */
/* 536 */ NdrFcShort( 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 */ 0x2,               /* FC_CHAR */
                            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)*/
```

common/txnlog/include/rtetime.h

```
/* FILE: rtetime.h : header file
 * Copyright 1997 Microsoft Corp., All rights reserved.
 *
 * Authors: Charles Levine, Philip Durr
 *                           Microsoft Corp.
 */

#define  MAX_JULIAN_TIME             0x7FFFFFFFFFFFFFFF
#define JULIAN_TIME__int64
#define  TC_TIME            DWORD
extern "C"
{
BOOL                InitJulianTime(LPSYSTEMTIME lpInitTime);
JULIAN_TIME         GetJulianTime(void);
DWORD               MyTickCount(void);
void                GetJulianAndTC(JULIAN_TIME *pJulian, DWORD *pTC);
JULIAN_TIME         ConvertTo64BitTime(int iYear, int iMonth, int iDay, int iHour, int
iMinute, int iSecond);
JULIAN_TIME         Get64BitTime(LPSYSTEMTIME lpInitTime);
int                           JulianDay( int yr, int mm, int dd );
void                JulianToTime(JULIAN_TIME julianTS, int* yr, int* mm, int* dd, int
*hh, int *mi, int *ss );
void                JulianToCalendar( int day, int* yr, int* mm, int* dd );
}
```

common/txnlog/include/spinlock.h

```
/*       FILE: SPINLOCK.H
 *
 * Copyright 1997 Microsoft Corp., All rights reserved.
 *
 * Authors: Mike Parkes, Charles Levine, Philip Durr
 *                         Microsoft Corp.
 */

#ifndef _INC_Spinlock

        const LONG LockClosed       = 1;
        const LONG LockOpen         = 0;

        /****************************************************************
         *
         *   Spinlock and Semaphore locking.
         *
         *   This class provides a very conservative locking scheme.
         *   The assumption behind the code is that locks will be
         *   held for a very short time.  When a lock is taken a memory
         *   location is exchanged.  All other threads that want this
         *   lock wait by spinning and sometimes sleeping on a semaphore
         *   until it becomes free again.  The only other choice is not
         *   to wait at all and move on to do something else.  This
         *   module should normally be used in conjunction with cache
         *   aligned memory in minimize cache line misses.
         *
         ***************************************************************/

        class Spinlock
        {
                // Private data.
                HANDLE                          Semaphore;
                volatile LONG                   m_Spinlock;
                volatile LONG                   Waiting;

                #ifdef _DEBUG
                        // Counters for debugging builds.
                        volatile LONG      TotalLocks;
                        volatile LONG      TotalSleeps;
                        volatile LONG      TotalSpins;
                        volatile LONG      TotalWaits;
                #endif

                public:
                        // Public functions.

                        Spinlock( void );
                        inline BOOL ClaimLock( BOOL Wait = TRUE );
                        inline void ReleaseLock( void );
                        ~Spinlock( void );
                        // Disabled operations.
                        Spinlock( const Spinlock & Copy );
                        void operator=( const Spinlock & Copy );

                private:
                        // Private functions.
                        inline BOOL ClaimSpinlock( volatile LONG *sl );
                        void WaitForLock( void );
                        void WakeAllSleepers( void );
        };

        /*************************************************************
         *
         *   A guaranteed atomic exchange.
         *
         *   An attempt is made to claim the Spinlock.  This action is
         *   guaranteed to be atomic.
         *
         *************************************************************/

        inline BOOL Spinlock::ClaimSpinlock( volatile LONG *Spinlock )
        {
                #ifdef _DEBUG
                        InterlockedIncrement( (LPLONG) & TotalLocks );
                #endif
                return ( ((*Spinlock) == LockOpen) && (InterlockedExchange(
(LPLONG)Spinlock, LockClosed ) == LockOpen) );
        }

        /***************************************************
         *
         *   Claim the Spinlock.
         *
         *   Claim the lock if available else wait or exit.
         *
         ***************************************************/

        inline BOOL Spinlock::ClaimLock( BOOL Wait )
        {
                if ( ! ClaimSpinlock( (volatile LONG*) & m_Spinlock ) )
                {
                        if ( Wait )
                                WaitForLock();
                        return Wait;
                }
                return TRUE;
        }

        /*******************************************************
         *
         *   Release the Spinlock.
         *
         *   Release the lock and if needed wakeup any sleepers.
         *
         *******************************************************/

        inline void Spinlock::ReleaseLock( void )
        {
                m_Spinlock = LockOpen;
                if ( Waiting > 0 )
                        WakeAllSleepers();
        }

        #define _INC_Spinlock

#endif
```

common/txnlog/include/txnlog.h

```
/*      FILE:                   TXNLOG.H
 *                                      Microsoft TPC-C Kit Ver. 4.10.000
 *
 *                                      NOTE: this file is RTE specific and should not be
included
 *                                      in Full Disclosure Reports.
 *
 *                                      Copyright Microsoft, 1999
 *
 *      PURPOSE:        Structure definitions for logging delivery txn completion stats.
 *      Contact:        Charles Levine (clevine@microsoft.com)
 */


    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
                  WORD     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)
                  WORD     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             1
#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;



#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_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.
                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;
                int                                 iSavePtNextRec;

                JULIAN_TIME       lastTS;
        //when writing sorted output, used to verify records are sorted
                BOOL              bWrite;
        //writing log file

                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

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

        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(int index);
```

```
                   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 CTPCC_DBLIB_ERRS
                   {
                            ERR_BAD_FILE_FORMAT = 1,    // "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 ) { m_errno = iErr; };

                   int                m_errno;

                   int ErrorType() {return ERR_TYPE_TXNLOG;};
                   int ErrorNum() {return m_errno;};

                   // TODO: need to complete...
                   char *ErrorText() {return "";};
};
```

Appendix B - Database Design

Build Scripts

setup.cmd

```
ECHO OFF

@ECHO ************************************************************************
@ECHO *                                                                      *
@ECHO *  Microsoft TPC-C Benchmark Kit Ver. 4.01                             *
@ECHO *                                                                      *
@ECHO ************************************************************************

if '%1'=='' goto usage
if '%2'=='' goto usage
if '%3'=='' goto usage
if '%4'=='' goto usage
if not '%5'=='' if not '%5' == 'scaled' goto usage

::Cleanup any old .err files
@if exist logs\*.err del logs\*.err
         >nul

if  '%3'=='full' goto start
if  '%3'=='builddb' goto builddb
if  '%3'=='objects' goto objects
if  '%3'=='bulkload' goto bulkload
if  '%3'=='objectsfull' goto objects
if  '%3'=='bulkloadfull' goto bulkload
if  '%3'=='backup' goto backup
goto usage

:start
:: Cleanup the logs directory...
@if exist logs\version.log del logs\version.log                           >nul
@if exist logs\db.log del logs\db.log                                     >nul
@if exist logs\objects.log del logs\objects.log                           >nul
@if exist logs\objects.log del logs\objects.log                           >nul
@if exist logs\bulkload.log del logs\bulkload.log                >nul
@if exist logs\backup.log del logs\backup.log                             >nul

isql -Usa -P -S%1 -Q"select @@version"                                    >
logs\version.log
isql -Usa -P -S%1 -Q"select getdate()"                                    >>
logs\version.log

:builddb
@if exist logs\db.log del logs\db.log                                     >nul
@ECHO Building database files and database...
isql -Usa -P -S%1 -e < scripts\%2.war\%4\createdb.sql                     >
logs\db.log
@ECHO Database build complete.
if  '%3'=='full' goto objects
goto end

:objects
@if exist logs\objects.log del logs\objects.log                           >nul
@ECHO Creating database objects...
isql -Usa -P -S%1 -e < scripts\ddl\%4\tables.sql                 >  logs\objects.log
isql -Usa -P -S%1 -e < scripts\dml\%4\neword.sql                 >> logs\objects.log
isql -Usa -P -S%1 -e < scripts\dml\%4\payment.sql                >> logs\objects.log
isql -Usa -P -S%1 -e < scripts\dml\%4\ordstat.sql                >> logs\objects.log
isql -Usa -P -S%1 -e < scripts\dml\%4\delivery.sql                        >>
logs\objects.log
isql -Usa -P -S%1 -e < scripts\dml\%4\stocklev.sql                        >>
logs\objects.log
@ECHO Database object creation complete.
if  '%3'=='full' goto bulkload
if  '%3'=='objectsfull' goto bulkload
goto end

:bulkload
@if exist logs\bulkload.log del logs\bulkload.log                >nul
@ECHO Beginning data load and index creation...
isql -Usa -P -S%1 -e < scripts\utility\%4\dbopt1.sql                      >>
logs\objects.log
if '%4'=='mssql70' goto odbc
if '%4'=='mssql65' goto dblib
goto usage
:dblib
if '%5'==''      loader\%4\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -dscripts\ddl\%4 -c0
if '%5'=='normal' loader\%4\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -dscripts\ddl\%4 -
c0
if '%5'=='scaled' loader\%4\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -dscripts\ddl\%4 -
c1
goto bulkloaddone
:odbc
if '%5'==''      loader\%4\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -dscripts\ddl\%4 -c0
if '%5'=='normal' loader\%4\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -dscripts\ddl\%4 -
c0
if '%5'=='scaled' loader\%4\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -dscripts\ddl\%4 -
c1
goto bulkloaddone
:bulkloaddone
isql -Usa -P -S%1 -e < scripts\utility\%4\dbopt2.sql                      >>
logs\bulkload.log
@ECHO Data load and index creation complete.
if  '%3'=='full' goto backup
if  '%3'=='objectsfull' goto backup
if  '%3'=='bulkloadfull' goto backup
goto end

:backup
@if exist logs\backup.log del logs\backup.log                             >nul
@ECHO Backing up database...
isql -Usa -P -S%1 -e < scripts\%2.war\%4\backup.sql                       >
logs\backup.log
@ECHO Database backup complete.
if  '%3'=='full' goto verifyload
if  '%3'=='objectsfull' goto verifyload
if  '%3'=='bulkloadfull' goto verifyload
goto complete

:verifyload
@if exist logs\verifyload.log del logs\verifyload.log                     >nul
@Echo Verifying TPC-C database load...
```

```
isql -Usa -P -S%1 < scripts\utility\%4\verifytpccload.sql                  >
logs\verifyload.log
@ECHO Check logs\verifyload.log to verify database load.

:complete
@ECHO *************************************************************************
@ECHO *                                                                       *
@ECHO *  Full TPC-C build complete.  Check logs directory for setup errors.   *
@ECHO *                                                                       *
@ECHO *************************************************************************

goto end

:usage
@ECHO *************************************************************************
@ECHO *                                                                       *
@ECHO *  The TPC-C setup command file requires the following parameters:      *
@ECHO *                                                                       *
@ECHO *  setup SERVER NUMWAR BLDOPT VERSION DBTYPE                            *
@ECHO *                                                                       *
@ECHO *      SERVER  = machine name of server (use "" for local server)       *
@ECHO *      NUMWAR  = number of warehouses                                   *
@ECHO *      BLDOPT  = full, builddb, objects, objectsfull, bulkload,         *
@ECHO *                bulkloadfull, or backup                                *
@ECHO *      VERSION = mssql65 or mssql70                                     *
@ECHO *      DBTYPE  = normal or scaled
@ECHO *                                                                       *
@ECHO *  Note #1: the BLDOPT and VERSION parameters are case sensitive.       *
@ECHO *                                                                       *
@ECHO *  Note #2: the DBTYPE is optional.  If no DBTYPE is specified, SETUP   *
@ECHO *           will default to NORMAL.                                     *
@ECHO *                                                                       *
@ECHO *  Example:                                                             *
@ECHO *                                                                       *
@ECHO *  The following command would be used to build a complete 200         *
@ECHO *  warehouse database on SQL Server 7.0 runnning on server \\myserver.  *
@ECHO *                                                                       *
@ECHO *      SETUP myserver 200 full mssql70                                  *
@ECHO *                                                                       *
@ECHO *  Note, this command file does a backup of the database by default     *
@ECHO *  after the database build process is complete.  If you do not wish    *
@ECHO *  to make a backup (strongly discouraged), you must edit this file     *
@ECHO *  and comment that section out.  Also, if you need to run the dbcheck  *
@ECHO *  and the dbtables scripts on the fresh database load for an audit,    *
@ECHO *  you must either run them manually or edit this file to include them. *
@ECHO *                                                                       *
@ECHO *************************************************************************

:end

echo on
```

createdb.sql

```
--  File:     CREATEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Creates tpcc database and backup files

use master
go

--       Create temporary table for timing

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

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

insert   into tpcc_timer values (0,0)
go

--       Store starting time

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

--  create main database files

CREATE DATABASE tpcc
ON PRIMARY
(        NAME               = MSSQL70_tpcc_root,
         FILENAME = "C:\MSSQL70_tpcc_root.mdf",
         SIZE               = 8MB,
         FILEGROWTH         =0),

FILEGROUP MSSQL70_misc_fg
(        NAME               = MSSQL70_misc1,
         FILENAME = "F:",
         SIZE               = 37584MB,
         FILEGROWTH         = 0),

FILEGROUP MSSQL70_cs_fg
(        NAME               = MSSQL70_cs1,
         FILENAME = "E:",
         SIZE               = 68064MB,
         FILEGROWTH         = 0)

LOG ON
(        NAME               = MSSQL70_tpccv3_log,
         FILENAME = "S:",
         SIZE               = 34304MB,
         FILEGROWTH         = 0)
go

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

select "Elapsed time (in seconds): ", datediff(second,(select start_date from
tpcc_timer),(select end_date from tpcc_timer))

--       remove temporary table

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

tables.sql

```
--  File:     TABLES.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  Purpose:  Creates TPC-C tables


use tpcc
go

if exists ( select name from sysobjects where name = 'warehouse' )
        drop table warehouse
go
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 MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'district' )
        drop table district
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 MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'customer' )
        drop table customer
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 MSSQL70_cs_fg
go

if exists ( select name from sysobjects where name = 'history' )
        drop table history
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 MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'new_order' )
        drop table new_order
go
create table new_order
(
        no_o_id                              int,
        no_d_id                              tinyint,
        no_w_id                              smallint
) on MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'orders' )
        drop table orders
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 MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'order_line' )
        drop table order_line
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 MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'item' )
        drop table item
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 MSSQL70_misc_fg
go

if exists ( select name from sysobjects where name = 'stock' )
        drop table stock
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 MSSQL70_cs_fg
go
```

idxcuscl.sql

```
--  File:     IDXCUSCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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:     IDXNODCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_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. 4.00
--            Copyright Microsoft, 1996
--  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 MSSQL70_misc_fg

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

go
```

dbopt1.sql

```
--  File:     DBOPT1.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  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. 4.00
--            Copyright Microsoft, 1996
--  Purpose:  Resets database options after data load


use master
go

sp_dboption tpcc,'select ',false
go

sp_dboption tpcc,'trunc. ',false
go

use tpcc
go

checkpoint
go

sp_configure allow,1
go

reconfigure with override
go

/*                                             */
/* Set option values for user-defined indexes */
/*                                             */

sp_indexoption 'customer','AllowPageLocks',FALSE
go
sp_indexoption 'district','AllowPageLocks',FALSE
go
sp_indexoption 'warehouse','AllowPageLocks',FALSE
go
sp_indexoption 'stock','AllowPageLocks',FALSE
go
sp_indexoption 'order_line','AllowPageLocks',FALSE
go
sp_indexoption 'orders','AllowPageLocks',FALSE
go
sp_indexoption 'new_order','AllowRowLocks',FALSE
go
sp_indexoption 'item','AllowRowLocks',FALSE
go
sp_indexoption 'item','AllowPageLocks',FALSE
go

Print ' '
Print '******************'
Print 'Pre-specified Locking Hierarchy:'
Print '   Lockflag = 0 ==> No pre-pecified 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,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
```

dbopt3.sql

```
use tpcc
go
sp_indexoption 'orders','AllowPagelocks',TRUE
go
sp_indexoption 'orders','AllowRowlocks',FALSE
go
sp_indexoption 'order_line','AllowPagelocks',TRUE
go
sp_indexoption 'order_line','AllowRowlocks',FALSE
go
```

backup.sql

```
--  File:     BACKUP.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21
--            Copyright Microsoft, 1999, 2000
--  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 with init, stats = 5

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

go
```

restore.sql

```
--  File:     RESTORE.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21
--            Copyright Microsoft, 1999, 2000
--  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 with stats = 5

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

go
```

Stored Procedures

neword.sql

```
--  File:     NEWORD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.01
--            Copyright Microsoft, 1996
--  Purpose:  Creates new order transaction stored procedure
--
--  Modified 9/21/98 - Jamie Reding - Microsoft Corporation
--                 Reordered @rowcount check so that invalid supply warehouse id,
--      as well as invalid item id, is detected and causes explicit
--                 transaction rollback.
--

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
```

payment.sql

```
--  File:     PAYMENT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  Purpose:  Creates payment transaction stored procedure


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
```

ordstat.sql

```
--  File:     ORDSTAT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  Purpose:  Creates order status transaction stored procedure


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

                                                                  @c_id

                                                                  @c_last  char(16)
         tinyint,

         int,

= ""

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
```

delivery.sql

```
--  File:     DELIVERY.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  Purpose:  Creates delivery transaction stored procedure
```

```
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
```

stocklev.sql

```
--  File:     STOCKLEV.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.00
--            Copyright Microsoft, 1996
--  Purpose:  Creates stock level transaction stored procedure


use tpcc
go
```

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

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

         declare @o_id_low int,
                       @o_id_high int

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

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

go
```

Loader Source Code

tpcc.h

```
//       File:             TPCC.H
//                                  Microsoft TPC-C Kit Ver. 4.00
//                                  Copyright Microsoft, 1996, 1997, 1998

//       Purpose:  Header file for TPC-C database loader


// Build number of TPC Benchmark Kit
#define TPCKIT_VER "4.00"

// 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 ORDERS_PER_DIST               3000
#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. 4.00
//                                   Copyright Microsoft, 1996, 1997, 1998
//       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_DOWN30
#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);

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     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    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);

     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(500, 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_DIST+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_DIST);

        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 12:00:00.000");

                        }
                }
        }
}


//=======================================================================
//
// 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 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;

}
```

getargs.c

```
//       File:              GETARGS.C
//                                    Microsoft TPC-C Kit Ver. 4.00
//                                    Copyright Microsoft, 1996, 1997, 1998
//       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);
}
```

random.c

```
//       File:              RANDOM.C
//                                    Microsoft TPC-C Kit Ver. 4.00
//                                    Copyright Microsoft, 1996, 1997, 1998
//       Purpose:  Random number generation routines for database loader


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

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

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

/*******************************************************************************
*                                                                              *
* random -                                                                     *
*       Implements a GOOD pseudo random number generator.  This generator      *
*       will/should? run the complete period before repeating.                 *
*                                                                              *
* Copied from:                                                                 *
*       Random Numbers Generators: Good Ones Are Hard to Find.                 *
*       Communications of the ACM - October 1988 Volume 31 Number 10           *
*                                                                              *
* Machine Dependencies:                                                        *
*       long must be 2 ^ 31 - 1 or greater.                                     *
*                                                                              *
*******************************************************************************/

/*******************************************************************************
* seed - load the Seed value used in irand and drand.  Should be used before  *
*       first call to irand or drand.                                          *
*******************************************************************************/

void seed(long val)
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering seed()...\n", (int) GetCurrentThreadId());
         printf("Old Seed %ld New Seed %ld\n",Seed, val);
#endif

    if ( val < 0 )
             val = abs(val);

    Seed = val;

}


/******************************************************************************
*                                                                             *
* irand - returns a 32 bit integer pseudo random number with a period of      *
*       1 to 2 ^ 32 - 1.                                                      *
*                                                                             *
* parameters:                                                                 *
*       none.                                                                 *
*                                                                             *
* returns:                                                                    *
*       32 bit integer - defined as long ( see above ).                        *
```

```
*                                                                              *
* side effects:                                                                *
*       seed get recomputed.                                                   *
*******************************************************************************/

long irand()
{
    register long    s;      /* copy of seed */
    register long    test;   /* test flag */
    register long    hi;     /* tmp value for speed */
    register long    lo;     /* tmp value for speed */

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

    s = Seed;
    hi = s / Q;
    lo = s % Q;

    test = A * lo - R * hi;
    if ( test > 0 )
                   Seed = test;
    else
                   Seed = test + M;

    return( Seed );
}


/*******************************************************************************
*                                                                              *
* drand - returns a double pseudo random number between 0.0 and 1.0.           *
*       See irand.                                                             *
*******************************************************************************/
double drand()
{

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

    return( (double)irand() / 2147483647.0);
}


//========================================================================
// Function   : RandomNumber
//
// Description:
//========================================================================
long RandomNumber(long lower, long upper)
{
    long rand_num;

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

         if ( upper == lower )       /* pgd 08-13-96 perf enhancement */
                   return lower;

         upper++;
    if ( upper <= lower )
                rand_num = upper;
    else
                rand_num = lower + irand() % (upper - lower); /* pgd 08-13-96 perf 
enhancement */


#ifdef DEBUG
    printf("[%ld]DBG: RandomNumber between %ld & %ld ==> %ld\n",
                                   (int) GetCurrentThreadId(), lower, upper, 
rand_num);
#endif


    return rand_num;
}


#if 0

//Orginal code pgd 08/13/96

long RandomNumber(long lower,
                                     long upper)
{
    long rand_num;

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

         upper++;

    if ((upper <= lower))
                rand_num = upper;
    else
                rand_num = lower + irand() % ((upper > lower) ? upper - lower : 
upper);


#ifdef DEBUG
    printf("[%ld]DBG: RandomNumber between %ld & %ld ==> %ld\n",
                                   (int) GetCurrentThreadId(), lower, upper, 
rand_num);
#endif


    return rand_num;
}
#endif

//=======================================================================
// Function   : NURand
//
// Description:
//=======================================================================
long NURand(int iConst,
             long x,
             long y,
             long C)
{
    long rand_num;

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

    rand_num = (((RandomNumber(0,iConst) | RandomNumber(x,y)) + C) % (y-x+1))+x;

#ifdef DEBUG
    printf("[%ld]DBG: NURand: num = %d\n", (int) GetCurrentThreadId(), rand_num);
#endif

    return rand_num;
}
```

strings.c

```
//       File:             STRINGS.C
//                                  Microsoft TPC-C Kit Ver. 4.00
//                                  Copyright Microsoft, 1996, 1997, 1998
//       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;
         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++)
                  str[i] = chArray[RandomNumber(0, chArrayMax)];
         if ( len < z )
                  memset(str+len, ' ', z - len);
         str[len] = 0;

    return len;
}


//=======================================================================
//
// Function name: MakeOriginalAlphaString
//
//=======================================================================

int MakeOriginalAlphaString(int  x,
                                                             int  y,
                                                                  int  z,
                                                             char *str,
                                                         int  percent)
{
    int            len;
    int            val;
    int            start;

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

    // verify prercentage is valid
    if ((percent < 0) || (percent > 100))
    {
                  printf("MakeOrigianlAlphaString: Invalid percentage: %d\n", percent);
                  exit(-1);
    }
    // verify string is at least 8 chars in length
    if ((x + y) <= 8)
    {
                   printf("MakeOriginalAlphaString: string length must be >= 8\n");
                   exit(-1);
    }

    // Make Alpha String
    len = MakeAlphaString(x,y, z, str);

    val = RandomNumber(1,100);
    if (val <= percent)
    {
                   start = RandomNumber(0, len - 8);
                   strncpy(str + start, "ORIGINAL", 8);
    }


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

    return strlen(str);
}


//=======================================================================
//
// Function name: MakeNumberString
//
//=======================================================================
int MakeNumberString(int  x, int  y, int  z, char *str)
{
         char tmp[16];

         //MakeNumberString is always called MakeZipNumberString(16, 16, 16, string)

         memset(str, '0', 16);
         itoa(RandomNumber(0, 99999999), tmp, 10);
         memcpy(str, tmp, strlen(tmp));

         itoa(RandomNumber(0, 99999999), tmp, 10);
         memcpy(str+8, tmp, strlen(tmp));

         str[16] = 0;

    return 16;
}


//=======================================================================
//
// Function name: MakeZipNumberString
//
//=======================================================================
int MakeZipNumberString(int  x, int  y, int  z, char *str)
{
         char tmp[16];

         //MakeZipNumberString is always called MakeZipNumberString(9, 9, 9, string)

         strcpy(str, "000011111");

         itoa(RandomNumber(0, 9999), tmp, 10);
         memcpy(str, tmp, strlen(tmp));

    return 9;
}


//=======================================================================
//
// Function name: InitString
//
//=======================================================================
void InitString(char *str, int len)
{
#ifdef DEBUG
    printf("[%ld]DBG: Entering InitString()\n", (int) GetCurrentThreadId());
#endif

         memset(str, ' ', len);
    str[len] = 0;
}


//=======================================================================
// Function name: InitAddress
//
// Description:
//
//=======================================================================

void InitAddress(char *street_1, char *street_2, char *city, char *state, char *zip)
{
         memset(street_1, ' ', ADDRESS_LEN+1);
         memset(street_2, ' ', ADDRESS_LEN+1);
         memset(city, ' ', ADDRESS_LEN+1);

    street_1[ADDRESS_LEN+1] = 0;
    street_2[ADDRESS_LEN+1] = 0;
    city[ADDRESS_LEN+1]     = 0;

         memset(state, ' ', STATE_LEN+1);
    state[STATE_LEN+1] = 0;

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


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

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

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

time.c

```
//       File:              TIME.C
//                                    Microsoft TPC-C Kit Ver. 4.00
//                                    Copyright Microsoft, 1996, 1997, 1998
//       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;
}
```

Appendix C - Tunable Parameters

Server Configuration Parameters

Microsoft Windows 2000 Server Parameters

The following registry key was added to disable the kernel counters for Global and Per-Process I/Os:

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

Microsoft Windows 2000 Server Configuration

The following services were disabled on the server:

- Alerter
- Computer Browser
- DHCP Client
- Distributed File System
- Distributed Link Tracking Client
- DNS Client
- Global Array Manager Server
- IPSEC Policy Agent
- License Logging Service
- Messenger
- Microsoft Search
- Print Spooler
- Process Control Service
- Remote Registry Service
- Removable Storage
- Run as Service
- System Event Notification
- Task Scheduler

Microsoft SQL Server 2000 Startup Parameters

Microsoft SQL Server was started with the following command line options

sqlservr -c -x -T3502 –g100

where

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

Appendix C – Tunable Parameters

Microsoft SQL Server Stack Size

The default stack size of Microsoft SQL Server was changed using the EDITBIN utility. The EDITBIN utility ships with Microsoft Visual C++ V5.0. The command used was editbin /stack:131072 sqlservr.exe.

Mylex Device Drivers and Firmware

The following device drivers were added:

- Mylex BIOS: 6:00-05
- Mylex Firmware: 6.00-02 bld 127
- Miniport driver : 9.00-04 (dac2w2k.sys)
- Accelerated Driver : 9.00-04 (macdw2k.sys)

Mylex Registry Key

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

Microsoft SQL Server 2000 Configuration Parameters

```
name                             minimum     maximum     config_value run_value
-------------------------------- ----------- ----------- ------------ -----------
affinity mask                    0  2147483647            1           1
allow updates                    0           1            1           1
c2 audit mode                    0           1            0           0
cost threshold for parallelism   0       32767            5           5
cursor threshold                 -1  2147483647          -1          -1
default full-text language       0  2147483647         1033        1033
default language                 0        9999            0           0
fill factor (%)                  0         100            0           0
index create memory (KB)       704     1600000            0           0
language in cache                3         100            3           3
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         2000        2000
max text repl size (B)           0  2147483647        65536       65536
max worker threads              10        1024          168         168
media retention                  0         365            0           0
min memory per query (KB)      512 2147483647          1024        1024
min server memory (MB)           0  2147483647          100         100
nested triggers                  0           1            1           1
network packet size (B)        512       65535         4096        4096
open objects                     0  2147483647            0           0
priority boost                   0           1            1           1
query governor cost limit        0  2147483647            0           0
query wait (s)                  -1  2147483647           -1          -1
recovery interval (min)          0       32767           32767    32767
remote access                    0           1            0           0
remote login timeout (s)         0  2147483647            5           5
remote proc trans                0           1            0           0
remote query timeout (s)         0  2147483647            0           0
scan for startup procs           0           1            0           0
set working set size             0           1            0           0
show advanced options            0           1            1           1
two digit year cutoff         1753        9999         2049        2049
user connections                 0       32767            0           0
user options                     0       16383            0           0
```

Windows 2000 Server System Information Report For PE2500

```
System Information report written at: 10/15/2001 07:16:13 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  Build 2195
OS Manufacturer   Microsoft Corporation

System Name PE2500
System Manufacturer    Dell Computer Corporation
System Model      PowerEdge 2500
System Type X86-based PC
Processor   x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1130 Mhz
BIOS Version      Phoenix ROM BIOS PLUS Version 1.10 A04
Windows Directory C:\WINNT
System Directory  C:\WINNT\System32
Boot Device \Device\Harddisk0\Partition1
Locale      United States
User Name   PE2500\Administrator
Time Zone   Central Daylight Time
Total Physical Memory  2,358,768 KB
Available Physical Memory    262,676 KB
Total Virtual Memory   5,346,072 KB
Available Virtual Memory     1,292,136 KB
Page File Space   2,987,304 KB
Page File   C:\pagefile.sys

[Hardware Resources]

[ Following are sub-categories of this main category ]

[Conflicts/Sharing]

Resource    Device
IRQ 15      System board
IRQ 15      Secondary IDE Channel

[DMA]

Channel     Device      Status
4     Direct memory access controller    OK
2     Standard floppy disk controller    OK

[Forced Hardware]
```

```
Device      PNP Device ID
No Forced Hardware

[I/O]

Address Range    Device      Status
0x0000-0x03AF    PCI bus     OK
0x0000-0x03AF    Direct memory access controller    OK
0x03B0-0x03DF    PCI bus     OK
0x03B0-0x03DF    ATI Technologies Inc. RAGE XL PCI  OK
0x03E0-0x0FFF    PCI bus     OK
0xE000-0xEFFF    PCI bus     OK
0xECC0-0xECFF    Intel 8255x-based PCI Ethernet Adapter (10/100)OK
0xE800-0xE8FF    ATI Technologies Inc. RAGE XL PCI  OK
0x03C0-0x03DF    ATI Technologies Inc. RAGE XL PCI  OK
0x0A79-0x0A79    ISAPNP Read Data Port  OK
0x0279-0x0279    ISAPNP Read Data Port  OK
0x02F4-0x02F7    ISAPNP Read Data Port  OK
0x0080-0x009F    Direct memory access controller    OK
0x00C0-0x00DF    Direct memory access controller    OK
0x00F0-0x00FF    Numeric data processor OK
0x0020-0x003F    Programmable interrupt controller  OK
0x00A0-0x00BF    Programmable interrupt controller  OK
0x04D0-0x04D1    Programmable interrupt controller  OK
0x0061-0x0061    System speaker   OK
0x0040-0x005F    System timer     OK
0x03F0-0x03F5    Standard floppy disk controller    OK
0x03F7-0x03F7    Standard floppy disk controller    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
0x03F8-0x03FF    Communications Port (COM1)   OK
0x02F8-0x02FF    Communications Port (COM2)   OK
0x0378-0x037F    ECP Printer Port (LPT1)OK
0x0778-0x077F    ECP Printer Port (LPT1)OK
0x0070-0x007F    System CMOS/real time clock  OK
0x0814-0x085B    System board     OK
0x08A0-0x08AF    System board     OK
0x0C00-0x0CD7    System board     OK
0x0F50-0x0F58    System board     OK
0x00E0-0x00EF    System board     OK
0x08B0-0x08BF    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
0xB000-0xDFFF    PCI bus     OK
0xB000-0xDFFF    DEC 21154 PCI to PCI bridge  OK
0xD000-0xDFFF    PCI standard PCI-to-PCI bridge     OK
0xDC00-0xDCFF    SCSI Controller  OK
0xD800-0xD8FF    Adaptec AIC-7899 Ultra160/m PCI SCSI CardOK
0xC000-0xCFFF    DEC 21154 PCI to PCI bridge  OK
0xCC80-0xCCFF    Mylex eXtremeRAID 2000 Disk Array Controller  OK
0xBC80-0xBCFF    Mylex eXtremeRAID 2000 Disk Array Controller  OK
```

```
[IRQs]

IRQ Number  Device
9     Microsoft ACPI-Compliant System
16    Intel 8255x-based PCI Ethernet Adapter (10/100)
13    Numeric data processor
6     Standard floppy disk controller
1     Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12    PS/2 Compatible Mouse
4     Communications Port (COM1)
3     Communications Port (COM2)
8     System CMOS/real time clock
15    System board
15    Secondary IDE Channel
14    Primary IDE Channel
10    SCSI Controller
28    Adaptec AIC-7899 Ultra160/m PCI SCSI Card
21    Mylex eXtremeRAID 2000 Disk Array Controller
25    Mylex eXtremeRAID 2000 Disk Array Controller

[Memory]

Range Device      Status
0xA0000-0xBFFFF  PCI bus     OK
0xA0000-0xBFFFF  ATI Technologies Inc. RAGE XL PCI  OK
0xFD000000-0xFE2FFFFF  PCI bus     OK
0xFD000000-0xFE2FFFFF  ATI Technologies Inc. RAGE XL PCI  OK
0xFE201000-0xFE201FFF  Intel 8255x-based PCI Ethernet Adapter (10/100)
      OK
0xFE000000-0xFE0FFFFF  Intel 8255x-based PCI Ethernet Adapter (10/100)
      OK
0xFE200000-0xFE200FFF  ATI Technologies Inc. RAGE XL PCI  OK
0x0000-0x9FFFF   System board     OK
0x100000-0x8FFFFFFF    System board     OK
0xF0000-0xFFFFF  System board     OK
0xFEC00000-0xFEC0FFFF  System board     OK
0xFEE00000-0xFEE0FFFF  System board     OK
0xFFE00000-0xFFFFFFFF  System board     OK
0xE8000000-0xF47FFFFF  PCI bus     OK
0xFA800000-0xFCAFFFFF  PCI bus     OK
0xFA800000-0xFCAFFFFF  DEC 21154 PCI to PCI bridge  OK
0xFA800000-0xFCAFFFFF  Mylex eXtremeRAID 2000 Disk Array Controller
      OK
0xFC900000-0xFCAFFFFF  PCI standard PCI-to-PCI bridge     OK
0xFC9FF000-0xFC9FFFFF  SCSI Controller  OK
0xFC9FE000-0xFC9FEFFF  Adaptec AIC-7899 Ultra160/m PCI SCSI CardOK
0xFB800000-0xFC7FFFFF  DEC 21154 PCI to PCI bridge  OK
0xFB800000-0xFC7FFFFF  Mylex eXtremeRAID 2000 Disk Array Controller
      OK
0xF0000000-0xF3FFFFFF  DEC 21154 PCI to PCI bridge  OK
0xF0000000-0xF3FFFFFF  Mylex eXtremeRAID 2000 Disk Array Controller
      OK
0xF4000000-0xF47FFFFF  DEC 21154 PCI to PCI bridge  OK
0xF4000000-0xF47FFFFF  Mylex eXtremeRAID 2000 Disk Array Controller
      OK
```

```
[Components]

[ Following are sub-categories of this main category ]

[Multimedia]

[ Following are sub-categories of this main category ]

[Audio Codecs]

Codec Manufacturer      Description Status      File  Version     Size
      Creation Date
c:\winnt\system32\iac25_32.axIntel Corporation Indeo® audio software
      OK    C:\WINNT\System32\IAC25_32.AX2.05.53     195.00 KB
(199,680 bytes)  12/7/1999 6:00:00 AM
c:\winnt\system32\msg723.acm Microsoft Corporation        OK
      C:\WINNT\System32\MSG723.ACM 4.4.3385    106.77 KB (109,328
bytes)      10/2/2001 4:16:57 PM
c:\winnt\system32\lhacm.acm  Microsoft Corporation        OK
      C:\WINNT\System32\LHACM.ACM  4.4.3385    33.27 KB (34,064 bytes)
      10/2/2001 4:16:57 PM
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 6:00:00 AM
c:\winnt\system32\msgsm32.acmMicrosoft Corporation        OK
      C:\WINNT\System32\MSGSM32.ACM5.00.2134.1 22.27 KB (22,800 bytes)
      12/7/1999 6:00:00 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 6:00:00 AM
c:\winnt\system32\msadp32.acmMicrosoft Corporation        OK
      C:\WINNT\System32\MSADP32.ACM5.00.2134.1 14.77 KB (15,120 bytes)
      12/7/1999 6:00:00 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 6:00:00 AM

[Video Codecs]

Codec Manufacturer      Description Status      File  Version     Size
      Creation Date
c:\winnt\system32\ir50_32.dllIntel Corporation Indeo® video 5.10 OK
      C:\WINNT\System32\IR50_32.DLLR.5.10.15.2.55    737.50 KB
(755,200 bytes)  12/7/1999 6:00:00 AM
c:\winnt\system32\msh261.drv Microsoft Corporation        OK
      C:\WINNT\System32\MSH261.DRV 4.4.3385    163.77 KB (167,696
bytes)      10/2/2001 4:16:57 PM
c:\winnt\system32\msh263.drv Microsoft Corporation        OK
      C:\WINNT\System32\MSH263.DRV 4.4.3385    252.27 KB (258,320
bytes)      10/2/2001 4:16:30 PM
c:\winnt\system32\msvidc32.dll     Microsoft Corporation        OK
      C:\WINNT\System32\MSVIDC32.DLL     5.00.2134.1 27.27 KB (27,920
bytes)      12/7/1999 6:00:00 AM
c:\winnt\system32\msrle32.dllMicrosoft Corporation        OK
      C:\WINNT\System32\MSRLE32.DLL5.00.2134.1 10.77 KB (11,024 bytes)
      12/7/1999 6:00:00 AM
```

```
c:\winnt\system32\ir32_32.dllIntel(R) Corporation         OK
      C:\WINNT\System32\IR32_32.DLLNot Available    194.50 KB
(199,168 bytes)  12/7/1999 6:00:00 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 6:00:00 AM

[CD-ROM]

Item  Value
Drive D:
Description CD-ROM Drive
Media Loaded      False
Media Type  CD-ROM
Name  TEAC CD-224E
Manufacturer      (Standard CD-ROM drives)
Status      OK
Transfer Rate     Not Available
SCSI Target ID    0
PNP Device ID     IDE\CDROMTEAC_CD-
224E____________________________3.7D____\5&F3420B7&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_00D91028&REV_27\3&13C0B0C5&0&70
Adapter Type      ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description    ATI Technologies Inc. RAGE XL PCI
Adapter RAM 8.00 MB (8,388,608 bytes)
Installed Drivers atidrab.dll
Driver Version    5.00.2179.1
INF File    display.inf (atirage3 section)
Color Planes      1
Color Table Entries    65536
Resolution  1024 x 768 x 60 hertz
Bits/Pixel  16


[Infrared]

Item  Value
No infrared devices

[Input]

[ Following are sub-categories of this main category ]

[Keyboard]
```

```
Item  Value
Description Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name  Enhanced (101- or 102-key)
Layout      00000409
PNP Device ID     ACPI\PNP0303\4&14E2F907&0
NumberOfFunctionKeys   12


[Pointing Device]

Item  Value
Hardware Type     PS/2 Compatible Mouse
Number of Buttons 2
Status      OK
PNP Device ID     ACPI\PNP0F13\4&14E2F907&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] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type      Ethernet 802.3
Product Name      Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed   True
PNP Device ID
      PCI\VEN_8086&DEV_1229&SUBSYS_009B1028&REV_08\3&13C0B0C5&0&20
Last Reset  10/14/2001 2:12:04 PM
Index 0
Service Name      E100B
IP Address  192.1.1.104
IP Subnet   255.255.255.0
Default IP Gateway      Not Available
DHCP Enabled      False
DHCP Server Not Available
DHCP Lease Expires      Not Available
DHCP Lease Obtained     Not Available
MAC Address 00:06:5B:19:ED:D4
Service Name      E100B
IRQ Number  16
I/O Port    0xECC0-0xECFF
Driver      c:\winnt\system32\drivers\e100bnt5.sys (80144,
4.01.67.0000)
```

```
Name  [00000001] RAS Async Adapter
Adapter Type     Not Available
Product Name     RAS Async Adapter
Installed   True
PNP Device ID    Not Available
Last Reset  10/14/2001 2:12:04 PM
Index 1
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  [00000002] WAN Miniport (L2TP)
Adapter Type     Not Available
Product Name     WAN Miniport (L2TP)
Installed   True
PNP Device ID    ROOT\MS_L2TPMINIPORT\0000
Last Reset  10/14/2001 2:12:04 PM
Index 2
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  [00000003] 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  10/14/2001 2:12:04 PM
Index 3
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  [00000004] Direct Parallel
Adapter Type     Not Available
Product Name     Direct Parallel
Installed   True
PNP Device ID    ROOT\MS_PTIMINIPORT\0000
Last Reset  10/14/2001 2:12:04 PM
Index 4
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  [00000005] WAN Miniport (IP)
Adapter Type     Not Available
Product Name     WAN Miniport (IP)
Installed   True
PNP Device ID    ROOT\MS_NDISWANIP\0000
Last Reset  10/14/2001 2:12:04 PM
Index 5
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 (90768, 5.00.2184.1)


[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
```

```
SupportsGracefulClosingTrue
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
SupportsGracefulClosingFalse
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
SupportsGracefulClosingFalse
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
SupportsGracefulClosingTrue
SupportsGuaranteedBandwidth  False
```

```
SupportsMulticasting   False

Name  MSAFD NetBIOS [\Device\NetBT_Tcpip_{AA0EEEF3-C875-485C-8CAE-
E10092BB5B6F}] 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
SupportsGracefulClosingFalse
SupportsGuaranteedBandwidth  False
SupportsMulticasting   False

Name  MSAFD NetBIOS [\Device\NetBT_Tcpip_{AA0EEEF3-C875-485C-8CAE-
E10092BB5B6F}] 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
SupportsGracefulClosingFalse
SupportsGuaranteedBandwidth  False
SupportsMulticasting   False

Name  MSAFD NetBIOS [\Device\NetBT_Tcpip_{73A677EE-8D73-43DD-A006-
0856E3DC7B23}] 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
SupportsGracefulClosingFalse
```

```
SupportsGuaranteedBandwidth  False
SupportsMulticasting   False

Name  MSAFD NetBIOS [\Device\NetBT_Tcpip_{73A677EE-8D73-43DD-A006-
0856E3DC7B23}] 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
SupportsGracefulClosingFalse
SupportsGuaranteedBandwidth  False
SupportsMulticasting   False

Name  MSAFD NetBIOS [\Device\NetBT_Tcpip_{C4B8E1BA-47C4-4D04-AEF3-
8AF2B6EEBDEC}] 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
SupportsGracefulClosingFalse
SupportsGuaranteedBandwidth  False
SupportsMulticasting   False

Name  MSAFD NetBIOS [\Device\NetBT_Tcpip_{C4B8E1BA-47C4-4D04-AEF3-
8AF2B6EEBDEC}] 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
```

```
SupportsGracefulClosingFalse
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     5.00.2152.1
Size  21.27 KB (21,776 bytes)


[Ports]

[ Following are sub-categories of this main category ]

[Serial]

Item  Value
Name  COM1
Status      OK
PNP Device ID     ACPI\PNP0501\1
Maximum Input Buffer Size    0
Maximum Output Buffer Size   False
Settable Baud Rate     True
Settable Data Bits     True
Settable Flow Control  True
Settable Parity  True
Settable Parity Check  True
Settable Stop Bits     True
Settable RLSD    True
Supports RLSD    True
Supports 16 Bit Mode   False
Supports Special Characters  False
Baud Rate   9600
Bits/Byte   8
Stop Bits   1
Parity      None
Busy  0
Abort Read/Write on Error    0
Binary Mode Enabled    -1
Continue XMit on XOff  0
CTS Outflow Control    0
Discard NULL Bytes     0
DSR Outflow Control    0
DSR Sensitivity  0
DTR Flow Control Type  Enable
EOF Character    0
Error Replace Character0
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 Control0
IRQ Number  4
I/O Port    0x03F8-0x03FF
Driver      c:\winnt\system32\drivers\serial.sys (62448, 5.00.2134.1)

Name  COM2
Status      OK
PNP Device ID    ACPI\PNP0501\2
Maximum Input Buffer Size    Not Available
Maximum Output Buffer Size   Not Available
Settable Baud Rate     Not Available
Settable Data Bits     Not Available
Settable Flow Control  Not Available
Settable Parity  Not Available
Settable Parity Check  Not Available
Settable Stop Bits     Not Available
Settable RLSD    Not Available
Supports RLSD    Not Available
Supports 16 Bit Mode   Not Available
Supports Special Characters  Not Available
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 Character0
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 Control0
IRQ Number  3
I/O Port    0x02F8-0x02FF
Driver      c:\winnt\system32\drivers\serial.sys (62448, 5.00.2134.1)
```

```
[Parallel]

Item  Value
Name  LPT1
PNP Device ID    ACPI\PNP0401\4&14E2F907&0


[Storage]

[ Following are sub-categories of this main category ]

[Drives]

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

Drive C:
Description Local Fixed Disk
Compressed  False
File System NTFS
Size  8.46 GB (9,088,901,120 bytes)
Free Space  5.89 GB (6,321,336,320 bytes)
Volume Name
Volume Serial Number   68231A1C
Partition   Disk #0, Partition #0
Partition Size   8.46 GB (9,088,902,144 bytes)
Starting Offset  32256 bytes
Drive Description Disk drive
Drive Manufacturer     (Standard disk drives)
Drive Model SEAGATE ST39102LC SCSI Disk Device
Drive BytesPerSector   512
Drive MediaLoaded True
Drive MediaType  Fixed hard disk media
Drive Partitions 1
Drive SCSIBus    0
Drive SCSILogicalUnit  0
Drive SCSIPort   1
Drive SCSITargetId     0
Drive SectorsPerTrack  63
Drive Size  9097159680 bytes
Drive TotalCylinders   1106
Drive TotalSectors     17767890
Drive TotalTracks 282030
Drive TracksPerCylinder 255

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

Drive X:
Description Local Fixed Disk
Compressed  False
File System NTFS
Size  700.87 GB (752,555,524,096 bytes)
Free Space  619.79 GB (665,498,681,344 bytes)
Volume Name
Volume Serial Number   ECA42029
Partition   Disk #2, Partition #2
Partition Size    700.87 GB (752,555,543,040 bytes)
Starting Offset   Not Available
Drive Description \\.\PHYSICALDRIVE2
Drive Manufacturer     Not Available
Drive Model Not Available
Drive BytesPerSector   512
Drive MediaLoaded True
Drive MediaType   Fixed hard disk media
Drive Partitions  3
Drive SCSIBus     4
Drive SCSILogicalUnit  0
Drive SCSIPort    3
Drive SCSITargetId     0
Drive SectorsPerTrack  63
Drive Size  863687301120 bytes
Drive TotalCylinders   105004
Drive TotalSectors     1686889260
Drive TotalTracks 26776020
Drive TracksPerCylinder 255


[SCSI]

Item  Value
Name  Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption     Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver      adpu160m
Status      OK
```

```
PNP Device ID
      PCI\VEN_9005&DEV_00CF&SUBSYS_00D91028&REV_01\4&344CCDDD&0&2110
Device ID
      PCI\VEN_9005&DEV_00CF&SUBSYS_00D91028&REV_01\4&344CCDDD&0&2110
Device Map  Not Available
Index Not Available
Max Number Controlled  Not Available
IRQ Number  28
I/O Port    0xD800-0xD8FF
Driver      c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)

Name  Mylex eXtremeRAID 2000 Disk Array Controller
Caption     Mylex eXtremeRAID 2000 Disk Array Controller
Driver      dac2w2k
Status      Error
PNP Device ID
      PCI\VEN_1028&DEV_0002&SUBSYS_00D91028&REV_01\3&1070020&0&11
Device ID   PCI\VEN_1028&DEV_0002&SUBSYS_00D91028&REV_01\3&1070020&0&11
Device Map  Not Available
Index Not Available
Max Number Controlled  Not Available
Driver      c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name  Mylex eXtremeRAID 2000 Disk Array Controller
Caption     Mylex eXtremeRAID 2000 Disk Array Controller
Driver      dac2w2k
Status      OK
PNP Device ID
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&15BEFF34&0&4050
Device ID
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&15BEFF34&0&4050
Device Map  Not Available
Index Not Available
Max Number Controlled  Not Available
IRQ Number  21
I/O Port    0xCC80-0xCCFF
Driver      c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name  Mylex eXtremeRAID 2000 Disk Array Controller
Caption     Mylex eXtremeRAID 2000 Disk Array Controller
Driver      dac2w2k
Status      OK
PNP Device ID
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&356A78F3&0&4060
Device ID
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&356A78F3&0&4060
Device Map  Not Available
Index Not Available
Max Number Controlled  Not Available
IRQ Number  25
I/O Port    0xBC80-0xBCFF
Driver      c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)


[Printing]
```

```
Name  Port Name   Server Name
No printing information

[Problem Devices]

Device      PNP Device ID     Error Code
Secondary IDE Channel  PCIIDE\IDECHANNEL\4&328CD2DD&0&1   12
SCSI Controller
      PCI\VEN_9005&DEV_00C5&SUBSYS_00C51028&REV_01\4&344CCDDD&0&2010
      28
Mylex eXtremeRAID 2000 Disk Array Controller
      PCI\VEN_1028&DEV_0002&SUBSYS_00D91028&REV_01\3&1070020&0&1122
DELL 2x3 U2W SCSI BP SCSI Processor Device
    SCSI\PROCESSOR&VEN_DELL&PROD_2X3_U2W_SCSI_BP&REV_1.23\5&3CAF76E&0
&060  28
DELL 2x3 U2W SCSI BP SCSI Processor Device
    SCSI\PROCESSOR&VEN_DELL&PROD_2X3_U2W_SCSI_BP&REV_1.29\5&3CAF76E&0
&160  28
Dell 12 BAY U2W CU SCSI Processor Device
    SCSI\PROCESSOR&VEN_DELL&PROD_12_BAY_U2W_CU&REV_0209\5&346DA8CB&0&
0F0   28
Dell 12 BAY U2W CU SCSI Processor Device
    SCSI\PROCESSOR&VEN_DELL&PROD_12_BAY_U2W_CU&REV_0209\5&346DA8CB&0&
1F0   28
Dell 12 BAY U2W CU SCSI Processor Device
    SCSI\PROCESSOR&VEN_DELL&PROD_12_BAY_U2W_CU&REV_0209\5&346DA8CB&0&
2F0   28
Dell 12 BAY U2W CU SCSI Processor Device
    SCSI\PROCESSOR&VEN_DELL&PROD_12_BAY_U2W_CU&REV_0209\5&346DA8CB&0&
3F0   28

[USB]

Device      PNP Device ID
No USB Devices

[Software Environment]

[ Following are sub-categories of this main category ]

[Drivers]

Name  Description File  Type  Started     Start Mode  State Status
      Error Control     Accept Pause      Accept Stop
abiosdsk    Abiosdsk    Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Ignore      False False
abp480n5    abp480n5    Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
acpi  Microsoft ACPI Driver   c:\winnt\system32\drivers\acpi.sys
      Kernel Driver     True  Boot  Running     OK    Normal      False
      True
acpiec      ACPIEC      c:\winnt\system32\drivers\acpiec.sys
      Kernel Driver     False Disabled    Stopped     OK    Normal
      False False
```

```
adpu160m    adpu160m    c:\winnt\system32\drivers\adpu160m.sys
      Kernel Driver     True  Boot  Running     OK    Normal      False
      True
afd   AFD Networking Support Environment
      c:\winnt\system32\drivers\afd.sys  Kernel Driver     True  Auto
      Running     OK    Normal      False True
aha154x     Aha154x     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
aic116x     aic116x     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
aic78u2     aic78u2     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
aic78xx     aic78xx     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
ami0nt      ami0nt      Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
amsint      amsint      Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
asc   asc   Not Available     Kernel Driver     False Disabled
      Stopped     OK    Normal      False False
asc3350p    asc3350p    Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
asc3550     asc3550     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
asyncmac    RAS Asynchronous Media Driver
      c:\winnt\system32\drivers\asyncmac.sys   Kernel Driver     False
      Manual      Stopped     OK    Normal      False False
atapi Standard IDE/ESDI Hard Disk Controller
      c:\winnt\system32\drivers\atapi.sysKernel 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.sysKernel
Driver      True  System      Running     OK    Normal      False True
changer     Changer     Not Available     Kernel Driver     False
      System      Stopped     OK    Ignore      False False
```

```
cpqarray    Cpqarray   Not Available    Kernel Driver    False
      Disabled   Stopped     OK    Normal     False False
cpqarry2    cpqarry2   Not Available    Kernel Driver    False
      Disabled   Stopped     OK    Normal     False False
cpqfcalm    cpqfcalm   Not Available    Kernel Driver    False
      Disabled   Stopped     OK    Normal     False False
cpqfws2e    cpqfws2e   Not Available    Kernel Driver    False
      Disabled   Stopped     OK    Normal     False False
dac2w2k     dac2w2k    c:\winnt\system32\drivers\dac2w2k.sys
      Kernel Driver    True  Boot  Running    OK    Normal      False
      True
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    False Disabled    Stopped     OK    Normal
      False False
dmboot      dmboot     c:\winnt\system32\drivers\dmboot.sys
      Kernel Driver    False Disabled    Stopped     OK    Normal
      False False
dmio  Logical Disk Manager Driver  c:\winnt\system32\drivers\dmio.sys
      Kernel Driver    True  Boot  Running    OK    Normal      False
      True
dmload      dmload     c:\winnt\system32\drivers\dmload.sys
      Kernel Driver    True  Boot  Running    OK    Normal      False
      True
e100b Intel PRO Adapter Driver
      c:\winnt\system32\drivers\e100bnt5.sys  Kernel Driver     True
      Manual     Running     OK    Normal     False True
efs   EFS   c:\winnt\system32\drivers\efs.sys File System Driver
      True  Disabled   Running     OK    Normal     False True
fastfat     Fastfat    c:\winnt\system32\drivers\fastfat.sys    File
System Driver    True  Disabled    Running    OK    Normal      False
      True
fd16_700    Fd16_700   Not Available    Kernel Driver    False
      Disabled   Stopped     OK    Normal     False False
fdc   Floppy Disk Controller Driverc:\winnt\system32\drivers\fdc.sys
      Kernel Driver    True  Manual      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
```

```
gamdrv     gamdrv     c:\winnt\system32\drivers\gamdrv.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 Translatorc:\winnt\system32\drivers\ipnat.sys
      Kernel Driver     False Manual      Stopped     OK    Normal
      False False
ipsec IPSEC driver     c:\winnt\system32\drivers\ipsec.sysKernel
Driver     False Manual      Stopped     OK    Normal      False False
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
macdisk    macdisk    c:\winnt\system32\drivers\mac2w2k.sys
      Kernel Driver     True  Boot  Running     OK    Normal      False
      True
mnmdd mnmdd c:\winnt\system32\drivers\mnmdd.sysKernel Driver     True
      System      Running     OK    Ignore      False True
modem Modem c:\winnt\system32\drivers\modem.sysKernel 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.sysKernel Driver    False
      Manual      Stopped     OK    Normal      False False
mup   Mup   c:\winnt\system32\drivers\mup.sys  File System Driver
      True  Boot  Running     OK    Normal      False True
ncrc710     Ncrc710     Not Available    Kernel Driver    False
      Disabled    Stopped     OK    Normal      False False
ndis  NDIS System Driver     c:\winnt\system32\drivers\ndis.sys
      Kernel Driver    True  Boot  Running     OK    Normal      False
      True
ndistapi    Remote Access NDIS TAPI Driver
      c:\winnt\system32\drivers\ndistapi.sys  Kernel Driver    True
      Manual      Running     OK    Normal      False True
ndiswan     Remote Access NDIS WAN Driver
      c:\winnt\system32\drivers\ndiswan.sys   Kernel Driver    True
      Manual      Running     OK    Normal      False True
ndproxy     NDIS Proxy  c:\winnt\system32\drivers\ndproxy.sys
      Kernel Driver    True  Manual      Running     OK    Normal
      False True
netbios     NetBIOS Interface c:\winnt\system32\drivers\netbios.sys
      File System Driver     True  System      Running     OK
      Normal      False True
netbt NetBios over Tcpip     c:\winnt\system32\drivers\netbt.sys
      Kernel Driver    True  System      Running     OK    Normal
      False True
netdetect   NetDetect   c:\winnt\system32\drivers\netdtect.sys
      Kernel Driver    False Manual      Stopped     OK    Normal
      False False
npfs  Npfs  c:\winnt\system32\drivers\npfs.sys File System Driver
      True  System      Running     OK    Normal      False True
ntfs  Ntfs  c:\winnt\system32\drivers\ntfs.sys File System Driver
      True  Disabled    Running     OK    Normal      False True
null  Null  c:\winnt\system32\drivers\null.sys Kernel Driver    True
      System      Running     OK    Normal      False True
nwlnkflt    IPX Traffic Filter Driver
      c:\winnt\system32\drivers\nwlnkflt.sys  Kernel Driver    False
      Manual      Stopped     OK    Normal      False False
nwlnkfwd    IPX Traffic Forwarder Driver
      c:\winnt\system32\drivers\nwlnkfwd.sys  Kernel Driver    False
      Manual      Stopped     OK    Normal      False False
parallel    Parallel class driver
      c:\winnt\system32\drivers\parallel.sys  Kernel Driver    True
      Manual      Running     OK    Normal      False True
```

```
parport     Parallel port driver
      c:\winnt\system32\drivers\parport.sys   Kernel Driver     True
      System      Running     OK    Ignore      False True
partmgr     PartMgr     c:\winnt\system32\drivers\partmgr.sys
      Kernel Driver     True  Boot  Running     OK    Normal      False
      True
parvdm      ParVdm      c:\winnt\system32\drivers\parvdm.sys
      Kernel Driver     True  Auto  Running     OK    Ignore      False
      True
pci   PCI Bus Driver    c:\winnt\system32\drivers\pci.sys  Kernel
Driver      True  Boot  Running     OK    Critical    False True
pcidump     PCIDump     Not Available     Kernel Driver     False
      System      Stopped     OK    Ignore      False False
pciide      PCIIde      c:\winnt\system32\drivers\pciide.sys
      Kernel Driver     True  Boot  Running     OK    Normal      False
      True
pcmcia      Pcmcia      c:\winnt\system32\drivers\pcmcia.sys
      Kernel Driver     False Disabled    Stopped     OK    Normal
      False False
pdcomp      PDCOMP      Not Available     Kernel Driver     False
      Manual      Stopped     OK    Ignore      False False
pdframe     PDFRAME     Not Available     Kernel Driver     False
      Manual      Stopped     OK    Ignore      False False
pdreli      PDRELI      Not Available     Kernel Driver     False
      Manual      Stopped     OK    Ignore      False False
pdrframe    PDRFRAME    Not Available     Kernel Driver     False
      Manual      Stopped     OK    Ignore      False False
pptpminiport      WAN Miniport (PPTP)
      c:\winnt\system32\drivers\raspptp.sys   Kernel Driver     True
      Manual      Running     OK    Normal      False True
ptilink     Direct Parallel Link Driver
      c:\winnt\system32\drivers\ptilink.sys   Kernel Driver     True
      Manual      Running     OK    Normal      False True
ql1080      ql1080      Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
ql10wnt     Ql10wnt     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
ql1240      ql1240      Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
ql2100      ql2100      Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
rasacd      Remote Access Auto Connection Driver
      c:\winnt\system32\drivers\rasacd.sys    Kernel Driver     True
      System      Running     OK    Normal      False True
rasl2tp     WAN Miniport (L2TP)
      c:\winnt\system32\drivers\rasl2tp.sys   Kernel Driver     True
      Manual      Running     OK    Normal      False True
raspti      Direct Parallel   c:\winnt\system32\drivers\raspti.sys
      Kernel Driver     True  Manual      Running     OK    Normal
      False True
rca   Microsoft Streaming Network Raw Channel Access
      c:\winnt\system32\drivers\rca.sys  Kernel Driver     False
      Manual      Stopped     OK    Normal      False False
rdbss Rdbss c:\winnt\system32\drivers\rdbss.sysFile System Driver
      True  System      Running     OK    Normal      False True
```

```
rdpwd RDPWD c:\winnt\system32\drivers\rdpwd.sysKernel Driver     False
      Manual      Stopped     OK    Ignore      False False
redbook     Digital CD Audio Playback Filter Driver
      c:\winnt\system32\drivers\redbook.sys    Kernel Driver     False
      System      Stopped     OK    Normal      False False
serenum     Serenum Filter Driver
      c:\winnt\system32\drivers\serenum.sys    Kernel Driver     True
      Manual      Running     OK    Normal      False True
serial      Serial port driver
      c:\winnt\system32\drivers\serial.sys     Kernel Driver     True
      System      Running     OK    Ignore      False True
sfloppy     Sfloppy     c:\winnt\system32\drivers\sfloppy.sys
      Kernel Driver     False System      Stopped     OK    Ignore
      False False
sglfb sglfb Not Available     Kernel Driver     False System
      Stopped     OK    Normal      False False
simbad      Simbad      Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
sparrow     Sparrow     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
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.sysKernel 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.sysKernel Driver     False
      Manual      Stopped     OK    Ignore      False False
tdtcp TDTCP c:\winnt\system32\drivers\tdtcp.sysKernel Driver     False
      Manual      Stopped     OK    Ignore      False False
termdd      Terminal Device Driver
      c:\winnt\system32\drivers\termdd.sys     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
tga   tga   Not Available     Kernel Driver     False System
      Stopped     OK    Ignore      False False
udfs  Udfs  c:\winnt\system32\drivers\udfs.sys File System Driver
      False Disabled    Stopped     OK    Normal      False False
```

```
ultra66     ultra66     Not Available     Kernel Driver     False
      Disabled    Stopped     OK    Normal      False False
update      Microcode Update Driver
      c:\winnt\system32\drivers\update.sys     Kernel Driver     True
      Manual      Running     OK    Normal      False True
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>
NUMBER_OF_PROCESSORS   1     <SYSTEM>
OS    Windows_NT  <SYSTEM>
Os2LibPath  %SystemRoot%\system32\os2\dll;     <SYSTEM>
Path
    %SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;C:\
Program Files\Microsoft SQL Server\80\Tools\BINN;C:\Program
Files\Microsoft SQL Server\MSSQL\Binn;.;<SYSTEM>
PATHEXT     .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
      <SYSTEM>
PROCESSOR_ARCHITECTURE x86   <SYSTEM>
PROCESSOR_IDENTIFIER   x86 Family 6 Model 11 Stepping 1, GenuineIntel
      <SYSTEM>
PROCESSOR_LEVEL   6     <SYSTEM>
PROCESSOR_REVISION     0b01  <SYSTEM>
TEMP  %SystemRoot%\TEMP<SYSTEM>
TMP   %SystemRoot%\TEMP<SYSTEM>
windir      %SystemRoot%     <SYSTEM>
TEMP  %USERPROFILE%\Local Settings\Temp  PE2500\Administrator
TMP   %USERPROFILE%\Local Settings\Temp  PE2500\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   160   11    204800
      1413120     10/14/2001 7:12:29 PM  5.00.2170.1 44.27 KB (45,328
bytes)      12/7/1999 6:00:00 AM
csrss.exe   Not Available    184   13    Not Available     Not
Available   10/14/2001 7:12:36 PM  Unknown    Unknown     Unknown
winlogon.exe      c:\winnt\system32\winlogon.exe     204   13
      204800      1413120     10/14/2001 7:12:37 PM  5.00.2182.1
      173.27 KB (177,424 bytes)    12/7/1999 6:00:00 AM
services.exe      c:\winnt\system32\services.exe     232   9
      204800      1413120     10/14/2001 7:12:38 PM  5.00.2134.1 86.77
KB (88,848 bytes) 12/7/1999 6:00:00 AM
lsass.exe   c:\winnt\system32\lsass.exe  244   13    204800
      1413120     10/14/2001 7:12:38 PM  5.00.2184.1 32.77 KB (33,552
bytes)      12/7/1999 6:00:00 AM
svchost.exe c:\winnt\system32\svchost.exe400   8     204800
      1413120     10/14/2001 7:12:41 PM  5.00.2134.1 7.77 KB (7,952
bytes)      12/7/1999 6:00:00 AM
msdtc.exe   c:\winnt\system32\msdtc.exe  424   8     204800
      1413120     10/14/2001 7:12:42 PM  1999.9.3421.3    6.77 KB
(6,928 bytes)     10/2/2001 11:14:44 AM
svchost.exe c:\winnt\system32\svchost.exe532   8     204800
      1413120     10/14/2001 7:12:44 PM  5.00.2134.1 7.77 KB (7,952
bytes)      12/7/1999 6:00:00 AM
winmgmt.exe c:\winnt\system32\wbem\winmgmt.exe 552   8     204800
      1413120     10/14/2001 7:12:44 PM  1.50.1085.0001    188.05 KB
(192,567 bytes)  12/7/1999 6:00:00 AM
explorer.exe      c:\winnt\explorer.exe  672   8     204800
      1413120     10/14/2001 7:12:52 PM  5.00.2920.0000    232.77 KB
(238,352 bytes)  12/7/1999 6:00:00 AM
svchost.exe c:\winnt\system32\svchost.exe848   8     204800
      1413120     10/14/2001 7:12:59 PM  5.00.2134.1 7.77 KB (7,952
bytes)      12/7/1999 6:00:00 AM
mmc.exe     c:\winnt\system32\mmc.exe    928   8     204800
      1413120     10/14/2001 7:14:48 PM  5.00.2153.1 589.27 KB
(603,408 bytes)  12/7/1999 6:00:00 AM
cmd.exe     c:\winnt\system32\cmd.exe    668   8     204800
      1413120     10/15/2001 11:51:25 AM 5.00.2144.1 230.77 KB
(236,304 bytes)  12/7/1999 6:00:00 AM
cmd.exe     c:\winnt\system32\cmd.exe    492   8     204800
      1413120     10/15/2001 1:34:50 PM  5.00.2144.1 230.77 KB
(236,304 bytes)  12/7/1999 6:00:00 AM
sqlservr.exe      c:\program files\microsoft sql
server\mssql\binn\sqlservr.exe     592   13    204800      1413120
      10/15/2001 1:34:50 PM  2000.080.0384.00  7.05 MB (7,397,457
bytes)      10/2/2001 4:49:10 PM
```

```
mmc.exe     c:\winnt\system32\mmc.exe    520   8     204800
      1413120     10/15/2001 7:14:53 PM  5.00.2153.1 589.27 KB
(603,408 bytes)  12/7/1999 6:00:00 AM
rsvp.exe    c:\winnt\system32\rsvp.exe   1092  8     204800
      1413120     10/15/2001 7:15:53 PM  5.00.2167.1 172.77 KB
(176,912 bytes)  12/7/1999 6:00:00 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 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\traffic.dll
rsvp.exe    5.00.2167.1 172.77 KB (176,912 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rsvp.exe
wbemprox.dll     1.50.1085.0001    40.05 KB (41,016 bytes)12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\wbem\wbemprox.dll
rassapi.dll 5.00.2188.1 14.27 KB (14,608 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rassapi.dll
adsnt.dll   5.00.2191.1 194.27 KB (198,928 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\adsnt.dll
dbghelp.dll 5.00.2195.1 159.27 KB (163,088 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\dbghelp.dll
localsec.dll     5.00.2134.1 227.27 KB (232,720 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\localsec.dll
devmgr.dll  5.00.2166.1 215.77 KB (220,944 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\devmgr.dll
filemgmt.dll     5.00.2134.1 287.27 KB (294,160 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\filemgmt.dll
smlogcfg.dll     5.00.2163.1 273.27 KB (279,824 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\smlogcfg.dll
cabinet.dll 5.00.2147.1 54.77 KB (56,080 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\cabinet.dll
msinfo32.dll     5.00.2177.1 312.27 KB (319,760 bytes)    10/2/2001
4:16:53 PM  Microsoft Corporation  c:\program files\common
files\microsoft shared\msinfo\msinfo32.dll
riched20.dll     5.30.23.1200     421.27 KB (431,376 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\riched20.dll
riched32.dll     5.00.2134.1 3.77 KB (3,856 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\riched32.dll
els.dll     5.00.2175.1 151.27 KB (154,896 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\els.dll
ntmsmgr.dll 1,0,0,1     427.77 KB (438,032 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation and HighGround Systems, Inc.
      c:\winnt\system32\ntmsmgr.dll
mmfutil.dll 1.50.1085.0000   32.06 KB (32,829 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\mmfutil.dll
logdrive.dll     1.50.1085.0000   200.06 KB (204,863 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\logdrive.dll
dfrgres.dll 5.00.2150.1 27.50 KB (28,160 bytes)12/7/1999 6:00:00 AM
      Executive Software International, Inc.
      c:\winnt\system32\dfrgres.dll
dfrgsnap.dll     5.00.2150.1 41.77 KB (42,768 bytes)12/7/1999 6:00:00
AM    Executive Software International, Inc.
      c:\winnt\system32\dfrgsnap.dll
```

```
dmdskres.dll     2191.1.296.2     119.00 KB (121,856 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corp., VERITAS Software
      c:\winnt\system32\dmdskres.dll
dmutil.dll  2191.1.296.2     41.77 KB (42,768 bytes)12/7/1999 6:00:00
AM    VERITAS Software Corp. c:\winnt\system32\dmutil.dll
ntmsapi.dll 5.00.1948.1 50.27 KB (51,472 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ntmsapi.dll
dmdskmgr.dll     2191.1.296.2     158.77 KB (162,576 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corp., VERITAS Software
      c:\winnt\system32\dmdskmgr.dll
mycomput.dll     5.00.2134.1 107.77 KB (110,352 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\mycomput.dll
ssmslpcn.dll     2000.080.0382.00  28.56 KB (29,244 bytes)10/2/2001
4:49:10 PM  Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\ssmslpcn.dll
security.dll     5.00.2154.1 5.77 KB (5,904 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\security.dll
ssnmpn70.dll     2000.080.0194.00  24.06 KB (24,638 bytes)10/2/2001
4:49:10 PM  Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\ssnmpn70.dll
ssnetlib.dll     2000.080.0382.00  84.56 KB (86,588 bytes)10/2/2001
4:49:10 PM  Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\ssnetlib.dll
sqlevn70.rll     2000.080.0194.00  28.00 KB (28,672 bytes)10/2/2001
4:49:10 PM  Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\resources\1033\sqlevn70.rll
msvcirt.dll 6.10.8637.0 76.05 KB (77,878 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\msvcirt.dll
sqlsort.dll 2000.080.0382.00  576.56 KB (590,396 bytes)    10/2/2001
4:49:10 PM  Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\sqlsort.dll
ums.dll     2000.080.0382.00  48.07 KB (49,228 bytes)10/2/2001 4:49:10
PM    Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\ums.dll
opends60.dll     2000.080.0194.00  24.06 KB (24,639 bytes)10/2/2001
4:49:10 PM  Microsoft Corporation  c:\program files\microsoft sql
server\mssql\binn\opends60.dll
sqlservr.exe     2000.080.0384.00  7.05 MB (7,397,457 bytes)
      10/2/2001 4:49:10 PM   Microsoft Corporation  c:\program
files\microsoft sql server\mssql\binn\sqlservr.exe
cmd.exe     5.00.2144.1 230.77 KB (236,304 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\cmd.exe
olepro32.dll     5.0.4512    160.27 KB (164,112 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\olepro32.dll
pdh.dll     5.00.2174.1 143.27 KB (146,704 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\pdh.dll
sysmon.ocx  5.00.2163.1 167.77 KB (171,792 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\sysmon.ocx
mlang.dll   5.00.2920.0000   510.77 KB (523,024 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\mlang.dll
mmcndmgr.dll     5.00.2178.1 815.27 KB (834,832 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\mmcndmgr.dll
mfc42u.dll  6.00.8665.0 972.05 KB (995,384 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\mfc42u.dll
mmc.exe     5.00.2153.1 589.27 KB (603,408 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\mmc.exe
```

```
h323.tsp    5.00.2143.1 245.27 KB (251,152 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\h323.tsp
ipconf.tsp  5.00.2143.1 10.77 KB (11,024 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ipconf.tsp
ndptsp.tsp  5.00.2143.1 38.27 KB (39,184 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ndptsp.tsp
kmddsp.tsp  5.00.2150.1 17.77 KB (18,192 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\kmddsp.tsp
uniplat.dll 5.00.2151.1 13.77 KB (14,096 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\uniplat.dll
unimdm.tsp  5.00.2175.1 196.77 KB (201,488 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\unimdm.tsp
tapisrv.dll 5.00.2186.1 168.77 KB (172,816 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\tapisrv.dll
shdoclc.dll 5.00.2920.0000    324.50 KB (332,288 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\shdoclc.dll
mydocs.dll  5.00.2920.0000    55.77 KB (57,104 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\mydocs.dll
faxshell.dll      5.00.2134.1 8.27 KB (8,464 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\faxshell.dll
msacm32.dll 5.00.2134.1 65.27 KB (66,832 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\msacm32.dll
avifil32.dll      5.00.2134.1 76.27 KB (78,096 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\avifil32.dll
msvfw32.dll 5.00.2134.1 113.77 KB (116,496 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\msvfw32.dll
docprop2.dll      5.00.2178.1 297.77 KB (304,912 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\docprop2.dll
query.dll   5.00.2135.1 1.35 MB (1,410,832 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\query.dll
wininet.dll 5.00.2920.0000    456.77 KB (467,728 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\wininet.dll
msonsext.dll      9.0.3503    548.06 KB (561,210 bytes)    11/3/1999
3:38:34 PM  Microsoft Corporation
      c:\progra~1\common~1\micros~1\webfol~1\msonsext.dll
urlmon.dll  5.00.2920.0000    426.77 KB (437,008 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\urlmon.dll
browselc.dll      5.00.2920.0000    34.50 KB (35,328 bytes)12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\browselc.dll
dsuiext.dll 5.00.2153.1 107.77 KB (110,352 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\dsuiext.dll
comdlg32.dll      5.00.2920.0000    236.77 KB (242,448 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\comdlg32.dll
dsquery.dll 5.00.2138.1 153.27 KB (156,944 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\dsquery.dll
ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ntshrui.dll
linkinfo.dll      5.00.2134.1 15.77 KB (16,144 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\linkinfo.dll
msi.dll     1.10.1029.0 1.71 MB (1,794,320 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\msi.dll
powrprof.dll      5.00.2920.0000    13.27 KB (13,584 bytes)12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\powrprof.dll
batmeter.dll      5.00.2920.0000    20.27 KB (20,752 bytes)12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\batmeter.dll
```

```
stobject.dll     5.00.2144.1 81.77 KB (83,728 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\stobject.dll
webcheck.dll     5.00.2920.0000   251.77 KB (257,808 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\webcheck.dll
browseui.dll     5.00.2920.0000   793.27 KB (812,304 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\browseui.dll
shdocvw.dll 5.00.2920.0000   1.05 MB (1,104,144 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\shdocvw.dll
explorer.exe     5.00.2920.0000   232.77 KB (238,352 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\explorer.exe
netui1.dll  5.00.2134.1 210.27 KB (215,312 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\netui1.dll
netui0.dll  5.00.2134.1 70.27 KB (71,952 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\netui0.dll
ntlanman.dll     5.00.2157.1 35.27 KB (36,112 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\ntlanman.dll
wshnetbs.dll     5.00.2134.1 7.77 KB (7,952 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\wshnetbs.dll
rapilib.dll 5.00.2167.1 25.27 KB (25,872 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rapilib.dll
rsvpsp.dll  5.00.2167.1 74.77 KB (76,560 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rsvpsp.dll
ntmarta.dll 5.00.2158.1 98.77 KB (101,136 bytes)     12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\ntmarta.dll
provthrd.dll     1.50.1085.0000   68.07 KB (69,708 bytes)10/2/2001
4:16:46 PM  Microsoft Corporation  c:\winnt\system32\wbem\provthrd.dll
ntevt.dll   1.50.1085.0000   192.06 KB (196,669 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\wbem\ntevt.dll
perfos.dll  5.00.2155.1 21.27 KB (21,776 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\perfos.dll
psapi.dll   5.00.2134.1 28.27 KB (28,944 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\psapi.dll
framedyn.dll     1.50.1085.0000   164.05 KB (167,992 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll     1.50.1085.0000   1.03 MB (1,077,306 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\wbem\cimwin32.dll
wbemsvc.dll 1.50.1085.0000   140.07 KB (143,430 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\wbem\wbemsvc.dll
wbemess.dll 1.50.1085.0001   352.05 KB (360,503 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\wbem\wbemess.dll
fastprox.dll     1.50.1085.0001   144.08 KB (147,534 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\wbem\fastprox.dll
wbemcore.dll     1.50.1085.0001   632.05 KB (647,224 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\wbem\wbemcore.dll
wbemcomn.dll     1.50.1085.0001   684.05 KB (700,472 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\wbem\wbemcomn.dll
winmgmt.exe 1.50.1085.0001   188.05 KB (192,567 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\wbem\winmgmt.exe
```

```
ipbootp.dll 5.00.2168.1 33.77 KB (34,576 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ipbootp.dll
rastls.dll  5.00.2188.1 47.77 KB (48,912 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rastls.dll
raschap.dll 5.00.2175.1 34.77 KB (35,600 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\raschap.dll
ntlsapi.dll 5.00.2134.1 6.77 KB (6,928 bytes)  12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ntlsapi.dll
rasppp.dll  5.00.2175.1 192.27 KB (196,880 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rasppp.dll
rastapi.dll 5.00.2188.1 52.27 KB (53,520 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rastapi.dll
rasdlg.dll  5.00.2194.1 514.27 KB (526,608 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rasdlg.dll
netcfgx.dll 5.00.2175.1 533.77 KB (546,576 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\netcfgx.dll
rasmans.dll 5.00.2188.1 146.77 KB (150,288 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rasmans.dll
wmi.dll     5.00.2191.1 6.27 KB (6,416 bytes)  12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\wmi.dll
netshell.dll     5.00.2176.1 456.77 KB (467,728 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\netshell.dll
netman.dll  5.00.2175.1 88.77 KB (90,896 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\netman.dll
sens.dll    5.00.2163.1 36.77 KB (37,648 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\sens.dll
es.dll      1999.9.3422.21    231.77 KB (237,328 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\es.dll
mtxoci.dll  1999.9.3421.3     109.27 KB (111,888 bytes)    10/2/2001
11:14:45 AM Microsoft Corporation  c:\winnt\system32\mtxoci.dll
resutils.dll     5.00.2191.1 39.77 KB (40,720 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\resutils.dll
clusapi.dll 5.00.2179.1 50.27 KB (51,472 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\clusapi.dll
msvcp50.dll 5.00.7051   552.50 KB (565,760 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\msvcp50.dll
xolehlp.dll 1999.9.3421.3     17.27 KB (17,680 bytes)10/2/2001
11:14:45 AM Microsoft Corporation  c:\winnt\system32\xolehlp.dll
msdtclog.dll     1999.9.3421.3     89.77 KB (91,920 bytes)10/2/2001
11:14:44 AM Microsoft Corporation  c:\winnt\system32\msdtclog.dll
mtxclu.dll  1999.9.3421.3     50.27 KB (51,472 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\mtxclu.dll
msdtcprx.dll     1999.9.3422.10    619.27 KB (634,128 bytes)
      10/2/2001 11:14:45 AM  Microsoft Corporation
      c:\winnt\system32\msdtcprx.dll
txfaux.dll  1999.9.3422.24    341.27 KB (349,456 bytes)    10/2/2001
11:14:44 AM Microsoft Corporation  c:\winnt\system32\txfaux.dll
msdtctm.dll 1999.9.3422.12    1.02 MB (1,070,864 bytes)    10/2/2001
11:14:45 AM Microsoft Corporation  c:\winnt\system32\msdtctm.dll
msdtc.exe   1999.9.3421.3     6.77 KB (6,928 bytes)  10/2/2001
11:14:44 AM Microsoft Corporation  c:\winnt\system32\msdtc.exe
rasadhlp.dll     5.00.2168.1 7.27 KB (7,440 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rasadhlp.dll
winrnr.dll  5.00.2160.1 18.77 KB (19,216 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\winrnr.dll
```

```
wshtcpip.dll     5.00.2134.1 17.27 KB (17,680 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\wshtcpip.dll
msafd.dll   5.00.2153.1 54.27 KB (55,568 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\msafd.dll
rpcss.dll   5.00.2181.1 229.27 KB (234,768 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rpcss.dll
svchost.exe 5.00.2134.1 7.77 KB (7,952 bytes)  12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\svchost.exe
scecli.dll  5.00.2191.1 105.27 KB (107,792 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\scecli.dll
atl.dll     3.00.8449   57.56 KB (58,938 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\atl.dll
certcli.dll 5.00.2175.1 132.27 KB (135,440 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\certcli.dll
esent.dll   6.0.3939.6  1.07 MB (1,120,016 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\esent.dll
mswsock.dll 5.00.2152.1 62.27 KB (63,760 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\mswsock.dll
ntdsatq.dll 5.00.2181.1 31.27 KB (32,016 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ntdsatq.dll
ntdsa.dll   5.00.2195.1 993.27 KB (1,017,104 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\ntdsa.dll
kdcsvc.dll  5.00.2181.1 133.77 KB (136,976 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\kdcsvc.dll
sfmapi.dll  5.00.2134.1 38.77 KB (39,696 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\sfmapi.dll
rassfm.dll  5.00.2168.1 21.27 KB (21,776 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rassfm.dll
mpr.dll     5.00.2146.1 53.27 KB (54,544 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\mpr.dll
schannel.dll     5.00.2170.1 139.77 KB (143,120 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\schannel.dll
netlogon.dll     5.00.2182.1 347.77 KB (356,112 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\netlogon.dll
msv1_0.dll  5.00.2164.1 94.77 KB (97,040 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\msv1_0.dll
kerberos.dll     5.00.2181.1 196.77 KB (201,488 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\kerberos.dll
msprivs.dll 5.00.2154.1 41.50 KB (42,496 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\msprivs.dll
samsrv.dll  5.00.2192.1 357.77 KB (366,352 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\samsrv.dll
lsasrv.dll  5.00.2184.1 487.77 KB (499,472 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\lsasrv.dll
lsass.exe   5.00.2184.1 32.77 KB (33,552 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\lsass.exe
dhcpcsvc.dll     5.00.2153.1 88.77 KB (90,896 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\dhcpcsvc.dll
tapi32.dll  5.00.2182.1 123.27 KB (126,224 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\tapi32.dll
rasman.dll  5.00.2188.1 54.77 KB (56,080 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rasman.dll
rasapi32.dll     5.00.2188.1 189.77 KB (194,320 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\rasapi32.dll
rtutils.dll 5.00.2168.1 43.77 KB (44,816 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rtutils.dll
```

```
adsldpc.dll 5.00.2172.1 127.77 KB (130,832 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\adsldpc.dll
activeds.dll     5.00.2172.1 172.77 KB (176,912 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\activeds.dll
mprapi.dll  5.00.2181.1 79.27 KB (81,168 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\mprapi.dll
iphlpapi.dll     5.00.2173.2 67.77 KB (69,392 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\iphlpapi.dll
rnr20.dll   5.00.2152.1 35.77 KB (36,624 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\rnr20.dll
wmicore.dll 5.00.2178.1 70.77 KB (72,464 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\wmicore.dll
cryptdll.dll     5.00.2135.1 41.27 KB (42,256 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\cryptdll.dll
wkssvc.dll  5.00.2181.1 95.27 KB (97,552 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\wkssvc.dll
srvsvc.dll  5.00.2178.1 79.27 KB (81,168 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\srvsvc.dll
cfgmgr32.dll     5.00.2134.1 16.77 KB (17,168 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\cfgmgr32.dll
dmserver.dll     2191.1.296.2     11.77 KB (12,048 bytes)12/7/1999
6:00:00 AM  VERITAS Software Corp. c:\winnt\system32\dmserver.dll
winsta.dll  5.00.2134.1 36.27 KB (37,136 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\winsta.dll
icmp.dll    5.00.2134.1 7.27 KB (7,440 bytes)  12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\icmp.dll
lmhsvc.dll  5.00.2134.1 9.27 KB (9,488 bytes)  12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\lmhsvc.dll
eventlog.dll     5.00.2178.1 43.77 KB (44,816 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\eventlog.dll
ntdsapi.dll 5.00.2160.1 56.27 KB (57,616 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ntdsapi.dll
scesrv.dll  5.00.2188.1 225.77 KB (231,184 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\scesrv.dll
umpnpmgr.dll     5.00.2182.1 86.27 KB (88,336 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\umpnpmgr.dll
services.exe     5.00.2134.1 86.77 KB (88,848 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\services.exe
clbcatq.dll 1999.9.3422.14   479.27 KB (490,768 bytes)    10/2/2001
11:14:39 AM Microsoft Corporation  c:\winnt\system32\clbcatq.dll
oleaut32.dll     2.40.4512   600.27 KB (614,672 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\oleaut32.dll
cscui.dll   5.00.2172.1 227.27 KB (232,720 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\cscui.dll
winspool.drv     5.00.2167.1 109.77 KB (112,400 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\winspool.drv
winscard.dll     5.00.2134.1 77.27 KB (79,120 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\winscard.dll
wlnotify.dll     5.00.2164.1 53.27 KB (54,544 bytes)12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\wlnotify.dll
cscdll.dll  5.00.2189.1 98.27 KB (100,624 bytes)     12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\cscdll.dll
lz32.dll    5.00.2134.1 9.77 KB (10,000 bytes) 12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\lz32.dll
version.dll 5.00.2134.1 15.77 KB (16,144 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\version.dll
```

```
rsabase.dll 5.00.2150.1 128.77 KB (131,856 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rsabase.dll
mscat32.dll 5.131.2134.1     7.77 KB (7,952 bytes)  12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\mscat32.dll
ole32.dll   5.00.2181.1 966.27 KB (989,456 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\ole32.dll
imagehlp.dll     5.00.2195.1 125.27 KB (128,272 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\imagehlp.dll
msasn1.dll  5.00.2134.1 51.27 KB (52,496 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\msasn1.dll
crypt32.dll 5.131.2173.1     465.77 KB (476,944 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\crypt32.dll
wintrust.dll     5.131.2143.1     162.27 KB (166,160 bytes)
      12/7/1999 6:00:00 AM   Microsoft Corporation
      c:\winnt\system32\wintrust.dll
setupapi.dll     5.00.2183.1 554.27 KB (567,568 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\setupapi.dll
winmm.dll   5.00.2161.1 184.77 KB (189,200 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\winmm.dll
comctl32.dll     5.81  540.27 KB (553,232 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\comctl32.dll
shlwapi.dll 5.00.2920.0000   282.77 KB (289,552 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\shlwapi.dll
shell32.dll 5.00.2920.0000   2.24 MB (2,352,400 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\shell32.dll
msgina.dll  5.00.2191.1 309.77 KB (317,200 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\msgina.dll
wsock32.dll 5.00.2152.1 21.27 KB (21,776 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\wsock32.dll
dnsapi.dll  5.00.2181.1 129.77 KB (132,880 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\dnsapi.dll
wldap32.dll 5.00.2168.1 155.77 KB (159,504 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\wldap32.dll
ws2help.dll 5.00.2134.1 17.77 KB (18,192 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ws2help.dll
ws2_32.dll  5.00.2134.1 69.77 KB (71,440 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\ws2_32.dll
samlib.dll  5.00.2160.1 46.27 KB (47,376 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\samlib.dll
netrap.dll  5.00.2134.1 11.27 KB (11,536 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\netrap.dll
netapi32.dll     5.00.2194.1 302.77 KB (310,032 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\netapi32.dll
profmap.dll 5.00.2181.1 29.27 KB (29,968 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\profmap.dll
secur32.dll 5.00.2154.1 46.77 KB (47,888 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\secur32.dll
sfc.dll     5.00.2164.1 84.27 KB (86,288 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\sfc.dll
nddeapi.dll 5.00.2137.1 15.27 KB (15,632 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\nddeapi.dll
userenv.dll 5.00.2185.1 361.27 KB (369,936 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\userenv.dll
user32.dll  5.00.2180.1 393.27 KB (402,704 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\user32.dll
```

```
gdi32.dll   5.00.2180.1 228.77 KB (234,256 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\gdi32.dll
rpcrt4.dll  5.00.2193.1 434.27 KB (444,688 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\rpcrt4.dll
advapi32.dll     5.00.2191.1 349.27 KB (357,648 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\advapi32.dll
kernel32.dll     5.00.2191.1 715.27 KB (732,432 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\kernel32.dll
msvcrt.dll  6.10.8637.0 288.09 KB (295,000 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\msvcrt.dll
winlogon.exe     5.00.2182.1 173.27 KB (177,424 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\winlogon.exe
sfcfiles.dll     5.00.2195.1 973.27 KB (996,624 bytes)    12/7/1999
6:00:00 AM  Microsoft Corporation  c:\winnt\system32\sfcfiles.dll
ntdll.dll   5.00.2163.1 469.77 KB (481,040 bytes)    12/7/1999 6:00:00
AM    Microsoft Corporation  c:\winnt\system32\ntdll.dll
smss.exe    5.00.2170.1 44.27 KB (45,328 bytes)12/7/1999 6:00:00 AM
      Microsoft Corporation  c:\winnt\system32\smss.exe

[Services]

Display Name     Name  State Start Mode  Service Type     Path  Error
Control     Start Name  Tag ID
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     Stopped     Manual      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.exeNormal      LocalSystem 0
Distributed File SystemDfs   Stopped     Manual      Own Process
      c:\winnt\system32\dfssvc.exe Normal      LocalSystem 0
DHCP Client Dhcp  Stopped     Manual      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
Mylex Global Array Manager Server  gamscm      Stopped     Manual
      Own Process c:\winnt\system32\gamserv\gamscm.exe     Normal
      LocalSystem 0
```

```
Intersite Messaging    IsmServ     Stopped     Disabled    Own Process
      c:\winnt\system32\ismserv.exeNormal      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 ServiceLicenseService    Stopped     Manual      Own
Process     c:\winnt\system32\llssrv.exe Normal      LocalSystem 0
TCP/IP NetBIOS Helper ServiceLmHosts     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.exeNormal      LocalSystem
      0
Distributed Transaction CoordinatorMSDTC Running     Auto  Own Process
      c:\winnt\system32\msdtc.exe  Normal      LocalSystem 0
Windows Installer MSIServer   Stopped     Manual      Share Process
      c:\winnt\system32\msiexec.exe /v   Normal      LocalSystem 0
MSSQLSERVER MSSQLSERVER Stopped     Manual      Own Process
      c:\progra~1\micros~2\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     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     Stopped     Manual      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 Stopped     Manual      Share
Process     c:\winnt\system32\lsass.exe  Normal      LocalSystem 0
Protected Storage ProtectedStorage Stopped     Disabled    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      Running     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 ServiceRemoteRegistry   Stopped     Manual      Own
Process     c:\winnt\system32\regsvc.exe Normal     LocalSystem 0
Remote Procedure Call (RPC) LocatorRpcLocator  Stopped     Manual
      Own Process c:\winnt\system32\locator.exeNormal     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 -sNormal     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    Stopped     Manual      Share Process
      c:\winnt\system32\mstask.exe Normal     LocalSystem 0
RunAs Service    seclogon    Stopped     Manual      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.exeNormal     LocalSystem 0
SQLSERVERAGENT   SQLSERVERAGENT   Stopped     Manual      Own Process
      c:\progra~1\micros~2\mssql\binn\sqlagent.exe  Normal
      LocalSystem 0
Performance Logs and Alerts  SysmonLog   Stopped     Manual      Own
Process     c:\winnt\system32\smlogsvc.exe     Normal     LocalSystem
      0
Telephony   TapiSrv     Running     Manual      Share Process
      c:\winnt\system32\svchost.exe -k tapisrv Normal     LocalSystem
      0
Terminal Services TermService Stopped     Disabled    Own Process
      c:\winnt\system32\termsrv.exeNormal     LocalSystem 0
Telnet      TlntSvr     Stopped     Manual      Own Process
      c:\winnt\system32\tlntsvr.exeNormal     LocalSystem 0
Distributed Link Tracking Server   TrkSvr      Stopped     Manual
      Share Process     c:\winnt\system32\services.exe Normal LocalSystem    0
Distributed Link Tracking Client  TrkWks Stopped          Manual 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
```

```
Windows Management Instrumentation  WinMgmt       Running       Auto     Own Process
        c:\winnt\system32\wbem\winmgmt.exe   Ignore  LocalSystem    0
Windows Management Instrumentation Driver Extensions        Wmi     Running          Manual
        Share Process  c:\winnt\system32\services.exe Normal  LocalSystem    0

[Program Groups]

Group Name      Name    User Name
Accessories     Default User:Accessories        Default User
Accessories\Accessibility       Default User:Accessories\Accessibility   Default User
Accessories\Entertainment       Default User:Accessories\Entertainment Default User
Accessories\System Tools        Default User:Accessories\System Tools Default User
Startup Default User:Startup    Default User
Accessories     All Users:Accessories    All Users
Accessories\Accessibility       All Users:Accessories\Accessibility      All Users
Accessories\Communications      All Users:Accessories\Communications  All Users
Accessories\Entertainment       All Users:Accessories\Entertainment      All Users
Accessories\Games       All Users:Accessories\Games     All Users
Accessories\System Tools        All Users:Accessories\System Tools       All Users
Administrative Tools    All Users:Administrative Tools    All Users
Microsoft SQL Server    All Users:Microsoft SQL Server All Users
Startup All Users:Startup       All Users
Accessories     PE2500\Administrator:Accessories        PE2500\Administrator
Accessories\Accessibility       PE2500\Administrator:Accessories\Accessibility
        PE2500\Administrator
Accessories\Entertainment       PE2500\Administrator:Accessories\Entertainment
        PE2500\Administrator
Accessories\System Tools        PE2500\Administrator:Accessories\System Tools
        PE2500\Administrator
Administrative Tools    PE2500\Administrator:Administrative Tools        PE2500\Administrator
Startup PE2500\Administrator:Startup    PE2500\Administrator

[Startup Programs]

Program         Command         User Name       Location
No startup program information

[OLE Registration]

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

[Internet Explorer 5]

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

```
[Summary]

Item      Value
Version   5.00.2920.0000
Build     52920
Product ID          51876-OEM-0001501-00000
Application Path              C:\Program Files\Internet Explorer
Language            English (United States)
Active Printer      Not Available

Cipher Strength     56-bit
Content Advisor     Disabled
IEAK Install        No

[File Versions]

File      Version   Size      Date      Path      Company
advapi32.dll        5.0.2191.1          349 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
advapi32.dll        5.0.2191.1          349 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
advpack.dll         5.0.2920.0          87 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
advpack.dll         5.0.2920.0          87 KB  12/7/1999 7:00:00 AM   .         Microsoft Corporation
browselc.dll        5.0.2920.0          35 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
browselc.dll        5.0.2920.0          35 KB  12/7/1999 7:00:00 AM   .         Microsoft Corporation
browseui.dll        5.0.2920.0          793 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
browseui.dll        5.0.2920.0          793 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
ckcnv.exe           5.0.2189.1          9 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
ckcnv.exe           5.0.2189.1          9 KB   12/7/1999 7:00:00 AM   .         Microsoft Corporation
comctl32.dll        5.81.2920.0         540 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
comctl32.dll        5.81.2920.0         540 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
crypt32.dll         5.131.2173.1        466 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
crypt32.dll         5.131.2173.1        466 KB 12/7/1999 7:00:00 AM   .         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         5.0.2920.0          57 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
iesetup.dll         5.0.2920.0          57 KB  12/7/1999 7:00:00 AM   .         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        5.0.2195.1          125 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
imagehlp.dll        5.0.2195.1          125 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
imghelp.dll         <File Missing>      Not Available       Not Available       Not Available       Not Available
inseng.dll          5.0.2920.0          72 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32
          Microsoft Corporation
inseng.dll          5.0.2920.0          72 KB  12/7/1999 7:00:00 AM   .         Microsoft Corporation
jobexec.dll         5.0.0.1   47 KB     12/7/1999 7:00:00 AM   C:\WINNT\system32        Microsoft
Corporation
jobexec.dll         5.0.0.1   47 KB     12/7/1999 7:00:00 AM   .         Microsoft Corporation
```

```
jscript.dll     5.1.0.4615      476 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
jscript.dll     5.1.0.4615      476 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
jsproxy.dll     5.0.2920.0      13 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
jsproxy.dll     5.0.2920.0      13 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
msaahtml.dll    <File Missing>  Not Available   Not Available   Not Available   Not Available
mshtml.dll      5.0.2920.0      2302 KB         12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
mshtml.dll      5.0.2920.0      2302 KB         12/7/1999 7:00:00 AM   .          Microsoft
Corporation
msjava.dll      5.0.3234.0      918 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
msjava.dll      5.0.3234.0      918 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
msoss.dll       <File Missing>  Not Available   Not Available   Not Available   Not Available
msxml.dll       5.0.2920.0      521 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
msxml.dll       5.0.2920.0      521 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
occache.dll     5.0.2920.0      86 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
occache.dll     5.0.2920.0      86 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
ole32.dll       5.0.2181.1      966 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
ole32.dll       5.0.2181.1      966 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
oleaut32.dll    2.40.4512.1     600 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
oleaut32.dll    2.40.4512.1     600 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
olepro32.dll    5.0.4512.1      160 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
olepro32.dll    5.0.4512.1      160 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
rsabase.dll     5.0.2150.1      129 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
rsabase.dll     5.0.2150.1      129 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
rsaenh.dll      <File Missing>  Not Available   Not Available   Not Available   Not Available
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    5.0.2170.0      140 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
schannel.dll    5.0.2170.0      140 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
shdoc401.dll    <File Missing>  Not Available   Not Available   Not Available   Not Available
shdocvw.dll     5.0.2920.0      1078 KB         12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
shdocvw.dll     5.0.2920.0      1078 KB         12/7/1999 7:00:00 AM   .          Microsoft
Corporation
shell32.dll     5.0.2920.0      2297 KB         12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
shell32.dll     5.0.2920.0      2297 KB         12/7/1999 7:00:00 AM   .          Microsoft
Corporation
shlwapi.dll     5.0.2920.0      283 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
shlwapi.dll     5.0.2920.0      283 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
url.dll 5.0.2920.0      82 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32       Microsoft
Corporation
url.dll 5.0.2920.0      82 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
```

```
urlmon.dll      5.0.2920.0      427 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
urlmon.dll      5.0.2920.0      427 KB 12/7/1999 7:00:00 AM   .        Microsoft Corporation
vbscript.dll    5.1.0.4615      428 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
vbscript.dll    5.1.0.4615      428 KB 12/7/1999 7:00:00 AM   .        Microsoft Corporation
webcheck.dll    5.0.2920.0      252 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
webcheck.dll    5.0.2920.0      252 KB 12/7/1999 7:00:00 AM   .        Microsoft Corporation
win.com         5.0.2134.1      24 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
win.com         5.0.2134.1      24 KB  12/7/1999 7:00:00 AM   .        Microsoft Corporation
wininet.dll     5.0.2920.0      457 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
wininet.dll     5.0.2920.0      457 KB 12/7/1999 7:00:00 AM   .        Microsoft Corporation
winsock.dll     3.10.0.103      3 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
winsock.dll     3.10.0.103      3 KB   12/7/1999 7:00:00 AM   .        Microsoft Corporation
wintrust.dll    5.131.2143.1    162 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
wintrust.dll    5.131.2143.1    162 KB 12/7/1999 7:00:00 AM   .        Microsoft Corporation
wsock.vxd       <File Missing>  Not Available  Not Available  Not Available  Not Available
wsock32.dll     5.0.2152.1      21 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
wsock32.dll     5.0.2152.1      21 KB  12/7/1999 7:00:00 AM   .        Microsoft Corporation
wsock32n.dll    <File Missing>  Not Available  Not Available  Not Available  Not Available

[Connectivity]

Item    Value
Connection Preference Never dial
EnableHttp1.1   1
ProxyHttp1.1    0

LAN Settings

AutoConfigProxy         wininet.dll
AutoProxyDetectMode     Enabled
AutoConfigURL
Proxy   Disabled
ProxyServer
ProxyOverride

[Cache]

[ Following are sub-categories of this main category ]

[Summary]

Item    Value
Page Refresh Type       Automatic
Temporary Internet Files Folder C:\Documents and Settings\Administrator\Local
Settings\Temporary Internet Files
Total Disk Space        8667 MB
Available Disk Space    6028 MB
```

```
Maximum Cache Size    270 MB
Available Cache Size  271 MB

[List of Objects]

Program File    Status  CodeBase
No cached object information available

[Content]

[ Following are sub-categories of this main category ]

[Summary]

Item     Value
Content AdvisorDisabled

[Personal Certificates]

Issued To       Issued By       Validity Signature Algorithm
Administrator   Administrator   10/2/2001 to 9/8/2101   sha1RSA

[Other People Certificates]

Issued To       Issued By       Validity Signature Algorithm
No other people certificate information available

[Publishers]

Name
No publisher information available
```

Client Configuration Parameters

COM+ Settings

```
TPCC.AllTxns:
        Activation:
                Enable Object Pooling selected
                Minimum Pool Size: 160
                Maximum Pool Size: 160
                Creation Timeout: 60,000
                Enable Object Construction
                Enable Just in Time Activation
        Concurrency:
                Concurrency Required
```

TPCC Application Registry Parameters

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\TPCC]
"Path"="c:\\inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000012
"MaxConnections"=dword:00002ee0
"MaxPendingDeliveries"=dword:000003e8
"DB_Protocol"="DBLIB"
"TxnMonitor"="COM"
"DbServer"="pe2500"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"=""
"COM_SinglePool"="YES"
```

Microsoft 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,00,44,00,41,00,50,00,53,00,56,00,43,00,00,00,00,00
"PoolThreadLimit"=dword:000000be
"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:de,fc,ed,18,0a,98,c0,01,10,25,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,60,4e,96,aa,40,bf,01
"WbemAdapFileSize"=dword:00002510
"WbemAdapStatus"=dword:00000000
```

```
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,00,4e,00,54,00,5c,00,53,00,\
  79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,69,00,6e,00,65,00,74,00,73,\
  00,72,00,76,00,5c,00,69,00,6e,00,65,00,74,00,69,00,6e,00,66,00,6f,00,2e,00,\
  65,00,78,00,65,00,00,00
"DisplayName"="World Wide Web Publishing Service"
"DependOnService"=hex(7):49,00,49,00,53,00,41,00,44,00,4d,00,49,00,4e,00,00,00,\
  00,00
"DependOnGroup"=hex(7):00,00
"ObjectName"="LocalSystem"
"Description"="Provides Web connectivity and administration through the Internet
Information Services snap-in."

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\ASP]
"NOTE"="This is for backward compatibility only."

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

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters]
"MajorVersion"=dword:00000005
"MinorVersion"=dword:00000000
"InstallPath"="C:\\WINNT\\System32\\inetsrv"
"CertMapList"="C:\\WINNT\\System32\\inetsrv\\iiscrmap.dll"
"AccessDeniedMessage"="Error: Access is Denied."
"Filter DLLs"=""
"LogFileDirectory"="C:\\WINNT\\System32\\LogFiles"
"AcceptExOutstanding"=dword:00000028

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

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

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

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

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Virtual Roots]
"/"="c:\\inetpub\\wwwroot,,205"
"/Scripts"="c:\\inetpub\\scripts,,204"
"/IISHelp"="c:\\winnt\\help\\iishelp,,201"
"/IISAdmin"="C:\\WINNT\\System32\\inetsrv\\iisadmin,,201"
"/IISSamples"="c:\\inetpub\\iissamples,,201"
"/MSADC"="c:\\program files\\common files\\system\\msadc,,205"
"/_vti_bin"="C:\\Program Files\\Common Files\\Microsoft Shared\\Web Server
Extensions\\40\\isapi,,205"
"/Rpc"="C:\\WINNT\\System32\\RpcProxy,,4"
"/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:86,2b,a6,1b,0a,98,c0,01,10,3d,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,60,4e,96,aa,40,bf,01
"WbemAdapFileSize"=dword:00003d10
"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
```

Windows 2000 Server System Information Report For PE1400

```
System Information report written at: 10/16/2001 04:30:32 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  Build 2195
OS Manufacturer	Microsoft Corporation
System Name	CLIENT3
System Manufacturer	Dell Computer Corporation
System Model	PowerEdge 1400
System Type	X86-based PC
Processor	x86 Family 6 Model 8 Stepping 6 GenuineIntel ~1000 Mhz
BIOS Version	Phoenix ROM BIOS PLUS Version 1.10 A03
Windows Directory	C:\WINNT
System Directory	C:\WINNT\System32
Boot Device	\Device\Harddisk0\Partition1
Locale	United States
User Name	CLIENT3\Administrator
Time Zone	Central Daylight Time
Total Physical Memory	523,816 KB
Available Physical Memory	332,560 KB
Total Virtual Memory	1,802,240 KB
Available Virtual Memory	1,440,316 KB
Page File Space	1,278,424 KB
Page File	C:\pagefile.sys

[Hardware Resources]

[ Following are sub-categories of this main category ]

[Conflicts/Sharing]

Resource	Device
No conflicted/shared resources
```

```
[DMA]

Channel         Device  Status
4       Direct memory access controllerOK
2       Standard floppy disk controller  OK

[Forced Hardware]

Device  PNP Device ID
No Forced Hardware

[I/O]

Address Range Device  Status
0x0000-0x03AFPCI busOK
0x0000-0x03AFDirect memory access controllerOK
0x03B0-0x03DF       PCI busOK
0x03B0-0x03DF       ATI Technologies Inc. RAGE XL PCI       OK
0x03E0-0x0FFFPCI busOK
0xE000-0xEFFF       PCI busOK
0xECA0-0xECBF       Intel(R) PRO/100+ PCI Adapter OK
0xEC80-0xEC9F       Intel(R) PRO/100+ PCI Adapter #2        OK
0xE800-0xE8FF       ATI Technologies Inc. RAGE XL PCI       OK
0x03C0-0x03DF       ATI Technologies Inc. RAGE XL PCI       OK
0x0A79-0x0A79ISAPNP Read Data Port          OK
0x0279-0x0279ISAPNP Read Data Port          OK
0x02F4-0x02F7ISAPNP Read Data Port          OK
0x0080-0x009FDirect memory access controllerOK
0x00C0-0x00DF       Direct memory access controllerOK
0x00F0-0x00FFNumeric data processorOK
0x0020-0x003FProgrammable interrupt controller          OK
0x00A0-0x00BFProgrammable interrupt controller          OK
0x04D0-0x04D1       Programmable interrupt controller          OK
0x0061-0x0061System speakerOK
0x0040-0x005FSystem timer     OK
0x03F0-0x03F5Standard floppy disk controller  OK
0x03F7-0x03F7Standard floppy disk controller  OK
0x0060-0x0060Standard 101/102-Key or Microsoft Natural PS/2 Keyboard        OK
0x0064-0x0064Standard 101/102-Key or Microsoft Natural PS/2 Keyboard        OK
0x03F8-0x03FFCommunications Port (COM1)  OK
0x02F8-0x02FFCommunications Port (COM2)  OK
0x0378-0x037FECP Printer Port (LPT1)OK
0x0778-0x077FECP Printer Port (LPT1)OK
0x0070-0x007FSystem CMOS/real time clock  OK
0x0814-0x085BSystem board   OK
0x0580-0x058FSystem board   OK
0x0C00-0x0CD7       System board   OK
0x0F50-0x0F58System board   OK
0x00E0-0x00EFSystem board   OK
0x08B0-0x08BFStandard Dual Channel PCI IDE Controller          OK
0x01F0-0x01F7Primary IDE Channel     OK
0x03F6-0x03F6Primary IDE Channel     OK
0x0170-0x0177Secondary IDE ChannelOK
0x0376-0x0376Secondary IDE ChannelOK
```

```
0xD000-0xDFFF         PCI bus OK
0xDC00-0xDCFF         Adaptec AIC-7899 Ultra160/m PCI SCSI Card    OK
0xD800-0xD8FF         Adaptec AIC-7899 Ultra160/m PCI SCSI Card    OK

[IRQs]

IRQ Number    Device
9         Microsoft ACPI-Compliant System
25        Intel(R) PRO/100+ PCI Adapter
28        Intel(R) PRO/100+ PCI Adapter #2
13        Numeric data processor
6         Standard floppy disk controller
1         Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12        PS/2 Compatible Mouse
4         Communications Port (COM1)
3         Communications Port (COM2)
8         System CMOS/real time clock
14        Primary IDE Channel
30        Adaptec AIC-7899 Ultra160/m PCI SCSI Card
31        Adaptec AIC-7899 Ultra160/m PCI SCSI Card

[Memory]

Range   Device  Status
0xA0000-0xBFFFF       PCI bus OK
0xA0000-0xBFFFF       ATI Technologies Inc. RAGE XL PCI      OK
0xD8000-0xEFFFF       PCI bus OK
0xF9000000-0xFE30FFFF        PCI bus OK
0xFB001000-0xFB001FFF        Intel(R) PRO/100+ PCI Adapter OK
0xFE100000-0xFE1FFFFF        Intel(R) PRO/100+ PCI Adapter OK
0xFB000000-0xFB000FFF        Intel(R) PRO/100+ PCI Adapter #2       OK
0xFE000000-0xFE0FFFFF        Intel(R) PRO/100+ PCI Adapter #2       OK
0xFC000000-0xFCFFFFFF        ATI Technologies Inc. RAGE XL PCI      OK
0xFE300000-0xFE300FFF        ATI Technologies Inc. RAGE XL PCI      OK
0xF4000000-0xF823FFFF        PCI bus OK
0xF8231000-0xF8231FFF        Adaptec AIC-7899 Ultra160/m PCI SCSI Card    OK
0xF8230000-0xF8230FFF        Adaptec AIC-7899 Ultra160/m PCI SCSI Card    OK
0x0000-0x9FFFF        System board   OK
0x100000-0xFFFFFF     System board   OK
0x1000000-0x1FFFFFFF         System board   OK
0xF0000-0xFFFFF       System board   OK
0xFEC00000-0xFEC0FFFF        System board   OK
0xFEE00000-0xFEE0FFFF        System board   OK
0xFFE00000-0xFFFFFFFF        System board   OK

[Components]

[ Following are sub-categories of this main category ]

[Multimedia]

[ Following are sub-categories of this main category ]

[Audio Codecs]
```

```
Codec   Manufacturer     Description      Status   File      Version Size      Creation Date
c:\winnt\system32\iac25_32.ax  Intel Corporation          Indeo® audio software  OK
        C:\WINNT\System32\IAC25_32.AX      2.05.53 195.00 KB (199,680 bytes)
        12/7/1999 6:00:00 AM
c:\winnt\system32\msg723.acm Microsoft Corporation               OK
        C:\WINNT\System32\MSG723.ACM       4.4.3385           106.77 KB (109,328 bytes)
        2/16/2001 11:23:07 AM
c:\winnt\system32\lhacm.acm    Microsoft Corporation             OK
        C:\WINNT\System32\LHACM.ACM        4.4.3385           33.27 KB (34,064 bytes)
        2/16/2001 11:23:08 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
6:00:00 AM
c:\winnt\system32\msgsm32.acm          Microsoft Corporation              OK
        C:\WINNT\System32\MSGSM32.ACM      5.00.2134.1        22.27 KB (22,800 bytes)
        12/7/1999 6:00:00 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 6:00:00 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 6:00:00 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 6:00:00 AM

[Video Codecs]

Codec   Manufacturer     Description      Status   File      Version Size      Creation Date
c:\winnt\system32\ir50_32.dll    Intel Corporation        Indeo® video 5.10        OK
        C:\WINNT\System32\IR50_32.DLL      R.5.10.15.2.55 737.50 KB (755,200 bytes)
        12/7/1999 6:00:00 AM
c:\winnt\system32\msh261.drv   Microsoft Corporation             OK
        C:\WINNT\System32\MSH261.DRV       4.4.3385           163.77 KB (167,696 bytes)
        2/16/2001 11:23:08 AM
c:\winnt\system32\msh263.drv   Microsoft Corporation             OK
        C:\WINNT\System32\MSH263.DRV       4.4.3385           252.27 KB (258,320 bytes)
        2/16/2001 11:22:37 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 6:00:00 AM
c:\winnt\system32\ir32_32.dll    Intel(R) Corporation            OK
        C:\WINNT\System32\IR32_32.DLL      Not Available      194.50 KB (199,168 bytes)
        12/7/1999 6:00:00 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 6:00:00 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 6:00:00 AM

[CD-ROM]

Item    Value
Drive   D:
```

```
Description	CD-ROM Drive
Media Loaded	True
Media Type	CD-ROM
Name	SAMSUNG CD-ROM SC-148F
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	296.30 kbytes/sec
SCSI Target ID	0
PNP Device ID	IDE\CDROMSAMSUNG_CD-ROM_SC-
148F___________________F008____\5&F3420B7&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_00CE1028&REV_27\3&13C0B0C5&0&70
Adapter Type	ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description	ATI Technologies Inc. RAGE XL PCI
Adapter RAM	4.00 MB (4,194,304 bytes)
Installed Driversatidrab.dll
Driver Version	5.00.2179.1
INF File display.inf (atirage3 section)
Color Planes	1
Color Table Entries	256
Resolution	1024 x 768 x 60 hertz
Bits/Pixel	8


[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&14E2F907&0
NumberOfFunctionKeys 12


[Pointing Device]
```

```
Item     Value
Hardware Type  PS/2 Compatible Mouse
Number of Buttons        2
Status   OK
PNP Device ID  ACPI\PNP0F13\4&14E2F907&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] Intel(R) PRO/100+ PCI Adapter
Adapter Type    Ethernet 802.3
Product Name    Intel(R) PRO/100+ PCI Adapter
Installed       True
PNP Device ID   PCI\VEN_8086&DEV_1229&SUBSYS_00098086&REV_05\3&13C0B0C5&0&20
Last Reset      10/16/2001 10:46:57 AM
Index    0
Service Name    E100B
IP Address      192.1.30.100
IP Subnet       255.255.255.0
Default IP Gateway       Not Available
DHCP Enabled    False
DHCP Server     Not Available
DHCP Lease Expires       Not Available
DHCP Lease Obtained  Not Available
MAC Address     00:90:27:5C:D1:98
Service Name    E100B
IRQ Number      25
I/O Port 0xECA0-0xECBF
Driver   c:\winnt\system32\drivers\e100bnt5.sys (80144, 4.01.67.0000)

Name     [00000001] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type    Not Available
Product Name    Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed       True
PNP Device ID   PCI\VEN_8086&DEV_1229&SUBSYS_009B1028&REV_08\3&13C0B0C5&0&10
Last Reset      10/16/2001 10:46:57 AM
Index    1
Service Name    E100B
IP Address      Not Available
IP Subnet       Not Available
Default IP Gateway       Not Available
```

```
DHCP Enabled  True
DHCP Server    Not Available
DHCP Lease Expires     Not Available
DHCP Lease Obtained  Not Available
MAC Address    Not Available
Service Name   E100B
Driver   c:\winnt\system32\drivers\e100bnt5.sys (80144, 4.01.67.0000)

Name    [00000002] RAS Async Adapter
Adapter Type     Not Available
Product Name   RAS Async Adapter
Installed           True
PNP Device ID  Not Available
Last Reset        10/16/2001 10:46:57 AM
Index    2
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    [00000003] WAN Miniport (L2TP)
Adapter Type     Not Available
Product Name   WAN Miniport (L2TP)
Installed           True
PNP Device ID  ROOT\MS_L2TPMINIPORT\0000
Last Reset        10/16/2001 10:46:57 AM
Index    3
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    [00000004] 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        10/16/2001 10:46:57 AM
Index    4
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    [00000005] Direct Parallel
Adapter Type    Not Available
Product Name   Direct Parallel
Installed           True
PNP Device ID  ROOT\MS_PTIMINIPORT\0000
Last Reset        10/16/2001 10:46:57 AM
Index    5
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    [00000006] WAN Miniport (IP)
Adapter Type    Not Available
Product Name   WAN Miniport (IP)
Installed           True
PNP Device ID  ROOT\MS_NDISWANIP\0000
Last Reset        10/16/2001 10:46:57 AM
Index    6
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 (90768, 5.00.2184.1)

Name    [00000007] cLAN Host Adapter
Adapter Type    Not Available
Product Name   cLAN Host Adapter
Installed           True
PNP Device ID  PCI\VEN_135B&DEV_0001&SUBSYS_00000000&REV_00\3&1070020&0&20
Last Reset        10/16/2001 10:46:57 AM
Index    7
Service Name   GNINDIS
```

```
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   GNINDIS
Driver   c:\winnt\system32\drivers\gnindis.sys (22598, 4.1.1)

Name    [00000008] Intel(R) PRO/100+ PCI Adapter
Adapter Type    Ethernet 802.3
Product Name   Intel(R) PRO/100+ PCI Adapter
Installed           True
PNP Device ID  PCI\VEN_8086&DEV_1229&SUBSYS_00098086&REV_05\3&13C0B0C5&0&30
Last Reset        10/16/2001 10:46:57 AM
Index    8
Service Name   E100B
IP Address        192.1.1.3
IP Subnet         255.255.255.0
Default IP Gateway        Not Available
DHCP Enabled  False
DHCP Server    Not Available
DHCP Lease Expires     Not Available
DHCP Lease Obtained  Not Available
MAC Address    00:90:27:5C:D4:60
Service Name   E100B
IRQ Number      28
I/O Port0xEC80-0xEC9F
Driver   c:\winnt\system32\drivers\e100bnt5.sys (80144, 4.01.67.0000)


[Protocol]

Item      Value
Name    MSAFD Tcpip [TCP/IP]
ConnectionlessService  False
GuaranteesDelivery       True
GuaranteesSequencing True
MaximumAddressSize    16 bytes
MaximumMessageSize  0 bytes
MessageOriented          False
MinimumAddressSize     16 bytes
PseudoStreamOriented False
SupportsBroadcasting   False
SupportsConnectData    False
SupportsDisconnectData           False
SupportsEncryption       False
SupportsExpeditedData True
SupportsGracefulClosing          True
SupportsGuaranteedBandwidth  False
SupportsMulticasting      False

Name    MSAFD Tcpip [UDP/IP]
```

```
ConnectionlessService True
GuaranteesDelivery      False
GuaranteesSequencing False
MaximumAddressSize    16 bytes
MaximumMessageSize   65467 bytes
MessageOriented          True
MinimumAddressSize     16 bytes
PseudoStreamOriented False
SupportsBroadcasting   True
SupportsConnectData   False
SupportsDisconnectData            False
SupportsEncryption       False
SupportsExpeditedData False
SupportsGracefulClosing           False
SupportsGuaranteedBandwidth  False
SupportsMulticasting      True

Name    RSVP UDP Service Provider
ConnectionlessService True
GuaranteesDelivery      False
GuaranteesSequencing False
MaximumAddressSize    16 bytes
MaximumMessageSize   65467 bytes
MessageOriented          True
MinimumAddressSize     16 bytes
PseudoStreamOriented False
SupportsBroadcasting   True
SupportsConnectData   False
SupportsDisconnectData            False
SupportsEncryption       True
SupportsExpeditedData False
SupportsGracefulClosing           False
SupportsGuaranteedBandwidth  False
SupportsMulticasting      True

Name    RSVP TCP Service Provider
ConnectionlessService False
GuaranteesDelivery      True
GuaranteesSequencing True
MaximumAddressSize    16 bytes
MaximumMessageSize   0 bytes
MessageOriented          False
MinimumAddressSize     16 bytes
PseudoStreamOriented False
SupportsBroadcasting   False
SupportsConnectData   False
SupportsDisconnectData            False
SupportsEncryption       True
SupportsExpeditedData True
SupportsGracefulClosing           True
SupportsGuaranteedBandwidth  False
SupportsMulticasting      False

Name    MSAFD NetBIOS [\Device\NetBT_Tcpip_{7F28470E-1818-45F5-BA92-
D2EAEEFA3A3D}] 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_{7F28470E-1818-45F5-BA92-D2EAEEFA3A3D}] 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_{4C4DAE74-4007-4939-B7C1-D352BD42F36B}] 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_{4C4DAE74-4007-4939-B7C1-
D352BD42F36B}] 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_{0F52C741-CF89-4A57-ADDF-
6C498B2B5C5E}] 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_{0F52C741-CF89-4A57-ADDF-
6C498B2B5C5E}] 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_{53975049-680C-4C3D-A4CF-
317CC4811AD4}] 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_{53975049-680C-4C3D-A4CF-
317CC4811AD4}] 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_{F6854AC0-072C-450B-B073-
FD3E0C7B3152}] 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_{F6854AC0-072C-450B-B073-
FD3E0C7B3152}] 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

Name    MSAFD NetBIOS [\Device\NetBT_Tcpip_{CC273023-EFA3-4001-978D-169135B56664}]
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_{CC273023-EFA3-4001-978D-169135B56664}]
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


[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 5.00.2152.1
Size      21.27 KB (21,776 bytes)


[Ports]

[ Following are sub-categories of this main category ]

[Serial]

Item      Value
Name    COM1
Status   OK
PNP Device ID  ACPI\PNP0501\1
Maximum Input Buffer Size          Not Available
Maximum Output Buffer Size       Not Available
Settable Baud Rate       Not Available
Settable Data Bits         Not Available
Settable Flow Control    Not Available
Settable Parity  Not Available
Settable Parity Check    Not Available
Settable Stop Bits         Not Available
Settable RLSD  Not Available
Supports RLSD Not Available
Supports 16 Bit Mode    Not Available
Supports Special Characters      Not Available
Baud Rate         9600
Bits/Byte           8
Stop Bits           1
Parity   None
Busy    -1
Abort Read/Write on Error          Not Available
Binary Mode Enabled     Not Available
Continue XMit on XOff   Not Available
CTS Outflow Control      Not Available
Discard NULL Bytes       Not Available
DSR Outflow Control      Not Available
DSR Sensitivity Not Available
DTR Flow Control Type  Not Available
EOF Character  Not Available
```

```
Error Replace Character         Not Available
Error Replacement Enabled       Not Available
Event Character         Not Available
Parity Check Enabled    -1
RTS Flow Control Type   Not Available
XOff Character  19
XOffXMit Threshold      512
XOn Character   17
XOnXMit Threshold       2048
XOnXOff InFlow ControlNot Available
XOnXOff OutFlow Control         Not Available
IRQ Number      4
I/O Port0x03F8-0x03FF
Driver  c:\winnt\system32\drivers\serial.sys (62448, 5.00.2134.1)

Name    COM2
Status  OK
PNP Device ID   ACPI\PNP0501\2
Maximum Input Buffer Size       0
Maximum Output Buffer Size      False
Settable Baud Rate      True
Settable Data Bits      True
Settable Flow Control   True
Settable Parity True
Settable Parity Check   True
Settable Stop Bits      True
Settable RLSD   True
Supports RLSD True
Supports 16 Bit Mode    False
Supports Special Characters     False
Baud Rate       9600
Bits/Byte       8
Stop Bits       1
Parity  None
Busy    0
Abort Read/Write on Error       0
Binary Mode Enabled     -1
Continue XMit on XOff   0
CTS Outflow Control     0
Discard NULL Bytes      0
DSR Outflow Control     0
DSR Sensitivity0
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 Control0
XOnXOff OutFlow Control         0
```

```
IRQ Number	3
I/O Port	0x02F8-0x02FF
Driver	c:\winnt\system32\drivers\serial.sys (62448, 5.00.2134.1)


[Parallel]

Item	Value
Name	LPT1
PNP Device ID	ACPI\PNP0401\4&14E2F907&0


[Storage]

[ Following are sub-categories of this main category ]

[Drives]

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

Drive	C:
Description	Local Fixed Disk
Compressed	False
File System	NTFS
Size	4.24 GB (4,556,771,328 bytes)
Free Space	1008.77 MB (1,057,771,520 bytes)
Volume Name
Volume Serial Number	80E2C477
Partition	Disk #0, Partition #0
Partition Size	4.24 GB (4,556,772,864 bytes)
Starting Offset	32256 bytes
Drive Description	Disk drive
Drive Manufacturer	(Standard disk drives)
Drive Model	QUANTUM VIKING II 4.5WLS 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	2
Drive SectorsPerTrack	63
Drive Size	4556805120 bytes
Drive TotalCylinders	554
Drive TotalSectors	8900010
Drive TotalTracks	141270
Drive TracksPerCylinder	255


[SCSI]

Item	Value
```

```
Name    Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver  adpu160m
Status  OK
PNP Device ID   PCI\VEN_9005&DEV_00CF&SUBSYS_00CE1028&REV_01\3&1070020&0&10
Device ID       PCI\VEN_9005&DEV_00CF&SUBSYS_00CE1028&REV_01\3&1070020&0&10
Device Map      Not Available
Index   Not Available
Max Number Controlled   Not Available
IRQ Number      30
I/O Port 0xDC00-0xDCFF
Driver  c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)

Name    Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver  adpu160m
Status  OK
PNP Device ID   PCI\VEN_9005&DEV_00CF&SUBSYS_00CE1028&REV_01\3&1070020&0&11
Device ID       PCI\VEN_9005&DEV_00CF&SUBSYS_00CE1028&REV_01\3&1070020&0&11
Device Map      Not Available
Index   Not Available
Max Number Controlled   Not Available
IRQ Number      31
I/O Port 0xD800-0xD8FF
Driver  c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)


[Printing]

Name    Port Name       Server Name
No printing information

[Problem Devices]

Device  PNP Device ID   Error Code
Intel 8255x-based PCI Ethernet Adapter (10/100)
        PCI\VEN_8086&DEV_1229&SUBSYS_009B1028&REV_08\3&13C0B0C5&0&1022
cLAN Host Adapter
        PCI\VEN_135B&DEV_0001&SUBSYS_00000000&REV_00\3&1070020&0&20  22

[USB]

Device  PNP Device ID
No USB Devices

[Software Environment]

[ Following are sub-categories of this main category ]

[Drivers]

Name    Description     File    Type    Started Start Mode      State   Status  Error Control
        Accept Pause    Accept Stop
abiosdsk        Abiosdsk        Not Available   Kernel Driver   False   Disabled
        Stopped         OK      Ignore  False   False
```

```
abp480n5            abp480n5            Not Available       Kernel Driver       False     Disabled
          Stopped             OK        Normal    False     False
acpi      Microsoft ACPI Driver         c:\winnt\system32\drivers\acpi.sys                Kernel Driver       True
          Boot      Running             OK        Normal    False     True
acpiec    ACPIEC              c:\winnt\system32\drivers\acpiec.sys              Kernel Driver       False
          Disabled            Stopped             OK        Normal    False     False
adpu160m            adpu160m            c:\winnt\system32\drivers\adpu160m.sys                      Kernel Driver
          True      Boot      Running             OK        Normal    False     True
afd       AFD Networking Support Environment      c:\winnt\system32\drivers\afd.sys                 Kernel
Driver    True      Auto      Running             OK        Normal    False     True
aha154x             Aha154x             Not Available       Kernel Driver       False     Disabled
          Stopped             OK        Normal    False     False
aic116xaic116xNot Available     Kernel Driver       False     Disabled            Stopped             OK
          Normal    False     False
aic78u2aic78u2Not Available     Kernel Driver       False     Disabled            Stopped             OK
          Normal    False     False
aic78xx aic78xx Not Available   Kernel Driver       False     Disabled            Stopped             OK
          Normal    False     False
ami0nt    ami0nt    Not Available       Kernel Driver       False     Disabled            Stopped             OK
          Normal    False     False
amsint    amsint    Not Available       Kernel Driver       False     Disabled            Stopped             OK
          Normal    False     False
asc       asc       Not Available       Kernel Driver       False     Disabled            Stopped             OK
          Normal    False     False
asc3350p            asc3350p            Not Available       Kernel Driver       False     Disabled
          Stopped             OK        Normal    False     False
asc3550             asc3550             Not Available       Kernel Driver       False     Disabled
          Stopped             OK        Normal    False     False
asyncmac            RAS Asynchronous Media Driver           c:\winnt\system32\drivers\asyncmac.sys
          Kernel Driver       False     Manual    Stopped             OK        Normal    False     False
atapi     Standard IDE/ESDI Hard Disk Controllerc:\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
audstubAudio 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
cdaudioCdaudio                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 Driverc:\winnt\system32\drivers\cdrom.sys      Kernel Driver       True      System
          Running             OK        Normal    False     True
changer             Changer             Not Available       Kernel Driver       False     SystemStopped
          OK        Ignore    False     False
```

```
cpqarray	Cpqarray	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
cpqarry2	cpqarry2	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
cpqfcalm	cpqfcalm	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
cpqfws2e	cpqfws2e	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
dac960nt	dac960nt	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
deckzpsx	deckzpsx	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
dfsdriver	DfsDriver	c:\winnt\system32\drivers\dfs.sys	File System Driver
	True	Boot	Running	OK	Normal	False	True
disk	Disk Driver	c:\winnt\system32\drivers\disk.sys	Kernel Driver	True	Boot
	Running	OK	Normal	False	True
diskperf	Diskperf	c:\winnt\system32\drivers\diskperf.sys	Kernel Driver	True	Boot
	Running	OK	Normal	False	True
dmboot	dmboot	c:\winnt\system32\drivers\dmboot.sys	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
dmio	Logical Disk Manager Driver	c:\winnt\system32\drivers\dmio.sys	Kernel Driver
	True	Boot	Running	OK	Normal	False	True
dmload	dmload	c:\winnt\system32\drivers\dmload.sys	Kernel Driver	True	Boot
	Running	OK	Normal	False	True
e100b	Intel PRO Adapter Driver	c:\winnt\system32\drivers\e100bnt5.sys	Kernel Driver
	True	Manual	Running	OK	Normal	False	True
efs	EFS	c:\winnt\system32\drivers\efs.sys	File System Driver	True
	Disabled	Running	OK	Normal	False	True
fastfat	Fastfat	c:\winnt\system32\drivers\fastfat.sys	File System Driver	True
	Disabled	Running	OK	Normal	False	True
fd16_700	Fd16_700	Not Available	Kernel Driver	False	Disabled
	Stopped	OK	Normal	False	False
fdc	Floppy Disk Controller Driver	c:\winnt\system32\drivers\fdc.sys	Kernel Driver
	True	Manual	Running	OK	Normal	False	True
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
gnindis	cLAN NDIS Driver	c:\winnt\system32\drivers\gnindis.sys	Kernel Driver	False
	Auto	Stopped	OK	Normal	False	False
gnivia	cLAN VIA Driver	c:\winnt\system32\drivers\gnivia.sys	Kernel Driver	True
	Auto	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   False   Manual
        Stopped         OK      Normal  False   False
ipsraidnipsraidnNot 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.sysKernel 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
ncrc710Ncrc710          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   False  Manual   Stopped         OK      Normal  False   False
parallel  Parallel class driver  c:\winnt\system32\drivers\parallel.sys  Kernel Driver     True
          Manual  Running        OK       Normal  False   True
parport   Parallel port driver   c:\winnt\system32\drivers\parport.sys   Kernel Driver     True
          System  Running        OK       Ignore  False   True
partmgr   PartMgr c:\winnt\system32\drivers\partmgr.sys    Kernel Driver   True    Boot
          Running         OK     Normal   False   True
parvdm    ParVdm          c:\winnt\system32\drivers\parvdm.sys    Kernel Driver    True    Auto
          Running         OK     Ignore   False   True
pci       PCI Bus Driver  c:\winnt\system32\drivers\pci.sys       Kernel Driver    True    Boot
          Running         OK     Critical False   True
pcidump           PCIDump        Not Available    Kernel Driver   False   System  Stopped
          OK      Ignore  False  False
pciide    PCIIde  c:\winnt\system32\drivers\pciide.sys     Kernel Driver   True    Boot
          Running         OK     Normal   False   True
pcmcia    Pcmcia  c:\winnt\system32\drivers\pcmcia.sys     Kernel Driver   False   Disabled
          Stopped         OK     Normal   False   False
pdcomp    PDCOMP          Not Available   Kernel Driver    False   Manual  Stopped         OK
          Ignore  False   False
pdframe           PDFRAME        Not Available    Kernel Driver   False   Manual  Stopped
          OK      Ignore  False  False
pdreli    PDRELI          Not Available   Kernel Driver    False   Manual  Stopped         OK
          Ignore  False   False
pdrframe          PDRFRAME       Not Available    Kernel Driver   False   Manual  Stopped
          OK      Ignore  False  False
pptpminiport      WAN Miniport (PPTP)     c:\winnt\system32\drivers\raspptp.sys   Kernel Driver
          True    Manual  Running         OK      Normal  False   True
ptilink   Direct Parallel Link Driver     c:\winnt\system32\drivers\ptilink.sys   Kernel Driver
          True    Manual  Running         OK      Normal  False   True
ql1080    ql1080  Not Available  Kernel Driver    False   Disabled        Stopped         OK
          Normal  False   False
ql10wnt   Ql10wnt         Not Available   Kernel Driver    False   Disabled        Stopped
          OK      Normal  False  False
ql1240    ql1240  Not Available  Kernel Driver    False   Disabled        Stopped         OK
          Normal  False   False
ql2100    ql2100  Not Available  Kernel Driver    False   Disabled        Stopped         OK
          Normal  False   False
rasacd    Remote Access Auto Connection Driver c:\winnt\system32\drivers\rasacd.sys      Kernel
Driver    True    System  Running         OK      Normal  False   True
```

```
rasl2tp  WAN Miniport (L2TP)     c:\winnt\system32\drivers\rasl2tp.sys     Kernel Driver     True
         Manual Running          OK        Normal  False    True
raspti   Direct Parallel  c:\winnt\system32\drivers\raspti.sys     Kernel Driver     True      Manual
         Running         OK        Normal  False    True
rca      Microsoft Streaming Network Raw Channel Access
         c:\winnt\system32\drivers\rca.sys         Kernel Driver     False     Manual  Stopped
         OK       Normal  False    False
rdbss    Rdbss   c:\winnt\system32\drivers\rdbss.sys       File System Driver        True      System
         Running         OK        Normal  False    True
rdpwd    RDPWD           c:\winnt\system32\drivers\rdpwd.sys       Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
redbook          Digital CD Audio Playback Filter Driver   c:\winnt\system32\drivers\redbook.sys
         Kernel Driver   False     System  Stopped           OK        Normal  False    False
serenum          Serenum Filter Driver     c:\winnt\system32\drivers\serenum.sys  Kernel Driver
         True     Manual Running           OK        Normal  False    True
serial   Serial port driver      c:\winnt\system32\drivers\serial.sys      Kernel Driver     True
         System  Running         OK        Ignore  False    True
sfloppy  Sfloppy c:\winnt\system32\drivers\sfloppy.sys     Kernel Driver     False     System
         Stopped         OK        Ignore  False    False
sglfb    sglfb   Not Available     Kernel Driver     False     System  Stopped           OK        Normal
         False    False
simbad   Simbad  Not Available     Kernel Driver     False     Disabled          Stopped           OK
         Normal  False    False
sparrowSparrow           Not Available     Kernel Driver     False     Disabled          Stopped
         OK       Normal  False    False
spud     Special Purpose Utility Driver    c:\winnt\system32\drivers\spud.sys        Kernel Driver
         True     Manual Running           OK        Normal  False    True
srv      Srv     c:\winnt\system32\drivers\srv.sys         File System Driver        True      Manual
         Running         OK        Normal  False    True
swenum           Software Bus Driver       c:\winnt\system32\drivers\swenum.sys   Kernel Driver
         True     Manual Running           OK        Normal  False    True
symc810          symc810           Not Available     Kernel Driver     False     Disabled
         Stopped         OK        Normal  False    False
symc8xx          symc8xx           Not Available     Kernel Driver     False     Disabled
         Stopped         OK        Normal  False    False
sym_hi   sym_hi  Not Available     Kernel Driver     False     Disabled          Stopped           OK
         Normal  False    False
tcpip    TCP/IP Protocol Driver  c:\winnt\system32\drivers\tcpip.sys       Kernel Driver     True
         System  Running         OK        Normal  False    True
tdasync TDASYNC          c:\winnt\system32\drivers\tdasync.sys     Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
tdipx    TDIPX   c:\winnt\system32\drivers\tdipx.sys       Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
tdnetb   TDNETB          c:\winnt\system32\drivers\tdnetb.sys      Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
tdpipe   TDPIPE          c:\winnt\system32\drivers\tdpipe.sys      Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
tdspx    TDSPX c:\winnt\system32\drivers\tdspx.sys         Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
tdtcp    TDTCP c:\winnt\system32\drivers\tdtcp.sys         Kernel Driver     False     Manual
         Stopped         OK        Ignore  False    False
termdd   Terminal Device Driver  c:\winnt\system32\drivers\termdd.sys      Kernel Driver     False
         Disabled        Stopped           OK        Normal  False    False
tga      tga     Not Available     Kernel Driver     False     System  Stopped           OK        Ignore
         False    False
```

```
udfs     Udfs     c:\winnt\system32\drivers\udfs.sys       File System Driver       False
         Disabled          Stopped          OK       Normal  False   False
ultra66  ultra66  Not Available     Kernel Driver     False   Disabled          Stopped          OK
         Normal   False   False
update   Microcode Update Driver          c:\winnt\system32\drivers\update.sys     Kernel Driver
         True     Manual  Running          OK       Normal  False   True
usbhub   Microsoft USB Standard Hub Driver        c:\winnt\system32\drivers\usbhub.sys     Kernel
Driver   False    Manual  Stopped          OK       Normal  False   False
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>
NUMBER_OF_PROCESSORS  1           <SYSTEM>
OS       Windows_NT    <SYSTEM>
Os2LibPath        %SystemRoot%\system32\os2\dll;       <SYSTEM>
Path     C:\MKS\mksnt;C:\WINNT\system32;C:\WINNT;C:\WINNT\System32\Wbem;C:\Program
Files\Microsoft SQL Server\80\Tools\BINN;C:\SQL_2K~1\x86\binn;.;       <SYSTEM>
PATHEXT           .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH          <SYSTEM>
PROCESSOR_ARCHITECTURE            x86       <SYSTEM>
PROCESSOR_IDENTIFIER        x86 Family 6 Model 8 Stepping 6, GenuineIntel   <SYSTEM>
PROCESSOR_LEVEL   6         <SYSTEM>
PROCESSOR_REVISION          0806     <SYSTEM>
TEMP     %SystemRoot%\TEMP <SYSTEM>
TMP      %SystemRoot%\TEMP <SYSTEM>
windir   %SystemRoot%          <SYSTEM>
ROOTDIR           C:/MKS <SYSTEM>
SHELL    C:/MKS/mksnt/sh.exe    <SYSTEM>
HOME     C:/      <SYSTEM>
TMPDIR            C:/WINNT/TEMP          <SYSTEM>
TEMP     %USERPROFILE%\Local Settings\Temp          CLIENT3\Administrator
TMP      %USERPROFILE%\Local Settings\Temp          CLIENT3\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	160	11	204800	1413120
	10/16/2001 3:47:16 PM	5.00.2170.1	44.27 KB (45,328 bytes)	12/7/1999 6:00:00 AM
csrss.exe	Not Available	184	13	Not Available	Not Available	10/16/2001
3:47:22 PM	Unknown	Unknown	Unknown
winlogon.exe	c:\winnt\system32\winlogon.exe	204	13	204800	1413120
	10/16/2001 3:47:24 PM	5.00.2182.1	173.27 KB (177,424 bytes)	12/7/1999
6:00:00 AM
services.exe	c:\winnt\system32\services.exe	232	9	204800	1413120
	10/16/2001 3:47:25 PM	5.00.2134.1	86.77 KB (88,848 bytes)	12/7/1999 6:00:00 AM
lsass.exe	c:\winnt\system32\lsass.exe	244	13	204800	1413120
	10/16/2001 3:47:25 PM	5.00.2184.1	32.77 KB (33,552 bytes)	12/7/1999 6:00:00 AM
gnconmgr.exe	c:\winnt\system32\gnconmgr.exe	380	8	204800	1413120
	10/16/2001 3:47:29 PM	4.2.0.23	140.06 KB (143,420 bytes)	2/20/2001
11:50:27 AM
svchost.exe	c:\winnt\system32\svchost.exe	408	8	204800	1413120
	10/16/2001 3:47:30 PM	5.00.2134.1	7.77 KB (7,952 bytes)	12/7/1999 6:00:00 AM
msdtc.exe	c:\winnt\system32\msdtc.exe	432	8	204800	1413120
	10/16/2001 3:47:31 PM	1999.9.3421.3	6.77 KB (6,928 bytes)	2/16/2001 5:17:10 AM
svchost.exe	c:\winnt\system32\svchost.exe	544	8	204800	1413120
	10/16/2001 3:47:34 PM	5.00.2134.1	7.77 KB (7,952 bytes)	12/7/1999 6:00:00 AM
tcpsvcs.exe	c:\winnt\system32\tcpsvcs.exe	576	8	204800	1413120
	10/16/2001 3:47:35 PM	5.00.2134.1	24.77 KB (25,360 bytes)	12/7/1999 6:00:00 AM
winmgmt.exe	c:\winnt\system32\wbem\winmgmt.exe	588	8	204800	1413120
	10/16/2001 3:47:35 PM	1.50.1085.0001	188.05 KB (192,567 bytes)	12/7/1999
6:00:00 AM
inetinfo.exe	c:\winnt\system32\inetsrv\inetinfo.exe	616	8	204800	1413120
	10/16/2001 3:47:36 PM	5.00.0984	14.27 KB (14,608 bytes)	2/16/2001 5:17:51 AM
explorer.exe	c:\winnt\explorer.exe	704	8	204800	1413120	10/16/2001
3:47:44 PM	5.00.2920.0000	232.77 KB (238,352 bytes)	12/7/1999 6:00:00 AM
dfssvc.exe	c:\winnt\system32\dfssvc.exe	596	8	204800	1413120
	10/16/2001 3:47:44 PM	5.00.2191.1	85.27 KB (87,312 bytes)	12/7/1999 6:00:00 AM
dllhost.exe	Not Available	1044	8	Not Available	Not Available	10/16/2001
3:48:06 PM	Unknown	Unknown	Unknown
svchost.exe	c:\winnt\system32\svchost.exe	1148	8	204800	1413120
	10/16/2001 3:48:10 PM	5.00.2134.1	7.77 KB (7,952 bytes)	12/7/1999 6:00:00 AM
dllhost.exe	Not Available	1276	8	Not Available	Not Available	10/16/2001
3:48:13 PM	Unknown	Unknown	Unknown
sh.exe	c:\mks\mksnt\sh.exe	1164	8	204800	1413120	10/16/2001 3:50:17 PM
	5.2 build 64	271.50 KB (278,016 bytes)	2/16/2001 4:08:14 PM
mmc.exe	c:\winnt\system32\mmc.exe	312	8	204800	1413120
	10/16/2001 4:29:09 PM	5.00.2153.1	589.27 KB (603,408 bytes)	12/7/1999
6:00:00 AM
```

```
rsvp.exe        c:\winnt\system32\rsvp.exe      2036    8       204800 1413120
        10/16/2001 4:30:07 PM 5.00.2167.1       172.77 KB (176,912 bytes)       12/7/1999
6:00:00 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 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\traffic.dll
rsvp.exe        5.00.2167.1     172.77 KB (176,912 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\rsvp.exe
wbemprox.dll    1.50.1085.0001  40.05 KB (41,016 bytes) 12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\wbem\wbemprox.dll
mlang.dll       5.00.2920.0000  510.77 KB (523,024 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\mlang.dll
rassapi.dll     5.00.2188.1     14.27 KB (14,608 bytes) 12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\rassapi.dll
adsnt.dll       5.00.2191.1     194.27 KB (198,928 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\adsnt.dll
dbghelp.dll     5.00.2195.1     159.27 KB (163,088 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\dbghelp.dll
localsec.dll    5.00.2134.1     227.27 KB (232,720 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\localsec.dll
devmgr.dll      5.00.2166.1     215.77 KB (220,944 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\devmgr.dll
filemgmt.dll    5.00.2134.1     287.27 KB (294,160 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\filemgmt.dll
pdh.dll 5.00.2174.1     143.27 KB (146,704 bytes)       12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\pdh.dll
smlogcfg.dll    5.00.2163.1     273.27 KB (279,824 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\smlogcfg.dll
cabinet.dll     5.00.2147.1     54.77 KB (56,080 bytes) 12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\cabinet.dll
msinfo32.dll    5.00.2177.1     312.27 KB (319,760 bytes)       2/16/2001 11:23:04 AM
        Microsoft Corporation   c:\program files\common files\microsoft
shared\msinfo\msinfo32.dll
riched20.dll    5.30.23.1200    421.27 KB (431,376 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\riched20.dll
riched32.dll    5.00.2134.1     3.77 KB (3,856 bytes)   12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\riched32.dll
els.dll 5.00.2175.1     151.27 KB (154,896 bytes)       12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\els.dll
ntmsmgr.dll     1,0,0,1 427.77 KB (438,032 bytes)       12/7/1999 6:00:00 AM    Microsoft
Corporation and HighGround Systems, Inc.        c:\winnt\system32\ntmsmgr.dll
mmfutil.dll     1.50.1085.0000  32.06 KB (32,829 bytes) 12/7/1999 6:00:00 AM    Microsoft
Corporation     c:\winnt\system32\mmfutil.dll
logdrive.dll    1.50.1085.0000  200.06 KB (204,863 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\logdrive.dll
dfrgres.dll     5.00.2150.1     27.50 KB (28,160 bytes) 12/7/1999 6:00:00 AM    Executive
Software International, Inc.    c:\winnt\system32\dfrgres.dll
dfrgsnap.dll    5.00.2150.1     41.77 KB (42,768 bytes) 12/7/1999 6:00:00 AM    Executive
Software International, Inc.    c:\winnt\system32\dfrgsnap.dll
dmdskres.dll    2191.1.296.2    119.00 KB (121,856 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corp., VERITAS Software       c:\winnt\system32\dmdskres.dll
```

```
dmutil.dll          2191.1.296.2    41.77 KB (42,768 bytes)12/7/1999 6:00:00 AM   VERITAS
Software Corp.  c:\winnt\system32\dmutil.dll
ntmsapi.dll         5.00.1948.1     50.27 KB (51,472 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\ntmsapi.dll
dmdskmgr.dll        2191.1.296.2    158.77 KB (162,576 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corp., VERITAS Software       c:\winnt\system32\dmdskmgr.dll
mycomput.dll        5.00.2134.1     107.77 KB (110,352 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\mycomput.dll
mmcndmgr.dll        5.00.2178.1     815.27 KB (834,832 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\mmcndmgr.dll
mfc42u.dll          6.00.8665.0     972.05 KB (995,384 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\mfc42u.dll
mmc.exe             5.00.2153.1     589.27 KB (603,408 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\mmc.exe
sh.exe  5.2 build 64        271.50 KB (278,016 bytes)       2/16/2001 4:08:14 PM   Mortice Kern
Systems Inc.        c:\mks\mksnt\sh.exe
tapisrv.dll         5.00.2186.1     168.77 KB (172,816 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\tapisrv.dll
dfssvc.exe          5.00.2191.1     85.27 KB (87,312 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\dfssvc.exe
wininet.dll         5.00.2920.0000456.77 KB (467,728 bytes)         12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\wininet.dll
shdoclc.dll         5.00.2920.0000324.50 KB (332,288 bytes)         12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\shdoclc.dll
actxprxy.dll        5.00.2920.000070.77 KB (72,464 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\actxprxy.dll
urlmon.dll          5.00.2920.0000426.77 KB (437,008 bytes)         12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\urlmon.dll
faxshell.dll        5.00.2134.1     8.27 KB (8,464 bytes)   12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\faxshell.dll
msacm32.dll         5.00.2134.1     65.27 KB (66,832 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\msacm32.dll
avifil32.dll        5.00.2134.1     76.27 KB (78,096 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\avifil32.dll
msvfw32.dll         5.00.2134.1     113.77 KB (116,496 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\msvfw32.dll
docprop2.dll        5.00.2178.1     297.77 KB (304,912 bytes)       12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\docprop2.dll
ntshrui.dll         5.00.2134.1     46.77 KB (47,888 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\ntshrui.dll
linkinfo.dll        5.00.2134.1     15.77 KB (16,144 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\linkinfo.dll
browselc.dll        5.00.2920.000034.50 KB (35,328 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\browselc.dll
msi.dll  1.10.1029.0        1.71 MB (1,794,320 bytes)       12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\msi.dll
powrprof.dll        5.00.2920.000013.27 KB (13,584 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\powrprof.dll
batmeter.dll        5.00.2920.000020.27 KB (20,752 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\batmeter.dll
stobject.dll        5.00.2144.1     81.77 KB (83,728 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation         c:\winnt\system32\stobject.dll
webcheck.dll        5.00.2920.0000251.77 KB (257,808 bytes)         12/7/1999 6:00:00 AM
            Microsoft Corporation   c:\winnt\system32\webcheck.dll
```

```
browseui.dll       5.00.2920.0000793.27 KB (812,304 bytes)       12/7/1999 6:00:00 AM
           Microsoft Corporation    c:\winnt\system32\browseui.dll
shdocvw.dll        5.00.2920.00001.05 MB (1,104,144 bytes)       12/7/1999 6:00:00 AM
           Microsoft Corporation    c:\winnt\system32\shdocvw.dll
explorer.exe       5.00.2920.0000232.77 KB (238,352 bytes)       12/7/1999 6:00:00 AM
           Microsoft Corporation    c:\winnt\explorer.exe
tpcc_com_all.dll 1, 0, 0, 1        80.00 KB (81,920 bytes)7/2/2001 11:45:41 AM
           c:\inetpub\wwwroot\tpcc_c~2.dll
dbnetlib.dll       2000.080.0194.00          84.06 KB (86,082 bytes)2/16/2001 3:52:07 PM
           Microsoft Corporation    c:\winnt\system32\dbnetlib.dll
ntwdblib.dll       2000.080.0194.00          268.06 KB (274,489 bytes)       2/16/2001 3:52:12 PM
           Microsoft Corporation    c:\winnt\system32\ntwdblib.dll
tpcc_dblib.dll     Not Available     28.00 KB (28,672 bytes)7/2/2001 11:45:39 AM   Not Available
           c:\inetpub\wwwroot\tpcc_dblib.dll
tpcc_com.dll       Not Available     24.00 KB (24,576 bytes)7/2/2001 11:45:40 AM   Not Available
           c:\inetpub\wwwroot\tpcc_com.dll
tpcc.dll  0, 4, 0, 0           92.00 KB (94,208 bytes)7/2/2001 11:45:39 AM   Microsoft
           c:\inetpub\wwwroot\tpcc.dll
iwrps.dll          5.00.2182.1       8.77 KB (8,976 bytes)    2/16/2001 5:17:56 AM   Microsoft
Corporation        c:\winnt\system32\inetsrv\iwrps.dll
wamps.dll          5.00.2159.1       7.27 KB (7,440 bytes)    2/16/2001 5:17:57 AM   Microsoft
Corporation        c:\winnt\system32\inetsrv\wamps.dll
wshom.ocx          5.1.0.4615        72.05 KB (73,776 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation        c:\winnt\system32\wshom.ocx
wamregps.dll       5.00.2159.1       7.27 KB (7,440 bytes)    2/16/2001 5:17:52 AM   Microsoft
Corporation        c:\winnt\system32\wamregps.dll
scrrun.dll         5.1.0.4615        144.05 KB (147,512 bytes)       12/7/1999 6:00:00 AM
           Microsoft Corporation    c:\winnt\system32\scrrun.dll
iisext.dll5.00.2159.1          41.77 KB (42,768 bytes)2/16/2001 5:17:52 AM   Microsoft Corporation
           c:\winnt\system32\iisext.dll
adsiis.dll         5.00.2159.1       238.77 KB (244,496 bytes)       2/16/2001 5:17:52 AM
           Microsoft Corporation    c:\winnt\system32\adsiis.dll
vbscript.dll       5.1.0.4615        428.06 KB (438,330 bytes)       12/7/1999 6:00:00 AM
           Microsoft Corporation    c:\winnt\system32\vbscript.dll
asptxn.dll         5.00.0954         29.77 KB (30,480 bytes)2/16/2001 5:17:55 AM   Microsoft
Corporation        c:\winnt\system32\inetsrv\asptxn.dll
asp.dll   5.00.0984            326.77 KB (334,608 bytes)       2/16/2001 5:17:55 AM   Microsoft
Corporation        c:\winnt\system32\inetsrv\asp.dll
mfc42.dll          6.00.8665.0       972.05 KB (995,383 bytes)       12/7/1999 6:00:00 AM
           Microsoft Corporation    c:\winnt\system32\mfc42.dll
wam.dll 5.00.0984              71.27 KB (72,976 bytes)2/16/2001 5:17:57 AM   Microsoft Corporation
           c:\winnt\system32\inetsrv\wam.dll
odbcint.dll        3.520.6526.0      88.00 KB (90,112 bytes)2/16/2001 3:52:03 PM   Microsoft
Corporation        c:\winnt\system32\odbcint.dll
odbc32.dll         3.520.6526.0      216.27 KB (221,456 bytes)       2/16/2001 3:52:03 PM
           Microsoft Corporation    c:\winnt\system32\odbc32.dll
comsvcs.dll        1999.9.3422.141.16 MB (1,219,856 bytes)       2/16/2001 5:17:06 AM
           Microsoft Corporation    c:\winnt\system32\comsvcs.dll
iislog.dll5.00.0984            76.27 KB (78,096 bytes)2/16/2001 5:17:51 AM   Microsoft Corporation
           c:\winnt\system32\inetsrv\iislog.dll
ntlsapi.dll        5.00.2134.1       6.77 KB (6,928 bytes)    12/7/1999 6:00:00 AM   Microsoft
Corporation        c:\winnt\system32\ntlsapi.dll
httpext.dll        0.9.3939.9        418.27 KB (428,304 bytes)       2/16/2001 5:17:50 AM
           Microsoft Corporation    c:\winnt\system32\inetsrv\httpext.dll
```

```
rpcproxy.dll	5.00.2176.1	16.27 KB (16,656 bytes)2/16/2001 5:17:05 AM	Microsoft
Corporation	c:\winnt\system32\rpcproxy\rpcproxy.dll
fpexedll.dll	4.0.2.3406	20.06 KB (20,541 bytes)2/16/2001 5:19:40 AM	Microsoft
Corporation	c:\program files\common files\microsoft shared\web server
extensions\40\bin\fpexedll.dll
md5filt.dll	5.00.0984	32.77 KB (33,552 bytes)2/16/2001 5:17:56 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\md5filt.dll
gzip.dll	5.00.0984	30.27 KB (30,992 bytes)2/16/2001 5:17:56 AM	Microsoft Corporation
	c:\winnt\system32\inetsrv\gzip.dll
compfilt.dll	5.00.0984	22.27 KB (22,800 bytes)2/16/2001 5:17:55 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\compfilt.dll
sspifilt.dll	5.00.0984	43.27 KB (44,304 bytes)2/16/2001 5:17:57 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\sspifilt.dll
iscomlog.dll	5.00.0984	24.77 KB (25,360 bytes)2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\iscomlog.dll
lonsint.dll	5.00.0984	11.77 KB (12,048 bytes)2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\lonsint.dll
inetsloc.dll	5.00.0984	20.27 KB (20,752 bytes)2/16/2001 5:17:52 AM	Microsoft
Corporation	c:\winnt\system32\inetsloc.dll
iisfecnv.dll	5.00.0984	7.27 KB (7,440 bytes)	2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\iisfecnv.dll
isatq.dll	5.00.0984	61.27 KB (62,736 bytes)2/16/2001 5:17:53 AM	Microsoft Corporation
	c:\winnt\system32\inetsrv\isatq.dll
infocomm.dll	5.00.0984	234.27 KB (239,888 bytes)	2/16/2001 5:17:51 AM
	Microsoft Corporation	c:\winnt\system32\inetsrv\infocomm.dll
w3svc.dll	5.00.0984	347.27 KB (355,600 bytes)	2/16/2001 5:17:57 AM
	Microsoft Corporation	c:\winnt\system32\inetsrv\w3svc.dll
security.dll	5.00.2154.1	5.77 KB (5,904 bytes)	12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\security.dll
svcext.dll	5.00.0984	39.77 KB (40,720 bytes)2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\svcext.dll
admexs.dll	5.00.0984	27.77 KB (28,432 bytes)2/16/2001 5:17:50 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\admexs.dll
wamreg.dll	5.00.0984	46.27 KB (47,376 bytes)2/16/2001 5:17:57 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\wamreg.dll
metadata.dll	5.00.0984	70.77 KB (72,464 bytes)2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\metadata.dll
iismap.dll	5.00.0984	56.27 KB (57,616 bytes)2/16/2001 5:17:52 AM	Microsoft
Corporation	c:\winnt\system32\iismap.dll
nsepm.dll	5.00.0984	43.27 KB (44,304 bytes)2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\nsepm.dll
admwprox.dll	5.00.0984	31.77 KB (32,528 bytes)2/16/2001 5:17:52 AM	Microsoft
Corporation	c:\winnt\system32\admwprox.dll
coadmin.dll	5.00.0984	39.77 KB (40,720 bytes)2/16/2001 5:17:52 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\coadmin.dll
iisadmin.dll	5.00.0984	14.77 KB (15,120 bytes)2/16/2001 5:17:50 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\iisadmin.dll
rpcref.dll	5.00.0984	4.27 KB (4,368 bytes)	2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\rpcref.dll
iisrtl.dll	5.00.0984	120.77 KB (123,664 bytes)	2/16/2001 5:17:52 AM	Microsoft
Corporation	c:\winnt\system32\iisrtl.dll
inetinfo.exe	5.00.0984	14.27 KB (14,608 bytes)2/16/2001 5:17:51 AM	Microsoft
Corporation	c:\winnt\system32\inetsrv\inetinfo.exe
netui1.dll	5.00.2134.1	210.27 KB (215,312 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\netui1.dll
```

```
netui0.dll      5.00.2134.1     70.27 KB (71,952 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\netui0.dll
ntlanman.dll    5.00.2157.1     35.27 KB (36,112 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\ntlanman.dll
wshnetbs.dll    5.00.2134.1     7.77 KB (7,952 bytes)   12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\wshnetbs.dll
rapilib.dll     5.00.2167.1     25.27 KB (25,872 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\rapilib.dll
rsvpsp.dll      5.00.2167.1     74.77 KB (76,560 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\rsvpsp.dll
ntmarta.dll     5.00.2158.1     98.77 KB (101,136 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\ntmarta.dll
provthrd.dll    1.50.1085.000068.07 KB (69,708 bytes)2/16/2001 11:22:56 AM Microsoft
Corporation     c:\winnt\system32\wbem\provthrd.dll
ntevt.dll 1.50.1085.0000192.06 KB (196,669 bytes)       12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\wbem\ntevt.dll
perfos.dll      5.00.2155.1     21.27 KB (21,776 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\perfos.dll
psapi.dll       5.00.2134.1     28.27 KB (28,944 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\psapi.dll
framedyn.dll    1.50.1085.0000164.05 KB (167,992 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll    1.50.1085.00001.03 MB (1,077,306 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\cimwin32.dll
wbemsvc.dll     1.50.1085.0000140.07 KB (143,430 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\wbemsvc.dll
wbemess.dll     1.50.1085.0001352.05 KB (360,503 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\wbemess.dll
fastprox.dll    1.50.1085.0001144.08 KB (147,534 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\fastprox.dll
wbemcore.dll    1.50.1085.0001632.05 KB (647,224 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\wbemcore.dll
wbemcomn.dll    1.50.1085.0001684.05 KB (700,472 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\wbemcomn.dll
winmgmt.exe     1.50.1085.0001188.05 KB (192,567 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wbem\winmgmt.exe
simptcp.dll     5.00.2134.1     19.27 KB (19,728 bytes)2/16/2001 5:17:05 AM   Microsoft
Corporation     c:\winnt\system32\simptcp.dll
tcpsvcs.exe     5.00.2134.1     24.77 KB (25,360 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\tcpsvcs.exe
rasdlg.dll      5.00.2194.1     514.27 KB (526,608 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\rasdlg.dll
netcfgx.dll     5.00.2175.1     533.77 KB (546,576 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\netcfgx.dll
sens.dll 5.00.2163.1    36.77 KB (37,648 bytes)12/7/1999 6:00:00 AM   Microsoft Corporation
        c:\winnt\system32\sens.dll
rasmans.dll     5.00.2188.1     146.77 KB (150,288 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\rasmans.dll
wmi.dll  5.00.2191.1    6.27 KB (6,416 bytes)   12/7/1999 6:00:00 AM   Microsoft Corporation
        c:\winnt\system32\wmi.dll
netshell.dll    5.00.2176.1     456.77 KB (467,728 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\netshell.dll
netman.dll      5.00.2175.1     88.77 KB (90,896 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\netman.dll
```

```
es.dll	1999.9.3422.21231.77 KB (237,328 bytes)	12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\es.dll
iashlpr.dll	5.00.2184.1	33.27 KB (34,064 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iashlpr.dll
iasacct.dll	5.00.2134.1	28.27 KB (28,944 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iasacct.dll
iasuserr.dll	5.00.2134.1	25.77 KB (26,384 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iasuserr.dll
iasnap.dll	5.00.2134.1	58.77 KB (60,176 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iasnap.dll
iaspipe.dll	5.00.2134.1	41.77 KB (42,768 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iaspipe.dll
expsrv.dll	6.0.8540	370.27 KB (379,152 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\expsrv.dll
vbajet32.dll	6.1.8268	30.27 KB (30,992 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\vbajet32.dll
msjtes40.dll	4.00.2927.8	232.27 KB (237,840 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\msjtes40.dll
oledb32r.dll	2.60.6526.0	68.27 KB (69,904 bytes)2/16/2001 3:52:03 PM	Microsoft
Corporation	c:\program files\common files\system\ole db\oledb32r.dll
comdlg32.dll	5.00.2920.0000236.77 KB (242,448 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\comdlg32.dll
msdart.dll	2.60.6526.0	144.27 KB (147,728 bytes)	2/16/2001 3:52:02 PM
	Microsoft Corporation	c:\winnt\system32\msdart.dll
oledb32.dll	2.60.6526.0	448.27 KB (459,024 bytes)	2/16/2001 3:52:03 PM
	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32.dll
msjint40.dll	4.00.2927.2	148.27 KB (151,824 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\msjint40.dll
msjter40.dll	4.00.2927.2	52.27 KB (53,520 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\msjter40.dll
mswstr10.dll	4.00.2927.10	600.27 KB (614,672 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\mswstr10.dll
msjet40.dll	4.00.2927.4	1.43 MB (1,495,312 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\msjet40.dll
msjetoledb40.dll		4.00.2927.2	340.27 KB (348,432 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\msjetoledb40.dll
iasrad.dll	5.00.2139.1	94.27 KB (96,528 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iasrad.dll
iassam.dll	5.00.2160.1	96.27 KB (98,576 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iassam.dll
iasads.dll	5.00.2134.1	73.77 KB (75,536 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iasads.dll
iaspolcy.dll	5.00.2134.1	25.27 KB (25,872 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iaspolcy.dll
iassvcs.dll	5.00.2160.1	58.77 KB (60,176 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\iassvcs.dll
iassdo.dll	5.00.2157.1	262.27 KB (268,560 bytes)	12/7/1999 6:00:00 AM
	Microsoft Corporation	c:\winnt\system32\iassdo.dll
ias.dll	5.00.2134.1	7.27 KB (7,440 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation
	c:\winnt\system32\ias.dll
mtxoci.dll	1999.9.3421.3	109.27 KB (111,888 bytes)	2/16/2001 5:17:13 AM
	Microsoft Corporation	c:\winnt\system32\mtxoci.dll
resutils.dll	5.00.2191.1	39.77 KB (40,720 bytes)12/7/1999 6:00:00 AM	Microsoft
Corporation	c:\winnt\system32\resutils.dll
```

```
clusapi.dll     5.00.2179.1     50.27 KB (51,472 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\clusapi.dll
msvcp50.dll     5.00.7051       552.50 KB (565,760 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\msvcp50.dll
xolehlp.dll     1999.9.3421.3   17.27 KB (17,680 bytes)2/16/2001 5:17:12 AM   Microsoft
Corporation     c:\winnt\system32\xolehlp.dll
msdtclog.dll    1999.9.3421.3   89.77 KB (91,920 bytes)2/16/2001 5:17:10 AM   Microsoft
Corporation     c:\winnt\system32\msdtclog.dll
mtxclu.dll      1999.9.3421.3   50.27 KB (51,472 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\mtxclu.dll
msdtcprx.dll    1999.9.3422.10619.27 KB (634,128 bytes)       2/16/2001 5:17:12 AM
        Microsoft Corporation   c:\winnt\system32\msdtcprx.dll
txfaux.dll      1999.9.3422.24341.27 KB (349,456 bytes)       2/16/2001 5:17:11 AM
        Microsoft Corporation   c:\winnt\system32\txfaux.dll
msdtctm.dll     1999.9.3422.121.02 MB (1,070,864 bytes)       2/16/2001 5:17:12 AM
        Microsoft Corporation   c:\winnt\system32\msdtctm.dll
msdtc.exe       1999.9.3421.3   6.77 KB (6,928 bytes)   2/16/2001 5:17:10 AM   Microsoft
Corporation     c:\winnt\system32\msdtc.exe
rasadhlp.dll    5.00.2168.1     7.27 KB (7,440 bytes)   12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\rasadhlp.dll
winrnr.dll      5.00.2160.1     18.77 KB (19,216 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\winrnr.dll
dhcpcsvc.dll    5.00.2153.1     88.77 KB (90,896 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\dhcpcsvc.dll
tapi32.dll      5.00.2182.1     123.27 KB (126,224 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\tapi32.dll
rasman.dll      5.00.2188.1     54.77 KB (56,080 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\rasman.dll
rasapi32.dll    5.00.2188.1     189.77 KB (194,320 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\rasapi32.dll
icmp.dll 5.00.2134.1    7.27 KB (7,440 bytes)   12/7/1999 6:00:00 AM   Microsoft Corporation
        c:\winnt\system32\icmp.dll
iphlpapi.dll    5.00.2173.2     67.77 KB (69,392 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\iphlpapi.dll
rnr20.dll       5.00.2152.1     35.77 KB (36,624 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\rnr20.dll
wshtcpip.dll    5.00.2134.1     17.27 KB (17,680 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\wshtcpip.dll
msafd.dll       5.00.2153.1     54.27 KB (55,568 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\msafd.dll
rpcss.dll       5.00.2181.1     229.27 KB (234,768 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\rpcss.dll
svchost.exe     5.00.2134.1     7.77 KB (7,952 bytes)   12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\svchost.exe
vipl.dll 4.1.1  80.00 KB (81,920 bytes)2/16/2001 3:26:22 PM   Giganet Incorporated
        c:\winnt\system32\vipl.dll
gnconmgr.exe    4.2.0.23        140.06 KB (143,420 bytes)       2/20/2001 11:50:27 AM Giganet
Incorporated    c:\winnt\system32\gnconmgr.exe
iissuba.dll     5.00.0984       9.77 KB (10,000 bytes) 12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\iissuba.dll
scecli.dll      5.00.2191.1     105.27 KB (107,792 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\scecli.dll
atl.dll 3.00.8449       57.56 KB (58,938 bytes)12/7/1999 6:00:00 AM   Microsoft Corporation
        c:\winnt\system32\atl.dll
```

```
certcli.dll      5.00.2175.1      132.27 KB (135,440 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\certcli.dll
esent.dll        6.0.3939.6       1.07 MB (1,120,016 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\esent.dll
mswsock.dll      5.00.2152.1      62.27 KB (63,760 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\mswsock.dll
ntdsatq.dll      5.00.2181.1      31.27 KB (32,016 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\ntdsatq.dll
ntdsa.dll        5.00.2195.1      993.27 KB (1,017,104 bytes)     12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\ntdsa.dll
kdcsvc.dll       5.00.2181.1      133.77 KB (136,976 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\kdcsvc.dll
sfmapi.dll       5.00.2134.1      38.77 KB (39,696 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\sfmapi.dll
rtutils.dll      5.00.2168.1      43.77 KB (44,816 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\rtutils.dll
adsldpc.dll      5.00.2172.1      127.77 KB (130,832 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\adsldpc.dll
activeds.dll     5.00.2172.1      172.77 KB (176,912 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\activeds.dll
mprapi.dll       5.00.2181.1      79.27 KB (81,168 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\mprapi.dll
rassfm.dll       5.00.2168.1      21.27 KB (21,776 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\rassfm.dll
mpr.dll  5.00.2146.1      53.27 KB (54,544 bytes)12/7/1999 6:00:00 AM   Microsoft Corporation
         c:\winnt\system32\mpr.dll
schannel.dll     5.00.2170.1      139.77 KB (143,120 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\schannel.dll
netlogon.dll     5.00.2182.1      347.77 KB (356,112 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\netlogon.dll
msv1_0.dll       5.00.2164.1      94.77 KB (97,040 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\msv1_0.dll
kerberos.dll     5.00.2181.1      196.77 KB (201,488 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\kerberos.dll
msprivs.dll      5.00.2154.1      41.50 KB (42,496 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\msprivs.dll
samsrv.dll       5.00.2192.1      357.77 KB (366,352 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\samsrv.dll
lsasrv.dll       5.00.2184.1      487.77 KB (499,472 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\lsasrv.dll
lsass.exe        5.00.2184.1      32.77 KB (33,552 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\lsass.exe
wmicore.dll      5.00.2178.1      70.77 KB (72,464 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\wmicore.dll
psbase.dll       5.00.2146.1      111.77 KB (114,448 bytes)       12/7/1999 6:00:00 AM
         Microsoft Corporation    c:\winnt\system32\psbase.dll
cryptsvc.dll     5.00.2181.1      61.77 KB (63,248 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\cryptsvc.dll
cryptdll.dll     5.00.2135.1      41.27 KB (42,256 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\cryptdll.dll
wkssvc.dll       5.00.2181.1      95.27 KB (97,552 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\wkssvc.dll
srvsvc.dll       5.00.2178.1      79.27 KB (81,168 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation      c:\winnt\system32\srvsvc.dll
```

```
cfgmgr32.dll    5.00.2134.1    16.77 KB (17,168 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\cfgmgr32.dll
dmserver.dll    2191.1.296.2   11.77 KB (12,048 bytes)12/7/1999 6:00:00 AM   VERITAS
Software Corp.  c:\winnt\system32\dmserver.dll
winsta.dll      5.00.2134.1    36.27 KB (37,136 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\winsta.dll
eventlog.dll    5.00.2178.1    43.77 KB (44,816 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\eventlog.dll
ntdsapi.dll     5.00.2160.1    56.27 KB (57,616 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\ntdsapi.dll
scesrv.dll      5.00.2188.1    225.77 KB (231,184 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\scesrv.dll
umpnpmgr.dll    5.00.2182.1    86.27 KB (88,336 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\umpnpmgr.dll
services.exe    5.00.2134.1    86.77 KB (88,848 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\services.exe
clbcatq.dll     1999.9.3422.14479.27 KB (490,768 bytes)       2/16/2001 5:17:05 AM
        Microsoft Corporation    c:\winnt\system32\clbcatq.dll
oleaut32.dll    2.40.4512      600.27 KB (614,672 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\oleaut32.dll
cscui.dll5.00.2172.1    227.27 KB (232,720 bytes)       12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\cscui.dll
winspool.drv    5.00.2167.1    109.77 KB (112,400 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\winspool.drv
winscard.dll    5.00.2134.1    77.27 KB (79,120 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\winscard.dll
wlnotify.dll    5.00.2164.1    53.27 KB (54,544 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\wlnotify.dll
cscdll.dll      5.00.2189.1    98.27 KB (100,624 bytes)        12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\cscdll.dll
lz32.dll  5.00.2134.1    9.77 KB (10,000 bytes) 12/7/1999 6:00:00 AM   Microsoft Corporation
        c:\winnt\system32\lz32.dll
version.dll     5.00.2134.1    15.77 KB (16,144 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\version.dll
rsabase.dll     5.00.2150.1    128.77 KB (131,856 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\rsabase.dll
mscat32.dll     5.131.2134.1   7.77 KB (7,952 bytes)   12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\mscat32.dll
ole32.dll       5.00.2181.1    966.27 KB (989,456 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\ole32.dll
imagehlp.dll    5.00.2195.1    125.27 KB (128,272 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\imagehlp.dll
msasn1.dll      5.00.2134.1    51.27 KB (52,496 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\msasn1.dll
crypt32.dll     5.131.2173.1   465.77 KB (476,944 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\crypt32.dll
wintrust.dll    5.131.2143.1   162.27 KB (166,160 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\wintrust.dll
setupapi.dll    5.00.2183.1    554.27 KB (567,568 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\setupapi.dll
winmm.dll       5.00.2161.1    184.77 KB (189,200 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation    c:\winnt\system32\winmm.dll
comctl32.dll    5.81    540.27 KB (553,232 bytes)       12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\comctl32.dll
```

```
shlwapi.dll     5.00.2920.0000282.77 KB (289,552 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\shlwapi.dll
shell32.dll     5.00.2920.00002.24 MB (2,352,400 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\shell32.dll
msgina.dll      5.00.2191.1     309.77 KB (317,200 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\msgina.dll
wsock32.dll     5.00.2152.1     21.27 KB (21,776 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\wsock32.dll
dnsapi.dll      5.00.2181.1     129.77 KB (132,880 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\dnsapi.dll
wldap32.dll     5.00.2168.1     155.77 KB (159,504 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\wldap32.dll
ws2help.dll     5.00.2134.1     17.77 KB (18,192 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\ws2help.dll
ws2_32.dll      5.00.2134.1     69.77 KB (71,440 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\ws2_32.dll
samlib.dll      5.00.2160.1     46.27 KB (47,376 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\samlib.dll
netrap.dll      5.00.2134.1     11.27 KB (11,536 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\netrap.dll
netapi32.dll    5.00.2194.1     302.77 KB (310,032 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\netapi32.dll
profmap.dll     5.00.2181.1     29.27 KB (29,968 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\profmap.dll
secur32.dll     5.00.2154.1     46.77 KB (47,888 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\secur32.dll
sfc.dll 5.00.2164.1     84.27 KB (86,288 bytes)12/7/1999 6:00:00 AM   Microsoft Corporation
        c:\winnt\system32\sfc.dll
nddeapi.dll     5.00.2137.1     15.27 KB (15,632 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\nddeapi.dll
userenv.dll     5.00.2185.1     361.27 KB (369,936 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\userenv.dll
user32.dll      5.00.2180.1     393.27 KB (402,704 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\user32.dll
gdi32.dll       5.00.2180.1     228.77 KB (234,256 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\gdi32.dll
rpcrt4.dll      5.00.2193.1     434.27 KB (444,688 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\rpcrt4.dll
advapi32.dll    5.00.2191.1     349.27 KB (357,648 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\advapi32.dll
kernel32.dll    5.00.2191.1     715.27 KB (732,432 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\kernel32.dll
msvcrt.dll      6.10.8637.0     288.09 KB (295,000 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\msvcrt.dll
winlogon.exe    5.00.2182.1     173.27 KB (177,424 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\winlogon.exe
sfcfiles.dll    5.00.2195.1     973.27 KB (996,624 bytes)       12/7/1999 6:00:00 AM
        Microsoft Corporation   c:\winnt\system32\sfcfiles.dll
ntdll.dll 5.00.2163.1     469.77 KB (481,040 bytes)       12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\ntdll.dll
smss.exe        5.00.2170.1     44.27 KB (45,328 bytes)12/7/1999 6:00:00 AM   Microsoft
Corporation     c:\winnt\system32\smss.exe

[Services]
```

```
Display Name    Name    State    Start Mode    Service Type    Path    Error Control    Start
Name    Tag ID
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    Stopped    Manual 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    Stopped    Manual 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
cLAN Connection Manager    GniConMgr    Running    Auto    Own Process
        c:\winnt\system32\gnconmgr.exe    Normal LocalSystem    0
Internet Authentication Service    IAS    Running    Auto    Share Process
        c:\winnt\system32\svchost.exe -k netsvcs    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 ServiceLmHosts    Stopped    Manual 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 Running    Auto    Own Process
        c:\winnt\system32\msdtc.exe    Normal LocalSystem    0
Windows Installer    MSIServer    Stopped    Manual Share Process
        c:\winnt\system32\msiexec.exe /v    Normal LocalSystem    0
```

```
Network DDE	NetDDE		Stopped		Manual	Share Process
	c:\winnt\system32\netdde.exe	Normal	LocalSystem	0
Network DDE DSDM	NetDDEdsdm	Stopped		Manual	Share Process
	c:\winnt\system32\netdde.exe	Normal	LocalSystem	0
Net Logon	Netlogon	Stopped		Manual	Share Process
	c:\winnt\system32\lsass.exe	Normal	LocalSystem	0
Network Connections	Netman	Running		Manual	Share Process
	c:\winnt\system32\svchost.exe -k netsvcs		Normal	LocalSystem	0
File Replication	NtFrs	Stopped		Manual	Own Process	c:\winnt\system32\ntfrs.exe
	Ignore	LocalSystem	0
NT LM Security Support Provider		NtLmSsp		Stopped		Manual	Share Process
	c:\winnt\system32\lsass.exe	Normal	LocalSystem	0
Removable Storage	NtmsSvc		Stopped		Manual	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	Stopped		Manual	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		RemoteRegistryStopped		Manual	Own Process
	c:\winnt\system32\regsvc.exe	Normal	LocalSystem	0
Remote Command Service		RMSYSStopped		Manual	Own Process
	c:\benchcrf\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	Stopped		Manual	Share Process
	c:\winnt\system32\mstask.exe	Normal	LocalSystem	0
RunAs Service	seclogon	Stopped		Manual	Share Process
	c:\winnt\system32\services.exe	Ignore	LocalSystem	0
System Event Notification	SENS	Stopped		Manual	Share Process
	c:\winnt\system32\svchost.exe -k netsvcs		Normal	LocalSystem	0
Internet Connection Sharing	SharedAccess	Stopped		Manual	Share Process
	c:\winnt\system32\svchost.exe -k netsvcs		Normal	LocalSystem	0
Simple TCP/IP Services	SimpTcp		Running		Auto	Share Process
	c:\winnt\system32\tcpsvcs.exe	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.exeNormal	LocalSystem	0
Telephony	TapiSrv	Running	Manual	Share Process	c:\winnt\system32\svchost.exe -
k tapisrv	Normal	LocalSystem	0
Terminal Services	TermService	Stopped	Disabled	Own Process
	c:\winnt\system32\termsrv.exe	Normal	LocalSystem	0
Telnet	TlntSvr	Stopped	Manual	Own Process	c:\winnt\system32\tlntsvr.exe	Normal
	LocalSystem	0
Distributed Link Tracking ServerTrkSvr	Stopped	Manual	Share Process
	c:\winnt\system32\services.exe	Normal	LocalSystem	0
Distributed Link Tracking Client	TrkWks	Stopped	Manual	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	W3SVCRunning	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
Administrative Tools	Default User:Administrative Tools	Default User
Startup	Default User:Startup	Default User
Accessories	All Users:Accessories	All Users
Accessories\Accessibility	All Users:Accessories\Accessibility	All Users
Accessories\Communications	All Users:Accessories\Communications	All Users
Accessories\Entertainment	All Users:Accessories\Entertainment	All Users
Accessories\Games	All Users:Accessories\Games	All Users
Accessories\System Tools	All Users:Accessories\System Tools	All Users
Administrative Tools	All Users:Administrative Tools	All Users
Microsoft Office Tools	All Users:Microsoft Office Tools	All Users
Microsoft SQL Server	All Users:Microsoft SQL Server	All Users
MKS Toolkit	All Users:MKS Toolkit	All Users
Startup	All Users:Startup	All Users
WinZip	All Users:WinZip	All Users
Accessories	CLIENT3\Administrator:Accessories	CLIENT3\Administrator
Accessories\Accessibility	CLIENT3\Administrator:Accessories\Accessibility
	CLIENT3\Administrator
Accessories\Entertainment	CLIENT3\Administrator:Accessories\Entertainment
	CLIENT3\Administrator
Accessories\System Tools	CLIENT3\Administrator:Accessories\System Tools
	CLIENT3\Administrator
Administrative Tools	CLIENT3\Administrator:Administrative Tools	CLIENT3\Administrator
Startup	CLIENT3\Administrator:Startup	CLIENT3\Administrator
```

```
[Startup Programs]

Program          Command          User Name        Location
Microsoft Officec:\progra~1\micros~3\office\osa9.exe -b -l          All Users          Common
Startup

[OLE Registration]

Object    Local Server
Microsoft Graph 2000 Chart       C:\PROGRA~1\MICROS~3\Office\GRAPH9.EXE
Microsoft Excel Worksheet        Not Available
Microsoft Excel Chart    Not Available
Microsoft Excel Worksheet        C:\PROGRA~1\MICROS~3\Office\EXCEL.EXE
Microsoft Excel Chart    C:\PROGRA~1\MICROS~3\Office\EXCEL.EXE
Microsoft Word 6.0 - 7.0 Document        Not Available
Microsoft Word 6.0 - 7.0 PictureNot Available
Microsoft Word Document          C:\PROGRA~1\MICROS~3\Office\WINWORD.EXE
Microsoft Word Picture  C:\PROGRA~1\MICROS~3\Office\WINWORD.EXE
Sound (OLE2)    sndrec32.exe
Microsoft Clip Gallery    C:\PROGRA~1\COMMON~1\MICROS~1\Artgalry\artgalrY.exe
Media Clip        mplay32.exe
Video Clip         mplay32.exe /avi
MIDI Sequence mplay32.exe /mid
          Not Available
Microsoft Excel Chart    Not Available
Microsoft Excel 4.0 Macro          Not Available
Sound   Not Available
Media Clip        Not Available
          Not Available
          Not Available
Image Document            "C:\Program Files\Windows NT\Accessories\ImageVue\KodakImg.exe"
Microsoft PowerPoint Presentation         C:\PROGRA~1\MICROS~3\Office\POWERPNT.EXE
Microsoft PowerPoint Slide        C:\PROGRA~1\MICROS~3\Office\POWERPNT.EXE
WordPad Document       "%ProgramFiles%\Windows NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage object   Not Available
Bitmap Image    mspaint.exe
          Not Available
          Not Available

[Internet Explorer 5]

[ Following are sub-categories of this main category ]

[Summary]

Item      Value
Version5.00.2920.0000
Build     52920
Product ID         51876-OEM-0000007-00000
Application Path          C:\Program Files\Internet Explorer
Language          English (United States)
Active Printer    Not Available

Cipher Strength 56-bit
```

```
Content AdvisorDisabled
IEAK Install    No

[File Versions]

File     Version Size     Date     Path     Company
advapi32.dll    5.0.2191.1      349 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
advapi32.dll    5.0.2191.1      349 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
advpack.dll     5.0.2920.0      87 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
advpack.dll     5.0.2920.0      87 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
browselc.dll    5.0.2920.0      35 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
browselc.dll    5.0.2920.0      35 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
browseui.dll    5.0.2920.0      793 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
browseui.dll    5.0.2920.0      793 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
ckcnv.exe       5.0.2189.1      9 KB    12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
ckcnv.exe       5.0.2189.1      9 KB    12/7/1999 7:00:00 AM   .          Microsoft Corporation
comctl32.dll    5.81.2920.0     540 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
comctl32.dll    5.81.2920.0     540 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
crypt32.dll     5.131.2173.1    466 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
crypt32.dll     5.131.2173.1    466 KB 12/7/1999 7:00:00 AM   .          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     5.0.2920.0      57 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
iesetup.dll     5.0.2920.0      57 KB   12/7/1999 7:00:00 AM   .          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    5.0.2195.1      125 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
imagehlp.dll    5.0.2195.1      125 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
imghelp.dll     <File Missing>  Not Available   Not Available   Not Available   Not Available
inseng.dll      5.0.2920.0      72 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
inseng.dll      5.0.2920.0      72 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
jobexec.dll     5.0.0.1  47 KB  12/7/1999 7:00:00 AM   C:\WINNT\system32       Microsoft
Corporation
jobexec.dll     5.0.0.1  47 KB  12/7/1999 7:00:00 AM   .          Microsoft Corporation
jscript.dll     5.1.0.4615      476 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
jscript.dll     5.1.0.4615      476 KB 12/7/1999 7:00:00 AM   .          Microsoft Corporation
jsproxy.dll     5.0.2920.0      13 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
jsproxy.dll     5.0.2920.0      13 KB   12/7/1999 7:00:00 AM   .          Microsoft Corporation
msaahtml.dll    <File Missing>  Not Available   Not Available   Not Available   Not Available
mshtml.dll      5.0.2920.0      2302 KB         12/7/1999 7:00:00 AM   C:\WINNT\system32
         Microsoft Corporation
mshtml.dll      5.0.2920.0      2302 KB         12/7/1999 7:00:00 AM   .          Microsoft
Corporation
```

```
msjava.dll      5.0.3234.0      918 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
msjava.dll      5.0.3234.0      918 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
msoss.dll       <File Missing>  Not Available   Not Available   Not Available   Not Available
msxml.dll       5.0.2920.0      521 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
msxml.dll       5.0.2920.0      521 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
occache.dll     5.0.2920.0      86 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
occache.dll     5.0.2920.0      86 KB   12/7/1999 7:00:00 AM   .         Microsoft Corporation
ole32.dll       5.0.2181.1      966 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
ole32.dll       5.0.2181.1      966 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
oleaut32.dll    2.40.4512.1     600 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
oleaut32.dll    2.40.4512.1     600 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
olepro32.dll    5.0.4512.1      160 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
olepro32.dll    5.0.4512.1      160 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
rsabase.dll     5.0.2150.1      129 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
rsabase.dll     5.0.2150.1      129 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
rsaenh.dll      <File Missing>  Not Available   Not Available   Not Available   Not Available
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    5.0.2170.0      140 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
schannel.dll    5.0.2170.0      140 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
shdoc401.dll    <File Missing>  Not Available   Not Available   Not Available   Not Available
shdocvw.dll     5.0.2920.0      1078 KB         12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
shdocvw.dll     5.0.2920.0      1078 KB         12/7/1999 7:00:00 AM   .         Microsoft
Corporation
shell32.dll     5.0.2920.0      2297 KB         12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
shell32.dll     5.0.2920.0      2297 KB         12/7/1999 7:00:00 AM   .         Microsoft
Corporation
shlwapi.dll     5.0.2920.0      283 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
shlwapi.dll     5.0.2920.0      283 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
url.dll 5.0.2920.0      82 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32       Microsoft
Corporation
url.dll 5.0.2920.0      82 KB   12/7/1999 7:00:00 AM   .         Microsoft Corporation
urlmon.dll      5.0.2920.0      427 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
urlmon.dll      5.0.2920.0      427 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
vbscript.dll    5.1.0.4615      428 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
vbscript.dll    5.1.0.4615      428 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
webcheck.dll    5.0.2920.0      252 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
webcheck.dll    5.0.2920.0      252 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
win.com         5.0.2134.1      24 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
win.com         5.0.2134.1      24 KB   12/7/1999 7:00:00 AM   .         Microsoft Corporation
```

```
wininet.dll     5.0.2920.0      457 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
wininet.dll     5.0.2920.0      457 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
winsock.dll     3.10.0.103      3 KB    12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
winsock.dll     3.10.0.103      3 KB    12/7/1999 7:00:00 AM   .         Microsoft Corporation
wintrust.dll    5.131.2143.1    162 KB 12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
wintrust.dll    5.131.2143.1    162 KB 12/7/1999 7:00:00 AM   .         Microsoft Corporation
wsock.vxd       <File Missing>  Not Available   Not Available   Not Available   Not Available
wsock32.dll     5.0.2152.1      21 KB   12/7/1999 7:00:00 AM   C:\WINNT\system32
        Microsoft Corporation
wsock32.dll     5.0.2152.1      21 KB   12/7/1999 7:00:00 AM   .         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         Not Available
AutoProxyDetectMode     Enabled
AutoConfigURL
Proxy   Disabled
ProxyServer
ProxyOverride

[Cache]

[ Following are sub-categories of this main category ]

[Summary]

Item    Value
Page Refresh Type       Automatic
Temporary Internet Files Folder C:\Documents and Settings\Administrator\Local
Settings\Temporary Internet Files
Total Disk Space        4345 MB
Available Disk Space    1008 MB
Maximum Cache Size      135 MB
Available Cache Size    135 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	2/16/2001 to 1/23/2101	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

[Applications]



[Microsoft Word 2000]



[Summary]

Item	Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then
press F5 to refresh.

[Active Document]

Item	Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then
press F5 to refresh.

[Fields]

Item	Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then
press F5 to refresh.

[File Converters]
```

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Fonts]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Headers and Footers]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Hyperlinks]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Mail Merge]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Page Numbers]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Page Setup]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Styles]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Settings]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Tables]

Item Value
Microsoft Word 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Microsoft Excel 2000]

[Summary]

Item Value
Microsoft Excel 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Active Workbook]

Item Value
Microsoft Excel 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Add-Ins]

Item Value
Microsoft Excel 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Charts in Active Workbook]

Item Value
Microsoft Excel 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Microsoft PowerPoint 2000]

[Summary]

Item Value
Microsoft PowerPoint 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Active Presentation]

Item Value
Microsoft PowerPoint 2000 has not been started or is not installed. Install and/or start application then press F5 to refresh.

[Microsoft Outlook 2000]

[Summary]

Item Value

```
Microsoft Outlook 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[Microsoft Access 2000]



[Summary]

Item      Value
Microsoft Access 2000 has not been started or is not installed. Install and/or start application then
press F5 to refresh.

[Microsoft Publisher 2000]



[Summary]

Item      Value
Microsoft Publisher 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[Microsoft FrontPage 2000]



[Summary]

Item      Value
Microsoft FrontPage 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[Active Web]

Item      Value
Microsoft FrontPage 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[Active Page]

Item      Value
Microsoft FrontPage 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[COM Add-Ins]

Item      Value
Microsoft FrontPage 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[Themes]

Item      Value
```

```
Microsoft FrontPage 2000 has not been started or is not installed. Install and/or start application
then press F5 to refresh.

[Microsoft Office Environment]



[Last Web Connection Error]

Item	Value
No error messages have been generated

[Local Web Server Extensions]

Item	Value
Server type	msiis
Port number	/LM/W3SVC/1:
Version	4.0.2.3406
Path	C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\40


[Transport]

Item	Value
Microsoft OLE DB Provider for Internet Publishing	True
Microsoft Office Internet Publishing	False

[ODBC Drivers]



[Core Components]

Item	Value
Description	Administrator
Version	3.520.6526.0
File	C:\WINNT\System32\odbccp32.dll

Description	Control Panel Device
Version	3.520.6526.0
File	C:\WINNT\System32\odbccp32.cpl

Description	Control Panel Startup
Version	3.520.6526.0
File	C:\WINNT\System32\odbcad32.exe

Description	Cursor Library
Version	3.520.6526.0
File	C:\WINNT\System32\odbccr32.dll

Description	Driver Manager
Version	3.520.6526.0
File	C:\WINNT\System32\odbc32.dll

Description	Localized Resource DLL
```

```
Version 3.520.6526.0
File    C:\WINNT\System32\odbcint.dll

Description     Unicode Cursor Library
Version 3.520.6526.0
File    C:\WINNT\System32\odbccu32.dll


[Drivers]

Item    Value
Name    SQL Server
File    SQLSRV32.dll
Date    8/6/2000 2:51:44 AM
Version 2000.80.194.0

Name    Microsoft Access Driver (*.mdb)
File    odbcjt32.dll
Date    12/7/1999 7:00:00 AM
Version 4.0.4403.2

Name    Microsoft Text Driver (*.txt; *.csv)
File    odbcjt32.dll
Date    12/7/1999 7:00:00 AM
Version 4.0.4403.2

Name    Microsoft Excel Driver (*.xls)
File    odbcjt32.dll
Date    12/7/1999 7:00:00 AM
Version 4.0.4403.2

Name    Microsoft dBase Driver (*.dbf)
File    odbcjt32.dll
Date    12/7/1999 7:00:00 AM
Version 4.0.4403.2

Name    Microsoft Paradox Driver (*.db )
File    odbcjt32.dll
Date    12/7/1999 7:00:00 AM
Version 4.0.4403.2

Name    Microsoft Visual FoxPro Driver
File    vfpodbc.dll
Date    12/7/1999 7:00:00 AM
Version 6.1.8629.1

Name    Microsoft FoxPro VFP Driver (*.dbf)
File    vfpodbc.dll
Date    12/7/1999 7:00:00 AM
Version 6.1.8629.1

Name    Microsoft dBase VFP Driver (*.dbf)
File    vfpodbc.dll
Date    12/7/1999 7:00:00 AM
Version 6.1.8629.1
```

Name	Microsoft Access-Treiber (*.mdb)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Microsoft Text-Treiber (*.txt; *.csv)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Microsoft Excel-Treiber (*.xls)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Microsoft dBase-Treiber (*.dbf)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Microsoft Paradox-Treiber (*.db)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Microsoft Visual FoxPro-Treiber
File	vfpodbc.dll
Date	12/7/1999 7:00:00 AM
Version	6.1.8629.1

Name	Driver do Microsoft Access (*.mdb)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Driver da Microsoft para arquivos texto (*.txt; *.csv)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Driver do Microsoft Excel(*.xls)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Driver do Microsoft dBase (*.dbf)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

Name	Driver do Microsoft Paradox (*.db)
File	odbcjt32.dll
Date	12/7/1999 7:00:00 AM
Version	4.0.4403.2

```
Name    Driver para o Microsoft Visual FoxPro
File    vfpodbc.dll
Date    12/7/1999 7:00:00 AM
Version 6.1.8629.1

Name    Microsoft ODBC for Oracle
File    msorcl32.dll
Date    7/26/2000 4:37:04 PM
Version 2.573.6526.0


[OLE DB Providers]

Item    Value
Microsoft OLE DB Provider for SQL Server        2000.80.194.0
MSDataShape     2.60.6526.0
OLE DB Provider for Microsoft Directory Services        5.0.2172.1
Microsoft OLE DB Provider for OLAP Services     7.0.1073.1114
Microsoft OLE DB Provider for OLAP Services     7.0.1073.1114
Microsoft OLE DB Provider for Internet Publishing       8.103.2016.0
Microsoft OLE DB Provider for ODBC Drivers      2.60.6526.0
Microsoft OLE DB Enumerator for ODBC Drivers2.60.6526.0
Microsoft Jet 4.0 OLE DB Provider       4.0.2927.2
Microsoft OLE DB Enumerator for SQL Server      2000.80.194.0
Microsoft OLE DB Simple Provider        2.60.6526.0
Microsoft OLE DB Provider for Oracle    2.60.6526.0
Microsoft OLE DB Provider for Indexing Service5.0.2135.1
```

RTE Input Parameters

BenchCraft Configuration File

```
Profile:        912_12_1_01
File Path:      C:\benchcrf_421\912_12_1_01.pro
Version:        1.0.1

        Number of Engines: 6

                Name: DRIVER2A
                Description: RTE1
                Directory: c:\tpcclog\rte2a.log
                Machine: RTE1
                Parameter Set: PARAM2
                Index: 0
                Seed: 98176
                Configured Users: 1520
                Pipe Name: DRIVER43501360
                Connect Rate: 2000
                Start Rate: 500
                CLIENT_NURAND: 208
                CPU: 0
```

```
Name: DRIVER2B
Description: RTE2
Directory: c:\tpcclog\rte2b.log
Machine: RTE2
Parameter Set: PARAM2
Index: 100000000
Seed: 98176
Configured Users: 1520
Pipe Name: DRIVER40641161
Connect Rate: 2000
Start Rate: 500
CLIENT_NURAND: 208
CPU: 0

Name: DRIVER3A
Description: RTE3
Directory: c:\tpcclog\rte3a.log
Machine: RTE3
Parameter Set: PARAM2
Index: 200000000
Seed: 98176
Configured Users: 1520
Pipe Name: DRIVER371721555
Connect Rate: 2000
Start Rate: 500
CLIENT_NURAND: 208
CPU: 0

Name: DRIVER3B
Description: RTE4
Directory: c:\tpcclog\rte3b.log
Machine: RTE4
Parameter Set: PARAM2
Index: 300000000
Seed: 98176
Configured Users: 1520
Pipe Name: DRIVER341837462
Connect Rate: 2000
Start Rate: 500
CLIENT_NURAND: 208
CPU: 0

Name: DRIVER4A
Description: RTE5
Directory: c:\tpcclog\rte4a.log
Machine: RTE5
Parameter Set: PARAM2
Index: 400000000
Seed: 98176
Configured Users: 1520
Pipe Name: DRIVER311984373
Connect Rate: 2000
Start Rate: 500
CLIENT_NURAND: 208
```

```
        CPU: 0

        Name: DRIVER4B
        Description: RTE6
        Directory: c:\tpcclog\rte4b.log
        Machine: RTE6
        Parameter Set: PARAM2
        Index: 500000000
        Seed: 98176
        Configured Users: 1520
        Pipe Name: DRIVER282107740
        Connect Rate: 2000
        Start Rate: 500
        CLIENT_NURAND: 208
        CPU: 0

    Number of User groups: 12

        Driver Engine: DRIVER2A
        IIS Server: CLIENT3_1
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 1 - 76
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER2A
        IIS Server: CLIENT3_2
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 77 - 152
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER2B
        IIS Server: CLIENT3_1
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 153 - 228
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER2B
```

IIS Server: CLIENT3_2
SQL Server: PE2500
User: sa
Protocol: Html
w_id Range: 229 - 304
w_id Max Warehouse: 912
Scale: Normal
User Count: 760
District id: 1
Scale Down: No

Driver Engine: DRIVER3A
IIS Server: CLIENT3_1
SQL Server: PE2500
User: sa
Protocol: Html
w_id Range: 305 - 380
w_id Max Warehouse: 912
Scale: Normal
User Count: 760
District id: 1
Scale Down: No

Driver Engine: DRIVER3A
IIS Server: CLIENT3_2
SQL Server: PE2500
User: sa
Protocol: Html
w_id Range: 381 - 456
w_id Max Warehouse: 912
Scale: Normal
User Count: 760
District id: 1
Scale Down: No

Driver Engine: DRIVER3B
IIS Server: CLIENT3_1
SQL Server: PE2500
User: sa
Protocol: Html
w_id Range: 457 - 532
w_id Max Warehouse: 912
Scale: Normal
User Count: 760
District id: 1
Scale Down: No

Driver Engine: DRIVER3B
IIS Server: CLIENT3_2
SQL Server: PE2500
User: sa
Protocol: Html
w_id Range: 533 - 608
w_id Max Warehouse: 912
Scale: Normal

```
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER4A
        IIS Server: CLIENT3_1
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 609 - 684
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER4A
        IIS Server: CLIENT3_2
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 685 - 760
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER4B
        IIS Server: CLIENT3_1
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 761 - 836
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

        Driver Engine: DRIVER4B
        IIS Server: CLIENT3_2
        SQL Server: PE2500
        User: sa
        Protocol: Html
        w_id Range: 837 - 912
        w_id Max Warehouse: 912
        Scale: Normal
        User Count: 760
        District id: 1
        Scale Down: No

    Number of Parameter Sets: 6
```

```
50 run
New Parameter Set
             Txn     Think   Key     RT      RT      Menu
             Weight  Time    Time    Delay   Fence   Delay
New Order       44.86     30.00   18.02    0.10     5.00     0.10
Payment        43.05     30.00    3.02     0.10     5.00     0.10
Delivery       4.03      15.00    2.02     0.10     5.00     0.10
Stock Level     4.03     15.00    2.02     0.10    20.00     0.10
Order Status    4.03     25.00    2.02     0.10     5.00     0.10

~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

PARAM2
Slightly tweaked parameter set
             Txn     Think   Key     RT      RT      Menu
             Weight  Time    Time    Delay   Fence   Delay
New Order       44.84     12.04   18.02    0.10     5.00     0.10
Payment        43.04     12.04    3.02     0.10     5.00     0.10
Delivery       4.04       5.04    2.02     0.10     5.00     0.10
Stock Level     4.04      5.04    2.02     0.10    20.00     0.10
Order Status    4.04     10.04    2.02     0.10     5.00     0.10

PARAM3
New Parameter Set
             Txn     Think   Key     RT      RT      Menu
             Weight  Time    Time    Delay   Fence   Delay
New Order       44.86     12.04   18.02    0.10     5.00     0.10
Payment        43.05     12.04    3.02     0.10     5.00     0.10
Delivery       4.03       5.04    2.02     0.10     5.00     0.10
Stock Level     4.03      5.04    2.02     0.10    20.00     0.10
Order Status    4.03     10.04    2.02     0.10     5.00     0.10

50 run2
New Parameter Set
             Txn     Think   Key     RT      RT      Menu
             Weight  Time    Time    Delay   Fence   Delay
New Order       44.86     32.00   18.02    0.10     5.00     0.10
Payment        43.05     32.00    3.02     0.10     5.00     0.10
Delivery       4.03      17.00    2.02     0.10     5.00     0.10
Stock Level     4.03     17.00    2.02     0.10    20.00     0.10
Order Status    4.03     27.00    2.02     0.10     5.00     0.10

80 run
New Parameter Set
             Txn     Think   Key     RT      RT      Menu
             Weight  Time    Time    Delay   Fence   Delay
New Order       44.86     18.00   18.02    0.10     5.00     0.10
```

Payment	43.05	18.00	3.02	0.10	5.00	0.10
Delivery	4.03	13.00	2.02	0.10	5.00	0.10
Stock Level	4.03	13.00	2.02	0.10	20.00	0.10
Order Status	4.03	8.00	2.02	0.10	5.00	0.10

Appendix D – Disk Storage

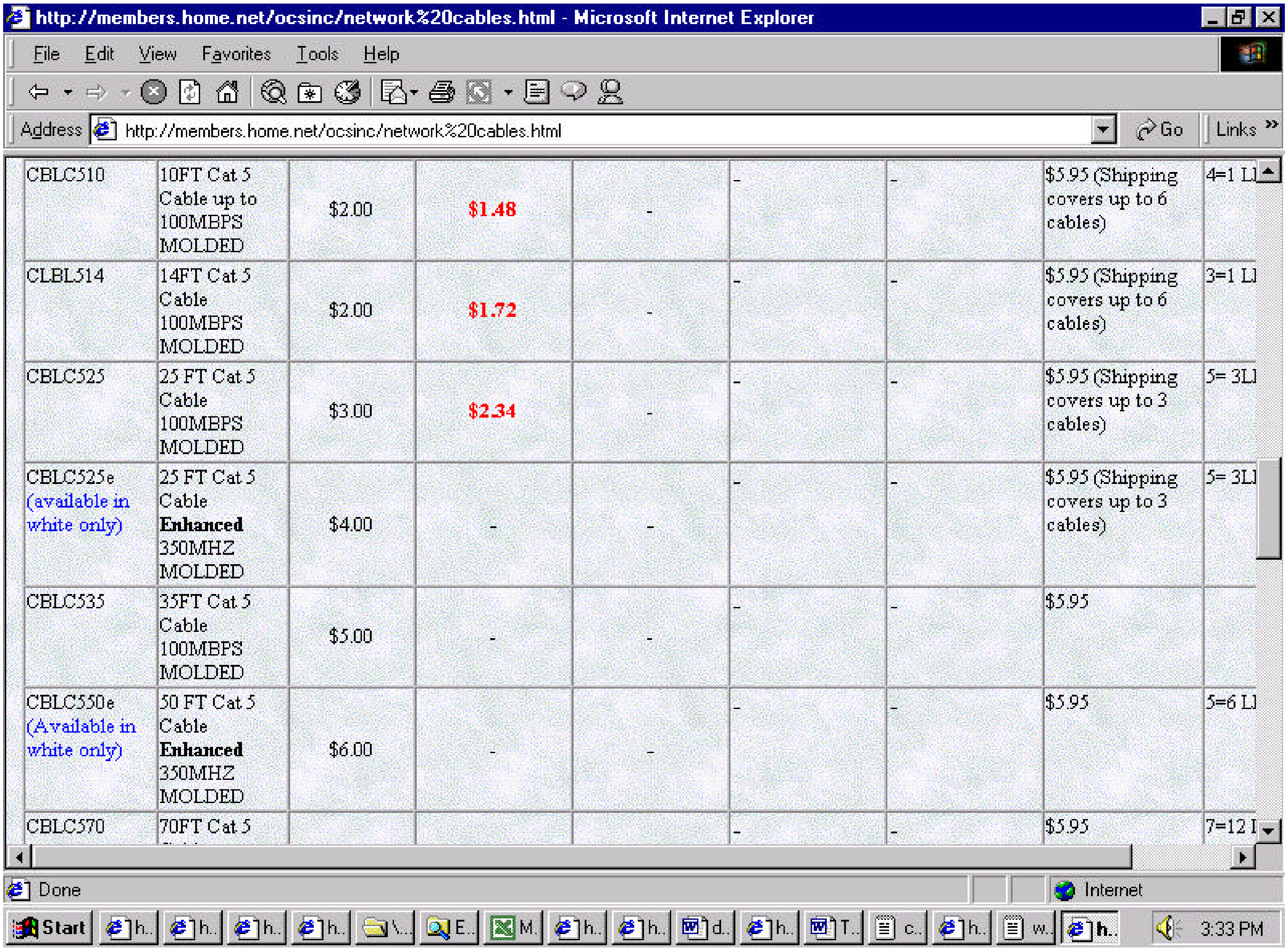
60 Day Space

TPC-C 60 Day Space Requirements

Warehouses	**1,100**				**TpmC**	**11,320.02**
Table	**Rows**	**Data KB**	**Index KB**	**Extra 5% KB**	**8hr Space**	**Total Space KB**
Warehouse	1,100	120	16	7		143
District	11,000	1,224	16	62		1302
Customer	33,000,000	24,000,008	1,431,176	1,271,559		26702743
History	33,000,000	1,833,392	40		301,883	1833432
NewOrder	9,900,000	156,912	368			157280
Orders	33,000,000	1,011,496	459,968		242,284	1471464
OrderLine	329,998,919	20,624,936	43,672		3,403,186	20668608
Item	100,000	9,608	32	482		10122
Stock	110,000,000	35,200,008	43,672	1,762,184		37005864
Total		82,837,704	1,978,960	3,034,294	3,947,353	87,850,958
MB					3,854.84	
	MB					
Dynamic Space	22,920	Sum of Data for Order, Orderline and History				
Static Space	62,872	Sum of Data+Index+5%-Dynamic Space				
Free Space	na	Total Allocated Spac - (Dynamic + Static Space)				
Daily Growth	3,774	(Dynamic Space/(W*62.5))*tpmc				
Daily Spread	-	(Free Space -1.5*Daily Growth) Zero Assumed				
60 Day Space MB	289,303		18 GB Drive	16.758	GB	
60 Day Space GB	**282.52**	**GB**	9 GB Drive	8.195	GB	
			4 GB Drive	3.999	GB	
Log Size	34,304	MB				
KB Per New Order	5.3088	KB				
8 hr log MB	28,170	MB				
8 hr log GB	**27.5096**	**GB**				
Space Usage	**GB Needed**	**Disks Measured**	**GB Priced**		Disks Needed	
180 Day Space DB	282.52	48	804.38	18GB		
		0	0.00	9GB		
		0	0.00	4GB		
Total DB		**48.00**	**804.38**	**GB**		
8-hr log + mirror	55.0193	4	67.03	GB	4.00	
OS, Swap	3	1	8.195	GB		

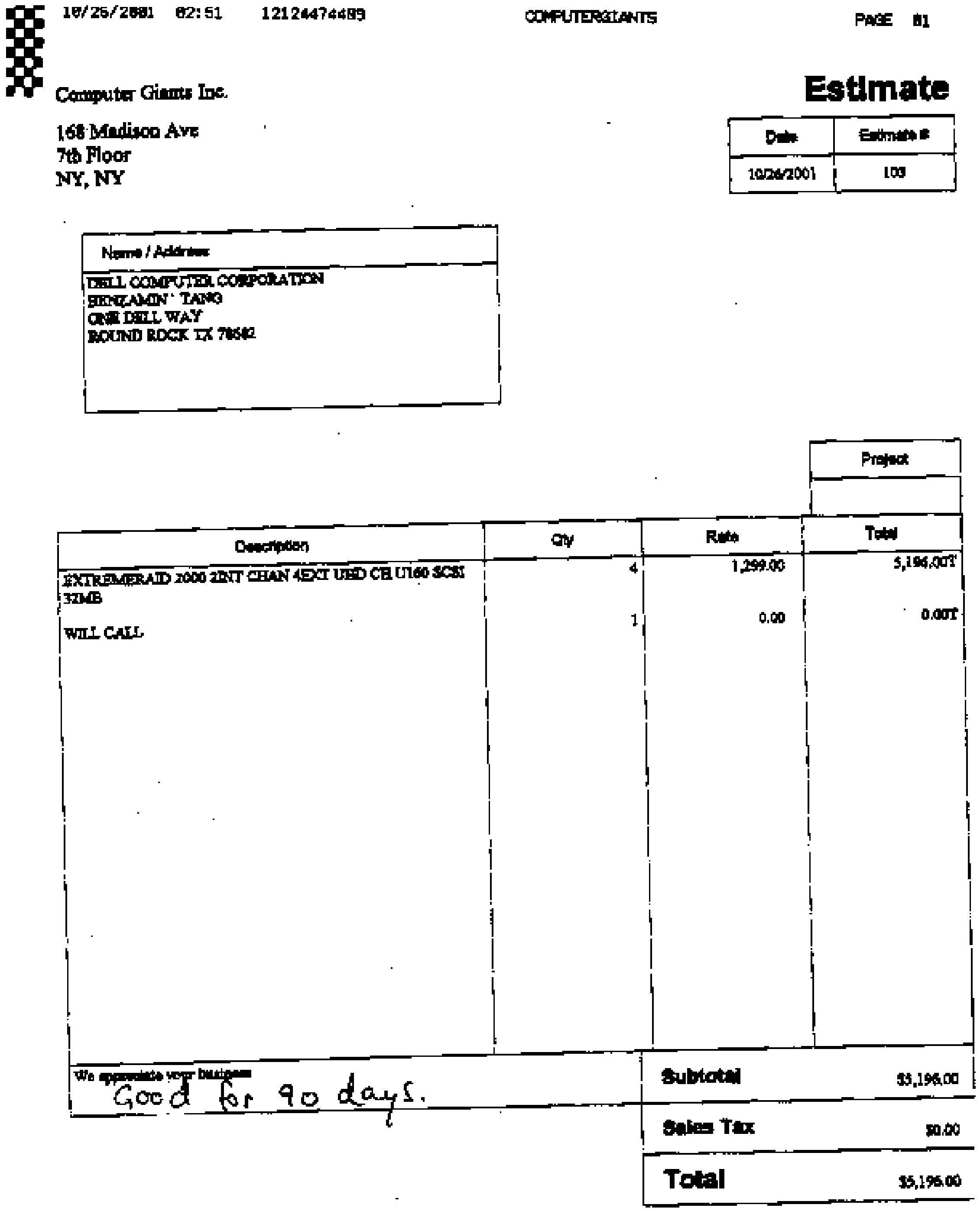
Total Storage	**340.54**	**GB**	**879.61**	**GB**		
Log Space OK						
Total Space OK		-65.7802569GB	-32.1678718GB			

Appendix E - Price Quotations



http://members.home.net/ocsinc/network%20cables.html - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://members.home.net/ocsinc/network%20cables.html
Go
Links »
Done
Internet
Start
3:33 PM

CBLC510	10FT Cat 5 Cable up to 100MBPS MOLDED	$2.00	$1.48	-	-	-	$5.95 (Shipping covers up to 6 cables)	4=1 LI
CLBL514	14FT Cat 5 Cable 100MBPS MOLDED	$2.00	$1.72	-	-	-	$5.95 (Shipping covers up to 6 cables)	3=1 LI
CBLC525	25 FT Cat 5 Cable 100MBPS MOLDED	$3.00	$2.34	-	-	-	$5.95 (Shipping covers up to 3 cables)	5= 3LI
CBLC525e (available in white only)	25 FT Cat 5 Cable **Enhanced** 350MHZ MOLDED	$4.00	-	-	-	-	$5.95 (Shipping covers up to 3 cables)	5= 3LI
CBLC535	35FT Cat 5 Cable 100MBPS MOLDED	$5.00	-	-	-	-	$5.95	
CBLC550e (Available in white only)	50 FT Cat 5 Cable **Enhanced** 350MHZ MOLDED	$6.00	-	-	-	-	$5.95	5=6 LI
CBLC570	70FT Cat 5				-	-	$5.95	7=12 I



10/26/2001 02:51 12124474489 COMPUTERGIANTS PAGE 01

Computer Giants Inc.

168 Madison Ave
7th Floor
NY, NY

Estimate

Date	Estimate #
10/26/2001	103

Name / Address

DELL COMPUTER CORPORATION
BENJAMIN TANG
ONE DELL WAY
ROUND ROCK TX 78682

Project

Description	Qty	Rate	Total
EXTREMERAID 2000 2INT CHAN 4EXT USD CH U160 SCSI 32MB	4	1,299.00	5,196.00T
WILL CALL	1	0.00	0.00T

We appreciate your business
Good for 90 days.

Subtotal	$5,196.00
Sales Tax	$0.00
Total	$5,196.00

For Warranty information go to :

http://www.computergiants.com/items/one_item.asp?part=3681&cat=33&subsubcat=292

Appendix E - Price Quotations

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

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

Microsoft

October 23, 2001

Dell Computer
Corporation
Nicholas Wakou
RR5
One DellWay
Round Rock, TX 787682

Nicholas:

Here is the information you requested regarding pricing for several Microsoft products to be used in conjunction with your TPC-C V5.0 benchmark testing.

All pricing shown is in US Dollars ($).

Part Number	Description	Unit Price	Quantity	Price
228-01079	**SQL Server 2000 Standard Edition** *Per processor licensing*	$ 4,999	1	$ 4,999
C11-00821	**Windows 2000 Server** *Server license only - No CALs* *Discount schedule: Open Program - No Level*	$ 738	1	$ 738
048-00317	**Visual C++ Professional 6.0 Win32**	$ 549	1	$ 549
	3-year maintenance for above software	$ 2,095	1	$ 6,285

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.

Reference ID: Prdaf0123106928
Please include this Reference ID in any correspondence regarding this price quote.