

TPC Benchmark™ C
Full Disclosure Report
for
IBM @server xSeries 225
using
Microsoft SQL Server 2000 Standard Edition
and
Windows 2000 Server

TPC-C Version 5.0

Submitted for Review
December 4, 2002



First Edition - December 2002

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Notes

¹ MHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

² When referring to hard disk capacity, GB, or gigabyte, means one thousand million bytes. Total user-accessible capacity may be less.

Abstract

IBM Corporation conducted the TPC Benchmark™ C on the IBM @server xSeries 225 configured as a client/server system. This report documents the full disclosure information required by the TPC Benchmark™ C Standard Specification, Revision 5.0, including the methodology used to achieve the reported results. All testing fully complied with this revision level.

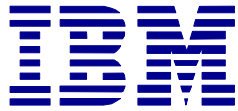
The software used on the xSeries 225 system includes Microsoft** Windows** 2000 Server operating system and Microsoft SQL Server 2000 Standard Edition database.

Two standard metrics, transactions per minute-C (tpmC) and price per tpmC (\$/tpmC), are reported as required by the TPC Benchmark C Standard Specification.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	tpmC	\$/tpmC	Total Solution Availability Date
IBM @server xSeries 225	Microsoft SQL Server 2000 Standard Edition Microsoft Windows 2000 Server	\$50,509	18,077.98	\$2.79	February 12, 2003

The results of the benchmark and test methodology used were audited by Bradley J. Askins of InfoSizing, Inc. The auditor's attestation letter is contained in Section 9 of this report.



**IBM @server xSeries 225 c/s
with Microsoft SQL Server 2000**

TPC-C Rev. 5.0

Report Date: December 4,
2002

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
\$50,509	18, 077.98 tpmC	\$2.79 / tpmC	February 12, 2003

Processors	Database Manager	Operating System	Other Software	Number of Users
Database Server: 1 Intel® Xeon™ 2.4GHz Client: 1 Pentium® III 1.4GHz	Microsoft® SQL Server 2000 Standard Edition with SP3	Microsoft Windows® 2000 Server with SP2	Microsoft Visual C++ Microsoft COM+	14,700

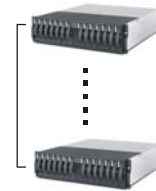
1 RTE emulating 14,700 Users



1 x IBM xSeries 220
1 x 1.4GHz Pentium III



1 x IBM xSeries 225
1 x 2.4GHz/512MB Xeon Processor
3 x Mylex AcceleRAID A352 Adapters
1 x 18.2GB Drive
2 x 73.4GB Drives



4 x EXP300 Storage
56 x 18.2GB Drives

System Component	Qty	Server	Qty	Client
Processors	1	2.4GHz Xeon	1	1.4GHz Pentium III
Cache		512KB L2 Cache		512KB L2 Cache
Memory	2	256MB	3	128MB
	2	1GB ECC SDRAM RDIMM	1	256MB
Disk Controllers	3	Mylex AcceleRAID A352 Adapter with 32MB	1	Ultra160 SCSI Interface
Disk Drives	1	Integrated Ultra320 SCSI	1	18.2GB Hard Disk
	57	18.2GB (10000 rpm)		
	2	73.4GB (10000 rpm)		
Total Storage		1101.65GB		
Tape Drive	1	20/40GB SCSI Tape Drive		

IBM Corporation	IBM @server xSeries 225 c/s with Microsoft SQL Server 2000	TPC-C Rev. 5.0
		Report Date: December 4, 2002

Description	Order Number	Brand	Third-Party Pricing	Unit Price	Qty	Ext. Price	3-Yr. Maint.*
Server Hardware							
xSeries 225 w/ 1 x 2.4GHz/512KB Xeon 2 x 256MB 133MHz ECC SDRAM Integrated Gigabit Ethernet Interface Integrated Dual-Channel Ultra320 SCSI	8647-3AX	IBM	1	\$1,529	1	\$1,529	\$698
1GB ECC SDRAM RDIMM Memory Kit	33L5039	IBM	1	779	2	1,558	0
Mylex AcceleRAID A352 SCSI Adapter	08P2420	Mylex	3	610	5	3,050	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	IBM	1	105	6	630	0
E54 15" (13.8" Viewable) Color Monitor*	633147N	IBM	1	139	1	139	90
20/40GB Internal SCSI Tape Drive	00N7991	IBM	1	769	1	769	0
Storage Hardware							
EXP300 Rack Storage Enclosure*	3531-1RU	IBM	1	3,179	4	12,716	800
EXP300 Rack-to-Tower Conversion Kit	09N7296	IBM	1	319	1	319	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM	1	275	57	15,675	0
73.4GB 10K Ultra160 SCSI Drive	06P5756	IBM	1	769	2	1,538	0
NetBAY11 Enterprise Rack*	9306110	IBM	1	519	1	519	168
Subtotal						\$38,442	\$1,756
Server Software							
Microsoft SQL Server 2000 Standard Edition	228-01079	Microsoft	2	4,999	1	\$4,999	\$0
Microsoft Windows 2000 Server	C11-00821	Microsoft	2	738	1	738	0
Three-Year Maintenance for Software		Microsoft	2	1,950	3		5,850
Subtotal						\$5,737	\$5,850
Client Hardware							
xSeries 220 / 1.4GHz/512KB Pentium III* 1 x 128MB 133MHz ECC SDRAM	8646-51X	IBM	1	1,089	1	\$1,089	\$698
256MB 133MHz ECC SDRAM RDIMM	10K0020	IBM	1	219	1	219	0
128MB 133MHz ECC SDRAM RDIMM	10K0018	IBM	1	115	2	230	0
18.2GB 10K Ultra160 SCSI Drive	06P5754	IBM	1	275	1	275	0
IBM 10/100 Dual-Port Server Adapter	22P4901	IBM	1	209	2	418	0
E54 15" (13.8" Viewable) Color Monitor*	633147N	IBM	1	139	1	139	90
Subtotal						\$2,370	\$788
Client Software							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft	2	738	1	738	0
Microsoft Visual C++	254-00170	Microsoft	2	109	1	109	0
Subtotal						\$847	\$0
User Connectivity							
Cross-over Cable (7 ft.)*** (incl. 2 spares)	CBLC5C7		4	2	3	6	0
Subtotal						\$6	\$0
Total						\$47,402	\$8,394
Large volume discount on IBM hardware of 14%; prices vary if purchased separately.			1			\$5,287	\$0

Notes: * The standard 3-year warranties on IBM hardware have been upgraded to 7x24x4 including parts exchange (ServicePac 69P9511). ** Five-year warranty. *** 10% or minimum 2 spares are added in place of on-site service (products have a 5-year return-to-vendor-warranty) Pricing: 1 - IBM Corp.; 2 - Microsoft Corp.; 3 - Computer Giants; 4 - LanAdapters.com. Audited by Bradley J. Askins of InfoSizing, Inc.	Three-Year Cost of Ownership:	\$50,509
	tpmC Rating:	18,077.98
	\$ / tpmC:	\$2.79

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

Numerical Quantities Summary			
MQTh, Computed Maximum Qualified Throughput:			18,077.98 tpmC
Response Times (in seconds)	Average	Maximum	90 %-tile
New-Order	0.60	5.52	0.90
Payment	0.39	5.24	0.66
Delivery	0.30	1.25	0.56
Stock Level	2.83	6.75	4.53
Order Status	0.49	5.47	0.78
Delivery (Deferred)	1.07	3.52	1.68
Menu	0.31	1.28	0.58
Transaction Mix (in percent of total transactions)		Total Occurrences	Percent
New-Order		2,169,358	44.89
Payment		2,078,008	43.00
Delivery		195,411	4.04
Stock-Level		194,767	4.03
Order Status		194,960	4.03
Emulation Delay (in seconds)	Response Time		Menu
New-Order	0.1		0.1
Payment	0.1		0.1
Delivery	0.1		0.1
Stock-Level	0.1		0.1
Order Status	0.1		0.1
Keying/Think Times (in seconds)	Average	Minimum	Maximum
New Order	18.01 / 12.03	18.00 / 0.00	18.03 / 120.50
Payment	3.01 / 12.03	3.00 / 0.00	3.03 / 120.50
Delivery	2.01 / 5.02	2.00 / 0.00	2.02 / 50.50
Stock Level	2.01 / 5.01	2.00 / 0.00	2.02 / 50.50
Order Status	2.01 / 10.02	2.00 / 0.00	2.02 / 100.50
Test Duration			
Ramp-up time			18 minutes
Measurement interval			120 minutes
Number of transactions (all types) completed in measurement interval			5,027,871
Ramp-down time			3 minutes
Number of checkpoints in measurement interval			4
Checkpoint interval			30 minutes

Table of Contents

Abstract	3
Numerical Quantities Summary	5
Preface	11
General Items	12
Application Code Disclosure and Definition Statements	12
Benchmark Sponsor	12
Parameter Settings	12
Configuration Diagrams	12
Clause 1: Logical Database Design Related Items	14
Table Definitions	14
Physical Organization of the Database	14
Insert and Delete Operations	14
Horizontal or Vertical Partitioning	14
Replication	14
Table Attributes	14
Clause 2: Transaction and Terminal Profiles Related Items	15
Random Number Generation	15
Screen Layout	15
Terminal Verification	15
Intelligent Terminals	15
Transaction Profiles	15
Deferred Delivery Mechanism	16
Clause 3: Transaction and System Properties Related Items	17
Atomicity Requirements	17
Consistency Requirements	17
Isolation Requirements	18
Durability Requirements	18
Clause 4: Scaling and Database Population Related Items	20
Cardinality of Tables	20
Distribution of Tables and Logs	20
Database Model Implemented	21
Partitions/Replications Mapping	21
60-Day Space Requirement	21
Clause 5: Performance Metrics and Response Time Related Items	22
Measured tpmC	22
Response Times	22
Keying/Think Times	22
Response Time Frequency Distribution Curves	23
Performance Curve for Response Time vs. Throughput	25
New Order Think Time Distribution	26
Throughput vs. Elapsed Time	26
Steady State Methodology	27
Work Performed during Steady State	27
Checkpoints	27
Measurement Interval	27
Transaction Mix	27
Percentage of Total Mix	28
Number of Checkpoints	28
Clause 6: SUT, Driver and Communication Definition Related Items	29

Description of RTE	29
Emulated Components	29
Benchmarked and Targeted System Configuration Diagrams	29
Network Configuration	29
Network Bandwidth	29
Operator Intervention	29
Clause 7: Pricing Related Items	30
Hardware and Software Components	30
Availability Date	30
Measured tpmC	30
Country-Specific Pricing	30
Usage Pricing	30
System Pricing	31
Clause 9: Audit Related Items	32
Auditor	32
Availability of the Full Disclosure Report	32
<i>Attestation letter</i>	33
Appendix A: Source Code	35
<i>client_utils.c</i>	35
<i>client_utils.h</i>	36
<i>dlldata.c</i>	37
<i>error.h</i>	37
<i>install.c</i>	39
<i>install.h</i>	47
<i>install.rc</i>	47
<i>install_com.cpp</i>	50
<i>license.txt</i>	52
<i>mon_client.c</i>	54
<i>mon_client.h</i>	57
<i>readme.txt</i>	57
<i>Readregistry.cpp</i>	57
<i>Readregistry.h</i>	58
<i>Resource.h</i>	58
<i>Resource_tpcc_rc.h</i>	59
<i>rtetime.h</i>	59
<i>spinlock.h</i>	59
<i>tpcc.cpp</i>	60
<i>tpcc.def</i>	83
<i>tpcc.h</i>	83
<i>tpcc.rc</i>	85
<i>tpcc_com.cpp</i>	86
<i>tpcc_com.h</i>	87
<i>tpcc_com_all.dsp</i>	89
<i>tpcc_com_ps.def</i>	90
<i>tpcc_com_ps.h</i>	90
<i>tpcc_com_ps.idl</i>	92
<i>tpcc_com_ps_i.c</i>	93
<i>tpcc_com_ps_p.c</i>	94
<i>tpcc_dblib.cpp</i>	114
<i>tpcc_dblib.h</i>	124
<i>tpcc_enc.cpp</i>	125
<i>tpcc_enc.h</i>	127
<i>tpcc_odbc.cpp</i>	128
<i>tpcc_odbc.h</i>	135
<i>tpcc_tux.cpp</i>	137

<i>tpcc_tux.h</i>	139
<i>trans.h</i>	140
<i>tuxapp.cpp</i>	141
<i>tuxapp.h</i>	145
<i>tuxmain.c</i>	145
<i>txn_base.h</i>	146
<i>txnlog.h</i>	146
<i>webclnt.dsp</i>	149
<i>webclnt.dsw</i>	150
Stored Procedures	151
<i>neword.sql</i>	151
<i>payment.sql</i>	154
<i>ordstat.sql</i>	155
<i>delivery.sql</i>	156
<i>stocklev.sql</i>	157
<i>version.sql</i>	158
<i>null-txn.sql</i>	158
Appendix B: Database Design	162
Database Build	162
<i>backup.sql</i>	162
<i>backupdev.sql</i>	162
<i>createdb.sql</i>	162
<i>dbopt1.sql</i>	163
<i>dbopt2.sql</i>	163
<i>idxcuscl.sql</i>	163
<i>idxcusnc.sql</i>	164
<i>idxdiscl.sql</i>	164
<i>idxitmcl.sql</i>	164
<i>idxnodcl.sql</i>	164
<i>idxodlcl.sql</i>	165
<i>idxordcl.sql</i>	165
<i>idxordnc.sql</i>	165
<i>idxstkcl.sql</i>	165
<i>idxwarcl.sql</i>	165
<i>removedb.sql</i>	166
<i>restore.sql</i>	166
<i>RunSQLCfg.sql</i>	166
<i>sqlshutdown.sql</i>	166
<i>tables.sql</i>	166
<i>Verify_TpccLoad.sql</i>	168
<i>version.sql</i>	169
Load Source Code	169
<i>getargs.c</i>	169
<i>random.c</i>	171
<i>strings.c</i>	172
<i>time.c</i>	175
<i>tpcc.h</i>	175
<i>tpccldr.c</i>	176
<i>tpccldr.mak</i>	200
Appendix C: Tunable Parameters	204
Microsoft Windows 2000 Server Configuration Parameters	204
Microsoft SQL Server 2000 Configuration Parameters	204
Microsoft Windows 2000 Server System Information Report	205
Disk Controller Configuration Parameters	226
Microsoft Windows 2000 Client System Information Report	233

Client Configuration Parameters	253
RTE Input Parameters	254
Appendix D: 60-Day Space	258
Appendix E: Third-Party Quotations	259

Preface

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

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

TPC Benchmark C is an On Line Transaction Processing (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 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.

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.

General Items

Benchmark Sponsor

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

This benchmark was sponsored by International Business Machines Corporation.

Application Code Disclosure and Definition Statements

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

Appendix A contains all source code implemented in this benchmark.

Parameter Settings

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

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

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

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

Configuration Diagrams

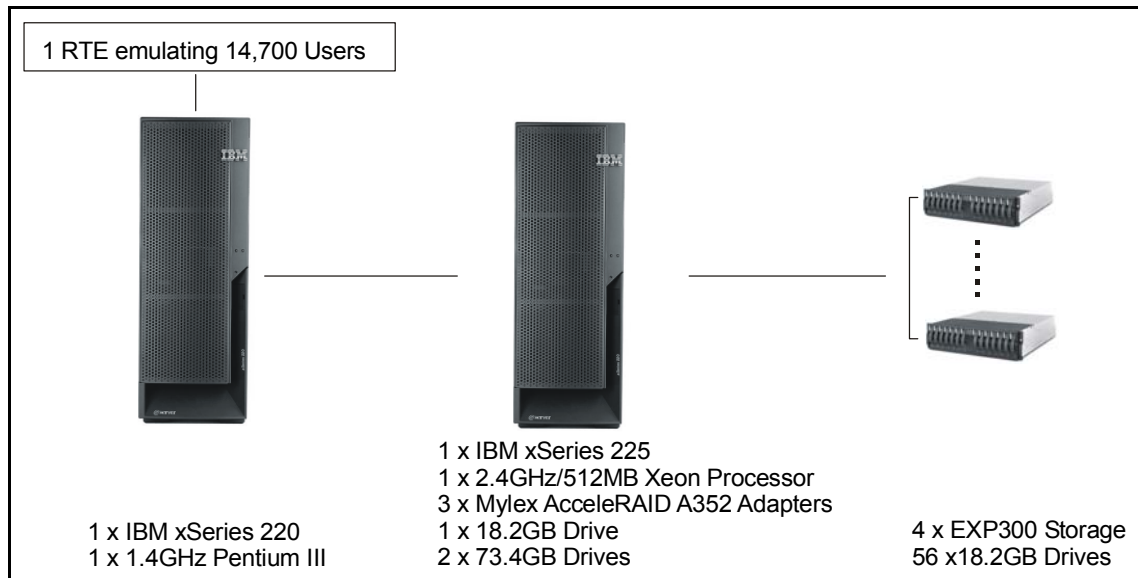
Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences.

The configuration diagrams for the tested and priced systems are provided on the following pages.

The Remote Terminal Emulator (RTE) used for these TPC Benchmark C tests is the Microsoft BenchCraft RTE. Under Version 5.0, the components of the configuration being emulated by the RTE are the workstations and the Ethernet hubs. Appendix C contains a listing of the RTE scripts and inputs used in the benchmark testing.

The benchmarked configuration used an IBM xSeries 220 system as the client, which executed the terminal I/O and submitted transactions to COM+ servers, which are also running on the clients. These COM+ servers forwarded the transaction requests to the server, and returned the results to the RTE. Microsoft SQL Server 2000 Standard Edition is the DBMS executing on the server

Measured and Priced Configuration



The measured and priced configurations were identical.

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.

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

Physical Organization of the Database

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

Physical space was allocated to Microsoft SQL Server on the server disks as detailed in Figure 4-2.

Insert and Delete Operations

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

All insert and delete functions were fully operational during the running of the benchmark. The space required for an additional 5 percent of the initial table cardinality was allocated to Microsoft SQL Server 2000 and priced as static space.

Horizontal or Vertical Partitioning

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

Partitioning was not used in this benchmark.

Replication

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

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).

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 disclosed.

The seeds and offsets for the random number generator were collected and verified to be different for each driver. The auditor selected samples of the generated numbers from the database. The samples were verified to have no discernible patterns.

Screen Layout

The actual layouts of the terminal input/out screens must be disclosed.

All screen layouts followed the TPC Benchmark C Standard Specification.

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 must for the demonstration in 8.1.3.3 must be disclosed and commercially available (including supporting software and maintenance).

The auditor verified terminal features by direct experimentation. The benchmarked configuration uses Microsoft Internet Explorer 5.0 and HTML scripts as the terminal interface.

Intelligent Terminals

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

The terminals emulated in the priced configuration are IBM PC desktop computer systems. All processing of the input/output screens was handled by the xSeries 220 client. The screen input/output was managed via HTML strings that comply with the HTML Version 2.0 specification. A listing of the code used to implement the intelligent terminals is provided in Appendix A. All data manipulation was handled by the xSeries 220 database server.

Transaction Profiles

The percentage of home and remote order-lines in the New-Order transactions must be disclosed.

The percentage of New-Order transactions that were rolled back as a result of an unused item number must be disclosed.

The number of items per orders entered by New-Order transactions must be disclosed. The percentage of home and remote Payment transactions must be disclosed. The percentage of Payment and Order-Status transactions that used non-primary key (C_LAST) access to the database must be disclosed.

The percentage of Delivery transactions that were skipped as a result of an insufficient number of rows in the NEW-ORDER table must be disclosed.

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

Table 2-1. Transaction Statistics

New Order	Value (%)
Home warehouse order lines	99.00
Remote warehouse order lines	1.00
Rolled back transactions	1.00
Average number of items per order	10.00
Payment	
Home warehouse payment transactions	85.07
Remote warehouse payment transactions	14.93
Non-Primary Key Access	
Payment transactions using C_LAST	60.04
Order-Status transactions using C_LAST	59.96
Delivery	
Delivery transactions skipped	0
Transaction Mix	
New-Order	44.89
Payment	43.00
Delivery	4.04
Stock Level	4.03
Order Status	4.03

Deferred Delivery Mechanism

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

The deferred delivery operation is queued by making an entry in an array within the application process (tpcc.dll) running on the client. Background threads within the application asynchronously process the queued delivery transactions.

The source code is listed in Appendix A.

Clause 3: Transaction and System Properties Related Items

The results of the ACID test 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.

Atomicity Requirements

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

All ACID tests were conducted according to specification.

Completed Transactions

The following steps were performed to verify the Atomicity of completed transactions.

1. The balance was retrieved from the CUSTOMER table for a random Customer, District and Warehouse, giving BALANCE_1.
2. The Payment transaction was executed for the Customer, District and Warehouse used in step 1.
3. The balance was retrieved again for the Customer used in step 1 and step 2, giving BALANCE_2. It was verified that BALANCE_1 was greater than BALANCE_2 by AMT.

Aborted Transactions

The following steps were performed to verify the Atomicity of the aborted Payment transaction:

1. The Payment application code was changed to execute a rollback of the transaction instead of performing the commit.
2. Using the balance, BALANCE_2, from the CUSTOMER table retrieved for the completed transaction, the Payment transaction was executed for the Customer, District and Warehouse used in step 1 of section 3.1.1. The transaction rolled back due to the change in the application code from step 1.
3. The balance was retrieved again for the Customer used for step 2, giving BALANCE_3. It was verified that BALANCE_2 was equal to BALANCE_3.

Consistency Requirements

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 demonstrated that the database was consistent for all four tests.

Isolation Requirements

Sufficient conditions must be enabled at either the system or the application level to ensure that the required isolation defined in Clause 3.4.1 is obtained.

Isolation tests one through seven were run 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 and placed in files. The auditor reviewed the results and verified that the isolation requirements had been met.

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

Case A was followed for Isolation test seven.

Durability Requirements

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

- *Permanent irrecoverable failure of any single durable medium containing TPC-C database tables or recovery log data (this test includes failure of all or part of memory)*
- *Instantaneous interruption (system crash/system hang) in processing that requires system reboot to recover*
- *Failure of all or part of memory (loss of contents)*

Loss of Data Test

The following steps were successfully performed to pass the Durability test of failure of a disk unit with database tables:

1. The contents of the database were backed up to several database dump devices during the initial database load. There were no dump devices on the disk array from which a drive was removed as part of this test.
2. The current count of the total number of orders was determined by the sum of D_NEXT_O_ID for all rows in the district table giving SUM1.
3. A test was started with 10 percent of the total users submitting transactions.
4. A disk containing a portion of each of the tables in the tpcc database was removed causing SQL Server to report errors accessing that device.
5. The run was aborted and SQL Server was restarted. Upon restart, the database tpcc reported numerous errors relating to the failed database device.
6. The transaction log was dumped to disk and the failed disk was replaced with a spare disk and was recovered.
7. The database was recovered and restored from the backup dump devices. Afterwards, the transaction log was applied to the database.
8. Step 2 was repeated to obtain the current count of the total number of orders giving SUM2.
9. It was verified that the sum of D_NEXT_O_ID after the database is recovered is greater than or equal to the sum of D_NEXT_O_ID before the run, plus all new order transactions completed during the run minus any rollback transactions.
10. Consistency Condition 3 was verified.

Combined Loss of Log and Loss of System Test (Instantaneous Interruption and Loss of Memory)

1. The current count of the total number of orders was determined by the sum of D_NEXT_O_ID for all rows in the district table giving SUM1.
2. The test started with a full load with all users submitting transactions. A checkpoint was issued, and the system continued to run for another 5 minutes.
3. One of the log disk drives was removed. Since the log disk was mirrored, SQL Server continued to process transactions without interruption.
4. The test continued for another 3 minutes.
5. The server under test was powered off, which removed power from the system and the memory.
6. The server was powered on again.
7. SQL Server was started to initiate automatic recovery from its log.
8. Step 1 was repeated to obtain the current count of the total number of orders giving SUM2.
9. It was verified that the sum of D_NEXT_O_ID after the database is recovered is greater than or equal to the sum of D_NEXT_O_ID before the run, plus all new order transactions completed during the run minus any rollback transactions.

Clause 4: Scaling and Database Population Related Items

Cardinality of Tables

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

The database was originally built with 1,480 warehouses, and the audited run used 1,470 warehouses.

Table 4-1. Initial Cardinality of Tables

Table Name	Rows
Warehouse	1,480
District	14,800
Item	100,000
New Order	13,320,000
History	44,400,000
Orders	44,400,000
Customer	44,400,000
Order Line	443,999,304
Stock	148,000,000
Inactive Warehouses	10

Distribution of Tables and Logs

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

Figure 4-2 depicts the database configuration of the tested system to meet the 8-hour steady state requirement.

Figure 4-2. Data Distribution for the Benchmarked Configuration

Controller	Drives	Partition	Size	Use
0	2 - 73.4GB	E:	40000MB	Logfile
1	14 - 18.2GB	F: G:	21180MB 10000MB	Customer and Stock Misc.
2	21 - 18.2GB	H: I: Y:	31770MB 15000MB 70000MB (NTFS)	Customer and Stock Misc. Backup 1
3	21 - 18.2GB	J: K: Z:	31770MB 15000MB 70000MB (NTFS)	Customer and Stock Misc. Backup 2

Database Model Implemented

A statement must be provided that describes:

- 1. The database 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/I, 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 Standard Edition is a relational database. The interface used was Microsoft SQL Server stored procedures accessed with Remote Procedure Calls embedded in C code using the Microsoft DBLIB interface.

Partitions/Replications Mapping

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

The database was neither partitioned nor replicated.

60-Day Space Requirement

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).

See Appendix D for details about how the 60-day space requirements were calculated.

Clause 5: Performance Metrics and Response Time Related Items

Measured tpmC

Measured tpmC must be reported.

Measured tpmC: 18,077.98 tpmC

Price per tpmC: \$2.79 per tpmC

Response Times

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

The TPC-C requirements for the average response time and the 90th percentile were met. Table 5-1 provides the response times for each of the transaction types and the menu for the measured system.

Table 5-1. Response Times in Seconds

Transaction Type	Average	Maximum	90 %-tile
New-Order	0.60	5.52	0.90
Payment	0.39	5.24	0.66
Delivery	0.30	1.25	0.56
Stock Level	2.83	6.75	4.53
Order Status	0.49	5.47	0.78
Delivery (Deferred)	1.07	3.52	1.68
Menu	0.31	1.28	0.58

Keying/Think Times

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

Table 5-2 lists the keying/think times for the measured system.

Table 5-2. Keying/Think Times

Transaction Type	Average	Minimum	Maximum
New-Order	18.01 / 12.03	18.00 / 0.00	18.03 / 120.50
Payment	3.01 / 12.03	3.00 / 0.00	3.03 / 120.50
Delivery	2.01 / 5.02	2.00 / 0.00	2.02 / 50.50
Stock Level	2.01 / 5.01	2.00 / 0.00	2.02 / 50.50
Order Status	2.01 / 10.02	2.00 / 0.00	2.02 / 100.50

Response Time Frequency Distribution Curves

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

Figure 5-1. New-Order Transaction - Response Time Frequency Distribution

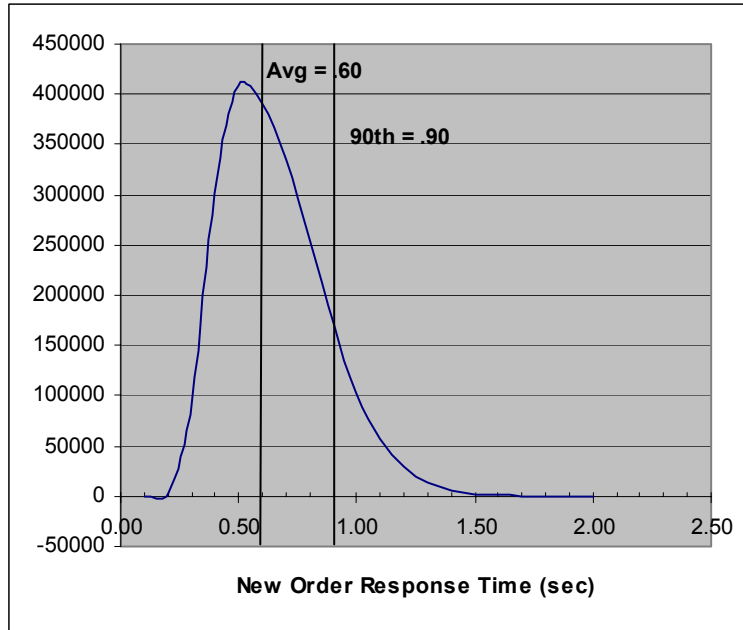


Figure 5-2. Payment Transaction - Response Time Frequency Distribution

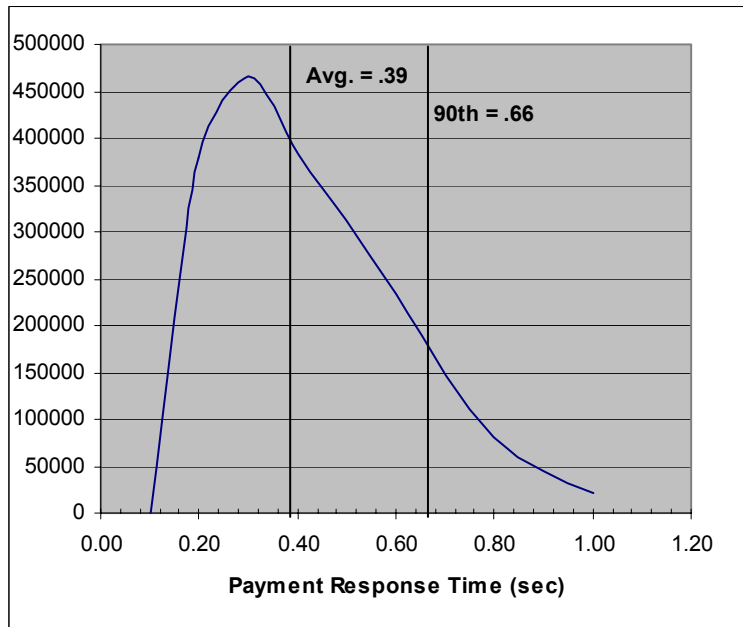


Figure 5-3. Order-Status Transaction - Response Time Frequency Distribution

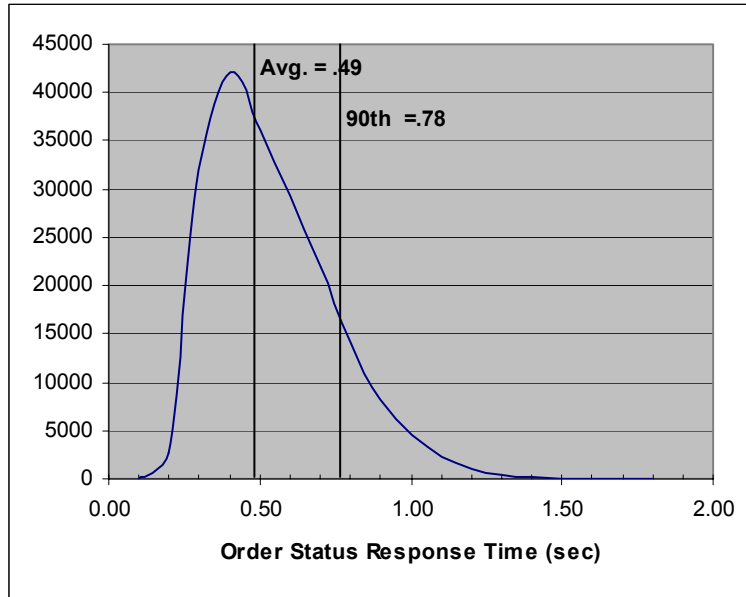
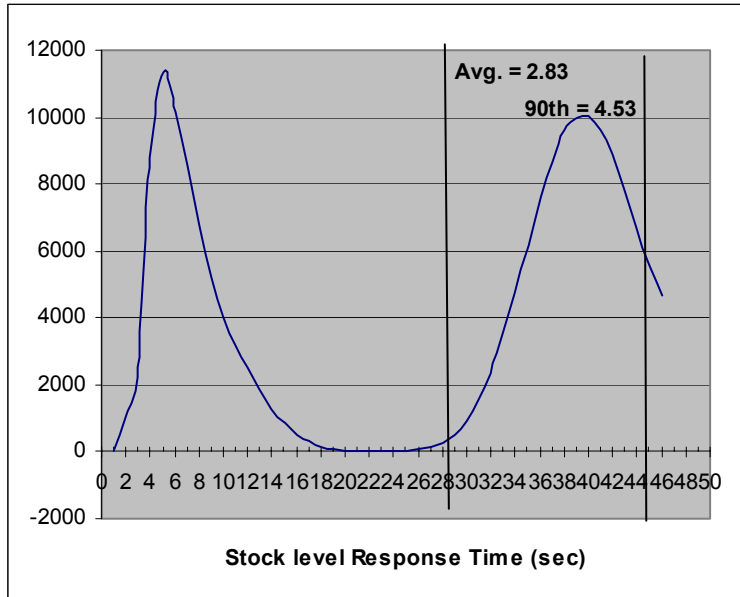


Figure 5-4. Delivery Transaction - Response Time Frequency Distribution



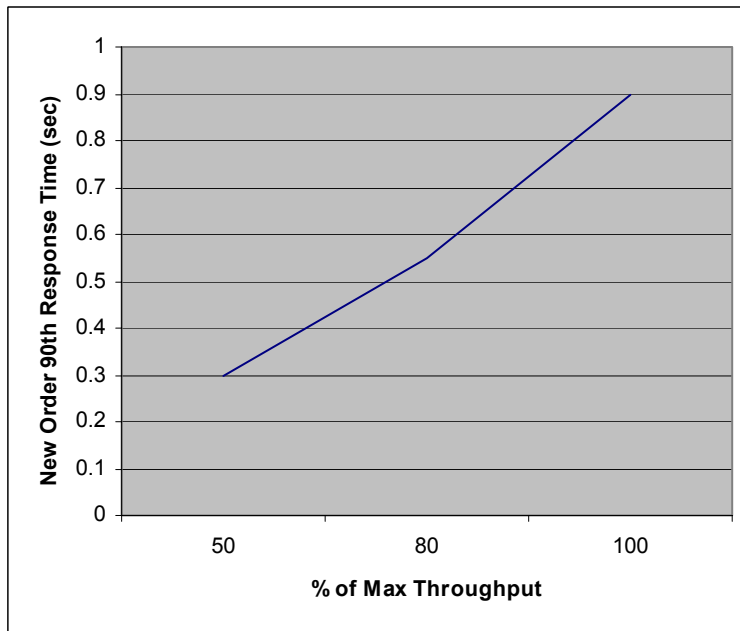
Figure 5-5. Stock-Level Transaction - Response Time Frequency Distribution



Performance Curve for Response Time vs. Throughput

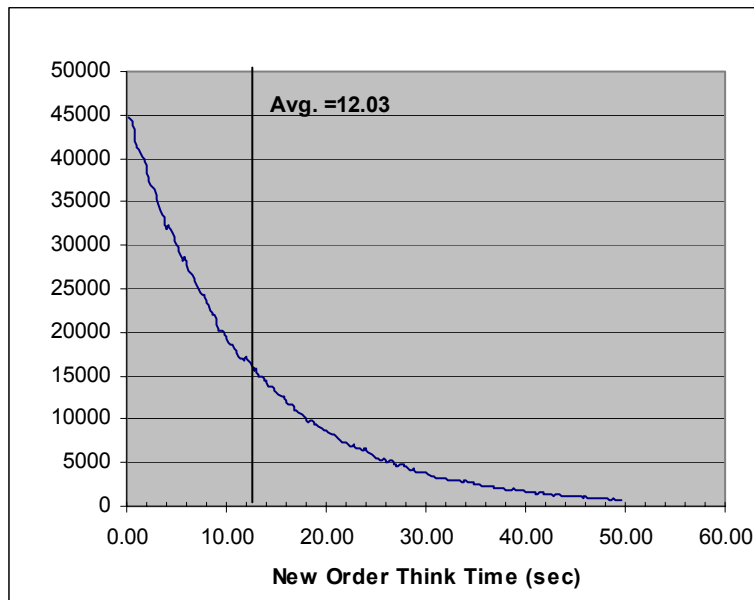
The performance curve for response time vs. throughput (see Clause 5.6.2) must be reported for the New-Order transaction.

Figure 5-6. New-Order Response Time vs. Throughput



New Order Think Time Distribution

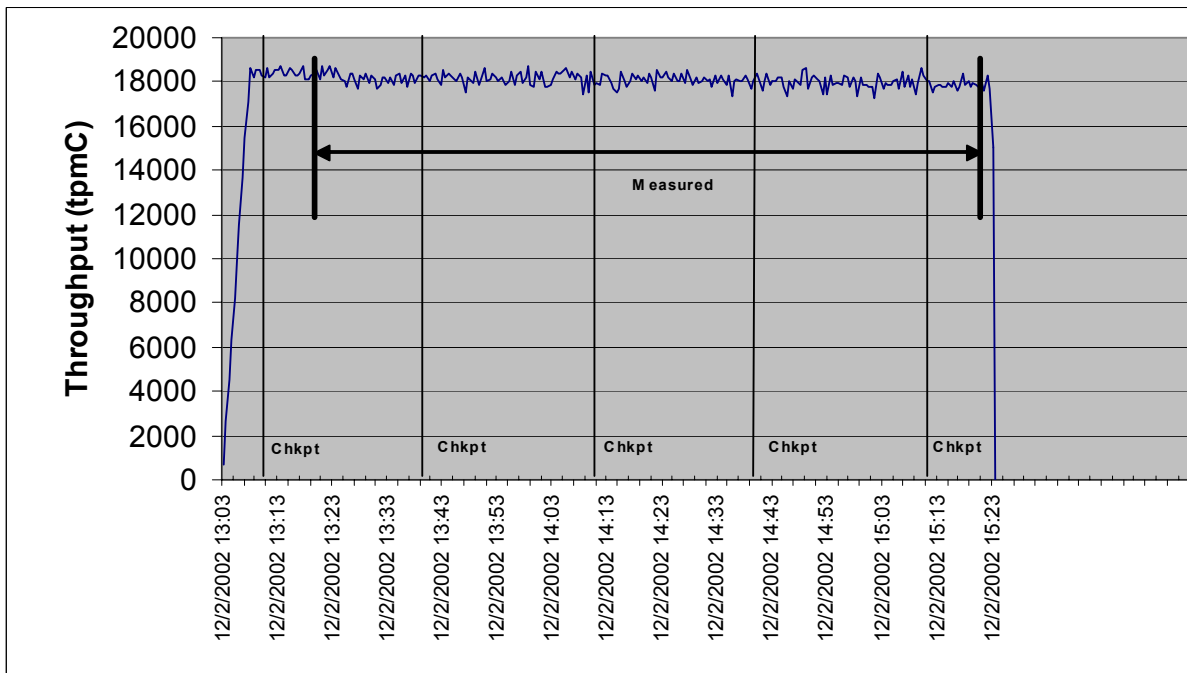
Figure 5-7. New-Order Think Time Distribution



Throughput vs. Elapsed Time

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

Figure 5-8. New-Order Throughput vs. Elapsed 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.

Figure 5-8 shows that the system was in steady state at the beginning of the measurement interval.

Work Performed during Steady State

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

Transaction Flow

The RTE generated the required input data to choose a transaction from the menu. This data was time-stamped. The response for the requested transaction was verified and time-stamped 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 input screen. The transmission was time-stamped. The return of the screen with the required response data was time-stamped. The difference between these two time-stamps 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 application processes running on the client machines through Ethernet LANs. These client application processes handled all screen I/O as well as all requests to the database on the server. The applications communicated with the database server over another Ethernet LAN using Microsoft SQL Server DBLIB library and RPC calls.

Checkpoints

Checkpoints were executed on the server during the ramp-up phase and at 30-minute intervals. The measured run contained four checkpoints. SQL Server was started with trace flag 3502, which caused it to log the occurrence of the checkpoint. This information was used to verify that the checkpoints occurred at the appropriate times during the test run.

During a checkpoint, SQL Server flushes all dirty pages from its cache to disk. It places a record in the database transaction log indicating that the checkpoint has completed and that all transactions, which were committed prior to the checkpoint have been written to disk.

Measurement Interval

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

The measurement interval was 120 minutes.

Transaction Mix

The method of regulation of the transaction mix (e.g., card decks or weighted random distribution) must be described. If weighted distribution is used and the RTE adjusts the weights associated with each transaction type, the maximum adjustments to the weight from the initial value must be disclosed. (8.1.6.13)

See Table 5-3.

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

Percentage of Total Mix

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

See Table 5-3.

Table 5-3. Transaction Statistics and Transaction Mix

New Order	Value (%)
Home warehouse order lines	99.00
Remote warehouse order lines	1.00
Rolled back transactions	1.00
Average number of items per order	10.00
Payment	
Home warehouse payment transactions	85.07
Remote warehouse payment transactions	14.93
Non-Primary Key Access	
Payment transactions using C_LAST	60.04
Order-Status transactions using C_LAST	59.96
Delivery	
Delivery transactions skipped	0
Transaction Mix	
New-Order	44.89
Payment	43.00
Delivery	4.04
Stock Level	4.03
Order-Status	4.03

Number of Checkpoints

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

Checkpoints were performed during the ramp-up period and during each measured run interval. The first measurement interval checkpoint started 18 minutes and 40 seconds after the start of the measurement interval. The four checkpoints in the measured interval are shown in Table 5-4.

Table 5-4. Checkpoint Start Time and Duration

Checkpoint	Start Time	Duration
1	01:40:11 p.m.	9 minutes 30 seconds
2	02:10:09 p.m.	10 minutes 6 seconds
3	02:40:07 p.m.	11 minutes 0 seconds
4	03:10:05 p.m.	11 minutes 16 seconds

The checkpoint interval was 30 minutes.

Clause 6: SUT, Driver and Communication Definition Related Items

Description of RTE

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

The RTE used was Microsoft BenchCraft 1.1.2 RTE. Benchcraft is a proprietary tool provided by Microsoft and is not commercially available. The RTE input is listed in Appendix C.

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.

No components were emulated.

Benchmarked and Targeted System Configuration Diagrams

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

The driver RTE generated the transaction input data and transmitted it to the client in HTML format. The driver RTE received the output from the System under Test, time-stamped it, and forwarded it to the Master RTE for post-test processing. No other functionality was included on the driver RTE.

Detailed diagrams of the benchmarked and priced configurations are provided in the section called “General Items” at the beginning of this document.

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).

See the measured and priced configuration diagrams (pages 13 and 14) for details about the network configuration.

Network Bandwidth

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

The Ethernet used in the LAN complies with the IEEE.802.3 standard. The LANs that connected the driver RTEs to the clients had a bandwidth of 10Mbps. The LAN that connected the client to the server had a bandwidth of 100Mbps.

Operator Intervention

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

The configuration did not require any operator intervention to sustain the reported throughput.

Clause 7: Pricing Related Items

Hardware and Software Components

A detailed list of the hardware and software used in the priced system must be reported. Each separately orderable item must have a 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) must also be reported.

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

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

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 for the priced system must be the date at which all components are committed to be available.

The total solution as priced will be available February 13, 2003.

Measured tpmC

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

- ◆ Maximum Qualified Throughput: 18,077.98 tpmC
- ◆□ Price per tpmC: \$2.79 per tpmC
- ◆□ Three-year cost of ownership: \$50,509

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.

The configuration is priced for the United States of America.

Usage Pricing

For any usage pricing, the sponsor must disclose:

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

The component pricing based on usage is shown below:

- 1 Microsoft Windows 2000 Server with SP2
- 1 Microsoft SQL Server 2000 Standard Edition with SP3 (based on per-processor price)
- 3-year support for hardware components (except for components for which 10 percent spares are provided)

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

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

Clause 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.

This implementation of the TPC-C benchmark was audited by Bradley J. Askins of InfoSizing, Inc. The auditor's attestation letter is provided in this section.

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 BenchmarkTMC," the Full Disclosure Report must have been submitted to the TPC Administrator as well as written permission obtained to distribute same.

The TPC Benchmark C Full Disclosure Report is available at www.tpc.org.

Benchmark Sponsor: William D. Hall
 Manager, xSeries Performance
 IBM Server Group
 3039 Cornwallis Road
 Research Triangle Park, NC 27709

December 3, 2002

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

Platform: **IBM @server xSeries 225 c/s**
 Operating system: **Microsoft Windows 2000 Server with SP2**
 Database Manager: **Microsoft SQL Server 2000 Standard Edition with SP3**
 Transaction Manager: **Microsoft COM+**

The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	tpmC
Server: IBM @server xSeries 225				
1 x Xeon (2.4GHz)	2.5 GB Main (512 KB L2 Cache per processor)	2 x 73.4 GB 57 x 18.2 GB	0.90 Seconds	18,077.98
IBM @server xSeries 220 (Specification for each)				
1 x Pentium III (1.4 GHz)	640 MB Main (512 KB L2 Cache per processor)	1 x 18.2 GB	n/a	n/a

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

- The database records were the proper size
- The database was properly scaled and populated

- The required ACID properties were met
- The transactions were correctly implemented
- Input data was generated according to the specified percentages
- The transaction cycle times included the required keying and think times
- The reported response times were correctly measured.
- All 90% response times were under the specified maximums
- At least 90% of all delivery transactions met the 80 Second completion time limit
- The reported measurement interval was 120 minutes (7200 seconds)
- The reported measurement interval was representative of steady state conditions
- Four checkpoints were taken during the reported measurement interval
- The 60 day storage requirement was correctly computed
- The system pricing was verified for major components and maintenance

Respectfully Yours,



François Raab, President



Bradley J. Askins, Auditor

Appendix A: Source Code

client_utils.c

```
/* client_utils.c
*/

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

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

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

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

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

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

```
char line_prefix[50];
va_list ap;

va_start(ap, format);

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

get_prefix(line_prefix);

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

va_end(ap);
}

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

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

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

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

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

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

    return(t_diff);
}

/*
```

```

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

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

    return(pClntInfo);
}

```

client_utils.h

```

#ifndef TPCC_CLIENT_UTILS_H
#define TPCC_CLIENT_UTILS_H

```

```

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

```

```

extern FILE * errtpcc;
extern FILE * logtpcc;
extern int debug;

```

```

extern char log_file_name[];
extern void logprintf( char *format, ...);
extern void err_printf( char *format, ...);
extern void encina_error_message(char *msg, unsigned long n);
extern int time_diff_ms(struct timeval *t2, struct timeval *t1);

```

```

typedef struct {
    int num;
    int errs;
    double RTtotal[2]; // 1 for server RT and 0 for client RT
    int RTcount;
} tran_info_t;

```

```

/*
* total_tran_count_t
*
* structure that holds the total count of transaction of each type
* as well as the reposne times.
*/

```

```

typedef struct {
    tran_info_t tran[MAX_TRAN_TYPE + 1];
    int errors;
    double time;
} total_tran_count_t;

```

```

/* enc_status_t
* structure that holds error information
*/

```

```

typedef struct {
    int status;
    int line;
    char file[268];
    unsigned long encinaError;
    char errorMsg[ENCINA_MAX_STATUS_STRING_SIZE];
} enc_status_t;

```

```

#define FALSE 0
#define TRUE 1

```

```

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

```

```

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

```

```

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

```

```

#define UTIL_IDENT(a) a

```

```

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

```

```

/* ENCINA_CALL: Make fail-fast calls on the various services. */
#define ENCINA_CALL(proc_name,call) \

```

```

{
    unsigned long _status;
    ENCINA_CALL_RC(proc_name,call,_status);
    if (_status) exit_program(_status);
}

#define ENCINA_CALL_RC(proc_name,call,rc)
{
    char _errorMsg[ENCINA_MAX_STATUS_STRING_SIZE];
    DPRINT(("ENCINA_CALL_RC: before call %s\n", proc_name));

    rc = (call);
    DPRINT(("ENCINA_CALL_RC: after call %s\n", proc_name));

    if (rc) {
        encina_StatusToString(rc, ENCINA_MAX_STATUS_STRING_SIZE,
            _errorMsg);
        err_printf( "%x\n", rc);
        err_printf( "%s\n", _errorMsg);
        err_printf( "%s\n", proc_name);
    }
}

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

#endif /* TPCC_CLIENT_UTILS_H */

```

dlldata.c

```

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

DO NOT ALTER THIS FILE

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

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

*****/

#include <rpcproxy.h>

#ifdef __cplusplus
extern "C" {
#endif

EXTERN_PROXY_FILE( tpcc_com_ps )

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

DLLDATA_ROUTINES( aProxyFileList, GET_DLL_CLSID )

```

```

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

/* end of generated dlldata file */

error.h

/* FILE: ERROR.H
* Microsoft TPC-C Kit Ver.
4.20.000
* Copyright Microsoft, 1999
* All Rights Reserved
*
* Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
*
* PURPOSE: Header file for error exception classes.
*
* Change history:
* 4.20.000 - updated rev number to match kit
* 4.21.000 - fixed bug: ~CBaseErr needed to be declared
virtual
*/

#pragma once

#ifdef _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_LEVEL 3

#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."; };
};

install.c

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

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

#include "resource.h"

#define WM_INITTEXT WM_USER+100

HICON          hIcon;
HINSTANCE      hInst;

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

// TPC-C registry settings
TPCCREGISTRYDATA Reg;

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

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

BOOL CALLBACK LicenseDlgProc(HWND hwnd, UINT uMsg,
WPARAM wParam, LPARAM lParam);
BOOL CALLBACK UpdatedDlgProc(HWND hwnd, UINT uMsg,
WPARAM wParam, LPARAM lParam);
BOOL CALLBACK MainDlgProc(HWND hwnd, UINT uMsg,
WPARAM wParam, LPARAM lParam);

```

```

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

BOOL install_com(char *szDllPath);

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

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

    hInst = hInstance;

    InitCommonControls();

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

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

    DestroyIcon(hIcon);
    return 0;
}

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

    switch(uMsg)
    {
        case WM_INITDIALOG:
            hFont = CreateFont(-12, 0, 0, 0, 400, 0, 0, 0,
0, 0, 0, 0, "Arial");

```

```

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

BOOL CALLBACK UpdatedDlgProc(HWND hwnd, UINT uMsg, WPARAM
wParam, LPARAM lParam)
{
    switch(uMsg)
    {
        case WM_INITDIALOG:
            switch(lParam)
            {
                case 1:
                case 2:
                    SetDlgItemText(hwnd,
IDC_RESULTS, "TPC-C Web Client Installed");
                    break;
            }
            return TRUE;
        case WM_COMMAND:
            if ( wParam == IDOK )
                EndDialog(hwnd, TRUE);
            break;
        default:
            break;
    }
    return FALSE;
}

BOOL CALLBACK MainDlgProc(HWND hwnd, UINT uMsg, WPARAM
wParam, LPARAM lParam)
{
    PAINTSTRUCT ps;

```



```

MEMORYSTATUS memoryStatus;
OSVERSIONINFO VI;
char          szTmp[256];
static char   szDllPath[256];
static char   szExePath[256];

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

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

        // set default values
        ZeroMemory( &Reg, sizeof(Reg) );
        Reg.dwNumberOfDeliveryThreads = 4;
        Reg.dwMaxConnections = 100;
        Reg.dwMaxPendingDeliveries = 100;
        Reg.eDB_Protocol = DBLIB;
        Reg.eTxnMon = None;
        strcpy(Reg.szDbServer,
""");
        strcpy(Reg.szDbName,
"tpcc");

        strcpy(Reg.szDbUser,      "sa");
        strcpy(Reg.szDbPassword,  "");

        iPoolThreadLimit = iMaxPhysicalMemory *
2;

        iThreadTimeout = 86400;
        iListenBackLog = 15;
        iAcceptExOutstanding = 40;

        ReadTPCCRegistrySettings( &Reg );
        ReadRegistrySettings();

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

        GetVersionInfo(szDllPath, szExePath);

        wsprintf(szTmp, "Version %d.%2d.%3d",
versionExeMS, versionExeMM, versionExeLS);
        SetDlgItemText(hwnd, IDC_VERSION,
szTmp);

        SetDlgItemText(hwnd, IDC_PATH,
szDllPath);

        SetDlgItemText(hwnd, ED_DB_SERVER,
Reg.szDbServer);

        SetDlgItemText(hwnd, ED_DB_USER_ID,
Reg.szDbUser);

        SetDlgItemText(hwnd,
ED_DB_PASSWORD, Reg.szDbPassword);

        SetDlgItemText(hwnd, ED_DB_NAME,
Reg.szDbName);

        SetDlgItemInt(hwnd, ED_THREADS,
Reg.dwNumberOfDeliveryThreads, FALSE);

        SetDlgItemInt(hwnd,
ED_MAXCONNECTION, Reg.dwMaxConnections, FALSE);

        SetDlgItemInt(hwnd,
ED_MAXDELIVERIES, Reg.dwMaxPendingDeliveries, FALSE);

        SetDlgItemInt(hwnd,
ED_IIS_MAX_THREAD_POOL_LIMIT, iPoolThreadLimit, FALSE);

        SetDlgItemInt(hwnd,
ED_IIS_THREAD_TIMEOUT, iThreadTimeout, FALSE);

        SetDlgItemInt(hwnd,
ED_IIS_LISTEN_BACKLOG, iListenBackLog, FALSE);

        SetDlgItemInt(hwnd,
ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE, iAcceptExOutstanding,
FALSE);

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

        else
            CheckDlgButton(hwnd,
IDC_ODBC, 1);

        // check OS version level for COM. Must be
at least Windows 2000

        VI.dwOSVersionInfoSize = sizeof(VI);
        GetVersionEx( &VI );
        if (VI.dwMajorVersion < 5)
        {
            HWND hDlg = GetDlgItem(
hwnd, IDC_TM_MTS );

            EnableWindow( hDlg, 0 ); //
disable COM option

            if (Reg.eTxnMon == COM)
                Reg.eTxnMon = None;
        }

        CheckDlgButton(hwnd, IDC_TM_NONE,
0);

        CheckDlgButton(hwnd, IDC_TM_TUXEDO,
0);

        CheckDlgButton(hwnd, IDC_TM_MTS, 0);
        CheckDlgButton(hwnd, IDC_TM_ENCINA,
0);

        switch (Reg.eTxnMon)
        {
            case None:
                CheckDlgButton(hwnd,
IDC_TM_NONE, 1);

                break;

            case TUXEDO:
                CheckDlgButton(hwnd,
IDC_TM_TUXEDO, 1);

                break;

            case ENCINA:
                CheckDlgButton(hwnd,
IDC_TM_ENCINA, 1);

                break;

            case COM:
                CheckDlgButton(hwnd,
IDC_TM_MTS, 1);

                break;
        }

        return TRUE;

    case WM_PAINT:
        if ( !IsIconic(hwnd) )
        {

```

```

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

            case IDC_ODBC:
                return
TRUE;

            case IDOK:
                ProcessOK(hwnd, szDllPath);
                return
TRUE;

            case IDCANCEL:
                EndDialog(hwnd, FALSE);
                return
TRUE;

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

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

    char szFullName[256];
    char szErrMsg[128];

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

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

    if ( IsDlgButtonChecked(hwnd, IDC_DBLIB) )
    {
        Reg.eDB_Protocol = DBLIB;

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

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

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

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

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

        EndDialog(hwnd, 0);
        return;
    }

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

    UpdateDialog(hDlg);
    WriteRegistrySettings(szDllPath);

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

        EndDialog(hwnd, 0);
        return;
    }
}

```

```

    }

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

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

        Sleep(100);

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

        EndDialog(hwnd, rc);
        return;
    }

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

    if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet\\Services\\Inetinfo\\Parameters", 0,
KEY_READ, &hKey) == ERROR_SUCCESS )
    {
        size = sizeof(iPoolThreadLimit);
        if ( RegQueryValueEx(hKey, "PoolThreadLimit", 0,
&type, (char *)&iPoolThreadLimit, &size) == ERROR_SUCCESS )
            if ( !iPoolThreadLimit )
                iPoolThreadLimit =
iMaxPhysicalMemory * 2;

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

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

        RegCloseKey(hKey);
    }

    if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet\\Services\\W3SVC\\Parameters", 0,
KEY_READ, &hKey) == ERROR_SUCCESS )

```

```

    {
        size = sizeof(iAcceptExOutstanding);
        if ( RegQueryValueEx(hKey, "AcceptExOutstanding", 0,
&type, (char *)&iAcceptExOutstanding, &size) == ERROR_SUCCESS )
            if ( !iAcceptExOutstanding )
                iAcceptExOutstanding = 40;

        RegCloseKey(hKey);
    }
}

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

    if ( RegCreateKeyEx(HKEY_LOCAL_MACHINE,
"SOFTWARE\\Microsoft\\TPCC", 0, NULL,
REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey,
&dwDisposition) == ERROR_SUCCESS )
    {
        strcpy(szTmp, szDllPath);
        ptr = strstr(szTmp, "tpcc");
        if ( ptr )
            *ptr = 0;

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

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

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

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

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

        RegFlushKey(hKey);
        RegCloseKey(hKey);
    }

    if ( (iRc=RegCreateKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet\\Services\\Inetinfo\\Parameters", 0, NULL,
REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey,
&dwDisposition)) == ERROR_SUCCESS )

```

```

    {
        RegSetValueEx(hKey, "PoolThreadLimit", 0,
REG_DWORD, (char *)&iPoolThreadLimit, sizeof(iPoolThreadLimit));
        RegSetValueEx(hKey, "ThreadTimeout", 0,
REG_DWORD, (char *)&iThreadTimeout, sizeof(iThreadTimeout));
        RegSetValueEx(hKey, "ListenBackLog", 0,
REG_DWORD, (char *)&iListenBackLog, sizeof(iListenBackLog));

        RegFlushKey(hKey);
        RegCloseKey(hKey);
    }

    if ( (iRc=RegCreateKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet\\Services\\W3SVC\\Parameters", 0, NULL,
REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey,
&dwDisposition)) == ERROR_SUCCESS )
    {
        RegSetValueEx(hKey, "AcceptExOutstanding", 0,
REG_DWORD, (char *)&iAcceptExOutstanding,
sizeof(iAcceptExOutstanding));

        RegFlushKey(hKey);
        RegCloseKey(hKey);
    }

    return;
}

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

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

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

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

```

```

    DWORD            d;
    char             szFullName[256];

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

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

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

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

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

    CloseHandle(hFile);

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

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

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

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

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

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

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

```

```

UpdateDialog(hDlg);

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

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

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

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

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

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

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

//if we stopped service restart it.
if ( bSvcRunning )
{

```

```

SetDlgItemText(hDlg, IDC_STATUS, "Starting Web
Service.");
SendDlgItemMessage(hDlg, IDC_PROGRESS1,
PBM_STEPIT, 0, 0);
UpdateDialog(hDlg);
StartWWWService();
}

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

return 1;
}

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

    szDllPath[0] = 0;
    bRc = TRUE;
    if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet\\Services\\W3SVC\\Parameters\\Virtual Roots",
0, KEY_ALL_ACCESS, &hKey) == ERROR_SUCCESS )
    {
        sv = sizeof(szData);
        iRc = RegQueryValueEx( hKey, "/", NULL, NULL,
szData, &sv ); // used by IIS 3.0
        if (iRc == ERROR_FILE_NOT_FOUND)
            iRc = RegQueryValueEx( hKey, "/", NULL,
NULL, szData, &sv ); // used by IIS 4.0
        if (iRc == ERROR_SUCCESS)
        {
            bRc = FALSE;
            strcpy(szDllPath, szData);
            if ( (ptr = strchr(szDllPath, ','))
                *ptr = 0;

            len = strlen(szDllPath);
            if ( szDllPath[len-1] != '\\')
            {
                szDllPath[len] = '\\';
                szDllPath[len+1] = 0;
            }
        }
        RegCloseKey(hKey);
    }

    return bRc;
}

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

    versionDIIMS = 0;
    versionDIILS = 0;

```

```

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

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

        versionExeMS = vs->dwProductVersionMS;
        versionExeLS = LOWORD(vs->dwProductVersionLS);
        versionExeMM = HIWORD(vs->dwProductVersionLS);
        free(ptr);
    }
    return;
}

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

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

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

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

    CloseServiceHandle(schService);
    return TRUE;

ServiceNotRunning:
    CloseServiceHandle(schService);
    return FALSE;
}

static BOOL StartWWWebService(void)
{
    SC_HANDLE          schSCManager;
    SC_HANDLE          schService;

```

```

SERVICE_STATUS     ssStatus;
DWORD                dwOldCheckPoint;

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

    if (! StartService(schService, 0, NULL) )
        goto StartWWWebErr;
    //start Service pending, Check the status until the service is running.
    if (! QueryServiceStatus(schService, &ssStatus) )
        goto StartWWWebErr;
    while( ssStatus.dwCurrentState != SERVICE_RUNNING)
    {
        dwOldCheckPoint = ssStatus.dwCheckPoint;
        //Save the current checkpoint.
        Sleep(ssStatus.dwWaitHint);
        //Wait for the specified interval.
        if ( !QueryServiceStatus(schService, &ssStatus) )
            //Check the status again.
            break;
        if (dwOldCheckPoint >= ssStatus.dwCheckPoint)
            //Break if the checkpoint has not been incremented.
            break;
    }

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

    CloseServiceHandle(schService);
    return TRUE;

StartWWWebErr:
    CloseServiceHandle(schService);
    return FALSE;
}

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

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

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

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

```

```

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

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

    CloseServiceHandle(schService);
    return TRUE;

StopWWWebErr:
    CloseServiceHandle(schService);
    return FALSE;
}

static void UpdateDialog(HWND hDlg)
{
    MSG msg;

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

```

install.h

```

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

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

#define BN_LOG              1001
#define ED_KEEP             1002
#define ED_THREADS         1003
#define ED_THREADS2        1004
#define IDC_PATH           1007
#define IDC_VERSION        1009
#define IDC_RESULTS        1010
#define IDC_PROGRESS1      1011
#define IDC_STATUS         1012
#define IDC_BUTTON1        1013
#define ED_MAXCONNECTION  1014
#define ED_IIS_MAX_THREAD_POOL_LIMIT 1015
#define ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE 1017
#define ED_IIS_THREAD_TIMEOUT 1018
#define ED_IIS_LISTEN_BACKLOG 1019

```

```

#define IDC_DBLIB          1021
#define IDC_ODBC          1022
#define IDC_CONNECT_POOL 1023
#define ED_USER_CONNECT_DELAY_TIME 1024

```

```

// Next default values for new objects
//

```

install.rc

```

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

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

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

#ifndef _AFX_RESOURCE_DLL || defined(AFX_TARG_ENU)
#ifndef _WIN32
LANGUAGE LANG_ENGLISH, SUBLANG_ENGLISH_US
#pragma code_page(1252)
#endif
#endif

//
// Dialog
//

IDD_DIALOG1 DIALOGEX 0, 0, 219, 351
STYLE DS_MODALFRAME | DS_CENTER | WS_MINIMIZEBOX |
WS_POPUP | WS_CAPTION |
WS_SYSMENU
CAPTION "TPC-C Web Client Installation Utility"
FONT 8, "MS Sans Serif"
BEGIN
    EDITTEXT    ED_THREADS,164,45,34,12,ES_RIGHT | ES_NUMBER,
                WS_EX_RTLREADING
    EDITTEXT    ED_MAXDELIVERIES,164,59,34,12,ES_RIGHT |
ES_NUMBER,
                WS_EX_RTLREADING
    EDITTEXT    ED_MAXCONNECTION,164,73,34,12,ES_RIGHT |
ES_NUMBER,
                WS_EX_RTLREADING
    CONTROL    "None",IDC_TM_NONE,"Button",BS_AUTORADIOBUTTON |
                WS_GROUP | WS_TABSTOP,43,100,33,10
    CONTROL    "COM",IDC_TM_MTS,"Button",BS_AUTORADIOBUTTON |
                WS_TABSTOP,43,113,32,10
    CONTROL    "TUXEDO",IDC_TM_TUXEDO,"Button",BS_AUTORADIOBUTTON |
                WS_TABSTOP,106,100,46,10
    CONTROL    "ENCINA",IDC_TM_ENCINA,"Button",BS_AUTORADIOBUTTON |

```

```

        WS_DISABLED | WS_TABSTOP,106,113,43,10
    EDITTEXT    ED_DB_SERVER,131,152,67,12,ES_AUTOHSCROLL
    EDITTEXT    ED_DB_USER_ID,131,165,67,12,ES_AUTOHSCROLL
    EDITTEXT    ED_DB_PASSWORD,131,178,67,12,ES_AUTOHSCROLL
    EDITTEXT    ED_DB_NAME,131,191,67,12,ES_AUTOHSCROLL
    CONTROL
"DBLIB",IDC_DBLIB,"Button",BS_AUTORADIOBUTTON | WS_GROUP |
    WS_TABSTOP,45,219,39,12
    CONTROL
"ODBC",IDC_ODBC,"Button",BS_AUTORADIOBUTTON | WS_TABSTOP,
    91,219,39,12
    EDITTEXT
ED_IIS_MAX_THREAD_POOL_LIMIT,164,263,34,12,ES_RIGHT |
    ES_NUMBER,WS_EX_RTREADING
    EDITTEXT
ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE,164,277,34,12,ES_RIGHT |
    ES_NUMBER,WS_EX_RTREADING
    EDITTEXT    ED_IIS_THREAD_TIMEOUT,164,291,34,12,ES_RIGHT |
ES_NUMBER,
    WS_EX_RTREADING
    EDITTEXT    ED_IIS_LISTEN_BACKLOG,164,305,34,12,ES_RIGHT |
ES_NUMBER,
    WS_EX_RTREADING
    DEFPUSHBUTTON "OK",IDOK,53,331,50,14
    PUSHBUTTON   "Cancel",IDCANCEL,119,331,50,14
    EDITTEXT    IDC_PATH,106,26,91,13,ES_AUTOHSCROLL |
ES_READONLY
    LTEXT       "Number of Delivery Threads:",IDC_STATIC,35,45,115,12
    LTEXT       "Max Number of Connections:",IDC_STATIC,35,73,115,12
    RTEXT       "Version 4.11",IDC_VERSION,120,4,89,9
    LTEXT       "IIS Max Thread Pool Limit:",IDC_STATIC,36,263,115,12
    LTEXT       "Web Service Backlog Queue
Size:",IDC_STATIC,36,277,115,
    12
    LTEXT       "IIS Thread Timeout (seconds):",IDC_STATIC,36,291,115,12
    LTEXT       "IIS Listen Backlog:",IDC_STATIC,36,307,115,10
    GROUPBOX   "Database
Interface",IDC_STATIC,35,208,163,27,WS_GROUP
    LTEXT       "Installation directory:",IDC_STATIC,35,29,71,10
    GROUPBOX   "Transaction Monitor",IDC_STATIC,33,90,165,37
    LTEXT       "Server Name:",IDC_STATIC,35,155,56,8
    LTEXT       "User ID:",IDC_STATIC,35,168,60,8
    LTEXT       "User Password:",IDC_STATIC,35,181,83,8
    LTEXT       "Database Name:",IDC_STATIC,35,194,54,8
    GROUPBOX   "SQL Server Connection
Properties",IDC_STATIC,22,139,187,
    102
    GROUPBOX   "Web Client Properties",IDC_STATIC,22,15,187,118
    GROUPBOX   "IIS Settings",IDC_STATIC,22,247,187,79
    LTEXT       "Max Pending Deliveries:",IDC_STATIC,35,59,115,12
END

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

IDD_DIALOG3 DIALOG DISCARDABLE 0, 0, 91, 40

```

```

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

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

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

#ifdef APSTUDIO_INVOKED
GUIDELINES DESIGNINFO DISCARDABLE
BEGIN
    IDD_DIALOG1, DIALOG
    BEGIN
        LEFTMARGIN, 22
        RIGHTMARGIN, 209
        VERTGUIDE, 35
        VERTGUIDE, 198
        TOPMARGIN, 4
        BOTTOMMARGIN, 345
    END

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

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

    IDD_DIALOG4, DIALOG
    BEGIN
        LEFTMARGIN, 7
        RIGHTMARGIN, 278
        TOPMARGIN, 7
        BOTTOMMARGIN, 195
    END
END

```



```

#endif // APSTUDIO_INVOKED

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

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

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

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

#endif // APSTUDIO_INVOKED

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

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

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

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

#ifdef _MAC
////////////////////////////////////
//
// Version
//

VS_VERSION_INFO VERSIONINFO
FILEVERSION 0,4,20,0
PRODUCTVERSION 0,4,20,0
FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
FILEFLAGS 0x1L
#else
FILEFLAGS 0x0L
#endif
FILEOS 0x40004L
FILETYPE 0x1L
FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInfo"
    BEGIN

```

```

BLOCK "040904b0"
BEGIN
    VALUE "Comments", "TPC-C Web Client Installer\0"
    VALUE "CompanyName", "Microsoft\0"
    VALUE "FileDescription", "install\0"
    VALUE "FileVersion", "0, 4, 20, 0\0"
    VALUE "InternalName", "install\0"
    VALUE "LegalCopyright", "Copyright © 1999\0"
    VALUE "OriginalFilename", "install.exe\0"
    VALUE "ProductName", "Microsoft install\0"
    VALUE "ProductVersion", "0, 4, 20, 0\0"
END
END
BLOCK "VarFileInfo"
BEGIN
    VALUE "Translation", 0x409, 1200
END
END

#endif // !_MAC

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

IDR_LICENSE1      LICENSE DISCARDABLE "license.txt"

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

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

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

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

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

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

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

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

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

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

```

```

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

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

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

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

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

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

install_com.cpp

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

#define _WIN32_WINNT 0x0500

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

extern "C"
{

```

```

        BOOL install_com(char *szDllPath);
}

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

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

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

    CoInitializeEx(NULL, COINIT_MULTITHREADED);

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

    bstrTemp = "Applications";

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

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

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

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

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

        if (wcsncmp(vTmp.bstrVal, L"TPC-C"))
        {

```

```

        lCount--;
        continue;
    }
    else
    {
        hr = pCatalogCollectionApp->Remove(lCount
- 1);
        if (!SUCCEEDED(hr)) goto Error;
        break;
    }
}

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

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

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

// set as a library (in process) application
bstrTemp = "Activation";
lActProp = COMAdminActivationInproc;
vTmp = lActProp;
hr = pCatalogObjectApp->put_Value(bstrTemp, vTmp);
if (!SUCCEEDED(hr)) goto Error;

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

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

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

pCatalogObjectApp->Release();
pCatalogObjectApp = NULL;

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

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

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

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

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

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

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

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

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

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

    bstrTemp = "MaxPoolSize";
    vTmp.Clear(); // clear variant so it isn't stored as a
bool (_variant_t feature)
    vTmp = (long)30;
    hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
    if (!SUCCEEDED(hr)) goto Error;

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

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

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

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

```

```

    hr = pCatalogCollectionItf->get_Count(&ICountItf);
    if (!SUCCEEDED(hr)) goto Error;

    // iterate through interfaces in component
    while (ICountItf > 0)
    {
        hr =
pCatalogCollectionItf->get_Item(ICountItf - 1, (IDispatch**)
&pCatalogObjectItf);
        if (!SUCCEEDED(hr)) goto Error;

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

        bstrTemp = "MethodsForInterface";
        hr =
pCatalogCollectionItf->GetCollection(bstrTemp, vKey, (IDispatch**)
&pCatalogCollectionMethod);
        if (!SUCCEEDED(hr)) goto Error;

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

        hr =
pCatalogCollectionMethod->get_Count(&ICountMethod);
        if (!SUCCEEDED(hr)) goto Error;

        // iterate through methods of interface
        while (ICountMethod > 0)
        {
            hr =
pCatalogCollectionMethod->get_Item(ICountMethod - 1, (IDispatch**)
&pCatalogObjectMethod);
            if (!SUCCEEDED(hr)) goto Error;

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

pCatalogObjectMethod->Release();
            pCatalogObjectMethod = NULL;

            ICountMethod--;
        }

        // save changes
        hr =
pCatalogCollectionMethod->SaveChanges(&IActProp);
        if (!SUCCEEDED(hr)) goto Error;

        pCatalogObjectItf->Release();
        pCatalogObjectItf = NULL;

        ICountItf--;
    }

    pCatalogObjectCo->Release();
    pCatalogObjectCo = NULL;

```

```

        ICountCo--;
    }

    // save changes
    hr = pCatalogCollectionCo->SaveChanges(&IActProp);
    if (!SUCCEEDED(hr)) goto Error;

    pCatalogCollectionApp->Release();
    pCatalogCollectionApp = NULL;

    pCatalogCollectionCo->Release();
    pCatalogCollectionCo = NULL;

    pCatalogCollectionItf->Release();
    pCatalogCollectionItf = NULL;

    pCatalogCollectionMethod->Release();
    pCatalogCollectionMethod = NULL;

Error:
    CoUninitialize();

    if (!SUCCEEDED(hr))
    {
        LPTSTR lpBuf;
        DWORD dwRes =
FormatMessage(FORMAT_MESSAGE_ALLOCATE_BUFFER |
FORMAT_MESSAGE_FROM_SYSTEM,
        NULL,
        hr,
        MAKELANGID(LANG_NEUTRAL, SUBLANG_DEFAULT),
        (LPTSTR) &lpBuf,
        0,
        NULL);
        // _tprintf(_T("Error adding components. HRESULT:
0x%x\n%s"), hr, lpBuf);
        return TRUE;
    }
    else
        return FALSE;
}

```

license.txt

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mon_client.c

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

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

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

static char *cellName;
static int envRetrieval = 0;
static int useSecurity = FALSE;
static CRITICAL_SECTION init_lock;
static total_tran_count_t *pClientInfo=NULL; /* keep stats for the client process */
static num_active_threads = 0;
```

```
static int iStatsFrequency = 1;
FILE *errtpcc;
char *errFile = "C:/temp/tpcc_encina.out";
enc_status_t enc_status;

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

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

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

/* CALTPCC
 * Macro to sends 1 RPC and then handles any errors.
 *
 * The macro takes the name of the RPC (e.g., NewOrder)
 * and makes the RPC by calling the appropriate function
 * (e.g., impTPCCNewOrder).
 */
#define CALLTPCC(name,length,dataP,header,trpcStatusP) \
{ \
    UTIL_CONCAT(impTPCC,name)(length,dataP,&header,trpcStatusP); \
    if (*(trpcStatusP)) { \
        char msg[100]; \
        sprintf(msg, "TRPC error during impTPCC%s", UTIL_STRING(name)); \
        header.returncode = TRPC_ERROR; \
        encina_error_message(msg, *(trpcStatusP)); \
    } else if ((header.returncode != TPCC_SUCCESS) && \
        (header.returncode != INVALID_NEWO)) { \
        char msg[100]; \
        sprintf(msg, "App error during impTPCC%s: ", UTIL_STRING(name)); \
        encina_error_message(msg, header.returncode); \
    } \
}

/*
 * pre_rpc -- For debug purposes
 *
 * Called before an RPC is made.
 * Set the state of the thread and keep track of the time the RPC is sent.
 * This is used by the Background thread to report the state of the client.
 */
static void pre_rpc(data_header *headerP,
                    int tran_type,
                    int sub_tran_type)
{
    if (iStatsFrequency < 1) {
        headerP->stats = 0;
    } else {
        int num;
        num = ++ (pClientInfo->tran[tran_type].num);
        headerP->stats = (num % iStatsFrequency==0) ? 1 : 0;
        if (headerP->stats)
            { /* measure the time for RT */
                get_local_time(&headerP->clnt_start);
            }
    }
}
```

```

        headerP->srv_start.sec = 0; /* initialize the server time
*/
        headerP->srv_start.usec = 0;
        headerP->srv_end.sec = 0;
        headerP->srv_end.usec = 0;
    }
}

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

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

    /* Store the info for each client.
     * Note: Since we don't use mutex for performance reason, pClientInfo
     * may not be accurate if more than one thread work on the same
     * data at a same time. But this should give us reasonable info.
     */
    if ((headerP->returncode == TPCC_SUCCESS) ||
        (headerP->returncode == INVALID_NEWO)) {
        tran_failed = 0;
    } else {
        pClientInfo->tran[tran_type].errs ++;
        pClientInfo->errors ++;
        tran_failed = 1;
    }
    if (headerP->stats && tran_type <= MAX_TRAN_TYPE && tran_type > 0
        && !tran_failed) {
        /* update total server round trip response time */
        start_time.tv_sec = headerP->srv_start.sec;
        start_time.tv_usec = headerP->srv_start.usec;
        end_time.tv_sec = headerP->srv_end.sec;
        end_time.tv_usec = headerP->srv_end.usec;
        time_diff = time_diff_ms(&end_time, &start_time);
        pClientInfo->tran[tran_type].RTtotal[1] += time_diff;
        DPRINT(("srv start_time %d.%d, end_time %d.%d, time_diff
%f\n",
                start_time.tv_sec, start_time.tv_usec,
                end_time.tv_sec, end_time.tv_usec,
                time_diff));

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

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

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

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

    PRE_RPC_WORK(&header, NEWO_TRANS, 0);
    CALLTPCC(NewOrder,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, NEWO_TRANS);
    if (header.returncode == INVALID_NEWO)
        return TPCC_SUCCESS;
    else
        return header.returncode;
}

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

    PRE_RPC_WORK(&header, PAYMENT_TRANS, 0);
    CALLTPCC(Payment,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, PAYMENT_TRANS);
    return header.returncode;
}

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

    PRE_RPC_WORK(&header, ORDER_STAT_TRANS, 0);
    CALLTPCC(OrderStatus,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, ORDER_STAT_TRANS);
    return header.returncode;
}

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

```

```

trpc_status_t trpcStatus;
data_header header;

PRE_RPC_WORK(&header, DELIVERY_TRANS, 0);
CALLTPCC(Delivery,length,dataP,header,&trpcStatus);
POST_RPC_WORK(&header, DELIVERY_TRANS);
return header.returncode;
}

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

    PRE_RPC_WORK(&header, STOCK_TRANS, 0);
    CALLTPCC(StockLevel,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, STOCK_TRANS);
    return header.returncode;
}

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

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

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

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

    get_time_init();
    // initialize the space for perfmon
    pClientInfo = perfCntDataInit();
    if (pClientInfo == NULL) // in case something wrong
        pClientInfo = malloc(sizeof(total_tran_count_t));
    memset(pClientInfo, 0, sizeof(total_tran_count_t));

```

```

read_mon_environment();

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

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

if (envRetrieval == 0) {
ENCINA_CALL_RC("mon_RetrieveEnable",mon_RetrieveEnable(FALSE),sta
tus);
    CHK_STATUS(status, MON_RETRIEVEENABLE_FAILED,
    "mon_RetrieveEnable failed");
}

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

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

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

mon_SecuritySetDefaults(client_authnLevel,client_authzSvc),
status);
    CHK_STATUS(status, MON_SECURITYSET_FAILED,
    "mon_SecuritySetDefaults failed");

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

{
    dbInfo_data_t data;
    trpc_status_t trpcStatus;
    /* Get DB Info -- currently id does not do anything
    but it will tell us if there is a server out there.
    Better to know instead of when all the terminals
    are up and ready
    */
    impTPCCNOInfo(&data, &trpcStatus);
    if (trpcStatus) {
        char msg[100];
        sprintf(msg, "TRPC error during db info at init.");
        encina_error_message(msg, trpcStatus);
        CHK_STATUS(33,NOINFO_TRPC_ERROR,
        "TRPC error during db info at init");
    }
}

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

/*-----*/

```



```

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

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

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

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

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

    RegCloseKey(hKey);
}

```

mon_client.h

```

/*
 * mon_client.h
 *
 */

#ifndef MON_CLIENT_H
#define MON_CLIENT_H

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

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

/*
 * Routines and declarations that are common to all clients
 */
#ifdef __cplusplus
extern "C" {

```

```

#endif
int send_new_order(long, unsigned char *);
int send_payment(long, unsigned char *);
int send_order_status(long, unsigned char *);
int send_delivery(long, unsigned char *);
int send_stock_level(long, unsigned char *);
void enroll_client();
#ifdef __cplusplus
}
#endif

#endif /* MON_CLIENT_H */

```

readme.txt

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 ( !strcmp(szTmp, szDBNames[ODBC]) )
            pReg->eDB_Protocol = ODBC;
    }
}

```

```

        else if ( !strcmp(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 ( !strcmp(szTmp, szTxnMonNames[TUXEDO]) )
            pReg->eTxnMon = TUXEDO;
        else if ( !strcmp(szTmp, szTxnMonNames[ENCINA]) )
            pReg->eTxnMon = ENCINA;
        else if ( !strcmp(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 ( !strcmp(szTmp, "YES") )
            pReg->bCOM_SinglePool = TRUE;
    }

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

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

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

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

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

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

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

```

```

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

        RegCloseKey(hKey);

        return FALSE;
    }

```

ReadRegistry.h

```

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

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

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

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

BOOL ReadTPCCRegistrySettings( TPCCREGISTRYDATA *pReg );


```

Resource.h

```

//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by install.rc
//
#define IDD_DIALOG1 101
#define IDI_ICON1 102
#define IDR_TPCCDLL 103
#define IDD_DIALOG2 105
#define IDI_ICON2 106
#define IDR_DELIVERY 107

```

```

#define IDD_DIALOG3          108
#define IDR_LICENSE1         112
#define IDD_DIALOG4         113
#define IDR_TPCCOBJ1        117
#define IDR_TPCCSTUB1       118
#define IDR_DBLIB_DLL       122
#define IDR_ODBC_DLL        123
#define IDR_TUXEDO_APP      124
#define IDR_TUXEDO_DLL      125
#define IDR_COM_DLL         126
#define IDR_COMPS_DLL       127
#define IDR_COMALL_DLL      128
#define IDR_COMTYPLIB_DLL   129
#define BN_LOG              1001
#define ED_KEEP             1002
#define ED_THREADS          1003
#define ED_THREADS2        1004
#define IDC_PATH            1007
#define IDC_VERSION         1009
#define IDC_RESULTS         1010
#define IDC_PROGRESS1       1011
#define IDC_STATUS          1012
#define IDC_BUTTON1         1013
#define ED_MAXCONNECTION    1014
#define ED_IIS_MAX_THREAD_POOL_LIMIT 1015
#define ED_MAXDELIVERIES    1016
#define ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE 1017
#define ED_IIS_THREAD_TIMEOUT 1018
#define ED_IIS_LISTEN_BACKLOG 1019
#define IDC_DBLIB           1021
#define IDC_LICENSE         1022
#define IDC_ODBC            1022
#define IDC_CONNECT_POOL    1023
#define ED_DB_SERVER        1023
#define ED_USER_CONNECT_DELAY_TIME 1024
#define ED_DB_USER_ID       1024
#define IDC_MTS             1025
#define IDC_TM_MTS          1025
#define IDC_TM_TUXEDO       1026
#define IDC_TM_NONE         1027
#define ED_DB_PASSWORD      1028
#define ED_DB_NAME          1029
#define IDC_TM_ENCINA       1030

```

```

// Next default values for new objects
//

```

```

#ifdef APSTUDIO_INVOKED
#ifdef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE 130
#define _APS_NEXT_COMMAND_VALUE 40001
#define _APS_NEXT_CONTROL_VALUE 1031
#define _APS_NEXT_SYMED_VALUE 101
#endif
#endif

```

Resource tpcc_rc.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
#ifdef 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

```

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 );
}

```

spinlock.h

```

/* FILE: SPINLOCK.H
 *
 * Copyright 1997 Microsoft Corp., All rights reserved.
 *
 * Authors: Mike Parkes, Charles Levine, Philip Durr
 *
 * Microsoft Corp.
 */

```

```

#ifdef _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

tpcc.cpp

/*      FILE:          TPCC.C
 *
 *      Microsoft TPC-C Kit Ver.
 *      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 WINAPI 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:

```

<pre> 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"); 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"); LoadLibrary(szDllName); if (hLibInstanceTm == NULL) throw new CWEBCLNT_ERR(ERR_LOADDLL_FAILED, szDllName, GetLastError()); // get function pointer to wrapper for class constructor </pre>	<pre> 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"); 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()); } } </pre>
---	---


```

                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);
    lstrcpy(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
        INPUT_FORM, szBuffer);
        MakeNewOrderForm(TermId, NULL,
        INPUT_FORM, szBuffer);
        break;
    case 3:
        // payment selected from menu; display
        payment input form
        INPUT_FORM, szBuffer);
        MakePaymentForm(TermId, NULL,
        INPUT_FORM, szBuffer);
        break;
    case 4:
        // delivery selected from menu; display
        delivery input form
        INPUT_FORM, szBuffer);
        MakeDeliveryForm(TermId, NULL,
        INPUT_FORM, szBuffer);
        break;
    case 5:
        // order-status selected from menu; display
        order-status input form
        INPUT_FORM, szBuffer);
        MakeOrderStatusForm(TermId, NULL,
        INPUT_FORM, szBuffer);
        break;

```

```

        case 6:
            // stock-level selected from menu; display
            stock-level input form
            INPUT_FORM, szBuffer);
            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 );
}
#endif ICECAP
    StopCAP();
#endif

    lpbSize = strlen(szBuffer);
    sprintf(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(txnDeliRec != 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>"
" __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=\"\"
WEBCIENT_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>"

```

```

ID      = <B>%s</B><BR>"
Password      = <B>%s</B><BR>"
            = <B>%s</B><BR>"
"</PRE></font>"
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,
"Client Stats</TITLE></HEAD></HTML>"
"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
                key value to look for
                char
                character array into which to place key's value
                int
                maximum length of key value array.
                WEBERROR
                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);
    }
}

```



```

" <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR></PRE><HR>"
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 = sprintf(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="TERMIN"
VALUE=""%d">"
" <INPUT TYPE="hidden" NAME="SYNCD"
VALUE=""%d">"
" <PRE><font face="Courier">
New Order<BR>"
, bValid ? 0 : ERR_BAD_ITEM_ID,
NEW_ORDER_FORM, iTermId, Term.pClientData[iTermId].iSyncd);
    if ( bInput )
    {
        c += sprintf(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 += sprintf(szForm+c, "Warehouse: %4.4d District:
%2.2d Date: ",
pNewOrderData->w_id,

```

```

        pNewOrderData->d_id);
    if ( bValid )
    {
        c += sprintf(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 += sprintf(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,
"%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 += sprintf(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 committed. Total: $%8.2f ",
        pNewOrderData->total_amount);
    else
    c += sprintf(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 = sprintf(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].iSynclId);

    if ( !bInput )
    {
        c += sprintf(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 += sprintf(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 += sprintf(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->w_street_1,
                    pPaymentData->d_street_1,
                    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_d_id,
                    pPaymentData->c_first,
                    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 += sprintf(szForm+c,
                    "    %-20s          %-20s %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 += sprintf(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
*

```



```

"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="TERMIN"
VALUE="%d">
"INPUT TYPE="hidden" NAME="SYNCID"
VALUE="%d">
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> <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> </font></PRE>"
" <BR> <BR> <BR> <BR> <BR> <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..">"
" </BODY></FORM></HTML>"
, pDeliveryData->o_carrier_id,
(pDeliveryData->exec_status_code == eOK) ?
"Delivery has been queued." : "Delivery Post Failed "
);
}
}

/* FUNCTION: ProcessNewOrderForm
*
* PURPOSE: This function gets and validates the input data from the
new order form

```

```

*
* filling in the required input variables. it then
calls the SQLNewOrder
*
* transaction, constructs the output form and
writes it back to client
*
* browser.
*/

void ProcessNewOrderForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer)
{
PNEW_ORDER_DATA pNewOrder;

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

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

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

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

/* FUNCTION: void ProcessPaymentForm
*
* PURPOSE: This function gets and validates the input data from the
payment form
*
* filling in the required input variables. It then
calls the SQLPayment
*
* transaction, constructs the output form and
writes it back to client
*
* browser.
*
* ARGUMENTS: EXTENSION_CONTROL_BLOCK *pECB
passed in structure pointer from inetsrv.
*
* int
iTermId client browser terminal id
*/

void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer)
{
PPAYMENT_DATA pPayment;

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

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

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

/* FUNCTION: ProcessOrderStatusForm
*
* PURPOSE: This function gets and validates the input data from the
Order Status

```

```

*
* form filling in the required input variables. It
then calls the
*
* SQLOrderStatus transaction, constructs the
output form and writes it
*
* back to client browser.
*
* ARGUMENTS: EXTENSION_CONTROL_BLOCK *pECB
passed in structure pointer from inetsrv.
*
* int
iTermId client browser terminal id
*
*/

```

```

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

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

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

    pOrderStatus =
Term.pClientData[iTermId].pTxn->BuffAddr_OrderStatus();
MakeOrderStatusForm(iTermId, pOrderStatus, OUTPUT_FORM,
szBuffer);
}

```

```

/* FUNCTION: ProcessDeliveryForm
*
* PURPOSE: This function gets and validates the input data from the
delivery form
*
* filling in the required input variables. It then
calls the PostDeliveryInfo
*
* Api, The client is then informed that the
transaction has been posted.
*
* ARGUMENTS: EXTENSION_CONTROL_BLOCK *pECB
passed in structure pointer from inetsrv.
*
* int
iTermId client browser terminal id
*
*/

```

```

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

    PDELIVERY_DATA pDelivery;

    pDelivery =
Term.pClientData[iTermId].pTxn->BuffAddr_Delivery();
ZeroMemory(pDelivery, sizeof(DELIVERY_DATA));
pDelivery->w_id = Term.pClientData[iTermId].w_id;

    pDelivery->o_carrier_id = GetIntKeyValue(&ptr, "OCD*",
ERR_DELIVERY_MISSING_OCD_KEY,
ERR_DELIVERY_CARRIER_INVALID);
    if ( pDelivery->o_carrier_id > 10 || pDelivery->o_carrier_id < 1 )
        throw new CWEBCLNT_ERR(
ERR_DELIVERY_CARRIER_ID_RANGE );

    if (dwNumDeliveryThreads)

```

```

{
    //post delivery info
    if ( PostDeliveryInfo(pDelivery->w_id,
pDelivery->o_carrier_id )
        pDelivery->exec_status_code =
eDeliveryFailed;
    else
        pDelivery->exec_status_code = eOK;
}
else // delivery is done synchronously if no delivery threads
configured
    Term.pClientData[iTermId].pTxn->Delivery();

    pDelivery =
Term.pClientData[iTermId].pTxn->BuffAddr_Delivery();
MakeDeliveryForm(iTermId, pDelivery, OUTPUT_FORM,
szBuffer);
}

```

```

/* FUNCTION: ProcessStockLevelForm
*
* PURPOSE: This function gets and validates the input data from the
Stock Level
*
* form filling in the required input variables. It
then calls the
*
* SQLStockLevel transaction, constructs the
output form and writes it
*
* back to client browser.
*
* ARGUMENTS: EXTENSION_CONTROL_BLOCK *pECB
passed in structure pointer from inetsrv.
*
* int
iTermId client browser terminal id
*
*/

```

```

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

    PSTOCK_LEVEL_DATA pStockLevel;

    pStockLevel =
Term.pClientData[iTermId].pTxn->BuffAddr_StockLevel();
ZeroMemory( pStockLevel, sizeof(STOCK_LEVEL_DATA) );

    pStockLevel->w_id = Term.pClientData[iTermId].w_id;
    pStockLevel->d_id = Term.pClientData[iTermId].d_id;

    pStockLevel->threshold = GetIntKeyValue(&ptr, "TT*",
ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,
ERR_STOCKLEVEL_THRESHOLD_INVALID);
    if ( pStockLevel->threshold >= 100 || pStockLevel->threshold < 0 )
        throw new CWEBCLNT_ERR(
ERR_STOCKLEVEL_THRESHOLD_RANGE );

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

    pStockLevel =
Term.pClientData[iTermId].pTxn->BuffAddr_StockLevel();
MakeStockLevelForm(iTermId, pStockLevel, OUTPUT_FORM,
szBuffer);
}

```

```

/* FUNCTION: GetNewOrderData
*

```



```

* PURPOSE:      This function extracts and validates the new order form
data from an http command string.
*
* ARGUMENTS:   LPSTR                          lpszQueryString
client browser http command string
*
*              NEW_ORDER_DATA
*pNewOrderData pointer to new order data structure
*
*/

void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA
*pNewOrderData)
{
    char    szTmp[26];
    int     i;
    short   items;
    int     ol_i_id, ol_quantity;
    char    *ptr = lpszQueryString;

    static char szSP[MAX_OL_NEW_ORDER_ITEMS][6] =
    { "SP00*", "SP01*", "SP02*", "SP03*", "SP04*",
      "SP05*", "SP06*", "SP07*", "SP08*", "SP09*",
      "SP10*", "SP11*", "SP12*", "SP13*", "SP14*" };
    static char szIID[MAX_OL_NEW_ORDER_ITEMS][7] =
    { "IID00*", "IID01*", "IID02*", "IID03*", "IID04*",
      "IID05*", "IID06*", "IID07*", "IID08*", "IID09*",
      "IID10*", "IID11*", "IID12*", "IID13*", "IID14*" };
    static char szQty[MAX_OL_NEW_ORDER_ITEMS][7] =
    { "Qty00*", "Qty01*", "Qty02*", "Qty03*", "Qty04*",
      "Qty05*", "Qty06*", "Qty07*", "Qty08*", "Qty09*",
      "Qty10*", "Qty11*", "Qty12*", "Qty13*", "Qty14*" };

    pNewOrderData->d_id = GetIntKeyValue(&ptr, "DID*",
ERR_NEWORDER_FORM_MISSING_DID,
ERR_NEWORDER_DISTRICT_INVALID);
    pNewOrderData->c_id = GetIntKeyValue(&ptr, "CID*",
ERR_NEWORDER_CUSTOMER_KEY,
ERR_NEWORDER_CUSTOMER_INVALID);

    for(i=0, items=0; i<MAX_OL_NEW_ORDER_ITEMS; i++)
    {
        GetKeyValue(&ptr, szSP[i], szTmp, sizeof(szTmp),
ERR_NEWORDER_MISSING_SUPPW_KEY);
        if ( szTmp[0] )
        {
            if ( !IsNumeric(szTmp) )
                throw new CWEBCLNT_ERR(
ERR_NEWORDER_SUPPW_INVALID );
            pNewOrderData->OL[items].ol_supply_w_id
= (short)atoi(szTmp);

            ol_i_id = pNewOrderData->OL[items].ol_i_id
=
                GetIntKeyValue(&ptr, szIID[i],
ERR_NEWORDER_MISSING_IID_KEY,
ERR_NEWORDER_ITEMID_INVALID);
            if ( ol_i_id > 999999 || ol_i_id < 1 )
                throw new CWEBCLNT_ERR(
ERR_NEWORDER_ITEMID_RANGE );

            ol_quantity =
pNewOrderData->OL[items].ol_quantity =
                GetIntKeyValue(&ptr, szQty[i],
ERR_NEWORDER_MISSING_QTY_KEY,
ERR_NEWORDER_QTY_INVALID);
            if ( ol_quantity > 99 || ol_quantity < 1 )
                throw new CWEBCLNT_ERR(
ERR_NEWORDER_QTY_RANGE );

```

```

                items++;
            }
            else
            {
                // nothing entered for supply warehouse, so
                item id and qty must also be blank
                GetKeyValue(&ptr, szIID[i], szTmp,
sizeof(szTmp), ERR_NEWORDER_MISSING_IID_KEY);
                if ( szTmp[0] )
                    throw new CWEBCLNT_ERR(
ERR_NEWORDER_ITEMID_WITHOUT_SUPPW );

                GetKeyValue(&ptr, szQty[i], szTmp,
sizeof(szTmp), ERR_NEWORDER_MISSING_QTY_KEY);
                if ( szTmp[0] )
                    throw new CWEBCLNT_ERR(
ERR_NEWORDER_QTY_WITHOUT_SUPPW );
            }
        }
        if ( items == 0 )
            throw new CWEBCLNT_ERR(
ERR_NEWORDER_NOITEMS_ENTERED );

        pNewOrderData->o_ol_cnt = items;
    }
}

/* FUNCTION: GetPaymentData
*
* PURPOSE:      This function extracts and validates the payment form
data from an http command string.
*
* ARGUMENTS:   LPSTR                          lpszQueryString
client browser http command string
*
*              PAYMENT_DATA
*pPaymentData pointer to payment data structure
*/

void GetPaymentData(LPSTR lpszQueryString, PAYMENT_DATA
*pPaymentData)
{
    char    szTmp[26];
    char    *ptr = lpszQueryString;
    BOOL    bCustIdBlank;

    pPaymentData->d_id = GetIntKeyValue(&ptr, "DID*",
ERR_PAYMENT_MISSING_DID_KEY,
ERR_PAYMENT_DISTRICT_INVALID);

    GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CID_KEY);
    if ( szTmp[0] == 0 )
    {
        bCustIdBlank = TRUE;
        pPaymentData->c_id = 0;
    }
    else
    {
        // parse customer id and verify that last name was NOT
entered
        bCustIdBlank = FALSE;
        if ( !IsNumeric(szTmp) )
            throw new CWEBCLNT_ERR(
ERR_PAYMENT_CUSTOMER_INVALID );
        pPaymentData->c_id = atoi(szTmp);
    }

    pPaymentData->c_w_id = GetIntKeyValue(&ptr, "CWI*",
ERR_PAYMENT_MISSING_CWI_KEY,
ERR_PAYMENT_CWI_INVALID);

```

```

        pPaymentData->c_d_id = GetIntKeyValue(&ptr, "CDI*",
ERR_PAYMENT_MISSING_CDI_KEY, ERR_PAYMENT_CDI_INVALID);

        if ( bCustIdBlank )
        {
            // customer id is blank, so last name must be entered
            GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CLT_KEY);
            if ( szTmp[0] == 0 )
                throw new CWEBCLNT_ERR(
ERR_PAYMENT_MISSING_CID_CLT );

            _strupr( szTmp );
            if ( strlen(pPaymentData->c_last) > LAST_NAME_LEN
)
                throw new CWEBCLNT_ERR(
ERR_PAYMENT_LAST_NAME_TO_LONG );
            strcpy(pPaymentData->c_last, szTmp);
        }
        else
        {
            // parse customer id and verify that last name was NOT
entered
            GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CLT_KEY);
            if ( szTmp[0] != 0 )
                throw new CWEBCLNT_ERR(
ERR_PAYMENT_CID_AND_CLT );
        }

        GetKeyValue(&ptr, "HAM*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_HAM_KEY);
        if (!IsDecimal(szTmp))
            throw new CWEBCLNT_ERR(
ERR_PAYMENT_HAM_INVALID );
        pPaymentData->h_amount = atof(szTmp);
        if ( pPaymentData->h_amount >= 10000.00 ||
pPaymentData->h_amount < 0 )
            throw new CWEBCLNT_ERR(
ERR_PAYMENT_HAM_RANGE );
    }

/* FUNCTION: GetOrderStatusData
*
* PURPOSE:      This function extracts and validates the payment form
data from an http command string.
*
*/
void GetOrderStatusData(LPSTR lpszQueryString, ORDER_STATUS_DATA
*pOrderStatusData)
{
    char    szTmp[26];
    char    *ptr = lpszQueryString;

    pOrderStatusData->d_id = GetIntKeyValue(&ptr, "DID*",
ERR_ORDERSTATUS_MISSING_DID_KEY,
ERR_ORDERSTATUS_DID_INVALID);

    GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CID_KEY);
    if ( szTmp[0] == 0 )
        // customer id is blank, so last name must be entered
        pOrderStatusData->c_id = 0;
    GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CLT_KEY);
    if ( szTmp[0] == 0 )
        throw new CWEBCLNT_ERR(
ERR_ORDERSTATUS_MISSING_CID_CLT );

    _strupr( szTmp );

```

```

        if ( strlen(pOrderStatusData->c_last) >
LAST_NAME_LEN )
            throw new CWEBCLNT_ERR(
ERR_ORDERSTATUS_CLT_RANGE );
            strcpy(pOrderStatusData->c_last, szTmp);
        }
        else
        {
            // parse customer id and verify that last name was NOT
entered
            if ( !IsNumeric(szTmp) )
                throw new CWEBCLNT_ERR(
ERR_ORDERSTATUS_CID_INVALID );
            pOrderStatusData->c_id = atoi(szTmp);
            GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CLT_KEY);
            if ( szTmp[0] != 0 )
                throw new CWEBCLNT_ERR(
ERR_ORDERSTATUS_CID_AND_CLT );
        }
    }

/* FUNCTION: BOOL IsNumeric(char *ptr)
*
* PURPOSE:      This function determines if a string is numeric. It fails if
any characters other
*
*                than numeric and null terminator are present.
*
* ARGUMENTS:   char                *ptr    pointer to
string to check.
*
* RETURNS:     BOOL    FALSE    if string is not all
numeric
*                TRUE    if
string contains only numeric characters i.e. '0' - '9'
*/
BOOL IsNumeric(char *ptr)
{
    if ( *ptr == 0 )
        return FALSE;

    while( *ptr && isdigit(*ptr) )
        ptr++;
    return ( !*ptr );
}

/* FUNCTION: BOOL IsDecimal(char *ptr)
*
* PURPOSE:      This function determines if a string is a non-negative
decimal value.
*
*                It fails if any characters other than a series of numbers followed by
*
*                a decimal point, another series of numbers,
and a null terminator are present.
*
* ARGUMENTS:   char                *ptr    pointer to
string to check.
*
* RETURNS:     BOOL    FALSE    if string is not a valid
non-negative decimal value
*                TRUE    if
string is OK
*/
BOOL IsDecimal(char *ptr)
{
    char *dotptr;
    BOOL bValid;

```

```

if ( *ptr == 0 )
    return FALSE;

// find decimal point
dotptr = strchr( ptr, '.' );
if (dotptr == NULL)
    // no decimal point, so just check for numeric
    return IsNumeric(ptr);
*dotptr = 0; // temporarily replace decimal with a terminator

if ( *ptr != 0 )
    bValid = IsNumeric(ptr);
// string starts with decimal point
else if (*(dotptr+1) == 0)
    return FALSE; // nothing but a decimal point is bad
else
    bValid = TRUE;

if (*(dotptr+1) != 0)
    // check text after decimal point
    bValid &= IsNumeric(dotptr+1);

*dotptr = '.'; // replace decimal point
return bValid;
}

```

tpcc.def

LIBRARY TPCC.DLL

EXPORTS

```

GetExtensionVersion @1
HttpExtensionProc @2
TerminateExtension @3

```

tpcc.h

```

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

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

```

```

#define TP_MAX_RETRIES
50

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

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

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

    int iSyncId;
    //synchronization 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;
    //synchronization 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_CID_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(WEBCONNT Err)
    {
        m_Error = Err;
        m_szTextDetail = NULL;
    }
};

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

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

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

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

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

//function prototypes

BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call,
LPVOID lpReserved);
void WriteMessageToEventLog(LPTSTR lpszMsg);
void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int
*pCmd, int *pFormId, int *pTermId, int *pSyncId);
void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char
*szBuffer);
void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void BeginCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int
iTermId);
void ProcessCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int
iTermId);
void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void ErrorMessage(EXTENSION_CONTROL_BLOCK *pECB, int iError, int
iErrorType, char *szMsg, int iTermId);
void GetKeyValue(char **pQueryString, char *pKey, char *pValue, int iMax,
WEBERROR err);
int GetIntKeyValue(char **pQueryString, char *pKey, WEBERROR
NoKeyErr, WEBERROR NotIntErr);
void TermInit(void);
void TermDeleteAll(void);
int TermAdd(void);
void TermDelete(int id);
void ErrorForm(EXTENSION_CONTROL_BLOCK *pECB, int iType, int
iErrorNum, int iTermId, int iSyncId, char *szErrorText, char *szBuffer);

```

```

void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm);
void MakeStockLevelForm(int iTermId, STOCK_LEVEL_DATA
*pStockLevelData, BOOL bInput, char *szForm);
void MakeNewOrderForm(int iTermId, NEW_ORDER_DATA
*pNewOrderData, BOOL bInput, char *szForm);
void MakePaymentForm(int iTermId, PAYMENT_DATA *pPaymentData,
BOOL bInput, char *szForm);
void MakeOrderStatusForm(int iTermId, ORDER_STATUS_DATA
*pOrderStatusData, BOOL bInput, char *szForm);
void MakeDeliveryForm(int iTermId, DELIVERY_DATA *pDeliveryData,
BOOL bInput, char *szForm);
void ProcessNewOrderForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer);
void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer);
void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer);
void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer);
void ProcessStockLevelForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId, char *szBuffer);
void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA
*pNewOrderData);
void GetPaymentData(LPSTR lpszQueryString, PAYMENT_DATA
*pPaymentData);
void GetOrderStatusData(LPSTR lpszQueryString, ORDER_STATUS_DATA
*pOrderStatusData);
BOOL PostDeliveryInfo(short w_id, short o_carrier_id);
BOOL IsNumeric(char *ptr);
BOOL IsDecimal(char *ptr);
void DeliveryWorkerThread(void *ptr);

```

tpcc.rc

```

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

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

//
// 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 _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

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

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

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

tpcc_com.cpp

/*      FILE:          TPCC_COM.CPP
 *
 *      4.20.000
 *
 *      All Rights Reserved
 *
 *      Copyright Microsoft, 1999
 *
 *      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 definitions of structures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_com.h"

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

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

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

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

    m_bSinglePool = bSinglePool;

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

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

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

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

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

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

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

```

```

        throw new CCOMERR(hr);

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

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

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

```

```

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

```

```

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

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

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

```

```

CTPCC_COM::~CTPCC_COM()

```

```

{
    if (m_pTxn)
        SafeArrayDestroy(m_vTxn.parray);

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

```

```

void CTPCC_COM::NewOrder()

```

```

{
    VARIANT vTxn_out;

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

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

```

```

}

void CTPCC_COM::Payment()
{
    VARIANT vTxn_out;

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

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

```

```

void CTPCC_COM::StockLevel()

```

```

{
    VARIANT vTxn_out;

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

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

```

```

void CTPCC_COM::OrderStatus()

```

```

{
    VARIANT vTxn_out;

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

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

```

tpcc_com.h

```

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

```

```

*/

#pragma once

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

// need to declare functions for import, unless define has already been created
// by the DLL's .cpp module for export.
#ifdef 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
        PAYMENT_DATA
        DELIVERY_DATA
        STOCK_LEVEL_DATA
        ORDER_STATUS_DATA
    } u;
} *m_pTxn;

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.dsp

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

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

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

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

```
!IF "$(CFG)" == "tpcc_com_all - Win32 Release"
```

```
# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /I 0x409 /d "NDEBUG"
# ADD RSC /I 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbcc32.lib
odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 .\db_dblib_dll\bin\tpcc_dblib.lib
.\db_odbc_dll\bin\tpcc_odbc.lib kernel32.lib user32.lib gdi32.lib winspool.lib
```

```
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbcc32.lib
odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
```

```
!ELSEIF "$(CFG)" == "tpcc_com_all - Win32 Debug"
```

```
# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /ZI /Od /D "WIN32" /D
"_DEBUG" /D "_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /ZI /Od /D "WIN32" /D "_DEBUG"
/D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /I 0x409 /d "_DEBUG"
# ADD RSC /I 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbcc32.lib
odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 .\db_dblib_dll\bin\tpcc_dblib.lib
.\db_odbc_dll\bin\tpcc_odbc.lib kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbcc32.lib
odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
```

```
!ENDIF
```

```
# Begin Target
```

```
# Name "tpcc_com_all - Win32 Release"
# Name "tpcc_com_all - Win32 Debug"
# Begin Group "Source"
```

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

```
SOURCE=\src\tpcc_com_all.cpp
# SUBTRACT CPP /YX
# End Source File
# Begin Source File
```

```
SOURCE=\src\tpcc_com_all.def
# End Source File
# Begin Source File
```

```
SOURCE=\src\tpcc_com_all.idl
```

```
!IF "$(CFG)" == "tpcc_com_all - Win32 Release"
```

```
# PROP Ignore_Default_Tool 1
# Begin Custom Build - Performing MIDL step
InputPath=\src\tpcc_com_all.idl
```

```
BuildCmds= \
```

```

midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
"\src\tpcc_com_all.idl" /out ".\src"

"\src\tpcc_com_all.tlb" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
$(BuildCmds)

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

"\src\tpcc_com_all_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
$(BuildCmds)
# End Custom Build

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

# PROP Ignore_Default_Tool 1
# Begin Custom Build - Performing MIDL step
InputPath=\src\tpcc_com_all.idl

BuildCmds= \
midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
"\src\tpcc_com_all.idl" /out ".\src"

"\src\tpcc_com_all.tlb" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
$(BuildCmds)

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

"\src\tpcc_com_all_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
$(BuildCmds)
# End Custom Build

!ENDIF

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

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

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

SOURCE=\src\resource.h
# End Source File
# End Group
# Begin Source File

SOURCE=\src\tpcc_com_all.rc
# End Source File
# End Target
# End Project

```

tpcc_com_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.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 "oidl.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 STDMETHODCALLTYPE NewOrder(
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;
```

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

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

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

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

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

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

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

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

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

```
HRESULT ( STDMETHODCALLTYPE __RPC_FAR *CallSetComplete )(
    ITPCC __RPC_FAR * This);
```

```
END_INTERFACE
```

```
} ITPCCVtbl;
```

```
interface ITPCC
```

```
{
```

```
CONST_VTBL struct ITPCCVtbl __RPC_FAR *lpVtbl;
```

```
};
```

```
#ifdef COBJMACROS
```

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

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

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

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

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

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

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

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

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

```
#endif /* COBJMACROS */
```

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

```

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

```

```

void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *pRpcChannelBuffer,
    PRPC_MESSAGE pRpcMessage,
    DWORD *pdwStubPhase);

```

```

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

```

```

void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *pRpcChannelBuffer,
    PRPC_MESSAGE pRpcMessage,
    DWORD *pdwStubPhase);

```

```

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

```

```

void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *pRpcChannelBuffer,
    PRPC_MESSAGE pRpcMessage,
    DWORD *pdwStubPhase);

```

```

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

```

```

void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *pRpcChannelBuffer,
    PRPC_MESSAGE pRpcMessage,
    DWORD *pdwStubPhase);

```

```

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

```

```

void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *pRpcChannelBuffer,
    PRPC_MESSAGE pRpcMessage,
    DWORD *pdwStubPhase);

```

```

HRESULT __stdcall ITPCC_CallSetComplete_Proxy(
    ITPCC__RPC_FAR * This);

```

```

void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *pRpcChannelBuffer,
    PRPC_MESSAGE pRpcMessage,
    DWORD *pdwStubPhase);

```

```

#endif /* __ITPCC_INTERFACE_DEFINED__ */

```

```

/* Additional Prototypes for ALL interfaces */

```

```

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

```

```

/* end of Additional Prototypes */

```

```

#ifdef __cplusplus
}
#endif

```

```

#endif

```

tpcc_com_ps.idl

```

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

```

```

// Forward declare all types defined

```

```

interface ITPCC;
import "oidl.idl";
import "ocidl.idl";

```

```

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

```

```

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

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

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

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

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

    HRESULT _stdcall CallSetComplete
    (
    );

}; // interface ITPCC

```

tpcc_com_ps_i.c

```

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

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

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

/* File created by MIDL compiler version 5.03.0280 */
/* at 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( )

#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_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,
0x00}} */

/* Object interface: IUnknown, ver. 0.0,
GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
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,
    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
    }
};

#endif !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_marshall] or [user_marshall] 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 */
        FC_AUTO_HANDLE /* 0x33, */ /*
Oi2 */
/* 2 */ NdrFcLong( 0x0 ), /* 0 */
/* 6 */ NdrFcShort( 0x3 ), /* 3 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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( 0x20 ), /* Alpha Stack
size/offset = 32 */

```

```

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, */
#ifdef _ALPHA_
#ifdef _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 */
#ifdef _ALPHA_
#ifdef _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, */
#ifdef _ALPHA_
#ifdef _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
#endif

```

```

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 */
#ifdef _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, */
#ifdef _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( 0xffff8 ), /* -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( 0xffc ), /* -4 */
/* 296 */ 0x6, /* FC_SHORT */
0x5b, /* FC_END */
/* 298 */
0x17, /* FC_CSTRUCT */
0x3, /* 3 */
/* 300 */ NdrFcShort( 0x8 ), /* 8 */
/* 302 */ NdrFcShort( 0xffffffff2 ), /* 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 */
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 */

```

/* 344 */	0x46,	/* 70 */	0x4b,	/* FC_PP */
	0x12, 0x10,	/* FC_UP	0x5c,	/* FC_PAD */
[pointer_deref] */			0x46,	/* FC_NO_REPEAT */
/* 346 */	NdrFcShort(0x2),	/* Offset= 2 (348) */	0x5c,	/* FC_PAD */
/* 348 */			/* 458 */	NdrFcShort(0x4), /* 4 */
	0x12, 0x0,	/* FC_UP */	/* 460 */	NdrFcShort(0x4), /* 4 */
/* 350 */	NdrFcShort(0x1fc),	/* Offset= 508 (858) */	/* 462 */	0x11, 0x0, /* FC_RP */
/* 352 */			/* 464 */	NdrFcShort(0xfffffd4), /* Offset= -44 (420) */
	0x2a,	/*	/* 466 */	
FC_ENCAPSULATED_UNION */			0x5b,	/* FC_END */
	0x49,	/* 73 */	0x8,	/* FC_LONG */
/* 354 */	NdrFcShort(0x18),	/* 24 */	/* 468 */	0x8, /* FC_LONG */
/* 356 */	NdrFcShort(0xa),	/* 10 */	/* 470 */	0x5b, /* FC_END */
/* 358 */	NdrFcLong(0x8),	/* 8 */		0x21, /*
/* 362 */	NdrFcShort(0x58),	/* Offset= 88 (450) */	FC_BOGUS_ARRAY */	0x3, /* 3 */
/* 364 */	NdrFcLong(0xd),	/* 13 */	/* 472 */	NdrFcShort(0x0), /* 0 */
/* 368 */	NdrFcShort(0x78),	/* Offset= 120 (488) */	/* 474 */	0x19, /* Corr desc: field pointer, FC_ULONG */
/* 370 */	NdrFcLong(0x9),	/* 9 */	0x0,	/* */
/* 374 */	NdrFcShort(0x94),	/* Offset= 148 (522) */	/* 476 */	NdrFcShort(0x0), /* 0 */
/* 376 */	NdrFcLong(0xc),	/* 12 */	/* 478 */	NdrFcLong(0xffffffff), /* -1 */
/* 380 */	NdrFcShort(0xbc),	/* Offset= 188 (568) */	/* 482 */	0x4c, /* FC_EMBEDDED_COMPLEX */
/* 382 */	NdrFcLong(0x24),	/* 36 */	0x0,	/* 0 */
/* 386 */	NdrFcShort(0x114),	/* Offset= 276 (662) */	/* 484 */	NdrFcShort(0xfffff50), /* Offset= -176 (308) */
/* 388 */	NdrFcLong(0x80d),	/* 32781 */	/* 486 */	0x5c, /* FC_PAD */
/* 392 */	NdrFcShort(0x130),	/* Offset= 304 (696) */	/* 488 */	0x5b, /* FC_END */
/* 394 */	NdrFcLong(0x10),	/* 16 */		0x1a, /*
/* 398 */	NdrFcShort(0x148),	/* Offset= 328 (726) */	FC_BOGUS_STRUCT */	0x3, /* 3 */
/* 400 */	NdrFcLong(0x2),	/* 2 */	/* 490 */	NdrFcShort(0x8), /* 8 */
/* 404 */	NdrFcShort(0x160),	/* Offset= 352 (756) */	/* 492 */	NdrFcShort(0x0), /* 0 */
/* 406 */	NdrFcLong(0x3),	/* 3 */	/* 494 */	NdrFcShort(0x6), /* Offset= 6 (500) */
/* 410 */	NdrFcShort(0x178),	/* Offset= 376 (786) */	/* 496 */	0x8, /* FC_LONG */
/* 412 */	NdrFcLong(0x14),	/* 20 */	/* 498 */	0x5c, /* FC_PAD */
/* 416 */	NdrFcShort(0x190),	/* Offset= 400 (816) */	/* 500 */	0x5b, /* FC_END */
/* 418 */	NdrFcShort(0xffffffff),	/* Offset= -1 (417) */		0x11, 0x0, /* FC_RP */
/* 420 */			/* 502 */	NdrFcShort(0xfffffe0), /* Offset= -32 (470) */
	0x1b,	/* FC_CARRAY */	/* 504 */	
	0x3,	/* 3 */		0x21, /*
/* 422 */	NdrFcShort(0x4),	/* 4 */	FC_BOGUS_ARRAY */	0x3, /* 3 */
/* 424 */	0x19,	/* Corr desc: field pointer, FC_ULONG */	/* 506 */	NdrFcShort(0x0), /* 0 */
	0x0,	/* */	/* 508 */	0x19, /* Corr desc: field pointer, FC_ULONG */
/* 426 */	NdrFcShort(0x0),	/* 0 */	/* 510 */	NdrFcShort(0x0), /* 0 */
/* 428 */			/* 512 */	NdrFcLong(0xffffffff), /* -1 */
	0x4b,	/* FC_PP */	/* 516 */	0x4c, /* FC_EMBEDDED_COMPLEX */
/* 430 */	0x5c,	/* FC_PAD */	0x0,	/* 0 */
	0x48,	/*	/* 518 */	NdrFcShort(0xfffff40), /* Offset= -192 (326) */
FC_VARIABLE_REPEAT */			/* 520 */	0x5c, /* FC_PAD */
FC_FIXED_OFFSET */	0x49,	/*	/* 522 */	0x5b, /* FC_END */
/* 432 */	NdrFcShort(0x4),	/* 4 */		0x1a, /*
/* 434 */	NdrFcShort(0x0),	/* 0 */	FC_BOGUS_STRUCT */	0x3, /* 3 */
/* 436 */	NdrFcShort(0x1),	/* 1 */	/* 524 */	NdrFcShort(0x8), /* 8 */
/* 438 */	NdrFcShort(0x0),	/* 0 */	/* 526 */	NdrFcShort(0x0), /* 0 */
/* 440 */	NdrFcShort(0x0),	/* 0 */	/* 528 */	NdrFcShort(0x6), /* Offset= 6 (534) */
/* 442 */	0x12, 0x0, /* FC_UP */		/* 530 */	0x8, /* FC_LONG */
/* 444 */	NdrFcShort(0xfffff6e),	/* Offset= -146 (298) */	/* 532 */	0x5c, /* FC_PAD */
/* 446 */				0x36, /* FC_POINTER */
	0x5b,	/* FC_END */		/* 534 */
	0x8,	/* FC_LONG */		0x5b, /* FC_END */
/* 448 */	0x5c,	/* FC_PAD */		
/* 450 */		/* FC_END */		
	0x16,	/* FC_PSTRUCT */		
	0x3,	/* 3 */		
/* 452 */	NdrFcShort(0x8),	/* 8 */		
/* 454 */				

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/* 534 */
                                0x11, 0x0, /* FC_RP */
/* 536 */ NdrFcShort( 0xfffffe0 ), /* 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( 0xfffffd4 ), /* 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 */
                                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( 0xfffffd8 ), /* Offset= -40 (584) */
/* 626 */ 0x36, /* FC_POINTER */
                                0x5b, /* FC_END */
/* 628 */
                                0x12, 0x0, /* FC_UP */
/* 630 */ NdrFcShort( 0xfffffe4 ), /* 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( 0xfffffd4 ), /* 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( 0xfffffd4 ), /* Offset= -44 (632) */
/* 678 */
                                0x1d, /* FC_SMFARRAY */
                                0x0, /* 0 */
/* 680 */ NdrFcShort( 0x8 ), /* 8 */
/* 682 */ 0x2, /* FC_CHAR */
                                0x5b, /* FC_END */
/* 684 */
                                0x15, /* FC_STRUCT */

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/* 686 */ NdrFcShort(0x10),	0x3,	/* 3 */	/* 758 */ NdrFcShort(0x8),	0x3,	/* 3 */
/* 688 */ 0x8,	/* 16 */		/* 760 */	/* 8 */	
	/* FC_LONG */				
/* 690 */ 0x6,	0x6,	/* FC_SHORT */		0x4b,	/* FC_PP */
	/* FC_SHORT */			0x5c,	/* FC_PAD */
	0x4c,	/*	/* 762 */		
FC_EMBEDDED_COMPLEX */				0x46,	/* FC_NO_REPEAT */
/* 692 */ 0x0,	/* 0 */		/* 764 */ NdrFcShort(0x4),	0x5c,	/* FC_PAD */
	NdrFcShort(0xffffffff),	/* Offset=	/* 766 */ NdrFcShort(0x4),		
-15 (678) */			/* 768 */ 0x12, 0x0, /* FC_UP */		
	0x5b,	/* FC_END */	/* 770 */ NdrFcShort(0xfffffe8),		/* Offset= -24 (746) */
/* 696 */			/* 772 */		
FC_BOGUS_STRUCT */	0x1a,	/*		0x5b,	/* FC_END */
	0x3,	/* 3 */		0x8,	/* FC_LONG */
/* 698 */ NdrFcShort(0x18),	/* 24 */		/* 774 */ 0x8,	/* FC_LONG */	
/* 700 */ NdrFcShort(0x0),	/* 0 */			0x5b,	/* FC_END */
/* 702 */ NdrFcShort(0xa),	/* Offset= 10 (712) */		/* 776 */		
/* 704 */ 0x8,	/* FC_LONG */			0x1b,	/* FC_CARRAY */
	0x36,	/* FC_POINTER */		0x3,	/* 3 */
/* 706 */ 0x4c,	/* FC_EMBEDDED_COMPLEX */		/* 778 */ NdrFcShort(0x4),	/* 4 */	
	0x0,	/* 0 */	/* 780 */ 0x19,	/* Corr desc: field pointer, FC_ULONG */	
/* 708 */ NdrFcShort(0xffffffe8),	/* Offset= -24 (684) */			0x0,	/* */
/* 710 */ 0x5c,	/* FC_PAD */		/* 782 */ NdrFcShort(0x0),	/* 0 */	
	0x5b,	/* FC_END */	/* 784 */ 0x8,	/* FC_LONG */	
/* 712 */				0x5b,	/* FC_END */
	0x11, 0x0, /* FC_RP */		/* 786 */		
/* 714 */ NdrFcShort(0xfffff0c),	/* Offset= -244 (470) */			0x16,	/* FC_PSTRUCT */
/* 716 */				0x3,	/* 3 */
	0x1b,	/* FC_CARRAY */	/* 788 */ NdrFcShort(0x8),	/* 8 */	
	0x0,	/* 0 */	/* 790 */		
/* 718 */ NdrFcShort(0x1),	/* 1 */			0x4b,	/* FC_PP */
/* 720 */ 0x19,	/* Corr desc: field pointer, FC_ULONG */			0x5c,	/* FC_PAD */
	0x0,	/* */	/* 792 */		
/* 722 */ NdrFcShort(0x0),	/* 0 */			0x46,	/* FC_NO_REPEAT */
/* 724 */ 0x1,	/* FC_BYTE */		/* 794 */ NdrFcShort(0x4),	0x5c,	/* FC_PAD */
	0x5b,	/* FC_END */	/* 796 */ NdrFcShort(0x4),		
/* 726 */			/* 798 */ 0x12, 0x0, /* FC_UP */		
	0x16,	/* FC_PSTRUCT */	/* 800 */ NdrFcShort(0xfffffe8),		/* Offset= -24 (776) */
/* 728 */ NdrFcShort(0x8),	/* 8 */		/* 802 */		
/* 730 */				0x5b,	/* FC_END */
	0x4b,	/* FC_PP */			
	0x5c,	/* FC_PAD */	/* 804 */ 0x8,	/* 8 */	/* FC_LONG */
/* 732 */				0x5b,	/* FC_END */
	0x46,	/* FC_NO_REPEAT */	/* 806 */		
	0x5c,	/* FC_PAD */		0x1b,	/* FC_CARRAY */
/* 734 */ NdrFcShort(0x4),	/* 4 */			0x7,	/* 7 */
/* 736 */ NdrFcShort(0x4),	/* 4 */		/* 808 */ NdrFcShort(0x8),	/* 8 */	
/* 738 */ 0x12, 0x0, /* FC_UP */			/* 810 */ 0x19,	/* Corr desc: field pointer, FC_ULONG */	
/* 740 */ NdrFcShort(0xfffffe8),	/* Offset= -24 (716) */			0x0,	/* */
/* 742 */			/* 812 */ NdrFcShort(0x0),	/* 0 */	
	0x5b,	/* FC_END */	/* 814 */ 0xb,	/* FC_HYPER */	
	0x8,	/* FC_LONG */		0x5b,	/* FC_END */
/* 744 */ 0x8,	/* FC_LONG */		/* 816 */		
	0x5b,	/* FC_END */		0x16,	/* FC_PSTRUCT */
/* 746 */				0x3,	/* 3 */
	0x1b,	/* FC_CARRAY */	/* 818 */ NdrFcShort(0x8),	/* 8 */	
	0x1,	/* 1 */	/* 820 */		
/* 748 */ NdrFcShort(0x2),	/* 2 */			0x4b,	/* FC_PP */
/* 750 */ 0x19,	/* Corr desc: field pointer, FC_ULONG */			0x5c,	/* FC_PAD */
	0x0,	/* */	/* 822 */		
/* 752 */ NdrFcShort(0x0),	/* 0 */			0x46,	/* FC_NO_REPEAT */
/* 754 */ 0x6,	/* FC_SHORT */		/* 824 */ NdrFcShort(0x4),	0x5c,	/* FC_PAD */
	0x5b,	/* FC_END */	/* 826 */ NdrFcShort(0x4),		
/* 756 */					
	0x16,	/* FC_PSTRUCT */			


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/* 974 */ NdrFcShort( 0x0 ), /* 0 */
/* 976 */ NdrFcShort( 0xfffffc32 ), /* Offset= -974 (2) */
/* 978 */
                                0x11, 0x4, /* FC_RP [allocated_on_stack] */
/* 980 */ NdrFcShort( 0x6 ), /* Offset= 6 (986) */
/* 982 */
                                0x13, 0x0, /* FC_OP */
/* 984 */ NdrFcShort( 0xfffffd ), /* Offset= -36 (948) */
/* 986 */ 0xb4, /* FC_USER_MARSHAL */
                                0x83, /* 131 */
/* 988 */ NdrFcShort( 0x0 ), /* 0 */
/* 990 */ NdrFcShort( 0x10 ), /* 16 */
/* 992 */ NdrFcShort( 0x0 ), /* 0 */
/* 994 */ NdrFcShort( 0xfffff4 ), /* 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 * piIndex )
{
    if(! _tpcc_com_ps_CHECK_IID(0))
    {
        *piIndex = 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( )

#ifdef _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,
    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 */
        FC_AUTO_HANDLE /* 0x33, */ /*
        Oi2 /* 0x6c, */ /* Old Flags: object,
        /* 2 */ NdrFcLong( 0x0 ), /* 0 */
        /* 6 */ NdrFcShort( 0x3 ), /* 3 */
#ifdef _ALPHA_
        /* 8 */ NdrFcShort( 0x38 ), /* ia64 Stack size/offset = 56 */
#endif
    }
};

```

```

#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, */
/* 16 */ 0xa, /* 10 */
/* 18 */ 0x3, /* 3 */
/* 20 */ 0x7, /* Ext Flags: new corr
desc, clt corr check, srv corr check, */
/* 22 */ NdrFcShort( 0x20 ), /* 32 */
/* 24 */ NdrFcShort( 0x0 ), /* 0 */
/* 26 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
/* 28 */ NdrFcShort( 0x10 ), /* ia64 Stack size/offset = 16 */
#else
    NdrFcShort( 0x8 ), /* axp64 Stack
size/offset = 8 */
#endif
/* 30 */ NdrFcShort( 0x3b6 ), /* Type Offset=950 */
/* 32 */ NdrFcShort( 0x6113 ), /* Flags: must size, must free, out,
simple ref, srv alloc size=24 */
/* 34 */ NdrFcShort( 0x28 ), /* ia64 Stack size/offset = 40 */
#else
    NdrFcShort( 0x20 ), /* axp64 Stack
size/offset = 32 */
#endif
/* 36 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
/* 38 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
/* 40 */ NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
#else
    NdrFcShort( 0x28 ), /* axp64 Stack
size/offset = 40 */
#endif
/* 42 */ 0x8, /* FC_LONG */
/* 44 */ 0x33, /* FC_AUTO_HANDLE */
/* 46 */ 0x0, /* Old Flags: object,
Oi2 */
/* 48 */ NdrFcLong( 0x0 ), /* 0 */
/* 50 */ NdrFcShort( 0x4 ), /* 4 */
/* 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, */
/* 60 */ 0xa, /* 10 */
/* 62 */ NdrFcShort( 0x20 ), /* 32 */
/* 64 */ NdrFcShort( 0x20 ), /* 32 */
/* 66 */ NdrFcShort( 0x0 ), /* 0 */
/* 68 */ NdrFcShort( 0x0 ), /* 0 */
/* 70 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
/* 72 */ NdrFcShort( 0x10 ), /* ia64 Stack size/offset = 16 */
#else
    NdrFcShort( 0x8 ), /* axp64 Stack
size/offset = 8 */
#endif
/* 74 */ NdrFcShort( 0x3b6 ), /* Type Offset=950 */
/* 76 */ NdrFcShort( 0x6113 ), /* Flags: must size, must free, out,
simple ref, srv alloc size=24 */
/* 78 */ NdrFcShort( 0x28 ), /* ia64 Stack size/offset = 40 */
#else
    NdrFcShort( 0x20 ), /* axp64 Stack
size/offset = 32 */
#endif
/* 80 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
/* 82 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
/* 84 */ NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
#else
    NdrFcShort( 0x28 ), /* axp64 Stack
size/offset = 40 */
#endif
/* 86 */ 0x8, /* FC_LONG */
/* 88 */ 0x33, /* FC_AUTO_HANDLE */
/* 90 */ 0x6c, /* Old Flags: object,
Oi2 */
/* 92 */ NdrFcLong( 0x0 ), /* 0 */
/* 94 */ NdrFcShort( 0x5 ), /* 5 */
/* 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, */
/* 104 */ 0xa, /* 10 */
/* 106 */ 0x3, /* 3 */
/* 108 */ 0x7, /* Ext Flags: new corr
desc, clt corr check, srv corr check, */
/* 110 */ NdrFcShort( 0x20 ), /* 32 */

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/* 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, */
#ifdef _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 */
#ifdef _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, */
#ifdef _ALPHA_
/* 128 */ NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
#else
NdrFcShort( 0x28 ), /* axp64 Stack
size/offset = 40 */
#endif
/* 130 */ 0x8, /* FC_LONG */
/* 0 */

/* Procedure StockLevel */

/* 132 */ 0x33, /* FC_AUTO_HANDLE */
/* 0x6c, /* Old Flags: object,
Oi2 */
/* 134 */ NdrFcLong( 0x0 ), /* 0 */
/* 138 */ NdrFcShort( 0x6 ), /* 6 */
#ifdef _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, */
#ifdef _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 */
#ifdef _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, */
#ifdef _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 */
#ifdef _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, */
#ifdef _ALPHA_
/* 204 */ NdrFcShort( 0x10 ), /* ia64 Stack size/offset = 16 */
#else
NdrFcShort( 0x8 ), /* axp64 Stack
size/offset = 8 */
#endif
/* 206 */ NdrFcShort( 0x3b6 ), /* Type Offset=950 */

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```

/* Parameter txn_out */
/* 208 */ NdrFcShort( 0x6113 ), /* Flags: must size, must free, out,
simple ref, srv alloc size=24 */
#ifdef _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, */
#ifdef _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 */

```



```

/* 446 */
FC_BOGUS_STRUCT */
    0x1a, /*
    0x3, /* 3 */
/* 448 */ NdrFcShort( 0x10 ), /* 16 */
/* 450 */ NdrFcShort( 0x0 ), /* 0 */
/* 452 */ NdrFcShort( 0x6 ), /* Offset= 6 (458) */
/* 454 */ 0x8, /* FC_LONG */
/* 456 */ 0x36, /* FC_POINTER */
/* 458 */ 0x5b, /* FC_END */
    0x11, 0x0, /* FC_RP */
/* 460 */ NdrFcShort( 0xfffff5dc ), /* 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( 0xfffff58 ), /* 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( 0xfffff5dc ), /* 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( 0xfffff44 ), /* 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 */
    0x11, 0x0, /* FC_RP */
/* 536 */ NdrFcShort( 0xfffff5dc ), /* 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( 0xfffff5dc ), /* 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 */
/* 616 */ 0x4c,        /* FC_EMBEDDED_COMPLEX */
/* 618 */ NdrFcShort( 0xfffffd6 ), /* Offset= -42 (576) */
/* 620 */ 0x39,        /* FC_ALIGNM8 */
/* 622 */ 0x5c,        /* FC_POINTER */
/* 624 */ 0x5b,        /* FC_END */
/* 626 */ NdrFcShort( 0xfffffe0 ), /* Offset= -32 (594) */
/* 628 */ 0x21,        /*
FC_BOGUS_ARRAY */
/* 630 */ NdrFcShort( 0x0 ), /* 0 */
/* 632 */ 0x19,        /* Corr desc: field pointer, FC_ULONG */
/* 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( 0xfffffd8 ), /* Offset= -40 (606) */
/* 648 */ 0x5c,        /* FC_PAD */
/* 650 */ 0x5b,        /* FC_END */
/* 652 */ 0x1a,        /*
FC_BOGUS_STRUCT */
/* 652 */ NdrFcShort( 0x10 ), /* 16 */
/* 654 */ NdrFcShort( 0x0 ), /* 0 */
/* 656 */ NdrFcShort( 0x6 ), /* Offset= 6 (662) */
/* 658 */ 0x8,        /* FC_LONG */
/* 660 */ 0x36,        /* FC_POINTER */
/* 662 */ 0x5b,        /* FC_END */
/* 664 */ NdrFcShort( 0xfffffde ), /* Offset= -36 (628) */
/* 666 */ 0x1d,        /* FC_SMFARRAY */
/* 668 */ NdrFcShort( 0x8 ), /* 8 */
/* 670 */ 0x2,        /* FC_CHAR */
/* 672 */ 0x5b,        /* FC_END */
/* 674 */ NdrFcShort( 0x10 ), /* 16 */
/* 676 */ 0x8,        /* FC_LONG */
/* 678 */ 0x6,        /* FC_SHORT */
/* 680 */ 0x4c,        /*
FC_EMBEDDED_COMPLEX */
/* 680 */ 0x0,        /* 0 */
NdrFcShort( 0xfffff1 ), /* Offset=
-15 (666) */
/* 684 */ 0x5b,        /* FC_END */
/* 686 */ 0x1a,        /*
FC_BOGUS_STRUCT */
/* 686 */ NdrFcShort( 0x20 ), /* 32 */
/* 688 */ NdrFcShort( 0x0 ), /* 0 */
/* 690 */ NdrFcShort( 0xa ), /* Offset= 10 (700) */
/* 692 */ 0x8,        /* FC_LONG */
/* 694 */ 0x36,        /* FC_POINTER */
/* 696 */ 0x4c,        /*
FC_EMBEDDED_COMPLEX */
/* 696 */ 0x0,        /* 0 */
NdrFcShort( 0xfffffe7 ), /* Offset=
-25 (672) */
/* 700 */ 0x5b,        /* FC_END */
/* 702 */ NdrFcShort( 0xfffff10 ), /* Offset= -240 (462) */
/* 704 */ 0x1b,        /* FC_CARRAY */
/* 706 */ NdrFcShort( 0x1 ), /* 1 */
/* 708 */ 0x19,        /* Corr desc: field pointer, FC_ULONG */
/* 710 */ NdrFcShort( 0x0 ), /* 0 */
/* 712 */ NdrFcShort( 0x1 ), /* Corr flags: early, */
/* 714 */ 0x1,        /* FC_BYTE */
/* 716 */ 0x5b,        /* FC_END */
/* 718 */ 0x1a,        /*
FC_BOGUS_STRUCT */
/* 718 */ NdrFcShort( 0x10 ), /* 16 */
/* 720 */ NdrFcShort( 0x0 ), /* 0 */
/* 722 */ NdrFcShort( 0x6 ), /* Offset= 6 (728) */
/* 724 */ 0x8,        /* FC_LONG */
/* 726 */ 0x36,        /* FC_POINTER */
/* 728 */ 0x5b,        /* FC_END */
/* 730 */ NdrFcShort( 0xfffffe6 ), /* Offset= -26 (704) */
/* 732 */ 0x1b,        /* FC_CARRAY */
/* 734 */ NdrFcShort( 0x2 ), /* 2 */
/* 736 */ 0x19,        /* Corr desc: field pointer, FC_ULONG */
/* 738 */ NdrFcShort( 0x0 ), /* 0 */
/* 740 */ NdrFcShort( 0x1 ), /* Corr flags: early, */
/* 742 */ 0x6,        /* FC_SHORT */
/* 744 */ 0x5b,        /* FC_END */
/* 746 */ 0x1a,        /*
FC_BOGUS_STRUCT */
/* 746 */ NdrFcShort( 0x10 ), /* 16 */
/* 748 */ NdrFcShort( 0x0 ), /* 0 */
/* 750 */ NdrFcShort( 0x6 ), /* Offset= 6 (756) */
/* 752 */ 0x8,        /* FC_LONG */
/* 754 */ 0x36,        /* FC_POINTER */
/* 756 */ 0x5b,        /* FC_END */
/* 758 */ NdrFcShort( 0xfffffe6 ), /* Offset= -26 (732) */
/* 760 */ 0x1b,        /* FC_CARRAY */
/* 762 */ NdrFcShort( 0x4 ), /* 4 */
/* 764 */ 0x19,        /* Corr desc: field pointer, FC_ULONG */
/* 766 */ NdrFcShort( 0x0 ), /* 0 */
/* 768 */ NdrFcShort( 0x1 ), /* Corr flags: early, */

```



```

/* 770 */ 0x8,          /* FC_LONG */
/* 772 */          0x5b,          /* FC_END */
FC_BOGUS_STRUCT */
          0x1a,          /*
          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( 0xfffffe6 ), /* Offset= -26 (760) */
/* 788 */
          0x1b,          /* FC_CARRAY */
          0x7,          /* 7 */
/* 790 */ NdrFcShort( 0x8 ), /* 8 */
/* 792 */ 0x19,        /* Corr desc: field pointer, FC_ULONG */
          0x0,          /*
          /* 0 */
/* 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( 0xfffffe6 ), /* 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,          /*
          /* 0 */
/* 830 */ NdrFcShort( 0xffc8 ), /* -56 */
/* 832 */ NdrFcShort( 0x1 ), /* Corr flags: early, */
/* 834 */ 0x4c,        /* FC_EMBEDDED_COMPLEX */
          0x0,          /* 0 */
/* 836 */ NdrFcShort( 0xfffffec ), /* Offset= -20 (816) */
/* 838 */ 0x5c,        /* FC_PAD */
          0x5b,          /* FC_END */
/* 840 */
          0x1a,          /*
FC_BOGUS_STRUCT */
          0x3,          /* 3 */
/* 842 */ NdrFcShort( 0x38 ), /* 56 */
/* 844 */ NdrFcShort( 0xfffffec ), /* 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( 0xffffe0d ), /* Offset=
-499 (356) */
          0x5b,          /* FC_END */
/* 858 */
          0x12, 0x0, /* FC_UP */
/* 860 */ NdrFcShort( 0xfffff02 ), /* Offset= -254 (606) */
/* 862 */
          0x12, 0x8, /* FC_UP [simple_pointer] */
          /* FC_BYTE */
          0x5c,          /* FC_PAD */
/* 866 */
          0x12, 0x8, /* FC_UP [simple_pointer] */
          /* FC_SHORT */
          0x5c,          /* FC_PAD */
/* 868 */ 0x6,          /*
          0x12, 0x8, /* FC_UP [simple_pointer] */
          /* FC_LONG */
          0x5c,          /* FC_PAD */
/* 872 */ 0x8,          /*
          0x12, 0x8, /* FC_UP [simple_pointer] */
          /* FC_FLOAT */
          0x5c,          /* FC_PAD */
/* 876 */ 0xa,          /*
          0x12, 0x8, /* FC_UP [simple_pointer] */
          /* FC_DOUBLE */
          0x5c,          /* FC_PAD */
/* 878 */
          0x12, 0x8, /* FC_UP [simple_pointer] */
          /* FC_UP */
          0x12, 0x10, /* FC_UP
[pointer_deref] */
/* 888 */ NdrFcShort( 0xffffda6 ), /* Offset= -602 (286) */
/* 890 */
          0x12, 0x10, /* FC_UP
[pointer_deref] */
/* 892 */ NdrFcShort( 0xffffdbc ), /* Offset= -580 (312) */
/* 894 */
          0x12, 0x10, /* FC_UP
[pointer_deref] */
/* 896 */ NdrFcShort( 0xffffdca ), /* Offset= -566 (330) */
/* 898 */
          0x12, 0x10, /* FC_UP
[pointer_deref] */
/* 900 */ NdrFcShort( 0xffffdd8 ), /* 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( 0xfffff2 ), /* 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 */
/* 940 */ 0x6,          /* FC_SHORT */
/* 942 */ 0x6,          /* FC_SHORT */
/* 944 */ 0x4c,         /* FC_EMBEDDED_COMPLEX */
                                0x0,          /* 0 */
/* 946 */ NdrFcShort( 0xffffc54 ), /* 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( 0xffffc44 ), /* Offset=-956 (2) */
/* 960 */
                                0x11, 0x4, /* FC_RP [allocated_on_stack] */
/* 962 */ NdrFcShort( 0x6 ), /* Offset=6 (968) */
/* 964 */
                                0x13, 0x0, /* FC_OP */
/* 966 */ NdrFcShort( 0xfffffdc ), /* Offset=-36 (930) */
/* 968 */ 0xb4,         /* FC_USER_MARSHAL */
                                0x83,          /* 131 */
/* 970 */ NdrFcShort( 0x0 ), /* 0 */
/* 972 */ NdrFcShort( 0x18 ), /* 24 */
/* 974 */ NdrFcShort( 0x0 ), /* 0 */
/* 976 */ NdrFcShort( 0xfffff4 ), /* Offset=-12 (964) */

                                0x0
    }
};

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

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

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

```

```

};

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

int __stdcall _tpcc_com_ps_IID_Lookup( const IID * pIID, int * pIndex )
{
    if(!_tpcc_com_ps_CHECK_IID(0))
    {
        *pIndex = 0;
        return 1;
    }

    return 0;
}

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

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

tpcc_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 <sqlldb.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 DEFCLPCKSIZE 4096

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

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

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

BOOL APIENTRY DllMain(HMODULE hModule, DWORD
ul_reason_for_call, LPVOID lpReserved)
{
    switch( ul_reason_for_call )
    {
        case DLL_PROCESS_ATTACH:
            DisableThreadLibraryCalls(hModule);
            dbinit(); // initialize dblib
            break;

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

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

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

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

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

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

```

```

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

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

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

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

    if (pConn != NULL)
    {
        pConn->SetSqlError( msgno, msgstate, severity, msgtext
);
    }
    return 0;
}

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

```

```

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

    return;
}

/* FUNCTION: CTPCC_DBLIB_ERR::ErrorText
 *
 */

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

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

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

    for(i=0; errorMsgs[i].szMsg[0]; i++)
    {
        if ( m_erno == 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;
    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;
    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 (dbprocmshandle(login, msg_handler) == NULL)
        ThrowError(CDBLIBERR::eDbProcHandler);

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

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

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

    m_dbproc = dbopen(login, szServer);

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

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

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

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

    dbcmd(m_dbproc, "set nocount on "); //
    // do not return row counts
}

```

```

        dbcmd(m_dbproc, "set XACT_ABORT ON");
rollback transaction on abort

        if (dbsqlexec(m_dbproc) == FAIL)
            ThrowError(CDBLIBERR::eDbSqlExec);

        DiscardNextResults(2);

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

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

        if (dbresults(m_dbproc) != SUCCEEDED)
            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); // @threshold smallint

            if (dbrpcexec(m_dbproc) == FAIL)

ThrowError(CDBLIBERR::eDbRpcExec);

            if (dbresults(m_dbproc) != SUCCEED)

ThrowError(CDBLIBERR::eDbResults);

            if (dbnextrow(m_dbproc) != REG_ROW)

ThrowError(CDBLIBERR::eDbNextRow);

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

            DiscardNextRows(0);
            DiscardNextResults(0);

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

iErrOleDbProvider &&
sErrTimeoutExpired) != NULL)) &&
                strstr(e->m_msgtext,
                    (++iTryCount <= iMaxRetries))
                {
                    // hit deadlock; backoff for
                    increasingly longer period

                    delete e;
                    Sleep(10 * iTryCount);
                }
                else
                    throw;
            }
        }
        // while (TRUE)

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

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

    int                iTryCount = 0;
    const BYTE         *pData;

    ResetError();

    while (TRUE)

```

```

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

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

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

        if (dbrpcexec(m_dbproc) == FAIL)

ThrowError(CDBLIBERR::eDbRpcExec);

        // Get order line results
        m_txn.NewOrder.total_amount = 0;

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

ThrowError(CDBLIBERR::eDbResults);

            if (dbnumcols(m_dbproc) != 5)

ThrowError(CDBLIBERR::eWrongNumCols);

            if (dbnextrow(m_dbproc) !=
REG_ROW)

ThrowError(CDBLIBERR::eDbNextRow);

            if (pData=dbdata(m_dbproc, 1))

UtilStrCpy(m_txn.NewOrder.OL[i].ol_i_name, pData, dbdatlen(m_dbproc, 1));
            if (pData=dbdata(m_dbproc, 2))
m_txn.NewOrder.OL[i].ol_stock = (*(DBSMALLINT *) pData);
            if (pData=dbdata(m_dbproc, 3))
UtilStrCpy(m_txn.NewOrder.OL[i].ol_brand_generic, pData,
dbdatlen(m_dbproc, 3));
            if (pData=dbdata(m_dbproc, 4))
            dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,4),
SQLFLT8, (BYTE
*)&m_txn.NewOrder.OL[i].ol_i_price, 8);
            if (pData=dbdata(m_dbproc, 5))
            dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,5),
SQLFLT8, (BYTE
*)&m_txn.NewOrder.OL[i].ol_amount, 8);
            m_txn.NewOrder.total_amount =
m_txn.NewOrder.total_amount + m_txn.NewOrder.OL[i].ol_amount;
            DiscardNextRows(0);
        }

        // get remaining values for w_tax, d_tax, o_id,
c_last, c_discount, c_credit, o_entry_d, commit_flag
        if (dbresults(m_dbproc) != SUCCEED)

ThrowError(CDBLIBERR::eDbResults);

            if (dbnextrow(m_dbproc) != REG_ROW)

ThrowError(CDBLIBERR::eDbNextRow);

            if (dbnumcols(m_dbproc) != 8)

ThrowError(CDBLIBERR::eWrongNumCols);

            if (pData=dbdata(m_dbproc, 1))
            dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,1), SQLFLT8, (BYTE
*)&m_txn.NewOrder.w_tax, 8);
            if (pData=dbdata(m_dbproc, 2))
            dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,2), SQLFLT8, (BYTE
*)&m_txn.NewOrder.d_tax, 8);
            if (pData=dbdata(m_dbproc, 3))
                m_txn.NewOrder.o_id =
(*(DBINT *) pData);
            if (pData=dbdata(m_dbproc, 4))
UtilStrCpy(m_txn.NewOrder.c_last, pData, dbdatlen(m_dbproc, 4));
            if (pData=dbdata(m_dbproc, 5))
            dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,5), SQLFLT8, (BYTE
*)&m_txn.NewOrder.c_discount, 8);
            if (pData=dbdata(m_dbproc, 6))
UtilStrCpy(m_txn.NewOrder.c_credit, pData, dbdatlen(m_dbproc, 6));
            if (pData=dbdata(m_dbproc, 7))
            {
                datetime = *((DBDATETIME *)
pData);
            }
        }
    }
}

```


<pre> daterec.minute; m_txn.Payment.h_date.minute = daterec.second; m_txn.Payment.h_date.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; </pre>	<pre> m_txn.Payment.c_since.month = daterec.month; m_txn.Payment.c_since.day = daterec.day; m_txn.Payment.c_since.hour = daterec.hour; m_txn.Payment.c_since.minute = daterec.minute; m_txn.Payment.c_since.second = daterec.second; } if(pData=dbdata(m_dbproc, 23)) UtilStrCpy(m_txn.Payment.c_credit, pData, dbdatlen(m_dbproc, 23)); if(pData=dbdata(m_dbproc, 24)) dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,24), SQLFLT8, (BYTE *)&m_txn.Payment.c_credit_lim, 8); if(pData=dbdata(m_dbproc, 25)) dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,25), SQLFLT8, (BYTE *)&m_txn.Payment.c_discount, 8); if(pData=dbdata(m_dbproc, 26)) dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,26), SQLFLT8, (BYTE *)&m_txn.Payment.c_balance, 8); if(pData=dbdata(m_dbproc, 27)) UtilStrCpy(m_txn.Payment.c_data, pData, dbdatlen(m_dbproc, 27)); DiscardNextRows(0); DiscardNextResults(0); if (m_txn.Payment.c_id == 0) throw new CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_INVALID_CUST); else m_txn.Payment.exec_status_code = eOK; return; } catch (CSQLERR *e) { if ((e->m_msgno == 1205 (e->m_msgno == iErrOleDbProvider && sErrTimeoutExpired) != NULL)) && ((++iTryCount <= iMaxRetries)) { // hit deadlock; backoff for delete e; Sleep(10 * iTryCount); } else throw; } } // while (TRUE) // if (iTryCount) // throw new CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS, iTryCount); } </pre>
---	--

```

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

    int
    RETCODE      rc;
    const BYTE   *pData;

    ResetError();

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

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

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

            if (dbrpcexec(m_dbproc) == FAIL)

ThrowError(CDBLIBERR::eDbRpcExec);

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

ThrowError(CDBLIBERR::eDbResults);
            }

            if (dbnumcols(m_dbproc) != 5)

ThrowError(CDBLIBERR::eWrongNumCols);

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

ThrowError(CDBLIBERR::eDbNextRow);

                if(pData=dbdata(m_dbproc, 1))

m_txn.OrderStatus.OL[i].ol_supply_w_id = (*(DBSMALLINT *) pData);

```

```

                if(pData=dbdata(m_dbproc, 2))

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

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

m_txn.OrderStatus.OL[i].ol_delivery_d.year = daterec.year;
m_txn.OrderStatus.OL[i].ol_delivery_d.month = daterec.month;
m_txn.OrderStatus.OL[i].ol_delivery_d.day = daterec.day;
m_txn.OrderStatus.OL[i].ol_delivery_d.hour = daterec.hour;
m_txn.OrderStatus.OL[i].ol_delivery_d.minute = daterec.minute;
m_txn.OrderStatus.OL[i].ol_delivery_d.second = daterec.second;
                }
                i++;
                m_txn.OrderStatus.o_ol_cnt = i;

                if (dbresults(m_dbproc) != SUCCEED)

ThrowError(CDBLIBERR::eDbResults);

                if (dbnextrow(m_dbproc) != REG_ROW)

ThrowError(CDBLIBERR::eDbNextRow);

                if (dbnumcols(m_dbproc) != 8)

ThrowError(CDBLIBERR::eWrongNumCols);

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

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

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

UtilStrCpy(m_txn.OrderStatus.c_middle, pData, dbdatlen(m_dbproc, 4));

                if(pData=dbdata(m_dbproc, 5))
                {
                    datetime = (*(DBDATETIME *)
pData);
                    dbdatecrack(m_dbproc, &daterec,
&datetime);

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

```

```

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

m_txn.OrderStatus.o_entry_d.minute = daterec.minute;
m_txn.OrderStatus.o_entry_d.second = daterec.second;
                                }
                                if(pData=dbdata(m_dbproc, 6))
                                m_txn.OrderStatus.o_carrier_id =
*(DBSMALLINT *) pData);
                                if(pData=dbdata(m_dbproc, 7))
                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,7),
                                SQLFLT8,
(BYTE *)&m_txn.OrderStatus.c_balance, 8);
                                if(pData=dbdata(m_dbproc, 8))
                                m_txn.OrderStatus.o_id =
*(DBINT *) pData);

                                DiscardNextRows(0);
                                DiscardNextResults(0);

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

m_txn.OrderStatus.exec_status_code = eOK;

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

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

void CTPCC_DBLIB::Delivery()

```

```

{
    int i;
    int iTryCount = 0;
    const BYTE *pData;

    ResetError();

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

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

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

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

// if (iTryCount)

```

```

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

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

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

```

tpcc_dblib.h

```

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

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

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

class CSQLERR : public CBaseErr
{
public:
    CSQLERR(void)
    {
        m_msgno = 0;
        m_msgstate = 0;
        m_severity = 0;
        m_msgtext = NULL;
    };

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

```

```

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

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

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

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

        m_dberrstr = NULL;
        m_oserrstr = NULL;
    };

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

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

```

```

char *m_oserrstr;

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

};

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

CTPCC_DBLIB_ERR( int iErr ) { m_erno = iErr;
m_iTryCount = 0; };

CTPCC_DBLIB_ERR( int iErr, int iTryCount ) {
m_erno = iErr; m_iTryCount = iTryCount; };

int m_erno;
int m_iTryCount;

int ErrorType() {return ERR_TYPE_TPCC_DBLIB;};
int ErrorNum() {return m_erno;};

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_handler
// outside of the class
void SetDbLibError(int severity, int dberr, int oserr,
LPCSTR dberrstr, LPCSTR oserrstr);
void SetSqlError( int msgno, int msgstate, int severity,
LPCSTR msgtext );
};

extern "C" DllDecl CTPCC_DBLIB* CTPCC_DBLIB_new
( LPCSTR szServer, LPCSTR szUser, LPCSTR szPassword,
LPCSTR szHost, LPCSTR szDatabase );

typedef CTPCC_DBLIB* (TYPE_CTPCC_DBLIB)(LPCSTR, LPCSTR,
LPCSTR, LPCSTR, LPCSTR);

```

tpcc_enc.cpp

```

// tpcc_enc.cpp: implementation of the CTPCC_ENCINA class.
//
//
//
#include <windows.h>
#include <process.h>
#include <stdio.h>
#include <stdarg.h>
#include <malloc.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <sys/timeb.h>
#include <io.h>

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

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

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

```

```

#include "mon_client.h"
#include "client_utils.h"

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

BOOL WINAPIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call,
LPVOID lpReserved)
{
    switch( ul_reason_for_call )
    {
        case DLL_PROCESS_ATTACH:

            DisableThreadLibraryCalls(hModule);
            InitializeCriticalSection(&TpCriticalSection);
            break;

        case DLL_PROCESS_DETACH:
            DeleteCriticalSection(&TpCriticalSection);
            break;

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

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

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

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

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

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

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

}

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

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

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

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

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

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

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

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

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

char *CENCERR::ErrorText()
{
    if (m_iErrorType == TRPC_ERROR)
}

```

```

    {
        sprintf( m_szErrorText, "Error: ENCINA TRPC error
(see log file %s for details)", errFile);
    }
    else
        sprintf( m_szErrorText, "Error: Class %d, error # %d",
m_iErrorType, m_iError);
    return m_szErrorText;
};

```

tpcc_enc.h

```

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

```

```

#ifndef _TPCC_ENCINA_H_
#define _TPCC_ENCINA_H_

```

```

#pragma once

```

```

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

```

```

class CTPCC_ENCINA : public CTPCC_BASE
{
private:
    struct ENC_DATA
    {
        int
        int
        union
        {
            NEW_ORDER_DATA
            PAYMENT_DATA
            DELIVERY_DATA
            STOCK_LEVEL_DATA
            ORDER_STATUS_DATA
        } u;
    } *m_txn;

public:
    CTPCC_ENCINA();
    virtual ~CTPCC_ENCINA();

```

```

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

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

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

public:
    int     m_errno;           //
    int     m_iErrorType;     // match
    ErrorType in CTPCC_ENCINA
    int     m_iError;         // machine
    error in CTPCC_ENCINA

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

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

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

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

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

```

```

typedef CTPCC_ENCINA* (TYPE_CTPCC_ENCINA)();

#endif // !defined(_TPCC_ENCINA_H_)

tpcc_odbc.cpp

/*      FILE:          TPCC_ODBC.CPP
 *          Microsoft TPC-C Kit Ver.
4.20.000
 *          Copyright Microsoft, 1999
 *          All Rights Reserved
 *
 *          Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *      PURPOSE:      Implements ODBC calls for TPC-C txns.
 *      Contact:    Charles Levine (clevine@microsoft.com)
 *
 * Change history:
 *      4.20.000 - updated rev number to match kit
 *      4.10.001 - not deleting error class in catch handler on
deadlock retry;
 *          not a functional bug, but a
memory leak
 */

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

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

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

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

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

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

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

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

static SQLHENV henv = SQL_NULL_HENV;
// ODBC environment handle

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

```

```

        if (
SQLAllocHandleStd(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv)
!= SQL_SUCCESS )
            return FALSE;
        break;
        case DLL_PROCESS_DETACH:
            if (henv != NULL)
                SQLFreeEnv(henv);
            break;
        default:
            /* nothing */;
    }
    return TRUE;
}

/* FUNCTION: CTPCC_ODBC_ERR::ErrorText
 *
 */

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

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

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

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

// wrapper routine for class constructor
__declspec( dllexport ) CTPCC_ODBC* CTPCC_ODBC_new(
LPCSTR szServer,          // name of SQL server
LPCSTR szUser,           // user name for login
LPCSTR szPassword,       // password for login
LPCSTR szHost,           // not used
LPCSTR szDatabase )      // name of database to use
{
    return new CTPCC_ODBC( szServer, szUser, szPassword, szHost,
szDatabase );
}

```



```

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

    // initialization
    m_hdbc = SQL_NULL_HDBC;
    m_hstmt = SQL_NULL_HSTMT;

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

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

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

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

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

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

        rc = SQLDriverConnect(m_hdbc, NULL,
(SQLCHAR*)szConnectStr, sizeof(szConnectStr),
(SQLCHAR*)szOutStr, sizeof(szOutStr),
&iOutStrLen, SQL_DRIVER_NOPROMPT );

        if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)
            ThrowError(CODBCERR::eConnect);
    }

    if (SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmt)
!= SQL_SUCCESS)
        ThrowError(CODBCERR::eAllocHandle);

    {
        char          buffer[128];

        // set some options affecting connection behavior
        strcpy(buffer, "set nocount on set XACT_ABORT ON");
    }

    rc = SQLExecDirect(m_hstmt, (unsigned char *)buffer,
SQL_NTS);
    if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)
        ThrowError(CODBCERR::eExecDirect);

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

    SQLFreeHandle(SQL_HANDLE_STMT, m_hstmt);
}

// Bind parameters for each of the transactions
InitNewOrderParams();
InitPaymentParams();
InitOrderStatusParams();
InitDeliveryParams();
InitStockLevelParams();
}

CTPCC_ODBC::~CTPCC_ODBC( void )
{
    // note: descriptors are automatically released when the connection is
dropped
    SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtNewOrder);
    SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtPayment);
    SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtDelivery);
    SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtOrderStatus);
    SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtStockLevel);

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

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

    pODBCErr = new CODBCERR();

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

    szTmp[0] = 0;
    while (TRUE)
    {

```

```

        rc = SQLError(henv, m_hdbc, m_hstmt, (BYTE
*)&szState, &lnativeError,
        (BYTE *)&szMsg,
sizeof(szMsg), NULL);
        if (rc == SQL_NO_DATA)
            break;

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

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

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

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

    if (pODBCErr->m_odbcerrstr != NULL)
    {
        delete [] pODBCErr->m_odbcerrstr;
        pODBCErr->m_odbcerrstr = NULL;
    }

    if (strlen(szTmp) > 0)
    {
        pODBCErr->m_odbcerrstr = new char[ strlen(szTmp)+1
];
        strcpy( pODBCErr->m_odbcerrstr, szTmp );
    }

    SQLFreeStmt(m_hstmt, SQL_CLOSE);
    throw pODBCErr;
}

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

    m_hstmt = m_hstmtStockLevel;

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

```

```

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

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

    m_hstmt = m_hstmtStockLevel;

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

            if ( SQLFetch(m_hstmt) == SQL_ERROR )
                ThrowError(CODBCERR::eFetch);

            SQLFreeStmt(m_hstmt, SQL_CLOSE);

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

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

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

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

    m_hstmt = m_hstmtNewOrder;

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

```

```

        int i = 0;
        if ( SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.NewOrder.w_id, 0,
NULL) != SQL_SUCCESS
            || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
&m_txn.NewOrder.d_id, 0, NULL) != SQL_SUCCESS
            || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 0, 0,
&m_txn.NewOrder.c_id, 0, NULL) != SQL_SUCCESS
            || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
&m_txn.NewOrder.o_ol_cnt, 0, NULL) != SQL_SUCCESS
            || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
&m_txn.NewOrder.o_all_local, 0, NULL) != SQL_SUCCESS
        )
            ThrowError(CODBCERR::eBindParam);

        for (int j=0; j<MAX_OL_NEW_ORDER_ITEMS; j++)
        {
            if ( SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 0, 0,
&m_txn.NewOrder.OL[j].ol_i_id, 0, NULL) != SQL_SUCCESS
                || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
&m_txn.NewOrder.OL[j].ol_supply_w_id, 0, NULL) != SQL_SUCCESS
                || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
&m_txn.NewOrder.OL[j].ol_quantity, 0, NULL) != SQL_SUCCESS
            )
                ThrowError(CODBCERR::eBindParam);
        }

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

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

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

        i = 0;
        if ( SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.w_tax, 0, NULL) != SQL_SUCCESS
            || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.d_tax, 0, NULL) != SQL_SUCCESS
            || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.NewOrder.o_id, 0, NULL) != SQL_SUCCESS

```

```

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

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

    // 0 1 2
    // 012345678901234567890123456789
    wchar_t szSqlTemplate[] =
L"{call tpcc_neworder(?,?,?,?,?,"
L"?,?,?,?,?,?,?,?,?,?,?,?,?,"
L"?,?,?,?,?,?,?,?,?,,?,?,?,?,?,"
L"?,?,?,?,?,?,?,?,?,,?,?,?,?,?)}";

    m_hstmt = m_hstmtNewOrder;

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

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

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

    while (TRUE)
    {
        try
        {
            m_BindOffset = 0;
            rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)szSqlTemplate, SQL_NTS);

```

```

        if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)
ThrowError(CODBCERR::eExecDirect);

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

        if ( SQLFetch(m_hstmt) ==
SQL_ERROR)
ThrowError(CODBCERR::eFetch);

        // move to the next resultset
if ( SQLMoreResults(m_hstmt) ==
SQL_ERROR )
ThrowError(CODBCERR::eMoreResults);

        m_txn.NewOrder.total_amount +=
m_txn.NewOrder.OL[i].ol_amount;
}

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

        if ( SQLFetch(m_hstmt) == SQL_ERROR)
ThrowError(CODBCERR::eFetch);

        SQLFreeStmt(m_hstmt, SQL_CLOSE);

        if (m_no_commit_flag == 1)
        {
                m_txn.NewOrder.total_amount *=
((1 + m_txn.NewOrder.w_tax + m_txn.NewOrder.d_tax) * (1 -
m_txn.NewOrder.c_discount));

m_txn.NewOrder.exec_status_code = eOK;
        }
        else
m_txn.NewOrder.exec_status_code = eInvalidItem;

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

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

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

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

        m_hstmt = m_hstmtPayment;

        int i = 0;
        if ( SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Payment.w_id, 0, NULL)
!= SQL_SUCCESS
                // SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
&m_txn.Payment.c_w_id, 0, NULL) != SQL_SUCCESS
                // SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_DOUBLE, SQL_NUMERIC, 6, 2,
&m_txn.Payment.h_amount, 0, NULL) != SQL_SUCCESS
                // SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
&m_txn.Payment.d_id, 0, NULL) != SQL_SUCCESS
                // SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
&m_txn.Payment.c_d_id, 0, NULL) != SQL_SUCCESS
                // SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 0, 0,
&m_txn.Payment.c_id, 0, NULL) != SQL_SUCCESS
                // SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_CHAR, SQL_CHAR,
sizeof(m_txn.Payment.c_last), 0, &m_txn.Payment.c_last,
sizeof(m_txn.Payment.c_last), NULL) != SQL_SUCCESS
        )
                ThrowError(CODBCERR::eBindParam);

        i = 0;
        if ( SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.Payment.c_id, 0, NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_last, sizeof(m_txn.Payment.c_last),
NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i,
SQL_C_TYPE_TIMESTAMP, &m_txn.Payment.h_date,
0, NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_street_1, sizeof(m_txn.Payment.w_street_1),
NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_street_2, sizeof(m_txn.Payment.w_street_2),
NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_city, sizeof(m_txn.Payment.w_city),
NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_state, sizeof(m_txn.Payment.w_state),
NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_zip, sizeof(m_txn.Payment.w_zip),
NULL) != SQL_SUCCESS
                // SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_street_1, sizeof(m_txn.Payment.d_street_1),
NULL) != SQL_SUCCESS
        )
}

```

```

        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_street_2, sizeof(m_txn.Payment.d_street_2), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_city, sizeof(m_txn.Payment.d_city),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_state, sizeof(m_txn.Payment.d_state),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_zip, sizeof(m_txn.Payment.d_zip),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_first, sizeof(m_txn.Payment.c_first),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_middle, sizeof(m_txn.Payment.c_middle), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_street_1, sizeof(m_txn.Payment.c_street_1), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_street_2, sizeof(m_txn.Payment.c_street_2), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_city, sizeof(m_txn.Payment.c_city),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_state, sizeof(m_txn.Payment.c_state),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_zip, sizeof(m_txn.Payment.c_zip),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_phone, sizeof(m_txn.Payment.c_phone),
NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i,
SQL_C_TYPE_TIMESTAMP, &m_txn.Payment.c_since,
0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_credit, sizeof(m_txn.Payment.c_credit), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.Payment.c_credit_lim, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.Payment.c_discount, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.Payment.c_balance, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_data, sizeof(m_txn.Payment.c_data),
NULL) != SQL_SUCCESS
    )
    ThrowError(CODBCERR::eBindCol);
}

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

    m_hstmt = m_hstmtPayment;

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

    while (TRUE)
    {
        try

```

```

        {
            rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)" {call tpcc_payment(?,?,?,?,?,?)", SQL_NTS);
            if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)
                ThrowError(CODBCERR::eExecDirect);

            if ( SQLFetch(m_hstmt) == SQL_ERROR)
                ThrowError(CODBCERR::eFetch);

            SQLFreeStmt(m_hstmt, SQL_CLOSE);

            if (m_txn.Payment.c_id == 0)
                throw new CTPCC_ODBC_ERR(
CTPCC_ODBC_ERR::ERR_INVALID_CUST);
            else
                m_txn.Payment.exec_status_code
= eOK;

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

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

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

void CTPCC_ODBC::InitOrderStatusParams()
{
    if ( SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m_hstmtOrderStatus) != SQL_SUCCESS
        || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descOrderStatusCols1) != SQL_SUCCESS
        || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descOrderStatusCols2) != SQL_SUCCESS
    )
        ThrowError(CODBCERR::eAllocHandle);

    m_hstmt = m_hstmtOrderStatus;

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

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

```

```

        || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 0, 0,
&m_txn.OrderStatus.c_id, 0, NULL) != SQL_SUCCESS
        || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_CHAR, SQL_CHAR,
sizeof(m_txn.OrderStatus.c_last), 0, &m_txn.OrderStatus.c_last,
sizeof(m_txn.OrderStatus.c_last), NULL) != SQL_SUCCESS
    )
    ThrowError(CODBCERR::eBindParam);

    // configure block cursor
    if ( SQLSetStmtAttrW(m_hstmt,
SQL_ATTR_ROW_BIND_TYPE,
(SQLPOINTER)sizeof(m_txn.OrderStatus.OL[0]), 0) != SQL_SUCCESS
        || SQLSetStmtAttrW(m_hstmt,
SQL_ATTR_ROWS_FETCHED_PTR, &m_RowsFetched, 0) !=
SQL_SUCCESS
    )
        ThrowError(CODBCERR::eSetStmtAttr);

    i = 0;
    if ( SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.OrderStatus.OL[0].ol_supply_w_id, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.OL[0].ol_i_id, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.OrderStatus.OL[0].ol_quantity, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.OrderStatus.OL[0].ol_amount, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i,
SQL_C_TYPE_TIMESTAMP, &m_txn.OrderStatus.OL[0].ol_delivery_d, 0,
NULL) != SQL_SUCCESS
    )
        ThrowError(CODBCERR::eBindCol);

    if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
m_descOrderStatusCols2, SQL_IS_POINTER ) != SQL_SUCCESS )
        ThrowError(CODBCERR::eSetStmtAttr);

    i = 0;
    if ( SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.c_id, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.OrderStatus.c_last, sizeof(m_txn.OrderStatus.c_last), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.OrderStatus.c_first, sizeof(m_txn.OrderStatus.c_first), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.OrderStatus.c_middle, sizeof(m_txn.OrderStatus.c_middle), NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i,
SQL_C_TYPE_TIMESTAMP, &m_txn.OrderStatus.o_entry_d, 0, NULL) !=
SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.OrderStatus.o_carrier_id, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.OrderStatus.c_balance, 0, NULL) != SQL_SUCCESS
        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.o_id, 0, NULL) != SQL_SUCCESS
    )
        ThrowError(CODBCERR::eBindCol);
}

void CTPCC_ODBC::OrderStatus()
{

```

```

    int
iTryCount = 0;
    RETCODE
rc;

    m_hstmt = m_hstmtOrderStatus;

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

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

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

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

            // configure block cursor
            if ( SQLSetStmtAttrW(m_hstmt,
SQL_ATTR_ROW_ARRAY_SIZE,
(SQLPOINTER)MAX_OL_ORDER_STATUS_ITEMS, 0) != SQL_SUCCESS
            )
                ThrowError(CODBCERR::eSetStmtAttr);

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

            m_txn.OrderStatus.o_ol_cnt =
(short)m_RowsFetched;

            if (m_txn.OrderStatus.o_ol_cnt != 0)
            {
                if ( SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC, m_descOrderStatusCols2,
SQL_IS_POINTER ) != SQL_SUCCESS )
                    ThrowError(CODBCERR::eSetStmtAttr);

                if ( SQLMoreResults(m_hstmt) ==
SQL_ERROR )
                    ThrowError(CODBCERR::eMoreResults);

                if ( ( rc = SQLFetch(m_hstmt)) ==
SQL_ERROR )
                    ThrowError(CODBCERR::eFetch);
            }
        }
    }
}

```

```

        SQLFreeStmt(m_hstmt, SQL_CLOSE);

        if (m_txn.OrderStatus.o_ol_cnt == 0)
            throw new CTPCC_ODBC_ERR(
CTPCC_ODBC_ERR::ERR_NO_SUCH_ORDER );
        else if (m_txn.OrderStatus.c_id == 0 &&
m_txn.OrderStatus.c_last[0] == 0)
            throw new CTPCC_ODBC_ERR(
CTPCC_ODBC_ERR::ERR_INVALID_CUST );
        else
            break;
    }
    catch (COBDCERR *e)
    {
        if (!(e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
            throw;

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

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

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

    m_hstmt = m_hstmtDelivery;

    int i = 0;
    if ( SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Delivery.w_id, 0, NULL)
!= SQL_SUCCESS
        || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
&m_txn.Delivery.o_carrier_id, 0, NULL) != SQL_SUCCESS
    )
        ThrowError(COBCERR::eBindParam);

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

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

    m_hstmt = m_hstmtDelivery;

    while (TRUE)

```

```

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

            if ( SQLFetch(m_hstmt) == SQL_ERROR )
                ThrowError(COBCERR::eFetch);

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

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

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

tpcc_odbc.h

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

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

class COBDCERR : public CBaseErr
{
public:
    enum ACTION
    {

```

```

        eNone,
        eUnknown,
        eAllocConn,
error from SQLAllocConnect
SQLAllocHandle
SQLSetConnectOption
SQLConnect
error from SQLAllocStmt
SQLExecDirect
error from SQLBindParameter
SQLBindCol
error from SQLFetch
SQLFetchScroll
SQLMoreResults
SQLPrepare
SQLExecute
SQLSetEnvAttr
SQLSetStmtAttr
};

CODBCERR(void)
{
    m_eAction = eNone;
    m_NativeError = 0;
    m_bDeadLock = FALSE;
    m_odbcerrstr = NULL;
};

~CODBCERR()
{
    if (m_odbcerrstr != NULL)
        delete [] m_odbcerrstr;
};

ACTION m_eAction;
int m_NativeError;
BOOL m_bDeadLock;
char *m_odbcerrstr;

int ErrorType() {return ERR_TYPE_ODBC;};
int ErrorNum() {return m_NativeError;};
char *ErrorText() {return m_odbcerrstr;};
};

class CTPCC_ODBC_ERR : public CBaseErr
{
public:
    enum TPCC_ODBC_ERRS
    {
        ERR_WRONG_SP_VERSION = 1,
        ERR_INVALID_CUST,
};

        ERR_NO_SUCH_ORDER,
        // "No orders found for customer."
        ERR_RETRIED_TRANS,
        // "Retries before transaction succeeded."
};

        CTPCC_ODBC_ERR( int iErr ) { m_erno = iErr;
m_iTryCount = 0; };

        CTPCC_ODBC_ERR( int iErr, int iTryCount ) {
m_erno = iErr; m_iTryCount = iTryCount; };

        int m_erno;
        int m_iTryCount;

        int ErrorType() {return ERR_TYPE_TPCC_ODBC;};
        int ErrorNum() {return m_erno;};
        char *ErrorText();
};

class DllDecl CTPCC_ODBC : public CTPCC_BASE
{
private:
    // declare variables and private functions here...
    BOOL m_bDeadlock;
    // transaction was selected as deadlock victim
    int m_MaxRetries;
    // retry count on deadlock

        SQLHENV m_henv;
        // ODBC environment handle
        SQLHDBC m_hdbc;
        SQLHSTMT m_hstmt;
        // the current hstmt

        SQLHSTMT m_hstmtNewOrder;
        SQLHSTMT m_hstmtPayment;
        SQLHSTMT m_hstmtDelivery;
        SQLHSTMT m_hstmtOrderStatus;
        SQLHSTMT m_hstmtStockLevel;

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

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

        void ThrowError( CODBCERR::ACTION eAction );

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

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

```



```

    }
    m_txn;

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

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

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

```

```

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

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

```

tpcc_tux.cpp

```

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

```

```

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

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

```

```

#include <atmi.h>

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

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

#include "..\..\common\src\trans.h" //tpckit transaction
header contains definitions of structures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_tux.h" // interface
to Tuxedo libraries

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

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

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

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

            InitializeCriticalSection(&TpCriticalSection);
            break;

        case DLL_PROCESS_DETACH:
            TlsFree(TLSIsTpInitedKey);
            DeleteCriticalSection(&TpCriticalSection);
            break;

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

static void ThrTpInited()
{
    static int num_tpinit=0;
    int iRc, TpRc;

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

```

```

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

    iRc = tpinit(tpinf);
    TpRc = tperrno;
    LeaveCriticalSection(&TpCriticalSection);

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

    int value = 1;
    TlsSetValue(TLSIsTpInitKey,&value);
}

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

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

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

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

    ThrTpInit();

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

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

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

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

    ThrTpInit();

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

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

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

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

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

    // normal path...

    ThrTpInit();

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

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

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

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

    ThrTpInit();

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

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

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

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

    ThrTpInit();

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

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

```

```

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

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

```

tpcc_tux.h

```

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

#pragma once

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

class DllDecl CTPCC_TUXEDO : public CTPCC_BASE
{
private:
    struct TUX_DATA
    {
        int
        ErrorType;
        int
        error;
        union
        {
            NEW_ORDER_DATA
            PAYMENT_DATA
            DELIVERY_DATA
            StockLevel;
            OrderStatus;
        } u;
    };
public:
    CTPCC_TUXEDO();
    ~CTPCC_TUXEDO(void);
    inline PNEW_ORDER_DATA
    BuffAddr_NewOrder() { return &m_txn->u.NewOrder;
};
    inline PPAYMENT_DATA
    BuffAddr_Payment() { return &m_txn->u.Payment; };
    inline PDELIVERY_DATA
    BuffAddr_Delivery() { return &m_txn->u.Delivery; };
    inline PSTOCK_LEVEL_DATA BuffAddr_StockLevel()
    { return &m_txn->u.StockLevel; };
    inline PORDER_STATUS_DATA
    BuffAddr_OrderStatus() { return &m_txn->u.OrderStatus; };

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

class CTUXERR : public CBaseErr
{
private:
    // TODO: should use the sz_Msg field of the base class
instead
    char m_szErrorText[64];
public:
    // use this interface for genuine Tuxedo errors
    CTUXERR( int iErr )
    {
        m_erno = iErr;
        m_iErrorType = 0;
        m_iError = GetLastError(); // only
meaningful if m_erno == TPEOS
    };
    // use this interface to impersonate a non-Tuxedo error
type
    CTUXERR( int iErrorType, int iError )
    {
        m_iErrorType = iErrorType;
        m_iError = iError;
        m_erno = 0;
    }
    int m_erno;
    int m_iErrorType;
    int m_iError;
    // A CTUXERR class can impersonate another class,
    which happens if the error
    // was not actually a Tuxedo error, but was simply
    transmitted back via Tuxedo.
    int ErrorType()
    {

```

```

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

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

class CTUXERR : public CBaseErr
{
private:
    // TODO: should use the sz_Msg field of the base class
instead
    char m_szErrorText[64];
public:
    // use this interface for genuine Tuxedo errors
    CTUXERR( int iErr )
    {
        m_erno = iErr;
        m_iErrorType = 0;
        m_iError = GetLastError(); // only
meaningful if m_erno == TPEOS
    };
    // use this interface to impersonate a non-Tuxedo error
type
    CTUXERR( int iErrorType, int iError )
    {
        m_iErrorType = iErrorType;
        m_iError = iError;
        m_erno = 0;
    }
    int m_erno;
    int m_iErrorType;
    int m_iError;
    // A CTUXERR class can impersonate another class,
    which happens if the error
    // was not actually a Tuxedo error, but was simply
    transmitted back via Tuxedo.
    int ErrorType()
    {

```

```

        if (m_iErrorType == 0)
            return ERR_TYPE_TUXEDO;
        else
            return m_iErrorType;
    }

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

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

typedef CTPCC_TUXEDO* (TYPE_CTPCC_TUXEDO);

```

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 dlib, 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.
#ifdef __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 /* SQLINTEGER */
        fraction;
    } TIMESTAMP_STRUCT;
#endif

// possible values for exec_status_code after transaction completes
enum EXEC_STATUS
{
    eOK, // 0 "Transaction
    committed."
    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;
    delivery transaction queued
    short                 w_id;
    warehouse
    short                 o_carrier_id;
} DELIVERY_TRANSACTION;

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

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

tuxapp.cpp

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

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

```

```

#include <malloc.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <sys\timeb.h>
#include <io.h>
#include <assert.h>

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

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

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

char szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

// configuration settings from registry
TPCCREGISTRYDATA Reg;

CTPCC_BASE *pTxn = NULL;

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

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

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

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

        GetParameters(argc, argv);

        switch (Reg.eDB_Protocol)
        {
            case ODBC:
                pTxn = new CTPCC_ODBC(
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, szMyComputerName,
Reg.szDbName );
                break;
            case DBLIB:

```

```

                pTxn = new CTPCC_DBLIB(
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, szMyComputerName,
Reg.szDbName );
                break;
        }
    }
    catch (CBaseErr *e)
    {
        WriteMessageToEventLog(e->ErrorText());
        delete e;
    }
    catch (...)
    {
        WriteMessageToEventLog(TEXT("Unhandled
exception."));
    }

    return 0;
}

/* FUNCTION: tpsvrdone ( void )
*
*/
void tpsvrdone ( void )
{
    delete pTxn;
    pTxn = NULL;
}

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

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

    for(int i=j+1; i<argc; i++)
    {
        if ( argv[i][0] == '-' || argv[i][0] == '/' )
        {
            switch(argv[i][1])
            {
                case 'S':
                    strcpy(Reg.szDbServer,
argv[i+2]);
                    break;
                case 'D':
                    strcpy(Reg.szDbName,
argv[i+2]);
                    break;
                case 'P':

```

```

strcpy(Reg.szDbPassword, argv[i+2]);
                                break;
                                case 'U':
                                strcpy(Reg.szDbUser,
argv[i+2]);
                                break;
                                default:
                                cout << "Microsoft
TPC-C Kit" << endl;
                                cout << "Tuxedo
Server" << endl << endl;
                                cout << "Usage:" <<
endl;
                                cout << " tuxapp
[<tuxedo-args>] -- -S<sql-server> [-D<database>] [-U<user>] [-P<password>]"
<< endl << endl;
                                cout << "All parameters
default to values in registry." << endl;
                                throw new
CTUXAPP_ERR( ERR_BAD_SYNTAX );
                                }
                                }
}

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

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

    _stprintf(szMsg, TEXT("Error in TUXAPP.EXE: "));
    lpszStrings[0] = szMsg;
    lpszStrings[1] = lpszMsg;

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

        (VOID) DeregisterEventSource(hEventSource);
    }
}

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

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

```

```

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

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

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

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

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

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

```

```

        tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
    }
}

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

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

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

        pTxn->Delivery();

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

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

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

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

```

```

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

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

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

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

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

```



```

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

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

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

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

```

tuxapp.h

```

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

```

```

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

```

```

class CTUXAPP_ERR : public CBaseErr
{
public:
    TUXERROR m_Error;

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

    ~CTUXAPP_ERR() {};
}

```

```

};

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

struct TUX_DATA
{
    int retval;
    int error;

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

```

```

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

```

```

#ifdef __cplusplus
extern "C" {
#endif

```

```

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

```

```

#ifdef __cplusplus
}
#endif

```

tuxmain.c

```

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

```

```

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

```

```

#ifdef __cplusplus
extern "C" {
#endif
extern int _tmrunserver_((int));
extern void DELIVERY_((TPSVCINFO *));
extern void NEWORDER_((TPSVCINFO *));
extern void ORDERSTATUS_((TPSVCINFO *));

```

```

extern void PAYMENT__((TPSVCINFO *));
extern void STOCKLEVEL__((TPSVCINFO *));
#ifdef __cplusplus
}
#endif

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

#ifdef _TMDLLIMPORT
#define _TMDLLIMPORT
#endif

_TMDLLIMPORT extern struct xa_switch_t tnull_switch;

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

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

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

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

```

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.
#ifdef 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;
};

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

```

```

= 0          BYTE    TxnSubType;                // #define    MAX_NUM_BUFFERS                2
            // end of common header
            // flags passed in to the constructor
            #define    TXN_LOG_WRITE            0x01
            #define    TXN_LOG_READ            0x02
            #define    TXN_LOG_SORTED          0x04
            int    DeltaT4;                    // response time (ms)
            int    DeltaTxnExec;              // execution
time (ms)
            WORD    w_id;                    // warehouse
            #define    TXN_LOG_OS_ERROR        1
            #define    TXN_LOG_NOT_SORTED      2
ID          BYTE    TxnStatus;                // completion status for
            #define    SKIP_CTRL_RECS          1
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;
            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
                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; };
};
};

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 "";};
};

```

webclnt.dsp

```

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

# TARGETTYPE "Win32 (x86) Application" 0x0101

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

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir ".\Release"
# PROP BASE Intermediate_Dir ".\Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ".\Release"
# PROP Intermediate_Dir ".\Release"
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
"_WINDOWS" /YX /c
# ADD CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe

```

```

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir ".\Debug"
# PROP BASE Intermediate_Dir ".\Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\Debug"
# PROP Intermediate_Dir ".\Debug"
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG"
/D "_WINDOWS" /YX /c
# ADD CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /win32
# ADD BASE RSC /I 0x409 /d "_DEBUG"
# ADD RSC /I 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbccp32.lib
odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbccp32.lib
/nologo /subsystem:windows /debug /machine:I386

!ENDIF

# Begin Target

# Name "webcInt - Win32 Release"
# Name "webcInt - Win32 Debug"
# End Target
# End Project

```

webcInt.dsw

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

```

#####
#####

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

#####
#####

```

```

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

#####
#####

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

Package=<5>
{{{
}}}

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

#####
#####

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

Package=<5>
{{{
}}}

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

```

```

Begin Project Dependency
Project_Dep_Name tm_com_dll
End Project Dependency
Begin Project Dependency
Project_Dep_Name tm_encina_dll
End Project Dependency
}}}

#####
#####

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

Package=<5>
{{{
}}}

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

#####
#####

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

#####
#####

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

#####
#####

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

Package=<5>
{{{
}}}

Package=<4>
{{{
  Begin Project Dependency

```

```

Project_Dep_Name tpcc_com_ps
End Project Dependency
}}}

#####
#####

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

#####
#####

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

Package=<5>
{{{
}}}

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

#####
#####

Global:

Package=<5>
{{{
}}}

Package=<3>
{{{
}}}

#####
#####

Stored Procedures

neword.sql

-- File: NEWORD.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates new order transaction stored procedure
--
-- Interface Level: 4.10.000

use tpcc
go

```

```

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

```

```

create proc tpcc_neworder

```

```

    @w_id      smallint,
    @d_id      tinyint,
    @c_id      int,
    @o_ol_cnt  tinyint,
    @o_all_local tinyint,
    @i_id1     int = 0,
    @i_id2     int = 0,
    @i_id3     int = 0,
    @i_id4     int = 0,
    @i_id5     int = 0,
    @i_id6     int = 0,
    @i_id7     int = 0,
    @i_id8     int = 0,
    @i_id9     int = 0,
    @i_id10    int = 0,
    @i_id11    int = 0,
    @i_id12    int = 0,
    @i_id13    int = 0,
    @i_id14    int = 0,
    @i_id15    int = 0,
    @s_w_id1   smallint = 0, @ol_qty1  smallint = 0,
    @s_w_id2   smallint = 0, @ol_qty2  smallint = 0,
    @s_w_id3   smallint = 0, @ol_qty3  smallint = 0,
    @s_w_id4   smallint = 0, @ol_qty4  smallint = 0,
    @s_w_id5   smallint = 0, @ol_qty5  smallint = 0,
    @s_w_id6   smallint = 0, @ol_qty6  smallint = 0,
    @s_w_id7   smallint = 0, @ol_qty7  smallint = 0,
    @s_w_id8   smallint = 0, @ol_qty8  smallint = 0,
    @s_w_id9   smallint = 0, @ol_qty9  smallint = 0,
    @s_w_id10  smallint = 0, @ol_qty10 smallint = 0,
    @s_w_id11  smallint = 0, @ol_qty11 smallint = 0,
    @s_w_id12  smallint = 0, @ol_qty12 smallint = 0,
    @s_w_id13  smallint = 0, @ol_qty13 smallint = 0,
    @s_w_id14  smallint = 0, @ol_qty14 smallint = 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 available 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 - @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,
                             1899",
                             "dec 31,
                             @li_qty,
                             @i_price
                             @s_dist)
* @li_qty,

-- 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

-- 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. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates payment transaction stored procedure
--
--          Interface Level: 4.10.000

use tpcc
go

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

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

as
declare @w_street_1 char(20),
        @w_street_2 char(20),
        @w_city     char(20),
        @w_state    char(2),
        @w_zip      char(9),
        @w_name     char(10),
        @d_street_1 char(20),
        @d_street_2 char(20),
        @d_city     char(20),
        @d_state    char(2),
        @d_zip      char(9),
        @d_name     char(10),

```

```

@c_first  char(16),
@c_middle char(2),
@c_street_1 char(20),
@c_street_2 char(20),
@c_city   char(20),
@c_state  char(2),
@c_zip    char(9),
@c_phone  char(16),
@c_since  datetime,
@c_credit char(2),
@c_credit_lim numeric(12,2),
@c_balance numeric(12,2),
@c_discount numeric(4,4),
@data     char(500),
@c_data   char(500),
@datetime datetime,
@w_ytd    numeric(12,2),
@d_ytd    numeric(12,2),
@cnt      smallint,
@val      smallint,
@screen_data char(200),
        @d_id_local  tinyint,
        @w_id_local  smallint,
        @c_id_local  int

```

```

select @screen_data = ""

begin tran p

-- get payment date

select    @datetime = getdate()

if (@c_id = 0)
begin

-- get customer id and info using last name

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

select    @val = (@cnt + 1) / 2
set       rowcount @val

select    @c_id = c_id
from      customer (repeatableread)
where     c_last = @c_last and
         c_w_id = @c_w_id and
         c_d_id = @c_d_id

order    by c_last, c_first

set       rowcount 0

end

-- get customer info and update balances

update    customer
set       @c_balance = c_balance = c_balance
- @h_amount,
         c_payment_cnt = c_payment_cnt + 1,
         c_ytd_payment = c_ytd_payment + @h_amount,
         @c_first = c_first,
         @c_middle = c_middle,
         @c_last = c_last,

```

```

@c_street_1      = c_street_1,
@c_street_2      = c_street_2,
@c_city          = c_city,
@c_state = c_state,
@c_zip          = c_zip,
@c_phone = c_phone,
@c_credit = c_credit,
@c_credit_lim   = c_credit_lim,
@c_discount     = c_discount,
@c_since = c_since,
@data           = c_data,
@c_id_local     = c_id
where
c_id            = @c_id and
c_w_id         = @c_w_id and
c_d_id         = @c_d_id

-- if customer has bad credit get some more info

if (@c_credit = "BC")
begin

-- compute new info

select @c_data      = convert(char(5),@c_id) +
convert(char(4),@c_d_id) +
convert(char(5),@c_w_id) +
convert(char(4),@d_id) +
convert(char(5),@w_id) +
convert(char(19),@h_amount) +
substring(@data, 1, 458)

-- update customer info

update customer
set c_data = @c_data

where c_id = @c_id and
c_w_id = @c_w_id and
c_d_id = @c_d_id

select @screen_data = substring (@c_data,1,200)

end

-- get district data and update year-to-date

update district
set d_ytd = d_ytd + @h_amount,
@d_street_1 = d_street_1,
@d_street_2 = d_street_2,
@d_city = d_city,
@d_state = d_state,
@d_zip = d_zip,
@d_name = d_name,
@d_id_local = d_id

where d_w_id = @w_id and
d_id = @d_id

-- get warehouse data and update year-to-date

update warehouse
set w_ytd = w_ytd + @h_amount,
@w_street_1 = w_street_1,
@w_street_2 = w_street_2,
@w_city = w_city,
@w_state = w_state,
@w_zip = w_zip,

@c_id_local = @c_id_local,
@c_d_id = @c_d_id,
@c_w_id = @c_w_id,

@d_id_local,
@w_id_local,
@datetime,
@h_amount,
@w_name + " " +

@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_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. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates order status transaction stored procedure
--
-- Interface Level: 4.10.000

use tpcc
go

if exists ( select name from sysobjects where name = "tpcc_orderstatus" )
drop procedure tpcc_orderstatus

go

create proc tpcc_orderstatus @w_id smallint,

```

```

                @d_id    tinyint,

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

as

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

begin tran o

if (@c_id = 0)
    begin

-- get customer id and info using last name

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

        set       rowcount @cnt

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

        order    by c_w_id, c_d_id, c_last, c_first

        set       rowcount 0

    end

    else

        begin

-- get customer info if by id

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

        select    @cnt    = @@rowcount

        end

-- if no such customer

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

```

```

                end
                goto custnotfound

-- 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. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates delivery transaction stored procedure
--
-- Interface Level: 4.10.000

use tpcc
go

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

create proc tpcc_delivery    @w_id    smallint,

                                @o_carrier_id smallint

as

declare @d_id    tinyint,
        @o_id    int,
        @c_id    int,

```

```

@total      numeric(12,2),
@oid1       int,
@oid2       int,
@oid3       int,
@oid4       int,
@oid5       int,
@oid6       int,
@oid7       int,
@oid8       int,
@oid9       int,
@oid10      int

select @d_id = 0

begin tran d

    while (@d_id < 10)
    begin

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

        select top 1
               @o_id = no_o_id
        from   new_order (serializable uplock)
        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

            -- accumulate 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. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates stock level transaction stored procedure
--
-- Interface Level: 4.10.000

use tpcc
go

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

create proc tpcc_stocklevel @w_id smallint,
                           @d_id tinyint,
                           @threshold 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 < @threshold

go

```

version.sql

```

-- File:   VERSION.SQL
--        Microsoft TPC-C Benchmark Kit Ver. 4.22
--        Copyright Microsoft, 2001
-- Purpose: Returns version level of TPC-C stored procs
-- Note:   Always update the return value of this proc for
--         any interface changes or "must have" bug fixes.
--
-- The value returned by this SP defines the "interface level",
-- which must match between the stored procs and the client code.
-- The interface level may be down rev from the current kit. This
-- indicates that the interface hasn't changed since that version.

use tpcc
go

if exists ( select name from sysobjects where name = "tpcc_version" )
    drop procedure tpcc_version

go

create proc tpcc_version
as
declare    @version char(8)

begin
    select @version = "4.10.000"
    select @version as "Version"

end

go

```

null-txn.sql

```

-- TPC-C Null Txn Stored Procs
-- Microsoft TPC-C Kit
-- 8/17/99
--
-- This script will create stored procs which accept the same parameters and
-- return correctly formed
-- results sets to match the standard TPC-C stored procs. Of course, the advan-
-- tage is that these
-- stored procs place almost no load on SQL Server and do not require a
-- database.
--
-- The purpose of these stored procs is to size and test the web client without the
-- need of a fully
-- scaled database.
--

```

```

drop proc tpcc_delivery
drop proc tpcc_neworder
drop proc tpcc_orderstatus
drop proc tpcc_payment
drop proc tpcc_stocklevel
drop proc tpcc_version
drop table order_line_null
go

create proc tpcc_delivery    @w_id    smallint,

@o_carrier_id smallint
as

```

```

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

```

```

declare @delaytime varchar(30)

```

```

-- uniform random delay of 0 - 1 second; avg = 0.50
select @delaytime = '00:00:0' + cast(cast((rand()*1.00) as decimal(4,3)) as
char(5))
waitfor delay @delaytime

select 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001

```

GO

```

create proc tpcc_neworder

@w_id    smallint,
@d_id    tinyint,
@c_id    int,
@o_ol_cnt tinyint,
@o_all_local tinyint,
@i_id1   int = 0,

@i_id2   int = 0,
@i_id3   int = 0,
@i_id4   int = 0,
@i_id5   int = 0,
@i_id6   int = 0,
@i_id7   int = 0,
@i_id8   int = 0,
@i_id9   int = 0,
@i_id10  int = 0,

@s_w_id1 smallint = 0, @ol_qty1 smallint = 0,
@s_w_id2 smallint = 0, @ol_qty2 smallint = 0,
@s_w_id3 smallint = 0, @ol_qty3 smallint = 0,
@s_w_id4 smallint = 0, @ol_qty4 smallint = 0,
@s_w_id5 smallint = 0, @ol_qty5 smallint = 0,
@s_w_id6 smallint = 0, @ol_qty6 smallint = 0,
@s_w_id7 smallint = 0, @ol_qty7 smallint = 0,
@s_w_id8 smallint = 0, @ol_qty8 smallint = 0,
@s_w_id9 smallint = 0, @ol_qty9 smallint = 0,
@s_w_id10 smallint = 0, @ol_qty10 smallint = 0,

```

```

@s_w_id11 smallint = 0, @ol_qty11 smallint = 0,
@s_w_id12 smallint = 0, @ol_qty12 smallint = 0,
@s_w_id13 smallint = 0, @ol_qty13 smallint = 0,
@s_w_id14 smallint = 0, @ol_qty14 smallint = 0,
@s_w_id15 smallint = 0, @ol_qty15 smallint = 0

as
declare @w_tax numeric(4,4),
        @d_tax numeric(4,4),
        @c_last char(16),
        @c_credit char(2),
        @c_discount numeric(4,4),
        @i_price numeric(5,2),
        @i_name char(24),
        @o_entry_d datetime,
        @li_no int,
        @o_id int,
        @commit_flag tinyint,
        @li_id int,
        @li_qty smallint

declare @delaytime varchar(30)

begin
-- uniform random delay of 0 - 0.6 second; avg = 0.3
select @delaytime = '00:00:0' + cast(cast((rand()*0.60) as decimal(4,3)) as
char(5))
waitfor delay @delaytime

-- process orderlines

select @commit_flag = 1, @li_no = 0

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

select @li_no = @li_no + 1
select @i_price = 23.45, @li_qty = @li_no

if (@li_id = 999999)
begin
select ",0",0,0
select @commit_flag = 0

```

```

        end
        else
        begin
select 'Item Name blah',17,'G', @i_price, @i_price *
@li_qty
        end
        end

-- return order data to client

select @w_tax = 0.1234,
       @d_tax = 0.0987,
       @o_id = 3001,
       @c_last = 'BAROUGHTABLE',
       @c_discount = 0.2198,
       @c_credit = 'GC',
       @o_entry_d = getdate()

select @w_tax,
       @d_tax,
       @o_id,
       @c_last,
       @c_discount,
       @c_credit,
       @o_entry_d,
       @commit_flag

end

GO

create proc tpcc_orderstatus @w_id smallint,
@o_ol_cnt int,
@d_id tinyint,
@c_id int,
@c_last char(16) = ""
as
declare @c_balance numeric(12,2),
        @c_first char(16),
        @c_middle char(2),
        @o_id int,
        @o_entry_d datetime,
        @o_carrier_id smallint,
        @ol_cnt smallint

declare @delaytime varchar(30)

-- uniform random delay of 0 - 0.2 second; avg = 0.1
select @delaytime = '00:00:0' + cast(cast((rand()*0.20) as decimal(4,3)) as
char(5))
waitfor delay @delaytime

select
@c_id = 113,
@c_balance = -10.00,
@c_first = '8YCodgytqCj8',
@c_middle = 'OE',
@c_last = 'OUGHTOUGHTABLE',
@o_id = 3456,
@o_entry_d = getdate(),
@o_carrier_id = 1

```

```

select @ol_cnt = (rand() * 11) + 5
SET ROWCOUNT @ol_cnt

```

```

select
    ol_supply_w_id,
    ol_i_id,
    ol_quantity,
    ol_amount,
    ol_delivery_d
from order_line_null

```

```

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

```

GO

```

create proc tpcc_payment @w_id      smallint,

```

```

    smallint,

```

```

    numeric(6,2),

```

```

    tinyint,

```

```

    tinyint,

```

```

    int,

```

```

    char(16) = "

```

as

```

declare @w_street_1 char(20),
    @w_street_2 char(20),
    @w_city char(20),
    @w_state char(2),
    @w_zip char(9),
    @w_name char(10),
    @d_street_1 char(20),
    @d_street_2 char(20),
    @d_city char(20),
    @d_state char(2),
    @d_zip char(9),
    @d_name char(10),
    @c_first char(16),
    @c_middle char(2),
    @c_street_1 char(20),
    @c_street_2 char(20),
    @c_city char(20),
    @c_state char(2),
    @c_zip char(9),
    @c_phone char(16),
    @c_since datetime,
    @c_credit char(2),
    @c_credit_lim numeric(12,2),
    @c_balance numeric(12,2),
    @c_discount numeric(4,4),
    @data char(500),
    @c_data char(500),
    @datetime datetime,
    @w_ytd numeric(12,2),

```

```

@d_ytd numeric(12,2),
@cnt smallint,
@val smallint,
@screen_data char(200),
    @d_id_local tinyint,
    @w_id_local smallint,
    @c_id_local int

```

```

declare @delaytime varchar(30)

```

```

-- uniform random delay of 0 - 0.3 second; avg = 0.15
select @delaytime = '00:00:0' + cast(cast((rand()*0.30) as decimal(4,3)) as
char(5))

```

```

waitfor delay @delaytime

```

```

select @screen_data = "

```

```

-- get customer info and update balances

```

```

select
    @d_street_1 = 'rqSHHakqyV',
    @d_street_2 = 'zZ98nW3BR2s',
    @d_city = 'ArNr4GNFV9',
    @d_state = 'aV',
    @d_zip = '453511111'

```

```

-- get warehouse data and update year-to-date

```

```

select
    @w_street_1 = 'rqSHHakqyV',
    @w_street_2 = 'zZ98nW3BR2s',
    @w_city = 'ArNr4GNFV9',
    @w_state = 'aV',
    @w_zip = '453511111'

```

```

select
    @c_id = 123,
    @c_balance = -10000.00,
    @c_first = 'KmR03Xureb',
    @c_middle = 'OE',
    @c_last = 'BAROUGHTBAR',
    @c_street_1 = 'QpGdOHjv8mR9vNI8V',
    @c_street_2 = 'dzKoCObBqbC3yu',
    @c_city = 'zAKZXdC037FQxq',
    @c_state = 'QA',
    @c_zip = '700311111',
    @c_phone = '2967264064528555',
    @c_credit = 'GC',
    @c_credit_lim = 50000.00,
    @c_discount = 0.3069,
    @c_since = getdate(),
    @datetime = getdate()

```

```

-- return data to client

```

```

select @c_id,
    @c_last,
    @datetime,
    @w_street_1,
    @w_street_2,
    @w_city,
    @w_state,
    @w_zip,
    @d_street_1,
    @d_street_2,

```



```

@d_city,
@d_state,
@d_zip,
@c_first,
@c_middle,
@c_street_1,
@c_street_2,
@c_city,
@c_state,
@c_zip,
@c_phone,
@c_since,
@c_credit,
@c_credit_lim,
@c_discount,
@c_balance,
@screen_data

GO

create proc tpcc_stocklevel      @w_id          smallint,
                                @d_id          tinyint,
                                @threshold    smallint
as
declare @delaytime varchar(30)
-- uniform random delay of 0 - 3.6 second; avg = 1.8
select @delaytime = '00:00:0' + cast(cast((rand()*3.60) as decimal(4,3)) as
char(5))
waitfor delay @delaytime

select 49

GO

create proc tpcc_version
as
declare @version char(8)

begin
select @version = '4.10.000'
select @version as 'Version'

end

GO

CREATE TABLE order_line_null (
[ol_i_id] [int] NOT NULL ,
[ol_supply_w_id] [smallint] NOT NULL ,
[ol_delivery_d] [datetime] NOT NULL ,
[ol_quantity] [smallint] NOT NULL ,
[ol_amount] [numeric](6, 2) NOT NULL
) ON [PRIMARY]
GO

insert into order_line_null values ( 101, 1, getdate(), 1, 123.45 )
insert into order_line_null values ( 102, 1, getdate(), 2, 123.45 )
insert into order_line_null values ( 103, 1, getdate(), 3, 123.45 )
insert into order_line_null values ( 104, 1, getdate(), 4, 123.45 )
insert into order_line_null values ( 105, 1, getdate(), 5, 123.45 )
insert into order_line_null values ( 106, 1, getdate(), 1, 123.45 )
insert into order_line_null values ( 107, 1, getdate(), 2, 123.45 )
insert into order_line_null values ( 108, 1, getdate(), 3, 123.45 )
insert into order_line_null values ( 109, 1, getdate(), 4, 123.45 )

```

```

insert into order_line_null values ( 110, 1, getdate(), 5, 123.45 )
insert into order_line_null values ( 111, 1, getdate(), 1, 123.45 )
insert into order_line_null values ( 112, 1, getdate(), 2, 123.45 )
insert into order_line_null values ( 113, 1, getdate(), 3, 123.45 )
insert into order_line_null values ( 114, 1, getdate(), 4, 123.45 )
insert into order_line_null values ( 115, 1, getdate(), 5, 123.45 )

```

GO

Appendix B: Database Design

Database Build

backup.sql

```
-- File: BACKUP.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates backup of tpcc database

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

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

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

Go
```

backupdev.sql

```
-- File: BACKUPDEVB.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates tpcc database Backup Devices

use master
go

-- create backup devices

exec sp_addumpdevice 'disk','tpccback1','Y:\tpccback1.dmp'
go
exec sp_addumpdevice 'disk','tpccback2','Z:\tpccback2.dmp'
go
exec sp_addumpdevice 'disk','tpccback3','Y:\tpccback3.dmp'
go
exec sp_addumpdevice 'disk','tpccback4','Z:\tpccback4.dmp'
Go
```

createdb.sql

```
-- File: CREATEDB.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates tpcc database and backup files

use master
go

-- Create temporary table for timing

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

go
```

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

insert into tpcc_timer values (0,0)
go

-- Store starting time

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

-- create main database files

CREATE DATABASE tpcc
ON PRIMARY
(
    NAME = MSSQL_tpcc_root,
    FILENAME = "Y:\MSSQL_tpcc_root.mdf",
    SIZE = 8MB,
    FILEGROWTH =0),
FILEGROUP MSSQL_misc_fg
(
    NAME = MSSQL_misc1,
    FILENAME = "G:",
    SIZE = 10000MB,
    FILEGROWTH = 0),
(
    NAME = MSSQL_misc2,
    FILENAME = "I:",
    SIZE = 15000MB,
    FILEGROWTH = 0),
(
    NAME = MSSQL_misc3,
    FILENAME = "K:",
    SIZE = 15000MB,
    FILEGROWTH = 0),
FILEGROUP MSSQL_cs_fg
(
    NAME = MSSQL_cs1,
    FILENAME = "F:",
    SIZE = 21180MB,
    FILEGROWTH = 0),
(
    NAME = MSSQL_cs2,
    FILENAME = "H:",
    SIZE = 31770MB,
    FILEGROWTH = 0),
(
    NAME = MSSQL_cs3,
    FILENAME = "J:",
    SIZE = 31770MB,
    FILEGROWTH = 0)
LOG ON
(
    NAME =MSSQL_tpcc_log,
    FILENAME = "E:",
    SIZE =40000MB,
    FILEGROWTH =0)
COLLATE Latin1_General_BIN
go

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

select "Elapsed time (in seconds): ", datediff(second,(select start_date from
tpcc_timer),(select end_date from tpcc_timer))

-- remove temporary table
```

```

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

```

dbopt1.sql

```

-- File: DBOPT1.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Sets database options for data load

```

```

use master
go

```

```

exec sp_dboption tpcc,'select into/bulkcopy',true
exec sp_dboption tpcc,'trunc. log on chkpt.',true
exec sp_dboption tpcc,'torn page detection',false
go

```

```

use tpcc
go

```

```

checkpoint
Go

```

dbopt2.sql

```

-- File: DBOPT2.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Resets database options after data load

```

```

sp_dboption tpcc,'select into/bulkcopy',FALSE
GO

```

```

sp_dboption tpcc,'trunc. log on chkpt.',FALSE
GO

```

```

USE tpcc
GO

```

```

CHECKPOINT
GO

```

```

sp_configure 'allow updates',1
GO

```

```

RECONFIGURE WITH OVERRIDE
GO

```

```

DECLARE          @msg          varchar(50)

```

```

--          --
--  OPTIONS FOR SQL SERVER 8.0  --
-- Set option values for user-defined indexes --
--          --

```

```

SET          @msg          = ''
PRINT       @msg
SET          @msg          = 'Setting SQL Server indexoptions'
PRINT       @msg
SET          @msg          = ''
PRINT       @msg

```

```

EXEC sp_indexoption 'customer', 'DisallowPageLocks', TRUE
EXEC sp_indexoption 'district', 'DisallowPageLocks', TRUE
EXEC sp_indexoption 'warehouse', 'DisallowPageLocks', TRUE
EXEC sp_indexoption 'stock', 'DisallowPageLocks', TRUE
EXEC sp_indexoption 'order_line', 'DisallowRowLocks', TRUE
EXEC sp_indexoption 'orders', 'DisallowRowLocks', TRUE
EXEC sp_indexoption 'new_order', 'DisallowRowLocks', TRUE
EXEC sp_indexoption 'item', 'DisallowRowLocks', TRUE
EXEC sp_indexoption 'item', 'DisallowPageLocks', TRUE
GO

```

```

Print ''
Print '*****'
Print 'Pre-specified Locking Hierarchy:'
Print ' Lockflag = 0 ==> No pre-specified hierarchy'
Print ' Lockflag = 1 ==> Lock at Page-level then Table-level'
Print ' Lockflag = 2 ==> Lock at Row-level then Table-level'
Print ' Lockflag = 3 ==> Lock at Table-level'
Print ''

```

```

SELECT name,lockflags
FROM sysindexes
WHERE object_id('warehouse') = id OR
      object_id('district') = id OR
      object_id('customer') = id OR
      object_id('stock') = id OR
      object_id('orders') = id OR
      object_id('order_line')= id OR
      object_id('history') = id OR
      object_id('new_order') = id OR
      object_id('item') = id
ORDER BY lockflags asc
GO

```

```

sp_configure 'allow updates',0
GO

```

```

RECONFIGURE WITH OVERRIDE
GO

```

```

EXEC sp_dboption tpcc, 'auto update statistics',FALSE
EXEC sp_dboption tpcc, 'auto create statistics', FALSE
GO

```

```

EXEC sp_tableoption 'district', 'pintable',true
EXEC sp_tableoption 'warehouse', 'pintable',true
EXEC sp_tableoption 'new_order', 'pintable',true
EXEC sp_tableoption 'item', 'pintable',true
GO

```

idxcuscl.sql

```

-- File: IDXCUSCL.SQL
-- Microsoft TPC-C Benchmark Kit Ver. 4.22
-- Copyright Microsoft, 2001
-- Purpose: Creates clustered index on customer table

```

```

use tpcc
go

```

```

declare @startdate datetime

```

```

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

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

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

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

go

```

idxcusnc.sql

```

-- File:  IDXCUSNC.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose:  Creates non-clustered index on customer table

use tpc
go

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

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

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

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

go

```

idxdiscl.sql

```

-- File:  IDXDISCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose:  Creates clustered index on district table

use tpc
go

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

if exists ( select name from sysindexes where name = 'district_c1' )
    drop index district.district_c1

create unique clustered index district_c1 on district(d_w_id, d_id)

```

```

with fillfactor=100 on MSSQL_misc_fg

```

```

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

go

```

idxitmcl.sql

```

-- File:  IDXITMCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose:  Creates clustered index on item table

use tpc
go

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

if exists ( select name from sysindexes where name = 'item_c1' )
    drop index item.item_c1

create unique clustered index item_c1 on item(i_id)
    on MSSQL_misc_fg

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

go

```

idxnodcl.sql

```

-- File:  IDXNODCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose:  Creates clustered index on new_order table

use tpc
go

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

if exists ( select name from sysindexes where name = 'new_order_c1' )
    drop index new_order.new_order_c1

create unique clustered index new_order_c1 on new_order(no_w_id, no_d_id,
no_o_id)
    on MSSQL_misc_fg

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

go

```

idxodlcl.sql

```
-- File:  IDXODLCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Creates clustered index on order_line table

use tpcc
go

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

if exists ( select name from sysindexes where name = 'order_line_c1' )
    drop index order_line.order_line_c1

create unique clustered index order_line_c1 on order_line(ol_w_id, ol_d_id,
ol_o_id, ol_number)
    on MSSQL_misc_fg

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

go
```

idxordcl.sql

```
-- File:  IDXORDCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Creates clustered index on orders table

use tpcc
go

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

if exists ( select name from sysindexes where name = 'orders_c1' )
    drop index orders.orders_c1

create unique clustered index orders_c1 on orders(o_w_id, o_d_id, o_id)
    on MSSQL_misc_fg

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

go
```

idxordnc.sql

```
-- File:  IDXORDNC.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Creates non-clustered index on orders table
```

```
use tpcc
go

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

if exists ( select name from sysindexes where name = 'orders_nc1' )
    drop index orders.orders_nc1

create index orders_nc1 on orders(o_w_id, o_d_id, o_c_id, o_id)
    on MSSQL_misc_fg

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

go
```

idxstkcl.sql

```
-- File:  IDXSTKCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Creates clustered index on stock table

use tpcc
go

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

if exists ( select name from sysindexes where name = 'stock_c1' )
    drop index stock.stock_c1

create unique clustered index stock_c1 on stock(s_i_id, s_w_id)
    on MSSQL_cs_fg

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

go
```

idxwarcl.sql

```
-- File:  IDXWARCL.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Creates clustered index on warehouse table

use tpcc
go

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

```

if exists ( select name from sysindexes where name = 'warehouse_c1' )
    drop index warehouse.warehouse_c1

create unique clustered index warehouse_c1 on warehouse(w_id)
    with fillfactor=100 on MSSQL_misc_fg

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

go

```

removedb.sql

```

-- File:   REMOVEDB.SQL
--       Microsoft TPC-C Benchmark Kit Ver. 4.22
--       Copyright Microsoft, 2001
-- Purpose: Removes tpcc database and backup files

```

```

use master
go

```

```

-- remove any existing database and backup files

```

```

exec sp_dbremove tpcc, dropdev
go

```

```

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

```

restore.sql

```

-- File:   RESTORE.SQL
--       Microsoft TPC-C Benchmark Kit Ver. 4.22
--       Copyright Microsoft, 2001
-- Purpose: Loads database backup from backup files

```

```

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

```

```

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

```

```

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

```

```

go

```

RunSQLCfg.sql

```

/* TPC-C Benchmark Kit          */
/*                               */
/* RUNSQLCFG.SQL                */
/*                               */

```

```

/* This script file is used to set runtime server configuration parameters */
/*                               */

```

```

exec sp_configure "show advanced option", 1
go

```

```

reconfigure with override
go

```

```

/* change this value to approximately the number of connected users */
exec sp_configure "max worker threads",240

```

```

/* increase priority of user threads */
exec sp_configure "priority boost",1

```

```

/* disable automatic checkpointing */
exec sp_configure "recovery interval",56

```

```

/* change to a mask appropriate for the number of processors on the server */
exec sp_configure "affinity mask",0x7

```

```

/* enable fibers */
exec sp_configure "lightweight pooling",1

```

```

/* enable update */
exec sp_configure "allow updates",1

```

```

/* set max degree of parallelism */
exec sp_configure "max degree of parallelism",1

```

```

go

```

```

reconfigure with override
go

```

sqlshutdown.sql

```

use tpcc
go
checkpoint
go
shutdown
go

```

tables.sql

```

-- File:   TABLES.SQL
--       Microsoft TPC-C Benchmark Kit Ver. 4.22
--       Copyright Microsoft, 2001
-- Purpose: Creates TPC-C tables

```

```

use tpcc
go

```

```

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

```

```

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

```

```

go

```

```

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

```

```

go
if exists ( select name from sysobjects where name = 'customer' )
    drop table customer
go
if exists ( select name from sysobjects where name = 'history' )
    drop table history
go
if exists ( select name from sysobjects where name = 'new_order' )
    drop table new_order
go
if exists ( select name from sysobjects where name = 'orders' )
    drop table orders
go
if exists ( select name from sysobjects where name = 'order_line' )
    drop table order_line
go
if exists ( select name from sysobjects where name = 'item' )
    drop table item
go
if exists ( select name from sysobjects where name = 'stock' )
    drop table stock
go
--
-- Create new tables
--

create table warehouse
(
    w_id                smallint,
    w_name              char(10),
    w_street_1          char(20),
    w_street_2          char(20),
    w_city              char(20),
    w_state             char(2),
    w_zip              char(9),
    w_tax              numeric(4,4),
    w_ytd              numeric(12,2)
) on MSSQL_misc_fg
go

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

create table customer
(
    c_id                int,
    c_d_id              tinyint,
    c_w_id              smallint,
    c_first             char(16),
    c_middle            char(2),
    c_last             char(16),
    c_street_1          char(20),
    c_street_2          char(20),
    c_city              char(20),

```

```

    c_state            char(2),
    c_zip              char(9),
    c_phone            char(16),
    c_since            datetime,
    c_credit           char(2),
    c_credit_lim       numeric(12,2),
    c_discount         numeric(4,4),
    c_balance          numeric(12,2),
    c_ytd_payment     numeric(12,2),
    c_payment_cnt     smallint,
    c_delivery_cnt    smallint,
    c_data             char(500)
) on MSSQL_cs_fg
go

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

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

create table orders
(
    o_id               int,
    o_d_id             tinyint,
    o_w_id             smallint,
    o_c_id             int,
    o_entry_d          datetime,
    o_carrier_id       tinyint,
    o_ol_cnt           tinyint,
    o_all_local        tinyint
) on MSSQL_misc_fg
go

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

create table item
(
    i_id               int,
    i_im_id            int,

```

```

        i_name          char(24),
        i_price         numeric(5,2),
        i_data          char(50)
) on MSSQL_misc_fg
go

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

```

Verify_TpccLoad.sql

```

-- File:  VERIFYTPCCLOAD.SQL
--        Microsoft TPC-C Benchmark Kit Ver. 4.22
--        Copyright Microsoft, 2001
-- Purpose: Performs series of TPCC database checks to verify
--          that database load completed correctly

print  " "
select convert(char(30), getdate(),9)
print  " "

use tpcc
go

-- *****
--
-- Check rows per table from SYSINDEXES
--
-- *****

print  'WAREHOUSE TABLE'

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

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

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

print  'ITEM TABLE = 100,000'

select rows
from    sysindexes

```

```

where   id      =object_id("item")
go

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

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

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

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

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

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

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

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

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

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

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

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

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

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

use tpcc
go

sp_helpindex customer
go

sp_helpindex stock
go

sp_helpindex district
go

sp_helpindex item
go

```



```

sp_helpindex      new_order
go

sp_helpindex      orders
go

sp_helpindex      order_line
go

sp_helpindex      warehouse
go

```

version.sql

```

-- File:  VERSION.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Returns version level of TPC-C stored procs
-- Note:   Always update the return value of this proc for
--         any interface changes or "must have" bug fixes.
--
-- The value returned by this SP defines the "interface level",
-- which must match between the stored procs and the client code.
-- The interface level may be down rev from the current kit. This
-- indicates that the interface hasn't changed since that version.

use tpcc
go

if exists ( select name from sysobjects where name = "tpcc_version" )
    drop procedure tpcc_version
go

create proc tpcc_version
as
declare    @version char(8)

begin
    select @version = "4.10.000"
    select @version as "Version"
end

go

```

Load Source Code

getargs.c

```

//      File:          GETARGS.C
//                  Microsoft TPC-C Kit Ver. 4.22
//                  Copyright Microsoft, 1996, 1997,
//                  1998, 1999, 2000, 2001
//      Purpose:   Source file for command line processing

// Includes
#include "tpcc.h"

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

```

```

//=====
//=====

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

#ifdef DEBUG
    printf("[%d]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 through */
            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. 4.22
// Copyright Microsoft, 1996, 1997,
1998, 1999, 2000, 2001
// Purpose: Random number generation routines for database loader

```

```

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

```

```

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

```

```

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

```

```

/*****
*****
* random -
* Implements a GOOD pseudo random number generator. This generator
* will/should? run the complete period before repeating.
* Copied from:
* Random Numbers Generators: Good Ones Are Hard to Find.
* Communications of the ACM - October 1988 Volume 31 Number 10
* Machine Dependencies:
* long must be 2 ^ 31 - 1 or greater.
*****
*****/

```

```

/*****
*****
* seed - load the Seed value used in irand and drand. Should be used before *
* first call to irand or drand.
*****
*****/

```

```

void seed(long val)
{

```

```

#ifdef DEBUG

```

```

printf("[%d]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("[%d]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("[%d]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("[%d]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("[%d]DBG: RandomNumber between %ld & %ld ==> %ld\n",
(int) GetCurrentThreadId(), lower,
upper, rand_num);
#endif

    return rand_num;
}

#if 0
//Original code pgd 08/13/96

long RandomNumber(long lower,
                    long upper)
{
    long rand_num;

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

    rand_num = (((RandomNumber(0,iConst) | RandomNumber(x,y)) + C) %
(y-x+1))+x;

#ifdef DEBUG
    printf("[%d]DBG: NURand: num = %d\n", (int) GetCurrentThreadId(),
rand_num);
#endif

    return rand_num;
}

```

strings.c

```

// File: STRINGS.C
// Microsoft TPC-C Kit Ver. 4.22
// Copyright Microsoft, 1996, 1997,
1998, 1999, 2000, 2001
// Purpose: Source file for database loader string functions

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

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

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

```

```

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

    MakeAlphaString (10, 20, ADDRESS_LEN, street_1);
    MakeAlphaString (10, 20, ADDRESS_LEN, street_2);
    MakeAlphaString (10, 20, ADDRESS_LEN, city);
    MakeAlphaString ( 2, 2, STATE_LEN, state);
    MakeZipNumberString( 9, 9, ZIP_LEN, zip);

#ifdef DEBUG
    printf("[%ld]DBG: MakeAddress: street_1: %s, street_2: %s, city: %s, state:
    %s, zip: %s\n",
            (int) GetCurrentThreadId(), street_1, street_2,
    city, state, zip);
#endif

    return;
}

//=====
//
// Function name: LastName
//
//=====

void LastName(int num,
              char *name)
{
    static char *n[] =
    {
        "BAR", "OUGHT", "ABLE", "PRI", "PRES",
        "ESE", "ANTI", "CALLY", "ATION", "EING"
    };

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

    if ((num >= 0) && (num < 1000))
    {
        strcpy(name, n[(num/100)%10]);
        strcat(name, n[(num/10)%10]);
        strcat(name, n[(num/1)%10]);

        if (strlen(name) < LAST_NAME_LEN)
        {
            PaddString(LAST_NAME_LEN, name);
        }
    }
    else
    {
        printf("\nError in LastName()... num <=%ld> out of range
    (0,999)\n", num);
        exit(-1);
    }

#ifdef DEBUG
    printf("[%ld]DBG: LastName: num = [%d] ==> [%d][%d][%d]\n",
            (int) GetCurrentThreadId(), num, num/100,
    (num/10)%10, num%10);
#endif

```

```

    printf("[%ld]DBG: LastName: String = %s\n", (int)
    GetCurrentThreadId(), name);
#endif

    return;
}

//=====
//
// Function name: MakeAlphaString
//
//=====

//philipdu 08/13/96 Changed MakeAlphaString to use A-Z, a-z, and 0-9 in
//accordance with spec see below:
//The spec says:
//4.3.2.2 The notation random a-string [x .. y]
//(respectively, n-string [x .. y]) represents a string of random alphanumeric
//(respectively, numeric) characters of a random length of minimum x,
//maximum y,
//and mean (y+x)/2. Alphanumerics are A..Z, a..z, and 0..9. The only other
//requirement is that the character set used "must be able to represent a
//minimum
//of 128 different characters". We are using 8-bit chars, so this is a non issue.
//It is completely unreasonable to stuff non-printing chars into the text fields.
//-CLevine 08/13/96

int MakeAlphaString( int x, int y, int z, char *str)
{
    int len;
    int i;
    char cc = 'a';
    static char chArray[] =
    "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz";
    static int chArrayMax = 61;

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

    len= RandomNumber(x, y);

    for (i=0; i<len; i++)
    {
        cc = chArray[RandomNumber(0, chArrayMax)];
        str[i] = cc;
    }
    if ( len < z )
        memset(str+len, ' ', z - len);
    str[len] = 0;

    return len;
}

//=====
//
// Function name: MakeOriginalAlphaString
//
//=====

```

```

int MakeOriginalAlphaString(int x,
                           int y,
                           int z,
                           char *str,
                           int percent)
{
    int len;
    int val;
    int start;

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

    // verify percentage is valid
    if ((percent < 0) || (percent > 100))
    {
        printf("MakeOriginalAlphaString: 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("[%d]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("[%d]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. 4.22
// Copyright Microsoft, 1996, 1997,
1998, 1999, 2000, 2001
// Purpose: Source file for time functions

```

```

// Includes
#include "tpcc.h"

```

```

// Globals
static long start_sec;

```

```

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

```

```

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

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

    _ftime(&el_time);

```

```

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

return time_now;
}

```

tpcc.h

```

// File: TPCC.H
// Microsoft TPC-C Kit Ver. 4.22
// Copyright Microsoft, 1996, 1997,
1998, 1999, 2000, 2001
// Purpose: Header file for TPC-C database loader

```

```

// Build number of TPC Benchmark Kit
#define TPCKIT_VER "4.22"

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

typedef struct
{
    char *server;

```

```

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

// String length constants
#define SERVER_NAME_LEN      20
#define DATABASE_NAME_LEN   20
#define USER_NAME_LEN       20
#define PASSWORD_LEN        20
#define TABLE_NAME_LEN     20
#define I_DATA_LEN          50
#define I_NAME_LEN          24
#define BRAND_LEN           1
#define LAST_NAME_LEN       16
#define W_NAME_LEN          10
#define ADDRESS_LEN         20
#define STATE_LEN           2
#define ZIP_LEN              9
#define S_DIST_LEN          24
#define S_DATA_LEN          50
#define D_NAME_LEN          10
#define FIRST_NAME_LEN      16
#define MIDDLE_NAME_LEN     2
#define PHONE_LEN           16
#define CREDIT_LEN          2
#define C_DATA_LEN          500
#define H_DATA_LEN          24
#define DIST_INFO_LEN       24
#define MAX_OL_NEW_ORDER_ITEMS 15
#define MAX_OL_ORDER_STATUS_ITEMS 15
#define STATUS_LEN          25
#define OL_DIST_INFO_LEN    24
#define C_SINCE_LEN

23
#define H_DATE_LEN

23
#define OL_DELIVERY_D_LEN      23
#define O_ENTRY_D_LEN         23

// Functions in random.c
void      seed();
long      irand();
double    drand();
void      WUCreate();

```

```

short     WURand();
long      RandomNumber(long lower, long upper);

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

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

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

```

tpccldr.c

```

//      File:          TPCCLDR.C
//                                  Microsoft TPC-C Kit Ver. 4.22
//                                  Copyright Microsoft, 2000, 2001
//      Purpose:      Source file for TPC-C database loader

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

// Defines
#define MAXITEMS      100000
#define MAXITEMS_SCALE_DOWN      100
#define CUSTOMERS_PER_DISTRICT 3000
#define CUSTOMERS_SCALE_DOWN     30
#define DISTRICT_PER_WAREHOUSE 10
#define ORDERS_PER_DISTRICT      3000
#define ORDERS_SCALE_DOWN        30
#define MAX_CUSTOMER_THREADS     2
#define MAX_ORDER_THREADS        3
#define MAX_MAIN_THREADS         4

// Functions declarations
void HandleErrorDBC (SQLHDBC hdbc1);

void CheckSQL();
void CheckDataBase();

long NURand();
void LoadItem();
void LoadWarehouse();

void Stock();
void District();

void LoadCustomer();
void CustomerBufInit();
void CustomerBufLoad();
void LoadCustomerTable();
void LoadHistoryTable();

void LoadOrders();
void OrdersBufInit();

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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
} CUSTOMER_SORT_STRUCT;

typedef struct
{
    long    time_start;
} LOADER_TIME_STRUCT;

// Global variables

char    szLastError[300];

HENV    henv;

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

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

ORDERS_STRUCT  orders_buf[ORDERS_PER_DISTRICT];
CUSTOMER_STRUCT customer_buf[CUSTOMERS_PER_DISTRICT];
long    orders_rows_loaded;
long    new_order_rows_loaded;
long    order_line_rows_loaded;
long    history_rows_loaded;
long    customer_rows_loaded;
long    stock_rows_loaded;
long    district_rows_loaded;
long    item_rows_loaded;
long    warehouse_rows_loaded;
long    main_time_start;
long    main_time_end;
long
long    max_items;
long    customers_per_district;
long    orders_per_district;
long    first_new_order;
long    last_new_order;

TPCCCLDR_ARGS  *aptr, args;

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=====
//
// 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");

    // process command line arguments

    aptr = &args;
    GetArgsLoader(argc, argv, aptr);

    // verify database and tables exist before attempting to load

    CheckSQL();
    CheckDataBase();

    printf("Build interface is ODBC.\n");

    if (aptr->build_index == 0)
        printf("Data load only - no index creation.\n");
    else
        printf("Data load and index creation.\n");

    if (aptr->index_order == 0)
        printf("Clustered indexes will be created after bulk
load.\n");
    else
        printf("Clustered indexes will be created before bulk
load.\n");

    // set database scale values
    if (aptr->scale_down == 1)
    {
        printf("*** Scaled Down Database ***\n");
        max_items = MAXITEMS_SCALE_DOWN;
        customers_per_district =
CUSTOMERS_SCALE_DOWN;
        orders_per_district = ORDERS_SCALE_DOWN;
        first_new_order = 0;
        last_new_order = 30;
    }
    else
    {
        max_items = MAXITEMS;
        customers_per_district =
CUSTOMERS_PER_DISTRICT;
        orders_per_district = ORDERS_PER_DISTRICT;
        first_new_order = 2100;
        last_new_order = 3000;
    }

    // open connections to SQL Server

    OpenConnections();

    // open file for loader results
    fLoader = fopen(aptr->loader_res_file, "w");

    if (fLoader == NULL)
    {
        printf("Error, loader result file open failed.");
        exit(-1);
    }

    // start loading data

    sprintf(buffer, "TPC-C load started for %ld
warehouses.\n", aptr->num_warehouses);

    printf("%s", buffer);
    fprintf(fLoader, "%s", buffer);

    main_time_start = (TimeNow() / MILLI);

    // start parallel load threads

    if (aptr->tables_all || aptr->table_item)
    {
        fprintf(fLoader, "\nStarting loader threads for: item\n");

        hThread[0] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadItem,
NULL,
0,
&dwThreadID[0]);

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

    if (aptr->tables_all || aptr->table_warehouse)
    {
        fprintf(fLoader, "Starting loader threads for:
warehouse\n");

        hThread[1] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadWarehouse,

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NULL,
0,
&dwThreadID[1]);

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

    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");
        }

        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");
            }

            // Wait for threads to finish...
            for (i=0; i<MAX_MAIN_THREADS; i++)
            {
                if (hThread[i] != NULL)

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        {
            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 != SUCCEEDED)
        HandleErrorDBC(i_hdbc1);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
    {

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        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))

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        BuildIndex("idxitmc1");
    }
}

//=====
//
// 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("idxwarc1");

    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);

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

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

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

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

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

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

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

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

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```

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

// if build index after load..
if ((aptr->build_index == 1) && (aptr->index_order == 0))
    BuildIndex("idxwarc1");

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 != SUCCEEDED)
        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);
    }
}

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        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 = apr->starting_warehouse; w_id <=
apr->num_warehouses; w_id++)
    {

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        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 ((apr->build_index == 1) && (apr->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;

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RETCODE      rc;
DBINT      rcint;
char      bcp hint[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 != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

if ((aptr->build_index == 1) && (aptr->index_order == 1))
{
    sprintf(bcp hint, "tablock, order (s_i_id, s_w_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 100000));
    rc = bcp_control(w_hdbc1, BCPHINTS, (void*)
bcp hint);
    if (rc != SUCCEEDED)
        HandleErrorDBC(w_hdbc1);
}

rc = bcp_bind(w_hdbc1, (BYTE *) &s_i_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, 1);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) &s_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 2);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) &s_quantity, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 3);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_01, 0, S_DIST_LEN,
NULL, 0, 0, 4);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_02, 0, S_DIST_LEN,
NULL, 0, 0, 5);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_03, 0, S_DIST_LEN,
NULL, 0, 0, 6);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_04, 0, S_DIST_LEN,
NULL, 0, 0, 7);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_05, 0, S_DIST_LEN,
NULL, 0, 0, 8);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_06, 0, S_DIST_LEN,
NULL, 0, 0, 9);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_07, 0, S_DIST_LEN,
NULL, 0, 0, 10);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_08, 0, S_DIST_LEN,
NULL, 0, 0, 11);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_09, 0, S_DIST_LEN,
NULL, 0, 0, 12);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_10, 0, S_DIST_LEN,
NULL, 0, 0, 13);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) &s_ytd, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, 14);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) &s_order_cnt, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 15);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) &s_remote_cnt, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 16);
if (rc != SUCCEEDED)
    HandleErrorDBC(w_hdbc1);

rc = bcp_bind(w_hdbc1, (BYTE *) s_data, 0, S_DATA_LEN,
NULL, 0, 0, 17);
if (rc != SUCCEEDED)
    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
// SQLRETURN
// SQLSMALLINT
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;

CustomerBufnfit();

customer_time_start.time_start = (TimeNow() / MILLI);
history_time_start.time_start = (TimeNow() / MILLI);

for (w_id = (short)aptr->starting_warehouse; w_id <=
aptr->num_warehouses; w_id++)
{
    for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE;
d_id++)
    {
        CustomerBufLoad(d_id, w_id);

        // Start parallel loading threads here...

```



```

// Start customer table thread
printf("...Loading customer table for: d_id =
%d, w_id = %d\n", d_id, w_id);
hThread[0] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadCustomerTable,
&customer_time_start,
0,
&dwThreadID[0]);
if (hThread[0] == NULL)
{
printf("Error, failed in creating
creating thread = 0.\n");
exit(-1);
}
// Start History table thread
printf("...Loading history table for: d_id = %d,
w_id = %d\n", d_id, w_id);
hThread[1] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadHistoryTable,
&history_time_start,
0,
&dwThreadID[1]);
if (hThread[1] == NULL)
{
printf("Error, failed in creating
creating thread = 1.\n");
exit(-1);
}
WaitForSingleObject( hThread[0], INFINITE
);
WaitForSingleObject( hThread[1], INFINITE
);
if (CloseHandle(hThread[0]) == FALSE)
{
printf("Error, failed in closing
customer thread handle with errno: %d\n", GetLastError());
}
if (CloseHandle(hThread[1]) == FALSE)
{
printf("Error, failed in closing
history thread handle with errno: %d\n", GetLastError());
}
}
}
// flush the bulk connection
rcint = bcp_done(c_hdbc1);
if (rcint < 0)
HandleErrorDBC(c_hdbc1);
rcint = bcp_done(c_hdbc2);
if (rcint < 0)
HandleErrorDBC(c_hdbc2);
printf("Finished loading customer table.\n");
// if build index after load...
if ((aptr->build_index == 1) && (aptr->index_order == 0))
BuildIndex("idxcuscl");
// build non-clustered index
if (aptr->build_index == 1)
BuildIndex("idxcusnc");
// Output the NURAND used for the loader into C_FIRST for C_ID
= 1,
// C_W_ID = 1, and C_D_ID = 1
sprintf(cmd, "isql -S%s -U%s -P%s -d%s -e -Q\"update customer set
c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id = 1\" >
logs\nurand_load.log",
aptr->server,
aptr->user,
aptr->password,
aptr->database,
LOADER_NURAND_C);
system(cmd);
SQLFreeStmt(c_hstmt1, SQL_DROP);
SQLDisconnect(c_hdbc1);
SQLFreeConnect(c_hdbc1);
SQLFreeStmt(c_hstmt2, SQL_DROP);
SQLDisconnect(c_hdbc2);
SQLFreeConnect(c_hdbc2);
return;
}
//=====
//
// Function : CustomerBufInit
//
//=====
void CustomerBufInit()
{
int i;
for (i=0;i<customers_per_district;i++)
{
customer_buf[i].c_id = 0;
customer_buf[i].c_d_id = 0;
customer_buf[i].c_w_id = 0;
strcpy(customer_buf[i].c_first, "");
}
}

```

```

strcpy(customer_buf[i].c_middle,"");
strcpy(customer_buf[i].c_last,"");
strcpy(customer_buf[i].c_street_1,"");
strcpy(customer_buf[i].c_street_2,"");
strcpy(customer_buf[i].c_city,"");
strcpy(customer_buf[i].c_state,"");
strcpy(customer_buf[i].c_zip,"");
strcpy(customer_buf[i].c_phone,"");
strcpy(customer_buf[i].c_credit,"");

customer_buf[i].c_credit_lim = 0;
customer_buf[i].c_discount = (float) 0;

// fix to avoid ODBC float to numeric conversion
problem.

// customer_buf[i].c_balance = 0;
strcpy(customer_buf[i].c_balance,"");

customer_buf[i].c_ytd_payment = 0;
customer_buf[i].c_payment_cnt = 0;
customer_buf[i].c_delivery_cnt = 0;

strcpy(customer_buf[i].c_data,"");

customer_buf[i].h_amount = 0;

strcpy(customer_buf[i].h_data,"");
}

}

//=====
//
// Function : CustomerBufLoad
//
// Fills shared buffer for HISTORY and CUSTOMER
//=====

void CustomerBufLoad(int d_id, int w_id)
{
    long i;
    CUSTOMER_SORT_STRUCT c[CUSTOMERS_PER_DISTRICT];

    for (i=0;i<customers_per_district;i++)
    {
        if (i < 1000)
            LastName(i, c[i].c_last);
        else
            LastName(NURand(255,0,999,LOADER_NURAND_C), c[i].c_last);

        MakeAlphaString(8,16,FIRST_NAME_LEN,
c[i].c_first);

        c[i].c_id = i+1;
    }

    printf("...Loading customer buffer for: d_id = %d, w_id = %d\n",
d_id, w_id);

    for (i=0;i<customers_per_district;i++)

```

```

{
    customer_buf[i].c_d_id = d_id;
    customer_buf[i].c_w_id = w_id;
    customer_buf[i].h_amount = 10.0;

    customer_buf[i].c_ytd_payment = 10.0;

    customer_buf[i].c_payment_cnt = 1;
    customer_buf[i].c_delivery_cnt = 0;

    // Generate CUSTOMER and HISTORY data

    customer_buf[i].c_id = c[i].c_id;

    strcpy(customer_buf[i].c_first, c[i].c_first);
    strcpy(customer_buf[i].c_last, c[i].c_last);

    customer_buf[i].c_middle[0] = 'O';
    customer_buf[i].c_middle[1] = 'E';

    MakeAddress(customer_buf[i].c_street_1,
customer_buf[i].c_street_2,
customer_buf[i].c_city,
customer_buf[i].c_state,
customer_buf[i].c_zip);

    MakeNumberString(16, 16, PHONE_LEN,
customer_buf[i].c_phone);

    if (RandomNumber(1L, 100L) > 10)
        customer_buf[i].c_credit[0] = 'G';
    else
        customer_buf[i].c_credit[0] = 'B';
    customer_buf[i].c_credit[1] = 'C';

    customer_buf[i].c_credit_lim = 50000.0;
    customer_buf[i].c_discount = ((float)
RandomNumber(0L, 5000L)) / 10000.0;

    // fix to avoid ODBC float to numeric conversion
problem.

    // customer_buf[i].c_balance = -10.0;
    strcpy(customer_buf[i].c_balance,"-10.0");

    MakeAlphaString(300, 500, C_DATA_LEN,
customer_buf[i].c_data);

    // Generate HISTORY data
    MakeAlphaString(12, 24, H_DATA_LEN,
customer_buf[i].h_data);
}

}

//=====
//
// Function : LoadCustomerTable
//
//=====

void LoadCustomerTable(LOADER_TIME_STRUCT *customer_time_start)
{
    int i;
    long c_id;
    short c_d_id;

```

<pre> 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 != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2, 2); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2, 3); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_first, 0, FIRST_NAME_LEN, NULL, 0, 0, 4); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_middle, 0, MIDDLE_NAME_LEN, NULL, 0, 0, 5); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0, LAST_NAME_LEN, NULL, 0, 0, 6); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_street_1, 0, ADDRESS_LEN, NULL, 0, 0, 7); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0, ADDRESS_LEN, NULL, 0, 0, 8); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_city, 0, ADDRESS_LEN, NULL, 0, 0, 9); if (rc != SUCCEEDED) </pre>	<pre> HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0, STATE_LEN, NULL, 0, 0, 10); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_zip, 0, ZIP_LEN, NULL, 0, 0, 11); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0, PHONE_LEN, NULL, 0, 0, 12); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_since, 0, C_SINCE_LEN, NULL, 0, SQLCHARACTER, 13); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0, CREDIT_LEN, NULL, 0, 0, 14); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_credit_lim, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 15); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_discount, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 16); if (rc != SUCCEEDED) 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 != SUCCEEDED) // HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_balance, 0, 5, NULL, 0, SQLCHARACTER, 17); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 18); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_payment_cnt, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2, 19); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) &c_delivery_cnt, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2, 20); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0, 500, NULL, 0, 0, 21); if (rc != SUCCEEDED) HandleErrorDBC(c_hdbc1); for (i = 0; i < customers_per_district; i++) </pre>
---	---

```

{
    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
    // 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 != SUCCEEDED)
        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 != SUCCEEDED)

```

```

        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 2);
    if (rc != SUCCEEDED)
        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
    if (rc != SUCCEEDED)
        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 4);
    if (rc != SUCCEEDED)
        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 5);
    if (rc != SUCCEEDED)
        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &h_date, 0, H_DATE_LEN,
NULL, 0, SQLCHARACTER, 6);
    if (rc != SUCCEEDED)
        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0, SQL_VARLEN_DATA,
NULL, 0, SQLFLT8, 7);
    if (rc != SUCCEEDED)
        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0, H_DATA_LEN, NULL, 0, 0,
8);
    if (rc != SUCCEEDED)
        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 != SUCCEEDED)
            HandleErrorDBC(c_hdbc2);

        history_rows_loaded++;
        CheckForCommit(c_hdbc2, c_hstmt2,
history_rows_loaded, "history", &history_time_start->time_start);
    }
}

//=====
//
// Function : LoadOrders
//
//=====

```

```

void LoadOrders()
{
    LOADER_TIME_STRUCT  orders_time_start;
    LOADER_TIME_STRUCT  new_order_time_start;
    LOADER_TIME_STRUCT  order_line_time_start;
    short                w_id;

    short                d_id;
    DWORD
dwThreadID[MAX_ORDER_THREADS];
    HANDLE
hThread[MAX_ORDER_THREADS];
    char                name[20];
    RETCODE
rc;
    char
bcpHint[128];

    // seed with unique number
    seed(6);

    printf("Loading orders...\n");

    // if build index before load...
    if ((aptr->build_index == 1) && (aptr->index_order == 1))
    {
        BuildIndex("idxordcl");
        BuildIndex("idxnodcl");
        BuildIndex("idxodlcl");
    }

    // initialize bulk copy
    sprintf(name, "%s..%s", aptr->database, "orders");

    rc = bcp_init(o_hdbc1, name, NULL, "logs\\orders.err", DB_IN);
    if (rc != SUCCEED)
        HandleErrorDBC(o_hdbc1);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
    {
        sprintf(bcpHint, "tablock, order (o_w_id, o_d_id, o_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
        rc = bcp_control(o_hdbc1, BCPHINTS, (void*) bcpHint);

        if (rc != SUCCEED)
            HandleErrorDBC(o_hdbc1);
    }

    sprintf(name, "%s..%s", aptr->database, "new_order");

    rc = bcp_init(o_hdbc2, name, NULL, "logs\\neword.err", DB_IN);
    if (rc != SUCCEED)
        HandleErrorDBC(o_hdbc2);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
    {
        sprintf(bcpHint, "tablock, order (no_w_id, no_d_id,
no_o_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 9000));
        rc = bcp_control(o_hdbc2, BCPHINTS, (void*) bcpHint);

        if (rc != SUCCEED)
            HandleErrorDBC(o_hdbc2);
    }

    sprintf(name, "%s..%s", aptr->database, "order_line");

    rc = bcp_init(o_hdbc3, name, NULL, "logs\\ordline.err", DB_IN);

    if (rc != SUCCEED)
        HandleErrorDBC(o_hdbc3);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
    {
        sprintf(bcpHint, "tablock, order (ol_w_id, ol_d_id,
ol_o_id, ol_number), ROWS_PER_BATCH = %u", (aptr->num_warehouses *
300000));
        rc = bcp_control(o_hdbc3, BCPHINTS, (void*) bcpHint);

        if (rc != SUCCEED)
            HandleErrorDBC(o_hdbc3);
    }

    orders_rows_loaded = 0;
    new_order_rows_loaded = 0;
    order_line_rows_loaded = 0;

    OrdersBufInit();

    orders_time_start.time_start = (TimeNow() / MILLI);
    new_order_time_start.time_start = (TimeNow() / MILLI);
    order_line_time_start.time_start = (TimeNow() / MILLI);

    for (w_id = (short)aptr->starting_warehouse; w_id <=
aptr->num_warehouses; w_id++)
    {
        for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE;
d_id++)
        {
            OrdersBufLoad(d_id, w_id);

            // start parallel loading threads here...

            // start Orders table thread

            printf("...Loading Order Table for: d_id = %d,
w_id = %d\n", d_id, w_id);

            hThread[0] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadOrdersTable,
&orders_time_start,
0,
&dwThreadID[0]);

            if (hThread[0] == NULL)
            {
                printf("Error, failed in creating
creating thread = 0.\n");
                exit(-1);
            }

            // start NewOrder table thread

            printf("...Loading New-Order Table for: d_id
= %d, w_id = %d\n", d_id, w_id);

            hThread[1] = CreateThread(NULL,
0,

```

```

(LPTHREAD_START_ROUTINE) LoadNewOrderTable,
&new_order_time_start,
0,
&dwThreadID[1]);

        if (hThread[1] == NULL)
        {
                printf("Error, failed in creating
creating thread = 1.\n");
                exit(-1);
        }

        // start Order-Line table thread
        printf("...Loading Order-Line Table for: d_id
= %d, w_id = %d\n", d_id, w_id);
        hThread[2] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadOrderLineTable,
&order_line_time_start,
0,
&dwThreadID[2]);

        if (hThread[2] == NULL)
        {
                printf("Error, failed in creating
creating thread = 2.\n");
                exit(-1);
        }

        WaitForSingleObject( hThread[0], INFINITE
);
        WaitForSingleObject( hThread[1], INFINITE
);
        WaitForSingleObject( hThread[2], INFINITE
);

        if (CloseHandle(hThread[0]) == FALSE)
        {
                printf("Error, failed in closing
Orders thread handle with errno: %d\n", GetLastError());
        }

        if (CloseHandle(hThread[1]) == FALSE)
        {
                printf("Error, failed in closing
NewOrder thread handle with errno: %d\n", GetLastError());
        }

        if (CloseHandle(hThread[2]) == FALSE)
        {
                printf("Error, failed in closing
OrderLine thread handle with errno: %d\n", GetLastError());
        }
}

```

```

printf("Finished loading orders.\n");
return;
}

//=====
//
// Function : OrdersBufInit
//
// Clears shared buffer for ORDERS, NEWORDER, and ORDERLINE
//
//=====

void OrdersBufInit()
{
        int i;
        int j;

        for (i=0;i<orders_per_district;i++)
        {
                orders_buf[i].o_id = 0;
                orders_buf[i].o_d_id = 0;
                orders_buf[i].o_w_id = 0;
                orders_buf[i].o_c_id = 0;
                orders_buf[i].o_carrier_id = 0;
                orders_buf[i].o_ol_cnt = 0;
                orders_buf[i].o_all_local = 0;

                for (j=0;j<=14;j++)
                {
                        orders_buf[i].o_ol[j].ol = 0;
                        orders_buf[i].o_ol[j].ol_i_id = 0;

                        orders_buf[i].o_ol[j].ol_supply_w_id = 0;
                        orders_buf[i].o_ol[j].ol_quantity = 0;
                        orders_buf[i].o_ol[j].ol_amount = 0;
                        strcpy(orders_buf[i].o_ol[j].ol_dist_info,"");
                }
        }
}

//=====
//
// Function : OrdersBufLoad
//
// Fills shared buffer for ORDERS, NEWORDER, and ORDERLINE
//
//=====

void OrdersBufLoad(int d_id, int w_id)
{
        int cust[ORDERS_PER_DISTRICT+1];
        long o_id;
        short ol;

        printf("...Loading Order Buffer for: d_id = %d, w_id = %d\n",
d_id, w_id);

```

```

GetPermutation(cust, orders_per_district);

for (o_id=0;o_id<orders_per_district;o_id++)
{
    // Generate ORDER and NEW-ORDER data

    orders_buf[o_id].o_d_id = d_id;
    orders_buf[o_id].o_w_id = w_id;
    orders_buf[o_id].o_id = o_id+1;
    orders_buf[o_id].o_c_id = cust[o_id+1];
    orders_buf[o_id].o_ol_cnt = (short)RandomNumber(5L,
15L);

    if (o_id < first_new_order)
    {
        orders_buf[o_id].o_carrier_id =
(short)RandomNumber(1L, 10L);
        orders_buf[o_id].o_all_local = 1;
    }
    else
    {
        orders_buf[o_id].o_carrier_id = 0;
        orders_buf[o_id].o_all_local = 1;
    }

    for (ol=0; ol<orders_buf[o_id].o_ol_cnt; ol++)
    {

        orders_buf[o_id].o_ol[ol].ol = ol+1;
        orders_buf[o_id].o_ol[ol].ol_i_id =
RandomNumber(1L, max_items);
        orders_buf[o_id].o_ol[ol].ol_supply_w_id =
w_id;

        orders_buf[o_id].o_ol[ol].ol_quantity = 5;
        MakeAlphaString(24, 24,
OL_DIST_INFO_LEN, &orders_buf[o_id].o_ol[ol].ol_dist_info);

        // Generate ORDER-LINE data
        if (o_id < first_new_order)
        {

orders_buf[o_id].o_ol[ol].ol_amount = 0;
set properly during load                // Added to insure ol_delivery_d

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;
set properly during load                // Added to insure ol_delivery_d

                                        // odbc datetime format
strcpy(orders_buf[o_id].o_ol[ol].ol_delivery_d,"1899-12-31 00:00:00.000");

        }
    }
}
}

```

```

=====
//
// Function : LoadOrdersTable
//
=====
void LoadOrdersTable(LOADER_TIME_STRUCT *orders_time_start)
{
    int i;
    long o_id;
    short o_d_id;
    short o_w_id;
    long o_c_id;
    short o_carrier_id;
    short o_ol_cnt;
    short o_all_local;
    char o_entry_d[O_ENTRY_D_LEN+1];
    RETCODE rc;
    DBINT rcint;

    // bind ORDER data
    rc = bcp_bind(o_hdbc1, (BYTE *) &o_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 1);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 2);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_c_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 4);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_entry_d, 0,
O_ENTRY_D_LEN, NULL, 0, SQLCHARACTER, 5);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_carrier_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 6);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_ol_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 7);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_all_local, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 8);
    if (rc != SUCCEEDED)
        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 != SUCCEEDED)
    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 != SUCCEEDED)
        HandleErrorDBC(o_hdbc2);

```

```

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 2);
    if (rc != SUCCEEDED)
        HandleErrorDBC(o_hdbc2);

```

```

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
    if (rc != SUCCEEDED)
        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 != SUCCEEDED)
            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 != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 2);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 4);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 5);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &ol_supply_w_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 6);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &ol_delivery_d, 0,
OL_DELIVERY_D_LEN, NULL, 0, SQLCHARACTER, 7);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &ol_quantity, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 8);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) &ol_amount, 0, SQL_VARLEN_DATA,
NULL, 0, SQLFLT8, 9);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0, DIST_INFO_LEN,
NULL, 0, 0, 10);
if (rc != SUCCEEDED)
    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 != SUCCEEDED)
    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 == apr->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 ((apr->build_index == 1) && (apr->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->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->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

```

aptr->user,

aptr->user,

```

        sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,

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->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);

```

aptr->user,

aptr->user,

```

// Connection 6

printf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,
aptr->password,
aptr->database );

rc = SQLSetConnectOption (o_hdbc2, SQL_PACKET_SIZE,
aptr->pack_size);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc2);

rc = SQLDriverConnect ( o_hdbc2,
NULL,
(SQLCHAR*)&szDriverString[0] ,
SQL_NTS,
(SQLCHAR*)&szDriverStringOut[0],
sizeof(szDriverStringOut),
&cbDriverStringOut,
SQL_DRIVER_NOPROMPT );
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc2);

// Connection 7

printf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,
aptr->password,
aptr->database );

rc = SQLSetConnectOption (o_hdbc3, SQL_PACKET_SIZE,
aptr->pack_size);
if (rc != SUCCEEDED)
    HandleErrorDBC(o_hdbc3);

rc = SQLDriverConnect ( o_hdbc3,
NULL,
(SQLCHAR*)&szDriverString[0] ,
SQL_NTS,
(SQLCHAR*)&szDriverStringOut[0],
sizeof(szDriverStringOut),
&cbDriverStringOut,
SQL_DRIVER_NOPROMPT );
if (rc != SUCCEEDED)

```

```
aptr->user,
```

```
aptr->user,
```

```

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 )
    {
        printf( szLastError , "%s" , Msg );
        _strtime(timebuf);
        _strdate(datebuf);

        printf( "[%s : %s] %s\n" , datebuf, timebuf, szLastError);

        fp1 = fopen("logs\\tpccldr.err", "w");
        if (fp1 == NULL)
            printf("ERROR: Unable to open errorlog
file.\n");
        else
        {
            fprintf(fp1, "[%s : %s] %s\n" , datebuf,
timebuf, szLastError);
            fclose(fp1);
        }
    }
}

```

```

        i++;
    }
}

void HandleErrorSTMT (HSTMT hstmt1)
{
    SQLCHAR          SqlState[6],
    Msg[SQL_MAX_MESSAGE_LENGTH];
    SQLINTEGER NativeError;
    SQLSMALLINT i, MsgLen;
    SQLRETURN rc2;
    char            timebuf[128];
    char            datebuf[128];
    FILE            *fp1;

    i = 1;
    while ((rc2 = SQLGetDiagRec(SQL_HANDLE_STMT , hstmt1, i,
    SqlState , &NativeError,
    Msg, sizeof(Msg) , &MsgLen ))
    != SQL_NO_DATA )
    {
        sprintf( szLastError , "%s" , Msg );

        _strtime(timebuf);
        _strdate(datebuf);

        printf( "[%s : %s] %s\n" , datebuf, timebuf, szLastError);

        fp1 = fopen("logs\\tpccldr.err", "w");
        if (fp1 == NULL)
            printf("ERROR: Unable to open errorlog
file.\n");
        else
        {
            fprintf(fp1, "[%s : %s] %s\n" , datebuf,
timebuf, szLastError);
            fclose(fp1);
        }

        i++;
    }
}

void FormatDate ( char* szTimeCOutput )
{
    struct tm when;
    time_t now;

    time( &now );
    when = *localtime( &now );

    mktime( &when );

    // odbc datetime format
    strftime( szTimeCOutput , 30 , "%Y-%m-%d %H:%M:%S.000",
&when );

    return;
}

```

```

//=====
//
// Function : CheckSQL
//
//=====

void CheckSQL()
{
    RETCODE rc;

    char            szDriverString[300];
    char            szDriverStringOut[1024];
    int             SQLBuildFlag;
    char            resp;

    SQLSMALLINT    cbDriverStringOut;
    SQLCHAR        SQLVersion[19];
    SQLINTEGER     SQLVersionInd;

    SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE,
&henv );

    SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION,
(void*)SQL_OV_ODBC3, 0 );

    SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

    SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void
*)SQL_BCP_ON, SQL_IS_INTEGER );

    // Open connection to SQL Server

    sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s" ,
aptr->server,
aptr->user,
aptr->password );

    if ( SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE,
(SQLPOINTER)aptr->pack_size, SQL_IS_UIINTEGER ) != SQL_SUCCESS )
        HandleErrorDBC(v_hdbc);

    rc = SQLDriverConnect ( v_hdbc,
NULL,
(SQLCHAR*)&szDriverString[0] ,
SQL_NTS,
(SQLCHAR*)&szDriverStringOut[0],
sizeof(szDriverStringOut),
&cbDriverStringOut,
SQL_DRIVER_NOPROMPT );

    if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
        HandleErrorDBC(v_hdbc);
}

```

```

        if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt)
        != SQL_SUCCESS )
            HandleErrorSTMT(v_hstmt);

        rc = SQLBindCol(v_hstmt, 4, SQL_C_CHAR, &SQLVersion,
        sizeof(SQLVersion), &SQLVersionInd);

        // issue SQL Server extended stored procedure (xp_msver) to
        determine installed version
        rc = SQLExecDirect(v_hstmt, "EXECUTE xp_msver
        ProductVersion", SQL_NTS);

        if ((rc != SQL_SUCCESS) && (rc !=
        SQL_SUCCESS_WITH_INFO))
            HandleErrorSTMT(v_hstmt);

        rc = SQLFetch(v_hstmt);

        if (rc != SQL_SUCCESS)
            HandleErrorDBC(v_hdbc);

        // Check build number to ensure 8.00.194 or higher
        SQLBuildFlag = 1;

        // first check the Major version
        if ( SQLVersion[0] == '8' )
        {
            if (( SQLVersion[2] == '0' ) & ( SQLVersion[3] == '0' ) )
            {
                if ( SQLVersion[5] == '1' )
                {
                    if ( (SQLVersion[6] == '9' ) &
                    (SQLVersion[7] == '4' ) )
                    {
                        SQLBuildFlag = 0;
                        printf("You are using
                        SQL Server version = %9s\n\n", SQLVersion);
                    }
                    else
                    {
                        SQLBuildFlag = 1;
                    }
                }
                else
                {
                    if ( SQLVersion[5] == '3' )
                    {
                        if ( (SQLVersion[6] >=
                        53) & (SQLVersion[7] >= 48) )
                        {
                            SQLBuildFlag = 0;
                            printf("You
                            are using SQL Server version = %9s\n\n", SQLVersion);
                        }
                        else
                        {
                            SQLBuildFlag = 1;
                        }
                    }
                }
            }
        }
        else
        {

```

```

        SQLBuildFlag = 1;
    }
    if ( SQLBuildFlag == 1 )
    {
        printf("NOTE: The SQL Server version you are using is
        not supported\n");
        printf("for TPC-C benchmarking. You currently have
        SQL Server version %9s\n",SQLVersion);
        printf("installed. Please upgrade to Microsoft SQL
        Server 2000 (8.00.0194) or better.\n");
        printf("and re-run the SETUP program.\n\n");
        printf("Do you wish to continue with setup? (Y/N): ");
        resp = getchar();
        if ( ( resp == 'N' ) || (resp == 'n') )
        {
            printf("\nSetup Aborted!\n");
            exit(1);
        }
    }

    SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
    SQLDisconnect(v_hdbc);
    SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

    return;
}

//=====
//
// Function : CheckDataBase
//
//=====

void CheckDataBase()
{
    RETCODE rc;

    char szDriverString[300];
    char szDriverStringOut[1024];
    char TablesBitMap[9] =
    {"000000000"};
    int i, ExitFlag;

    SQLSMALLINT cbDriverStringOut;
    SQLCHAR TabName[10];
    SQLINTEGER TabNameInd, TabCount,
    TabCountInd;

    ExitFlag = 0;

    SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE,
    &henv );

    SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION,
    (void*)SQL_OV_ODBC3, 0 );

    SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

    SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void
    *)SQL_BCP_ON, SQL_IS_INTEGER );

```

```

// Open connection to SQL Server

sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,
aptr->password,
aptr->database );

rc = SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE,
(SQLPOINTER)aptr->pack_size, SQL_IS_UIINTEGER );
if (rc != SQL_SUCCESS)
    HandleErrorDBC(v_hdbc);

rc = SQLDriverConnect ( v_hdbc,
                        NULL,
(SQLCHAR*)&szDriverString[0] ,
                        SQL_NTS,
(SQLCHAR*)&szDriverStringOut[0],
                        SQL_NTS,
sizeof(szDriverStringOut),
&cbDriverStringOut,
SQL_DRIVER_NOPROMPT );

// if the rc is SQL_ERROR, the the TPCC database probably does
not exist
if (rc == SQL_ERROR)
{
    printf("The database TPCC does not appear to exist!\n");
    printf("\nCheck LOGS\ directory for database creation
errors.\n");

    // cleanup database connections and handles
    SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
    SQLDisconnect(v_hdbc);
    SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

    // since there is not a database, exit back to SETUP.CMD
    exit(1);
}

if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt)
!= SQL_SUCCESS )
    HandleErrorDBC(v_hdbc);

if ( SQLBindCol(v_hstmt, 1, SQL_C_ULONG, &TabCount, 0,
&TabCountInd) != SQL_SUCCESS )
    HandleErrorSTMT(v_hstmt);

// count the number of user tables from sysobjects
rc = SQLExecDirect(v_hstmt, "select count(*) from sysobjects
where xtype = 'U'", SQL_NTS);
if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
    HandleErrorSTMT(v_hstmt);

if ( SQLFetch(v_hstmt) != SQL_SUCCESS )
    HandleErrorSTMT(v_hstmt);

// if the number of tables is less than 9, select all the user tables in
TPCC

```

```

if (TabCount != 9)
{
    SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
    SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc ,
&v_hstmt);

    if ( SQLBindCol(v_hstmt, 1, SQL_C_CHAR,
&TabName, sizeof(TabName), &TabNameInd) != SQL_SUCCESS )
        HandleErrorSTMT(v_hstmt);

    // select the list of user tables into a result set
    rc = SQLExecDirect(v_hstmt, "select * from sysobjects
where xtype = 'U'", SQL_NTS);
    if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
        HandleErrorSTMT(v_hstmt);

    // go through the result set and set the bitmap for each
found table
    // set the bitmap to '1' if the table name is found
    while ((rc = SQLFetch(v_hstmt)) != SQL_NO_DATA)
    {
        switch( TabName[0] )
        {
            case 'w':
                TablesBitMap[0] = '1';
                break;
            case 'd':
                TablesBitMap[1] = '1';
                break;
            case 'c':
                TablesBitMap[2] = '1';
                break;
            case 'h':
                TablesBitMap[3] = '1';
                break;
            case 'n':
                TablesBitMap[4] = '1';
                break;
            case 'o':
                if (TabName[5] = 's')
                    TablesBitMap[5] = '1';
                if (TabName[5] = '_')
                    TablesBitMap[6] = '1';
                break;
            case 'i':
                TablesBitMap[7] = '1';
                break;
            case 's':
                TablesBitMap[8] = '1';
                break;
        }
    }

    // a '0' ExitFlag means do NOT exit the loader early, a '1'
means exit the loader early
    ExitFlag = 0;

    // iterate through the bitmap to display which table(s) is
actually missing
    for (i = 0; i <= 8; i++)
    {
        switch(i)
        {
            case 0:
                if (TablesBitMap[i] == '0')

```

<pre> table is missing or damaged.\n"); { printf("The Warehouse ExitFlag = 1; } break; case 1: if (TablesBitMap[i] == '0') { printf("The District ExitFlag = 1; } break; case 2: if (TablesBitMap[i] == '0') { printf("The Customer ExitFlag = 1; } break; case 3: if (TablesBitMap[i] == '0') { printf("The History ExitFlag = 1; } break; case 4: if (TablesBitMap[i] == '0') { printf("The New_Order ExitFlag = 1; } break; case 5: if (TablesBitMap[i] == '0') { printf("The Orders table ExitFlag = 1; } break; case 6: if (TablesBitMap[i] == '0') { printf("The Order_Line ExitFlag = 1; } break; case 7: if (TablesBitMap[i] == '0') { printf("The Item table is ExitFlag = 1; } break; case 8: if (TablesBitMap[i] == '0') { printf("The Stock table ExitFlag = 1; </pre>	<pre> } break; } } // if one or more tables are missing, display message and exit the loader if (ExitFlag = 1) { printf("\nExiting TPC-C Loader!\n"); printf("\nCheck LOGS\ directory for database\n"); printf("or table creation errors.\n"); // cleanup database connections and handles SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt); SQLDisconnect(v_hdbc); SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc); exit(1); } // cleanup database connections and handles SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt); SQLDisconnect(v_hdbc); SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc); return; } </pre>
tpccldr.mak	
<pre> # Microsoft Developer Studio Generated NMAKE File, Format Version 4.10 # ** DO NOT EDIT ** # TARGETTYPE "Win32 (x86) Console Application" 0x0103 !IF "\$(CFG)" == "" CFG=tpccldr - Win32 Debug !MESSAGE No configuration specified. Defaulting to tpccldr - Win32 Debug. !ENDIF !IF "\$(CFG)" != "tpccldr - Win32 Release" && "\$(CFG)" !=\ "tpccldr - Win32 Debug" !MESSAGE Invalid configuration "\$(CFG)" specified. !MESSAGE You can specify a configuration when running NMAKE on this makefile !MESSAGE by defining the macro CFG on the command line. For example: !MESSAGE !MESSAGE NMAKE /f "tpccldr.mak" CFG="tpccldr - Win32 Debug" !MESSAGE !MESSAGE Possible choices for configuration are: !MESSAGE !MESSAGE "tpccldr - Win32 Release" (based on "Win32 (x86) Console Application") !MESSAGE "tpccldr - Win32 Debug" (based on "Win32 (x86) Console Application") !MESSAGE !ERROR An invalid configuration is specified. !ENDIF !IF "\$(OS)" == "Windows_NT" NULL= !ELSE </pre>	


```

NULL=nul
!ENDIF
#####
#####
# Begin Project
# PROP Target_Last_Scanned "tpcldr - Win32 Debug"
RSC=rc.exe
CPP=cl.exe

!IF "$(CFG)" == "tpcldr - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir "bin"
# PROP Intermediate_Dir "objects"
# PROP Target_Dir ""
OUTDIR=.bin
INTDIR=.objects

ALL : "$(OUTDIR)\tpcldr.exe"

CLEAN :
    -@erase "$(INTDIR)\getargs.obj"
    -@erase "$(INTDIR)\random.obj"
    -@erase "$(INTDIR)\strings.obj"
    -@erase "$(INTDIR)\time.obj"
    -@erase "$(INTDIR)\tpcldr.obj"
    -@erase "$(OUTDIR)\tpcldr.exe"

"$$(OUTDIR)" :
    if not exist "$$(OUTDIR)\$(NULL)" mkdir "$$(OUTDIR)"

"$$(INTDIR)" :
    if not exist "$$(INTDIR)\$(NULL)" mkdir "$$(INTDIR)"

# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
# "_CONSOLE" /YX /c
# ADD CPP /nologo /MT /W3 /GX /O2 /I "c:\mssql\dblib\include" /D
"NDEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
# SUBTRACT CPP /YX
CPP_PROJ=/nologo /MT /W3 /GX /O2 /I "c:\mssql\dblib\include" /D
"NDEBUG" /D\
"WIN32" /D "_CONSOLE" /D "DBNTWIN32" /Fo"$$(INTDIR)" /c
CPP_OBJS=.objects/
CPP_SBRS=.
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
BSC32_FLAGS=/nologo /o"$$(OUTDIR)\tpcldr.bsc"
BSC32_SBRS= \

LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbcc32.lib
odbccp32.lib /nologo /subsystem:console /machine:I386
# ADD LINK32 c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
uuid.lib odbcc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none
/machine:I386
LINK32_FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib
gdi32.lib

```

```

winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib\
uuid.lib odbcc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none\
/machine:I386 /out:"$(OUTDIR)\tpcldr.exe"
LINK32_OBJS= \
    "$(INTDIR)\getargs.obj" \
    "$(INTDIR)\random.obj" \
    "$(INTDIR)\strings.obj" \
    "$(INTDIR)\time.obj" \
    "$(INTDIR)\tpcldr.obj"

"$$(OUTDIR)\tpcldr.exe" : "$$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
    $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ELSEIF "$(CFG)" == "tpcldr - Win32 Debug"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir "bin"
# PROP Intermediate_Dir "objects"
# PROP Target_Dir ""
OUTDIR=.bin
INTDIR=.objects

ALL : "$(OUTDIR)\tpcldr.exe"

CLEAN :
    -@erase "$(INTDIR)\getargs.obj"
    -@erase "$(INTDIR)\random.obj"
    -@erase "$(INTDIR)\strings.obj"
    -@erase "$(INTDIR)\time.obj"
    -@erase "$(INTDIR)\tpcldr.obj"
    -@erase "$(INTDIR)\vc40.idb"
    -@erase "$(INTDIR)\vc40.pdb"
    -@erase "$(OUTDIR)\tpcldr.exe"

"$$(OUTDIR)" :
    if not exist "$$(OUTDIR)\$(NULL)" mkdir "$$(OUTDIR)"

"$$(INTDIR)" :
    if not exist "$$(INTDIR)\$(NULL)" mkdir "$$(INTDIR)"

# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG"
/D "_CONSOLE" /YX /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:\mssql\dblib\include" /D
"_DEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
# SUBTRACT CPP /YX
CPP_PROJ=/nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:\mssql\dblib\include" /D\
"_DEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32"
/Fo"$$(INTDIR)" \
/Fd"$$(INTDIR)" /c
CPP_OBJS=.objects/
CPP_SBRS=.
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
BSC32_FLAGS=/nologo /o"$$(OUTDIR)\tpcldr.bsc"
BSC32_SBRS= \

LINK32=link.exe

```

```

# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbccp32.lib
odbccp32.lib /nologo /subsystem:console /debug /machine:I386
# ADD LINK32 c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
uuid.lib odbccp32.lib /nologo /subsystem:console /pdb:none /debug
/machine:I386
LINK32_FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib
gdi32.lib\
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib\
uuid.lib odbccp32.lib /nologo /subsystem:console /pdb:none /debug\
/machine:I386 /out:"$(OUTDIR)\tpccldr.exe"
LINK32_OBJS= \
    "$(INTDIR)\getargs.obj" \
    "$(INTDIR)\random.obj" \
    "$(INTDIR)\strings.obj" \
    "$(INTDIR)\time.obj" \
    "$(INTDIR)\tpccldr.obj"

 "$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
    $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ENDIF

.c{$(CPP_OBJS)}.obj:
    $(CPP) $(CPP_PROJ) $<

.cpp{$(CPP_OBJS)}.obj:
    $(CPP) $(CPP_PROJ) $<

.cxx{$(CPP_OBJS)}.obj:
    $(CPP) $(CPP_PROJ) $<

.c{$(CPP_SBRs)}.sbr:
    $(CPP) $(CPP_PROJ) $<

.cpp{$(CPP_SBRs)}.sbr:
    $(CPP) $(CPP_PROJ) $<

.cxx{$(CPP_SBRs)}.sbr:
    $(CPP) $(CPP_PROJ) $<

#####
#####
# Begin Target

# Name "tpccldr - Win32 Release"
# Name "tpccldr - Win32 Debug"

!IF "$(CFG)" == "tpccldr - Win32 Release"

!ELSEIF "$(CFG)" == "tpccldr - Win32 Debug"

!ENDIF

#####
#####
# Begin Source File

SOURCE=. \src\random.c
DEP_CPP_RANDO= \
    ".\src\tpcc.h" \
    "\mssql\dblib\include\sqldb.h" \
    "\mssql\dblib\include\sqlfront.h"

```

```

 "$(INTDIR)\random.obj" : $(SOURCE) $(DEP_CPP_RANDO) "$(INTDIR)"
    $(CPP) $(CPP_PROJ) $(SOURCE)

# End Source File
#####
#####
# Begin Source File

SOURCE=. \src\strings.c
DEP_CPP_STRIN= \
    ".\src\tpcc.h" \
    "\mssql\dblib\include\sqldb.h" \
    "\mssql\dblib\include\sqlfront.h"

 "$(INTDIR)\strings.obj" : $(SOURCE) $(DEP_CPP_STRIN) "$(INTDIR)"
    $(CPP) $(CPP_PROJ) $(SOURCE)

# End Source File
#####
#####
# Begin Source File

SOURCE=. \src\time.c
DEP_CPP_TIME_ = \
    ".\src\tpcc.h" \
    "\mssql\dblib\include\sqldb.h" \
    "\mssql\dblib\include\sqlfront.h"

 "$(INTDIR)\time.obj" : $(SOURCE) $(DEP_CPP_TIME_) "$(INTDIR)"
    $(CPP) $(CPP_PROJ) $(SOURCE)

# End Source File
#####
#####
# Begin Source File

SOURCE=. \src\tpccldr.c
DEP_CPP_TPCCCL= \
    ".\src\tpcc.h" \
    "\mssql\dblib\include\sqldb.h" \
    "\mssql\dblib\include\sqlfront.h"

 "$(INTDIR)\tpccldr.obj" : $(SOURCE) $(DEP_CPP_TPCCCL) "$(INTDIR)"
    $(CPP) $(CPP_PROJ) $(SOURCE)

# End Source File
#####
#####
# Begin Source File

SOURCE=. \src\getargs.c
DEP_CPP_GETAR= \
    ".\src\tpcc.h" \
    "\mssql\dblib\include\sqldb.h" \
    "\mssql\dblib\include\sqlfront.h"

 "$(INTDIR)\getargs.obj" : $(SOURCE) $(DEP_CPP_GETAR) "$(INTDIR)"
    $(CPP) $(CPP_PROJ) $(SOURCE)

```

End Source File
End Target
End Project

#####

Appendix C: Tunable Parameters

Microsoft Windows 2000 Server Configuration Parameters

Server Configuration Parameters

Microsoft Windows 2000 Server Configuration
The following services were set as manual on the server:

- Alerter
- Computer Browser
- DHCP Client
- Distributed File System
- Distributed Link Tracking Client
- DNS Client
- IPSEC Policy Agent
- License Logging Service
- Messenger
- Print Spooler
- Remote Registry Service
- Removable Storage
- RUN as Service
- System Event Notification
- Task Scheduler

Microsoft SQL Server 2000 Startup Parameters

```
c:\Program Files\Microsoft SQL Server\MSSQL\Binn\sqlservr.exe -c -x -t3502 -g88
```

Where:

- c Start SQL Server independent of the Service Control Manager
- x Disable the keeping of CPU time and cache hit ratio statistics
- t3502 Writes a message to the SQL Server Errorlog showing the beginning and ending time of each checkpoint
- g88 Specifies the amount of memory that is set aside for allocations not from the buffer pool

Microsoft SQL Server 2000 Configuration Parameters

```
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11>
-- File:  VERSION.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Returns SQL Server version string
```

```
print " "
select convert(char(30), getdate(),9)
print " "
```

Nov 27 2002 9:32:20:200AM

(1 row affected)

```
1> 2> 3>
select @@version
```

```
-----
-----
-----
Microsoft SQL Server 2000 - 8.00.731 (Intel X86)
Oct 29 2002 15:55:27
Cop
yright (c) 1988-2002 Microsoft Corporation
Standard Edition on Windows
NT 5.0 (Build 2195: Service Pack 2)
```

```
(1 row affected)
1> 2>
1> 2> 3> 4> 5> 6> 7> 8> 9> 10>
-- File:  CONFIG.SQL
--      Microsoft TPC-C Benchmark Kit Ver. 4.22
--      Copyright Microsoft, 2001
-- Purpose: Collects SQL Server configuration parameters
```

```
print " "
select convert(char(30), getdate(),9)
print " "
```

Nov 27 2002 9:32:21:013AM

```
(1 row affected)

1> 2> 3> DBCC execution completed. If DBCC printed error messages, contact
your system administrator.
Configuration option 'show advanced options' changed from 1 to 1. Run the
RECONFIGURE statement to install.
```

```
sp_configure "show advanced",1
1> 2> reconfigure with override
1> 2> sp_configure
name                                minimum  maximum
config_value run_value
-----
affinity mask                        -2147483648 2147483647
3 3
allow updates                         0 1 0
0
awe enabled                           0 1 0
0
c2 audit mode                         0 1 0
0
cost threshold for parallelism        0 32767
5 5
Cross DB Ownership Chaining           0 1
0 0
cursor threshold                      -1 2147483647
-1 -1
default full-text language            0 2147483647
1033 1033
default language                       0 9999 0
0
fill factor (%)                       0 100 0
0
index create memory (KB)              704 2147483647
0 0
```

```

lightweight pooling          0    1    1
1
locks                        5000 2147483647    0
0
max degree of parallelism   0    32    0
0
max server memory (MB)      4 2147483647
2147483647 2147483647
max text repl size (B)     0 2147483647
65536 65536
max worker threads         32 32767
240 240
media retention            0    365    0
0
min memory per query (KB)  512 2147483647
512 512
min server memory (MB)     0 2147483647
0 0
nested triggers            0    1    1
1
network packet size (B)    512 65536
1024 1024
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
56 56
remote access               0    1    1
1
remote login timeout (s)   0 2147483647
20 20
remote proc trans           0    1    0
0
remote query timeout (s)   0 2147483647
600 600
scan for startup procs     0    1    0
0
set working set size       0    1    0
0
show advanced options      0    1    1
1
two digit year cutoff      1753 9999
2049 2049
user connections            0    32767    0
0
user options                0    32767
0 0
1>

```

Microsoft Windows 2000 Server System Information Report

System Information report written at: 11/29/2002 10:22:34 AM
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item Value

```

OS Name Microsoft Windows 2000 Server
Version 5.0.2195 Service Pack 2 Build 2195
OS Manufacturer Microsoft Corporation
System Name TPCC
System Manufacturer IBM
System Model -[8647kwo]-
System Type X86-based PC
Processor x86 Family 15 Model 2 Stepping 7 GenuineIntel ~37419 Mhz
Processor x86 Family 15 Model 2 Stepping 7 GenuineIntel ~37419 Mhz
BIOS Version )Phoenix - Award WorkstationBIOS v6.00PG
Windows Directory C:\WINNT
System Directory C:\WINNT\System32
Boot Device \Device\Harddisk0\Partition1
Locale United States
User NameTPCC\Administrator
Time ZoneEastern Standard Time
Total Physical Memory 2,620,904 KB
Available Physical Memory 2,381,284 KB
Total Virtual Memory 7,177,580 KB
Available Virtual Memory 6,857,624 KB
Page File Space 4,556,676 KB
Page File C:\pagefile.sys

```

[Hardware Resources]

[Following are sub-categories of this main category]

[Conflicts/Sharing]

```

Resource Device
IRQ 5 PCI Device
IRQ 5 Multimedia Audio Controller

```

[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
0x0000-0x0CF7 PCI bus OK
0x0000-0x0CF7 Direct memory access controller OK
0x0D00-0x40B7 PCI bus OK
0x40B9-0xFFFF PCI bus OK
0x9000-0x9FFF PCI standard PCI-to-PCI bridge OK
0x9000-0x9FFF PCI standard PCI-to-PCI bridge OK
0x9000-0x9FFF LSI Logic 1020/1030 Ultra320 SCSI Adapter
OK
0x9400-0x94FF LSI Logic 1020/1030 Ultra320 SCSI Adapter
OK
0xA000-0xA0FF ATI Technologies Inc. RAGE XL PCI OK
0x03B0-0x03BB ATI Technologies Inc. RAGE XL PCI OK
0x03C0-0x03DF ATI Technologies Inc. RAGE XL PCI OK
0x0A79-0x0A79 ISAPNP Read Data Port OK
0x0279-0x0279 ISAPNP Read Data Port OK
0x0274-0x0277 ISAPNP Read Data Port OK
0xF000-0xF00F 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

```

0x5000-0x501F	PCI Device	OK	
0xBC00-0xBCFF	Multimedia Audio Controller	OK	
0xC000-0xC03F	Multimedia Audio Controller	OK	
0x4000-0x40BF	Motherboard resources	OK	
0x0010-0x001F	Motherboard resources	OK	
0x0022-0x003F	Motherboard resources	OK	
0x0044-0x005F	Motherboard resources	OK	
0x0062-0x0063	Motherboard resources	OK	
0x0065-0x006F	Motherboard resources	OK	
0x0074-0x007F	Motherboard resources	OK	
0x0091-0x0093	Motherboard resources	OK	
0x00A2-0x00BF	Motherboard resources	OK	
0x00E0-0x00EF	Motherboard resources	OK	
0x04D0-0x04D1	Motherboard resources	OK	
0x0800-0x087F	Motherboard resources	OK	
0x0020-0x0021	Programmable interrupt controller	OK	OK
0x00A0-0x00A1	Programmable interrupt controller	OK	OK
0x0080-0x0090	Direct memory access controller	OK	
0x0094-0x009F	Direct memory access controller	OK	
0x00C0-0x00DF	Direct memory access controller	OK	
0x0040-0x0043	System timer	OK	
0x0070-0x0073	System CMOS/real time clock	OK	
0x0061-0x0061	System speaker	OK	
0x00F0-0x00FF	Numeric data processor	OK	
0x03F2-0x03F5	Standard floppy disk controller	OK	
0x03F7-0x03F7	Standard floppy disk controller	OK	
0x03F8-0x03FF	Communications Port (COM1)	OK	
0x02F8-0x02FF	Communications Port (COM2)	OK	
0x0378-0x037F	Printer Port (LPT1)	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	
0x40B8-0x40B8	IBM (Version 5.4) Automatic Server Restart	OK	

[IRQs]

IRQ Number	Device
9	Microsoft ACPI-Compliant System
48	Broadcom NetXtreme Gigabit Ethernet
52	Mylex AcceleRAID 352 Disk Array Controller
56	Mylex AcceleRAID 352 Disk Array Controller
24	Mylex AcceleRAID 352 Disk Array Controller
32	LSI Logic 1020/1030 Ultra320 SCSI Adapter
33	LSI Logic 1020/1030 Ultra320 SCSI Adapter
22	ATI Technologies Inc. RAGE XL PCI
15	Secondary IDE Channel
5	PCI Device
5	Multimedia Audio Controller
8	System CMOS/real time clock
13	Numeric data processor
6	Standard floppy disk controller
4	Communications Port (COM1)
3	Communications Port (COM2)
12	PS/2 Compatible Mouse
1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard

[Memory]

Range	Device	Status
0xC8000-0xCBFFF	System board	OK
0xCEC00-0xCFFFF	System board	OK
0xF0000-0xFBFFF	System board	OK
0xFC000-0xFFFFF	System board	OK
0x9FFF0000-0x9FFFFFFF	System board	OK
0x0000-0x9FFFF	System board	OK
0x100000-0x9FFEFF	System board	OK
0xFEC00000-0xFECFFFFF	System board	OK

0xFEE00000-0xFEEFFFFFFF	System board	OK
0xFFB00000-0xFFB7FFFF	System board	OK
0xFFFF0000-0xFFFFFFFFFF	System board	OK
0xE0000-0xEFFFFF	System board	OK
0xFFB80000-0xFFBFFFFFFF	Intel(r) 82802 Firmware Hub Device	OK
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	ATI Technologies Inc. RAGE XL PCI	OK
0xC0000-0xDFFFF	PCI bus	OK
0xA0000000-0xFEBFFFFFFF	PCI bus	OK
0xE4000000-0xE7FFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xEE000000-0xF2FFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xEE000000-0xF2FFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xE8000000-0xEDFFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xE8000000-0xEDFFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xE8000000-0xEDFFFFFFF	Mylex AcceleRAID 352 Disk Array Controller	OK
0xF2001000-0xF2001FFF	System Interrupt Controller	OK
0xEF000000-0xEF00FFFF	Broadcom NetXtreme Gigabit Ethernet	OK
0xEA000000-0xEBFFFFFFF	Mylex AcceleRAID 352 Disk Array Controller	OK
0xF2000000-0xF200FFF	System Interrupt Controller	OK
0xF0000000-0xF1FFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xEC000000-0xEDFFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xEC000000-0xEDFFFFFFF	Mylex AcceleRAID 352 Disk Array Controller	OK
0xF1000000-0xF100FFFF	LSI Logic 1020/1030 Ultra320 SCSI Adapter	OK
0xF1010000-0xF101FFFF	LSI Logic 1020/1030 Ultra320 SCSI Adapter	OK
0xF1020000-0xF102FFFF	LSI Logic 1020/1030 Ultra320 SCSI Adapter	OK
0xF1030000-0xF103FFFF	LSI Logic 1020/1030 Ultra320 SCSI Adapter	OK
0xF3000000-0xF3FFFFFFF	ATI Technologies Inc. RAGE XL PCI	OK
0xF5000000-0xF500FFF	ATI Technologies Inc. RAGE XL PCI	OK
0xFEBFFC00-0xFEBFFFFFFF	Standard Dual Channel PCI IDE Controller	OK
0xF6001000-0xF60011FF	Multimedia Audio Controller	OK
0xF6002000-0xF60020FF	Multimedia Audio 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.ax	Intel Corporation	Indeo® audio software	OK	
OK	C:\WINNT\System32\IAC25_32.AX	2.05.53	195.00 KB	
(199,680 bytes)	11/23/2002 6:52:53 AM			
c:\winnt\system32\msg723.acm	Microsoft Corporation		OK	
OK	C:\WINNT\System32\MSG723.ACM	4.4.3385	106.77 KB	
(109,328 bytes)	11/23/2002 6:53:12 AM			
c:\winnt\system32\lhacm.acm	Microsoft Corporation		OK	
OK	C:\WINNT\System32\LHACM.ACM	4.4.3385	33.27 KB	
(34,064 bytes)	11/23/2002 6:53:05 AM			
c:\winnt\system32\tssoft32.acm	DSP GROUP, INC.		OK	
OK	C:\WINNT\System32\TSSOFT32.ACM	1.01	9.27 KB (9,488 bytes)	
11/23/2002 6:53:44 AM				

```

c:\winnt\system32\msadp32.acm Microsoft Corporation
OK      C:\WINNT\System32\MSADP32.ACM  5.00.2134.1
14.77 KB (15,120 bytes)      11/23/2002 6:53:10 AM
c:\winnt\system32\msgsm32.acm Microsoft Corporation
OK      C:\WINNT\System32\MSGSM32.ACM  5.00.2134.1
22.27 KB (22,800 bytes)      11/23/2002 6:53:12 AM
c:\winnt\system32\msg711.acm Microsoft Corporation
OK      C:\WINNT\System32\MSG711.ACM  5.00.2134.1
10.27 KB (10,512 bytes)      11/23/2002 6:53:12 AM
c:\winnt\system32\imaadp32.acm Microsoft Corporation
OK      C:\WINNT\System32\IMAADP32.ACM  5.00.2134.1
16.27 KB (16,656 bytes)      11/23/2002 6:52:55 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	
73.75 KB (75,200 bytes)		11/23/2002 6:53:02 AM		
c:\winnt\system32\msh261.drv	Microsoft Corporation		OK	
167.696 KB (167,696 bytes)		11/23/2002 6:53:12 AM		
c:\winnt\system32\msh263.drv	Microsoft Corporation		OK	
252.27 KB (258,320 bytes)		11/23/2002 6:53:12 AM		
c:\winnt\system32\msvidc32.dll	Microsoft Corporation		OK	
27.27 KB (27,920 bytes)		11/23/2002 6:53:17 AM		
c:\winnt\system32\msrle32.dll	Microsoft Corporation		OK	
10.77 KB (11,024 bytes)		11/23/2002 6:53:16 AM		
c:\winnt\system32\ir32_32.dll	Intel(R) Corporation		OK	
194.50 KB (199,168 bytes)		11/23/2002 6:53:02 AM		
c:\winnt\system32\iccvid.dll	Radius Inc.		OK	
108.00 KB (110,592 bytes)		11/23/2002 6:52:54 AM		

[CD-ROM]

Item	Value
Drive	D:
Description	CD-ROM Drive
Media Loaded	False
Media Type	CD-ROM
Name	LITEON CD-ROM LTN486S
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available
SCSI Target ID	0
PNP Device ID	
IDE\CDROM\LITEON_CD-ROM_LTN486S	YUS5
_5&132E58B0&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_02401014&REV_274&1A671D0C&0&08F0	

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	800 x 600 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\3&13C0B0C5&0
NumberOfFunctionKeys	12

[Pointing Device]

Item	Value
Hardware Type	PS/2 Compatible Mouse
Number of Buttons	3
Status	OK
PNP Device ID	ACPI\PNP0F13\3&13C0B0C5&0
Power Management Supported	False
Double Click Threshold	6
Handedness	Right Handed Operation

[Modem]

Item	Value
No modems	

[Network]

[Following are sub-categories of this main category]

[Adapter]

Item	Value
Name	[00000000] RAS Async Adapter
Adapter Type	Not Available
Product Name	RAS Async Adapter
Installed	True
PNP Device ID	Not Available
Last Reset	11/29/2002 5:19:11 AM
Index	0
Service Name	AsyncMac
IP Address	Not Available
IP Subnet	Not Available
Default IP Gateway	Not Available
DHCP Enabled	False

DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Not Available

Name [00000001] WAN Miniport (L2TP)
Adapter Type Not Available
Product Name WAN Miniport (L2TP)
Installed True
PNP Device ID ROOT\MS_L2TPMINIPOINT\0000
Last Reset 11/29/2002 5:19:11 AM
Index 1
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Rasl2tp
Driver c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1)

Name [00000002] WAN Miniport (PPTP)
Adapter Type Wide Area Network (WAN)
Product Name WAN Miniport (PPTP)
Installed True
PNP Device ID ROOT\MS_PPTPMINIPOINT\0000
Last Reset 11/29/2002 5:19:11 AM
Index 2
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Service Name PptpMiniport
Driver c:\winnt\system32\drivers\rasptp.sys (47856, 5.00.2160.1)

Name [00000003] Direct Parallel
Adapter Type Not Available
Product Name Direct Parallel
Installed True
PNP Device ID ROOT\MS_PTIMINIPOINT\0000
Last Reset 11/29/2002 5:19:11 AM
Index 3
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Raspti
Driver c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1)

Name [00000004] WAN Miniport (IP)
Adapter Type Not Available
Product Name WAN Miniport (IP)
Installed True
PNP Device ID ROOT\MS_NDISWANIP\0000

Last Reset 11/29/2002 5:19:11 AM
Index 4
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name NdisWan
Driver c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779)

Name [00000005] 3Com 3C1000 Gigabit NIC
Adapter Type Not Available
Product Name 3Com 3C1000 Gigabit NIC
Installed True
PNP Device ID Not Available
Last Reset 11/29/2002 5:19:11 AM
Index 5
Service Name b57w2k
IP Address 192.168.132.252
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 00:10:DC:72:86:0B
Service Name Not Available

Name [00000006] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Ethernet 802.3
Product Name Broadcom NetXtreme Gigabit Ethernet
Installed True
PNP Device ID
PCI\VEN_14E4&DEV_16A7&SUBSYS_026F1014&REV_02\5&121CC7C2
&0&08E810
Last Reset 11/29/2002 5:19:11 AM
Index 6
Service Name b57w2k
IP Address 192.168.132.252
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 00:10:DC:72:86:0B
Service Name b57w2k
IRQ Number 48
Driver c:\winnt\system32\drivers\b57w2k.sys (78352, 2.78.0.0)

[Protocol]

Item	Value
Name	MSAFD Tcpip [TCP/IP]
ConnectionlessService	False
GuaranteesDelivery	True
GuaranteesSequencing	True
MaximumAddressSize	16 bytes
MaximumMessageSize	0 bytes
MessageOriented	False
MinimumAddressSize	16 bytes
PseudoStreamOriented	False
SupportsBroadcasting	False

SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData True
 SupportsGracefulClosing True
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD Tcpi [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_{64DC893E-9956-4B1E-8819-ECF5B2F40277}]
 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_{64DC893E-9956-4B1E-8819-ECF5B2F40277}]
 DATAGRAM 3
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{DFFC437E-0438-46D6-BF4D-0CDA840DD04B}]
 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_{DFFC437E-0438-46D6-BF4D-0CDA840DD04B}]
 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_{CD27EF5F-FFDD-4296-876F-228CAB8480D8}]
 SEQPACKET 1
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{CD27EF5F-FFDD-4296-876F-228CAB8480D8}]
 DATAGRAM 1
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{C2803871-3A42-4CBC-8E5C-4A2E8014D69A}]
 SEQPACKET 2
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{C2803871-3A42-4CBC-8E5C-4A2E8014D69A}]
 DATAGRAM 2
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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\wssock32.dll
Version	5.00.2195.2871
Size	21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item	Value
Name	COM1
Status	OK
PNP Device ID	ACPI\PNP0501\1
Maximum Input Buffer Size	0
Maximum Output Buffer Size	False
Settable Baud Rate	True
Settable Data Bits	True
Settable Flow Control	True
Settable Parity	True
Settable Parity Check	True
Settable Stop Bits	True
Settable RLSB	True
Supports RLSB	True
Supports 16 Bit Mode	False
Supports Special Characters	False
Baud Rate	9600
Bits/Byte	8
Stop Bits	1
Parity	None
Busy	0
Abort Read/Write on Error	0
Binary Mode Enabled	-1
Continue XMit on XOff	0
CTS Outflow Control	0
Discard NULL Bytes	0
DSR Outflow Control	0
DSR Sensitivity	0
DTR Flow Control Type	Enable

EOF Character 0
 Error Replace Character 0
 Error Replacement Enabled 0
 Event Character 0
 Parity Check Enabled 0
 RTS Flow Control Type Enable
 XOff Character 19
 XOffXMit Threshold 512
 XOn Character 17
 XOnXMit Threshold 2048
 XOnXOff InFlow Control 0
 XOnXOff OutFlow Control 0
 IRQ Number 4
 I/O Port 0x03F8-0x03FF
 Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

Name COM2
 Status OK
 PNP Device ID ACPI\PNP0501\2
 Maximum Input Buffer Size 0
 Maximum Output Buffer Size False
 Settable Baud Rate True
 Settable Data Bits True
 Settable Flow Control True
 Settable Parity True
 Settable Parity Check True
 Settable Stop Bits True
 Settable RLSD True
 Supports RLSD True
 Supports 16 Bit Mode False
 Supports Special Characters False
 Baud Rate 9600
 Bits/Byte 8
 Stop Bits 1
 Parity None
 Busy 0
 Abort Read/Write on Error 0
 Binary Mode Enabled -1
 Continue XMit on XOff 0
 CTS Outflow Control 0
 Discard NULL Bytes 0
 DSR Outflow Control 0
 DSR Sensitivity 0
 DTR Flow Control Type Enable
 EOF Character 0
 Error Replace Character 0
 Error Replacement Enabled 0
 Event Character 0
 Parity Check Enabled 0
 RTS Flow Control Type Enable
 XOff Character 19
 XOffXMit Threshold 512
 XOn Character 17
 XOnXMit Threshold 2048
 XOnXOff InFlow Control 0
 XOnXOff OutFlow Control 0
 IRQ Number 3
 I/O Port 0x02F8-0x02FF
 Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item Value
 Name LPT1
 PNP Device ID ACPI\PNP0400\3&13C0B0C5&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	16.94 GB (18,194,284,544 bytes)
Free Space	13.77 GB (14,781,427,712 bytes)
Volume Name	
Volume Serial Number	E4D23AFA
Partition Disk #0, Partition #0	
Partition Size	16.94 GB (18,194,287,104 bytes)
Starting Offset	32256 bytes
Drive Description	Disk drive
Drive Manufacturer	(Standard disk drives)
Drive Model	IBM-PSG ST318203LC !# 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 SCSTargetId	0
Drive SectorsPerTrack	63
Drive Size	18194319360 bytes
Drive TotalCylinders	2212
Drive TotalSectors	35535780
Drive TotalTracks	564060
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
Partition Disk #1, Partition #0	
Partition Size	68.32 GB (73,361,272,320 bytes)
Starting Offset	8225280 bytes
Drive Description	Disk drive
Drive Manufacturer	(Standard disk drives)
Drive Model	LSILOGIC 1030 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 SCSTargetId	4
Drive SectorsPerTrack	63
Drive Size	73369497600 bytes
Drive TotalCylinders	8920
Drive TotalSectors	143299800
Drive TotalTracks	2274600
Drive TracksPerCylinder	255

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
 Partition Disk #2, Partition #0
 Partition Size 237.00 GB (254,481,937,920 bytes)
 Starting Offset 8225280 bytes
 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 2
 Drive SCSI Bus 2
 Drive SCSI LogicalUnit 0
 Drive SCSI Port 4
 Drive SCSI TargetId 0
 Drive SectorsPerTrack 63
 Drive Size 254490163200 bytes
 Drive TotalCylinders 30940
 Drive TotalSectors 497051100
 Drive TotalTracks 7889700
 Drive TracksPerCylinder 255

Drive G:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available
 Partition Disk #2, Partition #0
 Partition Size 237.00 GB (254,481,937,920 bytes)
 Starting Offset 8225280 bytes
 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 2
 Drive SCSI Bus 2
 Drive SCSI LogicalUnit 0
 Drive SCSI Port 4
 Drive SCSI TargetId 0
 Drive SectorsPerTrack 63
 Drive Size 254490163200 bytes
 Drive TotalCylinders 30940
 Drive TotalSectors 497051100
 Drive TotalTracks 7889700
 Drive TracksPerCylinder 255

Drive H:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available
 Partition Disk #3, Partition #0
 Partition Size 355.51 GB (381,727,019,520 bytes)

Starting Offset 8225280 bytes
 Drive Description \\.\PHYSICALDRIVE3
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 3
 Drive SCSI Bus 2
 Drive SCSI LogicalUnit 0
 Drive SCSI Port 5
 Drive SCSI TargetId 0
 Drive SectorsPerTrack 63
 Drive Size 381735244800 bytes
 Drive TotalCylinders 46410
 Drive TotalSectors 745576650
 Drive TotalTracks 11834550
 Drive TracksPerCylinder 255

Drive I:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available
 Partition Disk #3, Partition #0
 Partition Size 355.51 GB (381,727,019,520 bytes)
 Starting Offset 8225280 bytes
 Drive Description \\.\PHYSICALDRIVE3
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 3
 Drive SCSI Bus 2
 Drive SCSI LogicalUnit 0
 Drive SCSI Port 5
 Drive SCSI TargetId 0
 Drive SectorsPerTrack 63
 Drive Size 381735244800 bytes
 Drive TotalCylinders 46410
 Drive TotalSectors 745576650
 Drive TotalTracks 11834550
 Drive TracksPerCylinder 255

Drive J:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available
 Partition Disk #4, Partition #0
 Partition Size 355.51 GB (381,727,019,520 bytes)
 Starting Offset 8225280 bytes
 Drive Description \\.\PHYSICALDRIVE4
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 3
 Drive SCSI Bus 2
 Drive SCSI LogicalUnit 0

Drive SCSIPort 6
 Drive SCSITargetId 0
 Drive SectorsPerTrack 63
 Drive Size 381735244800 bytes
 Drive TotalCylinders 46410
 Drive TotalSectors 745576650
 Drive TotalTracks 11834550
 Drive TracksPerCylinder 255

Drive K:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available
 Partition Disk #4, Partition #0
 Partition Size 355.51 GB (381,727,019,520 bytes)
 Starting Offset 8225280 bytes
 Drive Description \\.\PHYSICALDRIVE4
 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 2
 Drive SCSILogicalUnit 0
 Drive SCSIPort 6
 Drive SCSITargetId 0
 Drive SectorsPerTrack 63
 Drive Size 381735244800 bytes
 Drive TotalCylinders 46410
 Drive TotalSectors 745576650
 Drive TotalTracks 11834550
 Drive TracksPerCylinder 255

Drive Y:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 68.36 GB (73,402,363,904 bytes)
 Free Space 13.80 GB (14,814,588,928 bytes)
 Volume Name Backup_1
 Volume Serial Number 10400008
 Partition Disk #3, Partition #0
 Partition Size 355.51 GB (381,727,019,520 bytes)
 Starting Offset 8225280 bytes
 Drive Description \\.\PHYSICALDRIVE3
 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 2
 Drive SCSILogicalUnit 0
 Drive SCSIPort 5
 Drive SCSITargetId 0
 Drive SectorsPerTrack 63
 Drive Size 381735244800 bytes
 Drive TotalCylinders 46410
 Drive TotalSectors 745576650
 Drive TotalTracks 11834550
 Drive TracksPerCylinder 255

Drive Z:

Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 68.36 GB (73,402,363,904 bytes)
 Free Space 13.64 GB (14,650,978,304 bytes)
 Volume Name Backup_2
 Volume Serial Number BC8BC5EA
 Partition Disk #4, Partition #0
 Partition Size 355.51 GB (381,727,019,520 bytes)
 Starting Offset 8225280 bytes
 Drive Description \\.\PHYSICALDRIVE4
 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 2
 Drive SCSILogicalUnit 0
 Drive SCSIPort 6
 Drive SCSITargetId 0
 Drive SectorsPerTrack 63
 Drive Size 381735244800 bytes
 Drive TotalCylinders 46410
 Drive TotalSectors 745576650
 Drive TotalTracks 11834550
 Drive TracksPerCylinder 255

Drive L:
 Description Network Connection
 Provider Name \\Rtemaster\edrive

[SCSI]

Item	Value
Name	Mylex AcceleRAID 352 Disk Array Controller
Caption	Mylex AcceleRAID 352 Disk Array Controller
Driver	dac2w2k
Status	OK
PNP Device ID	PCI\VEN_1069&DEV_0050&SUBSYS_00501069&REV_02\5&121CC7C2&0&10E810
Device ID	PCI\VEN_1069&DEV_0050&SUBSYS_00501069&REV_02\5&121CC7C2&0&10E810
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	52
Driver	c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)
Name	Mylex AcceleRAID 352 Disk Array Controller
Caption	Mylex AcceleRAID 352 Disk Array Controller
Driver	dac2w2k
Status	OK
PNP Device ID	PCI\VEN_1069&DEV_0050&SUBSYS_00501069&REV_02\5&121CC7C2&0&18E810
Device ID	PCI\VEN_1069&DEV_0050&SUBSYS_00501069&REV_02\5&121CC7C2&0&18E810
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	56
Driver	c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name Mylex AcceleRAID 352 Disk Array Controller
Caption Mylex AcceleRAID 352 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_0050&SUBSYS_00501069&REV_02\5&21593F33&0
&08F810
Device ID
PCI\VEN_1069&DEV_0050&SUBSYS_00501069&REV_02\5&21593F33&0
&08F810
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 24
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name LSI Logic 1020/1030 Ultra320 SCSI Adapter
Caption LSI Logic 1020/1030 Ultra320 SCSI Adapter
Driver SYMMPI
Status OK
PNP Device ID
PCI\VEN_1000&DEV_0030&SUBSYS_10001000&REV_07\5&21593F33&0
&18F810
Device ID
PCI\VEN_1000&DEV_0030&SUBSYS_10001000&REV_07\5&21593F33&0
&18F810
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 32
I/O Port 0x9000-0x9FFF
Driver c:\winnt\system32\drivers\symmpi.sys (37840, 1.08.16.00)

Name LSI Logic 1020/1030 Ultra320 SCSI Adapter
Caption LSI Logic 1020/1030 Ultra320 SCSI Adapter
Driver SYMMPI
Status OK
PNP Device ID
PCI\VEN_1000&DEV_0030&SUBSYS_10001000&REV_07\5&21593F33&0
&19F810
Device ID
PCI\VEN_1000&DEV_0030&SUBSYS_10001000&REV_07\5&21593F33&0
&19F810
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 33
I/O Port 0x9400-0x94FF
Driver c:\winnt\system32\drivers\symmpi.sys (37840, 1.08.16.00)

[Printing]

Name Port Name Server Name
No printing information

[Problem Devices]

Device PNP Device ID Error Code
System Interrupt Controller
PCI\VEN_8086&DEV_1461&SUBSYS_00000000&REV_03\4&4E4AD31&0
&E010 1
System Interrupt Controller
PCI\VEN_8086&DEV_1461&SUBSYS_00000000&REV_03\4&4E4AD31&0
&F010 1
PCI Device
PCI\VEN_8086&DEV_24C3&SUBSYS_027A1014&REV_02\3&13C0B0C5
&0&FB 28

Multimedia Audio Controller
PCI\VEN_8086&DEV_24C5&SUBSYS_027A1014&REV_02\3&13C0B0C5
&0&FD 1

[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	Accept Stop
abiosdsk	Abiosdsk	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Ignore	False	False
abp480n5	abp480n5	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
acpi	Microsoft ACPI Driver	c:\winnt\system32\drivers\acpi.sys	Kernel Driver	Running	OK
Kernel Driver	True	Boot	Running	OK	Normal
False	True				
acpiec	ACPIEC	c:\winnt\system32\drivers\acpiec.sys	Kernel Driver	False	False
Driver	False	Disabled	Stopped	OK	Normal
False					
adpu160m	adpu160m	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
afd	AFD Networking Support Environment		Kernel Driver	True	Auto
c:\winnt\system32\drivers\afd.sys	Kernel Driver		Running	OK	Normal
Normal	False	True			
aha154x	Aha154x	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
aic116x	aic116x	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
aic78u2	aic78u2	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
aic78xx	aic78xx	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
ami0nt	ami0nt	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
amsint	amsint	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
asc	asc	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
asc3350p	asc3350p	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
asc3550	asc3550	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Normal	False	False
asynmac	RAS Asynchronous Media Driver		Kernel Driver	False	False
c:\winnt\system32\drivers\asynmac.sys	Kernel Driver		Manual	Stopped	OK
Normal	False	False			
atapi	Standard IDE/ESDI Hard Disk Controller		Kernel Driver	True	True
c:\winnt\system32\drivers\atapi.sys	Kernel Driver		Boot	Running	OK
Normal	False	True			
atdisk	Atdisk	Not Available	Kernel Driver	False	False
Disabled	Stopped	OK	Ignore	False	False
atirage3	atirage3	c:\winnt\system32\drivers\atimpab.sys	Kernel Driver	True	True
Driver	True	Manual	Running	OK	Ignore
True					
atmarpc	ATM ARP Client Protocol		Kernel Driver	False	False
c:\winnt\system32\drivers\atmarpc.sys	Kernel Driver		Manual	Stopped	OK
Normal	False	False			
audstub	Audio Stub Driver	c:\winnt\system32\drivers\audstub.sys	Kernel Driver	True	Manual
Kernel Driver	True	Manual	Running	OK	Normal
False	True				

b57w2k	Broadcom NetXtreme Gigabit Ethernet								flashpnt	flashpnt	Not Available		Kernel Driver	False
c:\winnt\system32\drivers\b57w2k.sys	Kernel Driver	True							Disabled	Stopped	OK	Normal	False	False
Manual	Running	OK	Normal	False	True				flpydisk	Floppy Disk Driver	c:\winnt\system32\drivers\flpydisk.sys		Kernel Driver	Normal
beep	Beep	c:\winnt\system32\drivers\beep.sys	Kernel Driver	True					False	True				
Driver	True	System	Running	OK	Normal	False			ftdisk	Volume Manager Driver				
True									c:\winnt\system32\drivers\ftdisk.sys	Kernel Driver			Kernel Driver	True
buslogic	BusLogic	Not Available		Kernel Driver	False				Boot	Running	OK	Normal	False	True
Disabled	Stopped	OK	Normal	False	False				gamdrv	gamdrv	c:\winnt\system32\drivers\gamdrv.sys		Kernel Driver	False
cd20xrnt	cd20xrnt	Not Available		Kernel Driver	False				Driver	True	Boot	Running	OK	Normal
Disabled	Stopped	OK	Normal	False	False				True					
cdaudio	Cdaudio	c:\winnt\system32\drivers\cdaudio.sys	Kernel Driver	False					gpc	Generic Packet Classifier				
Driver	False	System	Stopped	OK	Ignore	False			c:\winnt\system32\drivers\msgpc.sys	Kernel Driver			Kernel Driver	True
False									Manual	Running	OK	Normal	False	True
cdfs	Cdfs	c:\winnt\system32\drivers\cdfs.sys	File System	True					i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver				
Driver	True	Disabled	Running	OK	Normal	False			c:\winnt\system32\drivers\i8042prt.sys	Kernel Driver			Kernel Driver	True
True									System	Running	OK	Normal	False	True
cdrom	CD-ROM Driver	c:\winnt\system32\drivers\cdrom.sys	Kernel Driver	True	System	Running	OK	Normal	ibmbspw	IBM (Version 5.4) Automatic Server Restart				
False	True								c:\winnt\system32\drivers\ibmbspw.sys	Kernel Driver			Kernel Driver	True
changer	Changer	Not Available		Kernel Driver	False				Manual	Running	OK	Normal	False	True
System	Stopped	OK	Ignore	False	False				ini910u	ini910u	Not Available		Kernel Driver	False
cpqarray	Cpqarray	Not Available		Kernel Driver	False				Disabled	Stopped	OK	Normal	False	False
Disabled	Stopped	OK	Normal	False	False				intelide	IntelIde	Not Available		Kernel Driver	False
cpqarray2	cpqarray2	Not Available		Kernel Driver	False				Disabled	Stopped	OK	Normal	False	False
Disabled	Stopped	OK	Normal	False	False				ipfilterdriver	IP Traffic Filter Driver				
cpqfcalm	cpqfcalm	Not Available		Kernel Driver	False				c:\winnt\system32\drivers\ipfltdrv.sys	Kernel Driver			Kernel Driver	False
Disabled	Stopped	OK	Normal	False	False				Manual	Stopped	OK	Normal	False	False
cpqfws2e	cpqfws2e	Not Available		Kernel Driver	False				ipinip	IP in IP Tunnel Driver	c:\winnt\system32\drivers\ipinip.sys		Kernel Driver	Normal
Disabled	Stopped	OK	Normal	False	False				False	False	Manual	Stopped	OK	Normal
dac2w2k	dac2w2k	c:\winnt\system32\drivers\dac2w2k.sys	Kernel Driver	True	Boot	Running	OK	Normal	False	False				
Driver	True	Boot	Running	OK	Normal	False			ipnat	IP Network Address Translator	c:\winnt\system32\drivers\ipnat.sys		Kernel Driver	Normal
True									False	False	False	Manual	Stopped	OK
dac960nt	dac960nt	Not Available		Kernel Driver	False				ipsec	IPSEC driver	c:\winnt\system32\drivers\ipsec.sys		Kernel Driver	Normal
Disabled	Stopped	OK	Normal	False	False				False	False				
deckzpsx	deckzpsx	Not Available		Kernel Driver	False				ipsraidn	ipsraidn	Not Available		Kernel Driver	False
Disabled	Stopped	OK	Normal	False	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				
True	Boot	Running	OK	Normal	False	True			isapnp	PnP ISA/EISA Bus Driver				
disk	Disk Driver	c:\winnt\system32\drivers\disk.sys	Kernel Driver	True	Boot	Running	OK	Normal	c:\winnt\system32\drivers\isapnp.sys	Kernel Driver			Kernel Driver	True
Kernel Driver	True	Boot	Running	OK	Normal	False			Boot	Running	OK	Critical	False	True
False	True								kbdclass	Keyboard Class Driver				
diskperf	Diskperf	c:\winnt\system32\drivers\diskperf.sys	Kernel Driver	False	Disabled	Stopped	OK	Normal	c:\winnt\system32\drivers\kbdclass.sys	Kernel Driver			Kernel Driver	True
Driver	False	Disabled	Stopped	OK	Normal	False			System	Running	OK	Normal	False	True
False									ksecdd	KSecDD	c:\winnt\system32\drivers\ksecdd.sys		Kernel Driver	False
dmboot	dmboot	c:\winnt\system32\drivers\dmboot.sys	Kernel Driver	False	Disabled	Stopped	OK	Normal	Driver	True	Boot	Running	OK	Normal
Driver	False	Disabled	Stopped	OK	Normal	False			True					
False									lbrtfdc	lbrtfdc	Not Available		Kernel Driver	False
dmio	Logical Disk Manager Driver								System	Stopped	OK	Ignore	False	False
c:\winnt\system32\drivers\dmio.sys	Kernel Driver	True							lp6nds35	lp6nds35	Not Available		Kernel Driver	False
Boot	Running	OK	Normal	False	True				Disabled	Stopped	OK	Normal	False	False
dmload	dmload	c:\winnt\system32\drivers\dmload.sys	Kernel Driver	True	Boot	Running	OK	Normal	macdisk	macdisk	c:\winnt\system32\drivers\mac2w2k.sys		Kernel Driver	False
Driver	True	Boot	Running	OK	Normal	False			Driver	True	Boot	Running	OK	Normal
True									True					
efs	EFS	c:\winnt\system32\drivers\efs.sys	File System Driver	True	Disabled	Running	OK	Normal	False	True				
True	Disabled	Running	OK	Normal	False	True			mnmdd	mnmdd	c:\winnt\system32\drivers\mnmdd.sys		Kernel Driver	False
fastfat	Fastfat	c:\winnt\system32\drivers\fastfat.sys	File System	Driver	True	Disabled	Running	OK	Normal	False				
Driver	True	Disabled	Running	OK	Normal	False			True					
True									modem	Modem	c:\winnt\system32\drivers\modem.sys		Kernel Driver	False
fd16_700	Fd16_700	Not Available		Kernel Driver	False				Driver	False	Manual	Stopped	OK	Ignore
Disabled	Stopped	OK	Normal	False	False				False					
fdc	Floppy Disk Controller Driver	c:\winnt\system32\drivers\fdc.sys	Kernel Driver	False	True	Manual	Running	OK	Normal					
Kernel Driver	True	Manual	Running	OK	Normal	False			mouclass	Mouse Class Driver	c:\winnt\system32\drivers\mouclass.sys		Kernel Driver	Normal
False	True								False	True				
fips	Fips	c:\winnt\system32\drivers\fips.sys	Kernel Driver	True	Auto	Running	OK	Normal	mountmgr	MountMgr	c:\winnt\system32\drivers\mountmgr.sys		Kernel Driver	False
Driver	True	Auto	Running	OK	Normal	False			Driver	True	Boot	Running	OK	Normal
True									True					
fireport	fireport	Not Available		Kernel Driver	False				mraid35x	mraid35x	Not Available		Kernel Driver	False
Disabled	Stopped	OK	Normal	False	False				Disabled	Stopped	OK	Normal	False	False

mrxsmbr	MRXSMB	c:\winnt\system32\drivers\mrxsmbr.sys	File System	Driver	True	System	Running	OK	Normal	False	pci	PCI Bus Driver	c:\winnt\system32\drivers\pci.sys	Kernel Driver	True	Boot	Running	OK	Critical	False	
msfs	Msfs	c:\winnt\system32\drivers\msfs.sys	File System	Driver	True	System	Running	OK	Normal	False	pcidump	PCIDump	Not Available	Kernel Driver	True	Stopped	OK	Ignore	False	False	
mskssrv	Microsoft Streaming Service Proxy	c:\winnt\system32\drivers\mskssrv.sys	Kernel Driver	Manual	Stopped	OK	Normal	False	False	False	pciide	PCIIDE	c:\winnt\system32\drivers\pciide.sys	Kernel Driver	True	Boot	Running	OK	Normal	False	
mspclock	Microsoft Streaming Clock Proxy	c:\winnt\system32\drivers\mspclock.sys	Kernel Driver	Manual	Stopped	OK	Normal	False	False	False	pcmcia	Pcmcia	c:\winnt\system32\drivers\pcmcia.sys	Kernel Driver	False	Disabled	Stopped	OK	Normal	False	
mspqm	Microsoft Streaming Quality Manager Proxy	c:\winnt\system32\drivers\mspqm.sys	Kernel Driver	Manual	Stopped	OK	Normal	False	False	False	pdcomp	PDCOMP	Not Available	Kernel Driver	Manual	Stopped	OK	Ignore	False	False	
mup	Mup	c:\winnt\system32\drivers\mup.sys	File System	Driver	True	Boot	Running	OK	Normal	False	pdframe	PDFRAME	Not Available	Kernel Driver	False	Manual	Stopped	OK	Ignore	False	False
nrc710	Nrc710	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	False	pdreli	PDRELI	Not Available	Kernel Driver	Manual	Stopped	OK	Ignore	False	False	
ndis	NDIS System Driver	c:\winnt\system32\drivers\ndis.sys	Kernel Driver	False	True	Boot	Running	OK	Normal	False	pdframe	PDFRAME	Not Available	Kernel Driver	False	Manual	Stopped	OK	Ignore	False	False
ndistapi	Remote Access NDIS TAPI Driver	c:\winnt\system32\drivers\ndistapi.sys	Kernel Driver	Manual	Running	OK	Normal	False	True	True	pptpminiport	WAN Miniport (PPTP)	c:\winnt\system32\drivers\rasppptp.sys	Kernel Driver	Manual	Running	OK	Normal	False	True	
ndiswan	Remote Access NDIS WAN Driver	c:\winnt\system32\drivers\ndiswan.sys	Kernel Driver	Manual	Running	OK	Normal	False	True	True	ptilink	Direct Parallel Link Driver	c:\winnt\system32\drivers\ptilink.sys	Kernel Driver	Manual	Running	OK	Normal	False	True	
ndproxy	NDIS Proxy	c:\winnt\system32\drivers\ndproxy.sys	Kernel Driver	False	True	Manual	Running	OK	Normal	False	q11080	q11080	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
netbios	NetBIOS Interface	c:\winnt\system32\drivers\netbios.sys	File System	Driver	True	System	Running	OK	Normal	False	q110wnt	Q110wnt	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
netbt	NetBios over Tcpip	c:\winnt\system32\drivers\netbt.sys	Kernel Driver	False	True	System	Running	OK	Normal	False	q11240	q11240	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
netdetect	NetDetect	c:\winnt\system32\drivers\netdetect.sys	Kernel Driver	False	Manual	Stopped	OK	Normal	False	False	q12100	q12100	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
npfs	Npfs	c:\winnt\system32\drivers\npfs.sys	File System	Driver	True	System	Running	OK	Normal	False	rasacd	Remote Access Auto Connection Driver	c:\winnt\system32\drivers\rasacd.sys	Kernel Driver	System	Running	OK	Normal	False	True	
ntfs	Ntfs	c:\winnt\system32\drivers\ntfs.sys	File System	Driver	True	Disabled	Running	OK	Normal	False	rasl2tp	WAN Miniport (L2TP)	c:\winnt\system32\drivers\rasl2tp.sys	Kernel Driver	Manual	Running	OK	Normal	False	True	
null	Null	c:\winnt\system32\drivers\null.sys	Kernel Driver	True	System	Running	OK	Normal	False	False	raspti	Direct Parallel	c:\winnt\system32\drivers\raspti.sys	Kernel Driver	False	True	True	Manual	Running	OK	Normal
nwlkflt	IPX Traffic Filter Driver	c:\winnt\system32\drivers\nwlkflt.sys	Kernel Driver	Manual	Stopped	OK	Normal	False	False	False	rca	Microsoft Streaming Network Raw Channel Access	c:\winnt\system32\drivers\rca.sys	Kernel Driver	Stopped	OK	Normal	False	False	Manual	
nwlkfld	IPX Traffic Forwarder Driver	c:\winnt\system32\drivers\nwlkfld.sys	Kernel Driver	Manual	Stopped	OK	Normal	False	False	False	rdbss	Rdbss	c:\winnt\system32\drivers\rdbss.sys	File System	Driver	True	System	Running	OK	Normal	False
parallel	Parallel class driver	c:\winnt\system32\drivers\parallel.sys	Kernel Driver	False	True	Manual	Running	OK	Normal	False	rdpwd	RDPWD	c:\winnt\system32\drivers\rdpwd.sys	Kernel Driver	False	Manual	Stopped	OK	Ignore	False	
parport	Parallel port driver	c:\winnt\system32\drivers\parport.sys	Kernel Driver	False	True	System	Running	OK	Ignore	False	redbook	Digital CD Audio Playback Filter Driver	c:\winnt\system32\drivers\redbook.sys	Kernel Driver	System	Stopped	OK	Normal	False	False	
partmgr	PartMgr	c:\winnt\system32\drivers\partmgr.sys	Kernel Driver	True	Boot	Running	OK	Normal	False	False	serenum	Serenum Filter Driver	c:\winnt\system32\drivers\serenum.sys	Kernel Driver	False	True	Manual	Running	OK	Normal	
parvdm	ParVdm	c:\winnt\system32\drivers\parvdm.sys	Kernel Driver	True	Auto	Running	OK	Ignore	False	False	serial	Serial port driver	c:\winnt\system32\drivers\serial.sys	Kernel Driver	False	True	System	Running	OK	Ignore	
											sfloppy	Sfloppy	c:\winnt\system32\drivers\sfloppy.sys	Kernel Driver	False	System	Stopped	OK	Ignore	False	
											sglfb	sglfb	Not Available	Kernel Driver	System	Stopped	OK	Normal	False	False	
											simbad	Simbad	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	

sparrow	Sparrow	Not Available		Kernel Driver	False	
Disabled	Stopped	OK	Normal	False	False	
spud	Special Purpose Utility Driver			c:\winnt\system32\drivers\spud.sys		
Kernel Driver	True	Manual	Running	OK	Normal	
False	True					
srv	Srv	c:\winnt\system32\drivers\srvs.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	
symmpi	symmpi	c:\winnt\system32\drivers\symmpi.sys		Kernel		
Driver	True	Boot	Running	OK	Normal	False
True						
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				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						
uhcd	Microsoft USB Universal Host Controller Driver			c:\winnt\system32\drivers\uhcd.sys		
Kernel Driver				Kernel Driver	False	
Manual	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				Kernel Driver	True	
Manual	Running	OK	Normal	False	True	
usbhub	Microsoft USB Standard Hub Driver			c:\winnt\system32\drivers\usbhub.sys		
Kernel Driver				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				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	2	<SYSTEM>
OS	Windows_NT	<SYSTEM>
Os2LibPath	%SystemRoot%\system32\os2\dll;Path	<SYSTEM>
Path	%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;C:\Program Files\Microsoft SQL Server\MSSQL\BINN;C:\Program Files\Microsoft SQL Server\80\Tools\BINN	<SYSTEM>
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH	<SYSTEM>
PROCESSOR_ARCHITECTURE	x86	<SYSTEM>
PROCESSOR_IDENTIFIER	x86 Family 15 Model 2 Stepping 7, GenuineIntel	<SYSTEM>
PROCESSOR_LEVEL	15	<SYSTEM>
PROCESSOR_REVISION	0207	<SYSTEM>
TEMP	%SystemRoot%\TEMP	<SYSTEM>
TMP	%SystemRoot%\TEMP	<SYSTEM>
windir	%SystemRoot%	<SYSTEM>
TEMP	%USERPROFILE%\Local Settings\Temp	TPCC\Administrator
TMP	%USERPROFILE%\Local Settings\Temp	TPCC\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	Unknown	Unknown	Unknown

[Network Connections]

Local Name	Remote Name	Type	Status	User Name
L:	\\Rtemaster\edrive	Disk	OK	TPCC\Administrator

[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set	Max
Working Set	Start Time	Version	Size	File Date	
system	idle process	Not Available	0	0	Not
Available	Not Available	Not Available	Unknown	Unknown	Unknown
system	Not Available	8	8	0	1413120
Not Available	Unknown	Unknown	Unknown		
smss.exe	c:\winnt\system32\smss.exe	160	11	204800	
1413120	11/29/2002 10:19:35 AM	5.00.2195.2901	44.27 KB		
(45,328 bytes)	12/7/1999 7:00:00 AM				
csrss.exe	Not Available	188	13	Not Available	
Not Available	11/29/2002 10:19:38 AM	Unknown	Unknown		
Unknown					
winlogon.exe	c:\winnt\system32\winlogon.exe	208	13		
204800	1413120	11/29/2002 10:19:40 AM	5.00.2195.2953		
173.77 KB (177,936 bytes)	12/7/1999 7:00:00 AM				
services.exe	c:\winnt\system32\services.exe	236	9		
204800	1413120	11/29/2002 10:19:40 AM	5.00.2195.2780		
86.77 KB (88,848 bytes)	12/7/1999 7:00:00 AM				
lsass.exe	c:\winnt\system32\lsass.exe	248	9	204800	
1413120	11/29/2002 10:19:40 AM	5.00.2195.2964	32.77 KB		
(33,552 bytes)	12/7/1999 7:00:00 AM				

svchost.exe	c:\winnt\system32\svchost.exe	412	8	localsec.dll	5.00.2195.2130	230.27 KB (235,792 bytes)	
204800	1413120	11/29/2002 10:19:43 AM	5.00.2134.1	11/23/2002 10:21:40 AM		Microsoft Corporation	
7.77 KB (7,952 bytes)		11/23/2002 6:53:42 AM		c:\winnt\system32\localsec.dll			
msdtc.exe	c:\winnt\system32\msdtc.exe	448	8	devmgr.dll	5.00.2166.1	215.77 KB (220,944 bytes)	11/23/2002
1413120	11/29/2002 10:19:44 AM	1999.9.3421.3	6.77 KB	6:51:09 AM		Microsoft Corporation	
(6,928 bytes)		11/23/2002 6:53:10 AM		c:\winnt\system32\devmgr.dll			
svchost.exe	c:\winnt\system32\svchost.exe	580	8	filemgmt.dll	5.00.2195.2165	287.27 KB (294,160 bytes)	
204800	1413120	11/29/2002 10:19:48 AM	5.00.2134.1	11/23/2002 10:21:37 AM		Microsoft Corporation	
7.77 KB (7,952 bytes)		11/23/2002 6:53:42 AM		c:\winnt\system32\filemgmt.dll			
rsvp.exe	c:\winnt\system32\rsvp.exe	604	8	pdh.dll	5.00.2195.2739	147.77 KB (151,312 bytes)	11/23/2002
1413120	11/29/2002 10:19:48 AM	5.00.2167.1	172.77 KB	10:21:50 AM		Microsoft Corporation	
(176,912 bytes)		11/23/2002 6:53:35 AM		c:\winnt\system32\pdh.dll			
raidserv.exe	c:\program files\raidman\raidserv.exe	628	8	smlogcfg.dll	5.00.2195.2485	273.27 KB (279,824 bytes)	
204800	1413120	11/29/2002 10:19:48 AM	5.10.21	11/23/2002 10:21:53 AM		Microsoft Corporation	
(40,960 bytes)		6/17/2002 6:33:18 PM		c:\winnt\system32\smlogcfg.dll			
tcpsvcs.exe	c:\winnt\system32\tcpsvcs.exe	652	8	cabinet.dll	5.00.2147.1	54.77 KB (56,080 bytes)	11/23/2002
204800	1413120	11/29/2002 10:19:49 AM	5.00.2134.1	6:50:52 AM		Microsoft Corporation	
24.77 KB (25,360 bytes)		11/23/2002 6:53:43 AM		c:\winnt\system32\cabinet.dll			
winmgmt.exe	c:\winnt\system32\wbem\winmgmt.exe	664	8	msinfo32.dll	5.00.2177.1	312.27 KB (319,760 bytes)	
204800	1413120	11/29/2002 10:19:49 AM	1.50.1085.0029	11/23/2002 6:47:23 AM		Microsoft Corporation	c:\program
192.08 KB (196,685 bytes)		11/23/2002 10:22:00 AM		files\common files\microsoft shared\msinfo\msinfo32.dll			
inetinfo.exe	c:\winnt\system32\inetinfo.exe	740	8	riched20.dll	5.30.23.1205	421.27 KB (431,376 bytes)	
204800	1413120	11/29/2002 10:19:52 AM	5.00.0984	11/23/2002 10:21:51 AM		Microsoft Corporation	
(14,608 bytes)		11/23/2002 6:52:59 AM		c:\winnt\system32\riched20.dll			
svchost.exe	c:\winnt\system32\svchost.exe	1008	8	riched32.dll	5.00.2134.1	3.77 KB (3,856 bytes)	11/23/2002
204800	1413120	11/29/2002 10:20:10 AM	5.00.2134.1	6:53:34 AM		Microsoft Corporation	
7.77 KB (7,952 bytes)		11/23/2002 6:53:42 AM		c:\winnt\system32\riched32.dll			
explorer.exe	c:\winnt\explorer.exe	688	8	els.dll	5.00.2175.1	151.27 KB (154,896 bytes)	11/23/2002
1413120	11/29/2002 10:20:35 AM	5.00.3315.2846	237.27 KB	6:52:47 AM		Microsoft Corporation	
(242,960 bytes)		11/23/2002 10:21:57 AM		c:\winnt\system32\els.dll			
mmc.exe	c:\winnt\system32\mmc.exe	468	8	ntmsmgr.dll	1,0,0,1	427.77 KB (438,032 bytes)	11/23/2002
1413120	11/29/2002 10:20:46 AM	5.00.2195.2301	589.27 KB	6:53:26 AM		Microsoft Corporation and HighGround Systems, Inc.	
(603,408 bytes)		11/23/2002 10:21:40 AM		c:\winnt\system32\ntmsmgr.dll			
mdm.exe	c:\winnt\system32\mdm.exe	1048	8	mmfutil.dll	1.50.1085.0000	32.06 KB (32,829 bytes)	11/23/2002
1413120	11/29/2002 10:20:54 AM	6.00.8424	121.29 KB (124,200 bytes)	6:53:09 AM		Microsoft Corporation	
bytes)		11/23/2002 6:53:07 AM		c:\winnt\system32\mmfutil.dll			

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer	Path
mdm.exe	6.00.8424	121.29 KB (124,200 bytes)	11/23/2002 6:53:07 AM	Microsoft Corporation	c:\winnt\system32\mdm.exe
wbemprox.dll	1.50.1085.0045	40.08 KB (41,040 bytes)	11/23/2002 10:22:00 AM	Microsoft Corporation	c:\winnt\system32\wbem\wbemprox.dll
faxshell.dll	5.00.2134.1	8.27 KB (8,464 bytes)	11/23/2002 6:52:50 AM	Microsoft Corporation	c:\winnt\system32\faxshell.dll
msacm32.dll	5.00.2134.1	65.27 KB (66,832 bytes)	11/23/2002 6:53:10 AM	Microsoft Corporation	c:\winnt\system32\msacm32.dll
avifil32.dll	5.00.2134.1	76.27 KB (78,096 bytes)	11/23/2002 6:50:51 AM	Microsoft Corporation	c:\winnt\system32\avifil32.dll
msvfw32.dll	5.00.2134.1	113.77 KB (116,496 bytes)	11/23/2002 6:53:17 AM	Microsoft Corporation	c:\winnt\system32\msvfw32.dll
docprop2.dll	5.00.2178.1	297.77 KB (304,912 bytes)	11/23/2002 6:52:38 AM	Microsoft Corporation	c:\winnt\system32\docprop2.dll
rassapi.dll	5.00.2188.1	14.27 KB (14,608 bytes)	11/23/2002 6:53:33 AM	Microsoft Corporation	c:\winnt\system32\rassapi.dll
adsnt.dll	5.00.2195.2778	195.27 KB (199,952 bytes)	11/23/2002 10:21:32 AM	Microsoft Corporation	c:\winnt\system32\adsnt.dll
dbghelp.dll	5.00.2195.2104	159.27 KB (163,088 bytes)	5/4/2001 1:05:02 PM	Microsoft Corporation	c:\winnt\system32\dbghelp.dll
localsec.dll	5.00.2195.2130	230.27 KB (235,792 bytes)	11/23/2002 10:21:40 AM	Microsoft Corporation	c:\winnt\system32\localsec.dll
devmgr.dll	5.00.2166.1	215.77 KB (220,944 bytes)	11/23/2002 6:51:09 AM	Microsoft Corporation	c:\winnt\system32\devmgr.dll
filemgmt.dll	5.00.2195.2165	287.27 KB (294,160 bytes)	11/23/2002 10:21:37 AM	Microsoft Corporation	c:\winnt\system32\filemgmt.dll
pdh.dll	5.00.2195.2739	147.77 KB (151,312 bytes)	11/23/2002 10:21:50 AM	Microsoft Corporation	c:\winnt\system32\pdh.dll
smlogcfg.dll	5.00.2195.2485	273.27 KB (279,824 bytes)	11/23/2002 10:21:53 AM	Microsoft Corporation	c:\winnt\system32\smlogcfg.dll
cabinet.dll	5.00.2147.1	54.77 KB (56,080 bytes)	11/23/2002 6:50:52 AM	Microsoft Corporation	c:\winnt\system32\cabinet.dll
msinfo32.dll	5.00.2177.1	312.27 KB (319,760 bytes)	11/23/2002 6:47:23 AM	Microsoft Corporation	c:\program files\common files\microsoft shared\msinfo\msinfo32.dll
riched20.dll	5.30.23.1205	421.27 KB (431,376 bytes)	11/23/2002 10:21:51 AM	Microsoft Corporation	c:\winnt\system32\riched20.dll
riched32.dll	5.00.2134.1	3.77 KB (3,856 bytes)	11/23/2002 6:53:34 AM	Microsoft Corporation	c:\winnt\system32\riched32.dll
els.dll	5.00.2175.1	151.27 KB (154,896 bytes)	11/23/2002 6:52:47 AM	Microsoft Corporation	c:\winnt\system32\els.dll
ntmsmgr.dll	1,0,0,1	427.77 KB (438,032 bytes)	11/23/2002 6:53:26 AM	Microsoft Corporation and HighGround Systems, Inc.	c:\winnt\system32\ntmsmgr.dll
mmfutil.dll	1.50.1085.0000	32.06 KB (32,829 bytes)	11/23/2002 6:53:09 AM	Microsoft Corporation	c:\winnt\system32\mmfutil.dll
logdrive.dll	1.50.1085.0000	200.06 KB (204,863 bytes)	11/23/2002 6:53:06 AM	Microsoft Corporation	c:\winnt\system32\logdrive.dll
dfrgres.dll	5.00.2150.1	27.50 KB (28,160 bytes)	11/23/2002 5:01:09 AM	Executive Software International, Inc.	c:\winnt\system32\dfrgres.dll
dfrgsnap.dll	5.00.2195.2104	41.77 KB (42,768 bytes)	11/23/2002 10:21:35 AM	Executive Software International, Inc.	c:\winnt\system32\dfrgsnap.dll
dmdskres.dll	2195.2104.297.3	119.50 KB (122,368 bytes)	11/23/2002 10:21:35 AM	Microsoft Corp., VERITAS Software	c:\winnt\system32\dmdskres.dll
dmutil.dll	2195.2104.297.3	42.27 KB (43,280 bytes)	11/23/2002 10:21:35 AM	VERITAS Software Corp.	c:\winnt\system32\dmutil.dll
ntmsapi.dll	5.00.1948.1	51.77 KB (53,008 bytes)	11/23/2002 10:21:48 AM	Microsoft Corporation	c:\winnt\system32\ntmsapi.dll
dmdskmgr.dll	2215.2215.297.3	160.27 KB (164,112 bytes)	11/23/2002 10:21:35 AM	Microsoft Corp., VERITAS Software	c:\winnt\system32\dmdskmgr.dll
mycomput.dll	5.00.2134.1	107.77 KB (110,352 bytes)	11/23/2002 6:53:19 AM	Microsoft Corporation	c:\winnt\system32\mycomput.dll
mmcmdmgr.dll	5.00.2178.1	815.27 KB (834,832 bytes)	11/23/2002 6:53:09 AM	Microsoft Corporation	c:\winnt\system32\mmcmdmgr.dll
mfc42u.dll	6.00.8665.0	972.05 KB (995,384 bytes)	11/23/2002 6:53:07 AM	Microsoft Corporation	c:\winnt\system32\mfc42u.dll

mmc.exe	5.00.2195.2301	589.27 KB (603,408 bytes)	11/23/2002	10:21:40 AM	Microsoft Corporation	c:\winnt\system32\mmc.exe
mshhtml.dll	5.00.3315.2870	227.27 KB (232,720 bytes)	11/23/2002	10:21:42 AM	Microsoft Corporation	c:\winnt\system32\mshhtml.dll
imm32.dll	5.00.2195.2821	94.27 KB (96,528 bytes)	11/23/2002	10:21:38 AM	Microsoft Corporation	c:\winnt\system32\imm32.dll
netplwiz.dll	5.00.2195.2370	169.77 KB (173,840 bytes)	11/23/2002	10:21:47 AM	Microsoft Corporation	c:\winnt\system32\netplwiz.dll
netmsg.dll	5.00.2137.1	152.50 KB (156,160 bytes)	11/23/2002	6:53:20 AM	Microsoft Corporation	c:\winnt\system32\netmsg.dll
netui2.dll	5.00.2134.1	280.27 KB (286,992 bytes)	11/23/2002	6:53:21 AM	Microsoft Corporation	c:\winnt\system32\netui2.dll
mprui.dll	5.00.2195.2104	54.77 KB (56,080 bytes)	11/23/2002	10:21:41 AM	Microsoft Corporation	c:\winnt\system32\mprui.dll
imgutil.dll	5.00.3315.2870	30.77 KB (31,504 bytes)	11/23/2002	10:21:38 AM	Microsoft Corporation	c:\winnt\system32\imgutil.dll
webvw.dll	5.00.2920.0000	1.06 MB (1,115,408 bytes)	11/23/2002	6:53:53 AM	Microsoft Corporation	c:\winnt\system32\webvw.dll
msls31.dll	3.10.337.0	145.27 KB (148,752 bytes)	11/23/2002	6:53:15 AM	Microsoft Corporation	c:\winnt\system32\msls31.dll
wininet.dll	5.00.3315.1000	456.77 KB (467,728 bytes)	11/23/2002	10:21:56 AM	Microsoft Corporation	c:\winnt\system32\wininet.dll
msdbg.dll	6.00.8424	67.50 KB (69,120 bytes)	11/23/2002	6:53:10 AM	Microsoft Corporation	c:\winnt\system32\msdbg.dll
shdoclc.dll	5.00.3315.2879	324.50 KB (332,288 bytes)	11/23/2002	10:21:52 AM	Microsoft Corporation	c:\winnt\system32\shdoclc.dll
pdm.dll	6.00.8424	179.27 KB (183,574 bytes)	11/23/2002	6:53:30 AM	Microsoft Corporation	c:\winnt\system32\pdm.dll
mshtml.dll	5.00.3315.2870	2.24 MB (2,345,232 bytes)	11/23/2002	10:21:41 AM	Microsoft Corporation	c:\winnt\system32\mshtml.dll
mlang.dll	5.00.3103.1000	510.77 KB (523,024 bytes)	11/23/2002	10:21:40 AM	Microsoft Corporation	c:\winnt\system32\mlang.dll
urlmon.dll	5.00.3315.1000	441.27 KB (451,856 bytes)	11/23/2002	10:21:55 AM	Microsoft Corporation	c:\winnt\system32\urlmon.dll
linkinfo.dll	5.00.2134.1	15.77 KB (16,144 bytes)	11/23/2002	6:53:05 AM	Microsoft Corporation	c:\winnt\system32\linkinfo.dll
browseui.dll	5.00.3315.2846	34.50 KB (35,328 bytes)	11/23/2002	10:21:33 AM	Microsoft Corporation	c:\winnt\system32\browseui.dll
msi.dll	2.0.2600.2	1.90 MB (1,994,240 bytes)	11/23/2002	10:21:42 AM	Microsoft Corporation	c:\winnt\system32\msi.dll
powrprof.dll	5.00.3103.1000	13.27 KB (13,584 bytes)	11/23/2002	10:21:50 AM	Microsoft Corporation	c:\winnt\system32\powrprof.dll
batmeter.dll	5.00.3103.1000	20.27 KB (20,752 bytes)	11/23/2002	10:21:33 AM	Microsoft Corporation	c:\winnt\system32\batmeter.dll
stobject.dll	5.00.2195.2780	79.27 KB (81,168 bytes)	11/23/2002	10:21:54 AM	Microsoft Corporation	c:\winnt\system32\stobject.dll
webcheck.dll	5.00.3315.1000	251.77 KB (257,808 bytes)	11/23/2002	10:21:56 AM	Microsoft Corporation	c:\winnt\system32\webcheck.dll
ntshrui.dll	5.00.2134.1	46.77 KB (47,888 bytes)	11/23/2002	6:53:26 AM	Microsoft Corporation	c:\winnt\system32\ntshrui.dll
mydocs.dll	5.00.2920.0000	55.77 KB (57,104 bytes)	11/23/2002	6:53:20 AM	Microsoft Corporation	c:\winnt\system32\mydocs.dll
browseui.dll	5.00.3315.2846	788.77 KB (807,696 bytes)	11/23/2002	10:21:33 AM	Microsoft Corporation	c:\winnt\system32\browseui.dll
shdocvw.dll	5.00.3315.2879	1.05 MB (1,104,144 bytes)	11/23/2002	10:21:53 AM	Microsoft Corporation	c:\winnt\system32\shdocvw.dll
explorer.exe	5.00.3315.2846	237.27 KB (242,960 bytes)	11/23/2002	10:21:57 AM	Microsoft Corporation	c:\winnt\explorer.exe
tapisrv.dll	5.00.2195.2955	169.27 KB (173,328 bytes)	11/23/2002	10:21:54 AM	Microsoft Corporation	c:\winnt\system32\tapisrv.dll
iislog.dll	5.00.0984	75.27 KB (77,072 bytes)	11/23/2002	6:52:59 AM	Microsoft Corporation	c:\winnt\system32\iislog.dll
ntlsapi.dll	5.00.2134.1	6.77 KB (6,928 bytes)	11/23/2002	6:53:25 AM	Microsoft Corporation	c:\winnt\system32\ntlsapi.dll
httpext.dll	0.9.3940.21	435.27 KB (445,712 bytes)	11/23/2002	6:52:56 AM	Microsoft Corporation	c:\winnt\system32\httpext.dll
rpcproxy.dll	5.00.2195.2780	16.27 KB (16,656 bytes)	11/23/2002	6:53:34 AM	Microsoft Corporation	c:\winnt\system32\rpcproxy\rpcproxy.dll
fpexedll.dll	4.0.2.4324	20.06 KB (20,541 bytes)	11/23/2002	6:47:27 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)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\md5filt.dll
gzip.dll	5.00.0984	30.27 KB (30,992 bytes)	11/23/2002	6:52:56 AM	Microsoft Corporation	c:\winnt\system32\gzip.dll
compfilt.dll	5.00.0984	22.77 KB (23,312 bytes)	11/23/2002	6:52:56 AM	Microsoft Corporation	c:\winnt\system32\compfilt.dll
sspifilt.dll	5.00.0984	43.27 KB (44,304 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\sspifilt.dll
iscomlog.dll	5.00.0984	24.77 KB (25,360 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\iscomlog.dll
lonsint.dll	5.00.0984	11.77 KB (12,048 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\lonsint.dll
inetsloc.dll	5.00.0984	20.27 KB (20,752 bytes)	11/23/2002	6:52:55 AM	Microsoft Corporation	c:\winnt\system32\inetsloc.dll
iisfecnv.dll	5.00.0984	7.27 KB (7,440 bytes)	11/23/2002	6:52:59 AM	Microsoft Corporation	c:\winnt\system32\iisfecnv.dll
isatq.dll	5.00.0984	60.27 KB (61,712 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\isatq.dll
infocomm.dll	5.00.0984	238.27 KB (243,984 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\infocomm.dll
w3svc.dll	5.00.0984	343.27 KB (351,504 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\w3svc.dll
security.dll	5.00.2154.1	5.77 KB (5,904 bytes)	11/23/2002	6:53:36 AM	Microsoft Corporation	c:\winnt\system32\security.dll
svcxext.dll	5.00.0984	39.77 KB (40,720 bytes)	11/23/2002	6:53:00 AM	Microsoft Corporation	c:\winnt\system32\svcxext.dll
admexs.dll	5.00.0984	27.77 KB (28,432 bytes)	11/23/2002	6:52:56 AM	Microsoft Corporation	c:\winnt\system32\admexs.dll

wamreg.dll	5.00.0984	45.77 KB (46,864 bytes)	11/23/2002 6:53:00 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\wamreg.dll
metadata.dll	5.00.0984	68.77 KB (70,416 bytes)	11/23/2002 6:53:00 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\metadata.dll
iismap.dll	5.00.0984	55.77 KB (57,104 bytes)	11/23/2002 6:52:55 AM	Microsoft Corporation	c:\winnt\system32\iismap.dll
nsepm.dll	5.00.0984	43.27 KB (44,304 bytes)	11/23/2002 6:53:00 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\nsepm.dll
admwprox.dll	5.00.0984	31.77 KB (32,528 bytes)	11/23/2002 6:50:49 AM	Microsoft Corporation	c:\winnt\system32\admwprox.dll
coadmin.dll	5.00.0984	39.27 KB (40,208 bytes)	11/23/2002 6:52:56 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\coadmin.dll
iisadmin.dll	5.00.0984	15.27 KB (15,632 bytes)	11/23/2002 6:52:59 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\iisadmin.dll
rpref.dll	5.00.0984	4.27 KB (4,368 bytes)	11/23/2002 6:53:00 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\iisadmin.dll
iisrtl.dll	5.00.0984	119.77 KB (122,640 bytes)	11/23/2002 6:52:55 AM	Microsoft Corporation	c:\winnt\system32\inetsrv\iisadmin.dll
inetinfo.exe	5.00.0984	14.27 KB (14,608 bytes)	11/23/2002 6:52:59 AM	Microsoft Corporation	c:\winnt\system32\inetinfo.exe
netui1.dll	5.00.2134.1	210.27 KB (215,312 bytes)	11/23/2002 6:53:21 AM	Microsoft Corporation	c:\winnt\system32\netui1.dll
netui0.dll	5.00.2134.1	70.27 KB (71,952 bytes)	11/23/2002 6:53:21 AM	Microsoft Corporation	c:\winnt\system32\netui0.dll
ntlanman.dll	5.00.2157.1	35.27 KB (36,112 bytes)	11/23/2002 6:53:25 AM	Microsoft Corporation	c:\winnt\system32\ntlanman.dll
wshnetbs.dll	5.00.2134.1	7.77 KB (7,952 bytes)	11/23/2002 6:53:55 AM	Microsoft Corporation	c:\winnt\system32\wshnetbs.dll
ntmarta.dll	5.00.2195.2862	98.77 KB (101,136 bytes)	11/23/2002 10:21:48 AM	Microsoft Corporation	c:\winnt\system32\ntmarta.dll
provthrd.dll	1.50.1085.0000	68.07 KB (69,708 bytes)	11/23/2002 6:53:50 AM	Microsoft Corporation	c:\winnt\system32\wbem\provthrd.dll
ntevt.dll	1.50.1085.0000	192.06 KB (196,669 bytes)	11/23/2002 6:53:50 AM	Microsoft Corporation	c:\winnt\system32\wbem\ntevt.dll
perfos.dll	5.00.2155.1	21.27 KB (21,776 bytes)	11/23/2002 6:53:30 AM	Microsoft Corporation	c:\winnt\system32\perfos.dll
psapi.dll	5.00.2134.1	28.27 KB (28,944 bytes)	11/23/2002 6:53:31 AM	Microsoft Corporation	c:\winnt\system32\psapi.dll
framedyn.dll	1.50.1085.0000	164.05 KB (167,992 bytes)	11/23/2002 6:53:49 AM	Microsoft Corporation	c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll	1.50.1085.0038	1.02 MB (1,073,232 bytes)	11/23/2002 10:21:59 AM	Microsoft Corporation	c:\winnt\system32\wbem\cimwin32.dll
wbemsvcs.dll	1.50.1085.0007	40.07 KB (41,036 bytes)	11/23/2002 10:22:00 AM	Microsoft Corporation	c:\winnt\system32\wbem\wbemsvcs.dll
wbemess.dll	1.50.1085.0039	364.07 KB (372,804 bytes)	11/23/2002 10:22:00 AM	Microsoft Corporation	c:\winnt\system32\wbem\wbemess.dll
fastprox.dll	1.50.1085.0037	144.08 KB (147,536 bytes)	11/23/2002 10:21:59 AM	Microsoft Corporation	c:\winnt\system32\wbem\fastprox.dll
wbemcore.dll	1.50.1085.0036	628.07 KB (643,140 bytes)	11/23/2002 10:21:59 AM	Microsoft Corporation	c:\winnt\system32\wbem\wbemcore.dll
wbemcomn.dll	1.50.1085.0021	692.07 KB (708,675 bytes)	11/23/2002 10:21:59 AM	Microsoft Corporation	c:\winnt\system32\wbem\wbemcomn.dll
winmgmt.exe	1.50.1085.0029	192.08 KB (196,685 bytes)	11/23/2002 10:22:00 AM	Microsoft Corporation	c:\winnt\system32\wbem\winmgmt.exe
simptcp.dll	5.00.2134.1	19.27 KB (19,728 bytes)	11/23/2002 6:53:40 AM	Microsoft Corporation	c:\winnt\system32\simptcp.dll
tcpsvcs.exe	5.00.2134.1	24.77 KB (25,360 bytes)	11/23/2002 6:53:43 AM	Microsoft Corporation	c:\winnt\system32\simptcp.dll
storim.dll	5.10.21	508.07 KB (520,263 bytes)	6/17/2002 6:33:42 PM	IBM Corporation	c:\program files\raidman\storim.dll
nfstcpr.dll	5.10.21	100.00 KB (102,400 bytes)	6/17/2002 6:33:10 PM	IBM Corporation	c:\program files\raidman\nfstcpr.dll
nfstj.dll	5.10.21	188.00 KB (192,512 bytes)	6/17/2002 6:33:02 PM	IBM Corporation	c:\program files\raidman\nfstj.dll
net.dll	Not Available	27.00 KB (27,648 bytes)	1/24/2002 3:02:14 AM	Not Available	c:\program files\raidman\jre\bin\net.dll
zip.dll	Not Available	55.50 KB (56,832 bytes)	1/24/2002 3:02:14 AM	Not Available	c:\program files\raidman\jre\bin\zip.dll
java.dll	Not Available	166.50 KB (170,496 bytes)	1/24/2002 3:02:14 AM	Not Available	c:\program files\raidman\jre\bin\java.dll
hpi.dll	Not Available	30.50 KB (31,232 bytes)	1/24/2002 3:02:14 AM	Not Available	c:\program files\raidman\jre\bin\hpi.dll
xhpi.dll	Not Available	4.50 KB (4,608 bytes)	1/24/2002 3:02:14 AM	Not Available	c:\program files\raidman\jre\bin\xhpi.dll
jvm.dll	Not Available	863.50 KB (884,224 bytes)	1/24/2002 3:02:14 AM	Not Available	c:\program files\raidman\jre\bin\classic\jvm.dll
raidserv.exe	5.10.21	40.00 KB (40,960 bytes)	6/17/2002 6:33:18 PM	IBM Corporation	c:\program files\raidman\raidserv.exe
traffic.dll	5.00.2139.1	30.77 KB (31,504 bytes)	11/23/2002 6:53:43 AM	Microsoft Corporation	c:\winnt\system32\traffic.dll
rsvp.exe	5.00.2167.1	172.77 KB (176,912 bytes)	11/23/2002 6:53:35 AM	Microsoft Corporation	c:\winnt\system32\rsvp.exe
wmi.dll	5.00.2191.1	6.27 KB (6,416 bytes)	11/23/2002 6:53:55 AM	Microsoft Corporation	c:\winnt\system32\wmi.dll
netshell.dll	5.00.2195.2779	457.27 KB (468,240 bytes)	11/23/2002 10:21:47 AM	Microsoft Corporation	c:\winnt\system32\netshell.dll
netman.dll	5.00.2195.2779	89.27 KB (91,408 bytes)	11/23/2002 10:21:47 AM	Microsoft Corporation	c:\winnt\system32\netman.dll
rasdlg.dll	5.00.2195.2671	514.27 KB (526,608 bytes)	12/7/1999 7:00:00 AM	Microsoft Corporation	c:\winnt\system32\rasdlg.dll
netcfgx.dll	5.00.2195.2228	534.77 KB (547,600 bytes)	11/23/2002 10:21:47 AM	Microsoft Corporation	c:\winnt\system32\netcfgx.dll
sens.dll	5.00.2163.1	36.77 KB (37,648 bytes)	11/23/2002 6:53:36 AM	Microsoft Corporation	c:\winnt\system32\sens.dll

rasmans.dll	5.00.2195.2728	147.27 KB (150,800 bytes)		iasdo.dll	5.00.2195.2104	261.77 KB (268,048 bytes)	11/23/2002
11/23/2002 10:21:51 AM	Microsoft Corporation			10:21:38 AM	Microsoft Corporation		
c:\winnt\system32\rasmans.dll				c:\winnt\system32\iasdo.dll			
iashlpr.dll	5.00.2184.1	33.27 KB (34,064 bytes)	11/23/2002	ias.dll	5.00.2134.1	7.27 KB (7,440 bytes)	11/23/2002 6:52:53 AM
6:52:53 AM	Microsoft Corporation			Microsoft Corporation			
c:\winnt\system32\iashlpr.dll				c:\winnt\system32\ias.dll			
iasacct.dll	5.00.2134.1	28.27 KB (28,944 bytes)	11/23/2002	mtxoci.dll	2000.2.3471.1	101.77 KB (104,208 bytes)	11/23/2002
6:52:53 AM	Microsoft Corporation			6:53:19 AM	Microsoft Corporation		
c:\winnt\system32\iasacct.dll				c:\winnt\system32\mtxoci.dll			
iasuser.dll	5.00.2134.1	25.77 KB (26,384 bytes)	11/23/2002	resutils.dll	5.00.2195.2787	39.77 KB (40,720 bytes)	11/23/2002
6:52:54 AM	Microsoft Corporation			10:21:51 AM	Microsoft Corporation		
c:\winnt\system32\iasuser.dll				c:\winnt\system32\resutils.dll			
iasnap.dll	5.00.2195.2104	58.77 KB (60,176 bytes)	11/23/2002	clusapi.dll	5.00.2195.2104	54.27 KB (55,568 bytes)	11/23/2002
10:21:38 AM	Microsoft Corporation			10:21:34 AM	Microsoft Corporation		
c:\winnt\system32\iasnap.dll				c:\winnt\system32\clusapi.dll			
iaspipe.dll	5.00.2134.1	41.77 KB (42,768 bytes)	11/23/2002	msvcpx50.dll	5.00.7051	552.50 KB (565,760 bytes)	11/23/2002
6:52:54 AM	Microsoft Corporation			6:53:17 AM	Microsoft Corporation		
c:\winnt\system32\iaspipe.dll				c:\winnt\system32\msvcpx50.dll			
expshr.dll	6.0.8540	370.27 KB (379,152 bytes)	11/23/2002 10:21:37 AM	xolehlp.dll	1999.9.3421.3	17.27 KB (17,680 bytes)	11/23/2002
Microsoft Corporation				6:53:55 AM	Microsoft Corporation		
c:\winnt\system32\expshr.dll				c:\winnt\system32\xolehlp.dll			
vbajet32.dll	6.1.8268	30.27 KB (30,992 bytes)	11/23/2002	msdtclog.dll	1999.9.3421.3	89.77 KB (91,920 bytes)	
10:21:55 AM	Microsoft Corporation			11/23/2002 6:53:11 AM	Microsoft Corporation		
c:\winnt\system32\vbajet32.dll				c:\winnt\system32\msdtclog.dll			
msjtes40.dll	4.00.4229.0	236.27 KB (241,936 bytes)		mtxclu.dll	2000.2.3471.1	51.27 KB (52,496 bytes)	11/23/2002
11/23/2002 10:21:44 AM	Microsoft Corporation			10:21:46 AM	Microsoft Corporation		
c:\winnt\system32\msjtes40.dll				c:\winnt\system32\mtxclu.dll			
oledb32r.dll	2.70.9001.0	built by: Lab06_N(dagbuild) 64.00 KB (65,536 bytes)	11/25/2002 10:01:19 AM	msdtcprx.dll	2000.2.3471.1	665.77 KB (681,744 bytes)	
Microsoft Corporation				11/23/2002 6:53:11 AM	Microsoft Corporation		
c:\program files\common files\system\ole db\oledb32r.dll				c:\winnt\system32\msdtcprx.dll			
comdlg32.dll	5.00.3103.1000	236.77 KB (242,448 bytes)		txfaux.dll	2000.2.3471.1	374.27 KB (383,248 bytes)	11/23/2002
12/7/1999 7:00:00 AM	Microsoft Corporation			6:53:44 AM	Microsoft Corporation		
c:\winnt\system32\comdlg32.dll				c:\winnt\system32\txfaux.dll			
msdart.dll	2.71.9031.4	built by: Lab06_N(dagbuild) 124.00 KB (126,976 bytes)	9/27/2002 1:22:40 PM	msdtctm.dll	2000.2.3471.1	1.07 MB (1,120,528 bytes)	
Microsoft Corporation				11/23/2002 6:53:11 AM	Microsoft Corporation		
c:\winnt\system32\msdart.dll				c:\winnt\system32\msdtctm.dll			
oledb32.dll	2.71.9031.4	built by: Lab06_N(dagbuild) 408.00 KB (417,792 bytes)	9/27/2002 1:22:42 PM	msdtc.exe	1999.9.3421.3	6.77 KB (6,928 bytes)	11/23/2002 6:53:10 AM
Microsoft Corporation				Microsoft Corporation			
c:\program files\common files\system\ole db\oledb32.dll				c:\winnt\system32\msdtc.exe			
msjint40.dll	4.00.2927.2	148.27 KB (151,824 bytes)		winnr.dll	5.00.2160.1	18.77 KB (19,216 bytes)	11/23/2002
11/23/2002 10:21:44 AM	Microsoft Corporation			6:53:54 AM	Microsoft Corporation		
c:\winnt\system32\msjint40.dll				c:\winnt\system32\winnr.dll			
msjter40.dll	4.00.2927.2	52.27 KB (53,520 bytes)		rpss.dll	5.00.2195.2815	231.27 KB (236,816 bytes)	11/23/2002
11/23/2002 10:21:44 AM	Microsoft Corporation			10:21:52 AM	Microsoft Corporation		
c:\winnt\system32\msjter40.dll				c:\winnt\system32\rpss.dll			
mswstr10.dll	4.00.3829.2	600.27 KB (614,672 bytes)		svchost.exe	5.00.2134.1	7.77 KB (7,952 bytes)	11/23/2002
11/23/2002 10:21:46 AM	Microsoft Corporation			6:53:42 AM	Microsoft Corporation		
c:\winnt\system32\mswstr10.dll				c:\winnt\system32\svchost.exe			
msjet40.dll	4.00.4431.3	1.43 MB (1,503,504 bytes)	11/23/2002	scecli.dll	5.00.2195.2780	105.27 KB (107,792 bytes)	11/23/2002
10:21:43 AM	Microsoft Corporation			10:21:52 AM	Microsoft Corporation		
c:\winnt\system32\msjet40.dll				c:\winnt\system32\scecli.dll			
msjetoledb40.dll	4.00.4331.4	340.27 KB (348,432 bytes)		atl.dll	3.00.8449	57.56 KB (58,938 bytes)	11/23/2002 6:50:50 AM
11/23/2002 10:21:44 AM	Microsoft Corporation			Microsoft Corporation			
c:\winnt\system32\msjetoledb40.dll				c:\winnt\system32\atl.dll			
iasrad.dll	5.00.2139.1	94.27 KB (96,528 bytes)	11/23/2002	certcli.dll	5.00.2195.2778	130.77 KB (133,904 bytes)	11/23/2002
6:52:54 AM	Microsoft Corporation			10:21:34 AM	Microsoft Corporation		
c:\winnt\system32\iasrad.dll				c:\winnt\system32\certcli.dll			
iassam.dll	5.00.2160.1	96.27 KB (98,576 bytes)	11/23/2002	esent.dll	6.0.3940.13	1.08 MB (1,135,376 bytes)	11/23/2002
6:52:54 AM	Microsoft Corporation			10:21:36 AM	Microsoft Corporation		
c:\winnt\system32\iassam.dll				c:\winnt\system32\esent.dll			
iasads.dll	5.00.2134.1	73.77 KB (75,536 bytes)	11/23/2002	mswsock.dll	5.00.2195.2871	62.77 KB (64,272 bytes)	
6:52:53 AM	Microsoft Corporation			11/23/2002 10:21:46 AM	Microsoft Corporation		
c:\winnt\system32\iasads.dll				c:\winnt\system32\mswsock.dll			
iaspolicy.dll	5.00.2134.1	25.27 KB (25,872 bytes)		ntdsatq.dll	5.00.2195.2878	31.27 KB (32,016 bytes)	11/23/2002
11/23/2002 6:52:54 AM	Microsoft Corporation			10:21:48 AM	Microsoft Corporation		
c:\winnt\system32\iaspolicy.dll				c:\winnt\system32\ntdsatq.dll			
iassvcs.dll	5.00.2195.2104	58.77 KB (60,176 bytes)	11/23/2002	ntdsa.dll	5.00.2195.2899	990.77 KB (1,014,544 bytes)	11/23/2002
10:21:38 AM	Microsoft Corporation			10:21:47 AM	Microsoft Corporation		
c:\winnt\system32\iassvcs.dll				c:\winnt\system32\ntdsa.dll			

kdcsvc.dll	5.00.2195.2878	137.77 KB (141,072 bytes)	11/23/2002	oleaut32.dll	2.40.4517	612.27 KB (626,960 bytes)	12/7/1999
10:21:40 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\kdcsvc.dll				c:\winnt\system32\oleaut32.dll			
sfmapi.dll	5.00.2134.1	38.77 KB (39,696 bytes)	11/23/2002	mprapi.dll	5.00.2181.1	79.27 KB (81,168 bytes)	11/23/2002
6:53:37 AM	Microsoft Corporation			6:53:09 AM	Microsoft Corporation		
c:\winnt\system32\sfmapi.dll				c:\winnt\system32\mprapi.dll			
rassfm.dll	5.00.2195.2671	21.27 KB (21,776 bytes)	11/23/2002	iphlpapi.dll	5.00.2173.2	67.77 KB (69,392 bytes)	
10:21:51 AM	Microsoft Corporation			11/23/2002 6:53:01 AM	Microsoft Corporation		
c:\winnt\system32\rassfm.dll				c:\winnt\system32\iphlpapi.dll			
mpr.dll	5.00.2195.2779	53.27 KB (54,544 bytes)	11/23/2002	rnrt20.dll	5.00.2195.2871	35.77 KB (36,624 bytes)	11/23/2002
10:21:41 AM	Microsoft Corporation			10:21:51 AM	Microsoft Corporation		
c:\winnt\system32\mpr.dll				c:\winnt\system32\rnrt20.dll			
rsabase.dll	5.00.2195.2228	128.27 KB (131,344 bytes)	5/4/2001	wmicore.dll	5.00.2195.2842	72.27 KB (74,000 bytes)	
1:05:02 PM	Microsoft Corporation			11/23/2002 10:21:57 AM	Microsoft Corporation		
c:\winnt\system32\rsabase.dll				c:\winnt\system32\wmicore.dll			
schannel.dll	5.00.2195.2922	138.27 KB (141,584 bytes)		psbase.dll	5.00.2195.2779	111.77 KB (114,448 bytes)	11/23/2002
5/4/2001 1:05:02 PM	Microsoft Corporation			10:21:50 AM	Microsoft Corporation		
c:\winnt\system32\schannel.dll				c:\winnt\system32\psbase.dll			
netlogon.dll	5.00.2195.2865	357.77 KB (366,352 bytes)		cryptsvc.dll	5.00.2181.1	61.77 KB (63,248 bytes)	
11/23/2002 10:21:47 AM	Microsoft Corporation			11/23/2002 6:51:03 AM	Microsoft Corporation		
c:\winnt\system32\netlogon.dll				c:\winnt\system32\cryptsvc.dll			
kerberos.dll	5.00.2195.2913	198.77 KB (203,536 bytes)		cryptdll.dll	5.00.2135.1	41.27 KB (42,256 bytes)	11/23/2002
11/23/2002 10:21:40 AM	Microsoft Corporation			6:51:03 AM	Microsoft Corporation		
c:\winnt\system32\kerberos.dll				c:\winnt\system32\cryptdll.dll			
msprivs.dll	5.00.2154.1	41.50 KB (42,496 bytes)	11/23/2002	wkssvc.dll	5.00.2195.2780	95.27 KB (97,552 bytes)	12/7/1999
6:53:15 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\msprivs.dll				c:\winnt\system32\wkssvc.dll			
samsrv.dll	5.00.2195.2918	369.77 KB (378,640 bytes)	12/7/1999	srsvcs.dll	5.00.2195.2904	79.27 KB (81,168 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\samsrv.dll				c:\winnt\system32\srsvcs.dll			
lsasrv.dll	5.00.2195.2964	492.77 KB (504,592 bytes)	12/7/1999	cfgmgr32.dll	5.00.2134.1	16.77 KB (17,168 bytes)	
7:00:00 AM	Microsoft Corporation			11/23/2002 6:50:55 AM	Microsoft Corporation		
c:\winnt\system32\lsasrv.dll				c:\winnt\system32\cfgmgr32.dll			
lsass.exe	5.00.2195.2964	32.77 KB (33,552 bytes)	12/7/1999	dmserver.dll	2195.2778.297.3	11.77 KB (12,048 bytes)	
7:00:00 AM	Microsoft Corporation			11/23/2002 10:21:35 AM	VERITAS Software Corp.		
c:\winnt\system32\lsass.exe				c:\winnt\system32\dmserver.dll			
rasadhlp.dll	5.00.2168.1	7.27 KB (7,440 bytes)	11/23/2002	winsta.dll	5.00.2195.2386	36.77 KB (37,648 bytes)	11/23/2002
6:53:32 AM	Microsoft Corporation			10:21:56 AM	Microsoft Corporation		
c:\winnt\system32\rasadhlp.dll				c:\winnt\system32\winsta.dll			
wshtcpip.dll	5.00.2195.2104	17.27 KB (17,680 bytes)		icmp.dll	5.00.2134.1	7.27 KB (7,440 bytes)	11/23/2002 6:52:54 AM
11/23/2002 10:21:57 AM	Microsoft Corporation			AM	Microsoft Corporation		c:\winnt\system32\icmp.dll
c:\winnt\system32\wshtcpip.dll				lmhsvc.dll	5.00.2195.2778	9.77 KB (10,000 bytes)	12/7/1999
msafd.dll	5.00.2195.2779	106.77 KB (109,328 bytes)	11/23/2002	7:00:00 AM	Microsoft Corporation		
10:21:41 AM	Microsoft Corporation			c:\winnt\system32\lmhsvc.dll			
c:\winnt\system32\msafd.dll				eventlog.dll	5.00.2178.1	43.77 KB (44,816 bytes)	
dhcpcsvc.dll	5.00.2195.2778	88.77 KB (90,896 bytes)		11/23/2002 6:52:48 AM	Microsoft Corporation		
12/7/1999 7:00:00 AM	Microsoft Corporation			c:\winnt\system32\eventlog.dll			
c:\winnt\system32\dhcpcsvc.dll				ntdsapi.dll	5.00.2195.2661	55.77 KB (57,104 bytes)	11/23/2002
tapi32.dll	5.00.2182.1	123.27 KB (126,224 bytes)	11/23/2002	10:21:48 AM	Microsoft Corporation		
6:53:42 AM	Microsoft Corporation			c:\winnt\system32\ntdsapi.dll			
c:\winnt\system32\tapi32.dll				scesrv.dll	5.00.2195.2780	226.27 KB (231,696 bytes)	11/23/2002
rasman.dll	5.00.2195.2780	54.77 KB (56,080 bytes)	12/7/1999	10:21:52 AM	Microsoft Corporation		
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\scesrv.dll			
c:\winnt\system32\rasman.dll				umpnpmgr.dll	5.00.2182.1	86.27 KB (88,336 bytes)	
rasapi32.dll	5.00.2195.2671	189.77 KB (194,320 bytes)		11/23/2002 6:53:44 AM	Microsoft Corporation		
12/7/1999 7:00:00 AM	Microsoft Corporation			c:\winnt\system32\umpnpmgr.dll			
c:\winnt\system32\rasapi32.dll				services.exe	5.00.2195.2780	86.77 KB (88,848 bytes)	
rtutils.dll	5.00.2168.1	43.77 KB (44,816 bytes)	11/23/2002	12/7/1999 7:00:00 AM	Microsoft Corporation		
6:53:35 AM	Microsoft Corporation			c:\winnt\system32\services.exe			
c:\winnt\system32\rtutils.dll				msv1_0.dll	5.00.2195.2900	111.77 KB (114,448 bytes)	12/7/1999
adslsdp.dll	5.00.2195.2842	127.27 KB (130,320 bytes)	11/23/2002	7:00:00 AM	Microsoft Corporation		
10:21:32 AM	Microsoft Corporation			c:\winnt\system32\msv1_0.dll			
c:\winnt\system32\adslsdp.dll				cscui.dll	5.00.2195.2959	228.27 KB (233,744 bytes)	11/23/2002
activeds.dll	5.00.2195.2778	174.77 KB (178,960 bytes)		10:21:34 AM	Microsoft Corporation		
11/23/2002 10:21:26 AM	Microsoft Corporation			c:\winnt\system32\cscui.dll			
c:\winnt\system32\activeds.dll				winspool.drv	5.00.2195.2780	109.77 KB (112,400 bytes)	
				12/7/1999 7:00:00 AM	Microsoft Corporation		
				c:\winnt\system32\winspool.drv			

winscard.dll	5.00.2134.1	77.27 KB (79,120 bytes)		ws2_32.dll	5.00.2195.2780	67.77 KB (69,392 bytes)	11/23/2002
11/23/2002 6:53:54 AM	Microsoft Corporation			10:21:57 AM	Microsoft Corporation		
c:\winnt\system32\winscard.dll				c:\winnt\system32\ws2_32.dll			
wlnotify.dll	5.00.2195.2780	53.77 KB (55,056 bytes)		samlib.dll	5.00.2195.2780	49.77 KB (50,960 bytes)	12/7/1999
11/23/2002 10:21:56 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\wlnotify.dll				c:\winnt\system32\samlib.dll			
csddl.dll	5.00.2195.2401	98.27 KB (100,624 bytes)	11/23/2002	netrap.dll	5.00.2134.1	11.27 KB (11,536 bytes)	11/23/2002
10:21:34 AM	Microsoft Corporation			6:53:20 AM	Microsoft Corporation		
c:\winnt\system32\csddl.dll				c:\winnt\system32\netrap.dll			
lz32.dll	5.00.2134.1	9.77 KB (10,000 bytes)	11/23/2002	netapi32.dll	5.00.2195.2808	303.77 KB (311,056 bytes)	
6:53:06 AM	Microsoft Corporation			11/23/2002 10:21:46 AM	Microsoft Corporation		
c:\winnt\system32\lz32.dll				c:\winnt\system32\netapi32.dll			
version.dll	5.00.2134.1	15.77 KB (16,144 bytes)	11/23/2002	profmap.dll	5.00.2181.1	29.27 KB (29,968 bytes)	
6:53:46 AM	Microsoft Corporation			11/23/2002 6:53:31 AM	Microsoft Corporation		
c:\winnt\system32\version.dll				c:\winnt\system32\profmap.dll			
rsaenh.dll	5.00.2195.2228	130.77 KB (133,904 bytes)	11/23/2002	secur32.dll	5.00.2195.2862	46.77 KB (47,888 bytes)	11/23/2002
6:53:35 AM	Microsoft Corporation			10:21:52 AM	Microsoft Corporation		
c:\winnt\system32\rsaenh.dll				c:\winnt\system32\secur32.dll			
mecat32.dll	5.131.2134.1	7.77 KB (7,952 bytes)	11/23/2002	sfc.dll	5.00.2195.2896	92.11 KB (94,320 bytes)	11/23/2002
6:53:10 AM	Microsoft Corporation			10:21:52 AM	Microsoft Corporation		
c:\winnt\system32\mec32.dll				c:\winnt\system32\sfc.dll			
ole32.dll	5.00.2195.2887	969.77 KB (993,040 bytes)	11/23/2002	nddeapi.dll	5.00.2137.1	15.27 KB (15,632 bytes)	11/23/2002
10:21:50 AM	Microsoft Corporation			6:53:20 AM	Microsoft Corporation		
c:\winnt\system32\ole32.dll				c:\winnt\system32\nddeapi.dll			
imagehlp.dll	5.00.2195.2778	125.77 KB (128,784 bytes)		userenv.dll	5.00.2195.2780	361.77 KB (370,448 bytes)	12/7/1999
5/4/2001 1:05:02 PM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\imagehlp.dll				c:\winnt\system32\userenv.dll			
msasn1.dll	5.00.2134.1	51.27 KB (52,496 bytes)	11/23/2002	user32.dll	5.00.2195.2821	392.77 KB (402,192 bytes)	12/7/1999
6:53:10 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\msasn1.dll				c:\winnt\system32\user32.dll			
crypt32.dll	5.131.2195.2833	451.27 KB (462,096 bytes)	11/23/2002	gdi32.dll	5.00.2195.2778	228.77 KB (234,256 bytes)	12/7/1999
10:21:34 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\crypt32.dll				c:\winnt\system32\gdi32.dll			
wintrust.dll	5.131.2195.2779	162.27 KB (166,160 bytes)		rpert4.dll	5.00.2195.2832	437.27 KB (447,760 bytes)	11/23/2002
11/23/2002 10:21:56 AM	Microsoft Corporation			10:21:51 AM	Microsoft Corporation		
c:\winnt\system32\wintrust.dll				c:\winnt\system32\rpert4.dll			
setupapi.dll	5.00.2195.2663	555.77 KB (569,104 bytes)		advapi32.dll	5.00.2195.2867	351.77 KB (360,208 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\setupapi.dll				c:\winnt\system32\advapi32.dll			
winmm.dll	5.00.2161.1	184.77 KB (189,200 bytes)	11/23/2002	kernel32.dll	5.00.2195.2778	714.77 KB (731,920 bytes)	
6:53:53 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\winmm.dll				c:\winnt\system32\kernel32.dll			
comctl32.dll	5.81	537.77 KB (550,672 bytes)	12/7/1999	msvcrt.dll	6.10.8924.0	284.05 KB (290,869 bytes)	5/4/2001
7:00:00 AM	Microsoft Corporation			1:05:02 PM	Microsoft Corporation		
c:\winnt\system32\comctl32.dll				c:\winnt\system32\msvcrt.dll			
shlwapi.dll	5.00.3315.1000	282.77 KB (289,552 bytes)	11/23/2002	winlogon.exe	5.00.2195.2953	173.77 KB (177,936 bytes)	
10:21:53 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\shlwapi.dll				c:\winnt\system32\winlogon.exe			
shell32.dll	5.00.3315.2902	2.25 MB (2,359,056 bytes)	11/23/2002	sfcfiles.dll	5.00.2195.2967	948.27 KB (971,024 bytes)	11/23/2002
10:21:53 AM	Microsoft Corporation			10:21:52 AM	Microsoft Corporation		
c:\winnt\system32\shell32.dll				c:\winnt\system32\sfcfiles.dll			
msgina.dll	5.00.2195.2779	324.27 KB (332,048 bytes)	12/7/1999	ntdll.dll	5.00.2195.2779	478.77 KB (490,256 bytes)	5/4/2001
7:00:00 AM	Microsoft Corporation			1:05:02 PM	Microsoft Corporation		
c:\winnt\system32\msgina.dll				c:\winnt\system32\ntdll.dll			
wsock32.dll	5.00.2195.2871	21.27 KB (21,776 bytes)		smss.exe	5.00.2195.2901	44.27 KB (45,328 bytes)	12/7/1999
11/23/2002 10:21:57 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\wsock32.dll				c:\winnt\system32\smss.exe			
dnsapi.dll	5.00.2195.2785	130.77 KB (133,904 bytes)	11/23/2002				
10:21:36 AM	Microsoft Corporation						
c:\winnt\system32\dnsapi.dll							
wldap32.dll	5.00.2195.2797	125.27 KB (128,272 bytes)					
11/23/2002 10:21:56 AM	Microsoft Corporation						
c:\winnt\system32\wldap32.dll							
ws2help.dll	5.00.2134.1	17.77 KB (18,192 bytes)					
11/23/2002 6:53:55 AM	Microsoft Corporation						
c:\winnt\system32\ws2help.dll							

[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	Application Management	AppMgmt	Stopped	Manual
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		Network Connections	Netman	Running	Manual	Share Process	
c:\winnt\system32\cisvc.exe		Normal	LocalSystem	0		c:\winnt\system32\svchost.exe -k netsvcs		Normal	LocalSystem	0	
ClipBook	ClipSrv	Stopped	Manual	Own Process		File Replication	NtFrs	Stopped	Manual	Own Process	
c:\winnt\system32\clipsrv.exe		Normal	LocalSystem	0		c:\winnt\system32\ntfrs.exe		Ignore	LocalSystem	0	
Distributed File System	Dfs	Stopped	Manual	Own		NT LM Security Support Provider		NtLmSsp	Stopped	Manual	
Process	c:\winnt\system32\dfsrv.exe		Normal	LocalSystem	0	Share Process		c:\winnt\system32\lsass.exe		Normal	
DHCP Client	Dhcp	Stopped	Manual	Share Process		LocalSystem		0			
c:\winnt\system32\services.exe		Normal	LocalSystem	0		Removable Storage	NtmsSvc	Stopped	Manual	Share Process	
Logical Disk Manager Administrative Service				dmadmin	Stopped	c:\winnt\system32\svchost.exe -k netsvcs		Normal	LocalSystem	0	
Manual	Share Process			c:\winnt\system32\dmadmin.exe /com		Plug and Play	PlugPlay	Running	Auto	Share Process	
Normal	LocalSystem			0		c:\winnt\system32\services.exe		Normal	LocalSystem	0	
Logical Disk Managerdmserver		Running	Auto	Share Process		IPSEC Policy Agent	PolicyAgent	Stopped	Manual	Share	
c:\winnt\system32\services.exe		Normal	LocalSystem	0		Process	c:\winnt\system32\lsass.exe		Normal	LocalSystem	0
DNS Client	Dnscache	Stopped	Manual	Share Process		Protected Storage	ProtectedStorage	Running	Auto	Share	
c:\winnt\system32\services.exe		Normal	LocalSystem	0		Process	c:\winnt\system32\services.exe		Normal	LocalSystem	0
Event Log	Eventlog	Running	Auto	Share Process		Remote Access Auto Connection Manager	RasAuto	Stopped	Manual		
c:\winnt\system32\services.exe		Normal	LocalSystem	0		Share Process		c:\winnt\system32\svchost.exe -k netsvcs		Normal	
COM+ Event System	EventSystem	Stopped	Manual	Share		LocalSystem		0			
Process	c:\winnt\system32\svchost.exe -k netsvcs		Normal			Remote Access Connection Manager		RasMan	Stopped	Manual	
LocalSystem	0					Share Process		c:\winnt\system32\svchost.exe -k netsvcs		Normal	
Fax Service	Fax	Stopped	Manual	Own Process		LocalSystem		0			
c:\winnt\system32\faxsvc.exe		Normal	LocalSystem	0		Routing and Remote Access	RemoteAccess	Stopped	Disabled		
Mylex Global Array Manager Server			gamserv	Stopped	Manual	Share Process		c:\winnt\system32\svchost.exe -k netsvcs		Normal	
Own Process			c:\winnt\system32\gamserv\gamserv.exe		Normal	LocalSystem		0			
LocalSystem	0					Remote Registry Service		RemoteRegistry	Stopped	Manual	
Internet Authentication Service	IAS	Running	Auto	Share		Own Process		c:\winnt\system32\regsvcs.exe		Normal	
Process	c:\winnt\system32\svchost.exe -k netsvcs		Normal			LocalSystem		0			
LocalSystem	0					Remote Procedure Call (RPC) Locator		RpcLocator	Stopped		
IIS Admin Service	IISADMIN	Running	Auto	Share		Manual	Own Process		c:\winnt\system32\locator.exe		Normal
Process	c:\winnt\system32\inetrv\inetinfo.exe		Normal			LocalSystem		0			
LocalSystem	0					Remote Procedure Call (RPC)		RpcSs	Running	Auto	Share
Intersite Messaging	IsmServ	Stopped	Disabled	Own Process		Process		c:\winnt\system32\svchost -k rpsvc		Normal	
c:\winnt\system32\ismserv.exe		Normal	LocalSystem	0		LocalSystem		0			
Kerberos Key Distribution Center			kdc	Stopped	Disabled	QoS Admission Control (RSVP)	RSVP	Running	Auto	Own	
Share Process			c:\winnt\system32\lsass.exe		Normal	Process		c:\winnt\system32\rsrv.exe -s		Normal	LocalSystem
LocalSystem	0					Security Accounts Manager		SamSs	Running	Auto	Share
Server	lanmanserver	Running	Auto	Share Process		Process		c:\winnt\system32\lsass.exe		Normal	LocalSystem
c:\winnt\system32\services.exe		Normal	LocalSystem	0		Smart Card Helper		SCardDrv	Stopped	Manual	Share Process
Workstation	lanmanworkstation	Running	Auto	Share		c:\winnt\system32\scardsvr.exe		Ignore	LocalSystem	0	
Process	c:\winnt\system32\services.exe		Normal	LocalSystem	0	Smart Card		SCardSvr	Stopped	Manual	Share Process
License Logging Service	LicenseService	Stopped	Manual	Manual		c:\winnt\system32\scardsvr.exe		Ignore	LocalSystem	0	
Own Process			c:\winnt\system32\llssrv.exe		Normal	Task Scheduler		Schedule	Stopped	Manual	Share Process
LocalSystem	0					c:\winnt\system32\mstask.exe		Normal	LocalSystem	0	
TCP/IP NetBIOS Helper Service	LmHosts	Running	Auto	Share		RunAs Service		seclogon	Stopped	Manual	Share Process
Process	c:\winnt\system32\services.exe		Normal	LocalSystem	0	c:\winnt\system32\services.exe		Ignore	LocalSystem	0	
Messenger Messenger	Stopped	Manual	Share Process			System Event Notification		SENS	Stopped	Manual	Share
c:\winnt\system32\services.exe		Normal	LocalSystem	0		Process		c:\winnt\system32\svchost.exe -k netsvcs		Normal	
NetMeeting Remote Desktop Sharing			mnmsrv	Stopped	Manual	LocalSystem		0			
Own Process			c:\winnt\system32\mnmsrv.exe		Normal	ServeRAID Manager Agent		ServeRAIDManagerAgent	Running		
LocalSystem	0					Auto	Own Process		c:\program files\raidman\raidserv.exe		
Distributed Transaction Coordinator			MSDTC	Running	Auto	Normal	LocalSystem		0		
Own Process			c:\winnt\system32\msdtc.exe		Normal	Internet Connection Sharing		SharedAccess	Stopped	Manual	
LocalSystem	0					Share Process		c:\winnt\system32\svchost.exe -k netsvcs		Normal	
Windows Installer	MSIServer	Stopped	Manual	Share Process		LocalSystem		0			
c:\winnt\system32\msiexec.exe /v			Normal	LocalSystem	0	Simple TCP/IP Services		SimpTcp	Running	Auto	Share
MSSQLSERVER	MSSQLSERVER	Stopped	Manual	Own		Process		c:\winnt\system32\tpsvcs.exe		Normal	LocalSystem
Process	c:\progra~1\microso~3\mssql\bin\sqlservr.exe		Normal			Print Spooler		Spooler	Stopped	Manual	Own Process
LocalSystem	0					c:\winnt\system32\spoolsv.exe		Normal	LocalSystem	0	
MSSQLServerADHelper		MSSQLServerADHelper		Stopped		SQLSERVERAGENT		SQLSERVERAGENT	Stopped		
Manual	Own Process		c:\program files\microsoft sql			Manual	Own Process		c:\progra~1\microso~3\mssql\bin\sqlagent.exe		
server\80\tools\bin\sqladhlp.exe		Normal	LocalSystem	0		Normal	LocalSystem		0		
Network DDE	NetDDE	Stopped	Manual	Share Process		Performance Logs and Alerts		SysmonLog	Stopped	Manual	
c:\winnt\system32\netdde.exe		Normal	LocalSystem	0		Own Process		c:\winnt\system32\smlogsvcs.exe		Normal	
Network DDE DSDMNetDDEdsdm			Stopped	Manual	Share	LocalSystem		0			
Process	c:\winnt\system32\netdde.exe		Normal	LocalSystem	0	Telephony TapiSrv		Running	Manual	Share Process	
Net Logon	Netlogon	Stopped	Manual	Share Process		c:\winnt\system32\svchost.exe -k tapisrv		Normal	LocalSystem	0	
c:\winnt\system32\lsass.exe		Normal	LocalSystem	0		Terminal Services		TermService	Stopped	Disabled	Own
						Process		c:\winnt\system32\termsrv.exe		Normal	LocalSystem
										0	


```

Telnet TlntSvr Stopped Manual Own Process
c:\winnt\system32\tlntsvr.exe Normal LocalSystem 0
Distributed Link Tracking Server TrkSvr Stopped Manual Share
Process c:\winnt\system32\services.exe Normal LocalSystem
Distributed Link Tracking Client TrkWks Stopped Manual Share
Process c:\winnt\system32\services.exe Normal LocalSystem
Uninterruptible Power Supply UPS Stopped Manual Own
Process c:\winnt\system32\ups.exe Normal LocalSystem
Utility Manager UtilMan Stopped Manual Own Process
c:\winnt\system32\utilman.exe Normal LocalSystem 0
Windows Time W32Time Stopped Manual Share Process
c:\winnt\system32\services.exe Normal LocalSystem 0
World Wide Web Publishing Service W3SVC Running Auto
Share Process c:\winnt\system32\inetrv\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	Default User
Accessories	Default User:Accessories	Default User	Default User
Accessories\Accessibility	Default User:Accessories\Accessibility	Default User	Default User
Accessories\Entertainment	Default User:Accessories\Entertainment	Default User	Default User
Accessories\System Tools	Default User:Accessories\System Tools	Default User	Default User
Startup	Default User:Startup	Default User	Default User
Accessories	All Users:Accessories	All Users	All Users
Accessories\Accessibility	All Users:Accessories\Accessibility	All Users	All Users
Accessories\Communications	All Users:Accessories\Communications	All Users	All Users
Accessories\Entertainment	All Users:Accessories\Entertainment	All Users	All Users
Accessories\Games	All Users:Accessories\Games	All Users	All Users
Accessories\Microsoft Script Debugger	All Users:Accessories\Microsoft Script Debugger	All Users	All Users
Accessories\System Tools	All Users:Accessories\System Tools	All Users	All Users
Administrative Tools	All Users:Administrative Tools	All Users	All Users
Microsoft SQL Server	All Users:Microsoft SQL Server	All Users	All Users
ServeRAID Manager	All Users:ServeRAID Manager	All Users	All Users
Startup	All Users:Startup	All Users	All Users
Accessories	TPCC\Administrator:Accessories	TPCC\Administrator	TPCC\Administrator
Accessories\Accessibility	TPCC\Administrator:Accessories\Accessibility	TPCC\Administrator	TPCC\Administrator
Accessories\Entertainment	TPCC\Administrator:Accessories\Entertainment	TPCC\Administrator	TPCC\Administrator
Accessories\System Tools	TPCC\Administrator:Accessories\System Tools	TPCC\Administrator	TPCC\Administrator
Startup	TPCC\Administrator:Startup	TPCC\Administrator	TPCC\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 Clipmplay32.exe /avi
MIDI Sequence mplay32.exe /mid
Sound Not Available
Media Clip Not Available
Image Document "C:\Program Files\Windows
NT\Accessories\ImageVue\KodakImg.exe"
WordPad Document "%ProgramFiles%\Windows
NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage object Not Available
Bitmap Image mspaint.exe

```

[Internet Explorer 5]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Version	5.00.3315.1000
Build	53315.1000
Product ID	51876-270-6331465-05171
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available

Cipher Strength	168-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company
advapi32.dll	5.0.2195.2867	352 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
advpack.dll	5.0.3103.1000	87 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
browseic.dll	5.0.3315.2846	35 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
browseui.dll	5.0.3315.2846	789 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ckcnv.exe	5.0.2189.1	9 KB	12/7/1999 7:00:00 AM	C:\WINNT\system32	Microsoft Corporation
comctl32.dll	5.81.3103.1000	538 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
crypt32.dll	5.131.2195.2833	451 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
enhsg.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
iemigrat.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
iesetup.dll	5.0.3103.1000	57 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
iexplore.exe	5.0.2920.0	59 KB	12/7/1999 7:00:00 AM	C:\Program Files\Internet Explorer	Microsoft Corporation
imagehlp.dll	5.0.2195.2778	126 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
imghelp.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
inseng.dll	5.0.3103.1000	72 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
jobexec.dll	5.0.0.1	47 KB	12/7/1999 7:00:00 AM	C:\WINNT\system32	Microsoft Corporation
jsript.dll	5.1.0.5907	476 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
jsproxy.dll	5.0.2920.0	13 KB	12/7/1999 7:00:00 AM	C:\WINNT\system32	Microsoft Corporation
msaahtml.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available

```

mshtml.dll 5.0.3315.2870      2290 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
msjava.dll 5.0.3802.0 923 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
msoss.dll <File Missing>      Not Available      Not Available
Not Available      Not Available
msxml.dll 8.0.5718.1 493 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
occache.dll 5.0.3103.1000      86 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
ole32.dll 5.0.2195.2887      970 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
oleaut32.dll 2.40.4517.0      612 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
olepro32.dll 5.0.4517.0 160 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
rsabase.dll 5.0.2195.2228      128 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
rsaenh.dll 5.0.2195.2228      131 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
rsapi32.dll <File Missing>      Not Available      Not Available
Not Available      Not Available
rsasig.dll <File Missing>      Not Available      Not Available
Not Available      Not Available
schannel.dll 5.1.2195.0 138 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
shdoc401.dll <File Missing>      Not Available      Not
Available Not Available      Not Available
shdocvw.dll 5.0.3315.2879      1078 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
shell32.dll 5.0.3315.2902      2304 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
shlwapi.dll 5.0.3315.1000      283 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
url.dll 5.0.2920.0 82 KB  12/7/1999 7:00:00 AM
C:\WINNT\system32 Microsoft Corporation
urlmon.dll 5.0.3315.1000      441 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
vbscript.dll 5.1.0.5907 428 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
webcheck.dll 5.0.3315.1000      252 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
win.com 5.0.2134.1 24 KB  12/7/1999 7:00:00 AM
C:\WINNT\system32 Microsoft Corporation
wininet.dll 5.0.3315.1000      457 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
winsock.dll 3.10.0.103 3 KB  12/7/1999 7:00:00 AM
C:\WINNT\system32 Microsoft Corporation
wintrust.dll 5.131.2195.2779      162 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
wsock.vxd <File Missing>      Not Available      Not Available
Not Available      Not Available
wsock32.dll 5.0.2195.2871      21 KB  5/4/2001 12:05:02 PM
C:\WINNT\system32 Microsoft Corporation
wsock32n.dll <File Missing>      Not Available      Not
Available Not Available      Not Available

```

[Connectivity]

```

Item      Value
Connection 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      17351 MB
Available Disk Space      14096 MB
Maximum Cache Size      1084 MB
Available Cache Size      1084 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      11/18/2002 to 10/25/2102
sha1RSA

```

[Other People Certificates]

```

Issued To      Issued By      Validity      Signature Algorithm
No other people certificate information available

```

[Publishers]

```

Name
No publisher information available

```

[Security]

```

Zone      Security Level
Local intranet      Medium-low
Trusted sites      Low
Internet      Medium
Restricted sites      High

```

Disk Controller Configuration Parameters

Dual-Channel Ultra320 SCSI Interface

November 29, 2002 10:24:41 AM EST

Configuration summary

Server name.....tpcc
ServeRAID Manager agent.....5.10.21
ServeRAID Manager console.....5.10.21
Number of controllers.....1
Operating system.....Windows 2000

Information for controller 1

Controller type.....LSI 1030
BIOS version.....5.03.01.00
Firmware version.....1.00.14.00
Device driver version.....1.08.16.00
Hot-swap rebuild.....Enabled
Data scrubbing.....Enabled
Auto-synchronization.....Enabled
Unattended mode.....Enabled
Number of arrays.....1
Number of logical drives.....1
Number of hot-spare drives.....0
Number of ready drives.....1

Array A

Array identifier.....A
Array size in MB.....140012
Free space in MB.....0
Number of logical drives.....1
Number of physical drives.....2

Logical drives in array A

Logical drive.....1
Array letter.....A
State.....Okay
RAID level.....1
Data space in MB.....69970
Parity space in MB.....69970

Physical drives in array A

Type.....Hard disk drive
Channel.....1
SCSI ID.....4
Vendor.....IBM-ESXS
Product or model number.....ST373405LC
Serial number.....3EK010CW
Firmware level.....B242
Size in MB.....70006
State.....Online
Array letter.....A
Mirror role.....Primary
PFA error.....No
Write-cache mode.....Write through

Type.....Hard disk drive
Channel.....1
SCSI ID.....5
Vendor.....IBM-ESXS
Product or model number.....ST373405LC
Serial number.....3EK011WZ
Firmware level.....B242
Size in MB.....70006
State.....Online
Array letter.....A
Mirror role.....Secondary
PFA error.....No

Write-cache mode.....Write through

SCSI channel 1

Type.....Hard disk drive
Channel.....1
SCSI ID.....0
Vendor.....IBM-PSG
Product or model number.....ST318203LC
Serial number.....LR235920
Firmware level.....B227
Size in MB.....17357
State.....Ready
PFA error.....No
Write-cache mode.....Write through

Type.....Hard disk drive
Channel.....1
SCSI ID.....4
Vendor.....IBM-ESXS
Product or model number.....ST373405LC
Serial number.....3EK010CW
Firmware level.....B242
Size in MB.....70006
State.....Online
Array letter.....A
Mirror role.....Primary
PFA error.....No
Write-cache mode.....Write through

Type.....Hard disk drive
Channel.....1
SCSI ID.....5
Vendor.....IBM-ESXS
Product or model number.....ST373405LC
Serial number.....3EK011WZ
Firmware level.....B242
Size in MB.....70006
State.....Online
Array letter.....A
Mirror role.....Secondary
PFA error.....No
Write-cache mode.....Write through

Type.....Enclosure
Channel.....1
SCSI ID.....8
Vendor.....IBM
Product or model number.....24P2578a S320
Firmware level.....1

End of the configuration information for controller 1

Mylex AcceleRAID A352 Adapter 1

Begin

BeginGroup

PhysicalDevice0 = Channel=0, Target=0, Size=17340mb,
State=Online,

TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice1 = Channel=0, Target=1, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice2 = Channel=0, Target=2, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice3 = Channel=0, Target=3, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice4 = Channel=0, Target=4, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice5 = Channel=0, Target=5, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice6 = Channel=0, Target=6, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice7 = Channel=1, Target=8, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice8 = Channel=1, Target=9, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice9 = Channel=1, Target=10, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice10 = Channel=1, Target=11, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice11 = Channel=1, Target=12, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;

PhysicalDevice12 = Channel=1, Target=13, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice13 = Channel=1, Target=14, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
LogicalDevice0 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=242704mb, BIOSGeometry=8GB,
(PhysicalDevice0, StartAddress=0mb, Size=17336mb),
(PhysicalDevice1, StartAddress=0mb, Size=17336mb),
(PhysicalDevice2, StartAddress=0mb, Size=17336mb),
(PhysicalDevice3, StartAddress=0mb, Size=17336mb),
(PhysicalDevice4, StartAddress=0mb, Size=17336mb),
(PhysicalDevice5, StartAddress=0mb, Size=17336mb),
(PhysicalDevice6, StartAddress=0mb, Size=17336mb),
(PhysicalDevice7, StartAddress=0mb, Size=17336mb),
(PhysicalDevice8, StartAddress=0mb, Size=17336mb),
(PhysicalDevice9, StartAddress=0mb, Size=17336mb),
(PhysicalDevice10, StartAddress=0mb, Size=17336mb),
(PhysicalDevice11, StartAddress=0mb, Size=17336mb),
(PhysicalDevice12, StartAddress=0mb, Size=17336mb),
(PhysicalDevice13, StartAddress=0mb, Size=17336mb);

EndGroup

BeginControllerParameter

ControllerName = AcceleRAID 352 ;
ControllerType = 30;
FirmwareVersion = 7.01;
CacheLineSize = 8KB;
BackgroundTaskRate = 50;
InitiatorID = 7;
DiskStartupMode = AutoSpin;
DevicesPerSpin = 2;
InitialDelay = 6S;
SequentialDelay = 0S;

```

EnableDriveSizing = 0;
EnableClustering = 0;
EnableBGInit = 1;
EnableReadAhead = 0;
EnableBiosLoadDelay = 0;
EnableForcedUnitAccess = 0;
DisableBios = 0;
EnableCDROMBoot = 0;
EnableStorageWorks = 0;
EnableSAFTE = 0;
EnableSES = 0;
EnableARM = 1;
EnableOFM = 1;
OEMCode = 0;
StartupOption = 0;

```

EndControllerParameter

End

Mylex AcceleRAID A352 Adapter 2

Begin

BeginGroup

```

PhysicalDevice0 = Channel=0, Target=0, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice1 = Channel=0, Target=1, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice2 = Channel=0, Target=2, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice3 = Channel=0, Target=3, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice4 = Channel=0, Target=4, Size=17340mb,
State=Online,

```

```

    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice5 = Channel=0, Target=5, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice6 = Channel=0, Target=6, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice7 = Channel=1, Target=0, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice8 = Channel=1, Target=1, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice9 = Channel=1, Target=2, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice10 = Channel=1, Target=3, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice11 = Channel=1, Target=4, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice12 = Channel=1, Target=5, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice13 = Channel=1, Target=6, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice14 = Channel=1, Target=8, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice15 = Channel=1, Target=9, Size=17340mb,
State=Online,
    TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;

```

PhysicalDevice16 = Channel=1, Target=10, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice17 = Channel=1, Target=11, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice18 = Channel=1, Target=12, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice19 = Channel=1, Target=13, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice20 = Channel=1, Target=14, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
IntermediateDevice0 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=121352mb,
(PhysicalDevice0, StartAddress=0mb, Size=17336mb),
(PhysicalDevice1, StartAddress=0mb, Size=17336mb),
(PhysicalDevice2, StartAddress=0mb, Size=17336mb),
(PhysicalDevice3, StartAddress=0mb, Size=17336mb),
(PhysicalDevice4, StartAddress=0mb, Size=17336mb),
(PhysicalDevice5, StartAddress=0mb, Size=17336mb),
(PhysicalDevice6, StartAddress=0mb, Size=17336mb);
IntermediateDevice1 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=121352mb,
(PhysicalDevice7, StartAddress=0mb, Size=17336mb),
(PhysicalDevice8, StartAddress=0mb, Size=17336mb),
(PhysicalDevice9, StartAddress=0mb, Size=17336mb),
(PhysicalDevice10, StartAddress=0mb, Size=17336mb),
(PhysicalDevice11, StartAddress=0mb, Size=17336mb),
(PhysicalDevice12, StartAddress=0mb, Size=17336mb),
(PhysicalDevice13, StartAddress=0mb, Size=17336mb);
IntermediateDevice2 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=121352mb,

(PhysicalDevice14, StartAddress=0mb, Size=17336mb),
(PhysicalDevice15, StartAddress=0mb, Size=17336mb),
(PhysicalDevice16, StartAddress=0mb, Size=17336mb),
(PhysicalDevice17, StartAddress=0mb, Size=17336mb),
(PhysicalDevice18, StartAddress=0mb, Size=17336mb),
(PhysicalDevice19, StartAddress=0mb, Size=17336mb),
(PhysicalDevice20, StartAddress=0mb, Size=17336mb);
LogicalDevice0 = StripeSize=64kb, Raid=12, WriteThrough=1,
Size=364056mb, BIOSGeometry=8GB,
(IntermediateDevice0, StartAddress=0mb,
Size=121352mb),
(IntermediateDevice1, StartAddress=0mb,
Size=121352mb),
(IntermediateDevice2, StartAddress=0mb,
Size=121352mb);
EndGroup
BeginControllerParameter
ControllerName = AcceleRAID 352 ;
ControllerType = 30;
FirmwareVersion = 7.01;
CacheLineSize = 8KB;
BackgroundTaskRate = 50;
InitiatorID = 7;
DiskStartupMode = AutoSpin;
DevicesPerSpin = 2;
InitialDelay = 6S;
SequentialDelay = 0S;
EnableDriveSizing = 0;
EnableClustering = 0;
EnableBGInit = 1;
EnableReadAhead = 0;
EnableBiosLoadDelay = 0;
EnableForcedUnitAccess = 0;
DisableBios = 0;
EnableCDROMBoot = 0;
EnableStorageWorks = 0;

EnableSAFTE = 0;
EnableSES = 0;
EnableARM = 1;
EnableOFM = 1;
OEMCode = 0;
StartupOption = 0;

EndControllerParameter

End

Mylex AcceleRAID A352 Adapter 3

Begin

BeginGroup

PhysicalDevice0 = Channel=0, Target=8, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice1 = Channel=0, Target=9, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice2 = Channel=0, Target=10, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice3 = Channel=0, Target=11, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice4 = Channel=0, Target=12, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice5 = Channel=0, Target=13, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice6 = Channel=0, Target=14, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice7 = Channel=1, Target=0, Size=17340mb,
State=Online,

TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice8 = Channel=1, Target=1, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice9 = Channel=1, Target=2, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice10 = Channel=1, Target=3, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice11 = Channel=1, Target=4, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice12 = Channel=1, Target=5, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice13 = Channel=1, Target=6, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice14 = Channel=1, Target=8, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice15 = Channel=1, Target=9, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice16 = Channel=1, Target=10, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice17 = Channel=1, Target=11, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,
PhysicalDevice18 = Channel=1, Target=12, Size=17340mb,
State=Online,
MaxTag=16;
TransferSpeed=80MHz, TransferWidth=16Bit,

```

PhysicalDevice19 = Channel=1, Target=13, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
PhysicalDevice20 = Channel=1, Target=14, Size=17340mb,
State=Online,
TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=16;
IntermediateDevice0 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=121352mb,
(PhysicalDevice0, StartAddress=0mb, Size=17336mb),
(PhysicalDevice1, StartAddress=0mb, Size=17336mb),
(PhysicalDevice2, StartAddress=0mb, Size=17336mb),
(PhysicalDevice3, StartAddress=0mb, Size=17336mb),
(PhysicalDevice4, StartAddress=0mb, Size=17336mb),
(PhysicalDevice5, StartAddress=0mb, Size=17336mb),
(PhysicalDevice6, StartAddress=0mb, Size=17336mb);
IntermediateDevice1 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=121352mb,
(PhysicalDevice7, StartAddress=0mb, Size=17336mb),
(PhysicalDevice8, StartAddress=0mb, Size=17336mb),
(PhysicalDevice9, StartAddress=0mb, Size=17336mb),
(PhysicalDevice10, StartAddress=0mb, Size=17336mb),
(PhysicalDevice11, StartAddress=0mb, Size=17336mb),
(PhysicalDevice12, StartAddress=0mb, Size=17336mb),
(PhysicalDevice13, StartAddress=0mb, Size=17336mb);
IntermediateDevice2 = StripeSize=64kb, Raid=0, WriteThrough=1,
Size=121352mb,
(PhysicalDevice14, StartAddress=0mb, Size=17336mb),
(PhysicalDevice15, StartAddress=0mb, Size=17336mb),
(PhysicalDevice16, StartAddress=0mb, Size=17336mb),
(PhysicalDevice17, StartAddress=0mb, Size=17336mb),
(PhysicalDevice18, StartAddress=0mb, Size=17336mb),
(PhysicalDevice19, StartAddress=0mb, Size=17336mb),
(PhysicalDevice20, StartAddress=0mb, Size=17336mb);
LogicalDevice0 = StripeSize=64kb, Raid=12, WriteThrough=1,
Size=364056mb, BIOSGeometry=8GB,

```

```

(IntermediateDevice0, StartAddress=0mb,
Size=121352mb),
(IntermediateDevice1, StartAddress=0mb,
Size=121352mb),
(IntermediateDevice2, StartAddress=0mb,
Size=121352mb);
EndGroup
BeginControllerParameter
ControllerName = AcceleRAID 352 ;
ControllerType = 30;
FirmwareVersion = 7.01;
CacheLineSize = 8KB;
BackgroundTaskRate = 50;
InitiatorID = 7;
DiskStartupMode = AutoSpin;
DevicesPerSpin = 2;
InitialDelay = 6S;
SequentialDelay = 0S;
EnableDriveSizing = 0;
EnableClustering = 0;
EnableBGInit = 1;
EnableReadAhead = 0;
EnableBiosLoadDelay = 0;
EnableForcedUnitAccess = 0;
DisableBios = 0;
EnableCDROMBoot = 0;
EnableStorageWorks = 0;
EnableSAFTE = 0;
EnableSES = 0;
EnableARM = 1;
EnableOFM = 1;
OEMCode = 0;
StartupOption = 0;
EndControllerParameter
End

```


Microsoft Windows 2000 Client System Information Report

System Information report written at: 11/29/2002 10:22:46 AM
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item	Value
OS Name	Microsoft Windows 2000 Server
Version	5.0.2195 Service Pack 2 Build 2195
OS Manufacturer	Microsoft Corporation
System Name	CLIENT10
System Manufacturer	IBM
System Model	IBM eserver xSeries 220 -[4444aaa]-
System Type	X86-based PC
Processor	x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1394 Mhz
BIOS Version	IBM BIOS Ver 1.0
Windows Directory	C:\WINNT
System Directory	C:\WINNT\System32
Boot Device	\Device\Harddisk0\Partition1
Locale	United States
User Name	CLIENT10\Administrator
Time Zone	Eastern Standard Time
Total Physical Memory	654,812 KB
Available Physical Memory	569,684 KB
Total Virtual Memory	2,865,552 KB
Available Virtual Memory	2,710,656 KB
Page File Space	2,210,740 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
2	Standard floppy disk controller	OK
4	Direct memory access controller	OK

[Forced Hardware]

Device	PNP Device ID
No Forced Hardware	

[I/O]

Address Range	Device	Status
0x0000-0x303F	PCI bus	OK
0x0000-0x303F	Direct memory access controller	OK
0x03B0-0x03BB	S3 Graphics Inc. Savage4	OK
0x03C0-0x03DF	S3 Graphics Inc. Savage4	OK
0x3000-0x303F	IBM 10/100 Ethernet Server Adapter	OK
0x2000-0x2FFF	DEC 21152 PCI to PCI bridge	OK
0x2000-0x2FFF	Intel(R) PRO/100+ Dual Port Server Adapter #3	OK
0x2020-0x203F	Intel(R) PRO/100+ Dual Port Server Adapter #4	OK
0x0A79-0x0A79	ISAPNP Read Data Port	OK

0x0279-0x0279	ISAPNP Read Data Port	OK
0x02F4-0x02F7	ISAPNP Read Data Port	OK
0x002E-0x002F	Motherboard resources	OK
0x0438-0x0439	Motherboard resources	OK
0x0430-0x0437	Motherboard resources	OK
0x0430-0x0437	Not Available	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	
0x03F0-0x03F5	Standard floppy disk controller	OK
0x03F7-0x03F7	Standard floppy disk controller	OK
0x0378-0x037F	Printer Port (LPT1)	OK
0x03F8-0x03FF	Communications Port (COM1)	OK
0x02F8-0x02FF	Communications Port (COM2)	OK
0x0020-0x0021	Advanced programmable interrupt controller	OK
0x00A0-0x00A1	Advanced programmable interrupt controller	OK
0x0080-0x008F	Direct memory access controller	OK
0x00C0-0x00DF	Direct memory access controller	OK
0x0040-0x0043	System timer	OK
0x0070-0x0073	System CMOS/real time clock	OK
0x0061-0x0061	System speaker	OK
0x00F0-0x00FF	Numeric data processor	OK
0x0600-0x0600	Motherboard resources	OK
0x0374-0x0375	Motherboard resources	OK
0x0377-0x0377	Motherboard resources	OK
0x0F50-0x0F58	Motherboard resources	OK
0x0700-0x070F	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
0x3040-0xFFFF	PCI bus	OK
0x3100-0x31FF	Adaptec AIC-7892 - Ultra160 SCSI	OK
0x4000-0x4FFF	DEC 21152 PCI to PCI bridge	OK
0x4000-0x4FFF	Intel(R) PRO/100+ Dual Port Server Adapter	OK
0x4020-0x403F	Intel(R) PRO/100+ Dual Port Server Adapter #2	OK

[IRQs]

IRQ Number	Device
30	Microsoft ACPI-Compliant System
31	S3 Graphics Inc. Savage4
27	IBM 10/100 Ethernet Server Adapter
16	Intel(R) PRO/100+ Dual Port Server Adapter #3
17	Intel(R) PRO/100+ Dual Port Server Adapter #4
1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12	PS/2 Compatible Mouse
6	Standard floppy disk controller
4	Communications Port (COM1)
3	Communications Port (COM2)
8	System CMOS/real time clock
13	Numeric data processor
14	Primary IDE Channel
10	Standard OpenHCD USB Host Controller
28	Adaptec AIC-7892 - Ultra160 SCSI
20	Intel(R) PRO/100+ Dual Port Server Adapter
21	Intel(R) PRO/100+ Dual Port Server Adapter #2

[Memory]

Range	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	S3 Graphics Inc. Savage4	OK
0xF0000000-0xFBFFFFFF	PCI bus	OK
0xF0000000-0xFBFFFFFF	S3 Graphics Inc. Savage4	OK

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0xFC000000-0xFFFFFFFF PCI bus OK
0xFEB80000-0xFEBFFFFFF S3 Graphics Inc. Savage4 OK
0xFEB7F000-0xFEB7FFFF IBM 10/100 Ethernet Server Adapter
OK
0xFEB40000-0xFEB5FFFF IBM 10/100 Ethernet Server Adapter
OK
0xFD000000-0xFE1FFFFFF DEC 21152 PCI to PCI bridge OK
0xFBF00000-0xFBFFFFFF DEC 21152 PCI to PCI bridge OK
0xFBF00000-0xFBFFFFFF Intel(R) PRO/100+ Dual Port Server Adapter
#3 OK
0xFE000000-0xFE0FFFFF Intel(R) PRO/100+ Dual Port Server Adapter
#3 OK
0xFBF01000-0xFBF01FFF Intel(R) PRO/100+ Dual Port Server Adapter
#4 OK
0xFE100000-0xFE1FFFFF Intel(R) PRO/100+ Dual Port Server Adapter
#4 OK
0xFEB7E000-0xFEB7EFFF Standard OpenHCD USB Host Controller
OK
0x28000000-0xECFFFFFF PCI bus OK
0xED000000-0xEFFFFFFF PCI bus OK
0xEFFF0000-0xEFFFFFFF Adaptec AIC-7892 - Ultra160 SCSI
OK
0xEE000000-0xEF1FFFFF DEC 21152 PCI to PCI bridge OK
0xECF00000-0xECFFFFFF DEC 21152 PCI to PCI bridge OK
0xECF00000-0xECFFFFFF Intel(R) PRO/100+ Dual Port Server Adapter
OK
0xEF000000-0xEF0FFFFF Intel(R) PRO/100+ Dual Port Server Adapter
OK
0xECF01000-0xECF01FFF Intel(R) PRO/100+ Dual Port Server Adapter
#2 OK
0xEF100000-0xEF1FFFFF Intel(R) PRO/100+ Dual Port Server Adapter
#2 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 7:00:00 AM
c:\winnt\system32\msg723.acm	Microsoft Corporation		OK	C:\WINNT\System32\MSG723.ACM 4.4.3385 106.77 KB (109,328 bytes) 9/17/2001 2:09:33 PM
c:\winnt\system32\lhacm.acm	Microsoft Corporation		OK	C:\WINNT\System32\LHACM.ACM 4.4.3385 33.27 KB (34,064 bytes) 9/17/2001 2:09:34 PM
c:\winnt\system32\tsoft32.acm	DSP GROUP, INC.		OK	C:\WINNT\System32\TSSOFT32.ACM 1.01 9.27 KB (9,488 bytes) 12/7/1999 7:00:00 AM
c:\winnt\system32\msgsm32.acm	Microsoft Corporation		OK	C:\WINNT\System32\MSGSM32.ACM 5.00.2134.1 22.27 KB (22,800 bytes) 12/7/1999 7:00:00 AM
c:\winnt\system32\msg711.acm	Microsoft Corporation		OK	C:\WINNT\System32\MSG711.ACM 5.00.2134.1 10.27 KB (10,512 bytes) 12/7/1999 7:00:00 AM
c:\winnt\system32\msadp32.acm	Microsoft Corporation		OK	C:\WINNT\System32\MSADP32.ACM 5.00.2134.1 14.77 KB (15,120 bytes) 12/7/1999 7:00:00 AM

```

c:\winnt\system32\imaadp32.acm Microsoft Corporation
OK C:\WINNT\System32\IMAADP32.ACM 5.00.2134.1
16.27 KB (16,656 bytes) 12/7/1999 7:00:00 AM

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[Video Codecs]

Codec	Manufacturer	Description	Status	File
Version	Size	Creation Date		
c:\winnt\system32\ir50_32.dll	Intel Corporation	Indeo® video 5.10	OK	C:\WINNT\System32\IR50_32.DLL R.5.10.15.2.55 737.50 KB (755,200 bytes) 12/7/1999 7:00:00 AM
c:\winnt\system32\msh261.drv	Microsoft Corporation		OK	C:\WINNT\System32\MSH261.DRV 4.4.3385 163.77 KB (167,696 bytes) 9/17/2001 2:09:33 PM
c:\winnt\system32\msh263.drv	Microsoft Corporation		OK	C:\WINNT\System32\MSH263.DRV 4.4.3385 252.27 KB (258,320 bytes) 9/17/2001 2:09:09 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 7:00:00 AM
c:\winnt\system32\msrle32.dll	Microsoft Corporation		OK	C:\WINNT\System32\MSRLE32.DLL 5.00.2134.1 10.77 KB (11,024 bytes) 12/7/1999 7:00:00 AM
c:\winnt\system32\ir32_32.dll	Intel(R) Corporation		OK	C:\WINNT\System32\IR32_32.DLL Not Available 194.50 KB (199,168 bytes) 12/7/1999 7:00:00 AM
c:\winnt\system32\iccvid.dll	Radius Inc.		OK	C:\WINNT\System32\ICCVID.DLL 1.10.0.6 108.00 KB (110,592 bytes) 12/7/1999 7:00:00 AM

[CD-ROM]

Item	Value
Drive	D:
Description	CD-ROM Drive
Media Loaded	False
Media Type	CD-ROM
Name	LG CD-ROM CRD-8484B
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available
SCSI Target ID	0
PNP Device ID	
IDE\CDROM\LG_CD-ROM_CRD-8484B	1.05 \5
&326853DD&0&0.0.0	

[Sound Device]

Item	Value
No sound devices	

[Display]

Item	Value
Name	S3 Graphics Inc. Savage4
PNP Device ID	PCI\VEN_5333&DEV_8A22&SUBSYS_01C51014&REV_063&267A616A
&0&08	
Adapter Type	S3 Savage4, S3 Graphics Incorporated compatible
Adapter Description	S3 Graphics Inc. Savage4
Adapter RAM	8.00 MB (8,388,608 bytes)
Installed Drivers	s3savg4.dll
Driver Version	5.12.01.8013-8.40.02a
INF File	oem4.inf (S3SAVAGE4 section)
Color Planes	1
Color Table Entries	4294967296
Resolution	1024 x 768 x 60 hertz

Bits/Pixel 32

[Infrared]

Item Value
No infrared devices

[Input]

[Following are sub-categories of this main category]

[Keyboard]

Item Value
Description Standard 101/102-Key or Microsoft Natural PS/2
Keyboard
Name Enhanced (101- or 102-key)
Layout 00000409
PNP Device ID ACPI\PNP0303\4&389C1010&0
NumberOfFunctionKeys 12

[Pointing Device]

Item Value
Hardware Type PS/2 Compatible Mouse
Number of Buttons 3
Status OK
PNP Device ID ACPI\PNP0F13\4&389C1010&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] IBM 10/100 Ethernet Server Adapter
Adapter Type Ethernet 802.3
Product Name IBM 10/100 Ethernet Server Adapter
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_01F11014&REV_0C\3&267A616A&0&10
Last Reset 11/29/2002 4:39:29 AM
Index 0
Service Name E100B
IP Address 192.168.132.251
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 00:02:55:AA:02:D7
Service Name E100B
IRQ Number 27
I/O Port 0x3000-0x303F

Driver c:\winnt\system32\drivers\e100bnt5.sys (139536, 6.01.03.0000)

Name [00000001] Intel(R) PRO/100+ Dual Port Server Adapter
Adapter Type Ethernet 802.3
Product Name Intel(R) PRO/100+ Dual Port Server Adapter
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_10F08086&REV_05\4&15F5026D&0&2028
Last Reset 11/29/2002 4:39:29 AM
Index 1
Service Name E100B
IP Address 192.168.130.10
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:E8:71:60
Service Name E100B
IRQ Number 20
I/O Port 0x4000-0x4FFF
Driver c:\winnt\system32\drivers\e100bnt5.sys (139536, 6.01.03.0000)

Name [00000002] RAS Async Adapter
Adapter Type Not Available
Product Name RAS Async Adapter
Installed True
PNP Device ID Not Available
Last Reset 11/29/2002 4:39:29 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_L2TPMINIPOINT\0000
Last Reset 11/29/2002 4:39:29 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_PPTPMINIPOINT\0000
Last Reset 11/29/2002 4:39:29 AM

Index 4
 Service Name PtpMiniport
 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 PtpMiniport
 Driver c:\winnt\system32\drivers\rasptp.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_PTMINIPOINT\0000
 Last Reset 11/29/2002 4:39:29 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 11/29/2002 4:39:29 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 (90096, 5.00.2195.2779)

Name [00000007] Intel(R) PRO/100+ Dual Port Server Adapter
 Adapter Type Ethernet 802.3
 Product Name Intel(R) PRO/100+ Dual Port Server Adapter
 Installed True
 PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_10F08086&REV_05\4&15F5026D&0&2828
 Last Reset 11/29/2002 4:39:29 AM
 Index 7
 Service Name E100B
 IP Address 192.168.140.10
 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:E8:71:61
 Service Name E100B
 IRQ Number 21
 I/O Port 0x4020-0x403F
 Driver c:\winnt\system32\drivers\e100bnt5.sys (139536, 6.01.03.0000)

Name [00000008] Intel(R) PRO/100+ Dual Port Server Adapter
 Adapter Type Ethernet 802.3
 Product Name Intel(R) PRO/100+ Dual Port Server Adapter
 Installed True
 PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_10F08086&REV_05\4&273796BB&0&2048
 Last Reset 11/29/2002 4:39:29 AM

Index 8
 Service Name E100B
 IP Address 192.168.110.10
 IP Subnet 255.255.255.0
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 00:03:47:22:5D:1E
 Service Name E100B
 IRQ Number 16
 I/O Port 0x2000-0x2FFF
 Driver c:\winnt\system32\drivers\e100bnt5.sys (139536, 6.01.03.0000)

Name [00000009] Intel(R) PRO/100+ Dual Port Server Adapter
 Adapter Type Ethernet 802.3
 Product Name Intel(R) PRO/100+ Dual Port Server Adapter
 Installed True
 PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_10F08086&REV_05\4&273796BB&0&2848
 Last Reset 11/29/2002 4:39:29 AM

Index 9
 Service Name E100B
 IP Address 192.168.120.10
 IP Subnet 255.255.255.0
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 00:03:47:22:5D:1F
 Service Name E100B
 IRQ Number 17
 I/O Port 0x2020-0x203F
 Driver c:\winnt\system32\drivers\e100bnt5.sys (139536, 6.01.03.0000)

[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 Tcpi [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_{12C1B60F-27AA-4FFD-9BC5-ED78BFE30675}]
 SEQPACKET 6
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes

MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting False
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{12C1B60F-27AA-4FFD-9BC5-ED78BFE30675}]
 DATAGRAM 6
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{E83E64D1-57DD-4B85-BB86-15EB57654D6A}]
 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_{E83E64D1-57DD-4B85-BB86-15EB57654D6A}]
 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_{BA57FA6C-B8B5-432D-AF7B-8AAF85E17FEE}]
 SEQPACKET 4

ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{BA57FA6C-B8B5-432D-AF7B-8AAF85E17FEE}]
 DATAGRAM 4

ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{AD7DBD85-EF28-41FF-8D67-FEA354E70717}]
 SEQPACKET 1

ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{AD7DBD85-EF28-41FF-8D67-FEA354E70717}]
 DATAGRAM 1

ConnectionlessService True

GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{E7C2D096-2A16-494D-9F24-93D093159D64}]
 SEQPACKET 0

ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{E7C2D096-2A16-494D-9F24-93D093159D64}]
 DATAGRAM 0

ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{8F354C3B-893D-43F7-B7B0-3BF884D63BF1}]
 SEQPACKET 2

ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{8F354C3B-893D-43F7-B7B0-3BF884D63BF1}]
 DATAGRAM 2
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{9788862E-F4FC-434F-AE8B-56AA0E507EF7}]
 SEQPACKET 3
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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_{9788862E-F4FC-434F-AE8B-56AA0E507EF7}]
 DATAGRAM 3
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 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\sock32.dll
Version	5.00.2195.2871
Size	21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item	Value
Name	COM1
Status	OK
PNP Device ID	ACPI\PNP0501\1
Maximum Input Buffer Size	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 Character	0
Error Replacement Enabled	0
Event Character	0
Parity Check Enabled	0
RTS Flow Control Type	Enable
XOff Character	19
XOffXMit Threshold	512
XOn Character	17
XOnXMit Threshold	2048
XOnXOff InFlow Control	0
XOnXOff OutFlow Control	0
IRQ Number	4
I/O Port	0x03F8-0x03FF
Driver	c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

Name	COM2
Status	OK
PNP Device ID	ACPI\PNP0501\2
Maximum Input Buffer Size	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 Character 0
 Error Replacement Enabled 0
 Event Character 0
 Parity Check Enabled 0
 RTS Flow Control Type Enable
 XOff Character 19
 XOffXMit Threshold 512
 XOn Character 17
 XOnXMit Threshold 2048
 XOnXOff InFlow Control 0
 XOnXOff OutFlow Control 0
 IRQ Number 3
 I/O Port 0x02F8-0x02FF
 Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item	Value
Name	LPT1
PNP Device ID	ACPI\PNP0400\1

[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	5.90 GB (6,335,074,304 bytes)
Volume Name	
Volume Serial Number	1C67EB25
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	IBM-PSG ST39204LC !# SCSI Disk Device
Drive BytesPerSector	512
Drive MediaLoaded	True
Drive MediaType	Fixed hard disk media
Drive Partitions	1
Drive SCSI Bus	0
Drive SCSI Logical Unit	0
Drive SCSI Port	2
Drive SCSTargetId	0
Drive SectorsPerTrack	63
Drive Size	9097159680 bytes
Drive TotalCylinders	1106
Drive TotalSectors	17767890
Drive TotalTracks	282030
Drive TracksPerCylinder	255

Drive E:	
Description	Network Connection
Provider Name	\\192.168.132.253\e\$

[SCSI]

Item	Value
Name	Adaptec AIC-7892 - Ultra160 SCSI
Caption	Adaptec AIC-7892 - Ultra160 SCSI
Driver	adpu160m
Status	OK
PNP Device ID	PCI\VEN_9005&DEV_008F&SUBSYS_008F1014&REV_02\3&13C0B0C5&0&18
Device ID	PCI\VEN_9005&DEV_008F&SUBSYS_008F1014&REV_02\3&13C0B0C5&0&18
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	28
I/O Port	0x3100-0x31FF
Driver	c:\winnt\system32\drivers\adpu160m.sys (88000, d4.10 (4.10.4000))

[Printing]

Name	Port Name Server Name
No printing information	

[Problem Devices]

Device	PNP Device ID	Error Code
Not Available	ACPI\IBM37D1\4&389C1010&0	28

[USB]

Device	PNP Device ID
Standard OpenHCD USB Host Controller	
PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_04\3&267A616A&0&7A	
USB Root Hub	USB\ROOT_HUB\4&372644EA&0

[Software Environment]

[Following are sub-categories of this main category]

[Drivers]

TMP %USERPROFILE%\Local Settings\Temp
CLIENT10\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

[Network Connections]

Local Name	Remote Name	Type	Status	User Name
E:	\\192.168.132.253\e\$	Disk	OK	

[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	11/29/2002 9:39:46 AM	5.00.2195.2901		44.27 KB	
(45,328 bytes)	12/7/1999 7:00:00 AM				
csrss.exe	Not Available	184	13	Not Available	
Not Available	11/29/2002 9:39:50 AM		Unknown	Unknown	
Unknown					
winlogon.exe	c:\winnt\system32\winlogon.exe	204	13		
204800	1413120 11/29/2002 9:39:51 AM	5.00.2195.2953			
173.77 KB (177,936 bytes)	12/7/1999 7:00:00 AM				
services.exe	c:\winnt\system32\services.exe	232	9		
204800	1413120 11/29/2002 9:39:53 AM	5.00.2195.2780			
86.77 KB (88,848 bytes)	12/7/1999 7:00:00 AM				
lsass.exe	c:\winnt\system32\lsass.exe	244	9	204800	
1413120	11/29/2002 9:39:53 AM	5.00.2195.2964		32.77 KB	
(33,552 bytes)	12/7/1999 7:00:00 AM				
svchost.exe	c:\winnt\system32\svchost.exe	404	8		
204800	1413120 11/29/2002 9:39:55 AM	5.00.2134.1			
7.77 KB (7,952 bytes)	12/7/1999 7:00:00 AM				
msdtc.exe	c:\winnt\system32\msdtc.exe	440	8	204800	
1413120	11/29/2002 9:39:57 AM	1999.9.3421.3		6.77 KB	
(6,928 bytes)	9/17/2001 10:04:52 AM				
svchost.exe	c:\winnt\system32\svchost.exe	548	8		
204800	1413120 11/29/2002 9:39:58 AM	5.00.2134.1			
7.77 KB (7,952 bytes)	12/7/1999 7:00:00 AM				
rsys.exe	Not Available	660	8	Not Available	
Not Available	11/29/2002 9:40:01 AM		Unknown	Unknown	
Unknown					
tcpvcs.exe	c:\winnt\system32\tcpvcs.exe	740	8		
204800	1413120 11/29/2002 9:40:16 AM	5.00.2134.1			
24.77 KB (25,360 bytes)	12/7/1999 7:00:00 AM				
winmgmt.exe	c:\winnt\system32\wbem\winmgmt.exe	768	8		
204800	1413120 11/29/2002 9:40:16 AM	1.50.1085.0029			
192.08 KB (196,685 bytes)	9/24/2001 10:26:43 AM				
inetinfo.exe	c:\winnt\system32\inetinfo.exe	800	8		
204800	1413120 11/29/2002 9:40:16 AM	5.00.0984		14.27 KB	
(14,608 bytes)	9/24/2001 10:27:34 AM				

dfssvc.exe	c:\winnt\system32\dfssvc.exe	604	8	204800
1413120	11/29/2002 9:40:17 AM	5.00.2195.2841		88.27 KB
(90,384 bytes)	9/24/2001 10:26:13 AM			
svchost.exe	c:\winnt\system32\svchost.exe	972	8	
204800	1413120 11/29/2002 9:41:02 AM	5.00.2134.1		
7.77 KB (7,952 bytes)	12/7/1999 7:00:00 AM			
explorer.exe	c:\winnt\explorer.exe	732	8	204800
1413120	11/29/2002 10:17:49 AM	5.00.3315.2846		237.27 KB
(242,960 bytes)	9/24/2001 10:26:39 AM			
mmc.exe	c:\winnt\system32\mmc.exe	848	8	204800
1413120	11/29/2002 10:19:00 AM	5.00.2195.2301		589.27 KB
(603,408 bytes)	9/24/2001 10:26:20 AM			
rsvp.exe	c:\winnt\system32\rsvp.exe	876	8	204800
1413120	11/29/2002 10:20:40 AM	5.00.2167.1		172.77 KB
(176,912 bytes)	12/7/1999 7:00:00 AM			

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer	Path
traffic.dll	5.00.2139.1	30.77 KB (31,504 bytes)			12/7/1999
7:00:00 AM		Microsoft Corporation			
c:\winnt\system32\traffic.dll					
rsvp.exe	5.00.2167.1	172.77 KB (176,912 bytes)			12/7/1999
7:00:00 AM		Microsoft Corporation			
c:\winnt\system32\rsvp.exe					
wbemprox.dll	1.50.1085.0045	40.08 KB (41,040 bytes)			
9/24/2001 10:26:43 AM		Microsoft Corporation			
c:\winnt\system32\wbem\wbemprox.dll					
mlang.dll	5.00.3103.1000	510.77 KB (523,024 bytes)			9/24/2001
10:26:20 AM		Microsoft Corporation			
c:\winnt\system32\mlang.dll					
rassapi.dll	5.00.2188.1	14.27 KB (14,608 bytes)			12/7/1999
7:00:00 AM		Microsoft Corporation			
c:\winnt\system32\rassapi.dll					
adsnt.dll	5.00.2195.2778	195.27 KB (199,952 bytes)			9/24/2001
10:26:09 AM		Microsoft Corporation			
c:\winnt\system32\adsnt.dll					
dbghelp.dll	5.00.2195.2104	159.27 KB (163,088 bytes)			
5/4/2001 12:05:02 PM		Microsoft Corporation			
c:\winnt\system32\dbghelp.dll					
localec.dll	5.00.2195.2130	230.27 KB (235,792 bytes)			
9/24/2001 10:26:19 AM		Microsoft Corporation			
c:\winnt\system32\localec.dll					
devmgr.dll	5.00.2166.1	215.77 KB (220,944 bytes)			12/7/1999
7:00:00 AM		Microsoft Corporation			
c:\winnt\system32\devmgr.dll					
filemgmt.dll	5.00.2195.2165	287.27 KB (294,160 bytes)			
9/24/2001 10:26:16 AM		Microsoft Corporation			
c:\winnt\system32\filemgmt.dll					
pdh.dll	5.00.2195.2739	147.77 KB (151,312 bytes)			9/24/2001
10:26:32 AM		Microsoft Corporation			
c:\winnt\system32\pdh.dll					
smlogcfg.dll	5.00.2195.2485	273.27 KB (279,824 bytes)			
9/24/2001 10:26:35 AM		Microsoft Corporation			
c:\winnt\system32\smlogcfg.dll					
cabinet.dll	5.00.2147.1	54.77 KB (56,080 bytes)			12/7/1999
7:00:00 AM		Microsoft Corporation			
c:\winnt\system32\cabinet.dll					
msinfo32.dll	5.00.2177.1	312.27 KB (319,760 bytes)			
9/17/2001 2:09:30 PM		Microsoft Corporation			c:\program
files\common files\microsoft shared\msinfo\msinfo32.dll					
riched20.dll	5.30.23.1205	421.27 KB (431,376 bytes)			
9/24/2001 10:26:33 AM		Microsoft Corporation			
c:\winnt\system32\riched20.dll					
riched32.dll	5.00.2134.1	3.77 KB (3,856 bytes)			12/7/1999
7:00:00 AM		Microsoft Corporation			
c:\winnt\system32\riched32.dll					

els.dll	5.00.2175.1	151.27 KB (154,896 bytes)	12/7/1999	docprop2.dll	5.00.2178.1	297.77 KB (304,912 bytes)	
7:00:00 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\els.dll				c:\winnt\system32\docprop2.dll			
ntsmngr.dll	1.0,0,1	427.77 KB (438,032 bytes)	12/7/1999	linkinfo.dll	5.00.2134.1	15.77 KB (16,144 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation and HighGround Systems, Inc.			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\ntsmngr.dll				c:\winnt\system32\linkinfo.dll			
mmfutil.dll	1.50.1085.0000	32.06 KB (32,829 bytes)	12/7/1999	browsecl.dll	5.00.3315.2846	34.50 KB (35,328 bytes)	
7:00:00 AM	Microsoft Corporation			9/24/2001 10:26:10 AM	Microsoft Corporation		
c:\winnt\system32\mmfutil.dll				c:\winnt\system32\browsecl.dll			
logdrive.dll	1.50.1085.0000	200.06 KB (204,863 bytes)		msi.dll	2.0.2600.0	1.90 MB (1,991,168 bytes)	9/24/2001 10:26:23 AM
12/7/1999 7:00:00 AM	Microsoft Corporation			AM	Microsoft Corporation		c:\winnt\system32\msi.dll
c:\winnt\system32\logdrive.dll				powrprof.dll	5.00.3103.1000	13.27 KB (13,584 bytes)	
dfrgres.dll	5.00.2150.1	27.50 KB (28,160 bytes)	12/7/1999	9/24/2001 10:26:32 AM	Microsoft Corporation		
7:00:00 AM	Executive Software International, Inc.			c:\winnt\system32\powrprof.dll			
c:\winnt\system32\dfrgres.dll				batmeter.dll	5.00.3103.1000	20.27 KB (20,752 bytes)	
dfrgsnap.dll	5.00.2195.2104	41.77 KB (42,768 bytes)		9/24/2001 10:26:10 AM	Microsoft Corporation		
9/24/2001 10:26:13 AM	Executive Software International, Inc.			c:\winnt\system32\batmeter.dll			
c:\winnt\system32\dfrgsnap.dll				stobject.dll	5.00.2195.2780	79.27 KB (81,168 bytes)	9/24/2001
dmdskres.dll	2195.2104.297.3	119.50 KB (122,368 bytes)		10:26:36 AM	Microsoft Corporation		
9/24/2001 10:26:14 AM	Microsoft Corp., VERITAS Software			c:\winnt\system32\stobject.dll			
c:\winnt\system32\dmdskres.dll				webcheck.dll	5.00.3315.1000	251.77 KB (257,808 bytes)	
dmutil.dll	2195.2104.297.3	42.27 KB (43,280 bytes)	9/24/2001	9/24/2001 10:26:38 AM	Microsoft Corporation		
10:26:14 AM	VERITAS Software Corp.			c:\winnt\system32\webcheck.dll			
c:\winnt\system32\dmutil.dll				ntshrui.dll	5.00.2134.1	46.77 KB (47,888 bytes)	12/7/1999
ntmsapi.dll	5.00.1948.1	51.77 KB (53,008 bytes)	9/24/2001	7:00:00 AM	Microsoft Corporation		
10:26:29 AM	Microsoft Corporation			c:\winnt\system32\ntshrui.dll			
c:\winnt\system32\ntmsapi.dll				mydocs.dll	5.00.2920.0000	55.77 KB (57,104 bytes)	12/7/1999
dmdskmgr.dll	2215.2215.297.3	160.27 KB (164,112 bytes)		7:00:00 AM	Microsoft Corporation		
9/24/2001 10:26:13 AM	Microsoft Corp., VERITAS Software			c:\winnt\system32\mydocs.dll			
c:\winnt\system32\dmdskmgr.dll				hhsetup.dll	4.74.8702	66.27 KB (67,856 bytes)	12/7/1999 7:00:00 AM
mycomput.dll	5.00.2134.1	107.77 KB (110,352 bytes)		Microsoft Corporation			c:\winnt\system32\hhsetup.dll
12/7/1999 7:00:00 AM	Microsoft Corporation			mmschext.dll	5.00.2153.1	24.27 KB (24,848 bytes)	
c:\winnt\system32\mycomput.dll				12/7/1999 7:00:00 AM	Microsoft Corporation		
mmcmdmgr.dll	5.00.2178.1	815.27 KB (834,832 bytes)		c:\winnt\system32\mmschext.dll			
12/7/1999 7:00:00 AM	Microsoft Corporation			browseui.dll	5.00.3315.2846	788.77 KB (807,696 bytes)	
c:\winnt\system32\mmcmdmgr.dll				9/24/2001 10:26:10 AM	Microsoft Corporation		
mmc.exe	5.00.2195.2301	589.27 KB (603,408 bytes)	9/24/2001	c:\winnt\system32\browseui.dll			
10:26:20 AM	Microsoft Corporation			shdocvw.dll	5.00.3315.2879	1.05 MB (1,104,144 bytes)	
c:\winnt\system32\mmc.exe				9/24/2001 10:26:34 AM	Microsoft Corporation		
wininet.dll	5.00.3315.1000	456.77 KB (467,728 bytes)	9/24/2001	c:\winnt\system32\shdocvw.dll			
10:26:38 AM	Microsoft Corporation			explorer.exe	5.00.3315.2846	237.27 KB (242,960 bytes)	
c:\winnt\system32\wininet.dll				9/24/2001 10:26:39 AM	Microsoft Corporation		
netplwiz.dll	5.00.2195.2370	169.77 KB (173,840 bytes)		c:\winnt\explorer.exe			
9/24/2001 10:26:28 AM	Microsoft Corporation			tapisrv.dll	5.00.2195.2955	169.27 KB (173,328 bytes)	9/24/2001
c:\winnt\system32\netplwiz.dll				10:26:36 AM	Microsoft Corporation		
netmsg.dll	5.00.2137.1	152.50 KB (156,160 bytes)	12/7/1999	c:\winnt\system32\tapisrv.dll			
7:00:00 AM	Microsoft Corporation			dfssvc.exe	5.00.2195.2841	88.27 KB (90,384 bytes)	9/24/2001
c:\winnt\system32\netmsg.dll				10:26:13 AM	Microsoft Corporation		
netui2.dll	5.00.2134.1	280.27 KB (286,992 bytes)	12/7/1999	c:\winnt\system32\dfssvc.exe			
7:00:00 AM	Microsoft Corporation			iislog.dll	5.00.0984	75.27 KB (77,072 bytes)	9/24/2001 10:27:34 AM
c:\winnt\system32\netui2.dll				AM	Microsoft Corporation		c:\winnt\system32\iislog.dll
mprui.dll	5.00.2195.2104	54.77 KB (56,080 bytes)	9/24/2001	ntlsapi.dll	5.00.2134.1	6.77 KB (6,928 bytes)	12/7/1999 7:00:00 AM
10:26:21 AM	Microsoft Corporation			Microsoft Corporation			c:\winnt\system32\ntlsapi.dll
c:\winnt\system32\mprui.dll				httpext.dll	0.9.3940.21	435.27 KB (445,712 bytes)	9/24/2001
urlmon.dll	5.00.3315.1000	441.27 KB (451,856 bytes)	9/24/2001	10:27:34 AM	Microsoft Corporation		
10:26:37 AM	Microsoft Corporation			c:\winnt\system32\httpext.dll			
c:\winnt\system32\urlmon.dll				rpeproxy.dll	5.00.2195.2780	16.27 KB (16,656 bytes)	
faxshell.dll	5.00.2134.1	8.27 KB (8,464 bytes)	12/7/1999 7:00:00 AM	9/24/2001 10:27:26 AM	Microsoft Corporation		
Microsoft Corporation				c:\winnt\system32\rpeproxy\rpeproxy.dll			
msacm32.dll	5.00.2134.1	65.27 KB (66,832 bytes)		fpexedll.dll	4.0.2.4324	20.06 KB (20,541 bytes)	9/24/2001
12/7/1999 7:00:00 AM	Microsoft Corporation			10:27:24 AM	Microsoft Corporation		c:\program
c:\winnt\system32\msacm32.dll				files\common files\microsoft shared\web server extensions\40\bin\fpexedll.dll			
avifil32.dll	5.00.2134.1	76.27 KB (78,096 bytes)	12/7/1999	md5filt.dll	5.00.0984	32.77 KB (33,552 bytes)	9/24/2001 10:27:35 AM
7:00:00 AM	Microsoft Corporation			AM	Microsoft Corporation		
c:\winnt\system32\avifil32.dll				c:\winnt\system32\md5filt.dll			
msvfw32.dll	5.00.2134.1	113.77 KB (116,496 bytes)		gzip.dll	5.00.0984	30.27 KB (30,992 bytes)	9/24/2001 10:27:34 AM
12/7/1999 7:00:00 AM	Microsoft Corporation			AM	Microsoft Corporation		c:\winnt\system32\gzip.dll
c:\winnt\system32\msvfw32.dll							

compfilt.dll	5.00.0984	22.77 KB (23,312 bytes)	9/24/2001	wshnetbs.dll	5.00.2134.1	7.77 KB (7,952 bytes)	12/7/1999
10:27:33 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\compfilt.dll				c:\winnt\system32\wshnetbs.dll			
sspifilt.dll	5.00.0984	43.27 KB (44,304 bytes)	9/24/2001	ntmarta.dll	5.00.2195.2862	98.77 KB (101,136 bytes)	9/24/2001
AM	Microsoft Corporation		10:27:35	10:26:29 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\sspifilt.dll				c:\winnt\system32\ntmarta.dll			
iscomlog.dll	5.00.0984	24.77 KB (25,360 bytes)	9/24/2001	provthrd.dll	1.50.1085.0000	68.07 KB (69,708 bytes)	
10:27:35 AM	Microsoft Corporation			9/17/2001	2:09:22 PM	Microsoft Corporation	
c:\winnt\system32\inetsrv\iscomlog.dll				c:\winnt\system32\wbem\provthrd.dll			
lonsint.dll	5.00.0984	11.77 KB (12,048 bytes)	9/24/2001	ntevt.dll	1.50.1085.0000	192.06 KB (196,669 bytes)	12/7/1999
AM	Microsoft Corporation		10:27:35	7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\lonsint.dll				c:\winnt\system32\wbem\ntevt.dll			
inetsloc.dll	5.00.0984	20.27 KB (20,752 bytes)	9/24/2001	perfos.dll	5.00.2155.1	21.27 KB (21,776 bytes)	12/7/1999
AM	Microsoft Corporation		10:26:17	7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\inetsloc.dll				c:\winnt\system32\perfos.dll			
iisfecnv.dll	5.00.0984	7.27 KB (7,440 bytes)	9/17/2001	psapi.dll	5.00.2134.1	28.27 KB (28,944 bytes)	12/7/1999
10:05:27 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\iisfecnv.dll				c:\winnt\system32\psapi.dll			
isatq.dll	5.00.0984	60.27 KB (61,712 bytes)	9/24/2001	framedyn.dll	1.50.1085.0000	164.05 KB (167,992 bytes)	
AM	Microsoft Corporation		10:27:35	12/7/1999	7:00:00 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\isatq.dll				c:\winnt\system32\wbem\framedyn.dll			
infocomm.dll	5.00.0984	238.27 KB (243,984 bytes)	9/24/2001	cimwin32.dll	1.50.1085.0038	1.02 MB (1,073,232 bytes)	
10:27:34 AM	Microsoft Corporation			9/24/2001	10:26:41 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\infocomm.dll				c:\winnt\system32\wbem\cimwin32.dll			
w3svc.dll	5.00.0984	343.27 KB (351,504 bytes)	9/24/2001	wbemsvcs.dll	1.50.1085.0007	40.07 KB (41,036 bytes)	
AM	Microsoft Corporation		10:27:36	9/24/2001	10:26:43 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\w3svc.dll				c:\winnt\system32\wbem\wbemsvcs.dll			
security.dll	5.00.2154.1	5.77 KB (5,904 bytes)	12/7/1999	wbemess.dll	1.50.1085.0039	364.07 KB (372,804 bytes)	
7:00:00 AM	Microsoft Corporation			9/24/2001	10:26:43 AM	Microsoft Corporation	
c:\winnt\system32\security.dll				c:\winnt\system32\wbem\wbemess.dll			
svcxext.dll	5.00.0984	39.77 KB (40,720 bytes)	9/24/2001	fastprox.dll	1.50.1085.0037	144.08 KB (147,536 bytes)	
AM	Microsoft Corporation		10:27:35	9/24/2001	10:26:42 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\svcxext.dll				c:\winnt\system32\wbem\fastprox.dll			
admexs.dll	5.00.0984	27.77 KB (28,432 bytes)	9/24/2001	wbemcore.dll	1.50.1085.0036	628.07 KB (643,140 bytes)	
AM	Microsoft Corporation		10:27:33	9/24/2001	10:26:42 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\admexs.dll				c:\winnt\system32\wbem\wbemcore.dll			
wamreg.dll	5.00.0984	45.77 KB (46,864 bytes)	9/24/2001	wbemcomn.dll	1.50.1085.0021	692.07 KB (708,675 bytes)	
AM	Microsoft Corporation		10:27:36	9/24/2001	10:26:42 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\wamreg.dll				c:\winnt\system32\wbem\wbemcomn.dll			
metadata.dll	5.00.0984	68.77 KB (70,416 bytes)	9/24/2001	winnmgmt.exe	1.50.1085.0029	192.08 KB (196,685 bytes)	
10:27:35 AM	Microsoft Corporation			9/24/2001	10:26:43 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\metadata.dll				c:\winnt\system32\wbem\winnmgmt.exe			
iismap.dll	5.00.0984	55.77 KB (57,104 bytes)	9/24/2001	simptcp.dll	5.00.2134.1	19.27 KB (19,728 bytes)	9/17/2001
AM	Microsoft Corporation		10:26:17	10:04:47 AM	Microsoft Corporation		
c:\winnt\system32\iismap.dll				c:\winnt\system32\simptcp.dll			
nsepm.dll	5.00.0984	43.27 KB (44,304 bytes)	9/24/2001	tcpsvcs.exe	5.00.2134.1	24.77 KB (25,360 bytes)	
AM	Microsoft Corporation		10:27:35	12/7/1999	7:00:00 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\nsepm.dll				c:\winnt\system32\tcpsvcs.exe			
admwprox.dll	5.00.0984	31.77 KB (32,528 bytes)	9/17/2001	wmi.dll	5.00.2191.1	6.27 KB (6,416 bytes)	12/7/1999
10:05:29 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\admwprox.dll				c:\winnt\system32\wmi.dll			
coadmin.dll	5.00.0984	39.27 KB (40,208 bytes)	9/24/2001	netshell.dll	5.00.2195.2779	457.27 KB (468,240 bytes)	9/24/2001
10:27:33 AM	Microsoft Corporation			10:26:28 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\coadmin.dll				c:\winnt\system32\netshell.dll			
iisadmin.dll	5.00.0984	15.27 KB (15,632 bytes)	9/24/2001	netman.dll	5.00.2195.2779	89.27 KB (91,408 bytes)	9/24/2001
10:27:34 AM	Microsoft Corporation			10:26:28 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\iisadmin.dll				c:\winnt\system32\netman.dll			
rpref.dll	5.00.0984	4.27 KB (4,368 bytes)	9/24/2001	rasdlg.dll	5.00.2195.2671	514.27 KB (526,608 bytes)	12/7/1999
10:27:35 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\inetsrv\rpref.dll				c:\winnt\system32\rasdlg.dll			
iisrtl.dll	5.00.0984	119.77 KB (122,640 bytes)	9/24/2001	netcfgx.dll	5.00.2195.2228	534.77 KB (547,600 bytes)	9/24/2001
AM	Microsoft Corporation		10:26:17	10:26:28 AM	Microsoft Corporation		
c:\winnt\system32\iisrtl.dll				c:\winnt\system32\netcfgx.dll			
inetinfo.exe	5.00.0984	14.27 KB (14,608 bytes)	9/24/2001	rasmans.dll	5.00.2195.2728	147.27 KB (150,800 bytes)	
10:27:34 AM	Microsoft Corporation			9/24/2001	10:26:32 AM	Microsoft Corporation	
c:\winnt\system32\inetsrv\inetinfo.exe				c:\winnt\system32\rasmans.dll			
netui1.dll	5.00.2134.1	210.27 KB (215,312 bytes)	12/7/1999	ntmsdba.dll	5.00.2195.2779	167.27 KB (171,280 bytes)	
7:00:00 AM	Microsoft Corporation			9/24/2001	10:26:29 AM	Microsoft Corporation	
c:\winnt\system32\netui1.dll				c:\winnt\system32\ntmsdba.dll			
netui0.dll	5.00.2134.1	70.27 KB (71,952 bytes)	12/7/1999				
7:00:00 AM	Microsoft Corporation						
c:\winnt\system32\netui0.dll							
ntlanman.dll	5.00.2157.1	35.27 KB (36,112 bytes)	12/7/1999				
7:00:00 AM	Microsoft Corporation						
c:\winnt\system32\ntlanman.dll							

sens.dll	5.00.2163.1	36.77 KB (37,648 bytes)	12/7/1999	iasssdo.dll	5.00.2195.2104	261.77 KB (268,048 bytes)	9/24/2001
7:00:00 AM	Microsoft Corporation			10:26:16 AM	Microsoft Corporation		
c:\winnt\system32\sens.dll				c:\winnt\system32\iasssdo.dll			
iashlpr.dll	5.00.2184.1	33.27 KB (34,064 bytes)	12/7/1999	ntmssvc.dll	5.00.2195.2779	391.27 KB (400,656 bytes)	
7:00:00 AM	Microsoft Corporation			9/24/2001 10:26:29 AM	Microsoft Corporation		
c:\winnt\system32\iashlpr.dll				c:\winnt\system32\ntmssvc.dll			
iasacct.dll	5.00.2134.1	28.27 KB (28,944 bytes)	12/7/1999	ias.dll	5.00.2134.1	7.27 KB (7,440 bytes)	12/7/1999 7:00:00 AM
7:00:00 AM	Microsoft Corporation			Microsoft Corporation	c:\winnt\system32\ias.dll		
c:\winnt\system32\iasacct.dll				es.dll	2000.2.3471.1	222.27 KB (227,600 bytes)	9/24/2001
iasusererr.dll	5.00.2134.1	25.77 KB (26,384 bytes)	12/7/1999	10:26:15 AM	Microsoft Corporation		
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\es.dll			
c:\winnt\system32\iasusererr.dll				mtxoci.dll	2000.2.3471.1	101.77 KB (104,208 bytes)	9/24/2001
iasnap.dll	5.00.2195.2104	58.77 KB (60,176 bytes)	9/24/2001	10:26:27 AM	Microsoft Corporation		
10:26:16 AM	Microsoft Corporation			c:\winnt\system32\mtxoci.dll			
c:\winnt\system32\iasnap.dll				resutlils.dll	5.00.2195.2787	39.77 KB (40,720 bytes)	9/24/2001
iaspipe.dll	5.00.2134.1	41.77 KB (42,768 bytes)	12/7/1999	10:26:33 AM	Microsoft Corporation		
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\resutlils.dll			
c:\winnt\system32\iaspipe.dll				clusapi.dll	5.00.2195.2104	54.27 KB (55,568 bytes)	9/24/2001
expssrv.dll	6.0.8540	370.27 KB (379,152 bytes)	9/24/2001 10:26:16 AM	10:26:11 AM	Microsoft Corporation		
Microsoft Corporation				c:\winnt\system32\clusapi.dll			
c:\winnt\system32\expssrv.dll				msvcvp50.dll	5.00.7051	552.50 KB (565,760 bytes)	12/7/1999
vbajet32.dll	6.1.8268	30.27 KB (30,992 bytes)	9/24/2001	7:00:00 AM	Microsoft Corporation		
10:26:37 AM	Microsoft Corporation			c:\winnt\system32\msvcvp50.dll			
c:\winnt\system32\vbajet32.dll				xolehlp.dll	1999.9.3421.3	17.27 KB (17,680 bytes)	9/17/2001
msjtes40.dll	4.00.4229.0	236.27 KB (241,936 bytes)	9/24/2001 10:26:25 AM	10:04:53 AM	Microsoft Corporation		
Microsoft Corporation				c:\winnt\system32\xolehlp.dll			
c:\winnt\system32\msjtes40.dll				msdtclog.dll	1999.9.3421.3	89.77 KB (91,920 bytes)	
oledb32r.dll	2.70.9001.0	built by: Lab06_N(dagbuild) 64.00 KB (65,536 bytes)	11/26/2002 9:10:31 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\msdtclog.dll			
c:\program files\common files\system\ole db\oledb32r.dll				mtxclu.dll	2000.2.3471.1	51.27 KB (52,496 bytes)	9/24/2001
comdlg32.dll	5.00.3103.1000	236.77 KB (242,448 bytes)	12/7/1999 7:00:00 AM	10:26:27 AM	Microsoft Corporation		
Microsoft Corporation				c:\winnt\system32\mtxclu.dll			
c:\winnt\system32\comdlg32.dll				msdtcprx.dll	2000.2.3471.1	665.77 KB (681,744 bytes)	
msdart.dll	2.71.9031.4	built by: Lab06_N(dagbuild) 124.00 KB (126,976 bytes)	9/27/2002 1:22:40 PM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\msdtcprx.dll			
c:\winnt\system32\msdart.dll				txfaux.dll	2000.2.3471.1	374.27 KB (383,248 bytes)	9/24/2001
oledb32.dll	2.71.9031.4	built by: Lab06_N(dagbuild) 408.00 KB (417,792 bytes)	9/27/2002 1:22:42 PM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\txfaux.dll			
c:\program files\common files\system\ole db\oledb32.dll				msdtctm.dll	2000.2.3471.1	1.07 MB (1,120,528 bytes)	
msjint40.dll	4.00.2927.2	148.27 KB (151,824 bytes)	9/24/2001 10:26:25 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\msdtctm.dll			
c:\winnt\system32\msjint40.dll				msdtc.exe	1999.9.3421.3	6.77 KB (6,928 bytes)	9/17/2001 10:04:52 AM
msjter40.dll	4.00.2927.2	52.27 KB (53,520 bytes)	9/24/2001 10:26:25 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\msdtc.exe			
c:\winnt\system32\msjter40.dll				rasadhlp.dll	5.00.2168.1	7.27 KB (7,440 bytes)	12/7/1999
mswstr10.dll	4.00.3829.2	600.27 KB (614,672 bytes)	9/24/2001 10:26:27 AM	7:00:00 AM	Microsoft Corporation		
Microsoft Corporation				c:\winnt\system32\rasadhlp.dll			
c:\winnt\system32\mswstr10.dll				winrrr.dll	5.00.2160.1	18.77 KB (19,216 bytes)	12/7/1999
msjet40.dll	4.00.4431.3	1.43 MB (1,503,504 bytes)	9/24/2001 10:26:25 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\winrrr.dll			
c:\winnt\system32\msjet40.dll				rrr20.dll	5.00.2195.2871	35.77 KB (36,624 bytes)	9/24/2001
msjetoledb40.dll	4.00.4331.4	340.27 KB (348,432 bytes)	9/24/2001 10:26:25 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\rrr20.dll			
c:\winnt\system32\msjetoledb40.dll				rpess.dll	5.00.2195.2815	231.27 KB (236,816 bytes)	9/24/2001
iasrad.dll	5.00.2139.1	94.27 KB (96,528 bytes)	12/7/1999 7:00:00 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\rpess.dll			
c:\winnt\system32\iasrad.dll				svchost.exe	5.00.2134.1	7.77 KB (7,952 bytes)	12/7/1999
iassam.dll	5.00.2160.1	96.27 KB (98,576 bytes)	12/7/1999 7:00:00 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\svchost.exe			
c:\winnt\system32\iassam.dll				dssenh.dll	5.00.2195.2228	142.77 KB (146,192 bytes)	9/24/2001
iasads.dll	5.00.2134.1	73.77 KB (75,536 bytes)	12/7/1999 7:00:00 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\dssenh.dll			
c:\winnt\system32\iasads.dll				wshtcpip.dll	5.00.2195.2104	17.27 KB (17,680 bytes)	
iaspolicy.dll	5.00.2134.1	25.27 KB (25,872 bytes)	12/7/1999 7:00:00 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\wshtcpip.dll			
c:\winnt\system32\iaspolicy.dll				msafd.dll	5.00.2195.2779	106.77 KB (109,328 bytes)	9/24/2001
iassvcs.dll	5.00.2195.2104	58.77 KB (60,176 bytes)	9/24/2001 10:26:17 AM	Microsoft Corporation			
Microsoft Corporation				c:\winnt\system32\msafd.dll			
c:\winnt\system32\iassvcs.dll							

dhcpcsvc.dll	5.00.2195.2778	88.77 KB (90,896 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\dhcpcsvc.dll			
tapi32.dll	5.00.2182.1	123.27 KB (126,224 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\tapi32.dll			
rasman.dll	5.00.2195.2780	54.77 KB (56,080 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\rasman.dll			
rasapi32.dll	5.00.2195.2671	189.77 KB (194,320 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\rasapi32.dll			
iphlpapi.dll	5.00.2173.2	67.77 KB (69,392 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\iphlpapi.dll			
oakley.dll	5.00.2195.2785	378.77 KB (387,856 bytes)	9/24/2001
10:26:30 AM	Microsoft Corporation		
c:\winnt\system32\oakley.dll			
mfc42u.dll	6.00.8665.0	972.05 KB (995,384 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\mfc42u.dll			
polagent.dll	5.00.2183.1	108.27 KB (110,864 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\polagent.dll			
scecli.dll	5.00.2195.2780	105.27 KB (107,792 bytes)	9/24/2001
10:26:33 AM	Microsoft Corporation		
c:\winnt\system32\scecli.dll			
atl.dll	3.00.8449	57.56 KB (58,938 bytes)	12/7/1999 7:00:00 AM
Microsoft Corporation	c:\winnt\system32\atl.dll		
certcli.dll	5.00.2195.2778	130.77 KB (133,904 bytes)	9/24/2001
10:26:11 AM	Microsoft Corporation		
c:\winnt\system32\certcli.dll			
esent.dll	6.0.3940.13	1.08 MB (1,135,376 bytes)	9/24/2001
10:26:15 AM	Microsoft Corporation		
c:\winnt\system32\esent.dll			
mwssock.dll	5.00.2195.2871	62.77 KB (64,272 bytes)	
9/24/2001 10:26:27 AM	Microsoft Corporation		
c:\winnt\system32\mwssock.dll			
ntdsatq.dll	5.00.2195.2878	31.27 KB (32,016 bytes)	9/24/2001
10:26:29 AM	Microsoft Corporation		
c:\winnt\system32\ntdsatq.dll			
ntdsa.dll	5.00.2195.2899	990.77 KB (1,014,544 bytes)	9/24/2001
10:26:29 AM	Microsoft Corporation		
c:\winnt\system32\ntdsa.dll			
kdcsvc.dll	5.00.2195.2878	137.77 KB (141,072 bytes)	9/24/2001
10:26:19 AM	Microsoft Corporation		
c:\winnt\system32\kdcsvc.dll			
sfmapi.dll	5.00.2134.1	38.77 KB (39,696 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\sfmapi.dll			
rtutils.dll	5.00.2168.1	43.77 KB (44,816 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\rtutils.dll			
adslsdp.dll	5.00.2195.2842	127.27 KB (130,320 bytes)	9/24/2001
10:26:09 AM	Microsoft Corporation		
c:\winnt\system32\adslsdp.dll			
activeds.dll	5.00.2195.2778	174.77 KB (178,960 bytes)	
9/24/2001 10:26:02 AM	Microsoft Corporation		
c:\winnt\system32\activeds.dll			
mprapi.dll	5.00.2181.1	79.27 KB (81,168 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\mprapi.dll			
rassfm.dll	5.00.2195.2671	21.27 KB (21,776 bytes)	9/24/2001
10:26:32 AM	Microsoft Corporation		
c:\winnt\system32\rassfm.dll			
mpr.dll	5.00.2195.2779	53.27 KB (54,544 bytes)	9/24/2001
10:26:20 AM	Microsoft Corporation		
c:\winnt\system32\mpr.dll			
rsabase.dll	5.00.2195.2228	128.27 KB (131,344 bytes)	5/4/2001
12:05:02 PM	Microsoft Corporation		
c:\winnt\system32\rsabase.dll			
schannel.dll	5.00.2195.2922	138.27 KB (141,584 bytes)	
5/4/2001 12:05:02 PM	Microsoft Corporation		
c:\winnt\system32\schannel.dll			
netlogon.dll	5.00.2195.2865	357.77 KB (366,352 bytes)	
9/24/2001 10:26:28 AM	Microsoft Corporation		
c:\winnt\system32\netlogon.dll			
msv1_0.dll	5.00.2195.2900	111.77 KB (114,448 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\msv1_0.dll			
kerberos.dll	5.00.2195.2913	198.77 KB (203,536 bytes)	
9/24/2001 10:26:19 AM	Microsoft Corporation		
c:\winnt\system32\kerberos.dll			
msprivs.dll	5.00.2154.1	41.50 KB (42,496 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\msprivs.dll			
samsrv.dll	5.00.2195.2918	369.77 KB (378,640 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\samsrv.dll			
lsasrv.dll	5.00.2195.2964	492.77 KB (504,592 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\lsasrv.dll			
lsass.exe	5.00.2195.2964	32.77 KB (33,552 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\lsass.exe			
wmicore.dll	5.00.2195.2842	72.27 KB (74,000 bytes)	
9/24/2001 10:26:39 AM	Microsoft Corporation		
c:\winnt\system32\wmicore.dll			
trkws.dll	5.00.2166.1	88.77 KB (90,896 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\trkws.dll			
seclogon.dll	5.00.2135.1	15.77 KB (16,144 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\seclogon.dll			
psbase.dll	5.00.2195.2779	111.77 KB (114,448 bytes)	9/24/2001
10:26:32 AM	Microsoft Corporation		
c:\winnt\system32\psbase.dll			
cryptsvc.dll	5.00.2181.1	61.77 KB (63,248 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\cryptsvc.dll			
cryptdll.dll	5.00.2135.1	41.27 KB (42,256 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\cryptdll.dll			
wkssvc.dll	5.00.2195.2780	95.27 KB (97,552 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\wkssvc.dll			
srvsvc.dll	5.00.2195.2904	79.27 KB (81,168 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\srvsvc.dll			
cfgmgr32.dll	5.00.2134.1	16.77 KB (17,168 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\cfgmgr32.dll			
dmserver.dll	2195.2778.297.3	11.77 KB (12,048 bytes)	
9/24/2001 10:26:14 AM	VERITAS Software Corp.		
c:\winnt\system32\dmserver.dll			
winsta.dll	5.00.2195.2386	36.77 KB (37,648 bytes)	9/24/2001
10:26:38 AM	Microsoft Corporation		
c:\winnt\system32\winsta.dll			
icmp.dll	5.00.2134.1	7.27 KB (7,440 bytes)	12/7/1999 7:00:00 AM
Microsoft Corporation	c:\winnt\system32\icmp.dll		
lmhsvc.dll	5.00.2195.2778	9.77 KB (10,000 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\lmhsvc.dll			
eventlog.dll	5.00.2178.1	43.77 KB (44,816 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\eventlog.dll			

ntdsapi.dll	5.00.2195.2661	55.77 KB (57,104 bytes)	9/24/2001	comctl32.dll	5.81	537.77 KB (550,672 bytes)	12/7/1999
10:26:29 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\ntdsapi.dll				c:\winnt\system32\comctl32.dll			
scesrv.dll	5.00.2195.2780	226.27 KB (231,696 bytes)	9/24/2001	shlwapi.dll	5.00.3315.1000	282.77 KB (289,552 bytes)	9/24/2001
10:26:33 AM	Microsoft Corporation			10:26:35 AM	Microsoft Corporation		
c:\winnt\system32\scesrv.dll				c:\winnt\system32\shlwapi.dll			
umpnprmgr.dll	5.00.2182.1	86.27 KB (88,336 bytes)		shell32.dll	5.00.3315.2902	2.25 MB (2,359,056 bytes)	9/24/2001
12/7/1999 7:00:00 AM	Microsoft Corporation			10:26:35 AM	Microsoft Corporation		
c:\winnt\system32\umpnprmgr.dll				c:\winnt\system32\shell32.dll			
services.exe	5.00.2195.2780	86.77 KB (88,848 bytes)		msgina.dll	5.00.2195.2779	324.27 KB (332,048 bytes)	12/7/1999
12/7/1999 7:00:00 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\services.exe				c:\winnt\system32\msgina.dll			
clbcatq.dll	2000.2.3471.1	496.77 KB (508,688 bytes)	9/24/2001	wsock32.dll	5.00.2195.2871	21.27 KB (21,776 bytes)	
10:26:11 AM	Microsoft Corporation			9/24/2001 10:26:39 AM	Microsoft Corporation		
c:\winnt\system32\clbcatq.dll				c:\winnt\system32\wsock32.dll			
oleaut32.dll	2.40.4517	612.27 KB (626,960 bytes)	12/7/1999	dnsapi.dll	5.00.2195.2785	130.77 KB (133,904 bytes)	9/24/2001
7:00:00 AM	Microsoft Corporation			10:26:14 AM	Microsoft Corporation		
c:\winnt\system32\oleaut32.dll				c:\winnt\system32\dnsapi.dll			
cscui.dll	5.00.2195.2959	228.27 KB (233,744 bytes)	9/24/2001	wldap32.dll	5.00.2195.2797	125.27 KB (128,272 bytes)	
10:26:12 AM	Microsoft Corporation			9/24/2001 10:26:38 AM	Microsoft Corporation		
c:\winnt\system32\cscui.dll				c:\winnt\system32\wldap32.dll			
winspool.drv	5.00.2195.2780	109.77 KB (112,400 bytes)		ws2help.dll	5.00.2134.1	17.77 KB (18,192 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\winspool.drv				c:\winnt\system32\ws2help.dll			
winscard.dll	5.00.2134.1	77.27 KB (79,120 bytes)		ws2_32.dll	5.00.2195.2780	67.77 KB (69,392 bytes)	9/24/2001
12/7/1999 7:00:00 AM	Microsoft Corporation			10:26:39 AM	Microsoft Corporation		
c:\winnt\system32\wincard.dll				c:\winnt\system32\ws2_32.dll			
wlnotify.dll	5.00.2195.2780	53.77 KB (55,056 bytes)		samlib.dll	5.00.2195.2780	49.77 KB (50,960 bytes)	12/7/1999
9/24/2001 10:26:39 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\wlnotify.dll				c:\winnt\system32\samlib.dll			
csd.dll	5.00.2195.2401	98.27 KB (100,624 bytes)	9/24/2001	netrap.dll	5.00.2134.1	11.27 KB (11,536 bytes)	12/7/1999
10:26:12 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\csd.dll				c:\winnt\system32\netrap.dll			
lz32.dll	5.00.2134.1	9.77 KB (10,000 bytes)	12/7/1999	netapi32.dll	5.00.2195.2808	303.77 KB (311,056 bytes)	
7:00:00 AM	Microsoft Corporation			9/24/2001 10:26:28 AM	Microsoft Corporation		
c:\winnt\system32\lz32.dll				c:\winnt\system32\netapi32.dll			
version.dll	5.00.2134.1	15.77 KB (16,144 bytes)	12/7/1999	profmap.dll	5.00.2181.1	29.27 KB (29,968 bytes)	
7:00:00 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\version.dll				c:\winnt\system32\profmap.dll			
rsaenh.dll	5.00.2195.2228	130.77 KB (133,904 bytes)	9/24/2001	secur32.dll	5.00.2195.2862	46.77 KB (47,888 bytes)	9/24/2001
10:27:28 AM	Microsoft Corporation			10:26:34 AM	Microsoft Corporation		
c:\winnt\system32\rsaenh.dll				c:\winnt\system32\secur32.dll			
mscat32.dll	5.131.2134.1	7.77 KB (7,952 bytes)	12/7/1999	sfc.dll	5.00.2195.2896	92.11 KB (94,320 bytes)	9/24/2001
7:00:00 AM	Microsoft Corporation			10:26:34 AM	Microsoft Corporation		
c:\winnt\system32\mscat32.dll				c:\winnt\system32\sfc.dll			
ole32.dll	5.00.2195.2887	969.77 KB (993,040 bytes)	9/24/2001	nddeapi.dll	5.00.2137.1	15.27 KB (15,632 bytes)	12/7/1999
10:26:31 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\ole32.dll				c:\winnt\system32\nddeapi.dll			
imagehlp.dll	5.00.2195.2778	125.77 KB (128,784 bytes)		userenv.dll	5.00.2195.2780	361.77 KB (370,448 bytes)	12/7/1999
5/4/2001 12:05:02 PM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\imagehlp.dll				c:\winnt\system32\userenv.dll			
msasn1.dll	5.00.2134.1	51.27 KB (52,496 bytes)	12/7/1999	user32.dll	5.00.2195.2821	392.77 KB (402,192 bytes)	12/7/1999
7:00:00 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\msasn1.dll				c:\winnt\system32\user32.dll			
crypt32.dll	5.131.2195.2833	451.27 KB (462,096 bytes)	9/24/2001	gdi32.dll	5.00.2195.2778	228.77 KB (234,256 bytes)	12/7/1999
10:26:12 AM	Microsoft Corporation			7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\crypt32.dll				c:\winnt\system32\gdi32.dll			
wintrust.dll	5.131.2195.2779	162.27 KB (166,160 bytes)		rpert4.dll	5.00.2195.2832	437.27 KB (447,760 bytes)	9/24/2001
9/24/2001 10:26:38 AM	Microsoft Corporation			10:26:33 AM	Microsoft Corporation		
c:\winnt\system32\wintrust.dll				c:\winnt\system32\rpert4.dll			
setupapi.dll	5.00.2195.2663	555.77 KB (569,104 bytes)		advapi32.dll	5.00.2195.2867	351.77 KB (360,208 bytes)	
12/7/1999 7:00:00 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\setupapi.dll				c:\winnt\system32\advapi32.dll			
winmm.dll	5.00.2161.1	184.77 KB (189,200 bytes)	12/7/1999	kernel32.dll	5.00.2195.2778	714.77 KB (731,920 bytes)	
7:00:00 AM	Microsoft Corporation			12/7/1999 7:00:00 AM	Microsoft Corporation		
c:\winnt\system32\winmm.dll				c:\winnt\system32\kernel32.dll			

msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes) 5/4/2001
 12:05:02 PM Microsoft Corporation
 c:\winnt\system32\msvcrt.dll
 winlogon.exe 5.00.2195.2953 173.77 KB (177,936 bytes)
 12/7/1999 7:00:00 AM Microsoft Corporation
 c:\winnt\system32\winlogon.exe
 sfcfiles.dll 5.00.2195.2967 948.27 KB (971,024 bytes) 9/24/2001
 10:26:34 AM Microsoft Corporation
 c:\winnt\system32\sfcfiles.dll
 ntdll.dll 5.00.2195.2779 478.77 KB (490,256 bytes) 5/4/2001
 12:05:02 PM Microsoft Corporation
 c:\winnt\system32\ntdll.dll
 smss.exe 5.00.2195.2901 44.27 KB (45,328 bytes) 12/7/1999
 7:00:00 AM Microsoft Corporation
 c:\winnt\system32\smss.exe

[Services]

Display Name	Name	State	Start Mode	Service Type
Path	Error Control	Start Name	Tag ID	
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\dfsrv.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		Normal	LocalSystem	0
Fax Service	Fax	Stopped	Manual	Own Process
c:\winnt\system32\faxsvc.exe		Normal	LocalSystem	0
Internet Authentication Service	IAS	Running	Auto	Share Process
c:\winnt\system32\svchost.exe -k		Normal	LocalSystem	0
IIS Admin Service	IISADMIN	Running	Auto	Share Process
c:\winnt\system32\inetrv\inetinfo.exe		Normal	LocalSystem	0
Intersite Messaging	IsmServ	Stopped	Disabled	Own Process
c:\winnt\system32\ismsserv.exe		Normal	LocalSystem	0
Kerberos Key Distribution Center	kdc	Stopped	Disabled	Share Process
c:\winnt\system32\lsass.exe		Normal	LocalSystem	0
Server	lanmanserver	Running	Auto	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
Workstation	lanmanworkstation	Running	Auto	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
License Logging Service	LicenseService	Stopped	Manual	Own Process
c:\winnt\system32\llssrv.exe		Normal	LocalSystem	0
TCP/IP NetBIOS Helper Service	LmHosts	Running	Auto	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0

Messenger	Messenger	Stopped	Manual	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
NetMeeting Remote Desktop Sharing	mnmsrvc	Stopped	Manual	Own Process
c:\winnt\system32\mnmsrvc.exe		Normal	LocalSystem	0
Distributed Transaction Coordinator	MSDTC	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		Normal	LocalSystem	0
File Replication	NtFrs	Stopped	Manual	Own Process
c:\winnt\system32\ntfrs.exe		Ignore	LocalSystem	0
NT LM Security Support Provider	NtLmSsp	Stopped	Manual	Share Process
c:\winnt\system32\lsass.exe		Normal	LocalSystem	0
Removable Storage	NtmsSvc	Running	Auto	Share Process
c:\winnt\system32\svchost.exe -k		Normal	LocalSystem	0
Plug and Play	PlugPlay	Running	Auto	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
IPSEC Policy Agent	PolicyAgent	Running	Auto	Share Process
c:\winnt\system32\lsass.exe		Normal	LocalSystem	0
Protected Storage	ProtectedStorage	Running	Auto	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
Remote Access Auto Connection Manager	RasAuto	Stopped	Manual	Share Process
c:\winnt\system32\svchost.exe -k		Normal	LocalSystem	0
Remote Access Connection Manager	RasMan	Stopped	Manual	Share Process
c:\winnt\system32\svchost.exe -k		Normal	LocalSystem	0
Routing and Remote Access	RemoteAccess	Stopped	Disabled	Share Process
c:\winnt\system32\svchost.exe -k		Normal	LocalSystem	0
Remote Registry Service	RemoteRegistry	Stopped	Manual	Own Process
c:\winnt\system32\regsvc.exe		Normal	LocalSystem	0
Remote Command Service	RMSYS	Running	Auto	Own Process
c:\program files\benchcraft\rsys.exe		Normal	LocalSystem	0
Remote Procedure Call (RPC) Locator	RpcLocator	Stopped	Manual	Own Process
c:\winnt\system32\locator.exe		Normal	LocalSystem	0
Remote Procedure Call (RPC)	RpcSs	Running	Auto	Share Process
c:\winnt\system32\svchost -k		Normal	LocalSystem	0
QoS Admission Control (RSVP)	RSVP	Running	Auto	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	Running	Auto	Share Process
c:\winnt\system32\services.exe		Ignore	LocalSystem	0
System Event Notification	SENS	Running	Auto	Share Process
c:\winnt\system32\svchost.exe -k		Normal	LocalSystem	0

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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.exe  Normal
LocalSystem  0
Telephony TapiSrv  Running  Manual  Share Process
c:\winnt\system32\svchost.exe -k tapisrv  Normal  LocalSystem  0
Terminal Services  TermService  Stopped  Disabled  Own
Process  c:\winnt\system32\termsrv.exe  Normal  LocalSystem  0
Telnet  TlntSvr  Stopped  Manual  Own Process
c:\winnt\system32\tlntsvr.exe  Normal  LocalSystem  0
Distributed Link Tracking Server  TrkSvr  Stopped  Manual  Share
Process  c:\winnt\system32\services.exe  Normal  LocalSystem  0
Distributed Link Tracking Client  TrkWks  Running  Auto  Share
Process  c:\winnt\system32\services.exe  Normal  LocalSystem  0
Uninterruptible Power Supply  UPS  Stopped  Manual  Own
Process  c:\winnt\system32\ups.exe  Normal  LocalSystem  0
Utility Manager  UtilMan  Stopped  Manual  Own Process
c:\winnt\system32\utilman.exe  Normal  LocalSystem  0
Windows Time  W32Time  Stopped  Manual  Share Process
c:\winnt\system32\services.exe  Normal  LocalSystem  0
World Wide Web Publishing Service  W3SVC  Running  Auto
Share Process  c:\winnt\system32\inetrv\inetinfo.exe  Normal
LocalSystem  0
Windows Management Instrumentation  WinMgmt  Running  Auto
Own Process  c:\winnt\system32\wbem\winmgmt.exe  Ignore
LocalSystem  0
Windows Management Instrumentation Driver Extensions  Wmi
Running  Manual  Share Process  c:\winnt\system32\services.exe
Normal  LocalSystem  0

```

[Program Groups]

Group Name	Name	User Name
Accessories	Default User:Accessories	Default User
Accessories\Accessibility	Default User:Accessories\Accessibility	Default User
Accessories\Entertainment	Default User:Accessories\Entertainment	Default User
Accessories\System Tools	Default User:Accessories\System Tools	Default User
Startup	Default User:Startup	Default User
Accessories	All Users:Accessories	All Users
Accessories\Accessibility	All Users:Accessories\Accessibility	All Users
Accessories\Communications	All Users:Accessories\Communications	All Users
Accessories\Entertainment	All Users:Accessories\Entertainment	All Users
Accessories\Games	All Users:Accessories\Games	All Users
Accessories\Microsoft Script Debugger	All Users:Accessories\Microsoft Script Debugger	All Users
Accessories\System Tools	All Users:Accessories\System Tools	All Users
Administrative Tools	All Users:Administrative Tools	All Users
Microsoft SQL Server	All Users:Microsoft SQL Server	All Users
Startup	All Users:Startup	All Users
Accessories	CLIENT10\Administrator:Accessories	CLIENT10\Administrator
Accessories\Accessibility	CLIENT10\Administrator:Accessories\Accessibility	CLIENT10\Administrator

```

Accessories\Entertainment
CLIENT10\Administrator:Accessories\Entertainment
CLIENT10\Administrator
Accessories\System Tools  CLIENT10\Administrator:Accessories\System
Tools  CLIENT10\Administrator
Administrative Tools  CLIENT10\Administrator:Administrative Tools
CLIENT10\Administrator
Benchcraft  CLIENT10\Administrator:Benchcraft
CLIENT10\Administrator
Startup  CLIENT10\Administrator:Startup
CLIENT10\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	C:\WINNT\System32\mspaint.exe

[Internet Explorer 5]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Version	5.00.3315.1000
Build	53315.1000
Product ID	51876-270-7339724-05107
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available
Cipher Strength	168-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company
advapi32.dll	5.0.2195.2867	352 KB	5/4/2001 11:05:02 AM	C:\WINNT\system32	Microsoft Corporation
advpack.dll	5.0.3103.1000	87 KB	5/4/2001 11:05:02 AM	C:\WINNT\system32	Microsoft Corporation
browsecl.dll	5.0.3315.2846	35 KB	5/4/2001 11:05:02 AM	C:\WINNT\system32	Microsoft Corporation
rowseui.dll	5.0.3315.2846	789 KB	5/4/2001 11:05:02 AM	C:\WINNT\system32	Microsoft Corporation
ckcnv.exe	5.0.2189.1	9 KB	12/7/1999 7:00:00 AM	C:\WINNT\system32	Microsoft Corporation
comctl32.dll	5.81.3103.1000	538 KB	5/4/2001 11:05:02 AM	C:\WINNT\system32	Microsoft Corporation
crypt32.dll	5.131.2195.2833	451 KB	5/4/2001 11:05:02 AM	C:\WINNT\system32	Microsoft Corporation

ehnsig.dll	<File Missing>	Not Available	Not Available
Not Available	Not Available		
iemigrat.dll	<File Missing>	Not Available	Not
Available	Not Available	Not Available	
iesetup.dll	5.0.3103.1000	57 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
iexplore.exe	5.0.2920.0	59 KB	12/7/1999 7:00:00 AM
C:\Program Files\Internet Explorer	Microsoft Corporation		
imagehlp.dll	5.0.2195.2778	126 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
imgghelp.dll	<File Missing>	Not Available	Not
Available	Not Available	Not Available	
inseng.dll	5.0.3103.1000	72 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
jobexec.dll	5.0.0.1	47 KB	12/7/1999 7:00:00 AM
C:\WINNT\system32	Microsoft Corporation		
jscrip.dll	5.1.0.5907	476 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
jsproxy.dll	5.0.2920.0	13 KB	12/7/1999 7:00:00 AM
C:\WINNT\system32	Microsoft Corporation		
msaahml.dll	<File Missing>	Not Available	Not
Available	Not Available	Not Available	
mshhtml.dll	5.0.3315.2870	2290 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
msjava.dll	5.0.3802.0	923 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
msoss.dll	<File Missing>	Not Available	Not Available
Not Available	Not Available		
msxml.dll	8.0.5718.1	493 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
occache.dll	5.0.3103.1000	86 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
ole32.dll	5.0.2195.2887	970 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
oleaut32.dll	2.40.4517.0	612 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
olepro32.dll	5.0.4517.0	160 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
rsabase.dll	5.0.2195.2228	128 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
rsaenh.dll	5.0.2195.2228	131 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
rsapi32.dll	<File Missing>	Not Available	Not Available
Not Available	Not Available		
rsasig.dll	<File Missing>	Not Available	Not Available
Not Available	Not Available		
schannel.dll	5.1.2195.0	138 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
shdoc401.dll	<File Missing>	Not Available	Not
Available	Not Available	Not Available	
shdocvw.dll	5.0.3315.2879	1078 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
shell32.dll	5.0.3315.2902	2304 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
shlwapi.dll	5.0.3315.1000	283 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
url.dll	5.0.2920.0	82 KB	12/7/1999 7:00:00 AM
C:\WINNT\system32	Microsoft Corporation		
urlmon.dll	5.0.3315.1000	441 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
vbscript.dll	5.1.0.5907	428 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
webcheck.dll	5.0.3315.1000	252 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
win.com	5.0.2134.1	24 KB	12/7/1999 7:00:00 AM
C:\WINNT\system32	Microsoft Corporation		
wininet.dll	5.0.3315.1000	457 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		

winsock.dll	3.10.0.103	3 KB	12/7/1999 7:00:00 AM
C:\WINNT\system32	Microsoft Corporation		
wintrust.dll	5.131.2195.2779	162 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
wsock.vxd	<File Missing>	Not Available	Not Available
Not Available	Not Available		
wsock32.dll	5.0.2195.2871	21 KB	5/4/2001 11:05:02 AM
C:\WINNT\system32	Microsoft Corporation		
wsock32n.dll	<File Missing>	Not Available	Not
Available	Not Available	Not Available	

[Connectivity]

Item	Value
Connection Preference	Never dial
EnableHttp1.1	1
ProxyHttp1.1	0

LAN Settings

AutoConfigProxy	wininet.dll
AutoProxyDetectMode	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	6041 MB
Maximum Cache Size	270 MB
Available Cache Size	271 MB

[List of Objects]

Program File	Status	CodeBase
No cached object information available		

[Content]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Content Advisor	Disabled

[Personal Certificates]

Issued To	Issued By	Validity	Signature	Algorithm
Administrator	Administrator	9/17/2001 to 8/24/2101	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

Client Configuration Parameters

Client Configuration Parameters

COM+ Settings

TPCC.AITxns:

Activation:

- Enable Object Pooling selected
- Minimum Pool Size: 196
- Maximum Pool Size: 196
- Creating Timeout: 60,000
- Enable Object Construction
- Enable Just in Time Activation

Concurrency:

- Concurrency Required

TPCC Application Registry Parameters

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\TPCC]

"Path"="c:\inetpub\wwwroot\
"NumberOfDeliveryThreads"=dword:0x16
"MaxConnections"=dword:0x3A98
"MaxPendingDeliveries"=dword:0x640
"DB_Protocol"="ODBC"
"TxnMonitor"="COM"
"DbServer"="tpcc"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"=""
"COM_SinglePool"="YES"

Microsoft Internet Information Service Registry Parameters

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\inetInfo]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\inetInfo\Parameters]

"ListenBackLog"=dword:0x19
"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,00,56,00,43,00,00,00,00
"PoolThreadLimit"=dword:0xbe
"ThreadTimeout"=dword:0x15180

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\inetInfo\Performance]

"Library"="infoctrs.dll"
"Open"="OpenINFOPerformanceData"
"Close"="CloseINFOPerformanceData"
"Collect"="CollectINFOPerformanceData"
"Last Counter"=dword:0x842
"Last Help"=dword:0x843
"First Counter"=dword:0x802

World Wide Web Service Registry Parameters

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC]
"Type"=dword:0x20
"Start"=dword:0x2
"ErrorControl"=dword:0x1
"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\inetrv"
"CertMapList"="C:\WINNT\System32\inetrv\iisrcmap.dll"
"AccessDeniedMessage"="Error: Access is Denied."
"Filter DLLs"=""
"LogFileDirectory"="C:\WINNT\System32\LogFiles"
"AcceptExOutstanding"=dword:00000028

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\AdvancedDataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\RDSServer.DataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Script Map]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Virtual Roots]

"/"="c:\inetpub\wwwroot,,205"
"/Scripts"="c:\inetpub\scripts,,1"
"/IISAdmin"="C:\WINNT\System32\inetrv\iisadmin,,1"
"/IISSamples"="c:\inetpub\iissamples,,1"
"/MSADC"="c:\program files\common files\system\msadc,,1"
"/IISHelp"="c:\winnt\help\iishelp,,1"
"/_vti_bin"="C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\40\isapi,,1"
"/Rpc"="C:\WINNT\System32\RpcProxy,,1"
"/Printers"="C:\WINNT\web\printers,,201"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Performance]

"Library"="w3ctrs.dll"
"Open"="OpenW3PerformanceData"
"Close"="CloseW3PerformanceData"
"Collect"="CollectW3PerformanceData"

"Last Counter"=dword:000008f2
"Last Help"=dword:000008f3
"First Counter"=dword:00000850
"First Help"=dword:00000851

[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,00,00,00,20,02,00,00,00,1c,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

RTE Input Parameters

Profile: 1480wh_14700users
File Path: C:\Program Files\BenchCraft\1480wh_14700users.pro
Version: 3

Number of Engines: 15

Name: rte111
Description: rte111
Directory: c:\rtelogs\rte111.log
Machine: rtes2
Parameter Set: PARAM2
Index: 0
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER11571562
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte112
Description: rte112
Directory: c:\rtelogs\rte112.log
Machine: rtes2
Parameter Set: PARAM2
Index: 3000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER25384421
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte113
Description: rte113
Directory: c:\rtelogs\rte113.log
Machine: rtes2

Parameter Set: PARAM2
Index: 6000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER35434750
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte114
Description: rte114
Directory: c:\rtelogs\rte114.log
Machine: rtes2
Parameter Set: PARAM2
Index: 9000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER45470859
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte121
Description: rte121
Directory: c:\rtelogs\rte121.log
Machine: rtes2
Parameter Set: PARAM2
Index: 15000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER55546265
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte122
Description: rte122
Directory: c:\rtelogs\rte122.log
Machine: rtes2
Parameter Set: PARAM2
Index: 18000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER65583640
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte123
Description: rte123
Directory: c:\rtelogs\rte123.log
Machine: rtes2
Parameter Set: PARAM2
Index: 21000000
Seed: 13381
Configured Users: 1000

Pipe Name: DRIVER75623609
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte124
Description: rte124
Directory: c:\rtelogs\rte124.log
Machine: rtes2
Parameter Set: PARAM2
Index: 24000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER85670968
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte132
Description: rte132
Directory: c:\rtelogs\rte132.log
Machine: rtes2
Parameter Set: PARAM2
Index: 27000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER95713843
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte133
Description: rte133
Directory: c:\rtelogs\rte133.log
Machine: rtes2
Parameter Set: PARAM2
Index: 30000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER105754984
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte134
Description: rte134
Directory: c:\rtelogs\rte134.log
Machine: rtes2
Parameter Set: PARAM2
Index: 33000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER115821125
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1

Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte141
Description: rte141
Directory: c:\rtelogs\rte141.log
Machine: frte90
Parameter Set: PARAM2
Index: 75000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER2668925937
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte142
Description: rte142
Directory: c:\rtelogs\rte142.log
Machine: frte90
Parameter Set: PARAM2
Index: 78000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER2768987671
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Name: rte143
Description: rte143
Directory: c:\rtelogs\rte143.log
Machine: frte90
Parameter Set: PARAM2
Index: 81000000
Seed: 13381
Configured Users: 1000
Pipe Name: DRIVER2869074843
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 1

Name: rte144
Description: rte144
Directory: c:\rtelogs\rte144.log
Machine: frte90
Parameter Set: PARAM2
Index: 84000000
Seed: 13381
Configured Users: 700
Pipe Name: DRIVER2969145625
Connect Rate: 400
Start Rate: 200
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND: 233
CPU: 0

Number of User groups: 15

Driver Engine: rte111
IIS Server: client11
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1 - 100
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte112
IIS Server: client11
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 101 - 200
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte113
IIS Server: client11
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 201 - 300
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte114
IIS Server: client11
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 301 - 400
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte121
IIS Server: client12
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 401 - 500
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal

User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte122
IIS Server: client12
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 501 - 600
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte123
IIS Server: client12
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 601 - 700
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte124
IIS Server: client12
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 701 - 800
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte132
IIS Server: client13
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 801 - 900
w_id Min Warehouse: 1
w_id Max Warehouse: 1470
Scale: Normal
User Count: 1000
District id: 1
Scale Down: No

Driver Engine: rte133
IIS Server: client13
SQL Server: ibmserver3
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 901 - 1000
w_id Min Warehouse: 1

w_id Max Warehouse: 1470
 Scale: Normal
 User Count: 1000
 District id: 1
 Scale Down: No

Driver Engine: rte134
 IIS Server: client13
 SQL Server: ibmserver3
 Database: tpcc
 User: sa
 Protocol: HTML
 w_id Range: 1001 - 1100
 w_id Min Warehouse: 1
 w_id Max Warehouse: 1470
 Scale: Normal
 User Count: 1000
 District id: 1
 Scale Down: No

Driver Engine: rte141
 IIS Server: client14
 SQL Server: ibmserver3
 Database: tpcc
 User: sa
 Protocol: HTML
 w_id Range: 1101 - 1200
 w_id Min Warehouse: 1
 w_id Max Warehouse: 1470
 Scale: Normal
 User Count: 1000
 District id: 1
 Scale Down: No

Driver Engine: rte142
 IIS Server: client14
 SQL Server: ibmserver3
 Database: tpcc
 User: sa
 Protocol: HTML
 w_id Range: 1201 - 1300
 w_id Min Warehouse: 1
 w_id Max Warehouse: 1470
 Scale: Normal
 User Count: 1000
 District id: 1
 Scale Down: No

Driver Engine: rte143
 IIS Server: client14
 SQL Server: ibmserver3
 Database: tpcc
 User: sa
 Protocol: HTML
 w_id Range: 1301 - 1400
 w_id Min Warehouse: 1
 w_id Max Warehouse: 1470
 Scale: Normal
 User Count: 1000
 District id: 1
 Scale Down: No

Driver Engine: rte144
 IIS Server: client14
 SQL Server: ibmserver3
 Database: tpcc
 User: sa
 Protocol: HTML

w_id Range: 1401 - 1470
 w_id Min Warehouse: 1
 w_id Max Warehouse: 1470
 Scale: Normal
 User Count: 700
 District id: 1
 Scale Down: No

Number of Parameter Sets: 2

~Default

Default Parameter Set

	Txn Weight	Think Time	Key Time	RT Delay	RT Fence	Menu Delay
New Order	5.00	0.10	10.00	12.05	18.01	0.10
Payment	5.00	0.10	10.00	12.05	3.01	0.10
Delivery	5.00	0.10	1.00	5.05	2.01	0.10
Stock Level	20.00	0.10	1.00	5.05	2.01	0.10
Order Status	5.00	0.10	1.00	10.05	2.01	0.10

PARAM2

Performance parameters

	Txn Weight	Think Time	Key Time	RT Delay	RT Fence	Menu Delay
New Order	5.00	0.10	10.00	12.05	18.01	0.10
Payment	5.00	0.10	9.61	12.05	3.01	0.10
Delivery	5.00	0.10	0.90	5.05	2.01	0.10
Stock Level	20.00	0.10	0.90	5.05	2.01	0.10
Order Status	5.00	0.10	0.90	10.05	2.01	0.10

Appendix D: 60-Day Space

TPC-C 60-Day Space Requirements						
Warehouses	1,480				tpmC	18,077.98
Table	Rows	Data KB	Index KB	Extra 5% KB	8HR Space	Total Space KB
Warehouse	1,480	160	32	9.60		201.60
District	14,800	1,648	32	84.00		1,764.00
Item	100,000	9,528	48	478.80		10,054.80
New-Order	13,320,000	210,600	504		118,400.00	329,504.00
History	44,400,000	2,466,680	24		482,087.30	2,948,791.30
Orders	44,400,000	1,360,920	618,880		386,927.83	2,366,727.83
Customer	44,400,000	32,290,912	1,925,472	1,710,819.20		35,927,203.20
Order-Line	443,999,304	27,749,960	58,760		5,434,876.11	33,243,596.11
Stock	148,000,000	47,360,000	88,504	2,372,425.20		49,820,929.20
Totals		111,450,408	2,692,256	4,083,816.80	6,422,291.24	124,648,772.04
Segment	LogDev Cnt.	Segment Size	Needed	Overhead		Not Needed
misc						
big	3	40,960,000	38,900,640	389,006		1,670,353.97
master, msdb,model	3	86,753,280	85,748,132	857,481		147,666.28
tpcc_root	1	13,312	13,312			-
tempdb	1	8,192	8,192			-
	1	8,704	8,704			-
Totals						
		127,743,488.00	124,678,980.04	1,246,487.72		1,818,020.24
Dynamic Space	31,577,560.00	Sum of Data for Order, Order-Line and History				
Static Space	87,895,408.52	Data + Index + 5% Space + Overhead - Dynamic Space				
Free Space	6,452,499.24	Total Segment Size - Dynamic Space - Static Space - Not needed				
Daily Growth	6,171,450.05	(Dynamic Space/W * 62.5) * tpmC				
Daily Spread	(2,804,675.84)	Free Space - 1.5 * Daily Growth (Zero If Negative)				
60-Day Space (KB)	458,182,411.56	Static Space + 60 (Daily Growth + Daily Spread)				
60-Day Space (GB)	436.96	60-Day Space in GB (Excludes OS,Paging and RDBMS Logs)				
Available (GB)	948.08	Total storage configured and available for database, minus logs, in RAID-0 configuration.				
Log File Storage Requirement						
Log Size (MB)	40,000.00	Total Size of Log File				
% Log Used	28.0278	% of Log File Used During Entire Run				
Total N-O Txn	2,472,176.00	Total Count of New-Order Transactions during Entire Run				
Log / N-O Txn	4.64	KB of Log per New-Order Transaction				
8 Hour Log (GB)	38.43	8 Hours of Log in GB (Excluding Space for Redundancy)				
Log Configured (GB)	68.32					
Disk Capacity	MB	GB				
18.2GB 10K RPM	17,736	16.93				
73.4GB 10K RPM	69,960	68.32				
Space Usage	GB Needed		Disks Priced	Disk Size	GB Priced	GB Usable
60-Day (RAID-0)	436.96		56	18.2GB	948.08	948.08
					Total DB	948.08
8hr Log (RAID-1)	38.43		2	73.4GB	136.64	68.32
					Total Log	68.32
OS, SQL Server	4.00		1	18.2GB	16.93	16.93
Total Space	479.39		59		1,101.65	1,033.33

Appendix E: Third-Party Quotations

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
<http://www.microsoft.com/>

Microsoft

December 4, 2002

IBM Corporation
Chris King
3039 Cornwallis Road
Research Triangle Park,
NC 27709

Ms. King:

Here is the information you requested regarding pricing for several Microsoft products to be used in conjunction with your TPC-C benchmark testing.

All pricing shown is in US Dollars (\$).

Part Number	Description	Unit Price	Quantity	Price
228-01079	SQL Server 2000 Standard Edition <i>Per processor licensing No discounts applied</i>	\$4,999	1	\$4,999
C11-00821	Windows 2000 Server <i>Server license only - No CALs Discount Schedule: Open Program - No Level Unit Price reflects a 8% discount from the retail unit price of \$799.</i>	\$738	2	\$1,476
254-00170	Visual C++ .Net Standard <i>No discounts applied</i>	\$109	1	\$109
PRO-PRORS-16U-01	Database Server Support Package <i>1 Year Term</i>	\$1,950	3	\$5,850

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: PCchki0204122870

Please include this Reference ID in any correspondence regarding this price quote.



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Product Info

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08P1388	MYLEX ACCELERAIID 150 PART#A150-1-4E	\$300.00	1
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08P3201	ACCELERAIID 170LP 1 CHANNEL PCI U160 SCSI RAID ADPTR 16MB NO BB	\$315.00	1
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08P2630	MYLEX ACCELERAIID 170 1 CHANNEL PCI U160 SCSI RAID ADPTR 32MB NO BB #A170-1-32	\$370.00	1
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08P4019	ACCELERAIID 170 1 CHANNEL PCI U160 SCSI RAID ADPTR 32MB NO BBU (SAME AS 08P2630)	\$390.00	1
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08P4021	ACCELERAIID 170 1 CHANNEL PCI U160 SCSI RAID ADPTR 64MB NO BBU	\$473.00	1
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08P2632	IBM STORAGE SYSTEMS DIVISION ACCELERAIID 170 1 CHANNEL PCI U160 SCSI RAID ADPTR	\$473.00	1
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08P2420	ACCELERAIID A352 2 CHANNEL PCI U160 SCSI RAID ADPTR 32MB NO BBU	\$610.00	1
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08P2417	ACCELERAIID 352 2 CHANNEL PCI U160 SCSI RAID ADPTR 64MB NO BBU	\$700.00	1
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LanAdapters.com

Crossover Cables

Hooks 2 PCs Together W/O Hub 10bt or 100bt Supports Fast Ethernet RJ-45 twisted pair crossover.

■ Cat5e 3ft Crossover with molded gray ends

Availability: Usually ships the same business day.

cb5c3 Regular price: \$2.00 Sale price: **\$1.00, 50/\$40.00**

■ Cat5e 5ft Crossover with molded gray ends

Availability: Usually ships the same business day.

cb5c5 Regular price: \$2.00 Sale price: **\$1.20, 50/\$50.00**

■ Cat5e 7ft Crossover with molded gray ends

Availability: Usually ships the same business day.

CB5C7 Regular price: \$2.00 Sale price: **\$1.40, 50/\$60.00**

■ Cat5e 14ft Crossover Cable

Availability: Usually ships the same business day.

CB5C14 **\$2.00, 30/\$51.60** select_color:

■ Cat5e 25ft molded Crossover Cable

Availability: Usually ships the same business day.

CB5C25 Regular price: \$8.00 Sale price: **\$3.00, 10/\$24.00** color:

■ Cat5e 50ft Crossover Cable

Availability: Usually ships the same business day.

CB5C50 **\$7.00, 30/\$195.00**

■ Cat5e 100ft Crossover Cable - 3 lbs Crimp on end style - not snagless

Availability: Usually ships the same business day.

CB5C100 **\$10.00, 10/\$90.00**

■ Cat5e 150ft Crossover Cable

CB5C150 **\$21.00**