TPC Benchmark™ C

Full Disclosure Report for

FUJITSU COMPUTERS SIEMENS

PRIMERGY R450

Using Microsoft SQL Server 2000 Enterprise Edition SP3

and Microsoft .NET Server 2003 Enterprise Edition

November 4, 2002

First Edition

First Edition November 4, 2002

Fujitsu Siemens Computers GmbH believes that the information in this document is accurate as of the publication date. The information in this document is subject to change without notice. We assume no responsibility for any errors that may appear in this document. The pricing information in this document is believed to accurately reflect the current prices as of the publication date. However, we provide no warranty of the pricing information in this document.

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

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

PRIMERGY R450, PRIMERGY 870 and PRIMERGY C200 are trademarks of Fujitsu Siemens Computers GmbH.

Microsoft, Windows 2000, .NET Server 2003, SQL Server and Benchcraft are registered trademarks of Microsoft Corporation.

Pentium®III, Pentium®III XEON and XEON™ MP are registered trademarks of Intel.

TPC Benchmark™ is a trademark of the Transaction Processing Performance Council (TPC).

Other product names mentioned in this document may be trademarks and/or registered trademarks of their respective companies.

Preface

The Transaction Processing Performance Council (TPC), of which Fujitsu Siemens Computers GmbH is a member, is an organization of computer companies, dedicated to the development of objective, industry-wide performance metrics in the area of transaction processing. Fujitsu Siemens Computers GmbH is involved in this effort, participating on the council and utilizing TPC benchmarks in performance evaluation.

The TPC Benchmark™ C Standard Specification was developed by the Transaction Processing Performance Council. This benchmark exercises the system components necessary to perform tasks associated with that class of on-line transaction processing (OLTP) environments emphasizing a mixture of read-only and update intensive transactions. This is a complex OLTP application environment exercising a breadth of system components associated by such environments 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

This benchmark defines four on-line transactions and one deferred transaction, intended to emulate functions that are common to many OLTP applications. However, this benchmark does not reflect the entire range of OLTP requirements. 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, system 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.

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 subjected 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.

Summary

This report documents the TPC Benchmark™ C results achieved by the Fujitsu Siemens Computers GmbH using Microsoft SQL Server 2000 Enterprise Edition SP3 .

The TPC Benchmark™ C tests were run on a PRIMERGY R450 system using the Windows .NET Server 2003 Enterprise Edition operating system.

The results, summarized below, show the number of TPC Benchmark™ C transactions per minute (tpmC) and the price per tpmC (€/tpmC).

Hardware	**Software**	**Total System Cost**	**tpmC**	**€/tpmC**	**Availability Date**
Fujitsu Siemens Computers GmbH PRIMERGY R450	Microsoft SQL Server 2000 Enterprise Edition SP3 , Windows .NET Server 2003 Enterprise Edition	€ 434,063	68,264.47	€ 6.36	May 3, 2003

FUJITSU COMPUTERS SIEMENS

PRIMERGY R450

C/S with 3 PRIMERGY C200

TPC-C REV 5.0
EXECUTIVE SUMMARY

Report Date: November 4, 2002

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
€ 434,063	**68,264.47 tpmC**	**€ 6.36/tpmC**	**May 3, 2003**

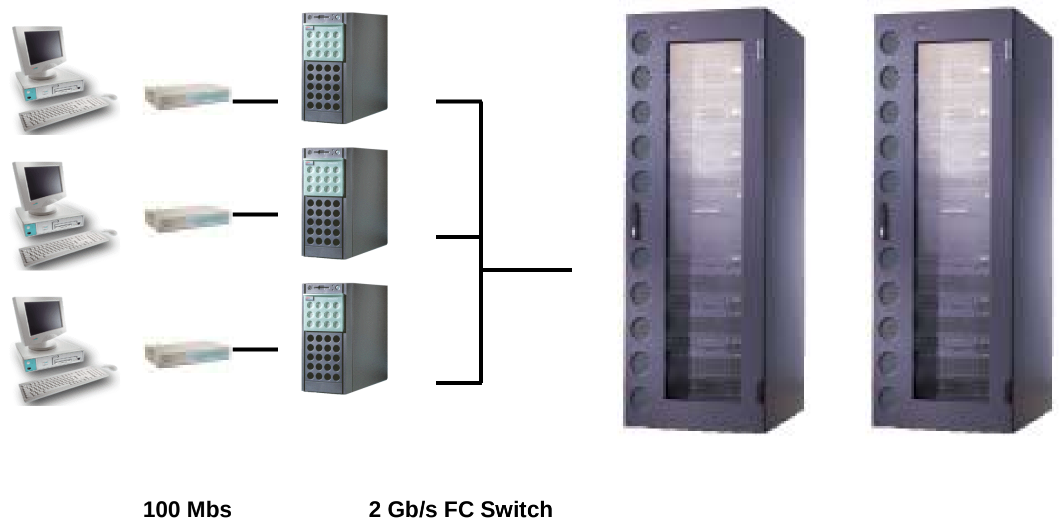
Processors	Database Manager	Operating System	Other Software	Number of Users
Server 4 Intel Xeon™ MP 2.00 GHz with 2M iL3 Cache Client 3 x 2 Intel Pentium® III 1400 MHz with 512 KB SLC	**Microsoft SQL Server 2000 Enterprise Edition SP3**	**Microsoft Windows .NET Server 2003 Enterprise Edition**	**Windows 2000 Server, IIS 5.0 and COM+**	**55000**

Terminals:
55000 User

Client:
2 x PRIMERGY C200
18300 users per client
1 x PRIMERGY C200
18400 users per client

Server:
PRIMERGY R450
7 SCSI Controller

Storage:
25 x PRIMERGY S30
288 disk 18GB
10 disks 36 GB



System Components	Qty/Srv.	1 PRIMERGY R450	Qty/Client	3 PRIMERGY C200
Processors	4	Intel Xeon™ MP 2.00 GHz with 2M iL3 Cache	2	Intel Pentium® III 1400 MHz with512 KB SLC
Memory	16	GB	768	MB
Disk Controller	7	Mylex eXtremeRAID 2000	1	SCSI Controller
Disk Drives	289 10	18 GB 36 GB	1	18 GB
Total GB of Storage	1	4,865 GB		
Tape Drive	1	20 GB DAT		

FUJITSU COMPUTERS SIEMENS

PRIMERGY R450

C/S with 3 PRIMERGY C200

TPC-C REV 5.0
EXECUTIVE SUMMARY

Report Date: November 4, 2002

Description	Part Number	Third Party		Unit Price	Qty.	Extended Price	3yr Maint. Price
		Brand	Pricing				
PRIMERGY R450 RH XEON 2.0GHz/2MB	S26361-K845-V202		1	11,400 Euro	1	11,400 Euro	
Xeon MP Processor 2.0 GHz/2MB	S26361-F2817-E202		1	7,140 Euro	3	21,420 Euro	
Mountingkit 19" Racks f. Server	SNP:SY-F1647E301-P		1	120 Euro	1	120 Euro	
Memory 4GB DDR-RAM PC1600 ECC	S26361-F2550-E545		1	4,140 Euro	4	16,560 Euro	
Tape DAT DDS4 20GB	S26361- F2233- E3		1	784 Euro	1	784 Euro	
18GB, 15k, U160, Hot plug, 1"	S26361-F2336-E518		1	440 Euro	1	440 Euro	
Mylex eXtremeRAID 2000 4x U160 SCSI, BBU	S26361- F2190- E128		1	2,544 Euro	7	17,808 Euro	
Keybord KBPC S	S26381-K252-L120		1	18 Euro	1	18 Euro	
Monitor 151E	S26361- K819- V150		1	159 Euro	1	159 Euro	
3 Year Maintenance Server, 7x24, 4hr Resp.	FSP:G3SP94HUFPSRH		1	7,200 Euro			7,200 Euro
	Server Hardware Subtotal					68,709 Euro	
DataCenter Rack 46 HU	SNP: SY- K614V104- P		1	1,920 Euro	2	3,840 Euro	
3 Year Maintenance Rack, 7x24, 4hr Resp.	FSP:G3SP94HUFPSRI			160 Euro			160 Euro
APC-USV 3000VA Rack	SNP: PS- E421E1- P		1	1,740 Euro	2	3,480 Euro	
36GB, 15k, U160, Hot plug, 1" (spared)	S26361-F2336-E536		1	744 Euro	12	8,928 Euro	
PRIMERGY S30 GE RH 2-Channel U160 SCSI	SNP: SY- K638V210- P		1	2,900 Euro	1	2,900 Euro	
18GB, 15k, U160, Hot plug, 1" (spared)	S26361-F2336-E518		1	440 Euro	317	139,480 Euro	
PRIMERGY S30 GE RH 1-Ch	SNP:SY-K638V230-P		1	2,900 Euro	24	69,600 Euro	
Mountingkit 19" Racks f. S30 / S60	S26361-F2734-E20		1	140 Euro	25	3,500 Euro	
SCSI Cable UHD68 (S)	SNP: SY- F2365L20- P		1	104 Euro	26	2,704 Euro	
3 Year Maintenance Storage, 7x24, 4hr Resp.	FSP:G3SP94HUFPSAS		1	4,448 Euro			4,448 Euro
	Storage Subtotal					234,432 Euro	
	Maint. Server + Storage						11,648 Euro
PRIMERGY C200 GE FS PIII 1,4GHz/512KB	S26361-K836-V134		1	1,180 Euro	3	3,540 Euro	
Pentium III Processor 1.4GHz 512kB	S26361-F2599-E140		1	700 Euro	3	2,100 Euro	
Memory 512MB SDRAM PC133 ECC	S26361-F2306-E523		1	460 Euro	3	1,380 Euro	
Memory 256MB SDRAM PC133 ECC	S26361-F2306-E522		1	220 Euro	3	660 Euro	
Hard Disk 18GB, 10k, U160, hot plug, 1"	SNP:SY-F2336E118-P		1	328 Euro	3	984 Euro	
CD- ROM, ATAPI	SNP:SY-F2240E1-A		1	40 Euro	3	120 Euro	
Monitor 151E	S26361- K819- V150		1	159 Euro	3	478 Euro	
Tastatur KBPC S	S26381-K252-L120		1	18 Euro	3	53 Euro	
3 Year Maintenance, 7x24, 4hr Resp.	FSP:G3SP94HUFPSFS		1	2,128 Euro	3		6,384 Euro
	Client Hardware Subtotal					9,314 Euro	6,384 Euro
Windows .NET Enterprise Server 2003 (open program no level)	N/A		1	2,998 Euro	1	2,998 Euro	
MS SQL-Server 2000 Ent.Edit. Per Proc Lic. (open program level C)	MSO:810-00846		1	16,381 Euro	4	65,522 Euro	
	Server Software Subtotal					68,520 Euro	
Windows Svr 2000 (open program no level)	MSO:C11-00821		1	672 Euro	3	2,016 Euro	
VC++ Pro 6.0 Win32	MSO:048-00426		1	368 Euro	1	368 Euro	
	Client Software Subtotal					2,384 Euro	
Microsoft Software Support (all above)	SNP:10901600012						10,353 Euro
FC Switch 8 Port, 2GBit	D:FCSW-8P2GB01		1	6,672 Euro	1	6,672 Euro	
FC GBIC SFP Multi Mode 2 GB	D:FCGBIG-MM2G-01		1	358 Euro	4	1,430 Euro	
FC Kabel MMF 10m, Connector DLC-DLC	D:FCKAB-MM-C10L		1	107 Euro	4	426 Euro	
3 Year Maintenance FC, 7x24, 4hr Resp.	FSP:G3SP94HUFPBG2			2,720 Euro			2,720 Euro
Qlogic 2350 (spared)			2	1,845 Euro	6	11,070 Euro	
	User Connectivity Subtotal					19,599 Euro	
	Total					402,958 Euro	31,105 Euro

1=Fujitsu-Siemens, 2=Atlantik Elektronik

Prices used in TPC bechmarks 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 section of the TPC benchmark pricing specifications. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

3 -Year Cost of Ownership:	€ 434,063
tpmC Rating:	68,264.47
€ / tpmC:	6.36

Note: The benchmark results and test methodology were audited by Bradley Askins of InfoSizing

Numerical Quantities Summary

MQTh, computed Maximum Qualified Throughput		68,264.47 tpmC	
Response Times (in seconds)	**90th percentile**	**Average**	**Maximum**
- New-Order	**0.95**	**0.58**	**5.61**
- Payment	**0.88**	**0.52**	**5.47**
- Order-Status	**0.89**	**0.53**	**6.00**
- Delivery (interactive portion)	**0.12**	**0.11**	**0.59**
- Delivery (deferred portion)	**0.55**	**0.31**	**1.77**
- Stock-Level	**1.78**	**1.29**	**5.50**
- Menu	**0.12**	**0.11**	**1.20**
Transaction Mix, in percent of total transactions			
- New-Order			**44.91 %**
- Payment			**43.03 %**
- Order-Status			**4.02 %**
- Delivery			**4.02 %**
- Stock-Level			**4.02 %**
Emulation Delay (in seconds)		**Response Time**	**Menu**
- New-Order		**0.1**	**0.1**
- Payment		**0.1**	**0.1**
- Order-Status		**0.1**	**0.1**
- Delivery (interactive)		**0.1**	**0.1**
- Stock-Level		**0.1**	**0.1**
Keying/Think Times (in seconds)	**Minimum**	**Average**	**Maximum**
- New-Order	**18.00/0.000**	**18.02/12.05**	**18.04/120.51**
- Payment	**3.00/0.000**	**3.02/12.04**	**3.04/120.51**
- Order-Status	**2.00/0.000**	**2.02/10.02**	**2.04/100.50**
- Delivery (interactive)	**2.00/0.000**	**2.02/ 5.05**	**2.03/ 50.50**
- Stock-Level	**2.00/0.000**	**2.02/ 5.06**	**2.04/ 50.50**
Test Duration and Checkpointing			
- Ramp-up time		**46 minutes**	
- Measurement interval		**120 minutes**	
- Number of checkpoints		**4**	
- Checkpoint interval		**30 minutes**	
- Transactions during measurement interval (all types)		**18,971,511**	

Contents

Introduction

This is the Full Disclosure Report for the TPC Benchmark™ C running on the Fujitsu Siemens Computers system PRIMERGY R450. It meets the requirements of the TPC Benchmark™ C Standard Revision 5.0.

System Overview

This report documents the compliance of the Fujitsu Siemens Computers GmbH TPC Benchmark™ C tests using Microsoft SQL Server 2000 Enterprise Edition SP3 Relational Database Management System.

The TPC Benchmark™ C tests were carried out on a PRIMERGY R450. The PRIMERGY R450 is a powerful Server with a motherboard based on the ServerWorks chipset that holds up to 4 Intel Xeon™ MP 2.00 GHz processors with 2M iL3 L2 cache. The Intel® Xeon™ Processor family with the Intel® NetBurst™ micro-architecture uses Hyper-Threading Technology to provide additional performance and application scalability to multi-processor servers. Hyper-Threading Technology enables multi-threaded software to execute tasks in parallel within each processor. The system was equipped with 16 GB of ECC DDR RAM memory. 7 PCI slots were used for SCSI RAID controllers and one Qlogic FC controller.

The client machines were 3 PRIMERGY C200 with 2 Intel Pentium® III 1400 MHz. They all included 768 MB ECC SDRAM memory, onboard ethernet adapter and one Qlogic FC Contoller.

The server operating system was Windows .NET Server 2003 Enterprise Edition . The client operating system was Windows 2000 Server SP2.

Full Disclosure

From Clause 8.1 of the TPC Benchmark™ C Standard Specification:

> The intent of this disclosure is for a customer to be able to replicate the results of this benchmark given the appropriate documentation and products.

Fujitsu Siemens Computers believes that this full disclosure report meets the stated intention. Fujitsu Siemens Computers has strived to maintain the integrity of the Specification by adhering not only to the letter of the Specification, but also to its spirit.

Report Format

*The format of this document follows Clause 8 of the TPC Benchmark™ C specification (*TPC Benchmark™ C Standard Specification, *Revision 5.0, Transaction Processing Performance Council) which describes the full disclosure report requirements for the test.*

Each section of this report begins with the specification requirement printed in *italic type*. It is followed by plain type text that explains how the test complies with the requirement. Sections which require extensive listings reference appropriate appendices.

Report organization**:**

- General Items
- Clause 1 Related Items - Logical Database Design
- Clause 2 Related Items - Transaction and Terminal Profiles
- Clause 3 Related Items - Transaction and System Properties
- Clause 4 Related Items - Scaling and Database Population
- Clause 5 Related Items - Performance Metrics and Response Time
- Clause 6 Related Items - SUT, Driver, and Communication Definition
- Clause 7 Related Items - Pricing
- Clause 8 Related Items - Audit
- Appendix A - Application Source Code
- Appendix B - Database Details
- Appendix C - Tunable Parameters and Options
- Appendix D – Space Calculation
- Appendix E - Price Quotations
- Appendix F - Attestation Letter

Additional Copies	*Additional copies of this report are available upon request from Fujitsu Siemens Computers GmbH:* *Fujitsu Siemens Computers* *ES PS DS 3* *PRIMERGY Server Performance Lab* *Mr. Bathe* *Heinz-Nixdorf-Ring 1* *33106 Paderborn* Germany

1. General Items

1.1 Application Code

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. [Clause 8.1.1.4]

The source code of the application program is provided in Appendix A - Application Source Code.

1.2 Benchmark Sponsor

A statement identifying the benchmark sponsor(s) and other participating companies must be provided. [Clause 8.1.1.5]

This benchmark was sponsored and executed by Fujitsu Siemens Computers GmbH.
The benchmark was developed and engineered by Fujitsu Siemens Computers GmbH and Microsoft Corporation.
Testing took place at Fujitsu Siemens Computers PRIMERGY benchmark laboratories in Paderborn, Germany.

1.3 Parameter Settings

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

- *Database tuning options.*
- *Recovery/commit options.*
- *Consistency/locking options.*
- *Operating system and application configuration parameters.*

[Clause 8.1.1.6]

The significant parameters and system configuration files are provided in Appendix C - Tunable Parameters and Options.

1.4 Configuration Diagrams

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

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

[Clause 8.1.1.7]

Table 1: SUT Configuration PRIMERGY R450

4	Intel Xeon™ MP 2.00 GHz with 2M iL3 Cache
16	GB memory
7	Mylex eXtremRAID 2000 SCSI controllers
0	disks 9 GB measured
289	disks 18 GB measured
10	disks 36 GB measured
0	disks 9 GB priced
289	disks 18 GB priced
10	disks 36 GB priced
1	Qlogic 2350 2 GBit FC controller

Table 2: Client Configuration PRIMERGY C200

2	Intel Pentium® III 1400 MHz with 512 KB Second Level Cache
768	MB memory
1	SCSI controller
1	disk 18 GB
1	Onboard Intel LAN
1	Qlogic 2350 2 GBit FC controller

The benchmarked and priced system configurations are shown in Figure 1 and Figure 2 in accordance with Clause 8.1.1.7.

Figure 1: Benchmark System Configuration PRIMERGY R450

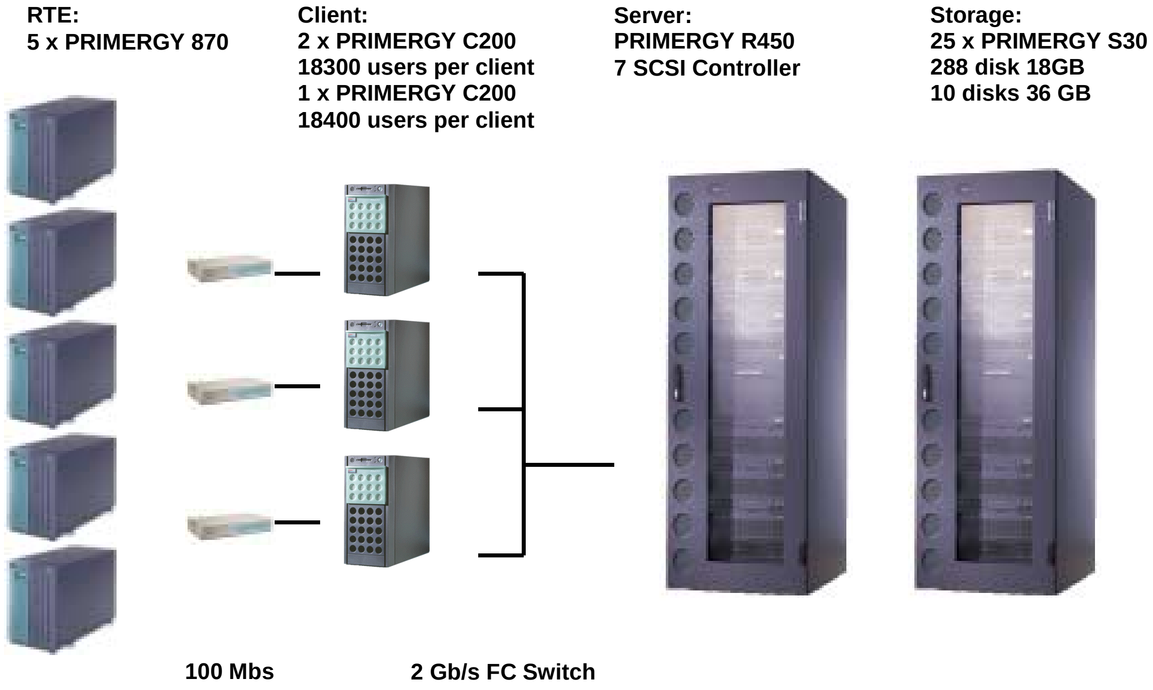
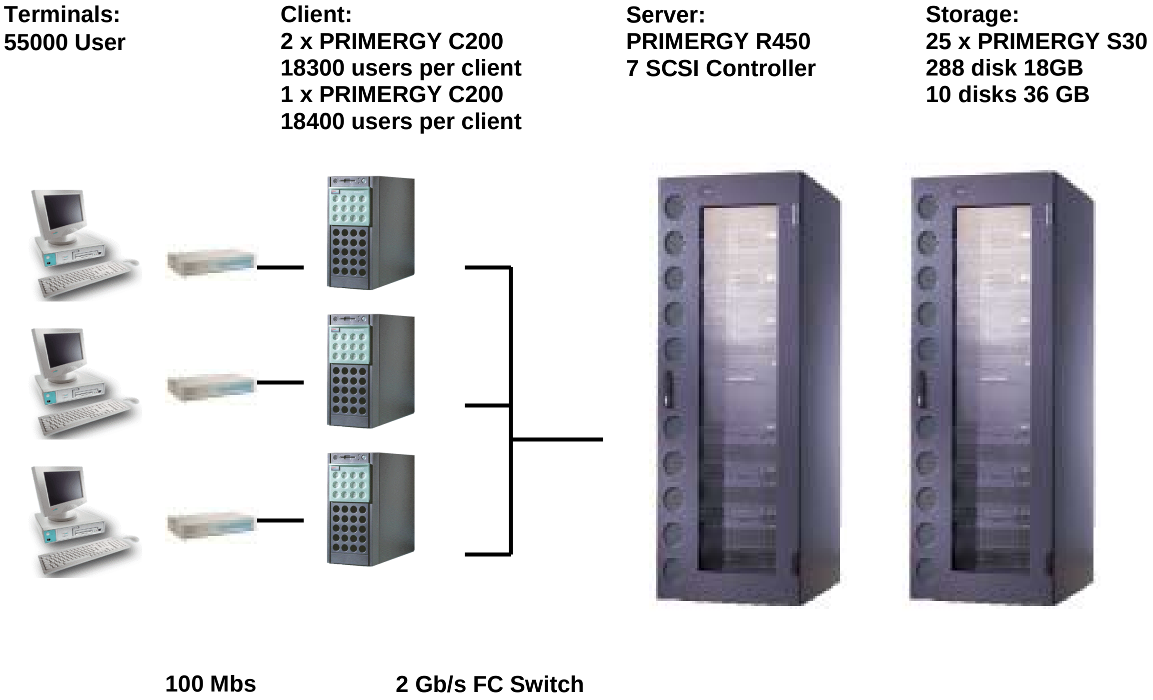


Figure 2: Priced System Configuration PRIMERGY R450



2. Clause 1 Related Items - Logical Database Design

2.1 Table Definitions	*Listings must be provided for all table definition statements and all other statements used to set-up the database. [Clause 8.1.2.1]*

The programs that defined, created, and populated the Microsoft SQL Server 2000 Enterprise Edition SP3 database for this TPC benchmark™ C are listed in Appendix B - Database Details.

2.2 Physical Organization of Database	*The physical organization of tables and indices, within the database, must be disclosed. [Clause 8.1.2.2]*

Table 3: Physical Organization of the Database

Controller	Channel 0	Channel 1	Channel 2	Channel 3	RAID	Drive
eXtremeRAID 2000 #0	0-0 1-0 2-0 3-0 4-0	0-1 1-1 2-1 3-1 4-1			SPAN 0 to 1 RAID1	L:
eXtremeRAID 2000 #1	0-0 0-1 0-2 0-3 0-4 0-5 0-6 0-8 0-9 0-10 0-11 0-12	1-0 1-1 1-2 1-3 1-4 1-5 1-6 1-8 1-9 1-10 1-11 1-12	2-0 2-1 2-2 2-3 2-4 2-5 2-6 2-8 2-9 2-10 2-11 2-12	3-0 3-1 3-2 3-3 3-4 3-5 3-6 3-8 3-9 3-10 3-11 3-12	SPAN 0 to 3 RAID0	E: N: U:
eXtremeRAID 2000 #2	0-0 0-1 0-2 0-3 0-4 0-5 0-6 0-8 0-9 0-10 0-11 0-12	1-0 1-1 1-2 1-3 1-4 1-5 1-6 1-8 1-9 1-10 1-11 1-12	2-0 2-1 2-2 2-3 2-4 2-5 2-6 2-8 2-9 2-10 2-11 2-12	3-0 3-1 3-2 3-3 3-4 3-5 3-6 3-8 3-9 3-10 3-11 3-12	SPAN 0 to 3 RAID0	F: O: V:
eXtremeRAID 2000 #3	0-0 0-1	1-0 1-1	2-0 2-1	3-0 3-1	SPAN 0 to 3 RAID0	G: P:

	0-2 0-3 0-4 0-5 0-6 0-8 0-9 0-10 0-11 0-12	1-2 1-3 1-4 1-5 1-6 1-8 1-9 1-10 1-11 1-12	2-2 2-3 2-4 2-5 2-6 2-8 2-9 2-10 2-11 2-12	3-2 3-3 3-4 3-5 3-6 3-8 3-9 3-10 3-11 3-12		W:
eXtremeRAID 2000 #4	0-0 0-1 0-2 0-3 0-4 0-5 0-6 0-8 0-9 0-10 0-11 0-12	1-0 1-1 1-2 1-3 1-4 1-5 1-6 1-8 1-9 1-10 1-11 1-12	2-0 2-1 2-2 2-3 2-4 2-5 2-6 2-8 2-9 2-10 2-11 2-12	3-0 3-1 3-2 3-3 3-4 3-5 3-6 3-8 3-9 3-10 3-11 3-12	SPAN 0 to 3 RAID0	H: Q: X:
eXtremeRAID 2000 #5	0-0 0-1 0-2 0-3 0-4 0-5 0-6 0-8 0-9 0-10 0-11 0-12	1-0 1-1 1-2 1-3 1-4 1-5 1-6 1-8 1-9 1-10 1-11 1-12	2-0 2-1 2-2 2-3 2-4 2-5 2-6 2-8 2-9 2-10 2-11 2-12	3-0 3-1 3-2 3-3 3-4 3-5 3-6 3-8 3-9 3-10 3-11 3-12	SPAN 0 to 3 RAID0	I: R: Y:
eXtremeRAID 2000 #6	0-0 0-1 0-2 0-3 0-4 0-5 0-6 0-8 0-9 0-10 0-11 0-12	1-0 1-1 1-2 1-3 1-4 1-5 1-6 1-8 1-9 1-10 1-11 1-12	2-0 2-1 2-2 2-3 2-4 2-5 2-6 2-8 2-9 2-10 2-11 2-12	3-0 3-1 3-2 3-3 3-4 3-5 3-6 3-8 3-9 3-10 3-11 3-12	SPAN 0 to 3 RAID0	J: S: Z:

All controllers were configured with write cache disabled. Write cache was enabled on the log drives and disabled on the data drives. Disk types are Seagate ST318452 LC 18 GB and ST328452 LC 36 GB with 15000 rpm.
Space was allocated to Microsoft SQL Server 2000 Enterprise Edition SP3 on SUT disks according to the data in section 5.2. The size of the datafile on each disk drive was calculated to provide even distribution on load across the disk drives. The Windows Disk Manager was used to create raw devices for data/log and NTFS partitions for dump devices. For further information see Appendix B (Disk Usage) and Figure 4 in 5.2 (Distribution of Tables and Log). No attempt was made to alter the default physical organization of the database tables and indices chosen by Microsoft SQL Server 2000 Enterprise Edition SP3 .

2.3 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. [Clause 8.1.2.3]

There were no restrictions on insert and delete operations to any tables.

2.4 Database Partitioning

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

There was no partitioning used in this implementation.

2.5 Replication of Tables

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

Replication of tables was not used in this implementation.

2.6 Additional and/or Duplicated 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). [Clause 8.1.2.6]

No additional and/or duplicated attributes were used.

3. Clause 2 Related Items - Transaction and Terminal Profiles

3.1 **Random Number Generator**	*The method of verification for the random number generation must be described. [Clause 8.1.3.1]*

The random number generation was done in Microsoft BenchCraft, which was audited independently.

3.2 **Input/Output Screen Layout**	*The actual layouts of the terminal input/output screens must be disclosed. [Clause 8.1.3.2]*

The screen layout corresponded exactly to those of the TPC-C Standard Specification (specified in Clause 2.4.3, 2.5.3, 2.6.3, 2.7.3, and 2.8.3).

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

All of the requirements in clause 2.2.2.4. are supported. This was verified by manually exercising each specification on a PRIMERGY 870.

3.4 **Presentation Managers or Intelligent Terminals**	*Any usage of presentation managers or intelligent terminals must be explained. [Clause 8.1.3.4]*

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

3.5 **Transaction Statistics**	*The numerical quantities which are required are listed in the following table. [Clause 8.1.3.5 to 8.1.3.11]*

Table 4: Transaction Statistics

	Statistics	Percentage
New-Order	Home order-lines	99.00%
	Remote order-lines	1.00%
	Rolled back transactions	0.99%
	Average items per order	10.00
Payment	Home transactions	85.00%
	Remote transactions	15.00%
	Non-primary key access	60.01%
Order-Status	Non-primary key access	60.01
Delivery	Skipped transactions	0
Transaction Mix	New-Order	44.91 %
	Payment	43.03 %
	Order-Status	4.02 %
	Delivery	4.02 %
	Stock-Level	4.02 %

3.6 Queueing Mechanism

The queuing mechanism used to defer the execution of the Delivery transaction must be disclosed. [Clause 8.1.12]

Deferred deliveries are queued by making an entry in an array within the client application process (tpcc.dll). The queued delivery transactions are processed and logged asynchronously by background threads within the application.
The source code is listed in Appendix A - Application Source Code.

4. Clause 3 Related Items - Transaction and System Properties

ACID Tests	*The results of the ACID tests must 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. [Clause 8.1.4.1]*

All ACID tests were performed successfully. The following sections describe the requirements of each of the tests as described in Clause 3 and the approach used to satisfy them.

All ACID tests were performed on the PRIMERGY R450 system using the fully scaled database, except for the test of durable media failure. This durability test was performed on a database scaled to 550 warehouses. This test would also pass on a fully scaled database.

4.1 Atomicity	*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. [Clause 3.2.1]*

Commit Transaction	Perform the Payment transaction for a randomly selected warehouse, district, and customer (by customer number as specified in Clause 2.5.1.2) and verify that the records in the CUSTOMER, DISTRICT, and WAREHOUSE tables have been changed appropriately. [Clause 3.2.2.1]

The following steps demonstrated atomicity for completed (COMMIT) transactions:

- A row was randomly selected from the warehouse, district and customer table.
- the current balance was noted.
- A payment transaction was executed with the above identifiers and a known amount.
- The transaction was committed.
- It was verified, that the rows contain the correct updated balances.

Rollback Transaction	Perform the Payment transaction for a randomly selected warehouse, district, and customer (by customer number as specified in Clause 2.5.1.2) and substitute a ROLLBACK of the transaction for the COMMIT of the transaction. Verify that the records in the CUSTOMER, DISTRICT, and WAREHOUSE tables have NOT been changed. [Clause 3.2.2.2]

The following steps demonstrated atomicity for aborted (ROLLBACK) transactions:

- A row was randomly selected from the warehouse, district and customer table.
- the current balance was noted.
- A payment transaction was executed with the above identifiers and a known amount.
- The transaction was rolled back.
- It was verified, that the rows contain the original balances.

4.2 Consistency

Consistency is the property of the application that requires any execution of a database transaction to take the database from one consistent state to another, assuming that the database is initially in a consistent state. [Clause 3.3.1]

Consistency conditions 1 - 4 were tested by issuing queries to the database. The results of the queries verified that the database was consistent for all these tests. The tests were performed before and after the performance run on the same database that was used for the benchmark.

4.3 Isolation

Operations of concurrent transactions must yield results which are indistinguishable from the results which would be obtained by forcing each transaction to be serially executed to completion in some order.

We ran all of the seven isolation tests as described in clause 3.4.2.1 to 3.4.2.7 and additionally the two phantom protection tests. The tests were executed using shell scripts to issue queries to the database. The results of the queries verified that the required isolation had been met.

4.4 Durability

The tested system must guarantee durability: the ability to preserve the effects of committed transactions and insure database consistency after recovery from any one of the failures listed in Clause 3.5.3. [Clause 3.5]

List of single failures

1 Permanent irrecoverable failure of any single durable medium containing TPC-C database tables or recovery log data

2 Instantaneous interruption (system crash / system hang) in processing which requires system reboot to recover

3 Failure of all or part of memory (loss of contents).

[Clause 3.5.3]

The intent of these tests is to demonstrate that all transactions whose output messages have been received at the terminal or RTE have in fact been committed in spite of any single failure from the list in Clause 3.5.3 and that all consistency conditions are still met after the database is recovered.

It is required that the system crash test(s) and the loss of memory test(s) described in Clause 3.5.3.2 and 3.5.3.3 be performed under full terminal load and a fully scaled database. The durable media failure test(s) described in Clause 3.5.3.1 may be performed on a subset of the SUT configuration and database. For the SUT subset, all multiple hardware components, such as processors and disk / controllers in the full SUT configuration, must be represented by the greater of 10% of the configuration or two of each of the multiple hardware components. The database must be scaled to at least 10% of the fully scaled database, with a minimum of two warehouses. ... Furthermore, the standard driving mechanism must be used in this test. The test sponsor must state that to the best of their knowledge, a fully scaled test would also pass all durability tests. [Clause 3.5.4]

The failure of all or part of memory test and the system crash test were combined with the loss of log disk and performed under full load and by using a fully scaled database.

The full hardware configuration of the SUT (in accordance with Clause 3.5.4) and the same test procedure was used during all durability tests, except the test for loss of data.

- The current count of the total number of orders was determined by summing up the D_NEXT_O_ID fields of all rows in the DISTRICT table.

A test was started under full load and a checkpoint executed.

- After 6 min in steady state we pulled off one of the log disks. As we use hardware-mirrored diskpairs with the SCSI-controller, execution continued.
- After additional 6 min we powered of the server to emulate the loss of memory. After server system reboot, SQL-Server starts with recovering the database tpcc. After completion, we computed the sum of D_NEXT_O_ID from district. Client and RTE systems were interrupted and evaluation started on the RTE. The difference of all D_NEXT_O_ID between RTE an server was in the permitted scope.

The durable media failure test for loss of data disk was performed with 48 of the 288 data disks and a database scaled to 550 warehouses under the load of 5500 users. We used one RTE and one client system. To the best of the test sponsor's knowledge, a fully loaded and fully scaled database would also pass this durability test.

- The database was backed up.
- The current count of the total number of orders was determined by summing up the D_NEXT_O_ID fields of all rows in the DISTRICT table before the test.
- After 5 min in steady state we pulled of one of the data disks.
- SQL-Server recognized the loss of a device. We dumped the transaction log and removed the database with dropdevice. Then we shut down SQL-Server and the system.
- We replaced the disk and made it online.
- We restarted SQL-Server, no tpcc database and none of its devices were present. We recreated the database, loaded dump and load transaction log
- After completion, we computed the sum of D_NEXT_O_ID from district.
- Client and RTE systems were interrupted and evaluation started on the RTE. The difference of all D_NEXT_O_ID between RTE an server was in the permitted scope.

5. Clause 4 Related Items - Scaling and Database Population

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

The database for the PRIMERGY R450 system was scaled for 5500 warehouses. The performance run used 5500 warehouses. In accordance with Clause 4.2, the following number of records were loaded in the specified tables:

Table 5: Number of Rows

Table	Number of Records
Warehouse	5500
District	55,000
Customer	165,000,000
History	165,000,001
Order	165,000,000
New-Order	49,500,000
Order-Line	1,649,998,197
Stock	550,000,000
Item	100,000
Deleted Warehouses	00

The following constant values were used during the database build and benchmark test for the NURand function:

Table 6: C_LAST value

Constant C	Value
C_LAST (build)	123
C_LAST (run)	233

5.2 Distribution of Tables and Log

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

Table 7: Logical Organization of the Database

Disk	Controller	Disktype	RAID Configuration	Drive Letter	Size MB	Filegroup or Filesystem
0	Onboard SCSI	18 GB	-	System C:	17000	NTFS
1	eXtremeRAID 2000 #0	10 x 36 GB	RAID 1	L:	90000	log
2	eXtremeRAID 2000 #1	48 x 18 GB	RAID 0	E: N: U	52500 29000 300000	cs1 misc1 backup1
3	eXtremeRAID 2000 #2	48 x 18 GB	RAID 0	F: O: V:	52500 29000 300000	cs2 misc2 backup2
4	eXtremeRAID 2000 #3	48 x 18 GB	RAID 0	G: P: W:	52500 29000 300000	cs3 misc3 backup3
5	eXtremeRAID 2000 #4	48 x 18 GB	RAID 0	H: Q: X:	52500 29000 300000	cs4 misc4 backup4
6	eXtremeRAID 2000 #5	48 x 18 GB	RAID 0	I: R: Y:	52500 29000 300000	cs5 misc5 backup5
7	eXtremeRAID 2000 #6	48 x 18 GB	RAID 0	J: S: Z:	52500 29000 300000	cs6 misc6 backup6

5.3 Database Model, Interface, and Access Language

A statement must be provided that describes:

1. The data model implemented by the DBMS used (e.g., relational, network, hierarchical)

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

[Clause 8.1.5.3]

Microsoft SQL Server 2000 Enterprise Edition SP3 is a Relational DataBase Management System. The interface used was Microsoft SQL Server 2000 Enterprise Edition SP3 stored procedures accessed with Remote Procedure Calls embedded in C code.

5.4 **Database Partitions/Replications Mapping**	*The mapping of database partitions/replications must be explicitly described. [Clause 8.1.5.4]*

There was no partitioning and/or replication used in this implementation.

5.5 **60 day space Calculation**	*Details of the 60-day space computations along with proof that the database is configured to subtain 8 hours of growth for the dynamic tables (Order, Order-Line, and History) must be disclosed (see Clause 4.2.3). [Clause 8.1.5.5]*

Calculations of space requirements in the priced configurations for the 60-day period are provided in Appendix D – Space Calculation.

6. Clause 5 Related Items - Performance Metrics and Response Time

6.1 Measured tpmC	*Measured tpmC must be reported. [Clause 8.1.6.1]*

During the 120 minutes measurement period on the PRIMERGY R450 the throughput measured was 68,264.47 tpmC.

6.2 Response Times	*Ninetieth percentile, maximum and average response times must be reported for all transaction types as well as for the Menu response time. [Clause 8.1.6.2]*

Table 8: Response Times

Type	Average	Maximum	90 Percentile
New-Order	0.58	5.61	0.95
Payment	0.52	5.47	0.88
Order-Status	0.53	6.00	0.89
Interactive Delivery	0.11	0.59	0.12
Deferred Delivery	0.31	1.77	0.55
Stock-Level	1.29	5.50	1.78
Menu	0.11	1.20	0.12

6.3 Keying and Think Times	*The minimum, the average, and the maximum keying and think times must be reported for each transaction type. [Clause 8.1.6.3]*

Table 9: Keying Times

Keying Times			
Type	**Average**	**Maximum**	**Minimum**
New-Order	18.02	18.04	18.00
Payment	3.02	3.04	3.00
Order-Status	2.02	2.04	2.00
Delivery	2.02	2.03	2.00
Stock-Level	2.02	2.04	2.00

Table 10: Think Times

Think Times			
Type	**Average**	**Maximum**	**Minimum**
New-Order	12.05	120.51	0.000
Payment	12.04	120.51	0.000
Order-Status	10.02	100.50	0.000
Delivery	5.05	50.50	0.000
Stock-Level	5.06	50.50	0.000

6.4 Graphs

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

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

Think Time frequency distribution curves (see Clause 5.6.3) must be reported for each transaction type. [Clause 8.1.6.6]

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

Figure 3: New-Order Response Time Distribution

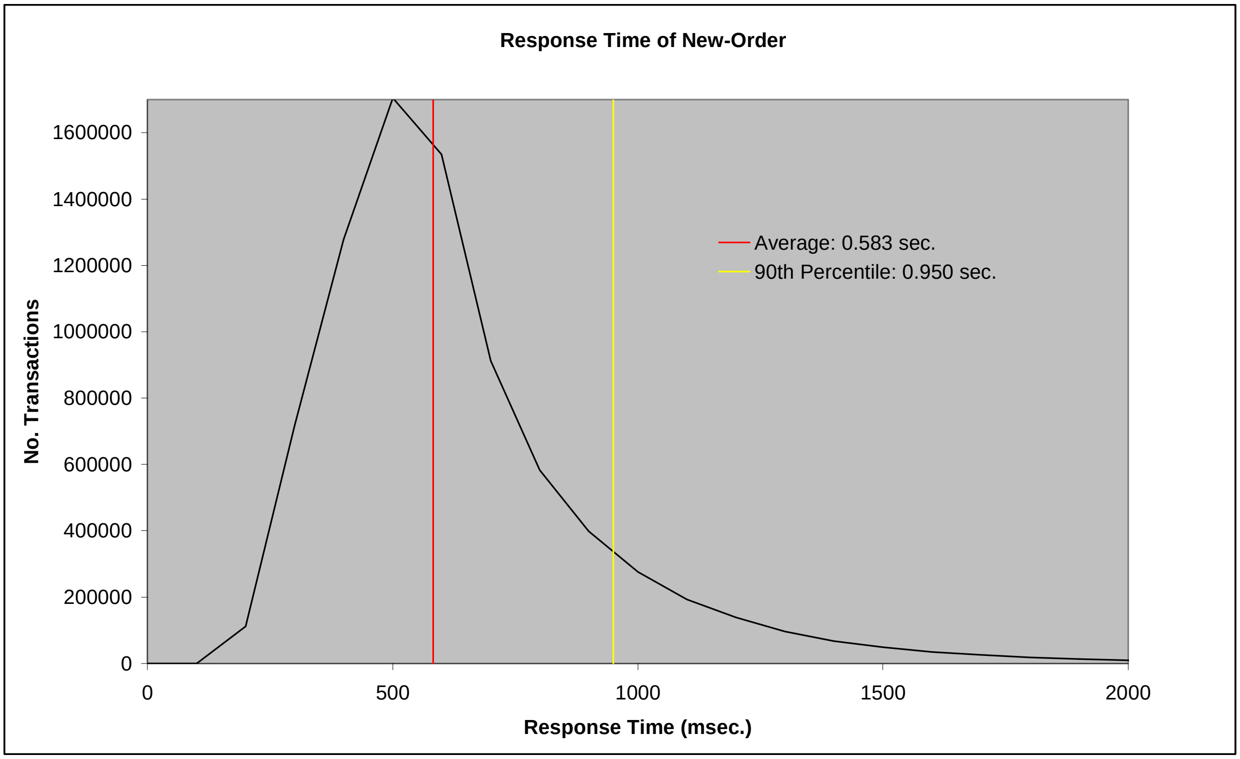


FIGURE 4:PAYMENT RESPONSE TIME DISTRIBUTION

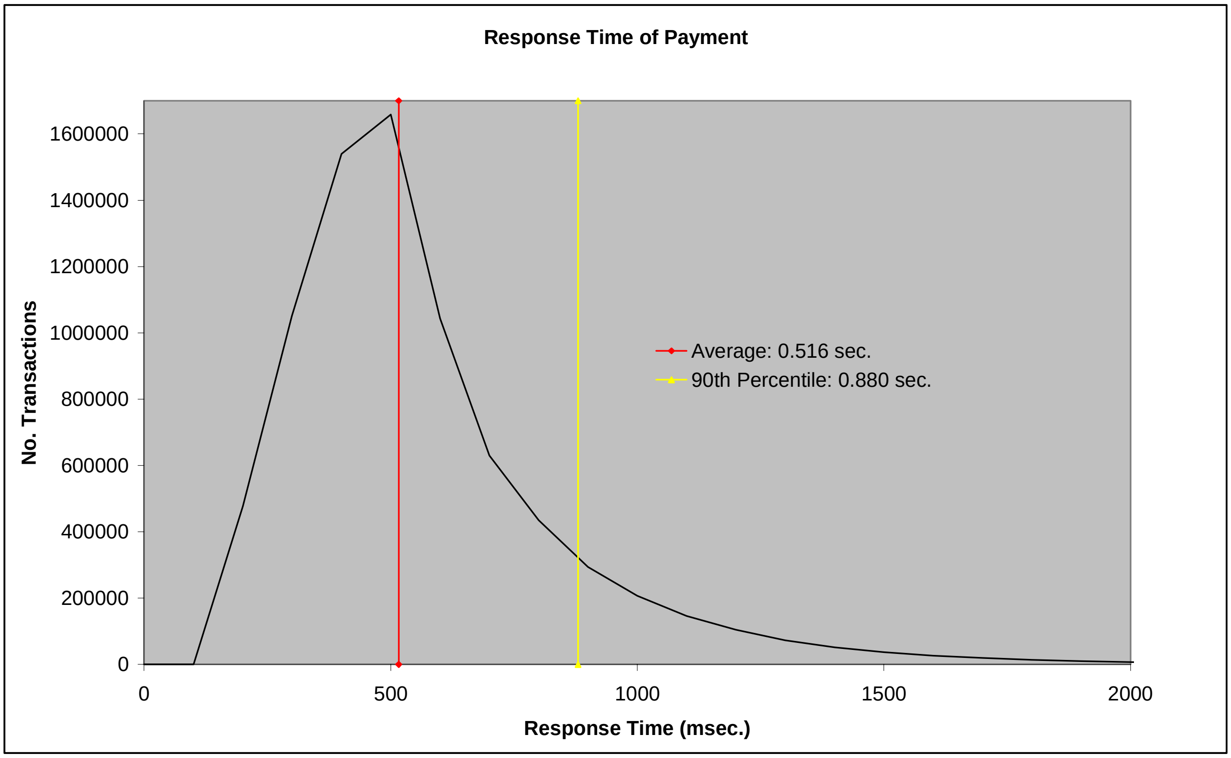


Figure 5:Order-Status Response Time Distribution

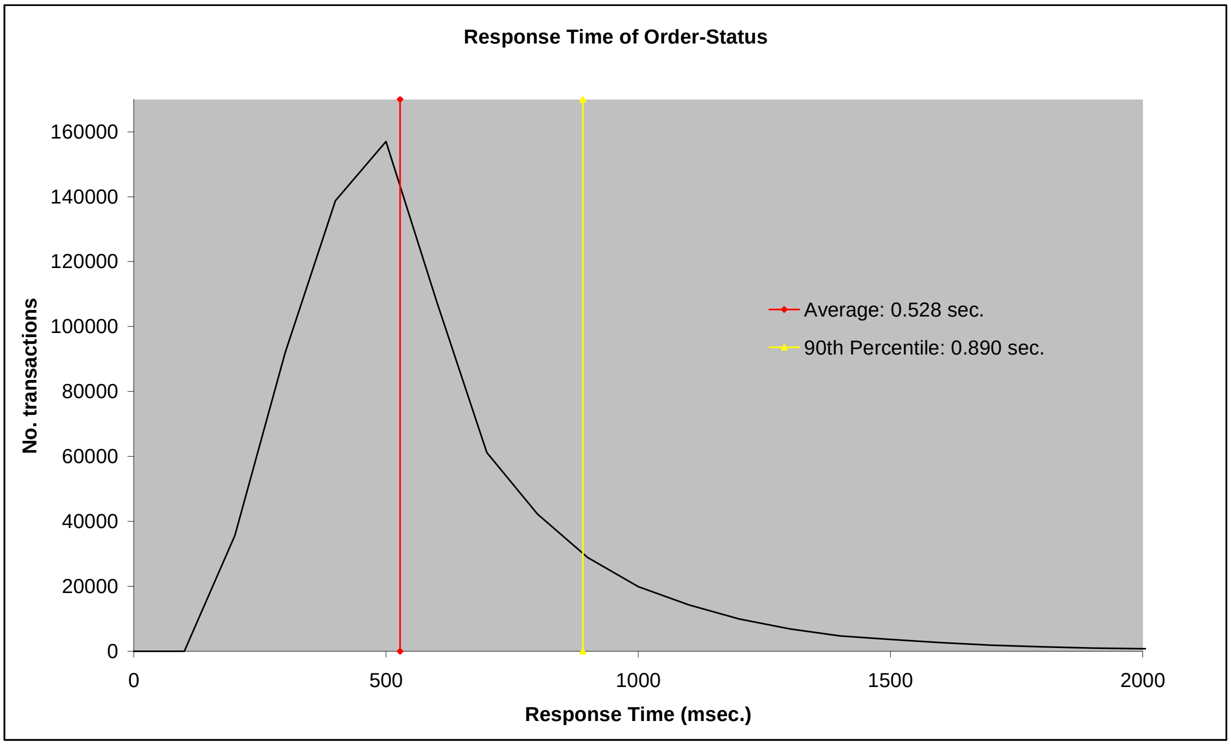


Figure 6: Delivery Response Time Distribution

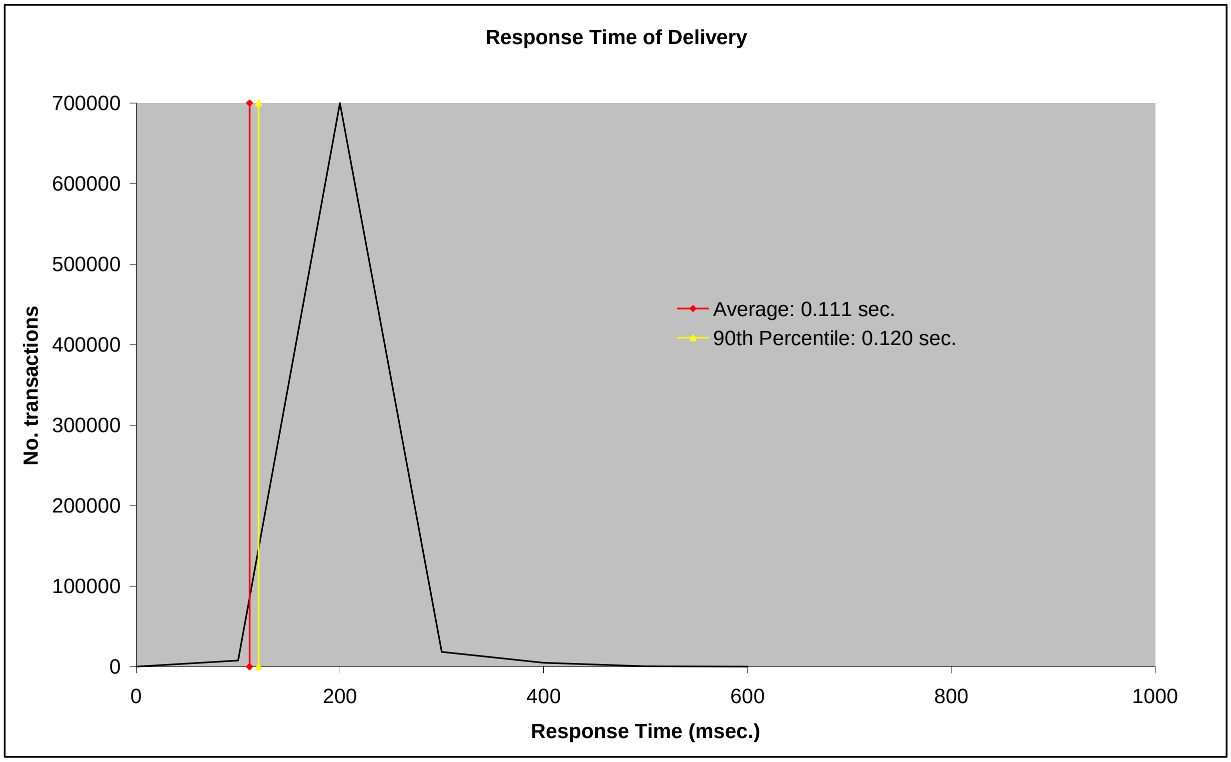


Figure 7: Stock-Level Response Time Distribution

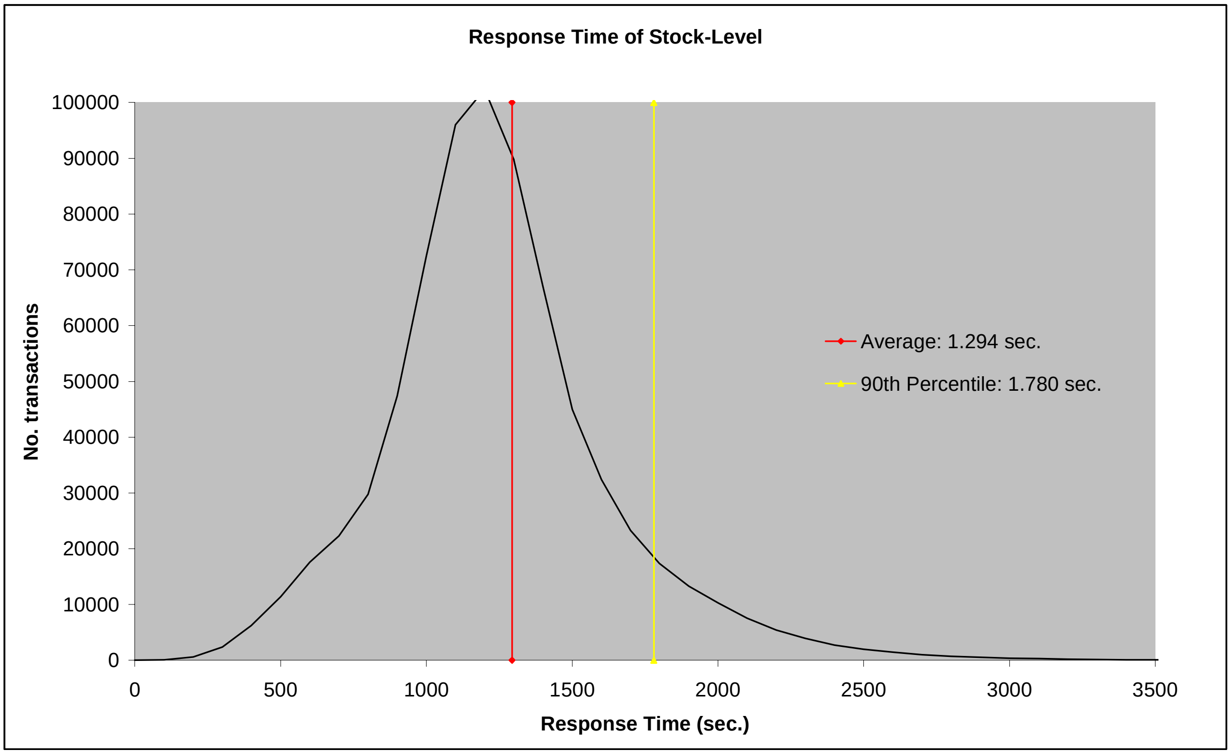


Figure 8: Response Time Versus Throughput

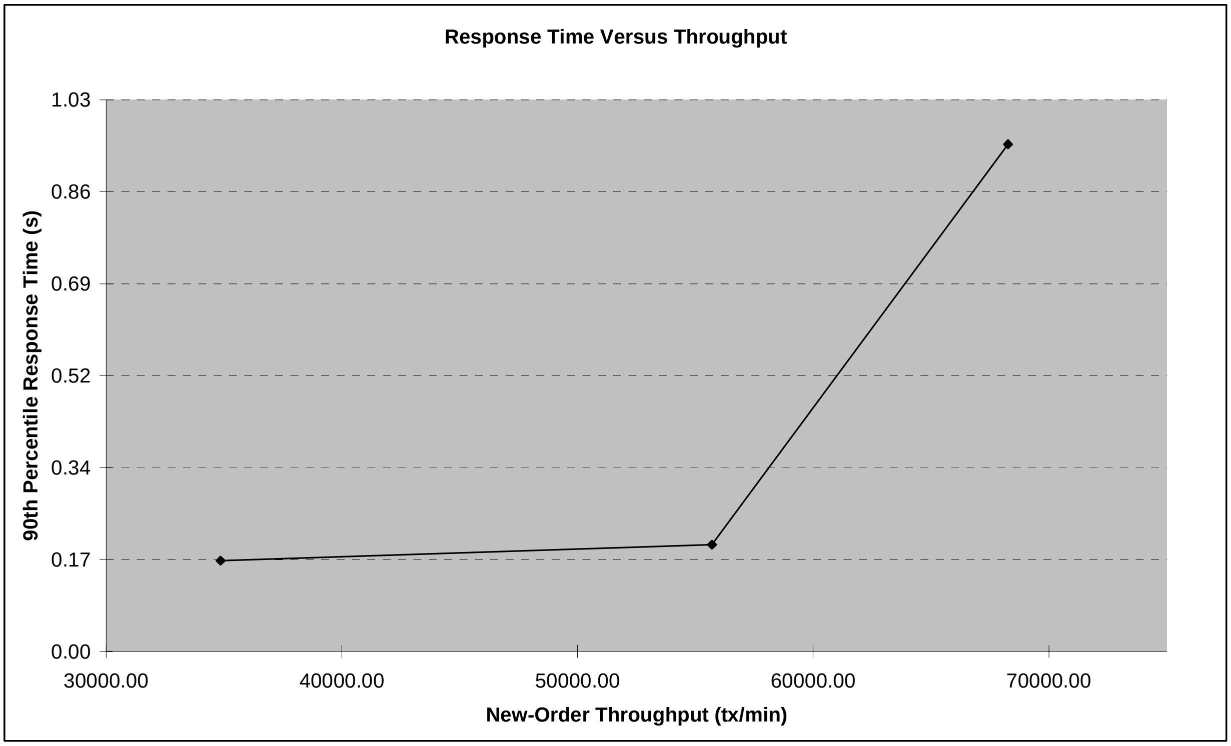


Figure 9: New-Order Think Time Distribution

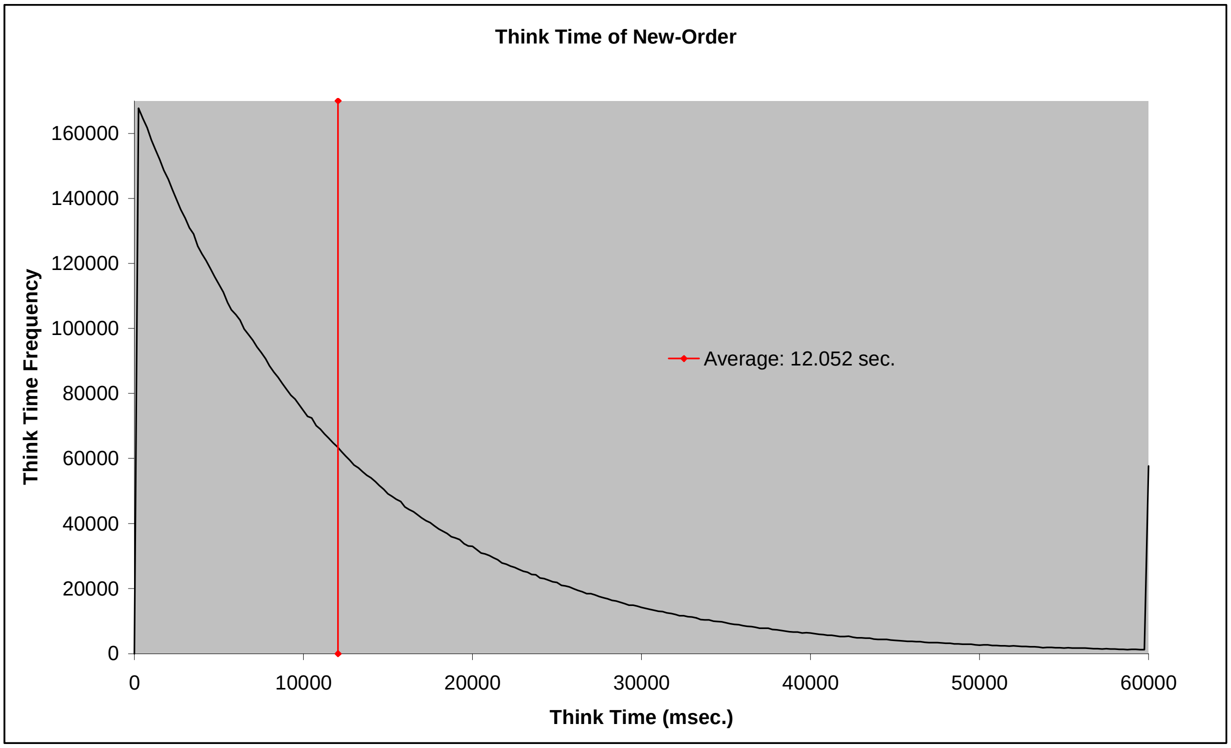
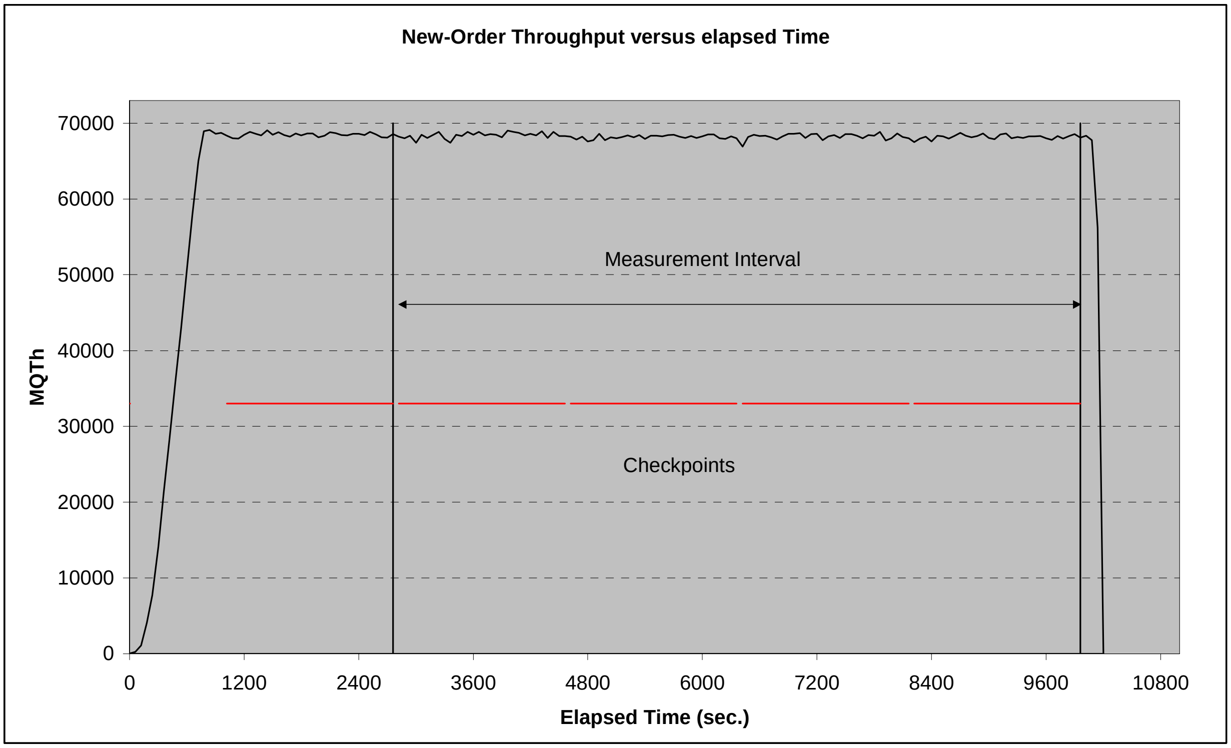


Figure 10: Throughput Versus elapsed Time



6.5 **Steady State Determination**	*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. [Clause 8.1.6.9]*

In all test runs, steady state was achieved before the measurement period began. Steady state was determined to occur based on a visual inspection of tpmC versus time (see graph in section 6.4).

The graph in section 6.4 illustrates that the measurement period was within the steady state period for the run. One checkpoint occurred before and four during the measurement period.

6.6 **Work Performed**	*A description of how the work normally performed during a sustained test (for example checkpointing, writing redo/undo log records, etc.), actually occurred during the measurement interval must be reported. [Clause 8.1.6.10]*

The RTE generated the required input data to choose a transaction from the menu. This data was timestamped and captured in RTE log files before being transmitted. There was one log file for each user. The input screen for the requested transaction was returned and it was also captured and timestamped in the RTE log files. The difference between these two timestamps was the menu response time.

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

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

The RTE transmissions were sent to Internet Information Server running on the client machines through Ethernet LANs. Internet Information Server handled all screen I/O as well as all requests to the database on the server. Internet Information Server communicated with the database server over COM+ which was used as transaction monitor.

All database operations like update, select, delete and insert are performed by one of the TPC-C back end programs. The TPC-C backend program commits the transaction after all the corresponding operations are done.

Modified database buffers are migrated to disk a least-recently-used basis independent of transaction commits. In addition, every block modification is protected by log records. Asynchronously the log buffers are flushed to a log file on disk either when the transaction is committed or when the log buffer’s fill state reaches it’s limit. The log buffer’s always flushed by a commit before it become full.

To perform checkpoints at specific intervals, we wrote a script to schedule multiple checkpoints at specific intervals. By setting the trace flag #3502, SQL Server logged the checkpoint beginning and ending time in the ERRORLOG file. The script included a wait time between each checkpoint equal to a fourth of the measurement interval which was 120 minutes. The checkpoint script was started manually after the RTE had all users logged in and sending transactions.

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

6.7 Duration of Checkpoints

The start time and duration in seconds of at least the four (4) longest checkpoints during the MeasurementInterval must be disclosed (see Clause 5.5.2.2 (2)). [Clause 8.1.6.11]

There was one checkpoint before measurement and four checkpoints during measurement. Starttime and duration of these four checkpoints is listed in the following table:

Table 11: Duration of Checkpoints

Measurement		duration	
Start =	End =	minutes	seconds
9:26:20	11:26:20	120	7200
4 Checkpoints		duration	
Start =	End =	minutes	seconds
09:27:21	09:56:21	29.00	1740
09:57:20	10:26:18	28.97	1738
10:27:19	10:56:19	29.00	1740
10:57:18	11:26:18	29.00	1740

6.8 Duration of Measurement

A statement of the duration of the measurement interval for the reported Maximum Qualified Throughput (tpmC) must be included. [Clause 8.1.6.12]

The measurement interval of the PRIMERGY R450 system test was 120 minutes.

6.9 Regulation of Transaction Mix

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

The transaction mix was regulated by weighted distribution. The chosen weights meet the required minimum percentages of the mix which are described in Clause 5.2.3 of the Standard Specifications. No adjustments were made by the RTE.

6.10 Transaction Mix

The percentage of the total mix for each transaction type must be disclosed. [Clause 8.1.6.14]

Table 12: Transaction Mix

	Percentage
New-Order	44.91 %
Payment	43.03 %
Order-Status	4.02 %
Delivery	4.02 %
Stock-Level	4.02 %

6.11 Transaction Statistics

The percentage of New-Order transactions rolled back as a result of invalid item number must be disclosed. [Clause 8.1.6.15]

The average number of order-lines entered per New-Order transaction must be disclosed. [Clause 8.1.6.16]

The percentage of remote order-lines entered per New-Order transaction must be disclosed. [Clause 8.1.6.17]

The percentage of remote Payment transactions must be disclosed. [Clause 8.1.6.18]

The percentage of customer selections by customer last name in the Payment and Order-Status transactions must be disclosed. [Clause 8.1.6.19]

The percentage of Delivery transactions skipped due to there being fewer than necessary orders in the New-Order table must be disclosed. [Clause 8.1.6.20]

The numerical quantities which are required in Clause 8.1.6.15 to 8.1.6.20 are already listed in a table above (see section 3.5).

6.12 Checkpoint Statistics

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. [Clause 8.1.6.21]

The numerical quantities which are required in Clause 8.1.6.21 are already listed above (see section 6.7).

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

7.1 RTE Inputs

If the RTE is commercially available, then its inputs must be specified. Otherwise, a description must be supplied of what inputs (e.g., scripts) to the RTE had been used. [Clause 8.1.7.1]

Microsoft Benchcraft was used as the RTE to emulate the terminals. Its input parameters are shown in Appendix C - Tunable Parameters and Options.

We used COM+ to simulate terminal users, generate random data, record response times and statistical data. Its input parameters are shown in Appendix C - Tunable Parameters and Options.

7.2 Lost Connections

The number of terminal connections lost during the Measurement Interval must be disclosed (seeClause 6.6.2). [Clause 8.1.7.3]

There were no lost connections during measurement interval.

7.3 Functionality and Performance of 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. [Clause 8.1.7.3]

The Driver System consisted of a PRIMERGY 870. This driver was attached to the client machine through a 100 Mbps ethernet LAN and switch. Since this is exactly the same connectivity as configured in the priced system, no component was emulated. Therefore, the test described in Clause 6.6.3.4 was not required.

7.4 Functional Diagrams of the Benchmarked and Proposed Configuration

A complete functional diagram of both the benchmark configuration and the configuration of the proposed (target) system must be disclosed. A detailed list of all software and hardware functionality being performed on the Driver System, and its interface to the SUT must be disclosed (see Clause 6.6.3.6). [Clause 8.1.7.4]

Figure 1 and Figure 2 in section 1.4 show the functional diagrams of the benchmark configuration and the priced configuration.

7.5 Network Configurations of the Tested and Proposed Services

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). [Clause 8.1.7.5]

Figure 1 and Figure 2 in section 1.4 show the network setup of both configurations. The driver replaces the workstations.

In both configurations 2 Mbs FC was used to connect the server with the 3 clients with VI over FC and 100Mbs LAN with switch to connect the RTE systems or 55000 workstations to the clients.

7.6 Network Bandwidth

The bandwidth of the network(s) used in the tested / priced configuration must be disclosed. [Clause 8.1.7.6]

The ethernet used in the local area network (LAN) between the emulated user system and the front-end system complies with the IEEE 802.3 standard. Its bandwith is 100 Mbps. Between front-end and SUT the bandwidth is 100 Mbps.

7.7 Operator Intervention

If the configuration requires operator intervention (see Clause 6.6.6), the mechanism and the frequency of this intervention must be disclosed. [Clause 8.1.7.7]

The PRIMERGY R450 requires no operator intervention to sustain the reported throughput.

8. Clause 7 Related Items - Pricing

8.1 **System Pricing**	*A detailed list of hardware and software used in the priced system must be reported. Each separately orderable item must have vendor part number, description, and release/revision level, and either general availability status or committed delivery date. If package-pricing is used, vendor part number of the package and a description uniquely identifying each of the components of the package must be disclosed. Pricing source(s) and effective date(s) of price(s) must also be reported. [Clause 8.1.8.1]* *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. [Clause 8..1.8.2]*

The details of the hardware and software are reported in the summary in front of this report. The spreadsheet used to determine the 3-year price and the speadsheet used to describe the priced configuration can be found in Appendix E - Price Quotations.

8.2 **Availability Dates**	*The committed delivery date for general availability (availability date) of products used in the price calculations must be reported. When the priced system includes products with different availability dates, the reported availability date for the priced system must be the date at which all components are committed to be available. This single date must be reported on the first page of the Executive Summary. All availability dates,whether for individual components or for the SUT as a whole, must be disclosed to a precision of one day. [Clause 8.1.8.3]*

All hardware and software components used in the price calculations of the PRIMERGY R450 system will be generally available from Fujitsu Siemens Computers GmbH as of May 3, 2003.

8.3 **Throughput and Price/Performance**	*A statement of the measured tpmC, as well as the respective calculations for 3-year pricing, price/performance (price/tpmC), and the availability date must be included. [Clause 8.1.8.4]*

PRIMERGY R450 system was measured at 68,264.47 tpmC with Microsoft SQL Server 2000 Enterprise Edition SP3 with a 3-year system price of € 434,063. The respective price/performance for the PRIMERGY R450 is € 6.36/tpmC. The priced PRIMERGY R450 will be available as of May 3, 2003.

8.4 **Country Specific Pricing**	*Additional Clause 7 related items may be included in the Full Disclosure Report for each country specific priced configuration. Country specifiv pricing is subject to Clause 7.1.7 [Clause 8.1.8.5]*

The system is being priced for Germany.

8.5 Usage Pricing

For any usage pricing, the sponsor must diclose:

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

[Clause 8.1.8.6]

The component pricing based on usage is shown below:

- One Microsoft SQL Server 2000 Enterprise Edition SP3
- One Windows .NET Server 2003 Enterprise Edition
- 3 Microsoft Windows 2000 Server SP2 license (includes 5 client access licenses)
- One Microsoft Visual C++ Professional 6.0

9. Clause 8 Related Items - Audit

9.1 **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.* *A review of the pricing model is required to ensure that all components required are priced (see Clause 9.2.8). The auditor is not required to review the final Full Disclosure Report or the final pricing prior to issuing the attestation letter. [Clause 8.1.9]*

The benchmark test of the PRIMERGY R450 system with Microsoft SQL Server 2000 Enterprise Edition SP3 was independently audited by:

Bradley Askins, TPC certified auditors of Infosizing.
The attestation letter is included in Appendix F.

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

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

or

Fujitsu Siemens Computers
ES PS DS 3
PRIMERGY Server Performance Lab
Mr. Bathe
Heinz-Nixdorf-Ring 1
33106 Paderborn
Germany

Appendix A - Application Source Code

```
LIBRARY TPCC.DLL

EXPORTS

     GetExtensionVersion  @1
     HttpExtensionProc    @2
     TerminateExtension   @3


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

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

#define TP_MAX_RETRIES                                   50


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

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


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

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

     CTPCC_BASE *pTxn;

} CLIENTDATA, *PCLIENTDATA;


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

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


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

class CWEBCLNT_ERR : public CBaseErr
{
```

```
     public:

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

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

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

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

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

};

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

//function prototypes

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

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

#define APSTUDIO_READONLY_SYMBOLS
////////////////////////////////////////////////////////////////////////////
/
//
// Generated from the TEXTINCLUDE 2 resource.
//
```

```
#include "afxres.h"

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

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

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

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

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

#endif    // !_MAC


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

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

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

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

#endif    // APSTUDIO_INVOKED


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

IDD_DIALOG1 DIALOG DISCARDABLE  0, 0, 186, 95
STYLE DS_MODALFRAME | WS_POPUP | WS_CAPTION | WS_SYSMENU
CAPTION "Dialog"
FONT 8, "MS Sans Serif"
BEGIN
    DEFPUSHBUTTON   "OK",IDOK,129,7,50,14
    PUSHBUTTON      "Cancel",IDCANCEL,129,24,50,14
END


////////////////////////////////////////////////////////////////////////////
/
//
// DESIGNINFO
//
```

```

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

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



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


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


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

#include <windows.h>
#include <process.h>
#include <tchar.h>
#include <stdio.h>
#include <stdarg.h>
```

```
#include <malloc.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <sys\timeb.h>
#include <io.h>
#include <assert.h>

#include <sqltypes.h>

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

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

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

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

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

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


#define    LEN_ERR_STRING  256

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

char       szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

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

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

static     CRITICAL_SECTION          TermCriticalSection;

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

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

// For deferred Delivery txns:

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

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

// configuration settings from registry
TPCCREGISTRYDATA          Reg;


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

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

/* FUNCTION: DllMain
 *
 * PURPOSE:     This function is the entry point for the DLL.  This
implementation is based on the
```

```
 *              fact that DLL_PROCESS_ATTACH is only called from the inet
service once.
 *
 * ARGUMENTS:   HANDLE     hModule                  module handle
 *                   DWORDul_reason_for_call   reason for call
 *                   LPVOID     lpReserved          reserved for future use
 *
 * RETURNS:          BOOL  FALSE                errors occured in
initialization
 *                             TRUE                 DLL successfully
initialized
 */

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

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

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

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

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

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

                    TermInit();

                    // load DLL for txn monitor
                    if (Reg.eTxnMon == TUXEDO)
                    {
                         strcpy( szDllName, Reg.szPath );
```

```
                          strcat( szDllName, "tpcc_tuxedo.dll");
                          hLibInstanceTm = LoadLibrary( szDllName );
                          if (hLibInstanceTm == NULL)
                               throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED,
szDllName, GetLastError() );

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

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

                     // load DLL for database connection
                     if ((Reg.eTxnMon == None) || (dwNumDeliveryThreads >
0))
                     {
```

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

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

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

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

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

                    InitJulianTime(NULL);

                    // create unique log file name based on delilog-
yymmdd-hhmm.log
                    SYSTEMTIME Time;
                    GetLocalTime( &Time );
```

```
                    wsprintf( szLogFile, "%sdelivery-%2.2d%2.2d%2.2d-
%2.2d%2.2d.log",
                             Reg.szPath, Time.wYear % 100,
Time.wMonth, Time.wDay, Time.wHour, Time.wMinute );
                    txnDelilog = new CTxnLog(szLogFile,
TXN_LOG_WRITE);

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

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

                break;

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

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

                    delete [] pDeliHandles;
                    delete [] pDelBuff;

                    CloseHandle( hWorkerSemaphore );
                    CloseHandle( hDoneEvent );
                    DeleteCriticalSection(&DelBuffCriticalSection);
                }
```

```
                    DeleteCriticalSection(&TermCriticalSection);

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

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

                    Sleep(500);
                    break;

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

     return TRUE;
}


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

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

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

     return TRUE;
}

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

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

     TermDeleteAll();
     return TRUE;
}


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

DWORD WINAPI HttpExtensionProc(EXTENSION_CONTROL_BLOCK *pECB)
{
     int             iCmd, FormId, TermId, iSyncId;
     char       szBuffer[4096];
     int                 lpbSize;
     static char         szHeader[] = "200 Ok";
     DWORD          dwSize = 6;             // initial value is strlen(szHeader)
     char           szHeader1[4096];


#ifdef ICECAP
     StartCAP();
#endif

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

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

                    throw new CWEBCLNT_ERR( ERR_INVALID_TERMID );
               }

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

               //set use time
               Term.pClientData[TermId].iTickCount = GetTickCount();
          }


          switch(iCmd)
          {
          case 0:
               WelcomeForm(pECB, szBuffer);
               break;
          case 1:
               switch( FormId )
               {
                    case WELCOME_FORM:
                    case MAIN_MENU_FORM:
                         break;
                    case NEW_ORDER_FORM:
                         ProcessNewOrderForm(pECB, TermId, szBuffer);
                         break;
                    case PAYMENT_FORM:
```

```
                         ProcessPaymentForm(pECB, TermId, szBuffer);
                         break;
                    case DELIVERY_FORM:
                         ProcessDeliveryForm(pECB, TermId, szBuffer);
                         break;
                    case ORDER_STATUS_FORM:
                         ProcessOrderStatusForm(pECB, TermId, szBuffer);
                         break;
                    case STOCK_LEVEL_FORM:
                         ProcessStockLevelForm(pECB, TermId, szBuffer);
                         break;
               }
               break;
          case 2:
               // new-order selected from menu; display new-order input form
               MakeNewOrderForm(TermId, NULL, INPUT_FORM, szBuffer);
               break;
          case 3:
               // payment selected from menu; display payment input form
               MakePaymentForm(TermId, NULL, INPUT_FORM, szBuffer);
               break;
          case 4:
               // delivery selected from menu; display delivery input form
               MakeDeliveryForm(TermId, NULL, INPUT_FORM, szBuffer);
               break;
          case 5:
               // order-status selected from menu; display order-status
input form
               MakeOrderStatusForm(TermId, NULL, INPUT_FORM, szBuffer);
               break;
          case 6:
               // stock-level selected from menu; display stock-level input
form
               MakeStockLevelForm(TermId, NULL, INPUT_FORM, szBuffer);
               break;
          case 7:
               // ExitCmd
               TermDelete(TermId);
               WelcomeForm(pECB, szBuffer);
               break;
          case 8:
               SubmitCmd(pECB, szBuffer);
               break;
          case 9:
               // menu
               MakeMainMenuForm(TermId, Term.pClientData[TermId].iSyncId,
szBuffer);
               break;
          case 10:
               // CMD=Clear
               // resets all connections; should only be used when no other
connections are active
               TermDeleteAll();
               TermInit();
               WelcomeForm(pECB, szBuffer);
               break;
          case 11:  // CMD=Stats
               StatsCmd(pECB, szBuffer);
               break;
          }
     }
     catch (CBaseErr *e)
     {
          ErrorForm( pECB, e->ErrorType(), e->ErrorNum(), TermId, iSyncId,
e->ErrorText(), szBuffer );
          delete e;
     }
     catch (...)
     {
          ErrorForm( pECB, ERR_TYPE_WEBDLL, 0, TermId, iSyncId, "Error:
Unhandled exception in Web Client.", szBuffer );
     }

#ifdef ICECAP
     StopCAP();
#endif


     lpbSize = strlen(szBuffer);
     wsprintf(szHeader1,
               "Content-Type: text/html\r\n"
               "Content-Length: %d\r\n"
               "Connection: Keep-Alive\r\n\r\n" , lpbSize);
     strcat( szHeader1, szBuffer );

     (*pECB->ServerSupportFunction)(pECB->ConnID,
HSE_REQ_SEND_RESPONSE_HEADER, szHeader, (LPDWORD) &dwSize,
(LPDWORD)szHeader1);

     //finish up and keep connection
     pECB->dwHttpStatusCode = 200;
     return HSE_STATUS_SUCCESS_AND_KEEP_CONN;
}


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

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

    _stprintf(szMsg, TEXT("Error in TPCC.DLL: "));
    lpszStrings[0] = szMsg;
    lpszStrings[1] = lpszMsg;

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

        (VOID) DeregisterEventSource(hEventSource);
    }
}


/* FUNCTION: DeliveryWorkerThread
 *
 * PURPOSE:     This function processes deferred delivery txns.  There are
typically several
 *              threads running this routine.  The number of threads is
determined by an entry
 *              read from the registry.  The thread waits for work by waiting
on semaphore.
 *              When a delivery txn is posted, the semaphore is released.
After processing
 *              the delivery txn, information is logged to record the txn
status and execution
 *              time.
 */

/*static*/ void DeliveryWorkerThread(void *ptr)
{
     CTPCC_BASE      *pTxn = NULL;

     DELIVERY_TRANSACTION      delivery;
     PDELIVERY_DATA                 pDeliveryData;
     TXN_RECORD_TPCC_DELIV_DEF txnDeliRec;

     DWORD                     index;
     HANDLE                         handles[2];

     SYSTEMTIME      trans_end;      //delivery transaction finished time
     SYSTEMTIME      trans_start;    //delivery transaction start time

     assert(txnDelilog != NULL);

     try
     {
          if (Reg.eDB_Protocol == ODBC)
               pTxn = pCTPCC_ODBC_new( Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, szMyComputerName, Reg.szDbName );
```

```
          else if (Reg.eDB_Protocol == DBLIB)
               pTxn = pCTPCC_DBLIB_new( Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, szMyComputerName, Reg.szDbName );
          pDeliveryData = pTxn->BuffAddr_Delivery();
     }
     catch (CBaseErr *e)
     {
          char szTmp[1024];
          wsprintf( szTmp, "Error in Delivery Txn thread.  Could not connect
to database.  "
                    "%s.  Server=%s, User=%s, Password=%s, Database=%s",
                    e->ErrorText(), Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, Reg.szDbName );
          WriteMessageToEventLog( szTmp );
          delete e;
          goto ErrorExit;
     }
     catch (...)
     {
          WriteMessageToEventLog(TEXT("Unhandled exception caught in
DeliveryWorkerThread."));
          goto ErrorExit;
     }

     while (TRUE)
     {
          try
          {
               //while delivery thread running, i.e. user has not requested
termination
               while (TRUE)
               {
                    // need to wait for multiple objects: program exit or
worker semaphore;
                    handles[0] = hDoneEvent;
                    handles[1] = hWorkerSemaphore;
                    index = WaitForMultipleObjects( 2, &handles[0], FALSE,
INFINITE );
                    if (index == WAIT_OBJECT_0)
                         goto ErrorExit;

                    ZeroMemory(&txnDeliRec, sizeof(txnDeliRec));
                    txnDeliRec.TxnType = TXN_REC_TYPE_TPCC_DELIV_DEF;

                    // make a local copy of current entry from delivery
buffer and increment buffer index
                    EnterCriticalSection(&DelBuffCriticalSection);
                    delivery = *(pDelBuff+dwDelBuffBusyIndex);
                    dwDelBuffFreeCount++;
                    dwDelBuffBusyIndex++;
                    if (dwDelBuffBusyIndex == dwDelBuffSize)  // wrap-
around if at end of buffer
                         dwDelBuffBusyIndex = 0;
                    LeaveCriticalSection(&DelBuffCriticalSection);

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

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

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

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

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

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

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

ErrorExit:
     delete pTxn;
     _endthread();
}
```

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

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

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

          dwDelBuffFreeCount--;
          dwDelBuffFreeIndex++;
          if (dwDelBuffFreeIndex == dwDelBuffSize)
               dwDelBuffFreeIndex = 0;        // wrap-around if at end of
buffer
     }
     else
          // No free buffers.  Return an error, which indicates that the
delivery buffer is full.
          // Most likely, the number of delivery worker threads needs to be
increased to keep up
          // with the txn rate.
          bError = TRUE;
     LeaveCriticalSection(&DelBuffCriticalSection);

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

     return bError;
}

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

```
 *                   then the pTermid and pFormid return values are
undefined.
 */

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

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

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

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

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

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

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

/* FUNCTION: void WelcomeForm
 *
 */

void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
```

```
{
     char szTmp[1024];

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

     sprintf( szTmp, "Configuration Settings: <BR><font face=\"Courier New\"
color=\"blue\"><PRE>"
                          "Txn Monitor            = <B>%s</B><BR>"
                          "Database protocol      = <B>%s</B><BR>"
                          "Max Connections        = <B>%d</B><BR>"
                          "# of Delivery Threads  = <B>%d</B><BR>"
                          "Max Pending Deliveries = <B>%d</B><BR>"
                , szTxnMonNames[Reg.eTxnMon], szDBNames[Reg.eDB_Protocol],
                Reg.dwMaxConnections, dwNumDeliveryThreads, dwDelBuffSize );
     strcat( szBuffer, szTmp);

     if (Reg.eTxnMon == COM)
     {
          sprintf( szTmp, "COM Single Pool        = <B>%s</B><BR>",
               Reg.bCOM_SinglePool ? "YES" : "NO" );
          strcat( szBuffer, szTmp);
     }
     strcat( szBuffer, "</PRE></font>");

     if (Reg.eTxnMon == None)
          // connection options may be specified when not using a txn
monitor
          sprintf( szTmp, "Please enter your database options for this
connection:<BR>"
                               "<font face=\"Courier New\"
color=\"blue\"><PRE>"
```

```
                               "DB Server    = <INPUT NAME=\"db_server\"
SIZE=20 VALUE=\"%s\"><BR>"
                               "DB User ID   = <INPUT NAME=\"db_user\"
SIZE=20 VALUE=\"%s\"><BR>"
                               "DB Password  = <INPUT NAME=\"db_passwd\"
SIZE=20 VALUE=\"%s\"><BR>"
                               "DB Name      = <INPUT NAME=\"db_name\"
SIZE=20 VALUE=\"%s\"><BR>"
                               "</PRE></font>"
                      , Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
Reg.szDbName );
     else
          // if using a txn monitor, connection options are determined from
registry; can't
          // set per user.  show options fyi
          sprintf( szTmp, "Database options which will be used by the
transaction monitor:<BR>"
                               "<font face=\"Courier New\"
color=\"blue\"><PRE>"
                               "DB Server              = <B>%s</B><BR>"
                               "DB User ID             = <B>%s</B><BR>"
                               "DB Password            = <B>%s</B><BR>"
                               "DB Name                = <B>%s</B><BR>"
                               "</PRE></font>"
                      , Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
Reg.szDbName );
     strcat( szBuffer, szTmp);

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

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

void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
     int        iNewTerm;
     char *ptr = pECB->lpszQueryString;
     char szVersion[32]   = { 0 };
     char szServer[32]    = { 0 };
     char szUser[32]      = "sa";
     char szPassword[32]  = { 0 };
     char szDatabase[32]  = "tpcc";

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

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

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

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


     iNewTerm = TermAdd();

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

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

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

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

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

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

     EnterCriticalSection(&TermCriticalSection);

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

     LeaveCriticalSection(&TermCriticalSection);

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

char *CWEBCLNT_ERR::ErrorText()
{
     static SERRORMSG errorMsgs[] =
     {
          {    ERR_COMMAND_UNDEFINED,                          "Command
undefined."                                                              },
          {    ERR_D_ID_INVALID,                               "Invalid
District ID Must be 1 to 10."                                       },
          {    ERR_DELIVERY_CARRIER_ID_RANGE,             "Delivery Carrier
ID out of range must be 1 - 10."                               },
          {    ERR_DELIVERY_CARRIER_INVALID,              "Delivery Carrier
ID invalid must be numeric 1 - 10."                       },
          {    ERR_DELIVERY_MISSING_OCD_KEY,              "Delivery missing
Carrier ID key \"OCD*\"."                                      },
          {    ERR_DELIVERY_THREAD_FAILED,                     "Could not
start delivery worker thread."                                      },
          {    ERR_GETPROCADDR_FAILED,                         "Could not
map proc in DLL.  GetProcAddr error.  DLL="                         },
          {    ERR_HTML_ILL_FORMED,                       "Required key field
is missing from HTML string."                             },
          {    ERR_INVALID_SYNC_CONNECTION,               "Invalid Terminal
Sync ID."                                                           },
          {    ERR_INVALID_TERMID,                             "Invalid
Terminal ID."                                                            },
          {    ERR_LOADDLL_FAILED,                             "Load of DLL
failed.  DLL="                                                           },
          {    ERR_MAX_CONNECTIONS_EXCEEDED,              "No connections
available.  Max Connections is probably too low."   },
          {    ERR_MISSING_REGISTRY_ENTRIES,              "Required registry
entries are missing.  Rerun INSTALL to correct."     },
          {    ERR_NEWORDER_CUSTOMER_INVALID,             "New Order customer
id invalid data type, range = 1 to 3000."      },
          {    ERR_NEWORDER_CUSTOMER_KEY,                 "New Order missing
Customer key \"CID*\"."                                        },
          {    ERR_NEWORDER_DISTRICT_INVALID,             "New Order District
ID Invalid range 1 - 10."                                 },
          {    ERR_NEWORDER_FORM_MISSING_DID,             "New Order missing
District key \"DID*\"."                                        },
          {    ERR_NEWORDER_ITEMID_INVALID,               "New Order Item Id
is wrong data type, must be numeric."                     },
          {    ERR_NEWORDER_ITEMID_RANGE,                 "New Order Item Id
is out of range. Range = 1 to 999999."                    },
          {    ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,         "New Order Item_Id
field entered without a corresponding Supp_W." },
          {    ERR_NEWORDER_MISSING_IID_KEY,              "New Order missing
Item Id key \"IID*\"."                                         },
          {    ERR_NEWORDER_MISSING_QTY_KEY,              "New Order Missing
Qty key \"Qty##*\"."                                           },
          {    ERR_NEWORDER_MISSING_SUPPW_KEY,            "New Order missing
Supp_W key \"SP##*\"."                                         },
          {    ERR_NEWORDER_NOITEMS_ENTERED,              "New Order No order
lines entered."                                                },
          {    ERR_NEWORDER_QTY_INVALID,                  "New Order Qty
invalid must be numeric range 1 - 99."                         },
          {    ERR_NEWORDER_QTY_RANGE,                         "New Order
Qty is out of range. Range = 1 to 99."                              },
          {    ERR_NEWORDER_QTY_WITHOUT_SUPPW,            "New Order Qty
field entered without a corresponding Supp_W."      },
```

```
          {    ERR_NEWORDER_SUPPW_INVALID,                     "New Order
Supp_W invalid data type must be numeric."                          },
          {    ERR_NO_SERVER_SPECIFIED,                   "No Server name
specified."                                                          },
          {    ERR_ORDERSTATUS_CID_AND_CLT,               "Order Status Only
Customer ID or Last Name may be entered, not both."  },
          {    ERR_ORDERSTATUS_CID_INVALID,               "Order Status
Customer ID invalid, range must be numeric 1 - 3000."     },
          {    ERR_ORDERSTATUS_CLT_RANGE,                 "Order Status
Customer last name longer than 16 characters."      },
          {    ERR_ORDERSTATUS_DID_INVALID,               "Order Status
District invalid, value must be numeric 1 - 10."          },
          {    ERR_ORDERSTATUS_MISSING_CID_CLT,           "Order Status
Either Customer ID or Last Name must be entered."         },
          {    ERR_ORDERSTATUS_MISSING_CID_KEY,           "Order Status
missing Customer key \"CID*\"."                           },
          {    ERR_ORDERSTATUS_MISSING_CLT_KEY,           "Order Status
missing Customer Last Name key \"CLT*\"."                 },
          {    ERR_ORDERSTATUS_MISSING_DID_KEY,           "Order Status
missing District key \"DID*\"."                           },
          {    ERR_PAYMENT_CDI_INVALID,                   "Payment Customer
district invalid must be numeric."                  },
          {    ERR_PAYMENT_CID_AND_CLT,                   "Payment Only
Customer ID or Last Name may be entered, not both."  },
          {    ERR_PAYMENT_CUSTOMER_INVALID,              "Payment Customer
data type invalid, must be numeric."                },
          {    ERR_PAYMENT_CWI_INVALID,                   "Payment Customer
Warehouse invalid, must be numeric."                },
          {    ERR_PAYMENT_DISTRICT_INVALID,              "Payment District
ID is invalid, must be 1 - 10."                     },
          {    ERR_PAYMENT_HAM_INVALID,                   "Payment Amount
invalid data type must be numeric."                       },
          {    ERR_PAYMENT_HAM_RANGE,                          "Payment
Amount out of range, 0 - 9999.99."                                   },
          {    ERR_PAYMENT_LAST_NAME_TO_LONG,             "Payment Customer
last name longer than 16 characters."                     },
          {    ERR_PAYMENT_MISSING_CDI_KEY,               "Payment missing
Customer district key \"CDI*\"."                          },
          {    ERR_PAYMENT_MISSING_CID_CLT,               "Payment Either
Customer ID or Last Name must be entered."                },
          {    ERR_PAYMENT_MISSING_CID_KEY,               "Payment missing
Customer Key \"CID*\"."                                   },
          {    ERR_PAYMENT_MISSING_CLT_KEY,               "Payment missing
Customer Last Name key \"CLT*\"."                         },
          {    ERR_PAYMENT_MISSING_CWI_KEY,               "Payment missing
Customer Warehouse key \"CWI*\"."                         },
          {    ERR_PAYMENT_MISSING_DID_KEY,               "Payment missing
District Key \"DID*\"."                                   },
          {    ERR_PAYMENT_MISSING_HAM_KEY,               "Payment missing
Amount key \"HAM*\"."                                          },
          {    ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,      "Stock Level;
missing Threshold key \"TT*\"."                           },
          {    ERR_STOCKLEVEL_THRESHOLD_INVALID,          "Stock Level;
Threshold value must be in the range = 1 - 99."     },
          {    ERR_STOCKLEVEL_THRESHOLD_RANGE,           "Stock Level
Threshold out of range, range must be 1 - 99."           },
          {    ERR_VERSION_MISMATCH,                          "Invalid
version field.  RTE and Web Client are probably out of sync." },
          {    ERR_W_ID_INVALID,                              "Invalid
Warehouse ID."                                                      },
          {    0,                                                  ""

          }
     };

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

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

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

}

/* FUNCTION: GetKeyValue
 *
 * PURPOSE:     This function parses a http formatted string for specific key
values.
 *
 * ARGUMENTS:   char            *pQueryString   http string from client
browser
 *                   char            *pKey           key value to look for
 *                   char            *pValue              character array
into which to place key's value
 *                   int                  iMax            maximum length of
key value array.
 *                   WEBERROR        err                  error value to
throw
 *
```

```
 * RETURNS:          nothing.
 *
 * ERROR:       if (the pKey value is not found) then
 *                        if (err == 0)
 *                             return (empty string)
 *                        else
 *                             throw CWEBCLNT_ERR(err)
 *
 * COMMENTS:    http keys are formatted either KEY=value& or KEY=value\0.
This DLL formats
 *                   TPC-C input fields in such a manner that the keys can
be extracted in the
 *                   above manner.
 */

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

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

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

     *pQueryString = ptr;
     return;

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

/* FUNCTION: GetIntKeyValue
 *
 * PURPOSE:     This function parses a http formatted string for a specific
key value.
 *
 * ARGUMENTS:   char            *pQueryString   http string from client
browser
 *                   char            *pKey           key value to look for
 *                   WEBERROR        NoKeyErr        error value to throw if
key not found
```

```
 *                    WEBERROR        NotIntErr       error value to throw if
value not numeric
 *
 * RETURNS:           integer
 *
 * ERROR:       if (the pKey value is not found) then
 *                        if (NoKeyErr != NO_ERR)
 *                             throw CWEBCLNT_ERR(err)
 *                        else
 *                             return 0
 *                   else if (non-numeric char found) then
 *                        if (NotIntErr != NO_ERR) then
 *                             throw CWEBCLNT_ERR(err)
 *                        else
 *                             return 0
 *
 * COMMENTS:    http keys are formatted either KEY=value& or KEY=value\0.
This DLL formats
 *                   TPC-C input fields in such a manner that the keys can
be extracted in the
 *                   above manner.
 */

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

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

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

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

     *pQueryString = ptr;
     return atoi(ptr0);

ErrorNoKey:
     if (NoKeyErr != NO_ERR)
```

```
          throw new CWEBCLNT_ERR( NoKeyErr );
     return 0;
}

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

void TermInit(void)
{
     EnterCriticalSection(&TermCriticalSection);

     Term.iMasterSyncId   = 1;
     Term.iNumEntries     = Reg.dwMaxConnections+1;

     Term.pClientData     = NULL;
     Term.pClientData     = (PCLIENTDATA)malloc(Term.iNumEntries *
sizeof(CLIENTDATA));
     if (Term.pClientData == NULL)
     {
          LeaveCriticalSection(&TermCriticalSection);
          throw new CWEBCLNT_ERR( ERR_MEM_ALLOC_FAILED );
     }

     ZeroMemory( Term.pClientData, Term.iNumEntries * sizeof(CLIENTDATA) );

     Term.iFreeList       = Term.iNumEntries-1;
     // build free list
     // note: Term.pClientData[0].iNextFree gets set to -1, which marks it
as "in use".
     //       This is intentional, as the zero entry is used as an anchor
and never
     //         allocated as an actual terminal.
     for(int i=0; i<Term.iNumEntries; i++)
          Term.pClientData[i].iNextFree = i-1;

     LeaveCriticalSection(&TermCriticalSection);
}

/* FUNCTION: TermDeleteAll
 *
 * PURPOSE:     This function frees allocated resources associated with the
terminal structure.
 *
 * ARGUMENTS:   none
 *
 * RETURNS:          None
 *
 * COMMENTS:    This function is called only when the inet service unloads
the TPCC.DLL
```

```
 *
 */

void TermDeleteAll(void)
{
     EnterCriticalSection(&TermCriticalSection);

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

     Term.iFreeList       = 0;
     Term.iNumEntries     = 0;
     if ( Term.pClientData )
          free(Term.pClientData);
     Term.pClientData     = NULL;

     LeaveCriticalSection(&TermCriticalSection);
}

/* FUNCTION: TermAdd
 *
 * PURPOSE:     This function assigns a terminal id which is used to identify
a client browser.
 *
 * RETURNS:          int       assigned terminal id
 *
 */

int TermAdd(void)
{
     DWORD i;
     int       iNewTerm, iTickCount;

     if (Term.iNumEntries == 0)
          return -1;

     EnterCriticalSection(&TermCriticalSection);
     if (Term.iFreeList != 0)
     {    // position is available
          iNewTerm = Term.iFreeList;
          Term.iFreeList = Term.pClientData[iNewTerm].iNextFree;
          Term.pClientData[iNewTerm].iNextFree = -1;  // indicates this
position is in use
     }
     else
     {    // no open slots, so find the slot that hasn't been used in the
longest time and reuse it
          for(iNewTerm=1, i=1, iTickCount=0x7FFFFFFF;
i<Reg.dwMaxConnections; i++)
          {
               if (iTickCount > Term.pClientData[i].iTickCount)
```

```
               {
                    iTickCount = Term.pClientData[i].iTickCount;
                    iNewTerm = i;
               }
          }
          // if oldest term is less than one minute old, it probably means
that more connections
          // are being attempted than were specified as "Max Connections" at
install.  In this case,
          // do not bump existing connection; instead, return error to
requestor.
          if ((GetTickCount() - iTickCount) < 60000)
          {
               LeaveCriticalSection(&TermCriticalSection);
               throw new CWEBCLNT_ERR( ERR_MAX_CONNECTIONS_EXCEEDED );
          }
     }

     Term.pClientData[iNewTerm].iTickCount = GetTickCount();
     Term.pClientData[iNewTerm].iSyncId = Term.iMasterSyncId++;
     Term.pClientData[iNewTerm].pTxn = NULL;

     LeaveCriticalSection(&TermCriticalSection);
     return iNewTerm;
}

/* FUNCTION: TermDelete
 *
 * PURPOSE:     This function makes a terminal entry in the Term array
available for reuse.
 *
 * ARGUMENTS:   int                             id         Terminal id of
client exiting
 *
 */

void TermDelete(int id)
{
     if ( id > 0 && id < Term.iNumEntries )
     {
          delete Term.pClientData[id].pTxn;

          // put onto free list
          EnterCriticalSection(&TermCriticalSection);

          Term.pClientData[id].iNextFree = Term.iFreeList;
          Term.iFreeList = id;

          LeaveCriticalSection(&TermCriticalSection);
     }
}


/* FUNCTION: MakeErrorForm
```

```
 */

void ErrorForm(EXTENSION_CONTROL_BLOCK *pECB, int iType, int iErrorNum, int
iTermId, int iSyncId, char *szErrorText, char *szBuffer )
{
     wsprintf(szBuffer,
          "<HTML><HEAD><TITLE>TPC-C Error</TITLE></HEAD><BODY>"
          "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<BOLD>An Error Occurred</BOLD><BR><BR>"
          "%s"
          "<BR><BR><HR>"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..NewOrder..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-Status..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-Level..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
          "</FORM></BODY></HTML>"
          , iType, iErrorNum, MAIN_MENU_FORM, iTermId, iSyncId, szErrorText
);
}

/* FUNCTION: MakeMainMenuForm
 */

void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm)
{
     wsprintf(szForm,
          "<HTML><HEAD><TITLE>TPC-C Main Menu</TITLE></HEAD><BODY>"
          "Select Desired Transaction.<BR><HR>"
          "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..NewOrder..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-Status..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-Level..\">"
          "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
          "</FORM></BODY></HTML>"
          , MAIN_MENU_FORM, iTermId, iSyncId);
}

/* FUNCTION: MakeStockLevelForm
 *
 * PURPOSE:     This function constructs the Stock Level HTML page.
 *
 * COMMENTS:    The internal client buffer is created when the terminal id is
assigned and should not
 *                   be freed except when the client terminal id is no
longer needed.
 */

void MakeStockLevelForm(int iTermId, STOCK_LEVEL_DATA *pStockLevelData, BOOL
bInput, char *szForm)
{
     int  c;

     c = wsprintf(szForm,
          "<HTML><HEAD><TITLE>TPC-C Stock Level</TITLE></HEAD><FORM
ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<PRE><font face=\"Courier\">
Stock-Level<BR>"
          "Warehouse: %4.4d   District: %2.2d<BR> <BR>",
          STOCK_LEVEL_FORM, iTermId, Term.pClientData[iTermId].iSyncId,
          Term.pClientData[iTermId].w_id, Term.pClientData[iTermId].d_id);

     if ( bInput )
     {
          strcpy(szForm+c,
               "Stock Level Threshold: <INPUT NAME=\"TT*\" SIZE=2><BR> <BR>"
               "low stock:    </font><BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR>"
               " <BR> <BR> <BR> <BR> <BR> <BR> <BR></PRE><HR>"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Process\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Menu\">"
               "</FORM></HTML>" );
     }
     else
     {
          wsprintf(szForm+c,
               "Stock Level Threshold: %2.2d<BR> <BR>"
               "low stock: %3.3d</font> <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR>"
               " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR></PRE><HR>"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..NewOrder..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-
Status..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-
Level..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
               "</FORM></HTML>"
               , pStockLevelData->threshold, pStockLevelData->low_stock);
     }
}

/* FUNCTION: MakeNewOrderForm
 *
 * COMMENTS:   The internal client buffer is created when the terminal id is
assigned and should not
 *                   be freed except when the client terminal id is no
longer needed.
 */

void MakeNewOrderForm(int iTermId, NEW_ORDER_DATA *pNewOrderData, BOOL
bInput, char *szForm)
{
     int       i, c;
     BOOL bValid;
     static    char szBR[] = " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR>";

     if (!bInput)
          assert( pNewOrderData->exec_status_code == eOK || pNewOrderData-
>exec_status_code == eInvalidItem );

     bValid = (bInput || (pNewOrderData->exec_status_code == eOK));

     c = wsprintf(szForm,
          "<HTML><HEAD><TITLE>TPC-C New Order</TITLE></HEAD><BODY>"
          "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<PRE><font face=\"Courier\">
New Order<BR>"
          , bValid ? 0 : ERR_BAD_ITEM_ID, NEW_ORDER_FORM, iTermId,
Term.pClientData[iTermId].iSyncId);

     if ( bInput )
     {
          c += wsprintf(szForm+c, "Warehouse: %4.4d   ",
Term.pClientData[iTermId].w_id );

          strcpy( szForm+c,
               "District: <INPUT NAME=\"DID*\" SIZE=1>
Date:<BR>"
               "Customer:  <INPUT NAME=\"CID*\" SIZE=4>   Name:
Credit:      %Disc:<BR>"
               "Order Number:           Number of Lines:           W_tax:
D_tax:<BR> <BR>"
               " Supp_W  Item_Id  Item Name                  Qty  Stock  B/G
Price    Amount<BR>"
               "  <INPUT NAME=\"SP00*\" SIZE=4>  <INPUT NAME=\"IID00*\"
SIZE=6>                            <INPUT NAME=\"Qty00*\" SIZE=1><BR>"
```

```
               "  <INPUT NAME=\"SP01*\" SIZE=4>  <INPUT NAME=\"IID01*\"
SIZE=6>                            <INPUT NAME=\"Qty01*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP02*\" SIZE=4>  <INPUT NAME=\"IID02*\"
SIZE=6>                            <INPUT NAME=\"Qty02*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP03*\" SIZE=4>  <INPUT NAME=\"IID03*\"
SIZE=6>                            <INPUT NAME=\"Qty03*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP04*\" SIZE=4>  <INPUT NAME=\"IID04*\"
SIZE=6>                            <INPUT NAME=\"Qty04*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP05*\" SIZE=4>  <INPUT NAME=\"IID05*\"
SIZE=6>                            <INPUT NAME=\"Qty05*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP06*\" SIZE=4>  <INPUT NAME=\"IID06*\"
SIZE=6>                            <INPUT NAME=\"Qty06*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP07*\" SIZE=4>  <INPUT NAME=\"IID07*\"
SIZE=6>                            <INPUT NAME=\"Qty07*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP08*\" SIZE=4>  <INPUT NAME=\"IID08*\"
SIZE=6>                            <INPUT NAME=\"Qty08*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP09*\" SIZE=4>  <INPUT NAME=\"IID09*\"
SIZE=6>                            <INPUT NAME=\"Qty09*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP10*\" SIZE=4>  <INPUT NAME=\"IID10*\"
SIZE=6>                            <INPUT NAME=\"Qty10*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP11*\" SIZE=4>  <INPUT NAME=\"IID11*\"
SIZE=6>                            <INPUT NAME=\"Qty11*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP12*\" SIZE=4>  <INPUT NAME=\"IID12*\"
SIZE=6>                            <INPUT NAME=\"Qty12*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP13*\" SIZE=4>  <INPUT NAME=\"IID13*\"
SIZE=6>                            <INPUT NAME=\"Qty13*\" SIZE=1><BR>"
               "  <INPUT NAME=\"SP14*\" SIZE=4>  <INPUT NAME=\"IID14*\"
SIZE=6>                            <INPUT NAME=\"Qty14*\" SIZE=1><BR>"
               "Execution Status:
Total:<BR>"
               "</font></PRE><HR>"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Process\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Menu\">"
               "</FORM></HTML>"
               );
     }
     else
     {
          c += wsprintf(szForm+c, "Warehouse: %4.4d   District: %2.2d
Date: ",
               pNewOrderData->w_id,
               pNewOrderData->d_id);

          if ( bValid )
          {
               c += wsprintf(szForm+c, "%2.2d-%2.2d-%4.4d
%2.2d:%2.2d:%2.2d",
                    pNewOrderData->o_entry_d.day,
                    pNewOrderData->o_entry_d.month,
                    pNewOrderData->o_entry_d.year,
                    pNewOrderData->o_entry_d.hour,
                    pNewOrderData->o_entry_d.minute,
                    pNewOrderData->o_entry_d.second);
          }
          c += wsprintf(szForm+c, "<BR>Customer:  %4.4d   Name: %-16s
Credit: %-2s   ",
                pNewOrderData->c_id, pNewOrderData->c_last, pNewOrderData-
>c_credit);

          if ( bValid )
          {
                c += sprintf(szForm+c,
                               "%%Disc: %5.2f            <BR>"
                               "Order Number: %8.8d  Number of Lines: %2.2d
W_tax: %5.2f   D_tax: %5.2f  <BR> <BR>"
                               " Supp_W  Item_Id  Item Name
Qty  Stock  B/G  Price    Amount<BR>",
                     100.0*pNewOrderData->c_discount,
                     pNewOrderData->o_id,
                     pNewOrderData->o_ol_cnt,
                     100.0 * pNewOrderData->w_tax,
                     100.0 * pNewOrderData->d_tax);

                for(i=0; i<pNewOrderData->o_ol_cnt; i++)
                {
                     c += sprintf(szForm+c, "  %4.4d   %6.6d   %-24s  %2.2d
%3.3d    %1.1s   $%6.2f  $%7.2f  <BR>",
                          pNewOrderData->OL[i].ol_supply_w_id,
                          pNewOrderData->OL[i].ol_i_id,
                          pNewOrderData->OL[i].ol_i_name,
                          pNewOrderData->OL[i].ol_quantity,
                          pNewOrderData->OL[i].ol_stock,
                          pNewOrderData->OL[i].ol_brand_generic,
                          pNewOrderData->OL[i].ol_i_price,
                          pNewOrderData->OL[i].ol_amount );
                }
          }
          else
          {
                c += wsprintf(szForm+c,
                     "%Disc:<BR>"
                     "Order Number: %8.8d  Number of Lines:
W_tax:         D_tax:<BR> <BR>"
                     " Supp_W  Item_Id  Item Name                  Qty  Stock
B/G  Price    Amount<BR>"
                     , pNewOrderData->o_id);

                i = 0;
          }

          strncpy( szForm+c, szBR, (15-i)*5 );
          c += (15-i)*5;

          if ( bValid )
                c += sprintf(szForm+c, "Execution Status: Transaction
commited.                      Total:  $%8.2f  ",
                     pNewOrderData->total_amount);
```

```
          else
                c += wsprintf(szForm+c, "Execution Status: Item number is not
valid.                  Total:");

          strcpy(szForm+c,
                " <BR></font></PRE><HR>"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..NewOrder..\">"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-
Status..\">"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-
Level..\">"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
                "</FORM></HTML>"
                );
     }
}

/* FUNCTION: MakePaymentForm
 *
 * COMMENTS:    The internal client buffer is created when the terminal id is
assigned and should not
 *                   be freed except when the client terminal id is no
longer needed.
 */

void MakePaymentForm(int iTermId, PAYMENT_DATA *pPaymentData, BOOL bInput,
char *szForm)
{
     int c;

     c = wsprintf(szForm,
          "<HTML><HEAD><TITLE>TPC-C Payment</TITLE></HEAD><BODY>"
          "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<PRE><font face=\"Courier\">
Payment<BR>"
          "Date: "
          , PAYMENT_FORM, iTermId, Term.pClientData[iTermId].iSyncId);

     if ( !bInput )
     {
          c += wsprintf(szForm+c, "%2.2d-%2.2d-%4.4d %2.2d:%2.2d:%2.2d",
                pPaymentData->h_date.day,
                pPaymentData->h_date.month,
                pPaymentData->h_date.year,
                pPaymentData->h_date.hour,
                pPaymentData->h_date.minute,
                pPaymentData->h_date.second);
     }

     if ( bInput )
     {
          c += wsprintf(szForm+c,
                "<BR> <BR>Warehouse: %4.4d"
                "                          District: <INPUT NAME=\"DID*\"
SIZE=1><BR> <BR> <BR> <BR> <BR>"
                "Customer: <INPUT NAME=\"CID*\" SIZE=4>"
                "Cust-Warehouse: <INPUT NAME=\"CWI*\" SIZE=4>  "
                "Cust-District: <INPUT NAME=\"CDI*\" SIZE=1><BR>"
                "Name:                       <INPUT NAME=\"CLT*\" SIZE=16>
Since:<BR>"
                "
Credit:<BR>"
                "                                              Disc:<BR>"
                "                                              Phone:<BR>
<BR>"
                "Amount Paid:          $<INPUT NAME=\"HAM*\" SIZE=7>      New
Cust-Balance:<BR>"
                "Credit Limit:<BR> <BR>Cust-Data: <BR> <BR> <BR> <BR>
<BR></font></PRE><HR>"
                "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Process\"><INPUT
TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Menu\">"
                "</BODY></FORM></HTML>"
                , Term.pClientData[iTermId].w_id);
     }
     else
     {
          c += wsprintf(szForm+c,
                "<BR> <BR>Warehouse: %4.4d                          District:
%2.2d<BR>"
                "%-20s                     %-20s<BR>"
                "%-20s                     %-20s<BR>"
                "%-20s %-2s %5.5s-%4.4s       %-20s %-2s %5.5s-%4.4s<BR>
<BR>"
                "Customer: %4.4d  Cust-Warehouse: %4.4d  Cust-District:
%2.2d<BR>"
                "Name:   %-16s %-2s %-16s     Since:  %2.2d-%2.2d-%4.4d<BR>"
                "        %-20s                    Credit: %-2s<BR>"

                , Term.pClientData[iTermId].w_id, pPaymentData->d_id
                , pPaymentData->w_street_1, pPaymentData->d_street_1
                , pPaymentData->w_street_2, pPaymentData->d_street_2
                , pPaymentData->w_city, pPaymentData->w_state, pPaymentData-
>w_zip, pPaymentData->w_zip+5
                , pPaymentData->d_city, pPaymentData->d_state, pPaymentData-
>d_zip, pPaymentData->d_zip+5
                , pPaymentData->c_id, pPaymentData->c_w_id,    pPaymentData-
>c_d_id
                , pPaymentData->c_first, pPaymentData->c_middle,
pPaymentData->c_last
                , pPaymentData->c_since.day, pPaymentData->c_since.month,
     pPaymentData->c_since.year
                , pPaymentData->c_street_1, pPaymentData->c_credit
                );

        c += sprintf(szForm+c,
                "        %-20s                    %%Disc:  %5.2f<BR>",
                pPaymentData->c_street_2, 100.0*pPaymentData->c_discount);

          c += wsprintf(szForm+c,
                "        %-20s %-2s %5.5s-%4.4s       Phone:  %6.6s-%3.3s-
%3.3s-%4.4s<BR> <BR>",
                pPaymentData->c_city, pPaymentData->c_state, pPaymentData-
>c_zip, pPaymentData->c_zip+5,
                pPaymentData->c_phone, pPaymentData->c_phone+6, pPaymentData-
>c_phone+9, pPaymentData->c_phone+12 );

          c += sprintf(szForm+c,
                "Amount Paid:          $%7.2f      New Cust-Balance:
$%14.2f<BR>"
                "Credit Limit:   $%13.2f<BR> <BR>"
                , pPaymentData->h_amount, pPaymentData->c_balance
                , pPaymentData->c_credit_lim
                );

          if ( pPaymentData->c_credit[0] == 'B' && pPaymentData->c_credit[1]
== 'C' )
                c += wsprintf(szForm+c,
                           "Cust-Data: %-50.50s<BR>           %-50.50s<BR>
%-50.50s<BR>           %-50.50s<BR>",
                           pPaymentData->c_data, pPaymentData->c_data+50,
pPaymentData->c_data+100, pPaymentData->c_data+150 );
          else
                strcpy(szForm+c, "Cust-Data: <BR> <BR> <BR> <BR>");

          strcat(szForm,  " <BR></font></PRE><HR>"
                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..NewOrder..\">"
                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Payment..\">"
                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Delivery..\">"
                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Order-Status..\">"
                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Stock-Level..\">"
                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Exit..\">"
                                "</BODY></FORM></HTML>");
     }

}

/* FUNCTION: MakeOrderStatusForm
 *
 * COMMENTS:    The internal client buffer is created when the terminal id is
assigned and should not
 *                   be freed except when the client terminal id is no
longer needed.
 */

void MakeOrderStatusForm(int iTermId, ORDER_STATUS_DATA *pOrderStatusData,
BOOL bInput, char *szForm)
{
     int        i, c;
     static char szBR[] = " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR>";

     c = wsprintf(szForm,
          "<HTML><HEAD><TITLE>TPC-C Order-Status</TITLE></HEAD><BODY>"
          "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<PRE><font face=\"Courier\">
Order-Status<BR>"
          "Warehouse: %4.4d   ",
          ORDER_STATUS_FORM, iTermId, Term.pClientData[iTermId].iSyncId,
Term.pClientData[iTermId].w_id);

     if ( bInput )
     {
          strcpy(szForm+c,
               "District: <INPUT NAME=\"DID*\" SIZE=1><BR>"
               "Customer: <INPUT NAME=\"CID*\" SIZE=4>   Name:
<INPUT NAME=\"CLT*\" SIZE=23><BR>"
               "Cust-Balance:<BR> <BR>"
               "Order-Number:            Entry-Date:
Carrier-Number:<BR>"
               "Supply-W     Item-Id    Qty     Amount      Delivery-
Date<BR> <BR> <BR> <BR> <BR>"
               " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR></font></PRE>"
               "<HR><INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Process\"><INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Menu\">"
               "</BODY></FORM></HTML>" );
     }
     else
     {
          c += wsprintf(szForm+c,
               "District: %2.2d<BR>"
               "Customer: %4.4d   Name: %-16s %-2s %-16s<BR>",
               pOrderStatusData->d_id, pOrderStatusData->c_id,
               pOrderStatusData->c_first, pOrderStatusData->c_middle,
pOrderStatusData->c_last);

          c += sprintf(szForm+c, "Cust-Balance: $%9.2f<BR> <BR>",
```

```
               pOrderStatusData->c_balance);

          c += wsprintf(szForm+c,
               "Order-Number: %8.8d   Entry-Date: %2.2d-%2.2d-%4.4d
%2.2d:%2.2d:%2.2d   Carrier-Number: %2.2d<BR>"
               "Supply-W     Item-Id    Qty     Amount      Delivery-
Date<BR>",
               pOrderStatusData->o_id,
               pOrderStatusData->o_entry_d.day,
               pOrderStatusData->o_entry_d.month,
               pOrderStatusData->o_entry_d.year,
               pOrderStatusData->o_entry_d.hour,
               pOrderStatusData->o_entry_d.minute,
               pOrderStatusData->o_entry_d.second,
               pOrderStatusData->o_carrier_id);

          for(i=0; i< pOrderStatusData->o_ol_cnt; i++)
          {
               c += sprintf(szForm+c, "  %4.4d       %6.6d     %2.2d
$%8.2f      %2.2d-%2.2d-%4.4d<BR>",
                    pOrderStatusData->OL[i].ol_supply_w_id,
                    pOrderStatusData->OL[i].ol_i_id,
                    pOrderStatusData->OL[i].ol_quantity,
                    pOrderStatusData->OL[i].ol_amount,
                    pOrderStatusData->OL[i].ol_delivery_d.day,
                    pOrderStatusData->OL[i].ol_delivery_d.month,
                    pOrderStatusData->OL[i].ol_delivery_d.year);
          }

          strncpy( szForm+c, szBR, (15-i)*5 );
          c += (15-i)*5;

          strcpy(szForm+c,
               "</font></PRE><HR><INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..NewOrder..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-
Status..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-
Level..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
               "</BODY></FORM></HTML>" );
     }
}

/* FUNCTION: MakeDeliveryForm
 *
 * COMMENTS:    The internal client buffer is created when the terminal id is
assigned and should not
 *                   be freed except when the client terminal id is no
longer needed.
 */
```

```
void MakeDeliveryForm(int iTermId, DELIVERY_DATA *pDeliveryData, BOOL
bInput, char *szForm)
{
     int  c;

     c = wsprintf(szForm,
          "<HTML><HEAD><TITLE>TPC-C Delivery</TITLE></HEAD><BODY>"
          "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
          "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
          "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
          "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
          "<PRE><font face=\"Courier\">
Delivery<BR>"
          "Warehouse: %4.4d<BR> <BR>",
          (!bInput && (pDeliveryData->exec_status_code != eOK)) ?
ERR_TYPE_DELIVERY_POST : 0,
          DELIVERY_FORM, iTermId, Term.pClientData[iTermId].iSyncId,
Term.pClientData[iTermId].w_id);

     if ( bInput )
     {
          strcpy( szForm+c,
               "Carrier Number: <INPUT NAME=\"OCD*\" SIZE=1><BR> <BR>"
               "Execution Status: <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>"
               " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR> </font></PRE><HR>"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Process\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Menu\">"
               "</BODY></FORM></HTML>" );
     }
     else
     {
          wsprintf( szForm+c,
               "Carrier Number: %2.2d<BR> <BR>"
               "Execution Status: %s <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR>"
               " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR> </font></PRE>"
               "<HR><INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..NewOrder..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-
Status..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-
Level..\">"
               "<INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
               "</BODY></FORM></HTML>"

               , pDeliveryData->o_carrier_id,
               (pDeliveryData->exec_status_code == eOK) ? "Delivery has been
queued." : "Delivery Post Failed     "
               );
     }
}

/* FUNCTION: ProcessNewOrderForm
 *
 * PURPOSE:     This function gets and validates the input data from the new
order form
 *              filling in the required input variables. it then calls the
SQLNewOrder
 *              transaction, constructs the output form and writes it back to
client
 *              browser.
 */

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```
 *                   int                            iTermId    client
browser terminal id
 *
 */

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

     PDELIVERY_DATA  pDelivery;

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

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

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

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

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

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

     PSTOCK_LEVEL_DATA    pStockLevel;

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

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

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

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

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

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

void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA *pNewOrderData)
{
     char szTmp[26];
     int       i;
     shortitems;
     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;
}

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

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

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


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

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

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

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

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

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

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

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

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

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

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

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

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

     RegCloseKey(hKey);

     return FALSE;
}

/*   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 );

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

#pragma once

#ifndef _INC_STRING
     #include <string.h>
#endif

const int m_szMsg_size = 512;
const int m_szApp_size = 64;
const int m_szLoc_size = 64;

//error message structure used in ErrorText routines
typedef struct _SERRORMSG
{
     int        iError;                   //error id of message
     char szMsg[256];                //message to sent to browser
} SERRORMSG;

#define ERR_FATAL_LEVEL              1
#define ERR_WARNING_LEVEL      2
#define ERR_INFORMATION_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.";}
};

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

// String length constants
#define SERVER_NAME_LEN          20
#define DATABASE_NAME_LEN        20
#define USER_NAME_LEN            20
#define PASSWORD_LEN             20
#define TABLE_NAME_LEN           20
#define I_DATA_LEN               50
#define I_NAME_LEN               24
#define BRAND_LEN                 1
#define LAST_NAME_LEN            16
#define W_NAME_LEN               10
#define ADDRESS_LEN              20
#define STATE_LEN                 2
#define ZIP_LEN                   9
#define S_DIST_LEN               24
```

```
#define S_DATA_LEN                 50
#define D_NAME_LEN                 10
#define FIRST_NAME_LEN             16
#define MIDDLE_NAME_LEN             2
#define PHONE_LEN                  16
#define DATETIME_LEN               30
#define CREDIT_LEN                  2
#define C_DATA_LEN                250
#define H_DATA_LEN                 24
#define DIST_INFO_LEN              24
#define MAX_OL_NEW_ORDER_ITEMS     15
#define MAX_OL_ORDER_STATUS_ITEMS  15
#define STATUS_LEN                 25
#define OL_DIST_INFO_LEN          24

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

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

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

     // output params
     char                      ol_i_name[I_NAME_LEN+1];
     char                      ol_brand_generic[BRAND_LEN+1];
     double                    ol_i_price;
```

```
     double                         ol_amount;
     short                          ol_stock;
} OL_NEW_ORDER_DATA;

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

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

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

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

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

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

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


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

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

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

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

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

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

#pragma once

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

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

          virtual PNEW_ORDER_DATA        BuffAddr_NewOrder()       = 0;
          virtual PPAYMENT_DATA          BuffAddr_Payment()        = 0;
          virtual PDELIVERY_DATA         BuffAddr_Delivery()       = 0;
          virtual PSTOCK_LEVEL_DATA BuffAddr_StockLevel()     = 0;
          virtual PORDER_STATUS_DATA BuffAddr_OrderStatus()    = 0;
          virtual void NewOrder          () = 0;
          virtual void Payment      () = 0;
          virtual void Delivery          () = 0;
          virtual void StockLevel        () = 0;
          virtual void OrderStatus  () = 0;
};

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

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

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

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

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

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

#define    DEFCLPACKSIZE             4096

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

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

```
static     long iConnectionCount = 0;  // number of current dblib connections

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

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

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

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


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

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

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

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

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

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

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

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

     return 0;
}

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

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

     return;
}

/* FUNCTION: CTPCC_DBLIB_ERR::ErrorText
 *
 */

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

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

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

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

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


CTPCC_DBLIB::CTPCC_DBLIB (
     LPCSTR szServer,          // name of SQL server
     LPCSTR szUser,            // user name for login
```

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

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

        m_MaxRetries = 10;          // how many retries on deadlock

        // increase max number of connections if getting close
        if ( dbgetmaxprocs() < (iConnectionCount+5) )
        {
                if ( dbsetmaxprocs(iConnectionCount+10) == FAIL )
                        ThrowError(CDBLIBERR::eDbSetMaxProcs);
        }

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

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

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


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

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

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

        m_dbproc = dbopen(login, szServer);

        // deallocate login structure before checking for success
```

```
        dbfreelogin( login );

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

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

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

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

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

        DiscardNextResults(2);

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

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

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

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

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


        DiscardNextRows(0);
        DiscardNextResults(0);
}


CTPCC_DBLIB::~CTPCC_DBLIB( void )
{
        // close db connection and deallocate resources
```

```
     dbclose(m_dbproc);
     InterlockedDecrement( &iConnectionCount );
     if (m_DbLibErr != NULL)
          delete m_DbLibErr;
     if (m_SqlErr != NULL)
          delete m_SqlErr;
}

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

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

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

}

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

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

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

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

```
     // check for SQL Server error first;  if yes, throw it and ignore any
DBLib error.
     if (m_SqlErr != NULL)
     {
          CSQLERR         *pSqlErr;
          pSqlErr = m_SqlErr;
          m_SqlErr = NULL;     // clear our pointer to instance; catch
handler will delete
          throw pSqlErr;
     }

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

     throw pDbLibErr;
}

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

     while (TRUE)
     {
          rc = dbnextrow(m_dbproc);
          if (rc == NO_MORE_ROWS)
               break;
          if (rc == FAIL)
          {
               if (iExpectedCount >= 0)
                    ThrowError(CDBLIBERR::eDbNextRow);
               else
                    break;
          }
          iRowsRead++;
     }
```

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

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

    while (TRUE)
    {
        rc = dbresults(m_dbproc);
        if (rc == NO_MORE_RESULTS)
            break;
        if (rc == FAIL)
        {
            if (iExpectedCount >= 0)
                ThrowError(CDBLIBERR::eDbResults);
            else
                break;
        }

        DiscardNextRows(-1);
        iResultsRead++;
    }

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

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

    ResetError();

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

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

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

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

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

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

            DiscardNextRows(0);
            DiscardNextResults(0);

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

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


void CTPCC_DBLIB::NewOrder()
{
    int             i;
    DBINT       commit_flag;
    DBDATETIME datetime;
    DBDATEREC   daterec;
    int             iTryCount = 0;
    const BYTE *pData;

    ResetError();

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

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

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

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

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


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

```
                    ThrowError(CDBLIBERR::eDbResults);

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

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

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

                    dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,5),
                    SQLFLT8, (BYTE *)&m_txn.NewOrder.OL[i].ol_amount,
8);

                m_txn.NewOrder.total_amount =
m_txn.NewOrder.total_amount + m_txn.NewOrder.OL[i].ol_amount;

                DiscardNextRows(0);
            }


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

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

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

            if (pData=dbdata(m_dbproc, 1))

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

```
                dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,2), SQLFLT8, (BYTE *)&m_txn.NewOrder.d_tax, 8);
            if (pData=dbdata(m_dbproc, 3))
                m_txn.NewOrder.o_id = (*(DBINT *) pData);
            if (pData=dbdata(m_dbproc, 4))
                UtilStrCpy(m_txn.NewOrder.c_last, pData,
dbdatlen(m_dbproc, 4));
            if (pData=dbdata(m_dbproc, 5))
                dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,5), SQLFLT8, (BYTE *)&m_txn.NewOrder.c_discount, 8);
            if (pData=dbdata(m_dbproc, 6))
                UtilStrCpy(m_txn.NewOrder.c_credit, pData,
dbdatlen(m_dbproc, 6));
            if (pData=dbdata(m_dbproc, 7))
            {
                datetime = *((DBDATETIME *) pData);
                dbdatecrack(m_dbproc, &daterec, &datetime);
                m_txn.NewOrder.o_entry_d.year   = daterec.year;
                m_txn.NewOrder.o_entry_d.month  = daterec.month;
                m_txn.NewOrder.o_entry_d.day    = daterec.day;
                m_txn.NewOrder.o_entry_d.hour   = daterec.hour;
                m_txn.NewOrder.o_entry_d.minute = daterec.minute;
                m_txn.NewOrder.o_entry_d.second = daterec.second;
            }
            if (pData=dbdata(m_dbproc, 8))
                commit_flag = (*(DBTINYINT *) pData);

            DiscardNextRows(0);
            DiscardNextResults(0);


            if (commit_flag == 1)
            {
                m_txn.NewOrder.total_amount *= ((1 +
m_txn.NewOrder.w_tax + m_txn.NewOrder.d_tax) * (1 -
m_txn.NewOrder.c_discount));
                m_txn.NewOrder.exec_status_code = eOK;
            }
            else
                m_txn.NewOrder.exec_status_code = eInvalidItem;

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

```
            else
                throw;
        }
    }   // while (TRUE)

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


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

    int             iTryCount = 0;
    const BYTE *pData;

    ResetError();

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

            dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -1, -1, (BYTE *)
&m_txn.Payment.w_id);
            dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -1, -1, (BYTE *)
&m_txn.Payment.c_w_id);
            dbrpcparam(m_dbproc, NULL, 0, SQLFLT8, -1, -1, (BYTE *)
&m_txn.Payment.h_amount);
            dbrpcparam(m_dbproc, NULL, 0, SQLINT1, -1, -1, (BYTE *)
&m_txn.Payment.d_id);
            dbrpcparam(m_dbproc, NULL, 0, SQLINT1, -1, -1, (BYTE *)
&m_txn.Payment.c_d_id);
            dbrpcparam(m_dbproc, NULL, 0, SQLINT4, -1, -1, (BYTE *)
&m_txn.Payment.c_id);

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

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

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

            if (dbnextrow(m_dbproc) != REG_ROW)
                ThrowError(CDBLIBERR::eDbNextRow);
                if (dbnumcols(m_dbproc) != 27)
                     ThrowError(CDBLIBERR::eWrongNumCols);

                if (pData=dbdata(m_dbproc, 1))
                     m_txn.Payment.c_id = *((DBINT *) pData);
                if (pData=dbdata(m_dbproc, 2))
                     UtilStrCpy(m_txn.Payment.c_last, pData,
dbdatlen(m_dbproc, 2));
                if (pData=dbdata(m_dbproc, 3))
                {
                     datetime = *((DBDATETIME *) pData);
                     dbdatecrack(m_dbproc, &daterec, &datetime);
                     m_txn.Payment.h_date.year   = daterec.year;
                     m_txn.Payment.h_date.month  = daterec.month;
                     m_txn.Payment.h_date.day    = daterec.day;
                     m_txn.Payment.h_date.hour   = daterec.hour;
                     m_txn.Payment.h_date.minute = daterec.minute;
                     m_txn.Payment.h_date.second = daterec.second;
                }
                if (pData=dbdata(m_dbproc, 4))
                     UtilStrCpy(m_txn.Payment.w_street_1, pData,
dbdatlen(m_dbproc, 4));
                if (pData=dbdata(m_dbproc, 5))
                     UtilStrCpy(m_txn.Payment.w_street_2, pData,
dbdatlen(m_dbproc, 5));
                if (pData=dbdata(m_dbproc, 6))
                     UtilStrCpy(m_txn.Payment.w_city, pData,
dbdatlen(m_dbproc, 6));
                if (pData=dbdata(m_dbproc, 7))
                     UtilStrCpy(m_txn.Payment.w_state, pData,
dbdatlen(m_dbproc, 7));
                if (pData=dbdata(m_dbproc, 8))
                     UtilStrCpy(m_txn.Payment.w_zip, pData,
dbdatlen(m_dbproc, 8));
                if (pData=dbdata(m_dbproc, 9))
                     UtilStrCpy(m_txn.Payment.d_street_1, pData,
dbdatlen(m_dbproc, 9));
                if (pData=dbdata(m_dbproc, 10))
                     UtilStrCpy(m_txn.Payment.d_street_2, pData,
dbdatlen(m_dbproc, 10));
                if (pData=dbdata(m_dbproc, 11))
                     UtilStrCpy(m_txn.Payment.d_city, pData,
dbdatlen(m_dbproc, 11));
                if (pData=dbdata(m_dbproc, 12))
                     UtilStrCpy(m_txn.Payment.d_state, pData,
dbdatlen(m_dbproc, 12));
                if (pData=dbdata(m_dbproc, 13))
                     UtilStrCpy(m_txn.Payment.d_zip, pData,
dbdatlen(m_dbproc, 13));
                if (pData=dbdata(m_dbproc, 14))
                     UtilStrCpy(m_txn.Payment.c_first, pData,
dbdatlen(m_dbproc, 14));
                if (pData=dbdata(m_dbproc, 15))
                     UtilStrCpy(m_txn.Payment.c_middle, pData,
dbdatlen(m_dbproc, 15));
                if (pData=dbdata(m_dbproc, 16))
                     UtilStrCpy(m_txn.Payment.c_street_1, pData,
dbdatlen(m_dbproc, 16));
                if (pData=dbdata(m_dbproc, 17))
                     UtilStrCpy(m_txn.Payment.c_street_2, pData,
dbdatlen(m_dbproc, 17));
                if (pData=dbdata(m_dbproc, 18))
                     UtilStrCpy(m_txn.Payment.c_city, pData,
dbdatlen(m_dbproc, 18));
                if (pData=dbdata(m_dbproc, 19))
                     UtilStrCpy(m_txn.Payment.c_state, pData,
dbdatlen(m_dbproc, 19));
                if (pData=dbdata(m_dbproc, 20))
                     UtilStrCpy(m_txn.Payment.c_zip, pData,
dbdatlen(m_dbproc, 20));
                if (pData=dbdata(m_dbproc, 21))
                     UtilStrCpy(m_txn.Payment.c_phone, pData,
dbdatlen(m_dbproc, 21));
                if (pData=dbdata(m_dbproc, 22))
                {
                     datetime = *((DBDATETIME *) pData);
                     dbdatecrack(m_dbproc, &daterec, &datetime);
                     m_txn.Payment.c_since.year   = daterec.year;
                     m_txn.Payment.c_since.month  = daterec.month;
                     m_txn.Payment.c_since.day    = daterec.day;
                     m_txn.Payment.c_since.hour   = daterec.hour;
                     m_txn.Payment.c_since.minute = daterec.minute;
                     m_txn.Payment.c_since.second = daterec.second;
                }
                if(pData=dbdata(m_dbproc, 23))
                     UtilStrCpy(m_txn.Payment.c_credit, pData,
dbdatlen(m_dbproc, 23));
                if(pData=dbdata(m_dbproc, 24))
                     dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,24), SQLFLT8, (BYTE *)&m_txn.Payment.c_credit_lim, 8);
                if(pData=dbdata(m_dbproc, 25))
                     dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,25), SQLFLT8, (BYTE *)&m_txn.Payment.c_discount, 8);
                if(pData=dbdata(m_dbproc, 26))
                     dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,26), SQLFLT8, (BYTE *)&m_txn.Payment.c_balance, 8);
                if(pData=dbdata(m_dbproc, 27))
                     UtilStrCpy(m_txn.Payment.c_data, pData,
dbdatlen(m_dbproc, 27));

                DiscardNextRows(0);
                DiscardNextResults(0);


                if (m_txn.Payment.c_id == 0)
                     throw new CTPCC_DBLIB_ERR(
CTPCC_DBLIB_ERR::ERR_INVALID_CUST );
```

```
               else
                    m_txn.Payment.exec_status_code = eOK;

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

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



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

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

     ResetError();

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

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

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


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

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

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

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

                    if(pData=dbdata(m_dbproc, 1))
                         m_txn.OrderStatus.OL[i].ol_supply_w_id =
(*(DBSMALLINT *) pData);
                    if(pData=dbdata(m_dbproc, 2))
                         m_txn.OrderStatus.OL[i].ol_i_id = (*(DBINT *)
pData);
                    if(pData=dbdata(m_dbproc, 3))
                         m_txn.OrderStatus.OL[i].ol_quantity =
(*(DBSMALLINT *) pData);
                    if(pData=dbdata(m_dbproc, 4))
                         dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,4),
                                       SQLFLT8, (BYTE
*)&m_txn.OrderStatus.OL[i].ol_amount, 8);
                    if(pData=dbdata(m_dbproc, 5))
                    {
                         datetime = *((DBDATETIME *) pData);
                         dbdatecrack(m_dbproc, &daterec, &datetime);
                         m_txn.OrderStatus.OL[i].ol_delivery_d.year   =
daterec.year;
                         m_txn.OrderStatus.OL[i].ol_delivery_d.month  =
daterec.month;
```

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


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

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

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

               if(pData=dbdata(m_dbproc, 1))
                    m_txn.OrderStatus.c_id = (*(DBINT *) pData);
               if(pData=dbdata(m_dbproc, 2))
                    UtilStrCpy(m_txn.OrderStatus.c_last, pData,
dbdatlen(m_dbproc,2));
               if(pData=dbdata(m_dbproc, 3))
                    UtilStrCpy(m_txn.OrderStatus.c_first, pData,
dbdatlen(m_dbproc,3));
               if(pData=dbdata(m_dbproc, 4))
                    UtilStrCpy(m_txn.OrderStatus.c_middle, pData,
dbdatlen(m_dbproc, 4));
               if(pData=dbdata(m_dbproc, 5))
               {
                    datetime = *((DBDATETIME *) pData);
                    dbdatecrack(m_dbproc, &daterec, &datetime);
                    m_txn.OrderStatus.o_entry_d.year   = daterec.year;
                    m_txn.OrderStatus.o_entry_d.month  = daterec.month;
                    m_txn.OrderStatus.o_entry_d.day    = daterec.day;
                    m_txn.OrderStatus.o_entry_d.hour   = daterec.hour;
                    m_txn.OrderStatus.o_entry_d.minute = daterec.minute;
                    m_txn.OrderStatus.o_entry_d.second = daterec.second;
               }
               if(pData=dbdata(m_dbproc, 6))
                    m_txn.OrderStatus.o_carrier_id = (*(DBSMALLINT *)
pData);
               if(pData=dbdata(m_dbproc, 7))
                    dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,7),
                                  SQLFLT8, (BYTE
*)&m_txn.OrderStatus.c_balance, 8);
               if(pData=dbdata(m_dbproc, 8))
```

```
                    m_txn.OrderStatus.o_id = (*(DBINT *) pData);

               DiscardNextRows(0);
               DiscardNextResults(0);


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

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

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


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

     ResetError();

     while (TRUE)
     {
          try
          {
               dbrpcinit(m_dbproc, "tpcc_delivery", 0);
               dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -1, -1, (BYTE *)
&m_txn.Delivery.w_id);
               dbrpcparam(m_dbproc, NULL, 0, SQLINT1, -1, -1, (BYTE *)
&m_txn.Delivery.o_carrier_id);

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

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

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

               if (dbnumcols(m_dbproc) != 10)
                    ThrowError(CDBLIBERR::eWrongNumCols);

               for (i=0; i<10; i++)
               {
                    if (pData = dbdata(m_dbproc, i+1))
                         m_txn.Delivery.o_id[i] = *((DBINT *)pData);
               }

               DiscardNextRows(0);
               DiscardNextResults(0);

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

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

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

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

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

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

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

class CSQLERR : public CBaseErr
{
     public:

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

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

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

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

};

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

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

               m_dberrstr = NULL;
               m_oserrstr = NULL;
          };

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

```
          };

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

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

};

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

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

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

          int       m_errno;
          int       m_iTryCount;

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

          char *ErrorText();
};

class DllDecl CTPCC_DBLIB : public CTPCC_BASE
{
     private:
          // declare variables and private functions here...
          PDBPROCESS m_dbproc;
          CDBLIBERR  *m_DbLibErr;         // not allocated until needed
(maybe never)
          CSQLERR        *m_SqlErr;           // not allocated until needed
(maybe never)
          int            m_MaxRetries;        // retry count on deadlock
          void DiscardNextRows(int iExpectedCount);
          void DiscardNextResults(int iExpectedCount);
          void ThrowError( CDBLIBERR::ACTION eAction );
          void ResetError();

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

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

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

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


          // these are public because they must be called from the dblib
err_handler and msg_hangler
          // outside of the class
          void SetDbLibError(int severity, int dberr, int oserr, LPCSTR
dberrstr, LPCSTR oserrstr);
          void SetSqlError( int msgno, int msgstate, int severity, LPCSTR
msgtext );

};

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

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

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

// needed for CoinitializeEx
#define _WIN32_WINNT 0x0400

#include <windows.h>

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

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

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

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

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

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

     m_bSinglePool   = bSinglePool;

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

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

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

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

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

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

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

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

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

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

     // call setcomplete to release each component back into pool
```

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

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

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

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

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

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

void CTPCC_COM::NewOrder()
{
     VARIANT   vTxn_out;

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

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

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

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

void CTPCC_COM::StockLevel()
{
     VARIANT   vTxn_out;

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

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

void CTPCC_COM::OrderStatus()
{
     VARIANT   vTxn_out;

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

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

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

```
#pragma once

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

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

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

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

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

          int       m_hr;
          int       m_iErrorType;
          int       m_iError;

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

          int ErrorNum() {return m_hr;}

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

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

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

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

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

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

          void NewOrder        ();
          void Payment         ();
          void StockLevel      ();
```

```
          void OrderStatus     ();
          void Delivery        () { throw new CCOMERR(E_NOTIMPL); }  // not
supported
};


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


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

typedef CTPCC_COM* (TYPE_CTPCC_COM)(BOOL);

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


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

class CCOMPONENT_ERR : public CBaseErr
{
     public:
          CCOMPONENT_ERR(COMPONENT_ERROR Err)
          {
               m_Error = Err;
               m_szTextDetail = NULL;
               m_SystemErr = 0;
               m_szErrorText = NULL;
          };
          CCOMPONENT_ERR(COMPONENT_ERROR Err, char *szTextDetail, DWORD
dwSystemErr)
          {
               m_Error = Err;
               m_szTextDetail = new char[strlen(szTextDetail)+1];
               strcpy( m_szTextDetail, szTextDetail );
               m_SystemErr = dwSystemErr;
               m_szErrorText = NULL;
          };

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

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

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


static void WriteMessageToEventLog(LPTSTR lpszMsg);


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

     CTPCC_Common();
     ~CTPCC_Common();

// ITPCC
public:
     HRESULT __stdcall NewOrder(          int* iSize, UCHAR** txn);
     HRESULT __stdcall Payment(      int* iSize, UCHAR** txn);
     HRESULT __stdcall Delivery(          int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall StockLevel(   int* iSize, UCHAR** txn);
     HRESULT __stdcall OrderStatus(  int* iSize, UCHAR** txn);

     HRESULT __stdcall CallSetComplete();

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

// IObjectConstruct
     STDMETHODIMP Construct(IDispatch * pUnk);

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

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

};

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

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

};
```

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

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

// ITPCC
public:
//   HRESULT __stdcall NewOrder(          int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall Payment(     int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall StockLevel(   int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall OrderStatus(  int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
};


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

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

// ITPCC
public:
     HRESULT __stdcall NewOrder(          int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall Payment(     int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall StockLevel(   int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
//   HRESULT __stdcall OrderStatus(  int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
};

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

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

// ITPCC
public:
     HRESULT __stdcall NewOrder(          int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
//   HRESULT __stdcall Payment(     int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall StockLevel(   int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall OrderStatus(  int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
};

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

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

// ITPCC
public:
     HRESULT __stdcall NewOrder(          int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
     HRESULT __stdcall Payment(     int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
//    HRESULT __stdcall StockLevel(   int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
      HRESULT __stdcall OrderStatus(  int* iSize, UCHAR** txn) {return
E_NOTIMPL;}
};


//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc_com_all.rc
//
#define IDS_PROJNAME                    100
#define IDR_TPCC                        101
#define IDR_NEWORDER                    102
#define IDR_ORDERSTATUS                 103
#define IDR_PAYMENT                     104
#define IDR_STOCKLEVEL                  105

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        202
#define _APS_NEXT_COMMAND_VALUE         32768
#define _APS_NEXT_CONTROL_VALUE         201
#define _APS_NEXT_SYMED_VALUE           106
#endif
#endif

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

#define STRICT
#define _WIN32_WINNT 0x0400
#define _ATL_APARTMENT_THREADED

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

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

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


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


CComModule _Module;

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


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

static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB     *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC      *pCTPCC_ODBC_new;


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

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

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

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

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

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

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

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

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

     return TRUE;    // OK
}

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

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

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

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

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

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

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

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


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

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

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

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

        (VOID) DeregisterEventSource(hEventSource);
    }
}

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

/* FUNCTION: CCOMPONENT_ERR::ErrorText
 *
 */
```

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

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

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

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


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

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

```
}

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

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

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

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

     return S_OK;
}

HRESULT CTPCC_Common::NewOrder(int* iSize, UCHAR **txn)
{
     PNEW_ORDER_DATA pNewOrder;
     COM_DATA        *pData;

     try
     {
          pData = (COM_DATA*)*txn;
          pNewOrder = m_pTxn->BuffAddr_NewOrder();

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

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

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

HRESULT CTPCC_Common::Payment(int* iSize, UCHAR** txn)
{
     PPAYMENT_DATA   pPayment;
     COM_DATA        *pData;

     try
     {
          pData = (COM_DATA*)*txn;
          pPayment = m_pTxn->BuffAddr_Payment();

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

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

HRESULT CTPCC_Common::StockLevel(int* iSize, UCHAR** txn)
{
     PSTOCK_LEVEL_DATA    pStockLevel;
     COM_DATA             *pData;

     try
     {
          pData = (COM_DATA*)*txn;
          pStockLevel = m_pTxn->BuffAddr_StockLevel();

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

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

```
                ((e->ErrorType() == ERR_TYPE_ODBC) && (e->ErrorNum() ==
10054)) )
               m_bCanBePooled = FALSE;

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

HRESULT CTPCC_Common::OrderStatus(int* iSize, UCHAR** txn)
{
     PORDER_STATUS_DATA   pOrderStatus;
     COM_DATA             *pData;

     try
     {
          pData = (COM_DATA*)*txn;
          pOrderStatus = m_pTxn->BuffAddr_OrderStatus();

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

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

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

; tpcc_com_all.def : Declares the module parameters.

LIBRARY      "tpcc_com_all.dll"

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


#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 Mon Jan 24 20:00:20 2000
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


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

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

#ifndef __tpcc_com_all_h__
#define __tpcc_com_all_h__

/* Forward Declarations */

#ifndef __TPCC_FWD_DEFINED__
#define __TPCC_FWD_DEFINED__
```

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

#endif    /* __TPCC_FWD_DEFINED__ */


#ifndef __NewOrder_FWD_DEFINED__
#define __NewOrder_FWD_DEFINED__

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

#endif    /* __NewOrder_FWD_DEFINED__ */


#ifndef __OrderStatus_FWD_DEFINED__
#define __OrderStatus_FWD_DEFINED__

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

#endif    /* __OrderStatus_FWD_DEFINED__ */


#ifndef __Payment_FWD_DEFINED__
#define __Payment_FWD_DEFINED__

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

#endif    /* __Payment_FWD_DEFINED__ */


#ifndef __StockLevel_FWD_DEFINED__
#define __StockLevel_FWD_DEFINED__

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

```
#endif    /* __StockLevel_FWD_DEFINED__ */


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

#ifdef __cplusplus
extern "C"{
#endif

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

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









extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_s_ifspec;


#ifndef __TPCCLib_LIBRARY_DEFINED__
#define __TPCCLib_LIBRARY_DEFINED__

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


EXTERN_C const IID LIBID_TPCCLib;

EXTERN_C const CLSID CLSID_TPCC;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_NewOrder;

#ifdef __cplusplus

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

```
EXTERN_C const CLSID CLSID_OrderStatus;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_Payment;

#ifdef __cplusplus

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

EXTERN_C const CLSID CLSID_StockLevel;

#ifdef __cplusplus

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

/* Additional Prototypes for ALL interfaces */

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif



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

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


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

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

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


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


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


     [
          uuid(CD02F7EF-A4FA-11D2-BA4E-00C04FBFE08B),
          helpstring("Payment Class")
     ]
```

```
     coclass Payment
     {
          [default] interface ITPCC;
     };


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

};

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

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

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

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

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

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

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

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

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

#endif    // APSTUDIO_INVOKED


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

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

```
    END
END

#endif    // !_MAC


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

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

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

STRINGTABLE DISCARDABLE
BEGIN
    IDS_PROJNAME            "tpcc_com_all"
END

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



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

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


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


#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 Mon Jan 24 20:00:20 2000
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

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

#ifdef __cplusplus
extern "C"{
#endif


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

#ifdef _MIDL_USE_GUIDDEF_

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

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

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

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

#endif // __IID_DEFINED__

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

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

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x
8B);


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


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


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

```
MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x
8B);


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

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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


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

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

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


 /* File created by MIDL compiler version 5.03.0280 */
/* at Mon Jan 24 20:00:20 2000
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

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

#ifdef __cplusplus
extern "C"{
#endif


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

#ifdef _MIDL_USE_GUIDDEF_

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

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

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

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

#endif // __IID_DEFINED__

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

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

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x
8B);


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


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


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

```
MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x
8B);


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

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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


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

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

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


#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 Mon Jan 24 20:00:07 2000
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


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

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

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

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

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

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


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

#ifdef __cplusplus
extern "C"{
#endif

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

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

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


EXTERN_C const IID IID_ITPCC;
```

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

    MIDL_INTERFACE("FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : public IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn) = 0;

        virtual HRESULT __stdcall Payment(
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][in] */ unsigned char __RPC_FAR *__RPC_FAR
*txn) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else     /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

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

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

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

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * This,
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn);

        HRESULT ( __stdcall __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][in] */ unsigned char __RPC_FAR *__RPC_FAR
*txn);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn);

        HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [out][in] */ int __RPC_FAR *iSize,
            /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR
*__RPC_FAR *txn);

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

        END_INTERFACE
    } ITPCCVtbl;

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



#ifdef COBJMACROS


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

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

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

#define ITPCC_NewOrder(This,iSize,txn)    \
    (This)->lpVtbl -> NewOrder(This,iSize,txn)

#define ITPCC_Payment(This,iSize,txn)     \
    (This)->lpVtbl -> Payment(This,iSize,txn)

#define ITPCC_Delivery(This,iSize,txn)    \
    (This)->lpVtbl -> Delivery(This,iSize,txn)

#define ITPCC_StockLevel(This,iSize,txn)  \
    (This)->lpVtbl -> StockLevel(This,iSize,txn)

#define ITPCC_OrderStatus(This,iSize,txn) \
    (This)->lpVtbl -> OrderStatus(This,iSize,txn)

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

#endif /* COBJMACROS */


#endif    /* C style interface */



HRESULT __stdcall ITPCC_NewOrder_Proxy(
    ITPCC __RPC_FAR * This,
    /* [out][in] */ int __RPC_FAR *iSize,
    /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR *__RPC_FAR
*txn);


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


HRESULT __stdcall ITPCC_Payment_Proxy(
    ITPCC __RPC_FAR * This,
    /* [out][in] */ int __RPC_FAR *iSize,
    /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR *__RPC_FAR
*txn);


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] */ int __RPC_FAR *iSize,
    /* [size_is][size_is][in] */ unsigned char __RPC_FAR *__RPC_FAR *txn);


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


HRESULT __stdcall ITPCC_StockLevel_Proxy(
    ITPCC __RPC_FAR * This,
    /* [out][in] */ int __RPC_FAR *iSize,
    /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR *__RPC_FAR
*txn);


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


HRESULT __stdcall ITPCC_OrderStatus_Proxy(
    ITPCC __RPC_FAR * This,
    /* [out][in] */ int __RPC_FAR *iSize,
    /* [size_is][size_is][out][in] */ unsigned char __RPC_FAR *__RPC_FAR
*txn);


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 */

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif




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

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


LIBRARY      "tpcc_com_ps"

DESCRIPTION  'Proxy/Stub DLL'

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


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

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


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


/* verify that the <rpcndr.h> version is high enough to compile this file*/
```

```
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

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

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

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

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

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


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

#ifdef __cplusplus
extern "C"{
#endif

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

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




extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_s_ifspec;

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

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

```
EXTERN_C const IID IID_ITPCC;

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

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

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

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

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

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

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else      /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

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

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

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

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

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

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

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

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

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

        END_INTERFACE
    } ITPCCVtbl;

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


#ifdef COBJMACROS


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

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

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


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

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

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

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

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

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

#endif /* COBJMACROS */


#endif    /* C style interface */



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


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


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


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


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


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

```

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


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


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


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


HRESULT __stdcall ITPCC_CallSetComplete_Proxy( 
    ITPCC __RPC_FAR * This);


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



#endif    /* __ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

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

```
/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif



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

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

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

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

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

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

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

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

        HRESULT _stdcall CallSetComplete
                                (
                                );

    };    // interface ITPCC




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

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

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


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

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

#ifdef __cplusplus
extern "C"{
#endif


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

#ifdef _MIDL_USE_GUIDDEF_
```

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

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

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

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

#endif // __IID_DEFINED__

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

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

#endif !_MIDL_USE_GUIDDEF_

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

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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


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

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

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


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

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

#ifdef __cplusplus
extern "C"{
#endif


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

#ifdef _MIDL_USE_GUIDDEF_

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

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

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

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

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

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

#endif !_MIDL_USE_GUIDDEF_

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

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



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



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

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


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

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


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

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


#include "tpcc_com_ps.h"

#define TYPE_FORMAT_STRING_SIZE   997
#define PROC_FORMAT_STRING_SIZE   193
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

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

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;



/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00}} */



/* Object interface: IUnknown, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x46}} */



/* Object interface: ITPCC, ver. 0.0,
   GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B}} */



extern const MIDL_STUB_DESC Object_StubDesc;



extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    34,
    68,
    102,
    136,
    170
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0
    };

static const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *)-1 /* ITPCC::NewOrder */ ,
    (void *)-1 /* ITPCC::Payment */ ,
    (void *)-1 /* ITPCC::Delivery */ ,
    (void *)-1 /* ITPCC::StockLevel */ ,
    (void *)-1 /* ITPCC::OrderStatus */ ,
    (void *)-1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ];
```

```

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x20000, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN32__)
#error  Invalid build platform for this stub.
#endif

#if !(TARGET_IS_NT40_OR_LATER)
#error You need a Windows NT 4.0 or later to run this stub because it uses these features:
#error   -Oif or -Oicf, [wire_marshal] or [user_marshal] attribute.
#error However, your C/C++ compilation flags indicate you intend to run this app on earlier systems.
#error This app will die there with the RPC_X_WRONG_STUB_VERSION error.
#endif
```

```
static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

            /* Procedure NewOrder */

                                0x33,           /* FC_AUTO_HANDLE */
                                0x6c,           /* Old Flags:  object, Oi2 */
/*  2 */ NdrFcLong( 0x0 ),        /* 0 */
/*  6 */ NdrFcShort( 0x3 ),       /* 3 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/*  8 */ NdrFcShort( 0x1c ),      /* x86 Stack size/offset = 28 */
#else
                                NdrFcShort( 0x20 ),     /*  MIPS Stack size/offset = 32 */
#endif
#else
                                NdrFcShort( 0x20 ),     /* PPC Stack size/offset = 32 */
#endif
#else
                                NdrFcShort( 0x28 ),     /* Alpha Stack size/offset = 40 */
#endif
/* 10 */NdrFcShort( 0x0 ),        /* 0 */
/* 12 */NdrFcShort( 0x8 ),        /* 8 */
/* 14 */0x7,                    /* Oi2 Flags:  srv must size, clt must size, has return, */
                                0x3,            /* 3 */

            /* Parameter txn_in */

/* 16 */NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 18 */NdrFcShort( 0x4 ),        /* x86 Stack size/offset = 4 */
#else
                                NdrFcShort( 0x8 ),      /*  MIPS Stack size/offset = 8 */
#endif
#else
                                NdrFcShort( 0x8 ),      /* PPC Stack size/offset = 8 */
#endif
#else
                                NdrFcShort( 0x8 ),      /* Alpha Stack size/offset = 8 */
#endif
/* 20 */NdrFcShort( 0x3c8 ),    /* Type Offset=968 */

            /* Parameter txn_out */

/* 22 */NdrFcShort( 0x4113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
```

```
/* 24 */NdrFcShort( 0x14 ),     /* x86 Stack size/offset = 20 */
#else
                                NdrFcShort( 0x18 ),     /*  MIPS Stack size/offset = 24 */
#endif
#else
                                NdrFcShort( 0x18 ),     /* PPC Stack size/offset = 24 */
#endif
#else
                                NdrFcShort( 0x18 ),     /* Alpha Stack size/offset = 24 */
#endif
/* 26 */NdrFcShort( 0x3da ),    /* Type Offset=986 */

            /* Return value */

/* 28 */NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 30 */NdrFcShort( 0x18 ),     /* x86 Stack size/offset = 24 */
#else
                                NdrFcShort( 0x1c ),     /*  MIPS Stack size/offset = 28 */
#endif
#else
                                NdrFcShort( 0x1c ),     /* PPC Stack size/offset = 28 */
#endif
#else
                                NdrFcShort( 0x20 ),     /* Alpha Stack size/offset = 32 */
#endif
/* 32 */0x8,                    /* FC_LONG */
                                0x0,            /* 0 */

            /* Procedure Payment */

/* 34 */0x33,                   /* FC_AUTO_HANDLE */
                                0x6c,           /* Old Flags:  object, Oi2 */
/* 36 */NdrFcLong( 0x0 ),       /* 0 */
/* 40 */NdrFcShort( 0x4 ),      /* 4 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 42 */NdrFcShort( 0x1c ),     /* x86 Stack size/offset = 28 */
#else
                                NdrFcShort( 0x20 ),     /*  MIPS Stack size/offset = 32 */
#endif
#else
                                NdrFcShort( 0x20 ),     /* PPC Stack size/offset = 32 */
#endif
#else
                                NdrFcShort( 0x28 ),     /* Alpha Stack size/offset = 40 */
#endif
/* 44 */NdrFcShort( 0x0 ),      /* 0 */
/* 46 */NdrFcShort( 0x8 ),      /* 8 */
/* 48 */0x7,                    /* Oi2 Flags:  srv must size, clt must size, has return, */
```

```
			0x3,		/* 3 */

	/* Parameter txn_in */

/* 50 */NdrFcShort( 0x8b ),	/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 52 */NdrFcShort( 0x4 ),	/* x86 Stack size/offset = 4 */
#else
			NdrFcShort( 0x8 ),	/*  MIPS Stack size/offset = 8 */
#endif
#else
			NdrFcShort( 0x8 ),	/* PPC Stack size/offset = 8 */
#endif
#else
			NdrFcShort( 0x8 ),	/* Alpha Stack size/offset = 8 */
#endif
/* 54 */NdrFcShort( 0x3c8 ),	/* Type Offset=968 */

	/* Parameter txn_out */

/* 56 */NdrFcShort( 0x4113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 58 */NdrFcShort( 0x14 ),	/* x86 Stack size/offset = 20 */
#else
			NdrFcShort( 0x18 ),	/*  MIPS Stack size/offset = 24 */
#endif
#else
			NdrFcShort( 0x18 ),	/* PPC Stack size/offset = 24 */
#endif
#else
			NdrFcShort( 0x18 ),	/* Alpha Stack size/offset = 24 */
#endif
/* 60 */NdrFcShort( 0x3da ),	/* Type Offset=986 */

	/* Return value */

/* 62 */NdrFcShort( 0x70 ),	/* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 64 */NdrFcShort( 0x18 ),	/* x86 Stack size/offset = 24 */
#else
			NdrFcShort( 0x1c ),	/*  MIPS Stack size/offset = 28 */
#endif
#else
			NdrFcShort( 0x1c ),	/* PPC Stack size/offset = 28 */
#endif
#else
			NdrFcShort( 0x20 ),	/* Alpha Stack size/offset = 32 */
#endif
/* 66 */0x8,		/* FC_LONG */
			0x0,		/* 0 */

	/* Procedure Delivery */

/* 68 */0x33,		/* FC_AUTO_HANDLE */
			0x6c,		/* Old Flags:  object, Oi2 */
/* 70 */NdrFcLong( 0x0 ),	/* 0 */
/* 74 */NdrFcShort( 0x5 ),	/* 5 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 76 */NdrFcShort( 0x1c ),	/* x86 Stack size/offset = 28 */
#else
			NdrFcShort( 0x20 ),	/*  MIPS Stack size/offset = 32 */
#endif
#else
			NdrFcShort( 0x20 ),	/* PPC Stack size/offset = 32 */
#endif
#else
			NdrFcShort( 0x28 ),	/* Alpha Stack size/offset = 40 */
#endif
/* 78 */NdrFcShort( 0x0 ),	/* 0 */
/* 80 */NdrFcShort( 0x8 ),	/* 8 */
/* 82 */0x7,		/* Oi2 Flags:  srv must size, clt must size, has return, */
			0x3,		/* 3 */

	/* Parameter txn_in */

/* 84 */NdrFcShort( 0x8b ),	/* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 86 */NdrFcShort( 0x4 ),	/* x86 Stack size/offset = 4 */
#else
			NdrFcShort( 0x8 ),	/*  MIPS Stack size/offset = 8 */
#endif
#else
			NdrFcShort( 0x8 ),	/* PPC Stack size/offset = 8 */
#endif
#else
			NdrFcShort( 0x8 ),	/* Alpha Stack size/offset = 8 */
#endif
/* 88 */NdrFcShort( 0x3c8 ),	/* Type Offset=968 */

	/* Parameter txn_out */

/* 90 */NdrFcShort( 0x4113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 92 */NdrFcShort( 0x14 ),	/* x86 Stack size/offset = 20 */
```

```
#else
                        NdrFcShort( 0x18 ),     /*  MIPS Stack size/offset = 24 */
#endif
#else
                        NdrFcShort( 0x18 ),     /* PPC Stack size/offset = 24 */
#endif
#else
                        NdrFcShort( 0x18 ),     /* Alpha Stack size/offset = 24 */
#endif
/* 94 */NdrFcShort( 0x3da ),   /* Type Offset=986 */

        /* Return value */

/* 96 */NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 98 */NdrFcShort( 0x18 ),     /* x86 Stack size/offset = 24 */
#else
                        NdrFcShort( 0x1c ),     /*  MIPS Stack size/offset = 28 */
#endif
#else
                        NdrFcShort( 0x1c ),     /* PPC Stack size/offset = 28 */
#endif
#else
                        NdrFcShort( 0x20 ),     /* Alpha Stack size/offset = 32 */
#endif
/* 100 */       0x8,            /* FC_LONG */
                        0x0,            /* 0 */

        /* Procedure StockLevel */

/* 102 */       0x33,           /* FC_AUTO_HANDLE */
                        0x6c,           /* Old Flags:  object, Oi2 */
/* 104 */       NdrFcLong( 0x0 ),       /* 0 */
/* 108 */       NdrFcShort( 0x6 ),      /* 6 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 110 */       NdrFcShort( 0x1c ),     /* x86 Stack size/offset = 28 */
#else
                        NdrFcShort( 0x20 ),     /*  MIPS Stack size/offset = 32 */
#endif
#else
                        NdrFcShort( 0x20 ),     /* PPC Stack size/offset = 32 */
#endif
#else
                        NdrFcShort( 0x28 ),     /* Alpha Stack size/offset = 40 */
#endif
/* 112 */       NdrFcShort( 0x0 ),      /* 0 */
/* 114 */       NdrFcShort( 0x8 ),      /* 8 */
/* 116 */       0x7,            /* Oi2 Flags:  srv must size, clt must size, has return, */
                        0x3,            /* 3 */
```

```
        /* Parameter txn_in */

/* 118 */       NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 120 */       NdrFcShort( 0x4 ),      /* x86 Stack size/offset = 4 */
#else
                        NdrFcShort( 0x8 ),      /*  MIPS Stack size/offset = 8 */
#endif
#else
                        NdrFcShort( 0x8 ),      /* PPC Stack size/offset = 8 */
#endif
#else
                        NdrFcShort( 0x8 ),      /* Alpha Stack size/offset = 8 */
#endif
/* 122 */       NdrFcShort( 0x3c8 ),   /* Type Offset=968 */

        /* Parameter txn_out */

/* 124 */       NdrFcShort( 0x4113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 126 */       NdrFcShort( 0x14 ),     /* x86 Stack size/offset = 20 */
#else
                        NdrFcShort( 0x18 ),     /*  MIPS Stack size/offset = 24 */
#endif
#else
                        NdrFcShort( 0x18 ),     /* PPC Stack size/offset = 24 */
#endif
#else
                        NdrFcShort( 0x18 ),     /* Alpha Stack size/offset = 24 */
#endif
/* 128 */       NdrFcShort( 0x3da ),   /* Type Offset=986 */

        /* Return value */

/* 130 */       NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 132 */       NdrFcShort( 0x18 ),     /* x86 Stack size/offset = 24 */
#else
                        NdrFcShort( 0x1c ),     /*  MIPS Stack size/offset = 28 */
#endif
#else
                        NdrFcShort( 0x1c ),     /* PPC Stack size/offset = 28 */
#endif
#else
                        NdrFcShort( 0x20 ),     /* Alpha Stack size/offset = 32 */
#endif
```

```
/* 134 */        0x8,            /* FC_LONG */
                        0x0,            /* 0 */

                /* Procedure OrderStatus */

/* 136 */        0x33,           /* FC_AUTO_HANDLE */
                        0x6c,           /* Old Flags:  object, Oi2 */
/* 138 */        NdrFcLong( 0x0 ),       /* 0 */
/* 142 */        NdrFcShort( 0x7 ),      /* 7 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 144 */        NdrFcShort( 0x1c ),     /* x86 Stack size/offset = 28 */
#else
                        NdrFcShort( 0x20 ),     /*  MIPS Stack size/offset = 32 */
#endif
#else
                        NdrFcShort( 0x20 ),     /* PPC Stack size/offset = 32 */
#endif
#else
                        NdrFcShort( 0x28 ),     /* Alpha Stack size/offset = 40 */
#endif
/* 146 */        NdrFcShort( 0x0 ),      /* 0 */
/* 148 */        NdrFcShort( 0x8 ),      /* 8 */
/* 150 */        0x7,            /* Oi2 Flags:  srv must size, clt must size, has return, */
                        0x3,            /* 3 */

                /* Parameter txn_in */

/* 152 */        NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 154 */        NdrFcShort( 0x4 ),      /* x86 Stack size/offset = 4 */
#else
                        NdrFcShort( 0x8 ),      /*  MIPS Stack size/offset = 8 */
#endif
#else
                        NdrFcShort( 0x8 ),      /* PPC Stack size/offset = 8 */
#endif
#else
                        NdrFcShort( 0x8 ),      /* Alpha Stack size/offset = 8 */
#endif
/* 156 */        NdrFcShort( 0x3c8 ),    /* Type Offset=968 */

                /* Parameter txn_out */

/* 158 */        NdrFcShort( 0x4113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 160 */        NdrFcShort( 0x14 ),     /* x86 Stack size/offset = 20 */
#else
```

```
                        NdrFcShort( 0x18 ),     /*  MIPS Stack size/offset = 24 */
#endif
#else
                        NdrFcShort( 0x18 ),     /* PPC Stack size/offset = 24 */
#endif
#else
                        NdrFcShort( 0x18 ),     /* Alpha Stack size/offset = 24 */
#endif
/* 162 */        NdrFcShort( 0x3da ),    /* Type Offset=986 */

                /* Return value */

/* 164 */        NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 166 */        NdrFcShort( 0x18 ),     /* x86 Stack size/offset = 24 */
#else
                        NdrFcShort( 0x1c ),     /*  MIPS Stack size/offset = 28 */
#endif
#else
                        NdrFcShort( 0x1c ),     /* PPC Stack size/offset = 28 */
#endif
#else
                        NdrFcShort( 0x20 ),     /* Alpha Stack size/offset = 32 */
#endif
/* 168 */        0x8,            /* FC_LONG */
                        0x0,            /* 0 */

                /* Procedure CallSetComplete */

/* 170 */        0x33,           /* FC_AUTO_HANDLE */
                        0x6c,           /* Old Flags:  object, Oi2 */
/* 172 */        NdrFcLong( 0x0 ),       /* 0 */
/* 176 */        NdrFcShort( 0x8 ),      /* 8 */
#ifndef _ALPHA_
/* 178 */        NdrFcShort( 0x8 ),      /* x86, MIPS, PPC Stack size/offset = 8 */
#else
                        NdrFcShort( 0x10 ),     /* Alpha Stack size/offset = 16 */
#endif
/* 180 */        NdrFcShort( 0x0 ),      /* 0 */
/* 182 */        NdrFcShort( 0x8 ),      /* 8 */
/* 184 */        0x4,            /* Oi2 Flags:  has return, */
                        0x1,            /* 1 */

                /* Return value */

/* 186 */        NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 188 */        NdrFcShort( 0x4 ),      /* x86, MIPS, PPC Stack size/offset = 4 */
#else
                        NdrFcShort( 0x8 ),      /* Alpha Stack size/offset = 8 */
#endif
```

```
/* 190 */          0x8,                 /* FC_LONG */
                             0x0,                 /* 0 */

                             0x0
        }
    };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
    {
        0,
        {
                             NdrFcShort( 0x0 ),       /* 0 */
/*  2 */
                             0x12, 0x0,        /* FC_UP */
/*  4 */ NdrFcShort( 0x3b0 ),   /* Offset= 944 (948) */
/*  6 */
                             0x2b,               /* FC_NON_ENCAPSULATED_UNION */
                             0x9,                 /* FC_ULONG */
/*  8 */ 0x7,                /* Corr desc: FC_USHORT */
                             0x0,                 /*  */
/* 10 */NdrFcShort( 0xfff8 ),   /* -8 */
/* 12 */NdrFcShort( 0x2 ),       /* Offset= 2 (14) */
/* 14 */NdrFcShort( 0x10 ),      /* 16 */
/* 16 */NdrFcShort( 0x2b ),      /* 43 */
/* 18 */NdrFcLong( 0x3 ),        /* 3 */
/* 22 */NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 24 */NdrFcLong( 0x11 ),       /* 17 */
/* 28 */NdrFcShort( 0x8001 ), /* Simple arm type: FC_BYTE */
/* 30 */NdrFcLong( 0x2 ),        /* 2 */
/* 34 */NdrFcShort( 0x8006 ), /* Simple arm type: FC_SHORT */
/* 36 */NdrFcLong( 0x4 ),        /* 4 */
/* 40 */NdrFcShort( 0x800a ), /* Simple arm type: FC_FLOAT */
/* 42 */NdrFcLong( 0x5 ),        /* 5 */
/* 46 */NdrFcShort( 0x800c ), /* Simple arm type: FC_DOUBLE */
/* 48 */NdrFcLong( 0xb ),        /* 11 */
/* 52 */NdrFcShort( 0x8006 ), /* Simple arm type: FC_SHORT */
/* 54 */NdrFcLong( 0xa ),        /* 10 */
/* 58 */NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 60 */NdrFcLong( 0x6 ),        /* 6 */
/* 64 */NdrFcShort( 0xd6 ),      /* Offset= 214 (278) */
/* 66 */NdrFcLong( 0x7 ),        /* 7 */
/* 70 */NdrFcShort( 0x800c ), /* Simple arm type: FC_DOUBLE */
/* 72 */NdrFcLong( 0x8 ),        /* 8 */
/* 76 */NdrFcShort( 0xd0 ),      /* Offset= 208 (284) */
/* 78 */NdrFcLong( 0xd ),        /* 13 */
/* 82 */NdrFcShort( 0xe2 ),      /* Offset= 226 (308) */
/* 84 */NdrFcLong( 0x9 ),        /* 9 */
/* 88 */NdrFcShort( 0xee ),      /* Offset= 238 (326) */
/* 90 */NdrFcLong( 0x2000 ), /* 8192 */
/* 94 */NdrFcShort( 0xfa ),      /* Offset= 250 (344) */
/* 96 */NdrFcLong( 0x24 ),       /* 36 */
/* 100 */          NdrFcShort( 0x308 ),   /* Offset= 776 (876) */
/* 102 */          NdrFcLong( 0x4024 ), /* 16420 */
```

```
/* 106 */          NdrFcShort( 0x302 ),   /* Offset= 770 (876) */
/* 108 */          NdrFcLong( 0x4011 ), /* 16401 */
/* 112 */          NdrFcShort( 0x300 ),   /* Offset= 768 (880) */
/* 114 */          NdrFcLong( 0x4002 ), /* 16386 */
/* 118 */          NdrFcShort( 0x2fe ),    /* Offset= 766 (884) */
/* 120 */          NdrFcLong( 0x4003 ), /* 16387 */
/* 124 */          NdrFcShort( 0x2fc ),    /* Offset= 764 (888) */
/* 126 */          NdrFcLong( 0x4004 ), /* 16388 */
/* 130 */          NdrFcShort( 0x2fa ),    /* Offset= 762 (892) */
/* 132 */          NdrFcLong( 0x4005 ), /* 16389 */
/* 136 */          NdrFcShort( 0x2f8 ),    /* Offset= 760 (896) */
/* 138 */          NdrFcLong( 0x400b ), /* 16395 */
/* 142 */          NdrFcShort( 0x2e6 ),    /* Offset= 742 (884) */
/* 144 */          NdrFcLong( 0x400a ), /* 16394 */
/* 148 */          NdrFcShort( 0x2e4 ),    /* Offset= 740 (888) */
/* 150 */          NdrFcLong( 0x4006 ), /* 16390 */
/* 154 */          NdrFcShort( 0x2ea ),    /* Offset= 746 (900) */
/* 156 */          NdrFcLong( 0x4007 ), /* 16391 */
/* 160 */          NdrFcShort( 0x2e0 ),    /* Offset= 736 (896) */
/* 162 */          NdrFcLong( 0x4008 ), /* 16392 */
/* 166 */          NdrFcShort( 0x2e2 ),    /* Offset= 738 (904) */
/* 168 */          NdrFcLong( 0x400d ), /* 16397 */
/* 172 */          NdrFcShort( 0x2e0 ),    /* Offset= 736 (908) */
/* 174 */          NdrFcLong( 0x4009 ), /* 16393 */
/* 178 */          NdrFcShort( 0x2de ),    /* Offset= 734 (912) */
/* 180 */          NdrFcLong( 0x6000 ), /* 24576 */
/* 184 */          NdrFcShort( 0x2dc ),    /* Offset= 732 (916) */
/* 186 */          NdrFcLong( 0x400c ), /* 16396 */
/* 190 */          NdrFcShort( 0x2da ),    /* Offset= 730 (920) */
/* 192 */          NdrFcLong( 0x10 ),      /* 16 */
/* 196 */          NdrFcShort( 0x8002 ), /* Simple arm type: FC_CHAR */
/* 198 */          NdrFcLong( 0x12 ),      /* 18 */
/* 202 */          NdrFcShort( 0x8006 ), /* Simple arm type: FC_SHORT */
/* 204 */          NdrFcLong( 0x13 ),      /* 19 */
/* 208 */          NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 210 */          NdrFcLong( 0x16 ),      /* 22 */
/* 214 */          NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 216 */          NdrFcLong( 0x17 ),      /* 23 */
/* 220 */          NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 222 */          NdrFcLong( 0xe ),       /* 14 */
/* 226 */          NdrFcShort( 0x2be ),    /* Offset= 702 (928) */
/* 228 */          NdrFcLong( 0x400e ), /* 16398 */
/* 232 */          NdrFcShort( 0x2c4 ),    /* Offset= 708 (940) */
/* 234 */          NdrFcLong( 0x4010 ), /* 16400 */
/* 238 */          NdrFcShort( 0x2c2 ),    /* Offset= 706 (944) */
/* 240 */          NdrFcLong( 0x4012 ), /* 16402 */
/* 244 */          NdrFcShort( 0x280 ),    /* Offset= 640 (884) */
/* 246 */          NdrFcLong( 0x4013 ), /* 16403 */
/* 250 */          NdrFcShort( 0x27e ),    /* Offset= 638 (888) */
/* 252 */          NdrFcLong( 0x4016 ), /* 16406 */
/* 256 */          NdrFcShort( 0x278 ),    /* Offset= 632 (888) */
/* 258 */          NdrFcLong( 0x4017 ), /* 16407 */
/* 262 */          NdrFcShort( 0x272 ),    /* Offset= 626 (888) */
/* 264 */        NdrFcLong( 0x0 ),       /* 0 */
/* 268 */        NdrFcShort( 0x0 ),      /* Offset= 0 (268) */
/* 270 */        NdrFcLong( 0x1 ),       /* 1 */
/* 274 */        NdrFcShort( 0x0 ),      /* Offset= 0 (274) */
/* 276 */        NdrFcShort( 0xffffffff ),          /* Offset= -1 (275) */
/* 278 */
                         0x15,           /* FC_STRUCT */
                         0x7,            /* 7 */
/* 280 */        NdrFcShort( 0x8 ),      /* 8 */
/* 282 */        0xb,            /* FC_HYPER */
                         0x5b,           /* FC_END */
/* 284 */
                         0x12, 0x0,      /* FC_UP */
/* 286 */        NdrFcShort( 0xc ),      /* Offset= 12 (298) */
/* 288 */
                         0x1b,           /* FC_CARRAY */
                         0x1,            /* 1 */
/* 290 */        NdrFcShort( 0x2 ),      /* 2 */
/* 292 */        0x9,            /* Corr desc: FC_ULONG */
                         0x0,            /*  */
/* 294 */        NdrFcShort( 0xfffc ),   /* -4 */
/* 296 */        0x6,            /* FC_SHORT */
                         0x5b,           /* FC_END */
/* 298 */
                         0x17,           /* FC_CSTRUCT */
                         0x3,            /* 3 */
/* 300 */        NdrFcShort( 0x8 ),      /* 8 */
/* 302 */        NdrFcShort( 0xfffffff2 ),          /* Offset= -14 (288) */
/* 304 */        0x8,            /* FC_LONG */
                         0x8,            /* FC_LONG */
/* 306 */        0x5c,           /* FC_PAD */
                         0x5b,           /* FC_END */
/* 308 */
                         0x2f,           /* FC_IP */
                         0x5a,           /* FC_CONSTANT_IID */
/* 310 */        NdrFcLong( 0x0 ),       /* 0 */
/* 314 */        NdrFcShort( 0x0 ),      /* 0 */
/* 316 */        NdrFcShort( 0x0 ),      /* 0 */
/* 318 */        0xc0,           /* 192 */
                         0x0,            /* 0 */
/* 320 */        0x0,            /* 0 */
                         0x0,            /* 0 */
/* 322 */        0x0,            /* 0 */
                         0x0,            /* 0 */
/* 324 */        0x0,            /* 0 */
                         0x46,           /* 70 */
/* 326 */
                         0x2f,           /* FC_IP */
                         0x5a,           /* FC_CONSTANT_IID */
/* 328 */        NdrFcLong( 0x20400 ),           /* 132096 */
/* 332 */        NdrFcShort( 0x0 ),      /* 0 */
/* 334 */        NdrFcShort( 0x0 ),      /* 0 */
/* 336 */        0xc0,           /* 192 */
```

```
                         0x0,            /* 0 */
/* 338 */        0x0,            /* 0 */
                         0x0,            /* 0 */
/* 340 */        0x0,            /* 0 */
                         0x0,            /* 0 */
/* 342 */        0x0,            /* 0 */
                         0x46,           /* 70 */
/* 344 */
                         0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 346 */        NdrFcShort( 0x2 ),      /* Offset= 2 (348) */
/* 348 */
                         0x12, 0x0,      /* FC_UP */
/* 350 */        NdrFcShort( 0x1fc ),    /* Offset= 508 (858) */
/* 352 */
                         0x2a,           /* FC_ENCAPSULATED_UNION */
                         0x49,           /* 73 */
/* 354 */        NdrFcShort( 0x18 ),     /* 24 */
/* 356 */        NdrFcShort( 0xa ),      /* 10 */
/* 358 */        NdrFcLong( 0x8 ),       /* 8 */
/* 362 */        NdrFcShort( 0x58 ),     /* Offset= 88 (450) */
/* 364 */        NdrFcLong( 0xd ),       /* 13 */
/* 368 */        NdrFcShort( 0x78 ),     /* Offset= 120 (488) */
/* 370 */        NdrFcLong( 0x9 ),       /* 9 */
/* 374 */        NdrFcShort( 0x94 ),     /* Offset= 148 (522) */
/* 376 */        NdrFcLong( 0xc ),       /* 12 */
/* 380 */        NdrFcShort( 0xbc ),     /* Offset= 188 (568) */
/* 382 */        NdrFcLong( 0x24 ),      /* 36 */
/* 386 */        NdrFcShort( 0x114 ),    /* Offset= 276 (662) */
/* 388 */        NdrFcLong( 0x800d ),    /* 32781 */
/* 392 */        NdrFcShort( 0x130 ),    /* Offset= 304 (696) */
/* 394 */        NdrFcLong( 0x10 ),      /* 16 */
/* 398 */        NdrFcShort( 0x148 ),    /* Offset= 328 (726) */
/* 400 */        NdrFcLong( 0x2 ),       /* 2 */
/* 404 */        NdrFcShort( 0x160 ),    /* Offset= 352 (756) */
/* 406 */        NdrFcLong( 0x3 ),       /* 3 */
/* 410 */        NdrFcShort( 0x178 ),    /* Offset= 376 (786) */
/* 412 */        NdrFcLong( 0x14 ),      /* 20 */
/* 416 */        NdrFcShort( 0x190 ),    /* Offset= 400 (816) */
/* 418 */        NdrFcShort( 0xffffffff ),          /* Offset= -1 (417) */
/* 420 */
                         0x1b,           /* FC_CARRAY */
                         0x3,            /* 3 */
/* 422 */        NdrFcShort( 0x4 ),      /* 4 */
/* 424 */        0x19,           /* Corr desc:  field pointer, FC_ULONG */
                         0x0,            /*  */
/* 426 */        NdrFcShort( 0x0 ),      /* 0 */
/* 428 */
                         0x4b,           /* FC_PP */
                         0x5c,           /* FC_PAD */
/* 430 */
                         0x48,           /* FC_VARIABLE_REPEAT */
                         0x49,           /* FC_FIXED_OFFSET */
/* 432 */        NdrFcShort( 0x4 ),      /* 4 */
/* 434 */	NdrFcShort( 0x0 ),	/* 0 */
/* 436 */	NdrFcShort( 0x1 ),	/* 1 */
/* 438 */	NdrFcShort( 0x0 ),	/* 0 */
/* 440 */	NdrFcShort( 0x0 ),	/* 0 */
/* 442 */	0x12, 0x0,	/* FC_UP */
/* 444 */	NdrFcShort( 0xffffff6e ),	/* Offset= -146 (298) */
/* 446 */
			0x5b,		/* FC_END */

			0x8,		/* FC_LONG */
/* 448 */	0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 450 */
			0x16,		/* FC_PSTRUCT */
			0x3,		/* 3 */
/* 452 */	NdrFcShort( 0x8 ),	/* 8 */
/* 454 */
			0x4b,		/* FC_PP */
			0x5c,		/* FC_PAD */
/* 456 */
			0x46,		/* FC_NO_REPEAT */
			0x5c,		/* FC_PAD */
/* 458 */	NdrFcShort( 0x4 ),	/* 4 */
/* 460 */	NdrFcShort( 0x4 ),	/* 4 */
/* 462 */	0x11, 0x0,	/* FC_RP */
/* 464 */	NdrFcShort( 0xffffffd4 ),	/* Offset= -44 (420) */
/* 466 */
			0x5b,		/* FC_END */

			0x8,		/* FC_LONG */
/* 468 */	0x8,		/* FC_LONG */
			0x5b,		/* FC_END */
/* 470 */
			0x21,		/* FC_BOGUS_ARRAY */
			0x3,		/* 3 */
/* 472 */	NdrFcShort( 0x0 ),	/* 0 */
/* 474 */	0x19,		/* Corr desc:  field pointer, FC_ULONG */
			0x0,		/*  */
/* 476 */	NdrFcShort( 0x0 ),	/* 0 */
/* 478 */	NdrFcLong( 0xffffffff ),	/* -1 */
/* 482 */	0x4c,		/* FC_EMBEDDED_COMPLEX */
			0x0,		/* 0 */
/* 484 */	NdrFcShort( 0xffffff50 ),	/* Offset= -176 (308) */
/* 486 */	0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 488 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 490 */	NdrFcShort( 0x8 ),	/* 8 */
/* 492 */	NdrFcShort( 0x0 ),	/* 0 */
/* 494 */	NdrFcShort( 0x6 ),	/* Offset= 6 (500) */
/* 496 */	0x8,		/* FC_LONG */
			0x36,		/* FC_POINTER */
```

```
/* 498 */	0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 500 */
			0x11, 0x0,	/* FC_RP */
/* 502 */	NdrFcShort( 0xffffffe0 ),	/* Offset= -32 (470) */
/* 504 */
			0x21,		/* FC_BOGUS_ARRAY */
			0x3,		/* 3 */
/* 506 */	NdrFcShort( 0x0 ),	/* 0 */
/* 508 */	0x19,		/* Corr desc:  field pointer, FC_ULONG */
			0x0,		/*  */
/* 510 */	NdrFcShort( 0x0 ),	/* 0 */
/* 512 */	NdrFcLong( 0xffffffff ),	/* -1 */
/* 516 */	0x4c,		/* FC_EMBEDDED_COMPLEX */
			0x0,		/* 0 */
/* 518 */	NdrFcShort( 0xffffff40 ),	/* Offset= -192 (326) */
/* 520 */	0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 522 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 524 */	NdrFcShort( 0x8 ),	/* 8 */
/* 526 */	NdrFcShort( 0x0 ),	/* 0 */
/* 528 */	NdrFcShort( 0x6 ),	/* Offset= 6 (534) */
/* 530 */	0x8,		/* FC_LONG */
			0x36,		/* FC_POINTER */
/* 532 */	0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 534 */
			0x11, 0x0,	/* FC_RP */
/* 536 */	NdrFcShort( 0xffffffe0 ),	/* Offset= -32 (504) */
/* 538 */
			0x1b,		/* FC_CARRAY */
			0x3,		/* 3 */
/* 540 */	NdrFcShort( 0x4 ),	/* 4 */
/* 542 */	0x19,		/* Corr desc:  field pointer, FC_ULONG */
			0x0,		/*  */
/* 544 */	NdrFcShort( 0x0 ),	/* 0 */
/* 546 */
			0x4b,		/* FC_PP */
			0x5c,		/* FC_PAD */
/* 548 */
			0x48,		/* FC_VARIABLE_REPEAT */
			0x49,		/* FC_FIXED_OFFSET */
/* 550 */	NdrFcShort( 0x4 ),	/* 4 */
/* 552 */	NdrFcShort( 0x0 ),	/* 0 */
/* 554 */	NdrFcShort( 0x1 ),	/* 1 */
/* 556 */	NdrFcShort( 0x0 ),	/* 0 */
/* 558 */	NdrFcShort( 0x0 ),	/* 0 */
/* 560 */	0x12, 0x0,	/* FC_UP */
/* 562 */	NdrFcShort( 0x182 ),	/* Offset= 386 (948) */
/* 564 */
			0x5b,		/* FC_END */
```

```
                    0x8,            /* FC_LONG */
/* 566 */       0x5c,           /* FC_PAD */
                    0x5b,           /* FC_END */
/* 568 */
                    0x1a,           /* FC_BOGUS_STRUCT */
                    0x3,            /* 3 */
/* 570 */       NdrFcShort( 0x8 ),      /* 8 */
/* 572 */       NdrFcShort( 0x0 ),      /* 0 */
/* 574 */       NdrFcShort( 0x6 ),      /* Offset= 6 (580) */
/* 576 */       0x8,            /* FC_LONG */
                    0x36,           /* FC_POINTER */
/* 578 */       0x5c,           /* FC_PAD */
                    0x5b,           /* FC_END */
/* 580 */
                    0x11, 0x0,      /* FC_RP */
/* 582 */       NdrFcShort( 0xffffffd4 ),       /* Offset= -44 (538) */
/* 584 */
                    0x2f,           /* FC_IP */
                    0x5a,           /* FC_CONSTANT_IID */
/* 586 */       NdrFcLong( 0x2f ),      /* 47 */
/* 590 */       NdrFcShort( 0x0 ),      /* 0 */
/* 592 */       NdrFcShort( 0x0 ),      /* 0 */
/* 594 */       0xc0,           /* 192 */
                    0x0,            /* 0 */
/* 596 */       0x0,            /* 0 */
                    0x0,            /* 0 */
/* 598 */       0x0,            /* 0 */
                    0x0,            /* 0 */
/* 600 */       0x0,            /* 0 */
                    0x46,           /* 70 */
/* 602 */
                    0x1b,           /* FC_CARRAY */
                    0x0,            /* 0 */
/* 604 */       NdrFcShort( 0x1 ),      /* 1 */
/* 606 */       0x19,           /* Corr desc:  field pointer, FC_ULONG */
                    0x0,            /*  */
/* 608 */       NdrFcShort( 0x4 ),      /* 4 */
/* 610 */       0x1,            /* FC_BYTE */
                    0x5b,           /* FC_END */
/* 612 */
                    0x1a,           /* FC_BOGUS_STRUCT */
                    0x3,            /* 3 */
/* 614 */       NdrFcShort( 0x10 ),     /* 16 */
/* 616 */       NdrFcShort( 0x0 ),      /* 0 */
/* 618 */       NdrFcShort( 0xa ),      /* Offset= 10 (628) */
/* 620 */       0x8,            /* FC_LONG */
                    0x8,            /* FC_LONG */
/* 622 */       0x4c,           /* FC_EMBEDDED_COMPLEX */
                    0x0,            /* 0 */
/* 624 */       NdrFcShort( 0xffffffd8 ),       /* Offset= -40 (584) */
/* 626 */       0x36,           /* FC_POINTER */
                    0x5b,           /* FC_END */
```

```
/* 628 */
                    0x12, 0x0,      /* FC_UP */
/* 630 */       NdrFcShort( 0xffffffe4 ),       /* Offset= -28 (602) */
/* 632 */
                    0x1b,           /* FC_CARRAY */
                    0x3,            /* 3 */
/* 634 */       NdrFcShort( 0x4 ),      /* 4 */
/* 636 */       0x19,           /* Corr desc:  field pointer, FC_ULONG */
                    0x0,            /*  */
/* 638 */       NdrFcShort( 0x0 ),      /* 0 */
/* 640 */
                    0x4b,           /* FC_PP */
                    0x5c,           /* FC_PAD */
/* 642 */
                    0x48,           /* FC_VARIABLE_REPEAT */
                    0x49,           /* FC_FIXED_OFFSET */
/* 644 */       NdrFcShort( 0x4 ),      /* 4 */
/* 646 */       NdrFcShort( 0x0 ),      /* 0 */
/* 648 */       NdrFcShort( 0x1 ),      /* 1 */
/* 650 */       NdrFcShort( 0x0 ),      /* 0 */
/* 652 */       NdrFcShort( 0x0 ),      /* 0 */
/* 654 */       0x12, 0x0,      /* FC_UP */
/* 656 */       NdrFcShort( 0xffffffd4 ),       /* Offset= -44 (612) */
/* 658 */
                    0x5b,           /* FC_END */

                    0x8,            /* FC_LONG */
/* 660 */       0x5c,           /* FC_PAD */
                    0x5b,           /* FC_END */
/* 662 */
                    0x1a,           /* FC_BOGUS_STRUCT */
                    0x3,            /* 3 */
/* 664 */       NdrFcShort( 0x8 ),      /* 8 */
/* 666 */       NdrFcShort( 0x0 ),      /* 0 */
/* 668 */       NdrFcShort( 0x6 ),      /* Offset= 6 (674) */
/* 670 */       0x8,            /* FC_LONG */
                    0x36,           /* FC_POINTER */
/* 672 */       0x5c,           /* FC_PAD */
                    0x5b,           /* FC_END */
/* 674 */
                    0x11, 0x0,      /* FC_RP */
/* 676 */       NdrFcShort( 0xffffffd4 ),       /* Offset= -44 (632) */
/* 678 */
                    0x1d,           /* FC_SMFARRAY */
                    0x0,            /* 0 */
/* 680 */       NdrFcShort( 0x8 ),      /* 8 */
/* 682 */       0x2,            /* FC_CHAR */
                    0x5b,           /* FC_END */
/* 684 */
                    0x15,           /* FC_STRUCT */
                    0x3,            /* 3 */
/* 686 */       NdrFcShort( 0x10 ),     /* 16 */
/* 688 */       0x8,            /* FC_LONG */
```

```
                        0x6,            /* FC_SHORT */
/* 690 */       0x6,            /* FC_SHORT */
                        0x4c,           /* FC_EMBEDDED_COMPLEX */
/* 692 */       0x0,            /* 0 */
                        NdrFcShort( 0xfffffff1 ),       /* Offset= -15 (678) */
                        0x5b,           /* FC_END */
/* 696 */
                        0x1a,           /* FC_BOGUS_STRUCT */
                        0x3,            /* 3 */
/* 698 */       NdrFcShort( 0x18 ),     /* 24 */
/* 700 */       NdrFcShort( 0x0 ),      /* 0 */
/* 702 */       NdrFcShort( 0xa ),      /* Offset= 10 (712) */
/* 704 */       0x8,            /* FC_LONG */
                        0x36,           /* FC_POINTER */
/* 706 */       0x4c,           /* FC_EMBEDDED_COMPLEX */
                        0x0,            /* 0 */
/* 708 */       NdrFcShort( 0xffffffe8 ),       /* Offset= -24 (684) */
/* 710 */       0x5c,           /* FC_PAD */
                        0x5b,           /* FC_END */
/* 712 */
                        0x11, 0x0,      /* FC_RP */
/* 714 */       NdrFcShort( 0xffffff0c ),       /* Offset= -244 (470) */
/* 716 */
                        0x1b,           /* FC_CARRAY */
                        0x0,            /* 0 */
/* 718 */       NdrFcShort( 0x1 ),      /* 1 */
/* 720 */       0x19,           /* Corr desc:  field pointer, FC_ULONG */
                        0x0,            /*  */
/* 722 */       NdrFcShort( 0x0 ),      /* 0 */
/* 724 */       0x1,            /* FC_BYTE */
                        0x5b,           /* FC_END */
/* 726 */
                        0x16,           /* FC_PSTRUCT */
                        0x3,            /* 3 */
/* 728 */       NdrFcShort( 0x8 ),      /* 8 */
/* 730 */
                        0x4b,           /* FC_PP */
                        0x5c,           /* FC_PAD */
/* 732 */
                        0x46,           /* FC_NO_REPEAT */
                        0x5c,           /* FC_PAD */
/* 734 */       NdrFcShort( 0x4 ),      /* 4 */
/* 736 */       NdrFcShort( 0x4 ),      /* 4 */
/* 738 */       0x12, 0x0,      /* FC_UP */
/* 740 */       NdrFcShort( 0xffffffe8 ),       /* Offset= -24 (716) */
/* 742 */
                        0x5b,           /* FC_END */

                        0x8,            /* FC_LONG */
/* 744 */       0x8,            /* FC_LONG */
                        0x5b,           /* FC_END */
/* 746 */
                        0x1b,           /* FC_CARRAY */
```

```
                        0x1,            /* 1 */
/* 748 */       NdrFcShort( 0x2 ),      /* 2 */
/* 750 */       0x19,           /* Corr desc:  field pointer, FC_ULONG */
                        0x0,            /*  */
/* 752 */       NdrFcShort( 0x0 ),      /* 0 */
/* 754 */       0x6,            /* FC_SHORT */
                        0x5b,           /* FC_END */
/* 756 */
                        0x16,           /* FC_PSTRUCT */
                        0x3,            /* 3 */
/* 758 */       NdrFcShort( 0x8 ),      /* 8 */
/* 760 */
                        0x4b,           /* FC_PP */
                        0x5c,           /* FC_PAD */
/* 762 */
                        0x46,           /* FC_NO_REPEAT */
                        0x5c,           /* FC_PAD */
/* 764 */       NdrFcShort( 0x4 ),      /* 4 */
/* 766 */       NdrFcShort( 0x4 ),      /* 4 */
/* 768 */       0x12, 0x0,      /* FC_UP */
/* 770 */       NdrFcShort( 0xffffffe8 ),       /* Offset= -24 (746) */
/* 772 */
                        0x5b,           /* FC_END */

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

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

			0x8,		/* FC_LONG */
/* 834 */		0x8,		/* FC_LONG */
			0x5b,		/* FC_END */
/* 836 */
			0x15,		/* FC_STRUCT */
			0x3,		/* 3 */
/* 838 */		NdrFcShort( 0x8 ),	/* 8 */
/* 840 */		0x8,		/* FC_LONG */
			0x8,		/* FC_LONG */
/* 842 */		0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 844 */
			0x1b,		/* FC_CARRAY */
			0x3,		/* 3 */
/* 846 */		NdrFcShort( 0x8 ),	/* 8 */
/* 848 */		0x7,		/* Corr desc: FC_USHORT */
			0x0,		/*  */
/* 850 */		NdrFcShort( 0xffd8 ),	/* -40 */
/* 852 */		0x4c,		/* FC_EMBEDDED_COMPLEX */
			0x0,		/* 0 */
/* 854 */		NdrFcShort( 0xffffffee ),	/* Offset= -18 (836) */
/* 856 */		0x5c,		/* FC_PAD */
			0x5b,		/* FC_END */
/* 858 */
```

```
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 860 */		NdrFcShort( 0x28 ),	/* 40 */
/* 862 */		NdrFcShort( 0xffffffee ),	/* Offset= -18 (844) */
/* 864 */		NdrFcShort( 0x0 ),	/* Offset= 0 (864) */
/* 866 */		0x6,		/* FC_SHORT */
			0x6,		/* FC_SHORT */
/* 868 */		0x38,		/* FC_ALIGNM4 */
			0x8,		/* FC_LONG */
/* 870 */		0x8,		/* FC_LONG */
			0x4c,		/* FC_EMBEDDED_COMPLEX */
/* 872 */		0x0,		/* 0 */
			NdrFcShort( 0xfffffdf7 ),	/* Offset= -521 (352) */
			0x5b,		/* FC_END */
/* 876 */
			0x12, 0x0,	/* FC_UP */
/* 878 */		NdrFcShort( 0xfffffef6 ),	/* Offset= -266 (612) */
/* 880 */
			0x12, 0x8,	/* FC_UP [simple_pointer] */
/* 882 */		0x1,		/* FC_BYTE */
			0x5c,		/* FC_PAD */
/* 884 */
			0x12, 0x8,	/* FC_UP [simple_pointer] */
/* 886 */		0x6,		/* FC_SHORT */
			0x5c,		/* FC_PAD */
/* 888 */
			0x12, 0x8,	/* FC_UP [simple_pointer] */
/* 890 */		0x8,		/* FC_LONG */
			0x5c,		/* FC_PAD */
/* 892 */
			0x12, 0x8,	/* FC_UP [simple_pointer] */
/* 894 */		0xa,		/* FC_FLOAT */
			0x5c,		/* FC_PAD */
/* 896 */
			0x12, 0x8,	/* FC_UP [simple_pointer] */
/* 898 */		0xc,		/* FC_DOUBLE */
			0x5c,		/* FC_PAD */
/* 900 */
			0x12, 0x0,	/* FC_UP */
/* 902 */		NdrFcShort( 0xfffffd90 ),	/* Offset= -624 (278) */
/* 904 */
			0x12, 0x10,	/* FC_UP [pointer_deref] */
/* 906 */		NdrFcShort( 0xfffffd92 ),	/* Offset= -622 (284) */
/* 908 */
			0x12, 0x10,	/* FC_UP [pointer_deref] */
/* 910 */		NdrFcShort( 0xfffffda6 ),	/* Offset= -602 (308) */
/* 912 */
			0x12, 0x10,	/* FC_UP [pointer_deref] */
/* 914 */		NdrFcShort( 0xfffffdb4 ),	/* Offset= -588 (326) */
/* 916 */
			0x12, 0x10,	/* FC_UP [pointer_deref] */
/* 918 */		NdrFcShort( 0xfffffdc2 ),	/* Offset= -574 (344) */
/* 920 */
```

```
                        0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 922 */       NdrFcShort( 0x2 ),      /* Offset= 2 (924) */
/* 924 */
                        0x12, 0x0,      /* FC_UP */
/* 926 */       NdrFcShort( 0x16 ),     /* Offset= 22 (948) */
/* 928 */
                        0x15,           /* FC_STRUCT */
                        0x7,            /* 7 */
/* 930 */       NdrFcShort( 0x10 ),     /* 16 */
/* 932 */       0x6,            /* FC_SHORT */
                        0x1,            /* FC_BYTE */
/* 934 */       0x1,            /* FC_BYTE */
                        0x38,           /* FC_ALIGNM4 */
/* 936 */       0x8,            /* FC_LONG */
                        0x39,           /* FC_ALIGNM8 */
/* 938 */       0xb,            /* FC_HYPER */
                        0x5b,           /* FC_END */
/* 940 */
                        0x12, 0x0,      /* FC_UP */
/* 942 */       NdrFcShort( 0xfffffff2 ),       /* Offset= -14 (928) */
/* 944 */
                        0x12, 0x8,      /* FC_UP [simple_pointer] */
/* 946 */       0x2,            /* FC_CHAR */
                        0x5c,           /* FC_PAD */
/* 948 */
                        0x1a,           /* FC_BOGUS_STRUCT */
                        0x7,            /* 7 */
/* 950 */       NdrFcShort( 0x20 ),     /* 32 */
/* 952 */       NdrFcShort( 0x0 ),      /* 0 */
/* 954 */       NdrFcShort( 0x0 ),      /* Offset= 0 (954) */
/* 956 */       0x8,            /* FC_LONG */
                        0x8,            /* FC_LONG */
/* 958 */       0x6,            /* FC_SHORT */
                        0x6,            /* FC_SHORT */
/* 960 */       0x6,            /* FC_SHORT */
                        0x6,            /* FC_SHORT */
/* 962 */       0x4c,           /* FC_EMBEDDED_COMPLEX */
                        0x0,            /* 0 */
/* 964 */       NdrFcShort( 0xfffffc42 ),       /* Offset= -958 (6) */
/* 966 */       0x5c,           /* FC_PAD */
                        0x5b,           /* FC_END */
/* 968 */       0xb4,           /* FC_USER_MARSHAL */
                        0x83,           /* 131 */
/* 970 */       NdrFcShort( 0x0 ),      /* 0 */
/* 972 */       NdrFcShort( 0x10 ),     /* 16 */
/* 974 */       NdrFcShort( 0x0 ),      /* 0 */
/* 976 */       NdrFcShort( 0xfffffc32 ),       /* Offset= -974 (2) */
/* 978 */
                        0x11, 0x4,      /* FC_RP [alloced_on_stack] */
/* 980 */       NdrFcShort( 0x6 ),      /* Offset= 6 (986) */
/* 982 */
                        0x13, 0x0,      /* FC_OP */
/* 984 */       NdrFcShort( 0xffffffdc ),       /* Offset= -36 (948) */
```

```
/* 986 */       0xb4,           /* FC_USER_MARSHAL */
                        0x83,           /* 131 */
/* 988 */       NdrFcShort( 0x0 ),      /* 0 */
/* 990 */       NdrFcShort( 0x10 ),     /* 16 */
/* 992 */       NdrFcShort( 0x0 ),      /* 0 */
/* 994 */       NdrFcShort( 0xfffffff4 ),       /* Offset= -12 (982) */

                        0x0
        }
    };

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

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

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


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

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

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

    return 0;
}

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


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


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

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


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

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


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


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


#include "tpcc_com_ps.h"

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

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

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00}} */


/* Object interface: IUnknown, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,
   GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    44,
    88,
    132,
    176,
    220
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0
    };
```

```
static const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *)-1 /* ITPCC::NewOrder */ ,
    (void *)-1 /* ITPCC::Payment */ ,
    (void *)-1 /* ITPCC::Delivery */ ,
    (void *)-1 /* ITPCC::StockLevel */ ,
    (void *)-1 /* ITPCC::OrderStatus */ ,
    (void *)-1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ];

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x50002, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
```

```
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN64__)
#error  Invalid build platform for this stub.
#endif

static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

            /* Procedure NewOrder */

                        0x33,           /* FC_AUTO_HANDLE */
                        0x6c,           /* Old Flags:  object, Oi2 */
/*  2 */ NdrFcLong( 0x0 ),      /* 0 */
/*  6 */ NdrFcShort( 0x3 ),     /* 3 */
#ifndef _ALPHA_
/*  8 */ NdrFcShort( 0x38 ),    /* ia64 Stack size/offset = 56 */
#else
                        NdrFcShort( 0x30 ),     /* axp64 Stack size/offset = 48 */
#endif
/* 10 */NdrFcShort( 0x0 ),      /* 0 */
/* 12 */NdrFcShort( 0x8 ),      /* 8 */
/* 14 */0x47,           /* Oi2 Flags:  srv must size, clt must size, has return, has ext, */
                        0x3,            /* 3 */
/* 16 */0xa,            /* 10 */
                        0x7,            /* Ext Flags:  new corr desc, clt corr check, srv corr check, */
/* 18 */NdrFcShort( 0x20 ),     /* 32 */
/* 20 */NdrFcShort( 0x20 ),     /* 32 */
/* 22 */NdrFcShort( 0x0 ),       /* 0 */
/* 24 */NdrFcShort( 0x0 ),       /* 0 */

          /* Parameter txn_in */

/* 26 */NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 28 */NdrFcShort( 0x10 ),     /* ia64 Stack size/offset = 16 */
#else
                              NdrFcShort( 0x8 ),       /* axp64 Stack size/offset = 8 */
#endif
/* 30 */NdrFcShort( 0x3b6 ),   /* Type Offset=950 */

          /* Parameter txn_out */

/* 32 */NdrFcShort( 0x6113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 34 */NdrFcShort( 0x28 ),     /* ia64 Stack size/offset = 40 */
#else
                              NdrFcShort( 0x20 ),     /* axp64 Stack size/offset = 32 */
#endif
/* 36 */NdrFcShort( 0x3c8 ),   /* Type Offset=968 */

          /* Return value */

/* 38 */NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 40 */NdrFcShort( 0x30 ),     /* ia64 Stack size/offset = 48 */
#else
                              NdrFcShort( 0x28 ),     /* axp64 Stack size/offset = 40 */
#endif
/* 42 */0x8,                  /* FC_LONG */
                              0x0,                 /* 0 */

          /* Procedure Payment */

/* 44 */0x33,                 /* FC_AUTO_HANDLE */
                              0x6c,                /* Old Flags:  object, Oi2 */
/* 46 */NdrFcLong( 0x0 ),       /* 0 */
/* 50 */NdrFcShort( 0x4 ),       /* 4 */
#ifndef _ALPHA_
/* 52 */NdrFcShort( 0x38 ),     /* ia64 Stack size/offset = 56 */
#else
                              NdrFcShort( 0x30 ),     /* axp64 Stack size/offset = 48 */
#endif
/* 54 */NdrFcShort( 0x0 ),       /* 0 */
/* 56 */NdrFcShort( 0x8 ),       /* 8 */
/* 58 */0x47,                 /* Oi2 Flags:  srv must size, clt must size, has return, has ext, */
                              0x3,                 /* 3 */
/* 60 */0xa,                  /* 10 */
                              0x7,                 /* Ext Flags:  new corr desc, clt corr check, srv corr check, */
/* 62 */NdrFcShort( 0x20 ),     /* 32 */
/* 64 */NdrFcShort( 0x20 ),     /* 32 */
```

```
/* 66 */NdrFcShort( 0x0 ),       /* 0 */
/* 68 */NdrFcShort( 0x0 ),       /* 0 */

          /* Parameter txn_in */

/* 70 */NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 72 */NdrFcShort( 0x10 ),     /* ia64 Stack size/offset = 16 */
#else
                              NdrFcShort( 0x8 ),       /* axp64 Stack size/offset = 8 */
#endif
/* 74 */NdrFcShort( 0x3b6 ),   /* Type Offset=950 */

          /* Parameter txn_out */

/* 76 */NdrFcShort( 0x6113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 78 */NdrFcShort( 0x28 ),     /* ia64 Stack size/offset = 40 */
#else
                              NdrFcShort( 0x20 ),     /* axp64 Stack size/offset = 32 */
#endif
/* 80 */NdrFcShort( 0x3c8 ),   /* Type Offset=968 */

          /* Return value */

/* 82 */NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 84 */NdrFcShort( 0x30 ),     /* ia64 Stack size/offset = 48 */
#else
                              NdrFcShort( 0x28 ),     /* axp64 Stack size/offset = 40 */
#endif
/* 86 */0x8,                  /* FC_LONG */
                              0x0,                 /* 0 */

          /* Procedure Delivery */

/* 88 */0x33,                 /* FC_AUTO_HANDLE */
                              0x6c,                /* Old Flags:  object, Oi2 */
/* 90 */NdrFcLong( 0x0 ),       /* 0 */
/* 94 */NdrFcShort( 0x5 ),       /* 5 */
#ifndef _ALPHA_
/* 96 */NdrFcShort( 0x38 ),     /* ia64 Stack size/offset = 56 */
#else
                              NdrFcShort( 0x30 ),     /* axp64 Stack size/offset = 48 */
#endif
/* 98 */NdrFcShort( 0x0 ),       /* 0 */
/* 100 */          NdrFcShort( 0x8 ),       /* 8 */
/* 102 */          0x47,                 /* Oi2 Flags:  srv must size, clt must size, has return, has ext, */
                              0x3,                 /* 3 */
/* 104 */          0xa,                  /* 10 */
                              0x7,                 /* Ext Flags:  new corr desc, clt corr check, srv corr check, */
/* 106 */          NdrFcShort( 0x20 ),     /* 32 */
/* 108 */          NdrFcShort( 0x20 ),     /* 32 */
/* 110 */        NdrFcShort( 0x0 ),      /* 0 */
/* 112 */        NdrFcShort( 0x0 ),      /* 0 */

        /* Parameter txn_in */

/* 114 */        NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 116 */        NdrFcShort( 0x10 ),     /* ia64 Stack size/offset = 16 */
#else
                        NdrFcShort( 0x8 ),      /* axp64 Stack size/offset = 8 */
#endif
/* 118 */        NdrFcShort( 0x3b6 ),    /* Type Offset=950 */

        /* Parameter txn_out */

/* 120 */        NdrFcShort( 0x6113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 122 */        NdrFcShort( 0x28 ),     /* ia64 Stack size/offset = 40 */
#else
                        NdrFcShort( 0x20 ),     /* axp64 Stack size/offset = 32 */
#endif
/* 124 */        NdrFcShort( 0x3c8 ),    /* Type Offset=968 */

        /* Return value */

/* 126 */        NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 128 */        NdrFcShort( 0x30 ),     /* ia64 Stack size/offset = 48 */
#else
                        NdrFcShort( 0x28 ),     /* axp64 Stack size/offset = 40 */
#endif
/* 130 */        0x8,            /* FC_LONG */
                        0x0,            /* 0 */

        /* Procedure StockLevel */

/* 132 */        0x33,           /* FC_AUTO_HANDLE */
                        0x6c,           /* Old Flags:  object, Oi2 */
/* 134 */        NdrFcLong( 0x0 ),       /* 0 */
/* 138 */        NdrFcShort( 0x6 ),      /* 6 */
#ifndef _ALPHA_
/* 140 */        NdrFcShort( 0x38 ),     /* ia64 Stack size/offset = 56 */
#else
                        NdrFcShort( 0x30 ),     /* axp64 Stack size/offset = 48 */
#endif
/* 142 */        NdrFcShort( 0x0 ),      /* 0 */
/* 144 */        NdrFcShort( 0x8 ),      /* 8 */
/* 146 */        0x47,           /* Oi2 Flags:  srv must size, clt must size, has return, has ext, */
                        0x3,            /* 3 */
/* 148 */        0xa,            /* 10 */
                        0x7,            /* Ext Flags:  new corr desc, clt corr check, srv corr check, */
/* 150 */        NdrFcShort( 0x20 ),     /* 32 */
/* 152 */        NdrFcShort( 0x20 ),     /* 32 */
```

```
/* 154 */        NdrFcShort( 0x0 ),      /* 0 */
/* 156 */        NdrFcShort( 0x0 ),      /* 0 */

        /* Parameter txn_in */

/* 158 */        NdrFcShort( 0x8b ),     /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 160 */        NdrFcShort( 0x10 ),     /* ia64 Stack size/offset = 16 */
#else
                        NdrFcShort( 0x8 ),      /* axp64 Stack size/offset = 8 */
#endif
/* 162 */        NdrFcShort( 0x3b6 ),    /* Type Offset=950 */

        /* Parameter txn_out */

/* 164 */        NdrFcShort( 0x6113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 166 */        NdrFcShort( 0x28 ),     /* ia64 Stack size/offset = 40 */
#else
                        NdrFcShort( 0x20 ),     /* axp64 Stack size/offset = 32 */
#endif
/* 168 */        NdrFcShort( 0x3c8 ),    /* Type Offset=968 */

        /* Return value */

/* 170 */        NdrFcShort( 0x70 ),     /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 172 */        NdrFcShort( 0x30 ),     /* ia64 Stack size/offset = 48 */
#else
                        NdrFcShort( 0x28 ),     /* axp64 Stack size/offset = 40 */
#endif
/* 174 */        0x8,            /* FC_LONG */
                        0x0,            /* 0 */

        /* Procedure OrderStatus */

/* 176 */        0x33,           /* FC_AUTO_HANDLE */
                        0x6c,           /* Old Flags:  object, Oi2 */
/* 178 */        NdrFcLong( 0x0 ),       /* 0 */
/* 182 */        NdrFcShort( 0x7 ),      /* 7 */
#ifndef _ALPHA_
/* 184 */        NdrFcShort( 0x38 ),     /* ia64 Stack size/offset = 56 */
#else
                        NdrFcShort( 0x30 ),     /* axp64 Stack size/offset = 48 */
#endif
/* 186 */        NdrFcShort( 0x0 ),      /* 0 */
/* 188 */        NdrFcShort( 0x8 ),      /* 8 */
/* 190 */        0x47,           /* Oi2 Flags:  srv must size, clt must size, has return, has ext, */
                        0x3,            /* 3 */
/* 192 */        0xa,            /* 10 */
                        0x7,            /* Ext Flags:  new corr desc, clt corr check, srv corr check, */
/* 194 */        NdrFcShort( 0x20 ),     /* 32 */
/* 196 */        NdrFcShort( 0x20 ),     /* 32 */
/* 198 */          NdrFcShort( 0x0 ),       /* 0 */
/* 200 */          NdrFcShort( 0x0 ),       /* 0 */

          /* Parameter txn_in */

/* 202 */          NdrFcShort( 0x8b ),      /* Flags:  must size, must free, in, by val, */
#ifndef _ALPHA_
/* 204 */          NdrFcShort( 0x10 ),      /* ia64 Stack size/offset = 16 */
#else
                             NdrFcShort( 0x8 ),       /* axp64 Stack size/offset = 8 */
#endif
/* 206 */          NdrFcShort( 0x3b6 ),   /* Type Offset=950 */

          /* Parameter txn_out */

/* 208 */          NdrFcShort( 0x6113 ), /* Flags:  must size, must free, out, simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 210 */          NdrFcShort( 0x28 ),      /* ia64 Stack size/offset = 40 */
#else
                             NdrFcShort( 0x20 ),      /* axp64 Stack size/offset = 32 */
#endif
/* 212 */          NdrFcShort( 0x3c8 ),   /* Type Offset=968 */

          /* Return value */

/* 214 */          NdrFcShort( 0x70 ),      /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 216 */          NdrFcShort( 0x30 ),      /* ia64 Stack size/offset = 48 */
#else
                             NdrFcShort( 0x28 ),      /* axp64 Stack size/offset = 40 */
#endif
/* 218 */          0x8,                /* FC_LONG */
                             0x0,                /* 0 */

          /* Procedure CallSetComplete */

/* 220 */          0x33,               /* FC_AUTO_HANDLE */
                             0x6c,               /* Old Flags:  object, Oi2 */
/* 222 */          NdrFcLong( 0x0 ),        /* 0 */
/* 226 */          NdrFcShort( 0x8 ),       /* 8 */
/* 228 */          NdrFcShort( 0x10 ),      /* ia64, axp64 Stack size/offset = 16 */
/* 230 */          NdrFcShort( 0x0 ),       /* 0 */
/* 232 */          NdrFcShort( 0x8 ),       /* 8 */
/* 234 */          0x44,               /* Oi2 Flags:  has return, has ext, */
                             0x1,                /* 1 */
/* 236 */          0xa,                /* 10 */
                             0x1,                /* Ext Flags:  new corr desc, */
/* 238 */          NdrFcShort( 0x0 ),       /* 0 */
/* 240 */          NdrFcShort( 0x0 ),       /* 0 */
/* 242 */          NdrFcShort( 0x0 ),       /* 0 */
/* 244 */          NdrFcShort( 0x0 ),       /* 0 */

          /* Return value */
```

```
/* 246 */          NdrFcShort( 0x70 ),      /* Flags:  out, return, base type, */
/* 248 */          NdrFcShort( 0x8 ),       /* ia64, axp64 Stack size/offset = 8 */
/* 250 */          0x8,                /* FC_LONG */
                             0x0,                /* 0 */

                             0x0
      }
   };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
   {
      0,
      {
                             NdrFcShort( 0x0 ),       /* 0 */
/*  2 */
                             0x12, 0x0,       /* FC_UP */
/*  4 */ NdrFcShort( 0x39e ),   /* Offset= 926 (930) */
/*  6 */
                             0x2b,               /* FC_NON_ENCAPSULATED_UNION */
                             0x9,                /* FC_ULONG */
/*  8 */ 0x7,                  /* Corr desc: FC_USHORT */
                             0x0,                /*  */
/* 10 */NdrFcShort( 0xfff8 ),   /* -8 */
/* 12 */NdrFcShort( 0x1 ),      /* Corr flags:  early, */
/* 14 */NdrFcShort( 0x2 ),      /* Offset= 2 (16) */
/* 16 */NdrFcShort( 0x10 ),     /* 16 */
/* 18 */NdrFcShort( 0x2b ),     /* 43 */
/* 20 */NdrFcLong( 0x3 ),       /* 3 */
/* 24 */NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 26 */NdrFcLong( 0x11 ),      /* 17 */
/* 30 */NdrFcShort( 0x8001 ), /* Simple arm type: FC_BYTE */
/* 32 */NdrFcLong( 0x2 ),       /* 2 */
/* 36 */NdrFcShort( 0x8006 ), /* Simple arm type: FC_SHORT */
/* 38 */NdrFcLong( 0x4 ),       /* 4 */
/* 42 */NdrFcShort( 0x800a ), /* Simple arm type: FC_FLOAT */
/* 44 */NdrFcLong( 0x5 ),       /* 5 */
/* 48 */NdrFcShort( 0x800c ), /* Simple arm type: FC_DOUBLE */
/* 50 */NdrFcLong( 0xb ),       /* 11 */
/* 54 */NdrFcShort( 0x8006 ), /* Simple arm type: FC_SHORT */
/* 56 */NdrFcLong( 0xa ),       /* 10 */
/* 60 */NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 62 */NdrFcLong( 0x6 ),       /* 6 */
/* 66 */NdrFcShort( 0xd6 ),     /* Offset= 214 (280) */
/* 68 */NdrFcLong( 0x7 ),       /* 7 */
/* 72 */NdrFcShort( 0x800c ), /* Simple arm type: FC_DOUBLE */
/* 74 */NdrFcLong( 0x8 ),       /* 8 */
/* 78 */NdrFcShort( 0xd0 ),     /* Offset= 208 (286) */
/* 80 */NdrFcLong( 0xd ),       /* 13 */
/* 84 */NdrFcShort( 0xe4 ),     /* Offset= 228 (312) */
/* 86 */NdrFcLong( 0x9 ),       /* 9 */
/* 90 */NdrFcShort( 0xf0 ),     /* Offset= 240 (330) */
/* 92 */NdrFcLong( 0x2000 ), /* 8192 */
/* 96 */NdrFcShort( 0xfc ),      /* Offset= 252 (348) */
/* 98 */NdrFcLong( 0x24 ),       /* 36 */
/* 102 */          NdrFcShort( 0x2f4 ),    /* Offset= 756 (858) */
/* 104 */          NdrFcLong( 0x4024 ), /* 16420 */
/* 108 */          NdrFcShort( 0x2ee ),    /* Offset= 750 (858) */
/* 110 */          NdrFcLong( 0x4011 ), /* 16401 */
/* 114 */          NdrFcShort( 0x2ec ),    /* Offset= 748 (862) */
/* 116 */          NdrFcLong( 0x4002 ), /* 16386 */
/* 120 */          NdrFcShort( 0x2ea ),    /* Offset= 746 (866) */
/* 122 */          NdrFcLong( 0x4003 ), /* 16387 */
/* 126 */          NdrFcShort( 0x2e8 ),    /* Offset= 744 (870) */
/* 128 */          NdrFcLong( 0x4004 ), /* 16388 */
/* 132 */          NdrFcShort( 0x2e6 ),    /* Offset= 742 (874) */
/* 134 */          NdrFcLong( 0x4005 ), /* 16389 */
/* 138 */          NdrFcShort( 0x2e4 ),    /* Offset= 740 (878) */
/* 140 */          NdrFcLong( 0x400b ), /* 16395 */
/* 144 */          NdrFcShort( 0x2d2 ),    /* Offset= 722 (866) */
/* 146 */          NdrFcLong( 0x400a ), /* 16394 */
/* 150 */          NdrFcShort( 0x2d0 ),    /* Offset= 720 (870) */
/* 152 */          NdrFcLong( 0x4006 ), /* 16390 */
/* 156 */          NdrFcShort( 0x2d6 ),    /* Offset= 726 (882) */
/* 158 */          NdrFcLong( 0x4007 ), /* 16391 */
/* 162 */          NdrFcShort( 0x2cc ),    /* Offset= 716 (878) */
/* 164 */          NdrFcLong( 0x4008 ), /* 16392 */
/* 168 */          NdrFcShort( 0x2ce ),    /* Offset= 718 (886) */
/* 170 */          NdrFcLong( 0x400d ), /* 16397 */
/* 174 */          NdrFcShort( 0x2cc ),    /* Offset= 716 (890) */
/* 176 */          NdrFcLong( 0x4009 ), /* 16393 */
/* 180 */          NdrFcShort( 0x2ca ),    /* Offset= 714 (894) */
/* 182 */          NdrFcLong( 0x6000 ), /* 24576 */
/* 186 */          NdrFcShort( 0x2c8 ),    /* Offset= 712 (898) */
/* 188 */          NdrFcLong( 0x400c ), /* 16396 */
/* 192 */          NdrFcShort( 0x2c6 ),    /* Offset= 710 (902) */
/* 194 */          NdrFcLong( 0x10 ),      /* 16 */
/* 198 */          NdrFcShort( 0x8002 ), /* Simple arm type: FC_CHAR */
/* 200 */          NdrFcLong( 0x12 ),      /* 18 */
/* 204 */          NdrFcShort( 0x8006 ), /* Simple arm type: FC_SHORT */
/* 206 */          NdrFcLong( 0x13 ),      /* 19 */
/* 210 */          NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 212 */          NdrFcLong( 0x16 ),      /* 22 */
/* 216 */          NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 218 */          NdrFcLong( 0x17 ),      /* 23 */
/* 222 */          NdrFcShort( 0x8008 ), /* Simple arm type: FC_LONG */
/* 224 */          NdrFcLong( 0xe ),       /* 14 */
/* 228 */          NdrFcShort( 0x2aa ),    /* Offset= 682 (910) */
/* 230 */          NdrFcLong( 0x400e ), /* 16398 */
/* 234 */          NdrFcShort( 0x2b0 ),    /* Offset= 688 (922) */
/* 236 */          NdrFcLong( 0x4010 ), /* 16400 */
/* 240 */          NdrFcShort( 0x2ae ),    /* Offset= 686 (926) */
/* 242 */          NdrFcLong( 0x4012 ), /* 16402 */
/* 246 */          NdrFcShort( 0x26c ),    /* Offset= 620 (866) */
/* 248 */          NdrFcLong( 0x4013 ), /* 16403 */
/* 252 */          NdrFcShort( 0x26a ),    /* Offset= 618 (870) */
```

```
/* 254 */          NdrFcLong( 0x4016 ), /* 16406 */
/* 258 */          NdrFcShort( 0x264 ),    /* Offset= 612 (870) */
/* 260 */          NdrFcLong( 0x4017 ), /* 16407 */
/* 264 */          NdrFcShort( 0x25e ),    /* Offset= 606 (870) */
/* 266 */          NdrFcLong( 0x0 ),       /* 0 */
/* 270 */          NdrFcShort( 0x0 ),      /* Offset= 0 (270) */
/* 272 */          NdrFcLong( 0x1 ),       /* 1 */
/* 276 */          NdrFcShort( 0x0 ),      /* Offset= 0 (276) */
/* 278 */          NdrFcShort( 0xffffffff ),          /* Offset= -1 (277) */
/* 280 */
                            0x15,               /* FC_STRUCT */
                            0x7,                /* 7 */
/* 282 */          NdrFcShort( 0x8 ),      /* 8 */
/* 284 */          0xb,                /* FC_HYPER */
                            0x5b,               /* FC_END */
/* 286 */
                            0x12, 0x0,          /* FC_UP */
/* 288 */          NdrFcShort( 0xe ),      /* Offset= 14 (302) */
/* 290 */
                            0x1b,               /* FC_CARRAY */
                            0x1,                /* 1 */
/* 292 */          NdrFcShort( 0x2 ),      /* 2 */
/* 294 */          0x9,                /* Corr desc: FC_ULONG */
                            0x0,                /*  */
/* 296 */          NdrFcShort( 0xfffc ),   /* -4 */
/* 298 */          NdrFcShort( 0x1 ),      /* Corr flags:  early, */
/* 300 */          0x6,                /* FC_SHORT */
                            0x5b,               /* FC_END */
/* 302 */
                            0x17,               /* FC_CSTRUCT */
                            0x3,                /* 3 */
/* 304 */          NdrFcShort( 0x8 ),      /* 8 */
/* 306 */          NdrFcShort( 0xfffffff0 ),          /* Offset= -16 (290) */
/* 308 */          0x8,                /* FC_LONG */
                            0x8,                /* FC_LONG */
/* 310 */          0x5c,               /* FC_PAD */
                            0x5b,               /* FC_END */
/* 312 */
                            0x2f,               /* FC_IP */
                            0x5a,               /* FC_CONSTANT_IID */
/* 314 */          NdrFcLong( 0x0 ),       /* 0 */
/* 318 */          NdrFcShort( 0x0 ),      /* 0 */
/* 320 */          NdrFcShort( 0x0 ),      /* 0 */
/* 322 */          0xc0,               /* 192 */
                            0x0,                /* 0 */
/* 324 */          0x0,                /* 0 */
                            0x0,                /* 0 */
/* 326 */          0x0,                /* 0 */
                            0x0,                /* 0 */
/* 328 */          0x0,                /* 0 */
                            0x46,               /* 70 */
/* 330 */
                            0x2f,               /* FC_IP */
```

```
                    0x5a,           /* FC_CONSTANT_IID */
/* 332 */    NdrFcLong( 0x20400 ),          /* 132096 */
/* 336 */    NdrFcShort( 0x0 ),     /* 0 */
/* 338 */    NdrFcShort( 0x0 ),     /* 0 */
/* 340 */    0xc0,          /* 192 */
                    0x0,            /* 0 */
/* 342 */    0x0,           /* 0 */
                    0x0,            /* 0 */
/* 344 */    0x0,           /* 0 */
                    0x0,            /* 0 */
/* 346 */    0x0,           /* 0 */
                    0x46,           /* 70 */
/* 348 */
                    0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 350 */    NdrFcShort( 0x2 ),     /* Offset= 2 (352) */
/* 352 */
                    0x12, 0x0,      /* FC_UP */
/* 354 */    NdrFcShort( 0x1e6 ),   /* Offset= 486 (840) */
/* 356 */
                    0x2a,           /* FC_ENCAPSULATED_UNION */
                    0x89,           /* 137 */
/* 358 */    NdrFcShort( 0x20 ),    /* 32 */
/* 360 */    NdrFcShort( 0xa ),     /* 10 */
/* 362 */    NdrFcLong( 0x8 ),      /* 8 */
/* 366 */    NdrFcShort( 0x50 ),    /* Offset= 80 (446) */
/* 368 */    NdrFcLong( 0xd ),      /* 13 */
/* 372 */    NdrFcShort( 0x70 ),    /* Offset= 112 (484) */
/* 374 */    NdrFcLong( 0x9 ),      /* 9 */
/* 378 */    NdrFcShort( 0x90 ),    /* Offset= 144 (522) */
/* 380 */    NdrFcLong( 0xc ),      /* 12 */
/* 384 */    NdrFcShort( 0xb0 ),    /* Offset= 176 (560) */
/* 386 */    NdrFcLong( 0x24 ),     /* 36 */
/* 390 */    NdrFcShort( 0x104 ),   /* Offset= 260 (650) */
/* 392 */    NdrFcLong( 0x800d ),   /* 32781 */
/* 396 */    NdrFcShort( 0x120 ),   /* Offset= 288 (684) */
/* 398 */    NdrFcLong( 0x10 ),     /* 16 */
/* 402 */    NdrFcShort( 0x13a ),   /* Offset= 314 (716) */
/* 404 */    NdrFcLong( 0x2 ),      /* 2 */
/* 408 */    NdrFcShort( 0x150 ),   /* Offset= 336 (744) */
/* 410 */    NdrFcLong( 0x3 ),      /* 3 */
/* 414 */    NdrFcShort( 0x166 ),   /* Offset= 358 (772) */
/* 416 */    NdrFcLong( 0x14 ),     /* 20 */
/* 420 */    NdrFcShort( 0x17c ),   /* Offset= 380 (800) */
/* 422 */    NdrFcShort( 0xffffffff ),      /* Offset= -1 (421) */
/* 424 */
                    0x21,           /* FC_BOGUS_ARRAY */
                    0x3,            /* 3 */
/* 426 */    NdrFcShort( 0x0 ),     /* 0 */
/* 428 */    0x19,          /* Corr desc:  field pointer, FC_ULONG */
                    0x0,            /*  */
/* 430 */    NdrFcShort( 0x0 ),     /* 0 */
/* 432 */    NdrFcShort( 0x1 ),     /* Corr flags:  early, */
/* 434 */    NdrFcLong( 0xffffffff ),       /* -1 */
```

```
/* 438 */    NdrFcShort( 0x0 ),     /* Corr flags:  */
/* 440 */
                    0x12, 0x0,      /* FC_UP */
/* 442 */    NdrFcShort( 0xffffff74 ),      /* Offset= -140 (302) */
/* 444 */    0x5c,          /* FC_PAD */
                    0x5b,           /* FC_END */
/* 446 */
                    0x1a,           /* FC_BOGUS_STRUCT */
                    0x3,            /* 3 */
/* 448 */    NdrFcShort( 0x10 ),    /* 16 */
/* 450 */    NdrFcShort( 0x0 ),     /* 0 */
/* 452 */    NdrFcShort( 0x6 ),     /* Offset= 6 (458) */
/* 454 */    0x8,           /* FC_LONG */
                    0x39,           /* FC_ALIGNM8 */
/* 456 */    0x36,          /* FC_POINTER */
                    0x5b,           /* FC_END */
/* 458 */
                    0x11, 0x0,      /* FC_RP */
/* 460 */    NdrFcShort( 0xffffffdc ),      /* Offset= -36 (424) */
/* 462 */
                    0x21,           /* FC_BOGUS_ARRAY */
                    0x3,            /* 3 */
/* 464 */    NdrFcShort( 0x0 ),     /* 0 */
/* 466 */    0x19,          /* Corr desc:  field pointer, FC_ULONG */
                    0x0,            /*  */
/* 468 */    NdrFcShort( 0x0 ),     /* 0 */
/* 470 */    NdrFcShort( 0x1 ),     /* Corr flags:  early, */
/* 472 */    NdrFcLong( 0xffffffff ),       /* -1 */
/* 476 */    NdrFcShort( 0x0 ),     /* Corr flags:  */
/* 478 */    0x4c,          /* FC_EMBEDDED_COMPLEX */
                    0x0,            /* 0 */
/* 480 */    NdrFcShort( 0xffffff58 ),      /* Offset= -168 (312) */
/* 482 */    0x5c,          /* FC_PAD */
                    0x5b,           /* FC_END */
/* 484 */
                    0x1a,           /* FC_BOGUS_STRUCT */
                    0x3,            /* 3 */
/* 486 */    NdrFcShort( 0x10 ),    /* 16 */
/* 488 */    NdrFcShort( 0x0 ),     /* 0 */
/* 490 */    NdrFcShort( 0x6 ),     /* Offset= 6 (496) */
/* 492 */    0x8,           /* FC_LONG */
                    0x39,           /* FC_ALIGNM8 */
/* 494 */    0x36,          /* FC_POINTER */
                    0x5b,           /* FC_END */
/* 496 */
                    0x11, 0x0,      /* FC_RP */
/* 498 */    NdrFcShort( 0xffffffdc ),      /* Offset= -36 (462) */
/* 500 */
                    0x21,           /* FC_BOGUS_ARRAY */
                    0x3,            /* 3 */
/* 502 */    NdrFcShort( 0x0 ),     /* 0 */
/* 504 */    0x19,          /* Corr desc:  field pointer, FC_ULONG */
                    0x0,            /*  */
```

```
/* 506 */        NdrFcShort( 0x0 ),       /* 0 */
/* 508 */        NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 510 */        NdrFcLong( 0xffffffff ),          /* -1 */
/* 514 */        NdrFcShort( 0x0 ),       /* Corr flags:  */
/* 516 */        0x4c,           /* FC_EMBEDDED_COMPLEX */
                         0x0,            /* 0 */
/* 518 */        NdrFcShort( 0xffffff44 ),         /* Offset= -188 (330) */
/* 520 */        0x5c,           /* FC_PAD */
                         0x5b,           /* FC_END */
/* 522 */
                         0x1a,           /* FC_BOGUS_STRUCT */
                         0x3,            /* 3 */
/* 524 */        NdrFcShort( 0x10 ),      /* 16 */
/* 526 */        NdrFcShort( 0x0 ),       /* 0 */
/* 528 */        NdrFcShort( 0x6 ),       /* Offset= 6 (534) */
/* 530 */        0x8,            /* FC_LONG */
                         0x39,           /* FC_ALIGNM8 */
/* 532 */        0x36,           /* FC_POINTER */
                         0x5b,           /* FC_END */
/* 534 */
                         0x11, 0x0,      /* FC_RP */
/* 536 */        NdrFcShort( 0xffffffdc ),         /* Offset= -36 (500) */
/* 538 */
                         0x21,           /* FC_BOGUS_ARRAY */
                         0x3,            /* 3 */
/* 540 */        NdrFcShort( 0x0 ),       /* 0 */
/* 542 */        0x19,           /* Corr desc:  field pointer, FC_ULONG */
                         0x0,            /*  */
/* 544 */        NdrFcShort( 0x0 ),       /* 0 */
/* 546 */        NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 548 */        NdrFcLong( 0xffffffff ),          /* -1 */
/* 552 */        NdrFcShort( 0x0 ),       /* Corr flags:  */
/* 554 */
                         0x12, 0x0,      /* FC_UP */
/* 556 */        NdrFcShort( 0x176 ),     /* Offset= 374 (930) */
/* 558 */        0x5c,           /* FC_PAD */
                         0x5b,           /* FC_END */
/* 560 */
                         0x1a,           /* FC_BOGUS_STRUCT */
                         0x3,            /* 3 */
/* 562 */        NdrFcShort( 0x10 ),      /* 16 */
/* 564 */        NdrFcShort( 0x0 ),       /* 0 */
/* 566 */        NdrFcShort( 0x6 ),       /* Offset= 6 (572) */
/* 568 */        0x8,            /* FC_LONG */
                         0x39,           /* FC_ALIGNM8 */
/* 570 */        0x36,           /* FC_POINTER */
                         0x5b,           /* FC_END */
/* 572 */
                         0x11, 0x0,      /* FC_RP */
/* 574 */        NdrFcShort( 0xffffffdc ),         /* Offset= -36 (538) */
/* 576 */
                         0x2f,           /* FC_IP */
                         0x5a,           /* FC_CONSTANT_IID */
```

```
/* 578 */        NdrFcLong( 0x2f ),       /* 47 */
/* 582 */        NdrFcShort( 0x0 ),       /* 0 */
/* 584 */        NdrFcShort( 0x0 ),       /* 0 */
/* 586 */        0xc0,           /* 192 */
                         0x0,            /* 0 */
/* 588 */        0x0,            /* 0 */
                         0x0,            /* 0 */
/* 590 */        0x0,            /* 0 */
                         0x0,            /* 0 */
/* 592 */        0x0,            /* 0 */
                         0x46,           /* 70 */
/* 594 */
                         0x1b,           /* FC_CARRAY */
                         0x0,            /* 0 */
/* 596 */        NdrFcShort( 0x1 ),       /* 1 */
/* 598 */        0x19,           /* Corr desc:  field pointer, FC_ULONG */
                         0x0,            /*  */
/* 600 */        NdrFcShort( 0x4 ),       /* 4 */
/* 602 */        NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 604 */        0x1,            /* FC_BYTE */
                         0x5b,           /* FC_END */
/* 606 */
                         0x1a,           /* FC_BOGUS_STRUCT */
                         0x3,            /* 3 */
/* 608 */        NdrFcShort( 0x18 ),      /* 24 */
/* 610 */        NdrFcShort( 0x0 ),       /* 0 */
/* 612 */        NdrFcShort( 0xc ),       /* Offset= 12 (624) */
/* 614 */        0x8,            /* FC_LONG */
                         0x8,            /* FC_LONG */
/* 616 */        0x4c,           /* FC_EMBEDDED_COMPLEX */
                         0x0,            /* 0 */
/* 618 */        NdrFcShort( 0xffffffd6 ),         /* Offset= -42 (576) */
/* 620 */        0x39,           /* FC_ALIGNM8 */
                         0x36,           /* FC_POINTER */
/* 622 */        0x5c,           /* FC_PAD */
                         0x5b,           /* FC_END */
/* 624 */
                         0x12, 0x0,      /* FC_UP */
/* 626 */        NdrFcShort( 0xffffffe0 ),         /* Offset= -32 (594) */
/* 628 */
                         0x21,           /* FC_BOGUS_ARRAY */
                         0x3,            /* 3 */
/* 630 */        NdrFcShort( 0x0 ),       /* 0 */
/* 632 */        0x19,           /* Corr desc:  field pointer, FC_ULONG */
                         0x0,            /*  */
/* 634 */        NdrFcShort( 0x0 ),       /* 0 */
/* 636 */        NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 638 */        NdrFcLong( 0xffffffff ),          /* -1 */
/* 642 */        NdrFcShort( 0x0 ),       /* Corr flags:  */
/* 644 */
                         0x12, 0x0,      /* FC_UP */
/* 646 */        NdrFcShort( 0xffffffd8 ),         /* Offset= -40 (606) */
/* 648 */        0x5c,           /* FC_PAD */
```

```
			0x5b,		/* FC_END */
/* 650 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 652 */	NdrFcShort( 0x10 ),	/* 16 */
/* 654 */	NdrFcShort( 0x0 ),	/* 0 */
/* 656 */	NdrFcShort( 0x6 ),	/* Offset= 6 (662) */
/* 658 */	0x8,		/* FC_LONG */
			0x39,		/* FC_ALIGNM8 */
/* 660 */	0x36,		/* FC_POINTER */
			0x5b,		/* FC_END */
/* 662 */
			0x11, 0x0,	/* FC_RP */
/* 664 */	NdrFcShort( 0xffffffdc ),	/* Offset= -36 (628) */
/* 666 */
			0x1d,		/* FC_SMFARRAY */
			0x0,		/* 0 */
/* 668 */	NdrFcShort( 0x8 ),	/* 8 */
/* 670 */	0x2,		/* FC_CHAR */
			0x5b,		/* FC_END */
/* 672 */
			0x15,		/* FC_STRUCT */
			0x3,		/* 3 */
/* 674 */	NdrFcShort( 0x10 ),	/* 16 */
/* 676 */	0x8,		/* FC_LONG */
			0x6,		/* FC_SHORT */
/* 678 */	0x6,		/* FC_SHORT */
			0x4c,		/* FC_EMBEDDED_COMPLEX */
/* 680 */	0x0,		/* 0 */
			NdrFcShort( 0xfffffff1 ),	/* Offset= -15 (666) */
			0x5b,		/* FC_END */
/* 684 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 686 */	NdrFcShort( 0x20 ),	/* 32 */
/* 688 */	NdrFcShort( 0x0 ),	/* 0 */
/* 690 */	NdrFcShort( 0xa ),	/* Offset= 10 (700) */
/* 692 */	0x8,		/* FC_LONG */
			0x39,		/* FC_ALIGNM8 */
/* 694 */	0x36,		/* FC_POINTER */
			0x4c,		/* FC_EMBEDDED_COMPLEX */
/* 696 */	0x0,		/* 0 */
			NdrFcShort( 0xffffffe7 ),	/* Offset= -25 (672) */
			0x5b,		/* FC_END */
/* 700 */
			0x11, 0x0,	/* FC_RP */
/* 702 */	NdrFcShort( 0xffffff10 ),	/* Offset= -240 (462) */
/* 704 */
			0x1b,		/* FC_CARRAY */
			0x0,		/* 0 */
/* 706 */	NdrFcShort( 0x1 ),	/* 1 */
/* 708 */	0x19,		/* Corr desc:  field pointer, FC_ULONG */
			0x0,		/*  */
```

```
/* 710 */	NdrFcShort( 0x0 ),	/* 0 */
/* 712 */	NdrFcShort( 0x1 ),	/* Corr flags:  early, */
/* 714 */	0x1,		/* FC_BYTE */
			0x5b,		/* FC_END */
/* 716 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 718 */	NdrFcShort( 0x10 ),	/* 16 */
/* 720 */	NdrFcShort( 0x0 ),	/* 0 */
/* 722 */	NdrFcShort( 0x6 ),	/* Offset= 6 (728) */
/* 724 */	0x8,		/* FC_LONG */
			0x39,		/* FC_ALIGNM8 */
/* 726 */	0x36,		/* FC_POINTER */
			0x5b,		/* FC_END */
/* 728 */
			0x12, 0x0,	/* FC_UP */
/* 730 */	NdrFcShort( 0xffffffe6 ),	/* Offset= -26 (704) */
/* 732 */
			0x1b,		/* FC_CARRAY */
			0x1,		/* 1 */
/* 734 */	NdrFcShort( 0x2 ),	/* 2 */
/* 736 */	0x19,		/* Corr desc:  field pointer, FC_ULONG */
			0x0,		/*  */
/* 738 */	NdrFcShort( 0x0 ),	/* 0 */
/* 740 */	NdrFcShort( 0x1 ),	/* Corr flags:  early, */
/* 742 */	0x6,		/* FC_SHORT */
			0x5b,		/* FC_END */
/* 744 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
/* 746 */	NdrFcShort( 0x10 ),	/* 16 */
/* 748 */	NdrFcShort( 0x0 ),	/* 0 */
/* 750 */	NdrFcShort( 0x6 ),	/* Offset= 6 (756) */
/* 752 */	0x8,		/* FC_LONG */
			0x39,		/* FC_ALIGNM8 */
/* 754 */	0x36,		/* FC_POINTER */
			0x5b,		/* FC_END */
/* 756 */
			0x12, 0x0,	/* FC_UP */
/* 758 */	NdrFcShort( 0xffffffe6 ),	/* Offset= -26 (732) */
/* 760 */
			0x1b,		/* FC_CARRAY */
			0x3,		/* 3 */
/* 762 */	NdrFcShort( 0x4 ),	/* 4 */
/* 764 */	0x19,		/* Corr desc:  field pointer, FC_ULONG */
			0x0,		/*  */
/* 766 */	NdrFcShort( 0x0 ),	/* 0 */
/* 768 */	NdrFcShort( 0x1 ),	/* Corr flags:  early, */
/* 770 */	0x8,		/* FC_LONG */
			0x5b,		/* FC_END */
/* 772 */
			0x1a,		/* FC_BOGUS_STRUCT */
			0x3,		/* 3 */
```

```
/* 774 */          NdrFcShort( 0x10 ),     /* 16 */
/* 776 */          NdrFcShort( 0x0 ),      /* 0 */
/* 778 */          NdrFcShort( 0x6 ),      /* Offset= 6 (784) */
/* 780 */          0x8,               /* FC_LONG */
                            0x39,              /* FC_ALIGNM8 */
/* 782 */          0x36,              /* FC_POINTER */
                            0x5b,              /* FC_END */
/* 784 */
                            0x12, 0x0,         /* FC_UP */
/* 786 */          NdrFcShort( 0xffffffe6 ),          /* Offset= -26 (760) */
/* 788 */
                            0x1b,              /* FC_CARRAY */
                            0x7,               /* 7 */
/* 790 */          NdrFcShort( 0x8 ),      /* 8 */
/* 792 */          0x19,              /* Corr desc:  field pointer, FC_ULONG */
                            0x0,               /*  */
/* 794 */          NdrFcShort( 0x0 ),      /* 0 */
/* 796 */          NdrFcShort( 0x1 ),      /* Corr flags:  early, */
/* 798 */          0xb,               /* FC_HYPER */
                            0x5b,              /* FC_END */
/* 800 */
                            0x1a,              /* FC_BOGUS_STRUCT */
                            0x3,               /* 3 */
/* 802 */          NdrFcShort( 0x10 ),     /* 16 */
/* 804 */          NdrFcShort( 0x0 ),      /* 0 */
/* 806 */          NdrFcShort( 0x6 ),      /* Offset= 6 (812) */
/* 808 */          0x8,               /* FC_LONG */
                            0x39,              /* FC_ALIGNM8 */
/* 810 */          0x36,              /* FC_POINTER */
                            0x5b,              /* FC_END */
/* 812 */
                            0x12, 0x0,         /* FC_UP */
/* 814 */          NdrFcShort( 0xffffffe6 ),          /* Offset= -26 (788) */
/* 816 */
                            0x15,              /* FC_STRUCT */
                            0x3,               /* 3 */
/* 818 */          NdrFcShort( 0x8 ),      /* 8 */
/* 820 */          0x8,               /* FC_LONG */
                            0x8,               /* FC_LONG */
/* 822 */          0x5c,              /* FC_PAD */
                            0x5b,              /* FC_END */
/* 824 */
                            0x1b,              /* FC_CARRAY */
                            0x3,               /* 3 */
/* 826 */          NdrFcShort( 0x8 ),      /* 8 */
/* 828 */          0x7,               /* Corr desc: FC_USHORT */
                            0x0,               /*  */
/* 830 */          NdrFcShort( 0xffc8 ),   /* -56 */
/* 832 */          NdrFcShort( 0x1 ),      /* Corr flags:  early, */
/* 834 */          0x4c,              /* FC_EMBEDDED_COMPLEX */
                            0x0,               /* 0 */
/* 836 */          NdrFcShort( 0xffffffec ),          /* Offset= -20 (816) */
/* 838 */          0x5c,              /* FC_PAD */
                            0x5b,              /* FC_END */
/* 840 */
                            0x1a,              /* FC_BOGUS_STRUCT */
                            0x3,               /* 3 */
/* 842 */          NdrFcShort( 0x38 ),     /* 56 */
/* 844 */          NdrFcShort( 0xffffffec ),          /* Offset= -20 (824) */
/* 846 */          NdrFcShort( 0x0 ),      /* Offset= 0 (846) */
/* 848 */          0x6,               /* FC_SHORT */
                            0x6,               /* FC_SHORT */
/* 850 */          0x38,              /* FC_ALIGNM4 */
                            0x8,               /* FC_LONG */
/* 852 */          0x8,               /* FC_LONG */
                            0x4c,              /* FC_EMBEDDED_COMPLEX */
/* 854 */          0x4,               /* 4 */
                            NdrFcShort( 0xfffffe0d ),          /* Offset= -499 (356) */
                            0x5b,              /* FC_END */
/* 858 */
                            0x12, 0x0,         /* FC_UP */
/* 860 */          NdrFcShort( 0xffffff02 ),          /* Offset= -254 (606) */
/* 862 */
                            0x12, 0x8,         /* FC_UP [simple_pointer] */
/* 864 */          0x1,               /* FC_BYTE */
                            0x5c,              /* FC_PAD */
/* 866 */
                            0x12, 0x8,         /* FC_UP [simple_pointer] */
/* 868 */          0x6,               /* FC_SHORT */
                            0x5c,              /* FC_PAD */
/* 870 */
                            0x12, 0x8,         /* FC_UP [simple_pointer] */
/* 872 */          0x8,               /* FC_LONG */
                            0x5c,              /* FC_PAD */
/* 874 */
                            0x12, 0x8,         /* FC_UP [simple_pointer] */
/* 876 */          0xa,               /* FC_FLOAT */
                            0x5c,              /* FC_PAD */
/* 878 */
                            0x12, 0x8,         /* FC_UP [simple_pointer] */
/* 880 */          0xc,               /* FC_DOUBLE */
                            0x5c,              /* FC_PAD */
/* 882 */
                            0x12, 0x0,         /* FC_UP */
/* 884 */          NdrFcShort( 0xfffffda4 ),          /* Offset= -604 (280) */
/* 886 */
                            0x12, 0x10,        /* FC_UP [pointer_deref] */
/* 888 */          NdrFcShort( 0xfffffda6 ),          /* Offset= -602 (286) */
/* 890 */
                            0x12, 0x10,        /* FC_UP [pointer_deref] */
/* 892 */          NdrFcShort( 0xfffffdbc ),          /* Offset= -580 (312) */
/* 894 */
                            0x12, 0x10,        /* FC_UP [pointer_deref] */
/* 896 */          NdrFcShort( 0xfffffdca ),          /* Offset= -566 (330) */
/* 898 */
                            0x12, 0x10,        /* FC_UP [pointer_deref] */
```

```
/* 900 */        NdrFcShort( 0xfffffdd8 ),        /* Offset= -552 (348) */
/* 902 */
                        0x12, 0x10,      /* FC_UP [pointer_deref] */
/* 904 */        NdrFcShort( 0x2 ),      /* Offset= 2 (906) */
/* 906 */
                        0x12, 0x0,       /* FC_UP */
/* 908 */        NdrFcShort( 0x16 ),     /* Offset= 22 (930) */
/* 910 */
                        0x15,            /* FC_STRUCT */
                        0x7,             /* 7 */
/* 912 */        NdrFcShort( 0x10 ),     /* 16 */
/* 914 */        0x6,            /* FC_SHORT */
                        0x1,             /* FC_BYTE */
/* 916 */        0x1,            /* FC_BYTE */
                        0x38,            /* FC_ALIGNM4 */
/* 918 */        0x8,            /* FC_LONG */
                        0x39,            /* FC_ALIGNM8 */
/* 920 */        0xb,            /* FC_HYPER */
                        0x5b,            /* FC_END */
/* 922 */
                        0x12, 0x0,       /* FC_UP */
/* 924 */        NdrFcShort( 0xfffffff2 ),        /* Offset= -14 (910) */
/* 926 */
                        0x12, 0x8,       /* FC_UP [simple_pointer] */
/* 928 */        0x2,            /* FC_CHAR */
                        0x5c,            /* FC_PAD */
/* 930 */
                        0x1a,            /* FC_BOGUS_STRUCT */
                        0x7,             /* 7 */
/* 932 */        NdrFcShort( 0x20 ),     /* 32 */
/* 934 */        NdrFcShort( 0x0 ),      /* 0 */
/* 936 */        NdrFcShort( 0x0 ),      /* Offset= 0 (936) */
/* 938 */        0x8,            /* FC_LONG */
                        0x8,             /* FC_LONG */
/* 940 */        0x6,            /* FC_SHORT */
                        0x6,             /* FC_SHORT */
/* 942 */        0x6,            /* FC_SHORT */
                        0x6,             /* FC_SHORT */
/* 944 */        0x4c,           /* FC_EMBEDDED_COMPLEX */
                        0x0,             /* 0 */
/* 946 */        NdrFcShort( 0xfffffc54 ),        /* Offset= -940 (6) */
/* 948 */        0x5c,           /* FC_PAD */
                        0x5b,            /* FC_END */
/* 950 */        0xb4,           /* FC_USER_MARSHAL */
                        0x83,            /* 131 */
/* 952 */        NdrFcShort( 0x0 ),      /* 0 */
/* 954 */        NdrFcShort( 0x18 ),     /* 24 */
/* 956 */        NdrFcShort( 0x0 ),      /* 0 */
/* 958 */        NdrFcShort( 0xfffffc44 ),        /* Offset= -956 (2) */
/* 960 */
                        0x11, 0x4,       /* FC_RP [alloced_on_stack] */
/* 962 */        NdrFcShort( 0x6 ),      /* Offset= 6 (968) */
/* 964 */
                        0x13, 0x0,       /* FC_OP */
/* 966 */        NdrFcShort( 0xffffffdc ),        /* Offset= -36 (930) */
/* 968 */        0xb4,           /* FC_USER_MARSHAL */
                        0x83,            /* 131 */
/* 970 */        NdrFcShort( 0x0 ),      /* 0 */
/* 972 */        NdrFcShort( 0x18 ),     /* 24 */
/* 974 */        NdrFcShort( 0x0 ),      /* 0 */
/* 976 */        NdrFcShort( 0xfffffff4 ),        /* Offset= -12 (964) */

                        0x0
        }
    };

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

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

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


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

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

    return 0;
}

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


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

Appendix B - Database Details

BACKUP.SQL

```
--  File:     BACKUP.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates backup of tpcc database


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

dump database tpcc to tpccback1, tpccback2, tpccback3, tpccback4, tpccback5,
tpccback6 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. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates tpcc database Backup Devices


use master
go

--  create backup devices
exec sp_addumpdevice 'disk','tpccback1','U:\tpccback1.dmp'
exec sp_addumpdevice 'disk','tpccback2','V:\tpccback2.dmp'
exec sp_addumpdevice 'disk','tpccback3','W:\tpccback3.dmp'
exec sp_addumpdevice 'disk','tpccback4','X:\tpccback4.dmp'
exec sp_addumpdevice 'disk','tpccback5','Y:\tpccback5.dmp'
exec sp_addumpdevice 'disk','tpccback6','Z:\tpccback6.dmp'
go
```

CREATEDB.SQL

```
--  File:     CREATEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates tpcc database and backup files


use master
go

--   Create temporary table for timing

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

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

insert    into tpcc_timer values (0,0)
go

--   Store starting time

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

--  create main database files

CREATE DATABASE tpcc
ON PRIMARY
(    NAME      = MSSQL70_tpcc_root,
     FILENAME  = "C:\tpcc_root.mdf",
     SIZE      = 50MB,
     FILEGROWTH =0),
FILEGROUP  MSSQL70_cs_fg
(    NAME      = MSSQL70_cs1,
     FILENAME  = "E:",
     SIZE      = 52000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_cs2,
     FILENAME   = "F:",
     SIZE       = 52000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_cs3,
     FILENAME   = "G:",
     SIZE       = 52000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_cs4,
     FILENAME   = "H:",
     SIZE       = 52000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_cs5,
     FILENAME   = "I:",
     SIZE       = 52000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_cs6,
     FILENAME   = "J:",
     SIZE       = 52000MB,
     FILEGROWTH = 0),
FILEGROUP  MSSQL70_misc_fg
(    NAME       = MSSQL70_misc1,
     FILENAME   = "N:",
     SIZE       = 28000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_misc2,
     FILENAME   = "O:",
     SIZE       = 28000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_misc3,
     FILENAME   = "P:",
     SIZE       = 28000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_misc4,
     FILENAME   = "Q:",
     SIZE       = 28000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_misc5,
     FILENAME   = "R:",
     SIZE       = 28000MB,
     FILEGROWTH = 0),
(    NAME       = MSSQL70_misc6,
     FILENAME   = "S:",
     SIZE       = 28000MB,
     FILEGROWTH = 0)
LOG ON
(    NAME       =MSSQL70_tpcc_log,
     FILENAME   ="L:",
     SIZE       =80000MB,
     FILEGROWTH =0)
go

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

select "Elapsed time (in seconds): ", datediff(second,(select start_date
from tpcc_timer),(select end_date from tpcc_timer))

--    remove temporary table

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

DBOPT1.SQL

```
--  File:     DBOPT1.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Sets database options for data load


use master
go

exec sp_dboption tpcc,'select into/bulkcopy',true
exec sp_dboption tpcc,'trunc. log on chkpt.',true
go

use tpcc
go

checkpoint
go
```

DBOPT2.SQL

```
--  File:     DBOPT2.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21
--            Copyright Microsoft, 1999, 2000
--  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)

IF (SELECT (SUBSTRING((SELECT @@version),1,26))) = 'Microsoft SQL Server
2000'
     BEGIN
          --                                            --
          --        OPTIONS FOR SQL SERVER 8.0          --
          -- Set option values for user-defined indexes --
          --                                            --

          SET  @msg = ' '
          PRINT@msg                                  --
          SET  @msg = 'Setting SQL Server 8.0 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
     END
ELSE
     BEGIN
          --                                            --
          --        OPTIONS FOR SQL SERVER 7.0          --
          -- Set option values for user-defined indexes --
          --

          SET  @msg = ' '
          PRINT@msg                                  --
          SET  @msg = 'Setting SQL Server 7.0 indexoptions'
          PRINT@msg
          SET  @msg = ' '
          PRINT@msg                                  --

          EXEC sp_indexoption  'customer',     'AllowPageLocks',    FALSE
          EXEC sp_indexoption  'district',     'AllowPageLocks',    FALSE
```

```
          EXEC sp_indexoption  'warehouse',    'AllowPageLocks',    FALSE
          EXEC sp_indexoption  'stock',   'AllowPageLocks',    FALSE
          EXEC sp_indexoption  'order_line',   'AllowRowLocks',     FALSE
          EXEC sp_indexoption  'orders',  'AllowRowLocks',     FALSE
          EXEC sp_indexoption  'new_order',    'AllowRowLocks',     FALSE
          EXEC sp_indexoption  'item',         'AllowRowLocks',     FALSE
          EXEC sp_indexoption  'item',         'AllowPageLocks',    FALSE

     END
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
EXEC sp_dboption tpcc,    'torn page detection',          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
```

REMOVEDB.SQL

```
--  File:     REMOVEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Removes tpcc database and backup files


use master
go

--  remove any existing database and backup files

exec sp_dbremove tpcc, dropdev
go

exec sp_dropdevice 'tpccback1'
exec sp_dropdevice 'tpccback2'
exec sp_dropdevice 'tpccback3'
exec sp_dropdevice 'tpccback4'
exec sp_dropdevice 'tpccback5'
exec sp_dropdevice 'tpccback6'
go
```

RESTORE.SQL

```
--  File:     RESTORE.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Loads database backup from backup files


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

load database tpcc from tpccback1, tpccback2, tpccback3, tpccback4,
tpccback5, tpccback6 with stats = 1

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

go
```

VERIFYTPCCLOAD.SQL

```
--  File:     VERIFYTPCCLOAD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21
--            Copyright Microsoft, 1999, 2000
--  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
```

IDXCUSCL.SQL

```
--  File:     IDXCUSCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on customer table


use tpcc
go

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

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

create unique clustered index customer_c1 on customer(c_w_id, c_d_id, c_id)
     on MSSQL70_cs_fg

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

go
```

IDXCUSNC.SQL

```
--  File:     IDXCUSNC.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates non-clustered index on customer table


use tpcc
go

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

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

```
create unique nonclustered index customer_nc1 on customer(c_w_id, c_d_id,
c_last, c_first, c_id)
     on MSSQL70_cs_fg

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

go
```

IDXDISCL.SQL

```
--  File:     IDXDISCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on district table


use tpcc
go

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

if exists ( select name from sysindexes where name = 'district_c1' )
     drop index district.district_c1

create unique clustered index  district_c1 on district(d_w_id, d_id)
     with fillfactor=100 on MSSQL70_misc_fg

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

go
```

IDXITMCL.SQL

```
--  File:     IDXITMCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on item table


use tpcc
go
```

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

if exists ( select name from sysindexes where  name = 'item_c1' )
     drop index item.item_c1

create unique clustered index item_c1 on item(i_id)
     on MSSQL70_misc_fg

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

go
```

IDXNODCL.SQL

```
--  File:     IDXNODCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on new_order table


use tpcc
go

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

if exists ( select name from sysindexes where  name = 'new_order_c1' )
     drop index new_order.new_order_c1

create unique clustered index new_order_c1 on new_order(no_w_id, no_d_id,
no_o_id)
     on MSSQL70_misc_fg

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

go
```

IDXODLCL.SQL

```
--  File:     IDXODLCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  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 MSSQL70_misc_fg

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

go
```

IDXORDCL.SQL

```
--  File:     IDXORDCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on orders table


use tpcc
go

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

if exists ( select name from sysindexes where  name = 'orders_c1' )
     drop index orders.orders_c1

create unique clustered index orders_c1 on orders(o_w_id, o_d_id, o_id)
     on MSSQL70_misc_fg

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

go
```

IDXORDNC.SQL

```
--  File:     IDXORDNC.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  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 MSSQL70_misc_fg

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

go
```

IDXSTKCL.SQL

```
--  File:     IDXSTKCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on stock table


use tpcc
go

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

if exists ( select name from sysindexes where  name = 'stock_c1' )
     drop index stock.stock_c1

create unique clustered index stock_c1 on stock(s_i_id, s_w_id)
     on MSSQL70_cs_fg
```

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

go
```

IDXWARCL.SQL

```
--  File:     IDXWARCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  Purpose:  Creates clustered index on warehouse table


use tpcc
go

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

if exists ( select name from sysindexes where name = 'warehouse_c1' )
     drop index warehouse.warehouse_c1

create unique clustered index warehouse_c1 on warehouse(w_id)
     with fillfactor=100 on MSSQL70_misc_fg

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

go
```

TABLES.SQL

```
--  File:     TABLES.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.20
--            Copyright Microsoft, 1999
--  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 MSSQL70_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 MSSQL70_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 MSSQL70_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 MSSQL70_misc_fg
go

create table new_order
(
     no_o_id                  int,
     no_d_id                  tinyint,
     no_w_id                  smallint
) on MSSQL70_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 MSSQL70_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 MSSQL70_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 MSSQL70_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 MSSQL70_cs_fg
go
```

DELIVERY.SQL

```
--  File:     DELIVERY.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21.000
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Creates delivery transaction stored procedure
--
--   Interface Level: 4.10.000

use tpcc
go

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

create proc tpcc_delivery @w_id           smallint,

                     @o_carrier_id   smallint
as

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

select @d_id = 0

begin tran d

     while (@d_id < 10)
     begin

             select  @d_id  = @d_id + 1,
               @total = 0,
               @o_id  = 0
          select    top 1
               @o_id= no_o_id
          from new_order (serializable updlock)
          where no_w_id   = @w_id and
               no_d_id   = @d_id
          order by no_o_id asc

             if (@@rowcount <> 0)
          begin

--  claim the order for this district

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

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

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

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

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

--  accummulate lineitem amounts for this order into customer

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

          end

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

    end

commit tran d

-- return delivery data to client

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

go
```

NEWORD.SQL

```
--  File:     NEWORD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21.000
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Creates new order transaction stored procedure
--
--   Interface Level: 4.10.000

use tpcc
go

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

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

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

begin

begin transaction n

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

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

--  process orderlines

     while (@li_no < @o_ol_cnt)
     begin

          select @li_no = @li_no + 1

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

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

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

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

--  get item data (no one updates item)

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

--  update stock values

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

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

```
          if (@@rowcount > 0)
          begin

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

                insert into order_line values(@o_id,
                                      @d_id,
                                      @w_id,
                                      @li_no,
                                      @li_id,
                                      @li_s_w_id,
                                      "dec 31, 1899",
                                      @li_qty,
                                      @i_price * @li_qty,
                                      @s_dist)

--  send line-item data to client

                select    @i_name,
                     @s_quantity,
                     b_g = case when ( (patindex("%ORIGINAL%",@i_data) > 0)
and
                                 (patindex("%ORIGINAL%",@s_data) > 0) )
                           then "B" else "G" end,
                     @i_price,
                     @i_price * @li_qty

          end
          else
          begin

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

                select "",0,"",0,0
                select @commit_flag = 0

          end
     end

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

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

--  insert fresh row into orders table

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

--  insert corresponding row into new-order table

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

--  select warehouse tax

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

     if (@commit_flag = 1)
          commit transaction n
     else

--  all that work for nuthin!!!

          rollback transaction n

--  return order data to client

     select    @w_tax,
          @d_tax,
          @o_id,
          @c_last,
          @c_discount,
          @c_credit,
          @o_entry_d,
          @commit_flag

end

go
```

ORDSTAT.SQL

```
--  File:     ORDSTAT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21.000
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Creates order status transaction stored procedure
--
--   Interface Level: 4.10.000

use tpcc
go
```

```
if exists ( select name from sysobjects where name = "tpcc_orderstatus" )
     drop procedure   tpcc_orderstatus
go

create proc tpcc_orderstatus   @w_id smallint,
                     @d_id tinyint,
                     @c_id int,
                     @c_last   char(16) = ""

as

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

begin tran o

if (@c_id = 0)
     begin

--  get customer id and info using last name

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

          set  rowcount @cnt

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

          set  rowcount 0
     end

     else

     begin

--  get customer info if by id
```

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

          select    @cnt = @@rowcount

     end

--  if no such customer

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

--  get order info

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

--  select order lines for the current order

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

custnotfound:

commit tran o

--  return data to client

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

go
```

PAYMENT.SQL

```
--  File:     PAYMENT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21.000
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Creates payment transaction stored procedure
--
--   Interface Level: 4.10.000

use tpcc
go

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

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



as
declare  @w_street_1     char(20),
         @w_street_2     char(20),
         @w_city         char(20),
         @w_state        char(2),
         @w_zip          char(9),
         @w_name         char(10),
         @d_street_1     char(20),
         @d_street_2     char(20),
         @d_city         char(20),
         @d_state        char(2),
         @d_zip          char(9),
         @d_name         char(10),
         @c_first        char(16),
         @c_middle       char(2),
         @c_street_1     char(20),
         @c_street_2     char(20),
         @c_city         char(20),
         @c_state        char(2),
         @c_zip          char(9),
         @c_phone        char(16),
         @c_since        datetime,
         @c_credit       char(2),
         @c_credit_lim   numeric(12,2),
         @c_balance      numeric(12,2),
         @c_discount     numeric(4,4),
         @data           char(500),
         @c_data         char(500),
         @datetime       datetime,
         @w_ytd          numeric(12,2),
         @d_ytd          numeric(12,2),
         @cnt            smallint,
         @val            smallint,
         @screen_data      char(200),
      @d_id_local     tinyint,
      @w_id_local     smallint,
      @c_id_local     int

select @screen_data = ""

begin tran p

--  get payment date

     select     @datetime = getdate()

     if (@c_id = 0)
     begin

--  get customer id and info using last name

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

          select     @val = (@cnt + 1) / 2
          set  rowcount @val

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

          set  rowcount 0
     end

--  get customer info and update balances

     update     customer
     set  @c_balance = c_balance     = c_balance - @h_amount,
          c_payment_cnt   = c_payment_cnt + 1,
          c_ytd_payment   = c_ytd_payment + @h_amount,
          @c_first  = c_first,
          @c_middle = c_middle,
          @c_last         = c_last,
          @c_street_1     = c_street_1,
          @c_street_2     = c_street_2,
          @c_city         = c_city,
          @c_state  = c_state,
          @c_zip          = c_zip,
          @c_phone  = c_phone,
          @c_credit = c_credit,
          @c_credit_lim   = c_credit_lim,
          @c_discount     = c_discount,
          @c_since  = c_since,
          @data     = c_data,
          @c_id_local     = c_id
     where c_id      = @c_id and
          c_w_id          = @c_w_id and
          c_d_id          = @c_d_id

--  if customer has bad credit get some more info

     if (@c_credit = "BC")
     begin

--   compute new info

          select @c_data  = convert(char(5),@c_id) +
                       convert(char(4),@c_d_id) +
                       convert(char(5),@c_w_id) +
                       convert(char(4),@d_id) +
                       convert(char(5),@w_id) +
                       convert(char(19),@h_amount) +
                       substring(@data, 1, 458)

--  update customer info

          update    customer
          set  c_data    = @c_data
          where c_id = @c_id and
               c_w_id    = @c_w_id and
               c_d_id    = @c_d_id

          select    @screen_data = substring (@c_data,1,200)
     end

--  get district data and update year-to-date

     update    district
     set  d_ytd     = d_ytd + @h_amount,
          @d_street_1     = d_street_1,
          @d_street_2     = d_street_2,
          @d_city         = d_city,
```

```
          @d_state  = d_state,
          @d_zip          = d_zip,
          @d_name         = d_name,
          @d_id_local     = d_id
     where d_w_id         = @w_id and
          d_id      = @d_id

--  get warehouse data and update year-to-date

     update    warehouse
     set  w_ytd     = w_ytd + @h_amount,
          @w_street_1     = w_street_1,
          @w_street_2     = w_street_2,
          @w_city         = w_city,
          @w_state  = w_state,
          @w_zip          = w_zip,
          @w_name         = w_name,
          @w_id_local     = w_id
     where w_id      = @w_id

--  create history record

     insert into history values (    @c_id_local,
                          @c_d_id,
                          @c_w_id,
                          @d_id_local,
                          @w_id_local,
                          @datetime,
                          @h_amount,
                          @w_name + "    " + @d_name)
commit tran p

--  return data to client

select    @c_id,
     @c_last,
     @datetime,
     @w_street_1,
     @w_street_2,
     @w_city,
     @w_state,
     @w_zip,
     @d_street_1,
     @d_street_2,
     @d_city,
     @d_state,
     @d_zip,
     @c_first,
     @c_middle,
     @c_street_1,
     @c_street_2,
     @c_city,
     @c_state,
     @c_zip,
     @c_phone,
     @c_since,
     @c_credit,
     @c_credit_lim,
     @c_discount,
     @c_balance,
     @screen_data

go
```

STOCKLEV.SQL

```
--  File:     STOCKLEV.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21.000
--            Copyright Microsoft, 1999, 2000
--  Purpose:  Creates stock level transaction stored procedure
--
--   Interface Level: 4.10.000

use tpcc
go

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

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

declare   @o_id_low int,
     @o_id_high int

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

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

go
```

VERSION.SQL

```
--  File:     VERSION.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.21.000
--            Copyright Microsoft, 1999, 2000
--  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
```

GETARGS.C

```
//   File:     GETARGS.C
//                    Microsoft TPC-C Kit Ver. 4.20
//                    Copyright Microsoft, 1996, 1997, 1998, 1999
//   Purpose:  Source file for command line processing


// Includes
#include "tpcc.h"

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

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

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

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

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

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

          ptr = argv[i];

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

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

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

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

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

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

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

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

          case 't':
                     {
                          pargs->tables_all = FALSE;
                          if (strcmp(ptr+2,"item") == 0)
                               pargs->table_item = TRUE;
                          else if (strcmp(ptr+2,"warehouse") == 0)
                               pargs->table_warehouse = TRUE;
                          else if (strcmp(ptr+2,"customer") == 0)
                               pargs->table_customer = TRUE;
                          else if (strcmp(ptr+2,"orders") == 0)
                               pargs->table_orders = TRUE;
                          else
                          {
                          printf("\nUnrecognized command");
                          GetArgsLoaderUsage();
                          exit(1);
                          }

                          break;
                     }

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

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

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

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

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

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

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

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

    return;
}


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

void GetArgsLoaderUsage()
{

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


    printf("TPCCLDR:\n\n");
     printf("Parameter
Default\n");
     printf("--------------------------------------------------------------
\n");
    printf("-W Number of Warehouses to Load                       Required
\n");
```

```
    printf("-S Server                                             %s\n",
SERVER);
    printf("-U Username                                           %s\n",
USER);
    printf("-P Password                                           %s\n",
PASSWORD);
    printf("-D Database                                           %s\n",
DATABASE);
     printf("-b Batch Size                                         %ld\n",
(long) BATCH);
     printf("-p TDS packet size                                    %ld\n",
(long) DEFLDPACKSIZE);
     printf("-f Loader Results Output Filename                     %s\n",
LOADER_RES_FILE);
     printf("-s Starting Warehouse                                 %ld\n",
(long) DEF_STARTING_WAREHOUSE);
     printf("-i Build Option (data = 0, data and index = 1)        %ld\n",
(long) BUILD_INDEX);
     printf("-o Cluster Index Build Order (before = 1, after = 0)  %ld\n",
(long) INDEX_ORDER);
     printf("-c Build Scaled Database (normal = 0, tiny = 1)       %ld\n",
(long) SCALE_DOWN);
     printf("-d Index Script Path                                  %s\n",
INDEX_SCRIPT_PATH);
     printf("-t Table to Load                                      all
tables \n");
    printf("   [item|warehouse|customer|orders]\n");
    printf("   Notes: \n");
    printf("     - the '-t' parameter may be included multiple times to
\n");
    printf("       specify multiple tables to be loaded \n");
    printf("     - 'item' loads ITEM table \n");
    printf("     - 'warehouse' loads WAREHOUSE, DISTRICT, and STOCK tables
\n");
    printf("     - 'customer' loads CUSTOMER and HISTORY tables \n");
    printf("     - 'orders' load NEW-ORDER, ORDERS, ORDER-LINE tables \n");

     printf("\nNote:  Command line switches are case sensitive.\n");

    exit(0);
}
```

RANDOM.C

```
//   File:     RANDOM.C
//                  Microsoft TPC-C Kit Ver. 4.20
//                  Copyright Microsoft, 1996, 1997, 1998, 1999
//   Purpose:  Random number generation routines for database loader


// Includes
```

```
#include "tpcc.h"
#include "math.h"

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

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

/****************************************************************************
***
*
*
* random -
*
*       Implements a GOOD pseudo random number generator.  This generator
*
*       will/should? run the complete period before repeating.
*
*
*
* Copied from:
*
*       Random Numbers Generators: Good Ones Are Hard to Find.
*
*       Communications of the ACM - October 1988 Volume 31 Number 10
*
*
*
* Machine Dependencies:
*
*       long must be 2 ^ 31 - 1 or greater.
*
*
*
*****************************************************************************
**/

/****************************************************************************
***
* seed - load the Seed value used in irand and drand.  Should be used before
*
*       first call to irand or drand.
*
*****************************************************************************
**/

void seed(long val)
{
```

```
#ifdef DEBUG
    printf("[%ld]DBG: Entering seed()...\n", (int) GetCurrentThreadId());
     printf("Old Seed %ld New Seed %ld\n",Seed, val);
#endif

    if ( val < 0 )
         val = abs(val);

    Seed = val;

}


/****************************************************************************
**
*
*
* irand - returns a 32 bit integer pseudo random number with a period of
*
*       1 to 2 ^ 32 - 1.
*
*
*
* parameters:
*
*       none.
*
*
*
* returns:
*
*       32 bit integer - defined as long ( see above ).
*
*
*
* side effects:
*
*       seed get recomputed.
*
*****************************************************************************
*/

long irand()
{
    register long    s;      /* copy of seed */
    register long    test;   /* test flag */
    register long    hi;     /* tmp value for speed */
    register long    lo;     /* tmp value for speed */

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

    s = Seed;
    hi = s / Q;
    lo = s % Q;

    test = A * lo - R * hi;
    if ( test > 0 )
          Seed = test;
    else
          Seed = test + M;

    return( Seed );
}


/***************************************************************************
**
*
*
* drand - returns a double pseudo random number between 0.0 and 1.0.
*
*       See irand.
*
****************************************************************************
*/
double drand()
{

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

    return( (double)irand() / 2147483647.0);
}


//=========================================================================
// Function   : RandomNumber
//
// Description:
//=========================================================================
long RandomNumber(long lower, long upper)
{
    long rand_num;

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

     if ( upper == lower )     /* pgd 08-13-96 perf enhancement */
          return lower;

     upper++;

    if ( upper <= lower )
```

```
          rand_num = upper;
    else
          rand_num = lower + irand() % (upper - lower); /* pgd 08-13-96 perf
enhancement */


#ifdef DEBUG
    printf("[%ld]DBG: RandomNumber between %ld & %ld ==> %ld\n",
                     (int) GetCurrentThreadId(), lower, upper, rand_num);
#endif


    return rand_num;
}


#if 0

//Orginal code pgd 08/13/96

long RandomNumber(long lower,
                       long upper)
{
    long rand_num;

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

     upper++;

    if ((upper <= lower))
          rand_num = upper;
    else
          rand_num = lower + irand() % ((upper > lower) ? upper - lower :
upper);


#ifdef DEBUG
    printf("[%ld]DBG: RandomNumber between %ld & %ld ==> %ld\n",
                     (int) GetCurrentThreadId(), lower, upper, rand_num);
#endif


    return rand_num;
}
#endif

//=========================================================================
// Function   : NURand
//
// Description:
//=========================================================================
long NURand(int iConst,
         long x,
         long y,
         long C)
{
    long rand_num;

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

    rand_num = (((RandomNumber(0,iConst) | RandomNumber(x,y)) + C) % (y-
x+1))+x;

#ifdef DEBUG
    printf("[%ld]DBG: NURand: num = %d\n", (int) GetCurrentThreadId(),
rand_num);
#endif

    return rand_num;
}
```

STRINGS.C

```
//   File:      STRINGS.C
//                   Microsoft TPC-C Kit Ver. 4.20
//                   Copyright Microsoft, 1996, 1997, 1998, 1999
//   Purpose:   Source file for database loader string functions


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

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

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

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

    MakeAlphaString (10, 20, ADDRESS_LEN, street_1);
    MakeAlphaString (10, 20, ADDRESS_LEN, street_2);
    MakeAlphaString (10, 20, ADDRESS_LEN, city);
    MakeAlphaString ( 2,  2, STATE_LEN, state);
    MakeZipNumberString( 9,  9, ZIP_LEN, zip);

#ifdef DEBUG
    printf("[%ld]DBG: MakeAddress: street_1: %s, street_2: %s, city: %s,
state: %s, zip: %s\n",
                (int) GetCurrentThreadId(), street_1, street_2, city, state,
zip);
#endif

    return;

}


//=======================================================================
//
// Function name: LastName
//
//=======================================================================

void LastName(int  num,
                char *name)
{
    static char *n[] =
    {
          "BAR" , "OUGHT", "ABLE" , "PRI"  , "PRES",
          "ESE" , "ANTI" , "CALLY", "ATION", "EING"
    };

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

    if ((num >= 0) && (num < 1000))
    {
          strcpy(name, n[(num/100)%10]);
          strcat(name, n[(num/10)%10]);
          strcat(name, n[(num/1)%10]);

          if (strlen(name) < LAST_NAME_LEN)
          {
               PaddString(LAST_NAME_LEN, name);
          }

    }
    else
    {
          printf("\nError in LastName()... num <%ld> out of range
(0,999)\n", num);
          exit(-1);
    }


#ifdef DEBUG
    printf("[%ld]DBG: LastName: num = [%d] ==> [%d][%d][%d]\n",
                (int) GetCurrentThreadId(), num, num/100, (num/10)%10,
num%10);
     printf("[%ld]DBG: LastName: String = %s\n", (int) GetCurrentThreadId(),
name);
#endif

    return;

}



//=========================================================================
//
// Function name: MakeAlphaString
//
//=========================================================================

//philipdu 08/13/96 Changed MakeAlphaString to use A-Z, a-z, and 0-9 in
//accordance with spec see below:
//The spec says:
//4.3.2.2  The notation random a-string [x .. y]
//(respectively, n-string [x .. y]) represents a string of random
alphanumeric
//(respectively, numeric) characters of a random length of minimum x,
maximum y,
//and mean (y+x)/2. Alphanumerics are A..Z, a..z, and 0..9.  The only other
//requirement is that the character set used "must be able to represent a
minimum
//of 128 different characters".  We are using 8-bit chars, so this is a non
issue.
//It is completely unreasonable to stuff non-printing chars into the text
fields.
//-CLevine 08/13/96

int MakeAlphaString( int  x, int  y, int  z, char *str)
{
     int        len;
     int        i;
    char    cc = 'a';
     static     char chArray[] =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz";
     static     int  chArrayMax = 61;

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

     len= RandomNumber(x, y);

     for (i=0; i<len; i++)
     {
          cc = chArray[RandomNumber(0, chArrayMax)];
        str[i] = cc;
    }
     if ( len < z )
          memset(str+len, ' ', z - len);
     str[len] = 0;

    return len;
}


//=========================================================================
//
// Function name: MakeOriginalAlphaString
//
//=========================================================================

int MakeOriginalAlphaString(int  x,
                                   int  y,
                                    int  z,
                                   char *str,
                               int  percent)
{
    int         len;
    int         val;
    int         start;

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

    // verify prercentage is valid
    if ((percent < 0) || (percent > 100))
    {
          printf("MakeOrigianlAlphaString: Invalid percentage: %d\n",
percent);
          exit(-1);
    }

    // verify string is at least 8 chars in length
    if ((x + y) <= 8)
    {
          printf("MakeOriginalAlphaString: string length must be >= 8\n");
          exit(-1);
    }

    // Make Alpha String
    len = MakeAlphaString(x,y, z, str);

    val = RandomNumber(1,100);
    if (val <= percent)
    {
          start = RandomNumber(0, len - 8);
          strncpy(str + start, "ORIGINAL", 8);
    }


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

    return strlen(str);
}


//========================================================================
//
// Function name: MakeNumberString
//
//========================================================================
int MakeNumberString(int  x, int  y, int  z, char *str)
{
     char tmp[16];

     //MakeNumberString is always called MakeZipNumberString(16, 16, 16,
string)

     memset(str, '0', 16);
     itoa(RandomNumber(0, 99999999), tmp, 10);
     memcpy(str, tmp, strlen(tmp));

     itoa(RandomNumber(0, 99999999), tmp, 10);
     memcpy(str+8, tmp, strlen(tmp));

     str[16] = 0;

    return 16;
}


//========================================================================
//
// Function name: MakeZipNumberString
//
//========================================================================
int MakeZipNumberString(int  x, int  y, int  z, char *str)
{
     char tmp[16];
```

```
     //MakeZipNumberString is always called MakeZipNumberString(9, 9, 9,
string)

     strcpy(str, "000011111");

     itoa(RandomNumber(0, 9999), tmp, 10);
     memcpy(str, tmp, strlen(tmp));

    return 9;
}


//========================================================================
//
// Function name: InitString
//
//========================================================================
void InitString(char *str, int len)
{
#ifdef DEBUG
    printf("[%ld]DBG: Entering InitString()\n", (int) GetCurrentThreadId());
#endif

     memset(str, ' ', len);
    str[len] = 0;
}


//========================================================================
// Function name: InitAddress
//
// Description:
//
//========================================================================

void InitAddress(char *street_1, char *street_2, char *city, char *state,
char *zip)
{
     memset(street_1, ' ', ADDRESS_LEN+1);
     memset(street_2, ' ', ADDRESS_LEN+1);
     memset(city, ' ', ADDRESS_LEN+1);

    street_1[ADDRESS_LEN+1] = 0;
    street_2[ADDRESS_LEN+1] = 0;
    city[ADDRESS_LEN+1]     = 0;

     memset(state, ' ', STATE_LEN+1);
    state[STATE_LEN+1] = 0;

     memset(zip, ' ', ZIP_LEN+1);
    zip[ZIP_LEN+1] = 0;
}
```

```
//=======================================================================
//
// Function name: PaddString
//
//=======================================================================

void PaddString(int max, char *name)
{
     int        len;

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

     return;
}
```

TIME.C

```
//   File:     TIME.C
//                  Microsoft TPC-C Kit Ver. 4.20
//                  Copyright Microsoft, 1996, 1997, 1998, 1999
//   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. 4.20
//                  Copyright Microsoft, 1996, 1997, 1998, 1999
//   Purpose:  Header file for TPC-C database loader


// Build number of TPC Benchmark Kit
#define TPCKIT_VER   "4.20"

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

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

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

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

// Default loader arguments
#define BATCH                   10000
#define DEFLDPACKSIZE                32768
#define LOADER_RES_FILE           "logs\\load.out"
#define LOADER_NURAND_C                123
#define DEF_STARTING_WAREHOUSE       1
```

```
#define BUILD_INDEX                      1    // build both data and
indexes
#define INDEX_ORDER                      1    // build indexes before load
#define SCALE_DOWN                       0   // build a normal scale
database
#define INDEX_SCRIPT_PATH "scripts"

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

// String length constants
     #define SERVER_NAME_LEN            20
     #define DATABASE_NAME_LEN          20
     #define USER_NAME_LEN              20
     #define PASSWORD_LEN               20
     #define TABLE_NAME_LEN             20
     #define I_DATA_LEN                 50
     #define I_NAME_LEN                 24
     #define BRAND_LEN                   1
     #define LAST_NAME_LEN              16
     #define W_NAME_LEN                 10
     #define ADDRESS_LEN                20
     #define STATE_LEN                   2
     #define ZIP_LEN                     9
     #define S_DIST_LEN                 24
     #define S_DATA_LEN                 50
     #define D_NAME_LEN                 10
     #define FIRST_NAME_LEN             16
     #define MIDDLE_NAME_LEN             2
     #define PHONE_LEN                  16
     #define CREDIT_LEN                  2
     #define C_DATA_LEN                500
     #define H_DATA_LEN                 24
     #define DIST_INFO_LEN              24
     #define MAX_OL_NEW_ORDER_ITEMS     15
     #define MAX_OL_ORDER_STATUS_ITEMS  15
     #define STATUS_LEN                 25
     #define OL_DIST_INFO_LEN          24
     #define C_SINCE_LEN                     23
     #define H_DATE_LEN                      23
     #define OL_DELIVERY_D_LEN         23
     #define O_ENTRY_D_LEN              23


// Functions in random.c
void      seed();
long      irand();
double    drand();
void WUCreate();
short WURand();
long RandomNumber(long lower, long upper);

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

// Functions in time.c
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. 4.20
//                  Copyright Microsoft, 1996, 1997, 1998, 1999
//   Purpose:  Source file for TPC-C database loader


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

```
#include "search.h"

// Defines
#define MAXITEMS                100000
#define MAXITEMS_SCALE_DOWN          100
#define CUSTOMERS_PER_DISTRICT  3000
#define CUSTOMERS_SCALE_DOWN   30
#define DISTRICT_PER_WAREHOUSE  10
#define ORDERS_PER_DISTRICT     3000
#define ORDERS_SCALE_DOWN       30
#define MAX_CUSTOMER_THREADS    2
#define MAX_ORDER_THREADS       3
#define MAX_MAIN_THREADS        4

// Functions declarations

void HandleErrorDBC (SQLHDBC  hdbc1);

void CheckSQL();
void CheckDataBase();

long NURand();
void LoadItem();
void LoadWarehouse();

void Stock();
void District();

void LoadCustomer();
void CustomerBufInit();
void CustomerBufLoad();
void LoadCustomerTable();
void LoadHistoryTable();

void LoadOrders();
void OrdersBufInit();
void OrdersBufLoad();
void LoadOrdersTable();
void LoadNewOrderTable();
void LoadOrderLineTable();
void GetPermutation();
void CheckForCommit();
void OpenConnections();
void BuildIndex();
void FormatDate ();

// Shared memory structures

typedef struct
{
    long                ol;
    long                ol_i_id;
    short               ol_supply_w_id;
    short               ol_quantity;
    double              ol_amount;
    char                ol_dist_info[DIST_INFO_LEN+1];
     char                 ol_delivery_d[OL_DELIVERY_D_LEN+1];
} ORDER_LINE_STRUCT;

typedef struct
{
    long                o_id;
    short               o_d_id;
    short               o_w_id;
    long                o_c_id;
    short               o_carrier_id;
    short               o_ol_cnt;
    short               o_all_local;
     ORDER_LINE_STRUCT   o_ol[15];
} ORDERS_STRUCT;

typedef struct
{
    long                  c_id;
    short                 c_d_id;
    short                 c_w_id;
     char                 c_first[FIRST_NAME_LEN+1];
    char                  c_middle[MIDDLE_NAME_LEN+1];
    char                  c_last[LAST_NAME_LEN+1];
    char                  c_street_1[ADDRESS_LEN+1];
    char                  c_street_2[ADDRESS_LEN+1];
    char                  c_city[ADDRESS_LEN+1];
    char                  c_state[STATE_LEN+1];
    char                  c_zip[ZIP_LEN+1];
    char                  c_phone[PHONE_LEN+1];
    char                  c_credit[CREDIT_LEN+1];
    double                c_credit_lim;
    double                c_discount;
//  fix to avoid ODBC float to numeric conversion problem.
//  double                c_balance;
     char                 c_balance[6];

    double                c_ytd_payment;
     short                c_payment_cnt;
     short                c_delivery_cnt;
     char                 c_data[C_DATA_LEN+1];
     double                    h_amount;
    char                  h_data[H_DATA_LEN+1];
} CUSTOMER_STRUCT;

typedef struct
{
     char                 c_last[LAST_NAME_LEN+1];
     char                 c_first[FIRST_NAME_LEN+1];
    long                  c_id;
} CUSTOMER_SORT_STRUCT;

typedef struct
```

```
{
    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

HSTMTv_hstmt;                      // for SQL Server version verification
HSTMTi_hstmt1;
HSTMTw_hstmt1;
HSTMTc_hstmt1, c_hstmt2;
HSTMTo_hstmt1, o_hstmt2, o_hstmt3;

ORDERS_STRUCT   orders_buf[ORDERS_PER_DISTRICT];
CUSTOMER_STRUCT customer_buf[CUSTOMERS_PER_DISTRICT];
long            orders_rows_loaded;
long            new_order_rows_loaded;
long            order_line_rows_loaded;
long            history_rows_loaded;
long            customer_rows_loaded;
long            stock_rows_loaded;
long            district_rows_loaded;
long            item_rows_loaded;
long            warehouse_rows_loaded;
long            main_time_start;
long            main_time_end;
long            max_items;
long            customers_per_district;
long            orders_per_district;
long            first_new_order;
long            last_new_order;


TPCCLDR_ARGS    *aptr, args;


//=======================================================================
//
// Function name: main
//
```

```
//=======================================================================

int main(int  argc, char **argv)
{

     DWORD           dwThreadID[MAX_MAIN_THREADS];
     HANDLE          hThread[MAX_MAIN_THREADS];
     FILE            *fLoader;
     char            buffer[255];
     int                  i;

     for (i=0; i<MAX_MAIN_THREADS; i++)
          hThread[i] = NULL;

    printf("\n**************************************************");
     printf("\n*                                                *");
     printf("\n*  Microsoft SQL Server                          *");
     printf("\n*                                                *");
     printf("\n*  TPC-C BENCHMARK KIT:  Database loader         *");
     printf("\n*  Version %s                                  *",
TPCKIT_VER);
     printf("\n*                                                *");
     printf("\n**************************************************\n\n");

    // process command line arguments

    aptr = &args;
    GetArgsLoader(argc, argv, aptr);

     // verify correct SQL Server version in use
     // you must be using SQL Server 7.00.623 or better to load

     CheckSQL();

     // verify database and tables exist before attempting to load

     CheckDataBase();

     printf("Build interface is ODBC.\n");

     if (aptr->build_index == 0)
          printf("Data load only - no index creation.\n");
     else
          printf("Data load and index creation.\n");

     if (aptr->index_order == 0)
          printf("Clustered indexes will be created after bulk load.\n");
     else
          printf("Clustered indexes will be created before bulk load.\n");

     // set database scale values
     if (aptr->scale_down == 1)
     {
          printf("*** Scaled Down Database ***\n");
          max_items = MAXITEMS_SCALE_DOWN;
          customers_per_district = CUSTOMERS_SCALE_DOWN;
          orders_per_district = ORDERS_SCALE_DOWN;
          first_new_order = 0;
          last_new_order  = 30;
     }
     else
     {
          max_items = MAXITEMS;
          customers_per_district = CUSTOMERS_PER_DISTRICT;
          orders_per_district = ORDERS_PER_DISTRICT;
          first_new_order = 2100;
          last_new_order  = 3000;
     }


     // open connections to SQL Server

     OpenConnections();

     // open file for loader results
    fLoader = fopen(aptr->loader_res_file, "w");

    if (fLoader == NULL)
     {
          printf("Error, loader result file open failed.");
          exit(-1);
     }

    // start loading data

    sprintf(buffer,"TPC-C load started for %ld warehouses.\n",aptr-
>num_warehouses);

     printf("%s",buffer);
     fprintf(fLoader,"%s",buffer);

     main_time_start = (TimeNow() / MILLI);

     // start parallel load threads


     if (aptr->tables_all || aptr->table_item)
     {
          fprintf(fLoader, "\nStarting loader threads for: item\n");

          hThread[0] = CreateThread(NULL,
                                            0,
                                            (LPTHREAD_START_ROUTINE)
LoadItem,
                                            NULL,
                                            0,
                                            &dwThreadID[0]);
```

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

     if (aptr->tables_all || aptr->table_warehouse)
     {
          fprintf(fLoader, "Starting loader threads for: warehouse\n");

          hThread[1] = CreateThread(NULL,
                                            0,
                                            (LPTHREAD_START_ROUTINE)
LoadWarehouse,
                                            NULL,
                                            0,
                                            &dwThreadID[1]);

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

     if (aptr->tables_all || aptr->table_customer)
     {
          fprintf(fLoader, "Starting loader threads for: customer\n");

          hThread[2] = CreateThread(NULL,
                                            0,
                                            (LPTHREAD_START_ROUTINE)
LoadCustomer,
                                            NULL,
                                            0,
                                            &dwThreadID[2]);

          if (hThread[2] == NULL)
          {
               printf("Error, failed in creating creating main thread =
2.\n");
               exit(-1);
          }
     }

     if (aptr->tables_all || aptr->table_orders)
     {
          fprintf(fLoader, "Starting loader threads for: orders\n");

          hThread[3] = CreateThread(NULL,
                                            0,
                                            (LPTHREAD_START_ROUTINE)
LoadOrders,
                                            NULL,
                                            0,
                                            &dwThreadID[3]);

          if (hThread[3] == NULL)
          {
               printf("Error, failed in creating creating main thread =
3.\n");
               exit(-1);
          }
     }

     // Wait for threads to finish...
     for (i=0; i<MAX_MAIN_THREADS; i++)
     {
          if (hThread[i] != NULL)
          {
               WaitForSingleObject( hThread[i], INFINITE );
               CloseHandle(hThread[i]);
               hThread[i] = NULL;
          }
     }

     main_time_end = (TimeNow() / MILLI);

    sprintf(buffer,"\nTPC-C load completed successfully in %ld minutes.\n",
               (main_time_end - main_time_start)/60);

     printf("%s",buffer);
     fprintf(fLoader, "%s", buffer);

     fclose(fLoader);

     SQLFreeEnv(henv);

    exit(0);

     return 0;
}


//=======================================================================
//
// Function name: LoadItem
//
//=======================================================================

void LoadItem()
{
    long        i_id;
     long       i_im_id;
    char        i_name[I_NAME_LEN+1];
    double      i_price;
    char        i_data[I_DATA_LEN+1];
```

```
     char      name[20];
     long      time_start;
     RETCODE         rc;
     DBINT     rcint;
     char      bcphint[128];

     // Seed with unique number
     seed(1);

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

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

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

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

     rc = bcp_init(i_hdbc1, name, NULL, "logs\\item.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (i_id), ROWS_PER_BATCH =
100000");
          rc = bcp_control(i_hdbc1, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(i_hdbc1);
     }

     rc = bcp_bind(i_hdbc1, (BYTE *) &i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     rc = bcp_bind(i_hdbc1, (BYTE *) &i_im_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     rc = bcp_bind(i_hdbc1, (BYTE *) i_name, 0, I_NAME_LEN, NULL, 0, 0, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     rc = bcp_bind(i_hdbc1, (BYTE *) &i_price, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 4);
     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     rc = bcp_bind(i_hdbc1, (BYTE *) i_data, 0, I_DATA_LEN, NULL, 0, 0, 5);
     if (rc != SUCCEED)
```

```
          HandleErrorDBC(i_hdbc1);

     time_start = (TimeNow() / MILLI);

     item_rows_loaded = 0;

     for (i_id = 1; i_id <= max_items; i_id++)
     {
          i_im_id = RandomNumber(1L, 10000L);

          MakeAlphaString(14, 24, I_NAME_LEN, i_name);

          i_price = ((float) RandomNumber(100L, 10000L))/100.0;

          MakeOriginalAlphaString(26, 50, I_DATA_LEN, i_data, 10);

          rc = bcp_sendrow(i_hdbc1);
          if (rc != SUCCEED)
               HandleErrorDBC(i_hdbc1);

          item_rows_loaded++;
          CheckForCommit(i_hdbc1, i_hstmt1, item_rows_loaded, "item",
&time_start);
     }

     rcint = bcp_done(i_hdbc1);
     if (rcint < 0)
          HandleErrorDBC(i_hdbc1);

     printf("Finished loading item table.\n");

     SQLFreeStmt(i_hstmt1, SQL_DROP);
     SQLDisconnect(i_hdbc1);
     SQLFreeConnect(i_hdbc1);

     // if build index after load
     if ((aptr->build_index == 1) && (aptr->index_order == 0))
          BuildIndex("idxitmcl");

}


//=============================================================================
===
//
// Function   : LoadWarehouse
//
// Loads WAREHOUSE table and loads Stock and District as Warehouses are
created
//
//=============================================================================
===

void LoadWarehouse()
```

```
{
    short  w_id;
    char   w_name[W_NAME_LEN+1];
    char   w_street_1[ADDRESS_LEN+1];
    char   w_street_2[ADDRESS_LEN+1];
    char   w_city[ADDRESS_LEN+1];
    char   w_state[STATE_LEN+1];
    char   w_zip[ZIP_LEN+1];
    double w_tax;
    double w_ytd;
     char  name[20];
     long  time_start;
     RETCODE   rc;
     DBINT rcint;
     char  bcphint[128];


     // Seed with unique number
     seed(2);

     printf("Loading warehouse table...\n");

     // if build index before load...
     if ((aptr->build_index == 1) && (aptr->index_order == 1))
          BuildIndex("idxwarcl");

     InitString(w_name, W_NAME_LEN+1);
     InitAddress(w_street_1, w_street_2, w_city, w_state, w_zip);

     sprintf(name, "%s..%s", aptr->database, "warehouse");

     rc = bcp_init(w_hdbc1, name, NULL, "logs\\whouse.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (w_id), ROWS_PER_BATCH = %d",
aptr->num_warehouses);
          rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(w_hdbc1);
     }

     rc = bcp_bind(w_hdbc1, (BYTE *) &w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) w_name, 0, W_NAME_LEN, NULL, 0, 0, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);
     rc = bcp_bind(w_hdbc1, (BYTE *) w_street_1, 0, ADDRESS_LEN, NULL, 0, 0,
3);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) w_street_2, 0, ADDRESS_LEN, NULL, 0, 0,
4);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) w_city, 0, ADDRESS_LEN, NULL, 0, 0, 5);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) w_state, 0, STATE_LEN, NULL, 0, 0, 6);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) w_zip, 0, ZIP_LEN, NULL, 0, 0, 7);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &w_tax, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 8);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &w_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     time_start = (TimeNow() / MILLI);

     warehouse_rows_loaded = 0;

     for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
     {
          MakeAlphaString(6,10, W_NAME_LEN, w_name);

          MakeAddress(w_street_1, w_street_2, w_city, w_state, w_zip);

          w_tax = ((float) RandomNumber(0L,2000L))/10000.00;

          w_ytd = 300000.00;

          rc = bcp_sendrow(w_hdbc1);
          if (rc != SUCCEED)
               HandleErrorDBC(w_hdbc1);

          warehouse_rows_loaded++;
          CheckForCommit(w_hdbc1, i_hstmt1, warehouse_rows_loaded,
"warehouse", &time_start);
```

```
     }

     rcint = bcp_done(w_hdbc1);
     if (rcint < 0)
          HandleErrorDBC(w_hdbc1);

     printf("Finished loading warehouse table.\n");

     // if build index after load...
     if ((aptr->build_index == 1) && (aptr->index_order == 0))
          BuildIndex("idxwarcl");

     stock_rows_loaded = 0;
     district_rows_loaded = 0;

     District();
     Stock();

}


//=======================================================================
//
// Function   : District
//
//=======================================================================

void District()
{
    short  d_id;
    short  d_w_id;
    char   d_name[D_NAME_LEN+1];
    char   d_street_1[ADDRESS_LEN+1];
    char   d_street_2[ADDRESS_LEN+1];
    char   d_city[ADDRESS_LEN+1];
    char   d_state[STATE_LEN+1];
    char   d_zip[ZIP_LEN+1];
    double d_tax;
    double d_ytd;
     char  name[20];
    long   d_next_o_id;
     long  time_start;
     int        w_id;
     RETCODE    rc;
     DBINTrcint;
     char  bcphint[128];

     // Seed with unique number
     seed(4);

     printf("Loading district table...\n");

     // build index before load
     if ((aptr->build_index == 1) && (aptr->index_order == 1))
```

```
          BuildIndex("idxdiscl");

     InitString(d_name, D_NAME_LEN+1);
     InitAddress(d_street_1, d_street_2, d_city, d_state, d_zip);
     sprintf(name, "%s..%s", aptr->database, "district");

     rc = bcp_init(w_hdbc1, name, NULL, "logs\\district.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (d_w_id, d_id), ROWS_PER_BATCH =
%u", (aptr->num_warehouses * 10));
          rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(w_hdbc1);
     }

     rc = bcp_bind(w_hdbc1, (BYTE *) &d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &d_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) d_name, 0, D_NAME_LEN, NULL, 0, 0, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) d_street_1, 0, ADDRESS_LEN, NULL, 0, 0,
4);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) d_street_2, 0, ADDRESS_LEN, NULL, 0, 0,
5);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) d_city, 0, ADDRESS_LEN, NULL, 0, 0, 6);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) d_state, 0, STATE_LEN, NULL, 0, 0, 7);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) d_zip, 0, ZIP_LEN, NULL, 0, 0, 8);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);
```

```
     rc = bcp_bind(w_hdbc1, (BYTE *) &d_tax, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &d_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 10);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &d_next_o_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 11);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     d_ytd  = 30000.0;

     d_next_o_id = orders_per_district+1;

     time_start = (TimeNow() / MILLI);

     for (w_id = aptr->starting_warehouse; w_id <= aptr->num_warehouses;
w_id++)
     {
          d_w_id = w_id;

          for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE; d_id++)
          {
               MakeAlphaString(6,10,D_NAME_LEN, d_name);

               MakeAddress(d_street_1, d_street_2, d_city, d_state, d_zip);

               d_tax = ((float) RandomNumber(0L,2000L))/10000.00;

               rc = bcp_sendrow(w_hdbc1);
               if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

               district_rows_loaded++;
               CheckForCommit(w_hdbc1, w_hstmt1, district_rows_loaded,
"district", &time_start);
          }
    }

     rcint = bcp_done(w_hdbc1);
     if (rcint < 0)
          HandleErrorDBC(w_hdbc1);

     printf("Finished loading district table.\n");

     // if build index after load...
     if ((aptr->build_index == 1) && (aptr->index_order == 0))
          BuildIndex("idxdiscl");
    return;
}


//=======================================================================
//
// Function    : Stock
//
//=======================================================================

void Stock()
{
    long   s_i_id;
    short  s_w_id;
    short  s_quantity;
    char   s_dist_01[S_DIST_LEN+1];
    char   s_dist_02[S_DIST_LEN+1];
    char   s_dist_03[S_DIST_LEN+1];
    char   s_dist_04[S_DIST_LEN+1];
    char   s_dist_05[S_DIST_LEN+1];
    char   s_dist_06[S_DIST_LEN+1];
    char   s_dist_07[S_DIST_LEN+1];
    char   s_dist_08[S_DIST_LEN+1];
    char   s_dist_09[S_DIST_LEN+1];
    char   s_dist_10[S_DIST_LEN+1];
    long   s_ytd;
    short  s_order_cnt;
    short  s_remote_cnt;
    char   s_data[S_DATA_LEN+1];
    short  len;
     char  name[20];
     long  time_start;
     RETCODE    rc;
     DBINT rcint;
     char  bcphint[128];

     // Seed with unique number
     seed(3);

     // if build index before load...
     if ((aptr->build_index == 1) && (aptr->index_order == 1))
          BuildIndex("idxstkcl");

     sprintf(name, "%s..%s", aptr->database, "stock");

     rc = bcp_init(w_hdbc1, name, NULL, "logs\\stock.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (s_i_id, s_w_id), ROWS_PER_BATCH
= %u", (aptr->num_warehouses * 100000));
          rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(w_hdbc1);
     }

     rc = bcp_bind(w_hdbc1, (BYTE *) &s_i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     bcp_bind(w_hdbc1, (BYTE *) &s_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &s_quantity, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_01, 0, S_DIST_LEN, NULL, 0, 0,
4);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_02, 0, S_DIST_LEN, NULL, 0, 0,
5);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_03, 0, S_DIST_LEN, NULL, 0, 0,
6);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_04, 0, S_DIST_LEN, NULL, 0, 0,
7);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_05, 0, S_DIST_LEN, NULL, 0, 0,
8);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_06, 0, S_DIST_LEN, NULL, 0, 0,
9);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_07, 0, S_DIST_LEN, NULL, 0, 0,
10);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);
     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_08, 0, S_DIST_LEN, NULL, 0, 0,
11);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_09, 0, S_DIST_LEN, NULL, 0, 0,
12);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_10, 0, S_DIST_LEN, NULL, 0, 0,
13);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &s_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 14);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &s_order_cnt, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 15);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) &s_remote_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 16);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = bcp_bind(w_hdbc1, (BYTE *) s_data, 0, S_DATA_LEN, NULL, 0, 0, 17);
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     s_ytd = s_order_cnt = s_remote_cnt = 0;

     time_start = (TimeNow() / MILLI);

     printf("...Loading stock table\n");

     for (s_i_id=1; s_i_id <= max_items; s_i_id++)
     {

          for (s_w_id = (short)aptr->starting_warehouse; s_w_id <= aptr-
>num_warehouses; s_w_id++)
          {

               s_quantity = (short)RandomNumber(10L,100L);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_01);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_02);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_03);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_04);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_05);
```

```
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_06);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_07);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_08);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_09);
               len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_10);

               len = MakeOriginalAlphaString(26,50, S_DATA_LEN, s_data,10);

               rc = bcp_sendrow(w_hdbc1);
               if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

               stock_rows_loaded++;
               CheckForCommit(w_hdbc1, w_hstmt1, stock_rows_loaded, "stock",
&time_start);

          }
     }

     rcint = bcp_done(w_hdbc1);
     if (rcint < 0)
          HandleErrorDBC(w_hdbc1);

     printf("Finished loading stock table.\n");

     SQLFreeStmt(w_hstmt1, SQL_DROP);
     SQLDisconnect(w_hdbc1);
     SQLFreeConnect(w_hdbc1);

     // if build index after load...
     if ((aptr->build_index == 1) && (aptr->index_order == 0))
          BuildIndex("idxstkcl");

     return;
}


//=======================================================================
//
// Function   : LoadCustomer
//
//=======================================================================

void LoadCustomer()
{
     LOADER_TIME_STRUCT      customer_time_start;
     LOADER_TIME_STRUCT      history_time_start;
     short                     w_id;
    short                 d_id;
     DWORD                     dwThreadID[MAX_CUSTOMER_THREADS];
     HANDLE                    hThread[MAX_CUSTOMER_THREADS];
     char                      name[20];
     RETCODE                        rc;
     DBINT                     rcint;
     char                      bcphint[128];
     char                      cmd[256];
     // SQLRETURN                   rc_1;
     // SQLSMALLINT                 recnum, MsgLen;
     // SQLCHAR                     SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
     // SQLINTEGER                  NativeError;

     // Seed with unique number
     seed(5);

     printf("Loading customer and history tables...\n");

     // if build index before load...
     if ((aptr->build_index == 1) && (aptr->index_order == 1))
          BuildIndex("idxcuscl");

     // Initialize bulk copy
     sprintf(name, "%s..%s", aptr->database, "customer");

     rc = bcp_init(c_hdbc1, name, NULL, "logs\\customer.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (c_w_id, c_d_id, c_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
          rc = bcp_control(c_hdbc1, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(c_hdbc1);
     }

     sprintf(name, "%s..%s", aptr->database, "history");

     rc = bcp_init(c_hdbc2, name, NULL, "logs\\history.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

     sprintf(bcphint, "tablock");
     rc = bcp_control(c_hdbc2, BCPHINTS, (void*) bcphint);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

     customer_rows_loaded    = 0;
     history_rows_loaded     = 0;

     CustomerBufInit();

     customer_time_start.time_start = (TimeNow() / MILLI);
     history_time_start.time_start = (TimeNow() / MILLI);

     for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
```

```
     {
          for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE; d_id++)
          {

               CustomerBufLoad(d_id, w_id);

               // Start parallel loading threads here...

               // Start customer table thread

               printf("...Loading customer table for: d_id = %d, w_id =
%d\n", d_id, w_id);

               hThread[0] = CreateThread(NULL,
                                                  0,
                                                  (LPTHREAD_START_ROUTINE)
LoadCustomerTable,
                                                  &customer_time_start,
                                                  0,
                                                  &dwThreadID[0]);

               if (hThread[0] == NULL)
               {
                    printf("Error, failed in creating creating thread =
0.\n");
                    exit(-1);
               }

               // Start History table thread

               printf("...Loading history table for: d_id = %d, w_id =
%d\n", d_id, w_id);

               hThread[1] = CreateThread(NULL,
                                                  0,
                                                  (LPTHREAD_START_ROUTINE)
LoadHistoryTable,
                                                  &history_time_start,
                                                  0,
                                                  &dwThreadID[1]);

               if (hThread[1] == NULL)
               {
                    printf("Error, failed in creating creating thread =
1.\n");
                    exit(-1);
               }

               WaitForSingleObject( hThread[0], INFINITE );
               WaitForSingleObject( hThread[1], INFINITE );

               if (CloseHandle(hThread[0]) == FALSE)
               {
                     printf("Error, failed in closing customer thread handle
with errno: %d\n", GetLastError());
                }

                if (CloseHandle(hThread[1]) == FALSE)
                {
                     printf("Error, failed in closing history thread handle
with errno: %d\n", GetLastError());
                }


          }

     }

     // flush the bulk connection
     rcint = bcp_done(c_hdbc1);
     if (rcint < 0)
          HandleErrorDBC(c_hdbc1);

     rcint = bcp_done(c_hdbc2);
     if (rcint < 0)
          HandleErrorDBC(c_hdbc2);

     printf("Finished loading customer table.\n");

     // if build index after load...
     if ((aptr->build_index == 1) && (aptr->index_order == 0))
          BuildIndex("idxcuscl");

     // build non-clustered index
     if (aptr->build_index == 1)
          BuildIndex("idxcusnc");

     // Output the NURAND used for the loader into C_FIRST for C_ID = 1,
     // C_W_ID = 1, and C_D_ID = 1
     sprintf(cmd, "isql -S%s -U%s -P%s -d%s -e -Q\"update customer set
c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id = 1\" >
logs\\nurand_load.log",
                     aptr->server,
                     aptr->user,
                     aptr->password,
                     aptr->database,
                     LOADER_NURAND_C);

     system(cmd);

     SQLFreeStmt(c_hstmt1, SQL_DROP);
     SQLDisconnect(c_hdbc1);
     SQLFreeConnect(c_hdbc1);

     SQLFreeStmt(c_hstmt2, SQL_DROP);
     SQLDisconnect(c_hdbc2);
     SQLFreeConnect(c_hdbc2);
```

```

    return;

}


//=======================================================================
//
// Function   : CustomerBufInit
//
//=======================================================================

void CustomerBufInit()
{
     int     i;

     for (i=0;i<customers_per_district;i++)
     {
          customer_buf[i].c_id = 0;
          customer_buf[i].c_d_id = 0;
          customer_buf[i].c_w_id = 0;

          strcpy(customer_buf[i].c_first,"");
          strcpy(customer_buf[i].c_middle,"");
          strcpy(customer_buf[i].c_last,"");
          strcpy(customer_buf[i].c_street_1,"");
          strcpy(customer_buf[i].c_street_2,"");
          strcpy(customer_buf[i].c_city,"");
          strcpy(customer_buf[i].c_state,"");
          strcpy(customer_buf[i].c_zip,"");
          strcpy(customer_buf[i].c_phone,"");
          strcpy(customer_buf[i].c_credit,"");

          customer_buf[i].c_credit_lim = 0;
          customer_buf[i].c_discount = (float) 0;

          //  fix to avoid ODBC float to numeric conversion problem.
          //   customer_buf[i].c_balance = 0;
          strcpy(customer_buf[i].c_balance,"");

          customer_buf[i].c_ytd_payment = 0;
          customer_buf[i].c_payment_cnt = 0;
          customer_buf[i].c_delivery_cnt = 0;

          strcpy(customer_buf[i].c_data,"");

          customer_buf[i].h_amount = 0;

          strcpy(customer_buf[i].h_data,"");

     }

}
```

```
//=======================================================================
//
// Function   : CustomerBufLoad
//
// Fills shared buffer for HISTORY and CUSTOMER
//=======================================================================

void CustomerBufLoad(int d_id, int w_id)
{
     long                      i;
    CUSTOMER_SORT_STRUCT    c[CUSTOMERS_PER_DISTRICT];


     for (i=0;i<customers_per_district;i++)
     {
          if (i < 1000)
               LastName(i, c[i].c_last);
          else
               LastName(NURand(255,0,999,LOADER_NURAND_C), c[i].c_last);

          MakeAlphaString(8,16,FIRST_NAME_LEN, c[i].c_first);

          c[i].c_id = i+1;

     }

     printf("...Loading customer buffer for: d_id = %d, w_id = %d\n",
               d_id, w_id);

     for (i=0;i<customers_per_district;i++)
     {

          customer_buf[i].c_d_id = d_id;
          customer_buf[i].c_w_id = w_id;
          customer_buf[i].h_amount = 10.0;

          customer_buf[i].c_ytd_payment  = 10.0;

          customer_buf[i].c_payment_cnt  = 1;
          customer_buf[i].c_delivery_cnt = 0;

          // Generate CUSTOMER and HISTORY data

          customer_buf[i].c_id = c[i].c_id;

          strcpy(customer_buf[i].c_first, c[i].c_first);
          strcpy(customer_buf[i].c_last, c[i].c_last);

          customer_buf[i].c_middle[0] = 'O';
          customer_buf[i].c_middle[1] = 'E';

          MakeAddress(customer_buf[i].c_street_1,
                         customer_buf[i].c_street_2,
                         customer_buf[i].c_city,
                         customer_buf[i].c_state,
                         customer_buf[i].c_zip);

          MakeNumberString(16, 16, PHONE_LEN, customer_buf[i].c_phone);

          if (RandomNumber(1L, 100L) > 10)
               customer_buf[i].c_credit[0] = 'G';
          else
               customer_buf[i].c_credit[0] = 'B';
          customer_buf[i].c_credit[1] = 'C';

          customer_buf[i].c_credit_lim = 50000.0;
          customer_buf[i].c_discount = ((float) RandomNumber(0L, 5000L)) /
10000.0;

          //  fix to avoid ODBC float to numeric conversion problem.

          //  customer_buf[i].c_balance = -10.0;
          strcpy(customer_buf[i].c_balance,"-10.0");

          MakeAlphaString(300, 500, C_DATA_LEN, customer_buf[i].c_data);


          // Generate HISTORY data
          MakeAlphaString(12, 24, H_DATA_LEN, customer_buf[i].h_data);

     }
}

//=======================================================================
//
// Function   : LoadCustomerTable
//
//=======================================================================

void LoadCustomerTable(LOADER_TIME_STRUCT *customer_time_start)
{
     int         i;
    long        c_id;
    short       c_d_id;
    short       c_w_id;
    char        c_first[FIRST_NAME_LEN+1];
    char        c_middle[MIDDLE_NAME_LEN+1];
    char        c_last[LAST_NAME_LEN+1];
    char        c_street_1[ADDRESS_LEN+1];
    char        c_street_2[ADDRESS_LEN+1];
    char        c_city[ADDRESS_LEN+1];
    char        c_state[STATE_LEN+1];
    char        c_zip[ZIP_LEN+1];
    char        c_phone[PHONE_LEN+1];
    char        c_credit[CREDIT_LEN+1];
    double      c_credit_lim;
    double      c_discount;

     //  fix to avoid ODBC float to numeric conversion problem.
     //  double      c_balance;
     char       c_balance[6];

    double      c_ytd_payment;
    short       c_payment_cnt;
    short       c_delivery_cnt;
    char        c_data[C_DATA_LEN+1];
     char       c_since[C_SINCE_LEN+1];
     RETCODE         rc;

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

     rc = bcp_bind(c_hdbc1, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_first, 0, FIRST_NAME_LEN, NULL, 0, 0,
4);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_middle, 0, MIDDLE_NAME_LEN,NULL, 0, 0,
5);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0, LAST_NAME_LEN, NULL, 0, 0,
6);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_1, 0, ADDRESS_LEN, NULL, 0, 0,
7);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0, ADDRESS_LEN, NULL,0,0,
8);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_city, 0, ADDRESS_LEN, NULL, 0, 0, 9);
```

```
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0, STATE_LEN, NULL, 0, 0, 10);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_zip, 0, ZIP_LEN, NULL, 0, 0, 11);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0, PHONE_LEN, NULL, 0, 0, 12);

     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

     rc = bcp_bind(c_hdbc1, (BYTE *) &c_since, 0, C_SINCE_LEN, NULL, 0,
SQLCHARACTER, 13);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0, CREDIT_LEN, NULL, 0, 0,
14);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_credit_lim, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 15);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_discount, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 16);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);


     //  fix to avoid ODBC float to numeric conversion problem.

    //  rc = bcp_bind(c_hdbc1, (BYTE *) &c_balance, 0, SQL_VARLEN_DATA,
NULL, 0, SQLFLT8, 17);
     //  if (rc != SUCCEED)
     //   HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_balance, 0, 5, NULL, 0, SQLCHARACTER,
17);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);


    rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment, 0, SQL_VARLEN_DATA,
NULL, 0, SQLFLT8, 18);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) &c_payment_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 19);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_delivery_cnt,0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 20);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0, 500, NULL, 0, 0, 21);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

    for (i = 0; i < customers_per_district; i++)
    {
          c_id = customer_buf[i].c_id;
          c_d_id = customer_buf[i].c_d_id;
          c_w_id = customer_buf[i].c_w_id;

          strcpy(c_first, customer_buf[i].c_first);
          strcpy(c_middle, customer_buf[i].c_middle);
          strcpy(c_last, customer_buf[i].c_last);
          strcpy(c_street_1, customer_buf[i].c_street_1);
          strcpy(c_street_2, customer_buf[i].c_street_2);
          strcpy(c_city, customer_buf[i].c_city);
          strcpy(c_state, customer_buf[i].c_state);
          strcpy(c_zip, customer_buf[i].c_zip);
          strcpy(c_phone, customer_buf[i].c_phone);
          strcpy(c_credit, customer_buf[i].c_credit);

          FormatDate(&c_since);

          c_credit_lim = customer_buf[i].c_credit_lim;
          c_discount = customer_buf[i].c_discount;

          //  fix to avoid ODBC float to numeric conversion problem.

          //  c_balance = customer_buf[i].c_balance;
          strcpy(c_balance, customer_buf[i].c_balance);

          c_ytd_payment = customer_buf[i].c_ytd_payment;
          c_payment_cnt = customer_buf[i].c_payment_cnt;
          c_delivery_cnt = customer_buf[i].c_delivery_cnt;

          strcpy(c_data, customer_buf[i].c_data);

          // Send data to server
          rc = bcp_sendrow(c_hdbc1);
          if (rc != SUCCEED)
               HandleErrorDBC(c_hdbc1);

          customer_rows_loaded++;
```

```
          CheckForCommit(c_hdbc1, c_hstmt1, customer_rows_loaded,
"customer", &customer_time_start->time_start);
    }

}


//=========================================================================
//
// Function   : LoadHistoryTable
//
//=========================================================================

void LoadHistoryTable(LOADER_TIME_STRUCT *history_time_start)
{
     int            i;
    long            c_id;
    short           c_d_id;
    short           c_w_id;
     double         h_amount;
    char            h_data[H_DATA_LEN+1];
     char           h_date[H_DATE_LEN+1];
     RETCODE             rc;

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 4);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 5);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

     rc = bcp_bind(c_hdbc2, (BYTE *) &h_date, 0, H_DATE_LEN, NULL, 0,
SQLCHARACTER, 6);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);
    rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 7);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0, H_DATA_LEN, NULL, 0, 0, 8);
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

    for (i = 0; i < customers_per_district; i++)
    {
          c_id = customer_buf[i].c_id;
          c_d_id = customer_buf[i].c_d_id;
          c_w_id = customer_buf[i].c_w_id;
          h_amount = customer_buf[i].h_amount;
          strcpy(h_data, customer_buf[i].h_data);

          FormatDate(&h_date);

          // send to server
          rc = bcp_sendrow(c_hdbc2);
          if (rc != SUCCEED)
               HandleErrorDBC(c_hdbc2);

          history_rows_loaded++;
          CheckForCommit(c_hdbc2, c_hstmt2, history_rows_loaded, "history",
&history_time_start->time_start);
    }

}


//==============================================================-
===============
//
// Function   : LoadOrders
//
//=============================================================================
==

void LoadOrders()
{
     LOADER_TIME_STRUCT      orders_time_start;
     LOADER_TIME_STRUCT      new_order_time_start;
     LOADER_TIME_STRUCT      order_line_time_start;
     short                     w_id;
    short                 d_id;
     DWORD                     dwThreadID[MAX_ORDER_THREADS];
     HANDLE                    hThread[MAX_ORDER_THREADS];
     char                      name[20];
     RETCODE                        rc;
     char                      bcphint[128];

     // seed with unique number
```

```
     seed(6);

     printf("Loading orders...\n");

     // if build index before load...
     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
               BuildIndex("idxordcl");
               BuildIndex("idxnodcl");
               BuildIndex("idxodlcl");
     }

     // initialize bulk copy
     sprintf(name, "%s..%s", aptr->database, "orders");

     rc = bcp_init(o_hdbc1, name, NULL, "logs\\orders.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (o_w_id, o_d_id, o_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
          rc = bcp_control(o_hdbc1, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(o_hdbc1);

     }

     sprintf(name, "%s..%s", aptr->database, "new_order");

     rc = bcp_init(o_hdbc2, name, NULL, "logs\\neword.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc2);

     if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (no_w_id, no_d_id, no_o_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 9000));
          rc = bcp_control(o_hdbc2, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(o_hdbc2);
     }

     sprintf(name, "%s..%s", aptr->database, "order_line");

     rc = bcp_init(o_hdbc3, name, NULL, "logs\\ordline.err", DB_IN);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
     {
          sprintf(bcphint, "tablock, order (ol_w_id, ol_d_id, ol_o_id,
ol_number), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 300000));
```

```
          rc = bcp_control(o_hdbc3, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
               HandleErrorDBC(o_hdbc3);
     }

     orders_rows_loaded      = 0;
     new_order_rows_loaded   = 0;
     order_line_rows_loaded  = 0;

     OrdersBufInit();

     orders_time_start.time_start = (TimeNow() / MILLI);
     new_order_time_start.time_start = (TimeNow() / MILLI);
     order_line_time_start.time_start = (TimeNow() / MILLI);

     for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
     {
          for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE; d_id++)
          {

               OrdersBufLoad(d_id, w_id);

               // start parallel loading threads here...

               // start Orders table thread

               printf("...Loading Order Table for: d_id = %d, w_id = %d\n",
d_id, w_id);

               hThread[0] = CreateThread(NULL,
                                                 0,
                                                 (LPTHREAD_START_ROUTINE)
LoadOrdersTable,
                                                 &orders_time_start,
                                                 0,
                                                 &dwThreadID[0]);

               if (hThread[0] == NULL)
               {
                    printf("Error, failed in creating creating thread =
0.\n");
                    exit(-1);
               }

               // start NewOrder table thread

               printf("...Loading New-Order Table for: d_id = %d, w_id =
%d\n", d_id, w_id);

               hThread[1] = CreateThread(NULL,
                                                 0,
                                                 (LPTHREAD_START_ROUTINE)
LoadNewOrderTable,
                                                 &new_order_time_start,
                                                 0,
                                                 &dwThreadID[1]);

               if (hThread[1] == NULL)
               {
                    printf("Error, failed in creating creating thread =
1.\n");
                    exit(-1);
               }

               // start Order-Line table thread

               printf("...Loading Order-Line Table for: d_id = %d, w_id =
%d\n", d_id, w_id);

               hThread[2] = CreateThread(NULL,
                                                 0,
                                                 (LPTHREAD_START_ROUTINE)
LoadOrderLineTable,
                                                 &order_line_time_start,
                                                 0,
                                                 &dwThreadID[2]);

               if (hThread[2] == NULL)
               {
                    printf("Error, failed in creating creating thread =
2.\n");
                    exit(-1);
               }

               WaitForSingleObject( hThread[0], INFINITE );
               WaitForSingleObject( hThread[1], INFINITE );
               WaitForSingleObject( hThread[2], INFINITE );

               if (CloseHandle(hThread[0]) == FALSE)
               {
                    printf("Error, failed in closing Orders thread handle
with errno: %d\n", GetLastError());
               }

               if (CloseHandle(hThread[1]) == FALSE)
               {
                    printf("Error, failed in closing NewOrder thread handle
with errno: %d\n", GetLastError());
               }

               if (CloseHandle(hThread[2]) == FALSE)
               {
                    printf("Error, failed in closing OrderLine thread
handle with errno: %d\n", GetLastError());
               }
          }
     }

     printf("Finished loading orders.\n");


    return;
}


//======================================================================
//
// Function   : OrdersBufInit
//
// Clears shared buffer for ORDERS, NEWORDER, and ORDERLINE
//
//======================================================================

void OrdersBufInit()
{
     int     i;
     int        j;

     for (i=0;i<orders_per_district;i++)
     {
          orders_buf[i].o_id = 0;
          orders_buf[i].o_d_id = 0;
          orders_buf[i].o_w_id = 0;
          orders_buf[i].o_c_id = 0;
          orders_buf[i].o_carrier_id = 0;
          orders_buf[i].o_ol_cnt = 0;
          orders_buf[i].o_all_local = 0;

          for (j=0;j<=14;j++)
          {
               orders_buf[i].o_ol[j].ol = 0;
               orders_buf[i].o_ol[j].ol_i_id = 0;
               orders_buf[i].o_ol[j].ol_supply_w_id = 0;
               orders_buf[i].o_ol[j].ol_quantity = 0;
               orders_buf[i].o_ol[j].ol_amount = 0;
               strcpy(orders_buf[i].o_ol[j].ol_dist_info,"");
          }
     }

}


//======================================================================
//
// Function   : OrdersBufLoad
//
// Fills shared buffer for ORDERS, NEWORDER, and ORDERLINE
//
//======================================================================
```

```
void OrdersBufLoad(int d_id, int w_id)
{

     int     cust[ORDERS_PER_DISTRICT+1];
     long    o_id;
     short   ol;

     printf("...Loading Order Buffer for: d_id = %d, w_id = %d\n",
               d_id, w_id);

     GetPermutation(cust, orders_per_district);

     for (o_id=0;o_id<orders_per_district;o_id++)
     {

          // Generate ORDER and NEW-ORDER data

          orders_buf[o_id].o_d_id = d_id;
          orders_buf[o_id].o_w_id = w_id;
          orders_buf[o_id].o_id = o_id+1;
          orders_buf[o_id].o_c_id = cust[o_id+1];
          orders_buf[o_id].o_ol_cnt = (short)RandomNumber(5L, 15L);

          if (o_id < first_new_order)
          {
               orders_buf[o_id].o_carrier_id = (short)RandomNumber(1L, 10L);
               orders_buf[o_id].o_all_local  = 1;
          }
          else
          {
               orders_buf[o_id].o_carrier_id = 0;
               orders_buf[o_id].o_all_local  = 1;
          }

          for (ol=0; ol<orders_buf[o_id].o_ol_cnt; ol++)
          {

               orders_buf[o_id].o_ol[ol].ol = ol+1;
               orders_buf[o_id].o_ol[ol].ol_i_id = RandomNumber(1L,
max_items);
               orders_buf[o_id].o_ol[ol].ol_supply_w_id = w_id;
               orders_buf[o_id].o_ol[ol].ol_quantity = 5;
               MakeAlphaString(24, 24, OL_DIST_INFO_LEN,
&orders_buf[o_id].o_ol[ol].ol_dist_info);

               // Generate ORDER-LINE data
               if (o_id < first_new_order)
               {
                    orders_buf[o_id].o_ol[ol].ol_amount = 0;
                    // Added to insure ol_delivery_d set properly during
load

                    FormatDate(&orders_buf[o_id].o_ol[ol].ol_delivery_d);
```

```
                }
                else
                {
                     orders_buf[o_id].o_ol[ol].ol_amount =
RandomNumber(1,999999)/100.0;
                     // Added to insure ol_delivery_d set properly during
load

                     // odbc datetime format
                     strcpy(orders_buf[o_id].o_ol[ol].ol_delivery_d,"1899-
12-31 00:00:00.000");

                }
           }
     }
}


//=======================================================================
//
// Function   : LoadOrdersTable
//
//=======================================================================

void LoadOrdersTable(LOADER_TIME_STRUCT *orders_time_start)
{
     int         i;
    long        o_id;
     short      o_d_id;
     short      o_w_id;
    long        o_c_id;
    short       o_carrier_id;
    short       o_ol_cnt;
    short       o_all_local;
     char       o_entry_d[O_ENTRY_D_LEN+1];
     RETCODE         rc;
     DBINT      rcint;

     // bind ORDER data
    rc = bcp_bind(o_hdbc1, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);
```

```
    rc = bcp_bind(o_hdbc1, (BYTE *) &o_c_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 4);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

     rc = bcp_bind(o_hdbc1, (BYTE *) &o_entry_d, 0, O_ENTRY_D_LEN, NULL, 0,
SQLCHARACTER, 5);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_carrier_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 6);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_ol_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 7);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_all_local, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 8);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

    for (i = 0; i < orders_per_district; i++)
    {
          o_id         = orders_buf[i].o_id;
          o_d_id       = orders_buf[i].o_d_id;
          o_w_id       = orders_buf[i].o_w_id;
          o_c_id       = orders_buf[i].o_c_id;
          o_carrier_id = orders_buf[i].o_carrier_id;
          o_ol_cnt     = orders_buf[i].o_ol_cnt;
          o_all_local  = orders_buf[i].o_all_local;

          FormatDate(&o_entry_d);

          // send data to server
          rc = bcp_sendrow(o_hdbc1);
          if (rc != SUCCEED)
               HandleErrorDBC(o_hdbc1);

          orders_rows_loaded++;
          CheckForCommit(o_hdbc1, o_hstmt1, orders_rows_loaded, "orders",
&orders_time_start->time_start);
    }

     // rcint = bcp_batch(o_hdbc1);
     // if (rcint < 0)
     //   HandleErrorDBC(o_hdbc1);

     if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
     {
          rcint = bcp_done(o_hdbc1);
          if (rcint < 0)
               HandleErrorDBC(o_hdbc1);

          SQLFreeStmt(o_hstmt1, SQL_DROP);
          SQLDisconnect(o_hdbc1);
          SQLFreeConnect(o_hdbc1);

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
               BuildIndex("idxordcl");

          // build non-clustered index
          if (aptr->build_index == 1)
               BuildIndex("idxordnc");
     }

}


//=======================================================================
//
// Function   : LoadNewOrderTable
//
//=======================================================================

void LoadNewOrderTable(LOADER_TIME_STRUCT *new_order_time_start)
{
    int         i;
    long        o_id;
    short       o_d_id;
    short       o_w_id;
     RETCODE         rc;
     DBINT      rcint;

     // Bind NEW-ORDER data

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc2);

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc2);

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc2);

     for (i = first_new_order; i < last_new_order; i++)
     {
          o_id    = orders_buf[i].o_id;
```

```
          o_d_id  = orders_buf[i].o_d_id;
          o_w_id  = orders_buf[i].o_w_id;

          rc = bcp_sendrow(o_hdbc2);
          if (rc != SUCCEED)
               HandleErrorDBC(o_hdbc2);

          new_order_rows_loaded++;
          CheckForCommit(o_hdbc2, o_hstmt2, new_order_rows_loaded,
"new_order", &new_order_time_start->time_start);
     }

     // rcint = bcp_batch(o_hdbc2);
     // if (rcint < 0)
     //   HandleErrorDBC(o_hdbc2);

     if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
     {
          rcint = bcp_done(o_hdbc2);
          if (rcint < 0)
               HandleErrorDBC(o_hdbc2);

          SQLFreeStmt(o_hstmt2, SQL_DROP);
          SQLDisconnect(o_hdbc2);
          SQLFreeConnect(o_hdbc2);

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
               BuildIndex("idxnodcl");

     }

}


//=======================================================================
//
// Function   : LoadOrderLineTable
//
//=======================================================================

void LoadOrderLineTable(LOADER_TIME_STRUCT *order_line_time_start)
{
     int         i,j;
    long        o_id;
     short      o_d_id;
     short      o_w_id;
    long        ol;
     long       ol_i_id;
    short       ol_supply_w_id;
    short       ol_quantity;
    double      ol_amount;
    char        ol_dist_info[DIST_INFO_LEN+1];
     char       ol_delivery_d[OL_DELIVERY_D_LEN+1];
     RETCODE         rc;
     DBINT     rcint;

     // bind ORDER-LINE data
    rc = bcp_bind(o_hdbc3, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 4);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 5);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_supply_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 6);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

     rc = bcp_bind(o_hdbc3, (BYTE *) &ol_delivery_d, 0, OL_DELIVERY_D_LEN,
NULL, 0, SQLCHARACTER, 7);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_quantity, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 8);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_amount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0, DIST_INFO_LEN, NULL, 0,
0, 10);
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);
```

```
     for (i = 0; i < orders_per_district; i++)
    {
          o_id    = orders_buf[i].o_id;
          o_d_id  = orders_buf[i].o_d_id;
          o_w_id  = orders_buf[i].o_w_id;

          for (j=0; j < orders_buf[i].o_ol_cnt; j++)
          {
               ol             = orders_buf[i].o_ol[j].ol;
               ol_i_id        = orders_buf[i].o_ol[j].ol_i_id;
               ol_supply_w_id = orders_buf[i].o_ol[j].ol_supply_w_id;
               ol_quantity    = orders_buf[i].o_ol[j].ol_quantity;
               ol_amount      = orders_buf[i].o_ol[j].ol_amount;

               strcpy(ol_delivery_d,orders_buf[i].o_ol[j].ol_delivery_d);

               strcpy(ol_dist_info,orders_buf[i].o_ol[j].ol_dist_info);

               rc = bcp_sendrow(o_hdbc3);
               if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

               order_line_rows_loaded++;
               CheckForCommit(o_hdbc3, o_hstmt3, order_line_rows_loaded,
"order_line", &order_line_time_start->time_start);
          }

     }

     // rcint = bcp_batch(o_hdbc3);
     // if (rcint < 0)
     //   HandleErrorDBC(o_hdbc3);

     if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
     {
          rcint = bcp_done(o_hdbc3);
          if (rcint < 0)
               HandleErrorDBC(o_hdbc3);

          SQLFreeStmt(o_hstmt3, SQL_DROP);
          SQLDisconnect(o_hdbc3);
          SQLFreeConnect(o_hdbc3);

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
               BuildIndex("idxodlcl");

     }

}


//========================================================================
//
```

```
// Function   : GetPermutation
//
//=======================================================================

void GetPermutation(int perm[], int n)
{
     int i, r, t;

     for (i=1;i<=n;i++)
          perm[i] = i;

     for (i=1;i<=n;i++)
     {
          r = RandomNumber(i,n);
          t = perm[i];
          perm[i] = perm[r];
          perm[r] = t;
     }

}


//=======================================================================
//
// Function   : CheckForCommit
//
//=======================================================================

void CheckForCommit(HDBC hdbc,
                          HSTMT hstmt,
                     int rows_loaded,
                          char *table_name,
                     long *time_start)
{

    long   time_end, time_diff;
     // DBINT   rcint;

    if ( !(rows_loaded % aptr->batch) )
    {

          // rcint = bcp_batch(hdbc);
          // if (rcint < 0)
          //   HandleErrorDBC(hdbc);

          time_end = (TimeNow() / MILLI);
          time_diff = time_end - *time_start;

          printf("-> Loaded %ld rows into %s in %ld sec - Total = %d (%.2f
rps)\n",
               aptr->batch,
               table_name,
                    time_diff,
               rows_loaded,
```

```
                     (float) aptr->batch / (time_diff ? time_diff : 1L));

          *time_start = time_end;
    }

    return;
}


//=======================================================================
//
// Function   : OpenConnections
//
//=======================================================================

void OpenConnections()
{

     RETCODE         rc;

     char            szDriverString[300];
     char            szDriverStringOut[1024];
     SQLSMALLINT          cbDriverStringOut;


     SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

     SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION, (void*)SQL_OV_ODBC3, 0 );

     SQLAllocHandle(SQL_HANDLE_DBC, henv , &i_hdbc1);
     SQLAllocHandle(SQL_HANDLE_DBC, henv , &w_hdbc1);
     SQLAllocHandle(SQL_HANDLE_DBC, henv , &c_hdbc1);
     SQLAllocHandle(SQL_HANDLE_DBC, henv , &c_hdbc2);
     SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc1);
     SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc2);
     SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc3);

     SQLSetConnectAttr(i_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
     SQLSetConnectAttr(w_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
     SQLSetConnectAttr(c_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
     SQLSetConnectAttr(c_hdbc2, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
     SQLSetConnectAttr(o_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
     SQLSetConnectAttr(o_hdbc2, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
     SQLSetConnectAttr(o_hdbc3, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

     // Open connections to SQL Server
     // Connection 1

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                   aptr->server,
                                   aptr->user,
                                   aptr->password,
                                   aptr->database );

     rc = SQLSetConnectOption (i_hdbc1, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     rc = SQLDriverConnect ( i_hdbc1,
                                NULL,
                                 (SQLCHAR*)&szDriverString[0] ,
                                 SQL_NTS,
                                 (SQLCHAR*)&szDriverStringOut[0],
                                 sizeof(szDriverStringOut),
                                 &cbDriverStringOut,
                                 SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(i_hdbc1);

     // Connection 2

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                   aptr->server,
                                   aptr->user,
                                   aptr->password,
                                   aptr->database );

     rc = SQLSetConnectOption (w_hdbc1, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     rc = SQLDriverConnect ( w_hdbc1,
                                      NULL,
                                      (SQLCHAR*)&szDriverString[0] ,
                                      SQL_NTS,
                                      (SQLCHAR*)&szDriverStringOut[0],
                                      sizeof(szDriverStringOut),
                                      &cbDriverStringOut,
                                      SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(w_hdbc1);

     // Connection 3

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                   aptr->server,
                                   aptr->user,
                                   aptr->password,
                                   aptr->database );

     rc = SQLSetConnectOption (c_hdbc1, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

     rc = SQLDriverConnect ( c_hdbc1,
                                      NULL,
                                      (SQLCHAR*)&szDriverString[0] ,
                                      SQL_NTS,
                                      (SQLCHAR*)&szDriverStringOut[0],
                                      sizeof(szDriverStringOut),
                                      &cbDriverStringOut,
                                      SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc1);

     // Connection 4

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                   aptr->server,
                                   aptr->user,
                                   aptr->password,
                                   aptr->database );

     rc = SQLSetConnectOption (c_hdbc2, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

     rc = SQLDriverConnect ( c_hdbc2,
                                      NULL,
                                      (SQLCHAR*)&szDriverString[0] ,
                                      SQL_NTS,
                                      (SQLCHAR*)&szDriverStringOut[0],
                                      sizeof(szDriverStringOut),
                                      &cbDriverStringOut,
                                      SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(c_hdbc2);

     // Connection 5

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                   aptr->server,
                                   aptr->user,
                                   aptr->password,
                                   aptr->database );
     rc = SQLSetConnectOption (o_hdbc1, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

     rc = SQLDriverConnect ( o_hdbc1,
                                     NULL,
                                     (SQLCHAR*)&szDriverString[0] ,
                                     SQL_NTS,
                                     (SQLCHAR*)&szDriverStringOut[0],
                                     sizeof(szDriverStringOut),
                                     &cbDriverStringOut,
                                     SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc1);

     // Connection 6

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                  aptr->server,
                                  aptr->user,
                                  aptr->password,
                                  aptr->database );

     rc = SQLSetConnectOption (o_hdbc2, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc2);

     rc = SQLDriverConnect ( o_hdbc2,
                                     NULL,
                                     (SQLCHAR*)&szDriverString[0] ,
                                     SQL_NTS,
                                     (SQLCHAR*)&szDriverStringOut[0],
                                     sizeof(szDriverStringOut),
                                     &cbDriverStringOut,
                                     SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc2);

     // Connection 7

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                  aptr->server,
                                  aptr->user,
                                  aptr->password,
                                  aptr->database );

     rc = SQLSetConnectOption (o_hdbc3, SQL_PACKET_SIZE, aptr->pack_size);

     if (rc != SUCCEED)
```

```
          HandleErrorDBC(o_hdbc3);

     rc = SQLDriverConnect ( o_hdbc3,
                                     NULL,
                                     (SQLCHAR*)&szDriverString[0] ,
                                     SQL_NTS,
                                     (SQLCHAR*)&szDriverStringOut[0],
                                     sizeof(szDriverStringOut),
                                     &cbDriverStringOut,
                                     SQL_DRIVER_NOPROMPT );
     if (rc != SUCCEED)
          HandleErrorDBC(o_hdbc3);

}

//=======================================================================
//
// Function name: BuildIndex
//
//=======================================================================

void BuildIndex(char *index_script)
{
     char cmd[256];

     printf("Starting index creation:  %s\n",index_script);

     sprintf(cmd, "isql -S%s -U%s -P%s -e -i%s\\%s.sql > logs\\%s.log",
                    aptr->server,
                    aptr->user,
                    aptr->password,
                    aptr->index_script_path,
                    index_script,
                    index_script);

     system(cmd);

     printf("Finished index creation:  %s\n",index_script);
}


void HandleErrorDBC (SQLHDBC  hdbc1)
{

     SQLCHAR        SqlState[6], Msg[SQL_MAX_MESSAGE_LENGTH];
     SQLINTEGER  NativeError;
     SQLSMALLINT i, MsgLen;
     SQLRETURN   rc2;
     char       timebuf[128];
     char       datebuf[128];
     FILE       *fp1;

     i = 1;
     while (( rc2 = SQLGetDiagRec(SQL_HANDLE_DBC , hdbc1, i, SqlState ,
&NativeError,
                        Msg, sizeof(Msg) , &MsgLen )) != SQL_NO_DATA )
     {

          sprintf( szLastError , "%s" ,  Msg );

          _strtime(timebuf);
          _strdate(datebuf);

          printf( "[%s : %s] %s\n" , datebuf, timebuf, szLastError);

          fp1 = fopen("logs\\tpccldr.err","w");
          if (fp1 == NULL)
               printf("ERROR:  Unable to open errorlog file.\n");
          else
          {
               fprintf(fp1, "[%s : %s] %s\n" , datebuf, timebuf,
szLastError);
               fclose(fp1);
          }

          i++;

     }
}

void HandleErrorSTMT (HSTMT  hstmt1)
{

     SQLCHAR         SqlState[6], Msg[SQL_MAX_MESSAGE_LENGTH];
     SQLINTEGER  NativeError;
     SQLSMALLINT i, MsgLen;
     SQLRETURN   rc2;
     char       timebuf[128];
     char       datebuf[128];
     FILE       *fp1;

     i = 1;
     while (( rc2 = SQLGetDiagRec(SQL_HANDLE_STMT , hstmt1, i, SqlState ,
&NativeError,
                        Msg, sizeof(Msg) , &MsgLen )) != SQL_NO_DATA )
     {

          sprintf( szLastError , "%s" ,  Msg );

          _strtime(timebuf);
          _strdate(datebuf);

          printf( "[%s : %s] %s\n" , datebuf, timebuf, szLastError);

          fp1 = fopen("logs\\tpccldr.err","w");
          if (fp1 == NULL)
               printf("ERROR:  Unable to open errorlog file.\n");
```

```
          else
          {
               fprintf(fp1, "[%s : %s] %s\n" , datebuf, timebuf,
szLastError);
               fclose(fp1);
          }

          i++;

     }
}


void FormatDate ( char* szTimeCOutput )
{

     struct tm when;
     time_t now;

     time( &now );
     when  = *localtime( &now );

     mktime( &when );

     // odbc datetime format
     strftime( szTimeCOutput , 30 , "%Y-%m-%d %H:%M:%S.000", &when );

     return;

}


//=========================================================================
//
// Function   : CheckSQL
//
//=========================================================================

void CheckSQL()
{

     RETCODE         rc;

     char            szDriverString[300];
     char            szDriverStringOut[1024];
     int                  SQLBuildFlag;

     SQLSMALLINT          cbDriverStringOut;
     SQLCHAR              SQLVersion[19];
     SQLINTEGER      SQLVersionInd;



     SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );
     SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION, (void*)SQL_OV_ODBC3, 0 );

     SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

     SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

     // Open connection to SQL Server

     sprintf( szDriverString , "DRIVER={SQL Server};SERVER=%s;UID=%s;PWD=%s"
,
                                  aptr->server,
                                  aptr->user,
                                  aptr->password );

     if ( SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE, (SQLPOINTER)aptr-
>pack_size, SQL_IS_UINTEGER ) != SQL_SUCCESS )
          HandleErrorDBC(v_hdbc);

     rc = SQLDriverConnect ( v_hdbc,
                              NULL,
                                (SQLCHAR*)&szDriverString[0] ,
                                SQL_NTS,
                                (SQLCHAR*)&szDriverStringOut[0],
                                sizeof(szDriverStringOut),
                                &cbDriverStringOut,
                                SQL_DRIVER_NOPROMPT );

     if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
          HandleErrorDBC(v_hdbc);

     if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt) != SQL_SUCCESS
)
          HandleErrorSTMT(v_hstmt);

     rc = SQLBindCol(v_hstmt, 4, SQL_C_CHAR, &SQLVersion,
sizeof(SQLVersion), &SQLVersionInd);

     // issue SQL Server extended stored procedure (xp_msver) to determine
installed version
     rc = SQLExecDirect(v_hstmt, "EXECUTE xp_msver ProductVersion",
SQL_NTS);

     if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
          HandleErrorSTMT(v_hstmt);

     rc = SQLFetch(v_hstmt);

     if (rc != SQL_SUCCESS)
          HandleErrorDBC(v_hdbc);

     // Check build number to ensure 7.00.623 or higher
```

```
     SQLBuildFlag = 1;

     if ( SQLVersion[0] == 55 )
     {
          if ( SQLVersion[2] == 48 )
          {
               if ( SQLVersion[5] == 56 )
               {
                    if ( (SQLVersion[6] >= 48) &  (SQLVersion[7] >= 53) )

                    {
                         SQLBuildFlag = 0;
                         printf("You are using SQL Server version =
%9s\n\n", SQLVersion);
                    }
                    else
                    {
                         SQLBuildFlag = 1;
                    }
               }
               else
               {
                    if ( SQLVersion[5] >= 54 )
                    {
                         if ( (SQLVersion[6] >= 50) & (SQLVersion[7] >= 51)
)
                         {
                              SQLBuildFlag = 0;
                              printf("You are using SQL Server version =
%9s\n\n", SQLVersion);
                         }
                         else
                         {
                              SQLBuildFlag = 1;
                         }
                    }
                    else
                    {
                         if ( SQLVersion[5] >= 55 )
                         {
                              if ( (SQLVersion[6] >= 48) & (SQLVersion[7]
>= 48) )
                              {
                                   SQLBuildFlag = 0;
                                   printf("You are using SQL Server version
= %9s\n\n", SQLVersion);
                              }
                              else
                              {
                                   SQLBuildFlag = 1;
                              }
                         }
                    }
               }
          }
          else
          {
               if ( SQLVersion[5] >= 49 )
               {
                    if ( (SQLVersion[6] >= 52) & (SQLVersion[7] >= 48) )
                    {
                         SQLBuildFlag = 0;
                         printf("You are using SQL Server version =
%9s\n\n", SQLVersion);
                    }
                    else
                    {
                         SQLBuildFlag = 1;
                    }
               }
               else
               {
                    SQLBuildFlag = 1;
               }
          }
     }
     else
     {
          SQLBuildFlag = 1;
     }


     if ( SQLBuildFlag == 1 )
     {
          printf("ERROR.  The SQL Server version you are using is not
supported\n");
          printf("for TPC-C benchmarking.  You currently have SQL Server
version %9s\n",SQLVersion);
          printf("installed.  Please upgrade to Microsoft SQL Server
7.00.623 or better.\n");
          printf("and re-run the SETUP program.\n\n");
          exit(1);
     }

     SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
     SQLDisconnect(v_hdbc);
     SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

     return;

}

//=======================================================================
//
// Function   : CheckDataBase
//
//=======================================================================
```

```

void CheckDataBase()
{

     RETCODE         rc;

     char            szDriverString[300];
     char            szDriverStringOut[1024];
     char            TablesBitMap[9] = {"000000000"};
     int                  i, ExitFlag;

     SQLSMALLINT          cbDriverStringOut;
     SQLCHAR              TabName[10];
     SQLINTEGER      TabNameInd, TabCount, TabCountInd;


     ExitFlag = 0;

     SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

     SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION, (void*)SQL_OV_ODBC3, 0 );

     SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

     SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

     // Open connection to SQL Server

     sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
                                  aptr->server,
                                  aptr->user,
                                  aptr->password,
                                  aptr->database );

     rc = SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE, (SQLPOINTER)aptr-
>pack_size, SQL_IS_UINTEGER );
     if (rc != SQL_SUCCESS)
          HandleErrorDBC(v_hdbc);

     rc = SQLDriverConnect ( v_hdbc,
                              NULL,
                               (SQLCHAR*)&szDriverString[0] ,
                               SQL_NTS,
                               (SQLCHAR*)&szDriverStringOut[0],
                               sizeof(szDriverStringOut),
                               &cbDriverStringOut,
                               SQL_DRIVER_NOPROMPT );

     // if the rc is SQL_ERROR, the the TPCC database probably does not
exist
     if (rc == SQL_ERROR)
     {
          printf("The database TPCC does not appear to exist!\n");
          printf("\nCheck LOGS\\ directory for database creation
errors.\n");

          // cleanup database connections and handles
          SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
          SQLDisconnect(v_hdbc);
          SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

          // since there is not a database, exit back to SETUP.CMD
          exit(1);
     }

     if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt) != SQL_SUCCESS
)
          HandleErrorDBC(v_hdbc);

     if ( SQLBindCol(v_hstmt, 1, SQL_C_ULONG, &TabCount, 0, &TabCountInd) !=
SQL_SUCCESS )
          HandleErrorSTMT(v_hstmt);

     // count the number of user tables from sysobjects
     rc = SQLExecDirect(v_hstmt, "select count(*) from sysobjects where
xtype = \'U\'", SQL_NTS);
     if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
          HandleErrorSTMT(v_hstmt);

     if ( SQLFetch(v_hstmt) != SQL_SUCCESS )
          HandleErrorSTMT(v_hstmt);

     // if the number of tables is less than 9, select all the user tables
in TPCC
     if (TabCount != 9)
     {
          SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);

          SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt);

          if ( SQLBindCol(v_hstmt, 1, SQL_C_CHAR, &TabName, sizeof(TabName),
&TabNameInd) != SQL_SUCCESS )
               HandleErrorSTMT(v_hstmt);

          // select the list of user tables into a result set
          rc = SQLExecDirect(v_hstmt, "select * from sysobjects where xtype
= \'U\'", SQL_NTS);
          if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
               HandleErrorSTMT(v_hstmt);

          // go through the result set and set the bitmap for each found
table
          // set the bitmap to '1' if the table name is found

          while ((rc = SQLFetch(v_hstmt)) != SQL_NO_DATA)
          {
```

```
               switch( TabName[0] )
               {
               case 'w':
                    TablesBitMap[0] = '1';
                    break;
               case 'd':
                    TablesBitMap[1] = '1';
                    break;
               case 'c':
                    TablesBitMap[2] = '1';
                    break;
               case 'h':
                    TablesBitMap[3] = '1';
                    break;
               case 'n':
                    TablesBitMap[4] = '1';
                    break;
               case 'o':
                    if (TabName[5] = 's')
                         TablesBitMap[5] = '1';
                    if (TabName[5] = '_')
                         TablesBitMap[6] = '1';
                    break;
               case 'i':
                    TablesBitMap[7] = '1';
                    break;
               case 's':
                    TablesBitMap[8] = '1';
                    break;
               }
          }

          // a '0' ExitFlag means do NOT exit the loader early, a '1' means
exit the loader early
          ExitFlag = 0;

          // interate through the bitmap to display which table(s) is
actually missing
          for (i = 0; i <= 8; i++)
          {
               switch(i)
               {
               case 0:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The Warehouse table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 1:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The District table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 2:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The Customer table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 3:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The History table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 4:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The New_Order table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 5:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The Orders table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 6:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The Order_Line table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 7:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The Item table is missing or damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               case 8:
                    if (TablesBitMap[i] == '0')
                    {
                         printf("The Stock table is missing or
damaged.\n");
                         ExitFlag = 1;
                    }
                    break;
               }
          }

          // if one or more tables are missing, display message and exit the
loader
          if (ExitFlag = 1)
          {
               printf("\nExiting TPC-C Loader!\n");
               printf("\nCheck LOGS\\ directory for database\n");
               printf("or table creation errors.\n");

               // cleanup database connections and handles
               SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
               SQLDisconnect(v_hdbc);
               SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

               exit(1);
          }
     }

     // cleanup database connections and handles
     SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
     SQLDisconnect(v_hdbc);
     SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

     return;
}
```

Appendix C - Tunable Parameters and Options

This section discloses hardware information and the Windows .NET Server 2003 Enterprise Edition registry parameters used on the PRIMERGY R450 server system.

```
System Information report written at: 10/24/02 13:56:48
System Name: ASTERIX
[System Summary]

Item Value
OS Name   Microsoft® Windows® .NET Enterprise Server
Version   5.2.3663  Build 3663
OS Manufacturer Microsoft Corporation
System Name    ASTERIX
System Manufacturer  FUJITSU SIEMENS
System Model   PRIMERGY R450
System Type    X86-based PC
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
Processor  x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1988 Mhz
BIOS Version/Date    FSC 4.06  Rev. 1.04.1290, 8/21/2002
SMBIOS Version  2.31
Windows Directory    C:\WINDOWS
System Directory     C:\WINDOWS\system32
Boot Device    \Device\HarddiskVolume10
Locale    United States
Hardware Abstraction Layer Version = "5.2.3663.0 (main.020715-1506)"
User Name  ASTERIX\Administrator
Time Zone  W. Europe Daylight Time
Total Physical Memory     16,384.00 MB
Available Physical Memory 14.95 GB
Total Virtual Memory 32.32 GB
Available Virtual Memory  31.91 GB
Page File Space 17.04 GB
Page File  C:\pagefile.sys

[Hardware Resources]
```

```
[Conflicts/Sharing]

Resource  Device
I/O Port 0x0000A000-0x0000AFFF  DEC 21154 PCI to PCI bridge
I/O Port 0x0000A000-0x0000AFFF  Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xF0000000-0xF21FFFFF PCI bus
Memory Address 0xF0000000-0xF21FFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xF0000000-0xF21FFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

I/O Port 0x00000000-0x000003AF  PCI bus
I/O Port 0x00000000-0x000003AF  Direct memory access controller

Memory Address 0xF4000000-0xF5FFFFFF PCI bus
Memory Address 0xF4000000-0xF5FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xF4000000-0xF5FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

I/O Port 0x00002000-0x00003FFF  PCI bus
I/O Port 0x00002000-0x00003FFF  DEC 21154 PCI to PCI bridge
I/O Port 0x00002000-0x00003FFF  Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xE8000000-0xE9FFFFFF PCI bus
Memory Address 0xE8000000-0xE9FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xE8000000-0xE9FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xD8000000-0xD9FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xD8000000-0xD9FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xDA000000-0xDDFFFFFF PCI bus
Memory Address 0xDA000000-0xDDFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xDA000000-0xDDFFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

I/O Port 0x00009000-0x0000AFFF  PCI bus
I/O Port 0x00009000-0x0000AFFF  QLogic QLA23xx PCI Fibre Channel Adapter

I/O Port 0x00006000-0x00006FFF  PCI bus
I/O Port 0x00006000-0x00006FFF  DEC 21154 PCI to PCI bridge
I/O Port 0x00006000-0x00006FFF  Mylex eXtremeRAID 2000 Disk Array
Controller
```

```
I/O Port 0x00003000-0x00003FFF  DEC 21154 PCI to PCI bridge
I/O Port 0x00003000-0x00003FFF  Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xF6000000-0xF9FFFFFF PCI bus
Memory Address 0xF6000000-0xF9FFFFFF Intel 8255x-based PCI Ethernet
Adapter (10/100)

Memory Address 0xD6000000-0xD7FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xD6000000-0xD7FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xE4000000-0xE61FFFFF PCI bus
Memory Address 0xE4000000-0xE61FFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xE4000000-0xE61FFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xE0000000-0xE1FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xE0000000-0xE1FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

I/O Port 0x00005000-0x00005FFF  DEC 21154 PCI to PCI bridge
I/O Port 0x00005000-0x00005FFF  Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xE2000000-0xE3FFFFFF PCI bus
Memory Address 0xE2000000-0xE3FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xE2000000-0xE3FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xDE000000-0xE1FFFFFF PCI bus
Memory Address 0xDE000000-0xE1FFFFFF Adaptec AIC-7899 Ultra160 PCI SCSI
Card

Memory Address 0xA0000-0xBFFFF  PCI bus
Memory Address 0xA0000-0xBFFFF  RAGE XL PCI (Microsoft Corporation)

Memory Address 0xF8000000-0xF9FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xF8000000-0xF9FFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xFA000000-0xFBFFFFFF PCI bus
Memory Address 0xFA000000-0xFBFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xFA000000-0xFBFFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

I/O Port 0x00007000-0x00007FFF  PCI bus
I/O Port 0x00007000-0x00007FFF  DEC 21154 PCI to PCI bridge
I/O Port 0x00007000-0x00007FFF  Mylex eXtremeRAID 2000 Disk Array
Controller

I/O Port 0x00001000-0x0000144F  PCI bus
I/O Port 0x00001000-0x0000144F  RAGE XL PCI (Microsoft Corporation)

I/O Port 0x000003B0-0x000003DF  PCI bus
```

```
I/O Port 0x000003B0-0x000003DF  RAGE XL PCI (Microsoft Corporation)

I/O Port 0x00004000-0x00005FFF  PCI bus
I/O Port 0x00004000-0x00005FFF  Adaptec AIC-7899 Ultra160 PCI SCSI Card

I/O Port 0x00008000-0x00008FFF  PCI bus
I/O Port 0x00008000-0x00008FFF  DEC 21154 PCI to PCI bridge
I/O Port 0x00008000-0x00008FFF  Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xDC000000-0xDDFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xDC000000-0xDDFFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xEE000000-0xEFFFFFFF PCI bus
Memory Address 0xEE000000-0xEFFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xEE000000-0xEFFFFFFF Mylex eXtremeRAID 2000 Disk Array
Controller

Memory Address 0xEA000000-0xEC1FFFFF PCI bus
Memory Address 0xEA000000-0xEC1FFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xEA000000-0xEC1FFFFF Mylex eXtremeRAID 2000 Disk Array
Controller


[DMA]

Resource   Device    Status
Channel 4  Direct memory access controller OK
Channel 2  Standard floppy disk controller OK

[Forced Hardware]

Device     PNP Device ID

[I/O]

Resource   Device    Status
0x00000000-0x000003AF     PCI bus   OK
0x00000000-0x000003AF     Direct memory access controller OK
0x000003B0-0x000003DF     PCI bus   OK
0x000003B0-0x000003DF     RAGE XL PCI (Microsoft Corporation)  OK
0x000003E0-0x00000CF7     PCI bus   OK
0x00000D00-0x00000FFF     PCI bus   OK
0x00001000-0x0000144F     PCI bus   OK
0x00001000-0x0000144F     RAGE XL PCI (Microsoft Corporation)  OK
0x000003C0-0x000003DF     RAGE XL PCI (Microsoft Corporation)  OK
0x00000060-0x00000060     Standard 101/102-Key or Microsoft Natural PS/2
Keyboard  OK
0x00000064-0x00000064     Standard 101/102-Key or Microsoft Natural PS/2
Keyboard  OK
0x00000081-0x0000008F     Direct memory access controller OK
0x000000C0-0x000000DF     Direct memory access controller OK
0x00000070-0x00000071     System CMOS/real time clock    OK
0x00000020-0x00000021     Programmable interrupt controller    OK
```

```
0x000000A0-0x000000A1     Programmable interrupt controller    OK
0x000000F0-0x000000FF     Numeric data processor    OK
0x00000040-0x00000043     System timer    OK
0x00000061-0x00000061     System speaker  OK
0x00000080-0x00000080     Motherboard resources     OK
0x0000040B-0x0000040B     Motherboard resources     OK
0x000004D0-0x000004D1     Motherboard resources     OK
0x000004D6-0x000004D6     Motherboard resources     OK
0x00000500-0x0000051F     Motherboard resources     OK
0x00000C00-0x00000C01     Motherboard resources     OK
0x00000C06-0x00000C08     Motherboard resources     OK
0x00000C14-0x00000C14     Motherboard resources     OK
0x00000C20-0x00000C3F     Motherboard resources     OK
0x00000C50-0x00000C52     Motherboard resources     OK
0x00000C6F-0x00000C6F     Motherboard resources     OK
0x00000CD6-0x00000CD7     Motherboard resources     OK
0x00000CE0-0x00000CEF     Motherboard resources     OK
0x00000F50-0x00000F58     Motherboard resources     OK
0x000003F0-0x000003F5     Standard floppy disk controller OK
0x000003F7-0x000003F7     Standard floppy disk controller OK
0x00001440-0x0000144F     Standard Dual Channel PCI IDE Controller  OK
0x000001F0-0x000001F7     Primary IDE Channel  OK
0x000003F6-0x000003F6     Primary IDE Channel  OK
0x00000170-0x00000177     Secondary IDE Channel     OK
0x00000376-0x00000376     Secondary IDE Channel     OK
0x00000A79-0x00000A79     ISAPNP Read Data Port     OK
0x00000279-0x00000279     ISAPNP Read Data Port     OK
0x00000274-0x00000277     ISAPNP Read Data Port     OK
0x00002000-0x00003FFF     PCI bus    OK
0x00002000-0x00003FFF     DEC 21154 PCI to PCI bridge     OK
0x00002000-0x00003FFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00003000-0x00003FFF     DEC 21154 PCI to PCI bridge     OK
0x00003000-0x00003FFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00004000-0x00005FFF     PCI bus    OK
0x00004000-0x00005FFF     Adaptec AIC-7899 Ultra160 PCI SCSI Card   OK
0x00005000-0x00005FFF     DEC 21154 PCI to PCI bridge     OK
0x00005000-0x00005FFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00004400-0x000044FF     Adaptec AIC-7899 Ultra160 PCI SCSI Card   OK
0x00006000-0x00006FFF     PCI bus    OK
0x00006000-0x00006FFF     DEC 21154 PCI to PCI bridge     OK
0x00006000-0x00006FFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00007000-0x00007FFF     PCI bus    OK
0x00007000-0x00007FFF     DEC 21154 PCI to PCI bridge     OK
0x00007000-0x00007FFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00008000-0x00008FFF     PCI bus    OK
0x00008000-0x00008FFF     DEC 21154 PCI to PCI bridge     OK
0x00008000-0x00008FFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00009000-0x0000AFFF     PCI bus    OK
0x00009000-0x0000AFFF     QLogic QLA23xx PCI Fibre Channel Adapter  OK
0x0000A000-0x0000AFFF     DEC 21154 PCI to PCI bridge     OK
0x0000A000-0x0000AFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0x00009400-0x0000943F     Intel 8255x-based PCI Ethernet Adapter (10/100)
     OK

[IRQs]

Resource   Device     Status
IRQ 9 Microsoft ACPI-Compliant System OK
IRQ 36     RAGE XL PCI (Microsoft Corporation)  OK
IRQ 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard   OK
IRQ 8 System CMOS/real time clock     OK
IRQ 13     Numeric data processor     OK
IRQ 0 System timer    OK
IRQ 12     PS/2 Compatible Mouse     OK
IRQ 6 Standard floppy disk controller OK
IRQ 15     Secondary IDE Channel     OK
IRQ 28     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 30     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 26     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 38     Adaptec AIC-7899 Ultra160 PCI SCSI Card   OK
IRQ 39     Adaptec AIC-7899 Ultra160 PCI SCSI Card   OK
IRQ 24     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 22     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 20     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 16     QLogic QLA23xx PCI Fibre Channel Adapter  OK
IRQ 18     Mylex eXtremeRAID 2000 Disk Array Controller   OK
IRQ 37     Intel 8255x-based PCI Ethernet Adapter (10/100)OK

[Memory]

Resource   Device     Status
0xA0000-0xBFFFF PCI bus    OK
0xA0000-0xBFFFF RAGE XL PCI (Microsoft Corporation)  OK
0xD0000-0xE7FFF PCI bus    OK
0xD2000000-0xD3FFFFFF     PCI bus    OK
0xD4000000-0xD40FFFFF     PCI bus    OK
0xD3000000-0xD3FFFFFF     RAGE XL PCI (Microsoft Corporation)  OK
0xD2001000-0xD2001FFF     RAGE XL PCI (Microsoft Corporation)  OK
0xD4200000-0xD9FFFFFF     PCI bus    OK
0xDA000000-0xDDFFFFFF     PCI bus    OK
0xDA000000-0xDDFFFFFF     DEC 21154 PCI to PCI bridge     OK
0xDA000000-0xDDFFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xD6000000-0xD7FFFFFF     DEC 21154 PCI to PCI bridge     OK
0xD6000000-0xD7FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xD8000000-0xD9FFFFFF     DEC 21154 PCI to PCI bridge     OK
0xD8000000-0xD9FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xDC000000-0xDDFFFFFF     DEC 21154 PCI to PCI bridge     OK
0xDC000000-0xDDFFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xDE000000-0xE1FFFFFF     PCI bus    OK
```

```
0xDE000000-0xE1FFFFFF     Adaptec AIC-7899 Ultra160 PCI SCSI Card   OK
0xE2000000-0xE3FFFFFF     PCI bus   OK
0xE2000000-0xE3FFFFFF     DEC 21154 PCI to PCI bridge    OK
0xE2000000-0xE3FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xE0000000-0xE1FFFFFF     DEC 21154 PCI to PCI bridge    OK
0xE0000000-0xE1FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xDE001000-0xDE001FFF     Adaptec AIC-7899 Ultra160 PCI SCSI Card   OK
0xE4000000-0xE61FFFFF     PCI bus   OK
0xE4000000-0xE61FFFFF     DEC 21154 PCI to PCI bridge    OK
0xE4000000-0xE61FFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xE8000000-0xE9FFFFFF     PCI bus   OK
0xE8000000-0xE9FFFFFF     DEC 21154 PCI to PCI bridge    OK
0xE8000000-0xE9FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xEA000000-0xEC1FFFFF     PCI bus   OK
0xEA000000-0xEC1FFFFF     DEC 21154 PCI to PCI bridge    OK
0xEA000000-0xEC1FFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xEE000000-0xEFFFFFFF     PCI bus   OK
0xEE000000-0xEFFFFFFF     DEC 21154 PCI to PCI bridge    OK
0xEE000000-0xEFFFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xF0000000-0xF21FFFFF     PCI bus   OK
0xF0000000-0xF21FFFFF     DEC 21154 PCI to PCI bridge    OK
0xF0000000-0xF21FFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xF4000000-0xF5FFFFFF     PCI bus   OK
0xF4000000-0xF5FFFFFF     DEC 21154 PCI to PCI bridge    OK
0xF4000000-0xF5FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xF6000000-0xF9FFFFFF     PCI bus   OK
0xF6000000-0xF9FFFFFF     Intel 8255x-based PCI Ethernet Adapter (10/100)
     OK
0xFA000000-0xFBFFFFFF     PCI bus   OK
0xFA000000-0xFBFFFFFF     DEC 21154 PCI to PCI bridge    OK
0xFA000000-0xFBFFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xF6020000-0xF6020FFF     QLogic QLA23xx PCI Fibre Channel Adapter  OK
0xF8000000-0xF9FFFFFF     DEC 21154 PCI to PCI bridge    OK
0xF8000000-0xF9FFFFFF     Mylex eXtremeRAID 2000 Disk Array Controller
     OK
0xF6021000-0xF6021FFF     Intel 8255x-based PCI Ethernet Adapter (10/100)
     OK

[Components]



[Multimedia]
```

```
[Audio Codecs]

CODEC Manufacturer    Description     Status     File Version    Size
     Creation Date
c:\windows\system32\msg711.acm Microsoft Corporation           OK
     C:\WINDOWS\system32\MSG711.ACM 5.2.3663.0 (main.020715-1506)  10.00
KB (10,240 bytes)    7/18/2002 2:00 PM
c:\windows\system32\msgsm32.acm Microsoft Corporation           OK
     C:\WINDOWS\system32\MSGSM32.ACM 5.2.3663.0 (main.020715-1506)  20.00
KB (20,480 bytes)    7/18/2002 2:00 PM
c:\windows\system32\sl_anet.acm Sipro Lab Telecom Inc.    Sipro Lab
Telecom Audio Codec  OK   C:\WINDOWS\system32\SL_ANET.ACM 3.02 84.00 KB
(86,016 bytes)  7/18/2002 2:00 PM
c:\windows\system32\l3codeca.acm     Fraunhofer Institut Integrierte
Schaltungen IIS Fraunhofer IIS MPEG Layer-3 Codec    OK
     C:\WINDOWS\system32\L3CODECA.ACM     1, 9, 0, 0305   284.00 KB
(290,816 bytes) 7/18/2002 2:00 PM
c:\windows\system32\imaadp32.acm     Microsoft Corporation           OK
     C:\WINDOWS\system32\IMAADP32.ACM     5.2.3663.0 (main.020715-1506)
     15.50 KB (15,872 bytes)   7/18/2002 2:00 PM
c:\windows\system32\tssoft32.acm     DSP GROUP, INC.      OK
     C:\WINDOWS\system32\TSSOFT32.ACM     1.01 9.50 KB (9,728 bytes)
     7/18/2002 2:00 PM
c:\windows\system32\msg723.acm Microsoft Corporation           OK
     C:\WINDOWS\system32\MSG723.ACM 4.4.4000  116.00 KB (118,784 bytes)
     8/20/2002 10:47 AM
c:\windows\system32\msadp32.acm Microsoft Corporation           OK
     C:\WINDOWS\system32\MSADP32.ACM 5.2.3663.0 (main.020715-1506)  14.50
KB (14,848 bytes)    7/18/2002 2:00 PM
c:\windows\system32\msaud32.acm Microsoft Corporation     Windows Media
Audio Codec     OK   C:\WINDOWS\system32\MSAUD32.ACM 8.00.00.4477
     288.00 KB (294,912 bytes) 7/18/2002 2:00 PM

[Video Codecs]

CODEC Manufacturer    Description     Status     File Version    Size
     Creation Date
c:\windows\system32\iyuv_32.dll Microsoft Corporation           OK
     C:\WINDOWS\system32\IYUV_32.DLL 5.2.3663.0 (main.020715-1506)  45.00
KB (46,080 bytes)    7/16/2002 3:47 PM
c:\windows\system32\iccvid.dll Radius Inc.          OK
     C:\WINDOWS\system32\ICCVID.DLL 1.10.0.6  108.00 KB (110,592 bytes)
     7/18/2002 2:00 PM
c:\windows\system32\msh263.drv Microsoft Corporation           OK
     C:\WINDOWS\system32\MSH263.DRV 4.4.4000  280.00 KB (286,720 bytes)
     7/16/2002 3:46 PM
c:\windows\system32\msyuv.dll  Microsoft Corporation           OK
     C:\WINDOWS\system32\MSYUV.DLL  5.2.3663.0 (main.020715-1506)  16.50
KB (16,896 bytes)    7/16/2002 3:47 PM
c:\windows\system32\msrle32.dll Microsoft Corporation           OK
     C:\WINDOWS\system32\MSRLE32.DLL 5.2.3663.0 (main.020715-1506)  10.50
KB (10,752 bytes)    7/18/2002 2:00 PM
c:\windows\system32\msvidc32.dll     Microsoft Corporation           OK
     C:\WINDOWS\system32\MSVIDC32.DLL     5.2.3663.0 (main.020715-1506)
     26.50 KB (27,136 bytes)   7/18/2002 2:00 PM
```

```
c:\windows\system32\tsbyuv.dll	Microsoft Corporation		OK
	C:\WINDOWS\system32\TSBYUV.DLL	5.2.3663.0 (main.020715-1506)	8.00
KB (8,192 bytes)	7/16/2002 3:48 PM
c:\windows\system32\ir32_32.dll	Not Available		OK
	C:\WINDOWS\system32\IR32_32.DLL	Not Available	194.50 KB (199,168
bytes)	7/18/2002 2:00 PM
c:\windows\system32\msh261.drv	Microsoft Corporation		OK
	C:\WINDOWS\system32\MSH261.DRV	4.4.4000	180.00 KB (184,320 bytes)
	8/20/2002 10:47 AM

[CD-ROM]

Item	Value
Drive	D:
Description	CD-ROM Drive
Media Loaded	No
Media Type	CD-ROM
Name	MITSUMI CD-ROM SR243T
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available
SCSI Target ID	0
PNP Device ID	IDE\CDROMMITSUMI_CD-
ROM_SR243T___________________L02G____\5&1159A16&0&0.0.0
Driver	c:\windows\system32\drivers\cdrom.sys (5.2.3663.0 (main.020715-
1506), 47.75 KB (48,896 bytes), 7/18/2002 2:00 PM)

[Sound Device]

Item	Value

[Display]

Item	Value
Name	RAGE XL PCI (Microsoft Corporation)
PNP Device ID
	PCI\VEN_1002&DEV_4752&SUBSYS_0083110A&REV_27\3&291BF6FF&0&28
Adapter Type	ATI RAGE XL PCI (B41), ATI Technologies Inc. compatible
Adapter Description	RAGE XL PCI (Microsoft Corporation)
Adapter RAM	8.00 MB (8,388,608 bytes)
Installed Drivers	ati2drad.dll
Driver Version	5.10.2600.6009
INF File	atiixpad.inf (ati2mpad section)
Color Planes	1
Color Table Entries	65536
Resolution	800 x 600 x 60 hertz
Bits/Pixel	16
Memory Address	0xD3000000-0xD3FFFFFF
I/O Port	0x00001000-0x0000144F
Memory Address	0xD2001000-0xD2001FFF
IRQ Channel	IRQ 36
I/O Port	0x000003B0-0x000003DF
I/O Port	0x000003C0-0x000003DF
Memory Address	0xA0000-0xBFFFF
Driver	c:\windows\system32\drivers\ati2mpad.sys (5.10.2600.6009 built
by: jlu, 296.13 KB (303,232 bytes), 10/16/2002 8:11 AM)

[Infrared]

Item	Value

[Input]



[Keyboard]

Item	Value
Description	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name	Enhanced (101- or 102-key)
Layout	00000409
PNP Device ID	ACPI\PNP0303\4&2647A8AF&0
Number of Function Keys	12
I/O Port	0x00000060-0x00000060
I/O Port	0x00000064-0x00000064
IRQ Channel	IRQ 1
Driver	c:\windows\system32\drivers\i8042prt.sys (5.2.3663.0
(main.020715-1506), 50.50 KB (51,712 bytes), 7/18/2002 2:00 PM)

[Pointing Device]

Item	Value
Hardware Type	PS/2 Compatible Mouse
Number of Buttons	3
Status	OK
PNP Device ID	ACPI\PNP0F13\4&2647A8AF&0
Power Management Supported	No
Double Click Threshold	6
Handedness	Right Handed Operation
IRQ Channel	IRQ 12
Driver	c:\windows\system32\drivers\i8042prt.sys (5.2.3663.0
(main.020715-1506), 50.50 KB (51,712 bytes), 7/18/2002 2:00 PM)

[Modem]

Item	Value

[Network]



[Adapter]

Item	Value
Name	[00000001] Broadcom NetXtreme Gigabit Ethernet
Adapter Type	Not Available
Product Type	Broadcom NetXtreme Gigabit Ethernet
Installed	Yes
PNP Device ID	Not Available
```

```
Last Reset 10/24/2002 10:43 AM
Index 1
Service Name    b57w2k
IP Address 129.103.181.44
IP Subnet  255.255.255.0
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     00:30:05:30:19:62

Name [00000002] RAS Async Adapter
Adapter Type    Not Available
Product Type    RAS Async Adapter
Installed  Yes
PNP Device ID   Not Available
Last Reset 10/24/2002 10:43 AM
Index 2
Service Name    AsyncMac
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available

Name [00000003] WAN Miniport (L2TP)
Adapter Type    Not Available
Product Type    WAN Miniport (L2TP)
Installed  Yes
PNP Device ID   ROOT\MS_L2TPMINIPORT\0000
Last Reset 10/24/2002 10:43 AM
Index 3
Service Name    Rasl2tp
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Driver     c:\windows\system32\drivers\rasl2tp.sys (5.2.3663.0
(main.020715-1506), 61.63 KB (63,104 bytes), 7/18/2002 2:00 PM)

Name [00000004] WAN Miniport (PPTP)
Adapter Type    Wide Area Network (WAN)
Product Type    WAN Miniport (PPTP)
Installed  Yes
PNP Device ID   ROOT\MS_PPTPMINIPORT\0000
Last Reset 10/24/2002 10:43 AM
Index 4
```

```
Service Name    PptpMiniport
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     50:50:54:50:30:30
Driver     c:\windows\system32\drivers\raspptp.sys (5.2.3663.0
(main.020715-1506), 56.00 KB (57,344 bytes), 7/18/2002 2:00 PM)

Name [00000005] WAN Miniport (PPPOE)
Adapter Type    Wide Area Network (WAN)
Product Type    WAN Miniport (PPPOE)
Installed  Yes
PNP Device ID   ROOT\MS_PPPOEMINIPORT\0000
Last Reset 10/24/2002 10:43 AM
Index 5
Service Name    RasPppoe
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     33:50:6F:45:30:30
Driver     c:\windows\system32\drivers\raspppoe.sys (5.2.3663.0
(main.020715-1506), 36.88 KB (37,760 bytes), 7/18/2002 2:00 PM)

Name [00000006] Direct Parallel
Adapter Type    Not Available
Product Type    Direct Parallel
Installed  Yes
PNP Device ID   ROOT\MS_PTIMINIPORT\0000
Last Reset 10/24/2002 10:43 AM
Index 6
Service Name    Raspti
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Driver     c:\windows\system32\drivers\raspti.sys (5.2.3663.0
(main.020715-1506), 16.38 KB (16,768 bytes), 7/18/2002 2:00 PM)

Name [00000007] WAN Miniport (IP)
Adapter Type    Not Available
Product Type    WAN Miniport (IP)
Installed  Yes
PNP Device ID   ROOT\MS_NDISWANIP\0000
```

```
Last Reset 10/24/2002 10:43 AM
Index 7
Service Name    NdisWan
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Driver     c:\windows\system32\drivers\ndiswan.sys (5.2.3663.0
(main.020715-1506), 87.13 KB (89,216 bytes), 7/18/2002 2:00 PM)

Name [00000008] Intel(R) PRO/1000 XT Server Adapter
Adapter Type    Not Available
Product Type    Intel(R) PRO/1000 XT Server Adapter
Installed  Yes
PNP Device ID   Not Available
Last Reset 10/24/2002 10:43 AM
Index 8
Service Name    E1000
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available

Name [00000009] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type    Ethernet 802.3
Product Type    Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed  Yes
PNP Device ID
     PCI\VEN_8086&DEV_1229&SUBSYS_0083110A&REV_09\3&2AEF1B1C&0&48
Last Reset 10/24/2002 10:43 AM
Index 9
Service Name    E100B
IP Address 129.103.181.44
IP Subnet  255.255.255.0
Default IP Gateway   Not Available
DHCP Enabled    No
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     00:30:05:30:19:62
Memory Address  0xF6021000-0xF6021FFF
I/O Port   0x00009400-0x0000943F
Memory Address  0xF6000000-0xF9FFFFFF
IRQ Channel     IRQ 37
Driver     c:\windows\system32\drivers\e100b325.sys (6.03.03.0000 built
by: WinDDK, 135.50 KB (138,752 bytes), 10/16/2002 8:20 AM)
```

```
[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented     No
Minimum Address Size 16 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth   No
Supports Multicasting     No

Name MSAFD Tcpip [UDP/IP]
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented     Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth   No
Supports Multicasting     Yes

Name RSVP UDP Service Provider
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented     Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  Yes
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth   No
Supports Multicasting     Yes

Name RSVP TCP Service Provider
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented     No
Minimum Address Size 16 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  Yes
Supports Expedited Data   Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D4DE74E3-F20A-44E1-81C4-
647C574E5775}] SEQPACKET 4
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D4DE74E3-F20A-44E1-81C4-
647C574E5775}] DATAGRAM 4
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
```

```
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{04C22C36-E69B-4BF7-B81D-
DADCF9EF2717}] SEQPACKET 3
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{04C22C36-E69B-4BF7-B81D-
DADCF9EF2717}] DATAGRAM 3
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D3EC93BE-CC09-4B70-B14F-
00B02436065D}] SEQPACKET 0
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D3EC93BE-CC09-4B70-B14F-
00B02436065D}] DATAGRAM 0
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{AAF5F905-FEF4-4551-BD8A-
2FC82BCCC14E}] SEQPACKET 1
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{AAF5F905-FEF4-4551-BD8A-
2FC82BCCC14E}] DATAGRAM 1
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
```

```
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{78F8B33D-13E0-4BAC-92B5-
3AAD2E2A6076}] SEQPACKET 2
Connectionless Service    No
Guarantees Delivery  Yes
Guarantees Sequencing     Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     No
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{78F8B33D-13E0-4BAC-92B5-
3AAD2E2A6076}] DATAGRAM 2
Connectionless Service    Yes
Guarantees Delivery  No
Guarantees Sequencing     No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented     Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented    No
Supports Broadcasting     Yes
Supports Connect Data     No
Supports Disconnect Data  No
Supports Encryption  No
Supports Expedited Data   No
Supports Graceful Closing No
Supports Guaranteed Bandwidth  No
Supports Multicasting     No

[WinSock]

Item Value
File c:\windows\system32\winsock.dll
Size 2.80 KB (2,864 bytes)
Version   3.10

File c:\windows\system32\wsock32.dll
Size 22.00 KB (22,528 bytes)
Version   5.2.3663.0 (main.020715-1506)
```

```
[Ports]



[Serial]

Item Value

[Parallel]

Item Value

[Storage]



[Drives]

Item Value
Drive A:
Description     3 1/2 Inch Floppy Drive

Drive C:
Description     Local Fixed Disk
Compressed No
File System     NTFS
Size 17.09 GB (18,350,563,328 bytes)
Free Space 12.73 GB (13,672,247,296 bytes)
Volume Name
Volume Serial Number A83A7583

Drive D:
Description     CD-ROM Disc

Drive E:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive F:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive G:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive H:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive I:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive J:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive L:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive N:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive O:
Description     Local Fixed Disk
Compressed Not Available
```

```
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive P:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive Q:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive R:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive S:
Description     Local Fixed Disk
Compressed Not Available
File System     Not Available
Size Not Available
Free Space Not Available
Volume Name     Not Available
Volume Serial Number Not Available

Drive U:
Description     Local Fixed Disk
Compressed No
File System     NTFS
Size 292.97 GB (314,575,798,272 bytes)
Free Space 225.40 GB (242,024,095,744 bytes)
Volume Name     backup1
Volume Serial Number C4FDA507

Drive V:
Description     Local Fixed Disk
Compressed No
File System     NTFS
```

```
Size 292.97 GB (314,575,798,272 bytes)
Free Space 225.40 GB (242,024,079,360 bytes)
Volume Name     backup2
Volume Serial Number 508E74B3

Drive W:
Description     Local Fixed Disk
Compressed No
File System     NTFS
Size 292.97 GB (314,575,798,272 bytes)
Free Space 225.40 GB (242,020,323,328 bytes)
Volume Name     backup3
Volume Serial Number F4DD24D2

Drive X:
Description     Local Fixed Disk
Compressed No
File System     NTFS
Size 292.97 GB (314,575,798,272 bytes)
Free Space 225.40 GB (242,024,128,512 bytes)
Volume Name     backup4
Volume Serial Number D4FBE081

Drive Y:
Description     Local Fixed Disk
Compressed No
File System     NTFS
Size 292.97 GB (314,575,798,272 bytes)
Free Space 225.40 GB (242,024,128,512 bytes)
Volume Name     backup5
Volume Serial Number 1824F05E

Drive Z:
Description     Local Fixed Disk
Compressed No
File System     NTFS
Size 292.97 GB (314,575,798,272 bytes)
Free Space 225.40 GB (242,023,682,048 bytes)
Volume Name     backup6
Volume Serial Number EC384D2E

[Disks]

Item Value
Description     \\.\PHYSICALDRIVE4
Manufacturer    Not Available
Model Not Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  7
SCSI Target ID  0
```

```
Sectors/Track   63
Size 810.74 GB (870,530,734,080 bytes)
Total Cylinders 105,836
Total Sectors   1,700,255,340
Total Tracks    26,988,180
Tracks/Cylinder 255
Partition  Disk #4, Partition #0
Partition Size  51.27 GB (55,051,766,784 bytes)
Partition Starting Offset 8,257,536 bytes
Partition  Disk #4, Partition #1
Partition Size  28.81 GB (30,935,245,824 bytes)
Partition Starting Offset 55,060,056,576 bytes
Partition  Disk #4, Partition #2
Partition Size  292.97 GB (314,575,801,344 bytes)
Partition Starting Offset 152,044,333,056 bytes

Description     \\.\PHYSICALDRIVE3
Manufacturer    Not Available
ModelNot Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  6
SCSI Target ID  0
Sectors/Track   63
Size 169.41 GB (181,902,067,200 bytes)
Total Cylinders 22,115
Total Sectors   355,277,475
Total Tracks    5,639,325
Tracks/Cylinder 255
Partition  Disk #3, Partition #0
Partition Size  117.19 GB (125,830,301,184 bytes)
Partition Starting Offset 8,257,536 bytes

Description     \\.\PHYSICALDRIVE7
Manufacturer    Not Available
ModelNot Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  10
SCSI Target ID  0
Sectors/Track   63
Size 810.74 GB (870,530,734,080 bytes)
Total Cylinders 105,836
Total Sectors   1,700,255,340
Total Tracks    26,988,180
Tracks/Cylinder 255
Partition  Disk #7, Partition #0
Partition Size  51.27 GB (55,051,766,784 bytes)
Partition Starting Offset 8,257,536 bytes
Partition  Disk #7, Partition #1
Partition Size  28.81 GB (30,935,245,824 bytes)
Partition Starting Offset 55,060,056,576 bytes
Partition  Disk #7, Partition #2
Partition Size  292.97 GB (314,575,801,344 bytes)
Partition Starting Offset 152,044,333,056 bytes

Description     \\.\PHYSICALDRIVE2
Manufacturer    Not Available
ModelNot Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  5
SCSI Target ID  0
Sectors/Track   63
Size 810.74 GB (870,530,734,080 bytes)
Total Cylinders 105,836
Total Sectors   1,700,255,340
Total Tracks    26,988,180
Tracks/Cylinder 255
Partition  Disk #2, Partition #0
Partition Size  51.27 GB (55,051,766,784 bytes)
Partition Starting Offset 8,257,536 bytes
Partition  Disk #2, Partition #1
Partition Size  28.81 GB (30,935,245,824 bytes)
Partition Starting Offset 55,060,056,576 bytes
Partition  Disk #2, Partition #2
Partition Size  292.97 GB (314,575,801,344 bytes)
Partition Starting Offset 152,044,333,056 bytes

Description     \\.\PHYSICALDRIVE8
Manufacturer    Not Available
ModelNot Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  11
SCSI Target ID  0
Sectors/Track   63
Size 810.74 GB (870,530,734,080 bytes)
Total Cylinders 105,836
Total Sectors   1,700,255,340
Total Tracks    26,988,180
Tracks/Cylinder 255
Partition  Disk #8, Partition #0
Partition Size  51.27 GB (55,051,766,784 bytes)
Partition Starting Offset 8,257,536 bytes
Partition  Disk #8, Partition #1
Partition Size  28.81 GB (30,935,245,824 bytes)
Partition Starting Offset 55,060,056,576 bytes
Partition  Disk #8, Partition #2
Partition Size  292.97 GB (314,575,801,344 bytes)
Partition Starting Offset 152,044,333,056 bytes

Description     \\.\PHYSICALDRIVE5
Manufacturer    Not Available
ModelNot Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  8
SCSI Target ID  0
Sectors/Track   63
Size 810.74 GB (870,530,734,080 bytes)
Total Cylinders 105,836
Total Sectors   1,700,255,340
Total Tracks    26,988,180
Tracks/Cylinder 255
Partition  Disk #5, Partition #0
Partition Size  51.27 GB (55,051,766,784 bytes)
Partition Starting Offset 8,257,536 bytes
Partition  Disk #5, Partition #1
Partition Size  28.81 GB (30,935,245,824 bytes)
Partition Starting Offset 55,060,056,576 bytes
Partition  Disk #5, Partition #2
Partition Size  292.97 GB (314,575,801,344 bytes)
Partition Starting Offset 152,044,333,056 bytes

Description     \\.\PHYSICALDRIVE6
Manufacturer    Not Available
ModelNot Available
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus   4
SCSI Logical Unit    0
SCSI Port  9
SCSI Target ID  0
Sectors/Track   63
Size 810.74 GB (870,530,734,080 bytes)
Total Cylinders 105,836
Total Sectors   1,700,255,340
Total Tracks    26,988,180
Tracks/Cylinder 255
Partition  Disk #6, Partition #0
Partition Size  51.27 GB (55,051,766,784 bytes)
Partition Starting Offset 8,257,536 bytes
```

```
Partition  Disk #6, Partition #1
Partition Size  28.81 GB (30,935,245,824 bytes)
Partition Starting Offset 55,060,056,576 bytes
Partition  Disk #6, Partition #2
Partition Size  292.97 GB (314,575,801,344 bytes)
Partition Starting Offset 152,060,783,616 bytes

Description     Disk drive
Manufacturer    (Standard disk drives)
ModelQLOGIC PSEUDO LUN SCSI Disk Device
Bytes/Sector    512
Media Loaded    No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus   0
SCSI Logical Unit    0
SCSI Port  2
SCSI Target ID  127
Sectors/Track   0
Size 0 bytes
Total Cylinders 0
Total Sectors   0
Total Tracks    0
Tracks/Cylinder 0

Description     Disk drive
Manufacturer    (Standard disk drives)
ModelSEAGATE ST318452LC SCSI Disk Device
Bytes/Sector    512
Media Loaded    Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus   0
SCSI Logical Unit    0
SCSI Port  3
SCSI Target ID  0
Sectors/Track   63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors   35,841,015
Total Tracks    568,905
Tracks/Cylinder 255
Partition  Disk #1, Partition #0
Partition Size  17.09 GB (18,350,567,424 bytes)
Partition Starting Offset 32,256 bytes

[SCSI]

Item Value
Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2254B0D&0&4030
Memory Address  0xD6000000-0xD7FFFFFF
```

```
I/O Port   0x00002000-0x00003FFF
Memory Address  0xDA000000-0xDDFFFFFF
IRQ Channel     IRQ 28
Driver     c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1C72A60D&0&4038
Memory Address  0xD8000000-0xD9FFFFFF
I/O Port   0x00003000-0x00003FFF
Memory Address  0xDC000000-0xDDFFFFFF
IRQ Channel     IRQ 30
Driver     c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1ECE4987&0&4028
Memory Address  0xE0000000-0xE1FFFFFF
I/O Port   0x00005000-0x00005FFF
Memory Address  0xE2000000-0xE3FFFFFF
IRQ Channel     IRQ 26
Driver     c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name Adaptec AIC-7899 Ultra160 PCI SCSI Card
Manufacturer    Adaptec
Status     OK
PNP Device ID
     PCI\VEN_9005&DEV_00CF&SUBSYS_0083110A&REV_01\3&12F48E42&0&40
I/O Port   0x00004000-0x00005FFF
Memory Address  0xDE000000-0xE1FFFFFF
IRQ Channel     IRQ 38
Driver     c:\windows\system32\drivers\adpu160m.sys (RTC_XP07
(lab01_n(storbuild).010917-1031), 99.63 KB (102,016 bytes), 7/18/2002
2:00 PM)

Name Adaptec AIC-7899 Ultra160 PCI SCSI Card
Manufacturer    Adaptec
Status     OK
PNP Device ID
     PCI\VEN_9005&DEV_00CF&SUBSYS_0083110A&REV_01\3&12F48E42&0&41
I/O Port   0x00004400-0x000044FF
Memory Address  0xDE001000-0xDE001FFF
IRQ Channel     IRQ 39
Driver     c:\windows\system32\drivers\adpu160m.sys (RTC_XP07
(lab01_n(storbuild).010917-1031), 99.63 KB (102,016 bytes), 7/18/2002
2:00 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2F92D4B0&0&4020
Memory Address  0xE4000000-0xE61FFFFF
I/O Port   0x00006000-0x00006FFF
Memory Address  0xE8000000-0xE9FFFFFF
IRQ Channel     IRQ 24
Driver     c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2DF34B01&0&4018
Memory Address  0xEA000000-0xEC1FFFFF
I/O Port   0x00007000-0x00007FFF
Memory Address  0xEE000000-0xEFFFFFFF
IRQ Channel     IRQ 22
Driver     c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2BEE4042&0&4010
Memory Address  0xF0000000-0xF21FFFFF
I/O Port   0x00008000-0x00008FFF
Memory Address  0xF4000000-0xF5FFFFFF
IRQ Channel     IRQ 20
Driver     c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name QLogic QLA23xx PCI Fibre Channel Adapter
Manufacturer    QLogic
Status     OK
PNP Device ID
     PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&REV_02\3&2AEF1B1C&0&20
I/O Port   0x00009000-0x0000AFFF
Memory Address  0xF6020000-0xF6020FFF
IRQ Channel     IRQ 16
Driver     c:\windows\system32\drivers\ql2300.sys (8.2.0 Beta 3 (W2K VI),
429.70 KB (440,012 bytes), 10/7/2002 2:36 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Manufacturer    Mylex
Status     OK
PNP Device ID
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&3AE9BCCD&0&4028
Memory Address  0xF8000000-0xF9FFFFFF
I/O Port   0x0000A000-0x0000AFFF
Memory Address  0xFA000000-0xFBFFFFFF
IRQ Channel     IRQ 18
```

```
Driver    c:\windows\system32\drivers\dac2w2k.sys (80.00-01, 170.38 KB
(174,464 bytes), 6/10/2002 4:11 PM)

Name QLogic VI Kernel Agent driver
Manufacturer    QLogic
Status    Degraded
PNP Device ID   ROOT\SCSIADAPTER\0000
Driver    c:\windows\system32\drivers\qlvika.sys (1.00.14 (W2K), 48.75 KB
(49,916 bytes), 10/7/2002 2:37 PM)

[IDE]

Item Value
Name Standard Dual Channel PCI IDE Controller
Manufacturer    (Standard IDE ATA/ATAPI controllers)
Status    OK
PNP Device ID
     PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3&291BF6FF&0&79
I/O Port  0x00001440-0x0000144F
Driver    c:\windows\system32\drivers\pciide.sys (5.2.3663.0
(main.020715-1506), 3.50 KB (3,584 bytes), 10/16/2002 8:12 AM)

Name Primary IDE Channel
Manufacturer    (Standard IDE ATA/ATAPI controllers)
Status    OK
PNP Device ID   PCIIDE\IDECHANNEL\4&15AF076&0&0
I/O Port  0x000001F0-0x000001F7
I/O Port  0x000003F6-0x000003F6
Driver    c:\windows\system32\drivers\atapi.sys (5.2.3663.0 (main.020715-
1506), 90.38 KB (92,544 bytes), 7/18/2002 2:00 PM)

Name Secondary IDE Channel
Manufacturer    (Standard IDE ATA/ATAPI controllers)
Status    OK
PNP Device ID   PCIIDE\IDECHANNEL\4&15AF076&0&1
I/O Port  0x00000170-0x00000177
I/O Port  0x00000376-0x00000376
IRQ Channel     IRQ 15
Driver    c:\windows\system32\drivers\atapi.sys (5.2.3663.0 (main.020715-
1506), 90.38 KB (92,544 bytes), 7/18/2002 2:00 PM)

[Printing]

Name Driver     Port Name  Server Name

[Problem Devices]

Device    PNP Device ID   Error Code
FSC Remote Service Controller, mailbox device
     PCI\VEN_110A&DEV_007B&SUBSYS_008F110A&REV_00\3&291BF6FF&0&20   This
device is disabled.
FSC Remote Service Controller, shared memory device
     PCI\VEN_110A&DEV_007C&SUBSYS_008F110A&REV_00\3&291BF6FF&0&21   This
device is disabled.
```

```
FSC Remote Service Controller, SMIC device
     PCI\VEN_110A&DEV_007D&SUBSYS_008F110A&REV_00\3&291BF6FF&0&22   This
device is disabled.
Communications Port (COM1) ACPI\PNP0501\1  This device is disabled.
Communications Port (COM2) ACPI\PNP0501\2  This device is disabled.
ECP Printer Port (LPT1)    ACPI\PNP0401\4&2647A8AF&0 This device is
disabled.
ServerWorks (RCC) PCI to USB Open Host Controller
     PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3&291BF6FF&0&7A   This
device is disabled.

[USB]

Device    PNP Device ID
ServerWorks (RCC) PCI to USB Open Host Controller
     PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3&291BF6FF&0&7A

[Software Environment]



[System Drivers]

Name Description    File Type Started   Start Mode State Status    Error
Control   Accept Pause   Accept Stop
abiosdsk  Abiosdsk  Not Available  Kernel Driver  No   Disabled
     Stopped   OK   Ignore    No   No
acpi Microsoft ACPI Driver     c:\windows\system32\drivers\acpi.sys
     Kernel Driver  Yes  Boot Running  OK   Normal    No   Yes
acpiec    ACPIEC    c:\windows\system32\drivers\acpiec.sys    Kernel
Driver    No   Disabled  Stopped   OK   Normal    No   No
adpu160m  adpu160m  c:\windows\system32\drivers\adpu160m.sys  Kernel
Driver    Yes  Boot Running   OK   Normal    No   Yes
adpu320   adpu320   Not Available  Kernel Driver  No   Disabled
     Stopped   OK   Normal    No   No
afcnt afcnt Not Available  Kernel Driver  No   Disabled  Stopped   OK
     Normal    No   No
afd  AFD Networking Support Environment
     c:\windows\system32\drivers\afd.sys  Kernel Driver  Yes  Auto
     Running   OK   Normal    No   Yes
aha154x   Aha154x   Not Available  Kernel Driver  No   Disabled
     Stopped   OK   Normal    No   No
aic78u2   aic78u2   Not Available  Kernel Driver  No   Disabled
     Stopped   OK   Normal    No   No
aic78xx   aic78xx   Not Available  Kernel Driver  No   Disabled
     Stopped   OK   Normal    No   No
aliide    AliIde    Not Available  Kernel Driver  No   Disabled
     Stopped   OK   Normal    No   No
asyncmac  RAS Asynchronous Media Driver
     c:\windows\system32\drivers\asyncmac.sys  Kernel Driver  No
     Manual    Stopped   OK   Normal    No   No
atapi Standard IDE/ESDI Hard Disk Controller
     c:\windows\system32\drivers\atapi.sys     Kernel Driver  Yes  Boot
     Running   OK   Normal    No   Yes
```

```
atdisk    Atdisk    Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Ignore    No   No
ati2mpad  ati2mpad  c:\windows\system32\drivers\ati2mpad.sys  Kernel
Driver    Yes  Manual    Running   OK   Ignore    No   Yes
atmarpc   ATM ARP Client Protocol
     c:\windows\system32\drivers\atmarpc.sys   Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
audstub   Audio Stub Driver   c:\windows\system32\drivers\audstub.sys
     Kernel Driver   Yes  Manual    Running   OK   Normal    No   Yes
b57w2k    Broadcom NetXtreme Gigabit Ethernet
     c:\windows\system32\drivers\b57xp32.sys   Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
beep Beep c:\windows\system32\drivers\beep.sys Kernel Driver   Yes
     System    Running   OK   Normal    No   Yes
cbidf2k   cbidf2k   c:\windows\system32\drivers\cbidf2k.sys   Kernel
Driver    No   Disabled  Stopped   OK   Normal    No   No
cd20xrnt  cd20xrnt  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
cdfs Cdfs c:\windows\system32\drivers\cdfs.sys File System Driver   Yes
     Disabled  Running   OK   Normal    No   Yes
cdrom CD-ROM Driver   c:\windows\system32\drivers\cdrom.sys     Kernel
Driver    Yes  System    Running   OK   Normal    No   Yes
changer   Changer   Not Available   Kernel Driver   No   System
     Stopped   OK   Ignore    No   No
clusdisk  Cluster Disk Driver  c:\windows\system32\drivers\clusdisk.sys
     Kernel Driver   No   Disabled  Stopped   OK   Normal    No   No
cmdide    CmdIde    Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
cpqarray  Cpqarray  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
cpqarry2  cpqarry2  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
cpqcissm  cpqcissm  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
cpqfcalm  cpqfcalm  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
crcdisk   CRC Disk Filter Driver
     c:\windows\system32\drivers\crcdisk.sys   Kernel Driver   Yes  Boot
     Running   OK   Normal    No   Yes
dac2w2k   dac2w2k   c:\windows\system32\drivers\dac2w2k.sys   Kernel
Driver    Yes  Boot Running   OK   Normal    No   Yes
dac960nt  dac960nt  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
dfsdriver DfsDriver c:\windows\system32\drivers\dfs.sys  File System
Driver    Yes  Boot Running   OK   Normal    No   Yes
disk Disk Driver    c:\windows\system32\drivers\disk.sys Kernel Driver
     Yes  Boot Running   OK   Normal    No   Yes
dmboot    dmboot    c:\windows\system32\drivers\dmboot.sys    Kernel
Driver    No   Disabled  Stopped   OK   Normal    No   No
dmio Logical Disk Manager Driver    c:\windows\system32\drivers\dmio.sys
     Kernel Driver   Yes  Boot Running   OK   Normal    No   Yes
dmload    dmload    c:\windows\system32\drivers\dmload.sys    Kernel
Driver    Yes  Boot Running   OK   Normal    No   Yes
dpti2o    dpti2o    Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
```

```
dspcicfg  DsPciCfg  \??\c:\windows\system32\drivers\dspcicfg.sys
     Kernel Driver   Yes  Auto Running   OK   Normal    No   Yes
e1000 Intel(R) PRO/1000 Device Driver
     c:\windows\system32\drivers\e1000325.sys  Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
e100b Intel(R) PRO Adapter Driver
     c:\windows\system32\drivers\e100b325.sys  Kernel Driver   Yes
     Manual    Running   OK   Normal    No   Yes
em   em   c:\windows\system32\drivers\em.sys   Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
fastfat   Fastfat   c:\windows\system32\drivers\fastfat.sys   File
System Driver   Yes  Disabled  Running   OK   Normal    No   Yes
fdc  Floppy Disk Controller Driver  c:\windows\system32\drivers\fdc.sys
     Kernel Driver   Yes  Manual    Running   OK   Normal    No   Yes
fips Fips c:\windows\system32\drivers\fips.sys Kernel Driver   Yes
     System    Running   OK   Normal    No   Yes
flpydisk  Floppy Disk Driver   c:\windows\system32\drivers\flpydisk.sys
     Kernel Driver   Yes  Manual    Running   OK   Normal    No   Yes
ftdisk    Volume Manager Driver
     c:\windows\system32\drivers\ftdisk.sys    Kernel Driver   Yes  Boot
     Running   OK   Normal    No   Yes
gpc  Generic Packet Classifier c:\windows\system32\drivers\msgpc.sys
     Kernel Driver   Yes  Manual    Running   OK   Normal    No   Yes
hpn  hpn  Not Available   Kernel Driver   No   Disabled  Stopped   OK
     Normal    No   No
hpt3xx    hpt3xx    Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
http HTTP c:\windows\system32\drivers\http.sys Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
i2omgmt   i2omgmt   Not Available   Kernel Driver   No   System
     Stopped   OK   Normal    No   No
i2omp i2omp Not Available   Kernel Driver   No   Disabled  Stopped   OK
     Normal    No   No
i8042prt  i8042 Keyboard and PS/2 Mouse Port Driver
     c:\windows\system32\drivers\i8042prt.sys  Kernel Driver   Yes
     System    Running   OK   Normal    No   Yes
imapi CD-Burning Filter Driver  c:\windows\system32\drivers\imapi.sys
     Kernel Driver   No   System    Stopped   OK   Normal    No   No
intelide  IntelIde  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
ipfilterdriver  IP Traffic Filter Driver
     c:\windows\system32\drivers\ipfltdrv.sys  Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
ipinip    IP in IP Tunnel Driver
     c:\windows\system32\drivers\ipinip.sys    Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
ipnat IP Network Address Translator
     c:\windows\system32\drivers\ipnat.sys     Kernel Driver   No
     Manual    Stopped   OK   Normal    No   No
ipsec IPSEC driver    c:\windows\system32\drivers\ipsec.sys     Kernel
Driver    Yes  System    Running   OK   Normal    No   Yes
ipsraidn  ipsraidn  Not Available   Kernel Driver   No   Disabled
     Stopped   OK   Normal    No   No
```

```
isapnp     PnP ISA/EISA Bus Driver
     c:\windows\system32\drivers\isapnp.sys    Kernel Driver   Yes  Boot
     Running    OK   Critical   No   Yes
kbdclass   Keyboard Class Driver
     c:\windows\system32\drivers\kbdclass.sys  Kernel Driver   Yes
     System     Running    OK   Normal     No   Yes
ksecdd     KSecDD     c:\windows\system32\drivers\ksecdd.sys    Kernel
Driver     Yes  Boot  Running    OK   Normal     No   Yes
lp6nds35   lp6nds35   Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
macdisk    macdisk    c:\windows\system32\drivers\mac2w2k.sys   Kernel
Driver     Yes  Boot  Running    OK   Normal     No   Yes
mnmdd mnmdd c:\windows\system32\drivers\mnmdd.sys     Kernel Driver   Yes
     System     Running    OK   Ignore     No   Yes
modem Modem c:\windows\system32\drivers\modem.sys     Kernel Driver   No
     Manual     Stopped    OK   Ignore     No   No
mouclass   Mouse Class Driver   c:\windows\system32\drivers\mouclass.sys
     Kernel Driver   Yes  System     Running    OK   Normal     No   Yes
mountmgr   Mount Point Manager  c:\windows\system32\drivers\mountmgr.sys
     Kernel Driver   Yes  Boot Running    OK   Normal     No   Yes
mraid35x   mraid35x   Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
mrxdav     WebDav Client Redirector
     c:\windows\system32\drivers\mrxdav.sys    File System Driver   No
     Manual     Stopped    OK   Normal     No   No
mrxsmb     MRXSMB     c:\windows\system32\drivers\mrxsmb.sys    File
System Driver   Yes  System     Running    OK   Normal     No   Yes
msfs  Msfs  c:\windows\system32\drivers\msfs.sys File System Driver   Yes
     System     Running    OK   Normal     No   Yes
mup   Mup   c:\windows\system32\drivers\mup.sys  File System Driver   Yes
     Boot Running    OK   Normal     No   Yes
ndis  NDIS System Driver   c:\windows\system32\drivers\ndis.sys Kernel
Driver     Yes  Boot Running    OK   Normal     No   Yes
ndistapi   Remote Access NDIS TAPI Driver
     c:\windows\system32\drivers\ndistapi.sys  Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
ndisuio    NDIS Usermode I/O Protocol
     c:\windows\system32\drivers\ndisuio.sys   Kernel Driver   No
     Manual     Stopped    OK   Normal     No   No
ndiswan    Remote Access NDIS WAN Driver
     c:\windows\system32\drivers\ndiswan.sys   Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
ndproxy    NDIS Proxy c:\windows\system32\drivers\ndproxy.sys   Kernel
Driver     Yes  Manual     Running    OK   Normal     No   Yes
netbios    NetBIOS Interface    c:\windows\system32\drivers\netbios.sys
     File System Driver   Yes  System     Running    OK   Normal     No
     Yes
netbt NetBios over Tcpip   c:\windows\system32\drivers\netbt.sys
     Kernel Driver   Yes  System     Running    OK   Normal     No   Yes
nfrd960    nfrd960    Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
nmscfg     NIC Management Service Configuration Driver
     \??\c:\windows\system32\drivers\nmscfg.sys     Kernel Driver   No
     Manual     Stopped    OK   Normal     No   No
```

```
npfs  Npfs  c:\windows\system32\drivers\npfs.sys File System Driver   Yes
     System     Running    OK   Normal     No   Yes
ntfs  Ntfs  c:\windows\system32\drivers\ntfs.sys File System Driver   Yes
     Disabled   Running    OK   Normal     No   Yes
null  Null  c:\windows\system32\drivers\null.sys Kernel Driver   Yes
     System     Running    OK   Normal     No   Yes
parport    Parallel port driver c:\windows\system32\drivers\parport.sys
     Kernel Driver   No   Manual     Stopped    OK   Normal     No   No
partmgr    Partition Manager    c:\windows\system32\drivers\partmgr.sys
     Kernel Driver   Yes  Boot Running    OK   Normal     No   Yes
parvdm     ParVdm     c:\windows\system32\drivers\parvdm.sys    Kernel
Driver     No   Auto  Stopped    OK   Ignore     No   No
pci   PCI Bus Driver  c:\windows\system32\drivers\pci.sys  Kernel Driver
     Yes  Boot Running    OK   Critical   No   Yes
pciide     PCIIde     c:\windows\system32\drivers\pciide.sys    Kernel
Driver     Yes  Boot  Running    OK   Normal     No   Yes
pcmcia     Pcmcia     c:\windows\system32\drivers\pcmcia.sys    Kernel
Driver     No   Disabled  Stopped    OK   Normal     No   No
pdcomp     PDCOMP     Not Available   Kernel Driver   No   Manual
     Stopped    OK   Ignore     No   No
pdframe    PDFRAME    Not Available   Kernel Driver   No   Manual
     Stopped    OK   Ignore     No   No
pdreli     PDRELI     Not Available   Kernel Driver   No   Manual
     Stopped    OK   Ignore     No   No
pdrframe   PDRFRAME   Not Available   Kernel Driver   No   Manual
     Stopped    OK   Ignore     No   No
perc2 perc2 Not Available   Kernel Driver   No   Disabled   Stopped    OK
     Normal     No   No
perc2hib   perc2hib   Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
pptpminiport    WAN Miniport (PPTP)
     c:\windows\system32\drivers\raspptp.sys   Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
processor  Processor Driver     c:\windows\system32\drivers\processr.sys
     Kernel Driver   Yes  Manual     Running    OK   Normal     No   Yes
ptilink    Direct Parallel Link Driver
     c:\windows\system32\drivers\ptilink.sys   Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
ql1080     ql1080     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql10wnt    Ql10wnt    Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql12160    ql12160    Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql1240     ql1240     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql1280     ql1280     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql2100     ql2100     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql2200     ql2200     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
ql2300     ql2300     c:\windows\system32\drivers\ql2300.sys    Kernel
Driver     Yes  Boot  Running    OK   Normal     No   Yes
```

```
qlvika     qlvika     c:\windows\system32\drivers\qlvika.sys    Kernel
Driver     Yes  Auto Running    OK   Normal     No   Yes
rasacd     Remote Access Auto Connection Driver
     c:\windows\system32\drivers\rasacd.sys    Kernel Driver   Yes
     System     Running    OK   Normal     No   Yes
rasl2tp    WAN Miniport (L2TP)  c:\windows\system32\drivers\rasl2tp.sys
     Kernel Driver   Yes  Manual     Running    OK   Normal     No   Yes
raspppoe   Remote Access PPPOE Driver
     c:\windows\system32\drivers\raspppoe.sys  Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
raspti     Direct Parallel c:\windows\system32\drivers\raspti.sys
     Kernel Driver   Yes  Manual     Running    OK   Normal     No   Yes
rdbss Rdbss c:\windows\system32\drivers\rdbss.sys     File System Driver
     Yes  System     Running    OK   Normal     No   Yes
rdpcdd     RDPCDD     c:\windows\system32\drivers\rdpcdd.sys    Kernel
Driver     Yes  System     Running    OK   Ignore     No   Yes
rdpdr Terminal Server Device Redirector Driver
     c:\windows\system32\drivers\rdpdr.sys     Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
rdpwd RDPWD c:\windows\system32\drivers\rdpwd.sys     Kernel Driver   No
     Manual     Stopped    OK   Ignore     No   No
redbook    Digital CD Audio Playback Filter Driver
     c:\windows\system32\drivers\redbook.sys   Kernel Driver   Yes
     System     Running    OK   Normal     No   Yes
s3savage4  S3SAVAGE4  c:\windows\system32\drivers\s3gsav4m.sys  Kernel
Driver     No   Manual     Stopped    OK   Ignore     No   No
sccoper    Copernicus Management Controllers
     c:\windows\system32\drivers\sccoper.sys   Kernel Driver   No
     Manual     Stopped    OK   Normal     No   No
secdrv     Secdrv     c:\windows\system32\drivers\secdrv.sys    Kernel
Driver     No   Manual     Stopped    OK   Normal     No   No
serenum    Serenum Filter Driver
     c:\windows\system32\drivers\serenum.sys   Kernel Driver   No
     Manual     Stopped    OK   Normal     No   No
serial     Serial port driver   c:\windows\system32\drivers\serial.sys
     Kernel Driver   No   System     Stopped    OK   Ignore     No   No
sfloppy    Sfloppy    c:\windows\system32\drivers\sfloppy.sys   Kernel
Driver     No   System     Stopped    OK   Ignore     No   No
simbad     Simbad     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
sparrow    Sparrow    Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
srv  Srv  c:\windows\system32\drivers\srv.sys  File System Driver   Yes
     Manual     Running    OK   Normal     No   Yes
swenum     Software Bus Driver  c:\windows\system32\drivers\swenum.sys
     Kernel Driver   Yes  Manual     Running    OK   Normal     No   Yes
symc810    symc810    Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
symc8xx    symc8xx    Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
symmpi     symmpi     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
sym_hi     sym_hi     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
```

```
sym_u3     sym_u3     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
tcpip TCP/IP Protocol Driver    c:\windows\system32\drivers\tcpip.sys
     Kernel Driver   Yes  System     Running    OK   Normal     No   Yes
tdpipe     TDPIPE     c:\windows\system32\drivers\tdpipe.sys    Kernel
Driver     No   Manual     Stopped    OK   Ignore     No   No
tdtcp TDTCP c:\windows\system32\drivers\tdtcp.sys     Kernel Driver   No
     Manual     Stopped    OK   Ignore     No   No
termdd     Terminal Device Driver
     c:\windows\system32\drivers\termdd.sys    Kernel Driver   Yes
     System     Running    OK   Normal     No   Yes
toside     TosIde     Not Available   Kernel Driver   No   Disabled
     Stopped    OK   Normal     No   No
udfs Udfs c:\windows\system32\drivers\udfs.sys File System Driver   No
     Disabled  Stopped    OK   Normal     No   No
ultra ultra Not Available   Kernel Driver   No   Disabled  Stopped    OK
     Normal     No   No
update     Microcode Update Driver
     c:\windows\system32\drivers\update.sys    Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
usbhub     USB2 Enabled Hub     c:\windows\system32\drivers\usbhub.sys
     Kernel Driver   No   Manual     Stopped    OK   Normal     No   No
usbohci    Microsoft USB Open Host Controller Miniport Driver
     c:\windows\system32\drivers\usbohci.sys   Kernel Driver   No
     Manual     Stopped    OK   Normal     No   No
usbuhci    Microsoft USB Universal Host Controller Miniport Driver
     c:\windows\system32\drivers\usbuhci.sys   Kernel Driver   No
     Manual     Stopped    OK   Normal     No   No
vgasave    VGA Display Controller.   c:\windows\system32\drivers\vga.sys
     Kernel Driver   Yes  System     Running    OK   Ignore     No   Yes
viaide     ViaIde     c:\windows\system32\drivers\viaide.sys    Kernel
Driver     Yes  Boot Running    OK   Normal     No   Yes
volsnap    VolSnap    c:\windows\system32\drivers\volsnap.sys   Kernel
Driver     Yes  Boot Running    OK   Normal     No   Yes
wanarp     Remote Access IP ARP Driver
     c:\windows\system32\drivers\wanarp.sys    Kernel Driver   Yes
     Manual     Running    OK   Normal     No   Yes
wdica WDICA Not Available   Kernel Driver   No   Manual     Stopped    OK
     Ignore     No   No
wlbs Network Load Balancing    c:\windows\system32\drivers\wlbs.sys
     Kernel Driver   No   Manual     Stopped    OK   Normal     No   No

[Signed Drivers]

Device Name     Signed     Device Class    Driver Version  Driver Date
     Manufacturer    INF Name  Driver Name     Device ID
Not Available   Not Available   Not Available   Not Available   Not
Available  Not Available   Not Available   Not Available   HTREE\ROOT\0
ACPI Multiprocessor PC    No   COMPUTER   5.2.3663.0 7/15/2002  (Standard
computers) hal.inf   Not Available   ROOT\ACPI_HAL\0000
Microsoft ACPI-Compliant System No   SYSTEM     5.2.3663.0 7/15/2002
     Microsoft  acpi.inf  Not Available   ACPI_HAL\PNP0C08\0
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf   Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_0
```

```
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_1
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_2
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_3
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_4
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_5
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_6
Processor  No   PROCESSOR  5.2.3663.0 7/15/2002  (Standard processor types)
     cpu.inf    Not Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_7
PCI bus    No   SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
     machine.inf     Not Available   ACPI\PNP0A03\40
ServerWorks Grand Champion - NorthBridge High End    No   SYSTEM
     5.2.3663.0 7/15/2002  ServerWorks (RCC)    machine.inf     Not
Available  PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_22\3&291BF6FF&0&00
ServerWorks Grand Champion - NorthBridge High End    No   SYSTEM
     5.2.3663.0 7/15/2002  ServerWorks (RCC)    machine.inf     Not
Available  PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_00\3&291BF6FF&0&01
ServerWorks Grand Champion - NorthBridge High End    No   SYSTEM
     5.2.3663.0 7/15/2002  ServerWorks (RCC)    machine.inf     Not
Available  PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_00\3&291BF6FF&0&02
ServerWorks Grand Champion - NorthBridge High End    No   SYSTEM
     5.2.3663.0 7/15/2002  ServerWorks (RCC)    machine.inf     Not
Available  PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_00\3&291BF6FF&0&03
FSC Remote Service Controller, mailbox device   No   MANAGEMENT 3.13.0.0
     9/21/2001  Fujitsu Siemens Computers oem7.inf   Not Available
     PCI\VEN_110A&DEV_007B&SUBSYS_008F110A&REV_00\3&291BF6FF&0&20
FSC Remote Service Controller, shared memory device  No   MANAGEMENT
     3.13.0.0   9/21/2001  Fujitsu Siemens Computers oem7.inf   Not
Available  PCI\VEN_110A&DEV_007C&SUBSYS_008F110A&REV_00\3&291BF6FF&0&21
FSC Remote Service Controller, SMIC device      No   MANAGEMENT 3.13.0.0
     9/21/2001  Fujitsu Siemens Computers oem7.inf   Not Available
     PCI\VEN_110A&DEV_007D&SUBSYS_008F110A&REV_00\3&291BF6FF&0&22
RAGE XL PCI (Microsoft Corporation)  No   DISPLAY    5.10.2600.6009
     7/2/2001   ATI Technologies Inc.     atiixpad.inf    Not Available
     PCI\VEN_1002&DEV_4752&SUBSYS_0083110A&REV_27\3&291BF6FF&0&28
Default Monitor No   MONITOR    5.1.2001.0 6/6/2001   (Standard monitor
types)    monitor.inf     Not Available
     DISPLAY\DEFAULT_MONITOR\4&121B755&0&80000000&00&05
PCI standard host CPU bridge    No   SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     PCI\VEN_1166&DEV_0201&SUBSYS_00000000&REV_93\3&291BF6FF&0&78
Standard 101/102-Key or Microsoft Natural PS/2 Keyboard   No   KEYBOARD
     5.2.3663.0 7/15/2002  (Standard keyboards) keyboard.inf    Not
Available  ACPI\PNP0303\4&2647A8AF&0
Direct memory access controller No   SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     ACPI\PNP0200\4&2647A8AF&0
System CMOS/real time clock     No   SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     ACPI\PNP0B00\4&2647A8AF&0
Programmable interrupt controller    No   SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     ACPI\PNP0000\4&2647A8AF&0
Numeric data processor    No   SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available   ACPI\PNP0C04\4&2647A8AF&0
System timer    No   SYSTEM     5.2.3663.0 7/15/2002  (Standard system
devices)  machine.inf     Not Available   ACPI\PNP0100\4&2647A8AF&0
System speaker  No   SYSTEM     5.2.3663.0 7/15/2002  (Standard system
devices)  machine.inf     Not Available   ACPI\PNP0800\4&2647A8AF&0
PS/2 Compatible Mouse     No   MOUSE 5.2.3663.0 7/15/2002  Microsoft
     msmouse.inf     Not Available   ACPI\PNP0F13\4&2647A8AF&0
Motherboard resources     No   SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available   ACPI\PNP0C02\51
Communications Port  No   PORTS 5.2.3663.0 7/15/2002  (Standard port types)
     msports.inf     Not Available   ACPI\PNP0501\1
Communications Port  No   PORTS 5.2.3663.0 7/15/2002  (Standard port types)
     msports.inf     Not Available   ACPI\PNP0501\2
ECP Printer Port     No   PORTS 5.2.3663.0 7/15/2002  (Standard port types)
     msports.inf     Not Available   ACPI\PNP0401\4&2647A8AF&0
Standard floppy disk controller No   FDC  5.2.3663.0 7/15/2002  (Standard
floppy disk controllers)  fdc.inf    Not Available
     ACPI\PNP0700\4&2647A8AF&0
Floppy disk drive    No   FLOPPYDISK 5.2.3663.0 7/15/2002  (Standard
floppy disk drives)  flpydisk.inf    Not Available
     FDC\GENERIC_FLOPPY_DRIVE\5&2045E8EE&0&0
Standard Dual Channel PCI IDE Controller  No   HDC  5.2.3663.0 7/15/2002
     (Standard IDE ATA/ATAPI controllers) mshdc.inf  Not Available
     PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3&291BF6FF&0&79
Primary IDE Channel  No   HDC  5.2.3663.0 7/15/2002  (Standard IDE
ATA/ATAPI controllers)    mshdc.inf  Not Available
     PCIIDE\IDECHANNEL\4&15AF076&0&0
Secondary IDE Channel     No   HDC  5.2.3663.0 7/15/2002  (Standard IDE
ATA/ATAPI controllers)    mshdc.inf  Not Available
     PCIIDE\IDECHANNEL\4&15AF076&0&1
CD-ROM Drive    No   CDROM 5.2.3663.0 7/15/2002  (Standard CD-ROM drives)
     cdrom.inf  Not Available   IDE\CDROMMITSUMI_CD-
ROM_SR243T___________________L02G____\5&1159A16&0&0.0.0
ServerWorks (RCC) PCI to USB Open Host Controller    No   USB  5.2.3663.0
     7/15/2002  ServerWorks (RCC)    usbport.inf     Not Available
     PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3&291BF6FF&0&7A
PCI standard ISA bridge   No   SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available
     PCI\VEN_1166&DEV_0225&SUBSYS_00000000&REV_00\3&291BF6FF&0&7B
ISAPNP Read Data Port     No   SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available   ISAPNP\READDATAPORT\0
```

```
PCI standard host CPU bridge    No    SYSTEM     5.2.3663.0 7/15/2002
      (Standard system devices) machine.inf     Not Available
      PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&291BF6FF&0&80
PCI standard host CPU bridge    No    SYSTEM     5.2.3663.0 7/15/2002
      (Standard system devices) machine.inf     Not Available
      PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&291BF6FF&0&82
PCI standard host CPU bridge    No    SYSTEM     5.2.3663.0 7/15/2002
      (Standard system devices) machine.inf     Not Available
      PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&291BF6FF&0&88
PCI standard host CPU bridge    No    SYSTEM     5.2.3663.0 7/15/2002
      (Standard system devices) machine.inf     Not Available
      PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&291BF6FF&0&8A
PCI standard host CPU bridge    No    SYSTEM     5.2.3663.0 7/15/2002
      (Standard system devices) machine.inf     Not Available
      PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&291BF6FF&0&90
PCI standard host CPU bridge    No    SYSTEM     5.2.3663.0 7/15/2002
      (Standard system devices) machine.inf     Not Available
      PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&291BF6FF&0&92
PCI bus    No    SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
      machine.inf     Not Available   ACPI\PNP0A03\41
DEC 21154 PCI to PCI bridge     No    SYSTEM     5.2.3663.0 7/15/2002  DEC
      machine.inf     Not Available
      PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&3ADD9D&0&30
Mylex eXtremeRAID 2000 Disk Array Controller    No    SCSIADAPTER
      9.0.4.0    9/8/2000   Mylex oem2.inf   Not Available
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2254B0D&0&4030
Mylex Accelerated Driver   No    DISKDRIVE  Not Available   9/8/2000   Mylex
      oem3.inf  Not Available
      SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&2EB0A3BB&0&400
Mylex GAM Device     No    SYSTEM     5.2.3663.0 7/15/2002  Mylex
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&2EB0A3BB&0&660
DEC 21154 PCI to PCI bridge     No    SYSTEM     5.2.3663.0 7/15/2002  DEC
      machine.inf     Not Available
      PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&3ADD9D&0&38
Mylex eXtremeRAID 2000 Disk Array Controller    No    SCSIADAPTER
      9.0.4.0    9/8/2000   Mylex oem2.inf   Not Available
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1C72A60D&0&4038
Qlogic processor device    No    SYSTEM     5.2.3663.0 7/15/2002  QLOGIC
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.07\5&231C90DA&0&080
Qlogic processor device    No    SYSTEM     5.2.3663.0 7/15/2002  QLOGIC
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.07\5&231C90DA&0&180
Qlogic processor device    No    SYSTEM     5.2.3663.0 7/15/2002  QLOGIC
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.07\5&231C90DA&0&280
Qlogic processor device    No    SYSTEM     5.2.3663.0 7/15/2002  QLOGIC
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.07\5&231C90DA&0&380
Mylex Accelerated Driver   No    DISKDRIVE  Not Available   9/8/2000   Mylex
      oem3.inf  Not Available
      SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&231C90DA&0&400
```

```
Mylex GAM Device     No    SYSTEM     5.2.3663.0 7/15/2002  Mylex
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&231C90DA&0&660
PCI bus    No    SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
      machine.inf     Not Available   ACPI\PNP0A03\42
DEC 21154 PCI to PCI bridge     No    SYSTEM     5.2.3663.0 7/15/2002  DEC
      machine.inf     Not Available
      PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&12F48E42&0&28
Mylex eXtremeRAID 2000 Disk Array Controller    No    SCSIADAPTER
      9.0.4.0    9/8/2000   Mylex oem2.inf   Not Available
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1ECE4987&0&4028
Mylex Accelerated Driver   No    DISKDRIVE  Not Available   9/8/2000   Mylex
      oem3.inf  Not Available
      SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&F3FB0E4&0&400
Mylex GAM Device     No    SYSTEM     5.2.3663.0 7/15/2002  Mylex
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&F3FB0E4&0&660
Adaptec AIC-7899 Ultra160 PCI SCSI Card    No    SCSIADAPTER     5.2.3663.0
      7/15/2002  Adaptec    pnpscsi.inf     Not Available
      PCI\VEN_9005&DEV_00CF&SUBSYS_0083110A&REV_01\3&12F48E42&0&40
Disk drive No    DISKDRIVE  5.2.3663.0 7/15/2002  (Standard disk drives)
      disk.inf  Not Available
      SCSI\DISK&VEN_SEAGATE&PROD_ST318452LC&REV_8500\4&2477DA67&0&000
HP SAF-TE SCSI Processor Device No    SYSTEM     5.2.3663.0 7/15/2002  HP
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_SDR&PROD_GEM318&REV_0\4&2477DA67&0&080
Adaptec AIC-7899 Ultra160 PCI SCSI Card    No    SCSIADAPTER     5.2.3663.0
      7/15/2002  Adaptec    pnpscsi.inf     Not Available
      PCI\VEN_9005&DEV_00CF&SUBSYS_0083110A&REV_01\3&12F48E42&0&41
HP SAF-TE SCSI Processor Device No    SYSTEM     5.2.3663.0 7/15/2002  HP
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_SDR&PROD_GEM318&REV_0\4&37318B0C&0&080
PCI bus    No    SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
      machine.inf     Not Available   ACPI\PNP0A03\43
DEC 21154 PCI to PCI bridge     No    SYSTEM     5.2.3663.0 7/15/2002  DEC
      machine.inf     Not Available
      PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&25AE3EE7&0&20
Mylex eXtremeRAID 2000 Disk Array Controller    No    SCSIADAPTER
      9.0.4.0    9/8/2000   Mylex oem2.inf   Not Available
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2F92D4B0&0&4020
Mylex Accelerated Driver   No    DISKDRIVE  Not Available   9/8/2000   Mylex
      oem3.inf  Not Available
      SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&6CEC074&0&400
Mylex GAM Device     No    SYSTEM     5.2.3663.0 7/15/2002  Mylex
      scsidev.inf     Not Available
      SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&6CEC074&0&660
PCI bus    No    SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
      machine.inf     Not Available   ACPI\PNP0A03\44
DEC 21154 PCI to PCI bridge     No    SYSTEM     5.2.3663.0 7/15/2002  DEC
      machine.inf     Not Available
      PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&3867EF8C&0&18
Mylex eXtremeRAID 2000 Disk Array Controller    No    SCSIADAPTER
      9.0.4.0    9/8/2000   Mylex oem2.inf   Not Available
      PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2DF34B01&0&4018
```

```
Mylex Accelerated Driver  No   DISKDRIVE  Not Available   9/8/2000   Mylex
     oem3.inf  Not Available
     SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&27A1714F&0&400
Mylex GAM Device     No   SYSTEM     5.2.3663.0 7/15/2002  Mylex
     scsidev.inf     Not Available
     SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&27A1714F&0&660
PCI bus   No   SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
     machine.inf     Not Available   ACPI\PNP0A03\45
DEC 21154 PCI to PCI bridge    No   SYSTEM     5.2.3663.0 7/15/2002  DEC
     machine.inf     Not Available
     PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&20E01BA&0&10
Mylex eXtremeRAID 2000 Disk Array Controller   No   SCSIADAPTER
     9.0.4.0   9/8/2000   Mylex oem2.inf   Not Available
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2BEE4042&0&4010
Mylex Accelerated Driver  No   DISKDRIVE  Not Available   9/8/2000   Mylex
     oem3.inf  Not Available
     SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&944483E&0&400
Mylex GAM Device     No   SYSTEM     5.2.3663.0 7/15/2002  Mylex
     scsidev.inf     Not Available
     SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&944483E&0&660
PCI bus   No   SYSTEM     5.2.3663.0 7/15/2002  (Standard system devices)
     machine.inf     Not Available   ACPI\PNP0A03\46
QLogic QLA23xx PCI Fibre Channel Adapter  No   SCSIADAPTER     8.2.0.0
     8/5/2002   QLogic     oem6.inf   Not Available
     PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&REV_02\3&2AEF1B1C&0&20
Disk drive No   DISKDRIVE  5.2.3663.0 7/15/2002  (Standard disk drives)
     disk.inf  Not Available
     SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_LUN&REV_\4&AC124D8&0&07F0
DEC 21154 PCI to PCI bridge    No   SYSTEM     5.2.3663.0 7/15/2002  DEC
     machine.inf     Not Available
     PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&2AEF1B1C&0&28
Mylex eXtremeRAID 2000 Disk Array Controller   No   SCSIADAPTER
     9.0.4.0   9/8/2000   Mylex oem2.inf   Not Available
     PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&3AE9BCCD&0&4028
Qlogic processor device   No   SYSTEM     5.2.3663.0 7/15/2002  QLOGIC
     scsidev.inf     Not Available
     SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.06\5&23372C65&0&080
Qlogic processor device   No   SYSTEM     5.2.3663.0 7/15/2002  QLOGIC
     scsidev.inf     Not Available
     SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.06\5&23372C65&0&180
Mylex Accelerated Driver  No   DISKDRIVE  Not Available   9/8/2000   Mylex
     oem3.inf  Not Available
     SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0701\5&23372C65&0&400
Mylex GAM Device     No   SYSTEM     5.2.3663.0 7/15/2002  Mylex
     scsidev.inf     Not Available
     SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&23372C65&0&660
Intel 8255x-based PCI Ethernet Adapter (10/100) No   NET  6.3.3.0
     7/15/2002  Intelnet557.inf Not Available
     PCI\VEN_8086&DEV_1229&SUBSYS_0083110A&REV_09\3&2AEF1B1C&0&48
ACPI Fixed Feature Button No   SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available
     ACPI\FIXEDBUTTON\2&DABA3FF&0
Logical Disk Manager No   SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available   ROOT\DMIO\0000
```

```
Volume Manager  No   SYSTEM     5.2.3663.0 7/15/2002  (Standard system
devices)  machine.inf     Not Available   ROOT\FTDISK\0000
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8024OFFSET7E0000LENGTHCD157
4C00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8024OFFSETCD1D5CA00LENGTH73
3E26400
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8024OFFSET23668C6800LENGTH4
93E2DCC00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8025OFFSET7E0000LENGTHCD157
4C00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8025OFFSETCD1D5CA00LENGTH73
3E26400
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8025OFFSET23668C6800LENGTH4
93E2DCC00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8020OFFSET7E0000LENGTHCD157
4C00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8020OFFSETCD1D5CA00LENGTH73
3E26400
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8020OFFSET2367876C00LENGTH4
93E2DCC00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE72A272A2OFFSET7E00LENGTH445C770
00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8021OFFSET7E0000LENGTHCD157
4C00
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8021OFFSETCD1D5CA00LENGTH73
3E26400
Generic volume  No   VOLUME     5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8021OFFSET23668C6800LENGTH4
93E2DCC00
```

```
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8023OFFSET7E0000LENGTHCD157
4C00
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8023OFFSETCD1D5CA00LENGTH73
3E26400
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8023OFFSET23668C6800LENGTH4
93E2DCC00
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8022OFFSET7E0000LENGTHCD157
4C00
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8022OFFSETCD1D5CA00LENGTH73
3E26400
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE18FA8022OFFSET23668C6800LENGTH4
93E2DCC00
Generic volume  No   VOLUME    5.2.3663.0 7/15/2002  Microsoft  volume.inf
     Not Available
     STORAGE\VOLUME\1&30A96598&0&SIGNATURE2753D81EOFFSET7E0000LENGTH1D4C1
20600
AFD Networking Support Environment  Not Available  LEGACYDRIVER   Not
Available Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_AFD\0000
Beep Not Available  LEGACYDRIVER   Not Available  Not Available  Not
Available Not Available  Not Available  ROOT\LEGACY_BEEP\0000
CRC Disk Filter Driver    Not Available  LEGACYDRIVER   Not Available
     Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_CRCDISK\0000
dmboot    Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_DMBOOT\0000
dmload    Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_DMLOAD\0000
DsPciCfg  Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_DSPCICFG\0000
Fips Not Available  LEGACYDRIVER   Not Available  Not Available  Not
Available Not Available  Not Available  ROOT\LEGACY_FIPS\0000
Generic Packet Classifier Not Available  LEGACYDRIVER   Not Available
     Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_GPC\0000
IPSEC driver   Not Available  LEGACYDRIVER   Not Available  Not
Available Not Available  Not Available  Not Available
     ROOT\LEGACY_IPSEC\0000
```

```
ksecdd    Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_KSECDD\0000
macdisk   Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_MACDISK\0000
mnmdd Not Available  LEGACYDRIVER   Not Available  Not Available  Not
Available Not Available  Not Available  ROOT\LEGACY_MNMDD\0000
mountmgr  Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_MOUNTMGR\0000
NDIS System Driver  Not Available  LEGACYDRIVER   Not Available  Not
Available Not Available  Not Available  Not Available
     ROOT\LEGACY_NDIS\0000
Remote Access NDIS TAPI Driver Not Available  LEGACYDRIVER   Not
Available Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_NDISTAPI\0000
NDIS Usermode I/O ProtocolNot Available  LEGACYDRIVER   Not Available
     Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_NDISUIO\0000
NDProxy   Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_NDPROXY\0000
NetBios over Tcpip  Not Available  LEGACYDRIVER   Not Available  Not
Available Not Available  Not Available  Not Available
     ROOT\LEGACY_NETBT\0000
NIC Management Service Configuration Driver   Not Available
     LEGACYDRIVER   Not Available  Not Available  Not Available  Not
Available Not Available  ROOT\LEGACY_NMSCFG\0000
Null Not Available  LEGACYDRIVER   Not Available  Not Available  Not
Available Not Available  Not Available  ROOT\LEGACY_NULL\0000
Partition Manager   Not Available  LEGACYDRIVER   Not Available  Not
Available Not Available  Not Available  Not Available
     ROOT\LEGACY_PARTMGR\0000
ParVdm    Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_PARVDM\0000
Remote Access Auto Connection Driver Not Available  LEGACYDRIVER   Not
Available Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_RASACD\0000
RDPCDD    Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_RDPCDD\0000
TCP/IP Protocol Driver   Not Available  LEGACYDRIVER   Not Available
     Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_TCPIP\0000
VGA Display Controller.  Not Available  LEGACYDRIVER   Not Available
     Not Available  Not Available  Not Available  Not Available
     ROOT\LEGACY_VGASAVE\0000
ViaIde    Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_VIAIDE\0000
volsnap   Not Available  LEGACYDRIVER   Not Available  Not Available
     Not Available  Not Available  Not Available
     ROOT\LEGACY_VOLSNAP\0000
```

```
Remote Access IP ARP Driver    Not Available   LEGACYDRIVER    Not
Available  Not Available   Not Available   Not Available   Not Available
     ROOT\LEGACY_WANARP\0000
Audio Codecs    No    MEDIA 5.2.3663.0 7/15/2002  (Standard system devices)
     wave.inf   Not Available   ROOT\MEDIA\MS_MMACM
Legacy Audio Drivers No    MEDIA 5.2.3663.0 7/15/2002  (Standard system
devices)  wave.inf  Not Available   ROOT\MEDIA\MS_MMDRV
Media Control Devices     No    MEDIA 5.2.3663.0 7/15/2002  (Standard
system devices) wave.inf  Not Available   ROOT\MEDIA\MS_MMMCI
Legacy Video Capture Devices    No    MEDIA 5.2.3663.0 7/15/2002  (Standard
system devices) wave.inf  Not Available   ROOT\MEDIA\MS_MMVCD
Video Codecs    No    MEDIA 5.2.3663.0 7/15/2002  (Standard system devices)
     wave.inf   Not Available   ROOT\MEDIA\MS_MMVID
WAN Miniport (L2TP)  No    NET  5.2.3663.0 7/15/2002  Microsoft
     netrasa.inf     Not Available   ROOT\MS_L2TPMINIPORT\0000
WAN Miniport (IP)    No    NET  5.2.3663.0 7/15/2002  Microsoft
     netrasa.inf     Not Available   ROOT\MS_NDISWANIP\0000
WAN Miniport (PPPOE) No    NET  5.2.3663.0 7/15/2002  Microsoft
     netrasa.inf     Not Available   ROOT\MS_PPPOEMINIPORT\0000
WAN Miniport (PPTP)  No    NET  5.2.3663.0 7/15/2002  Microsoft
     netrasa.inf     Not Available   ROOT\MS_PPTPMINIPORT\0000
Direct Parallel No    NET  5.2.3663.0 7/15/2002  Microsoft  netrasa.inf
     Not Available   ROOT\MS_PTIMINIPORT\0000
Terminal Server Device Redirector    No    SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     ROOT\RDPDR\0000
Terminal Server Keyboard Driver No    SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     ROOT\RDP_KBD\0000
Terminal Server Mouse Driver    No    SYSTEM     5.2.3663.0 7/15/2002
     (Standard system devices) machine.inf     Not Available
     ROOT\RDP_MOU\0000
QLogic VI Kernel Agent driver   No    SCSIADAPTER     Not Available   Not
Available  Not Available   oem1.inf   Not Available   ROOT\SCSIADAPTER\0000

Plug and Play Software Device Enumerator  No    SYSTEM     5.2.3663.0
     7/15/2002  (Standard system devices)  machine.inf     Not Available
     ROOT\SYSTEM\0000
Microcode Update Device   No    SYSTEM     5.2.3663.0 7/15/2002  (Standard
system devices) machine.inf     Not Available   ROOT\SYSTEM\0001

[Environment Variables]

Variable   Value User Name
ClusterLog C:\WINDOWS\Cluster\cluster.log  <SYSTEM>
ComSpec    %SystemRoot%\system32\cmd.exe   <SYSTEM>
NUMBER_OF_PROCESSORS 8    <SYSTEM>
OS    Windows_NT <SYSTEM>
Path
     %SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;C:\Pro
gram 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 2, GenuineIntel
     <SYSTEM>
PROCESSOR_LEVEL 15   <SYSTEM>
PROCESSOR_REVISION   0202 <SYSTEM>
TEMP %SystemRoot%\TEMP    <SYSTEM>
TMP  %SystemRoot%\TEMP    <SYSTEM>
windir    %SystemRoot%    <SYSTEM>
TEMP %USERPROFILE%\Local Settings\Temp    NT AUTHORITY\SYSTEM
TMP  %USERPROFILE%\Local Settings\Temp    NT AUTHORITY\SYSTEM
TEMP %USERPROFILE%\Local Settings\Temp    NT AUTHORITY\LOCAL SERVICE
TMP  %USERPROFILE%\Local Settings\Temp    NT AUTHORITY\LOCAL SERVICE
TEMP %USERPROFILE%\Local Settings\Temp    ASTERIX\Administrator
TMP  %USERPROFILE%\Local Settings\Temp    ASTERIX\Administrator

[Print Jobs]

Document   Size Owner Notify     Status     Time Submitted  Start Time Until
Time Elapsed Time    Pages Printed   Job ID     Priority   Parameters
     Driver     Print Processor Host Print Queue     Data Type  Name

[Network Connections]

Local Name Remote Name     Type Status     User Name

[Running Tasks]

Name Path Process ID Priority   Min Working Set Max Working Set Start Time
     Version     Size File Date
system idle process  Not Available   0    0    Not Available   Not
Available  Not Available   Not Available   Not Available   Not Available
system     Not Available   4    8    0    1413120    Not Available   Not
Available  Not Available   Not Available
smss.exe   c:\windows\system32\smss.exe    424  11   204800     1413120
     10/24/2002 10:45 AM  5.2.3663.0 (main.020715-1506)  46.00 KB
(47,104 bytes)  7/18/2002 2:00 PM
csrss.exe  Not Available   472  13   Not Available   Not Available
     10/24/2002 10:45 AM  Not Available   Not Available   Not Available
winlogon.exe    c:\windows\system32\winlogon.exe     496  13   204800
     1413120    10/24/2002 10:45 AM  5.2.3663.0 (main.020715-1506)
     512.00 KB (524,288 bytes) 7/18/2002 2:00 PM
services.exe    c:\windows\system32\services.exe     540  9    204800
     1413120    10/24/2002 10:45 AM  5.2.3663.0 (main.020715-1506)  99.00
KB (101,376 bytes)   7/18/2002 2:00 PM
lsass.exe  c:\windows\system32\lsass.exe   552  9    204800     1413120
     10/24/2002 10:45 AM  5.2.3663.0 (main.020715-1506)  13.00 KB
(13,312 bytes)  7/18/2002 2:00 PM
svchost.exe     c:\windows\system32\svchost.exe 760  8    204800
     1413120    10/24/2002 10:45 AM  5.2.3663.0 (main.020715-1506)  12.00
KB (12,288 bytes)    7/18/2002 2:00 PM
svchost.exe     Not Available   848  8    Not Available   Not Available
     10/24/2002 10:45 AM  Not Available   Not Available   Not Available
svchost.exe     c:\windows\system32\svchost.exe 884  8    204800
     1413120    10/24/2002 10:45 AM  5.2.3663.0 (main.020715-1506)  12.00
KB (12,288 bytes)    7/18/2002 2:00 PM
```

```
explorer.exe    c:\windows\explorer.exe   1224 8    204800    1413120
     10/24/2002 10:46 AM  6.00.3663.0 (main.020715-1506)  989.50 KB
(1,013,248 bytes)    7/18/2002 2:00 PM
svchost.exe     c:\windows\system32\svchost.exe 1376 8    204800
     1413120   10/24/2002 10:46 AM  5.2.3663.0 (main.020715-1506)   12.00
KB (12,288 bytes)    7/18/2002 2:00 PM
helpctr.exe     c:\windows\pchealth\helpctr\binaries\helpctr.exe     1172
     8    204800    1413120    10/24/2002 1:54 PM   5.2.3663.0
(main.020715-1506)   670.00 KB (686,080 bytes) 8/20/2002 10:47 AM
helpsvc.exe     c:\windows\pchealth\helpctr\binaries\helpsvc.exe     1528
     8    204800    1413120    10/24/2002 1:54 PM   5.2.3663.0
(main.020715-1506)   683.50 KB (699,904 bytes) 8/20/2002 10:47 AM
wmiprvse.exe    Not Available   1544 8    Not Available   Not Available
     10/24/2002 1:54 PM   Not Available   Not Available   Not Available

[Loaded Modules]

Name Version    Size File Date Manufacturer    Path
smss 5.2.3663.0 (main.020715-1506)  46.00 KB (47,104 bytes)   7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\smss.exe
ntdll5.2.3663.0 (main.020715-1506)  697.50 KB (714,240 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\ntdll.dll
winlogon   5.2.3663.0 (main.020715-1506)  512.00 KB (524,288 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\winlogon.exe
kernel32   5.2.3663.0 (main.020715-1506)  934.50 KB (956,928 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\kernel32.dll
msvcrt     7.0.3663.0 (main.020715-1506)  319.50 KB (327,168 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msvcrt.dll
advapi32   5.2.3663.0 (main.020715-1506)  526.00 KB (538,624 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\advapi32.dll
rpcrt4     5.2.3663.0 (main.020715-1506)  544.50 KB (557,568 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rpcrt4.dll
user32     5.2.3663.0 (main.020715-1506)  547.50 KB (560,640 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\user32.dll
gdi325.2.3663.0 (main.020715-1506)  246.00 KB (251,904 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\gdi32.dll
userenv    5.2.3663.0 (main.020715-1506)  710.00 KB (727,040 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\userenv.dll
nddeapi    5.2.3663.0 (main.020715-1506)  15.00 KB (15,360 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\nddeapi.dll
crypt32    5.131.3663.0 (main.020715-1506) 545.00 KB (558,080 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\crypt32.dll
msasn1     5.2.3663.0 (main.020715-1506)  51.00 KB (52,224 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msasn1.dll
```

```
secur32    5.2.3663.0 (main.020715-1506)  57.00 KB (58,368 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\secur32.dll
winsta     5.2.3663.0 (main.020715-1506)  48.00 KB (49,152 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\winsta.dll
netapi32   5.2.3663.0 (main.020715-1506)  309.50 KB (316,928 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netapi32.dll
profmap    5.2.3663.0 (main.020715-1506)  21.00 KB (21,504 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\profmap.dll
regapi     5.2.3663.0 (main.020715-1506)  47.00 KB (48,128 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\regapi.dll
ws2_32     5.2.3663.0 (main.020715-1506)  77.00 KB (78,848 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ws2_32.dll
ws2help    5.2.3663.0 (main.020715-1506)  19.00 KB (19,456 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ws2help.dll
authz5.2.3663.0 (main.020715-1506)  56.50 KB (57,856 bytes)   7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\authz.dll
psapi5.2.3663.0 (main.020715-1506)  21.00 KB (21,504 bytes)   7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\psapi.dll
version    5.2.3663.0 (main.020715-1506)  16.50 KB (16,896 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\version.dll
setupapi   5.2.3663.0 (main.020715-1506)  917.50 KB (939,520 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\setupapi.dll
msgina     5.2.3663.0 (main.020715-1506)  1.19 MB (1,252,864 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msgina.dll
shsvcs     6.00.3663.0 (main.020715-1506) 122.50 KB (125,440 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\shsvcs.dll
shlwapi    6.00.3663.0 (main.020715-1506) 269.00 KB (275,456 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\shlwapi.dll
sfc  5.2.3663.0 (main.020715-1506)  4.50 KB (4,608 bytes)     7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\sfc.dll
sfc_os     5.2.3663.0 (main.020715-1506)  130.00 KB (133,120 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\sfc_os.dll
wintrust   5.131.3663.0 (main.020715-1506) 155.00 KB (158,720 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wintrust.dll
ole325.2.3663.0 (main.020715-1506)  1.08 MB (1,134,592 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\ole32.dll
imagehlp   5.2.3663.0 (main.020715-1506)  123.00 KB (125,952 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\imagehlp.dll
comctl32   6.0 (main.020715-1506)    905.00 KB (926,720 bytes) 8/20/2002
12:29 PM   Microsoft Corporation
```

```
     c:\windows\winsxs\x86_microsoft.windows.common-
controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll
winscard  5.2.3663.0 (main.020715-1506)  93.50 KB (95,744 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\winscard.dll
wtsapi32  5.2.3663.0 (main.020715-1506)  17.00 KB (17,408 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wtsapi32.dll
sxs  5.2.3663.0 (main.020715-1506)  685.50 KB (701,952 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\sxs.dll
rsaenh    5.2.3663.0 (main.020715-1506)  174.07 KB (178,248 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rsaenh.dll
wldap32   5.2.3663.0 (main.020715-1506)  167.00 KB (171,008 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wldap32.dll
shell32   6.00.3663.0 (main.020715-1506) 7.69 MB (8,067,072 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\shell32.dll
cscdll    5.2.3663.0 (main.020715-1506)  92.50 KB (94,720 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\cscdll.dll
wlnotify  5.2.3663.0 (main.020715-1506)  84.50 KB (86,528 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wlnotify.dll
winmm5.2.3663.0 (main.020715-1506)  163.00 KB (166,912 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\winmm.dll
winspool  5.2.3663.0 (main.020715-1506)  131.50 KB (134,656 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\winspool.drv
mpr  5.2.3663.0 (main.020715-1506)  55.00 KB (56,320 bytes)   7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\mpr.dll
comctl32  5.82 (main.020715-1506)   559.50 KB (572,928 bytes) 8/20/2002
12:29 PM  Microsoft Corporation
     c:\windows\winsxs\x86_microsoft.windows.common-
controls_6595b64144ccf1df_5.82.0.0_x-ww_8a69ba05\comctl32.dll
uxtheme   6.00.3663.0 (main.020715-1506) 190.50 KB (195,072 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\uxtheme.dll
samlib    5.2.3663.0 (main.020715-1506)  40.50 KB (41,472 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\samlib.dll
cscui5.2.3663.0 (main.020715-1506)  299.00 KB (306,176 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\cscui.dll
mprapi    5.2.3663.0 (main.020715-1506)  78.00 KB (79,872 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\mprapi.dll
activeds  5.2.3663.0 (main.020715-1506)  184.50 KB (188,928 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\activeds.dll
adsldpc   5.2.3663.0 (main.020715-1506)  139.50 KB (142,848 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\adsldpc.dll
```

```
credui    5.2.3663.0 (main.020715-1506)  161.00 KB (164,864 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\credui.dll
atl  3.05.2144  82.00 KB (83,968 bytes)   7/18/2002 2:00 PM    Microsoft
Corporation    c:\windows\system32\atl.dll
oleaut32  5.2.3663.0 483.50 KB (495,104 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\oleaut32.dll
rtutils   5.2.3663.0 (main.020715-1506)  31.00 KB (31,744 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rtutils.dll
clbcatq   2001.12.4593.0 (main.020715-1506)   465.50 KB (476,672 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\clbcatq.dll
comres    2001.12.4593.0 (main.020715-1506)   778.00 KB (796,672 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\comres.dll
ntmarta   5.2.3663.0 (main.020715-1506)  110.50 KB (113,152 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ntmarta.dll
wbemprox  5.2.3663.0 (main.020715-1506)  16.00 KB (16,384 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wbemprox.dll
wbemcomn  5.2.3663.0 (main.020715-1506)  205.00 KB (209,920 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wbemcomn.dll
wbemsvc   5.2.3663.0 (main.020715-1506)  42.50 KB (43,520 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wbemsvc.dll
fastprox  5.2.3663.0 (main.020715-1506)  434.50 KB (444,928 bytes)
     8/20/2002 10:43 AM   Microsoft Corporation
     c:\windows\system32\wbem\fastprox.dll
msvcp60   6.05.2144.0    388.00 KB (397,312 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\msvcp60.dll
ntdsapi   5.2.3663.0 (main.020715-1506)  67.00 KB (68,608 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ntdsapi.dll
dnsapi    5.2.3663.0 (main.020715-1506)  141.50 KB (144,896 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\dnsapi.dll
services  5.2.3663.0 (main.020715-1506)  99.00 KB (101,376 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\services.exe
scesrv    5.2.3663.0 (main.020715-1506)  301.00 KB (308,224 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\scesrv.dll
umpnpmgr  5.2.3663.0 (main.020715-1506)  115.00 KB (117,760 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\umpnpmgr.dll
ncobjapi  5.2.3663.0 (main.020715-1506)  33.00 KB (33,792 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ncobjapi.dll
eventlog  5.2.3663.0 (main.020715-1506)  58.50 KB (59,904 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\eventlog.dll
```

```
lsass 5.2.3663.0 (main.020715-1506)  13.00 KB (13,312 bytes)   7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\lsass.exe
lsasrv    5.2.3663.0 (main.020715-1506)  711.00 KB (728,064 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\lsasrv.dll
samsrv    5.2.3663.0 (main.020715-1506)  408.00 KB (417,792 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\samsrv.dll
cryptdll  5.2.3663.0 (main.020715-1506)  30.00 KB (30,720 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\cryptdll.dll
msprivs   5.2.3663.0 (main.020715-1506)  44.00 KB (45,056 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msprivs.dll
kerberos  5.2.3663.0 (main.020715-1506)  299.00 KB (306,176 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\kerberos.dll
msv1_0    5.2.3663.0 (main.020715-1506)  114.50 KB (117,248 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msv1_0.dll
netlogon  5.2.3663.0 (main.020715-1506)  401.50 KB (411,136 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netlogon.dll
w32time   5.2.3663.0 (main.020715-1506)  205.50 KB (210,432 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\w32time.dll
iphlpapi  5.2.3663.0 (main.020715-1506)  80.50 KB (82,432 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\iphlpapi.dll
schannel  5.2.3663.0 (main.020715-1506)  138.50 KB (141,824 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\schannel.dll
wdigest   5.2.3663.0 (main.020715-1506)  59.50 KB (60,928 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wdigest.dll
rassfm    5.2.3663.0 (main.020715-1506)  20.50 KB (20,992 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rassfm.dll
kdcsvc    5.2.3663.0 (main.020715-1506)  190.50 KB (195,072 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\kdcsvc.dll
ntdsa 5.2.3663.0 (main.020715-1506)  1.40 MB (1,465,344 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\ntdsa.dll
ntdsatq   5.2.3663.0 (main.020715-1506)  27.50 KB (28,160 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ntdsatq.dll
mswsock   5.2.3663.0 (main.020715-1506)  243.50 KB (249,344 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\mswsock.dll
esent 5.2.3663.0 (main.020715-1506)  925.50 KB (947,712 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\esent.dll
certcli   5.2.3663.0 (main.020715-1506)  215.00 KB (220,160 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\certcli.dll
cryptui   5.131.3663.0 (main.020715-1506) 463.50 KB (474,624 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\cryptui.dll
scecli    5.2.3663.0 (main.020715-1506)  174.00 KB (178,176 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\scecli.dll
pstorsvc  5.2.3663.0 (main.020715-1506)  24.00 KB (24,576 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\pstorsvc.dll
psbase    5.2.3663.0 (main.020715-1506)  81.00 KB (82,944 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\psbase.dll
dssenh    5.2.3663.0 (main.020715-1506)  129.07 KB (132,168 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\dssenh.dll
svchost   5.2.3663.0 (main.020715-1506)  12.00 KB (12,288 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\svchost.exe
rpcss 5.2.3663.0 (main.020715-1506)  266.00 KB (272,384 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\rpcss.dll
wshtcpip  5.2.3663.0 (main.020715-1506)  17.00 KB (17,408 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wshtcpip.dll
wkssvc    5.2.3663.0 (main.020715-1506)  122.00 KB (124,928 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wkssvc.dll
es   2001.12.4593.0 (main.020715-1506)    218.00 KB (223,232 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\es.dll
srvsvc    5.2.3663.0 (main.020715-1506)  87.50 KB (89,600 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\srvsvc.dll
wmisvc    5.2.3663.0 (main.020715-1506)  113.50 KB (116,224 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wmisvc.dll
vssapi    5.2.3663.0 (main.020715-1506)  471.00 KB (482,304 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\vssapi.dll
sens 5.2.3663.0 (main.020715-1506)  35.00 KB (35,840 bytes)   7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\sens.dll
netman    5.2.3663.0 (main.020715-1506)  147.00 KB (150,528 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netman.dll
rasapi32  5.2.3663.0 (main.020715-1506)  217.00 KB (222,208 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rasapi32.dll
rasman    5.2.3663.0 (main.020715-1506)  55.00 KB (56,320 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rasman.dll
tapi32    5.2.3663.0 (main.020715-1506)  169.50 KB (173,568 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\tapi32.dll
wzcsvc    5.2.3663.0 (main.020715-1506)  271.00 KB (277,504 bytes)
     7/16/2002 3:48 PM    Microsoft Corporation
     c:\windows\system32\wzcsvc.dll
```

```
wmi  5.2.3663.0 (main.020715-1506)  6.50 KB (6,656 bytes)     7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\wmi.dll
dhcpcsvc  5.2.3663.0 (main.020715-1506)  101.00 KB (103,424 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\dhcpcsvc.dll
wzcsapi   5.2.3663.0 (main.020715-1506)  24.00 KB (24,576 bytes)
     7/16/2002 3:48 PM    Microsoft Corporation
     c:\windows\system32\wzcsapi.dll
netshell  5.2.3663.0 (main.020715-1506)  1.57 MB (1,648,128 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netshell.dll
clusapi   5.2.3663.0 (main.020715-1506)  54.50 KB (55,808 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\clusapi.dll
netcfgx   5.2.3663.0 (main.020715-1506)  616.00 KB (630,784 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netcfgx.dll
winipsec  5.2.3663.0 (main.020715-1506)  29.00 KB (29,696 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\winipsec.dll
hnetcfg   5.2.3663.0 (main.020715-1506)  241.50 KB (247,296 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\hnetcfg.dll
wininet   6.00.3663.0 (main.020715-1506) 581.00 KB (594,944 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wininet.dll
wbemcore  5.2.3663.0 (main.020715-1506)  448.50 KB (459,264 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wbemcore.dll
esscli    5.2.3663.0 (main.020715-1506)  232.00 KB (237,568 bytes)
     8/20/2002 10:43 AM   Microsoft Corporation
     c:\windows\system32\wbem\esscli.dll
wmiutils  5.2.3663.0 (main.020715-1506)  88.50 KB (90,624 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wmiutils.dll
repdrvfs  5.2.3663.0 (main.020715-1506)  140.00 KB (143,360 bytes)
     8/20/2002 10:43 AM   Microsoft Corporation
     c:\windows\system32\wbem\repdrvfs.dll
wmiprvsd  5.2.3663.0 (main.020715-1506)  403.50 KB (413,184 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wmiprvsd.dll
wbemess   5.2.3663.0 (main.020715-1506)  253.00 KB (259,072 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wbemess.dll
rasmans   5.2.3663.0 (main.020715-1506)  161.50 KB (165,376 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rasmans.dll
rastapi   5.2.3663.0 (main.020715-1506)  54.50 KB (55,808 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rastapi.dll
ncprov    5.2.3663.0 (main.020715-1506)  42.50 KB (43,520 bytes)
     8/20/2002 10:43 AM   Microsoft Corporation
     c:\windows\system32\wbem\ncprov.dll
```

```
rasppp    5.2.3663.0 (main.020715-1506)  193.50 KB (198,144 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rasppp.dll
ntlsapi   5.2.3663.0 (main.020715-1506)  7.00 KB (7,168 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ntlsapi.dll
raschap   5.2.3663.0 (main.020715-1506)  105.00 KB (107,520 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\raschap.dll
rastls    5.2.3663.0 (main.020715-1506)  147.50 KB (151,040 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rastls.dll
ipbootp   5.2.3663.0 (main.020715-1506)  34.50 KB (35,328 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ipbootp.dll
rasdlg    5.2.3663.0 (main.020715-1506)  637.00 KB (652,288 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rasdlg.dll
rasadhlp  5.2.3663.0 (main.020715-1506)  6.00 KB (6,144 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\rasadhlp.dll
pchsvc    5.2.3663.0 (main.020715-1506)  30.00 KB (30,720 bytes)
     8/20/2002 10:48 AM   Microsoft Corporation
     c:\windows\pchealth\helpctr\binaries\pchsvc.dll
wbemcons  5.2.3663.0 (main.020715-1506)  69.00 KB (70,656 bytes)
     8/20/2002 10:44 AM   Microsoft Corporation
     c:\windows\system32\wbem\wbemcons.dll
explorer  6.00.3663.0 (main.020715-1506) 989.50 KB (1,013,248 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\explorer.exe
browseui  6.00.3663.0 (main.020715-1506) 999.50 KB (1,023,488 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\browseui.dll
shdocvw   6.00.3663.0 (main.020715-1506) 1.28 MB (1,341,952 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\shdocvw.dll
apphelp   5.2.3663.0 (main.020715-1506)  117.00 KB (119,808 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\apphelp.dll
themeui   6.00.3663.0 (main.020715-1506) 360.00 KB (368,640 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\themeui.dll
msimg32   5.2.3663.0 (main.020715-1506)  4.50 KB (4,608 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msimg32.dll
linkinfo  5.2.3663.0 (main.020715-1506)  15.50 KB (15,872 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\linkinfo.dll
ntshrui   6.00.3663.0 (main.020715-1506) 134.50 KB (137,728 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ntshrui.dll
webcheck  6.00.3663.0 (main.020715-1506) 253.50 KB (259,584 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\webcheck.dll
```

```
wsock32   5.2.3663.0 (main.020715-1506)  22.00 KB (22,528 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\wsock32.dll
stobject  5.2.3663.0 (main.020715-1506)  116.50 KB (119,296 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\stobject.dll
batmeter  6.00.3663.0 (main.020715-1506) 28.00 KB (28,672 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\batmeter.dll
powrprof  6.00.3663.0 (main.020715-1506) 14.00 KB (14,336 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\powrprof.dll
urlmon    6.00.3663.0 (main.020715-1506) 442.00 KB (452,608 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\urlmon.dll
printui   5.2.3663.0 (main.020715-1506)  522.00 KB (534,528 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\printui.dll
cfgmgr32  5.2.3663.0 (main.020715-1506)  17.00 KB (17,408 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\cfgmgr32.dll
drprov    5.2.3663.0 (main.020715-1506)  12.00 KB (12,288 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\drprov.dll
ntlanman  5.2.3663.0 (main.020715-1506)  39.50 KB (40,448 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ntlanman.dll
netui0    5.2.3663.0 (main.020715-1506)  73.00 KB (74,752 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netui0.dll
netui1    5.2.3663.0 (main.020715-1506)  176.50 KB (180,736 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\netui1.dll
davclnt   5.2.3663.0 (main.020715-1506)  23.00 KB (23,552 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\davclnt.dll
browselc  6.00.3663.0 (main.020715-1506) 61.50 KB (62,976 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\browselc.dll
shdoclc   6.00.3663.0 (main.020715-1506) 521.00 KB (533,504 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\shdoclc.dll
gdiplus   5.2.3663.0 (main.020715-1506)  1.65 MB (1,728,512 bytes)
     8/20/2002 12:29 PM   Microsoft Corporation
     c:\windows\winsxs\x86_microsoft.windows.gdiplus_6595b64144ccf1df_1.0
.3000.0_x-ww_4a2ca156\gdiplus.dll
tapisrv   5.2.3663.0 (main.020715-1506)  234.00 KB (239,616 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\tapisrv.dll
unimdm    5.2.3663.0 (main.020715-1506)  188.50 KB (193,024 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\unimdm.tsp
uniplat   5.2.3663.0 (main.020715-1506)  14.50 KB (14,848 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\uniplat.dll
```

```
kmddsp    5.2.3663.0 (main.020715-1506)  32.50 KB (33,280 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\kmddsp.tsp
ndptsp    5.2.3663.0 (main.020715-1506)  54.50 KB (55,808 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ndptsp.tsp
ipconf    5.2.3663.0 (main.020715-1506)  16.50 KB (16,896 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\ipconf.tsp
h323 5.2.3663.0 (main.020715-1506)  249.00 KB (254,976 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\h323.tsp
hidphone  5.2.3663.0 (main.020715-1506)  28.00 KB (28,672 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\hidphone.tsp
hid  5.2.3663.0 (main.020715-1506)  17.00 KB (17,408 bytes)   7/16/2002
3:47 PM   Microsoft Corporation     c:\windows\system32\hid.dll
helpctr   5.2.3663.0 (main.020715-1506)  670.00 KB (686,080 bytes)
     8/20/2002 10:47 AM   Microsoft Corporation
     c:\windows\pchealth\helpctr\binaries\helpctr.exe
hcappres  5.2.3663.0 (main.020715-1506)  6.50 KB (6,656 bytes)
     8/20/2002 10:47 AM   Microsoft Corporation
     c:\windows\pchealth\helpctr\binaries\hcappres.dll
itss 5.2.3663.0 (main.020715-1506)  118.50 KB (121,344 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\itss.dll
msxml3    8.40.8806.0    1.06 MB (1,107,968 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\msxml3.dll
pchshell  5.2.3663.0 (main.020715-1506)  94.00 KB (96,256 bytes)
     8/20/2002 10:48 AM   Microsoft Corporation
     c:\windows\pchealth\helpctr\binaries\pchshell.dll
mlang 6.00.3663.0 (main.020715-1506) 564.50 KB (578,048 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\mlang.dll
mshtml    6.00.3663.0 (main.020715-1506) 2.57 MB (2,690,560 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\mshtml.dll
msimtf    5.2.3663.0 (main.020715-1506)  141.00 KB (144,384 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\msimtf.dll
msctf 5.2.3663.0 (main.020715-1506)  273.00 KB (279,552 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\msctf.dll
jscript   5.6.0.7727 412.00 KB (421,888 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\jscript.dll
msls31    3.10.349.0 137.00 KB (140,288 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\msls31.dll
imm32 5.2.3663.0 (main.020715-1506)  104.00 KB (106,496 bytes) 7/18/2002
2:00 PM   Microsoft Corporation     c:\windows\system32\imm32.dll
mshtmled  6.00.3663.0 (main.020715-1506) 424.00 KB (434,176 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\mshtmled.dll
vbscript  5.6.0.7727 388.00 KB (397,312 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\vbscript.dll
mfc42 6.05.2178.0    960.00 KB (983,040 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\mfc42.dll
msinfo    5.2.3663.0 (main.020715-1506)  352.00 KB (360,448 bytes)
     8/20/2002 10:47 AM   Microsoft Corporation
     c:\windows\pchealth\helpctr\binaries\msinfo.dll
```

```
mfc42u    6.05.2178.0     960.00 KB (983,040 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\mfc42u.dll
comdlg32  6.00.3663.0 (main.020715-1506)  255.00 KB (261,120 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\comdlg32.dll
riched32  5.2.3663.0 (main.020715-1506)  3.50 KB (3,584 bytes)
     7/18/2002 2:00 PM    Microsoft Corporation
     c:\windows\system32\riched32.dll
riched20  5.31.23.1217    394.50 KB (403,968 bytes) 7/18/2002 2:00 PM
     Microsoft Corporation     c:\windows\system32\riched20.dll
helpsvc   5.2.3663.0 (main.020715-1506)  683.50 KB (699,904 bytes)
     8/20/2002 10:47 AM   Microsoft Corporation
     c:\windows\pchealth\helpctr\binaries\helpsvc.exe

[Services]

Display Name    Name StateStart Mode Service Type    Path Error Control
     Start Name Tag ID
Alerter   Alerter   Running   Auto Share Process
     c:\windows\system32\svchost.exe -k localserviceNormal     NT
AUTHORITY\LocalService    0
Application Layer Gateway Service    ALG  Stopped   Manual     Own
Process   c:\windows\system32\alg.exe     Normal     NT
AUTHORITY\LocalService    0
Application Management    AppMgmt   Stopped   Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Windows Audio   AudioSrv  Stopped   Disabled  Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Background Intelligent Transfer Service   BITS Stopped   Manual     Share
Process   c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Computer Browser     Browser   Stopped   Disabled  Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Indexing Service     CiSvcStopped   Manual     Share Process
     c:\windows\system32\cisvc.exe   Normal    LocalSystem    0
ClipBook  ClipSrv   Stopped   Disabled  Own Process
     c:\windows\system32\clipsrv.exeNormal    LocalSystem    0
COM+ System Application   COMSysApp Stopped   Manual    Own Process
     c:\windows\system32\dllhost.exe /processid:{02d4b3f1-fd88-11d1-960d-
00805fc79235}  Normal    LocalSystem    0
Cryptographic Services    CryptSvc  Stopped   Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Distributed File System   Dfs  Stopped   Manual    Own Process
     c:\windows\system32\dfssvc.exe  Normal    LocalSystem    0
DHCP Client     Dhcp Stopped   Manual     Share Process
     c:\windows\system32\svchost.exe -k networkservice   Normal     NT
AUTHORITY\NetworkService  0
Logical Disk Manager Administrative Service    dmadmin   Stopped
     Manual     Share Process   c:\windows\system32\dmadmin.exe /com
     Normal     LocalSystem     0
```

```
Logical Disk Manager dmserver  Stopped   Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
DNS Client Dnscache  Stopped   Manual     Share Process
     c:\windows\system32\svchost.exe -k networkservice   Normal     NT
AUTHORITY\NetworkService  0
Error Reporting Service   ERSvcStopped   Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Ignore
     LocalSystem    0
Event Log  Eventlog  Running   Auto Share Process
     c:\windows\system32\services.exe     Normal    LocalSystem    0
COM+ Event System    EventSystem    Running   Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Help and Support     helpsvc   Running   Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Human Interface Device Access  HidServ   Stopped   Disabled  Share
Process   c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
HTTP SSL  HTTPFilterStopped   Manual     Share Process
     c:\windows\system32\lsass.exe  Normal    LocalSystem    0
IMAPI CD-Burning COM Service   ImapiService   Stopped   Disabled  Own
Process   "c:\windows\system32\imapi.exe"Normal     LocalSystem    0
Intersite Messaging  IsmServ   Stopped   Disabled  Own Process
     c:\windows\system32\ismserv.exeNormal    LocalSystem    0
Kerberos Key Distribution Center     kdc  Stopped   Disabled  Share
Process   c:\windows\system32\lsass.exe  Normal     LocalSystem    0
Server    lanmanserver   Running   Auto Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Workstation    lanmanworkstation   Running   Auto Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
License Logging LicenseService  Stopped   Manual     Own Process
     c:\windows\system32\llssrv.exe Normal    NT
AUTHORITY\NetworkService  0
TCP/IP NetBIOS Helper     LmHosts   Running   Auto Share Process
     c:\windows\system32\svchost.exe -k localserviceNormal    NT
AUTHORITY\LocalService    0
Messenger  Messenger  Stopped   Disabled  Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
NetMeeting Remote Desktop Sharing    mnmsrvc   Stopped   Disabled  Own
Process   c:\windows\system32\mnmsrvc.exeNormal     LocalSystem    0
Distributed Transaction Coordinator  MSDTCStopped   Manual    Own
Process   c:\windows\system32\msdtc.exe  Normal     NT
AUTHORITY\NetworkService  0
Windows Installer    MSIServer Stopped   Manual     Share Process
     c:\windows\system32\msiexec.exe /v   Normal    LocalSystem    0
Microsoft Search     MSSEARCH  Stopped   Manual     Share Process
     "c:\program files\common files\system\mssearch\bin\mssearch.exe"
     Normal    LocalSystem    0
```

```
MSSQLSERVER     MSSQLSERVER     Stopped    Manual     Own Process
     c:\progra~1\micros~1\mssql\binn\sqlservr.exe    Normal
     LocalSystem     0
MSSQLServerADHelper  MSSQLServerADHelper  Stopped    Manual     Own
Process    c:\program files\microsoft sql
server\80\tools\binn\sqladhlp.exe    Normal     LocalSystem     0
Network DDE     NetDDE     Stopped    Disabled   Share Process
     c:\windows\system32\netdde.exe  Normal     LocalSystem     0
Network DDE DSDM     NetDDEdsdm Stopped    Disabled   Share Process
     c:\windows\system32\netdde.exe  Normal     LocalSystem     0
Net Logon  Netlogon   Stopped    Manual     Share Process
     c:\windows\system32\lsass.exe   Normal     LocalSystem     0
Network Connections  Netman     Running    Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs      Normal
     LocalSystem     0
Network Location Awareness (NLA)     Nla  Running    Manual     Share
Process    c:\windows\system32\svchost.exe -k netsvcs      Normal
     LocalSystem     0
Intel(R) NMS    NMSSvc     Stopped    Manual     Own Process
     c:\windows\system32\nmssvc.exe  Normal     LocalSystem     0
File Replication     NtFrs Stopped    Manual     Own Process
     c:\windows\system32\ntfrs.exe   Ignore     LocalSystem     0
NT LM Security Support Provider NtLmSsp    Stopped    Manual     Share
Process    c:\windows\system32\lsass.exe   Normal     LocalSystem     0
Removable Storage    NtmsSvc    Stopped    Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs      Normal
     LocalSystem     0
Plug and Play   PlugPlay  Running    Auto  Share Process
     c:\windows\system32\services.exe     Normal     LocalSystem     0
IPSEC Services  PolicyAgent     Stopped    Manual     Share Process
     c:\windows\system32\lsass.exe   Normal     LocalSystem     0
Protected Storage    ProtectedStorage     Running    Auto  Share Process
     c:\windows\system32\lsass.exe   Normal     LocalSystem     0
Remote Access Auto Connection Manager     RasAuto    Stopped    Manual
     Share Process   c:\windows\system32\svchost.exe -k netsvcs
     Normal     LocalSystem     0
Remote Access Connection Manager     RasMan     Running    Manual     Share
Process    c:\windows\system32\svchost.exe -k netsvcs      Normal
     LocalSystem     0
Remote Desktop Help Session Manager  RDSessMgr  Stopped    Manual     Own
Process    c:\windows\system32\sessmgr.exe Normal     LocalSystem     0
Routing and Remote Access  RemoteAccess    Stopped    Disabled   Share
Process    c:\windows\system32\svchost.exe -k netsvcs      Normal
     LocalSystem     0
Remote Registry RemoteRegistry  Stopped    Manual     Share Process
     c:\windows\system32\svchost.exe -k regsvc Normal     NT
AUTHORITY\LocalService     0
Remote Procedure Call (RPC) Locator  RpcLocator Stopped    Manual     Own
Process    c:\windows\system32\locator.exe Normal     NT
AUTHORITY\NetworkService  0
Remote Procedure Call (RPC)     RpcSs Running    Auto  Share Process
     c:\windows\system32\svchost -k rpcss Normal     LocalSystem     0
Resultant Set of Policy Provider     RSoPProv   Stopped    Manual     Share
Process    c:\windows\system32\rsopprov.exe     Normal     LocalSystem
     0
```

```
Special Administration Console Helper     sacsvr     Stopped    Manual
     Share Process   c:\windows\system32\svchost.exe -k netsvcs
     Normal    LocalSystem     0
Security Accounts Manager SamSs Stopped    Manual     Share Process
     c:\windows\system32\lsass.exe  Normal     LocalSystem     0
Smart Card SCardSvr   Stopped    Manual     Share Process
     c:\windows\system32\scardsvr.exe     Ignore     NT
AUTHORITY\LocalService    0
Task Scheduler  Schedule  Stopped    Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Secondary Logon seclogon  Stopped    Manual     Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Ignore
     LocalSystem    0
System Event Notification SENS Running    Auto Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Internet Connection Firewall (ICF) / Internet Connection Sharing (ICS)
     SharedAccess    Stopped    Disabled   Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Shell Hardware Detection  ShellHWDetection     Stopped    Manual     Share
Process    c:\windows\system32\svchost.exe -k netsvcs     Ignore
     LocalSystem    0
Print Spooler   Spooler    Stopped    Manual     Own Process
     c:\windows\system32\spoolsv.exe Normal     LocalSystem     0
SQLSERVERAGENT  SQLSERVERAGENT  Stopped    Manual     Own Process
     c:\progra~1\micros~1\mssql\binn\sqlagent.exe   Normal
     LocalSystem    0
Windows Image Acquisition (WIA) stisvc     Stopped    Disabled   Share
Process    c:\windows\system32\svchost.exe -k imgsvc Normal     NT
AUTHORITY\LocalService    0
Microsoft Software Shadow Copy Provider   swprv Stopped    Manual     Own
Process    c:\windows\system32\svchost.exe -k swprv  Normal
     LocalSystem    0
Performance Logs and Alerts     SysmonLog  Stopped    Manual     Own
Process    c:\windows\system32\smlogsvc.exe     Normal     NT
Authority\NetworkService  0
Telephony  TapiSrv    Running    Manual     Share Process
     c:\windows\system32\svchost.exe -k tapisrv     Normal
     LocalSystem    0
Terminal Services    TermService     Stopped    Disabled   Share Process
     c:\windows\system32\svchost.exe -k termsvcs    Normal
     LocalSystem    0
Themes     Themes     Stopped    Disabled   Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Telnet     TlntSvr    Stopped    Disabled   Own Process
     c:\windows\system32\tlntsvr.exe Normal     NT AUTHORITY\LOCAL SERVICE
     0
Distributed Link Tracking Server     TrkSvr     Stopped    Disabled   Share
Process    c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
```

```
Distributed Link Tracking Client     TrkWks    Stopped    Manual    Share
Process    c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Terminal Services Session Directory  Tssdis    Stopped    Disabled  Own
Process    c:\windows\system32\tssdis.exe  Normal    LocalSystem    0
Upload Manager  uploadmgr  Stopped    Disabled  Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Uninterruptible Power Supply    UPS  Stopped    Manual    Own Process
     c:\windows\system32\ups.exe    Normal    LocalSystem    0
Virtual Disk Service vds  Stopped    Manual    Own Process
     c:\windows\system32\vds.exe    Normal    LocalSystem    0
Volume Shadow Copy   VSS  Stopped    Manual    Own Process
     c:\windows\system32\vssvc.exe  Normal    LocalSystem    0
Windows Time    W32Time    Stopped    Manual    Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
WebClient  WebClient  Stopped    Disabled  Share Process
     c:\windows\system32\svchost.exe -k localservice Normal    NT
AUTHORITY\LocalService    0
WinHTTP Web Proxy Auto-Discovery Service  WinHttpAutoProxySvc  Stopped
     Manual    Share Process   c:\windows\system32\svchost.exe -k
localservice    Normal    NT AUTHORITY\LocalService 0
Windows Management Instrumentation   winmgmt    Running    Auto Share
Process    c:\windows\system32\svchost.exe -k netsvcs     Ignore
     LocalSystem    0
Portable Media Serial Number    WmdmPmSp  Stopped    Manual    Share
Process    c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Windows Management Instrumentation Driver Extensions Wmi  Stopped
     Manual    Share Process   c:\windows\system32\svchost.exe -k netsvcs
     Normal    LocalSystem    0
WMI Performance Adapter    WmiApSrv  Stopped    Manual    Own Process
     c:\windows\system32\wbem\wmiapsrv.exe     Normal    LocalSystem
     0
Automatic Updates    wuauserv  Stopped    Manual    Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0
Wireless Configuration    WZCSVC    Stopped    Manual    Share Process
     c:\windows\system32\svchost.exe -k netsvcs     Normal
     LocalSystem    0

[Program Groups]

Group Name Name  User Name
Accessories    Default User:Accessories  Default User
Accessories\Accessibility Default User:Accessories\Accessibility
     Default User
Accessories\Entertainment Default User:Accessories\Entertainment
     Default User
Startup    Default User:Startup Default User
Accessories    All Users:Accessories    All Users
Accessories\Accessibility All Users:Accessories\Accessibility  All Users
Accessories\Communications All Users:Accessories\Communications All Users
Accessories\Entertainment All Users:Accessories\Entertainment  All Users
```

```
Accessories\System Tools  All Users:Accessories\System Tools   All Users
Administrative Tools All Users:Administrative Tools  All Users
Microsoft SQL Server All Users:Microsoft SQL Server  All Users
Startup    All Users:Startup    All Users
Accessories    NT AUTHORITY\SYSTEM:Accessories NT AUTHORITY\SYSTEM
Accessories\Accessibility NT AUTHORITY\SYSTEM:Accessories\Accessibility
     NT AUTHORITY\SYSTEM
Accessories\Entertainment NT AUTHORITY\SYSTEM:Accessories\Entertainment
     NT AUTHORITY\SYSTEM
Startup    NT AUTHORITY\SYSTEM:Startup    NT AUTHORITY\SYSTEM
Accessories    ASTERIX\Administrator:Accessories    ASTERIX\Administrator

Accessories\Accessibility ASTERIX\Administrator:Accessories\Accessibility
     ASTERIX\Administrator
Accessories\Entertainment ASTERIX\Administrator:Accessories\Entertainment
     ASTERIX\Administrator
Administrative Tools ASTERIX\Administrator:Administrative Tools
     ASTERIX\Administrator
Startup    ASTERIX\Administrator:Startup   ASTERIX\Administrator

[Startup Programs]

Program    Command    User Name  Location
desktop    desktop.ini    NT AUTHORITY\SYSTEM  Startup
desktop    desktop.ini    ASTERIX\Administrator    Startup
desktop    desktop.ini    .DEFAULT   Startup
desktop    desktop.ini    All Users  Common Startup

[OLE Registration]

Object    Local Server
Sound (OLE2)    sndrec32.exe
Media Clip mplay32.exe
Video Clip mplay32.exe /avi
MIDI Sequence   mplay32.exe /mid
Sound Not Available
Media Clip Not Available
Windows Media Player 7    Not Available
WordPad Document     "%programfiles%\windows nt\accessories\wordpad.exe"
Windows Media Services DRM Storage object Not Available

[Windows Error Reporting]

Time  Type  Details

[Internet Settings]



[Internet Explorer]

[ Following are sub-categories of this main category ]
[Summary]

Item Value
```

```
Version    6.0.3663.0
Build 63663
Application Path     C:\Program Files\Internet Explorer
Language   English (United States)
Active Printer  Not Available

Cipher Strength 128-bit
Content Advisor Disabled
IEAK Install    No

[File Versions]

File Version    Size Date Path Company
actxprxy.dll    6.0.3663.0 95 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
advpack.dll     6.0.3663.0 93 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
asctrls.ocx     6.0.3663.0 89 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
browselc.dll    6.0.3663.0 62 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
browseui.dll    6.0.3663.0 1,000 KB   7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
cdfview.dll     6.0.3663.0 141 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
comctl32.dll    5.82.3663.0     560 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
dxtrans.dll     6.3.3663.0 188 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
dxtmsft.dll     6.3.3663.0 332 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
iecont.dll <File Missing>  Not Available   Not Available   Not Available
     Not Available
iecontlc.dll    <File Missing>  Not Available   Not Available   Not
Available  Not Available
iedkcs32.dll    16.0.3663.0     292 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
iepeers.dll     6.0.3663.0 229 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
iesetup.dll     6.0.3663.0 59 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
ieuinit.inf     Not Available   19 KB 7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Not Available
iexplore.exe    6.0.3663.0 90 KB 7/18/2002 2:00:00 PM C:\Program
Files\Internet Explorer   Microsoft Corporation
imgutil.dll     6.0.3663.0 30 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
inetcpl.cpl     6.0.3663.0 296 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
inetcplc.dll    6.0.3663.0 108 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
inseng.dll 6.0.3663.0 71 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
mlang.dll  6.0.3663.0 565 KB     7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
```

```
msencode.dll    2000.7.25.0     92 KB 7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Not Available
mshta.exe  6.0.3663.0 27 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
mshtml.dll 6.0.3663.0 2,628 KB   7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
mshtml.tlb 6.0.3663.0 1,319 KB   7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
mshtmled.dll    6.0.3663.0 424 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
mshtmler.dll    6.0.3663.0 55 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
msident.dll     6.0.3663.0 47 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
msidntld.dll    6.0.3663.0 15 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
msieftp.dll     6.0.3663.0 232 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
msrating.dll    6.0.3663.0 132 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
mstime.dll 6.0.3663.0 490 KB     7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
occache.dll     6.0.3663.0 88 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
proctexe.ocx    6.3.3663.0 78 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Intel Corporation
sendmail.dll    6.0.3663.0 54 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
shdoclc.dll     6.0.3663.0 521 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
shdocvw.dll     6.0.3663.0 1,311 KB   7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
shfolder.dll    6.0.3663.0 23 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
shlwapi.dll     6.0.3663.0 269 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
tdc.ocx    1.3.0.3130 57 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
url.dll    6.0.3663.0 40 KB 7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
urlmon.dll 6.0.3663.0 442 KB     7/18/2002 2:00:00 PM C:\WINDOWS\system32
     Microsoft Corporation
webcheck.dll    6.0.3663.0 254 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation
wininet.dll     6.0.3663.0 581 KB     7/18/2002 2:00:00 PM
     C:\WINDOWS\system32  Microsoft Corporation

[Connectivity]

Item Value
Connection Preference     Never dial

LAN Settings

AutoConfigProxy Not Available
```

```
AutoProxyDetectMode  Disabled
AutoConfigURL
ProxyEnabled
ProxyServer     proxy.mch.fsc.net:81
ProxyOverride   <local>

[Cache]

[ Following are sub-categories of this main category ]
[Summary]

Item Value
Page Refresh Type    Automatic
Temporary Internet Files Folder C:\Documents and
Settings\LocalService\Local Settings\Temporary Internet Files
Total Disk Space     Not Available
Available Disk Space Not Available
Maximum Cache Size   Not Available
Available Cache Size Not Available

[List of Objects]

Program File    Status     CodeBase
No cached object information available

[Content]

[ Following are sub-categories of this main category ]
[Summary]

Item Value
Content Advisor Disabled

[Personal Certificates]

Issued To  Issued By  Validity   Signature Algorithm
No personal certificate information available

[Other People Certificates]

Issued To  Issued By  Validity   Signature Algorithm
No other people certificate information available

[Publishers]

Name
No publisher information available

[Security]

Zone Security Level
My Computer     Custom
Local intranet  Medium-low
Trusted sites   Low
Internet   Medium
```

```
Restricted sites     High



GCFVERSION=2.00;
Begin
BeginGroup
     PhysicalDevice0 = Channel=0, Target=0, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice1 = Channel=1, Target=0, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice2 = Channel=0, Target=1, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice3 = Channel=1, Target=1, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice4 = Channel=0, Target=2, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice5 = Channel=1, Target=2, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice6 = Channel=0, Target=3, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice7 = Channel=1, Target=3, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice8 = Channel=0, Target=4, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice9 = Channel=1, Target=4, Size=34700MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     IntermediateDevice0 = StripeSize=64KB, Raid=1, WriteThrough=1,
Size=34696MB,
          (PhysicalDevice0, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks),
          (PhysicalDevice1, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks);
     IntermediateDevice1 = StripeSize=64KB, Raid=1, WriteThrough=1,
Size=34696MB,
          (PhysicalDevice2, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks),
          (PhysicalDevice3, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks);
     IntermediateDevice2 = StripeSize=64KB, Raid=1, WriteThrough=1,
Size=34696MB,
          (PhysicalDevice4, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks),
          (PhysicalDevice5, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks);
     IntermediateDevice3 = StripeSize=64KB, Raid=1, WriteThrough=1,
Size=34696MB,
          (PhysicalDevice6, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks),
          (PhysicalDevice7, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks);
     IntermediateDevice4 = StripeSize=64KB, Raid=1, WriteThrough=1,
Size=34696MB,
          (PhysicalDevice8, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks),
          (PhysicalDevice9, StartAddress=0MB/0Blocks,
Size=34696MB/71057408Blocks);
     LogicalDevice0 = StripeSize=64KB, Raid=12, WriteThrough=1,
Size=173480MB, BIOSGeometry=8GB,
          (IntermediateDevice0, StartAddress=0MB, Size=34696MB),
          (IntermediateDevice1, StartAddress=0MB, Size=34696MB),
          (IntermediateDevice2, StartAddress=0MB, Size=34696MB),
          (IntermediateDevice3, StartAddress=0MB, Size=34696MB),
          (IntermediateDevice4, StartAddress=0MB, Size=34696MB);
EndGroup
BeginControllerParameter
     ControllerName = eXtremeRAID 2000;
     ControllerType = 28;
     FirmwareVersion = 7.01;
     CacheLineSize = 8KB;
     AutomaticRebuildRate = 50;
     BackgroundInitializeRate = 50;
     ConsistencyCheckRate = 50;
     MORERate = 50;
     InitiatorID = 7;
     DevicesPerSpin = 2;
     SequentialDelay = 6S;
     EnableDriveSizing = 1;
     EnableClustering = 0;
     EnableBGInit = 1;
     EnableBiosLoadDelay = 0;
     EnableForcedUnitAccess = 0;
     DisableBios = 1;
     EnableCDROMBoot = 0;
     EnableStorageWorks = 0;
     EnableSAFTE = 0;
     EnableSES = 0;
     EnableARM = 0;
     EnableOFM = 0;
     OEMCode = 16;
     StartupOption = 4;
     EnableTempOffline = 0;
     EnablePatrolRead = 0;
     EnableSmartMode = 0;
     DlyBtwnIterations = 336;
     SmartScanInterval = 0;
EndControllerParameter
End

========================= Controller 1 .. 5 =========================

GCFVERSION=2.00;
Begin
BeginGroup
     PhysicalDevice0 = Channel=0, Target=0, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice1 = Channel=0, Target=1, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice2 = Channel=0, Target=2, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice3 = Channel=0, Target=3, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice4 = Channel=0, Target=4, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice5 = Channel=0, Target=5, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice6 = Channel=0, Target=10, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice7 = Channel=0, Target=11, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice8 = Channel=0, Target=12, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice9 = Channel=0, Target=13, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice10 = Channel=0, Target=14, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice11 = Channel=0, Target=15, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice12 = Channel=1, Target=0, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice13 = Channel=1, Target=1, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice14 = Channel=1, Target=2, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice15 = Channel=1, Target=3, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice16 = Channel=1, Target=4, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice17 = Channel=1, Target=5, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice18 = Channel=1, Target=10, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice19 = Channel=1, Target=11, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice20 = Channel=1, Target=12, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice21 = Channel=1, Target=13, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice22 = Channel=1, Target=14, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice23 = Channel=1, Target=15, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice24 = Channel=2, Target=0, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice25 = Channel=2, Target=1, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice26 = Channel=2, Target=2, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice27 = Channel=2, Target=3, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice28 = Channel=2, Target=4, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice29 = Channel=2, Target=5, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice30 = Channel=2, Target=10, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice31 = Channel=2, Target=11, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice32 = Channel=2, Target=12, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice33 = Channel=2, Target=13, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice34 = Channel=2, Target=14, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice35 = Channel=2, Target=15, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice36 = Channel=3, Target=0, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice37 = Channel=3, Target=1, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice38 = Channel=3, Target=2, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice39 = Channel=3, Target=3, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice40 = Channel=3, Target=4, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice41 = Channel=3, Target=5, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice42 = Channel=3, Target=10, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice43 = Channel=3, Target=11, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice44 = Channel=3, Target=12, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice45 = Channel=3, Target=13, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice46 = Channel=3, Target=14, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     PhysicalDevice47 = Channel=3, Target=15, Size=17300MB, State=Online,
          TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=16;
     IntermediateDevice0 = StripeSize=128KB, Raid=0, WriteThrough=1,
Size=207552MB,
          (PhysicalDevice0, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice1, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice2, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice3, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice4, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice5, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice6, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice7, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice8, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice9, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice10, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice11, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks);
     IntermediateDevice1 = StripeSize=128KB, Raid=0, WriteThrough=1,
Size=207552MB,
          (PhysicalDevice12, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice13, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice14, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice15, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice16, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice17, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice18, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice19, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice20, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice21, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice22, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice23, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks);
     IntermediateDevice2 = StripeSize=128KB, Raid=0, WriteThrough=1,
Size=207552MB,
          (PhysicalDevice24, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice25, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice26, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice27, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice28, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice29, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice30, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice31, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice32, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice33, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice34, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice35, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks);
     IntermediateDevice3 = StripeSize=128KB, Raid=0, WriteThrough=1,
Size=207552MB,
          (PhysicalDevice36, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice37, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice38, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice39, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice40, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice41, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice42, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice43, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice44, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice45, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice46, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks),
          (PhysicalDevice47, StartAddress=0MB/0Blocks,
Size=17296MB/35422208Blocks);
     LogicalDevice0 = StripeSize=128KB, Raid=12, WriteThrough=1,
Size=830208MB, BIOSGeometry=8GB,
          (IntermediateDevice0, StartAddress=0MB, Size=207552MB),
          (IntermediateDevice1, StartAddress=0MB, Size=207552MB),
          (IntermediateDevice2, StartAddress=0MB, Size=207552MB),
          (IntermediateDevice3, StartAddress=0MB, Size=207552MB);
EndGroup
BeginControllerParameter
     ControllerName = eXtremeRAID 2000;
     ControllerType = 28;
     FirmwareVersion = 7.01;
     CacheLineSize = 8KB;
     AutomaticRebuildRate = 50;
     BackgroundInitializeRate = 50;
     ConsistencyCheckRate = 50;
     MORERate = 50;
     InitiatorID = 7;
     DevicesPerSpin = 2;
     SequentialDelay = 6S;
     EnableDriveSizing = 1;
     EnableClustering = 0;
     EnableBGInit = 0;
     EnableBiosLoadDelay = 0;
     EnableForcedUnitAccess = 0;
     DisableBios = 1;
     EnableCDROMBoot = 0;
     EnableStorageWorks = 0;
     EnableSAFTE = 0;
     EnableSES = 0;
     EnableARM = 0;
     EnableOFM = 0;
     OEMCode = 16;
     StartupOption = 4;
     EnableTempOffline = 0;
     EnablePatrolRead = 0;
     EnableSmartMode = 0;
     DlyBtwnIterations = 336;
     SmartScanInterval = 0;
EndControllerParameter
End


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k
Class Name:        <NO CLASS>
Last Write Time:   10/31/2002 - 8:30 AM
Value 0
  Name:            Group
  Type:            REG_SZ
  Data:            SCSI Miniport

Value 1
  Name:            Start
  Type:            REG_DWORD
  Data:            0

Value 2
  Name:            Tag
  Type:            REG_DWORD
  Data:            0x21

Value 3
  Name:            Type
  Type:            REG_DWORD
  Data:            0x1

Value 4
  Name:            ErrorControl
  Type:            REG_DWORD
  Data:            0x1

Value 5
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            system32\DRIVERS\dac2w2k.sys


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Parameters
Class Name:        <NO CLASS>
```

```
Last Write Time:   8/20/2002 - 1:47 PM
Value 0
  Name:            BusType
  Type:            REG_DWORD
  Data:            0x8


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Parameters\D
evice
Class Name:        <NO CLASS>
Last Write Time:   10/29/2002 - 3:19 PM
Value 0
  Name:            DriverParameter
  Type:            REG_SZ
  Data:            ConfigureSIR=12


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Parameters\P
npInterface
Class Name:        <NO CLASS>
Last Write Time:   8/20/2002 - 11:30 AM
Value 0
  Name:            2
  Type:            REG_DWORD
  Data:            0x1

Value 1
  Name:            5
  Type:            REG_DWORD
  Data:            0x1


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Security
Class Name:        <NO CLASS>
Last Write Time:   8/20/2002 - 11:07 AM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 90 00 00 00 - 9c 00 00 00 14 00 00 00
................
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02 80 14 00
0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00 00 00 00
ÿ...............
00000030   02 00 60 00 04 00 00 00 - 00 00 14 00 fd 01 02 00
..`.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 00 00 18 00
................
00000050   ff 01 0f 00 01 02 00 00 - 00 00 00 05 20 00 00 00
ÿ........... ...
```

```
00000060   20 02 00 00 00 00 14 00 - 8d 01 02 00 01 01 00 00
................
00000070   00 00 00 05 0b 00 00 00 - 00 00 18 00 fd 01 02 00
............ý...
00000080   01 02 00 00 00 00 00 05 - 20 00 00 00 23 02 00 00  ........
...#...
00000090   01 01 00 00 00 00 00 05 - 12 00 00 00 01 01 00 00
................
00 00 00 05 12 00 00 00 -                          ........


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Enum
Class Name:        <NO CLASS>
Last Write Time:   10/31/2002 - 8:30 AM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2254b0d&0&4030

Value 1
  Name:            Count
  Type:            REG_DWORD
  Data:            0x7

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x7

Value 3
  Name:            1
  Type:            REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1c72a60d&0&4038

Value 4
  Name:            2
  Type:            REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1ece4987&0&4028

Value 5
  Name:            3
  Type:            REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2f92d4b0&0&4020

Value 6
  Name:            4
  Type:            REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2df34b01&0&4018
```

```
Value 7
  Name:             5
  Type:             REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2bee4042&0&4010

Value 8
  Name:             6
  Type:             REG_SZ
  Data:
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&3ae9bccd&0&4028


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\I/O
System
Class Name:        <NO CLASS>
Last Write Time:   8/20/2002 - 2:44 PM
Value 0
  Name:             CountOperations
  Type:             REG_DWORD
  Data:             0


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session
Manager\Memory Management
Class Name:        <NO CLASS>
Last Write Time:   8/22/2002 - 3:54 PM
Value 0
  Name:             ClearPageFileAtShutdown
  Type:             REG_DWORD
  Data:             0

Value 1
  Name:             DisablePagingExecutive
  Type:             REG_DWORD
  Data:             0

Value 2
  Name:             LargeSystemCache
  Type:             REG_DWORD
  Data:             0

Value 3
  Name:             NonPagedPoolQuota
  Type:             REG_DWORD
  Data:             0

Value 4
  Name:             NonPagedPoolSize
  Type:             REG_DWORD
  Data:             0

Value 5
  Name:             PagedPoolQuota
  Type:             REG_DWORD
  Data:             0

Value 6
  Name:             PagedPoolSize
  Type:             REG_DWORD
  Data:             0

Value 7
  Name:             SecondLevelDataCache
  Type:             REG_DWORD
  Data:             0

Value 8
  Name:             SystemPages
  Type:             REG_DWORD
  Data:             0x33000

Value 9
  Name:             PagingFiles
  Type:             REG_MULTI_SZ
  Data:             C:\pagefile.sys 2046 4092

Value 10
  Name:             PhysicalAddressExtension
  Type:             REG_DWORD
  Data:             0x1

Value 11
  Name:             WriteWatch
  Type:             REG_DWORD
  Data:             0x1

Value 12
  Name:             SessionViewSize
  Type:             REG_DWORD
  Data:             0x30

Value 13
  Name:             SessionPoolSize
  Type:             REG_DWORD
  Data:             0x4

Value 14
  Name:             DontVerifyRandomDrivers
  Type:             REG_DWORD
  Data:             0x1


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session
Manager\Memory Management\PrefetchParameters
Class Name:        <NO CLASS>
Last Write Time:   10/23/2002 - 4:07 PM
```

```
Value 0
  Name:            VideoInitTime
  Type:            REG_DWORD
  Data:            0x148

Value 1
  Name:            EnablePrefetcher
  Type:            REG_DWORD
  Data:            0x2

Value 2
  Name:            AppLaunchMaxNumPages
  Type:            REG_DWORD
  Data:            0xfa0

Value 3
  Name:            AppLaunchMaxNumSections
  Type:            REG_DWORD
  Data:            0xaa

Value 4
  Name:            AppLaunchTimerPeriod
  Type:            REG_BINARY
  Data:
80 69 67 ff ff ff ff ff -                          .igÿÿÿÿÿ

Value 5
  Name:            BootMaxNumPages
  Type:            REG_DWORD
  Data:            0x1f400

Value 6
  Name:            BootMaxNumSections
  Type:            REG_DWORD
  Data:            0xff0

Value 7
  Name:            BootTimerPeriod
  Type:            REG_BINARY
  Data:
00 f2 d8 f8 ff ff ff ff -                          .òØøÿÿÿÿ

Value 8
  Name:            MaxNumActiveTraces
  Type:            REG_DWORD
  Data:            0x8

Value 9
  Name:            MaxNumSavedTraces
  Type:            REG_DWORD
  Data:            0x8

Value 10
  Name:            RootDirPath
  Type:            REG_SZ
```

```
  Data:            Prefetch

Value 11
  Name:            HostingAppList
  Type:            REG_SZ
  Data:            DLLHOST.EXE,MMC.EXE,RUNDLL32.EXE


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\qlvika
Class Name:        <NO CLASS>
Last Write Time:   10/24/2002 - 10:43 AM
Value 0
  Name:            ErrorControl
  Type:            REG_DWORD
  Data:            0x1

Value 1
  Name:            start
  Type:            REG_DWORD
  Data:            0x2

Value 2
  Name:            type
  Type:            REG_DWORD
  Data:            0x1

Value 3
  Name:            Tag
  Type:            REG_DWORD
  Data:            0x1

Value 4
  Name:            group
  Type:            REG_SZ
  Data:            MVIA

Value 5
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            system32\DRIVERS\qlvika.sys


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\qlvika\Adapters
Class Name:        <NO CLASS>
Last Write Time:   8/20/2002 - 2:50 PM

Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\qlvika\Adapters\2100
00E08B072BB0
Class Name:        <NO CLASS>
Last Write Time:   8/21/2002 - 3:22 PM
Value 0
  Name:            IPAddress
  Type:            REG_MULTI_SZ
  Data:            129.103.192.216


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\qlvika\Parameters
Class Name:        <NO CLASS>
Last Write Time:   10/7/2002 - 2:43 PM
Value 0
  Name:            MaxRegisterMBytes
  Type:            REG_DWORD
  Data:            0x200

Value 1
  Name:            MaxRegisterRdmaMBytes
  Type:            REG_DWORD
  Data:            0x200

Value 2
  Name:            MaxRegisterRegions
  Type:            REG_DWORD
  Data:            0x1000

Value 3
  Name:            MaxVIs
  Type:            REG_DWORD
  Data:            0x400

Value 4
  Name:            MaxCQs
  Type:            REG_DWORD
  Data:            0x400

Value 5
  Name:            MaxCQEntries
  Type:            REG_DWORD
  Data:            0x2000

Value 6
  Name:            MaxTransferSize
  Type:            REG_DWORD
  Data:            0x10000

Value 7
  Name:            MaxPTags
  Type:            REG_DWORD
  Data:            0x800

Value 8
  Name:            IuBuffers
  Type:            REG_DWORD
  Data:            0x100

Value 9
  Name:            SendDescQuota
```

```
  Type:            REG_DWORD
  Data:            0x8

Value 10
  Name:            RecvDescQuota
  Type:            REG_DWORD
  Data:            0x8

Value 11
  Name:            SupportPrototypeCards
  Type:            REG_DWORD
  Data:            0


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\qlvika\Security
Class Name:        <NO CLASS>
Last Write Time:   8/20/2002 - 12:22 PM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 90 00 00 00 - 9c 00 00 00 14 00 00 00
................
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02 80 14 00
0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00 00 00 00
ÿ...............
00000030   02 00 60 00 04 00 00 00 - 00 00 14 00 fd 01 02 00
..`.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 00 00 18 00
................
00000050   ff 01 0f 00 01 02 00 00 - 00 00 00 05 20 00 00 00
ÿ.......... ...
00000060   20 02 00 00 00 00 14 00 - 8d 01 02 00 01 01 00 00
...............
00000070   00 00 00 05 0b 00 00 00 - 00 00 18 00 fd 01 02 00
............ý...
00000080   01 02 00 00 00 00 00 05 - 20 00 00 00 23 02 00 00  ........
...#...
00000090   01 01 00 00 00 00 00 05 - 12 00 00 00 01 01 00 00
................
00 00 00 05 12 00 00 00 -                          ........


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\qlvika\Enum
Class Name:        <NO CLASS>
Last Write Time:   10/24/2002 - 10:43 AM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:            Root\SCSIADAPTER\0000

Value 1
```

```
  Name:            Count
  Type:            REG_DWORD
  Data:            0x1

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x1
```

This section discloses hardware information and the Windows 2000 registry parameters used on the PRIMERGY C200 client systems.

```
System Information report written at: 10/24/2002 02:21:12 PM
[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    C200CL1
System Manufacturer  FUJITSU SIEMENS
System Model   D1306
System Type    X86-based PC
Processor  x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1393 Mhz
Processor  x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1393 Mhz
BIOS Version   PhoenixBIOS Version 4.06  Rev. 1.03.1306
Windows Directory    C:\WINNT
System Directory     C:\WINNT\System32
Boot Device    \Device\Harddisk0\Partition1
Locale    United States
User Name  C200CL1\Administrator
Time Zone  W. Europe Daylight Time
Total Physical Memory     785,892 KB
Available Physical Memory 684,476 KB
Total Virtual Memory 2,051,744 KB
Available Virtual Memory  1,883,460 KB
Page File Space 1,265,852 KB
Page File  C:\pagefile.sys


System Information report written at: 10/24/2002 02:20:45 PM
[Hardware Resources]

[ Following are sub-categories of this main category ]

[Conflicts/Sharing]

Resource  Device
No conflicted/shared resources

[DMA]
```

```
Channel    Device    Status
4    Direct memory access 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
0x0D00-0x0FFF   PCI bus   OK
0x1000-0x180F   PCI bus   OK
0x1000-0x180F   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
0x1400-0x143F   Fujitsu Siemens Computers 82559-based Onboard Ethernet
with WoL and AoL     OK
0x0A79-0x0A79   ISAPNP Read Data Port     OK
0x0279-0x0279   ISAPNP Read Data Port     OK
0x02F4-0x02F7   ISAPNP Read Data Port     OK
0x0010-0x001F   Motherboard resources     OK
0x0022-0x002D   Motherboard resources     OK
0x0030-0x003F   Motherboard resources     OK
0x0050-0x0053   Motherboard resources     OK
0x0062-0x0063   Motherboard resources     OK
0x0065-0x006F   Motherboard resources     OK
0x0074-0x007F   Motherboard resources     OK
0x0090-0x009F   Motherboard resources     OK
0x00A2-0x00B1   Motherboard resources     OK
0x00B4-0x00BF   Motherboard resources     OK
0x00E0-0x00EF   Motherboard resources     OK
0x0072-0x0073   Motherboard resources     OK
0x04D0-0x04D1   Motherboard resources     OK
0xF100-0xF10F   Motherboard resources     OK
0x0080-0x008F   Direct memory access controller OK
0x00C0-0x00DF   Direct memory access controller OK
0x0020-0x0021   Programmable interrupt controller    OK
0x00A0-0x00A1   Programmable interrupt controller    OK
0x0070-0x0071   System CMOS/real time clock    OK
0x0040-0x0043   System timer   OK
0x00F0-0x00FE   Numeric data processor    OK
0x0061-0x0061   System speaker  OK
0x0060-0x0060   Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
     OK
0x0064-0x0064   Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
     OK
0x03F0-0x03F5   Standard floppy disk controller OK
0x03F7-0x03F7   Standard floppy disk controller OK
0x1800-0x180F   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
0x1C00-0x1CFF   PCI bus   OK
0x1C00-0x1CFF   Symbios Ultra3 PCI SCSI Adapter; 53C1010-66 Device   OK
0x2000-0x20FF   PCI bus   OK
0x2000-0x20FF   QLogic QLA23xx PCI Fibre Channel Adapter  OK

[IRQs]

IRQ Number Device
9     Microsoft ACPI-Compliant System
30    Fujitsu Siemens Computers 82559-based Onboard Ethernet with WoL and
AoL
8     System CMOS/real time clock
13    Numeric data processor
1     Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12    PS/2 Compatible Mouse
6     Standard floppy disk controller
15    Secondary IDE Channel
29    Symbios Ultra3 PCI SCSI Adapter; 53C1010-66 Device
26    QLogic QLA23xx PCI Fibre Channel Adapter

[Memory]

Range Device     Status
0xA0000-0xBFFFF PCI bus   OK
0xA0000-0xBFFFF ATI Technologies Inc. RAGE XL PCI    OK
0xC8000-0xDFFFF PCI bus   OK
0xFB000000-0xFC2FFFFF     PCI bus   OK
0xFB000000-0xFC2FFFFF     ATI Technologies Inc. RAGE XL PCI    OK
0xFED00000-0xFEDFFFFF     PCI bus   OK
0xFEE01000-0xFFBFFFFF     PCI bus   OK
0xFC020000-0xFC020FFF     ATI Technologies Inc. RAGE XL PCI    OK
0xFC021000-0xFC021FFF     Fujitsu Siemens Computers 82559-based Onboard
Ethernet with WoL and AoL OK
0xFC000000-0xFC01FFFF     Fujitsu Siemens Computers 82559-based Onboard
Ethernet with WoL and AoL OK
0xFC300000-0xFC6FFFFF     PCI bus   OK
0xFC300000-0xFC6FFFFF     Symbios Ultra3 PCI SCSI Adapter; 53C1010-66
Device    OK
0xFC302000-0xFC3023FF     Symbios Ultra3 PCI SCSI Adapter; 53C1010-66
Device    OK
0xFC700000-0xFCAFFFFF     PCI bus   OK
0xFC700000-0xFCAFFFFF     QLogic QLA23xx PCI Fibre Channel Adapter  OK

System Information report written at: 10/24/2002 02:20:59 PM
[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\lhacm.acm     Microsoft Corporation           OK
     C:\WINNT\System32\LHACM.ACM     4.4.3385  33.27 KB (34,064 bytes)
     2/12/2001 3:47:53 PM
c:\winnt\system32\msg723.acm    Microsoft Corporation           OK
     C:\WINNT\System32\MSG723.ACM    4.4.3385  106.77 KB (109,328 bytes)
     2/12/2001 3:47:52 PM
c:\winnt\system32\iac25_32.ax   Intel Corporation    Indeo® audio software
     OK   C:\WINNT\System32\IAC25_32.AX   2.05.53    195.00 KB (199,680
bytes)    12/7/1999 1:00:00 PM
c:\winnt\system32\tssoft32.acm DSP GROUP, INC.      OK
     C:\WINNT\System32\TSSOFT32.ACM 1.01 9.27 KB (9,488 bytes)
     12/7/1999 1:00:00 PM
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 1:00:00 PM
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 1:00:00 PM
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 1:00:00 PM
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 1:00:00 PM

[Video Codecs]

Codec Manufacturer    Description     Status     File Version    Size
     Creation Date
c:\winnt\system32\ir50_32.dll   Intel Corporation    Indeo® video 5.10
     OK   C:\WINNT\System32\IR50_32.DLL   R.5.10.15.2.55  737.50 KB
(755,200 bytes) 12/7/1999 1:00:00 PM
c:\winnt\system32\msh263.drv    Microsoft Corporation           OK
     C:\WINNT\System32\MSH263.DRV    4.4.3385  252.27 KB (258,320 bytes)
     2/12/2001 3:47:24 PM
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 1:00:00 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 1:00:00 PM
c:\winnt\system32\msh261.drv    Microsoft Corporation           OK
     C:\WINNT\System32\MSH261.DRV    4.4.3385  163.77 KB (167,696 bytes)
     2/12/2001 3:47:52 PM
c:\winnt\system32\msrle32.dll   Microsoft Corporation           OK
     C:\WINNT\System32\MSRLE32.DLL   5.00.2134.1     10.77 KB (11,024
bytes)    12/7/1999 1:00:00 PM
c:\winnt\system32\ir32_32.dll   Intel(R) Corporation      OK
     C:\WINNT\System32\IR32_32.DLL   Not Available   194.50 KB (199,168
bytes)    12/7/1999 1:00:00 PM
```

```
[CD-ROM]

Item Value
Drive D:
Description     CD-ROM Drive
Media Loaded    False
Media Type CD-ROM
Name MITSUMI CD-ROM FX4830T!B
Manufacturer    (Standard CD-ROM drives)
Status     OK
Transfer Rate   Not Available
SCSI Target ID  0
PNP Device ID   IDE\CDROMMITSUMI_CD-
ROM_FX4830T!B________________R02N____\5&3858FEE&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_007A110A&REV_27\3&13C0B0C5&0&20
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  16777216
Resolution 800 x 600 x 85 hertz
Bits/Pixel 24


[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\5&1413D98F&0
```

```
NumberOfFunctionKeys 12


[Pointing Device]

Item Value
Hardware Type   PS/2 Compatible Mouse
Number of Buttons    3
Status     OK
PNP Device ID   ACPI\PNP0F13\5&1413D98F&0
Power Management Supported False
Double Click Threshold    6
Handedness Right Handed Operation


[Modem]

Item Value
No modems

[Network]

[ Following are sub-categories of this main category ]

[Adapter]

Item Value
Name [00000000] Intel(R) PRO/100+ PCI Adapter
Adapter Type    Not Available
Product Name    Intel(R) PRO/100+ PCI Adapter
Installed True
PNP Device ID   Not Available
Last Reset 10/24/2002 3:57:26 PM
Index 0
Service Name    E100B
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] RAS Async Adapter
Adapter Type    Not Available
Product Name    RAS Async Adapter
Installed True
PNP Device ID   Not Available
Last Reset 10/24/2002 3:57:26 PM
Index 1
Service Name    AsyncMac
IP Address Not Available
IP Subnet  Not Available
```

```
Default IP Gateway   Not Available
DHCP Enabled    False
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Service Name    Not Available

Name [00000002] WAN Miniport (L2TP)
Adapter Type    Not Available
Product Name    WAN Miniport (L2TP)
Installed  True
PNP Device ID   ROOT\MS_L2TPMINIPORT\0000
Last Reset 10/24/2002 3:57:26 PM
Index 2
Service Name    Rasl2tp
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    False
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Service Name    Rasl2tp
Driver     c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1)

Name [00000003] WAN Miniport (PPTP)
Adapter Type    Wide Area Network (WAN)
Product Name    WAN Miniport (PPTP)
Installed  True
PNP Device ID   ROOT\MS_PPTPMINIPORT\0000
Last Reset 10/24/2002 3:57:26 PM
Index 3
Service Name    PptpMiniport
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    False
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     50:50:54:50:30:30
Service Name    PptpMiniport
Driver     c:\winnt\system32\drivers\raspptp.sys (47856, 5.00.2160.1)

Name [00000004] Direct Parallel
Adapter Type    Not Available
Product Name    Direct Parallel
Installed  True
PNP Device ID   ROOT\MS_PTIMINIPORT\0000
Last Reset 10/24/2002 3:57:26 PM
Index 4
Service Name    Raspti
IP Address Not Available
```

```
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    False
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Service Name    Raspti
Driver     c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1)

Name [00000005] WAN Miniport (IP)
Adapter Type    Not Available
Product Name    WAN Miniport (IP)
Installed  True
PNP Device ID   ROOT\MS_NDISWANIP\0000
Last Reset 10/24/2002 3:57:26 PM
Index 5
Service Name    NdisWan
IP Address Not Available
IP Subnet  Not Available
Default IP Gateway   Not Available
DHCP Enabled    False
DHCP Server     Not Available
DHCP Lease Expires   Not Available
DHCP Lease Obtained  Not Available
MAC Address     Not Available
Service Name    NdisWan
Driver     c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779)

Name [00000006] Fujitsu Siemens Computers 82559-based Onboard Ethernet
with WoL and AoL
Adapter Type    Ethernet 802.3
Product Name    Fujitsu Siemens Computers 82559-based Onboard Ethernet
with WoL and AoL
Installed  True
PNP Device ID
     PCI\VEN_8086&DEV_1229&SUBSYS_004B110A&REV_09\3&13C0B0C5&0&50
Last Reset 10/24/2002 3:57:26 PM
Index 6
Service Name    E100B
IP Address 129.103.211.1
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     00:30:05:19:79:0F
Service Name    E100B
IRQ Number 30
I/O Port   0x1400-0x143F
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 Tcpip [UDP/IP]
ConnectionlessService     True
GuaranteesDelivery   False
GuaranteesSequencing False
MaximumAddressSize   16 bytes
MaximumMessageSize   65467 bytes
MessageOriented True
MinimumAddressSize   16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData  False
SupportsDisconnectData    False
SupportsEncryption   False
SupportsExpeditedData     False
SupportsGracefulClosing   False
SupportsGuaranteedBandwidth    False
SupportsMulticasting True

Name RSVP UDP Service Provider
ConnectionlessService     True
GuaranteesDelivery   False
GuaranteesSequencing False
MaximumAddressSize   16 bytes
MaximumMessageSize   65467 bytes
MessageOriented True
MinimumAddressSize   16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData  False
SupportsDisconnectData    False
SupportsEncryption   True
SupportsExpeditedData     False
SupportsGracefulClosing   False
SupportsGuaranteedBandwidth    False
SupportsMulticasting True
```

```
Name RSVP TCP Service Provider
ConnectionlessService     False
GuaranteesDelivery   True
GuaranteesSequencing True
MaximumAddressSize   16 bytes
MaximumMessageSize   0 bytes
MessageOriented False
MinimumAddressSize   16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData  False
SupportsDisconnectData    False
SupportsEncryption   True
SupportsExpeditedData     True
SupportsGracefulClosing   True
SupportsGuaranteedBandwidth    False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{75A03E77-80A6-4DFD-A783-
6876E710AB9F}] 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_{75A03E77-80A6-4DFD-A783-
6876E710AB9F}] 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_{BAFACDD3-FF58-4244-8343-
63E521C918BC}] 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_{BAFACDD3-FF58-4244-8343-
63E521C918BC}] 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_{CA92CE14-2FC2-4FF3-B680-
1F7DF9594EAF}] SEQPACKET 1
ConnectionlessService     False
GuaranteesDelivery   True
GuaranteesSequencing True
MaximumAddressSize   20 bytes
MaximumMessageSize   64000 bytes
MessageOriented True
MinimumAddressSize   20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData  False
SupportsDisconnectData    False
SupportsEncryption   False
SupportsExpeditedData     False
```

```
SupportsGracefulClosing   False
SupportsGuaranteedBandwidth    False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{CA92CE14-2FC2-4FF3-B680-
1F7DF9594EAF}] DATAGRAM 1
ConnectionlessService     True
GuaranteesDelivery   False
GuaranteesSequencing False
MaximumAddressSize   20 bytes
MaximumMessageSize   64000 bytes
MessageOriented True
MinimumAddressSize   20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData  False
SupportsDisconnectData    False
SupportsEncryption   False
SupportsExpeditedData     False
SupportsGracefulClosing   False
SupportsGuaranteedBandwidth    False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{FD73BFE5-0643-4705-9572-
5E3D92E4F8AD}] SEQPACKET 2
ConnectionlessService     False
GuaranteesDelivery   True
GuaranteesSequencing True
MaximumAddressSize   20 bytes
MaximumMessageSize   64000 bytes
MessageOriented True
MinimumAddressSize   20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData  False
SupportsDisconnectData    False
SupportsEncryption   False
SupportsExpeditedData     False
SupportsGracefulClosing   False
SupportsGuaranteedBandwidth    False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{FD73BFE5-0643-4705-9572-
5E3D92E4F8AD}] DATAGRAM 2
ConnectionlessService     True
GuaranteesDelivery   False
GuaranteesSequencing False
MaximumAddressSize   20 bytes
MaximumMessageSize   64000 bytes
MessageOriented True
MinimumAddressSize   20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData  False
SupportsDisconnectData    False
```

```
SupportsEncryption   False
SupportsExpeditedData     False
SupportsGracefulClosing   False
SupportsGuaranteedBandwidth     False
SupportsMulticasting False


[WinSock]

Item Value
File c:\winnt\system32\winsock.dll
Version   3.10
Size 2.80 KB (2,864 bytes)

File c:\winnt\system32\wsock32.dll
Version   5.00.2195.2871
Size 21.27 KB (21,776 bytes)


[Ports]

[ Following are sub-categories of this main category ]

[Serial]

Item Value
No serial port information

[Parallel]

Item Value
No parallel port information

[Storage]

[ Following are sub-categories of this main category ]

[Drives]

Item Value
Drive A:
Description     3 1/2 Inch Floppy Drive

Drive C:
Description     Local Fixed Disk
Compressed False
File System     NTFS
Size 17.01 GB (18,268,311,552 bytes)
Free Space 13.71 GB (14,716,776,448 bytes)
Volume Name
Volume Serial Number 080A3D50
Partition  Disk #0, Partition #0
Partition Size  17.01 GB (18,268,314,624 bytes)
Starting Offset 32256 bytes
Drive Description    Disk drive
```

```
Drive Manufacturer   (Standard disk drives)
Drive Model     FUJITSU MAG3182LC SCSI Disk Device
Drive BytesPerSector 512
Drive MediaLoaded    True
Drive MediaType Fixed hard disk media
Drive Partitions     1
Drive SCSIBus   0
Drive SCSILogicalUnit     0
Drive SCSIPort  2
Drive SCSITargetId   0
Drive SectorsPerTrack     63
Drive Size 18268346880 bytes
Drive TotalCylinders 2221
Drive TotalSectors   35680365
Drive TotalTracks    566355
Drive TracksPerCylinder   255


[SCSI]

Item Value
Name Symbios Ultra3 PCI SCSI Adapter; 53C1010-66 Device
Caption   Symbios Ultra3 PCI SCSI Adapter; 53C1010-66 Device
Driver    Sym_u3
Status    OK
PNP Device ID
     PCI\VEN_1000&DEV_0021&SUBSYS_6030110A&REV_01\3&1070020&0&50
Device ID  PCI\VEN_1000&DEV_0021&SUBSYS_6030110A&REV_01\3&1070020&0&50
Device Map Not Available
Index Not Available
Max Number Controlled     Not Available
IRQ Number 29
I/O Port  0x1C00-0x1CFF
Driver    c:\winnt\system32\drivers\sym_u3.sys (37920, SYM_U3NT-5.08.00)

Name QLogic QLA23xx PCI Fibre Channel Adapter
Caption   QLogic QLA23xx PCI Fibre Channel Adapter
Driver    ql2300
Status    OK
PNP Device ID
     PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&REV_02\3&29E81982&0&48
Device ID  PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&REV_02\3&29E81982&0&48
Device Map Not Available
Index Not Available
Max Number Controlled     Not Available
IRQ Number 26
I/O Port  0x2000-0x20FF
Driver    c:\winnt\system32\drivers\ql2300.sys (440012, 8.2.0 Beta 3 (W2K
VI))

Name QLogic VI Kernel Agent driver
Caption   QLogic VI Kernel Agent driver
Driver    qlvika
Status    OK
PNP Device ID   ROOT\SCSIADAPTER\0000
```

```
Device ID  ROOT\SCSIADAPTER\0000
Device Map Not Available
Index Not Available
Max Number Controlled     Not Available
Driver     c:\winnt\system32\drivers\qlvika.sys (49916, 1.00.14 (W2K))


[Printing]

Name Port Name  Server Name
No printing information

[Problem Devices]

Device     PNP Device ID   Error Code
No Problem Devices

[USB]

Device     PNP Device ID
No USB Devices

System Information report written at: 10/24/2002 02:21:12 PM
[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     C200CL1
System Manufacturer  FUJITSU SIEMENS
System Model    D1306
System Type     X86-based PC
Processor  x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1393 Mhz
Processor  x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1393 Mhz
BIOS Version    PhoenixBIOS Version 4.06  Rev. 1.03.1306
Windows Directory    C:\WINNT
System Directory     C:\WINNT\System32
Boot Device     \Device\Harddisk0\Partition1
Locale     United States
User Name  C200CL1\Administrator
Time Zone  W. Europe Daylight Time
Total Physical Memory     785,892 KB
Available Physical Memory 684,476 KB
Total Virtual Memory 2,051,744 KB
Available Virtual Memory  1,883,460 KB
Page File Space 1,265,852 KB
Page File  C:\pagefile.sys

System Information report written at: 10/24/2002 02:22:04 PM
[Environment Variables]

Variable   Value User Name
ComSpec    %SystemRoot%\system32\cmd.exe   <SYSTEM>
Os2LibPath %SystemRoot%\system32\os2\dll;  <SYSTEM>
```

```
Path
     %SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;C:\Pro
gram Files\Microsoft SQL Server\80\Tools\BINN  <SYSTEM>
windir     %SystemRoot%    <SYSTEM>
OS   Windows_NT <SYSTEM>
PROCESSOR_ARCHITECTURE    x86  <SYSTEM>
PROCESSOR_LEVEL 6    <SYSTEM>
PROCESSOR_IDENTIFIER x86 Family 6 Model 11 Stepping 1, GenuineIntel
     <SYSTEM>
PROCESSOR_REVISION   0b01 <SYSTEM>
NUMBER_OF_PROCESSORS 2    <SYSTEM>
PATHEXT    .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH    <SYSTEM>
TEMP %SystemRoot%\TEMP    <SYSTEM>
TMP  %SystemRoot%\TEMP    <SYSTEM>
TEMP %USERPROFILE%\Local Settings\Temp    C200CL1\Administrator
TMP  %USERPROFILE%\Local Settings\Temp    C200CL1\Administrator

System Information report written at: 10/24/2002 02:20:03 PM
[Services]

Display Name    Name State Start Mode Service Type    Path Error Control
     Start Name Tag ID
Alerter    Alerter    Running    Auto Share Process
     c:\winnt\system32\services.exe Normal    LocalSystem     0
Application Management    AppMgmt    Stopped    Manual    Share Process
     c:\winnt\system32\services.exe Normal    LocalSystem     0
Computer Browser     Browser    Stopped    Disabled   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  Stopped    Manual    Own Process
     c:\winnt\system32\dfssvc.exe   Normal    LocalSystem     0
DHCP Client     Dhcp Stopped    Disabled   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   Stopped    Manual    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    Auto Share Process
     c:\winnt\system32\svchost.exe -k netsvcs  Normal    LocalSystem
     0
Fax Service     Fax  Stopped    Disabled   Own Process
     c:\winnt\system32\faxsvc.exe   Normal    LocalSystem     0
IIS Admin Service    IISADMIN   Running    Manual    Share Process
     c:\winnt\system32\inetsrv\inetinfo.exe    Normal    LocalSystem
     0
Intersite Messaging  IsmServ    Stopped    Disabled   Own Process
     c:\winnt\system32\ismserv.exe  Normal    LocalSystem     0
```

```
Kerberos Key Distribution Center     kdc  Stopped    Disabled   Share
Process    c:\winnt\system32\lsass.exe     Normal     LocalSystem     0
Server     lanmanserver    Running    Auto  Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
Workstation     lanmanworkstation    Running    Auto  Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
License Logging Service   LicenseService  Stopped    Manual     Own
Process    c:\winnt\system32\llssrv.exe    Normal     LocalSystem     0
TCP/IP NetBIOS Helper Service   LmHosts    Running    Auto  Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
Messenger  Messenger  Running    Auto  Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
NetMeeting Remote Desktop Sharing    mnmsrvc    Stopped    Disabled   Own
Process    c:\winnt\system32\mnmsrvc.exe   Normal     LocalSystem     0
Distributed Transaction Coordinator  MSDTC Stopped    Manual     Own
Process    c:\winnt\system32\msdtc.exe     Normal     LocalSystem     0
Windows Installer    MSIServer  Stopped    Manual     Share Process
     c:\winnt\system32\msiexec.exe /v     Normal     LocalSystem     0
Network DDE     NetDDE    Stopped    Manual     Share Process
     c:\winnt\system32\netdde.exe    Normal     LocalSystem     0
Network DDE DSDM     NetDDEdsdm Stopped    Manual     Share Process
     c:\winnt\system32\netdde.exe    Normal     LocalSystem     0
Net Logon  Netlogon   Stopped    Manual     Share Process
     c:\winnt\system32\lsass.exe     Normal     LocalSystem     0
Network Connections  Netman     Running    Manual     Share Process
     c:\winnt\system32\svchost.exe -k netsvcs  Normal     LocalSystem
     0
Intel(R) NMS    NMSSvc     Running    Manual     Own Process
     c:\winnt\system32\nmssvc.exe    Normal     LocalSystem     0
File Replication     NtFrs Stopped    Manual     Own Process
     c:\winnt\system32\ntfrs.exe     Ignore     LocalSystem     0
NT LM Security Support Provider NtLmSsp    Stopped    Manual     Share
Process    c:\winnt\system32\lsass.exe     Normal     LocalSystem     0
Removable Storage    NtmsSvc    Stopped    Disabled   Share Process
     c:\winnt\system32\svchost.exe -k netsvcs  Normal     LocalSystem
     0
Plug and Play   PlugPlay  Running    Auto  Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
IPSEC Policy Agent   PolicyAgent     Stopped    Manual     Share Process
     c:\winnt\system32\lsass.exe     Normal     LocalSystem     0
Protected Storage    ProtectedStorage     Running    Auto  Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
Remote Access Auto Connection Manager     RasAuto    Stopped    Manual
     Share Process   c:\winnt\system32\svchost.exe -k netsvcs  Normal
     LocalSystem     0
Remote Access Connection Manager     RasMan     Stopped    Manual     Share
Process    c:\winnt\system32\svchost.exe -k netsvcs  Normal
     LocalSystem     0
Routing and Remote Access RemoteAccess    Stopped    Disabled   Share
Process    c:\winnt\system32\svchost.exe -k netsvcs  Normal
     LocalSystem     0
Remote Registry Service   RemoteRegistry  Stopped    Manual     Own
Process    c:\winnt\system32\regsvc.exe    Normal     LocalSystem     0
Remote Command Service    RMSYS Stopped    Disabled   Own Process
     c:\benchcrf_422\rsys.exe  Normal     LocalSystem     0
```

```
Remote Procedure Call (RPC) Locator  RpcLocator Stopped    Manual     Own
Process    c:\winnt\system32\locator.exe  Normal     LocalSystem     0
Remote Procedure Call (RPC)     RpcSs Running    Auto  Share Process
     c:\winnt\system32\svchost -k rpcss   Normal     LocalSystem     0
QoS RSVP   RSVP  Stopped    Manual     Own Process
     c:\winnt\system32\rsvp.exe -s   Normal     LocalSystem     0
Security Accounts Manager SamSs Stopped    Manual     Share Process
     c:\winnt\system32\lsass.exe     Normal     LocalSystem     0
Smart Card Helper    SCardDrv   Stopped    Manual     Share Process
     c:\winnt\system32\scardsvr.exe  Ignore     LocalSystem     0
Smart Card SCardSvr   Stopped    Manual     Share Process
     c:\winnt\system32\scardsvr.exe  Ignore     LocalSystem     0
Task Scheduler  Schedule   Stopped    Manual     Share Process
     c:\winnt\system32\mstask.exe    Normal     LocalSystem     0
RunAs Service   seclogon   Stopped    Manual     Share Process
     c:\winnt\system32\services.exe  Ignore     LocalSystem     0
System Event Notification SENS Running    Auto  Share Process
     c:\winnt\system32\svchost.exe -k netsvcs  Normal     LocalSystem
     0
Internet Connection Sharing     SharedAccess    Stopped    Manual     Share
Process    c:\winnt\system32\svchost.exe -k netsvcs  Normal
     LocalSystem     0
Simple Mail Transport Protocol (SMTP)     SMTPSVC    Stopped    Manual
     Share Process   c:\winnt\system32\inetsrv\inetinfo.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    Disabled   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     Stopped    Manual     Share
Process    c:\winnt\system32\services.exe Normal     LocalSystem     0
Uninterruptible Power Supply    UPS  Stopped    Manual     Own Process
     c:\winnt\system32\ups.exe Normal     LocalSystem     0
Utility Manager UtilMan    Stopped    Manual     Own Process
     c:\winnt\system32\utilman.exe   Normal     LocalSystem     0
Windows Time    W32Time    Stopped    Manual     Share Process
     c:\winnt\system32\services.exe  Normal     LocalSystem     0
World Wide Web Publishing Service    W3SVC Running    Auto  Share Process
     c:\winnt\system32\inetsrv\inetinfo.exe    Normal     LocalSystem
     0
Windows Management Instrumentation   WinMgmt    Running    Auto  Own
Process    c:\winnt\system32\wbem\winmgmt.exe   Ignore     LocalSystem
     0
Windows Management Instrumentation Driver Extensions Wmi   Running
     Manual     Share Process   c:\winnt\system32\services.exe  Normal
     LocalSystem     0
```

```
Key Name:          SYSTEM\CurrentControlSet\Control\Class\{4D36E972-E325-
11CE-BFC1-08002BE10318}\0006
Class Name:        <NO CLASS>
Last Write Time:   9/19/2002 - 2:29 PM
Value 0
  Name:            Adaptive_IFS
  Type:            REG_SZ
  Data:            1

Value 1
  Name:            AdaptiveCarrierLoss
  Type:            REG_SZ
  Data:            1

Value 2
  Name:            AdaptiveStalledInterrupts
  Type:            REG_SZ
  Data:            1

Value 3
  Name:            AdaptiveTransmitMethod
  Type:            REG_SZ
  Data:            1

Value 4
  Name:            AlwaysConnectGoal
  Type:            REG_SZ
  Data:            0

Value 5
  Name:            ANSAPI
  Type:            REG_DWORD
  Data:            0x2

Value 6
  Name:            AutoPowerSaveModeEnabled
  Type:            REG_SZ
  Data:            1

Value 7
  Name:            BusNumber
  Type:            REG_SZ
  Data:            0

Value 8
  Name:            BusType
  Type:            REG_SZ
  Data:            5

Value 9
  Name:            Characteristics
  Type:            REG_DWORD
  Data:            0x84
```

```
Value 10
  Name:            Coalesce
  Type:            REG_SZ
  Data:            1

Value 11
  Name:            CoInstallFlag
  Type:            REG_DWORD
  Data:            0x80000004

Value 12
  Name:            ComponentId
  Type:            REG_SZ
  Data:            pci\ven_8086&dev_1229&subsys_004b110a

Value 13
  Name:            ConfigIFS
  Type:            REG_SZ
  Data:            6

Value 14
  Name:            CPUSaver
  Type:            REG_SZ
  Data:            1536

Value 15
  Name:            DeviceVxDsPrefix
  Type:            REG_SZ
  Data:            e100b

Value 16
  Name:            DriverDate
  Type:            REG_SZ
  Data:            2-25-2002

Value 17
  Name:            DriverDateData
  Type:            REG_BINARY
  Data:
00000000   00 c0 1c 5e 8f bd c1 01 -                          .À.^.½Á.

Value 18
  Name:            DriverDesc
  Type:            REG_SZ
  Data:            Fujitsu Siemens Computers 82559-based Onboard Ethernet
with WoL and AoL

Value 19
  Name:            DriverVersion
  Type:            REG_SZ
  Data:            6.1.3.0

Value 20
  Name:            EnablePME
  Type:             REG_SZ
  Data:             2

Value 21
  Name:             EnablePowerDownOnLinkLoss
  Type:             REG_SZ
  Data:             0

Value 22
  Name:             FlowControl
  Type:             REG_SZ
  Data:             0

Value 23
  Name:             Force10MbOnD3
  Type:             REG_SZ
  Data:             0

Value 24
  Name:             HardwareAddress
  Type:             REG_SZ
  Data:             00300519790F

Value 25
  Name:             HPQPriorityLevel
  Type:             REG_SZ
  Data:             4

Value 26
  Name:             InfPath
  Type:             REG_SZ
  Data:             oem0.inf

Value 27
  Name:             InfSection
  Type:             REG_SZ
  Data:             D101SG.ndi

Value 28
  Name:             InfSectionExt
  Type:             REG_SZ
  Data:             .NTx86

Value 29
  Name:             IPSecTunnelMode
  Type:             REG_SZ
  Data:             1

Value 30
  Name:             LinkBasedLogin
  Type:             REG_SZ
  Data:             0

Value 31
  Name:             LogErrorMessages
```

```
  Type:             REG_SZ
  Data:             1

Value 32
  Name:             LogLinkStateEvent
  Type:             REG_SZ
  Data:             1

Value 33
  Name:             MatchingDeviceId
  Type:             REG_SZ
  Data:             pci\ven_8086&dev_1229&subsys_004b110a

Value 34
  Name:             MaxNumSecAssoc
  Type:             REG_SZ
  Data:             64

Value 35
  Name:             MWIEnable
  Type:             REG_SZ
  Data:             1

Value 36
  Name:             NetCfgInstanceId
  Type:             REG_SZ
  Data:             {75A03E77-80A6-4DFD-A783-6876E710AB9F}

Value 37
  Name:             NumCoalesce
  Type:             REG_SZ
  Data:             32

Value 38
  Name:             NumRfd
  Type:             REG_SZ
  Data:             64

Value 39
  Name:             NumTcb
  Type:             REG_SZ
  Data:             32

Value 40
  Name:             PcNic
  Type:             REG_SZ
  Data:             1

Value 41
  Name:             PnPCapabilities
  Type:             REG_DWORD
  Data:             0x38

Value 42
  Name:             ProviderName
  Type:            REG_SZ
  Data:            Intel

Value 43
  Name:            SlotNumber
  Type:            REG_SZ
  Data:            10

Value 44
  Name:            SpeedDuplex
  Type:            REG_SZ
  Data:            4

Value 45
  Name:            TaggingMode
  Type:            REG_SZ
  Data:            0

Value 46
  Name:            TaskOffload
  Type:            REG_SZ
  Data:            0

Value 47
  Name:            Threshold
  Type:            REG_SZ
  Data:            32

Value 48
  Name:            UcodeSW
  Type:            REG_SZ
  Data:            1

Value 49
  Name:            WakeOn
  Type:            REG_SZ
  Data:            0

Key Name:          SOFTWARE\Microsoft\MSSQLServer
Class Name:        <NO CLASS>
Last Write Time:   2/13/2001 - 10:00 AM

Key Name:          SOFTWARE\Microsoft\MSSQLServer\Client
Class Name:        <NO CLASS>
Last Write Time:   3/12/2001 - 3:20 PM
Value 0
  Name:            SharedMemoryOn
  Type:            REG_DWORD
  Data:            0


Key Name:          SOFTWARE\Microsoft\MSSQLServer\Client\ConnectTo
Class Name:        <NO CLASS>
Last Write Time:   10/8/2002 - 12:31 PM
```

```
Key Name:          SOFTWARE\Microsoft\MSSQLServer\Client\DB-Lib
Class Name:        <NO CLASS>
Last Write Time:   5/17/2001 - 9:31 AM
Value 0
  Name:            AutoAnsiToOem
  Type:            REG_SZ
  Data:            OFF

Value 1
  Name:            UseIntlSettings
  Type:            REG_SZ
  Data:            ON


Key Name:
SOFTWARE\Microsoft\MSSQLServer\Client\SuperSocketNetLib
Class Name:        <NO CLASS>
Last Write Time:   10/8/2002 - 1:09 PM
Value 0
  Name:            Encrypt
  Type:            REG_DWORD
  Data:            0

Value 1
  Name:            ProtocolOrder
  Type:            REG_MULTI_SZ
  Data:            via



Key Name:
SOFTWARE\Microsoft\MSSQLServer\Client\SuperSocketNetLib\LastConnect
Class Name:        <NO CLASS>
Last Write Time:   10/24/2002 - 10:51 AM
Value 0
  Name:            asterix
  Type:            REG_SZ
  Data:            -721289208:via:ASTERIX:ASTERIX,1433,0


Key Name:
SOFTWARE\Microsoft\MSSQLServer\Client\SuperSocketNetLib\Np
Class Name:        <NO CLASS>
Last Write Time:   2/13/2001 - 10:02 AM
Value 0
  Name:            DefaultPipe
  Type:            REG_SZ
  Data:            sql\query


Key Name:
SOFTWARE\Microsoft\MSSQLServer\Client\SuperSocketNetLib\Tcp
Class Name:        <NO CLASS>
Last Write Time:   2/13/2001 - 10:02 AM
Value 0
```

```
  Name:            DefaultPort
  Type:            REG_DWORD
  Data:            0x599


Key Name:
SOFTWARE\Microsoft\MSSQLServer\Client\SuperSocketNetLib\VIA
Class Name:        <NO CLASS>
Last Write Time:   10/9/2002 - 11:32 AM
Value 0
  Name:            DefaultClientNIC
  Type:            REG_SZ
  Data:            0

Value 1
  Name:            DefaultServerPort
  Type:            REG_SZ
  Data:            0:1433

Value 2
  Name:            RecognizedVendors
  Type:            REG_SZ
  Data:            Giganet, ServerNet II,QLogic

Value 3
  Name:            Vendor
  Type:            REG_SZ
  Data:            Giganet


Key Name:          SOFTWARE\Microsoft\MSSQLServer\Client\TDS
Class Name:        <NO CLASS>
Last Write Time:   10/23/2002 - 2:22 PM
Value 0
  Name:            asterix
  Type:            REG_SZ
  Data:            7.0

Value 1
  Name:            h250
  Type:            REG_SZ
  Data:            7.0

Value 2
  Name:            h400
  Type:            REG_SZ
  Data:            7.0

Value 3
  Name:            mogul
  Type:            REG_SZ
  Data:            7.0

Value 4
  Name:            r450
  Type:            REG_SZ
  Data:            7.0

Value 5
  Name:            via:asterix,1433,0
  Type:            REG_SZ
  Data:            7.0

Value 6
  Name:            via:mogul,1433,0
  Type:            REG_SZ
  Data:            7.0

Key Name:          SYSTEM\CurrentControlSet\Services\InetInfo
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 3:45 PM

Key Name:          SYSTEM\CurrentControlSet\Services\InetInfo\Parameters
Class Name:        <NO CLASS>
Last Write Time:   10/29/2002 - 1:47 PM
Value 0
  Name:            DispatchEntries
  Type:            REG_MULTI_SZ
  Data:            LDAPSVC
                   SMTPSVC

Value 1
  Name:            ListenBackLog
  Type:            REG_DWORD
  Data:            0x4650

Value 2
  Name:            PoolThreadLimit
  Type:            REG_DWORD
  Data:            0x26c

Value 3
  Name:            ThreadTimeout
  Type:            REG_DWORD
  Data:            0x15180


Key Name:          SYSTEM\CurrentControlSet\Services\InetInfo\Performance
Class Name:        <NO CLASS>
Last Write Time:   10/31/2002 - 8:26 AM
Value 0
  Name:            Close
  Type:            REG_SZ
  Data:            CloseINFOPerformanceData

Value 1
  Name:            Collect
  Type:            REG_SZ
  Data:            CollectINFOPerformanceData
```

```
Value 2
  Name:            First Counter
  Type:            REG_DWORD
  Data:            0x802

Value 3
  Name:            First Help
  Type:            REG_DWORD
  Data:            0x803

Value 4
  Name:            Last Counter
  Type:            REG_DWORD
  Data:            0x842

Value 5
  Name:            Last Help
  Type:            REG_DWORD
  Data:            0x843

Value 6
  Name:            Library
  Type:            REG_SZ
  Data:            infoctrs.dll

Value 7
  Name:            Library Validation Code
  Type:            REG_BINARY
  Data:
00000000   7e 16 f0 b4 0a 95 c0 01 - 10 25 00 00 00 00 00 00
~.ð´..À..%......

Value 8
  Name:            Open
  Type:            REG_SZ
  Data:            OpenINFOPerformanceData

Value 9
  Name:            WbemAdapFileSize
  Type:            REG_DWORD
  Data:            0x2510

Value 10
  Name:            WbemAdapFileTime
  Type:            REG_BINARY
  Data:
00000000   00 9b 1a af 81 d4 c0 01 -                          ...¯.ÔÀ.

Value 11
  Name:            WbemAdapStatus
  Type:            REG_DWORD
  Data:            0


Key Name:          SYSTEM\CurrentControlSet\Services\Tcpip
```

```
Class Name:        Class
Last Write Time:   2/12/2001 - 5:40 PM
Value 0
  Name:            Description
  Type:            REG_SZ
  Data:            TCP/IP Protocol Driver

Value 1
  Name:            DisplayName
  Type:            REG_SZ
  Data:            TCP/IP Protocol Driver

Value 2
  Name:            ErrorControl
  Type:            REG_DWORD

  Data:            0x1

Value 3
  Name:            Group
  Type:            REG_SZ
  Data:            PNP_TDI

Value 4
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            System32\DRIVERS\tcpip.sys

Value 5
  Name:            Start
  Type:            REG_DWORD
  Data:            0x1

Value 6
  Name:            Tag
  Type:            REG_DWORD
  Data:            0x4

Value 7
  Name:            Type
  Type:            REG_DWORD
  Data:            0x1


Key Name:          SYSTEM\CurrentControlSet\Services\Tcpip\Enum
Class Name:        <NO CLASS>
Last Write Time:   9/27/2002 - 11:08 AM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:            Root\LEGACY_TCPIP\0000

Value 1
  Name:            Count
  Type:            REG_DWORD
  Data:            0x1

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x1


Key Name:          SYSTEM\CurrentControlSet\Services\Tcpip\Linkage
Class Name:        <NO CLASS>
Last Write Time:   6/26/2002 - 10:24 AM
Value 0
  Name:            Bind
  Type:            REG_MULTI_SZ
  Data:            \Device\{75A03E77-80A6-4DFD-A783-6876E710AB9F}
                   \Device\{BAFACDD3-FF58-4244-8343-63E521C918BC}
                   \Device\NdisWanIp


Value 1
  Name:            Export
  Type:            REG_MULTI_SZ
  Data:            \Device\Tcpip_{75A03E77-80A6-4DFD-A783-6876E710AB9F}
                   \Device\Tcpip_{BAFACDD3-FF58-4244-8343-63E521C918BC}
                   \Device\Tcpip_{CA92CE14-2FC2-4FF3-B680-1F7DF9594EAF}
                   \Device\Tcpip_{FD73BFE5-0643-4705-9572-5E3D92E4F8AD}


Value 2
  Name:            Route
  Type:            REG_MULTI_SZ
  Data:            "{75A03E77-80A6-4DFD-A783-6876E710AB9F}"
                   "{BAFACDD3-FF58-4244-8343-63E521C918BC}"
                   "NdisWanIp"



Key Name:          SYSTEM\CurrentControlSet\Services\Tcpip\Parameters
Class Name:        Class
Last Write Time:   7/4/2002 - 11:10 AM
Value 0
  Name:            AllowUnqualifiedQuery
  Type:            REG_DWORD
  Data:            0

Value 1
  Name:            DataBasePath
  Type:            REG_EXPAND_SZ
  Data:            %SystemRoot%\System32\drivers\etc

Value 2
  Name:            DeadGWDetectDefault
  Type:            REG_DWORD
  Data:            0x1
```

```
Value 3
  Name:            Domain
  Type:            REG_SZ
  Data:

Value 4
  Name:            DontAddDefaultGatewayDefault
  Type:            REG_DWORD
  Data:            0

Value 5
  Name:            EnableICMPRedirect
  Type:            REG_DWORD
  Data:            0x1

Value 6
  Name:            EnableSecurityFilters
  Type:            REG_DWORD
  Data:            0

Value 7
  Name:            ForwardBroadcasts
  Type:            REG_DWORD
  Data:            0

Value 8
  Name:            Hostname
  Type:            REG_SZ
  Data:            C200CL1

Value 9
  Name:            IPEnableRouter
  Type:            REG_DWORD
  Data:            0

Value 10
  Name:            MaxUserPort
  Type:            REG_DWORD
  Data:            0xfffe

Value 11
  Name:            NameServer
  Type:            REG_SZ
  Data:

Value 12
  Name:            NV Hostname
  Type:            REG_SZ
  Data:            C200CL1

Value 13
  Name:            PrioritizeRecordData
  Type:            REG_DWORD
  Data:            0x1
```

```
Value 14
  Name:            SearchList
  Type:            REG_SZ
  Data:

Value 15
  Name:            UseDomainNameDevolution
  Type:            REG_DWORD
  Data:            0


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:40 PM

Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters\NdisWanIp
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:41 PM
Value 0
  Name:            IpConfig
  Type:            REG_MULTI_SZ
  Data:            Tcpip\Parameters\Interfaces\{CA92CE14-2FC2-4FF3-B680-
1F7DF9594EAF}
                   Tcpip\Parameters\Interfaces\{FD73BFE5-0643-4705-9572-
5E3D92E4F8AD}


Value 1
  Name:            IpInterfaces
  Type:            REG_BINARY
  Data:
00000000   14 ce 92 ca c2 2f f3 4f - b6 80 1f 7d f9 59 4e af
.Î.ÊÂ/óO¶..}ùYN¯
00000010   e5 bf 73 fd 43 06 05 47 - 95 72 5e 3d 92 e4 f8 ad
å¿sýC..G.r^=.äø-

Value 2
  Name:            LLInterface
  Type:            REG_SZ
  Data:            WANARP

Value 3
  Name:            NumInterfaces
  Type:            REG_DWORD
  Data:            0x2


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters\{75A03E77-
80A6-4DFD-A783-6876E710AB9F}
Class Name:        <NO CLASS>
Last Write Time:   6/26/2002 - 10:24 AM
Value 0
```

```
  Name:            IpConfig
  Type:            REG_MULTI_SZ
  Data:            Tcpip\Parameters\Interfaces\{75A03E77-80A6-4DFD-A783-
6876E710AB9F}


Value 1
  Name:            LLInterface
  Type:            REG_SZ
  Data:


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters\{BAFACDD3-
FF58-4244-8343-63E521C918BC}
Class Name:        <NO CLASS>
Last Write Time:   6/26/2002 - 10:20 AM
Value 0
  Name:            IpConfig
  Type:            REG_MULTI_SZ
  Data:            Tcpip\Parameters\Interfaces\{BAFACDD3-FF58-4244-8343-
63E521C918BC}


Value 1
  Name:            LLInterface
  Type:            REG_SZ
  Data:


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\DNSRegisteredAdapters
Class Name:        DynDnsRootClass
Last Write Time:   2/12/2001 - 5:40 PM

Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:40 PM

Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{75A03E77-
80A6-4DFD-A783-6876E710AB9F}
Class Name:        <NO CLASS>
Last Write Time:   9/19/2002 - 4:00 PM
Value 0
  Name:            DefaultGateway
  Type:            REG_MULTI_SZ
  Data:

Value 1
  Name:            DefaultGatewayMetric
  Type:            REG_MULTI_SZ
  Data:
```

```
Value 2
  Name:              DisableDynamicUpdate
  Type:              REG_DWORD
  Data:              0x1

Value 3
  Name:              Domain
  Type:              REG_SZ
  Data:

Value 4
  Name:              EnableAdapterDomainNameRegistration
  Type:              REG_DWORD
  Data:              0

Value 5
  Name:              EnableDeadGWDetect
  Type:              REG_DWORD
  Data:              0x1

Value 6
  Name:              EnableDHCP
  Type:              REG_DWORD
  Data:              0

Value 7
  Name:              InterfaceMetric
  Type:              REG_DWORD
  Data:              0x1

Value 8
  Name:              IPAddress
  Type:              REG_MULTI_SZ
  Data:              129.103.211.1


Value 9
  Name:              NameServer
  Type:              REG_SZ
  Data:

Value 10
  Name:              NTEContextList
  Type:              REG_MULTI_SZ
  Data:              0x00000002


Value 11
  Name:              RawIPAllowedProtocols
  Type:              REG_MULTI_SZ
  Data:              0


Value 12
  Name:              SubnetMask
  Type:              REG_MULTI_SZ
  Data:              255.255.255.0


Value 13
  Name:              TCPAllowedPorts
  Type:              REG_MULTI_SZ
  Data:              0


Value 14
  Name:              UDPAllowedPorts
  Type:              REG_MULTI_SZ
  Data:              0


Value 15
  Name:              UseZeroBroadcast
  Type:              REG_DWORD
  Data:              0


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{BAFACDD3-
FF58-4244-8343-63E521C918BC}
Class Name:        <NO CLASS>
Last Write Time:   8/30/2002 - 1:09 PM
Value 0
  Name:              DefaultGateway
  Type:              REG_MULTI_SZ
  Data:

Value 1
  Name:              DefaultGatewayMetric
  Type:              REG_MULTI_SZ
  Data:

Value 2
  Name:              DisableDynamicUpdate
  Type:              REG_DWORD
  Data:              0x1

Value 3
  Name:              Domain
  Type:              REG_SZ
  Data:

Value 4
  Name:              EnableAdapterDomainNameRegistration
  Type:              REG_DWORD
  Data:              0

Value 5
  Name:              EnableDeadGWDetect
  Type:              REG_DWORD
  Data:            0x1

Value 6
  Name:            EnableDHCP
  Type:            REG_DWORD
  Data:            0

Value 7
  Name:            InterfaceMetric
  Type:            REG_DWORD
  Data:            0x1

Value 8
  Name:            IPAddress
  Type:            REG_MULTI_SZ
  Data:            129.103.182.211


Value 9
  Name:            NameServer
  Type:            REG_SZ
  Data:

Value 10
  Name:            NTEContextList
  Type:            REG_MULTI_SZ
  Data:

Value 11
  Name:            RawIPAllowedProtocols
  Type:            REG_MULTI_SZ
  Data:            0


Value 12
  Name:            SubnetMask
  Type:            REG_MULTI_SZ
  Data:            255.255.255.0


Value 13
  Name:            TCPAllowedPorts
  Type:            REG_MULTI_SZ
  Data:            0


Value 14
  Name:            UDPAllowedPorts
  Type:            REG_MULTI_SZ
  Data:            0


Value 15
  Name:            UseZeroBroadcast
  Type:            REG_DWORD
```

```
  Data:            0


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{CA92CE14-
2FC2-4FF3-B680-1F7DF9594EAF}
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:41 PM
Value 0
  Name:            DefaultGateway
  Type:            REG_MULTI_SZ
  Data:

Value 1
  Name:            DontAddDefaultGateway
  Type:            REG_DWORD
  Data:            0

Value 2
  Name:            EnableDeadGWDetect
  Type:            REG_DWORD
  Data:            0x1

Value 3
  Name:            EnableDHCP
  Type:            REG_DWORD
  Data:            0

Value 4
  Name:            IPAddress
  Type:            REG_MULTI_SZ
  Data:            0.0.0.0


Value 5
  Name:            SubnetMask
  Type:            REG_MULTI_SZ
  Data:            0.0.0.0


Value 6
  Name:            UseZeroBroadcast
  Type:            REG_DWORD
  Data:            0


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{FD73BFE5-
0643-4705-9572-5E3D92E4F8AD}
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:41 PM
Value 0
  Name:            DefaultGateway
  Type:            REG_MULTI_SZ
  Data:
```

```
Value 1
  Name:            DontAddDefaultGateway
  Type:            REG_DWORD
  Data:            0

Value 2
  Name:            EnableDeadGWDetect
  Type:            REG_DWORD
  Data:            0x1

Value 3
  Name:            EnableDHCP
  Type:            REG_DWORD
  Data:            0

Value 4
  Name:            IPAddress
  Type:            REG_MULTI_SZ
  Data:            0.0.0.0


Value 5
  Name:            SubnetMask
  Type:            REG_MULTI_SZ
  Data:            0.0.0.0


Value 6
  Name:            UseZeroBroadcast
  Type:            REG_DWORD
  Data:            0


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\PersistentRoutes
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:40 PM

Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Winsock
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:40 PM
Value 0
  Name:            HelperDllName
  Type:            REG_EXPAND_SZ
  Data:            %SystemRoot%\System32\wshtcpip.dll

Value 1
  Name:            Mapping
  Type:            REG_BINARY
  Data:
00000000   0b 00 00 00 03 00 00 00 - 02 00 00 00 01 00 00 00
................
00000010   06 00 00 00 02 00 00 00 - 01 00 00 00 00 00 00 00
................
00000020   02 00 00 00 00 00 00 00 - 06 00 00 00 00 00 00 00
................
00000030   00 00 00 00 06 00 00 00 - 00 00 00 00 01 00 00 00
................
00000040   06 00 00 00 02 00 00 00 - 02 00 00 00 11 00 00 00
................
00000050   02 00 00 00 02 00 00 00 - 00 00 00 00 02 00 00 00
................
00000060   00 00 00 00 11 00 00 00 - 00 00 00 00 00 00 00 00
................
00000070   11 00 00 00 00 00 00 00 - 02 00 00 00 11 00 00 00
................
00000080   02 00 00 00 03 00 00 00 - 00 00 00 00
............

Value 2
  Name:            MaxSockAddrLength
  Type:            REG_DWORD
  Data:            0x10

Value 3
  Name:            MinSockAddrLength
  Type:            REG_DWORD
  Data:            0x10

Value 4
  Name:            UseDelayedAcceptance
  Type:            REG_DWORD
  Data:            0


Key Name:          SYSTEM\CurrentControlSet\Services\Tcpip\Performance
Class Name:        <NO CLASS>
Last Write Time:   9/27/2002 - 11:09 AM
Value 0
  Name:            Close
  Type:            REG_SZ
  Data:            CloseTcpIpPerformanceData

Value 1
  Name:            Collect
  Type:            REG_SZ
  Data:            CollectTcpIpPerformanceData

Value 2
  Name:            Library
  Type:            REG_SZ
  Data:            Perfctrs.dll

Value 3
  Name:            Open
  Type:            REG_SZ
  Data:            OpenTcpIpPerformanceData
```

```
Value 4
  Name:            WbemAdapFileSize
  Type:            REG_DWORD
  Data:            0xa310

Value 5
  Name:            WbemAdapFileTime
  Type:            REG_BINARY
  Data:
00000000   00 9b 1a af 81 d4 c0 01 -                          ...¯.ÔÀ.

Value 6
  Name:            WbemAdapStatus
  Type:            REG_DWORD
  Data:            0


Key Name:          SYSTEM\CurrentControlSet\Services\Tcpip\Security
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:40 PM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 a0 00 00 00 - ac 00 00 00 14 00 00 00
.... ...¬.......
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02 80 14 00
0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00 00 00 00
ÿ...............
00000030   02 00 70 00 04 00 00 00 - 00 00 18 00 fd 01 02 00
..p.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 02 00 00 00
................
00000050   00 00 1c 00 ff 01 0f 00 - 01 02 00 00 00 00 00 05
....ÿ...........
00000060   20 00 00 00 20 02 00 00 - 03 00 00 00 00 00 18 00   ...
...........
00000070   8d 01 02 00 01 01 00 00 - 00 00 00 05 0b 00 00 00
................
00000080   20 02 00 00 00 00 1c 00 - fd 01 02 00 01 02 00 00
.......ý.......
00000090   00 00 00 05 20 00 00 00 - 23 02 00 00 03 00 00 00  ....
...#.......
000000a0   01 01 00 00 00 00 00 05 - 12 00 00 00 01 01 00 00
................
000000b0   00 00 00 05 12 00 00 00 -                          ........


Key Name:
SYSTEM\CurrentControlSet\Services\Tcpip\ServiceProvider
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 5:40 PM
Value 0
  Name:            Class
  Type:            REG_DWORD
  Data:            0x8

Value 1
  Name:            DnsPriority
  Type:            REG_DWORD
  Data:            0x7d0

Value 2
  Name:            HostsPriority
  Type:            REG_DWORD
  Data:            0x1f4

Value 3
  Name:            LocalPriority
  Type:            REG_DWORD
  Data:            0x1f3

Value 4
  Name:            Name
  Type:            REG_SZ
  Data:            TCP/IP

Value 5
  Name:            NetbtPriority
  Type:            REG_DWORD
  Data:            0x7d1

Value 6
  Name:            ProviderPath
  Type:            REG_EXPAND_SZ
  Data:            %SystemRoot%\System32\wsock32.dll


Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC
Class Name:        <NO CLASS>
Last Write Time:   8/30/2002 - 1:13 PM
Value 0
  Name:            DependOnGroup
  Type:            REG_MULTI_SZ
  Data:

Value 1
  Name:            DependOnService
  Type:            REG_MULTI_SZ
  Data:            IISADMIN


Value 2
  Name:            Description
  Type:            REG_SZ
  Data:            Provides Web connectivity and administration through
the Internet Information Services snap-in.
```

```
Value 3
  Name:            DisplayName
  Type:            REG_SZ

  Data:            World Wide Web Publishing Service

Value 4
  Name:            ErrorControl
  Type:            REG_DWORD
  Data:            0x1

Value 5
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            C:\WINNT\System32\inetsrv\inetinfo.exe

Value 6
  Name:            ObjectName
  Type:            REG_SZ
  Data:            LocalSystem

Value 7
  Name:            Start
  Type:            REG_DWORD
  Data:            0x2

Value 8
  Name:            Type
  Type:            REG_DWORD
  Data:            0x20


Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC\ASP
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:46 PM
Value 0
  Name:            NOTE
  Type:            REG_SZ
  Data:            This is for backward compatibility only.


Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC\ASP\Parameters
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:46 PM

Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC\Enum
Class Name:        <NO CLASS>
Last Write Time:   9/27/2002 - 11:08 AM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:            Root\LEGACY_W3SVC\0000

Value 1
  Name:            Count
```

```
  Type:            REG_DWORD
  Data:            0x1

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x1


Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC\Parameters
Class Name:        <NO CLASS>
Last Write Time:   3/2/2001 - 2:38 PM
Value 0
  Name:            AcceptExOutstanding
  Type:            REG_DWORD
  Data:            0x28

Value 1
  Name:            AccessDeniedMessage
  Type:            REG_SZ
  Data:            Error: Access is Denied.

Value 2
  Name:            CertMapList
  Type:            REG_SZ
  Data:            C:\WINNT\System32\inetsrv\iiscrmap.dll

Value 3
  Name:            Filter DLLs
  Type:            REG_SZ
  Data:

Value 4
  Name:            InstallPath
  Type:            REG_SZ
  Data:            C:\WINNT\System32\inetsrv

Value 5
  Name:            LogFileDirectory
  Type:            REG_SZ
  Data:            C:\WINNT\System32\LogFiles

Value 6
  Name:            MajorVersion
  Type:            REG_DWORD
  Data:            0x5

Value 7
  Name:            MinorVersion
  Type:            REG_DWORD
  Data:            0


Key Name:
SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch
```

```
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:47 PM

Key Name:
SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\AdvancedData
Factory
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:47 PM

Key Name:
SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\RDSServer.Da
taFactory
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:47 PM

Key Name:
SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Script Map
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:57 PM

Key Name:
SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Virtual Roots
Class Name:        <NO CLASS>
Last Write Time:   2/13/2001 - 9:46 AM
Value 0
  Name:            /
  Type:            REG_SZ
  Data:            c:\inetpub\wwwroot,,205

Value 1
  Name:            /IISAdmin
  Type:            REG_SZ
  Data:            C:\WINNT\System32\inetsrv\iisadmin,,201

Value 2
  Name:            /IISHelp
  Type:            REG_SZ
  Data:            c:\winnt\help\iishelp,,201

Value 3
  Name:            /IISSamples
  Type:            REG_SZ
  Data:            c:\inetpub\iissamples,,201

Value 4
  Name:            /MSADC
  Type:            REG_SZ
  Data:            c:\program files\common files\system\msadc,,205

Value 5
  Name:            /Printers
  Type:            REG_SZ
  Data:            C:\WINNT\web\printers,,201

Value 6
```

```
  Name:            /Scripts
  Type:            REG_SZ
  Data:            c:\inetpub\scripts,,204


Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC\Performance
Class Name:        <NO CLASS>
Last Write Time:   9/27/2002 - 11:09 AM
Value 0
  Name:            Close
  Type:            REG_SZ
  Data:            CloseW3PerformanceData

Value 1
  Name:            Collect
  Type:            REG_SZ
  Data:            CollectW3PerformanceData

Value 2
  Name:            First Counter
  Type:            REG_DWORD
  Data:            0x844

Value 3
  Name:            First Help
  Type:            REG_DWORD
  Data:            0x845

Value 4
  Name:            Last Counter
  Type:            REG_DWORD
  Data:            0x8e6

Value 5
  Name:            Last Help
  Type:            REG_DWORD
  Data:            0x8e7

Value 6
  Name:            Library
  Type:            REG_SZ
  Data:            w3ctrs.dll

Value 7
  Name:            Library Validation Code
  Type:            REG_BINARY
  Data:
00000000   e0 81 84 b7 0a 95 c0 01 - 10 3d 00 00 00 00 00 00
à..·..À..=......

Value 8
  Name:            Open
  Type:            REG_SZ
  Data:            OpenW3PerformanceData
```

```
Value 9
  Name:            WbemAdapFileSize
  Type:            REG_DWORD
  Data:            0x1d10

Value 10
  Name:            WbemAdapFileTime
  Type:            REG_BINARY
  Data:
00000000   00 9b 1a af 81 d4 c0 01 -                          ...¯.ÔÀ.

Value 11
  Name:            WbemAdapStatus
  Type:            REG_DWORD
  Data:            0


Key Name:          SYSTEM\CurrentControlSet\Services\W3SVC\Security
Class Name:        <NO CLASS>
Last Write Time:   2/12/2001 - 4:46 PM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 a0 00 00 00 - ac 00 00 00 14 00 00 00
.... ...¬.......
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02 80 14 00
0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00 00 00 00
ÿ...............
00000030   02 00 70 00 04 00 00 00 - 00 00 18 00 fd 01 02 00
..p.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 74 00 6f 00
............t.o.
00000050   00 00 1c 00 ff 01 0f 00 - 01 02 00 00 00 00 00 05
....ÿ...........
00000060   20 00 00 00 20 02 00 00 - 72 00 73 00 00 00 18 00   ...
...r.s.....
00000070   8d 01 02 00 01 01 00 00 - 00 00 00 05 0b 00 00 00
................
00000080   20 02 00 00 00 00 1c 00 - fd 01 02 00 01 02 00 00
.......ý.......
00000090   00 00 00 05 20 00 00 00 - 23 02 00 00 72 00 73 00  ....
...#...r.s.
000000a0   01 01 00 00 00 00 00 05 - 12 00 00 00 01 01 00 00
................
000000b0   00 00 00 05 12 00 00 00 -                          ........


Key Name:          SOFTWARE\Microsoft\TPCC
Class Name:        <NO CLASS>
Last Write Time:   10/29/2002 - 10:25 AM
Value 0
  Name:            COM_SinglePool
  Type:            REG_SZ
```

```
  Data:            YES

Value 1
  Name:            DB_Protocol
  Type:            REG_SZ
  Data:            ODBC

Value 2
  Name:            DbName
  Type:            REG_SZ
  Data:            tpcc

Value 3
  Name:            DbPassword
  Type:            REG_SZ
  Data:

Value 4
  Name:            DbServer
  Type:            REG_SZ
  Data:            asterix

Value 5
  Name:            DbUser
  Type:            REG_SZ
  Data:            sa

Value 6
  Name:            MaxConnections
  Type:            REG_DWORD
  Data:            0x4844

Value 7
  Name:            MaxPendingDeliveries
  Type:            REG_DWORD
  Data:            0x708

Value 8
  Name:            NumberOfDeliveryThreads
  Type:            REG_DWORD
  Data:            0x6

Value 9
  Name:            Path
  Type:            REG_SZ
  Data:            c:\inetpub\wwwroot\

Value 10
  Name:            TxnMonitor
  Type:            REG_SZ
  Data:            COM


Key Name:          SYSTEM\CurrentControlSet\Services\qlvika
Class Name:        <NO CLASS>
```

```
Last Write Time:   8/15/2002 - 2:40 PM
Value 0
  Name:            ErrorControl
  Type:            REG_DWORD
  Data:            0x1

Value 1
  Name:            group
  Type:            REG_SZ
  Data:            MVIA

Value 2
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            System32\DRIVERS\qlvika.sys

Value 3
  Name:            start
  Type:            REG_DWORD
  Data:            0x2

Value 4
  Name:            Tag
  Type:            REG_DWORD
  Data:            0x1

Value 5
  Name:            type
  Type:            REG_DWORD
  Data:            0x1


Key Name:          SYSTEM\CurrentControlSet\Services\qlvika\Adapters
Class Name:        <NO CLASS>
Last Write Time:   8/15/2002 - 2:48 PM

Key Name:
SYSTEM\CurrentControlSet\Services\qlvika\Adapters\210000E08B072AB0
Class Name:        <NO CLASS>
Last Write Time:   8/15/2002 - 2:55 PM
Value 0
  Name:            IPAddress
  Type:            REG_MULTI_SZ
  Data:            129.103.192.211



Key Name:          SYSTEM\CurrentControlSet\Services\qlvika\Enum
Class Name:        <NO CLASS>
Last Write Time:   10/24/2002 - 1:57 PM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:            Root\SCSIADAPTER\0000
```

```
Value 1
  Name:            Count
  Type:            REG_DWORD
  Data:            0x1

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x1


Key Name:          SYSTEM\CurrentControlSet\Services\qlvika\Parameters
Class Name:        <NO CLASS>
Last Write Time:   10/7/2002 - 2:39 PM
Value 0
  Name:            IuBuffers
  Type:            REG_DWORD
  Data:            0x100

Value 1
  Name:            MaxCQEntries
  Type:            REG_DWORD
  Data:            0x2000

Value 2
  Name:            MaxCQs
  Type:            REG_DWORD
  Data:            0x400

Value 3
  Name:            MaxPTags
  Type:            REG_DWORD
  Data:            0x800

Value 4
  Name:            MaxRegisterMBytes
  Type:            REG_DWORD
  Data:            0x200

Value 5
  Name:            MaxRegisterRdmaMBytes
  Type:            REG_DWORD
  Data:            0x200

Value 6
  Name:            MaxRegisterRegions
  Type:            REG_DWORD
  Data:            0x1000

Value 7
  Name:            MaxTransferSize
  Type:            REG_DWORD
  Data:            0x10000

Value 8
```

```
  Name:            MaxVIs
  Type:            REG_DWORD
  Data:            0x400

Value 9
  Name:            RecvDescQuota
  Type:            REG_DWORD
  Data:            0x8

Value 10
  Name:            SendDescQuota
  Type:            REG_DWORD
  Data:            0x8

Value 11
  Name:            SupportPrototypeCards
  Type:            REG_DWORD
  Data:            0


Key Name:          SYSTEM\CurrentControlSet\Services\qlvika\Security
Class Name:        <NO CLASS>
Last Write Time:   8/15/2002 - 2:40 PM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 a0 00 00 00 - ac 00 00 00 14 00 00 00
.... ...¬.......
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02 80 14 00
0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00 00 00 00
ÿ...............
00000030   02 00 70 00 04 00 00 00 - 00 00 18 00 fd 01 02 00
..p.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 72 00 74 00
............r.t.
00000050   00 00 1c 00 ff 01 0f 00 - 01 02 00 00 00 00 00 05
....ÿ...........
00000060   20 00 00 00 20 02 00 00 - 00 00 00 00 00 00 18 00   ...
...........
00000070   8d 01 02 00 01 01 00 00 - 00 00 00 05 0b 00 00 00
................
00000080   20 02 00 00 00 00 1c 00 - fd 01 02 00 01 02 00 00
.......ý.......
00000090   00 00 00 05 20 00 00 00 - 23 02 00 00 00 00 00 00  ....
...#.......
000000a0   01 01 00 00 00 00 00 05 - 12 00 00 00 01 01 00 00
................
000000b0   00 00 00 05 12 00 00 00 -                          ........
```

Component Services Configuration:
COM+ Component TPCC.AllTXns Settings:

Enable object pooling
Minimum pool size 88
Maximum pool size 88
Creation timeout 60,000
Enable object construction
Enable just in time activation
Concurrency required

This section discloses the RTE parameters used on the PRIMERGY 870 system.

```
Profile:   R450_HTML_5500
File Path: F:\R450\R450_HTML_5500.pro
Version:   1.0.1

     Number of Engines: 15

          Name: DRIVER01
          Description: B210RT4 CL1
          Directory: c:\b210rt4_cl1.log
          Machine: b210rt4
          Parameter Set: All_Times3
          Index: 0
          Seed: 11063
          Configured Users: 3700
          Pipe Name: DRIVER1424171
          Connect Rate: 200
          Start Rate: 200
          CLIENT_NURAND: 233
          CPU: 0

          Name: DRIVER02
          Description: B210RT4 CL2
          Directory: c:\b210rt4_cl2.log
          Machine: b210rt4
          Parameter Set: All_Times3
          Index: 100000000
          Seed: 11063
          Configured Users: 3700
          Pipe Name: DRIVER2559625
          Connect Rate: 200
          Start Rate: 200
          CLIENT_NURAND: 233
          CPU: 1

          Name: DRIVER03
          Description: B210RT4 CL3
          Directory: c:\b210rt4_cl3.log
          Machine: b210rt4
```

```
Parameter Set: All_Times3
Index: 200000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER3602875
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER04
Description: B210RT5 CL1
Directory: c:\b210rt5_cl1.log
Machine: b210rt5
Parameter Set: All_Times3
Index: 300000000
Seed: 11063
Configured Users: 3600
Pipe Name: DRIVER4642312
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER05
Description: B210RT5 CL2
Directory: c:\b210rt5_cl2.log
Machine: b210rt5
Parameter Set: All_Times3
Index: 400000000
Seed: 11063
Configured Users: 3600
Pipe Name: DRIVER5691546
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER06
Description: B210RT5 CL3
Directory: c:\b210rt5_cl3.log
Machine: b210rt5
Parameter Set: All_Times3
Index: 500000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER6744125
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER07
Description: B210RT6 CL1
Directory: c:\b210rt6_cl1.log
Machine: b210rt6
Parameter Set: All_Times3
Index: 600000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER7781125
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER08
Description: B210RT6 CL2
Directory: c:\b210rt6_cl2.log
Machine: b210rt6
Parameter Set: All_Times3
Index: 700000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER8812109
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER09
Description: B210RT6 CL3
Directory: c:\b210rt6_cl3.log
Machine: b210rt6
Parameter Set: All_Times3
Index: 800000000
Seed: 11063
Configured Users: 3600
Pipe Name: DRIVER9847031
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER10
Description: tuerkis CL1
Directory: f:\tuerkis_cl1.log
Machine: tuerkis
Parameter Set: All_Times3
Index: 900000000
Seed: 11063
Configured Users: 3600
Pipe Name: DRIVER10879078
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER11
Description: tuerkis CL2
```

```
Directory: f:\tuerkis_cl2.log
Machine: tuerkis
Parameter Set: All_Times3
Index: 1000000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER11911953
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER12
Description: tuerkis CL3
Directory: f:\tuerkis_cl3.log
Machine: tuerkis
Parameter Set: All_Times3
Index: 1100000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER12937328
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER13
Description: violet CL1
Directory: c:\violet_cl1.log
Machine: violet
Parameter Set: All_Times3
Index: 1200000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER134383562
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER14
Description: violet CL2
Directory: c:\violet_cl2.log
Machine: violet
Parameter Set: All_Times3
Index: 1300000000
Seed: 11063
Configured Users: 3700
Pipe Name: DRIVER144579000
Connect Rate: 200
Start Rate: 200
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER15
```

```
     Description: violet CL3
     Directory: c:\violet_cl3.log
     Machine: violet
     Parameter Set: All_Times3
     Index: 1400000000
     Seed: 11063
     Configured Users: 3600
     Pipe Name: DRIVER155027046
     Connect Rate: 200
     Start Rate: 200
     CLIENT_NURAND: 233
     CPU: 2

Number of User groups: 15

     Driver Engine: DRIVER01
     IIS Server: c200cl1
     SQL Server: asterix
     User: sa
     Protocol: Html
     w_id Range: 1 - 370
     w_id Max Warehouse: 5500
     Scale: Normal
     User Count: 3700
     District id: 1
     Scale Down: No

     Driver Engine: DRIVER02
     IIS Server: c200cl2
     SQL Server: asterix
     User: sa
     Protocol: Html
     w_id Range: 371 - 740
     w_id Max Warehouse: 5500
     Scale: Normal
     User Count: 3700
     District id: 1
     Scale Down: No

     Driver Engine: DRIVER03
     IIS Server: c200cl3
     SQL Server: asterix
     User: sa
     Protocol: Html
     w_id Range: 741 - 1110
     w_id Max Warehouse: 5500
     Scale: Normal
     User Count: 3700
     District id: 1
     Scale Down: No

     Driver Engine: DRIVER04
     IIS Server: c200cl1
     SQL Server: asterix
     User: sa
```

```
Protocol: Html
w_id Range: 1111 - 1470
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3600
District id: 1
Scale Down: No

Driver Engine: DRIVER05
IIS Server: c200cl2
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 1471 - 1830
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3600
District id: 1
Scale Down: No

Driver Engine: DRIVER06
IIS Server: c200cl3
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 1831 - 2200
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3700
District id: 1
Scale Down: No

Driver Engine: DRIVER07
IIS Server: c200cl1
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 2201 - 2570
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3700
District id: 1
Scale Down: No

Driver Engine: DRIVER08
IIS Server: c200cl2
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 2571 - 2940
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3700
District id: 1
Scale Down: No
```

```
Driver Engine: DRIVER09
IIS Server: c200cl3
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 2941 - 3300
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3600
District id: 1
Scale Down: No

Driver Engine: DRIVER10
IIS Server: c200cl1
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 3301 - 3660
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3600
District id: 1
Scale Down: No

Driver Engine: DRIVER11
IIS Server: c200cl2
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 3661 - 4030
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3700
District id: 1
Scale Down: No

Driver Engine: DRIVER12
IIS Server: c200cl3
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 4031 - 4400
w_id Max Warehouse: 5500
Scale: Normal
User Count: 3700
District id: 1
Scale Down: No

Driver Engine: DRIVER13
IIS Server: c200cl1
SQL Server: asterix
User: sa
Protocol: Html
w_id Range: 4401 - 4770
```

```
          w_id Max Warehouse: 5500
          Scale: Normal
          User Count: 3700
          District id: 1
          Scale Down: No

          Driver Engine: DRIVER14
          IIS Server: c200cl2
          SQL Server: asterix
          User: sa
          Protocol: Html
          w_id Range: 4771 - 5140
          w_id Max Warehouse: 5500
          Scale: Normal
          User Count: 3700
          District id: 1
          Scale Down: No

          Driver Engine: DRIVER15
          IIS Server: c200cl3
          SQL Server: asterix
          User: sa
          Protocol: Html
          w_id Range: 5141 - 5500
          w_id Max Warehouse: 5500
          Scale: Normal
          User Count: 3600
          District id: 1
          Scale Down: No

     Number of Parameter Sets: 2


          ~Default
          Default Parameter Set
                          Txn     Think   Key     RT      RT      Menu
                          Weight  Time    Time    Delay   Fence   Delay
          New Order         10.00     12.05      18.01      0.10
5.00    0.10
          Payment           10.00     12.05       3.01      0.10
5.00    0.10
          Delivery           1.00      5.05       2.01      0.10
5.00    0.10
          Stock Level        1.00      5.05       2.01      0.10
20.00   0.10
          Order Status       1.00     10.05       2.01      0.10
5.00    0.10

          All_Times3
          Run 2H
                          Txn     Think   Key     RT      RT      Menu
                          Weight  Time    Time    Delay   Fence   Delay
          New Order         44.90     12.05      18.01      0.10
5.00    0.10
```

```
          Payment           43.02     12.05       3.01      0.10
5.00    0.10
          Delivery           4.02      5.05       2.01      0.10
5.00    0.10
          Stock Level        4.03      5.05       2.01      0.10
20.00   0.10
          Order Status       4.03     10.05       2.01      0.10
5.00    0.10
```

This section discloses the Microsoft SQL Server 2000 Enterprise Edition SP3 parameters used on the PRIMERGY R450 server system.

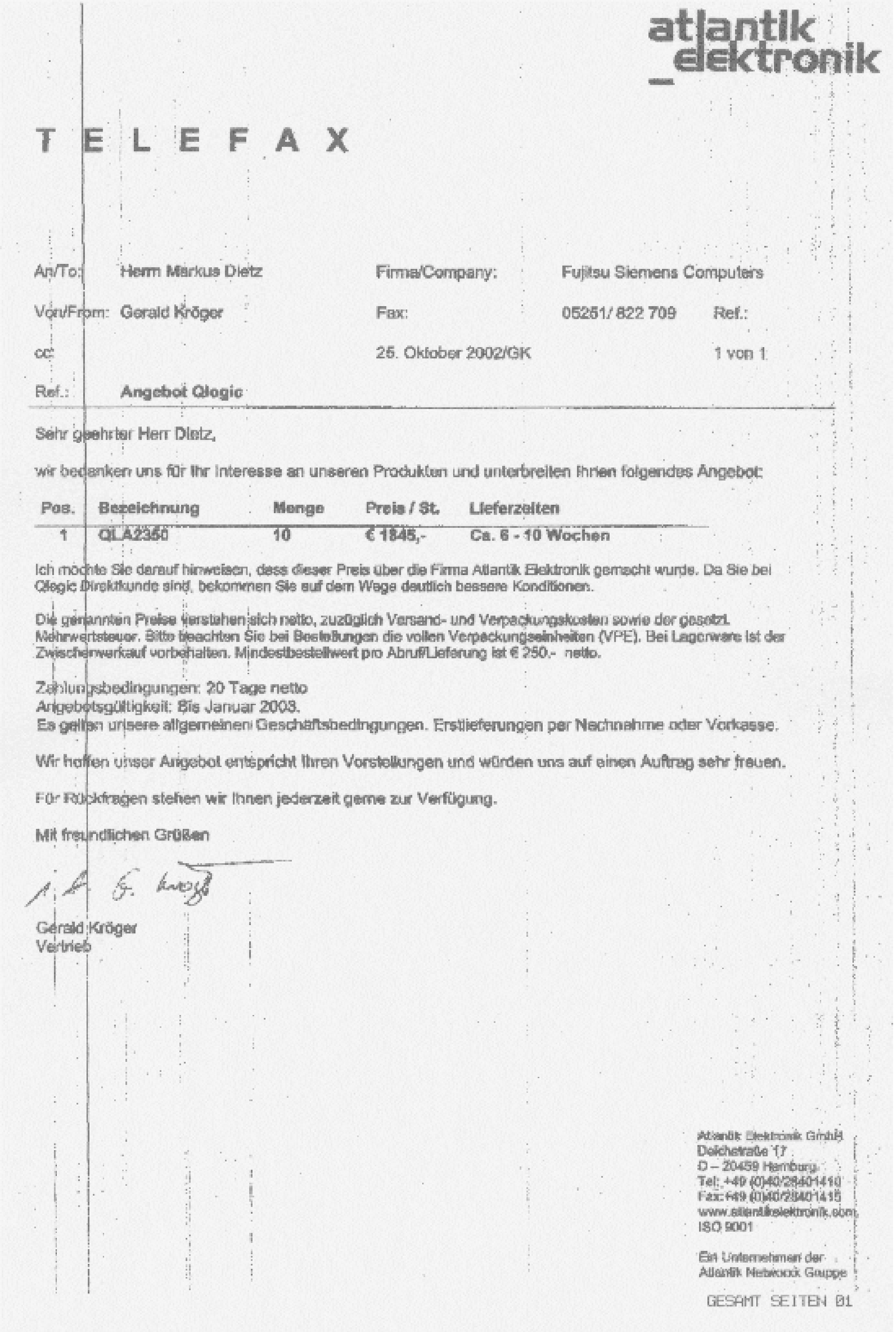
```
Microsoft SQL Server Startup Parameters:

sqlservr -c -x -T3502 -g80

where:
-c Start SQL Server independently of the Windows NT Service Control Manager
-x Disables the keeping of CPU time and cache-hit ratio statistics
-T3502 Prints a message to the SQL Server log at start and end of each checkpoint
-g80 memory in MB reserved for memory requests outside the buffer pool

Microsoft SQL Server Stack Size:

The default stack size for Microsoft SQL Server 2000 was changed using the EDITBIN utility:
editbin /STACK:131072

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 " "

 ------------------------------
 Oct 31 2002 11:47:05:290AM

(1 row affected)

1> 2> 3>
select @@version




 ------------------------------------------------------------------------------
     -----------------------------------------------------------------------
     -----------------------------------------------------------------------
     -----------------------------------
 Microsoft SQL Server  2000 - 8.00.725 (Intel X86)
     Sep 23 2002 13:22:20
     Cop
     yright (c) 1988-2002 Microsoft Corporation
     Enterprise Edition on Windo
     ws NT 5.2 (Build 3663: )



(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 " "

 ------------------------------
 Oct 22 2002 10:28:45:007AM

(1 row affected)
```

```
1> 2> 3> DBCC execution completed. If DBCC printed error messages, contact your system administrator.
Configuration option 'show advanced options' changed from 1 to 1. Run the RECONFIGURE statement to
install.

sp_configure "show advanced",1
1> 2> reconfigure with override
1> 2> sp_configure
 name                                    minimum     maximum     config_value run_value
 --------------------------------------- ----------- ----------- ------------ -----------
 affinity mask                           -2147483648  2147483647          255         255
 allow updates                                     0           1            0           0
 awe enabled                                       0           1            1           1
 c2 audit mode                                     0           1            0           0
 cost threshold for parallelism                    0       32767            5           5
 Cross DB Ownership Chaining                       0           1            0           0
 cursor threshold                                 -1  2147483647           -1          -1
 default full-text language                        0  2147483647         1033        1033
 default language                                  0        9999            0           0
 fill factor (%)                                   0         100            0           0
 index create memory (KB)                        704  2147483647            0           0
 lightweight pooling                               0           1            1           1
 locks                                          5000  2147483647            0           0
 max degree of parallelism                         0          32            1           1
 max server memory (MB)                            4  2147483647   2147483647  2147483647
 max text repl size (B)                            0  2147483647        65536       65536
 max worker threads                               32       32767          304         304
 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          512         512
 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          116         116
 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>
```

Appendix D – Space Calculation

Note : Numbers are in KBytes unless otherwise specified						
Warehouses	**5500**	**tpmC**	68264	**tpmC/W**	12.41	
Table	**Rows**	**Data**	**Index**	**5% Space**	**8H Space**	**Total Space**
Warehouse	5,500	592	56	32		680
District	55,000	6,112	72	309		6,493
Item	100,000	9,528	72	480		10,080
New-order	49,500,000	782,616	1,808		440,000	1,224,424
History	165,000,000	9,166,680	48		1,820,386	10,987,114
Orders	165,000,000	5,057,472	2,299,800		1,461,053	8,818,325
Customer	165,000,000	120,000,000	7,155,304	6,357,765		133,513,069
Order-line	1,649,998,197	103,124,888	218,280		20,522,525	123,865,693
Stock	550,000,000	176,000,000	328,808	8,816,440		185,145,248
Totals		414,147,888	10,004,248	15,175,027	24,243,963	463,571,126
Segment	**LogDev Cnt.**	**Seg. Size**	**Needed**	**Overhead**		**Not Needed**
misc	6	172,032,000	146,361,937	1,463,619		24,206,444
customer/stock	6	319,488,000	321,844,901	3,218,449		(5,575,350)
Totals		491,520,000	468,206,838	4,682,068		18,631,094
Dynamic space	117,349,040	Sum of Data for Order, Order-Line and History				
Static space	326,660,192	Data + Index + 5% Space + Overhead - Dynamic space				
Free space	28,879,674	Total Seg. Size - Dynamic Space - Static Space - Not Needed				
Daily growth	23,303,898	(Dynamic space/W * 62.5)* tpmC				
Daily spread	(6,076,172)	Free space - 1.5 * Daily growth (zero if negative)				
60 day (KB)	1,724,894,059	Static space + 60 (daily growth + daily spread)				
60 day (GB)	1,644.99	60-day space in GB (excludes OS, Paging and RDBMS Logs)				
Log size (MB)	80,000	Total size of log file				
% Log used	61.5505	% of log file used during entire run				
Total N-O Txn	10932869	Total count of N-O transactions during entire run				
Log per N-O txn	4.6120	KB of log per New-Order transaction				
8 Hour Log (GB)	144.12	8 hours of log in GB (excluding space for redundancy)				
Disk Capacity	**MB**	**GB**	**disks needed**	**disks priced**	**GB priced**	
18 GB 15000 rpm	17300	16.89		288	4,865.63	
60 day (GB)		1,644.99	97.37	288	4,865.63	
Disk Capacity	**MB**	**GB**	**disks needed**	**disks priced**		
36 GB 15000 rpm	34700	33.89				
8 Hour Log (RAID 1)		144.12	4.25	5+5		

Appendix E - Price Quotations



atlantik
_elektronik

T E L E F A X

An/To:	Herrn Markus Dietz	Firma/Company:	Fujitsu Siemens Computers	
Von/From:	Gerald Kröger	Fax:	05251/ 822 709	Ref.:
cc:		25. Oktober 2002/GK		1 von 1
Ref.:	**Angebot Qlogic**			

Sehr geehrter Herr Dietz,

wir bedanken uns für Ihr Interesse an unseren Produkten und unterbreiten Ihnen folgendes Angebot:

Pos.	**Bezeichnung**	**Menge**	**Preis / St.**	**Lieferzeiten**
1	**QLA2350**	**10**	**€ 1845,-**	**Ca. 6 - 10 Wochen**

Ich möchte Sie darauf hinweisen, dass dieser Preis über die Firma Atlantik Elektronik gemacht wurde. Da Sie bei Qlogic Direktkunde sind, bekommen Sie auf dem Wege deutlich bessere Konditionen.

Die genannten Preise verstehen sich netto, zuzüglich Versand- und Verpackungskosten sowie der gesetzl. Mehrwertsteuer. Bitte beachten Sie bei Bestellungen die vollen Verpackungseinheiten (VPE). Bei Lagerware ist der Zwischenverkauf vorbehalten. Mindestbestellwert pro Abruf/Lieferung ist € 250.- netto.

Zahlungsbedingungen: 20 Tage netto
Angebotsgültigkeit: Bis Januar 2003.
Es gelten unsere allgemeinen Geschäftsbedingungen. Erstlieferungen per Nachnahme oder Vorkasse.

Wir hoffen unser Angebot entspricht Ihren Vorstellungen und würden uns auf einen Auftrag sehr freuen.

Für Rückfragen stehen wir Ihnen jederzeit gerne zur Verfügung.

Mit freundlichen Grüßen

Gerald Kröger
Vertrieb

Atlantik Elektronik GmbH
Deichstraße 17
D – 20459 Hamburg
Tel: +49 (0)40/28401410
Fax: +49 (0)40/28401415
www.atlantikelektronik.com
ISO 9001

Ein Unternehmen der
Atlantik Networxx Gruppe

GESAMT SEITEN 01

Appendix F - Attestation Letter

Benchmark Sponsor: Franz-Josef Bathe
Fujitsu Siemens Computers
Heinz-Nixdorf-Ring 1
D-33106 Paderborn, Germany

November 1, 2002

I remotely verified the TPC Benchmark™ C performance of the following Client/Server configuration:

Platform:	**Siemens PRIMERGY R450**
Operating system:	**Microsoft Windows .NET Server 2003 Enterprise Edition**
Database Manager:	**Microsoft SQL Server 2000 Enterprise Edition SP3**
Transaction Manager:	**Microsoft COM+ (Included in Windows 2000)**

The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	**tpmC**
Server: Siemens PRIMERGY R450				
4 x Intel Xeon MP (2.00 GHz)	16 GB Main (2M iL3 SLC Cache per processor)	289 x 18 GB 10 x 36 GB	0.95 Seconds	**68,264.47**
Three (3) Clients: PRIMERGY C200 (Specification for each)				
2 x Pentium III (1400 MHz)	768 MB Main Cache: 512 KB	1 x 18 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
- One checkpoint was taken during the reported measurement interval
- The repeatability of the measured performance was verified
- 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