



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant ML370G3 2P
using
Microsoft SQL Server 2000 Enterprise Edition
and
Windows Server 2003, Standard Edition

First Edition
August 2003

First Edition – August, 2003

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Printed in the United States August, 2003

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Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant ML370G3 using Microsoft SQL Server 2000 Enterprise Edition SP3, in conformance with the requirements of the TPC Benchmark™ H Standard Specification, Revision 2.0. The operating system used for the benchmark was Microsoft Windows Server 2003, Standard Edition.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB	\$ / QphH @ 100GB
HP ProLiant ML370G3 2P	Microsoft SQL Server 2000 SP3 Windows Server 2003, Standard Edition	\$38,683	1701.9	1128.7	1386.0	\$ 28

The TPC Benchmark™ H was developed by the Transaction Processing Performance Council (TPC). The TPC was founded to define transaction processing benchmarks and to disseminate objective, verifiable performance data to the industry.

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

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P.O. Box 692000
Houston, TX 77269-2000

Standard and Executive Summary Statements

Pages ii-iv contains the Executive Summary and Numerical Quantities Summary of the benchmark results for the HP ProLiant ML370G3.

Auditor

The benchmark configuration, environment and methodology used to produce and validate the test results, and the pricing model used to calculate the cost per QppH and QthH were audited by Lorna Livingtree of Performance Metrics, Inc. to verify compliance with the relevant TPC specifications. The auditor's letter of attestation is attached in Section 9.1 "Auditors' Report."



HP ProLiant ML370G3 2P

TPC-H Rev. 2.0

Report Date:
Aug 15, 2003

Total System Cost

\$38,683

Composite Query per Hour Metric

1,386.0
QphH@100GB

Price / Performance

\$28
\$ / QphH@100GB

Database Size

100GB

Database Manager

Microsoft SQL Server 2000 Enterprise Edition

Operating System

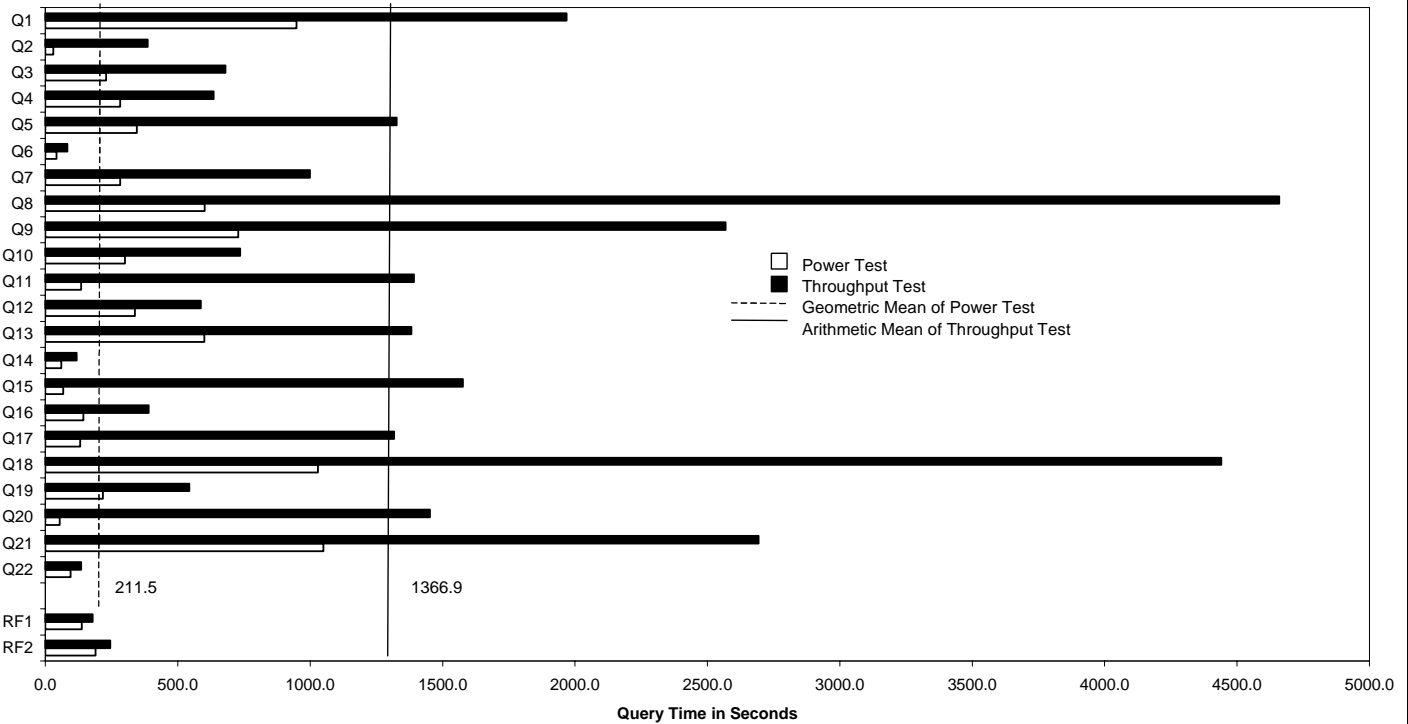
Windows Server 2003, Standard Edition

Other Software

Visual C++ .Net Standard

Availability Date

Aug 15, 2003



Database Load Time = 4:47:24

Load Included Backup: Y

Total Data Storage / Database Size = 3.71

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

System Configuration:

- Processors :** 2 x Intel Xeon 3.06 GHz with 512KB L2 cache
- Memory :** 4 GB memory
- Disk Controllers :** 2x Smart Array 6402
- Disks :** 22 x 18.2 GB 15K RPM drives
- Total Disk Storage:** 371.8 GB

Note: Database Size includes only raw data (e.g., no temp, index, redundant storage space, etc).

**HP ProLiant DL370 G3**

TPC-H Rev. 2.0

Report Date:

15-Aug-02

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware						
		Brand Pricing				
ML370G3 X3.06GHz 512KB/533 1GB 1P	310590-001	1	2,699	1	2,699	
X3.06/533-512k processor	257916-B21	1	1,159	1	1,159	
1GB PC2100 DDR (2x512MB)	300679-B21	1	550	1	550	
2GB PC2100 DDR (2x1024MB)	300680-B21	1	1,300	1	1,300	
Internal 2 Bay HotPlug U2/U3 SCSI Drive Cage	244059-B21	1	370	1	370	
S5500 15" Monitor	261602-001	1	129	1	129	
UPS T700	204015-001	1	325	1	325	
Servers 300 Series CarePaq, 3yr 7x24, 4hr resp.	162675-002	1	599	1		599
				Subtotal	6,532	599
Storage						
Smart Array 6402 Controller	273915-B21	1	1,299	2	2,598	
StorageWorks Enclosure Model 4314T- Tower	190210-001	1	3,182	1	3,182	
Ultra3 Dual I/O module upgrade for 4214, 4254 or 4314	190213-B21	1	569	1	569	
18.2GB 15Krpm U320 UNI HDD - internal	286775-B22	1	359	8	2,872	
18.2GB 15Krpm U320 UNI HDD - external	286775-B22	1	359	14	5,026	
18.2GB 15Krpm U320 UNI HDD - 10% spares	286775-B22	1	359	2	718	
CarePaq 43xx Enclosure, 3yr, 7x24, 4hr resp.	171242-002	1	157	1		157
				Subtotal	14,965	157
Hardware and Maintenance Discount						
Large Purchase and Net 30 discount	14.0%	1			(\$3,010)	(\$106)
				Hardware Subtotal	18,487	650
Software						
Microsoft SQL Server 2000 Enterprise Edition	810-00652	Microsoft	2	5,549	1	5,549
Database Server Support Package, 1 Year	PRO-PRORS-16U-01	Microsoft	2	1,950	3	5,850
Microsoft SQL Server 2000 Client Licenses	359-00532	Microsoft	2	146	50	7,300 included
Microsoft Windows Server 2003 - Standard Edition	P73-00295	Microsoft	2	738	1	738 included
Microsoft Visual C++ .NET Standard	254-00170	Microsoft	2	109	1	109 included
				Subtotal	13,696	5,850
				Total	\$32,183	\$6,500

3-Year Cost of Ownership: \$38,683**QpH Rating: 1386.0****\$ / QpH@100GB: \$28**

Pricing: 1=HP; 2= Microsoft

Note: The benchmark results and test methodology were audited by Lorna Livingtree of Performance Metrics

Audited by: Lorna Livingtree of Performance Metrics Inc.

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specifications. If you find that the stated prices are not available according to these terms, please inform at pricing@tpc.org. Thank you.



HP ProLiant ML370G3 2P

TPC-H Rev. 2.0

Report Date:
Aug 15, 2003

Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 3.71
Start of Database Load	= 2003-07-11 12:57:37
End of Database Load	= 2003-07-11 17:45:01
Database Load Time	= 4:47:24
Query Streams for Throughput Test	= 5
TPC-H Power	= 1701.9
TPC-H Throughput	= 1128.7
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	= 1386.0
Total System Price Over 3 Years	= \$38,683
TPC-H Price/ Performance Metric (\$/QphH@100GB)	= \$28

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 35084.3 seconds
--	-------------------

Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	711174501	7/12/2003	15:38:34	7/12/2003	17:52:32	2:13:58
Stream01	711174502	7/12/2003	17:52:33	7/13/2003	3:01:59	9:09:26
Stream02	711174503	7/12/2003	17:52:33	7/13/2003	2:59:01	9:06:28
Stream03	711174504	7/12/2003	17:52:33	7/13/2003	2:35:03	8:42:30
Stream04	711174505	7/12/2003	17:52:33	7/13/2003	1:40:13	7:47:40
Stream05	711174506	7/12/2003	17:52:33	7/13/2003	0:52:24	6:59:51
Refresh00		7/12/2003	15:38:34	7/12/2003	17:52:32	2:13:58
Refresh01		7/13/2003	3:02:00	7/13/2003	3:08:23	0:06:23
Refresh02		7/13/2003	3:08:23	7/13/2003	3:15:35	0:07:12
Refresh03		7/13/2003	3:15:35	7/13/2003	3:22:49	0:07:14
Refresh04		7/13/2003	3:22:49	7/13/2003	3:30:05	0:07:16
Refresh05		7/13/2003	3:30:05	7/13/2003	3:37:18	0:07:12



HP ProLiant ML370G3 2P

TPC-H Rev. 2.0

Report Date:
Aug 15, 2003

TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	948.5	30.4	230.0	281.8	345.3	41.4	283.1	600.9
Stream 01	1721.0	598.4	675.3	347.7	1189.6	58.7	1448.5	7729.9
Stream 02	1874.5	823.7	633.8	590.4	1496.0	113.9	1002.0	7093.2
Stream 03	2076.9	178.2	703.6	684.5	1454.5	47.5	770.6	5000.8
Stream 04	2111.6	240.7	798.9	826.6	998.2	67.0	484.6	1054.9
Stream 05	2059.4	90.2	588.9	725.8	1495.9	127.2	1291.6	2415.3
Min Qi	1721.0	90.2	588.9	347.7	998.2	47.5	484.6	1054.9
Max Qi	2111.6	823.7	798.9	826.6	1496.0	127.2	1448.5	7729.9
Avg Qi	1968.7	386.2	680.1	635.0	1326.8	82.9	999.5	4658.8
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	728.6	300.8	135.5	338.4	600.0	60.0	66.8	143.8
Stream 01	1779.0	508.8	1640.2	782.6	2056.2	131.5	702.0	473.2
Stream 02	2495.3	887.4	831.9	617.5	1231.1	141.0	1559.2	385.5
Stream 03	2307.4	926.2	1630.1	453.3	1435.1	67.7	1534.4	229.1
Stream 04	3843.4	860.4	1901.9	654.1	1090.8	111.5	2443.0	427.1
Stream 05	2417.8	496.6	954.4	426.3	1099.0	139.4	1645.3	433.4
Min Qi	1779.0	496.6	831.9	426.3	1090.8	67.7	702.0	229.1
Max Qi	3843.4	926.2	1901.9	782.6	2056.2	141.0	2443.0	473.2
Avg Qi	2568.6	735.9	1391.7	586.8	1382.4	118.2	1576.8	389.7
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	131.8	1029.9	217.8	53.7	1049.9	94.3	136.9	189.5
Stream 01	618.7	5177.4	240.9	1969.1	2986.2	131.5	140.4	242.7
Stream 02	3550.5	4067.8	702.9	455.3	2095.9	139.7	187.9	243.9
Stream 03	870.3	4675.5	347.8	3376.5	2439.0	141.4	187.9	246.5
Stream 04	1361.8	3839.9	891.8	1092.1	2837.2	122.4	189.0	246.7
Stream 05	183.0	4448.6	533.6	372.4	3112.0	135.6	187.4	245.8
Min Qi	183.0	3839.9	240.9	372.4	2095.9	122.4	140.4	242.7
Max Qi	3550.5	5177.4	891.8	3376.5	3112.0	141.4	189.0	246.7
Avg Qi	1316.9	4441.8	543.4	1453.1	2694.1	134.1	178.5	245.1

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1.0 General Items

1.1 Test Sponsor

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

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

1.2 Parameter Settings

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

- *Database Tuning Options*
- *Optimizer/Query execution options*
- *Query processing tool/language configuration parameters*
- *Recovery/commit options*
- *Consistency/locking options*
- *Operating system and configuration parameters*
- *Configuration parameters and options for any other software component incorporated into the pricing structure*
- *Compiler optimization options*

This requirement can be satisfied by providing a full list of all parameters and options, as long as all those which have been modified from their default values have been clearly identified and these parameters and options are only set once.

Appendix A, "Tunable Parameters," contains a list of all database parameters and operating system parameters.

1.3 Configuration Items

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.*
- *Type and the run-time execution location of software components (e.g., DBMS, query processing tools/languages, middle-ware components, software drivers, etc.).*

The server System Under Test (SUT), a HP ProLiant ML370G3 2P , depicted in Figure 1.1, consisted of :

- 2x Intel Xeon 3.06GHz with 512KB L2 Cache
- 4 GB of memory
- 2 x HP 6402 Array Controllers
- 1 x StorageWorks Enclosure 4314T
- 22 x 18.2GB Pluggable Ultra320 15K rpm 1” height drives

Figure 1.1 Benchmarked configuration

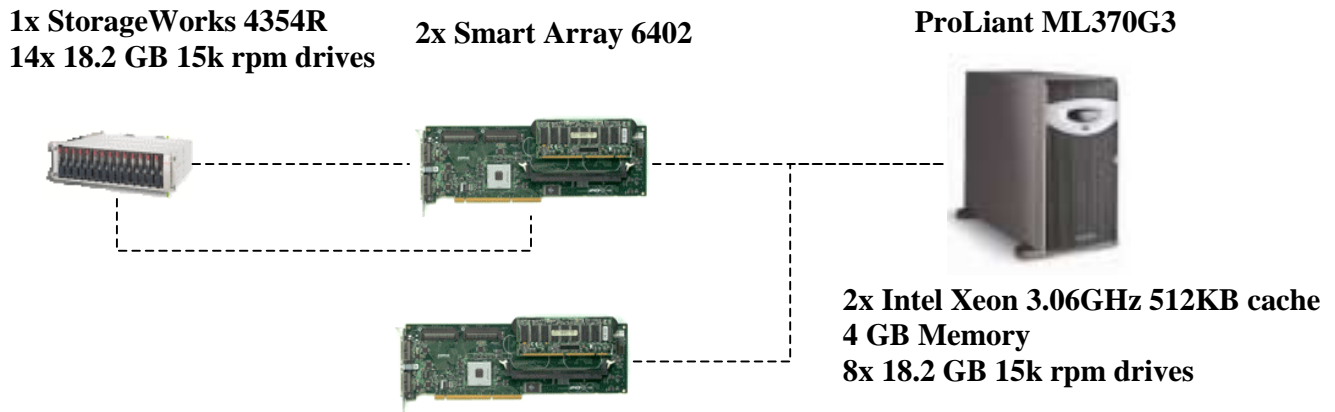
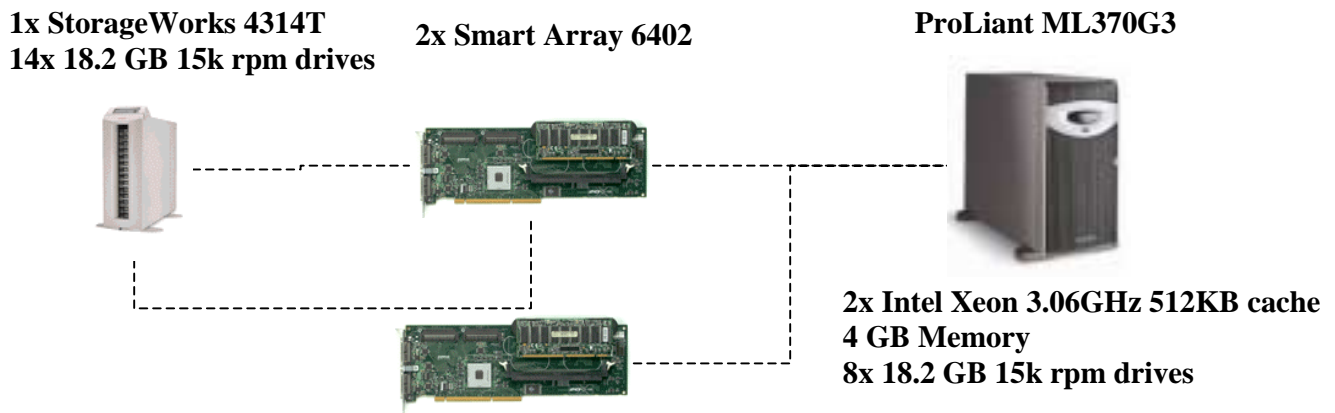


Figure 1.2 Priced configuration



The measured configuration was different in that it contained one additional StorageWorks 4354R, which held fourteen 36.4GB 15K SCSI drives that held raw data files and backup. A third Smart Array 6402 adapter was used to attach these drives. This hardware was not priced.

2.0 Clause 1: 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 test and qualification databases. (8.1.2.1)

Appendix B, "Database Build Scripts," contains the table definitions and the program used to load the database.

2.2 Physical Organization of Database

The physical organization of tables and indices, within the test and qualification databases, must be disclosed. If the column ordering of any table is different from that specified in Clause 1.4, it must be noted.

Appendix B, "Database Build Scripts," contains the DDL for the index definitions.

2.3 Horizontal Partitioning

Horizontal partitioning of tables and rows in the test and qualification databases (see Clause 1.5.4) must be disclosed.

Horizontal partitioning was not used

2.4 Replication

Any replication of physical objects must be disclosed and must conform to the requirements of Clause 1.5.6.

No replication was used.

3.0 Clause 2: Queries and Refresh Functions Related Items

3.1 Query Language

The query language used to implement the queries must be identified.

SQL was the query language used.

3.2 Random Number Generation

The method of verification for the random number generation must be described unless the supplied DBGEN and QGEN were used.

The TPC-supplied DBGEN version 1.3.0 and QGEN version 1.3.0 were used to generate all database populations.

3.3 Substitution Parameters Generation

The method used to generate values for substitution parameters must be disclosed. If QGEN is not used for this purpose, then the source code of any non-commercial tool used must be disclosed. If QGEN is used, the version number, release number, modification number and patch level of QGEN must be disclosed.

The supplied QGEN version 1.3.0 was used to generate the substitution parameters.

3.4 Query Text and Output Data from Database

The executable query text used for query validation must be disclosed along with the corresponding output data generated during the execution of the query text against the qualification database. If minor modifications (see Clause 2.2.3) have been applied to any functional query definitions or approved variants in order to obtain executable query text, these modifications must be disclosed and justified. The justification for a particular minor query modification can apply collectively to all queries for which it has been used. The output data for the power and throughput tests must be made available electronically upon request..

Appendix C contains the query text and query output. The following modifications were used:

- In Q1, Q4, Q5, Q6, Q10, Q12, Q14, Q15 and Q20, the “dateadd” function is used to perform date arithmetic.
- In Q7, Q8 and Q9, the “datepart” function is used to extract part of a date (e.g., “YY”).
- In Q2, Q3, Q10, Q18 and Q21, the “top” function is used to restrict the number of output rows.
- The word GO is used as a command delimiter.

3.5 Query Substitution Parameters and Seeds Used

All the query substitution parameters used during the performance test must be disclosed in tabular format, along with the seeds used to generate these parameters.

Appendix D contains the seed and query substitution parameters used.

3.6 Isolation Level

The isolation level used to run the queries must be disclosed. If the isolation level does not map closely to one of the isolation levels defined in Clause 3.4, additional descriptive detail must be provided.

The queries and transactions were run with isolation level 1.

3.7 Refresh Functions

The details of how the refresh functions were implemented must be disclosed (including source code of any non-commercial program used).

Appendix E contains the source code for the refresh functions.

4.0 Clause 3: Database System Properties

4.1 Atomicity Requirements

The results of the ACID tests must be disclosed along with a description of how the ACID requirements were met. This includes disclosing the code written to implement the ACID Transaction and Query.

All ACID tests were conducted according to specification. The Atomicity, Isolation, Consistency and Durability tests were performed on the HP ProLiant ML370G3.

4.1.1 Atomicity of the Completed Transactions

Perform the ACID Transaction for a randomly selected set of input data and verify that the appropriate rows have been changed in the ORDER, LINEITEM, and HISTORY tables.

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

1. The total price from the ORDER table and the extended price from the LINEITEM table were retrieved for a randomly selected order key.
2. The ACID Transaction was performed using the order key from step 1.
3. The ACID Transaction committed.
4. The total price from the ORDER table and the extended price from the LINEITEM table were retrieved for the same order key. It was verified that the appropriate rows had been changed.

4.1.2 Atomicity of Aborted Transactions

Perform the ACID transaction for a randomly selected set of input data, submitting a ROLLBACK of the transaction for the COMMIT of the transaction. Verify that the appropriate rows have not been changed in the ORDER, LINEITEM, and HISTORY tables.

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

1. The total price from the ORDER table and the extended price from the LINEITEM table were retrieved for a randomly selected order key.
2. The ACID Transaction was performed using the order key from step 1. The transaction was stopped prior to the commit.
3. The ACID Transaction was ROLLED BACK. .
4. The total price from the ORDER table and the extended price from the LINEITEM table were retrieved for the same order key used in steps 1 and 2. It was verified that the appropriate rows had not been changed.

4.2 Consistency Requirements

Consistency is the property of the application that requires any execution of transactions to take the database from one consistent state to another.

A consistent state for the TPC-H database is defined to exist when:

$$O_TOTALPRICE = SUM(L_EXTENDEDPRICE - L_DISCOUNT) * (1 + L_TAX)$$

For each ORDER and LINEITEM defined by (O_ORDERKEY = L_ORDERKEY)

4.2.1 Consistency Tests

Verify that ORDER and LINEITEM tables are initially consistent as defined in Clause 3.3.2.1, based upon a random sample of at least 10 distinct values of O_ORDERKEY.

The following steps were performed to verify consistency:

1. The consistency of the ORDER and LINEITEM tables was verified based on a sample of O_ORDERKEYs.
2. One hundred ACID Transactions were submitted from each of six execution streams.

3. The consistency of the ORDER and LINEITEM tables was reverified.

4.3 Isolation Requirements

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.

4.3.1 Isolation Test 1 - Read-Write Conflict with Commit

Demonstrate isolation for the read-write conflict of a read-write transaction and a read-only transaction when the read-write transaction is committed.

The following steps were performed to satisfy the test of isolation for a read-only and a read-write committed transaction:

1. An ACID Transaction was started for a randomly selected O_KEY, L_KEY and DELTA. The ACID Transaction was suspended prior to Commit.
2. An ACID query was started for the same O_KEY used in step 1. The ACID query blocked and did not see any uncommitted changes made by the ACID Transaction.
3. The ACID Transaction was resumed and committed.
4. The ACID query completed. It returned the data as committed by the ACID Transaction.

4.3.2 Isolation Test 2 - Read-Write Conflict with Rollback

Demonstrate isolation for the read-write conflict of a read-write transaction and a read-only transaction when the read-write transaction is rolled back.

The following steps were performed to satisfy the test of isolation for read-only and a rolled back read-write transaction:

1. An ACID transaction was started for a randomly selected O_KEY, L_KEY and DELTA. The ACID Transaction was suspended prior to Rollback.
2. An ACID query was started for the same O_KEY used in step 1. The ACID query did not see any uncommitted changes made by the ACID Transaction.
3. The ACID Transaction was ROLLED BACK.
4. The ACID query completed.

4.3.3 Isolation Test 3 - Write-Write Conflict with Commit

Demonstrate isolation for the write-write conflict of two update transactions when the first transaction is committed.

The following steps were performed to verify isolation of two update transactions:

1. An ACID Transaction T1 was started for a randomly selected O_KEY, L_KEY and DELTA. The ACID transaction T1 was suspended prior to Commit.
2. Another ACID Transaction T2 was started using the same O_KEY and L_KEY and a randomly selected DELTA.
3. T2 waited.
4. The ACID transaction T1 was allowed to Commit and T2 completed.
5. It was verified that:
$$T2.L_EXTENDEDPRICE = T1.L_EXTENDEDPRICE + (DELTA1*(T1.L_EXTENDEDPRICE/T1.L_QUANTITY))$$

4.3.4 Isolation Test 4 - Write-Write Conflict with Rollback

Demonstrate isolation for the write-write conflict of two update transactions when the first transaction is rolled back.

The following steps were performed to verify the isolation of two update transactions after the first one is rolled back:

1. An ACID Transaction T1 was started for a randomly selected O_KEY, L_KEY and DELTA. The ACID Transaction T1 was suspended prior to Rollback.

2. Another ACID Transaction T2 was started using the same O_KEY and L_KEY used in step 1 and a randomly selected DELTA.
3. T2 waited.
4. T1 was allowed to ROLLBACK and T2 completed.
5. It was verified that T2.L_EXTENDEDPRICE = T1.L_EXTENDEDPRICE.

4.3.5 Isolation Test 5 – Concurrent Read and Write Transactions on Different Tables

Demonstrate the ability of read and write transactions affecting different database tables to make progress concurrently.

The following steps were performed:

1. An ACID Transaction T1 for a randomly selected O_KEY, L_KEY and DELTA. The ACID Transaction T1 was suspended prior to Commit.
2. Another ACID Transaction T2 was started using random values for PS_PARTKEY and PS_SUPPKEY.
3. T2 completed.
4. T1 completed and the appropriate rows in the ORDER, LINEITEM and HISTORY tables were changed.

4.3.6 Isolation Test 6 – Update Transactions During Continuous Read-Only Query Stream

Demonstrate the continuous submission of arbitrary (read-only) queries against one or more tables of the database does not indefinitely delay update transactions affecting those tables from making progress.

The following steps were performed:

1. An ACID Transaction T1 was started, executing Q1 against the qualification database. The substitution parameter was chosen from the interval [0..2159] so that the query ran for a sufficient amount of time.
2. Before T1 completed, an ACID Transaction T2 was started using randomly selected values of O_KEY, L_KEY and DELTA.
3. T2 completed before T1 completed.
4. It was verified that the appropriate rows in the ORDER, LINEITEM and HISTORY tables were changed.

4.4 Durability Requirements

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 3.5.2.

4.4.1 Permanent Unrecoverable Failure of Any Durable Medium and Loss of System Power

Guarantee the database and committed updates are preserved across a permanent irrecoverable failure of any single durable medium containing TPC-H database tables or recovery log tables.

The database log was stored on a RAID-1 protected array of two physical drives. The tables for the database were stored on 2 RAID-0 arrays each containing 3 physical drives and 2 RAID-0 arrays each containing 7 physical drives. A backup of the database was taken. The backup was spread across 2 RAID-5 arrays.

The tests were conducted on the qualification database. The steps performed are shown below:

1. The complete database was backed up.
2. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
3. While the test was running, one of the disks from the database RAID-1 log was removed.
4. After it was determined that the test would still run with the loss of a log disk, one physical drive of a RAID-0 data volume was removed.
5. A checkpoint was issued to force a failure.
6. The six streams of ACID transactions failed and recorded their number of committed transaction in success files.
7. The database log was dumped to disk.
8. The database and log disks were replaced with new disks and RAID rebuild process started
9. When log RAID rebuild process finished a database restore was done.
10. A command was issued causing the database to run through its roll-forward recovery.
11. The counts in the success files and the HISTORY table count were compared and were found to match.

4.4.2 System Crash

Guarantee the database and committed updates are preserved across an instantaneous interruption (system crash/system hang) in processing which requires the system to reboot to recover.

1. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
2. While the streams of ACID transactions were running, the system was powered off.
3. When power was restored, the system rebooted and the database was restarted.
4. The database went through a recovery period.
5. The success file and the HISTORY table counts were compared and were found to match.

4.4.3 Memory Failure

Guarantee the database and committed updates are preserved across failure of all or part of memory (loss of contents).

See section 4.4.2

5.0 Clause 4: Scaling and Database Population

5.1 Initial Cardinality of Tables

The cardinality (e.g., the number of rows) of each table of the test database, as it existed at the completion of the database load (see clause 4.2.5) must be disclosed.

Table 5.1 lists the TPC Benchmark H defined tables and the row count for each table as they existed upon completion of the build.

Table 5. 1: Initial Number of Rows

Table Name	Row Count
Region	5
Nation	25
Supplier	1,000,000
Customer	15,000,000
Part	20,000,000
Partsupp	80,000,000
Orders	150,000,000
Lineitem	600,037,902

5.2 Distribution of Tables and Logs Across Media

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

Microsoft SQL Server was configured on a HP ProLiant ML370G3 with the following configuration:

- 2 x Smart Array 6402 disk controllers
- 1 x StorageWorks Enclosure 4314T
- 14 x 18.2GB 15k rpm external disk drives
- 8 x 18.2GB 15k rpm internal disk drives

All 22 disks were used to hold table data, indexes, database log and the temporary database (TempDB).

A detailed description of distribution of database filegroups and log can be found in Table 5.2.1

Table 5.2.1: SMART Array Controller Disk Array to Logical Drive Mapping

SMART Array Controller	SMART Logical Drive Array Letter	Number of Physical Drives in SMART LDA	SMART Logical Drive Number	SMART Fault Tolerance	Disk Format	Size (MB)	Contents
Slot 2	A	2	1	RAID1	NTFS	2048	OS
			2	RAID1	RAW	12000	Tpch100Log
			3	RAID0	RAW	6000	TempLog
			4	RAID1	RAW	314	Tpch1gLog
Slot 2	B	3	1	RAID0	RAW	30000	Tpch100g
			2	RAID0	RAW	15000	TempDB
Slot 2	C	3	1	RAID0	RAW	30000	Tpch100g
			2	RAID0	RAW	15000	TempDB
Slot 5	A	7	1	RAID0	RAW	70000	Tpch100g
			2	RAID0	RAW	35000	TempDB
			3	RAID0	RAW	4000	Tpch1g
Slot 5	A	7	1	RAID0	RAW	70000	Tpch100g
			2	RAID0	RAW	35000	TempDB
			3	RAID5	NTFS	14000	UF_Flatfiles

5.3 Mapping of Database Partitions/Replications

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

Database partitioning/replication was not used..

5.4 Implementation of RAID

Implementations may use some form of RAID to ensure high availability. If used for data, auxiliary storage (e.g. indexes) or temporary space, the level of RAID used must be disclosed for each device.

RAID 0 was used for database filegroups and tempdb, and RAID 1 for database recovery logs.

5.5 DBGEN Modifications

The version number, release number, modification number, and patch level of DBGEN must be disclosed. Any modifications to the DBGEN (see Clause 4.2.1) source code must be disclosed. In the event that a program other than DBGEN was used to populate the database, it must be disclosed in its entirety.

The standard distribution DBGEN version 1.3.0 was used for database population. No modifications were made.

5.6 Database Load time

The database load time for the test database (see clause 4.3) must be disclosed.

The database load time was 4 hours 47 minutes 24 seconds.

5.7 Data Storage Ratio

The data storage ratio must be disclosed. It is computed by dividing the total data storage of the priced configuration (expressed in GB) by the size chosen for the test database as defined in 4.1.3.1. The ratio must be reported to the nearest 1/100th, rounded up.

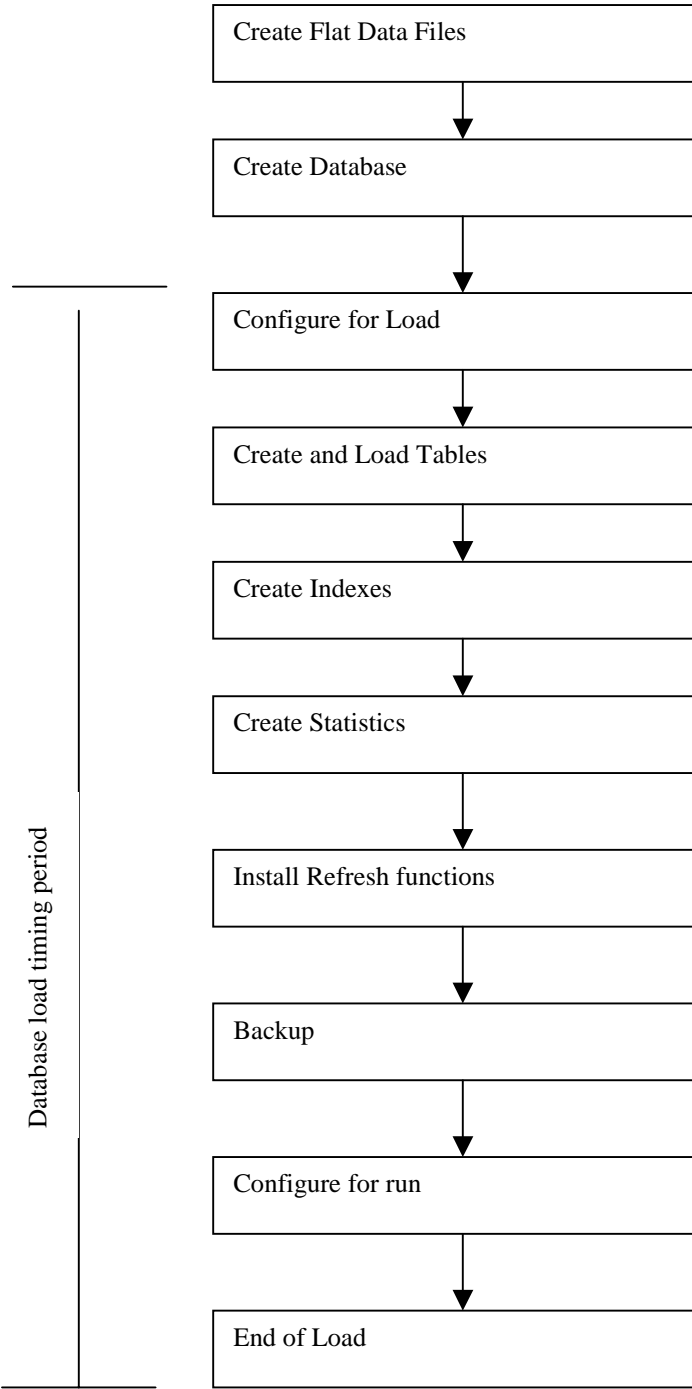
Disk Type	Number of Disks	Space per Disk	Total Disk Space	Data Storage Ratio
18.2 GB 15k rpm Ultra320 SCSI	22	16.92 GB	372.2 GB	3.72

5.8 Database Load Mechanism Details and Illustration

The details of the database load must be disclosed, including a block diagram illustrating the overall process. Disclosure of the load procedure includes all steps, scripts, input and configuration files required to completely reproduce the test and qualification databases.

Flat files for each of the tables were created using DBGEN.
The tables were loaded as depicted in Figure 5-8.

Figure 5.8: Block Diagram of Database Load Process



6.0 Clause 5: Performance Metrics and Execution Rules Related Items

6.1 Steps in the Power Test

The details of the steps followed to implement the power test (e.g., system boot, database restart, etc.) must be disclosed.

The following steps were used to implement the power test:

1. The system was rebooted
2. RF1 Refresh Transaction
3. Stream 00 Execution
4. RF2 Refresh Transaction.

6.2 Timing Intervals for Each Query and Refresh Function

The timing intervals (see Clause 5.3.6) for each query of the measured set and for both refresh functions must be reported for the power test.

The timing intervals for each query and both refresh functions are given in the Numerical Quantities Summary earlier in the executive summary.

6.3 Number of Streams for The Throughput Test

The number of execution streams used for the throughput test must be disclosed.

Five streams were used for the Throughput Test.

6.4 Start and End Date/Times for Each Query Stream

The start time and finish time for each query execution stream must be reported for the throughput test.

The Numerical Quantities Summary contains the start and stop times for the query execution streams run on the system reported.

6.5 Total Elapsed Time for the Measurement Interval

The total elapsed time of the measurement interval(see Clause 5.3.5) must be reported for the throughput test.

The Numerical Quantities Summary contains the timing intervals for the throughput test run on the system reported.

6.6 Refresh Function Start Date/Time and Finish Date/Time

Start and finish time for each update function in the update stream must be reported for the throughput test.

Stream ID	RF	Start Date	Start time	Stop Date	Stop Time
Stream00	RF1	7/12/2003	15:38:34	7/12/2003	15:40:51
Stream00	RF2	7/12/2003	17:49:23	7/12/2003	17:52:33
Stream01	RF1	7/13/2003	3:02:00	7/13/2003	3:04:20
Stream01	RF2	7/13/2003	3:04:20	7/13/2003	3:08:23
Stream02	RF1	7/13/2003	3:08:23	7/13/2003	3:11:31
Stream02	RF2	7/13/2003	3:11:31	7/13/2003	3:15:35
Stream03	RF1	7/13/2003	3:15:35	7/13/2003	3:18:43
Stream03	RF2	7/13/2003	3:18:43	7/13/2003	3:22:49
Stream04	RF1	7/13/2003	3:22:49	7/13/2003	3:25:58
Stream04	RF2	7/13/2003	3:25:58	7/13/2003	3:30:05
Stream05	RF1	7/13/2003	3:30:05	7/13/2003	3:33:13
Stream05	RF2	7/13/2003	3:33:13	7/13/2003	3:37:18

6.7 Timing Intervals for Each Query and Each Refresh Function for Each Stream

The timing intervals (see Clause 5.3.6) for each query of each stream and for each update function must be reported for the throughput test.

The timing intervals for each query and each update function are given in the Numerical Quantities Summary earlier in the executive summary.

6.8 Performance Metrics

The computed performance metrics, related numerical quantities and the price performance metric must be reported.

The Numerical Quantities Summary contains the performance metrics, related numerical quantities, and the price/performance metric for the system reported.

6.9 The Performance Metric and Numerical Quantities from Both Runs

A description of the method used to determine the reproducibility of the measurement results must be reported. This must include the performance metrics (QppH and QthH) from the reproducibility runs.

Performance results from the first two executions of the TPC-H benchmark indicated the following difference for the metric points:

Run	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB
Run 1	1728.4	1114.0	1387.6
Run 2	1701.9	1128.7	1386.0

6.11 System Activity Between Tests

Any activity on the SUT that takes place between the conclusion of Run1 and the beginning of Run2 must be disclosed.

The SUT was shutdown and the controller hosting flatfiles and backup was removed.

7.0 Clause 6: SUT and Driver Implementation

Related Items

7.1 Driver

A detailed description of how the driver performs its functions must be supplied, including any related source code or scripts. This description should allow an independent reconstruction of the driver.

Two scripts were used. The first one was used to create and load the database, while the second was used to run the Power and Throughput tests. These scripts are in Appendix F. A C program, semaphore.c, was used for coordination of parallel processes..

7.2 Implementation Specific Layer (ISL)

If an implementation-specific layer is used, then a detailed description of how it performs its functions must be supplied, including any related source code or scripts. This description should allow an independent reconstruction of the implementation-specific layer.

A command script was used to control and track the execution of queries. The scripts are contained in Appendix F. Qgen was used to generate the query streams, along with the appropriate substitution values.

The following steps are performed, to accomplish the Power and Throughput Runs:

1. Power Run

- Execute sixteen concurrent RF1 processes, each of which will apply a segment of an update set generated by dbgen.
- Each process submits multiple transactions, where a transaction spans a set of orders and their associated line items.
- Execute the Stream0 queries, in the prescribed order.
- Execute sixteen concurrent RF2 processes, each of which will apply a segment of an update set generated by dbgen. Each thread submits multiple transactions, where a transaction spans a set of orders and their associated line items.

2. Throughput Run

- Execute five concurrent query streams. Each stream executes queries in the prescribed order for the appropriate Stream Id (1-5). Upon completion of each stream, a semaphore is set to indication completion.
- Execute five consecutive RF1/RF2 transactions, against ascending Update sets produced by dbgen. The first RF1 waits on a semaphore prior to beginning its insert operations.

Each step is timed by the script. The timing information is stored in the database for later analysis. The inputs and outputs of steps are stored in text files for later analysis.

7.3 Profile-Directed Optimization

If profile-directed optimization as described in Clause 5.2.9 is used, such used must be disclosed.

Profile-directed optimization was not used.

8.0 Clause 7: Pricing Related Items

8.1 Hardware and Software Used

A detailed list of hardware and software used in the priced system must be reported. Each 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, contents of the package must be disclosed. Pricing source(s) and effective date(s) of price(s) must also be reported.

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

8.2 Total 3 Year Price

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

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. The price quotations are included in Appendix G, at the end of this document. As a large purchase, this purchase qualifies for a 14% discount from Hewlett-Packard Company.

8.3 Availability Date

The committed delivery date for general availability of products used in the price calculations must be reported. When the priced system includes products with different availability dates, the availability date reported on the executive summary must be the date by which all components are committed to being available. The full disclosure report must report availability dates individually for at least each of the categories for which a pricing subtotal must be provided.

The HP ProLiant ML370G3, system memory, additional processors, disk controllers and hard drives are available at the time of publication. All other hardware is generally available at the time of publication.

The system software, Microsoft Windows Server 2003, Standard Edition, and the database software, Microsoft SQL Server 2000 Enterprise Edition is generally available at the time of publication. Service Pack 3 for Microsoft SQL Server 2000 is generally available at the time of publication.

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-specific pricing is subject to Clause 7.1.7.

The configuration is priced for the United States of America.

9.0 Clause 9: Related Items

9.1 Auditors' Report

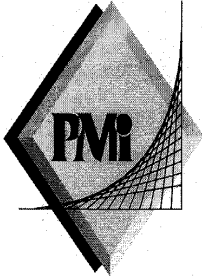
The auditor's agency name, address, phone number, and Attestation letter with a brief audit summary report indicating compliance must be included in the full disclosure report. A statement should be included specifying who to contact in order to obtain further information regarding the audit process.

This implementation of the TPC Benchmark H was audited by Lorna Livingtree of Performance Metrics. Further information regarding the audit process may be obtained from:

Performance Metrics, Inc.
137 Yankton St., Suite 101
Folsom, CA 95630
(phone) (916) 985-1131
(fax) (916) 985-1185
e-mail: lorna@perfmtrics.com

Requests for this TPC Benchmark H 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 USA
Telephone: (408) 295-8894
Fax: (408) 295-9768



PERFORMANCE METRICS INC.
TPC Certified Auditors

August 13, 2003

Mr. Daniel Pol
Hewlett-Packard
Database Performance Lab
20555 SH 249
Houston, TX 77070

I have verified the TPC Benchmark™ H for the following configuration:

Platform: Proliant ML370G3 2P
Database Manager: Microsoft SQL Server 2000 Enterprise Edition
Operating System: Microsoft Windows Server 2003, Standard Edition

CPU's	Memory	Total Disks	QppH@100GB	QthH@100GB	QphH@100GB
2 Intel Xeon MP @ 3.06 Ghz	4 GB	22 @ 18GB, 15Krpm	1,701.9	1,128.7	1,386.0

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

- The database tables were defined with the proper columns, layout and sizes.
- The tested database was correctly scaled and populated for 100GB using DBGEN. The version of DBGEN was 1.3.0.
- The qualification database layout was identical to the tested database except for the size of the files.
- The query text was verified to use only compliant variants and minor modifications.
- The executable query text was generated by QGEN and submitted through Microsoft's standard OSQL interactive interface. The version of QGEN was 1.3.0.
- The validation of the query text against the qualification database produced compliant results.

PERFORMANCE METRICS INC.
TPC Certified Auditors

- The refresh functions were properly implemented and executed the correct number of inserts and deletes.
- The load timing was properly measured and reported.
- The execution times were correctly measured and reported.
- The performance metrics were correctly computed and reported.
- The repeatability of the measurement was verified.
- The ACID properties were tested and verified.
- Sufficient mirrored log space was present on the tested system.
- The system pricing was checked for major components and maintenance.
- The executive summary pages of the FDR were verified for accuracy.

Auditor's Notes:

None.

Sincerely,



Lorna Livingtree
Auditor

Appendix A: Tunable Parameters

- Note: These are the settings used during the power test. The settings altered for the load are documented in Appendix B.

A.1 Microsoft SQL Server 2000 Version

The following text was output was generated by executing the select @@version command:

```
Microsoft SQL Server 2000 - 8.00.761 (Intel X86)
Feb 27 2003 12:09:37
Copyright (c) 1988-2003 Microsoft Corporation
Enterprise Edition on Windows NT 5.2 (Build 3790: )
```

A.2 SQL Server 2000 Installation

Microsoft SQL Server 2000 was installed on the SUT. All default options were selected during the install except:

- Database Server Enterprise Edition was installed.
- “Custom installation” was selected. The SQL Server
- Development tools were not installed.
- Binary Sort Order was used. (Collation Settings>SQL Collation>Binary)
- Services Accounts > Customized > SQL Server > Use Local System Account Authentication Mode > Mixed > Blank Password
- Microsoft SQL Server 2000 Service Pack 3 was installed using the default settings during installation.

A.3 SQL Server 2000 Startup Parameters

```
SQLSERVER -x -c -g32
```

Where :

- x Disable the Keeping of CPU time and cache-hit ratio statistics.
- c Start SQL Server independently of Windows NT Service Control Manager
- g Reserve 32 MB for non-buffer pool allocations.

A.4 Microsoft SQL Server 2000 Configuration Parameters

name	,minimum	,maximum	,config_value	,run_value
affinity mask	,-2147483648,	2147483647,	15,	15
allow updates	, 0,	1,	1,	1
awe enabled	, 0,	1,	0,	0
c2 audit mode	, 0,	1,	0,	0
cost threshold for parallelism	, 0,	32767,	0,	0
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,	4,	4
max server memory (MB)	, 4,	2147483647,	2147483647,	
max text repl size (B)	, 0,	2147483647,	65536,	65536
max worker threads	, 32,	32767,	255,	255
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,	32768,	32768
open objects	, 0,	2147483647,	0,	0
priority boost	, 0,	1,	1,	1
query governor cost limit	, 0,	2147483647,	0,	0
query wait (s)	, -1,	2147483647,	-1,	-1
recovery interval (min)	, 0,	32767,	32767,	32767
remote access	, 0,	1,	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

A.5 Windows 2003 Configuration

The default installation of Windows 2003 Standard Edition was used. All default options were selected during the install except:

- A TCP/IP address was configured on the system.

Updated installation to optimize performance for applications. (System Properties > Advanced > Performance Options > Programs)

Boot.ini parameters:

- /3GB - Give SQL Server access to 3GB memory
- /PAE - Allow the system to use addresses above 4GB

A.6 HP SMART Array Controller Cache Settings and registry entries

The HP SMART Array Controller cache settings for all drives was configured for the cache ratio of 0% read / 100% write .

The HP SMART Array Controller cache was enabled for all drives.

Windows Registry Editor Version 5.00

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqiss
b]
"Type"=dword:00000001
"Start"=dword:00000000
"ErrorControl"=dword:00000001
"Tag"=dword:00000102
```

```

"ImagePath"=hex(2):73,00,79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,44,00,52,00,49,00,56,00,45,00,52,00,53,00,5c,00,68,00,70,00,71,00,63,00,69,00,73,00,73,00,62,00,2e,00,73,00,79,00,73,00,00,00
"DisplayName"="Smart Array Controllers Non-Miniport Bus Driver"
"Group"="port"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqissb\Parameters]
"CompletionMode"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqissb\Security]
"Security"=hex:01,00,14,80,90,00,00,00,9c,00,00,00,14,00,00,00,30,00,00,0,0,2,\
00,1c,00,01,00,00,00,02,80,14,00,ff,01,0f,00,01,01,00,00,00,00,01,00,00,\
00,00,02,00,60,00,04,00,00,00,00,14,00,fd,01,02,00,01,01,00,00,00,00,00,\
.\
05,12,00,00,00,00,18,00,ff,01,0f,00,01,02,00,00,00,00,05,20,00,00,00,\
20,02,00,00,00,00,14,00,8d,01,02,00,01,01,00,00,00,00,05,0b,00,00,00,00,\
.\
00,18,00,fd,01,02,00,01,02,00,00,00,00,05,20,00,00,00,23,02,00,00,01,01,\
.\
00,00,00,00,05,12,00,00,00,01,01,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqissb\Enum]
"0"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&1070020&0&08"
"Count"=dword:00000005
"NextInstance"=dword:00000005
"1"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&1070020&0&10"
"2"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&29e81982&0&10"
"3"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&172e68dd&0&08"
"4"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&172e68dd&0&10"

```

A.7 System Hardware Information

System Information report written at: 08/08/03 20:56:26

System Name: PICO

[System Summary]

Item	Value
OS Name	Microsoft(R) Windows(R) Server 2003, Standard Edition
Version	5.2.3790 Build 3790
OS Manufacturer	Microsoft Corporation
System Name	PICO
System Manufacturer	Compaq
System Model	ProLiant ML370 G3
System Type	X86-based PC
Processor	x86 Family 15 Model 2 Stepping 7 GenuineIntel ~3046 Mhz

```

Processor x86 Family 15 Model 2 Stepping 7 GenuineIntel ~3046 Mhz
Processor x86 Family 15 Model 2 Stepping 7 GenuineIntel ~3046 Mhz
Processor x86 Family 15 Model 2 Stepping 7 GenuineIntel ~3046 Mhz

BIOS Version/Date Compaq P28, 6/19/2003
SMBIOS Version 2.3
Windows Directory C:\WINDOWS
System Directory C:\WINDOWS\system32
Boot Device \Device\HarddiskVolume1
Locale United States
Hardware Abstraction Layer Version = "5.2.3790.0 (srv03_rtm.030324-2048)"
User Name PICO\Administrator
Time Zone Central Daylight Time
Total Physical Memory 4,096.00 MB
Available Physical Memory 667.07 MB
Total Virtual Memory 7.53 GB
Available Virtual Memory 1.32 GB
Page File Space 3.71 GB

[Hardware Resources]

[Conflicts/Sharing]

Resource Device Status
I/O Port 0x00000000-0x00000CFF PCI bus
I/O Port 0x00000000-0x00000CFF PCI bus
I/O Port 0x00000000-0x00000CFF Direct memory access controller

I/O Port 0x000003C0-0x000003DF PCI bus
I/O Port 0x000003C0-0x000003DF RAGE XL PCI Family
(Microsoft Corporation)

Memory Address 0xF7F00000-0xF7FFFFFF PCI bus
Memory Address 0xF7F00000-0xF7FFFFFF PCI standard PCI-to-PCI bridge

Memory Address 0xF7E00000-0xF7EFFFFFF PCI bus
Memory Address 0xF7E00000-0xF7EFFFFFF PCI standard PCI-to-PCI bridge

I/O Port 0x00003000-0x00003FFF PCI bus
I/O Port 0x00003000-0x00003FFF PCI standard PCI-to-PCI bridge

I/O Port 0x00003000-0x00003FFF Smart Array 6400 Controller
(Non-Miniport)

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

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

I/O Port 0x00004000-0x00004FFF PCI bus
I/O Port 0x00004000-0x00004FFF PCI standard PCI-to-PCI bridge

I/O Port 0x00004000-0x00004FFF Smart Array 6400 Controller
(Non-Miniport)

[DMA]

Resource Device Status

```


Channel 7 Direct memory access controller	OK	0x00000C80-0x00000C83	Motherboard resources	OK
Channel 2 Standard floppy disk controller	OK	0x00000CD4-0x00000CD7	Motherboard resources	OK
[Forced Hardware]				
Device	PNP Device ID	0x00000CF9-0x00000CF9	Motherboard resources	OK
[I/O]		0x00000020-0x00000021	Programmable interrupt controller	OK
Resource	Device	Status	0x000000A0-0x000000A1	Programmable interrupt controller
0x00000000-0x00000CFF	PCI bus	OK	0x00000C00-0x00000C01	Programmable interrupt controller
0x00000000-0x00000CFF	PCI bus	OK	0x00000040-0x00000043	System timer
0x00000000-0x00000CFF	Direct memory access controller	OK	0x00000080-0x0000008F	Direct memory access controller
0x000003B0-0x000003BB	PCI bus	OK	0x000000C0-0x000000DF	Direct memory access controller
0x000003B0-0x000003BB	RAGE XL PCI Family (Microsoft Corporation)	OK	0x0000040B-0x0000040B	Direct memory access controller
0x000003C0-0x000003DF	PCI bus	OK	0x000004D6-0x000004D6	Direct memory access controller
0x000003C0-0x000003DF	RAGE XL PCI Family (Microsoft Corporation)	OK	0x00000061-0x00000061	System speaker
0x00002400-0x000024FF	RAGE XL PCI Family (Microsoft Corporation)	OK	0x00000060-0x00000060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00001800-0x000018FF	Base System Device	OK	0x00000064-0x00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00002800-0x000028FF	Base System Device	OK	0x0000002E-0x0000002F	Extended IO Bus
0x00000A79-0x00000A79	ISAPNP Read Data Port	OK	0x00000220-0x00000223	Extended IO Bus
0x00000279-0x00000279	ISAPNP Read Data Port	OK	0x00000240-0x0000025F	Extended IO Bus
0x00000274-0x00000277	ISAPNP Read Data Port	OK	0x00000070-0x00000073	Extended IO Bus
0x00000F50-0x00000F58	Motherboard resources	OK	0x00000378-0x0000037F	Printer Port (LPT1)
0x00000408-0x0000040F	Motherboard resources	OK	0x000003F8-0x000003FF	Communications Port (COM1)
0x00000092-0x00000092	Motherboard resources	OK	0x000002F8-0x000002FF	Communications Port (COM2)
0x00000900-0x00000903	Motherboard resources	OK	0x000003F2-0x000003F5	Standard floppy disk controller
0x00000910-0x00000911	Motherboard resources	OK	0x000003F7-0x000003F7	Standard floppy disk controller
0x00000920-0x00000923	Motherboard resources	OK	0x00002000-0x0000200F	CSB5 IDE Controller
0x00000930-0x00000937	Motherboard resources	OK	0x000001F0-0x000001F7	Primary IDE Channel
0x00000940-0x00000947	Motherboard resources	OK	0x000003F6-0x000003F6	Primary IDE Channel
0x00000950-0x00000957	Motherboard resources	OK	0x00000170-0x00000177	Secondary IDE Channel
0x00000C06-0x00000C08	Motherboard resources	OK	0x00000376-0x00000376	Secondary IDE Channel
0x00000C14-0x00000C14	Motherboard resources	OK	0x00003000-0x00003FFF	PCI bus
0x00000C49-0x00000C4A	Motherboard resources	OK	0x00003000-0x00003FFF	PCI standard PCI-to-PCI bridge
0x00000C50-0x00000C52	Motherboard resources	OK	0x00003000-0x00003FFF	Smart Array 6400 Controller (Non-Miniport)
0x00000C6C-0x00000C6F	Motherboard resources	OK	0x00004000-0x00004FFF	PCI bus
0x00000010-0x0000001F	Motherboard resources	OK	0x00004000-0x00004FFF	PCI standard PCI-to-PCI bridge
0x00000230-0x00000233	Motherboard resources	OK	0x00004000-0x00004FFF	Smart Array 6400 Controller (Non-Miniport)
0x00000260-0x00000267	Motherboard resources	OK	[IRQs]	
0x000004D0-0x000004D1	Motherboard resources	OK	Resource	Device
0x00000700-0x0000070F	Motherboard resources	OK	IRQ 9	Microsoft ACPI-Compliant System
0x00000800-0x0000081F	Motherboard resources	OK	IRQ 5	Base System Device
			IRQ 10	Base System Device
			IRQ 0	System timer
			IRQ 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
			IRQ 12	PS/2 Compatible Mouse
			IRQ 4	Communications Port (COM1)
			IRQ 3	Communications Port (COM2)
			IRQ 6	Standard floppy disk controller

IRQ 14 Primary IDE Channel OK
 IRQ 11 ServerWorks (RCC) PCI to USB Open Host Controller OK
 IRQ 29 BCM5703 Gigabit Ethernet OK
 IRQ 18 Smart Array 6400 Controller (Non-Miniport) OK
 IRQ 24 Smart Array 6400 Controller (Non-Miniport) OK

[Memory]

Resource	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xF5E00000-0xF6FFFFFF	PCI bus	OK
0xF6000000-0xF6FFFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xF5FF0000-0xF5FF0FFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xF5FE0000-0xF5FE01FF	Base System Device	OK
0xF5FD0000-0xF5FD07FF	Base System Device	OK
0xF5FC0000-0xF5FC1FFF	Base System Device	OK
0xF5F00000-0xF5F7FFFF	Base System Device	OK
0xF5EF0000-0xF5EF0FFF	ServerWorks (RCC) PCI to USB Open Host Controller	OK
0xF7D00000-0xF7DFFFFFF	PCI bus	OK
0xF7DF0000-0xF7DFFFFFF	BCM5703 Gigabit Ethernet	OK
0xF7E00000-0xF7EFFFFFF	PCI bus	OK
0xF7E00000-0xF7EFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xF7EF0000-0xF7EF1FFF	Smart Array 6400 Controller (Non-Miniport)	OK
0xF7E80000-0xF7E8BFFF	Smart Array 6400 Controller (Non-Miniport)	OK
0xF7F00000-0xF7FFFFFF	PCI bus	OK
0xF7F00000-0xF7FFFFFF	PCI standard PCI-to-PCI bridge	OK
0xF7FF0000-0xF7FF1FFF	Smart Array 6400 Controller (Non-Miniport)	OK
0xF7F80000-0xF7FBFFFF	Smart Array 6400 Controller (Non-Miniport)	OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description	Status	File
Version	Size	Creation Date		
c:\windows\system32\msaud32.acm	Microsoft Corporation	Windows Media Audio Codec	OK	C:\WINDOWS\system32\MSAUD32.ACM
8.00.00.4487	288.00 KB (294,912 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\msg723.acm	Microsoft Corporation		OK	C:\WINDOWS\system32\MSG723.ACM
4.4.4000	116.00 KB (118,784 bytes)	7/1/2003 1:16 PM		
c:\windows\system32\msg711.acm	Microsoft Corporation		OK	C:\WINDOWS\system32\MSG711.ACM
5.2.3790.0 (srv03_rtm.030324-2048)	10.00 KB (10,240 bytes)	3/25/2003 12:00 AM		

c:\windows\system32\tsoft32.acm	DSP GROUP, INC.		OK	C:\WINDOWS\system32\TSSOFT32.ACM
1.01	9.50 KB (9,728 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\msadp32.acm	Microsoft Corporation		OK	C:\WINDOWS\system32\MSADP32.ACM
5.2.3790.0 (srv03_rtm.030324-2048)	14.50 KB (14,848 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\imaadp32.acm	Microsoft Corporation		OK	C:\WINDOWS\system32\IMAADP32.ACM
5.2.3790.0 (srv03_rtm.030324-2048)	15.50 KB (15,872 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\l3codeca.acm	Fraunhofer Institut Integrierte Schaltungen IIS	Fraunhofer IIS MPEG Layer-3 Codec	OK	C:\WINDOWS\system32\L3CODECA.ACM
1, 9, 0, 0305	284.00 KB (290,816 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\sl_anet.acm	Sipro Lab Telecom Inc.	Sipro Lab Telecom Audio Codec	OK	C:\WINDOWS\system32\SL_ANET.ACM
3.02	84.00 KB (86,016 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\msgsm32.acm	Microsoft Corporation		OK	C:\WINDOWS\system32\MSGSM32.ACM
5.2.3790.0 (srv03_rtm.030324-2048)	20.50 KB (20,992 bytes)	3/25/2003 12:00 AM		

[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
5.2.3790.0 (srv03_rtm.030324-2048)	45.00 KB (46,080 bytes)	3/24/2003 7:49 PM		
c:\windows\system32\msh261.drv	Microsoft Corporation		OK	C:\WINDOWS\system32\MSH261.DRV
4.4.4000	180.00 KB (184,320 bytes)	7/1/2003 1:16 PM		
c:\windows\system32\msyuv.dll	Microsoft Corporation		OK	C:\WINDOWS\system32\MSYUV.DLL
5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896 bytes)	3/24/2003 7:49 PM		
c:\windows\system32\tsbyuv.dll	Microsoft Corporation		OK	C:\WINDOWS\system32\TSBYUV.DLL
5.2.3790.0 (srv03_rtm.030324-2048)	8.00 KB (8,192 bytes)	3/24/2003 7:50 PM		
c:\windows\system32\msvidc32.dll	Microsoft Corporation		OK	C:\WINDOWS\system32\MSVIDC32.DLL
5.2.3790.0 (srv03_rtm.030324-2048)	26.50 KB (27,136 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\msh263.drv	Microsoft Corporation		OK	C:\WINDOWS\system32\MSH263.DRV
4.4.4000	284.00 KB (290,816 bytes)	3/24/2003 7:46 PM		
c:\windows\system32\msrle32.dll	Microsoft Corporation		OK	C:\WINDOWS\system32\MSRLE32.DLL
5.2.3790.0 (srv03_rtm.030324-2048)	10.50 KB (10,752 bytes)	3/25/2003 12:00 AM		

[CD-ROM]

Item	Value
Drive	D:
Description	CD-ROM Drive
Media Loaded	No
Media Type	CD-ROM
Name	COMPAQ CD-ROM SC-148C
Manufacturer	(Standard CD-ROM drives)
Status	OK

Transfer Rate Not Available
 SCSI Target ID 1
 PNP Device ID IDE\CDROMCOMPAQ_CD-ROM_SC-148C_____B101_____5&FB0C83D&0&0.1.0
 Driver c:\windows\system32\drivers\cdrom.sys (5.2.3790.0 (srv03_rtm.030324-2048), 49.50 KB (50,688 bytes), 3/25/2003 12:00 AM)

[Sound Device]

Item Value

[Display]

Item Value
 Name RAGE XL PCI Family (Microsoft Corporation)
 PNP Device ID PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3&267A616A&0&18
 Adapter Type ATI RAGE XL PCI (B41), ATI Technologies Inc. compatible
 Adapter Description RAGE XL PCI Family (Microsoft Corporation)
 Adapter RAM 8.00 MB (8,388,608 bytes)
 Installed Drivers ati2drad.dll
 Driver Version 5.10.3663.6013
 INF File atiixpad.inf (ati2mpad section)
 Color Planes 1
 Color Table Entries 65536
 Resolution 800 x 600 x 60 hertz
 Bits/Pixel 16
 Memory Address 0xF6000000-0xF6FFFFFF
 I/O Port 0x00002400-0x000024FF
 Memory Address 0xF5FF0000-0xF5FFF0FF
 I/O Port 0x000003B0-0x000003BB
 I/O Port 0x000003C0-0x000003DF
 Memory Address 0xA0000-0xBFFFF
 Driver c:\windows\system32\drivers\ati2mpad.sys (5.10.3663.6013, 335.38 KB (343,424 bytes), 7/1/2003 8:12 AM)

[Infrared]

Item Value

[Input]

[Keyboard]

Item Value
 Description Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
 Name Enhanced (101- or 102-key)
 Layout 00000409
 PNP Device ID ACPI\PNP0303\4&35118DFF&0
 Number of Function Keys 12
 I/O Port 0x00000060-0x0000006F
 I/O Port 0x00000064-0x0000006B
 IRQ Channel IRQ 1
 Driver c:\windows\system32\drivers\i8042prt.sys (5.2.3790.0 (srv03_rtm.030324-2048), 68.50 KB (70,144 bytes), 3/25/2003 12:00 AM)

[Pointing Device]

Item Value
 Hardware Type PS/2 Compatible Mouse
 Number of Buttons 2
 Status OK

PNP Device ID ACPI\PNP0F13\4&35118DFF&0
 Power Management Supported No
 Double Click Threshold 6
 Handedness Right Handed Operation
 IRQ Channel IRQ 12
 Driver c:\windows\system32\drivers\i8042prt.sys (5.2.3790.0 (srv03_rtm.030324-2048), 68.50 KB (70,144 bytes), 3/25/2003 12:00 AM)

[Modem]

Item Value

[Network]

[Adapter]

Item Value
 Name [00000001] BCM5703 Gigabit Ethernet
 Adapter Type Ethernet 802.3
 Product Type BCM5703 Gigabit Ethernet
 Installed Yes
 PNP Device ID PCI\VEN_14E4&DEV_16A7&SUBSYS_00CB0E11&REV_02\3&13C0B0C5&0&20
 Last Reset 7/11/2003 6:14 PM
 Index 1
 Service Name b57w2k
 IP Address 130.168.253.23
 IP Subnet 255.255.0.0
 Default IP Gateway Not Available
 DHCP Enabled Yes
 DHCP Server 130.168.253.2
 DHCP Lease Expires 8/9/2003 9:45 AM
 DHCP Lease Obtained 8/8/2003 9:45 AM
 MAC Address 00:0B:CD:6B:8C:A0
 Memory Address 0xF7DF0000-0xF7DFFFFF
 IRQ Channel IRQ 29
 Driver c:\windows\system32\drivers\b57xp32.sys (2.91.0.0 built by: WinDDK, 137.00 KB (140,288 bytes), 7/1/2003 8:12 AM)

Name [00000002] RAS Async Adapter
 Adapter Type Not Available
 Product Type RAS Async Adapter
 Installed Yes
 PNP Device ID Not Available
 Last Reset 7/11/2003 6:14 PM
 Index 2
 Service Name AsyncMac
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)
 Adapter Type Not Available
 Product Type WAN Miniport (L2TP)
 Installed Yes
 PNP Device ID ROOT\MS_L2TPMINIPOINT\0000
 Last Reset 7/11/2003 6:14 PM
 Index 3
 Service Name Rasl2tp
 IP Address Not Available
 IP Subnet Not Available

Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Driver c:\windows\system32\drivers\rasl2tp.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 77.00 KB (78,848 bytes), 3/25/2003 12:00 AM)

Name [00000004] WAN Miniport (PPTP)
 Adapter Type Wide Area Network (WAN)
 Product Type WAN Miniport (PPTP)
 Installed Yes
 PNP Device ID ROOT\MS_PPTPMINIPOINT\0000
 Last Reset 7/11/2003 6:14 PM
 Index 4
 Service Name PptpMiniport
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 50:50:54:50:30:30
 Driver c:\windows\system32\drivers\raspptp.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 70.50 KB (72,192 bytes), 3/25/2003 12:00 AM)

Name [00000005] WAN Miniport (PPPOE)
 Adapter Type Wide Area Network (WAN)
 Product Type WAN Miniport (PPPOE)
 Installed Yes
 PNP Device ID ROOT\MS_PPPOEMINIPOINT\0000
 Last Reset 7/11/2003 6:14 PM
 Index 5
 Service Name RasPppoe
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 33:50:6F:45:30:30
 Driver c:\windows\system32\drivers\rasppoe.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 38.00 KB (38,912 bytes), 3/25/2003 12:00 AM)

Name [00000006] Direct Parallel
 Adapter Type Not Available
 Product Type Direct Parallel
 Installed Yes
 PNP Device ID ROOT\MS_PTMINIPOINT\0000
 Last Reset 7/11/2003 6:14 PM
 Index 6
 Service Name Raspti
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Driver c:\windows\system32\drivers\raspti.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 18.50 KB (18,944 bytes), 3/25/2003 12:00 AM)

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 7/11/2003 6:14 PM
 Index 7
 Service Name NdisWan
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Driver c:\windows\system32\drivers\ndiswan.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 96.50 KB (98,816 bytes), 3/25/2003 12:00 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_{4059B699-0E83-4596-A077-08E6D8C283D0}] 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_{4059B699-0E83-4596-A077-08E6D8C283D0}] 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_{ECEC3B7C-314A-4CD7-A4DB-C3EE1327FB83}] 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_{ECEC3B7C-314A-4CD7-A4DB-C3EE1327FB83}] 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_{0A6661E0-FDCF-4F18-B408-13357894A57F}] 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_{0A6661E0-FDCF-4F18-B408-13357894A57F}] DATAGRAM 2
 Connectionless Service Yes
 Guarantees Delivery No
 Guarantees Sequencing No
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting Yes
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

[WinSock]

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

File c:\windows\system32\wsock32.dll
 Size 22.00 KB (22,528 bytes)
 Version 5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]

[Serial]

Item Value
 Name Communications Port (COM1)
 Status OK
 PNP Device ID ACPI\PNP0501\0
 Maximum Input Buffer Size 0
 Maximum Output Buffer Size No
 Settable Baud Rate Yes
 Settable Data Bits Yes
 Settable Flow Control Yes
 Settable Parity Yes
 Settable Parity Check Yes
 Settable Stop Bits Yes
 Settable RLSD Yes
 Supports RLSD Yes
 Supports 16 Bit Mode No
 Supports Special Characters No
 Baud Rate 9600
 Bits/Byte 8
 Stop Bits 1
 Parity None
 Busy No
 Abort Read/Write on Error No
 Binary Mode Enabled Yes
 Continue XMit on XOff No
 CTS Outflow Control No
 Discard NULL Bytes No
 DSR Outflow Control 0
 DSR Sensitivity 0
 DTR Flow Control Type Enable
 EOF Character 0
 Error Replace Character 0
 Error Replacement Enabled No
 Event Character 0
 Parity Check Enabled No
 RTS Flow Control Type Enable
 XOff Character 19
 XOffXMit Threshold 512
 XOn Character 17
 XOnXMit Threshold 2048
 XOnXOff InFlow Control 0
 XOnXOff OutFlow Control 0
 IRQ Channel IRQ 4
 I/O Port 0x000003F8-0x000003FF
 Driver c:\windows\system32\drivers\serial.sys (5.2.3790.0 (srv03_rtm.030324-2048), 76.00 KB (77,824 bytes), 3/25/2003 12:00 AM)

Name Communications Port (COM2)
 Status OK
 PNP Device ID ACPI\PNP0501\1
 Maximum Input Buffer Size 0
 Maximum Output Buffer Size No
 Settable Baud Rate Yes
 Settable Data Bits Yes

Settable Flow Control Yes
 Settable Parity Yes
 Settable Parity Check Yes
 Settable Stop Bits Yes
 Settable RLSD Yes
 Supports RLSD Yes
 Supports 16 Bit Mode No
 Supports Special Characters No
 Baud Rate 9600
 Bits/Byte 8
 Stop Bits 1
 Parity None
 Busy No
 Abort Read/Write on Error No
 Binary Mode Enabled Yes
 Continue XMit on XOff No
 CTS Outflow Control No
 Discard NULL Bytes No
 DSR Outflow Control 0
 DSR Sensitivity 0
 DTR Flow Control Type Enable
 EOF Character 0
 Error Replace Character 0
 Error Replacement Enabled No
 Event Character 0
 Parity Check Enabled No
 RTS Flow Control Type Enable
 XOff Character 19
 XOffXMit Threshold 512
 XOn Character 17
 XOnXMit Threshold 2048
 XOnXOff InFlow Control 0
 XOnXOff OutFlow Control 0
 IRQ Channel IRQ 3
 I/O Port 0x000002F8-0x000002FF
 Driver c:\windows\system32\drivers\serial.sys (5.2.3790.0 (srv03_rtm.030324-2048), 76.00 KB (77,824 bytes), 3/25/2003 12:00 AM)

[Parallel]

Item Value
 Name LPT1
 PNP Device ID ACPI\PNP0400\5&13237358&0
 I/O Port 0x00000378-0x0000037F
 Driver c:\windows\system32\drivers\parport.sys (5.2.3790.0 (srv03_rtm.030324-2048), 76.50 KB (78,336 bytes), 3/24/2003 5:04 PM)

[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 2.00 GB (2,143,254,528 bytes)
 Free Space 483.98 MB (507,486,208 bytes)
 Volume Name
 Volume Serial Number A85C1B4F

Drive D:
 Description CD-ROM Disc

Drive X:
 Description Local Fixed Disk
 Compressed No
 File System NTFS
 Size 13.83 GB (14,854,819,840 bytes)
 Free Space 10.53 GB (11,310,673,920 bytes)
 Volume Name New Volume
 Volume Serial Number F89C38EE

[Disks]

Item Value
 Description \\.\PHYSICALDRIVE8
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 68.35 GB (73,394,173,440 bytes)
 Total Cylinders 8,923
 Total Sectors 143,347,995
 Total Tracks 2,275,365
 Tracks/Cylinder 255
 Partition Disk #8, Partition #0
 Partition Size 68.35 GB (73,394,141,184 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE9
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 34.17 GB (36,692,974,080 bytes)
 Total Cylinders 4,461
 Total Sectors 71,665,965
 Total Tracks 1,137,555
 Tracks/Cylinder 255
 Partition Disk #9, Partition #0
 Partition Size 34.17 GB (36,692,941,824 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE10
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 68.35 GB (73,394,173,440 bytes)
 Total Cylinders 8,923
 Total Sectors 143,347,995

Total Tracks 2,275,365
 Tracks/Cylinder 255
 Partition Disk #10, Partition #0
 Partition Size 68.35 GB (73,394,141,184 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE11
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 34.17 GB (36,692,974,080 bytes)
 Total Cylinders 4,461
 Total Sectors 71,665,965
 Total Tracks 1,137,555
 Tracks/Cylinder 255
 Partition Disk #11, Partition #0
 Partition Size 34.17 GB (36,692,941,824 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE12
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 13.83 GB (14,854,855,680 bytes)
 Total Cylinders 1,806
 Total Sectors 29,013,390
 Total Tracks 460,530
 Tracks/Cylinder 255
 Partition Disk #12, Partition #0
 Partition Size 13.83 GB (14,854,823,424 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE13
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 3.90 GB (4,186,667,520 bytes)
 Total Cylinders 509
 Total Sectors 8,177,085
 Total Tracks 129,795
 Tracks/Cylinder 255
 Partition Disk #13, Partition #0
 Partition Size 3.90 GB (4,186,635,264 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE0

Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 2.00 GB (2,146,798,080 bytes)
 Total Cylinders 261
 Total Sectors 4,192,965
 Total Tracks 66,555
 Tracks/Cylinder 255
 Partition Disk #0, Partition #0
 Partition Size 2.00 GB (2,143,256,576 bytes)
 Partition Starting Offset 16,384 bytes

Description \\.\PHYSICALDRIVE1
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 11.71 GB (12,576,453,120 bytes)
 Total Cylinders 1,529
 Total Sectors 24,563,385
 Total Tracks 389,895
 Tracks/Cylinder 255
 Partition Disk #1, Partition #0
 Partition Size 11.71 GB (12,576,420,864 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE2
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 5.85 GB (6,284,113,920 bytes)
 Total Cylinders 764
 Total Sectors 12,273,660
 Total Tracks 194,820
 Tracks/Cylinder 255
 Partition Disk #2, Partition #0
 Partition Size 5.85 GB (6,284,081,664 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE3
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available

SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 32
 Size 314.00 MB (329,252,864 bytes)
 Total Cylinders 314
 Total Sectors 643,072
 Total Tracks 20,096
 Tracks/Cylinder 64
 Partition Disk #3, Partition #0
 Partition Size 305.89 MB (320,753,664 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE4
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 29.29 GB (31,453,470,720 bytes)
 Total Cylinders 3,824
 Total Sectors 61,432,560
 Total Tracks 975,120
 Tracks/Cylinder 255
 Partition Disk #4, Partition #0
 Partition Size 29.29 GB (31,453,438,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE5
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 14.64 GB (15,718,510,080 bytes)
 Total Cylinders 1,911
 Total Sectors 30,700,215
 Total Tracks 487,305
 Tracks/Cylinder 255
 Partition Disk #5, Partition #0
 Partition Size 14.64 GB (15,718,477,824 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE6
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 29.29 GB (31,453,470,720 bytes)
 Total Cylinders 3,824
 Total Sectors 61,432,560

Total Tracks 975,120
 Tracks/Cylinder 255
 Partition Disk #6, Partition #0
 Partition Size 29.29 GB (31,453,438,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE7
 Manufacturer Not Available
 Model Not Available
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk

Partitions 1
 SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 14.64 GB (15,718,510,080 bytes)
 Total Cylinders 1,911
 Total Sectors 30,700,215
 Total Tracks 487,305
 Tracks/Cylinder 255
 Partition Disk #7, Partition #0
 Partition Size 14.64 GB (15,718,477,824 bytes)
 Partition Starting Offset 32,256 bytes

[SCSI]

Item Value
 Name Smart Array 6400 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_01\4
 &392398EF&0&2010
 Memory Address 0xF7EF0000-0xF7EF1FFF
 I/O Port 0x00003000-0x00003FFF
 Memory Address 0xF7E80000-0xF7EBFFFF
 IRQ Channel IRQ 18
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 7/2/2003 11:37 AM)

Name Smart Array 6400 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_01\4
 &14139DD2&0&2008
 Memory Address 0xF7FF0000-0xF7FF1FFF
 I/O Port 0x00004000-0x00004FFF
 Memory Address 0xF7F80000-0xF7FBFFFF
 IRQ Channel IRQ 24
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 7/2/2003 11:37 AM)

[IDE]

Item Value
 Name CSB5 IDE Controller
 Manufacturer ServerWorks
 Status OK
 PNP Device ID
 PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3
 &267A616A&0&79
 I/O Port 0x00002000-0x0000200F
 Driver c:\windows\system32\drivers\pciide.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 5.50 KB (5,632 bytes), 3/25/2003 12:00 AM)

Name Primary IDE Channel
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCIIDE\IDECHANNEL\4&1024D5C6&0&0
 I/O Port 0x000001F0-0x000001F7
 I/O Port 0x000003F6-0x000003F6
 IRQ Channel IRQ 14
 Driver c:\windows\system32\drivers\atapi.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 89.00 KB (91,136 bytes), 3/25/2003 12:00 AM)

Name Secondary IDE Channel
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCIIDE\IDECHANNEL\4&1024D5C6&0&1
 I/O Port 0x00000170-0x00000177
 I/O Port 0x00000376-0x00000376
 Driver c:\windows\system32\drivers\atapi.sys (5.2.3790.0
 (srv03_rtm.030324-2048), 89.00 KB (91,136 bytes), 3/25/2003 12:00 AM)

[Printing]

Name	Driver	Port Name	Server Name
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[Problem Devices]

Device	PNP Device ID	Error Code
Base System Device	PCI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_01\3 &267A616A&0&20	The drivers for this device are not installed.
Base System Device	PCI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_01\3 &267A616A&0&22	The drivers for this device are not installed.

[USB]

Device	PNP Device ID
ServerWorks (RCC) PCI to USB Open Host Controller	PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3 &267A616A&0&7A
USB Root Hub	USB\ROOT_HUB\4&AF5358C&0

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
abiosdsk	Abiosdsk	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Ignore	No
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver	Yes	Normal
	Yes	Boot	Running	OK	No
acpiec	ACPIEC	c:\windows\system32\drivers\acpiec.sys	Kernel	Yes	Normal
Driver	No	Disabled	Stopped	OK	No
adpu160m	adpu160m	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
adpu320	adpu320	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No

	Yes	Boot	Running	OK	Normal	No
hpqcissd	Smart Array Controllers Non-Miniport Disk Driver c:\windows\system32\drivers\hpqcissd.sys Kernel Driver					
	Yes	Boot	Running	OK	Normal	No
hpt3xx	hpt3xx	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
http	HTTP c:\windows\system32\drivers\http.sys Kernel					
Driver	No	Manual	Stopped	OK	Normal	No
	No					
i2omgmt	i2omgmt	Not Available		Kernel Driver		No
	System	Stopped	OK	Normal	No	No
i2omp	i2omp	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver c:\windows\system32\drivers\i8042prt.sys Kernel Driver					
	Yes	System	Running	OK	Normal	No
	Yes					
iirsp	iirsp	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
imapi	CD-Burning Filter Driver c:\windows\system32\drivers\imapi.sys Kernel Driver					
	No	System	Stopped	OK	Normal	No
	No					
intelide	IntelIde	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
ipfilterdriver	IP Traffic Filter Driver c:\windows\system32\drivers\ipfltdrv.sys Kernel Driver					
	No	Manual	Stopped	OK	Normal	No
	No					
ipinip	IP in IP Tunnel Driver:c:\windows\system32\drivers\ipinip.sys Kernel Driver					
	No	Manual	Stopped	OK	Normal	No
	No					
ipnat	IP Network Address Translator c:\windows\system32\drivers\ipnat.sys Kernel Driver					
	No	Manual	Stopped	OK	Normal	No
	No					
ipsec	IPSEC driver c:\windows\system32\drivers\ipsec.sys Kernel Driver					
	Normal	No	Yes	System	Running	OK
ipsraidn	ipsraidn	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
irenum	IR Enumerator Service c:\windows\system32\drivers\irenum.sys Kernel Driver					
	No	Manual	Stopped	OK	Normal	No
	No					
isapnp	PnP ISA/EISA Bus Driver c:\windows\system32\drivers\isapnp.sys Kernel Driver					
	Yes	Boot	Running	OK	Critical	No
	Yes					
kbdclass	Keyboard Class Driver c:\windows\system32\drivers\kbdclass.sys Kernel Driver					
	Yes	System	Running	OK	Normal	No
	Yes					
ksecdd	KSecDD c:\windows\system32\drivers\ksecdd.sys Kernel					
Driver	Yes	Boot	Running	OK	Normal	No
	Yes					
lp6nds35	lp6nds35	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
mnmdd	mnmdd c:\windows\system32\drivers\mnmdd.sys Kernel					
Driver	Yes	System	Running	OK	Ignore	No
	Yes					

modem	Modem	c:\windows\system32\drivers\modem.sys				Kernel
Driver	No	Manual	Stopped	OK	Ignore	No
	No					
mouclass	Mouse Class Driver c:\windows\system32\drivers\mouclass.sys					
	Kernel Driver	Yes	System	Running	OK	Normal
	Normal	No	Yes			
mountmgr	Mount Point Manager c:\windows\system32\drivers\mountmgr.sys Kernel Driver					
	Yes	Boot	Running	OK	Normal	No
	Yes					
mrraid35x	mrraid35x	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	No	Yes	System	Running	OK	Normal
	Yes					
msfs	Msfs c:\windows\system32\drivers\msfs.sys File					
System Driver	No	Yes	System	Running	OK	Normal
	Yes					
mup	Mup c:\windows\system32\drivers\mup.sys File					
System Driver	No	Yes	Boot	Running	OK	Normal
	Yes					
ndis	NDIS System Driver c:\windows\system32\drivers\ndis.sys					
	Kernel Driver	Yes	Boot	Running	OK	Normal
	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					
	Yes	Manual	Running	OK	Normal	No
	Yes					
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
	Normal	No	Yes			
netbios	NetBIOS Interface c:\windows\system32\drivers\netbios.sys					
	File System Driver	Yes	System	Running	OK	Normal
	Normal	No	Yes			
netbt	NetBios over Tcpip c:\windows\system32\drivers\netbt.sys					
	Kernel Driver	Yes	System	Running	OK	Normal
	Normal	No	Yes			
nfrd960	nfrd960	Not Available		Kernel Driver		No
	Disabled	Stopped	OK	Normal	No	No
npfs	Npfs c:\windows\system32\drivers\npfs.sys File					
System Driver	No	Yes	System	Running	OK	Normal
	Yes					
ntfs	Ntfs c:\windows\system32\drivers\ntfs.sys File					
System Driver	No	Yes	Disabled	Running	OK	Normal
	Yes					
null	Null c:\windows\system32\drivers\null.sys Kernel					
Driver	Yes	System	Running	OK	Normal	No
	Yes					
parport	Parallel port driver c:\windows\system32\drivers\parport.sys					
	Kernel Driver	Yes	Manual	Running	OK	Normal
	Normal	No	Yes			
partmgr	Partition Manager c:\windows\system32\drivers\partmgr.sys					
	Kernel Driver	Yes	Boot	Running	OK	Normal
	Normal	No	Yes			

parvdm Driver	Parvdm Yes Yes	c:\windows\system32\drivers\parvdm.sys Auto Running	OK	Ignore	Kernel No	
pci	PCI Bus Driver Kernel Driver Critical	c:\windows\system32\drivers\pci.sys Yes Boot	Running	OK		
pciide Driver	PCIIde Yes Yes	c:\windows\system32\drivers\pciide.sys Boot Running	OK	Normal	Kernel No	
pcmcia Driver	Pcmcia No No	c:\windows\system32\drivers\pcmcia.sys Disabled Stopped	OK	Normal	Kernel No	
pdcomp	PDCOMP Manual	Not Available Stopped	OK	Kernel Driver Ignore	No No	
pdframe	PDFRAME No No	Not Available Manual Stopped	OK	Kernel Driver Ignore	No No	
pdreli	PDRELI Manual	Not Available Stopped	OK	Kernel Driver Ignore	No No	
pdframe	PDRFRAME No No	Not Available Manual Stopped	OK	Kernel Driver Ignore	No No	
perc2	perc2 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
perc2hib	perc2hib Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
pptpminiport	WAN Miniport (PPTP) c:\windows\system32\drivers\rasppptp.sys Yes Yes	Manual Running	OK	Kernel Driver Normal	No No	
processor	Processor Driver Kernel Driver Normal	c:\windows\system32\drivers\processr.sys Yes Manual	Running	OK		
ptilink	Direct Parallel Link Driver c:\windows\system32\drivers\ptilink.sys Yes Yes	Manual Running	OK	Kernel Driver Normal	No No	
ql1080	ql1080 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql10wnt	Ql10wnt Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql12160	ql12160 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql1240	ql1240 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql1280	ql1280 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql2100	ql2100 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql2200	ql2200 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
ql2300	ql2300 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
rasacd	Remote Access Auto Connection Driver c:\windows\system32\drivers\rasacd.sys Yes Yes	System Running	OK	Kernel Driver Normal	No No	
rasl2tp	WAN Miniport (L2TP) c:\windows\system32\drivers\rasl2tp.sys Yes Yes	Manual Running	OK	Kernel Driver Normal	No No	
raspppoe	Remote Access PPPOE Driver c:\windows\system32\drivers\raspppoe.sys Yes Yes	Manual Running	OK	Kernel Driver Normal	No No	
raspti	Direct Parallel Kernel Driver Normal	c:\windows\system32\drivers\raspti.sys Yes Manual	Running	OK		
rdbss	Rdbss System Driver	c:\windows\system32\drivers\rdbss.sys Yes System	Running	OK	File Normal	
rdpcdd Driver	RDPCDD Yes	c:\windows\system32\drivers\rdpcdd.sys System Running	OK	Kernel Ignore	No No	
rdpdr	Terminal Server Device Redirector Driver c:\windows\system32\drivers\rdpdr.sys Yes Yes	Manual Running	OK	Kernel Driver Normal	No No	
rdpwd Driver	RDPWD Yes Yes	c:\windows\system32\drivers\rdpwd.sys Manual Running	OK	Kernel Ignore	No No	
redbook	Digital CD Audio Playback Filter Driver c:\windows\system32\drivers\redbook.sys Yes Yes	System Running	OK	Kernel Driver Normal	No No	
secdrv Driver	Secdrv No	c:\windows\system32\drivers\secdrv.sys Manual Stopped	OK	Kernel Normal	No No	
serenum	Serenum Filter Driver Kernel Driver Normal	c:\windows\system32\drivers\serenum.sys Yes Manual	Running	OK		
serial	Serial port driver Kernel Driver Ignore	c:\windows\system32\drivers\serial.sys Yes System	Running	OK		
sfloppy Driver	Sfloppy No No	c:\windows\system32\drivers\sfloppy.sys System Stopped	OK	Kernel Ignore	No No	
simbad	Simbad Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
sparrow	Sparrow Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
srv System Driver	Srv Yes No	c:\windows\system32\drivers\srv.sys Manual Running	OK	File Normal		
swenum	Software Bus Driver Kernel Driver Normal	c:\windows\system32\drivers\swenum.sys Yes Manual	Running	OK		
symc810	symc810 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
symc8xx	symc8xx Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
symmpi	symmpi Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
sym_hi	sym_hi Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
sym_u3	sym_u3 Disabled	Not Available Stopped	OK	Kernel Driver Normal	No No	
tcpip	TCP/IP Protocol Driver c:\windows\system32\drivers\tcpip.sys			Kernel Driver		

	Yes	System	Running	OK	Normal	No		ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2_0
tdpipe Driver	Yes No No	TDPIPE Manual	Running Stopped	OK	Normal	No	Processor Yes processor types) cpu.inf Not Available	5.2.3790.0 10/1/2002 (Standard Not Available ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2_1
tdtcp Driver	Yes Yes	TDTCP Manual	Running	OK	Ignore	No	Processor Yes processor types) cpu.inf Not Available	5.2.3790.0 10/1/2002 (Standard Not Available ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2_6
termdd	Yes	Terminal Device Driver c:\windows\system32\drivers\termdd.sys	Running	OK	Normal	No	Processor Yes processor types) cpu.inf Not Available	5.2.3790.0 10/1/2002 (Standard Not Available ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2_7
toside	Yes Disabled	TosIde Not Available Stopped	Running	OK	Normal	No	PCI bus Yes devices) machine.inf Not Available	5.2.3790.0 10/1/2002 (Standard system Not Available ACPI\PNP0A03\0
udfs System Driver	No No	Udfs No	Disabled	Stopped	OK	Normal	ServerWorks (RCC) CMIC_LE Processor to PCI Bridge(*) SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC)	Yes Not Available ACPI\VEN_1166&DEV_0014&SUBSYS_00000000&REV_32\3
ultra	No Disabled	ultra Not Available Stopped	Running	OK	Normal	No	ServerWorks (RCC) CMIC_LE Processor to PCI Bridge(*) SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC)	Yes Not Available ACPI\VEN_1166&DEV_0014&SUBSYS_00000000&REV_32\3
update	Yes Yes	Microcode Update Driver c:\windows\system32\drivers\update.sys	Running	OK	Normal	No	ServerWorks (RCC) CMIC_LE Processor to PCI Bridge(*) SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC)	Yes Not Available ACPI\VEN_1166&DEV_0014&SUBSYS_00000000&REV_00\3
usbhub	Yes Normal	USB2 Enabled Hub Kernel Driver	Running	OK	Normal	No	ServerWorks (RCC) CMIC_LE Processor to PCI Bridge(*) SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC)	Yes Not Available ACPI\VEN_1166&DEV_0014&SUBSYS_00000000&REV_00\3
usbohci	Yes Yes	Microsoft USB Open Host Controller Miniport Driver c:\windows\system32\drivers\usbohci.sys	Running	OK	Normal	No	ServerWorks (RCC) CMIC_LE Processor to PCI Bridge(*) SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC)	Yes Not Available ACPI\VEN_1166&DEV_0014&SUBSYS_00000000&REV_00\3
vgasave	Yes Yes	VGA Display Controller. c:\windows\system32\drivers\vga.sys	Running	OK	Ignore	No	RAGE XL PCI Family (Microsoft Corporation) DISPLAY 5.10.2600.6014 8/8/2001 ATI Technologies	Yes Not Available ACPI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3
viaide	Yes Disabled	Vialde Not Available Stopped	Running	OK	Normal	No	Inc. atiixpad.inf Not Available	ACPI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3
volsnap	Yes Normal	Storage volumes Kernel Driver	Running	OK	Normal	No	Default Monitor Yes (Standard monitor types) monitor.inf Not	5.1.2001.0 6/6/2001 Not Available DISPLAY\DEFAULT_MONITOR\4&89B5141&0&80000000&00&03
wanarp	Yes Yes	Remote Access IP ARP Driver c:\windows\system32\drivers\wanarp.sys	Running	OK	Normal	No	Available	DISPLAY\DEFAULT_MONITOR\4&89B5141&0&80000000&00&03
wdica	Yes Manual	WDICA Not Available Stopped	Running	OK	Ignore	No	Base System Device Not Available Available Not Available Not Available Not Available	UNKNOWN Not Not Available Not Available Not Available ACPI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_01\3
wlbs	Yes No	Network Load Balancing c:\windows\system32\drivers\wlbs.sys	Running	OK	Normal	No	Base System Device Not Available Available Not Available Not Available Not Available	UNKNOWN Not Not Available Not Available Not Available ACPI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_01\3
[Signed Drivers]							PCI standard ISA bridge Yes 10/1/2002 (Standard system devices) machine.inf	5.2.3790.0 Not Available ACPI\VEN_1166&DEV_0201&SUBSYS_00000000&REV_93\3
Device Name	Signed	Device Class	Driver Version				ISAPNP Read Data Port Yes	SYSTEM 5.2.3790.0
Name	Driver Date	Manufacturer	INF Name	Driver			10/1/2002 (Standard system devices) machine.inf	
Not Available	Not Available	Not Available	Not Available	Not Available			Not Available	ISAPNP\READDATAPORT\0
Available	Not Available	HTREE\ROOT\0	Not Available	Not Available			Motherboard resources Yes	SYSTEM 5.2.3790.0
ACPI Multiprocessor PC	5.2.3790.0 10/1/2002	Yes	COMPUTER	hal.inf	Not		10/1/2002 (Standard system devices) machine.inf	
Available	ROOT\ACPI_HAL\0000	5.2.3790.0 10/1/2002	Microsoft ACPI-Compliant System	Yes	SYSTEM		Not Available	ACPI\PNP0C02\0
Microsoft ACPI-Compliant System	5.2.3790.0 10/1/2002	Microsoft	acpi.inf	Not Available			Programmable interrupt controller Yes	SYSTEM
ACPI_HAL\PNP0C08\0	5.2.3790.0 10/1/2002	Microsoft	acpi.inf	Not Available			5.2.3790.0 10/1/2002 (Standard system devices)	
Processor Yes	PROCESSOR	5.2.3790.0 10/1/2002	Standard	processor types) cpu.inf	Not Available		machine.inf Not Available	ACPI\PNP0000\4&35118DFF&0
							System timer Yes	SYSTEM 5.2.3790.0 10/1/2002 (Standard
							machine.inf Not Available	system devices) machine.inf Not Available
							ACPI\PNP0100\4&35118DFF&0	

Direct memory access controller	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	ACPI\PNP0200\4&35118DFF&0
System speaker	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	ACPI\PNP0800\4&35118DFF&0
Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	Yes	KEYBOARD	5.2.3790.0	10/1/2002 (Standard keyboards)	keyboard.inf	Not Available	ACPI\PNP0303\4&35118DFF&0
PS/2 Compatible Mouse	Yes	MOUSE	5.2.3790.0	10/1/2002 Microsoft	msmouse.inf	Not Available	ACPI\PNP0F13\4&35118DFF&0
Extended IO Bus	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	ACPI\PNP0A06\4&35118DFF&0
Printer Port	Yes	PORTS	5.2.3790.0	10/1/2002 (Standard port types)	msports.inf	Not Available	ACPI\PNP0400\5&13237358&0
Printer Port Logical Interface	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	LPTENUM\MICROSOFTRAWPORT\6&BCCF519&0&LPT1
Communications Port	Yes	PORTS	5.2.3790.0	10/1/2002 (Standard port types)	msports.inf	Not Available	ACPI\PNP0501\0
Communications Port	Yes	PORTS	5.2.3790.0	10/1/2002 (Standard port types)	msports.inf	Not Available	ACPI\PNP0501\1
Standard floppy disk controller	Yes	FDC	5.2.3790.0	10/1/2002 (Standard floppy disk controllers)	fdc.inf	Not Available	ACPI\PNP0700\5&13237358&0
Floppy disk drive	Yes	FLOPPYDISK	5.2.3790.0	10/1/2002 (Standard floppy disk drives)	flpydisk.inf	Not Available	FDC\GENERIC_FLOPPY_DRIVE\6&1C650E5D&0&0
CSB5 IDE Controller	Yes	HDC	5.2.3790.0	10/1/2002 ServerWorks	mshdc.inf	Not Available	PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3&267A616A&0&79
Primary IDE Channel	Yes	HDC	5.2.3790.0	10/1/2002 (Standard IDE ATA/ATAPI controllers)	mshdc.inf	Not Available	PCI\IDE\IDECHANNEL\4&1024D5C6&0&0
CD-ROM Drive	Yes	CDROM	5.2.3790.0	10/1/2002 (Standard CD-ROM drives)	cdrom.inf	Not Available	IDE\CDROMCOMPAQ_CD-ROM_SC-148C_____B101_____5&FB0C83D&0&0.1.0
Secondary IDE Channel	Yes	HDC	5.2.3790.0	10/1/2002 (Standard IDE ATA/ATAPI controllers)	mshdc.inf	Not Available	PCI\IDE\IDECHANNEL\4&1024D5C6&0&1
ServerWorks (RCC) PCI to USB Open Host Controller	Yes	USB	5.2.3790.0	10/1/2002 ServerWorks (RCC)	usbport.inf	Not Available	PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3&267A616A&0&7A
USB Root Hub	Yes	USB	5.2.3790.0	10/1/2002 (Standard USB Host Controller)	usbport.inf	Not Available	USB\ROOT_HUB\4&AF5358C&0
Serverworks Champion CSB5 - SouthBridge 5 LPC	Yes	SYSTEM	5.2.3790.0	10/1/2002 ServerWorks (RCC)	machine.inf	Not Available	PCI\VEN_1166&DEV_0225&SUBSYS_00000000&REV_00\3&267A616A&0&7B
ServerWorks Grand Champion CIOB_X2 - I/O Bridge 133 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002 ServerWorks (RCC)	machine.inf	Not Available	PCI\VEN_1166&DEV_0101&SUBSYS_00000000&REV_05\3&267A616A&0&80
ServerWorks Grand Champion CIOB_X2 - I/O Bridge 133 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002 ServerWorks (RCC)	machine.inf	Not Available	PCI\VEN_1166&DEV_0101&SUBSYS_00000000&REV_05\3&267A616A&0&82
ServerWorks Grand Champion CIOB_X2 - I/O Bridge 133 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002 ServerWorks (RCC)	machine.inf	Not Available	PCI\VEN_1166&DEV_0101&SUBSYS_00000000&REV_05\3&267A616A&0&88
ServerWorks Grand Champion CIOB_X2 - I/O Bridge 133 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002 ServerWorks (RCC)	machine.inf	Not Available	PCI\VEN_1166&DEV_0101&SUBSYS_00000000&REV_05\3&267A616A&0&8A
PCI bus	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	ACPI\PNP0A03\1
BCM5703 Gigabit Ethernet	Yes	NET	2.91.0.0	10/1/2002 Narrowcom	netb57xp.inf	Not Available	PCI\VEN_14E4&DEV_16A7&SUBSYS_00CB0E11&REV_02\3&13C0B0C5&0&20
PCI bus	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	ACPI\PNP0A03\2
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	5.2.3790.0	10/1/2002 (Standard system devices)	machine.inf	Not Available	PCI\VEN_1014&DEV_01A7&SUBSYS_00000000&REV_02\3&1070020&0&0
Smart Array 6400 Controller (Non-Miniport)	No	SCSIADAPTER	5.6.59.32	4/8/2003 Hewlett-Packard	oem2.inf	Not Available	PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_01\4&392398EF&0&2010
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0000004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0100004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0200004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0300004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0400004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0500004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0600004000000000
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003 Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&9150251&0&0700004000000000

PCI bus devices)	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	ACPI\PNP0A03\3	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	PCI\VEN_1014&DEV_01A7&SUBSYS_00000000&REV_02\3&29E81982&0&08	D6OFFSET7E00LENGTH752C56200	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5
Smart Array 6400 Controller (Non-Miniport)	No							SCSIADAPTER	5.6.59.32	4/8/2003	Hewlett-Packard	oem2.inf	Not Available				D7OFFSET7E00LENGTH3A8E4F000	
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003	Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1D07EFAE&0&0000004000000000	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003	Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1D07EFAE&0&0100004000000000	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003	Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1D07EFAE&0&0200004000000000	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003	Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1D07EFAE&0&0300004000000000	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003	Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1D07EFAE&0&0400004000000000	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
Smart Array Logical Volume	No	DISKDRIVE	5.6.56.32	4/8/2003	Hewlett-Packard	oem3.inf	Not Available	HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1D07EFAE&0&0500004000000000	Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	
PCI bus devices)	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	ACPI\PNP0A03\4	DFOFFSET7E00LENGTH7F98AFC00	AFD Networking Support Environment	Not Available							
ACPI Thermal Zone	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	ACPI\THERMALZONE\THM0	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available					
ACPI Fixed Feature Button	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	ACPI\FIXEDBUTTON\2&DABA3FF&0	Beep	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Logical Disk Manager	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	ROOT\DMIO\0000	cpqciism	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Volume Manager	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	ROOT\FTDISK\0000	CRC Disk Filter Driver	Not Available	Not Available	Not Available	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE92A6666	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	Disk Driver	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	dmboot	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	dmload	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
Generic volume	Yes	VOLUME	5.2.3790.0	10/1/2002	Microsoft	volume.inf	Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE312EB5	Fips	Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	

Generic Packet Classifier	Not Available	LEGACYDRIVER	Not Available	volsnap	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available		Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available		Not Available	ROOT\LEGACY_VOLSNAP\0000	
IPSEC driver	Not Available	LEGACYDRIVER	Not Available	Remote Access IP ARP Driver	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available		Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_IPSEC\0000			Not Available	Not Available	
ksecdd	Not Available	LEGACYDRIVER	Not Available		Not Available	ROOT\LEGACY_WANARP\0000	
	Not Available	Not Available	Not Available	Audio Codecs	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
	Not Available	ROOT\LEGACY_KSECDD\0000			wave.inf	Not Available	
mmmd	Not Available	LEGACYDRIVER	Not Available			ROOT\MEDIA\MS_MMACM	
	Not Available	Not Available	Not Available	Legacy Audio Drivers	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
	Not Available	ROOT\LEGACY_MNMDD\0000			wave.inf	Not Available	
mountmgr	Not Available	LEGACYDRIVER	Not Available			ROOT\MEDIA\MS_MMDRV	
	Not Available	Not Available	Not Available	Media Control Devices	Yes	MEDIA	5.2.3790.0
	Not Available	ROOT\LEGACY_MOUNTMGR\0000				10/1/2002 (Standard system devices)	wave.inf Not
NDIS System Driver	Not Available	LEGACYDRIVER	Not Available	Available	ROOT\MEDIA\MS_MMMCI		
Available	Not Available	Not Available	Not Available	Legacy Video Capture Devices	Yes	MEDIA	5.2.3790.0
	Not Available	ROOT\LEGACY_NDIS\0000				10/1/2002 (Standard system devices)	wave.inf Not
Remote Access NDIS TAPI Driver	Not Available			Available	ROOT\MEDIA\MS_MMVCD		
	LEGACYDRIVER	Not Available	Not Available	Video Codecs	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
	Not Available	Not Available	Not Available		wave.inf	Not Available	
	LEGACYDRIVER	Not Available	Not Available			ROOT\MEDIA\MS_MMVID	
	Not Available	ROOT\LEGACY_NDISTAPI\0000		WAN Miniport (L2TP)	Yes	NET	5.2.3790.0
NDIS Usermode I/O Protocol	Not Available	LEGACYDRIVER	Not Available			10/1/2002 Microsoft	netrasa.inf Not Available
	Not Available	Not Available	Not Available			ROOT\MS_L2TPMINIPOINT\0000	
	Not Available	Not Available	Not Available	WAN Miniport (IP)	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
	LEGACYDRIVER	Not Available	Not Available		netrasa.inf	Not Available	ROOT\MS_NDISWANIP\0000
	Not Available	ROOT\LEGACY_NDISUIO\0000		WAN Miniport (PPPOE)	Yes	NET	5.2.3790.0
NDProxy	Not Available	LEGACYDRIVER	Not Available			10/1/2002 Microsoft	netrasa.inf Not Available
	Not Available	Not Available	Not Available			ROOT\MS_PPPOEMINIPOINT\0000	
	Not Available	ROOT\LEGACY_NDPROXY\0000		WAN Miniport (PPTP)	Yes	NET	5.2.3790.0
NetBios over Tcpip	Not Available	LEGACYDRIVER	Not Available			10/1/2002 Microsoft	netrasa.inf Not Available
Available	Not Available	Not Available	Not Available			ROOT\MS_PPTPMINIPOINT\0000	
	Not Available	ROOT\LEGACY_NETBT\0000		Direct Parallel	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
Null	Not Available	LEGACYDRIVER	Not Available		netrasa.inf	Not Available	
	Not Available	Not Available	Not Available			ROOT\MS_PTMINIPOINT\0000	
	Not Available	ROOT\LEGACY_NULL\0000		Terminal Server Device Redirector	Yes	SYSTEM	
Partition Manager	Not Available	LEGACYDRIVER	Not Available			5.2.3790.0 10/1/2002 (Standard system devices)	
Available	Not Available	Not Available	Not Available		machine.inf	Not Available	
	Not Available	ROOT\LEGACY_PARTMGR\0000				ROOT\RDPDR\0000	
Parvdm	Not Available	LEGACYDRIVER	Not Available	Terminal Server Keyboard Driver	Yes	SYSTEM	
	Not Available	Not Available	Not Available			5.2.3790.0 10/1/2002 (Standard system devices)	
	Not Available	ROOT\LEGACY_PARVDM\0000			machine.inf	Not Available	
Remote Access Auto Connection Driver	Not Available					ROOT\RDP_KBD\0000	
	LEGACYDRIVER	Not Available	Not Available	Terminal Server Mouse Driver	Yes	SYSTEM	5.2.3790.0
	Not Available	Not Available	Not Available			10/1/2002 (Standard system devices)	machine.inf
	LEGACYDRIVER	Not Available	Not Available			Not Available	ROOT\RDP_MOU\0000
	Not Available	ROOT\LEGACY_RASACD\0000		Plug and Play Software Device Enumerator	Yes	SYSTEM	
RDPCCD	Not Available	LEGACYDRIVER	Not Available			5.2.3790.0 10/1/2002 (Standard system devices)	
	Not Available	Not Available	Not Available			machine.inf	Not Available
	Not Available	ROOT\LEGACY_RDPCCD\0000				ROOT\SYSTEM\0000	
RDPWD	Not Available	LEGACYDRIVER	Not Available	Microcode Update Device	Yes	SYSTEM	5.2.3790.0
	Not Available	Not Available	Not Available			10/1/2002 (Standard system devices)	machine.inf
	Not Available	ROOT\LEGACY_RDPWD\0000				Not Available	ROOT\SYSTEM\0001
TCP/IP Protocol Driver	Not Available	LEGACYDRIVER	Not Available	[Environment Variables]			
	Not Available	Not Available	Not Available	Variable	Value	User Name	
	Not Available	Not Available	Not Available	ComSpec	%SystemRoot%\system32\cmd.exe		<SYSTEM>
	Not Available	ROOT\LEGACY_TCPIP\0000		Path			
TDTCP	Not Available	LEGACYDRIVER	Not Available		%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\Syst		
	Not Available	Not Available	Not Available		em32\Wbem;C:\Program Files\Microsoft SQL Server\80\Tools\BINN		
	Not Available	ROOT\LEGACY_TDTCP\0000			<SYSTEM>		
VGA Display Controller.	Not Available	LEGACYDRIVER	Not Available	windir	%SystemRoot%	<SYSTEM>	
	Not Available	Not Available	Not Available	OS	Windows_NT	<SYSTEM>	
	Not Available	Not Available	Not Available	PROCESSOR_ARCHITECTURE	x86	<SYSTEM>	
	Not Available	ROOT\LEGACY_VGASAVE\0000					

PROCESSOR_LEVEL 15 <SYSTEM>
 PROCESSOR_IDENTIFIER x86 Family 15 Model 2 Stepping 7,
 GenuineIntel <SYSTEM>
 PROCESSOR_REVISION 0207 <SYSTEM>
 NUMBER_OF_PROCESSORS 4 <SYSTEM>
 ClusterLogC:\WINDOWS\Cluster\cluster.log <SYSTEM>

PATHEXT

.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
 <SYSTEM>
 TEMP %SystemRoot%\TEMP <SYSTEM>
 TMP %SystemRoot%\TEMP <SYSTEM>
 TEMP %USERPROFILE%\Local Settings\Temp NT
 AUTHORITY\SYSTEM
 TMP %USERPROFILE%\Local Settings\Temp NT
 AUTHORITY\SYSTEM
 TEMP %USERPROFILE%\Local Settings\Temp NT
 AUTHORITY\LOCAL SERVICE
 TMP %USERPROFILE%\Local Settings\Temp NT
 AUTHORITY\LOCAL SERVICE
 TEMP %USERPROFILE%\Local Settings\Temp NT
 AUTHORITY\NETWORK SERVICE
 TMP %USERPROFILE%\Local Settings\Temp NT
 AUTHORITY\NETWORK SERVICE
 TEMP %USERPROFILE%\Local Settings\Temp PICO\Administrator
 TMP %USERPROFILE%\Local Settings\Temp PICO\Administrator

[Print Jobs]

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

[Network Connections]

Local Name	Remote Name	Type	Status	User
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[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set	Max Working Set
Working Set	Start Time	Version	Size	File Date	
system idle process	Not Available	0	0	0	Not Available
system	Not Available	4	8	0	1413120
smss.exe	Not Available	360	11	204800	1413120
csrss.exe	Not Available	460	13	Not Available	Not Available
winlogon.exe	c:\windows\system32\winlogon.exe	13	204800	1413120	7/11/2003 6:14 PM
services.exe	c:\windows\system32\services.exe	9	204800	1413120	7/11/2003 6:14 PM
lsass.exe	c:\windows\system32\lsass.exe	540	9	204800	1413120
svchost.exe	c:\windows\system32\svchost.exe	8	204800	1413120	7/11/2003 6:14 PM

svchost.exe	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312 bytes)	3/25/2003 12:00 AM		
svchost.exe	c:\windows\system32\svchost.exe	740	8	204800	1413120
svchost.exe	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312 bytes)	3/25/2003 12:00 AM		
svchost.exe	Not Available	908	8	Not Available	Not Available
svchost.exe	Not Available	976	8	Not Available	Not Available
svchost.exe	c:\windows\system32\svchost.exe	988	8	204800	1413120
spoolsv.exe	c:\windows\system32\spoolsv.exe	1164	8	204800	1413120
svchost.exe	c:\windows\system32\svchost.exe	1200	8	204800	1413120
svchost.exe	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312 bytes)	3/25/2003 12:00 AM		
explorer.exe	c:\windows\explorer.exe	1620	8	204800	1413120
dfssvc.exe	c:\windows\system32\dfssvc.exe	1692	8	204800	1413120
wmiprvse.exe	Not Available	1904	8	Not Available	Not Available
sqlservr.exe	c:\program files\microsoft sql server\mssql\bin\sqlservr.exe	2916	13	204800	1413120
csrss.exe	Not Available	3920	13	Not Available	Not Available
winlogon.exe	c:\windows\system32\winlogon.exe	856	13	204800	1413120
rdpclip.exe	c:\windows\system32\rdpclip.exe	1576	8	204800	1413120
explorer.exe	c:\windows\explorer.exe	2668	8	204800	1413120
cmd.exe	c:\windows\system32\cmd.exe	3148	8	204800	1413120
msinfo32.exe	c:\program files\common files\microsoft shared\msinfo\msinfo32.exe	2244	8	204800	1413120
wmiprvse.exe	Not Available	1560	8	Not Available	Not Available

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer	Path
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winlogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	536.50 KB (549,376 bytes)	shsvcs bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	121.50 KB (124,416 bytes)
ntdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	722.50 KB (739,840 bytes)	shlwapi bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	281.00 KB (287,744 bytes)
kernel32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	965.00 KB (988,160 bytes)	sfc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	4.50 KB (4,608 bytes)
msvcrt bytes)	7.0.3790.0 (srv03_rtm.030324-2048)	319.50 KB (327,168 bytes)	sfc_os bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	133.00 KB (136,192 bytes)
advapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	559.50 KB (572,928 bytes)	wintrust bytes)	5.131.3790.0 (srv03_rtm.030324-2048)	161.50 KB (165,376 bytes)
rpcrt4 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	643.50 KB (658,944 bytes)	ole32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.13 MB (1,187,328 bytes)
user32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	562.00 KB (575,488 bytes)	imagehlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	142.50 KB (145,920 bytes)
gdi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	263.00 KB (269,312 bytes)	comctl32	6.0 (srv03_rtm.030324-2048)	907.00 KB (928,768 bytes)
userenv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	732.50 KB (750,080 bytes)	controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll		
nddeapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	16.00 KB (16,384 bytes)	winscard bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	98.50 KB (100,864 bytes)
crypt32 bytes)	5.131.3790.0 (srv03_rtm.030324-2048)	598.00 KB (612,352 bytes)	wtsapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920 bytes)
msasn1 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	58.00 KB (59,392 bytes)	sxs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	733.00 KB (750,592 bytes)
secur32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	63.00 KB (64,512 bytes)	winmm bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	166.00 KB (169,984 bytes)
winsta bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	51.00 KB (52,224 bytes)	shell32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	7.79 MB (8,166,400 bytes)
netapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	317.00 KB (324,608 bytes)	rsaenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	176.83 KB (181,072 bytes)
profmap bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528 bytes)	wldap32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	158.00 KB (161,792 bytes)
regapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	48.50 KB (49,664 bytes)	cscdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	99.00 KB (101,376 bytes)
ws2_32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	87.50 KB (89,600 bytes)	wlnotify bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	87.50 KB (89,600 bytes)
ws2help bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	19.50 KB (19,968 bytes)	winspool bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	140.00 KB (143,360 bytes)
psapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	21.50 KB (22,016 bytes)	mpr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344 bytes)
version bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.00 KB (17,408 bytes)	comctl32	5.82 (srv03_rtm.030324-2048)	561.00 KB (574,464 bytes)
setupapi (1,038,848 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1,014.50 KB	7/1/2003 8:08 AM Microsoft Corporation		
msgina bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.14 MB (1,191,936 bytes)	controls_6595b64144ccf1df_5.82.0.0_x-ww_8a69ba05\comctl32.dll		
			uxtheme bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	196.00 KB (200,704 bytes)
			samlib bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	49.00 KB (50,176 bytes)

cscui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	305.00 KB (312,320)	kerberos bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	332.50 KB (340,480)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
oleaut32	5.2.3790.0 (486,000 bytes)	486.00 KB (497,664 bytes)	msv1_0 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	127.00 KB (130,048)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
clbcatq bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	481.00 KB (492,544)	netlogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	409.00 KB (418,816)
	7/1/2003 1:14 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
comres bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	778.00 KB (796,672)	w32time bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	216.00 KB (221,184)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
ntmarta bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	114.00 KB (116,736)	iphlpapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	82.50 KB (84,480)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
wbemprox bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920)	schannel bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	149.50 KB (153,088)
	7/1/2003 1:14 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
wbemcomm KB (216,576 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	211.50	wdigest bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	61.00 KB (62,464)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
wbemsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	42.50 KB (43,520)	rassfm bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	20.50 KB (20,992)
	7/1/2003 1:14 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
fastprox bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	443.00 KB (453,632)	kdcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	221.00 KB (226,304)
	7/1/2003 1:14 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
msvcp60	6.05.2144.0	388.00 KB (397,312 bytes)	ntdsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.45 MB (1,520,640)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
ntdsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	76.00 KB (77,824)	ntdsatq bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	32.00 KB (32,768)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
dnsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	147.50 KB (151,040)	mswsock bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	254.00 KB (260,096)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
services bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	102.00 KB (104,448)	esent bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.01 MB (1,056,256)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
scesrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	316.50 KB (324,096)	scecli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	179.50 KB (183,808)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
authz bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	67.00 KB (68,608)	wshtcpip bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	18.00 KB (18,432)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
umpnprmgr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	121.50 KB (124,416)	ipsecsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	162.50 KB (166,400)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
ncobjapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	34.50 KB (35,328)	oakley bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	325.50 KB (333,312)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
eventlog bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	60.50 KB (61,952)	winipsec bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	34.50 KB (35,328)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
lsass bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312)	pstorsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.00 KB (24,576)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
lsasrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	780.50 KB (799,232)	psbase bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	81.00 KB (82,944)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
samsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	452.00 KB (462,848)	dsenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	131.33 KB (134,480)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
cryptdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	34.00 KB (34,816)	wlbsctrl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	78.00 KB (79,872)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
msprivs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	46.50 KB (47,616)	svchost bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	

rpssc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rpssc.dll	276.50 KB (283,136)	wkssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wkssvc.dll	125.00 KB (128,000)
termsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\termsrv.dll	216.50 KB (221,696)	wiarpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wiarpc.dll	30.00 KB (30,720)
icaapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\icaapi.dll	10.50 KB (10,752)	cryptsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cryptsvc.dll	51.00 KB (52,224)
mstlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mstlsapi.dll	104.50 KB (107,008)	certcli bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\certcli.dll	228.00 KB (233,472)
activeds bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\activeds.dll	189.00 KB (193,536)	vssapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\vssapi.dll	528.00 KB (540,672)
adslrpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\adslrpc.dll	142.50 KB (145,920)	dmsrvrvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dmsrvrvc.dll	24.00 KB (24,576)
credui bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\credui.dll	159.00 KB (162,816)	es bytes)	2001.12.4720.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\es.dll	221.50 KB (226,816)
atl	3.05.2283 83.00 KB (84,992 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\atl.dll	83.00 KB (84,992)	pchsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:16 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\pchsvc.dll	31.50 KB (32,256)
rdpwsx bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\rdpwsx.dll	80.13 KB (82,056)	srvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\srvc.dll	89.00 KB (91,136)
wzcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 6:15 AM Microsoft Corporation c:\windows\system32\wzcsvc.dll	272.50 KB (279,040)	seclogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\seclogon.dll	16.50 KB (16,896)
rtutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rtutils.dll	32.00 KB (32,768)	sens bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\sens.dll	35.50 KB (36,352)
wmi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wmi.dll	6.50 KB (6,656)	trkws bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\trkws.dll	85.00 KB (87,040)
dhcpcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dhcpcsvc.dll	101.50 KB (103,936)	wmivc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\wbem\wmivc.dll	131.00 KB (134,144)
rastls bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rastls.dll	155.00 KB (158,720)	wuauerv bytes)	5.4.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\wuauerv.dll	10.50 KB (10,752)
cryptui bytes)	5.131.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cryptui.dll	473.50 KB (484,864)	wuaueng bytes)	5.4.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\wuaueng.dll	188.50 KB (193,024)
mprapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mprapi.dll	81.00 KB (82,944)	advpack bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\advpack.dll	93.50 KB (95,744)
rasapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rasapi32.dll	227.50 KB (232,960)	wininet bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wininet.dll	609.00 KB (623,616)
rasman bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rasman.dll	56.50 KB (57,856)	comsvcs bytes)	2001.12.4720.0 (srv03_rtm.030324-2048) 7/1/2003 1:14 PM Microsoft Corporation c:\windows\system32\comsvcs.dll	1.14 MB (1,199,616)
tapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\tapi32.dll	175.00 KB (179,200)	browser bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\browser.dll	70.50 KB (72,192)
raschap bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\raschap.dll	106.00 KB (108,544)	netrap bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netrap.dll	11.50 KB (11,776)
schedsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 7/1/2003 1:16 PM Microsoft Corporation c:\windows\system32\schedsvc.dll	176.00 KB (180,224)	netman bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netman.dll	209.00 KB (214,016)
msidle bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msidle.dll	5.50 KB (5,632)	wzcsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 6:15 AM Microsoft Corporation c:\windows\system32\wzcsapi.dll	24.50 KB (25,088)
audiosrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\audiosrv.dll	38.00 KB (38,912)	netshell bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netshell.dll	1.67 MB (1,747,456)

clusapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\clusapi.dll
hnetcfg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	243.50 KB (249,344 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\hnetcfg.dll
wbemcore bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	457.00 KB (467,968 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemcore.dll
esscli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	235.50 KB (241,152 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\esscli.dll
wmiutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	90.50 KB (92,672 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiutils.dll
repdrvfs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	165.00 KB (168,960 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\repdrvfs.dll
wmiprvsd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	405.50 KB (415,232 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiprvsd.dll
wbemess bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	256.50 KB (262,656 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemess.dll
rasdlg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	642.00 KB (657,408 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rasdlg.dll
rasadhlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	6.50 KB (6,656 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rasadhlp.dll
winhttp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	327.50 KB (335,360 bytes)	7/1/2003 8:08 AM	Microsoft Corporation	c:\windows\winsxs\x86_microsoft.windows.winhttp_6595b64144-1.0.0_x-ww_e0651936\winhttp.dll
ncprov bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	43.00 KB (44,032 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\wbem\ncprov.dll
xactsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	86.50 KB (88,576 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\xactsrv.dll
ntlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	8.00 KB (8,192 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntlsapi.dll
spoolsv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	55.00 KB (56,320 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\spoolsv.exe
spoolss bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	79.00 KB (80,896 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\spoolss.dll
localspl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	304.50 KB (311,808 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\localspl.dll
cnbjmon (46,592 bytes)	5.2.3680.0 (Lab03_dev\skatari).020509-1043)	45.50 KB (46,592 bytes)	3/24/2003 7:48 PM	Microsoft Corporation	c:\windows\system32\cnbjmon.dll
pjlmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360 bytes)	3/24/2003 7:49 PM	Microsoft Corporation	c:\windows\system32\pjlmon.dll
tcpmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	44.00 KB (45,056 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\tcpmon.dll
mgmtapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	14.00 KB (14,336 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mgmtapi.dll
snmpapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\snmpapi.dll
wsnmp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	39.50 KB (40,448 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wsnmp32.dll
usbmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.00 KB (17,408 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\usbmon.dll
winmr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\winmr.dll
wshqos bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	23.00 KB (23,552 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wshqos.dll
win32spl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	94.50 KB (96,768 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\win32spl.dll
inetpp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	71.50 KB (73,216 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\inetpp.dll
icmp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	4.50 KB (4,608 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\icmp.dll
ersvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ersvc.dll
explorer (1,032,704 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1,008.50 KB (1,032,704 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\explorer.exe
browseui bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1.01 MB (1,057,280 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\browseui.dll
shdocvw bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1.33 MB (1,393,664 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shdocvw.dll
apphelp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	122.00 KB (124,928 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\apphelp.dll
themeui bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	360.50 KB (369,152 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\themeui.dll
msimg32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	4.50 KB (4,608 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msimg32.dll
linkinfo bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\linkinfo.dll
ntshrui bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	136.00 KB (139,264 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntshrui.dll
webcheck bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	261.50 KB (267,776 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\webcheck.dll
wsock32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wsock32.dll
stobject bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	117.50 KB (120,320 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\stobject.dll
batmeter bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	28.50 KB (29,184 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\batmeter.dll
powrprof bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	14.50 KB (14,848 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\powrprof.dll
urlmon bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	501.50 KB (513,536 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\urlmon.dll
printui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	536.50 KB (549,376 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\printui.dll
cfgmgr32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cfgmgr32.dll

drprov bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	12.50 KB (12,800 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\drprov.dll
ntlanman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	41.00 KB (41,984 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntlanman.dll
netui0 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	75.50 KB (77,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\netui0.dll
netui1 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	184.00 KB (188,416 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\netui1.dll
davclnt bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	23.50 KB (24,064 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\davclnt.dll
dfssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	130.50 KB (133,632 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\dfssvc.exe
resutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	59.00 KB (60,416 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\resutils.dll
mfc42u	6.05.3014.0	960.00 KB (983,040 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mfc42u.dll
sqlservr	2000.080.0761.00	7.11 MB (7,450,664 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlservr.exe
opends60	2000.080.0194.00	24.06 KB (24,639 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\opends60.dll
ums	2000.080.0760.00	52.55 KB (53,808 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ums.dll
sqlsort	2000.080.0760.00	576.56 KB (590,396 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlsort.dll
msvcirt bytes)	7.0.3790.0 (srv03_rtm.030324-2048)	50.00 KB (51,200 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msvcirt.dll
sqllevn70	2000.080.0760.00	28.00 KB (28,672 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\resources\1033\sqllevn70.rll
xolehlp bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	8.50 KB (8,704 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\xolehlp.dll
msdtcprx bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	427.50 KB (437,760 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\msdtcprx.dll
mtxclu bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	74.50 KB (76,288 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mtxclu.dll
ssnetlib	2000.080.0760.00	80.56 KB (82,492 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssnetlib.dll
ssnmpn70	2000.080.0534.00	24.56 KB (25,148 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssnmpn70.dll
security bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	5.50 KB (5,632 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\security.dll
ssmslpcn	2000.080.0760.00	28.56 KB (29,244 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssmslpcn.dll
sqloledb bytes)	2000.085.1022.00 (srv03_rtm.030324-2048)	536.00 KB (548,864 bytes)	7/1/2003 1:16 PM	Microsoft Corporation	c:\program files\common files\system\ole db\sqloledb.dll
msdart bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	164.00 KB (167,936 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msdart.dll
comdlg32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	261.00 KB (267,264 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\comdlg32.dll
msdatl3 bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	96.00 KB (98,304 bytes)	7/1/2003 1:16 PM	Microsoft Corporation	c:\program files\common files\system\ole db\msdatl3.dll
oledb32 bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	500.00 KB (512,000 bytes)	7/1/2003 1:16 PM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32.dll
oledb32r bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	68.00 KB (69,632 bytes)	7/1/2003 1:16 PM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32r.dll
improov	2000.080.0760.00	100.58 KB (102,992 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\improov.dll
sqlresld	2000.080.0382.00	28.56 KB (29,248 bytes)	7/3/2003 11:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\sqlresld.dll
rdpsnd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	18.00 KB (18,432 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rdpsnd.dll
scredir bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	27.00 KB (27,648 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\scredir.dll
msacm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	21.00 KB (21,504 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msacm32.drv
msacm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	67.50 KB (69,120 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msacm32.dll
imaadp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.50 KB (15,872 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\imaadp32.acm
msadp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	14.50 KB (14,848 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msadp32.acm
msg711 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	10.00 KB (10,240 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msg711.acm
msgsm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	20.50 KB (20,992 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msgsm32.acm
tssoft32	1.01	9.50 KB (9,728 bytes)	3/25/2003 12:00 AM	DSP GROUP, INC.	c:\windows\system32\tssoft32.acm
tsd32	1.03	16.50 KB (16,896 bytes)	3/25/2003 12:00 AM	DSP GROUP, INC.	c:\windows\system32\tsd32.dll
msg723	4.4.4000	116.00 KB (118,784 bytes)	7/1/2003 1:16 PM	Microsoft Corporation	c:\windows\system32\msg723.acm
msaud32	8.00.00.4487	288.00 KB (294,912 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msaud32.acm
sl_anet	3.02	84.00 KB (86,016 bytes)	3/25/2003 12:00 AM	Sipro Lab Telecom Inc.	c:\windows\system32\sl_anet.acm
l3codeca	1, 9, 0, 0305	284.00 KB (290,816 bytes)	3/25/2003 12:00 AM	Fraunhofer Institut Integrierte Schaltungen	c:\windows\system32\l3codeca.acm
IIS cabinet bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	61.00 KB (62,464 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cabinet.dll
rdpclip bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	53.00 KB (54,272 bytes)	7/1/2003 1:14 PM	Microsoft Corporation	c:\windows\system32\rdpclip.exe
browselc bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	62.00 KB (63,488 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\browselc.dll

shdoclc 6.00.3790.0 (srv03_rtm.030324-2048) 588.50 KB (602,624 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\shdoclc.dll

cmd 5.2.3790.0 (srv03_rtm.030324-2048) 374.00 KB (382,976 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cmd.exe

msinfo32 5.2.3790.0 (srv03_rtm.030324-2048) 40.50 KB (41,472 bytes) 7/1/2003 1:16 PM Microsoft Corporation c:\program files\common files\microsoft shared\msinfo\msinfo32.exe

msinfo 5.2.3790.0 (srv03_rtm.030324-2048) 358.50 KB (367,104 bytes) 7/1/2003 1:16 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\msinfo.dll

riched32 5.2.3790.0 (srv03_rtm.030324-2048) 3.50 KB (3,584 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\riched32.dll

riched20 5.31.23.1218 406.00 KB (415,744 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\riched20.dll

[Services]

Display Name	Name	State	Start Mode	Service Type
Path	Error Control	Start Name	Tag ID	
Alerter	Alerter	Stopped	Disabled	Share Process
c:\windows\system32\svchost.exe -k localservice		NT AUTHORITY\LocalService	0	Normal
Application Layer Gateway Service	ALG	Stopped	Manual	Own Process
c:\windows\system32\alg.exe		NT AUTHORITY\LocalService	0	Normal
Application Management Process	AppMgmt	Stopped	Manual	Share
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Windows Audio	AudioSrv	Running	Auto	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Background Intelligent Transfer Service	BITS	Stopped	Manual	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Computer Browser	Browser	Running	Auto	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Indexing Service	CiSvc	Stopped	Disabled	Share Process
c:\windows\system32\cisvc.exe		LocalSystem	0	Normal
ClipBook	ClipSrv	Stopped	Disabled	Own Process
c:\windows\system32\clipsrv.exe		LocalSystem	0	Normal
COM+ System Application	COMSysApp	Stopped	Manual	Own Process
c:\windows\system32\dllhost.exe /processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}		LocalSystem	0	Normal
Cryptographic Services Process	CryptSvc	Running	Auto	Share
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Distributed File System Process	Dfs	Running	Auto	Own
c:\windows\system32\dfssvc.exe		LocalSystem	0	Normal
DHCP Client	Dhcp	Running	Auto	Share Process
c:\windows\system32\svchost.exe -k networkservice		NT AUTHORITY\NetworkService	0	Normal
Logical Disk Manager	Administrative Service			Stopped
Manual	Share Process			
c:\windows\system32\dmadmin.exe /com		LocalSystem	0	Normal
Logical Disk Managerdmserver		Running	Auto	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal

DNS Client	Dnscache	Running	Auto	Share Process
c:\windows\system32\svchost.exe -k networkservice		NT AUTHORITY\NetworkService	0	Normal
Error Reporting Service Process	ERSvc	Running	Auto	Share
c:\windows\system32\svchost.exe -k winerr		LocalSystem	0	Ignore
Event Log	Eventlog	Running	Auto	Share Process
c:\windows\system32\services.exe		LocalSystem	0	Normal
COM+ Event System Process	EventSystem		Running	Manual
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Help and Support	helpsvc	Running	Auto	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Human Interface Device Access Process	HidServ	Stopped	Disabled	Share
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
HTTP SSL	HTTPFilter	Stopped	Manual	Share Process
c:\windows\system32\lsass.exe		LocalSystem	0	Normal
IMAPI CD-Burning COM Service				Stopped
Disabled	Own Process			
c:\windows\system32\imapi.exe		LocalSystem	0	Normal
Intersite Messaging	ismServ	Stopped	Disabled	Own Process
c:\windows\system32\ismserv.exe		LocalSystem	0	Normal
Kerberos Key Distribution Center	kdc	Stopped	Disabled	Own Process
Share Process		c:\windows\system32\lsass.exe		Normal
LocalSystem		0		
Server	lanmanserver	Running	Auto	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
Workstation Process	lanmanworkstation	Running	Auto	Share
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
License Logging Process	LicenseService	Stopped	Disabled	Own
c:\windows\system32\llsrrv.exe		LocalSystem	0	Normal
AUTHORITY\NetworkService				NT
TCP/IP NetBIOS Helper Process	LmHosts	Running	Auto	Share
c:\windows\system32\svchost.exe -k localservice		NT AUTHORITY\LocalService	0	Normal
Messenger	Messenger	Stopped	Disabled	Share Process
c:\windows\system32\svchost.exe -k netsvcs		LocalSystem	0	Normal
NetMeeting Remote Desktop Sharing	mnmsrvc	Stopped	Disabled	Own Process
c:\windows\system32\mnmsrvc.exe		LocalSystem	0	Normal
Distributed Transaction Coordinator	MSDTC	Stopped	Manual	Own Process
c:\windows\system32\msdtc.exe		NT AUTHORITY\NetworkService	0	Normal
Windows Installer	MSIServer	Stopped	Manual	Share Process
c:\windows\system32\msiexec.exe /v		LocalSystem	0	Normal
MSSQLSERVER Process	MSSQLSERVER	Stopped	Manual	Own
c:\progra~1\microso~1\mssql\binn\sqlservr.exe		LocalSystem	0	Normal
MSSQLServerADHelper	MSSQLServerADHelper			Stopped
Manual	Own Process			
c:\program files\microsoft sql server\80\tools\binn\sqladhlp.exe		LocalSystem	0	Normal
Network DDE	NetDDE	Stopped	Disabled	Share Process
c:\windows\system32\netdde.exe		LocalSystem	0	Normal
Network DDE DSDM	NetDDEdsdm	Stopped	Disabled	Share Process
c:\windows\system32\netdde.exe		LocalSystem	0	Normal
Net Logon	Netlogon	Stopped	Manual	Share Process
c:\windows\system32\lsass.exe		LocalSystem	0	Normal


```

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 wuauerv Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Wireless Configuration WZCSVC Running Auto Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0

```

[Program Groups]

Group Name	Name	User Name	Default User
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	PICO\Administrator:Accessories		PICO\Administrator
Accessories\Accessibility	PICO\Administrator:Accessories\Accessibility		PICO\Administrator
Accessories\Entertainment	PICO\Administrator:Accessories\Entertainment		PICO\Administrator
Administrative Tools	PICO\Administrator:Administrative Tools		PICO\Administrator
Startup	PICO\Administrator:Startup		PICO\Administrator

[Startup Programs]

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

[OLE Registration]

Object	Type	Details			
Local Server					
Sound (OLE2)	sndrec32.exe				
Media Clip	mplay32.exe				
Video Clip	mplay32.exe /avi				
MIDI Sequence	mplay32.exe /midi				
Sound	Not Available				
Media Clip	Not Available				
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"				
Windows Media Services DRM Storage object		Not Available			
Bitmap Image	mspaint.exe				
[Windows Error Reporting]					
Time	Type	Details			
[Internet Settings]					
[Internet Explorer]					
[Following are sub-categories of this main category]					
[Summary]					
Item	Value				
Version	6.0.3790.0				
Build	63790				
Application Path	C:\Program Files\Internet Explorer				
Language	English (United States)				
Active Printer	Not Available				
Cipher Strength	128-bit				
Content Advisor	Disabled				
IEAK Install	No				
[File Versions]					
File	Version	Size	Date	Path	Company
actxprxy.dll		6.0.3790.0	95 KB	3/25/2003 1:00:00 AM	Microsoft Corporation
				C:\WINDOWS\system32	
advpack.dll		6.0.3790.0	94 KB	3/25/2003 1:00:00 AM	Microsoft Corporation
				C:\WINDOWS\system32	
asetrls.ocx	6.0.3790.0	90 KB	3/25/2003 1:00:00 AM		Microsoft Corporation
				C:\WINDOWS\system32	
browsecl.dll		6.0.3790.0	62 KB	3/25/2003 1:00:00 AM	Microsoft Corporation
				C:\WINDOWS\system32	
browseui.dll		6.0.3790.0	1,033 KB	3/25/2003 1:00:00 AM	Microsoft Corporation
				C:\WINDOWS\system32	
cdfview.dll		6.0.3790.0	144 KB	3/25/2003 1:00:00 AM	Microsoft Corporation
				C:\WINDOWS\system32	
comctl32.dll		5.82.3790.0		561 KB	3/25/2003 1:00:00 AM
				C:\WINDOWS\system32	Microsoft Corporation
dxtrans.dll	6.3.3790.0	198 KB	3/25/2003 1:00:00 AM		Microsoft Corporation
				C:\WINDOWS\system32	
dxtmsft.dll	6.3.3790.0	344 KB	3/25/2003 1:00:00 AM		Microsoft Corporation
				C:\WINDOWS\system32	
iecont.dll	<File Missing>		Not Available		Not Available
			Not Available		Not Available

iecontlc.dll	<File Missing> Not Available	Not Available	Not Available
iedkcs32.dll	16.0.3790.0	300 KB	3/25/2003 1:00:00 AM
AM	C:\WINDOWS\system32	Microsoft Corporation	
iepeers.dll	6.0.3790.0	230 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
iesetup.dll	6.0.3790.0	59 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
ieuinit.inf	Not Available	20 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Not Available	
ieexplore.exe	6.0.3790.0	90 KB	3/25/2003 1:00:00 AM
	C:\Program Files\Internet Explorer	Microsoft Corporation	
imgutil.dll	5.2.3790.0	35 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
inetctl.cpl	6.0.3790.0	303 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
inetctlc.dll	6.0.3790.0	109 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
inseng.dll	6.0.3790.0	72 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
mlang.dll	6.0.3790.0	570 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
msencode.dll	2002.10.4.0	112 KB	3/25/2003 1:00:00 AM
AM	C:\WINDOWS\system32	Not Available	
mshta.exe	6.0.3790.0	26 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
mshtml.dll	6.0.3790.0	2,848 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
mshtml.tlb	6.0.3790.0	1,319 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
mshtmlmed.dll	6.0.3790.0	444 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
mshtmlmer.dll	6.0.3790.0	55 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
msident.dll	6.0.3790.0	47 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
msidntld.dll	6.0.3790.0	15 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
msieftpl.dll	6.0.3790.0	230 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
msrating.dll	6.0.3790.0	132 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
msstime.dll	6.0.3790.0	491 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
occache.dll	6.0.3790.0	89 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
proctexe.ocx	6.3.3790.0	78 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Intel Corporation	

sendmail.dll	6.0.3790.0	52 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
shdoclc.dll	6.0.3790.0	589 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
shdocvw.dll	6.0.3790.0	1,361 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
shfolder.dll	6.0.3790.0	23 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
shlwapi.dll	6.0.3790.0	281 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
tdc.ocx	1.3.0.3130	58 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
url.dll	6.0.3790.0	36 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
urlmon.dll	6.0.3790.0	502 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
webcheck.dll	6.0.3790.0	262 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	
winet.dll	6.0.3790.0	609 KB	3/25/2003 1:00:00 AM
	C:\WINDOWS\system32	Microsoft Corporation	

[Connectivity]

Item	Value
Connection Preference	Never dial

LAN Settings

AutoConfigProxy	Not Available
AutoProxyDetectMode	Disabled
AutoConfigURL	
Proxy	Disabled
ProxyServer	
ProxyOverride	

[Cache]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Page Refresh Type	Automatic
Temporary Internet Files Folder	C:\Documents and Settings\NetworkService\Local Settings\Temporary Internet Files
Total Disk Space	Not Available
Available Disk Space	Not Available
Maximum Cache Size	Not Available
Available Cache Size	Not Available

[List of Objects]

Program File	Status	CodeBase
No cached object information available		

[Content]

[Following are sub-categories of this main category]

[Summary]

Item	Value
------	-------

Content Advisor Disabled

[Personal Certificates]

Issued To Issued By Validity Signature Algorithm
No personal certificate information available

[Other People Certificates]

Issued To Issued By Validity Signature Algorithm
No other people certificate information available

[Publishers]

Name
No publisher information available

[Security]

Zone	Security Level
My Computer	Custom
Local intranet	Medium-low
Trusted sites	Medium
Internet High	
Restricted sites	High

A.8 Server Registry Parameters

Windows Registry Editor Version 5.00

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

Appendix B: Database Build Scripts

B.1 CreateDatabase.sql

```
-- CreateDatabase
-- for use with StepMaster
-- Uses FileGroups

Create Database tpch100g on
Primary (name=tpch100g,
filename='c:\dev\tpch100g.mdf',size=10mb,filegrowth=0),
FileGroup tpch100g

(name=tpch100g1,filename='c:\dev\tpch_1\',size=29950mb,filegrowth=0),

(name=tpch100g2,filename='c:\dev\tpch_2\',size=29950mb,filegrowth=0),

(name=tpch100g3,filename='c:\dev\tpch_3\',size=69900mb,filegrowth=0),

(name=tpch100g4,filename='c:\dev\tpch_4\',size=69900mb,filegrowth=0)

Log on
      (name=tpch100gLog,filename='c:\dev\tpchlog\',size=11000mb,f
ilegrowth=0)

Alter Database tpch100g Add FileGroup LoadFg

Alter Database tpch100g Add File
      (name=LoadFg1,
filename='c:\dev\load_1\load.ldf',size=100000mb,filegrowth=0),
      (name=LoadFg2,
filename='c:\dev\load_2\load.ldf',size=100000mb,filegrowth=0)
to FileGroup LoadFg
```

B.2 CreateTables.sql

```
-- CreateTables
-- Uses filegroups

--
-- BASE TABLES
--

create table PART
      (P_PARTKEY      int          not null,
      P_NAME          varchar(55)  not null,
      P_MFGR          char(25)   not null,
      P_BRAND          char(10)   not null,
      P_TYPE           varchar(25) not null,
      P_SIZE           int         not null,
      P_CONTAINER      char(10)   not null,
      P_RETAILPRICE    money       not null,
      P_COMMENT        varchar(23) not null)
on LoadFg

create table SUPPLIER
      (S_SUPPKEY      int          not null,
      S_NAME          char(25)   not null,
      S_ADDRESS        varchar(40) not null,
      S_NATIONKEY      int         not null,
      S_PHONE          char(15)   not null,
      S_ACCTBAL        money       not null,
      S_COMMENT        varchar(101) not null)
on LoadFg
```

```
create table PARTSUPP
      (PS_PARTKEY      int          not null,
      PS_SUPPKEY       int          not null,
      PS_AVAILQTY      int          not null,
      PS_SUPPLYCOST    money        not null,
      PS_COMMENT       varchar(199) not null)
on LoadFg

create table CUSTOMER
      (C_CUSTKEY       int          not null,
      C_NAME           varchar(25)  not null,
      C_ADDRESS        varchar(40)  not null,
      C_NATIONKEY      int          not null,
      C_PHONE          char(15)   not null,
      C_ACCTBAL        money        not null,
      C_MKTSEGMENT     char(10)   not null,
      C_COMMENT        varchar(117) not null)
on LoadFg

create table ORDERS
      (O_ORDERKEY      int          not null,
      O_CUSTKEY        int          not null,
      O_ORDERSTATUS    char(1)     not null,
      O_TOTALPRICE     money        not null,
      O_ORDERDATE      smalldatetime not null,
      O_ORDERPRIORITY char(15)   not null,
      O_CLERK          char(15)   not null,
      O_SHIPPRIORITY   int          not null,
      O_COMMENT        varchar(79)  not null)
on LoadFg

create table LINEITEM
      (L_ORDERKEY      int          not null,
      L_PARTKEY        int          not null,
      L_SUPPKEY        int          not null,
      L_LINENUMBER     int          not null,
      L_QUANTITY        money        not null,
      L_EXTENDEDPRICE  money        not null,
      L_DISCOUNT      money        not null,
      L_TAX             money        not null,
      L_RETURNFLAG     char(1)     not null,
      L_LINESTATUS     char(1)     not null,
      L_SHIPDATE        smalldatetime not null,
      L_COMMITDATE     smalldatetime not null,
      L_RECEIPTDATE    smalldatetime not null,
      L_SHIPINSTRUCT   char(25)   not null,
      L_SHIPMODE       char(10)   not null,
      L_COMMENT        varchar(44)  not null)
on LoadFg

create table NATION
      (N_NATIONKEY     int          not null,
      N_NAME           char(25)   not null,
      N_REGIONKEY      int          not null,
      N_COMMENT        varchar(152) not null)
on LoadFg

create table REGION
      (R_REGIONKEY     int          not null,
      R_NAME           char(25)   not null,
      R_COMMENT        varchar(152) not null)
on LoadFg
```

B.3 CreateCUSTOMERIndexes.sql

```
create unique clustered index C_KEY_CLUIDX
  on CUSTOMER(C_CUSTKEY)
  with SORT_IN_TEMPDB
  on tpch100g
create index C_NATION_KEYIDX
  on CUSTOMER (C_NATIONKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.4 CreateLINEITEMIndexes.sql

```
create clustered index L_SHIPDATE_CLUIDX
  on LINEITEM(L_SHIPDATE)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create index L_PARTKEY_SUPPKEY_IDX
  on LINEITEM (L_PARTKEY,L_SUPPKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create index L_ORDERKEY_IDX
  on LINEITEM (L_ORDERKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g
```

B.5 CreateNATIONIndexes.sql

```
create unique clustered index N_KEY_CLUIDX
  on NATION(N_NATIONKEY)
  on tpch100g
create index N_REGIONKEY_IDX
  on NATION (N_REGIONKEY)
  on tpch100g
```

B.6 CreateORDERSIndexes.sql

```
create clustered index O_ORDERDATE_CLUIDX
  on ORDERS (O_ORDERDATE)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create index O_CUSTKEY_IDX
  on ORDERS (O_CUSTKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create unique index O_KEY_IDX
  on ORDERS(O_ORDERKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g
```

B.7 CreatePARTIndexes.sql

```
create unique clustered index P_KEY_CLUIDX
  on PART(P_PARTKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.8 CreatePARTSUPPIndexes.sql

```
create unique clustered index PS_KEY_CLUIDX
  on PARTSUPP(PS_PARTKEY,PS_SUPPKEY)
  with SORT_IN_TEMPDB
  on tpch100g
create index PS_SUPPKEY_IDX
  on PARTSUPP (PS_SUPPKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.9 CreateREGIONIndexes.sql

```
create unique clustered index R_KEY_CLUIDX
  on REGION(R_REGIONKEY)
  on tpch100g
```

B.10 createSUPPLIERindexes.sql

```
create unique clustered index S_SUPPKEY_CLUIDX
  on SUPPLIER (S_SUPPKEY)
  with SORT_IN_TEMPDB
  on tpch100g
create index S_NATION_KEYIDX
  on SUPPLIER (S_NATIONKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.11 Backup.sql

```
backup database tpch100g to
disk='c:\dev\load_1\test.bak',
disk='c:\dev\load_2\test.bak'
with init,stats=1
```

B.12 Restore.sql

```
restore database tpch100g from
disk='c:\dev\load_1\test.bak',
disk='c:\dev\load_2\test.bak'
with stats=1, replace
```

B.13 MoveTemp.sql

```
alter database tempdb modify file
(name=tempdev,filename='c:\dev\tempdev\',size=15MB)
alter database tempdb modify file
(name=templog,filename='c:\dev\templog\',size=20MB)
```

B.14 AddTemp.sql

```
alter database tempdb modify file
(name=tempdev, filename='c:\dev\tempdev\',size=14950mb,filegrowth=0)
alter database tempdb modify file
(name=templog, filename='c:\dev\templog\',size=5556mb,filegrowth=0)
alter database tempdb add file
```

```
(name=tempdev2,  
filename='c:\dev\tempdev_2\',size=14950mb,filegrowth=0),  
(name=tempdev3,  
filename='c:\dev\tempdev_3\',size=34950mb,filegrowth=0),  
(name=tempdev4,  
filename='c:\dev\tempdev_4\',size=34950mb,filegrowth=0)
```

B.15 DelLoadFg.sql

```
alter database tpch100g remove file LoadFg1  
alter database tpch100g remove file LoadFg2  
alter database tpch100g remove filegroup LoadFg
```

Appendix C: Query Text and Output

C.1 Qualification Queries and Output

Qualification Query 1

```

SELECT
L_RETURNFLAG
,L_LINESTATUS
,SUM(L_QUANTITY) AS SUM_QTY
,SUM(L_EXTENDEDPRI) AS SUM_BASE_PRICE
,SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)) AS SUM_DISC_PRICE
,SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)*(1+L_TAX)) AS
SUM_CHARGE
,AVG(L_QUANTITY) AS AVG_QTY
,AVG(L_EXTENDEDPRI) AS AVG_PRICE
,AVG(L_DISCOUNT) AS AVG_DISC
,COUNT(*) AS COUNT_ORDER
FROM
LINEITEM
WHERE
L_SHIPDATE <= DATEADD(dd, -90, cast('1998/12/01' as smalldatetime))
GROUP BY
L_RETURNFLAG
,L_LINESTATUS
ORDER BY
L_RETURNFLAG
,L_LINESTATUS
L_RETURNFLAG L_LINESTATUS SUM_QTY
SUM_BASE_PRICE SUM_DISC_PRICE SUM_CHARGE
AVG_QTY AVG_PRICE AVG_DISC
COUNT_ORDER

```

```

-----
----
A      F      37734107.0000  56586554400.7300
53758257134.8700  55909065224.7041      25.5220
38273.1297      .0499  1478493
N      F      991417.0000    1487504710.3800
1413082168.0541  1469649223.2395      25.5164      38284.4677
.0500  38854
N      O      74476040.0000  111701729697.7400
106118230307.6056  110367043876.2372      25.5022
38249.1179      .0499  2920374
R      F      37719753.0000  56568041380.9000
53741292684.6040  55889619121.7027      25.5057
38250.8546      .0500  1478870

```

(4 rows affected)

Qualification Query 2

```

SELECT TOP 100
S_ACCTBAL
,S_NAME
,N_NAME
,P_PARTKEY
,P_MFGR
,S_ADDRESS
,S_PHONE
,S_COMMENT
FROM
PART

```

```

,SUPPLIER
,PARTSUPP
,NATION
,REGION
WHERE
P_PARTKEY = PS_PARTKEY
AND S_SUPPKEY = PS_SUPPKEY
AND P_SIZE = 15
AND P_TYPE LIKE '%BRASS'
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'EUROPE'
AND PS_SUPPLYCOST =
(
SELECT MIN(PS_SUPPLYCOST)
FROM
PARTSUPP
,SUPPLIER
,NATION
,REGION
WHERE P_PARTKEY = PS_PARTKEY
AND S_SUPPKEY = PS_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'EUROPE'
)
ORDER BY
S_ACCTBAL DESC
,N_NAME
,S_NAME
,P_PARTKEY
S_ACCTBAL S_NAME N_NAME
P_PARTKEY P_MFGR S_ADDRESS
S_PHONE S_COMMENT
-----
-----
9938.5300 Supplier#000005359 UNITED KINGDOM
185358 Manufacturer#4 QKuHYh,vZGiwu2FWEJoLDx04
33-429-790-6131 blithely silent pinto beans are furiously. slyly final deposits
acros
9937.8400 Supplier#000005969 ROMANIA
108438 Manufacturer#1
ANDENSOSmk,miq23Xfb5RWt6dvUcvt6Qa 29-520-692-3537
carefully slow deposits use furiously. slyly ironic platelets above the ironic
9936.2200 Supplier#000005250 UNITED KINGDOM
249 Manufacturer#4 B3rq0xbSEim4Mpy2RH J 33-320-
228-2957 blithely special packages are. stealthily express deposits across the
closely final instructi
9923.7700 Supplier#000002324 GERMANY
29821 Manufacturer#4 y3OD9UywSTok 17-779-
299-1839 quickly express packages breach quiet pinto beans. requ
9871.2200 Supplier#000006373 GERMANY
43868 Manufacturer#5 J8fcXWsTqM 17-813-485-
8637 never silent deposits integrate furiously blit
9870.7800 Supplier#000001286 GERMANY
81285 Manufacturer#2
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special,
9870.7800 Supplier#000001286 GERMANY
181285 Manufacturer#4
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special,
..... Additional rows deleted .....

```

29-250-925-9690 blithely bold ideas haggle quickly final, regular request
 7914.4500 Supplier#000001013 RUSSIA 125988
 Manufacturer#2 riRcntps4KEDtYScjpMIWeYF6mNnR 32-
 194-698-3365 final, ironic theodolites alongside of the ironic
 7912.9100 Supplier#000004211 GERMANY
 159180 Manufacturer#5 2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG
 17-266-947-7315 final requests integrate slyly above the silent, even
 7912.9100 Supplier#000004211 GERMANY
 184210 Manufacturer#4 2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG
 17-266-947-7315 final requests integrate slyly above the silent, even
 7894.5600 Supplier#000007981 GERMANY
 85472 Manufacturer#4 NSJ96vMROAbeXP 17-963-
 404-3760 regular, even theodolites integrate carefully. bold, special
 theodolites are slyly fluffily iron
 7887.0800 Supplier#000009792 GERMANY
 164759 Manufacturer#3 Y28ITVeYriT3kiGdV2K8fSZ
 V2UqT5H1Otz 17-988-938-4296 pending, ironic packages sleep among
 the carefully ironic accounts. quickly final accounts
 7871.5000 Supplier#000007206 RUSSIA 104695
 Manufacturer#1 3w fNcNrvmvJjE95sgWZzvW 32-432-
 452-7731 furiously dogged pinto beans cajole. bold, express notornis until
 the slyly pending
 7852.4500 Supplier#000005864 RUSSIA 8363
 Manufacturer#4 WCNfBPZeSXh3h,c 32-454-883-
 3821 blithely regular deposits
 7850.6600 Supplier#000001518 UNITED KINGDOM
 86501 Manufacturer#1 ONda3YJiHKJOC 33-730-
 383-3892 furiously final accounts wake carefully idle requests. even dolphins
 wake acc
 7843.5200 Supplier#000006683 FRANCE
 11680 Manufacturer#4 2Z0JGkiv01Y00oCFwUGfviIbhzCdy
 16-464-517-8943 carefully bold accounts doub

(100 rows affected)

Qualification Query 3

```

SELECT TOP 10
L_ORDERKEY
,SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)) AS REVENUE
,O_ORDERDATE
,O_SHIPRIORITY
FROM
CUSTOMER
,ORDERS
,LINEITEM
WHERE
C_MKTSEGMENT = 'BUILDING'
AND C_CUSTKEY = O_CUSTKEY
AND L_ORDERKEY = O_ORDERKEY
AND O_ORDERDATE < '1995-03-15'
AND L_SHIPDATE > '1995-03-15'
GROUP BY
L_ORDERKEY
,O_ORDERDATE
,O_SHIPRIORITY
ORDER BY
REVENUE DESC
,O_ORDERDATE
L_ORDERKEY REVENUE O_ORDERDATE
O_SHIPRIORITY
-----
2456423 406181.0111 1995-03-05 00:00:00.000 0
3459808 405838.6989 1995-03-04 00:00:00.000 0
492164 390324.0610 1995-02-19 00:00:00.000 0
1188320 384537.9359 1995-03-09 00:00:00.000 0
2435712 378673.0558 1995-02-26 00:00:00.000 0
4878020 378376.7952 1995-03-12 00:00:00.000 0
5521732 375153.9215 1995-03-13 00:00:00.000 0

```

```

2628192 373133.3094 1995-02-22 00:00:00.000 0
993600 371407.4595 1995-03-05 00:00:00.000 0
2300070 367371.1452 1995-03-13 00:00:00.000 0

```

(10 rows affected)

Qualification Query 4

```

SELECT
O_ORDERPRIORITY
,COUNT(*) AS ORDER_COUNT
FROM
ORDERS
WHERE O_ORDERDATE >= '1993-07-01'
AND O_ORDERDATE < DATEADD(mm, 3, cast('1993-07-01' as
smalldatetime))
AND EXISTS
(
SELECT *
FROM LINEITEM
WHERE L_ORDERKEY = O_ORDERKEY
AND L_COMMITDATE < L_RECEIPTDATE
)
GROUP BY
O_ORDERPRIORITY
ORDER BY
O_ORDERPRIORITY
O_ORDERPRIORITY ORDER_COUNT
-----
1-URGENT 10594
2-HIGH 10476
3-MEDIUM 10410
4-NOT SPECIFIED 10556
5-LOW 10487

```

(5 rows affected)

Qualification Query 5

```

SELECT
N_NAME
,SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)) AS REVENUE
FROM
CUSTOMER
,ORDERS
,LINEITEM
,SUPPLIER
,NATION
,REGION
WHERE
C_CUSTKEY = O_CUSTKEY
AND L_ORDERKEY = O_ORDERKEY
AND L_SUPPKEY = S_SUPPKEY
AND C_NATIONKEY = S_NATIONKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'ASIA'
AND O_ORDERDATE >= '1994-01-01'
AND O_ORDERDATE < DATEADD(YY, 1, cast('1994-01-01' as
smalldatetime))
GROUP BY
N_NAME
ORDER BY
REVENUE DESC
N_NAME REVENUE
-----
INDONESIA 55502041.1697
VIETNAM 55295086.9967

```


CHINA	53724494.2566
INDIA	52035512.0002
JAPAN	45410175.6954

(5 rows affected)

Qualification Query 6

```

SELECT
SUM(L_EXTENDEDPRI* L_DISCOUNT) AS REVENUE
FROM
LINEITEM
WHERE
L_SHIPDATE >= '1994-01-01'
AND L_SHIPDATE < dateadd (yy, 1, cast('1994-01-01' as smalldatetime))
AND L_DISCOUNT BETWEEN .06 - 0.01 AND .06 + 0.01
AND L_QUANTITY < 24
REVENUE
-----
123141078.2283

```

(1 row affected)

Qualification Query 7

```

SELECT
SUPP_NATION
,CUST_NATION
,L_YEAR
,SUM(VOLUME) AS REVENUE
FROM
(
SELECT
N1.N_NAME AS SUPP_NATION
,N2.N_NAME AS CUST_NATION
,DATEPART(Y,Y,L_SHIPDATE) AS L_YEAR
,L_EXTENDEDPRI*(1-L_DISCOUNT) AS VOLUME
FROM
SUPPLIER
,LINEITEM
,ORDERS
,CUSTOMER
,NATION N1
,NATION N2
WHERE S_SUPPKEY = L_SUPPKEY
AND O_ORDERKEY = L_ORDERKEY
AND C_CUSTKEY = O_CUSTKEY
AND S_NATIONKEY = N1.N_NATIONKEY
AND C_NATIONKEY = N2.N_NATIONKEY
AND (
(N1.N_NAME = 'FRANCE' AND N2.N_NAME = 'GERMANY')
OR
(N1.N_NAME = 'GERMANY' AND N2.N_NAME = 'FRANCE')
)
AND L_SHIPDATE BETWEEN '1995-01-01' AND '1996-12-31'
)
AS SHIPPING
GROUP BY
SUPP_NATION
,CUST_NATION
,L_YEAR
ORDER BY
SUPP_NATION
,CUST_NATION
,L_YEAR
SUPP_NATION      CUST_NATION      L_YEAR
REVENUE
-----

```

FRANCE	GERMANY	1995
54639732.7336		
FRANCE	GERMANY	1996
54633083.3076		
GERMANY	FRANCE	1995
52531746.6697		
GERMANY	FRANCE	1996
52520549.0224		

(4 rows affected)

Qualification Query 8

```

SELECT
O_YEAR
,SUM(CASE WHEN NATION = 'BRAZIL'
THEN VOLUME
ELSE 0
END) / SUM(VOLUME) AS MKT_SHARE
FROM
(
SELECT
DATEPART(Y,Y,O_ORDERDATE) AS O_YEAR
,L_EXTENDEDPRI * (1-L_DISCOUNT) AS VOLUME
,N2.N_NAME AS NATION
FROM
PART
,SUPPLIER
,LINEITEM
,ORDERS
,CUSTOMER
,NATION N1
,NATION N2
,REGION
WHERE
P_PARTKEY = L_PARTKEY
AND S_SUPPKEY = L_SUPPKEY
AND L_ORDERKEY = O_ORDERKEY
AND O_CUSTKEY = C_CUSTKEY
AND C_NATIONKEY = N1.N_NATIONKEY
AND N1.N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'AMERICA'
AND S_NATIONKEY = N2.N_NATIONKEY
AND O_ORDERDATE BETWEEN '1995-01-01' AND '1996-12-31'
AND P_TYPE = 'ECONOMY ANODIZED STEEL'
) AS ALL_NATIONS
GROUP BY
O_YEAR
ORDER BY
O_YEAR
O_YEAR      MKT_SHARE
-----
1995          .0344
1996          .0414

```

(2 rows affected)

Qualification Query 9

```

SELECT
NATION
,O_YEAR
,SUM(AMOUNT) AS SUM_PROFIT
FROM
(
SELECT
N_NAME AS NATION
,DATEPART(Y,Y,O_ORDERDATE) AS O_YEAR

```

```

.L_EXTENDEDPRISE*(1-L_DISCOUNT)-
PS_SUPPLYCOST*L_QUANTITY AS AMOUNT
FROM
PART
,SUPPLIER
,LINEITEM
,PARTSUPP
,ORDERS
,NATION
WHERE
S_SUPPKEY = L_SUPPKEY
AND PS_SUPPKEY = L_SUPPKEY
AND PS_PARTKEY = L_PARTKEY
AND P_PARTKEY = L_PARTKEY
AND O_ORDERKEY = L_ORDERKEY
AND S_NATIONKEY = N_NATIONKEY
AND P_NAME LIKE '%green%'
)

```

```

AS PROFIT
GROUP BY
NATION
,O_YEAR
ORDER BY
NATION
,O_YEAR DESC

```

NATION	O_YEAR	SUM_PROFIT
ALGERIA	1998	31342867.2345
ALGERIA	1997	57138193.0233
ALGERIA	1996	56140140.1330
ALGERIA	1995	53051469.6534
ALGERIA	1994	53867582.1286
ALGERIA	1993	54942718.1324
ALGERIA	1992	54628034.7127
ARGENTINA	1998	30211185.7081
ARGENTINA	1997	50805741.7523
ARGENTINA	1996	51923746.5755
ARGENTINA	1995	49298625.7666

..... Additional rows deleted

VIETNAM	1996	50488161.4100
VIETNAM	1995	49658284.6125
VIETNAM	1994	50596057.2607
VIETNAM	1993	50953919.1519
VIETNAM	1992	49613838.3151

(175 rows affected)

Qualification Query 10

```

SELECT TOP 20
C_CUSTKEY
,C_NAME
,SUM(L_EXTENDEDPRISE*(1-L_DISCOUNT)) AS REVENUE
,C_ACCTBAL
,N_NAME
,C_ADDRESS
,C_PHONE
,C_COMMENT
FROM
CUSTOMER
,ORDERS
,LINEITEM
,NATION
WHERE
C_CUSTKEY = O_CUSTKEY
AND L_ORDERKEY = O_ORDERKEY
AND O_ORDERDATE >= '1993-10-01'

```

```

AND O_ORDERDATE < DATEADD(MM, 3, cast('1993-10-01' as
smalldatetime))

```

```

AND L_RETURNFLAG = 'R'
AND C_NATIONKEY = N_NATIONKEY

```

```

GROUP BY

```

```

C_CUSTKEY

```

```

,C_NAME

```

```

,C_ACCTBAL

```

```

,C_PHONE

```

```

,N_NAME

```

```

,C_ADDRESS

```

```

,C_COMMENT

```

```

ORDER BY

```

```

REVENUE DESC

```

```

C_CUSTKEY C_NAME REVENUE C_ACCTBAL

```

```

N_NAME C_ADDRESS C_PHONE

```

```

C_COMMENT

```

```

-----
-----
---

```

57040 Customer#000057040	734235.2455	632.8700
JAPAN Eioyzjf4pp	22-895-641-3466	
requests sleep blithely about the furiously i		
143347 Customer#000143347	721002.6948	2557.4700
EGYPT IaReFYv,Kw4	14-742-935-3718	
fluffily bold excuses haggle finally after the u		
60838 Customer#000060838	679127.3077	2454.7700
BRAZIL 64EaJ5vMAHWJIBOxJklpNc2RjWE	12-913-494-9813	
furiously even pinto beans integrate under the ruthless foxes;		
ironic, even dolphins across the slyl		
101998 Customer#000101998	637029.5667	3790.8900
UNITED KINGDOM 01c9CILnNtfOQYmZj	33-593-865-6378	
accounts doze blithely! enticing, final deposits sleep blithely		
special accounts. slyly express accounts pla		
125341 Customer#000125341	633508.0860	4983.5100
GERMANY S29ODD6bceU8QSuueJznkNaK	17-582-695-5962	
quickly express requests wake quickly blithely		
25501 Customer#000025501	620269.7849	7725.0400
ETHIOPIA W556MXuoiaYCCZamJL,Rn0B4ACUGdkQ8DZ		
15-874-808-6793 quickly special requests sleep evenly among the special		
deposits. special deposi		
115831 Customer#000115831	596423.8672	5098.1000
FRANCE rFeBbEEyk dl ne7zV5fDrmiq1oK09wV7pxqCglc 16-		
715-386-3788 carefully bold excuses sleep alongside of the thinly idle		
84223 Customer#000084223	594998.0239	528.6500
UNITED KINGDOM nAVZCs6BaWap rrM27N 2qBnzc5WBauxbA		
33-442-824-8191 pending, final ideas haggle final requests. unusual, regular		
asymptotes affix according to the even foxes.		
54289 Customer#000054289	585603.3918	5583.0200
IRAN vXCxoCsU0Bad5JQI ,oobkZ	20-834-292-4707	
express requests sublute blithely regular requests. regular, even ideas		
solve.		
39922 Customer#000039922	584878.1134	7321.1100
GERMANY Zgy4s50l2GKN4pLDPBU8m342gIw6R	17-147-757-8036	
even pinto beans haggle. slyly bold accounts inte		
6226 Customer#000006226	576783.7606	2230.0900
UNITED KINGDOM 8gPu8,NPGkfyQQ0hcIYUGPIBWc,ybP5g,		
33-657-701-3391 quickly final requests against the regular instructions wake		
blithely final instructions. pa		
922 Customer#000000922	576767.5333	3869.2500
GERMANY Az9RFaut7NkPnc5zSD2PwHgVvr4JRzq	17-945-916-9648	
boldly final requests cajole blith		
147946 Customer#000147946	576455.1320	2030.1300
ALGERIA iANyZHjqhy7Ajah0pTrYyhJ	10-886-956-3143	
furiously even accounts are blithely above the furiousl		
115640 Customer#000115640	569341.1933	6436.1000
ARGENTINA Vtgfia9ql 7EpHgecU1X	11-411-543-4901	
final instructions are slyly according to the		

```

73606 Customer#000073606      568656.8578      1785.6700
JAPAN      xuR0TRo5yChDfOCrjkd2ol      22-437-653-
6966 furiously bold orbits about the furiously busy requests wake across the
furiously quiet theodolites. d
110246 Customer#000110246      566842.9815      7763.3500
VIETNAM      7KzflgX MDOq7sOkI      31-943-426-
9837 dolphins sleep blithely among the slyly final
142549 Customer#000142549      563537.2368      5085.9900
INDONESIA      ChqEoK43OysjdHbtKCp6dKqjNyyvi9      19-
955-562-2398 regular, unusual dependencies boost slyly; ironic attainments
nag fluffily into the unusual packages?
146149 Customer#000146149      557254.9865      1791.5500
ROMANIA      s87fvzFQpU      29-744-164-6487
silent, unusual requests detect quickly slyly regul
52528 Customer#000052528      556397.3509      551.7900
ARGENTINA      NFztyTOR10UOJ      11-208-192-
3205 unusual requests detect. slyly dogged theodolites use slyly. deposit
23431 Customer#000023431      554269.5360      3381.8600
ROMANIA      HgiV0phqhala9aydNoIlb      29-915-458-
2654 instructions nag quickly. furiously bold accounts cajol

```

(20 rows affected)

Qualification Query 11

```

SELECT
PS_PARTKEY
,SUM(PS_SUPPLYCOST*PS_AVAILQTY) AS VALUE
FROM
PARTSUPP
,SUPPLIER
,NATION
WHERE
PS_SUPPKEY = S_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'GERMANY'
GROUP BY
PS_PARTKEY
HAVING
SUM(PS_SUPPLYCOST*PS_AVAILQTY) >
(
SELECT
SUM(PS_SUPPLYCOST*PS_AVAILQTY) * 0.0001000000
FROM PARTSUPP
,SUPPLIER
,NATION
WHERE PS_SUPPKEY = S_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'GERMANY'
)
ORDER BY
VALUE DESC
PS_PARTKEY VALUE
-----
129760      17538456.8600
166726      16503353.9200
191287      16474801.9700
161758      16101755.5400
34452      15983844.7200
139035      15907078.3400
9403      15451755.6200
154358      15212937.8800
38823      15064802.8600
85606      15053957.1500
33354      14408297.4000
..... Additional rows deleted .....
128820      7892882.7200

```

```

25891      7890511.2000
122819      7888881.0200
154731      7888301.3300
101674      7879324.6000
51968      7879102.2100
72073      7877736.1100
5182      7874521.7300

```

(1048 rows affected)

Qualification Query 12

```

SELECT
L_SHIPMODE
,SUM(CASE
WHEN O_ORDERPRIORITY = '1-URGENT'
OR O_ORDERPRIORITY = '2-HIGH'
THEN 1
ELSE 0
END) AS HIGH_LINE_COUNT,
SUM(CASE
WHEN O_ORDERPRIORITY <> '1-URGENT'
AND O_ORDERPRIORITY <> '2-HIGH'
THEN 1
ELSE 0
END) AS LOW_LINE_COUNT
FROM
ORDERS
,LINEITEM
WHERE
O_ORDERKEY = L_ORDERKEY
AND L_SHIPMODE IN ('MAIL','SHIP')
AND L_COMMITDATE < L_RECEIPTDATE
AND L_SHIPDATE < L_COMMITDATE
AND L_RECEIPTDATE >= '1994-01-01'
AND L_RECEIPTDATE < dateadd(YY, 1, cast('1994-01-01' as
smalldatetime))
GROUP BY
L_SHIPMODE
ORDER BY
L_SHIPMODE
L_SHIPMODE HIGH_LINE_COUNT LOW_LINE_COUNT
-----
MAIL      6202      9324
SHIP      6200      9262

```

(2 rows affected)

Qualification Query 13

```

SELECT
C_COUNT
,COUNT(*) AS CUSTDIST
FROM
(
SELECT
C_CUSTKEY
,COUNT(O_ORDERKEY)
FROM
CUSTOMER LEFT OUTER JOIN ORDERS ON
C_CUSTKEY = O_CUSTKEY
AND O_COMMENT NOT LIKE '%special%requests%'
GROUP BY
C_CUSTKEY
) AS C_ORDERS (C_CUSTKEY, C_COUNT)
GROUP BY
C_COUNT
ORDER BY

```

CUSTDIST DESC
 ,C_COUNT DESC
 C_COUNT CUSTDIST

```
-----
 0  50004
 9  6641
10  6566
11  6058
 8  5949
12  5553
13  4989
19  4748
 7  4707
18  4625
15  4552
17  4530
14  4484
20  4461
16  4323
21  4217
22  3730
 6  3334
23  3129
24  2622
25  2079
 5  1972
26  1593
27  1185
 4  1033
28  869
29  559
 3  398
30  373
31  235
 2  144
32  128
33  71
34  48
35  33
 1  23
36  17
37  7
40  4
38  4
39  2
41  1
```

(42 rows affected)

Qualification Query 14

```
SELECT
100.00 * SUM (CASE
WHEN P_TYPE LIKE 'PROMO%' THEN L_EXTENDEDPRI*(1-
L_DISCOUNT)
ELSE 0 END
) / SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)) AS
PROMO_REVENUE
FROM
LINEITEM
,PART
WHERE
L_PARTKEY = P_PARTKEY
AND L_SHIPDATE >= '1995-09-01'
AND L_SHIPDATE < DATEADD(MM, 1, cast('1995-09-01' as
smalldatetime))
PROMO_REVENUE
```

```
-----
16.380778626395540
```

(1 row affected)

Qualification Query 15

if exists (select * from sysindexes where name = 'REVENUE0')
 drop view REVENUE0

```
CREATE VIEW REVENUE0 (SUPPLIER_NO, TOTAL_REVENUE) AS
SELECT
L_SUPPKEY
,SUM(L_EXTENDEDPRI * (1 - L_DISCOUNT))
FROM
LINEITEM
WHERE
L_SHIPDATE >= '1996-01-01'
AND L_SHIPDATE < DATEADD(MM, 3, cast('1996-01-01' as
smalldatetime))
GROUP BY
L_SUPPKEY
```

```
SELECT
S_SUPPKEY
,S_NAME
,S_ADDRESS
,S_PHONE
,TOTAL_REVENUE
FROM
SUPPLIER
,REVENUE0
WHERE
S_SUPPKEY = SUPPLIER_NO
AND TOTAL_REVENUE = (
SELECT
MAX(TOTAL_REVENUE)
FROM
REVENUE0
)
ORDER BY
S_SUPPKEY
```

```
DROP VIEW REVENUE0
S_SUPPKEY S_NAME S_ADDRESS
S_PHONE TOTAL_REVENUE
```

```
-----
8449 Supplier#000008449 Wp34zim9qYFbVctdW
20-469-856-8873 1772627.2087
```

(1 row affected)

Qualification Query 16

```
SELECT
P_BRAND
,P_TYPE
,P_SIZE
,COUNT(DISTINCT PS_SUPPKEY) AS SUPPLIER_CNT
FROM
PARTSUPP
,PART
WHERE
P_PARTKEY = PS_PARTKEY
AND P_BRAND <> 'Brand#45'
AND P_TYPE NOT LIKE 'MEDIUM POLISHED%'
AND P_SIZE IN (49, 14, 23 , 45, 19, 3, 36, 9)
AND PS_SUPPKEY NOT IN
(SELECT S_SUPPKEY
```

```
FROM SUPPLIER
WHERE S_COMMENT LIKE '%Customer%Complaints%'
)
```

```
GROUP BY
P_BRAND
,P_TYPE
,P_SIZE
ORDER BY
SUPPLIER_CNT DESC
,P_BRAND
,P_TYPE
,P_SIZE
```

P_BRAND	P_TYPE	P_SIZE	SUPPLIER_CNT
Brand#41	MEDIUM BRUSHED TIN	3	28
Brand#54	STANDARD BRUSHED COPPER	14	27
Brand#11	STANDARD BRUSHED TIN	23	24
Brand#11	STANDARD BURNISHED BRASS	36	24
Brand#15	MEDIUM ANODIZED NICKEL	3	24
Brand#15	SMALL ANODIZED BRASS	45	24
Brand#15	SMALL BURNISHED NICKEL	19	24
Brand#21	MEDIUM ANODIZED COPPER	3	24
Brand#22	SMALL BRUSHED NICKEL	3	24
Brand#22	SMALL BURNISHED BRASS	19	24
Brand#25	MEDIUM BURNISHED COPPER	36	24
Brand#31	PROMO POLISHED COPPER	36	24
Brand#33	LARGE POLISHED TIN	23	24

..... Additional rows deleted

Brand#35	MEDIUM ANODIZED TIN	19	3
Brand#51	SMALL PLATED BRASS	23	3
Brand#52	MEDIUM BRUSHED BRASS	45	3
Brand#53	MEDIUM BRUSHED TIN	45	3
Brand#54	ECONOMY POLISHED BRASS	9	3
Brand#55	PROMO PLATED BRASS	19	3
Brand#55	STANDARD PLATED TIN	49	3

(18314 rows affected)

Qualification Query 17

```
SELECT
SUM(L_EXTENDEDPRISE)/7.0 AS AVG_YEARLY
FROM
LINEITEM
,PART
WHERE
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#23'
AND P_CONTAINER = 'MED BOX'
AND L_QUANTITY <
(
SELECT
0.2 * AVG(L_QUANTITY)
FROM LINEITEM
WHERE L_PARTKEY = P_PARTKEY
)
AVG_YEARLY
```

348406.0542857

(1 row affected)

Qualification Query 18

```
SELECT TOP 100
C_NAME
```

```
,C_CUSTKEY
,O_ORDERKEY
,O_ORDERDATE
,O_TOTALPRICE
,SUM(L_QUANTITY)
FROM
CUSTOMER
,ORDERS
,LINEITEM
WHERE
O_ORDERKEY IN
(
SELECT
L_ORDERKEY
FROM
LINEITEM
GROUP BY
L_ORDERKEY HAVING
SUM(L_QUANTITY) > 300
)
```

```
AND C_CUSTKEY = O_CUSTKEY
AND O_ORDERKEY = L_ORDERKEY
GROUP BY
C_NAME
,C_CUSTKEY
,O_ORDERKEY
,O_ORDERDATE
,O_TOTALPRICE
ORDER BY
O_TOTALPRICE DESC
,O_ORDERDATE
C_NAME C_CUSTKEY O_ORDERKEY O_ORDERDATE
O_TOTALPRICE
```

Customer#000128120	128120	4722021	1994-04-07 00:00:00.000
544089.0900	323.0000		
Customer#000144617	144617	3043270	1997-02-12 00:00:00.000
530604.4400	317.0000		
Customer#000013940	13940	2232932	1997-04-13 00:00:00.000
522720.6100	304.0000		
Customer#000066790	66790	2199712	1996-09-30 00:00:00.000
515531.8200	327.0000		
Customer#000046435	46435	4745607	1997-07-03 00:00:00.000
508047.9900	309.0000		
Customer#000015272	15272	3883783	1993-07-28 00:00:00.000
500241.3300	302.0000	418161.4900	305.0000

.... Additional rows deleted

Customer#000069904	69904	1742403	1996-10-19 00:00:00.000
408513.0000	305.0000		
Customer#000017746	17746	6882	1997-04-09 00:00:00.000
408446.9300	303.0000		
Customer#000013072	13072	1481925	1998-03-15 00:00:00.000
399195.4700	301.0000		
Customer#000082441	82441	857959	1994-02-07 00:00:00.000
382579.7400	305.0000		
Customer#000088703	88703	2995076	1994-01-30 00:00:00.000
363812.1200	302.0000		

(57 rows affected)

Qualification Query 19

```
SELECT
SUM(L_EXTENDEDPRISE* (1 - L_DISCOUNT)) AS REVENUE
FROM
```

```

LINEITEM
,PART
WHERE
(
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#12'
AND P_CONTAINER IN ('SM CASE', 'SM BOX', 'SM PACK', 'SM PKG')
AND L_QUANTITY >= 1 AND L_QUANTITY <= 1 + 10
AND P_SIZE BETWEEN 1 AND 5
AND L_SHIPMODE IN ('AIR', 'AIR REG')
AND L_SHIPINSTRUCT = 'DELIVER IN PERSON'
)
OR
(
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#23'
AND P_CONTAINER IN ('MED BAG', 'MED BOX', 'MED PKG', 'MED
PACK')
AND L_QUANTITY >= 10 AND L_QUANTITY <= 10 + 10
AND P_SIZE BETWEEN 1 AND 10
AND L_SHIPMODE IN ('AIR', 'AIR REG')
AND L_SHIPINSTRUCT = 'DELIVER IN PERSON'
)
OR
(
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#34'
AND P_CONTAINER IN ('LG CASE', 'LG BOX', 'LG PACK', 'LG PKG')
AND L_QUANTITY >= 20 AND L_QUANTITY <= 20 + 10
AND P_SIZE BETWEEN 1 AND 15
AND L_SHIPMODE IN ('AIR', 'AIR REG')
AND L_SHIPINSTRUCT = 'DELIVER IN PERSON'
)
REVENUE
-----
3083843.0578

(1 row affected)

```

Qualification Query 20

```

SELECT
S_NAME
,S_ADDRESS
FROM
SUPPLIER
,NATION
WHERE
S_SUPPKEY IN
(
SELECT
PS_SUPPKEY
FROM
PARTSUPP
WHERE
PS_PARTKEY IN
(
SELECT
P_PARTKEY
FROM
PART
WHERE
P_NAME LIKE 'forest%'
)
AND PS_AVAILQTY >
(
SELECT
0.5 * SUM(L_QUANTITY)

```

```

FROM
LINEITEM
WHERE
L_PARTKEY = PS_PARTKEY
AND L_SUPPKEY = PS_SUPPKEY
AND L_SHIPDATE >= '1994-01-01'
AND L_SHIPDATE < DATEADD(YY,1,cast('1994-01-01' as
smalldatetime))
)
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'CANADA'
ORDER BY
S_NAME
S_NAME S_ADDRESS
-----
Supplier#000000020 iybAE,RmTymrZVYaFzva2SHj
Supplier#000000091
YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197 YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226 83qOdU2EYRdPQAQhEtm GRZEd
Supplier#000000285 Br7e1nnt1yxrw6ImgpJ7YdhFDjuBf
Supplier#000000378 FfbhyCxWvcPrO8ltp9
Supplier#000000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530 0qwCMwobKY OcmLyfRXlagA8ukENJv,
Supplier#000000688 D fw5ocppmZpYBBIPI718hCihLDZ5KhKX
Supplier#000000710 f19YPvOyb QoYwjKC,oPycpGfieBacwKJo
Supplier#000000736 16i2nMwVuovfKnuVgaSGK2rDy65DIAFLegL7
Supplier#000000761 zLSLeLQUj2XrvTTFnv7WAcyZGvvMTx882d4
Supplier#000000884 bmhEShejaS

.... Additional rows deleted ...

Supplier#000009812 APFRMy3lCbGfGa53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmUUoey7v
Supplier#000009869
ucLqxrzrBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdPAHrzr1t,UQFZE
Supplier#000009974 7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

(204 rows affected)

```

Qualification Query 21

```

SELECT TOP 100
S_NAME
,COUNT(*) AS NUMWAIT
FROM
SUPPLIER
,LINEITEM L1
,ORDERS
,NATION
WHERE
S_SUPPKEY = L1.L_SUPPKEY
AND O_ORDERKEY = L1.L_ORDERKEY
AND O_ORDERSTATUS = 'F'
AND L1.L_RECEIPTDATE > L1.L_COMMITDATE
AND EXISTS
(
SELECT
*
FROM
LINEITEM L2
WHERE
L2.L_ORDERKEY = L1.L_ORDERKEY
AND L2.L_SUPPKEY <> L1.L_SUPPKEY
)

```

```

AND NOT EXISTS
(
SELECT
*
FROM
LINEITEM L3
WHERE
L3.L_ORDERKEY = L1.L_ORDERKEY
AND L3.L_SUPPKEY <> L1.L_SUPPKEY
AND L3.L_RECEIPTDATE > L3.L_COMMITDATE
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'SAUDI ARABIA'
GROUP BY
S_NAME
ORDER BY
NUMWAIT DESC
,S_NAME
S_NAME          NUMWAIT
-----
Supplier#000002829      20
Supplier#000005808      18
Supplier#000000262      17
Supplier#000000496      17
Supplier#0000002160     17
Supplier#000002301      17
Supplier#000002540      17
Supplier#000003063      17
Supplier#000005178      17

```

... Additional rows deleted

```

Supplier#000000673      12
Supplier#000000762      12
Supplier#000000811      12
Supplier#000000821      12
Supplier#000001337      12
Supplier#000001916      12
Supplier#000001925      12
Supplier#000002039      12
Supplier#000002357      12
Supplier#000002483      12

```

(100 rows affected)

Qualification Query 22

```

SELECT
CNTRYCODE
,COUNT(*) AS NUMCUST
,SUM(C_ACCTBAL) AS TOTACCTBAL
FROM
(
SELECT
SUBSTRING(C_PHONE,1,2) AS CNTRYCODE
,C_ACCTBAL
FROM
CUSTOMER
WHERE
SUBSTRING(C_PHONE,1,2) IN
('13', '31', '23', '29', '30', '18', '17')
AND C_ACCTBAL > (
SELECT
AVG(C_ACCTBAL)
FROM
CUSTOMER
WHERE
C_ACCTBAL > 0.00

```

```

AND SUBSTRING(C_PHONE,1,2) IN
('13', '31', '23', '29', '30', '18', '17')
)
AND NOT EXISTS (
SELECT
*
FROM
ORDERS
WHERE
O_CUSTKEY = C_CUSTKEY
)
) AS CUSTSALE
GROUP BY
CNTRYCODE
ORDER BY
CNTRYCODE
CNTRYCODE NUMCUST  TOTACCTBAL
-----
13          888      6737713.9900
17          861      6460573.7200
18          964      7236687.4000
23          892      6701457.9500
29          948      7158866.6300
30          909      6808436.1300
31          922      6806670.1800

```

(7 rows affected)

Appendix D: Seeds and Query Substitution Parameters

Stream0 Seed : 711174501

14	1996-03-01					
2	49	TIN	AMERICA			
9	slate					
20	midnight	1993-01-01	BRAZIL			
6	1995-01-01	0.04	24			
17	Brand#41	WRAP PACK				
18	312					
8	IRAQ	MIDDLE EAST	PROMO ANODIZED STEEL			
21	ALGERIA					
13	pending	accounts				
3	HOUSEHOLD	1995-03-07				
22	15	31	14	26	28	27
	12					
16	Brand#24	STANDARD POLISHED	3	25		
	46	5	38	48	20	15
4	1994-02-01					
11	ETHIOPIA	0.0000010000				
15	1996-05-01					
1	111					
10	1994-04-01					
19	Brand#53	Brand#11	Brand#51	5	13	27
5	AFRICA	1995-01-01				
7	FRANCE	IRAQ				
12	RAIL	TRUCK	1996-01-01			

Stream1 Seed : 711174502

14	1996-06-01					
2	37	COPPER	EUROPE			
9	saddle					
20	wheat	1996-01-01	MOZAMBIQUE			
6	1995-01-01	0.09	24			
17	Brand#43	WRAP DRUM				
18	313					
8	CANADA	AMERICA	ECONOMY POLISHED			
COPPER						
21	PERU					
13	pending	accounts				
3	AUTOMOBILE	1995-03-24				
22	26	20	13	25	19	22
	21					
16	Brand#54	MEDIUM BRUSHED	49	1		
	13	9	27	2	44	20
4	1996-09-01					
11	CHINA	0.0000010000				
15	1994-01-01					
1	119					
10	1995-01-01					
19	Brand#55	Brand#44	Brand#45	10	14	23
5	AMERICA	1995-01-01				
7	UNITED KINGDOM	CANADA				
12	AIR	TRUCK	1996-01-01			

Stream2 Seed : 711174503

14	1996-09-01					
2	24	STEEL	AMERICA			
9	puff					
20	hot	1994-01-01	FRANCE			
6	1995-01-01	0.06	25			
17	Brand#45	SM BOX				
18	315					
8	SAUDI ARABIA	MIDDLE EAST	ECONOMY			
BURNISHED	COPPER					
21	INDONESIA					
13	unusual	accounts				
3	HOUSEHOLD	1995-03-09				
22	15	19	26	22	18	16
	31					
16	Brand#44	PROMO BURNISHED	9	20		
	2	38	18	4	26	24
4	1994-06-01					
11	FRANCE	0.0000010000				
15	1996-08-01					
1	66					
10	1993-10-01					
19	Brand#12	Brand#22	Brand#45	6	15	20
5	ASIA	1995-01-01				
7	MOROCCO	SAUDI ARABIA				
12	REG AIR	TRUCK	1996-01-01			

Stream3 Seed : 711174504

14	1997-01-01					
2	12	BRASS	MIDDLE EAST			
9	pale					
20	salmon	1993-01-01	VIETNAM			
6	1996-01-01	0.04	24			
17	Brand#42	SM PACK				
18	313					
8	JAPAN	ASIA	LARGE BRUSHED COPPER			
21	ARGENTINA					
13	unusual	deposits				
3	AUTOMOBILE	1995-03-26				
22	31	13	19	26	25	17
	32					
16	Brand#24	SMALL PLATED	6	1	7	
	43	24	20	4	29	
4	1997-01-01					
11	ROMANIA	0.0000010000				
15	1994-05-01					
1	74					
10	1994-07-01					
19	Brand#15	Brand#15	Brand#44	1	16	27
5	EUROPE	1996-01-01				
7	GERMANY	JAPAN				
12	SHIP	TRUCK	1996-01-01			

Stream4 Seed : 711174505

14	1997-04-01					
2	50	TIN	AMERICA			
9	moccasin					
20	dark	1996-01-01	IRAQ			
6	1996-01-01	0.09	24			
17	Brand#44	SM DRUM				
18	314					
8	EGYPT	MIDDLE EAST	LARGE PLATED COPPER			
21	ROMANIA					
13	unusual	deposits				
3	FURNITURE	1995-03-11				
22	20	10	14	11	28	18
	27					
16	Brand#14	LARGE BRUSHED	6	38	15	
	1	20	26	37	34	
4	1994-10-01					
11	GERMANY	0.0000010000				
15	1996-12-01					
1	82					
10	1993-05-01					
19	Brand#12	Brand#43	Brand#33	6	17	23
5	MIDDLE EAST	1996-01-01				
7	UNITED STATES	EGYPT				
12	MAIL	FOB	1996-01-01			

Stream5 Seed : 711174506

14	1997-07-01					
2	38	COPPER	MIDDLE EAST			
9	maroon					
20	orchid	1995-01-01	ALGERIA			
6	1996-01-01	0.07	25			
17	Brand#41	LG BOX				
18	312					
8	VIETNAM	ASIA	LARGE ANODIZED COPPER			
21	IRAQ					
13	unusual	deposits				
3	MACHINERY	1995-03-28				
22	10	22	23	18	28	34
	13					
16	Brand#44	STANDARD ANODIZED	37	4		
	5	33	20	29	26	39
4	1997-05-01					
11	SAUDI ARABIA	0.0000010000				
15	1994-08-01					
1	90					
10	1994-02-01					
19	Brand#24	Brand#31	Brand#32	1	18	30
5	AFRICA	1996-01-01				
7	MOZAMBIQUE	VIETNAM				
12	TRUCK	MAIL	1997-01-01			

Appendix E: Refresh Function Source Code

E.1 CreateRF1Proc.sql

```
-- CreateRF1Proc.sql

if exists (select name from sysobjects where name = 'RF1')
    drop procedure RF1
GO

--
-- Create a stored RefreshInsert procedure which will catch the deadlock
-- victim abort and restart the insert transaction.
--
CREATE PROCEDURE RF1
@flatfiledir CHAR(40), @updateset INTEGER, @segment INTEGER,
@scalefactor INTEGER
AS
BEGIN

DECLARE @min_orderkey INTEGER
DECLARE @max_orderkey INTEGER
DECLARE @range INTEGER
DECLARE @max_set INTEGER
DECLARE @SQLstring NVARCHAR(255)
DECLARE @insert_sets INTEGER

set @insert_sets= @scalefactor

--
-- Create the insert tables
--
create table #NEWORDERS (
    O_ORDERKEY int not null,
    O_CUSTKEY int not null,
    O_ORDERSTATUS char(1) not null,
    O_TOTALPRICE money not null,
    O_ORDERDATE smalldatetime not null,
    O_ORDERPRIORITY char(15) not null,
    O_CLERK char(15) not null,
    O_SHIPPRIORITY int not null,
    O_COMMENT varchar(79) not null
)
create table #NEWLINEITEM(
    L_ORDERKEY int not null,
    L_PARTKEY int not null,
    L_SUPPKEY int not null,
    L_LINENUMBER int not null,
    L_QUANTITY money not null,
    L_EXTENDEDPRICE money not null,
    L_DISCOUNT money not null,
    L_TAX money not null,
    L_RETURNFLAG char(1) not null,
    L_LINESTATUS char(1) not null,
    L_SHIPDATE smalldatetime not null,
    L_COMMITDATE smalldatetime not null,
    L_RECEIPTDATE smalldatetime not null,
    L_SHIPINSTRUCT char(25) not null,
    L_SHIPMODE char(10) not null,
    L_COMMENT varchar(44) not null
)

create unique clustered index NEWORDERS on #NEWORDERS
(O_ORDERKEY)
```

```
create clustered index NEWLINEITEM on #NEWLINEITEM
(L_ORDERKEY)

--
-- Generate an SQL statement inserting the current updateset value into
-- the command. Next execute the statement to bulk load the new lineitem
-- insert values.
--
SET @SQLstring="bulk insert #NEWLINEITEM from "
+ RTRIM(convert(CHAR,@flatfiledir)) + "\Lineitem.tbl.u"
+ RTRIM(Convert(char,@updateset)) + "."
+ RTRIM(convert(char,@segment))
+ "" with
(FieldTerminator='|',RowTerminator='\n',order(L_ORDERKEY),codepage='
RAW',TABLOCK)"
EXEC sp_executesql @SQLstring

--
-- Generate an SQL statement inserting the current updateset value into
-- the command. Next execute the statement to bulk load the new order
-- insert values.
--
SET @SQLstring="bulk insert #NEWORDERS from "
+ RTRIM(convert(CHAR,@flatfiledir)) + "\Orders.tbl.u"
+ RTRIM(Convert(char,@updateset)) + "."
+ RTRIM(convert(char,@segment))
+ "" with
(FieldTerminator='|',RowTerminator='\n',order(O_ORDERKEY),CODEPA
GE='RAW',TABLOCK)"

EXEC sp_executesql @SQLstring

--
-- Obtain minimum and maximum order key and compute the range of each
-- set to be inserted into the ORDERS and LINEITEM tables.
--
SELECT
@min_orderkey=MIN(O_ORDERKEY),@max_orderkey=MAX(O_ORDE
RKEY) FROM #NEWORDERS
SET @range = (@max_orderkey - @min_orderkey) / @insert_sets

--
-- This handles the case when the max-min/insert_sets is less that 1
--
IF @range = 0
-- BEGIN
    SET @range = (@max_orderkey - @min_orderkey) / 1
-- END

--
-- Loop through the order keys only inserting a sets into the
-- ORDERS and LINTeITEM tables
--
SET @max_set = @min_orderkey - 1
WHILE @max_set < @max_orderkey
BEGIN
--
-- Set the range from min_orderkey to max_set
--
SET @max_set = @min_orderkey + @range
if @max_set > @max_orderkey
    SET @max_set = @max_orderkey + 1

--
-- Insert into ORDERS and LINEITEM tables
--
```

```

INSERT_TRANS:
begin transaction
insert into ORDERS SELECT * FROM #NEWORDERS
WHERE O_ORDERKEY >= @min_orderkey AND
O_ORDERKEY < @max_set
insert into LINEITEM SELECT * FROM #NEWLINITEM
WHERE L_ORDERKEY >= @min_orderkey AND L_ORDERKEY
< @max_set
commit transaction

--
-- If deadlock victim abort then restart the transaction
--
if (@@error = 1205)
BEGIN
print 'Insert deadlock - restarting RF1 transaction'
rollback transaction
GOTO INSERT_TRANS
END

--
-- Move min_orderkey to start of next insert set
--
SET @min_orderkey = @max_set
END

END

GO

```

E.2 CreateRF2Proc.sql

```

-- CreateRF2Proc.sql

if exists (select name from sysobjects where name = 'RF2')
drop procedure RF2
GO

--
-- Create a stored Refresh Delete procedure which will catch the deadlock
-- victim abort and restart the delete transaction.
--
CREATE PROCEDURE RF2
@flatfiledir CHAR(40), @updateset INTEGER, @segment INTEGER,
@scalefactor INTEGER
AS
BEGIN

DECLARE @min_orderkey INTEGER
DECLARE @max_orderkey INTEGER
DECLARE @range INTEGER
DECLARE @max_set INTEGER
DECLARE @SQLstring NVARCHAR(255)
DECLARE @delete_sets INTEGER

set @delete_sets=@scalefactor

create table #OLDORDERS (O_ORDERKEY int)
create unique clustered index OLDORDERS
on #OLDORDERS (O_ORDERKEY)
with sorted_data

--
-- Generate an SQL statement inserting the current updateset value into
-- the command. Next execute the statement to bulk load the old order
-- delete values
--
SET @SQLstring="bulk insert #OLDORDERS from ""

```

```

+ RTRIM(convert(CHAR,@flatfiledir)) + "\Delete.u"
+ RTRIM(Convert(char,@updateset)) + "."
+ RTRIM(convert(char,@segment))
+ "" with (order(O_ORDERKEY),codepage='RAW',TABLOCK)"
EXEC sp_executesql @SQLstring

--
-- Obtain minimum and maximum order key and compute the
-- range of each delete set
--
SELECT
@min_orderkey=MIN(O_ORDERKEY),@max_orderkey=MAX(O_ORDE
RKEY) FROM #OLDORDERS
SET @range = (@max_orderkey - @min_orderkey) / @delete_sets

--
-- This handles the case when the max-min/delete_sets is less than 1
--
IF @range = 0
-- BEGIN
SET @range = (@max_orderkey - @min_orderkey) / 1
-- END

--
-- Loop through the order keys only deleting sets from orders
-- and lineitem tables
--
SET @max_set = @min_orderkey - 1
WHILE @max_set < @max_orderkey
BEGIN
--
-- Set the range from min_orderkey to max_set
--
SET @max_set = @min_orderkey + @range
if @max_set > @max_orderkey
SET @max_set = @max_orderkey + 1

--
-- Delete from ORDERS and LINEITEM table
--
DELETE_TRANS:
begin transaction
delete from ORDERS where O_ORDERKEY in
(select * from #OLDORDERS WHERE O_ORDERKEY >=
@min_orderkey AND O_ORDERKEY < @max_set)
delete from LINEITEM where L_ORDERKEY in
(select * from #OLDORDERS WHERE O_ORDERKEY >=
@min_orderkey AND O_ORDERKEY < @max_set)

commit transaction

--
-- If deadlock victim abort then restart the transaction
--
if (@@error = 1205)
BEGIN
print 'Delete deadlock - restarting RF2 transaction'
rollback transaction
GOTO DELETE_TRANS
END

--
-- Move min_orderkey to start of next delete set
--
SET @min_orderkey = @max_set

END
END

GO

```

Appendix F: Implementation Specific Layer and Source Code

F.1 Setup.cmd

```
echo off

rem
rem Modify the following parameters for your configuration
rem

set DB=tpch100g
rem
rem set sql's 'sa' user password here
rem
set PW=

set HOMEDRIVE=C:
set HOMEDIR=(HP_TPCH_KIT)Setup
set OUTPUTDRIVE=c:
set OUTPUTDIR=(HP_TPCH_KIT)Output
set SCALEFACTOR=100
set DBGEN_SEGMENTS=32
set DBGEN_PARALLELISM=4
set FLATFILEDRIVE=z:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=
set RF1_PARALLELISM=16
set RF2_PARALLELISM=16
set UPDATEDRIVE=x:
set UPDATEDIR=(UF_Flatfiles
set UPDATE_SETS=18

set DoDBGEN=FALSE
set DoDBCREATE=TRUE
set DoBULKINSERT=TRUE
set DoCLEANUP=TRUE
set DoBACKUP=TRUE
set DoENDSTATS=TRUE

%HOMEDRIVE%
cd %HOMEDIR%

if '%1' == 'DBGEN' goto :DBGEN
if '%1' == 'BULKINSERTn' goto :BULKINSERTn

echo Checking for existence of HOMEDIR and OUTPUTDIR
if NOT EXIST %HOMEDRIVE%%HOMEDIR% goto :ERROR_EXIT
if NOT EXIST %OUTPUTDRIVE%%OUTPUTDIR% goto :ERROR_EXIT
if NOT EXIST %UPDATEDRIVE%%UPDATEDIR% goto :ERROR_EXIT

echo Finding next output directory in
%OUTPUTDRIVE%%OUTPUTDIR%
set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%HOMEDRIVE%%HOMEDIR%\%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND

set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBER%
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%

if NOT '%DoDBGEN%' == 'TRUE' goto :DBCREATE

rem
rem DBGEN invokes dbgen.exe in parallel
rem

echo Starting DBGEN of FlatFiles
for /l %%i in (1,1,%DBGEN_SEGMENTS%) do copy dists.dss
%FLATFILEDRIVE%\%FLATFILEDIR%\%i%\FLATFILESUBDIR%
Copy dists.dss %UPDATEDRIVE%%UPDATEDIR%
for /l %%i in (1,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS%)
do call :DBGEN_ITERATE %%i

echo Starting DBGEN of Update Files
%UPDATEDRIVE%
cd %UPDATEDIR%
%HOMEDRIVE%%HOMEDIR%\dbgen -U %UPDATE_SETS% -s
%SCALEFACTOR% -qf -C %UPDATE_SETS% -i
%RF1_PARALLELISM% -d %RF2_PARALLELISM%
2>%OUTPUTPATH%\dbgen_Update.out
%HOMEDRIVE%
cd %HOMEDIR%
goto :DBCREATE

:DBGEN_ITERATE
set FIRST=%1
set /a LAST=%FIRST%+%DBGEN_PARALLELISM%-1
echo DBGening sets %FIRST% through %LAST%
for /l %%i in (%FIRST%,1,%LAST%) do start cmd /C Setup DBGEN %%i
semaphore -wait DBGEN -count %DBGEN_PARALLELISM%
goto :EOF

:DBGEN
%FLATFILEDRIVE%
cd \%FLATFILEDIR%\%FLATFILESUBDIR%
%HOMEDRIVE%%HOMEDIR%\dbgen -qf -s%SCALEFACTOR% -
C%DBGEN_SEGMENTS% -S%2 2>%OUTPUTPATH%\dbgen_%2%.out
%HOMEDRIVE%
cd %HOMEDIR%
semaphore -release DBGEN
goto :EOF

:DBCREATE
if NOT '%DoDBCREATE%' == 'TRUE' goto :BULKINSERT
rem
rem DBCREATE invokes the file %DBNAME%\CreateDatabase.sql
rem
echo Starting database creation

osql -Usa -P%PW% -Q"if exists (select * from sysdatabases where
name='%DB%')drop database %DB%" -o
%OUTPUTPATH%\DropDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -i %DB%\CreateDatabase.sql -o
%OUTPUTPATH%\CreateDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
```

```

osql -Usa -P%PW% -Q"sp_dboption %DB%, 'trunc', TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'select into', TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'torn', FALSE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

:BULKINSERT
if NOT '%DoBULKINSERT%' == 'TRUE' goto :CLEANUP
rem
rem BULKINSERT starts a process per %DBGEN_PARALLELISM%
rem Each process inserts one or more segments
rem

osql -Usa -P%PW% -Q"sp_dboption %DB%, 'trunc', TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'select into', TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'torn', FALSE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

echo Dropping and Re-Creating Tables
osql -Usa -P%PW% -d%DB% -Q"if EXISTS (select * from sysobjects where
name = 'LOADTIMES') drop table LOADTIMES" -b -o
%OUTPUTPATH%\Drop_Loadtimes.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"create table LOADTIMES(STEP
char(35),TIMESTAMP datetime)" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('LOAD
begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Create
Tables begin',getdate())" -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
for %i in (REGION NATION SUPPLIER PARTSUPP PART
CUSTOMER ORDERS LINEITEM) do osql -Usa -P%PW% -d%DB% -
Q"drop table %i" -o %OUTPUTPATH%\Drop_Table_%i.out
osql -Usa -P%PW% -d%DB% -i %DB%\CreateTables.sql -o
%OUTPUTPATH%\CreateTables.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Create
Tables end',getdate())" -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT

echo Starting bulk inserts
for %i in (LINEITEM ORDERS CUSTOMER PART PARTSUPP
SUPPLIER) do call :BULKINSERT %i
echo for NATION and REGION
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values
('Nation/Region insert begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"bulk insert NATION from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%FLATFILESUBDIR%\Natio
n.tbl' with (FieldTerminator = '|', RowTerminator = '\n', tablock)" -o
%OUTPUTPATH%\BulkInsert_Nation.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i %DB%\CreateNATIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"bulk insert REGION from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%FLATFILESUBDIR%\Regio
n.tbl' with (FieldTerminator = '|', RowTerminator = '\n', tablock)" -o
%OUTPUTPATH%\BulkInsert_Region.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i %DB%\CreateREGIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values
('Nation/Region insert end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT

```

```

goto :CLEANUP

:BULKINSERTi
echo Starting bulk inserts for %i
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('%i bulk
insert begin',getdate())" -l 300
for /l %j in (1,1,%DBGEN_PARALLELISM%) do start cmd /C Setup
BULKINSERTn %i %j
semaphore -wait %i -count %DBGEN_PARALLELISM%
echo Starting create indexes for %i
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('%i
create index begin',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i %DB%\Create%IIndexes.sql -o
%OUTPUTPATH%\Create%IIndexes.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('%i
end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :EOF

:BULKINSERTn
for /l %k in
(%3,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS%) do call
:BULKINSERTn2 BULKINSERTn2 %2 %k
semaphore -release %2
goto :EOF

:BULKINSERTn2
osql -Usa -P%PW% -d%DB% -Q"bulk insert %2 from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%3FLATFILESUBDIR%\%2.
tbl.%3' with (FieldTerminator = '|', RowTerminator = '\n', tablock)" -o
%OUTPUTPATH%\BulkInsert_%2_%3.out -b -l 300
goto :EOF

:CLEANUP
if NOT '%DoCLEANUP%' == 'TRUE' goto :BACKUP
rem
rem CLEANUP sets statistics and lock options
rem

echo Setting Cleanup Options

osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Cleanup
start',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_createstats" -o
%OUTPUTPATH%\CreateStats.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_dboption '%DB%', 'auto create
statistics', 'OFF'" -o %OUTPUTPATH%\AutoCreateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_dboption '%DB%', 'auto update
statistics', 'OFF'" -o %OUTPUTPATH%\AutoUpdateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'LINEITEM',
'disallowpagelocks', 'FALSE'" -o
%OUTPUTPATH%\DisallowPageLocksLINEITEM.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'ORDERS',
'disallowpagelocks', 'FALSE'" -o
%OUTPUTPATH%\DisallowPageLocksOrders.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i CreateRF1Proc.sql -o
%OUTPUTPATH%\CreateRF1Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i CreateRF2Proc.sql -o
%OUTPUTPATH%\CreateRF2Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT

```

```

osql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'NATION','pintable',1" -o %OUTPUTPATH%\pinNATION.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'REGION','pintable',1" -o %OUTPUTPATH%\pinREGION.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
rem
rem osql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'SUPPLIER','pintable',1" -o %OUTPUTPATH%\pinSUPPLIER.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'torn', FALSE" -b
>%OUTPUTPATH%\dboptionTornOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'trunc', FALSE" -b
>%OUTPUTPATH%\dboptionTrunOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'select', FALSE" -b
>%OUTPUTPATH%\dboptionSelOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT

osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Cleanup
end',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

:BACKUP
rem
rem BACKUP is the final step, using a script
rem

if NOT '%DoBACKUP%' == 'TRUE' goto :ENDSTATS

echo Starting Backup
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Backup
start',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
echo Deleting LoadFg filegroup
osql -Usa -P%PW% -d%DB% -i %DB%\DelLoadFG.sql -o
%OUTPUTPATH%\DelLoadFG.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i %DB%\Backup.sql -o
%OUTPUTPATH%\Backup.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Backup
end',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

:ENDSTATS

if NOT '%DoENDSTATS%' == 'TRUE' goto :EOF

osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('LOAD
end',getdate())"
osql -Usa -P%PW% -d%DB% -Q"select TIMESTAMP from LOADTIMES
where STEP='LOAD end'" -o %OUTPUTPATH%\LoadEND.out
bcp %DB%..LOADTIMES out %OUTPUTPATH%\LOADTIMES.bcp -Usa
-P%PW% -n
echo Last step is to run Francois' dbtables-ms.sql script
osql -Usa -P%PW% -d%DB% -i dbtables-ms.sql -o
%OUTPUTPATH%\dbtables-ms.out
osql -Usa -P%PW% -d%DB% -i SetupReport.sql -o
%OUTPUTPATH%\SetupReport.out
rem echo Optional step to check database validity
rem osql -Usa -P%PW% -dtpch300g -Q"dbcc checkdb('tpch300g') with
PHYSICAL_ONLY" -o %OUTPUTPATH%\CheckDb.out
rem echo Optional, and very expensive, step to check LINEITEM and
ORDERS validity
rem osql -Usa -P%PW% -dtpch300g -Q"dbcc checktable('LINEITEM')" -o
%OUTPUTPATH%\CheckLINEITEM.out
rem osql -Usa -P%PW% -dtpch300g -Q"dbcc checktable('ORDERS')" -o
%OUTPUTPATH%\CheckORDERS.out

```

```

echo Done! Check for output in %OUTPUTPATH%
goto :EOF

```

```

:ERROR_EXIT
echo Setup aborted due to errors
echo Check output in %OUTPUTPATH%
exit /B

```

F.2 Run.cmd

```

echo off

rem
rem Modify the following parameters for your configuration
rem
rem This version pulls the Update Files from
rem %UPDRIVE%\segment\%UPDIR%
rem

set DB=tpch100g
set HOMEDRIVE=C:
set HOMEDIR=\HP_TPC_H_KIT\Run
set OUTPUTDRIVE=C:
set OUTPUTDIR=\HP_TPC_H_KIT\Output
set UPDRIVE=X:
set UPDIR=\UF_FLATFILES
set UPDATESET=7
set UPDATESEGMENTS=16
set SEED=711174501
set SCALEFACTOR=100
set STREAMS=5

set DoRESTORE=FALSE
set DoSETUP=TRUE
set DoPOWER=TRUE
set DoPOWERrefresh=TRUE
set DoPOWERStream0=TRUE
set DoTHROUGHPUT=TRUE

%HOMEDRIVE%
cd %HOMEDIR%

if '%1' == 'RF1' goto RF1
if '%1' == 'RF2' goto RF2
if '%1' == 'THROUGHPUT_STREAM' goto :THROUGHPUT_STREAM

echo Checking for existence of HOMEDIR and OUTPUTDIR
if NOT EXIST %HOMEDRIVE%\%HOMEDIR% goto :ERROR_EXIT
if NOT EXIST %OUTPUTDRIVE%\%OUTPUTDIR% goto :ERROR_EXIT

set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%OUTPUTDRIVE%\%OUTPUTDIR%\%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
set
OUTPUTPATH=%OUTPUTDRIVE%\%OUTPUTDIR%\%OUTPUTNUM
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%
rem
rem Create the TIMES table
rem

```

```

osql -E -d%DB% -Q"if exists (select * from sysindexes where name =
'TIMES') drop table TIMES"
osql -E -d%DB% -Q"create table TIMES(QUERY char(5),STREAM
int,START datetime)"

if NOT '%DoRESTORE%' == 'TRUE' goto :SETUP

rem
rem Use the Restore.sql script in SETUP
rem

echo Starting Restore
osql -E -i ..\Setup\%DB%\Restore.sql -b
osql -E -d%DB% -i ..\Setup\CreateRF1Proc.sql
osql -E -d%DB% -i ..\Setup\CreateRF2Proc.sql
if ERRORLEVEL 1 goto :ERROR_EXIT

:SETUP
if NOT '%DoSETUP%' == 'TRUE' goto :POWER

rem
rem Create the Power and five Throughput Streams
rem

echo QGening the Power and Throughput Streams
pushd templates
for /l %%i in (0,1,%STREAMS%) do call :SETUP1 %%i
for /l %%i in (1,1,%STREAMS%) do echo insert into TIMES values
('QXX',%%i,getdate())>> %HOMEDIR%\Stream%%i.sql
for /l %%i in (1,1,%STREAMS%) do echo go>>
%HOMEDIR%\Stream%%i.sql
for /l %%i in (0,1,%STREAMS%) do copy %HOMEDIR%\Stream%%i.sql
%OUTPUTPATH%
popd
goto :SETUP2

:SETUP1
echo Qgening using seed %SEED%
%HOMEDIR%\qgen -s %SCALEFACTOR% -r %SEED% -p 1 >
%HOMEDIR%\Stream%1.sql
set /a SEED=%SEED% + 1
goto :EOF

:SETUP2

rem
rem Begin POWER run
rem

rem
rem Execute the RF1 Transaction set in parallel
rem

:POWER
if NOT '%DoPOWER%' == 'TRUE' goto :THROUGHPUT
osql -E -d%DB% -Q"truncate table TIMES"
echo Beginning Power Run
if NOT '%DoPOWERRefresh%' == 'TRUE' goto :STREAM0

echo Running the RF1s
set /a UPDATE_SEGMENT=%1+%UPDATESET%
osql -E -d%DB% -Q"insert into TIMES values ('RF1',0,getdate())"
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /HIGH cmd /C Run
RF1 %UPDATE_SEGMENT% %%i
semaphore -wait RF1 -count %UPDATESEGMENTS%

rem
rem Execute the PowerRun Queries

```

```

rem

:STREAM0
if NOT '%DoPOWERStream0%' == 'TRUE' goto :STREAM0_DONE
echo Running Stream0
osql -E -d%DB% -iStream0.sql -o %OUTPUTPATH%\Stream0.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
:STREAM0_DONE

rem
rem Execute the RF2 Transaction set in Parallel
rem

if NOT '%DoPOWERRefresh%' == 'TRUE' goto :POWERDONE
echo Running the RF2s
osql -E -d%DB% -Q"insert into TIMES values ('RF2',0,getdate())"
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF2 %UPDATE_SEGMENT% %%i
semaphore -wait RF2 -count %UPDATESEGMENTS%

:POWERDONE
osql -E -d%DB% -Q"insert into TIMES values ('QXX',0,getdate())" -l300

rem
rem Execute the THROUGHPUT Run
rem

:THROUGHPUT
if NOT '%DoTHROUGHPUT%' == 'TRUE' goto :DONE
echo Running the Throughput Streams

for /l %%i in (1,1,%STREAMS%) do start /abovenormal cmd /C Run
THROUGHPUT_STREAM %%i
osql -E -d%DB% -Q"insert into TIMES values ('RF1',1,getdate())"
semaphore -wait THROUGHPUT_QUERIES -count %STREAMS%

for /l %%j in (1,1,%STREAMS%) do call :THROUGHPUT_REFRESH
%%j
goto :DONE

:THROUGHPUT_STREAM
osql -E -d%DB% -iStream%2.sql -o %OUTPUTPATH%\Stream%2.out
semaphore -release THROUGHPUT_QUERIES
goto :EOF

:THROUGHPUT_REFRESH
if %1 neq 1 osql -E -d%DB% -Q"insert into TIMES values
('RF1',%1,getdate())"
set /a UPDATE_SEGMENT=%1+%UPDATESET%
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF1 %UPDATE_SEGMENT% %%i
semaphore -wait RF1 -count %UPDATESEGMENTS%
osql -E -d%DB% -Q"insert into TIMES values ('RF2',%1,getdate())"
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF2 %UPDATE_SEGMENT% %%i
semaphore -wait RF2 -count %UPDATESEGMENTS%
osql -E -d%DB% -Q"insert into TIMES values ('RFX',%1,getdate())"
goto :EOF

rem
rem Final Step -- Write out completion to Log
rem

:DONE
osql -E -d%DB% -iReport.sql -o%OUTPUTPATH%\Report.out -w120
bcp %DB%..TIMES out %OUTPUTPATH%\TIMES.bcp -Usa -P -n
rem ----- Get SQL Configuration
osql -E -Q"sp_configure 'show advanced',1"
osql -E -Q"reconfigure with override"
osql -E -n -s, -w300 -Q"sp_configure" -o%OUTPUTPATH%\configure.out

```

```

rem ----- Get SQL Version
osql -E -n -w300 -e -Q"select @@version" -
o%OUTPUTPATH%\sqlversion.out
osql -E -n -w300 -e -Q"sp_helpdb %DB%" -o%OUTPUTPATH%\db.out
osql -E -n -w300 -e -Q"sp_dboption %DB%" -
o%OUTPUTPATH%\dboption.out
osql -E -n -w300 -e -Q"sp_helpsort" -o%OUTPUTPATH%\sort.out
osql -E -n -w300 -e -d%DB% -locking.sql -
o%OUTPUTPATH%\locking.out
rem ----- Get query plans
@echo set showplan_all on >%OUTPUTPATH%\stream.sql
@echo go >>%OUTPUTPATH%\stream.sql
type stream0.sql >>%OUTPUTPATH%\stream.sql
osql -E -d%DB% -n -w3000 -i%OUTPUTPATH%\stream.sql -
o%OUTPUTPATH%\plans.out

rem ----- Get Boot.ini
TYPE c:\boot.ini >%OUTPUTPATH%\boot.ini
reg query "HKLM\SYSTEM\CurrentControlSet\Control\Session
Manager\I/O System" /s >%OUTPUTPATH%\session.reg
reg query
"HKLM\SYSTEM\CurrentControlSet\Services\hpqcissb\Parameters" /s
>%OUTPUTPATH%\array.reg
reg query "HKLM\SYSTEM\CurrentControlSet\Control\PriorityControl" /s
>%OUTPUTPATH%\priority.reg

echo Done! Output can be found at %OUTPUTPATH%
goto :EOF

rem
rem Subroutine for Executing RF1s
rem called from RF1 and THROUGHPUT_RF1
rem

:RF1
rem osql -E -l 120 -d%DB% -Q"exec RF1
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,%SCALEFACTOR%" -o
%OUTPUTPATH%\RF1_%2_%3.out
osql -E -l 120 -d%DB% -Q"exec RF1
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF1_%2_%3.out
semaphore -release RF1
goto :EOF

rem
rem Subroutine for Executing RF2s
rem called from RF2 and THROUGHPUT_RF2
rem

:RF2
rem osql -E -l 120 -d%DB% -Q"exec RF2
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,%SCALEFACTOR%" -o
%OUTPUTPATH%\RF2_%2_%3.out
osql -E -l 120 -d%DB% -Q"exec RF2
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF2_%2_%3.out
semaphore -release RF2
goto :EOF

:ERROR_EXIT
echo Run aborted due to error
echo Check output in %OUTPUTPATH%
exit /B

```

F.3 Semaphore.cpp

```

#define _WIN32_WINNT 0x0400
#include <windows.h>
#include <string.h>
#include <iostream.h>
#include <stdlib.h>
#include <stdio.h>
#include <assert.h>
void main(int argc, char **argv)
{
typedef enum { eUnknown, eWait, eSignal, eRelease, eWaitList,
eWaitGroup } OPERATION;
OPERATION eOP = eUnknown;
int iCount;
int i;
HANDLE hSemaphore;
HANDLE *pHandles;
SYSTEMTIME Time;
if (argc < 3)
goto usage;
if (_stricmp(argv[1], "-wait") == 0)
eOP = eWait;
else if (_stricmp(argv[1], "-signal") == 0)
eOP = eSignal;
else if (_stricmp(argv[1], "-release") == 0)
eOP = eRelease;
else if (_stricmp(argv[1], "-waitlist") == 0)
eOP = eWaitList;
else if (_stricmp(argv[1], "-waitgroup") == 0)
eOP = eWaitGroup;
else goto usage;
if ((eOP == eWait) || (eOP == eRelease))
{
// argv[2] is the semaphore name
// if -count option specified, then there must be exactly 5 args
if ((argc == 5) && (_stricmp(argv[3], "-count") == 0))
{
iCount = atoi(argv[4]);
if (iCount < 1)
goto usage;
}
// check that
else if (argc != 3)
goto usage;
else
iCount = 1;
}
else if (eOP == eWaitGroup)
{
if ((argc != 5) || (_stricmp(argv[3], "-count") != 0))
goto usage;
iCount = atoi(argv[4]);
if (iCount < 1)
goto usage;
}
else
// eWaitList or eSignal
iCount = argc - 2;
if (eOP == eWait)
{
printf("semaphore name = %s\n", argv[2]);
printf("semaphore count = %d\n", iCount);
hSemaphore = CreateSemaphore( NULL, 0, 2000000000,
argv[2] );
if (hSemaphore == NULL)
{
DWORD dwError = GetLastError();
cout << "**ERROR* CreateSemaphore returned "

```



```

<< dwError << endl;
exit(EXIT_FAILURE);
}
for (i=0; i<iCount; i++)
{
WaitForSingleObject( hSemaphore, INFINITE );
GetLocalTime( &Time );
printf( "%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d
- released \n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond );
}
CloseHandle( hSemaphore );
}
else if ((eOP == eWaitGroup) || (eOP == eWaitList))
{
char **szEventNames;
szEventNames = new char*[iCount];
char szTmp[128];
printf( "event-list = " );
for (i=0; i<iCount; i++)
{
if (eOP == eWaitGroup)
{
wsprintf( szTmp, "%s.%d", argv[2],
i+1 );
szEventNames[i] = new
char[strlen(szTmp)+1];
strcpy( szEventNames[i], szTmp );
}
else
{
szEventNames[i] = new
char[strlen(argv[i+2])+1];
strcpy( szEventNames[i], argv[i+2] );
}
printf( " %s", szEventNames[i] );
}
printf( "\n" );
pHandles = new HANDLE[iCount-1];
for (i=0; i<iCount; i++)
{
pHandles[i] = CreateEvent( NULL, TRUE /*
manual reset */, FALSE /* initially non-signaled */, szEventNames[i] );
if (pHandles[i] == NULL)
{
DWORD dwError = GetLastError();
cout << "ERROR* CreateEvent
returned " << dwError << endl;
exit(EXIT_FAILURE);
}
}
for (i=iCount; i>0;i--)
{
int idx = WaitForMultipleObjects( i, pHandles,
FALSE /* wait for all */, INFINITE ) - WAIT_OBJECT_0;
GetLocalTime( &Time );
printf( "%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d
- signaled: %s \n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond, szEventNames[idx] );
HANDLE hTmp = pHandles[idx];
pHandles[idx] = pHandles[i-1];
pHandles[i-1] = hTmp;
char* szTmp = szEventNames[idx];
szEventNames[idx] = szEventNames[i-1];
szEventNames[i-1] = szTmp;
}
for (i=0; i<iCount; i++)
CloseHandle( pHandles[i] );

```

```

}
else if (eOP == eRelease)
{
hSemaphore = OpenSemaphore(
SEMAPHORE_MODIFY_STATE, FALSE, argv[2] );
if (hSemaphore == NULL)
{
DWORD dwError = GetLastError();
cout << "ERROR* OpenSemaphore returned "
<< dwError << endl;
exit(EXIT_FAILURE);
}
if (!ReleaseSemaphore( hSemaphore, iCount, NULL ))
{
DWORD dwError = GetLastError();
cout << "ERROR* ReleaseSemaphore returned
" << dwError << endl;
exit(EXIT_FAILURE);
}
CloseHandle( hSemaphore );
}
else if (eOP == eSignal)
{
for (i=0; i<iCount; i++)
{
HANDLE hHandle = OpenEvent(
EVENT_MODIFY_STATE, FALSE, argv[i+2] );
if (hHandle == NULL)
{
DWORD dwError = GetLastError();
cout << "ERROR* OpenEvent
returned " << dwError << endl;
exit(EXIT_FAILURE);
}
SetEvent( hHandle );
CloseHandle( hHandle );
}
}
exit(EXIT_SUCCESS);
// syntax was bad; show usage and quit
usage:
printf(
"Semaphore Utility - Ver. 1.2 - 26-Jul-99 \n"
"Copyright (C) Microsoft Corp 1999. All rights reserved.\n\n"
"usage: \n"
" semaphore { -wait | -release } <semaphore-name> [ -count
<count> ] \n"
" semaphore { -waitlist | -signal } <event-list> \n"
" semaphore -waitgroup <event-prefix> -count <count> \n"
"\n"
"<semaphore-name> == alpha-numeric identifier \n"
"<count> == integer > 0; default value = 1 \n"
"<event-list> == { <event-name> ... } \n"
"<event-name> == alpha-numeric identifier \n"
"<event-prefix> == alpha-numeric identifier \n"
"\n"
"There are two modes to choose from: a semaphore or a list
of events. \n"
"\n"
"Semaphore mode: \n"
"A semaphore is a single identifier with an associated count.
Each time \n"
"the semaphore is released, the count is decremented by one
(or the amount \n"
"specified). When the count reaches zero, the waiter
completes. If there \n"
"are multiple waiters on the same semaphore, each release
releases only \n"
"the number of waiters specified in count.\n"
"\n"

```

"List of Events: \n"
"A list of events (alpha-numeric tags) is specified for the waiter. The \n"
"waiter doesn't complete until all of the events have been signaled. A \n"
"given event may be signaled more than once. There are two ways to define \n"
"the list of events, either explicitly (-waitlist) by naming all of them or \n"
"implicitly (-waitgroup) with a prefix and a count. Using the -waitgroup
}

```
\n"  
"option, you provide an alpha-numeric tag which is used as  
the prefix for a \n"  
"group of events. The event names are generated by  
concatenating the prefix \n"  
"with \"<n>\", where <n> is 1 to the specified count. \n"  
);  
exit(EXIT_FAILURE);  
}
```

Appendix G: Price Quotations

August 8, 2003

Hewlett-Packard
Company
Daniel Pol
20555 SH 249
Houston, TX 77070

Mr. Pol:

Here is the information you requested regarding pricing for several Microsoft products to be used in conjunction with your TPC-H benchmark testing.

All pricing shown is in US Dollars (\$).

Part Number	Description	Unit Price	Quantity	Price
810-00652	SQL Server 2000 Enterprise Edition <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 26% discount from the retail unit price of \$7,499.</i>	\$5,549	1	\$5,549
359-00532	SQL Server 2000 Client License <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 18% discount from the retail unit price of \$179.</i>	\$146	50	\$7,300
P73-00295	Windows Server 2003, Standard Edition <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 26% discount from the retail unit price of \$999.</i>	\$738	1	\$738
254-00170	Visual C++ Standard <i>No discounts applied</i>	\$109	1	\$109
PRO-PRORS-16U-01	Database Server Support Package <i>1 Year Term</i>	\$1,950	3	\$5,850

All products are currently orderable through Microsoft's normal distribution channels.

This quote is valid for the next 90 days.

If we can be of any further assistance, please contact Jamie Reding at (425) 703-0510 or jamiere@microsoft.com.