



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant DL580G2 4P
using
Microsoft SQL Server 2000 Enterprise Edition
and
Windows Server 2003, Enterprise Server

First Edition
May 2003

First Edition – May, 2003

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

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HP ProLiant DL580G2 4P

TPC-H Rev. 2.0.1

Report Date:
May 28, 2003

Total System Cost

\$99,545

Composite Query per Hour Metric

2106.3

QphH@100GB

Price / Performance

\$48

\$ / QphH@100GB

Database Size

100GB

Database Manager

**Microsoft SQL
Server 2000
Enterprise Edition**

Operating System

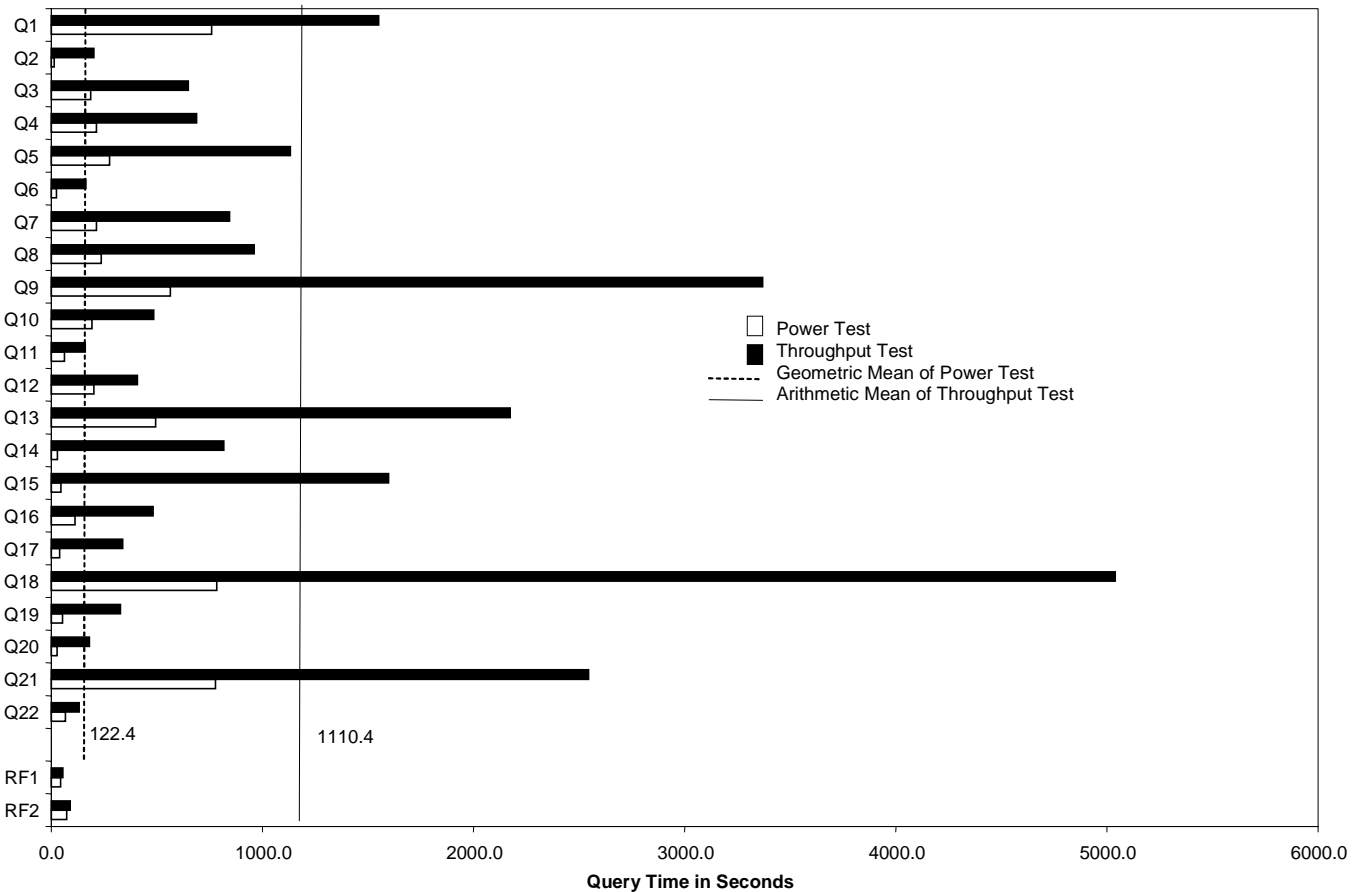
**Windows Server
2003, Enterprise
Server**

Other Software

**Visual C++
.Net Standard**

Availability Date

May 28, 2003



Database Load Time = 3:19:19

Load Included Backup: Y

Total Data Storage / Database Size = 12.52

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

System Configuration:

Processors : 4 x Intel Xeon MP 2.0 GHz with 2MB L2 cache
Memory : 4 GB memory
Disk Controllers : 5x Smart Array 5312
Disks : 74 x 18.2 GB 15K RPM drives
Total Disk Storage: 1252.1 GB

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

**HP ProLiant DL580G2 4P**

TPC-H Rev. 2.0.1

Report Date:

28-May-03

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware						
		Brand Pricing				
ProLiant DL580 G2 2P 2.0GHz/2M/2GB	202176-001	1	17,999	1	17,999	
2.0GHz/2MB processor (ML580 G2)	307276-B21	1	6,199	2	12,398	
2GB (4x512MB) DDR ECC 200MHz Memory	202171-B21	1	1,299	1	1,299	
S5500 15" Monitor	261602-001	1	139	1	139	
Scroll Mouse-Carbon	231947-B21	1	5	1	5	
PS/2 Easy Access Internet Keyboard	265977-001	1	12	1	12	
Rack Model 9142 (42U - Opal) - Flat Pallet	120663-B21	1	1,321	1	1,321	
Rack Sidewall Kit	120670-B21	1	207	1	207	
UPS T1500 XR	204155-002	1	621	1	621	
Servers 500 Series CarePaq, 3yr 7x24, 4hr resp.	401782-002	1	1,795	1		1,795
				Subtotal	34,001	1,795
Storage						
Smart Array 5312 Controller	238633-B21	1	1,349	5	6,745	
StorageWorks Enclosure Model 4354R - Rack-mountable	190211-001	1	3,523	5	17,615	
18.2GB 15Krpm U320 UNI HDD - internal	286775-B22	1	399	4	1,596	
18.2GB 15Krpm U320 UNI HDD - external	286775-B22	1	399	70	27,930	
18.2GB 15Krpm U320 UNI HDD - 10% spares	286775-B22	1	399	7	2,793	
CarePaq 43xx Enclosure, 3yr, 7x24, 4hr resp.	171242-002	1	157	5		785
				Subtotal	56,679	785
Hardware and Maintenance Discount						
Large Purchase and Net 30 discount	16.0%	1			(\$14,509)	(\$413)
				Hardware Subtotal	76,171	2,167
Software						
Microsoft SQL Server 2000 Enterprise Edition	810-00652	Microsoft	2,549	1	5,549	
Database Server Support Package	RO-PRORS-16U-01	Microsoft	1,950	3		5,850
Microsoft SQL Server 2000 Client Licenses	359-00532	Microsoft	146	50	7,300	included
Microsoft Windows Server 2003 - Enterprise Edition	P72-00264	Microsoft	2,399	1	2,399	included
Microsoft Visual C++ .NET Standard	254-00170	Microsoft	109	1	109	included
				Subtotal	15,357	5,850
				Total	\$91,528	\$8,017

3-Year Cost of Ownership: \$99,545**QphH Rating: 2106.3****\$ / QphH@100GB: \$48**

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 DL580G2 4P

TPC-H Rev. 2.0.1

Report Date:
May 28, 2003

Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 12.52
Start of Database Load	= 2003-05-08 21:05:32
End of Database Load	= 2003-05-09 00:24:51
Database Load Time	= 3:19:19
Query Streams for Throughput Test	= 5
TPC-H Power	= 2940.1
TPC-H Throughput	= 1509.0
TPC-H Composite Query-per-Hour Metric (QpH@100GB)	= 2106.3
Total System Price Over 3 Years	= \$99,545
TPC-H Price/ Performance Metric (\$/QpH@100GB)	= \$48

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 26241.6 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	509002451	5/9/2003	10:10:51	5/9/2003	11:42:32	1:31:42
Stream01	509002452	5/9/2003	11:42:33	5/9/2003	18:11:58	6:29:25
Stream02	509002453	5/9/2003	11:42:33	5/9/2003	18:47:55	7:05:22
Stream03	509002454	5/9/2003	11:42:33	5/9/2003	18:31:15	6:48:42
Stream04	509002455	5/9/2003	11:42:33	5/9/2003	18:20:32	6:37:59
Stream05	509002456	5/9/2003	11:42:33	5/9/2003	18:22:20	6:39:47
Refresh00		5/9/2003	10:10:51	5/9/2003	11:42:32	1:31:42
Refresh01		5/9/2003	18:47:55	5/9/2003	18:50:09	0:02:14
Refresh02		5/9/2003	18:50:09	5/9/2003	18:52:36	0:02:27
Refresh03		5/9/2003	18:52:36	5/9/2003	18:55:01	0:02:25
Refresh04		5/9/2003	18:55:01	5/9/2003	18:57:29	0:02:27
Refresh05		5/9/2003	18:57:29	5/9/2003	18:59:54	0:02:25



HP ProLiant DL580G2 4P

TPC-H Rev. 2.0.1

Report Date:
May 28, 2003

TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	759.4	14.1	187.8	213.0	276.2	25.3	214.2	237.6
Stream 01	1904.3	156.8	1145.5	807.3	798.6	177.1	556.3	533.5
Stream 02	1703.4	386.7	275.2	516.6	1088.1	45.4	881.9	1123.7
Stream 03	1228.3	218.4	313.7	990.0	1313.3	194.0	656.0	1491.8
Stream 04	1391.2	81.0	1059.0	451.5	1083.9	205.6	1423.9	465.8
Stream 05	1521.5	169.1	450.3	677.7	1439.9	202.0	705.0	1195.5
Min Qi	1228.3	81.0	275.2	451.5	798.6	45.4	556.3	465.8
Max Qi	1904.3	386.7	1145.5	990.0	1439.9	205.6	1423.9	1491.8
Avg Qi	1549.7	202.4	648.7	688.6	1144.8	164.8	844.6	962.1
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	563.6	192.8	63.7	202.1	493.6	29.3	46.0	113.5
Stream 01	3461.2	485.1	195.5	447.8	1846.0	594.6	1179.5	658.8
Stream 02	4787.1	569.9	63.9	413.9	1497.8	2089.7	1514.5	512.5
Stream 03	2834.5	429.3	186.9	325.7	3068.9	429.1	2043.9	248.8
Stream 04	2332.0	497.1	166.2	405.0	2427.8	456.0	1760.9	686.7
Stream 05	3432.9	448.1	196.3	447.3	2030.4	516.3	1492.9	310.6
Min Qi	2332.0	429.3	63.9	325.7	1497.8	429.1	1179.5	248.8
Max Qi	4787.1	569.9	196.3	447.8	3068.9	2089.7	2043.9	686.7
Avg Qi	3369.5	485.9	161.8	407.9	2174.2	817.1	1598.3	483.5
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	39.3	783.8	53.4	27.9	778.7	67.3	44.8	74.4
Stream 01	98.1	4734.9	338.1	150.9	2935.3	160.7	44.0	89.5
Stream 02	640.0	6223.3	211.9	86.5	780.8	109.6	56.6	90.4
Stream 03	95.8	4605.3	274.8	307.9	3176.1	89.9	56.0	89.0
Stream 04	410.3	4698.2	612.9	248.4	2856.2	160.0	57.1	90.2
Stream 05	452.0	4934.6	197.3	109.4	2976.3	142.9	56.5	89.6
Min Qi	95.8	4605.3	197.3	86.5	780.8	89.9	44.0	89.0
Max Qi	640.0	6223.3	612.9	307.9	3176.1	160.7	57.1	90.4
Avg Qi	339.2	5039.3	327.0	180.6	2544.9	132.6	54.0	89.7

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant DL760G2 using Microsoft SQL Server 2000 Enterprise Edition SP3, in conformance with the requirements of the TPC Benchmark™ H Standard Specification, Revision 2.0.1. The operating system used for the benchmark was Microsoft Windows 2003 Enterprise Server.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB	\$ / QphH @ 100GB
HP ProLiant DL580G2 4P	Microsoft SQL Server 2000 SP3 Windows Server 2003, Enterprise Server	\$99,545	2940.1	1509.0	2106.3	\$ 48

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:

Transaction Processing Performance Council (TPC)
c/o Shanley Public Relations
777 North First Street, Suite 600
San Jose, CA 95112 USA
Telephone: (408) 295-8894
Fax: (408) 295-9768

or

Hewlett-Packard Company
Database Performance Engineering
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 DL580G2.

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."

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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.).*

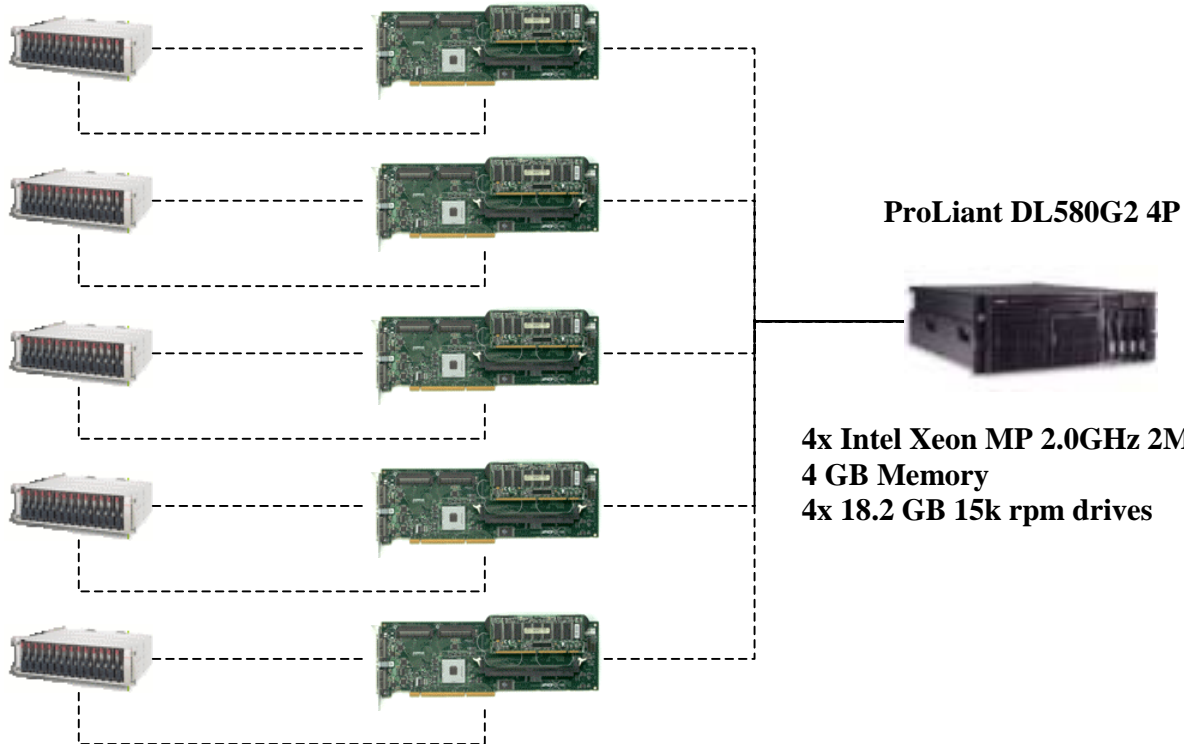
The server System Under Test (SUT), a HP ProLiant DL580G2 4P , depicted in Figure 1.1, consisted of :

- 4x Intel Xeon MP 2.0GHz with 2MB L2 Cache
- 4 GB of memory
- 5 x HP 5312 Array Controllers
- 5 x StorageWorks Enclosure 4354R
- 74 x 18.2GB Pluggable Ultra320 15K rpm 1” height drives

Figure 1.1 Benchmarked & Priced configuration

**5x StorageWorks 4354R
70x 18.2 GB 15k rpm drives**

5x Smart Array 5312



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 DL580G2.

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 10 RAID-0 arrays each containing 7 physical drives and 2 RAID-0 arrays each containing 2 physical drives. A backup of the database was taken. The backup was spread across 10 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 DL580G2 with the following configuration:

- 5 x Smart Array 5312 disk controllers
- 5 x StorageWorks Enclosure 4354R
- 70 x 18.2GB 15k rpm external disk drives
- 4 x 18.2GB 15k rpm internal disk drives

All 74 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 1	A	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 1	B	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 2	A	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 2	B	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID0	RAW	6000	TempLog
Slot 4	A	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 4	B	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 5	A	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 5	B	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID0	RAW	3000	Tpch1g
Slot 6	A	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID5	NTFS	30000	Flatfiles
Slot 6	B	7	1	RAID0	RAW	20000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID5	NTFS	19000	LoadFg
			4	RAID0	RAW	3000	Tpch1g
Slot 0	A	2	1	RAID0	RAW	5500	Tpch100g
			2	RAID0	RAW	3000	TempDB
			3	RAID1	NTFS	4000	OS
Slot 0	B	2	1	RAID0	RAW	5500	Tpch100g
			2	RAID0	RAW	3000	TempDB
			3	RAID1	RAW	12000	Tpch100Log
			4	RAID1	RAW	1100	Tpch1gLog

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 3 hours 19 minutes 19 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.

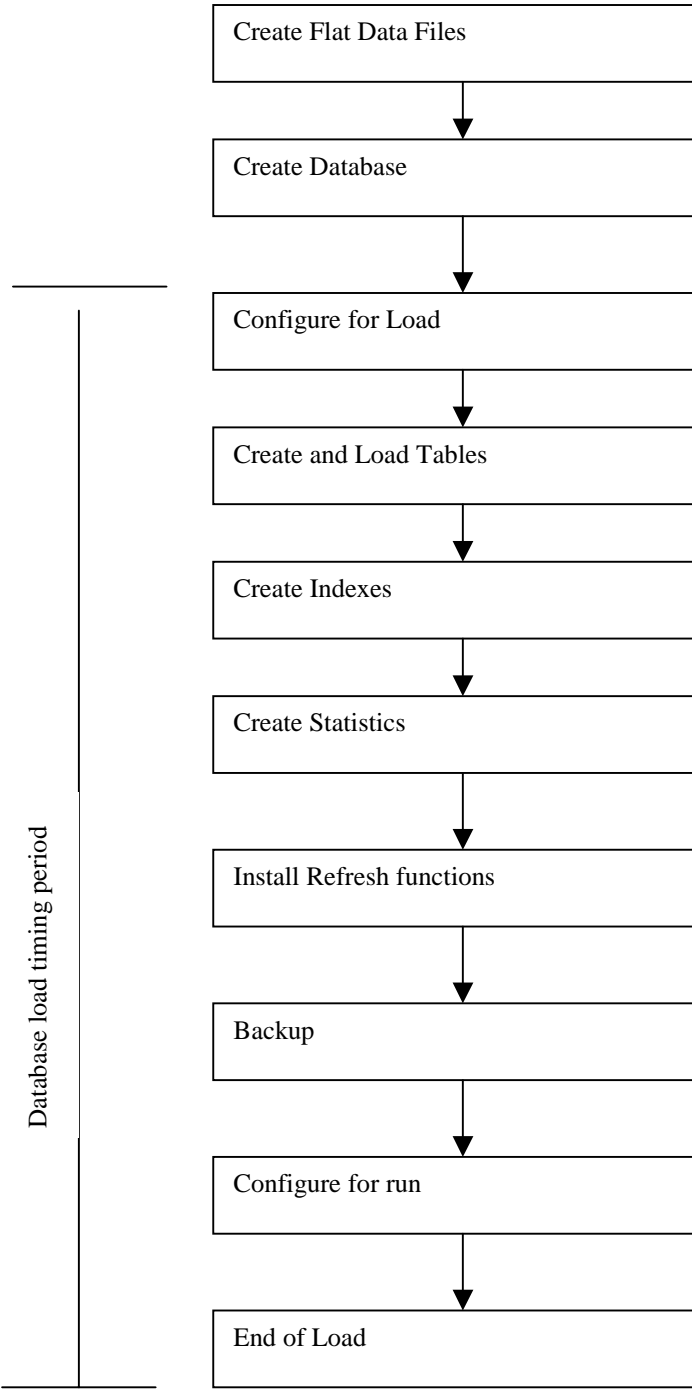
Disk Type	Number of Disks	Space per Disk	Total Disk Space	Data Storage Ratio
18.2 GB 15k rpm Ultra320 SCSI	74	16.92 GB	1252.1 GB	12.52

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	5/9/2003	10:10:50	5/9/2003	10:11:35
Stream00	RF2	5/9/2003	11:41:18	5/9/2003	11:42:32
Stream01	RF1	5/9/2003	18:47:55	5/9/2003	18:48:39
Stream01	RF2	5/9/2003	18:48:39	5/9/2003	18:50:09
Stream02	RF1	5/9/2003	18:50:09	5/9/2003	18:51:05
Stream02	RF2	5/9/2003	18:51:05	5/9/2003	18:52:36
Stream03	RF1	5/9/2003	18:52:36	5/9/2003	18:53:32
Stream03	RF2	5/9/2003	18:53:32	5/9/2003	18:55:01
Stream04	RF1	5/9/2003	18:55:01	5/9/2003	18:55:58
Stream04	RF2	5/9/2003	18:55:58	5/9/2003	18:57:28
Stream05	RF1	5/9/2003	18:57:28	5/9/2003	18:58:25
Stream05	RF2	5/9/2003	18:58:25	5/9/2003	18:59:54

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	2947.0	1511.0	2110.2
Run 2	2940.1	1509.0	2106.3

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.

SQL Server was restarted between runs.

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 16% 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 DL580G2, 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, Enterprise Server, 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

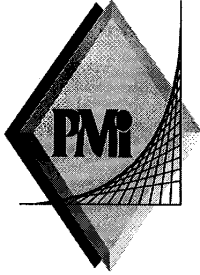
The auditor's agency name, address, phone number, and Attestation letter with a brief audit summary report indicating compliance must be included in the full disclosure report. A statement should be included specifying who to contact in order to obtain further information regarding the audit process.

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

May 20, 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 DL580G2 4P
Database Manager: Microsoft SQL Server 2000 Enterprise Edition
Operating System: Microsoft Windows Server 2003, Enterprise Server

CPU's	Memory	Total Disks	QppH@100GB	QthH@100GB	QphH@100GB
4 Intel Xeon MP @ 2 Ghz	4 GB	74 @ 18GB,15Krpm	2,940.1	1,509.0	2,106.3

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 100MB for non-buffer pool allocations.

A.4 Microsoft SQL Server 2000 Configuration Parameters

name	,minimum	,maximum	,config_value	,run_value
affinity mask	,-2147483648,	2147483647,	0,	0
allow updates	, 0,	1,	1,	1
awe enabled	, 0,	1,	1,	1
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,	8,	8
max server memory (MB)	, 4,	2147483647,	2147483647,	2147483647
max text repl size (B)	, 0,	2147483647,	65536,	65536
max worker threads	, 32,	32767,	512,	512
media retention	, 0,	365,	0,	0
min memory per query (KB)	, 512,	2147483647,	1024,	1024
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 Enterprise Server Build 3718 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\hpcqiss
b\Parameters]
"CompletionMode"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqiss
b\Security]
"Security"=hex:01,00,14,80,90,00,00,00,9c,00,00,00,14,00,00,00,30,00,00,0
0,02,\
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,\
20,02,00,00,00,14,00,8d,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
.\
00,00,00,00,05,12,00,00,01,01,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqiss
b\Enum]
"0"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&10
70020&0&08"
"Count"=dword:00000005
"NextInstance"=dword:00000005
"1"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&10
70020&0&10"
"2"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&29
e81982&0&10"
"3"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&17
2e68dd&0&08"
"4"="PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&17
2e68dd&0&10"

```

A.7 System Hardware Information

System Information report written at: 05/10/03 12:44:57

System Name: MINI

[System Summary]

Item	Value
OS Name	Microsoft(R) Windows(R) Server 2003, Enterprise Edition
Version	5.2.3790 Build 3790
OS Manufacturer	Microsoft Corporation
System Name	MINI
System Manufacturer	Compaq
System Model	ProLiant DL580 G2
System Type	X86-based PC
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz

Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1994 Mhz
BIOS Version/Date	Compaq P27, 4/2/2003
SMBIOS Version	2.3
Windows Directory	C:\WINDOWS
System Directory	C:\WINDOWS\system32
Boot Device	\Device\HarddiskVolume33
Locale	United States
Hardware Abstraction Layer	Version = "5.2.3790.0 (srv03_rtm.030324-2048)"
User Name	MINI\Administrator
Time Zone	Central Daylight Time
Total Physical Memory	4,096.00 MB
Available Physical Memory	71.95 MB
Total Virtual Memory	9.50 GB
Available Virtual Memory	2.11 GB
Page File Space	5.69 GB
Page File	C:\pagefile.sys
[Hardware Resources]	
[Conflicts/Sharing]	
Resource	Device
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	Standard VGA Graphics Adapter
I/O Port 0x00006000-0x000064FF	PCI bus
I/O Port 0x00006000-0x000064FF (Non-Miniport)	Smart Array 5312 Controller
I/O Port 0x00003000-0x000030FF	PCI bus
I/O Port 0x00003000-0x000030FF	Compaq Smart Array 5i Controller
I/O Port 0x00005000-0x000050FF	PCI bus
I/O Port 0x00005000-0x000050FF (Non-Miniport)	Smart Array 5312 Controller
Memory Address 0xA0000-0xBFFFF	PCI bus
Memory Address 0xA0000-0xBFFFF	Standard VGA Graphics Adapter
I/O Port 0x000003B0-0x000003BB	PCI bus
I/O Port 0x000003B0-0x000003BB	Standard VGA Graphics Adapter
I/O Port 0x00004000-0x000044FF	PCI bus
I/O Port 0x00004000-0x000044FF (Non-Miniport)	Smart Array 5312 Controller

			0x00000260-0x00000267	Motherboard resources	OK
[DMA]			0x000004D0-0x000004D1	Motherboard resources	OK
Resource Device Status			0x00000700-0x0000070F	Motherboard resources	OK
Channel 7 Direct memory access controller	OK		0x00000800-0x0000081F	Motherboard resources	OK
Channel 2 Standard floppy disk controller	OK		0x00000C80-0x00000C83	Motherboard resources	OK
[Forced Hardware]			0x00000CD4-0x00000CD7	Motherboard resources	OK
Device PNP Device ID			0x00000CF9-0x00000CF9	Motherboard resources	OK
[I/O]			0x00000020-0x00000021	Programmable interrupt controller	
Resource Device Status			OK		
0x00000000-0x00000CFF	PCI bus	OK	0x000000A0-0x000000A1	Programmable interrupt controller	
0x00000000-0x00000CFF	PCI bus	OK	OK		
0x00000000-0x00000CFF	Direct memory access controller	OK	0x00000C00-0x00000C01	Programmable interrupt controller	
0x000003B0-0x000003BB	PCI bus	OK	OK		
0x000003B0-0x000003BB	Standard VGA Graphics Adapter	OK	0x00000040-0x00000043	System timer	OK
0x000003C0-0x000003DF	PCI bus	OK	0x00000080-0x0000008F	Direct memory access controller	OK
0x000003C0-0x000003DF	Standard VGA Graphics Adapter	OK	0x000000C0-0x000000DF	Direct memory access controller	OK
0x00001800-0x000018FF	HP ProLiant iLO Advanced System Management Controller	OK	0x0000040B-0x0000040B	Direct memory access controller	OK
0x00002400-0x000024FF	HP iLO Management Interface Driver	OK	0x000004D6-0x000004D6	Direct memory access controller	OK
0x00002800-0x000028FF	Standard VGA Graphics Adapter	OK	0x00000061-0x00000061	System speaker	OK
0x00000A79-0x00000A79	ISAPNP Read Data Port	OK	0x00000060-0x00000060	Standard 101/102-Key or Microsoft	OK
0x00000279-0x00000279	ISAPNP Read Data Port	OK	Natural PS/2 Keyboard	OK	
0x00000274-0x00000277	ISAPNP Read Data Port	OK	0x00000064-0x00000064	Standard 101/102-Key or Microsoft	OK
0x00000F50-0x00000F58	Motherboard resources	OK	Natural PS/2 Keyboard	OK	
0x00000408-0x0000040F	Motherboard resources	OK	0x0000002E-0x0000002F	Extended IO Bus	OK
0x00000092-0x00000092	Motherboard resources	OK	0x00000220-0x00000223	Extended IO Bus	OK
0x00000900-0x00000903	Motherboard resources	OK	0x00000240-0x0000025F	Extended IO Bus	OK
0x00000910-0x00000911	Motherboard resources	OK	0x00000070-0x00000073	Extended IO Bus	OK
0x00000920-0x00000923	Motherboard resources	OK	0x000003F8-0x000003FF	Communications Port (COM1)	OK
0x00000930-0x00000937	Motherboard resources	OK	0x000003F2-0x000003F5	Standard floppy disk controller	OK
0x00000940-0x00000947	Motherboard resources	OK	0x000003F7-0x000003F7	Standard floppy disk controller	OK
0x00000950-0x00000957	Motherboard resources	OK	0x00002000-0x0000200F	CSB5 IDE Controller	OK
0x00000C06-0x00000C08	Motherboard resources	OK	0x000001F0-0x000001F7	Primary IDE Channel	OK
0x00000C14-0x00000C14	Motherboard resources	OK	0x000003F6-0x000003F6	Primary IDE Channel	OK
0x00000C49-0x00000C4A	Motherboard resources	OK	0x00000170-0x00000177	Secondary IDE Channel	OK
0x00000C50-0x00000C52	Motherboard resources	OK	0x00000376-0x00000376	Secondary IDE Channel	OK
0x00000C6C-0x00000C6F	Motherboard resources	OK	0x00003000-0x000030FF	PCI bus	OK
0x00000010-0x0000001F	Motherboard resources	OK	0x00003000-0x000030FF	Compaq Smart Array 5i Controller	OK
0x00000230-0x00000233	Motherboard resources	OK	OK		
			0x00004000-0x000044FF	PCI bus	OK
			0x00004000-0x000044FF	Smart Array 5312 Controller (Non-Miniport)	OK
			0x00004400-0x000044FF	Smart Array 5312 Controller (Non-Miniport)	OK
			0x00005000-0x000050FF	PCI bus	OK
			0x00005000-0x000050FF	Smart Array 5312 Controller (Non-Miniport)	OK
			0x00006000-0x000064FF	PCI bus	OK
			0x00006000-0x000064FF	Smart Array 5312 Controller (Non-Miniport)	OK
			0x00006400-0x000064FF	Smart Array 5312 Controller (Non-Miniport)	OK
			[IRQs]		

Resource	Device	Status
IRQ 9	Microsoft ACPI-Compliant System	OK
IRQ 29	HP ProLiant iLO Advanced System Management Controller	OK
IRQ 30	HP iLO Management Interface Driver	OK
IRQ 0	System timer	OK
IRQ 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
IRQ 12	PS/2 Compatible Mouse	OK
IRQ 4	Communications Port (COM1)	OK
IRQ 6	Standard floppy disk controller	OK
IRQ 14	Primary IDE Channel	OK
IRQ 11	ServerWorks (RCC) PCI to USB Open Host Controller	OK
IRQ 31	Compaq Smart Array 5i Controller	OK
IRQ 18	Smart Array 5312 Controller (Non-Miniport)	OK
IRQ 16	Smart Array 5312 Controller (Non-Miniport)	OK
IRQ 7	Compaq PCI Hotplug Controller	OK
IRQ 22	BCM5701 Gigabit Ethernet	OK
IRQ 20	Smart Array 5312 Controller (Non-Miniport)	OK
IRQ 3	Compaq PCI Hotplug Controller	OK
IRQ 26	Smart Array 5312 Controller (Non-Miniport)	OK
IRQ 24	Smart Array 5312 Controller (Non-Miniport)	OK

[Memory]

Resource	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	Standard VGA Graphics Adapter	OK
0xF5F00000-0xF77FFFFF	PCI bus	OK
0xF77F0000-0xF77F01FF	HP ProLiant iLO Advanced System Management Controller	OK
0xF77E0000-0xF77E07FF	HP iLO Management Interface Driver	OK
0xF77D0000-0xF77D1FFF	HP iLO Management Interface Driver	OK
0xF7700000-0xF777FFFF	HP iLO Management Interface Driver	OK
0xF6000000-0xF6FFFFFF	Standard VGA Graphics Adapter	OK
0xF5FF0000-0xF5FF0FFF	Standard VGA Graphics Adapter	OK
0xF5FE0000-0xF5FE0FFF	ServerWorks (RCC) PCI to USB Open Host Controller	OK
0xF7800000-0xF79FFFFF	PCI bus	OK
0xF79C0000-0xF79FFFFF	Compaq Smart Array 5i Controller	OK
0xF78F0000-0xF78F3FFF	Compaq Smart Array 5i Controller	OK
0xF7A00000-0xF7BFFFFF	PCI bus	OK
0xF7BC0000-0xF7BFFFFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7AF0000-0xF7AF3FFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7B80000-0xF7BBFFFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7AE0000-0xF7AE3FFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7AD0000-0xF7AD0FFF	Compaq PCI Hotplug Controller	OK
0xF7C00000-0xF7DFFFFF	PCI bus	OK
0xF7DF0000-0xF7DFFFFF	BCM5701 Gigabit Ethernet	OK
0xF7D80000-0xF7DBFFFF	Smart Array 5312 Controller (Non-Miniport)	OK

0xF7CF0000-0xF7CF3FFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7CE0000-0xF7CE0FFF	Compaq PCI Hotplug Controller	OK
0xF7E00000-0xF7FFFFFF	PCI bus	OK
0xF7FC0000-0xF7FFFFFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7EF0000-0xF7EF3FFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7F80000-0xF7FBFFFF	Smart Array 5312 Controller (Non-Miniport)	OK
0xF7EE0000-0xF7EE3FFF	Smart Array 5312 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\tssoft32.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\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\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\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
c:\windows\system32\sl_anet.acm	Sipro Lab Telecom Inc.	Sipro Lab Telecom Audio Codec	OK	
				C:\WINDOWS\system32\SL_ANET.ACM 3.02
		(86,016 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)		5/2/2003 3:47 PM
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

[Video Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\msh261.drv	Microsoft Corporation		OK	
				C:\WINDOWS\system32\MSH261.DRV

4.4.4000 180.00 KB (184,320 bytes) 5/2/2003 3:47 PM
 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\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\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\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\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\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 SN-124
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available
SCSI Target ID	0
PNP Device ID	IDE\CDROMCOMPAQ_CD-ROM_SN-124_N102_5&FB0C83D&0&0.0.0
Driver	c:\windows\system32\drivers\cdrom.sys (5.2.3790.0 (srv03_rtm.030324-2048), 49.50 KB (50,688 bytes), 3/25/2003 12:00 AM)

[Sound Device]

Item	Value
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[Display]

Item	Value
Name	Standard VGA Graphics Adapter
PNP Device ID	PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3&267A616A&0&18
Adapter Type	ATI MACH64, (Standard display types) compatible
Adapter Description	Standard VGA Graphics Adapter
Adapter RAM	7.94 MB (8,323,072 bytes)
Installed Drivers	vga.dll,framebuf.dll,vga256.dll,vga64k.dll
Driver Version	5.2.3790.0
INF File	display.inf (vga section)
Color Planes	1
Color Table Entries	65536
Resolution	800 x 600 x 1 hertz
Bits/Pixel	16
Memory Address	0xF6000000-0xF6FFFFFF
I/O Port	0x00002800-0x000028FF

Memory Address	0xF5FF0000-0xF5FF0FFF
I/O Port	0x000003B0-0x000003BB
I/O Port	0x000003C0-0x000003DF
Memory Address	0xA0000-0xBFFFF
Driver	c:\windows\system32\drivers\vgapnp.sys (5.2.3790.0 (srv03_rtm.030324-2048), 23.00 KB (23,552 bytes), 5/2/2003 4:23 PM)

[Infrared]

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

[Input]

[Keyboard]

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

[Pointing Device]

Item	Value
Hardware Type	PS/2 Compatible Mouse
Number of Buttons	3
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] BCM5701 Gigabit Ethernet
Adapter Type	Ethernet 802.3
Product Type	BCM5701 Gigabit Ethernet
Installed	Yes
PNP Device ID	PCI\VEN_14E4&DEV_1645&SUBSYS_007C0E11&REV_15\3&29E81982&0&08
Last Reset	5/9/2003 12:35 AM
Index	1
Service Name	b57w2k
IP Address	130.168.253.55
IP Subnet	255.255.0.0

Default IP Gateway Not Available
 DHCP Enabled Yes
 DHCP Server 130.168.253.2
 DHCP Lease Expires 5/11/2003 12:36 PM
 DHCP Lease Obtained 5/10/2003 12:36 PM
 MAC Address 00:08:02:ED:29:7B
 Memory Address 0xF7DF0000-0xF7DFFFFF
 IRQ Channel IRQ 22
 Driver c:\windows\system32\drivers\b57xp32.sys (2.91.0.0 built by:
 WinDDK, 137.00 KB (140,288 bytes), 5/2/2003 10:39 AM)

Name [00000002] RAS Async Adapter
 Adapter Type Not Available
 Product Type RAS Async Adapter
 Installed Yes
 PNP Device ID Not Available
 Last Reset 5/9/2003 12:35 AM
 Index 2
 Service Name AsyncMac
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)
 Adapter Type Not Available
 Product Type WAN Miniport (L2TP)
 Installed Yes
 PNP Device ID ROOT\MS_L2TPMINIPOINT\0000
 Last Reset 5/9/2003 12:35 AM
 Index 3
 Service Name Rasl2tp
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Driver c:\windows\system32\drivers\rasl2tp.sys (5.2.3790.0
 (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 5/9/2003 12:35 AM
 Index 4
 Service Name PptpMiniport
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 50:50:54:50:30:30
 Driver c:\windows\system32\drivers\raspptp.sys (5.2.3790.0
 (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 5/9/2003 12:35 AM
 Index 5
 Service Name RasPppoe
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 33:50:6F:45:30:30
 Driver c:\windows\system32\drivers\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 5/9/2003 12:35 AM
 Index 6
 Service Name Raspti
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Driver c:\windows\system32\drivers\raspti.sys (5.2.3790.0
 (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 5/9/2003 12:35 AM
 Index 7
 Service Name NdisWan
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Driver c:\windows\system32\drivers\ndiswan.sys (5.2.3790.0
 (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_{B6F7AAFD-48C7-443D-9A4B-5EBA03433078}] SEQUENCE 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_{B6F7AAFD-48C7-443D-9A4B-5EBA03433078}] 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_{14ECDA81-6EF5-4077-8E1E-A2C3E6D2AF19}] SEQUENCE 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_{14ECDA81-6EF5-4077-8E1E-A2C3E6D2AF19}] 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_{4A860E3E-E867-495E-B476-1AD77909BB5D}] 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_{4A860E3E-E867-495E-B476-1AD77909BB5D}] 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 RLSA	Yes
Supports RLSA	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)

[Parallel]

Item	Value
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[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	3.90 GB (4,190,433,280 bytes)
Free Space	513.32 MB (538,255,360 bytes)
Volume Name	
Volume Serial Number	74C0AB70
Drive	D:
Description	CD-ROM Disc
Drive	Z:
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	146.46 GB (157,265,424,384 bytes)
Free Space	34.52 GB (37,067,603,968 bytes)
Volume Name	New Volume
Volume Serial Number	D010BE59

[Disks]

Item	Value
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Description \\.\PHYSICALDRIVE15
 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 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549
 Total Sectors 40,949,685
 Total Tracks 649,995
 Tracks/Cylinder 255
 Partition Disk #15, Partition #0
 Partition Size 19.53 GB (20,966,206,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE16
 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 9.76 GB (10,479,006,720 bytes)
 Total Cylinders 1,274
 Total Sectors 20,466,810
 Total Tracks 324,870
 Tracks/Cylinder 255
 Partition Disk #16, Partition #0
 Partition Size 9.76 GB (10,478,974,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE17
 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 18.55 GB (19,913,402,880 bytes)
 Total Cylinders 2,421
 Total Sectors 38,893,365
 Total Tracks 617,355
 Tracks/Cylinder 255
 Partition Disk #17, Partition #0
 Partition Size 18.55 GB (19,913,370,624 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE18
 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 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549
 Total Sectors 40,949,685
 Total Tracks 649,995
 Tracks/Cylinder 255
 Partition Disk #18, Partition #0
 Partition Size 19.53 GB (20,966,206,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE19
 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 9.76 GB (10,479,006,720 bytes)
 Total Cylinders 1,274
 Total Sectors 20,466,810
 Total Tracks 324,870
 Tracks/Cylinder 255
 Partition Disk #19, Partition #0
 Partition Size 9.76 GB (10,478,974,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE20
 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 18.55 GB (19,913,402,880 bytes)
 Total Cylinders 2,421
 Total Sectors 38,893,365
 Total Tracks 617,355
 Tracks/Cylinder 255
 Partition Disk #20, Partition #0
 Partition Size 18.55 GB (19,913,370,624 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE21
 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 #21, 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 19.53 GB (20,966,238,720 bytes)
Total Cylinders 2,549
Total Sectors 40,949,685
Total Tracks 649,995
Tracks/Cylinder 255
Partition Disk #7, Partition #0
Partition Size 19.53 GB (20,966,206,464 bytes)
Partition Starting Offset 32,256 bytes

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 9.76 GB (10,479,006,720 bytes)
Total Cylinders 1,274
Total Sectors 20,466,810
Total Tracks 324,870
Tracks/Cylinder 255
Partition Disk #8, Partition #0
Partition Size 9.76 GB (10,478,974,464 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 18.55 GB (19,913,402,880 bytes)
Total Cylinders 2,421
Total Sectors 38,893,365
Total Tracks 617,355
Tracks/Cylinder 255
Partition Disk #9, Partition #0
Partition Size 18.55 GB (19,913,370,624 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 19.53 GB (20,966,238,720 bytes)
Total Cylinders 2,549
Total Sectors 40,949,685
Total Tracks 649,995
Tracks/Cylinder 255
Partition Disk #10, Partition #0
Partition Size 19.53 GB (20,966,206,464 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 9.76 GB (10,479,006,720 bytes)
Total Cylinders 1,274
Total Sectors 20,466,810
Total Tracks 324,870
Tracks/Cylinder 255
Partition Disk #11, Partition #0
Partition Size 9.76 GB (10,478,974,464 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 18.55 GB (19,913,402,880 bytes)
Total Cylinders 2,421
Total Sectors 38,893,365
Total Tracks 617,355
Tracks/Cylinder 255
Partition Disk #12, Partition #0
Partition Size 18.55 GB (19,913,370,624 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 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 #13, Partition #0
 Partition Size 29.29 GB (31,453,438,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE14
 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 2.93 GB (3,142,056,960 bytes)
 Total Cylinders 382
 Total Sectors 6,136,830
 Total Tracks 97,410
 Tracks/Cylinder 255
 Partition Disk #14, Partition #0
 Partition Size 2.93 GB (3,142,024,704 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE29
 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 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549
 Total Sectors 40,949,685
 Total Tracks 649,995
 Tracks/Cylinder 255
 Partition Disk #29, Partition #0
 Partition Size 19.53 GB (20,966,206,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE30
 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 9.76 GB (10,479,006,720 bytes)
 Total Cylinders 1,274

Total Sectors 20,466,810
 Total Tracks 324,870
 Tracks/Cylinder 255
 Partition Disk #30, Partition #0
 Partition Size 9.76 GB (10,478,974,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE31
 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 18.55 GB (19,913,402,880 bytes)
 Total Cylinders 2,421
 Total Sectors 38,893,365
 Total Tracks 617,355
 Tracks/Cylinder 255
 Partition Disk #31, Partition #0
 Partition Size 18.55 GB (19,913,370,624 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE32
 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 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549
 Total Sectors 40,949,685
 Total Tracks 649,995
 Tracks/Cylinder 255
 Partition Disk #32, Partition #0
 Partition Size 19.53 GB (20,966,206,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE33
 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 9.76 GB (10,479,006,720 bytes)
 Total Cylinders 1,274
 Total Sectors 20,466,810
 Total Tracks 324,870
 Tracks/Cylinder 255
 Partition Disk #33, Partition #0
 Partition Size 9.76 GB (10,478,974,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE34
 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 18.55 GB (19,913,402,880 bytes)
 Total Cylinders 2,421
 Total Sectors 38,893,365
 Total Tracks 617,355
 Tracks/Cylinder 255
 Partition Disk #34, Partition #0
 Partition Size 18.55 GB (19,913,370,624 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE35
 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 #35, Partition #0
 Partition Size 29.29 GB (31,453,438,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE36
 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 #36, Partition #0
 Partition Size 5.85 GB (6,284,081,664 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE22
 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 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549
 Total Sectors 40,949,685
 Total Tracks 649,995
 Tracks/Cylinder 255
 Partition Disk #22, Partition #0
 Partition Size 19.53 GB (20,966,206,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE23
 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 9.76 GB (10,479,006,720 bytes)
 Total Cylinders 1,274
 Total Sectors 20,466,810
 Total Tracks 324,870
 Tracks/Cylinder 255
 Partition Disk #23, Partition #0
 Partition Size 9.76 GB (10,478,974,464 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE24
 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 18.55 GB (19,913,402,880 bytes)
 Total Cylinders 2,421
 Total Sectors 38,893,365
 Total Tracks 617,355
 Tracks/Cylinder 255
 Partition Disk #24, Partition #0
 Partition Size 18.55 GB (19,913,370,624 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE25
 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 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549

Total Sectors 40,949,685
Total Tracks 649,995
Tracks/Cylinder 255
Partition Disk #25, Partition #0
Partition Size 19.53 GB (20,966,206,464 bytes)
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE26
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 9.76 GB (10,479,006,720 bytes)
Total Cylinders 1,274
Total Sectors 20,466,810
Total Tracks 324,870
Tracks/Cylinder 255
Partition Disk #26, Partition #0
Partition Size 9.76 GB (10,478,974,464 bytes)
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE27
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 18.55 GB (19,913,402,880 bytes)
Total Cylinders 2,421
Total Sectors 38,893,365
Total Tracks 617,355
Tracks/Cylinder 255
Partition Disk #27, Partition #0
Partition Size 18.55 GB (19,913,370,624 bytes)
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE28
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 #28, Partition #0
Partition Size 29.29 GB (31,453,438,464 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 19.53 GB (20,966,238,720 bytes)
Total Cylinders 2,549
Total Sectors 40,949,685
Total Tracks 649,995
Tracks/Cylinder 255
Partition Disk #0, Partition #0
Partition Size 19.53 GB (20,966,206,464 bytes)
Partition Starting Offset 32,256 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 9.76 GB (10,479,006,720 bytes)
Total Cylinders 1,274
Total Sectors 20,466,810
Total Tracks 324,870
Tracks/Cylinder 255
Partition Disk #1, Partition #0
Partition Size 9.76 GB (10,478,974,464 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 18.55 GB (19,913,402,880 bytes)
Total Cylinders 2,421
Total Sectors 38,893,365
Total Tracks 617,355
Tracks/Cylinder 255
Partition Disk #2, Partition #0
Partition Size 18.55 GB (19,913,370,624 bytes)
Partition Starting Offset 32,256 bytes

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

SCSI Bus Not Available
 SCSI Logical Unit Not Available
 SCSI Port Not Available
 SCSI Target ID Not Available
 Sectors/Track 63
 Size 19.53 GB (20,966,238,720 bytes)
 Total Cylinders 2,549
 Total Sectors 40,949,685
 Total Tracks 649,995
 Tracks/Cylinder 255
 Partition Disk #3, Partition #0
 Partition Size 19.53 GB (20,966,206,464 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 9.76 GB (10,479,006,720 bytes)
 Total Cylinders 1,274
 Total Sectors 20,466,810
 Total Tracks 324,870
 Tracks/Cylinder 255
 Partition Disk #4, Partition #0
 Partition Size 9.76 GB (10,478,974,464 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 18.55 GB (19,913,402,880 bytes)
 Total Cylinders 2,421
 Total Sectors 38,893,365
 Total Tracks 617,355
 Tracks/Cylinder 255
 Partition Disk #5, Partition #0
 Partition Size 18.55 GB (19,913,370,624 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 Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 0
 Sectors/Track 32
 Size 3.91 GB (4,194,631,680 bytes)
 Total Cylinders 1,004
 Total Sectors 8,192,640
 Total Tracks 256,020
 Tracks/Cylinder 255
 Partition Disk #37, Partition #0
 Partition Size 3.90 GB (4,190,437,376 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 1
 Sectors/Track 32
 Size 2.93 GB (3,145,973,760 bytes)
 Total Cylinders 753
 Total Sectors 6,144,480
 Total Tracks 192,015
 Tracks/Cylinder 255
 Partition Disk #38, Partition #0
 Partition Size 2.93 GB (3,141,779,456 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 2
 Sectors/Track 32
 Size 5.37 GB (5,765,529,600 bytes)
 Total Cylinders 1,380
 Total Sectors 11,260,800
 Total Tracks 351,900
 Tracks/Cylinder 255
 Partition Disk #39, Partition #0
 Partition Size 5.37 GB (5,761,335,296 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 3
 Sectors/Track 32
 Size 2.93 GB (3,145,973,760 bytes)
 Total Cylinders 753
 Total Sectors 6,144,480
 Total Tracks 192,015
 Tracks/Cylinder 255
 Partition Disk #40, Partition #0
 Partition Size 2.93 GB (3,141,779,456 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 4
 Sectors/Track 32
 Size 5.37 GB (5,765,529,600 bytes)
 Total Cylinders 1,380
 Total Sectors 11,260,800
 Total Tracks 351,900
 Tracks/Cylinder 255
 Partition Disk #41, Partition #0
 Partition Size 5.37 GB (5,761,335,296 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 5
 Sectors/Track 32
 Size 11.72 GB (12,583,895,040 bytes)
 Total Cylinders 3,012
 Total Sectors 24,577,920
 Total Tracks 768,060
 Tracks/Cylinder 255
 Partition Disk #42, Partition #0
 Partition Size 11.72 GB (12,579,700,736 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1

SCSI Bus 4
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 6
 Sectors/Track 32
 Size 1.08 GB (1,161,461,760 bytes)
 Total Cylinders 278
 Total Sectors 2,268,480
 Total Tracks 70,890
 Tracks/Cylinder 255
 Partition Disk #43, Partition #0
 Partition Size 1.08 GB (1,157,267,456 bytes)
 Partition Starting Offset 16,384 bytes

[SCSI]

Item Value
 Name Compaq Smart Array 5i Controller
 Manufacturer Compaq
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_01\3
 &13C0B0C5&0&08
 Memory Address 0xF79C0000-0xF79FFFFF
 I/O Port 0x00003000-0x000030FF
 Memory Address 0xF78F0000-0xF78F3FFF
 IRQ Channel IRQ 31
 Driver c:\windows\system32\drivers\cpqcissm.sys (5.8.74.1 built by:
 Microsoft, 13.00 KB (13,312 bytes), 3/25/2003 12:00 AM)

Name Smart Array 5312 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3
 &1070020&0&08
 Memory Address 0xF7BC0000-0xF7BFFFFF
 I/O Port 0x00004000-0x000044FF
 Memory Address 0xF7AF0000-0xF7AF3FFF
 IRQ Channel IRQ 18
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 5/2/2003 3:57 PM)

Name Smart Array 5312 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3
 &1070020&0&10
 Memory Address 0xF7B80000-0xF7BBFFFF
 I/O Port 0x00004400-0x000044FF
 Memory Address 0xF7AE0000-0xF7AE3FFF
 IRQ Channel IRQ 16
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 5/2/2003 3:57 PM)

Name Smart Array 5312 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3
 &29E81982&0&10
 Memory Address 0xF7D80000-0xF7DBFFFF
 I/O Port 0x00005000-0x000050FF
 Memory Address 0xF7CF0000-0xF7CF3FFF
 IRQ Channel IRQ 20
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 5/2/2003 3:57 PM)

Name Smart Array 5312 Controller (Non-Miniport)

Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3
 &172E68DD&0&08
 Memory Address 0xF7FC0000-0xF7FFFFFF
 I/O Port 0x00006000-0x000064FF
 Memory Address 0xF7EF0000-0xF7EF3FFF
 IRQ Channel IRQ 26
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 5/2/2003 3:57 PM)

Name Smart Array 5312 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3
 &172E68DD&0&10
 Memory Address 0xF7F80000-0xF7FBFFFF
 I/O Port 0x00006400-0x000064FF
 Memory Address 0xF7EE0000-0xF7EE3FFF
 IRQ Channel IRQ 24
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 5/2/2003 3:57 PM)

[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 PCI\IDE\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 PCI\IDE\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

[Problem Devices]

Device PNP Device ID Error Code

[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		Kernel Driver		
	c:\windows\system32\drivers\acpi.sys	Yes	Boot	Running	OK
	Yes	Normal			No
acpiec	ACPIEC	c:\windows\system32\drivers\acpiec.sys	Kernel		
Driver	No	Disabled	Stopped	OK	Normal
	No				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
afent	afent	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
afd	AFD Networking Support Environment		Kernel Driver		
	c:\windows\system32\drivers\afd.sys	Yes	Auto	Running	OK
	Yes	Normal			No
aha154x	Aha154x	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
aic78u2	aic78u2	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
aic78xx	aic78xx	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
aliide	AliIde	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
asynmac	RAS Asynchronous Media Driver		Kernel Driver		
	c:\windows\system32\drivers\asynmac.sys	No	Manual	Stopped	OK
	No				No
atapi	Standard IDE/ESDI Hard Disk Controller		Kernel Driver		
	c:\windows\system32\drivers\atapi.sys	Yes	Boot	Running	OK
	Yes	Normal			No
atdisk	Atdisk	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Ignore	No
ati2mpad	ati2mpad	c:\windows\system32\drivers\ati2mpad.sys	Kernel		
Driver	No	Manual	Stopped	OK	Ignore
	No				No
atmarpc	ATM ARP Client Protocol		Kernel Driver		
	c:\windows\system32\drivers\atmarpc.sys	No	Manual	Stopped	OK
	No				No

audstub	Audio Stub Driver	c:\windows\system32\drivers\audstub.sys	Kernel Driver	Yes	Manual	Running	OK		
	Normal	No	Yes						
b57w2k	BCM5701 Gigabit Ethernet	c:\windows\system32\drivers\b57xp32.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
	Yes								
beep	Beep	c:\windows\system32\drivers\beep.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
	Yes								
cbidf2k	cbidf2k	c:\windows\system32\drivers\cbidf2k.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
	No								
cd20xmt	cd20xmt	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Yes								
cdfs	Cdfs	c:\windows\system32\drivers\cdfs.sys	File System Driver	Yes	Disabled	Running	OK	Normal	No
	No	Yes							
cdrom	CD-ROM Driver	c:\windows\system32\drivers\cdrom.sys	Kernel Driver	Normal	No	Yes	System	Running	OK
	Kernel Driver	Yes		System	Running	OK			
changer	Changer	Not Available	Kernel Driver	System	Stopped	OK	Ignore	No	No
	System	Stopped		Ignore	No	No			
clusdisk	Cluster Disk Driver	c:\windows\system32\drivers\clusdisk.sys	Kernel Driver	Normal	No	No	Disabled	Stopped	OK
	Kernel Driver	No		Disabled	Stopped	OK			
cmdide	CmdIde	Not Available	Kernel Driver	Normal	No	No			
	Disabled	Stopped		Normal	No	No			
cpqarray	Cpqarray	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Disabled	Stopped		Normal	No	No			
cpqarray2	cpqarray2	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Disabled	Stopped		Normal	No	No			
cpqasm2	HP ProLiant iLO Advanced System Management Controller	c:\windows\system32\drivers\cpqasm2.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
	Yes								
cpqcidrv	HP Integrated Lights-Out	c:\windows\system32\drivers\cpqcidrv.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
	Yes								
cpqcissm	cpqcissm	c:\windows\system32\drivers\cpqcissm.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
cpqfcalm	cpqfcalm	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Disabled	Stopped		Normal	No	No			
crcdisk	CRC Disk Filter Driver	c:\windows\system32\drivers\crcdisk.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
dac960nt	dac960nt	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Disabled	Stopped		Normal	No	No			
dellcerc	dellcerc	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Disabled	Stopped		Normal	No	No			
dfsdriver	DfsDriver	c:\windows\system32\drivers\dfs.sys	File System Driver	No	Yes		Boot	Running	OK
	File System Driver	Yes		Boot	Running	OK		Normal	
disk	Disk Driver	c:\windows\system32\drivers\disk.sys	Kernel Driver	Normal	No	Yes	Boot	Running	OK
	Kernel Driver	Yes		Boot	Running	OK		Normal	
dmboot	dmboot	c:\windows\system32\drivers\dmboot.sys	Kernel Driver	Yes	Disabled	Running	OK	Normal	No
	Kernel Driver	Yes		Disabled	Running	OK		Normal	No
dmio	Logical Disk Manager Driver	c:\windows\system32\drivers\dmio.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
dmload	dmload	c:\windows\system32\drivers\dmload.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
dpti2o	dpti2o	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Kernel Driver	Not Available		Disabled	Stopped	OK		Normal	No
fastfat	Fastfat	c:\windows\system32\drivers\fastfat.sys	File System Driver	No	No	No	Disabled	Stopped	OK
	File System Driver	No		Disabled	Stopped	OK		Normal	
fdc	Floppy Disk Controller Driver	c:\windows\system32\drivers\fdc.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
	Kernel Driver	Yes		Manual	Running	OK		Normal	No
fips	Fips	c:\windows\system32\drivers\fips.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
	Kernel Driver	Yes		System	Running	OK		Normal	No
flpydisk	Floppy Disk Driver	c:\windows\system32\drivers\flpydisk.sys	Kernel Driver	Normal	No	Yes		Manual	Running
	Kernel Driver	Yes		Manual	Running	OK			
ftdisk	Volume Manager Driver	c:\windows\system32\drivers\ftdisk.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
gpc	Generic Packet Classifier	c:\windows\system32\drivers\msgpc.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
	Kernel Driver	Yes		Manual	Running	OK		Normal	No
hpn	hpn	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Kernel Driver	Not Available		Disabled	Stopped	OK		Normal	No
hpcqissb	Smart Array Controllers Non-Miniport Bus Driver	c:\windows\system32\drivers\hpcqissb.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
hpcqissd	Smart Array Controllers Non-Miniport Disk Driver	c:\windows\system32\drivers\hpcqissd.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
	Kernel Driver	Yes		Boot	Running	OK		Normal	No
hpt3xx	hpt3xx	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Kernel Driver	Not Available		Disabled	Stopped	OK		Normal	No
http	HTTP	c:\windows\system32\drivers\http.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
	Kernel Driver	No		Manual	Stopped	OK		Normal	No
i2omgmt	i2omgmt	Not Available	Kernel Driver	System	Stopped	OK		Normal	No
	Kernel Driver	Not Available		System	Stopped	OK		Normal	No
i2omp	i2omp	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Kernel Driver	Not Available		Disabled	Stopped	OK		Normal	No
i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver	c:\windows\system32\drivers\i8042prt.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
	Kernel Driver	Yes		System	Running	OK		Normal	No
iirsp	iirsp	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Kernel Driver	Not Available		Disabled	Stopped	OK		Normal	No
imapi	CD-Burning Filter Driver	c:\windows\system32\drivers\imapi.sys	Kernel Driver	No	System	Stopped	OK	Normal	No
	Kernel Driver	No		System	Stopped	OK		Normal	No
intelide	IntellIde	Not Available	Kernel Driver	Disabled	Stopped	OK		Normal	No
	Kernel Driver	Not Available		Disabled	Stopped	OK		Normal	No
ipfilterdriver	IP Traffic Filter Driver	c:\windows\system32\drivers\ipfltdrv.sys	Kernel Driver						
	Kernel Driver								

	No	Manual	Stopped	OK	Normal	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
ipsecc	IPSEC driver c:\windows\system32\drivers\ipsecc.sys					
	Kernel Driver	Yes	System	Running	OK	
	Normal	No	Yes			
ipsraidn	ipsraidn Not Available Kernel Driver No					
	Disabled	Stopped	OK	Normal	No	No
isapnp	PnP ISA/EISA Bus Driver					
	c:\windows\system32\drivers\isapnp.sys				Kernel Driver	
	Yes	Boot	Running	OK	Critical	No
	Yes					
kbdclass	Keyboard Class Driver					
	c:\windows\system32\drivers\kbdclass.sys				Kernel Driver	
	Yes	System	Running	OK	Normal	No
	Yes					
ksecdd	KSecDD c:\windows\system32\drivers\ksecdd.sys Kernel					
Driver	Yes	Boot	Running	OK	Normal	No
	Yes					
lp6nds35	lp6nds35 Not Available Kernel Driver No					
	Disabled	Stopped	OK	Normal	No	No
mnmd	mnmd c:\windows\system32\drivers\mnmd.sys Kernel					
Driver	Yes	System	Running	OK	Ignore	No
	Yes					
modem	Modem c:\windows\system32\drivers\modem.sys Kernel					
Driver	No	Manual	Stopped	OK	Ignore	No
	No					
mouclass	Mouse Class Driver c:\windows\system32\drivers\mouclass.sys					
	Kernel Driver	Yes	System	Running	OK	
	Normal	No	Yes			
mountmgr	Mount Point Manager					
	c:\windows\system32\drivers\mountmgr.sys				Kernel Driver	
	Yes	Boot	Running	OK	Normal	No
	Yes					
mraid35x	mraid35x Not Available Kernel Driver No					
	Disabled	Stopped	OK	Normal	No	No
mrxdav	WebDav Client Redirector					
	c:\windows\system32\drivers\mrxdav.sys				File System Driver	
	No	Manual	Stopped	OK	Normal	No
	No					
mrxsmb	MRXSMB c:\windows\system32\drivers\mrxsmb.sys File					
System Driver	Yes	System	Running	OK	Normal	
	No	Yes				
msfs	Msfs c:\windows\system32\drivers\msfs.sys File					
System Driver	Yes	System	Running	OK	Normal	
	No	Yes				
mup	Mup c:\windows\system32\drivers\mup.sys File					
System Driver	Yes	Boot	Running	OK	Normal	
	No	Yes				
ndis	NDIS System Driver c:\windows\system32\drivers\ndis.sys					
	Kernel Driver	Yes	Boot	Running	OK	
	Normal	No	Yes			
ndistapi	Remote Access NDIS TAPI Driver					
	c:\windows\system32\drivers\ndistapi.sys				Kernel Driver	
	Yes	Manual	Running	OK	Normal	No
	Yes					
ndisuio	NDIS Usermode I/O Protocol					
	c:\windows\system32\drivers\ndisuio.sys				Kernel Driver	
	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	No	Yes			
netbios	NetBIOS Interface c:\windows\system32\drivers\netbios.sys					
	File System Driver	Yes	System	Running	OK	
	Normal	No	Yes			
netbt	NetBios over Tcpip c:\windows\system32\drivers\netbt.sys					
	Kernel Driver	Yes	System	Running	OK	
	Normal	No	Yes			
nfrd960	nfrd960 Not Available Kernel Driver No					
	Disabled	Stopped	OK	Normal	No	No
npfs	Npfs c:\windows\system32\drivers\npfs.sys File					
System Driver	Yes	System	Running	OK	Normal	
	No	Yes				
ntfs	Ntfs c:\windows\system32\drivers\ntfs.sys File					
System Driver	Yes	Disabled	Running	OK	Normal	
	No	Yes				
null	Null c:\windows\system32\drivers\null.sys Kernel					
Driver	Yes	System	Running	OK	Normal	No
	Yes					
parport	Parport c:\windows\system32\drivers\parport.sys Kernel					
Driver	No	Manual	Stopped	OK	Ignore	No
	No					
partmgr	Partition Manager c:\windows\system32\drivers\partmgr.sys					
	Kernel Driver	Yes	Boot	Running	OK	
	Normal	No	Yes			
pci	PCI Bus Driver c:\windows\system32\drivers\pci.sys					
	Kernel Driver	Yes	Boot	Running	OK	
	Critical	No	Yes			
pciide	PCIIde c:\windows\system32\drivers\pciide.sys Kernel					
Driver	Yes	Boot	Running	OK	Normal	No
	Yes					
pcmcia	Pcmcia c:\windows\system32\drivers\pcmcia.sys Kernel					
Driver	No	Disabled	Stopped	OK	Normal	No
	No					
pdcomp	PDCOMP Not Available Kernel Driver No					
	Manual	Stopped	OK	Ignore	No	No
pdframe	PDFRAME Not Available Kernel Driver					
	No	Manual	Stopped	OK	Ignore	No
	No					
pdreli	PDRELI Not Available Kernel Driver No					
	Manual	Stopped	OK	Ignore	No	No
	No					
pdrframe	PDRFRAME Not Available Kernel Driver					
	No	Manual	Stopped	OK	Ignore	No
	No					
perc2	perc2 Not Available Kernel Driver No					
	Disabled	Stopped	OK	Normal	No	No
	No					
perc2hib	perc2hib Not Available Kernel Driver No					
	Disabled	Stopped	OK	Normal	No	No
	No					
pptpminiport	WAN Miniport (PPTP)					
	c:\windows\system32\drivers\rasppptp.sys				Kernel Driver	
	Yes	Manual	Running	OK	Normal	No
	Yes					
processor	Processor Driver c:\windows\system32\drivers\processr.sys					
	Kernel Driver	Yes	Manual	Running	OK	
	Normal	No	Yes			
ptlink	Direct Parallel Link Driver					
	c:\windows\system32\drivers\ptlink.sys				Kernel Driver	
	Yes	Manual	Running	OK	Normal	No
	Yes					

ql1080	ql1080 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	simbad	Simbad Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
ql10wnt	QL10wnt Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	sparrow	Sparrow Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
ql12160	ql12160 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	srv	Srv System Driver	c:\windows\system32\drivers\srv.sys Yes Manual Running No Yes	Kernel Driver OK	File Normal
ql1240	ql1240 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	swenum	Software Bus Driver	c:\windows\system32\drivers\swenum.sys Kernel Driver Yes Manual Running Normal No Yes	Kernel Driver OK	File Normal
ql1280	ql1280 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	symc810	symc810 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
ql2100	ql2100 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	symc8xx	symc8xx Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
ql2200	ql2200 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	symmpi	symmpi Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
ql2300	ql2300 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No	sym_hi	sym_hi Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
rasacd	Remote Access Auto Connection Driver c:\windows\system32\drivers\rasacd.sys Yes System Running OK			Kernel Driver Normal No	sym_u3	sym_u3 Disabled	Not Available Stopped OK	Kernel Driver Normal No	No No
rasl2tp	WAN Miniport (L2TP) c:\windows\system32\drivers\rasl2tp.sys Yes Manual Running OK			Kernel Driver Normal No	sysmgmt	HP ProLiant System Management Interface Driver c:\windows\system32\drivers\sysmgmt.sys Yes Manual Running OK			Kernel Driver Normal No
raspppoe	Remote Access PPPOE Driver c:\windows\system32\drivers\raspppoe.sys Yes Manual Running OK			Kernel Driver Normal No	tcpip	TCP/IP Protocol Driver c:\windows\system32\drivers\tcpip.sys Yes System Running OK			Kernel Driver Normal No
raspti	Direct Parallel	c:\windows\system32\drivers\raspti.sys	Kernel Driver Normal No	Yes Manual Running OK	tdpipe	TDPIPE Driver	c:\windows\system32\drivers\tdpipe.sys	Kernel Driver No	Ignore No
rdbss	Rdbss	c:\windows\system32\drivers\rdbss.sys	File System Driver	No Yes	tdtcp	TDTCP Driver	c:\windows\system32\drivers\tdtcp.sys	Kernel Driver Yes	Ignore No
rdpcdd	RDPCDD	c:\windows\system32\drivers\rdpcdd.sys	Kernel Driver	Yes System Running OK	termdd	Terminal Device Driver c:\windows\system32\drivers\termdd.sys			Kernel Driver Normal No
rdpdr	Terminal Server Device Redirector Driver c:\windows\system32\drivers\rdpdr.sys Yes Manual Running OK			Kernel Driver Normal No	toside	TosIde	Not Available Stopped OK	Kernel Driver Normal No	No No
rdpwd	RDPWD	c:\windows\system32\drivers\rdpwd.sys	Kernel Driver	Yes Manual Running OK	udfs	Udfs System Driver	c:\windows\system32\drivers\udfs.sys	File System Driver	No No
redbook	Digital CD Audio Playback Filter Driver c:\windows\system32\drivers\redbook.sys Yes System Running OK			Kernel Driver Normal No	ultra	ultra	Not Available Stopped OK	Kernel Driver Normal No	No No
secdrv	Secdrv	c:\windows\system32\drivers\secdrv.sys	Kernel Driver	No Manual Stopped OK	update	Microcode Update Driver c:\windows\system32\drivers\update.sys Yes Manual Running OK			Kernel Driver Normal No
serenum	Serenum Filter Driver c:\windows\system32\drivers\serenum.sys Kernel Driver Normal No			Yes Manual Running OK	usbhub	USB2 Enabled Hub	c:\windows\system32\drivers\usbhub.sys	Kernel Driver Normal No	Yes Manual Running OK
serial	Serial port driver	c:\windows\system32\drivers\serial.sys	Kernel Driver	Ignore No Yes	usbohci	Microsoft USB Open Host Controller Miniport Driver c:\windows\system32\drivers\usbohci.sys Yes Manual Running OK			Kernel Driver Normal No
sfloppy	Sfloppy	c:\windows\system32\drivers\sfloppy.sys	Kernel Driver	No System Stopped OK	vga	vga Driver	c:\windows\system32\drivers\vgapnp.sys	Kernel Driver Yes	Ignore No
					vgasave	VGA Display Controller. c:\windows\system32\drivers\vgas.sys			Kernel Driver

	No	System	Stopped	OK	Ignore	No
viaide	No	Not Available	Not Available	Kernel Driver	Normal	No
	Disabled	Stopped	OK	Normal	No	No
volsnap	Storage volumes	c:\windows\system32\drivers\volsnap.sys				
	Kernel Driver	Yes	Boot	Running	OK	
	Normal	No	Yes			
wanarp	Remote Access IP ARP Driver	c:\windows\system32\drivers\wanarp.sys				
	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes	Manual	Running	OK	Normal	No
wdica	WDICA	Not Available	Kernel Driver	Ignore	No	No
	Manual	Stopped	OK	Ignore	No	No
wlbs	Network Load Balancing	c:\windows\system32\drivers\wlbs.sys				
	Kernel Driver	Yes	Manual	Stopped	OK	Normal
	No	Manual	Stopped	OK	Normal	No
	No					

[Signed Drivers]

Device Name	Signed	Device Class	Driver Version
Name	Device ID	Manufacturer	INF Name Driver
Not Available	Not Available	Not Available	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	HTREE\ROOT\0	
ACPI Multiprocessor PC	Yes	COMPUTER	
	5.2.3790.0 10/1/2002	(Standard computers)	hal.inf Not
Available	ROOT\ACPL_HAL\0000		
Microsoft ACPI-Compliant System	Yes	SYSTEM	
	5.2.3790.0 10/1/2002	Microsoft	acpi.inf Not Available
	ACPL_HAL\PNP0C08\0		
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
	cpu.inf	Not Available	
	ACPI\GENUINEINTEL_-X86_FAMILY_15_MODEL_2_0		
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
	cpu.inf	Not Available	
	ACPI\GENUINEINTEL_-X86_FAMILY_15_MODEL_2_1		
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
	cpu.inf	Not Available	
	ACPI\GENUINEINTEL_-X86_FAMILY_15_MODEL_2_2		
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
	cpu.inf	Not Available	
	ACPI\GENUINEINTEL_-X86_FAMILY_15_MODEL_2_3		
PCI bus	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
	machine.inf	Not Available	ACPI\PNP0A03\0
ServerWorks Grand Champion	Yes	CMIC_HE - NorthBridge High End	5.2.3790.0 10/1/2002 ServerWorks (RCC)
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_22\3		
	&267A616A&0&00		
ServerWorks Grand Champion	Yes	CMIC_HE - NorthBridge High End	5.2.3790.0 10/1/2002 ServerWorks (RCC)
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_00\3		
	&267A616A&0&01		
ServerWorks Grand Champion	Yes	CMIC_HE - NorthBridge High End	5.2.3790.0 10/1/2002 ServerWorks (RCC)
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_00\3		
	&267A616A&0&02		
ServerWorks Grand Champion	Yes	CMIC_HE - NorthBridge High End	5.2.3790.0 10/1/2002 ServerWorks (RCC)

machine.inf	Not Available		
PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_00\3			
&267A616A&0&03			
HP ProLiant iLO Advanced System Management Controller	Yes		
SYSTEM	5.27.2195.0	12/30/2002	Compaq
oem1.inf	Not Available		
PCI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_01\3			
&267A616A&0&10			
HP iLO Management Interface Driver	Yes	MULTIFUNCTION	
1.4.0.0	9/4/2002	Hewlett-Packard Company	oem2.inf
Not Available			
PCI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_01\3			
&267A616A&0&12			
Standard VGA Graphics Adapter	Yes	DISPLAY	5.2.3790.0
10/1/2002 (Standard display types)		display.inf	Not Available
Available			
PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3			
&267A616A&0&18			
Default Monitor	Yes	MONITOR	5.1.2001.0 6/6/2001
(Standard monitor types)		monitor.inf	Not Available
Available			
DISPLAY\DEFAULT_MONITOR\4&89B5141&0&12345678&			
00&03			
PCI standard ISA bridge	Yes	SYSTEM	5.2.3790.0
10/1/2002 (Standard system devices)		machine.inf	
Not Available			
PCI\VEN_1166&DEV_0201&SUBSYS_00000000&REV_93\3			
&267A616A&0&78			
ISAPNP Read Data Port	Yes	SYSTEM	5.2.3790.0
10/1/2002 (Standard system devices)		machine.inf	
Not Available		ISAPNP\READDATAPORT\0	
Motherboard resources	Yes	SYSTEM	5.2.3790.0
10/1/2002 (Standard system devices)		machine.inf	
Not Available		ACPI\PNP0C02\0	
Programmable interrupt controller	Yes	SYSTEM	
5.2.3790.0 10/1/2002 (Standard system devices)		machine.inf	Not Available
ACPI\PNP0000\4&35118DFF&0			
System timer	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard 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			
Communications Port	Yes	PORTS	5.2.3790.0 10/1/2002 (Standard port types)
msports.inf	Not Available	ACPI\PNP0501\0	
Standard floppy disk controller	Yes	FDC	5.2.3790.0
10/1/2002 (Standard floppy disk controllers)		fdc.inf	
Not Available		ACPI\PNP0700\5&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								SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&
&267A616A&0&79								REV_2.38\4&3349E2F1&0&420
Primary IDE Channel	Yes	HDC	5.2.3790.0	10/1/2002	(Standard IDE ATA/ATAPI controllers)	mshdc.inf	Not Available	Disk drive Yes
PCI\IDE\IDECHANNEL\4&1024D5C6&0&0								DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives)
CD-ROM Drive	Yes	CDROM	5.2.3790.0	10/1/2002	(Standard CD-ROM drives)	cdrom.inf	Not Available	disk.inf Not Available
IDE\CDROMCOMPAQ_CD-ROM_SN-124_____N102____\5&FB0C83D&0&0.0.0								SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&
Secondary IDE Channel	Yes	HDC	5.2.3790.0	10/1/2002	(Standard IDE ATA/ATAPI controllers)	mshdc.inf	Not Available	REV_2.38\4&3349E2F1&0&430
PCI\IDE\IDECHANNEL\4&1024D5C6&0&1								Disk drive Yes
ServerWorks (RCC) PCI to USB Open Host Controller	Yes	USB	5.2.3790.0	10/1/2002	ServerWorks (RCC)	usbport.inf	Not Available	DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives)
Available								disk.inf Not Available
PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3								SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&
&267A616A&0&7A								REV_2.38\4&3349E2F1&0&440
USB Root Hub	Yes	USB	5.2.3790.0	10/1/2002	(Standard USB Host Controller)	usbport.inf	Not Available	Disk drive Yes
USB\ROOT_HUB\4&AF5358C&0								DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives)
Serverworks Champion CSB5 - SouthBridge 5 LPC	Yes	SYSTEM	5.2.3790.0	10/1/2002	ServerWorks (RCC)	machine.inf	Not Available	disk.inf Not Available
PCI\VEN_1166&DEV_0225&SUBSYS_00000000&REV_00\3								SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&
&267A616A&0&7B								REV_2.38\4&3349E2F1&0&450
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002	ServerWorks (RCC)	machine.inf	Not Available	Disk drive Yes
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3								DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives)
&267A616A&0&80								disk.inf Not Available
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002	ServerWorks (RCC)	machine.inf	Not Available	SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3								REV_2.38\4&3349E2F1&0&460
&267A616A&0&82								PCI bus Yes
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002	ServerWorks (RCC)	machine.inf	Not Available	SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices)
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3								machine.inf Not Available
&267A616A&0&88								ACPI\PNP0A03\2
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz	Yes	SYSTEM	5.2.3790.0	10/1/2002	ServerWorks (RCC)	machine.inf	Not Available	Smart Array 5312 Controller (Non-Miniport)
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3								No
&267A616A&0&8A								SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard
PCI bus	Yes	SYSTEM	5.2.3790.0	10/1/2002	(Standard system devices)	machine.inf	Not Available	oem0.inf Not Available
Compaq Smart Array 5i Controller								PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3
Yes								&1070020&0&08
SCSIADAPTER 5.2.3790.0 10/1/2002 Compaq pnp SCSI.inf Not Available								Smart Array Logical Volume
PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3								No
&13C0B0C5&0&08								DISKDRIVE 5.6.56.32
Compaq Virtual LUN	Yes	SYSTEM	5.2.3790.0	10/1/2002	Compaq scsidev.inf	Not Available		4/8/2003 Hewlett-Packard oem3.inf Not Available
SCSI\OTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA								HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU
TE&REV_CISS\4&3349E2F1&0&000								ME\4&BE22FCB&0&0000004000000000
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	Smart Array Logical Volume
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								No
REV_2.38\4&3349E2F1&0&400								DISKDRIVE 5.6.56.32
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU
REV_2.38\4&3349E2F1&0&410								ME\4&2AEB327C&0&0000004000000000
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	Smart Array Logical Volume
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								No
REV_2.38\4&3349E2F1&0&410								DISKDRIVE 5.6.56.32
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU
REV_2.38\4&3349E2F1&0&410								ME\4&2AEB327C&0&0100004000000000
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	Smart Array Logical Volume
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								No
REV_2.38\4&3349E2F1&0&410								DISKDRIVE 5.6.56.32
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU
REV_2.38\4&3349E2F1&0&410								ME\4&2AEB327C&0&0100004000000000
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	Smart Array Logical Volume
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								No
REV_2.38\4&3349E2F1&0&410								DISKDRIVE 5.6.56.32
Disk drive	Yes	DISKDRIVE	5.2.3790.0	10/1/2002	(Standard disk drives)	disk.inf	Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&								HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU
REV_2.38\4&3349E2F1&0&410								ME\4&2AEB327C&0&0100004000000000

HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&2AEB327C&0&0200004000000000	PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3&29E81982&0&F0
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\4
4/8/2003 Hewlett-Packard oem3.inf Not Available	
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&2AEB327C&0&0300004000000000	Smart Array 5312 Controller (Non-Miniport) No
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard
4/8/2003 Hewlett-Packard oem3.inf Not Available	oem0.inf Not Available
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&2AEB327C&0&0400004000000000	PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&172E68DD&0&08
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
4/8/2003 Hewlett-Packard oem3.inf Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&2AEB327C&0&0500004000000000	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0000004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
4/8/2003 Hewlett-Packard oem3.inf Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&2AEB327C&0&0600004000000000	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0100004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
4/8/2003 Hewlett-Packard oem3.inf Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&2AEB327C&0&0700004000000000	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0200004000000000
Compaq PCI Hotplug Controller Yes SYSTEM 5.2.3790.0	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
10/1/2002 Compaq machine.inf Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3&1070020&0&F0	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0300004000000000
PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\3	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
BCM5701 Gigabit Ethernet Yes NET 2.91.0.0	4/8/2003 Hewlett-Packard oem3.inf Not Available
10/1/2002 Narrowcom netb57xp.inf Not Available	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0400004000000000
Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
PCI\VEN_14E4&DEV_1645&SUBSYS_007C0E11&REV_15\3&29E81982&0&08	4/8/2003 Hewlett-Packard oem3.inf Not Available
Smart Array 5312 Controller (Non-Miniport) No	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0500004000000000
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
oem0.inf Not Available	4/8/2003 Hewlett-Packard oem3.inf Not Available
PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&29E81982&0&10	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&3523E4BF&0&0600004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	Smart Array 5312 Controller (Non-Miniport) No
4/8/2003 Hewlett-Packard oem3.inf Not Available	SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0000004000000000	oem0.inf Not Available
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	PCI\VEN_0E11&DEV_B178&SUBSYS_40830E11&REV_01\3&172E68DD&0&10
4/8/2003 Hewlett-Packard oem3.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0100004000000000	4/8/2003 Hewlett-Packard oem3.inf Not Available
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&349D8482&0&0000004000000000
4/8/2003 Hewlett-Packard oem3.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0200004000000000	4/8/2003 Hewlett-Packard oem3.inf Not Available
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&349D8482&0&0100004000000000
4/8/2003 Hewlett-Packard oem3.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0300004000000000	4/8/2003 Hewlett-Packard oem3.inf Not Available
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&349D8482&0&0200004000000000
4/8/2003 Hewlett-Packard oem3.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0400004000000000	4/8/2003 Hewlett-Packard oem3.inf Not Available
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&349D8482&0&0300004000000000
4/8/2003 Hewlett-Packard oem3.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0500004000000000	4/8/2003 Hewlett-Packard oem3.inf Not Available
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&349D8482&0&0400004000000000
4/8/2003 Hewlett-Packard oem3.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&1B252EFF&0&0600004000000000	4/8/2003 Hewlett-Packard oem3.inf Not Available
Compaq PCI Hotplug Controller Yes SYSTEM 5.2.3790.0	HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME\4&349D8482&0&0500004000000000
10/1/2002 Compaq machine.inf Not Available	Smart Array Logical Volume No DISKDRIVE 5.6.56.32
	4/8/2003 Hewlett-Packard oem3.inf Not Available

HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU ME\4&349D8482&0&0600004000000000	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B69
Smart Array Logical Volume No DISKDRIVE 5.6.56.32	OFFSET7E00LENGTH4A2EDEC00
4/8/2003 Hewlett-Packard oem3.inf Not Available	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
HPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU ME\4&349D8482&0&0700004000000000	volume.inf Not Available
ACPI Thermal Zone Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6
system devices) machine.inf Not Available	BOFFSET7E00LENGTHB477E00
ACPI\THERMALZONE\THM0	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
ACPI Fixed Feature Button Yes SYSTEM 5.2.3790.0	volume.inf Not Available
10/1/2002 (Standard system devices) machine.inf	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6
Not Available ACPI\FIXEDBUTTON\2&DABA3FF&0	AOFFSET7E00LENGTH4E1AEEC00
Logical Disk Manager Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
system devices) machine.inf Not Available	volume.inf Not Available
ROOT\DMIO\0000	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B75
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	OFFSET7E00LENGTH270987600
volume.inf Not Available	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
STORAGE\VOLUME\1&3735C57B&0&LDM#{C6F7ED6E- D833-4793-BBAC-9DBA179C3FBE}	volume.inf Not Available
Volume Manager Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B74
system devices) machine.inf Not Available	OFFSET7E00LENGTH4A2EDEC00
ROOT\FTDISK\0000	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B77
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B65	OFFSET7E00LENGTH4E1AEEC00
OFFSET7E00LENGTH4E1AEEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B76
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B64	OFFSET7E00LENGTH270987600
OFFSET7E00LENGTH270987600	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B71
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B67	OFFSET7E00LENGTH4A2EDEC00
OFFSET7E00LENGTH4A2EDEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B7
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B66	DOFFSET7E00LENGTH4E1AEEC00
OFFSET7E00LENGTH4E1AEEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B7
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B61	COFFSET7E00LENGTH270987600
OFFSET7E00LENGTH270987600	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B7
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B60	FOFFSET7E00LENGTH4A2EDEC00
OFFSET7E00LENGTH4A2EDEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B79
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B62	EOFFSET7E00LENGTH4E1AEEC00
OFFSET7E00LENGTH4E1AEEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B78
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6	OFFSET7E00LENGTH4A2EDEC00
DOFFSET7E00LENGTH270987600	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B7
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6	AOFFSET7E00LENGTH4E1AEEC00
COFFSET7E00LENGTH4A2EDEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B45
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6	OFFSET7E00LENGTH270987600
FOFFSET7E00LENGTH4E1AEEC00	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B44
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6	OFFSET7E00LENGTH4A2EDEC00
EOFFSET7E00LENGTH270987600	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	volume.inf Not Available
volume.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B46
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6	OFFSET7E00LENGTH4E1AEEC00
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
volume.inf Not Available	volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B6	STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B46
EOFFSET7E00LENGTH270987600	OFFSET7E00LENGTH4E1AEEC00
Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft	
volume.inf Not Available	

Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B41 OFFSET7E00LENGTH270987600	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	ksecdd	Not Available Not Available Not Available	LEGACYDRIVER Not Available ROOT\LEGACY_KSECDD\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATURE3FE3B40 OFFSET7E00LENGTH4A2EDC00	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	mmidd	Not Available Not Available Not Available	LEGACYDRIVER Not Available ROOT\LEGACY_MMIDD\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATURECC7F8D E5OFFSET7E00LENGTH1768F7A00	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	mountmgr	Not Available Not Available Not Available	LEGACYDRIVER Not Available ROOT\LEGACY_MOUNTMGR\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATURED98FD9 8OFFSET4000LENGTH9C5000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	NDIS System Driver	Not Available Not Available Not Available	LEGACYDRIVER Not Available ROOT\LEGACY_NDIS\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREDA05D A07OFFSET4000LENGTHB43C000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	Remote Access NDIS TAPI Driver	Not Available LEGACYDRIVER Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_NDISTAPI\0000	Not Available Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREDA05D A06OFFSET4000LENGTH157670000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	NDIS Usermode I/O Protocol	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_NDISUIO\0000	LEGACYDRIVER Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREDA05D A05OFFSET4000LENGTHB43C000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	NDProxy	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_NDPROXY\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREDA05D A08OFFSET4000LENGTH157670000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	NetBios over Tcpip	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_NETBT\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREDA05D A08OFFSET4000LENGTH157670000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	Null	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_NULL\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREE81082A6 9OFFSET4000LENGTH2EDC0000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	Partition Manager	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_PARTMGR\0000	Not Available Not Available Not Available
Generic volume volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATUREE81082A6 A0FFSET4000LENGTH44FA8000	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft	Remote Access Auto Connection Driver	Not Available LEGACYDRIVER Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_RASACD\0000	Not Available Not Available Not Available Not Available
AFD Networking Support Environment LEGACYDRIVER Not Available Not Available ROOT\LEGACY_AFD\0000	Not Available	LEGACYDRIVER Not Available Not Available	RDPCCDD	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_RDPCCDD\0000	Not Available Not Available Not Available
Beep LEGACYDRIVER Not Available Not Available ROOT\LEGACY_BEEP\0000	Not Available	LEGACYDRIVER Not Available Not Available	RDPWD	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_RDPWD\0000	Not Available Not Available Not Available
CRC Disk Filter Driver LEGACYDRIVER Not Available Not Available ROOT\LEGACY_CRCDISK\0000	Not Available	LEGACYDRIVER Not Available Not Available	HP ProLiant System Management Interface Driver	Not Available LEGACYDRIVER Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_SYSMGMT\0000	Not Available Not Available Not Available
dmboot LEGACYDRIVER Not Available Not Available ROOT\LEGACY_DMBOOT\0000	Not Available	LEGACYDRIVER Not Available Not Available	TCP/IP Protocol Driver	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_TCPIP\0000	LEGACYDRIVER Not Available Not Available
dmload LEGACYDRIVER Not Available Not Available ROOT\LEGACY_DMLOAD\0000	Not Available	LEGACYDRIVER Not Available Not Available	TDTCP	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_TDTCP\0000	Not Available Not Available Not Available
Fips LEGACYDRIVER Not Available Not Available ROOT\LEGACY_FIPS\0000	Not Available	LEGACYDRIVER Not Available Not Available	volsnap	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_VOLSNAP\0000	Not Available Not Available Not Available
Generic Packet Classifier LEGACYDRIVER Not Available Not Available ROOT\LEGACY_GPC\0000	Not Available	LEGACYDRIVER Not Available Not Available	Remote Access IP ARP Driver	Not Available Not Available Not Available	LEGACYDRIVER Not Available Not Available ROOT\LEGACY_WANARP\0000	LEGACYDRIVER Not Available Not Available
IPSEC driver LEGACYDRIVER Not Available Not Available ROOT\LEGACY_IPSEC\0000	Not Available	LEGACYDRIVER Not Available Not Available	Audio Codex system devices)	Yes wave.inf Not Available	MEDIA 5.2.3790.0 10/1/2002 (Standard wave.inf Not Available ROOT\MEDIA\MS_MMACM	10/1/2002 (Standard Not Available

Legacy Audio Drivers Yes MEDIA 5.2.3790.0 10/1/2002 (Standard system devices) wave.inf Not Available
 ROOT\MEDIA\MS_MMDRV
 Media Control Devices Yes MEDIA 5.2.3790.0 10/1/2002 (Standard system devices) wave.inf Not Available
 Available ROOT\MEDIA\MS_MMMC
 Legacy Video Capture Devices Yes MEDIA 5.2.3790.0 10/1/2002 (Standard system devices) wave.inf Not Available
 Available ROOT\MEDIA\MS_MMVCD
 Video Codecs Yes MEDIA 5.2.3790.0 10/1/2002 (Standard system devices) wave.inf Not Available
 ROOT\MEDIA\MS_MMVID
 WAN Miniport (L2TP) Yes NET 5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not Available
 ROOT\MS_L2TPMINIPOINT\0000
 WAN Miniport (IP) Yes NET 5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not Available
 ROOT\MS_NDISWANIP\0000
 WAN Miniport (PPPOE) Yes NET 5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not Available
 ROOT\MS_PPPOEMINIPOINT\0000
 WAN Miniport (PPTP) Yes NET 5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not Available
 ROOT\MS_PPTPMINIPOINT\0000
 Direct Parallel Yes NET 5.2.3790.0 10/1/2002 Microsoft netrasa.inf Not Available
 ROOT\MS_PTMINIPOINT\0000
 Terminal Server Device Redirector Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
 ROOT\RDPPDR\0000
 Terminal Server Keyboard Driver Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
 ROOT\RDPP_KBD\0000
 Terminal Server Mouse Driver Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
 ROOT\RDPP_MOUSE\0000
 Plug and Play Software Device Enumerator Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
 ROOT\SYSTEM\0000
 Microcode Update Device Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
 ROOT\SYSTEM\0001

[Environment Variables]

Variable	Value	User Name
ComSpec	%SystemRoot%\system32\cmd.exe	<SYSTEM>
Path	%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;C:\Program Files\Microsoft SQL Server\80\Tools\BINN<SYSTEM>	
windir	%SystemRoot%	<SYSTEM>
OS	Windows_NT	<SYSTEM>
PROCESSOR_ARCHITECTURE	x86	<SYSTEM>
PROCESSOR_LEVEL	15	<SYSTEM>
PROCESSOR_IDENTIFIER	x86 Family 15 Model 2 Stepping 2, GenuineIntel	<SYSTEM>
PROCESSOR_REVISION	0202	<SYSTEM>
NUMBER_OF_PROCESSORS	8	<SYSTEM>
ClusterLog	C:\WINDOWS\Cluster\cluster.log	<SYSTEM>
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH	<SYSTEM>
TEMP	%SystemRoot%\TEMP	<SYSTEM>

TMP %SystemRoot%\TEMP <SYSTEM>
 TEMP %USERPROFILE%\Local Settings\Temp AUTHORITY\SYSTEM NT
 AUTHORITY\SYSTEM
 TMP %USERPROFILE%\Local Settings\Temp AUTHORITY\SYSTEM NT
 AUTHORITY\SYSTEM
 TEMP %USERPROFILE%\Local Settings\Temp AUTHORITY\LOCAL SERVICE NT
 AUTHORITY\LOCAL SERVICE
 TMP %USERPROFILE%\Local Settings\Temp AUTHORITY\LOCAL SERVICE NT
 AUTHORITY\LOCAL SERVICE
 TEMP %USERPROFILE%\Local Settings\Temp AUTHORITY\NETWORK SERVICE NT
 AUTHORITY\NETWORK SERVICE
 TMP %USERPROFILE%\Local Settings\Temp AUTHORITY\NETWORK SERVICE NT
 AUTHORITY\NETWORK SERVICE
 TEMP %USERPROFILE%\Local Settings\Temp MINI\Administrator
 MINI\Administrator
 TMP %USERPROFILE%\Local Settings\Temp MINI\Administrator
 MINI\Administrator

[Print Jobs]

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

[Network Connections]

Local Name	Remote Name	Type	Status	User
Name	Not Available	\\infor\dpol	Disk	Current Connection
MINI\dpol				

[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set	Max Working Set
system	idle process	Not Available	Not Available	0	0
system	Available	Not Available	Not Available	0	Not Available
system	Available	Not Available	Not Available	0	Not Available
system	Available	Not Available	4	8	0
system	Available	Not Available	Not Available	Not Available	Not Available
smss.exe	Not Available	476	11	204800	1413120
smss.exe	5/9/2003 12:35 AM	Not Available	Not Available	Not Available	Not Available
smss.exe	Not Available	Not Available	524	13	Not Available
csrss.exe	Not Available	5/9/2003 12:35 AM	Not Available	Not Available	Not Available
csrss.exe	Not Available	Not Available	Not Available	Not Available	Not Available
winlogon.exe	c:\windows\system32\winlogon.exe	13	204800	1413120	5/9/2003 12:36 AM
winlogon.exe	5.2.3790.0 (srv03_rtm.030324-2048)	3/25/2003 12:00 AM	536.50 KB (549,376 bytes)		
services.exe	c:\windows\system32\services.exe	9	204800	1413120	5/9/2003 12:36 AM
services.exe	5.2.3790.0 (srv03_rtm.030324-2048)	3/25/2003 12:00 AM	102.00 KB (104,448 bytes)		
lsass.exe	c:\windows\system32\lsass.exe	604	9	204800	1413120
lsass.exe	5/9/2003 12:36 AM	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312 bytes)		
svchost.exe	c:\windows\system32\svchost.exe	8	204800	1413120	5/9/2003 12:36 AM
svchost.exe	5.2.3790.0 (srv03_rtm.030324-2048)	3/25/2003 12:00 AM	13.00 KB (13,312 bytes)		
svchost.exe	c:\windows\system32\svchost.exe	8	204800	1413120	5/9/2003 12:36 AM
svchost.exe	5.2.3790.0 (srv03_rtm.030324-2048)	3/25/2003 12:00 AM	13.00 KB (13,312 bytes)		
svchost.exe	Not Available	968	8	Not Available	Not Available
svchost.exe	Available	Not Available	5/9/2003 12:36 AM	Not Available	Not Available
svchost.exe	Available	Not Available	Not Available	Not Available	Not Available

svchost.exe	Not Available	1020	8	Not Available	winlogon	5.2.3790.0 (srv03_rtm.030324-2048)	536.50 KB (549,376 bytes)
svchost.exe	Not Available	5/9/2003 12:36 AM	Not Available		ntdll	5.2.3790.0 (srv03_rtm.030324-2048)	722.50 KB (739,840 bytes)
svchost.exe	Not Available	Not Available	Not Available		kernel32	5.2.3790.0 (srv03_rtm.030324-2048)	965.00 KB (988,160 bytes)
svchost.exe	c:\windows\system32\svchost.exe		1032		msvcrt	7.0.3790.0 (srv03_rtm.030324-2048)	319.50 KB (327,168 bytes)
spoolsv.exe	c:\windows\system32\spoolsv.exe		1244		advapi32	5.2.3790.0 (srv03_rtm.030324-2048)	559.50 KB (572,928 bytes)
spoolsv.exe	8	204800	1413120	5/9/2003 12:36 AM	rpcrt4	5.2.3790.0 (srv03_rtm.030324-2048)	643.50 KB (658,944 bytes)
spoolsv.exe	5.2.3790.0 (srv03_rtm.030324-2048)		13.00 KB (13,312 bytes)	3/25/2003 12:00 AM	user32	5.2.3790.0 (srv03_rtm.030324-2048)	562.00 KB (575,488 bytes)
svchost.exe	c:\windows\system32\svchost.exe		1276		gdi32	5.2.3790.0 (srv03_rtm.030324-2048)	263.00 KB (269,312 bytes)
svchost.exe	8	204800	1413120	5/9/2003 12:36 AM	userenv	5.2.3790.0 (srv03_rtm.030324-2048)	732.50 KB (750,080 bytes)
svchost.exe	5.2.3790.0 (srv03_rtm.030324-2048)		13.00 KB (13,312 bytes)	3/25/2003 12:00 AM	nddeapi	5.2.3790.0 (srv03_rtm.030324-2048)	16.00 KB (16,384 bytes)
svchost.exe	Not Available	1312	8	Not Available	crypt32	5.131.3790.0 (srv03_rtm.030324-2048)	598.00 KB (612,352 bytes)
svchost.exe	Not Available	Not Available	Not Available		msasn1	5.2.3790.0 (srv03_rtm.030324-2048)	58.00 KB (59,392 bytes)
sysdown.exe	c:\windows\system32\sysdown.exe		1348		secur32	5.2.3790.0 (srv03_rtm.030324-2048)	63.00 KB (64,512 bytes)
sysdown.exe	8	204800	1413120	5/9/2003 12:36 AM	winsta	5.2.3790.0 (srv03_rtm.030324-2048)	51.00 KB (52,224 bytes)
sysdown.exe	5.27.2195.0		34.77 KB (35,600 bytes)	5/2/2003 4:09 PM	netapi32	5.2.3790.0 (srv03_rtm.030324-2048)	317.00 KB (324,608 bytes)
dfssvc.exe	c:\windows\system32\dfssvc.exe	1632	8	204800	profmap	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528 bytes)
dfssvc.exe	1413120	5/9/2003 12:36 AM	5.2.3790.0 (srv03_rtm.030324-2048)	130.50 KB (133,632 bytes)	regapi	5.2.3790.0 (srv03_rtm.030324-2048)	48.50 KB (49,664 bytes)
dfssvc.exe	3/25/2003 12:00 AM				ws2_32	5.2.3790.0 (srv03_rtm.030324-2048)	87.50 KB (89,600 bytes)
wmiprvse.exe	Not Available	1740	8	Not Available	ws2help	5.2.3790.0 (srv03_rtm.030324-2048)	19.50 KB (19,968 bytes)
wmiprvse.exe	Not Available	Not Available	Not Available		psapi	5.2.3790.0 (srv03_rtm.030324-2048)	21.50 KB (22,016 bytes)
wmiprvse.exe	Not Available	Not Available	Not Available		version	5.2.3790.0 (srv03_rtm.030324-2048)	17.00 KB (17,408 bytes)
explorer.exe	c:\windows\explorer.exe	1960	8	6.00.3790.0	setupapi	5.2.3790.0 (srv03_rtm.030324-2048)	1,014.50 KB (1,038,848 bytes)
explorer.exe	204800	1413120	5/9/2003 12:40 AM	1,008.50 KB (1,032,704 bytes)	msgina	5.2.3790.0 (srv03_rtm.030324-2048)	1.14 MB (1,191,936 bytes)
explorer.exe	(srv03_rtm.030324-2048)						
cmd.exe	c:\windows\system32\cmd.exe	1332	8	204800			
cmd.exe	1413120	5/9/2003 12:41 AM	5.2.3790.0 (srv03_rtm.030324-2048)	374.00 KB (382,976 bytes)			
cmd.exe	3/25/2003 12:00 AM						
sqlservr.exe	c:\program files\microsoft sql server\mssql\binn\sqlservr.exe	1604	13	204800			
sqlservr.exe	5/9/2003 10:04 AM	2000.080.0761.00	7.11 MB (7,450,664 bytes)	5/2/2003 3:59 PM			
sqlservr.exe	5/2/2003 3:59 PM						
csrss.exe	Not Available	1836	13	Not Available			
csrss.exe	Not Available	5/9/2003 8:10 PM	Not Available				
csrss.exe	Not Available	Not Available	Not Available				
winlogon.exe	c:\windows\system32\winlogon.exe		1944				
winlogon.exe	13	204800	1413120	5/9/2003 8:10 PM			
winlogon.exe	5.2.3790.0 (srv03_rtm.030324-2048)		536.50 KB (549,376 bytes)	3/25/2003 12:00 AM			
rdpclip.exe	c:\windows\system32\rdpclip.exe	1780	8	204800			
rdpclip.exe	1413120	5/9/2003 8:10 PM	5.2.3790.0 (srv03_rtm.030324-2048)	53.00 KB (54,272 bytes)			
rdpclip.exe	5/2/2003 3:43 PM						
explorer.exe	c:\windows\explorer.exe	1888	8	6.00.3790.0			
explorer.exe	204800	1413120	5/9/2003 8:10 PM	1,008.50 KB (1,032,704 bytes)			
explorer.exe	(srv03_rtm.030324-2048)						
cmd.exe	c:\windows\system32\cmd.exe	1452	8	204800			
cmd.exe	1413120	5/9/2003 8:10 PM	5.2.3790.0 (srv03_rtm.030324-2048)	374.00 KB (382,976 bytes)			
cmd.exe	3/25/2003 12:00 AM						
msinfo32.exe	c:\program files\common files\microsoft shared\msinfo\msinfo32.exe	2900	8	204800			
msinfo32.exe	5/10/2003 12:44 PM	5.2.3790.0 (srv03_rtm.030324-2048)	40.50 KB (41,472 bytes)	5/2/2003 3:47 PM			
msinfo32.exe	40.50 KB (41,472 bytes)						
wmiprvse.exe	Not Available	2944	8	Not Available			
wmiprvse.exe	Not Available	5/10/2003 12:44 PM	Not Available				
wmiprvse.exe	Not Available	Not Available	Not Available				
[Loaded Modules]							
Name	Version	Size	File Date	Manufacturer	Path		

shsvcs bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	121.50 KB (124,416 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shsvcs.dll
shlwapi bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	281.00 KB (287,744 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shlwapi.dll
sfc 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\sfc.dll
sfc_os bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	133.00 KB (136,192 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\sfc_os.dll
wintrust bytes)	5.131.3790.0 (srv03_rtm.030324-2048)	161.50 KB (165,376 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wintrust.dll
ole32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.13 MB (1,187,328 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ole32.dll
imagehlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	142.50 KB (145,920 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\imagehlp.dll
comctl32 controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll	6.0 (srv03_rtm.030324-2048)	907.00 KB (928,768 bytes)	5/2/2003 10:34 AM	Microsoft Corporation	c:\windows\winsxs\x86_microsoft.windows.common-controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll
winscard bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	98.50 KB (100,864 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\winscard.dll
wtsapi32 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\wtsapi32.dll
sxs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	733.00 KB (750,592 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\sxs.dll
winmm bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	166.00 KB (169,984 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\winmm.dll
shell32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	7.79 MB (8,166,400 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shell32.dll
wldap32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	158.00 KB (161,792 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wldap32.dll
rsaenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	176.83 KB (181,072 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rsaenh.dll
csd.dll bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	99.00 KB (101,376 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\csd.dll
wlnotify bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	87.50 KB (89,600 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wlnotify.dll
winspool bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	140.00 KB (143,360 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\winspool.drv
mpr 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\mpr.dll
comctl32 controls_6595b64144ccf1df_5.82.0.0_x-ww_8a69ba05\comctl32.dll	5.82 (srv03_rtm.030324-2048)	561.00 KB (574,464 bytes)	5/2/2003 10:34 AM	Microsoft Corporation	c:\windows\winsxs\x86_microsoft.windows.common-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)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\uxtheme.dll
samlib bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	49.00 KB (50,176 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\samlib.dll
clbcatq bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	481.00 KB (492,544 bytes)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\clbcatq.dll
oleaut32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	486.00 KB (497,664 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\oleaut32.dll
comres bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	778.00 KB (796,672 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\comres.dll
cscur bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	305.00 KB (312,320 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cscur.dll
ntmarta bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	114.00 KB (116,736 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntmarta.dll
wbemprox bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920 bytes)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemprox.dll
wbemcomn KB (216,576 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	211.50 KB (216,576 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemcomn.dll
wbemsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	42.50 KB (43,520 bytes)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemsvc.dll
fastprox bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	443.00 KB (453,632 bytes)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\wbem\fastprox.dll
msvcp60 bytes)	6.05.2144.0	388.00 KB (397,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msvcp60.dll
ntdsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	76.00 KB (77,824 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntdsapi.dll
dnsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	147.50 KB (151,040 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\dnsapi.dll
services bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	102.00 KB (104,448 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\services.exe
scesrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	316.50 KB (324,096 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\scesrv.dll
authz bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	67.00 KB (68,608 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\authz.dll
umpnpgm bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	121.50 KB (124,416 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\umpnpgm.dll
ncobjapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	34.50 KB (35,328 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ncobjapi.dll
eventlog bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	60.50 KB (61,952 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\eventlog.dll
lsass bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\lsass.exe
lsasrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	780.50 KB (799,232 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\lsasrv.dll
samsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	452.00 KB (462,848 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\samsrv.dll
cryptdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	34.00 KB (34,816 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cryptdll.dll
msprivs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	46.50 KB (47,616 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msprivs.dll

kerberos bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	332.50 KB (340,480)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\kerberos.dll	rpscs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	276.50 KB (283,136)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rpscs.dll
msv1_0 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	127.00 KB (130,048)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msv1_0.dll	termsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	216.50 KB (221,696)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\termsrv.dll
netlogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	409.00 KB (418,816)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\netlogon.dll	icaapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	10.50 KB (10,752)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\icaapi.dll
w32time bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	216.00 KB (221,184)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\w32time.dll	mstlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	104.50 KB (107,008)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mstlsapi.dll
iphlpapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	82.50 KB (84,480)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\iphlpapi.dll	activeds bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	189.00 KB (193,536)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\activeds.dll
schannel bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	149.50 KB (153,088)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\schannel.dll	adslrpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	142.50 KB (145,920)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\adslrpc.dll
wdigest bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	61.00 KB (62,464)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wdigest.dll	credui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	159.00 KB (162,816)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\credui.dll
rassfm bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	20.50 KB (20,992)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rassfm.dll	atl	3.05.2283	83.00 KB (84,992 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\atl.dll
kdcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	221.00 KB (226,304)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\kdcsvc.dll	rdpwsx bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	80.13 KB (82,056)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\rdpwsx.dll
ntdsa bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.45 MB (1,520,640)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntdsa.dll	wzcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	272.50 KB (279,040)	3/25/2003 6:15 AM	Microsoft Corporation	c:\windows\system32\wzcsvc.dll
ntdsatq bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	32.00 KB (32,768)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntdsatq.dll	rtutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	32.00 KB (32,768)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rtutils.dll
msswsock bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	254.00 KB (260,096)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msswsock.dll	wmi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	6.50 KB (6,656)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wmi.dll
esent bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.01 MB (1,056,256)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\esent.dll	dhcpcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	101.50 KB (103,936)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\dhcpcsvc.dll
scecli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	179.50 KB (183,808)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\scecli.dll	rastls bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	155.00 KB (158,720)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rastls.dll
wshtcpip bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	18.00 KB (18,432)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wshtcpip.dll	cryptui bytes)	5.131.3790.0 (srv03_rtm.030324-2048)	473.50 KB (484,864)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cryptui.dll
ipsecsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	162.50 KB (166,400)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ipsecsvc.dll	mprapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	81.00 KB (82,944)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mprapi.dll
oakley bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	325.50 KB (333,312)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\oakley.dll	rasapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	227.50 KB (232,960)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rasapi32.dll
winipsec bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	34.50 KB (35,328)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\winipsec.dll	rasman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.50 KB (57,856)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rasman.dll
pstorsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.00 KB (24,576)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\pstorsvc.dll	tapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	175.00 KB (179,200)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\tapi32.dll
psbase bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	81.00 KB (82,944)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\psbase.dll	raschap bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	106.00 KB (108,544)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\raschap.dll
dssenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	131.33 KB (134,480)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\dssenh.dll	schedsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	176.00 KB (180,224)	5/2/2003 3:47 PM	Microsoft Corporation	c:\windows\system32\schedsvc.dll
wlbsctrl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	78.00 KB (79,872)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wlbsctrl.dll	msidle bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	5.50 KB (5,632)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msidle.dll
svchost bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\svchost.exe	wkssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	125.00 KB (128,000)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wkssvc.dll

wiarpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	30.00 KB (30,720)	repdrvfs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	165.00 KB (168,960)
	3/25/2003 12:00 AM Microsoft Corporation			5/2/2003 3:43 PM Microsoft Corporation	
	c:\windows\system32\wiarpc.dll			c:\windows\system32\wbem\repdrvfs.dll	
cryptsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	51.00 KB (52,224)	wmiprvsvd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	405.50 KB (415,232)
	3/25/2003 12:00 AM Microsoft Corporation			5/2/2003 3:43 PM Microsoft Corporation	
	c:\windows\system32\cryptsvc.dll			c:\windows\system32\wbem\wmiprvsvd.dll	
certcli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	228.00 KB (233,472)	wbemess bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	256.50 KB (262,656)
	3/25/2003 12:00 AM Microsoft Corporation			5/2/2003 3:43 PM Microsoft Corporation	
	c:\windows\system32\certcli.dll			c:\windows\system32\wbem\wbemess.dll	
vssapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	528.00 KB (540,672)	ncprov bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	43.00 KB (44,032)
	3/25/2003 12:00 AM Microsoft Corporation			5/2/2003 3:43 PM Microsoft Corporation	
	c:\windows\system32\vssapi.dll			c:\windows\system32\wbem\ncprov.dll	
dmserver bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.00 KB (24,576)	netman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	209.00 KB (214,016)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\dmserver.dll			c:\windows\system32\netman.dll	
es bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	221.50 KB (226,816)	wzcsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.50 KB (25,088)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 6:15 AM Microsoft Corporation	
	c:\windows\system32\es.dll			c:\windows\system32\wzcsapi.dll	
pchsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	31.50 KB (32,256)	netshell bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.67 MB (1,747,456)
	5/2/2003 3:47 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\pchealth\helpctr\binaries\pchsvc.dll			c:\windows\system32\netshell.dll	
srvsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	89.00 KB (91,136)	clusapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\srvsvc.dll			c:\windows\system32\clusapi.dll	
seclogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896)	hnetcfg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	243.50 KB (249,344)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\seclogon.dll			c:\windows\system32\hnetcfg.dll	
trkwks bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	85.00 KB (87,040)	rasdlg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	642.00 KB (657,408)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\trkwks.dll			c:\windows\system32\rasdlg.dll	
wmisvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	131.00 KB (134,144)	rasadhlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	6.50 KB (6,656)
	5/2/2003 3:43 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wbem\wmisvc.dll			c:\windows\system32\rasadhlp.dll	
wuauerv bytes)	5.4.3790.0 (srv03_rtm.030324-2048)	10.50 KB (10,752)	xactsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	86.50 KB (88,576)
	5/2/2003 3:43 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wuauerv.dll			c:\windows\system32\xactsrv.dll	
wuaueng bytes)	5.4.3790.0 (srv03_rtm.030324-2048)	188.50 KB (193,024)	ntlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	8.00 KB (8,192)
	5/2/2003 3:43 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wuaueng.dll			c:\windows\system32\ntlsapi.dll	
advpack bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	93.50 KB (95,744)	spoolsv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	55.00 KB (56,320)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\advpack.dll			c:\windows\system32\spoolsv.exe	
wininet bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	609.00 KB (623,616)	spoolss bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	79.00 KB (80,896)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wininet.dll			c:\windows\system32\spoolss.dll	
sens bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	35.50 KB (36,352)	localspl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	304.50 KB (311,808)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\sens.dll			c:\windows\system32\localspl.dll	
comsvcs bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	1.14 MB (1,199,616)	cnbjmon (46,592 bytes)	5.2.3680.0 (Lab03_dev(skatar).020509-1043)	45.50 KB
	5/2/2003 3:43 PM Microsoft Corporation			3/24/2003 7:48 PM Microsoft Corporation	
	c:\windows\system32\comsvcs.dll			c:\windows\system32\cnbjmon.dll	
browser bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	70.50 KB (72,192)	pjlmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360)
	3/25/2003 12:00 AM Microsoft Corporation			3/24/2003 7:49 PM Microsoft Corporation	
	c:\windows\system32\browser.dll			c:\windows\system32\pjlmon.dll	
netrap bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	11.50 KB (11,776)	tcpmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	44.00 KB (45,056)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\netrap.dll			c:\windows\system32\tcpmon.dll	
winhttp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	327.50 KB (335,360)	mgmtapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	14.00 KB (14,336)
	5/2/2003 10:34 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\winsxs\x86_microsoft.windows.winhttp_6595b64144			c:\windows\system32\mgmtapi.dll	
ccf1df_5.1.0.0_x-ww_e0651936\winhttp.dll					
wbemcore bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	457.00 KB (467,968)	snmpapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920)
	5/2/2003 3:43 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wbem\wbemcore.dll			c:\windows\system32\snmpapi.dll	
esscli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	235.50 KB (241,152)	wsnmp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	39.50 KB (40,448)
	5/2/2003 3:43 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wbem\esscli.dll			c:\windows\system32\wsnmp32.dll	
wmiutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	90.50 KB (92,672)	usbmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.00 KB (17,408)
	5/2/2003 3:43 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wbem\wmiutils.dll			c:\windows\system32\usbmon.dll	

winnr 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\winnr.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
sysdown 4:09 PM	5.27.2195.0	34.77 KB (35,600 bytes)	5/2/2003	Compaq Computer Corporation	c:\windows\system32\sysdown.exe
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
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
explorer (1,032,704 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1,008.50 KB	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
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
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
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
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
cmd bytes)	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
sqlservr 3:59 PM	2000.080.0761.00	7.11 MB (7,450,664 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\sqlservr.exe
opends60 3:59 PM	2000.080.0194.00	24.06 KB (24,639 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\opends60.dll
ums 3:59 PM	2000.080.0760.00	52.55 KB (53,808 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\ums.dll
sqlsort 3:59 PM	2000.080.0760.00	576.56 KB (590,396 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\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 3:59 PM	2000.080.0760.00	28.00 KB (28,672 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\resources\1033\sqllevn70.rll
xolehlp bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	8.50 KB (8,704 bytes)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\xolehlp.dll
msdtcprx bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	427.50 KB (437,760 bytes)	5/2/2003 3:43 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
ssnmpn70 3:59 PM	2000.080.0534.00	24.56 KB (25,148 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\ssnmpn70.dll
ssnetlib 3:59 PM	2000.080.0760.00	80.56 KB (82,492 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\ssnetlib.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 3:59 PM	2000.080.0760.00	28.56 KB (29,244 bytes)	5/2/2003	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\ssmslpcn.dll
sqloledb bytes)	2000.085.1022.00 (srv03_rtm.030324-2048)	536.00 KB (548,864 bytes)	5/2/2003 3:47 PM	Microsoft Corporation	c:\program files\common files\system\ole db\sqloledb.dll

msdart	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	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	2.80.1022.0 (srv03_rtm.030324-2048)	96.00 KB (98,304 bytes)	5/2/2003 3:47 PM	Microsoft Corporation	c:\program files\common files\system\ole db\msdatl3.dll
oledb32	2.80.1022.0 (srv03_rtm.030324-2048)	500.00 KB (512,000 bytes)	5/2/2003 3:47 PM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32.dll
oledb32r	2.80.1022.0 (srv03_rtm.030324-2048)	68.00 KB (69,632 bytes)	5/2/2003 3:47 PM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32r.dll
improv	2000.080.0760.00	100.58 KB (102,992 bytes)	5/2/2003 3:59 PM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\improv.dll
sqlresld	2000.080.0382.00	28.56 KB (29,248 bytes)	5/2/2003 3:59 PM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\sqlresld.dll
xpstar	2000.080.0760.00	280.56 KB (287,296 bytes)	5/2/2003 3:59 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\xpstar.dll
sqlsvc	2000.080.0760.00	92.56 KB (94,784 bytes)	5/2/2003 4:00 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\sqlsvc.dll
odbc32	3.525.1022.0 (srv03_rtm.030324-2048)	232.00 KB (237,568 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\odbc32.dll
odbcbcsp	2000.085.1022.00 (srv03_rtm.030324-2048)	24.00 KB (24,576 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\odbcbcsp.dll
w95scm	2000.080.0760.00	48.56 KB (49,728 bytes)	5/2/2003 4:00 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\w95scm.dll
sqlunirl	2000.080.0728.00	176.56 KB (180,800 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\sqlunirl.dll
shfolder	6.00.3790.0 (srv03_rtm.030324-2048)	23.00 KB (23,552 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shfolder.dll
odbcint	3.525.1022.0 (srv03_rtm.030324-2048)	92.00 KB (94,208 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\odbcint.dll
sqlsvc	2000.080.0194.00	24.00 KB (24,576 bytes)	5/2/2003 4:00 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\resources\1033\sqlsvc.rll
xpstar	2000.080.0760.00	36.00 KB (36,864 bytes)	5/2/2003 3:59 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\bin\resources\1033\xpstar.rll
rdpsnd	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	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	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	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	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	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	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	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)	5/2/2003 3:47 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	5.2.3790.0 (srv03_rtm.030324-2048)	53.00 KB (54,272 bytes)	5/2/2003 3:43 PM	Microsoft Corporation	c:\windows\system32\rdpclip.exe
rdpclip	5.2.3790.0 (srv03_rtm.030324-2048)	95.00 KB (97,280 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\actxprxy.dll
actxprxy	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\actxprxy.dll
browsecl	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\browsecl.dll
shdoclc	6.00.3790.0 (srv03_rtm.030324-2048)	316.00 KB (323,584 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shdoclc.dll
zipfldr	6.00.3790.0 (srv03_rtm.030324-2048)	52.00 KB (53,248 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\zipfldr.dll
sendmail	6.00.3790.0 (srv03_rtm.030324-2048)	88.00 KB (90,112 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\sendmail.dll
mydocs	6.00.3790.0 (srv03_rtm.030324-2048)	66.50 KB (68,096 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mydocs.dll
twext	6.00.3790.0 (srv03_rtm.030324-2048)	40.50 KB (41,472 bytes)	5/2/2003 3:47 PM	Microsoft Corporation	c:\program files\common files\microsoft shared\msinfo\msinfo32.exe
msinfo32	5.2.3790.0 (srv03_rtm.030324-2048)	358.50 KB (367,104 bytes)	5/2/2003 3:47 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				Normal
	NT AUTHORITY\LocalService 0				
Application Layer Gateway Service		ALG	Stopped	Manual	
Own Process	c:\windows\system32\alg.exe				Normal
	NT AUTHORITY\LocalService 0				
Application Management Process	AppMgmt	Stopped	Manual	Share	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Windows Audio	AudioSrv	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Background Intelligent Transfer Service		BITS	Stopped	Manual	
Share Process	c:\windows\system32\svchost.exe -k				
	netsvcs Normal LocalSystem 0				
Computer Browser	Browser	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Indexing Service	CiSvc	Stopped	Disabled	Share Process	
	c:\windows\system32\cisvc.exe				Normal LocalSystem 0
ClipBook	ClipSrv	Stopped	Disabled	Own Process	
	c:\windows\system32\clipsrv.exe				Normal LocalSystem 0
COM+ System Application	COMSysApp		Stopped	Manual	
Own Process	c:\windows\system32\dlhst.exe				
	/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235} Normal LocalSystem 0				
Cryptographic Services	CryptSvc	Running	Auto	Share	
Process	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Distributed File System	Dfs	Running	Auto	Own	
Process	c:\windows\system32\dfsvc.exe				Normal LocalSystem 0
DHCP Client	Dhcp	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k networkservice				Normal
	NT AUTHORITY\NetworkService 0				
Logical Disk Manager Administrative Service				dmadmin	Stopped
Manual Share Process	c:\windows\system32\dmadmin.exe /com				Normal
	LocalSystem 0				
Logical Disk Managerdmsrvr		Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
DNS Client	Dnscache	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k networkservice				Normal
	NT AUTHORITY\NetworkService 0				
Error Reporting Service	ERSvc	Running	Auto	Share	
Process	c:\windows\system32\svchost.exe -k winerr				Ignore
	LocalSystem 0				
Event Log	Eventlog	Running	Auto	Share Process	
	c:\windows\system32\services.exe				Normal
	LocalSystem 0				
COM+ Event System	EventSystem		Running	Manual	Share
Process	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Help and Support	helpsvc	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Human Interface Device Access	HidSrv	Stopped	Disabled	Share	
Process	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
HTTP SSLHTTPFilter		Stopped	Manual	Share Process	
	c:\windows\system32\lsass.exe				Normal LocalSystem 0
IMAPI CD-Burning COM Service				ImapiService	Stopped
Disabled Own Process	c:\windows\system32\imapi.exe				
	Normal LocalSystem 0				

Intersite Messaging	IsmServ	Stopped	Disabled	Own Process	
	c:\windows\system32\ismserv.exe				Normal
	LocalSystem 0				
Kerberos Key Distribution Center		kdc	Stopped	Disabled	
Share Process	c:\windows\system32\lsass.exe				Normal
	LocalSystem 0				
Server	lanmanserver	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Workstation	lanmanworkstation	Running	Auto	Share	
Process	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
License Logging	LicenseService		Stopped	Disabled	Own
Process	c:\windows\system32\llssrv.exe				Normal NT
	AUTHORITY\NetworkService 0				
TCP/IP NetBIOS Helper	LmHosts	Running	Auto	Share	
Process	c:\windows\system32\svchost.exe -k localservice				Normal
	NT AUTHORITY\LocalService 0				
Messenger	Messenger	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
NetMeeting Remote Desktop Sharing		mmnmsvc	Stopped	Disabled	
Own Process	c:\windows\system32\mmnmsvc.exe				
	Normal LocalSystem 0				
Distributed Transaction Coordinator		MSDTC	Stopped	Manual	
Own Process	c:\windows\system32\msdtc.exe				Normal
	NT AUTHORITY\NetworkService 0				
Windows Installer	MSIServer	Stopped	Manual	Share Process	
	c:\windows\system32\msiexec.exe /v				Normal
	LocalSystem 0				
MSSQLSERVER	MSSQLSERVER		Stopped	Manual	Own
Process	c:\program files\microsoft sql server\bin\sqlservr.exe				Normal
	LocalSystem 0				
MSSQLServerADHelper		MSSQLServerADHelper		Stopped	
Manual Own Process	c:\program files\microsoft sql server\80\tools\bin\sqladhlp.exe				Normal LocalSystem 0
Network DDE	NetDDE	Stopped	Disabled	Share Process	
	c:\windows\system32\netdde.exe				Normal LocalSystem 0
Network DDE DSDM	NetDDEdsdm		Stopped	Disabled	Share
Process	c:\windows\system32\netdde.exe				Normal LocalSystem 0
Net Logon	Netlogon	Stopped	Manual	Share Process	
	c:\windows\system32\lsass.exe				Normal LocalSystem 0
Network Connections	Netman	Running	Manual	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Network Location Awareness (NLA)		Nla	Running	Manual	
Share Process	c:\windows\system32\svchost.exe -k				
	netsvcs Normal LocalSystem 0				
File Replication	NtFrs	Stopped	Manual	Own Process	
	c:\windows\system32\ntfrs.exe				Ignore LocalSystem 0
NT LM Security Support Provider			NtLmSsp	Stopped	Manual
Share Process	c:\windows\system32\lsass.exe				Normal
	LocalSystem 0				
Removable Storage	NtmsSvc	Stopped	Manual	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem 0				
Plug and Play	PlugPlay	Running	Auto	Share Process	
	c:\windows\system32\services.exe				Normal
	LocalSystem 0				
IPSEC Services	PolicyAgent		Running	Auto	Share
Process	c:\windows\system32\lsass.exe				Normal LocalSystem 0
Protected Storage	ProtectedStorage		Running	Auto	Share
Process	c:\windows\system32\lsass.exe				Normal LocalSystem 0

Remote Access Auto Connection Manager	RasAuto	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
netsvcs	Normal	LocalSystem	0		
Remote Access Connection Manager	RasMan	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
netsvcs	Normal	LocalSystem	0		
Remote Desktop Help Session Manager	RDSessMgr	Stopped	Manual	Own Process	c:\windows\system32\sessmgr.exe
			Normal		
			LocalSystem	0	
Routing and Remote Access	RemoteAccess	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
netsvcs	Normal	LocalSystem	0		
Remote Registry	RemoteRegistry	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k regsvc
			Normal	NT	
	AUTHORITY\LocalService	0			
Remote Procedure Call (RPC) Locator	RpcLocator	Stopped	Manual	Own Process	c:\windows\system32\locator.exe
			Normal	NT	
	AUTHORITY\NetworkService	0			
Remote Procedure Call (RPC) Process	RpcSs	Running	Auto	Share Process	c:\windows\system32\svchost -k rpsvc
			Normal		
	LocalSystem	0			
Resultant Set of Policy Provider	RSOPProv	Stopped	Manual	Share Process	c:\windows\system32\rsopprov.exe
			Normal		
	LocalSystem	0			
Special Administration Console Helper	sacsvr	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
netsvcs	Normal	LocalSystem	0		
Security Accounts Manager	SamSs	Running	Auto	Share Process	c:\windows\system32\lsass.exe
			Normal	LocalSystem	0
Smart Card	SCardSvr	Stopped	Manual	Share Process	c:\windows\system32\scardsvr.exe
			Ignore	NT	
	AUTHORITY\LocalService	0			
Task Scheduler	Schedule	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			Normal		
	LocalSystem	0			
Secondary Logon	seclogon	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			Ignore		
	LocalSystem	0			
System Event Notification	SENS	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			Normal		
	LocalSystem	0			
Internet Connection Firewall (ICF) / Internet Connection Sharing (ICS)	SharedAccess	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
			Normal		
	LocalSystem	0			
Shell Hardware Detection	ShellHWDetection	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			Normal		
	LocalSystem	0			
Print Spooler	Spooler	Running	Auto	Own Process	c:\windows\system32\spoolsv.exe
			Normal		
	LocalSystem	0			
SQLSERVERAGENT	SQLSERVERAGENT	Stopped	Manual	Own Process	c:\progra~1\micros~1\mssql\binn\sqlagent.exe
			Normal		
	LocalSystem	0			
Windows Image Acquisition (WIA)	stisvc	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
imgsvc	Normal	NT	AUTHORITY\LocalService	0	
Microsoft Software Shadow Copy Provider	swprv	Stopped	Manual	Own Process	c:\windows\system32\svchost.exe -k
			Normal	LocalSystem	0
HP ProLiant System Shutdown Service	sysdown	Running	Auto	Own Process	c:\windows\system32\sysdown.exe
			Normal	LocalSystem	0
Performance Logs and Alerts	SysmonLog	Stopped	Manual	Own Process	c:\windows\system32\smlogsvc.exe
			Normal	NT	Authority\NetworkService
			0		
Telephony	TapiSrv	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Terminal Services	TermService	Running	Manual	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Themes	Themes	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Telnet	TlntSvr	Stopped	Disabled	Own Process	c:\windows\system32\tlntsvr.exe
			Normal	NT	
	AUTHORITY\LocalService	0			
Distributed Link Tracking Server	TrkSvr	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Distributed Link Tracking Client	TrkWks	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Terminal Services Session Directory	Tssdis	Stopped	Disabled	Own Process	c:\windows\system32\tssdis.exe
			LocalSystem	Normal	
	LocalSystem	0			
Upload Manager	uploadmgr	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Uninterruptible Power Supply	UPS	Stopped	Manual	Own Process	c:\windows\system32\ups.exe
			Normal	NT	
	AUTHORITY\LocalService	0			
Virtual Disk Service	vds	Stopped	Manual	Own Process	c:\windows\system32\vds.exe
			Normal	LocalSystem	0
Volume Shadow Copy	VSS	Stopped	Manual	Own Process	c:\windows\system32\vssvc.exe
			Normal	LocalSystem	0
Windows Time	W32Time	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
WebClient	WebClient	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
			NT	AUTHORITY\LocalService	0
	NT				
WinHTTP	Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Stopped	Manual	Share Process
			NT	AUTHORITY\LocalService	0
	NT				
Windows Management Instrumentation	winmgmt	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Portable Media Serial Number Service	WmdmPmSN	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Windows Management Instrumentation Driver Extensions		Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
WMI Performance Adapter	WmiApSrv	Stopped	Manual	Own Process	c:\windows\system32\wbem\wmiapsrv.exe
			Normal	LocalSystem	0
	LocalSystem	0			
Automatic Updates	wuauerv	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
Wireless Configuration	WZCSVC	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k
			LocalSystem	Normal	
	LocalSystem	0			
[Program Groups]					
Group Name	Name	User Name			
Accessories	Default User:Accessories	Default User			

Accessories\Accessibility Default User:Accessories\Accessibility Default User

Accessories\Entertainment Default User:Accessories\Entertainment Default User

Startup Default User:Startup Default User

Accessories All Users:Accessories All Users

Accessories\Accessibility All Users:Accessories\Accessibility All Users

Accessories\Communications All Users:Accessories\Communications All Users

Accessories\Entertainment All Users:Accessories\Entertainment All Users

Accessories\System Tools All Users:Accessories\System Tools All Users

Administrative Tools All Users:Administrative Tools All Users

Microsoft SQL Server All Users:Microsoft SQL Server All Users

Startup All Users:Startup All Users

Accessories NT AUTHORITY\SYSTEM:Accessories NT AUTHORITY\SYSTEM

Accessories\Accessibility NT AUTHORITY\SYSTEM:Accessories\Accessibility NT AUTHORITY\SYSTEM

Accessories\Entertainment NT AUTHORITY\SYSTEM:Accessories\Entertainment NT AUTHORITY\SYSTEM

Startup NT AUTHORITY\SYSTEM:Startup NT AUTHORITY\SYSTEM

Accessories MINI\Administrator:Accessories MINI\Administrator

Accessories\Accessibility MINI\Administrator:Accessories\Accessibility MINI\Administrator

Accessories\Entertainment MINI\Administrator:Accessories\Entertainment MINI\Administrator

Administrative Tools MINI\Administrator:Administrative Tools MINI\Administrator

Startup MINI\Administrator:Startup MINI\Administrator

[Startup Programs]

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

[OLE Registration]

Object	Local Server
Sound (OLE2)	sndrec32.exe
Media Clip	mplay32.exe
Video Clip	mplay32.exe /avi
MIDI Sequence	mplay32.exe /mid
Sound	Not Available
Media Clip	Not Available
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
5/4/2003 1:51 PM	Application Hang	Hanging application mmc.exe, version 5.2.3790.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

[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	C:\WINDOWS\system32	Microsoft Corporation
advpack.dll	6.0.3790.0	94 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
asctrls.ocx	6.0.3790.0	90 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
browsecl.dll	6.0.3790.0	62 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
browseui.dll	6.0.3790.0	1,033 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
cdfview.dll	6.0.3790.0	144 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
comctl32.dll	5.82.3790.0	561 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
dxtrans.dll	6.3.3790.0	198 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
dxtmsft.dll	6.3.3790.0	344 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
iecont.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
iecontlc.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
iedkcs32.dll	16.0.3790.0	300 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
iepeers.dll	6.0.3790.0	230 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
iesetup.dll	6.0.3790.0	59 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation
ieuinit.inf	Not Available	20 KB	3/25/2003	C:\WINDOWS\system32	Not Available
ieexplore.exe	6.0.3790.0	90 KB	3/25/2003	C:\Program Files\Internet Explorer	Microsoft Corporation
imgutil.dll	5.2.3790.0	35 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation


```

inetcp.cpl 6.0.3790.0 303 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

inetplc.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
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

mshtml.dll 6.0.3790.0 444 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

mshtml.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

msieftp.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

mstime.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

wininet.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=19950mb,filegrowth=0),

(name=tpch100g2,filename='c:\dev\tpch_2\',size=19950mb,filegrowth=0),

(name=tpch100g3,filename='c:\dev\tpch_3\',size=19950mb,filegrowth=0),

(name=tpch100g4,filename='c:\dev\tpch_4\',size=19950mb,filegrowth=0),

(name=tpch100g5,filename='c:\dev\tpch_5\',size=19950mb,filegrowth=0),

(name=tpch100g6,filename='c:\dev\tpch_6\',size=19950mb,filegrowth=0),

(name=tpch100g7,filename='c:\dev\tpch_7\',size=19950mb,filegrowth=0),

(name=tpch100g8,filename='c:\dev\tpch_8\',size=19950mb,filegrowth=0),

(name=tpch100g9,filename='c:\dev\tpch_9\',size=19950mb,filegrowth=0),

(name=tpch100g10,filename='c:\dev\tpch_10\',size=19950mb,filegrowth=0
),
(name=tpch100g11,filename='c:\dev\tpch_11\',size=5450mb,filegrowth=0)
,
(name=tpch100g12,filename='c:\dev\tpch_12\',size=5450mb,filegrowth=0)

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

Alter Database tpch100g Add FileGroup LoadFg

Alter Database tpch100g Add File
      (name=LoadFg1,
filename='c:\dev\load_1\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg2,
filename='c:\dev\load_2\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg3,
filename='c:\dev\load_3\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg4,
filename='c:\dev\load_4\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg5,
filename='c:\dev\load_5\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg6,
filename='c:\dev\load_6\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg7,
filename='c:\dev\load_7\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg8,
filename='c:\dev\load_8\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg9,
filename='c:\dev\load_9\load.ldf',size=18900mb,filegrowth=0),
      (name=LoadFg10,
filename='c:\dev\load_10\load.ldf',size=18900mb,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',
disk='c:\dev\load_3\test.bak',
disk='c:\dev\load_4\test.bak',

```

```

disk='c:\dev\load_5\test.bak',
disk='c:\dev\load_6\test.bak',
disk='c:\dev\load_7\test.bak',
disk='c:\dev\load_8\test.bak',
disk='c:\dev\load_9\test.bak',
disk='c:\dev\load_10\test.bak'
with init,stats=10

```

B.12 Restore.sql

```

restore database tpch100g from
disk='c:\dev\load_1\test.bak',
disk='c:\dev\load_2\test.bak',
disk='c:\dev\load_3\test.bak',
disk='c:\dev\load_4\test.bak',
disk='c:\dev\load_5\test.bak',
disk='c:\dev\load_6\test.bak',
disk='c:\dev\load_7\test.bak',
disk='c:\dev\load_8\test.bak',
disk='c:\dev\load_9\test.bak',
disk='c:\dev\load_10\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=9950mb,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=9950mb,filegrowth=0),
(name=tempdev3,
filename='c:\dev\tempdev_3\',size=9950mb,filegrowth=0),
(name=tempdev4,
filename='c:\dev\tempdev_4\',size=9950mb,filegrowth=0),
(name=tempdev5,
filename='c:\dev\tempdev_5\',size=9950mb,filegrowth=0),
(name=tempdev6,
filename='c:\dev\tempdev_6\',size=9950mb,filegrowth=0),
(name=tempdev7,
filename='c:\dev\tempdev_7\',size=9950mb,filegrowth=0),
(name=tempdev8,
filename='c:\dev\tempdev_8\',size=9950mb,filegrowth=0),
(name=tempdev9,
filename='c:\dev\tempdev_9\',size=9950mb,filegrowth=0),
(name=tempdev10,
filename='c:\dev\tempdev_10\',size=9950mb,filegrowth=0),
(name=tempdev11,
filename='c:\dev\tempdev_11\',size=2950mb,filegrowth=0),
(name=tempdev12,
filename='c:\dev\tempdev_12\',size=2950mb,filegrowth=0)

```

B.15 DelLoadFg.sql

```

alter database tpch100g remove file LoadFg1
alter database tpch100g remove file LoadFg2
alter database tpch100g remove file LoadFg3
alter database tpch100g remove file LoadFg4
alter database tpch100g remove file LoadFg5
alter database tpch100g remove file LoadFg6
alter database tpch100g remove file LoadFg7
alter database tpch100g remove file LoadFg8
alter database tpch100g remove file LoadFg9
alter database tpch100g remove file LoadFg10
alter database tpch100g remove filegroup LoadFg

```

Appendix C: Query Text and Output

C.1 Qualification Queries and Output

Qualification Query 1

-- using default substitutions

/* tpch 1.sql */

```
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, '1998/12/01')
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

-- using default substitutions

/* tpch 2.sql */

```
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,vZGiwu2FWEJJoLDx04
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 B3rqp0xbSEim4Mpy2RH 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,E2fjVd7eUrzp2Ef8j1QxGo2DFnosATEH 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,
 9852.5200 Supplier#000008973 RUSSIA 18972
 Manufacturer#2 t5L67YdBYH6o,Vz24jpDyQ9 32-188-
 594-7038 quickly regular instructions wake-- carefully unusual braids into
 the expres
 9847.8300 Supplier#000008097 RUSSIA 130557
 Manufacturer#2 xMe97bpE69NzdwLoX 32-375-640-
 3593 slyly regular dependencies sleep slyly furiously express dep
 9847.5700 Supplier#000006345 FRANCE
 86344 Manufacturer#1
 VS3zrk3qG698u6ld8HhOBYvrTcStSvQIDQDag 16-886-766-7945 silent
 pinto beans should have to snooze carefully along the final reques
 7914.4500 Supplier#000001013 RUSSIA 125988
 Manufacturer#2 riRcntps4KEDtYScjpMIWeYF6mNnR 32-
 194-698-3365 final, ironic theodolites alongside of the ironic

 Additional rows deleted

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

-- using default substitutions

/* tpch 3.sql */

```
SELECT TOP 10
L_ORDERKEY
,SUM(L_EXTENDEDPRISE*(1-L_DISCOUNT)) AS REVENUE
,O_ORDERDATE
,O_SHIPPRIORITY
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_SHIPPRIORITY
ORDER BY
REVENUE DESC
,O_ORDERDATE
L_ORDERKEY REVENUE O_ORDERDATE
O_SHIPPRIORITY
```

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

-- using default substitutions

/* tpch 4.sql */

```
SELECT
O_ORDERPRIORITY
,COUNT(*) AS ORDER_COUNT
FROM
ORDERS
WHERE O_ORDERDATE >= '1993-07-01'
AND O_ORDERDATE < DATEADD (mm, 3, '1993-07-01')
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

-- using default substitutions

/* tpch 5.sql */

```
SELECT
N_NAME
,SUM(L_EXTENDEDPRISE*(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, '1994-01-01')
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

-- using default substitutions

/* tpch 6.sql */

```

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

```

123141078.2283

(1 row affected)

Qualification Query 7

-- using default substitutions

/* tpch 7.sql */

```

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(YY,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

-- using default substitutions

/* tpch 8.sql */

```

SELECT
O_YEAR
,SUM(CASE WHEN NATION = 'BRAZIL'
THEN VOLUME
ELSE 0
END) / SUM(VOLUME) AS MKT_SHARE
FROM
(
SELECT
DATEPART(YY,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

-- using default substitutions

/* tpch 9.sql */

```

SELECT
NATION
,O_YEAR
,SUM(AMOUNT) AS SUM_PROFIT
FROM
(
SELECT
N_NAME AS NATION
,DATEPART(YY, O_ORDERDATE) AS O_YEAR
,L_EXTENDEDPRIE*(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
UNITED STATES  1993      48029946.8014
UNITED STATES  1992      48671944.4983

```

..... Additional rows deleted

```

VIETNAM      1998      30442736.0594
VIETNAM      1997      50309179.7942
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

-- using default substitutions

/* tpch 10.sql */

```

SELECT TOP 20
C_CUSTKEY
,C_NAME
,SUM(L_EXTENDEDPRIE*(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, '1993-10-01')
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
-----
---
57040 Customer#000057040      734235.2455      632.8700
JAPAN      Eioyjf4pp      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 01e9CILnNtfOQYmZj 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 W556MXuoiaYCCZamJI,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 ne7zV5fDrmiq1oK09wV7pxqCgIc 16-
 715-386-3788 carefully bold excuses sleep alongside of the thinly idle
 84223 Customer#000084223 594998.0239 528.6500
 UNITED KINGDOM nAVZCs6BaWap rrM27N 2qBnze5WBauxbA
 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 sublata blithely regular requests. regular, even ideas
 solve.
 39922 Customer#000039922 584878.1134 7321.1100
 GERMANY Zgy4s5012GKN4pLDPBU8m342glw6R 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 Az9RFaut7NkPnc5zSD2PwHgVwr4jRzq 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 Vtgfia9qI 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 ChqEoK43OysjdHbtKCp6dKqjNyvvi9 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 HgiVOpqhala9aydNoIlb 29-915-458-
 2654 instructions nag quickly. furiously bold accounts cajol

(20 rows affected)

Qualification Query 11

-- using default substitutions

/* tpch 11.sql */

```
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
154747	14407580.6800
82865	14235489.7800
76094	14094247.0400

..... Additional rows deleted

171154	7896814.5000
79373	7896186.0000
113808	7893353.8800
27901	7892952.0000
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

-- using default substitutions

/* tpch 12.sql */

```
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, '1994-01-01')
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

-- using default substitutions

/* tpch 13.sql */

```

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

-- using default substitutions

/* tpch 14.sql */

```

SELECT
100.00 * SUM (CASE
WHEN P_TYPE LIKE 'PROMO%' THEN L_EXTENDEDPRICE*(1-
L_DISCOUNT)
ELSE 0 END
) / SUM(L_EXTENDEDPRICE*(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, '1995-09-01')
PROMO_REVENUE
-----

```

16.380778626395540

(1 row affected)

Qualification Query 15

-- using default substitutions

/* tpch 15.sql */

```

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, '1996-01-01')
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

-- using default substitutions

/* tpch 16.sql */

```

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

```

..... Additional rows deleted

```

Brand#32 STANDARD ANODIZED COPPER 23 3
Brand#33 SMALL ANODIZED BRASS 9 3
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

-- using default substitutions

/* tpch 17.sql */

```

SELECT
SUM(L_EXTENDEDPRI)/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

-- using default substitutions

/* tpch 18.sql */

```

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#000093392      93392    5200102  1997-01-22 00:00:00.000
425487.5100      304.0000
Customer#000015631      15631    1845057  1994-05-12 00:00:00.000
419879.5900      302.0000
Customer#000112987      112987   4439686  1996-09-17 00:00:00.000
418161.4900      305.0000

```

.... Additional rows deleted

```

Customer#000012599      12599    4259524  1998-02-12 00:00:00.000
415200.6100      304.0000
Customer#000105410      105410   4478371  1996-03-05 00:00:00.000
412754.5100      302.0000
Customer#000149842      149842   5156581  1994-05-30 00:00:00.000
411329.3500      302.0000
Customer#000010129      10129    5849444  1994-03-21 00:00:00.000
409129.8500      309.0000
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

-- using default substitutions

/* tpch 19.sql */

```

SELECT
SUM(L_EXTENDEDPRI* (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

-- using default substitutions

/* tpch 20.sql */

```

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,'1994-01-01')
)
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'CANADA'
ORDER BY
S_NAME
S_NAME          S_ADDRESS
-----
Supplier#00000020  iybAE,RmTymrZVYaFZva2SH,j
Supplier#00000091
YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197  YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226  83qOdU2EYRdPQAQhEtn GRZEd
Supplier#000009601  51m637bO,Rw5DnHWFUvLacRx9
Supplier#000009709  rRnCbHYgDgl9PZYnyWKVYSUW0vKg
Supplier#000009753  wLhVEcRmd7PkJF4FBnGK7Z

```

.... Additional rows deleted ...

```

Supplier#000009796  z,y4Idmr15DOvPUqYG
Supplier#000009799  4wNjXGa4OKW1
Supplier#000009811  E3iuyq7UnZxU7oPZle2Gu6
Supplier#000009812  APFRMy3lCbGfGa53n5t9DxzFPQPgnjrGt32
Supplier#000009862  rJzweWeN58
Supplier#000009868  ROjGgx5gvtkmnUUoeyy7v
Supplier#000009869
ucLqxzrpBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899  7XdpaHrzr1t,UQFZE
Supplier#000009974  7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

```

(204 rows affected)

Qualification Query 21

-- using default substitutions

/* tpch 21.sql */

```

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#000002160  17
Supplier#000002301  17
Supplier#000002540  17
Supplier#000003063  17
Supplier#000005178  17
Supplier#000008331  17
Supplier#000002005  16
Supplier#000002095  16
Supplier#000005799  16
Supplier#000005842  16
Supplier#000006450  16
Supplier#000006939  16
Supplier#000009200  16
Supplier#000009727  16
Supplier#000000486  15
Supplier#000000565  15
Supplier#000001046  15
Supplier#000001047  15
Supplier#000001161  15

```

... Additional rows deleted ...

```

Supplier#000001336  15
Supplier#000001435  15
Supplier#000003075  15
Supplier#000003335  15
Supplier#000005649  15
Supplier#000006027  15
Supplier#000006795  15
Supplier#000006800  15
Supplier#000006824  15
Supplier#000007131  15
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

-- using default substitutions

/* tpch 22.sql */

```
SELECT
CENTRYCODE
,COUNT(*) AS NUMCUST
,SUM(C_ACCTBAL) AS TOTACCTBAL
FROM
(
SELECT
SUBSTRING(C_PHONE,1,2) AS CENTRYCODE
,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
CENTRYCODE
ORDER BY
CENTRYCODE
CENTRYCODE 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 : 509002451

14	1994-06-01						
2	50	TIN	EUROPE				
9	violet						
20	dim	1997-01-01	ROMANIA				
6	1997-01-01	0.08	25				
17	Brand#45	JUMBO PKG					
18	315						
8	JORDAN	MIDDLE EAST	PROMO POLISHED COPPER				
21	VIETNAM						
13	express	requests					
3	BUILDING	1995-03-21					
22	29	20	15	11	13	21	
	28						
16	Brand#34	PROMO BRUSHED	45	36	14		
	40	16	12	1	41		
4	1996-04-01						
11	IRAQ	0.0000010000					
15	1996-06-01						
1	94						
10	1993-11-01						
19	Brand#42	Brand#54	Brand#22	3	18	26	
5	ASIA	1997-01-01					
7	ROMANIA	JORDAN					
12	SHIP	AIR	1996-01-01				

Stream1 Seed : 509002452

21	JORDAN						
3	HOUSEHOLD	1995-03-06					
18	313						
5	EUROPE	1993-01-01					
11	UNITED STATES	0.0000010000					
7	IRAQ	ETHIOPIA					
6	1993-01-01	0.05	24				
20	peach	1995-01-01	INDONESIA				
17	Brand#42	JUMBO DRUM					
12	MAIL	REG AIR	1994-01-01				
16	Brand#14	MEDIUM BURNISHED	40	34			
	28	22	13	35	14	50	
15	1994-03-01						
13	special	requests					
10	1994-08-01						
2	38	STEEL	AFRICA				
8	ETHIOPIA	AFRICA	PROMO PLATED TIN				
14	1994-09-01						
19	Brand#44	Brand#32	Brand#21	9	19	22	
9	spring						
22	19	29	10	22	32	21	
	11						
1	102						
4	1993-12-01						

Stream2 Seed : 509002453

6	1993-01-01	0.03	25				
17	Brand#44	WRAP BAG					
14	1994-12-01						
16	Brand#54	ECONOMY PLATED	43	23			
	11	4	31	19	18	21	
19	Brand#51	Brand#25	Brand#15	4	20	29	
10	1993-06-01						
9	seashell						
2	25	BRASS	EUROPE				
15	1996-10-01						
8	RUSSIA	EUROPE	PROMO ANODIZED TIN				
5	MIDDLE EAST	1993-01-01					
22	34	14	16	18	10	31	
	26						
12	TRUCK	REG AIR	1994-01-01				
7	CANADA	RUSSIA					
13	special	requests					
18	315						
1	110						
4	1996-07-01						
20	blue	1994-01-01	UNITED STATES				
3	BUILDING	1995-03-23					
11	JAPAN	0.0000010000					
21	FRANCE						

Stream3 Seed : 509002454

8	KENYA	AFRICA	ECONOMY POLISHED TIN				
5	AFRICA	1993-01-01					
4	1994-04-01						
6	1993-01-01	0.08	25				
17	Brand#41	WRAP PKG					
7	SAUDI ARABIA	KENYA					
1	118						
18	312						
22	28	14	29	31	12	23	
	18						
14	1995-03-01						
9	rose						
10	1994-03-01						
15	1994-06-01						
11	ALGERIA	0.0000010000					
20	linen	1997-01-01	KENYA				
2	13	NICKEL	AMERICA				
21	UNITED KINGDOM						
19	Brand#53	Brand#53	Brand#14	9	10	25	
13	special	requests					
16	Brand#34	STANDARD BRUSHED	14	26			
	50	8	6	36	44	49	
12	RAIL	REG AIR	1995-01-01				
3	HOUSEHOLD	1995-03-08					

Stream4 Seed : 509002455

5	AMERICA	1993-01-01				
21	MOROCCO					
14	1995-07-01					
19	Brand#55 Brand#41 Brand#14	5	11	21		
15	1997-01-01					
17	Brand#43 WRAP DRUM					
12	AIR REG AIR	1995-01-01				
6	1993-01-01	0.05	24			
4	1996-11-01					
9	pink					
8	FRANCE EUROPE ECONOMY BURNISHED TIN					
16	Brand#14 LARGE ANODIZED	15	37	31		
	8	14	3	24	9	
11	JORDAN 0.0000010000					
2	1 TIN EUROPE					
10	1994-12-01					
18	314					
1	65					
13	special requests					
7	JAPAN FRANCE					
22	18	13	10	30	17	26
	28					
3	AUTOMOBILE	1995-03-25				
20	thistle	1996-01-01	CANADA			

Stream5 Seed : 509002456

21	GERMANY					
15	1994-10-01					
4	1994-08-01					
6	1993-01-01	0.03	25			
7	EGYPT UNITED KINGDOM					
16	Brand#54 PROMO PLATED	4	18	15		
	3	19	23	47	13	
19	Brand#12 Brand#24 Brand#53	10	12	29		
18	315					
14	1995-10-01					
22	28	22	25	19	16	26
	29					
11	ARGENTINA	0.0000010000				
13	special accounts					
3	FURNITURE	1995-03-10				
1	73					
2	39 COPPER AMERICA					
5	EUROPE	1993-01-01				
8	UNITED KINGDOM EUROPE LARGE BRUSHED TIN					
20	ghost	1994-01-01	CHINA			
12	REG AIR AIR	1995-01-01				
17	Brand#45 SM BAG					
10	1993-09-01					
9	orange					

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 datetime 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 datetime not null,
    L_COMMITDATE datetime not null,
    L_RECEIPTDATE datetime 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 than 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 RFI 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=8
set FLATFILEDRIVE=z:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=\
set RF1_PARALLELISM=16
set RF2_PARALLELISM=16
set UPDATEDRIVE=z:
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 /1 %i in (1,1,%DBGEN_SEGMENTS%) do copy dists.dss
%FLATFILEDRIVE%\%FLATFILEDIR%\%i%\FLATFILESUBDIR%
Copy dists.dss %UPDATEDRIVE%%UPDATEDIR%
for /1 %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 /1 %i in (%FIRST%,1,%LAST%) do start cmd /C Setup DBGEN %i
semaphore -wait DBGEN -count %DBGEN_PARALLELISM%
goto :EOF

:DBGEN
%FLATFILEDRIVE%
cd %FLATFILEDRIVE%\%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
```

```

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

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

:BULKINSERTn
for /1 %%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%\%3%FLATFILESUBDIR%\%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% -Q"sp_dboption 'tpch100g','torn page
detection',FALSE" -o %OUTPUTPATH%\TornPage.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%, '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 %UPDATEDRIVE%<segment>%UPDATEDIR%
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 UPDATEDRIVE=Z:
set UPDATEDIR=\UF_Flatfiles
set UPDATESSET=7
set UPDATESEGMENTS=16
set SEED=509002451
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
%HOMEDRIVE%%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 /abovenormal 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())" -I300
```

```
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% -ilocking.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\IO 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

May 12, 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</i> <i>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</i> <i>retail unit price of \$179.</i>	\$146	50	\$7,300
P72-00264	Windows Server 2003, Enterprise Server <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 40% discount from the</i> <i>retail unit price of \$3,999.</i>	\$2,399	1	\$2,399
659-00844	Visual Studio Professional <i>No discounts applied</i>	\$1,079	1	\$1,079
PRO-PRORS-16U-01	Database Server Support Package <i>1 Year Term</i>	\$1,950	3	\$5,850

Some products may not be currently orderable but will be available through Microsoft's normal distribution channels by April 2, 2003.

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.

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
<http://www.microsoft.com/>

Microsoft

February 28, 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
254-00170	Visual C++ Standard <i>No discounts applied</i>	\$109	1	\$109

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

This quote is valid for the next 90 days.

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

Reference ID: PCjare0328026807

Please include this Reference ID in any correspondence regarding this price quote.