



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant DL760G2 8P
using
Microsoft SQL Server 2000 Enterprise Edition
and
Windows Server 2003, Enterprise Edition

First Edition
November 2003

First Edition –November, 2003

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Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant DL760G2 using Microsoft SQL Server 2000 Enterprise Edition SP3, in conformance with the requirements of the TPC Benchmark™ H Standard Specification, Revision 2.0. The operating system used for the benchmark was Microsoft Windows 2003 Enterprise Edition.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 1000GB	QthH @ 1000GB	QphH @ 1000GB	\$ / QphH @ 1000GB
HP ProLiant DL760G2 8P	Microsoft SQL Server 2000 SP3 Windows Server 2003, Enterprise Edition	\$199,475	4956.6	2312.2	3385.4	\$ 59

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

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

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Standard and Executive Summary Statements

Pages ii-iv contains the Executive Summary and Numerical Quantities Summary of the benchmark results for the HP ProLiant DL760G2.

Auditor

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



HP ProLiant DL760G2 8P

TPC-H Rev. 2.0

Report Date:
Nov 12, 2003

Total System Cost

\$199,475

Composite Query per Hour Metric

3385.4

QphH@1000GB

Price / Performance

\$59

\$/ QphH@1000GB

Database Size

1000GB

Database Manager

**Microsoft SQL
Server 2000
Enterprise Edition**

Operating System

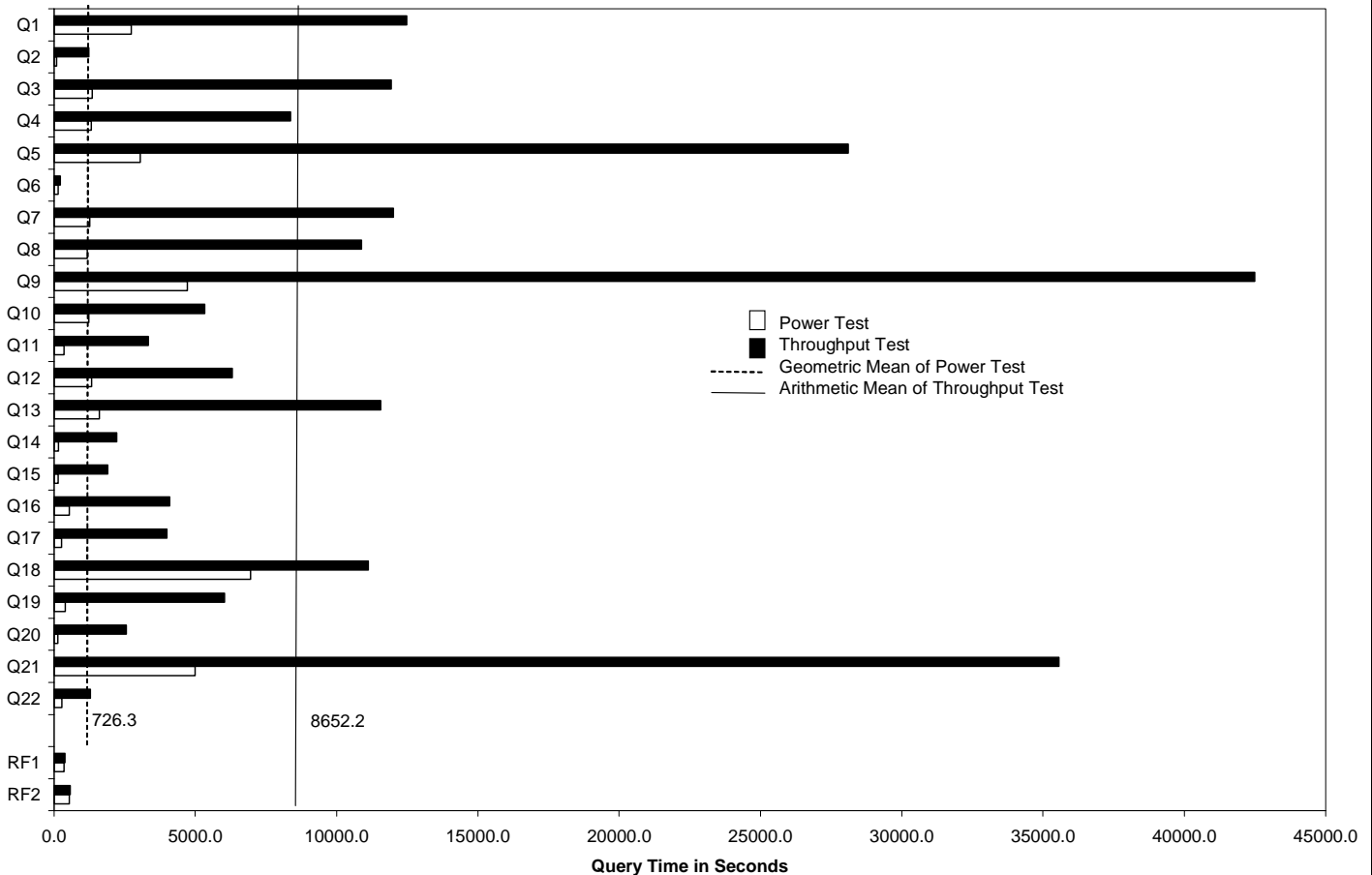
**Windows Server
2003, Enterprise
Edition**

Other Software

**Visual C++
.Net Standard**

Availability Date

Nov 12, 2003



Database Load Time = 37:54:16

Load Included Backup: Y

Total Data Storage / Database Size = 4.70

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

System Configuration:

Processors : 8 x Intel Xeon MP 2.8 GHz with 2MB L2 cache
Memory : 16 GB memory
Disk Controllers : 6x Smart Array 5302
Disks : 142 x 18.2GB drives, 16 x 36.4GB drives, 13x 146GB drives
Total Disk Storage: 4,703.8 GB

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

**HP ProLiant DL760 G2 8P****TPC-H Rev. 2.0**

Report Date:

11/12/03

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware						
Brand Pricing						
ProLiant DL760 G2 X2.8-2M 4P 4G - 4GB addressable RAM, 1GB redundant RAM - integrated Smart Array 5i controller	326703-B21	1	49,199	1	49,199	
X2.8-2M 4P DL760 G2	334037-B21	1	29,699	1	29,699	
512 REG PC133	236853-B21	1	339	22	7,458	
Monitor 15" S5500	261602-169	1	129	1	129	
3-Button PS/2 Mouse	304786-B21	1	5	1	5	
PS/2 Easy Access Keyboard	304788-001	1	10	1	10	
Rack Model 9142 (42U - Opal) - Flat Pallet	120663-B21	1	1,321	1	1,321	
Rack Sidewall Kit	120670-B21	1	207	1	207	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	299	2	598	
36.4 GB Hot-Plug Wide U320 15K 1"	286776-B22	1	519	2	1,038	
UPS T1500 XR	204155-002	1	621	1	621	
Servers 700 Series CarePaq, 3yr 7x24, 4hr resp. (FM-HE724-3)	401784-002	1	3,390	1		3,390
Subtotal					90,285	3,390
Storage						
Smart Array 5302/128	283552-B21	1	1,299	6	7,794	
StorageWorks Enclosure Model 4314R - Rack-mountable	190209-001	1	2,955	12	35,460	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	299	140	41,860	
18.2 GB Hot-Plug Wide U320 15K 1" (10% spare)	286775-B22	1	299	14	4,186	
36.4 GB Hot-Plug Wide U320 15K 1"	286776-B22	1	519	14	7,266	
36.4 GB Hot-Plug Wide U320 15K 1" (10% spare)	286776-B22	1	519	2	1,038	
146 GB Hot-Plug Wide U320 10K 1"	286716-B22	1	1,039	13	13,507	
146 GB Hot-Plug Wide U320 10K 1" (10% spare)	286716-B22	1	1,039	2	2,078	
CarePaq 43xx Enclosure, 3yr, 7x24, 4hr resp. (FM-4E724-36)	171242-002	1	157	12		1,884
Subtotal					113,189	1,884
Hardware and Maintenance Discount						
Large Purchase and Net 30 discount	16.0%	1			(\$32,556)	(\$844)
Hardware Subtotal					170,918	4,430
Software						
Microsoft SQL Server 2000 Enterprise Edition	810-00652	Microsoft	2	5,549	1	5,549
Database Server Support Package	RO-PRORS-16U-01	Microsoft	2	1,950	3	5,850
Microsoft SQL Server 2000 Client Licenses	359-00532	Microsoft	2	146	70	10,220
Windows Server 2003, Enterprise Edition	P72-00264	Microsoft	2	2,399	1	2,399
Visual C++ .Net Standard	254-00170	Microsoft	2	109	1	109
Subtotal					18,277	5,850
Total					\$189,195	\$10,280

3-Year Cost of Ownership: \$199,475**QpH Rating: 3385.4****\$/QpH@1000GB: \$59**

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 DL760G2 8P

TPC-H Rev. 2.0

Report Date:

Nov 12, 2003

Numerical Quantities

Measurement Results:

Database Scale Factor	= 1000
Total Data Storage / Database Size	= 4.70
Start of Database Load	= 2003-08-04 14:10:05
End of Database Load	= 2003-08-06 04:04:21
Database Load Time	= 37:54:16
Query Streams for Throughput Test	= 7
TPC-H Power	= 4956.6
TPC-H Throughput	= 2312.2
TPC-H Composite Query-per-Hour Metric (QphH@1000GB)	= 3385.4
Total System Price Over 3 Years	= \$199,475
TPC-H Price/ Performance Metric (\$/QphH@1000GB)	= \$59

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 239769.3 seconds
--	--------------------

Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	806040421	8/11/2003	13:18:29	8/11/2003	23:04:48	9:46:19
Stream01	806040422	8/11/2003	23:04:49	8/14/2003	8:01:05	56:56:16
Stream02	806040423	8/11/2003	23:04:49	8/14/2003	15:36:37	64:31:48
Stream03	806040424	8/11/2003	23:04:49	8/14/2003	13:19:17	62:14:28
Stream04	806040425	8/11/2003	23:04:49	8/14/2003	13:33:18	62:28:29
Stream05	806040426	8/11/2003	23:04:49	8/14/2003	10:17:30	59:12:41
Stream06	806040427	8/11/2003	23:04:49	8/14/2003	15:48:28	64:43:39
Stream07	806040428	8/11/2003	23:04:49	8/14/2003	14:43:17	63:38:28
Refresh00		8/11/2003	13:18:29	8/11/2003	23:04:48	9:46:19
Refresh01		8/14/2003	15:48:29	8/14/2003	16:04:11	0:15:43
Refresh02		8/14/2003	16:04:12	8/14/2003	16:20:29	0:16:17
Refresh03		8/14/2003	16:20:29	8/14/2003	16:36:30	0:16:01
Refresh04		8/14/2003	16:36:30	8/14/2003	16:52:36	0:16:06
Refresh05		8/14/2003	16:52:36	8/14/2003	17:08:41	0:16:04
Refresh06		8/14/2003	17:08:41	8/14/2003	17:24:46	0:16:05
Refresh07		8/14/2003	17:24:46	8/14/2003	17:40:58	0:16:12



HP ProLiant DL760G2 8P

TPC-H Rev. 2.0

Report Date:
Nov 12, 2003

TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	2736.2	93.9	1357.0	1319.8	3056.7	144.0	1259.0	1172.4
Stream 01	10156.3	1073.3	11713.6	4552.6	22489.7	197.5	21281.5	9301.8
Stream 02	13786.8	673.3	10860.9	9619.8	22882.9	425.6	11742.5	6646.4
Stream 03	14037.7	1379.0	7605.8	6213.7	36958.4	178.3	11916.7	15503.0
Stream 04	13177.0	380.1	9302.3	13159.6	25695.1	183.0	7822.5	5840.0
Stream 05	11470.5	1818.8	7501.9	11388.1	30168.5	217.2	10711.2	9310.5
Stream 06	10266.7	2772.0	14649.7	5345.7	40099.2	217.1	13033.3	18170.8
Stream 07	14456.1	487.3	21928.3	8334.2	18445.9	176.1	7577.4	11366.1
Min Qi	10156.3	380.1	7501.9	4552.6	18445.9	176.1	7577.4	5840.0
Max Qi	14456.1	2772.0	21928.3	13159.6	40099.2	425.6	21281.5	18170.8
Avg Qi	12478.7	1226.3	11937.5	8373.4	28105.7	227.8	12012.2	10876.9
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	4724.2	1233.5	360.1	1336.0	1606.7	161.2	150.3	548.2
Stream 01	31974.6	7145.8	3511.0	3033.6	14011.6	3243.2	4156.8	4095.6
Stream 02	62687.6	4805.8	1538.2	6836.4	11538.5	6674.6	1639.6	14492.7
Stream 03	20695.7	4141.3	4778.2	3155.4	10885.7	1249.0	1685.8	1800.1
Stream 04	50661.6	6030.7	1704.6	4801.2	10562.1	1780.5	1611.2	1916.0
Stream 05	20714.4	3935.9	7246.9	16289.7	13245.8	1003.7	1767.0	2637.8
Stream 06	55363.7	8675.0	2712.3	7934.5	10001.0	1152.5	1948.0	2520.6
Stream 07	55362.7	2631.0	1893.5	2147.9	10659.9	443.8	510.3	1183.4
Min Qi	20695.7	2631.0	1538.2	2147.9	10001.0	443.8	510.3	1183.4
Max Qi	62687.6	8675.0	7246.9	16289.7	14011.6	6674.6	4156.8	14492.7
Avg Qi	42494.3	5337.9	3340.7	6314.1	11557.8	2221.0	1902.7	4092.3
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	260.8	6957.9	396.7	137.2	4998.2	276.0	352.1	541.2
Stream 01	3869.6	8592.9	7067.0	1364.6	31115.3	1029.1	359.6	583.1
Stream 02	3504.4	15652.6	5447.3	943.5	19007.1	901.9	396.2	580.8
Stream 03	1529.9	8541.9	6562.7	7279.3	56859.2	1112.0	391.6	569.8
Stream 04	5422.8	15947.2	6859.9	1464.7	39782.5	805.0	396.1	569.7
Stream 05	5099.7	8579.8	6527.7	503.4	42450.3	572.5	394.3	570.3
Stream 06	3579.1	10469.5	6485.7	1676.4	14845.3	1101.5	397.0	568.3
Stream 07	4969.8	10107.4	3342.4	4715.9	44908.2	3460.9	399.9	572.6
Min Qi	1529.9	8541.9	3342.4	503.4	14845.3	572.5	359.6	568.3
Max Qi	5422.8	15947.2	7067.0	7279.3	56859.2	3460.9	399.9	583.1
Avg Qi	3996.5	11127.3	6041.8	2564.0	35566.8	1283.3	390.7	573.5

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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

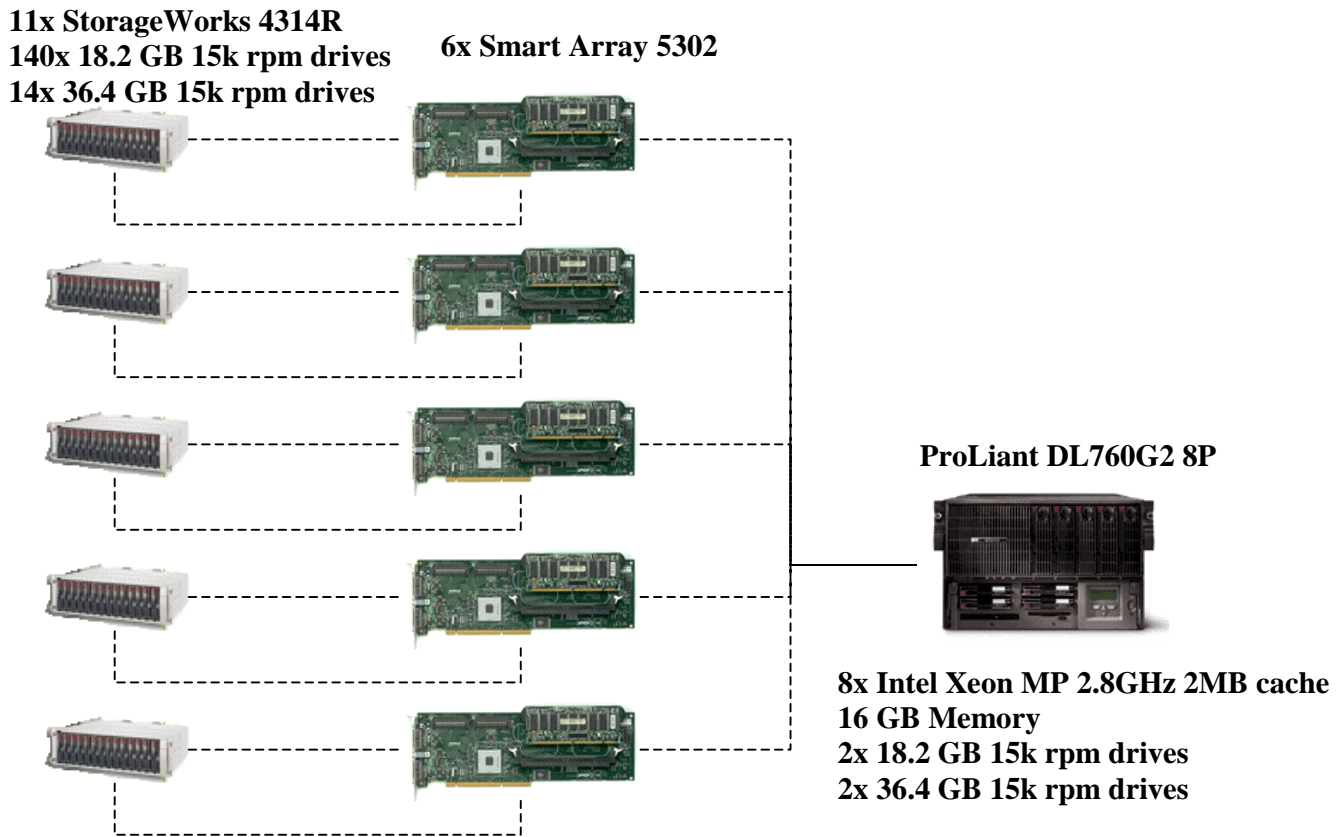
Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences. This includes, but is not limited to:

- *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 DL760G2 8P , depicted in Figure 1.1, consisted of :

- 8x Intel Xeon MP 2.8GHz with 2MB L2 Cache
- 16 GB of memory
- 6 x HP 5302 Array Controllers
- 11 x StorageWorks Enclosure 4354R
- 142 x 18.2GB Pluggable Ultra320 15K rpm 1” height drives
- 16 x 36.4GB Pluggable Ultra320 15K rpm 1” height drives

Figure 1.1 Benchmarked configuration



The measured configuration was different in that it contained 10 additional StorageWorks 4354R, which held 112x 18.2GB 15K SCSI and 28x 72GB 15K SCSI drives that held raw data files. Four additional Smart Array 5304 adapters were used to attach these drives. This hardware was not priced.

The priced configuration contains one additional StorageWorks 4314R disk enclosure with 13x 146GB U320 10k rpm drives. These drives were priced for backup space.

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 DL760G2.

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 8 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 14 physical drives. The tables for the database were stored on 20 RAID-0 arrays each containing 7 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. 8 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. 8 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	10,000,000
Customer	150,000,000
Part	200,000,000
Partsupp	800,000,000
Orders	1,500,000,000
Lineitem	5,999,989,709

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 DL760G2 with the following configuration:

- 6 x Smart Array 5302 disk controllers
- 11 x StorageWorks Enclosure 4354R
- 140 x 18.2GB 15k rpm external disk drives
- 14 x 36.4GB 15k rpm external disk drives
- 2 x 18.2GB 15k rpm internal disk drives
- 2 x 36.4GB 15k rpm internal disk drives

All 158 disks were used to hold table data, indexes, database log and the temporary database (TempDB).

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

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

SMART Array Controller	SMART Logical Drive Array Letter	Number of Physical Drives in SMART LDA	SMART Logical Drive Number	SMART Fault Tolerance	Disk Format	Size (MB)	Contents
Slot 2	A	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 2	B	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 2	C	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 2	D	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 4	A	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 4	B	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 4	C	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 4	D	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 6	A	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 6	B	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 6	C	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 6	D	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 8	A	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 8	B	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 8	C	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 8	D	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 10	A	14	1	RAID1	RAW	200000	TpchLog
			2	RAID0	RAW	31500	TempDB
			3	RAID0	RAW	50000	TempLog
			4	RAID0	RAW	2000	Tpch1g
			5	RAID1	RAW	500	Tpch1gLog
Slot 11	A	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 11	B	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 11	C	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Slot 11	D	7	1	RAID0	RAW	90000	Tpch1000g
			2	RAID0	RAW	31500	TempDB
Embedded	A	2	1	RAID1+0	NTFS	18000	OS

Embedded	B	2	1	RAID1+0	NTFS	36000	UF_Flatfiles
----------	---	---	---	---------	------	-------	--------------

5.3 Mapping of Database Partitions/Replications

The mapping of database partitions/replications must be explicitly described.
 Database partitioning/replication was not used..

5.4 Implementation of RAID

Implementations may use some form of RAID to ensure high availability. If used for data, auxiliary storage (e.g. indexes) or temporary space, the level of RAID used must be disclosed for each device.
 RAID 0 was used for database filegroups and tempdb, and RAID 1 for database recovery logs.

5.5 DBGEN Modifications

The version number, release number, modification number, and patch level of DBGEN must be disclosed. Any modifications to the DBGEN (see Clause 4.2.1) source code must be disclosed. In the event that a program other than DBGEN was used to populate the database, it must be disclosed in its entirety.
 The standard distribution DBGEN version 1.3.0 was used for database population. No modifications were made.

5.6 Database Load time

The database load time for the test database (see clause 4.3) must be disclosed.
 The database load time was 37 hours 54 minutes 16 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.

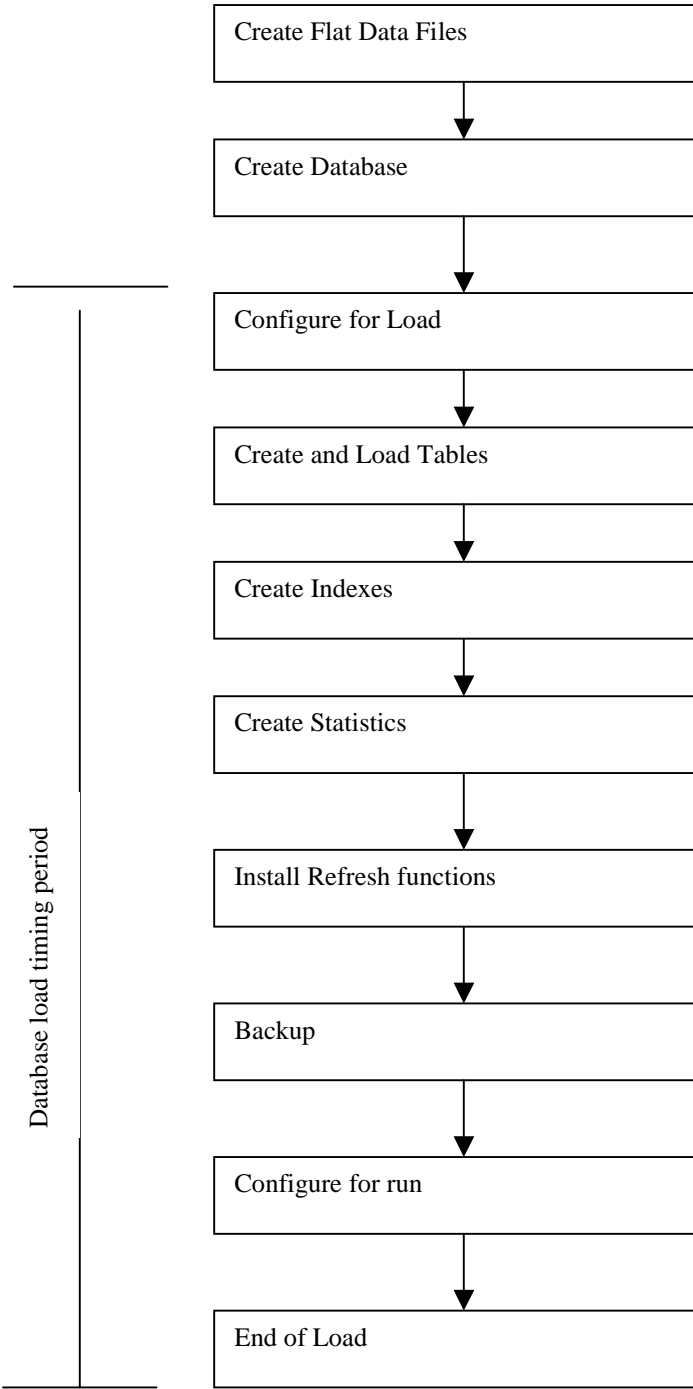
Disk Type	Number of Disks	Space per Disk	Total Disk Space	Data Storage Ratio
18.2 GB 15k rpm Ultra320 SCSI	142	16.92 GB	2402.64GB	
36.4 GB 15k rpm Ultra320 SCSI	16	33.84 GB	541.44GB	
146 GB 10k rpm Ultra320 SCSI	13	135.36 GB	1759.68 GB	4.70

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.

7 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	8/11/2003	13:18:29	8/11/2003	13:24:22
Stream00	RF2	8/11/2003	22:55:47	8/11/2003	23:04:49
Stream01	RF1	8/14/2003	15:48:29	8/14/2003	15:54:28
Stream01	RF2	8/14/2003	15:54:28	8/14/2003	16:04:12
Stream02	RF1	8/14/2003	16:04:12	8/14/2003	16:10:48
Stream02	RF2	8/14/2003	16:10:48	8/14/2003	16:20:29
Stream03	RF1	8/14/2003	16:20:29	8/14/2003	16:27:00
Stream03	RF2	8/14/2003	16:27:00	8/14/2003	16:36:30
Stream04	RF1	8/14/2003	16:36:30	8/14/2003	16:43:06
Stream04	RF2	8/14/2003	16:43:06	8/14/2003	16:52:36
Stream05	RF1	8/14/2003	16:52:36	8/14/2003	16:59:10
Stream05	RF2	8/14/2003	16:59:10	8/14/2003	17:08:41
Stream06	RF1	8/14/2003	17:08:41	8/14/2003	17:15:18
Stream06	RF2	8/14/2003	17:15:18	8/14/2003	17:24:46
Stream07	RF1	8/14/2003	17:24:46	8/14/2003	17:31:26
Stream07	RF2	8/14/2003	17:31:26	8/14/2003	17:40:59

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 (Q_{ppH} and Q_{thH}) 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	Q_{ppH} @ 1000GB	Q_{thH} @ 1000GB	Q_{pH} @ 1000GB
Run 1	4930.7	2378.1	3424.3
Run 2	4956.6	2312.2	3385.4

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 64 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 64 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 7 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 DL760G2, 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 Edition and the database software, Microsoft SQL Server 2000 Enterprise Edition is generally available at the time of publication. Service Pack 3 for Microsoft SQL Server 2000 is generally available at the time of publication.

8.4 Country-Specific Pricing

Additional Clause 7 related items may be included in the Full Disclosure Report for each country-specific priced configuration. Country-specific pricing is subject to Clause 7.1.7.

The configuration is priced for the United States of America.

9.0 Clause 9: Related Items

9.1 Auditors' Report

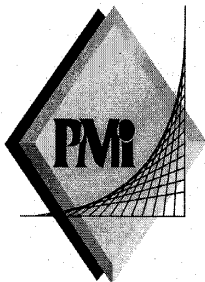
The auditor's agency name, address, phone number, and Attestation letter with a brief audit summary report indicating compliance must be included in the full disclosure report. A statement should be included specifying who to contact in order to obtain further information regarding the audit process.

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

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

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

Transaction Processing Performance Council
c/o Shanley Public Relations
777 North First Street, Suite 6000
San Jose, CA 95112-6311 USA
Telephone: (408) 295-8894
Fax: (408) 295-9768



PERFORMANCE METRICS INC.
TPC Certified Auditors

August 19, 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 DL760 G2
Database Manager: Microsoft SQL Server 2000 Enterprise Edition
Operating System: Microsoft Windows Server 2003, Enterprise Edition

CPU's	Memory	Total Disks	QppH@1000GB	QthH@1000GB	QphH@1000GB
8 Intel Xeon MP @ 2.8 Ghz	16 GB	142 @ 16GB 16 @ 36GB	4,956.6	2,312.2	3,385.4

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 1,000GB 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.

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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 -g128
```

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 128MB for non-buffer pool allocations.

A.4 Microsoft SQL Server 2000 Configuration Parameters

name	,minimum	,maximum	,config_value	,run_value
affinity mask	,-2147483648,	2147483647,	65535,	65535
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,	16,	16
max server memory (MB)	, 4,	2147483647,	2147483647,	
max text repl size (B)	, 0,	2147483647,	65536,	65536
max worker threads	, 32,	32767,	1800,	1800
media retention	, 0,	365,	0,	0
min memory per query (KB)	, 512,	2147483647,	512,	512
min server memory (MB)	, 0,	2147483647,	0,	0
nested triggers	, 0,	1,	1,	1
network packet size (B)	, 512,	65536,	32768,	32768
open objects	, 0,	2147483647,	0,	0
priority boost	, 0,	1,	1,	1
query governor cost limit	, 0,	2147483647,	0,	0
query wait (s)	, -1,	2147483647,	-1,	-1
recovery interval (min)	, 0,	32767,	32767,	32767
remote access	, 0,	1,	1,	1
remote login timeout (s)	, 0,	2147483647,	20,	20
remote proc trans	, 0,	1,	0,	0
remote query timeout (s)	, 0,	2147483647,	600,	600
scan for startup procs	, 0,	1,	0,	0
set working set size	, 0,	1,	0,	0
show advanced options	, 0,	1,	1,	1
two digit year cutoff	, 1753,	9999,	2049,	2049
user connections	, 0,	32767,	0,	0
user options	, 0,	32767,	0,	0

A.5 Windows 2003 Configuration

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

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

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

Boot.ini parameters:

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

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

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

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

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpqciss
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\hpqciss
b\Parameters]
"CompletionMode"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpqciss
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,\

00,00,02,00,60,00,04,00,00,00,00,00,14,00,fd,01,02,00,01,01,00,00,00,00,00
.\

05,12,00,00,00,00,00,18,00,ff,01,0f,00,01,02,00,00,00,00,00,05,20,00,00,00,\

20,02,00,00,00,00,14,00,8d,01,02,00,01,01,00,00,00,00,00,05,0b,00,00,00,00
.\

00,18,00,fd,01,02,00,01,02,00,00,00,00,00,05,20,00,00,00,23,02,00,00,01,01
.\
00,00,00,00,00,05,12,00,00,00,01,01,00,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpqciss
b\Enum]
"0"="Root\LEGACY_HPQCISB\0000"
"Count"=dword:00000001
"NextInstance"=dword:00000001

```

A.7 System Hardware Information

System Information report written at: 08/15/03 08:59:52

System Name: PHOENIX

[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	PHOENIX
System Manufacturer	HP
System Model	ProLiant DL760 G2
System Type	X86-based PC
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor	x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz

```

Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
Processor x86 Family 15 Model 2 Stepping 5 GenuineIntel ~2799 Mhz
BIOS Version/Date HP P44-06/19/2003, 6/19/2003
SMBIOS Version 2.3
Windows Directory C:\WINDOWS
System Directory C:\WINDOWS\system32
Boot Device \Device\HarddiskVolume46
Locale United States
Hardware Abstraction Layer Version = "5.2.3790.0 (srv03_rtm.030324-
2048)"
User Name PHOENIX\Administrator
Time Zone Central America Standard Time
Total Physical Memory 16,388.00 MB
Available Physical Memory 15.47 GB
Total Virtual Memory 35.37 GB
Available Virtual Memory 34.92 GB
Page File Space 19.62 GB
Page File C:\pagefile.sys

```

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device	Bus
I/O Port 0x00000000-0x000017FF		PCI bus
I/O Port 0x00000000-0x000017FF		Direct memory access controller
I/O Port 0x000003C0-0x000003DF		PCI bus
I/O Port 0x000003C0-0x000003DF		Standard VGA Graphics Adapter
I/O Port 0x00006000-0x00006FFF		PCI bus
I/O Port 0x00006000-0x00006FFF		Smart Array 5300 Controller (Non-Miniport)
IRQ 35	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	
IRQ 35	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	
IRQ 35	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	
IRQ 35	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	
IRQ 35	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	
IRQ 35	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	
I/O Port 0x00003000-0x00003FFF		PCI bus
I/O Port 0x00003000-0x00003FFF		Smart Array 5300 Controller (Non-Miniport)

I/O Port 0x00005000-0x00005FFF I/O Port 0x00005000-0x00005FFF (Non-Miniport)	PCI bus Smart Array 5300 Controller	0x00000070-0x00000073	Motherboard resources	OK
		0x00000092-0x00000092	Motherboard resources	OK
		0x00000C00-0x00000CD7	Motherboard resources	OK
I/O Port 0x00001800-0x00002FFF I/O Port 0x00001800-0x00002FFF Management Controller	PCI bus HP ProLiant Advanced System	0x00001000-0x0000107F	Motherboard resources	OK
		0x00001080-0x000010FF	Motherboard resources	OK
Memory Address 0xA0000-0xBFFFF Memory Address 0xA0000-0xBFFFF Adapter	PCI bus Standard VGA Graphics	0x00000040-0x00000043 0x00000080-0x0000008F	System timer Direct memory access controller	OK OK
I/O Port 0x00007000-0x00007FFF I/O Port 0x00007000-0x00007FFF (Non-Miniport)	PCI bus Smart Array 5300 Controller	0x000000C0-0x000000DF	Direct memory access controller	OK
		0x0000040B-0x0000040B	Direct memory access controller	OK
I/O Port 0x000003B0-0x000003BB I/O Port 0x000003B0-0x000003BB Adapter	PCI bus Standard VGA Graphics	0x000004D6-0x000004D6	Direct memory access controller	OK
		0x00000061-0x00000061 0x000003F8-0x000003FF	System speaker Communications Port (COM1)	OK OK
I/O Port 0x00008000-0x00008FFF I/O Port 0x00008000-0x00008FFF (Non-Miniport)	PCI bus Smart Array 5300 Controller	0x000003F2-0x000003F5 0x000003F7-0x000003F7	Standard floppy disk controller Standard floppy disk controller	OK OK
[DMA]		0x00000060-0x00000060	Standard 101/102-Key or Microsoft	OK
Resource Device Status		Natural PS/2 Keyboard	Standard 101/102-Key or Microsoft	OK
Channel 7 Direct memory access controller	OK	0x00000064-0x00000064	Natural PS/2 Keyboard	OK
Channel 2 Standard floppy disk controller	OK	0x00002820-0x0000282F	CSB5 IDE Controller	OK
[Forced Hardware]		0x000001F0-0x000001F7	Primary IDE Channel	OK
Device PNP Device ID		0x000003F6-0x000003F6 0x00000170-0x00000177	Primary IDE Channel Secondary IDE Channel	OK OK
		0x00000376-0x00000376	Secondary IDE Channel	OK
[I/O]		0x00000A79-0x00000A79	ISAPNP Read Data Port	OK
Resource Device Status		0x00000279-0x00000279	ISAPNP Read Data Port	OK
0x00000000-0x000017FF 0x00000000-0x000017FF	PCI bus OK Direct memory access controller	0x00000274-0x00000277	ISAPNP Read Data Port	OK
0x000003B0-0x000003BB 0x000003B0-0x000003BB	PCI bus OK Standard VGA Graphics Adapter	0x00000020-0x00000021	Programmable interrupt controller	OK
0x000003C0-0x000003DF 0x000003C0-0x000003DF	PCI bus OK Standard VGA Graphics Adapter	0x000000A0-0x000000A1	Programmable interrupt controller	OK
0x00001800-0x00002FFF 0x00001800-0x00002FFF Management Controller	PCI bus OK HP ProLiant Advanced System	0x000004D0-0x000004D1	Programmable interrupt controller	OK
0x00002000-0x000020FF	OK Standard VGA Graphics Adapter	0x00003000-0x00003FFF	PCI bus OK	OK
0x00002400-0x000024FF	Compaq Smart Array 5i Controller	0x00003000-0x00003FFF	Smart Array 5300 Controller (Non-Miniport)	OK
OK		0x00003400-0x000034FF	Smart Array 5300 Controller (Non-Miniport)	OK
0x00000F50-0x00000F58	Motherboard resources	0x00005000-0x00005FFF	PCI bus OK	OK
	OK	0x00005000-0x00005FFF	Smart Array 5300 Controller (Non-Miniport)	OK
0x00000F57-0x00000F57	Motherboard resources	0x00006000-0x00006FFF	PCI bus OK	OK
	OK	0x00006000-0x00006FFF	Smart Array 5300 Controller (Non-Miniport)	OK
0x00000700-0x0000076F	Motherboard resources	0x00007000-0x00007FFF	PCI bus OK	OK
	OK	0x00007000-0x00007FFF	Smart Array 5300 Controller (Non-Miniport)	OK
0x00000900-0x0000095F	Motherboard resources	0x00008000-0x00008FFF	PCI bus OK	OK
	OK	0x00008000-0x00008FFF	Smart Array 5300 Controller (Non-Miniport)	OK
0x00000800-0x0000081F	Motherboard resources	0x00008000-0x00008FFF	PCI bus OK	OK
	OK	0x00008000-0x00008FFF	Smart Array 5300 Controller (Non-Miniport)	OK
0x00000010-0x0000001F	Motherboard resources			OK
0x00000022-0x0000002F	Motherboard resources			OK
		[IRQs]		
		Resource Device Status		

IRQ 9 Microsoft ACPI-Compliant System OK
 IRQ 47 BCM5701 Gigabit Ethernet #2 OK
 IRQ 37 HP ProLiant Advanced System Management Controller OK

 IRQ 40 Compaq Smart Array 5i Controller OK
 IRQ 0 System timer OK
 IRQ 4 Communications Port (COM1) OK
 IRQ 6 Standard floppy disk controller OK
 IRQ 12 PS/2 Compatible Mouse OK
 IRQ 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK

 IRQ 14 Primary IDE Channel OK
 IRQ 11 ServerWorks (RCC) PCI to USB Open Host Controller OK

 IRQ 39 hp Memory Host Controller OK
 IRQ 32 hp Memory Host Controller OK
 IRQ 38 hp Memory Host Controller OK
 IRQ 35 hp ProLiant PCI Hot Plug Controller (CPQPHP installed) OK
 IRQ 35 hp ProLiant PCI Hot Plug Controller (CPQPHP installed) OK
 IRQ 35 hp ProLiant PCI Hot Plug Controller (CPQPHP installed) OK
 IRQ 35 hp ProLiant PCI Hot Plug Controller (CPQPHP installed) OK
 IRQ 35 hp ProLiant PCI Hot Plug Controller (CPQPHP installed) OK
 IRQ 45 Smart Array 5300 Controller (Non-Miniport) OK
 IRQ 43 Smart Array 5300 Controller (Non-Miniport) OK
 IRQ 17 Smart Array 5300 Controller (Non-Miniport) OK
 IRQ 21 Smart Array 5300 Controller (Non-Miniport) OK
 IRQ 25 Smart Array 5300 Controller (Non-Miniport) OK
 IRQ 29 Smart Array 5300 Controller (Non-Miniport) OK

[Memory]

Resource	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	Standard VGA Graphics Adapter	OK
0xF5E00000-0xF7FFFFFF	PCI bus	OK
0xF7FF0000-0xF7FFFFFF	BCM5701 Gigabit Ethernet #2	OK
0xF7FE0000-0xF7FE00FF	HP ProLiant Advanced System Management Controller	OK
0xF6000000-0xF6FFFFFF	Standard VGA Graphics Adapter	OK
0xF5FF0000-0xF5FF0FFF	Standard VGA Graphics Adapter	OK
0xF5F80000-0xF5FBFFFF	Compaq Smart Array 5i Controller	OK
0xF5EF0000-0xF5EF3FFF	Compaq Smart Array 5i Controller	OK
0xC0000-0xDFFFF	Motherboard resources	OK
0xF5F70000-0xF5F70FFF	ServerWorks (RCC) PCI to USB Open Host Controller	OK
0xF5F60000-0xF5F607FF	hp Memory Host Controller	OK
0xF5F50000-0xF5F507FF	hp Memory Host Controller	OK
0xF5F40000-0xF5F407FF	hp Memory Host Controller	OK

0xF5F30000-0xF5F30FFF	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	OK
0xFEC00000-0xFFFFFFFF	Advanced programmable interrupt controller	OK
0xF5900000-0xF5DFFFFFF	PCI bus	OK
0xF5DC0000-0xF5DFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5C00000-0xF5CFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5BC0000-0xF5BFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5A00000-0xF5AFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF59F0000-0xF59F0FFF	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	OK
0xF5600000-0xF58FFFFFF	PCI bus	OK
0xF58C0000-0xF58FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5700000-0xF57FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF56F0000-0xF56F0FFF	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	OK
0xF5300000-0xF55FFFFFF	PCI bus	OK
0xF55C0000-0xF55FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5400000-0xF54FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF53F0000-0xF53F0FFF	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	OK
0xF5000000-0xF52FFFFFF	PCI bus	OK
0xF52C0000-0xF52FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5100000-0xF51FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF50F0000-0xF50F0FFF	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	OK
0xF4D00000-0xF4FFFFFF	PCI bus	OK
0xF4FC0000-0xF4FFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF4E00000-0xF4EFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF4DF0000-0xF4DF0FFF	hp ProLiant PCI Hot Plug Controller (CPQPHP installed)	OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
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\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\sl_anet.acm		Sipro Lab Telecom Inc.		
	Sipro Lab Telecom Audio Codec	OK		
	C:\WINDOWS\system32\SL_ANET.ACM	3.02		84.00 KB
	(86,016 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\msg723.acm		Microsoft Corporation		
	OK	C:\WINDOWS\system32\MSG723.ACM		

4.4.4000 116.00 KB (118,784 bytes) 4/18/2003 2:20 PM

c:\windows\system32\imaadp32.acm Microsoft Corporation
OK
C:\WINDOWS\system32\IMAADP32.ACM5.2.3790.0
(srv03_rtm.030324-2048) 15.50 KB (15,872 bytes)
3/25/2003 12:00 AM

c:\windows\system32\l3codeca.acm Fraunhofer Institut Integrierte
Schaltungen IIS Fraunhofer IIS MPEG Layer-3 Codec OK
C:\WINDOWS\system32\L3CODECA.ACM 1, 9, 0,
0305 284.00 KB (290,816 bytes) 3/25/2003 12:00 AM

c:\windows\system32\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\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

[Video Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\tsbyuv.dll	Microsoft Corporation	OK	C:\WINDOWS\system32\TSBYUV.DLL	
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	8.00 KB (8,192	3/24/2003 7:50 PM	
c:\windows\system32\iyuv_32.dll	Microsoft Corporation	OK	C:\WINDOWS\system32\IYUV_32.DLL	
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	45.00 KB (46,080	3/24/2003 7:49 PM	
c:\windows\system32\msh261.drv	Microsoft Corporation	OK	C:\WINDOWS\system32\MSH261.DRV	
4.4.4000	180.00 KB (184,320 bytes)	4/18/2003 2:20 PM		
c:\windows\system32\msyuv.dll	Microsoft Corporation	OK	C:\WINDOWS\system32\MSYUV.DLL	
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896	3/24/2003 7:49 PM	
c:\windows\system32\msvidc32.dll	Microsoft Corporation	OK	C:\WINDOWS\system32\MSVIDC32.DLL	
(srv03_rtm.030324-2048)	26.50 KB (27,136 bytes)	3/25/2003 12:00 AM		
c:\windows\system32\msh263.drv	Microsoft Corporation	OK	C:\WINDOWS\system32\MSH263.DRV	
4.4.4000	284.00 KB (290,816 bytes)	3/24/2003 7:46 PM		
c:\windows\system32\msrle32.dll	Microsoft Corporation	OK	C:\WINDOWS\system32\MSRLE32.DLL	
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	10.50 KB (10,752	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-224E
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available

SCSI Target ID 0
PNP Device ID IDE\CDROMCOMPAQ_CD-
224E_____A.8D____\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
[Display]	
Item	Value
Name	Standard VGA Graphics Adapter
PNP Device ID	PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3 &267A616A&0&68
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	0x00002000-0x000020FF
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), 4/22/2003 9:30 AM)

[Infrared]

Item	Value
[Input]	
[Keyboard]	
Item	Value
Description	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name	Enhanced (101- or 102-key)
Layout	00000409
PNP Device ID	ACPI\PNP0303\4&35118DFF&0
Number of Function Keys	12
I/O Port	0x00000060-0x00000060
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	2
Status	OK

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

[Modem]

Item Value

[Network]

[Adapter]

Item Value
Name [00000001] HP NC7770 Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC7770 Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 8/6/2003 9:30 AM
Index 1
Service Name q57w2k
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled Yes
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000002] RAS Async Adapter
Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 8/6/2003 9:30 AM
Index 2
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)
Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID ROOT\MS_L2TPMINIPORT\0000
Last Reset 8/6/2003 9:30 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_PPTPMINIPORT\0000
Last Reset 8/6/2003 9:30 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_PPPOEMINIPORT\0000
Last Reset 8/6/2003 9:30 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_PTMINIPORT\0000
Last Reset 8/6/2003 9:30 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 8/6/2003 9:30 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)

Name [00000008] 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&267A616A&0&08
 Last Reset 8/6/2003 9:30 AM
 Index 8
 Service Name b57w2k
 IP Address 130.168.253.47
 IP Subnet 255.255.0.0
 Default IP Gateway Not Available
 DHCP Enabled Yes
 DHCP Server 130.168.253.2
 DHCP Lease Expires 8/15/2003 9:31 PM
 DHCP Lease Obtained 8/14/2003 9:31 PM
 MAC Address 00:02:A5:E7:7B:A9
 Memory Address 0xF7FF0000-0xF7FFFFF
 IRQ Channel IRQ 47
 Driver c:\windows\system32\drivers\b57xp32.sys (2.91.0.0 built by: WinDDK, 137.00 KB (140,288 bytes), 4/18/2003 7:45 AM)

[Protocol]

Item	Value
Name	MSAFD Tcpiip [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 Tcpiip [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_Tcpiip_{60D9D4D1-2B46-4C4B-9F4A-2889FCD596D8}] SEQPACKE
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_Tcpiip_{60D9D4D1-2B46-4C4B-9F4A-2889FCD596D8}] DATAGRAM
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_{E9EECDC3-2FA6-45D9-9F32-9BD0FB7A69CE}] 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_{E9EECDC3-2FA6-45D9-9F32-9BD0FB7A69CE}] 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_{5ABE8395-828C-4719-B4AA-D42098041721}] 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_{5ABE8395-828C-4719-B4AA-D42098041721}] 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_{5B35BB2B-E81B-40CA-B7F9-21758EE085C2}] SEQUENCE 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_{5B35BB2B-E81B-40CA-B7F9-21758EE085C2}] 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\wssock32.dll
Size	22.00 KB (22,528 bytes)
Version	5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]

[Serial]

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

[Parallel]

Item Value

[Storage]

[Drives]

Item Value
Drive A:
Description 3 1/2 Inch Floppy Drive

Drive C:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 16.95 GB (18,198,999,040 bytes)
Free Space 9.07 GB (9,738,108,928 bytes)
Volume Name
Volume Serial Number 64E412A6

Drive D:
Description CD-ROM Disc

Drive X:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 33.91 GB (36,413,280,256 bytes)
Free Space 9.73 GB (10,444,414,976 bytes)
Volume Name New Volume
Volume Serial Number 1CAF4023

[Disks]

Item Value
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 87.89 GB (94,368,637,440 bytes)
Total Cylinders 11,473
Total Sectors 184,313,745
Total Tracks 2,925,615
Tracks/Cylinder 255
Partition Disk #13, Partition #0
Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
Total Cylinders 4,018
Total Sectors 64,549,170
Total Tracks 1,024,590
Tracks/Cylinder 255
Partition Disk #14, Partition #0
Partition Size 30.78 GB (33,049,142,784 bytes)
Partition Starting Offset 32,256 bytes

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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #15, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #16, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #17, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #18, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #19, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #20, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #21, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #22, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #23, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #24, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #25, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.81 GB (33,082,076,160 bytes)
 Total Cylinders 4,022
 Total Sectors 64,613,430
 Total Tracks 1,025,610
 Tracks/Cylinder 255
 Partition Disk #26, Partition #0
 Partition Size 30.81 GB (33,082,043,904 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #27, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #28, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 195.31 GB (209,711,738,880 bytes)
 Total Cylinders 25,496
 Total Sectors 409,593,240
 Total Tracks 6,501,480
 Tracks/Cylinder 255
 Partition Disk #0, Partition #0
 Partition Size 195.31 GB (209,711,706,624 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #1, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 48.83 GB (52,427,934,720 bytes)
 Total Cylinders 6,374
 Total Sectors 102,398,310
 Total Tracks 1,625,370
 Tracks/Cylinder 255
 Partition Disk #2, Partition #0
 Partition Size 48.82 GB (52,419,677,184 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 2.00 GB (2,146,798,080 bytes)
 Total Cylinders 261
 Total Sectors 4,192,965
 Total Tracks 66,555
 Tracks/Cylinder 255
 Partition Disk #3, Partition #0
 Partition Size 1.99 GB (2,138,540,544 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 32
 Size 498.00 MB (522,190,848 bytes)
 Total Cylinders 498
 Total Sectors 1,019,904
 Total Tracks 31,872
 Tracks/Cylinder 64
 Partition Disk #4, Partition #0
 Partition Size 496.98 MB (521,125,888 bytes)
 Partition Starting Offset 16,384 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #29, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #30, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #31, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #32, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #33, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #34, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #35, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.81 GB (33,082,076,160 bytes)
 Total Cylinders 4,022
 Total Sectors 64,613,430
 Total Tracks 1,025,610
 Tracks/Cylinder 255
 Partition Disk #36, Partition #0
 Partition Size 30.81 GB (33,082,043,904 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE37
 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #37, Partition #0
 Partition Size 87.89 GB (94,368,605,184 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE38
 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #38, Partition #0
 Partition Size 30.78 GB (33,049,142,784 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE39
 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #39, Partition #0
 Partition Size 87.89 GB (94,368,605,184 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE40
 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #40, Partition #0
 Partition Size 30.78 GB (33,049,142,784 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE41
 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #41, Partition #0
 Partition Size 87.89 GB (94,368,605,184 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE42
 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 30.81 GB (33,082,076,160 bytes)
 Total Cylinders 4,022
 Total Sectors 64,613,430
 Total Tracks 1,025,610
 Tracks/Cylinder 255
 Partition Disk #42, Partition #0
 Partition Size 30.81 GB (33,082,043,904 bytes)
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE43
 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #43, Partition #0
 Partition Size 87.89 GB (94,368,605,184 bytes)

Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE44
 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #44, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #5, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #6, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #7, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #8, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #9, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #10, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 87.89 GB (94,368,637,440 bytes)
 Total Cylinders 11,473
 Total Sectors 184,313,745
 Total Tracks 2,925,615
 Tracks/Cylinder 255
 Partition Disk #11, Partition #0
 Partition Size 87.89 GB (94,368,605,184 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 30.78 GB (33,049,175,040 bytes)
 Total Cylinders 4,018
 Total Sectors 64,549,170
 Total Tracks 1,024,590
 Tracks/Cylinder 255
 Partition Disk #12, Partition #0
 Partition Size 30.78 GB (33,049,142,784 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 16.95 GB (18,203,197,440 bytes)
 Total Cylinders 4,357
 Total Sectors 35,553,120
 Total Tracks 1,111,035
 Tracks/Cylinder 255
 Partition Disk #45, Partition #0
 Partition Size 16.95 GB (18,199,003,136 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 33.91 GB (36,414,750,720 bytes)
 Total Cylinders 8,716
 Total Sectors 71,122,560
 Total Tracks 2,222,580
 Tracks/Cylinder 255
 Partition Disk #46, Partition #0
 Partition Size 33.91 GB (36,413,282,304 bytes)
 Partition Starting Offset 32,256 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&267A616A&0&70
Memory Address	0xF5F80000-0xF5FBFFFF
I/O Port	0x00002400-0x000024FF
Memory Address	0xF5EF0000-0xF5EF3FFF
IRQ Channel	IRQ 40
Driver	c:\windows\system32\drivers\cpqcissm.sys (5.8.74.1 built by: Microsoft, 13.00 KB (13,312 bytes), 6/7/2003 8:29 AM)

Name	Smart Array 5300 Controller (Non-Miniport)
Manufacturer	Hewlett-Packard
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&13C0B0C5&0&08
Memory Address	0xF5DC0000-0xF5DFFFFF
Memory Address	0xF5C00000-0xF5CFFFFF
I/O Port	0x00003000-0x00003FFF
IRQ Channel	IRQ 45
Driver	c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by: WinDDK, 38.00 KB (38,912 bytes), 4/18/2003 2:51 PM)

Name	Smart Array 5300 Controller (Non-Miniport)
Manufacturer	Hewlett-Packard
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&13C0B0C5&0&10
Memory Address	0xF5BC0000-0xF5BFFFFF
Memory Address	0xF5A00000-0xF5AFFFFF
I/O Port	0x00003400-0x000034FF
IRQ Channel	IRQ 43
Driver	c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by: WinDDK, 38.00 KB (38,912 bytes), 4/18/2003 2:51 PM)

Name	Smart Array 5300 Controller (Non-Miniport)
Manufacturer	Hewlett-Packard
Status	OK

PNP Device ID
 PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
 &1070020&0&10
 Memory Address 0xF58C0000-0xF58FFFFF
 Memory Address 0xF5700000-0xF57FFFFF
 I/O Port 0x00005000-0x00005FFF
 IRQ Channel IRQ 17
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 4/18/2003 2:51 PM)

Name Smart Array 5300 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
 &29E81982&0&10
 Memory Address 0xF55C0000-0xF55FFFFF
 Memory Address 0xF5400000-0xF54FFFFF
 I/O Port 0x00006000-0x00006FFF
 IRQ Channel IRQ 21
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 4/18/2003 2:51 PM)

Name Smart Array 5300 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
 &172E68DD&0&10
 Memory Address 0xF52C0000-0xF52FFFFF
 Memory Address 0xF5100000-0xF51FFFFF
 I/O Port 0x00007000-0x00007FFF
 IRQ Channel IRQ 25
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 4/18/2003 2:51 PM)

Name Smart Array 5300 Controller (Non-Miniport)
 Manufacturer Hewlett-Packard
 Status OK
 PNP Device ID
 PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
 &474B838&0&10
 Memory Address 0xF4FC0000-0xF4FFFFF
 Memory Address 0xF4E00000-0xF4EFFFFF
 I/O Port 0x00008000-0x00008FFF
 IRQ Channel IRQ 29
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:
 WinDDK, 38.00 KB (38,912 bytes), 4/18/2003 2:51 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 0x00002820-0x0000282F
 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
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[Problem Devices]

Device	PNP Device ID	Error Code
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[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
Accept Stop					
abiosdsk	Abiosdsk	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Ignore	No
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver	Yes	Normal
	Yes	Boot	Running	OK	No
	Yes				
acpiec	ACPIEC	c:\windows\system32\drivers\acpiec.sys	Kernel	Yes	Normal
Driver	No	Disabled	Stopped	OK	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
afcnt	afcnt	Not Available	Kernel Driver	No	No
	Disabled	Stopped	OK	Normal	No
afd	AFD Networking Support Environment	c:\windows\system32\drivers\afd.sys	Kernel Driver	Yes	Normal
	Yes	Auto	Running	OK	No
	Yes				
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 Disabled	Stopped OK	Kernel Driver Normal	No No	No No	cpqfcalm	cpqfcalm	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No	No No					
aliide	AliIde	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No	No No	cpqmhph	hp ProLiant Hot Plug Memory Driver c:\windows\system32\drivers\cpqmhph.sys					Kernel Driver Normal	No No				
asynmac	RAS Asynchronous Media Driver c:\windows\system32\drivers\asynmac.sys			No	Manual	Stopped	OK	Kernel Driver Normal	No No	cpqphp	hp ProLiant PCI Hot Plug Controller (CPQPHP installed) c:\windows\system32\drivers\cpqphp.sys			Kernel Driver Normal	No No			
ataapi	Standard IDE/ESDI Hard Disk Controller c:\windows\system32\drivers\ataapi.sys			Yes	Boot	Running	OK	Kernel Driver Normal	No No	cpqteam	HP Network Teaming and Configuration c:\windows\system32\drivers\cpqteam.sys			Kernel Driver Normal	No No			
atdisk	Atdisk	Not Available Disabled	Stopped OK	Kernel Driver Ignore	No No	No No	crdisk	CRC Disk Filter Driver c:\windows\system32\drivers\crdisk.sys					Kernel Driver Normal	No No				
ati2mpad Driver	ati2mpad	c:\windows\system32\drivers\ati2mpad.sys	No	Manual	Stopped	OK	Ignore	Kernel Driver Normal	No No	dac960nt	dac960nt	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No			
atmarpc	ATM ARP Client Protocol c:\windows\system32\drivers\atmarpc.sys			No	Manual	Stopped	OK	Kernel Driver Normal	No No	dellcerc	dellcerc	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No			
audstub	Audio Stub Driver	c:\windows\system32\drivers\audstub.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No	dfsdriver	DfsDriver	c:\windows\system32\drivers\dfs.sys	File System Driver	Yes	Boot	Running	OK	Normal
b57w2k	BCM5701 Gigabit Ethernet c:\windows\system32\drivers\b57xp32.sys			Yes	Manual	Running	OK	Kernel Driver Normal	No No	disk	Disk Driver	c:\windows\system32\drivers\disk.sys	Kernel Driver	Yes	Boot	Running	OK	Normal
beep Driver	Beep	c:\windows\system32\drivers\beep.sys	Yes	System	Running	OK	Normal	Kernel Normal	No	dmbboot Driver	dmbboot	c:\windows\system32\drivers\dmbboot.sys	No	Disabled	Stopped	OK	Normal	Kernel No
cbidf2k Driver	cbidf2k	c:\windows\system32\drivers\cbidf2k.sys	No	Disabled	Stopped	OK	Normal	Kernel Normal	No	dmio	Logical Disk Manager Driver c:\windows\system32\drivers\dmio.sys			Kernel Driver Normal	No No			
cd20xmt	cd20xmt	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No	No No	dmload Driver	dmload	c:\windows\system32\drivers\dmload.sys	Yes	Boot	Running	OK	Normal	Kernel No			
cdfs System Driver	Cdfs	c:\windows\system32\drivers\cdfs.sys	Yes	Disabled	Running	OK	Normal	File System Driver	Normal	dpti2o	dpti2o	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No			
cdrom	CD-ROM Driver	c:\windows\system32\drivers\cdrom.sys	Kernel Driver	Yes	System	Running	OK	Normal	No	fastfat System Driver	Fastfat	c:\windows\system32\drivers\fastfat.sys	No	Disabled	Stopped	OK	File System Driver	Normal
changer	Changer System	Not Available Stopped	OK	Kernel Driver Ignore	No No	No No	fdc	Floppy Disk Controller Driver c:\windows\system32\drivers\fdc.sys			Kernel Driver Normal	No No						
clusdisk	Cluster Disk Driver	c:\windows\system32\drivers\clusdisk.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No	fips Driver	Fips	c:\windows\system32\drivers\fips.sys	Yes	System	Running	OK	Kernel Normal	No
cmdide	CmdIde	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No	No No	flpydisk	Floppy Disk Driver	c:\windows\system32\drivers\flpydisk.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No		
cpqarray	Cpqarray	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No	No No	ftdisk	Volume Manager Driver c:\windows\system32\drivers\ftdisk.sys			Kernel Driver Normal	No No						
cpqarry2	cpqarry2	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No	No No	gpc	Generic Packet Classifier c:\windows\system32\drivers\msgpc.sys			Kernel Driver Normal	No No						
cpqasm	HP ProLiant Advanced System Management Controller c:\windows\system32\drivers\cpqasm.sys			Yes	Manual	Running	OK	Kernel Driver Normal	No No	hpn	hpn	Not Available Disabled	Stopped OK	Kernel Driver Normal	No No			
cpqcissm Driver	cpqcissm	c:\windows\system32\drivers\cpqcissm.sys	Yes	Boot	Running	OK	Normal	Kernel Normal	No	hpqcissb	Smart Array Controllers Non-Miniport Bus Driver c:\windows\system32\drivers\hpqcissb.sys			Kernel Driver	No			

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

mouclass	Mouse Class Driver Kernel Driver c:\windows\system32\drivers\mouclass.sys					
	Yes	System	Running	OK	Normal	No
mountmgr	Mount Point Manager c:\windows\system32\drivers\mountmgr.sys Kernel Driver					
	Yes	Boot	Running	OK	Normal	No
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
mrxsmb System Driver	MRXSMB c:\windows\system32\drivers\mrxsmb.sys		File		Normal	
	No	Yes	System	Running	OK	Normal
msfs System Driver	Msfs c:\windows\system32\drivers\msfs.sys		File		Normal	
	No	Yes	System	Running	OK	Normal
mup System Driver	Mup c:\windows\system32\drivers\mup.sys		File		Normal	
	No	Yes	Boot	Running	OK	Normal
ndis	NDIS System Driver c:\windows\system32\drivers\ndis.sys Kernel Driver					
	Yes	Boot	Running	OK	Normal	No
ndistapi	Remote Access NDIS TAPI Driver c:\windows\system32\drivers\ndistapi.sys Kernel Driver					
	Yes	Manual	Running	OK	Normal	No
ndisuiop	NDIS Usermode I/O Protocol c:\windows\system32\drivers\ndisuiop.sys Kernel Driver					
	Yes	Manual	Running	OK	Normal	No
ndiswan	Remote Access NDIS WAN Driver c:\windows\system32\drivers\ndiswan.sys Kernel Driver					
	Yes	Manual	Running	OK	Normal	No
ndproxy	NDIS Proxy c:\windows\system32\drivers\ndproxy.sys Kernel Driver					
	Normal	No	Yes	Manual	Running	OK
netbios	NetBIOS Interface c:\windows\system32\drivers\netbios.sys File System Driver					
	Normal	No	Yes	System	Running	OK
netbt	NetBios over Tcpip c:\windows\system32\drivers\netbt.sys Kernel Driver					
	Normal	No	Yes	System	Running	OK
nfrd960	nfrd960 Not Available		Kernel Driver		No	
	Disabled	Stopped	OK	Normal	No	No
npfs System Driver	Npfs c:\windows\system32\drivers\npfs.sys		File		Normal	
	No	Yes	System	Running	OK	Normal
ntfs System Driver	Ntfs c:\windows\system32\drivers\ntfs.sys		File		Normal	
	No	Yes	Disabled	Running	OK	Normal
null Driver	Null c:\windows\system32\drivers\null.sys		Kernel		No	
	Yes	System	Running	OK	Normal	No
parport Driver	Parport c:\windows\system32\drivers\parport.sys		Kernel		No	
	No	Manual	Stopped	OK	Ignore	No
partmgr	Partition Manager c:\windows\system32\drivers\partmgr.sys Kernel Driver					
	Yes	Boot	Running	OK	Normal	No
pci	PCI Bus Driver c:\windows\system32\drivers\pci.sys Kernel Driver					
	Critical	No	Yes	Boot	Running	OK

pciide Driver	PCIIde Yes Yes	c:\windows\system32\drivers\pciide.sys	Kernel Driver Normal No	Yes Yes	Manual	Running	OK	Normal	No
pcmcia Driver	Pcmcia No No	c:\windows\system32\drivers\pcmcia.sys	Kernel Driver Normal No	Yes Yes	Manual	Running	OK	Normal	No
pdcomp	PDCOMP	Not Available	Kernel Driver	No	Manual	Stopped	OK	Ignore	No
pdframe	PDFRAME	Not Available	Kernel Driver	No	Manual	Stopped	OK	Ignore	No
pdreli	PDRELI	Not Available	Kernel Driver	No	Manual	Stopped	OK	Ignore	No
pdrframe	PDRFRAME	Not Available	Kernel Driver	No	Manual	Stopped	OK	Ignore	No
perc2	perc2	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
perc2hib	perc2hib	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
pptpminiport	WAN Miniport (PPTP)								
	Yes	c:\windows\system32\drivers\rasppptp.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
processor	Processor Driver	c:\windows\system32\drivers\processr.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
ptilink	Direct Parallel Link Driver	c:\windows\system32\drivers\ptilink.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
q57w2k	HP NC7770 Gigabit Server Adapter	c:\windows\system32\drivers\q57xp32.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
q11080	q11080	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q110wnt	Q110wnt	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q112160	q112160	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q11240	q11240	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q11280	q11280	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q12100	q12100	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q12200	q12200	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
q12300	q12300	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
rasacd	Remote Access Auto Connection Driver	c:\windows\system32\drivers\rasacd.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
rasl2tp	WAN Miniport (L2TP)								
	Yes	c:\windows\system32\drivers\rasl2tp.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
raspppoe	Remote Access PPPOE Driver	c:\windows\system32\drivers\raspppoe.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
raspti	Direct Parallel	c:\windows\system32\drivers\raspti.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
rdbss	Rdbss	c:\windows\system32\drivers\rdbss.sys	File	Yes	System	Running	OK	Normal	No
rdpcdd	RDPCDD	c:\windows\system32\drivers\rdpcdd.sys	Kernel Driver	Yes	System	Running	OK	Ignore	No
rdpdr	Terminal Server Device Redirector Driver	c:\windows\system32\drivers\rdpdr.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
rdpwd	RDPWD	c:\windows\system32\drivers\rdpwd.sys	Kernel Driver	Yes	Manual	Running	OK	Ignore	No
redbook	Digital CD Audio Playback Filter Driver	c:\windows\system32\drivers\redbook.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
secdrv	Secdrv	c:\windows\system32\drivers\secdrv.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
serenum	Serenum Filter Driver	c:\windows\system32\drivers\serenum.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
serial	Serial port driver	c:\windows\system32\drivers\serial.sys	Kernel Driver	Yes	System	Running	OK	Ignore	No
sfloppy	Sfloppy	c:\windows\system32\drivers\sfloppy.sys	Kernel Driver	No	System	Stopped	OK	Ignore	No
simbad	Simbad	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sparrow	Sparrow	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
srv	Srv	c:\windows\system32\drivers\srv.sys	File	Yes	Manual	Running	OK	Normal	No
startdss	startdss	c:\windows\system32\drivers\startdss.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
swenum	Software Bus Driver	c:\windows\system32\drivers\swenum.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
symc810	symc810	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
symc8xx	symc8xx	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
symmpi	symmpi	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sym_hi	sym_hi	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sym_u3	sym_u3	Not Available	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sysmgmt	HP ProLiant System Management Interface Driver	c:\windows\system32\drivers\sysmgmt.sys	Kernel Driver						

	Yes	Manual	Running	OK	Normal	No
tcpip	TCP/IP Protocol Driver					
	No	Manual	Stopped	OK	Ignore	No
	c:\windows\system32\drivers\tcpip.sys					
	Yes	System	Running	OK	Normal	No
	Kernel Driver					
tdpipe	TDPIPE					
Driver	No	Manual	Stopped	OK	Ignore	No
	c:\windows\system32\drivers\tdpipe.sys					
	Yes	System	Running	OK	Normal	No
	Kernel Driver					
tdtcp	TDTCP					
Driver	Yes	Manual	Running	OK	Ignore	No
	c:\windows\system32\drivers\tdtcp.sys					
	Yes	System	Running	OK	Normal	No
	Kernel Driver					
termdd	Terminal Device Driver					
	c:\windows\system32\drivers\termdd.sys					
	Yes	System	Running	OK	Normal	No
	Kernel Driver					
toside	TosIde					
	Not Available	Manual	Stopped	OK	Normal	No
	Kernel Driver					
	Disabled	Manual	Stopped	OK	Normal	No
udfs	Udfs					
System Driver	No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\udfs.sys					
	No	Manual	Stopped	OK	Normal	No
ultra	ultra					
	Not Available	Manual	Stopped	OK	Normal	No
	Kernel Driver					
	Disabled	Manual	Stopped	OK	Normal	No
update	Microcode Update Driver					
	c:\windows\system32\drivers\update.sys					
	Yes	Manual	Running	OK	Normal	No
	Kernel Driver					
usbhub	USB2 Enabled Hub					
	Kernel Driver	Yes	Manual	Running	OK	Normal
	c:\windows\system32\drivers\usbhub.sys					
	Normal	No	Yes	Manual	Running	OK
usbohci	Microsoft USB Open Host Controller Miniport Driver					
	c:\windows\system32\drivers\usbohci.sys					
	Yes	Manual	Running	OK	Normal	No
	Kernel Driver					
vga	vga					
Driver	Yes	Manual	Running	OK	Ignore	No
	c:\windows\system32\drivers\vgapnp.sys					
	Yes	System	Running	OK	Ignore	No
	Kernel Driver					
vgasave	VGA Display Controller.					
	c:\windows\system32\drivers\vga.sys					
	No	System	Stopped	OK	Ignore	No
	Kernel Driver					
viaide	Vialde					
	Not Available	Manual	Stopped	OK	Normal	No
	Kernel Driver					
	Disabled	Manual	Stopped	OK	Normal	No
volsnap	Storage volumes					
	Kernel Driver	Yes	Boot	Running	OK	Normal
	c:\windows\system32\drivers\volsnap.sys					
	Normal	No	Yes	Manual	Running	OK
wanarp	Remote Access IP ARP Driver					
	c:\windows\system32\drivers\wanarp.sys					
	Yes	Manual	Running	OK	Normal	No
	Kernel Driver					
	Yes	System	Running	OK	Normal	No
wdica	WDICA					
	Not Available	Manual	Stopped	OK	Ignore	No
	Kernel Driver					
	Manual	Stopped	OK	Ignore	No	No
wlbs	Network Load Balancing					
	c:\windows\system32\drivers\wlbs.sys					
	No	Manual	Stopped	OK	Normal	No
	Kernel Driver					
	No	Manual	Stopped	OK	Normal	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
Available	Not Available	HTREE\ROOT\0	Not Available

ACPI Multiprocessor PC	Yes	COMPUTER
Available	5.2.3790.0 10/1/2002 (Standard computers)	hal.inf Not
Microsoft ACPI-Compliant System	Yes	SYSTEM
ACPI_HAL\PNP0C08\0	5.2.3790.0 10/1/2002 Microsoft	acpi.inf Not Available
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\0
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\1
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\2
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\3
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\4
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\5
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\6
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\7
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\8
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\9
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\10
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\11
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\12
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\13
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\14
Processor (processor types)	Yes PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types) Not Available
	cpu.inf	ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\15

PCI bus devices) Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system machine.inf Not Available ACPI\PNP0A03\0

BCM5701 Gigabit Ethernet Yes NET 2.91.0.0 10/1/2002 Narrowcom netb57xp.inf Not Available

PCI\VEN_14E4&DEV_1645&SUBSYS_007C0E11&REV_15\3 &267A616A&0&08

HP ProLiant Advanced System Management Controller No SYSTEM 5.31.3718.0 4/28/2003 Compaq oem4.inf Not Available

PCI\VEN_0E11&DEV_A0F0&SUBSYS_B0F30E11&REV_00\3 &267A616A&0&60

Standard VGA Graphics Adapter Yes DISPLAY 5.2.3790.0 10/1/2002 (Standard display types) display.inf Not Available

PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3 &267A616A&0&68

Default Monitor Yes MONITOR 5.1.2001.0 6/6/2001 (Standard monitor types) monitor.inf Not Available

DISPLAY\DEFAULT_MONITOR\4&85FC1EE&0&12345678 &00&0D

Compaq Smart Array 5i Controller Yes SCSIADAPTER 5.2.3790.0 10/1/2002 Compaq pnpscsi.inf Not Available

PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_01\3 &267A616A&0&70

Compaq Virtual LUN Yes SYSTEM 5.2.3790.0 10/1/2002 Compaq scsidev.inf Not Available

SCSI\OTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA TE&REV_CISS\4&37E0A253&0&000

Disk drive Yes DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives) disk.inf Not Available

SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME& REV_2.38\4&37E0A253&0&400

Disk drive Yes DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives) disk.inf Not Available

SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME& REV_2.38\4&37E0A253&0&410

ServerWorks Champion CSB5 - SouthBridge 5 Yes SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available

PCI\VEN_1166&DEV_0201&SUBSYS_00000000&REV_93\3 &267A616A&0&78

Motherboard resources Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C02\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

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) floppydisk.inf Not Available

FDC\GENERIC_FLOPPY_DRIVE\6&1C650E5D&0&0

PS/2 Compatible Mouse Yes MOUSE 5.2.3790.0 10/1/2002 Microsoft msmouse.inf Not Available ACPI\PNP0F13\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

CSB5 IDE Controller Yes HDC 5.2.3790.0 10/1/2002 ServerWorks mshdc.inf Not Available

PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3 &267A616A&0&79

Primary IDE Channel Yes HDC 5.2.3790.0 10/1/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available

PCI\IDE\IDECHANNEL\4&1024D5C6&0&0

CD-ROM Drive Yes CDROM 5.2.3790.0 10/1/2002 (Standard CD-ROM drives) cdrom.inf Not Available

IDE\CDROMCOMPAQ_CD-224E_____A.8D____\5&FB0C83D&0&0.0.0

Secondary IDE Channel Yes HDC 5.2.3790.0 10/1/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available

PCI\IDE\IDECHANNEL\4&1024D5C6&0&1

ServerWorks (RCC) PCI to USB Open Host Controller Yes USB 5.2.3790.0 10/1/2002 ServerWorks (RCC) usbport.inf Not Available

PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3 &267A616A&0&7A

USB Root Hub Yes USB 5.2.3790.0 10/1/2002 (Standard USB Host Controller) usbport.inf Not Available

USB\ROOT_HUB\4&AF5358C&0

Serverworks Champion CSB5 - SouthBridge 5 LPC Yes SYSTEM 5.2.3790.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available

PCI\VEN_1166&DEV_0225&SUBSYS_00000000&REV_00\3 &267A616A&0&7B

ISAPNP Read Data Port Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available

ISAPNP\READDATAPORT\0

hp Memory Host Controller No SYSTEM 1.0.1108.3 11/8/2002 Compaq Information Technologies Group, L.P. oem0.inf Not Available

PCI\VEN_0E11&DEV_B200&SUBSYS_00010E11&REV_03\3 &267A616A&0&80

hp Memory Host Controller No SYSTEM 1.0.1108.3 11/8/2002 Compaq Information Technologies Group, L.P. oem0.inf Not Available

PCI\VEN_0E11&DEV_B200&SUBSYS_B2000E11&REV_03\3 &267A616A&0&81

hp Memory Host Controller No SYSTEM 1.0.1108.3 11/8/2002 Compaq Information Technologies Group, L.P. oem0.inf Not Available

PCI\VEN_0E11&DEV_B200&SUBSYS_B2000E11&REV_03\3 &267A616A&0&82

PCI standard host CPU bridge Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available

PCI\VEN_0E11&DEV_B1C2&SUBSYS_00000000&REV_00\3 &267A616A&0&B8

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

PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_04\3 &267A616A&0&C0

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

PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_04\3
&267A616A&0&C2
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
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_04\3
&267A616A&0&C4
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
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_04\3
&267A616A&0&C6
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
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_04\3
&267A616A&0&C8
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
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_04\3
&267A616A&0&CA
hp ProLiant PCI Hot Plug Controller (CPQPHP installed) Yes
SYSTEM 6.1.2.5 1/6/2003 HP oem6.inf Not
Available
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2F80E11&REV_14\3
&267A616A&0&F0
Advanced programmable interrupt controller Yes SYSTEM
5.2.3790.0 10/1/2002 (Standard system devices)
machine.inf Not Available
ACPI\PNP0003\3&267A616A&0
Programmable interrupt controller Yes SYSTEM
5.2.3790.0 10/1/2002 (Standard system devices)
machine.inf Not Available
ACPI\PNP0000\3&267A616A&0
PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system
devices) machine.inf Not Available ACPI\PNP0A03\1

Smart Array 5300 Controller (Non-Miniport) No
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard
oem2.inf Not Available
PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
&13C0B0C5&0&08
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&2D73AEC0&0&0000004000000000
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&2D73AEC0&0&0100004000000000
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&2D73AEC0&0&0200004000000000
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&2D73AEC0&0&0300004000000000
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&2D73AEC0&0&0400004000000000
Smart Array 5300 Controller (Non-Miniport) No
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard
oem2.inf Not Available
PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
&13C0B0C5&0&10
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&E6AAC0F&0&0000004000000000
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&E6AAC0F&0&0100004000000000
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&E6AAC0F&0&0200004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.56.32
4/8/2003 Hewlett-Packard oem3.inf Not Available
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ME\4&E6AAC0F&0&0300004000000000
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&E6AAC0F&0&0400004000000000
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&E6AAC0F&0&0500004000000000
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&E6AAC0F&0&0600004000000000
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&E6AAC0F&0&0700004000000000
hp ProLiant PCI Hot Plug Controller (CPQPHP installed) Yes
SYSTEM 6.1.2.5 1/6/2003 HP oem6.inf Not
Available
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3
&13C0B0C5&0&F0
PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system
devices) machine.inf Not Available ACPI\PNP0A03\2

Smart Array 5300 Controller (Non-Miniport) No
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard
oem2.inf Not Available
PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3
&1070020&0&10
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&16A16360&0&0000004000000000
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&16A16360&0&0100004000000000
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&16A16360&0&0200004000000000
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&16A16360&0&0300004000000000
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&16A16360&0&0400004000000000
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&16A16360&0&0500004000000000
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_VOLUMES\4&16A16360&0&0600004000000000
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_VOLUMES\4&16A16360&0&0700004000000000
hp ProLiant PCI Hot Plug Controller (CPQPHP installed) Yes
SYSTEM 6.1.2.5 1/6/2003 HP oem6.inf Not Available
Available
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3&1070020&0&F0
PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\3
Smart Array 5300 Controller (Non-Miniport) No
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard oem2.inf Not Available
PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&29E81982&0&10
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_VOLUMES\4&1C5980EA&0&0000004000000000
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_VOLUMES\4&1C5980EA&0&0100004000000000
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_VOLUMES\4&1C5980EA&0&0200004000000000
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_VOLUMES\4&1C5980EA&0&0300004000000000
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_VOLUMES\4&1C5980EA&0&0400004000000000
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_VOLUMES\4&1C5980EA&0&0500004000000000
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_VOLUMES\4&1C5980EA&0&0600004000000000
hp ProLiant PCI Hot Plug Controller (CPQPHP installed) Yes
SYSTEM 6.1.2.5 1/6/2003 HP oem6.inf Not Available
Available
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3&29E81982&0&F0
PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\4
Smart Array 5300 Controller (Non-Miniport) No
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard oem2.inf Not Available
PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&172E68DD&0&10
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_VOLUMES\4&2E12B67&0&0000004000000000
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_VOLUMES\4&2E12B67&0&0100004000000000
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_VOLUMES\4&2E12B67&0&0200004000000000
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_VOLUMES\4&2E12B67&0&0300004000000000
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_VOLUMES\4&2E12B67&0&0400004000000000
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_VOLUMES\4&2E12B67&0&0500004000000000
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_VOLUMES\4&2E12B67&0&0600004000000000
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_VOLUMES\4&2E12B67&0&0700004000000000
hp ProLiant PCI Hot Plug Controller (CPQPHP installed) Yes
SYSTEM 6.1.2.5 1/6/2003 HP oem6.inf Not Available
Available
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3&172E68DD&0&F0
PCI bus Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\5
Smart Array 5300 Controller (Non-Miniport) No
SCSIADAPTER 5.6.59.32 4/8/2003 Hewlett-Packard oem2.inf Not Available
PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&474B838&0&10
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_VOLUMES\4&62E2361&0&0000004000000000
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_VOLUMES\4&62E2361&0&0100004000000000
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_VOLUMES\4&62E2361&0&0200004000000000
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_VOLUMES\4&62E2361&0&0300004000000000
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_VOLUMES\4&62E2361&0&0400004000000000
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_VOLUMES\4&62E2361&0&0500004000000000
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_VOLUMES\4&62E2361&0&0600004000000000
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&62E2361&0&0700004000000000	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3 F0OFFSET7E00LENGTH7B1E1E600
hp ProLiant PCI Hot Plug Controller (CPQHP installed) Yes	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
SYSTEM 6.1.2.5 1/6/2003 HP oem6.inf Not	volume.inf Not Available
Available	STORAGE\VOLUME\1&30A96598&0&SIGNATUREC20777
PCI\VEN_0E11&DEV_A0F7&SUBSYS_A2FE0E11&REV_14\3&474B838&0&F0	D6OFFSET7E00LENGTH15F8CEA400
ACPI Thermal Zone Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
ACPI\THERMALZONE\THM1	volume.inf Not Available
ACPI Fixed Feature Button Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
Not Available ACPI\FIXEDBUTTON\2&DABA3FF&0	E9OFFSET7E00LENGTH7B1E1E600
Logical Disk Manager Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available	Generic volume Yes VOLUME 5.2.3790.0 10/1/2002 Microsoft
ROOT\DMIO\0000	volume.inf Not Available
Volume Manager Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
ROOT\FTDISK\0000	EBOFFSET7E00LENGTH7B1E1E600
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&SIGNATURE3D17F36A0FFSET7E00LENGTH30D3CAB200	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE3D17F3650FFSET7E00LENGTH7B1E1E600	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE3D17F3640FFSET7E00LENGTHC3474CC00	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE3D17F3670FFSET7E00LENGTH7F778A00	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE3D17F3660FFSET4000LENGTH1F0FC000	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE6AE9E3FA0FFSET7E00LENGTH15F8CEA400	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE809A263E0FFSET7E00LENGTH7B1E1E600	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE6AE9E3FC0FFSET7E00LENGTH15F8CEA400	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE6AE9E3FDOFFSET7E00LENGTH7B1E1E600	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE1D2286500FFSET7E00LENGTH15F8CEA400	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE6AE9E3FEOFFSET7E00LENGTH7B1E1E600	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE6AE9E3FF0FFSET7E00LENGTH15F8CEA400	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3
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&SIGNATURE6AE9E3C20FFSET7E00LENGTH15F8CEA400	STORAGE\VOLUME\1&30A96598&0&SIGNATURE6AE9E3

Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	Not Available	Not Available
volume.inf	Not Available			ROOT\LEGACY_AFD\0000		
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3		Beep	Not Available	LEGACYDRIVER	Not Available
C3OFFSET7E00LENGTH7B1E1E600				Not Available	Not Available	Not Available
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	ROOT\LEGACY_BEEP\0000	
volume.inf	Not Available		CRC Disk	Filter Driver	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
C4OFFSET7E00LENGTH15F8CEA400				Not Available	Not Available	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	ROOT\LEGACY_CRCDISK\0000	
volume.inf	Not Available		dmboot	Not Available	LEGACYDRIVER	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
C5OFFSET7E00LENGTH7B1E1E600				Not Available	ROOT\LEGACY_DMBOOT\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		dmload	Not Available	Not Available	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
C6OFFSET7E00LENGTH15F8CEA400				Not Available	ROOT\LEGACY_DMLOAD\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		Fips	Not Available	Not Available	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	LEGACYDRIVER	Not Available
C7OFFSET7E00LENGTH7B1E1E600				Not Available	Not Available	Not Available
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	ROOT\LEGACY_FIPS\0000	
volume.inf	Not Available		Generic Packet Classifier	Not Available	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
F8OFFSET7E00LENGTH15F8CEA400				Not Available	Not Available	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		IPSEC driver	Not Available	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3		Available	Not Available	Not Available	Not Available
F9OFFSET7E00LENGTH7B3D7EE00				Not Available	ROOT\LEGACY_IPSEC\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		ksecdd	Not Available	Not Available	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	ROOT\LEGACY_KSECCD\0000	
D6OFFSET7E00LENGTH15F8CEA400			mnmdd	Not Available	LEGACYDRIVER	Not Available
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	Not Available	Not Available
volume.inf	Not Available		mountmgr	Not Available	LEGACYDRIVER	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
D7OFFSET7E00LENGTH7B1E1E600				Not Available	ROOT\LEGACY_MOUNTMGR\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		NDIS System Driver	Not Available	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3		Available	Not Available	Not Available	Not Available
C8OFFSET7E00LENGTH15F8CEA400				Not Available	ROOT\LEGACY_NDIS\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		Remote Access NDIS TAPI Driver	Not Available	Not Available	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			LEGACYDRIVER	Not Available	Not Available
C9OFFSET7E00LENGTH7B1E1E600				Not Available	Not Available	Not Available
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		NDIS Usermode I/O Protocol	Not Available	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
CAOFFSET7E00LENGTH15F8CEA400				Not Available	Not Available	Not Available
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		NDProxy	Not Available	LEGACYDRIVER	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	Not Available	Not Available
CBOFFSET7E00LENGTH7B3D7EE00				Not Available	ROOT\LEGACY_NDPROXY\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		NetBios over Tcpip	Not Available	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3		Available	Not Available	Not Available	Not Available
CCOFFSET7E00LENGTH15F8CEA400				Not Available	ROOT\LEGACY_NETBT\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		Null	Not Available	Not Available	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATURE6AE9E3			Not Available	LEGACYDRIVER	Not Available
CDOFFSET7E00LENGTH7B1E1E600				Not Available	Not Available	Not Available
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		Partition Manager	Not Available	Not Available	LEGACYDRIVER
STORAGE\	VOLUME\1&30A96598&0&SIGNATUREEE56364C		Available	Not Available	Not Available	Not Available
20FFSET4000LENGTH43CBEC000				Not Available	ROOT\LEGACY_PARTMGR\0000	
Generic volume	Yes	VOLUME 5.2.3790.0 10/1/2002 Microsoft		Not Available	LEGACYDRIVER	Not Available
volume.inf	Not Available		Remote Access Auto Connection Driver	Not Available	Not Available	Not Available
STORAGE\	VOLUME\1&30A96598&0&SIGNATUREAA4E30			LEGACYDRIVER	Not Available	Not Available
1EOFFSET7E00LENGTH87A669800				Not Available	Not Available	Not Available
AFD Networking Support Environment	Not Available		RDPCDD	Not Available	LEGACYDRIVER	Not Available
LEGACYDRIVER	Not Available	Not Available		Not Available	Not Available	Not Available

```

Not Available      ROOT\LEGACY_RDPD\0000
RDPWD Not Available LEGACYDRIVER Not Available
Not Available Not Available Not Available
Not Available ROOT\LEGACY_RDPWD\0000
sacdrv Not Available LEGACYDRIVER Not Available
Not Available Not Available Not Available
Not Available ROOT\LEGACY_SACDRV\0000

startdss Not Available LEGACYDRIVER Not Available
Not Available Not Available Not Available
Not Available ROOT\LEGACY_STARTDSS\0000

HP ProLiant System Management Interface Driver Not Available
LEGACYDRIVER Not Available Not Available
Not Available Not Available Not Available
ROOT\LEGACY_SYSMGMT\0000
TCP/IP Protocol Driver Not Available LEGACYDRIVER
Not Available Not Available Not Available
Not Available Not Available Not Available
ROOT\LEGACY_TCPIP\0000
TDTCP Not Available LEGACYDRIVER Not Available
Not Available Not Available Not Available
Not Available Not Available Not Available
ROOT\LEGACY_TDTCP\0000
volsnap Not Available LEGACYDRIVER Not Available
Not Available Not Available Not Available
Not Available Not Available Not Available
ROOT\LEGACY_VOLSNAP\0000

Remote Access IP ARP Driver Not Available LEGACYDRIVER
Not Available Not Available Not Available
Not Available Not Available Not Available
ROOT\LEGACY_WANARP\0000
Audio Codex Yes MEDIA 5.2.3790.0 10/1/2002 (Standard
system devices) wave.inf Not Available
ROOT\MEDIA\MS_MMCM
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 ROOT\MEDIA\MS_MMMCI
Legacy Video Capture Devices Yes MEDIA 5.2.3790.0
10/1/2002 (Standard system devices) wave.inf Not
Available ROOT\MEDIA\MS_MMVCD
Video Codex 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_L2TPMINIPORT\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_PPPOEMINIPORT\0000
WAN Miniport (PPTP) Yes NET 5.2.3790.0
10/1/2002 Microsoft netrasa.inf Not Available
ROOT\MS_PPTPMINIPORT\0000
Direct Parallel Yes NET 5.2.3790.0 10/1/2002 Microsoft
netrasa.inf Not Available
ROOT\MS_PTMINIPORT\0000
Terminal Server Device Redirector Yes SYSTEM
5.2.3790.0 10/1/2002 (Standard system devices)
machine.inf Not Available
ROOT\RDPDR\0000
Terminal Server Keyboard Driver Yes SYSTEM
5.2.3790.0 10/1/2002 (Standard system devices)
machine.inf Not Available
ROOT\RDP_KBD\0000

```

```

Terminal Server Mouse Driver Yes SYSTEM 5.2.3790.0
10/1/2002 (Standard system devices) machine.inf
Not Available ROOT\RDP_MOU\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%\Syst
em32\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 5,
GenuineIntel <SYSTEM>
PROCESSOR_REVISION 0205 <SYSTEM>
NUMBER_OF_PROCESSORS 16 <SYSTEM>
ClusterLogC:\WINDOWS\Cluster\cluster.log <SYSTEM>

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

[Print Jobs]
Document Size Owner Notify Status Time Submitted
Start Time Until TimeElapsed Time Pages Printed
Job ID Priority ParametersDriver Print Processor
Host Print Queue Data Type Name

[Network Connections]
Local Name Remote Name Type Status User
Name

[Running Tasks]
Name Path Process ID Priority Min Working Set Max
Working Set Start Time Version Size File Date

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```

system idle process  Not Available      0      0      Not
Available Not Available Not Available Not Available
system Not Available      4      8      0      1413120
Not Available Not Available Not Available
smss.exe Not Available      544     11     204800 1413120
8/6/2003 9:31 AM Not Available Not Available
Not Available
csrss.exe Not Available      592     13     Not Available
Not Available      8/6/2003 9:31 AM Not Available
Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe 616
13 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 536.50 KB (549,376
bytes) 3/25/2003 12:00 AM
services.exe c:\windows\system32\services.exe 660
9 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 102.00 KB (104,448
bytes) 3/25/2003 12:00 AM
lsass.exe c:\windows\system32\lsass.exe 672 9 204800
1413120 8/6/2003 9:31 AM 5.2.3790.0 (srv03_rtm.030324-
2048) 13.00 KB (13,312 bytes) 3/25/2003 12:00 AM
svchost.exe c:\windows\system32\svchost.exe 836
8 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 13.00 KB (13,312
bytes) 3/25/2003 12:00 AM
svchost.exe c:\windows\system32\svchost.exe 888
8 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 13.00 KB (13,312
bytes) 3/25/2003 12:00 AM
svchost.exe Not Available 1032 8 Not
Available Not Available 8/6/2003 9:31 AM Not Available
svchost.exe Not Available Not Available
svchost.exe Not Available 1100 8 Not
Available Not Available 8/6/2003 9:31 AM Not Available
svchost.exe c:\windows\system32\svchost.exe 1112
8 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 13.00 KB (13,312
bytes) 3/25/2003 12:00 AM
spoolsv.exe c:\windows\system32\spoolsv.exe 1280
8 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 55.00 KB (56,320
bytes) 3/25/2003 12:00 AM
msdtc.exe Not Available 1308 8 Not Available
Not Available 8/6/2003 9:31 AM Not Available
Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe 1644
8 204800 1413120 8/6/2003 9:31 AM
5.2.3790.0 (srv03_rtm.030324-2048) 13.00 KB (13,312
bytes) 3/25/2003 12:00 AM
svchost.exe Not Available 1676 8 Not
Available 8/6/2003 9:31 AM Not Available
Not Available Not Available
cpqrcmc.exe c:\windows\system32\cpqrcmc.exe 1712
8 204800 1413120 8/6/2003 9:31 AM 5.0.2.0
96.27 KB (98,576 bytes) 2/7/2001 4:40 PM
sysdown.exe c:\windows\system32\sysdown.exe 1744
8 204800 1413120 8/6/2003 9:31 AM
5.30.3718.0 built by: 29.00 KB (29,696 bytes) 5/9/2003
11:45 AM
explorer.exe c:\windows\explorer.exe 492 8
204800 1413120 8/6/2003 9:31 AM 6.00.3790.0
(srv03_rtm.030324-2048) 1,008.50 KB (1,032,704 bytes)
3/25/2003 12:00 AM
dfssvc.exe c:\windows\system32\dfssvc.exe 636 8 204800
1413120 8/6/2003 9:31 AM 5.2.3790.0 (srv03_rtm.030324-
2048) 130.50 KB (133,632 bytes) 3/25/2003 12:00 AM

```

```

cpqteam.exe c:\windows\system32\cpqteam.exe 1004
8 204800 1413120 8/6/2003 9:31 AM
7.30.730.17 56.00 KB (57,344 bytes) 4/9/2003
5:15 AM
cmd.exe c:\windows\system32\cmd.exe 1636 8 204800
1413120 8/6/2003 9:31 AM 5.2.3790.0 (srv03_rtm.030324-
2048) 374.00 KB (382,976 bytes) 3/25/2003 12:00 AM
wmiprvse.exe Not Available 2212 8 Not
Available Not Available 8/6/2003 9:32 AM Not Available
Not Available Not Available
csrss.exe Not Available 3500 13 Not Available
Not Available 8/14/2003 8:34 PM Not Available
Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe 260
13 204800 1413120 8/14/2003 8:34 PM
5.2.3790.0 (srv03_rtm.030324-2048) 536.50 KB (549,376
bytes) 3/25/2003 12:00 AM
rdpclip.exec:\windows\system32\rdpclip.exe 284 8 204800
1413120 8/14/2003 8:34 PM 5.2.3790.0 (srv03_rtm.030324-
2048) 53.00 KB (54,272 bytes) 4/18/2003 2:16 PM
explorer.exe c:\windows\explorer.exe 3556 8
204800 1413120 8/14/2003 8:34 PM 6.00.3790.0
(srv03_rtm.030324-2048) 1,008.50 KB (1,032,704 bytes)
3/25/2003 12:00 AM
cpqteam.exe c:\windows\system32\cpqteam.exe 2896
8 204800 1413120 8/14/2003 8:34 PM
7.30.730.17 56.00 KB (57,344 bytes) 4/9/2003
5:15 AM
cmd.exe c:\windows\system32\cmd.exe 2924 8 204800
1413120 8/14/2003 8:34 PM 5.2.3790.0 (srv03_rtm.030324-
2048) 374.00 KB (382,976 bytes) 3/25/2003 12:00 AM
csrss.exe Not Available 4064 13 Not Available
Not Available 8/14/2003 8:56 PM Not Available
Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe 448
13 204800 1413120 8/14/2003 8:56 PM
5.2.3790.0 (srv03_rtm.030324-2048) 536.50 KB (549,376
bytes) 3/25/2003 12:00 AM
rdpclip.exec:\windows\system32\rdpclip.exe 3296 8 204800
1413120 8/14/2003 8:57 PM 5.2.3790.0 (srv03_rtm.030324-
2048) 53.00 KB (54,272 bytes) 4/18/2003 2:16 PM
explorer.exe c:\windows\explorer.exe 2824 8
204800 1413120 8/14/2003 8:57 PM 6.00.3790.0
(srv03_rtm.030324-2048) 1,008.50 KB (1,032,704 bytes)
3/25/2003 12:00 AM
cpqteam.exe c:\windows\system32\cpqteam.exe 3464
8 204800 1413120 8/14/2003 8:57 PM
7.30.730.17 56.00 KB (57,344 bytes) 4/9/2003
5:15 AM
cmd.exe c:\windows\system32\cmd.exe 2984 8 204800
1413120 8/14/2003 9:05 PM 5.2.3790.0 (srv03_rtm.030324-
2048) 374.00 KB (382,976 bytes) 3/25/2003 12:00 AM
cmd.exe c:\windows\system32\cmd.exe 3356 8 204800
1413120 8/14/2003 9:09 PM 5.2.3790.0 (srv03_rtm.030324-
2048) 374.00 KB (382,976 bytes) 3/25/2003 12:00 AM
msinfo32.exe c:\program files\common files\microsoft
shared\msinfo\msinfo32.exe 676 8 204800 1413120
8/15/2003 8:58 AM 5.2.3790.0 (srv03_rtm.030324-2048)
40.50 KB (41,472 bytes) 4/18/2003 2:20 PM
wmiprvse.exe Not Available 3304 8 Not
Available Not Available 8/15/2003 8:58 AM Not Available
Not Available Not Available
[Loaded Modules]
Name Version Size File Date Manufacturer Path
winlogon 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\winlogon.exe

```

ntdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ntdll.dll	722.50 KB (739,840)	shlwapi bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\shlwapi.dll	281.00 KB (287,744)
kernel32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\kernel32.dll	965.00 KB (988,160)	sfc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\sfc.dll	4.50 KB (4,608)
msvcrt bytes)	7.0.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msvcrt.dll	319.50 KB (327,168)	sfc_os bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\sfc_os.dll	133.00 KB (136,192)
advapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\advapi32.dll	559.50 KB (572,928)	wintrust bytes)	5.131.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wintrust.dll	161.50 KB (165,376)
rpcrt4 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rpcrt4.dll	643.50 KB (658,944)	ole32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ole32.dll	1.13 MB (1,187,328)
user32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\user32.dll	562.00 KB (575,488)	imagehlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\imagehlp.dll	142.50 KB (145,920)
gdi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\gdi32.dll	263.00 KB (269,312)	comctl32	6.0 (srv03_rtm.030324-2048) 4/18/2003 7:17 AM Microsoft Corporation c:\windows\winsxs\x86_microsoft.windows.common- controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll	907.00 KB (928,768 bytes)
userenv bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\userenv.dll	732.50 KB (750,080)	winscard bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\winscard.dll	98.50 KB (100,864)
nddeapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\nddeapi.dll	16.00 KB (16,384)	wtsapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wtsapi32.dll	17.50 KB (17,920)
crypt32 bytes)	5.131.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\crypt32.dll	598.00 KB (612,352)	winmm bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\winmm.dll	166.00 KB (169,984)
msasn1 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msasn1.dll	58.00 KB (59,392)	sxs bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\sxs.dll	733.00 KB (750,592)
secur32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\secur32.dll	63.00 KB (64,512)	shell32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\shell32.dll	7.79 MB (8,166,400)
winsta bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\winsta.dll	51.00 KB (52,224)	wldap32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wldap32.dll	158.00 KB (161,792)
netapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netapi32.dll	317.00 KB (324,608)	cscdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cscdll.dll	99.00 KB (101,376)
profmap bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\profmap.dll	22.00 KB (22,528)	rsaenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rsaenh.dll	176.83 KB (181,072)
regapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\regapi.dll	48.50 KB (49,664)	wlnotify bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wlnotify.dll	87.50 KB (89,600)
ws2_32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ws2_32.dll	87.50 KB (89,600)	winspool bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\winspool.drv	140.00 KB (143,360)
ws2help bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ws2help.dll	19.50 KB (19,968)	mpr bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mpr.dll	56.00 KB (57,344)
psapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\psapi.dll	21.50 KB (22,016)	comctl32	5.82 (srv03_rtm.030324-2048) 4/18/2003 7:17 AM Microsoft Corporation c:\windows\winsxs\x86_microsoft.windows.common- controls_6595b64144ccf1df_5.82.0.0_x-ww_8a69ba05\comctl32.dll	561.00 KB (574,464 bytes)
version bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\version.dll	17.00 KB (17,408)	uxtheme bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\uxtheme.dll	196.00 KB (200,704)
setupapi (1,038,848 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\setupapi.dll	1,014.50 KB	samlib bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\samlib.dll	49.00 KB (50,176)
msgina bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msgina.dll	1.14 MB (1,191,936)	shsvcs bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\shsvcs.dll	121.50 KB (124,416)
clbcatq bytes)	2001.12.4720.0 (srv03_rtm.030324-2048) 4/18/2003 2:16 PM Microsoft Corporation c:\windows\system32\clbcatq.dll	481.00 KB (492,544)			

oleaut32	5.2.3790.0 486.00 KB (497,664 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\oleaut32.dll	msv1_0	5.2.3790.0 (srv03_rtm.030324-2048)	127.00 KB (130,048 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msv1_0.dll
comres	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	netlogon	5.2.3790.0 (srv03_rtm.030324-2048)	409.00 KB (418,816 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
cscui	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\cscui.dll	w32time	5.2.3790.0 (srv03_rtm.030324-2048)	216.00 KB (221,184 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
ntmarta	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	iphlpapi	5.2.3790.0 (srv03_rtm.030324-2048)	82.50 KB (84,480 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
wbemprox	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920 bytes)	4/18/2003 2:16 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemprox.dll	schannel	5.2.3790.0 (srv03_rtm.030324-2048)	149.50 KB (153,088 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
wbemcomn	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	wdigest	5.2.3790.0 (srv03_rtm.030324-2048)	61.00 KB (62,464 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
wbemsvc	5.2.3790.0 (srv03_rtm.030324-2048)	42.50 KB (43,520 bytes)	4/18/2003 2:16 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemsvc.dll	rassfm	5.2.3790.0 (srv03_rtm.030324-2048)	20.50 KB (20,992 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
fastprox	5.2.3790.0 (srv03_rtm.030324-2048)	443.00 KB (453,632 bytes)	4/18/2003 2:16 PM	Microsoft Corporation	c:\windows\system32\wbem\fastprox.dll	kdcsvc	5.2.3790.0 (srv03_rtm.030324-2048)	221.00 KB (226,304 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
msvcp60	6.05.2144.0	388.00 KB (397,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msvcp60.dll	ntdsa	5.2.3790.0 (srv03_rtm.030324-2048)	1.45 MB (1,520,640 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
ntdsapi	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	ntdsatq	5.2.3790.0 (srv03_rtm.030324-2048)	32.00 KB (32,768 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
dnsapi	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	mswsock	5.2.3790.0 (srv03_rtm.030324-2048)	254.00 KB (260,096 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
services	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	esent	5.2.3790.0 (srv03_rtm.030324-2048)	1.01 MB (1,056,256 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
scesrv	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	scecli	5.2.3790.0 (srv03_rtm.030324-2048)	179.50 KB (183,808 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
authz	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	wshtcpip	5.2.3790.0 (srv03_rtm.030324-2048)	18.00 KB (18,432 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
umpnprmgr	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\umpnprmgr.dll	ipsecsvc	5.2.3790.0 (srv03_rtm.030324-2048)	162.50 KB (166,400 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
ncobjapi	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	oakley	5.2.3790.0 (srv03_rtm.030324-2048)	325.50 KB (333,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
eventlog	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	winipsec	5.2.3790.0 (srv03_rtm.030324-2048)	34.50 KB (35,328 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
lsass	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	pstorsvc	5.2.3790.0 (srv03_rtm.030324-2048)	24.00 KB (24,576 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
lsasrv	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	psbase	5.2.3790.0 (srv03_rtm.030324-2048)	81.00 KB (82,944 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
samsrv	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	dssenh	5.2.3790.0 (srv03_rtm.030324-2048)	131.33 KB (134,480 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
cryptdll	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	wlbsctrl	5.2.3790.0 (srv03_rtm.030324-2048)	78.00 KB (79,872 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
msprivs	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	svchost	5.2.3790.0 (srv03_rtm.030324-2048)	13.00 KB (13,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
kerberos	5.2.3790.0 (srv03_rtm.030324-2048)	332.50 KB (340,480 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\kerberos.dll	rpcss	5.2.3790.0 (srv03_rtm.030324-2048)	276.50 KB (283,136 bytes)	3/25/2003 12:00 AM	Microsoft Corporation
										c:\windows\system32\rpcss.dll

termsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	216.50 KB (221,696)	cryptsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	51.00 KB (52,224)
	4/18/2003 2:16 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\termsrv.dll			c:\windows\system32\cryptsvc.dll	
icaapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	10.50 KB (10,752)	certcli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	228.00 KB (233,472)
	4/18/2003 2:16 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\icaapi.dll			c:\windows\system32\certcli.dll	
mstlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	104.50 KB (107,008)	vssapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	528.00 KB (540,672)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\mstlsapi.dll			c:\windows\system32\vssapi.dll	
activeds bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	189.00 KB (193,536)	dmsrvr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.00 KB (24,576)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\activeds.dll			c:\windows\system32\dmsrvr.dll	
adslidpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	142.50 KB (145,920)	es bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	221.50 KB (226,816)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\adslidpc.dll			c:\windows\system32\es.dll	
credui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	159.00 KB (162,816)	pchsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	31.50 KB (32,256)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:21 PM Microsoft Corporation	
	c:\windows\system32\credui.dll			c:\windows\pchealth\helpctr\binaries\pchsvc.dll	
atl	3.05.2283 83.00 KB (84,992 bytes)	3/25/2003 12:00 AM Microsoft Corporation	srvsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	89.00 KB (91,136)
	c:\windows\system32\atl.dll			3/25/2003 12:00 AM Microsoft Corporation	
				c:\windows\system32\srvsvc.dll	
rdpwsx bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	80.13 KB (82,056)	seclogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896)
	4/18/2003 2:16 PM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\rdpwsx.dll			c:\windows\system32\seclogon.dll	
wzcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	272.50 KB (279,040)	trkws bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	85.00 KB (87,040)
	3/25/2003 6:15 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wzcsvc.dll			c:\windows\system32\trkws.dll	
rtutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	32.00 KB (32,768)	wmisvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	131.00 KB (134,144)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\rtutils.dll			c:\windows\system32\wbem\wmisvc.dll	
wmi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	6.50 KB (6,656)	wuauerv bytes)	5.4.3790.0 (srv03_rtm.030324-2048)	10.50 KB (10,752)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\wmi.dll			c:\windows\system32\wuauerv.dll	
dhcpcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	101.50 KB (103,936)	wuaueng bytes)	5.4.3790.0 (srv03_rtm.030324-2048)	188.50 KB (193,024)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\dhcpcsvc.dll			c:\windows\system32\wuaueng.dll	
rastls bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	155.00 KB (158,720)	advpack bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	93.50 KB (95,744)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\rastls.dll			c:\windows\system32\advpack.dll	
cryptui bytes)	5.131.3790.0 (srv03_rtm.030324-2048)	473.50 KB (484,864)	wininet bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	609.00 KB (623,616)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\cryptui.dll			c:\windows\system32\wininet.dll	
mprapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	81.00 KB (82,944)	sens bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	35.50 KB (36,352)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\mprapi.dll			c:\windows\system32\sens.dll	
rasapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	227.50 KB (232,960)	comsvcs bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	1.14 MB (1,199,616)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\rasapi32.dll			c:\windows\system32\comsvcs.dll	
rasman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.50 KB (57,856)	wbemcore bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	457.00 KB (467,968)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\rasman.dll			c:\windows\system32\wbem\wbemcore.dll	
tapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	175.00 KB (179,200)	esscli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	235.50 KB (241,152)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\tapi32.dll			c:\windows\system32\wbem\esscli.dll	
raschap bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	106.00 KB (108,544)	wmiutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	90.50 KB (92,672)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\raschap.dll			c:\windows\system32\wbem\wmiutils.dll	
schedsvr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	176.00 KB (180,224)	repdrvfs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	165.00 KB (168,960)
	4/18/2003 2:20 PM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\schedsvr.dll			c:\windows\system32\wbem\repdrvfs.dll	
msidle bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	5.50 KB (5,632)	wmiprvsd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	405.50 KB (415,232)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\msidle.dll			c:\windows\system32\wbem\wmiprvsd.dll	
wkssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	125.00 KB (128,000)	wbemess bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	256.50 KB (262,656)
	3/25/2003 12:00 AM Microsoft Corporation			4/18/2003 2:16 PM Microsoft Corporation	
	c:\windows\system32\wkssvc.dll			c:\windows\system32\wbem\wbemess.dll	
wiarpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	30.00 KB (30,720)	browser bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	70.50 KB (72,192)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wiarpc.dll			c:\windows\system32\browser.dll	

netrap bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	11.50 KB (11,776)	win32spl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	94.50 KB (96,768)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\netrap.dll			c:\windows\system32\win32spl.dll	
netman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	209.00 KB (214,016)	inetpp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	71.50 KB (73,216)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\netman.dll			c:\windows\system32\inetpp.dll	
wzcsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.50 KB (25,088)	icmp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	4.50 KB (4,608)
	3/25/2003 6:15 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wzcsapi.dll			c:\windows\system32\icmp.dll	
netshell bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.67 MB (1,747,456)	ersvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528)
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\netshell.dll			c:\windows\system32\ersvc.dll	
clusapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344)	cpqrcmc	5.0.2.0 96.27 KB (98,576 bytes)	2/7/2001 4:40 PM
	3/25/2003 12:00 AM Microsoft Corporation			Compaq c:\windows\system32\cpqrcmc.exe	
	c:\windows\system32\clusapi.dll		sysdown	5.30.3718.0 built by: 29.00 KB (29,696 bytes)	5/9/2003
hnetcfg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	243.50 KB (249,344)	11:45 AM	Compaq Computer Corporation	
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\sysdown.exe	
	c:\windows\system32\hnetcfg.dll		explorer	6.00.3790.0 (srv03_rtm.030324-2048)	1,008.50 KB
rasdlg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	642.00 KB (657,408)	(1,032,704 bytes)	3/25/2003 12:00 AM Microsoft Corporation	
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\explorer.exe	
	c:\windows\system32\rasdlg.dll		browseui	6.00.3790.0 (srv03_rtm.030324-2048)	1.01 MB (1,057,280)
rasadhlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	6.50 KB (6,656)	bytes)	3/25/2003 12:00 AM Microsoft Corporation	
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\browseui.dll	
	c:\windows\system32\rasadhlp.dll		shdocvw	6.00.3790.0 (srv03_rtm.030324-2048)	1.33 MB (1,393,664)
winhttp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	327.50 KB (335,360)	bytes)	3/25/2003 12:00 AM Microsoft Corporation	
	4/18/2003 7:17 AM Microsoft Corporation			c:\windows\system32\shdocvw.dll	
	c:\windows\winsxs\x86_microsoft.windows.winhttp_6595b64144		apphelp	5.2.3790.0 (srv03_rtm.030324-2048)	122.00 KB (124,928)
ccf1df_5.1.0.0_x-ww_e0651936\winhttp.dll			bytes)	3/25/2003 12:00 AM Microsoft Corporation	
ncprov bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	43.00 KB (44,032)		c:\windows\system32\apphelp.dll	
	4/18/2003 2:16 PM Microsoft Corporation		themeui	6.00.3790.0 (srv03_rtm.030324-2048)	360.50 KB (369,152)
	c:\windows\system32\wbem\ncprov.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
ntlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	8.00 KB (8,192)		c:\windows\system32\themeui.dll	
	3/25/2003 12:00 AM Microsoft Corporation		msimg32	5.2.3790.0 (srv03_rtm.030324-2048)	4.50 KB (4,608)
	c:\windows\system32\ntlsapi.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
spoolsv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	55.00 KB (56,320)		c:\windows\system32\msimg32.dll	
	3/25/2003 12:00 AM Microsoft Corporation		linkinfo	5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896)
	c:\windows\system32\spoolsv.exe		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
spoolss bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	79.00 KB (80,896)		c:\windows\system32\linkinfo.dll	
	3/25/2003 12:00 AM Microsoft Corporation		ntshru	6.00.3790.0 (srv03_rtm.030324-2048)	136.00 KB (139,264)
	c:\windows\system32\spoolss.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
localspl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	304.50 KB (311,808)		c:\windows\system32\ntshru.dll	
	3/25/2003 12:00 AM Microsoft Corporation		urlmon	6.00.3790.0 (srv03_rtm.030324-2048)	501.50 KB (513,536)
	c:\windows\system32\localspl.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
cnbjmon (46,592 bytes)	5.2.3680.0 (Lab03_dev\skatari).020509-1043)	45.50 KB		c:\windows\system32\urlmon.dll	
	3/24/2003 7:48 PM Microsoft Corporation		webcheck	6.00.3790.0 (srv03_rtm.030324-2048)	261.50 KB (267,776)
	c:\windows\system32\cnbjmon.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
pjlmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360)		c:\windows\system32\webcheck.dll	
	3/24/2003 7:49 PM Microsoft Corporation		wsock32	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528)
	c:\windows\system32\pjlmon.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
tcpmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	44.00 KB (45,056)		c:\windows\system32\wsock32.dll	
	3/25/2003 12:00 AM Microsoft Corporation		stobject	5.2.3790.0 (srv03_rtm.030324-2048)	117.50 KB (120,320)
	c:\windows\system32\tcpmon.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
mgmtapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	14.00 KB (14,336)		c:\windows\system32\stobject.dll	
	3/25/2003 12:00 AM Microsoft Corporation		batmeter	6.00.3790.0 (srv03_rtm.030324-2048)	28.50 KB (29,184)
	c:\windows\system32\mgmtapi.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
snmpapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920)		c:\windows\system32\batmeter.dll	
	3/25/2003 12:00 AM Microsoft Corporation		powrprof	6.00.3790.0 (srv03_rtm.030324-2048)	14.50 KB (14,848)
	c:\windows\system32\snmpapi.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
wsnmp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	39.50 KB (40,448)		c:\windows\system32\powrprof.dll	
	3/25/2003 12:00 AM Microsoft Corporation		printui	5.2.3790.0 (srv03_rtm.030324-2048)	536.50 KB (549,376)
	c:\windows\system32\wsnmp32.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
usbmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.00 KB (17,408)		c:\windows\system32\printui.dll	
	3/25/2003 12:00 AM Microsoft Corporation		cfgmgr32	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920)
	c:\windows\system32\usbmon.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
winnr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360)		c:\windows\system32\cfgmgr32.dll	
	3/25/2003 12:00 AM Microsoft Corporation		drprov	5.2.3790.0 (srv03_rtm.030324-2048)	12.50 KB (12,800)
	c:\windows\system32\winnr.dll		bytes)	3/25/2003 12:00 AM Microsoft Corporation	
wshqos bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	23.00 KB (23,552)		c:\windows\system32\drprov.dll	
	3/25/2003 12:00 AM Microsoft Corporation				
	c:\windows\system32\wshqos.dll				

ntlman bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ntlman.dll	41.00 KB (41,984	browsecl bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\browsecl.dll	62.00 KB (63,488
netui0 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netui0.dll	75.50 KB (77,312	shdoclc bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\shdoclc.dll	588.50 KB (602,624
netui1 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netui1.dll	184.00 KB (188,416	zipfldr bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\zipfldr.dll	316.00 KB (323,584
davclnt bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\davclnt.dll	23.50 KB (24,064	sendmail bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\sendmail.dll	52.00 KB (53,248
dfssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dfssvc.exe	130.50 KB (133,632	mydocs bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mydocs.dll	88.00 KB (90,112
resutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\resutils.dll	59.00 KB (60,416	mlang bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mlang.dll	570.00 KB (583,680
mfc42u	6.05.3014.0 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mfc42u.dll	960.00 KB (983,040 bytes)	cabinet bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cabinet.dll	61.00 KB (62,464
cpqteam 5:15 AM	7.30.730.17 Hewlett-Packard Company c:\windows\system32\cpqteam.exe	56.00 KB (57,344 bytes) 4/9/2003	msinfo32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/18/2003 2:20 PM Microsoft Corporation c:\program files\common files\microsoft shared\msinfo\msinfo32.exe	40.50 KB (41,472
cmd bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cmd.exe	374.00 KB (382,976	msinfo bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/18/2003 2:20 PM Microsoft Corporation c:\windows\system32\msinfo.dll	358.50 KB (367,104
rdpsnd bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rdpsnd.dll	18.00 KB (18,432	comdlg32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\comdlg32.dll	261.00 KB (267,264
scredir bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\scredir.dll	27.00 KB (27,648	riched32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\riched32.dll	3.50 KB (3,584
msacm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msacm32.drv	21.00 KB (21,504	riched20	5.31.23.1218 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\riched20.dll	406.00 KB (415,744 bytes)
msacm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msacm32.dll	67.50 KB (69,120	[Services]		
imaadp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\imaadp32.acm	15.50 KB (15,872	Display Name	Name	State
msadp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msadp32.acm	14.50 KB (14,848	Path	Error Control	Start Mode
msg711 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msg711.acm	10.00 KB (10,240	Service Type	Tag ID	
msgsm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msgsm32.acm	20.50 KB (20,992	Alerter	Alerter	Stopped
tssoft32	1.01 DSP GROUP, INC. c:\windows\system32\tssoft32.acm	9.50 KB (9,728 bytes) 3/25/2003 12:00 AM	Disabled	Share Process	
tsd32	1.03 DSP GROUP, INC. c:\windows\system32\tsd32.dll	16.50 KB (16,896 bytes) 3/25/2003 12:00 AM	ALG	Stopped	Manual
msg723	4.4.4000 Microsoft Corporation c:\windows\system32\msg723.acm	116.00 KB (118,784 bytes) 4/18/2003 2:20 PM	Own Process	c:\windows\system32\alg.exe	Normal
msaud32	8.00.0.4487 Microsoft Corporation c:\windows\system32\msaud32.acm	288.00 KB (294,912 bytes) 3/25/2003 12:00 AM	NT AUTHORITY\LocalService	0	
sl_anet	3.02 Sipro Lab Telecom Inc. c:\windows\system32\sl_anet.acm	84.00 KB (86,016 bytes) 3/25/2003 12:00 AM	Application Layer Gateway Service	AppMgmt	Stopped
l3codeca	1, 9, 0, 0305 Fraunhofer Institut Integrierte Schaltungen c:\windows\system32\l3codeca.acm	284.00 KB (290,816 bytes) 3/25/2003 12:00 AM	Application Management	Normal	Share
IIS	5.2.3790.0 (srv03_rtm.030324-2048) Microsoft Corporation c:\windows\system32\rdpclip.exe	53.00 KB (54,272	Process	c:\windows\system32\svchost.exe -k netsvcs	Normal
rdpclip bytes)	4/18/2003 2:16 PM		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
			Share Process	c:\windows\system32\svchost.exe -k	Manual
			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\dlhhost.exe

/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}	Normal								
LocalSystem	0								
Compaq Remote Monitor Service	CpqRcmc	Running	Auto	Share					
Own Process	c:\windows\system32\cpqrcmc.exe								
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\dfsrv.exe	Normal							
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 Managerdmserver		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	HidServ	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							
0									
IMAPI CD-Burning COM Service	ImapiService			Stopped					
Disabled	Own	Process							
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\llsdrv.exe	Normal							
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	mnmsrvc	Stopped	Disabled						
Own	Process	c:\windows\system32\mnmsrvc.exe							
Normal	LocalSystem	0							
Distributed Transaction Coordinator	MSDTC	Running	Auto						
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:\progra~1\microso~1\mssql\binn\sqlservr.exe								
LocalSystem	0								
MSSQLServerADHelper	MSSQLServerADHelper			Stopped					
Manual	Own	Process							
server\80\tools\binn\sqladhlp.exe	Normal	LocalSystem	0						
Network DDE	NetDDE	Stopped	Disabled	Share	Process				
	c:\windows\system32\netdde.exe	Normal							
0									
Network DDE DSDM	NetDDEdsdm	Stopped	Disabled	Share					
Process	c:\windows\system32\netdde.exe	Normal							
0									
Net Logon	Netlogon	Stopped	Manual	Share	Process				
	c:\windows\system32\lsass.exe	Normal							
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							
0									
NT LM Security Support Provider				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							
0									
Protected Storage	ProtectedStorage	Running	Auto	Share					
Process	c:\windows\system32\lsass.exe	Normal							
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									
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							
AUTHORITY\LocalService	0								
Remote Procedure Call (RPC) Locator	RpcLocator			Stopped					
Manual	Own	Process							
c:\windows\system32\locator.exe	Normal	NT							
AUTHORITY\NetworkService	0								
Remote Procedure Call (RPC)	RpcSs	Running	Auto	Share					
Process	c:\windows\system32\svchost -k rpcss	Normal							
LocalSystem	0								

Resultant Set of Policy Provider	RSOPProv	Stopped	Manual	Share	Process	c:\windows\system32\rsopprov.exe	LocalSystem	0	Normal	Upload Manager	uploadmgr	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal		
Special Administration Console Helper	sacsrv	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k	LocalSystem	0	Normal	Uninterruptible Power Supply	UPS	Stopped	Manual	Own	Process	c:\windows\system32\ups.exe	LocalSystem	0	Normal		
Security Accounts Manager	SamSs	Running	Auto	Share	Process	c:\windows\system32\lsass.exe	LocalSystem	0	Normal	VIRTUAL DISK SERVICE	vds	Stopped	Manual	Own	Process	c:\windows\system32\vds.exe	LocalSystem	0	Normal		
Smart Card	SCardSvr	Stopped	Manual	Share	Process	c:\windows\system32\scardsvr.exe	LocalSystem	0	Ignore	Volume Shadow Copy	VSS	Stopped	Manual	Own	Process	c:\windows\system32\vssvc.exe	LocalSystem	0	Normal		
Task Scheduler	Schedule	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Windows Time	W32Time	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal		
Secondary Logon	seclogon	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Ignore	WebClient	WebClient	Stopped	Disabled	Share	Process	c:\windows\system32\svchost.exe -k localservice	LocalSystem	0	Normal		
System Event Notification	SENS	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	WinHTTP	Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k localservice	LocalSystem	0	Normal	
Internet Connection Firewall (ICF) / Internet Connection Sharing (ICS)	SharedAccess	Stopped	Disabled	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Windows Management Instrumentation	winmgmt	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k	LocalSystem	0	Normal		
Shell Hardware Detection	ShellHWDetection	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k	LocalSystem	0	Ignore	Portable Media Serial Number Service	WmdmPmSN	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal		
Print Spooler	Spooler	Running	Auto	Own	Process	c:\windows\system32\spoolsv.exe	LocalSystem	0	Normal	Windows Management Instrumentation Driver Extensions		Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal		
SQLSERVERAGENT	SQLSERVERAGENT	Stopped	Manual	Own	Process	c:\progra~1\microso~1\mssql\binn\sqlagent.exe	LocalSystem	0	Normal	WMI Performance Adapter	WmiApSrv	Stopped	Manual	Own	Process	c:\windows\system32\wbem\wmiaprv.exe	LocalSystem	0	Normal		
Windows Image Acquisition (WIA)	stisvc	Stopped	Disabled	Share	Process	c:\windows\system32\svchost.exe -k	LocalSystem	0	Normal	Automatic Updates	wuauerv	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal		
Microsoft Software Shadow Copy Provider	swprv	Stopped	Manual	Own	Process	c:\windows\system32\svchost.exe -k swprv	LocalSystem	0	Normal	Wireless Configuration	WZCSVC	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal		
HP ProLiant System Shutdown Service	sysdown	Running	Auto	Own	Process	c:\windows\system32\sysdown.exe	LocalSystem	0	Normal	[Program Groups]											
Performance Logs and Alerts	SysmonLog	Stopped	Manual	Own	Process	c:\windows\system32\smlogsvc.exe	LocalSystem	0	Normal	Group Name	Name	User Name									
Telephony TapiSrv	TapiSrv	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k tapisrv	LocalSystem	0	Normal	Accessories	Default User:Accessories	Default User									
Terminal Services	TermService	Running	Manual	Share	Process	c:\windows\system32\svchost.exe -k termsvc	LocalSystem	0	Normal	Accessories\Accessibility		Default User:Accessories\Accessibility									
Themes	Themes	Stopped	Disabled	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Accessories\Entertainment		Default User:Accessories\Entertainment									
Telnet	TlntSvr	Stopped	Disabled	Own	Process	c:\windows\system32\tlntsvr.exe	LocalSystem	0	Normal	Startup	Default User:Startup	Default User									
Distributed Link Tracking Server	TrkSvr	Stopped	Disabled	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Accessories	All Users:Accessories	All Users									
Distributed Link Tracking Client	TrkWks	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Accessories\Accessibility		All Users:Accessories\Accessibility									
Terminal Services Session Directory	Tssdis	Stopped	Disabled	Own	Process	c:\windows\system32\tssdis.exe	LocalSystem	0	Normal	Accessories\Communications		All Users:Accessories\Communications									
Upload Manager	uploadmgr	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Accessories\Entertainment		All Users:Accessories\Entertainment									
Uninterruptible Power Supply	UPS	Stopped	Manual	Own	Process	c:\windows\system32\ups.exe	LocalSystem	0	Normal	Accessories\System Tools		All Users:Accessories\System Tools									
VIRTUAL DISK SERVICE	vds	Stopped	Manual	Own	Process	c:\windows\system32\vds.exe	LocalSystem	0	Normal	Administrative Tools	All Users:Administrative Tools	All Users									
Volume Shadow Copy	VSS	Stopped	Manual	Own	Process	c:\windows\system32\vssvc.exe	LocalSystem	0	Normal	Compaq System Tools		All Users:Compaq System Tools	All Users								
Windows Time	W32Time	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal	Compaq System Tools\hp Array Configuration Utility		All Users:Compaq System Tools\hp Array Configuration Utility	All Users								
WebClient	WebClient	Stopped	Disabled	Share	Process	c:\windows\system32\svchost.exe -k localservice	LocalSystem	0	Normal	Microsoft SQL Server	All Users:Microsoft SQL Server	All Users									
WinHTTP	Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k localservice	LocalSystem	0	Normal	Startup	All Users:Startup	All Users								
Windows Management Instrumentation	winmgmt	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k	LocalSystem	0	Normal												
Portable Media Serial Number Service	WmdmPmSN	Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal												
Windows Management Instrumentation Driver Extensions		Stopped	Manual	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal												
WMI Performance Adapter	WmiApSrv	Stopped	Manual	Own	Process	c:\windows\system32\wbem\wmiaprv.exe	LocalSystem	0	Normal												
Automatic Updates	wuauerv	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal												
Wireless Configuration	WZCSVC	Running	Auto	Share	Process	c:\windows\system32\svchost.exe -k netsvcs	LocalSystem	0	Normal												

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 PHOENIX\Administrator:Accessories
 PHOENIX\Administrator
 Accessories\Accessibility
 PHOENIX\Administrator:Accessories\Accessibility
 PHOENIX\Administrator
 Accessories\Entertainment
 PHOENIX\Administrator:Accessories\Entertainment
 PHOENIX\Administrator
 Administrative Tools PHOENIX\Administrator:Administrative Tools
 PHOENIX\Administrator
 Startup PHOENIX\Administrator:StartupPHOENIX\Administrator

[Startup Programs]

Program	Command	User Name	Location
desktop	desktop.ini	NT AUTHORITY\SYSTEM	Startup
desktop	desktop.ini	PHOENIX\Administrator	Startup
desktop	desktop.ini	.DEFAULT	Startup
desktop	desktop.ini	All Users	Common Startup
CPQTEAM	cpqteam.exe	All Users	
	HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run		

[OLE Registration]

Object	Local Server
Sound (OLE2)	sndrec32.exe
Media Clip	mplay32.exe
Video Clip	mplay32.exe /avi
MIDI Sequence	mplay32.exe /midi
Sound	Not Available
Media Clip	Not Available
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Windows Media Services DRM Storage object	Not Available

Bitmap Image mspaint.exe

[Windows Error Reporting]

Time	Type	Details
6/19/2003 3:25 PM	Application Error	Faulting application dbgeng.exe, version 0.0.0.0, faulting module dbgeng.exe, version 0.0.0.0, fault address 0x00008847.

5/27/2003 11:23 AM	Application Error	Faulting application surveyor.exe, version 2.54.1.0, faulting module surveyor.exe, version 2.54.1.0, fault address 0x0008b137.

5/23/2003 11:28 AM	Application Error	Faulting application surveyor.exe, version 2.54.1.0, faulting module surveyor.exe, version 2.54.1.0, fault address 0x0008b137.

5/23/2003 11:04 AM	Application Error	Faulting application surveyor.exe, version 2.54.1.0, faulting module surveyor.exe, version 2.54.1.0, fault address 0x0008b137.

5/9/2003 12:11 PM	Application Error	Faulting application surveyor.exe, version 2.54.1.0, faulting module surveyor.exe, version 2.54.1.0, fault address 0x0008b137.

7/16/2003 7:35 AM	Dhcp	Your computer has lost the lease to its IP address 130.168.253.47 on the
Network Card with network address 0002A5E77BA9.

5/15/2003 12:09 PM Dhcp Your computer has lost the lease to its IP address 130.168.253.22 on the
Network Card with network address 000802ED28DC.

7/18/2003 10:50 AM Application Hang Hanging application mmc.exe, version 5.2.3790.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

7/18/2003 10:50 AM Application Hang Hanging application mmc.exe, version 5.2.3790.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

7/18/2003 10:48 AM Application Hang Hanging application mmc.exe, version 5.2.3790.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

6/18/2003 3:41 PM Application Hang Hanging application mmc.exe, version 5.2.3790.0, hang module msvcrt.dll, version 7.0.3790.0, hang address 0x00033740.

6/15/2003 7:50 AM Application Hang Hanging application mmc.exe, version 5.2.3790.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

6/15/2003 7:30 AM Application Hang Hanging application mmc.exe, version 5.2.3790.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

6/10/2003 2:34 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	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	3/25/2003	C:\WINDOWS\system32	561 KB Microsoft Corporation
dxtrans.dll	6.3.3790.0 198 KB	3/25/2003	C:\WINDOWS\system32	Microsoft Corporation	Microsoft Corporation

dxtnsft.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

 iepcers.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
 iexplore.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
 inetcppl.cpl 6.0.3790.0 303 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 inetcppl.dll 6.0.3790.0 109 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 inseng.dll 6.0.3790.0 72 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 mlang.dll 6.0.3790.0 570 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 msencode.dll 2002.10.4.0 112 KB 3/25/2003
 C:\WINDOWS\system32 Not Available
 mshta.exe 6.0.3790.0 26 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 mshtml.dll 6.0.3790.0 2,848 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 mshtml.tlb 6.0.3790.0 1,319 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 mshtmlmed.dll 6.0.3790.0 444 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 mshtmlmer.dll 6.0.3790.0 55 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 msident.dll 6.0.3790.0 47 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 msidentld.dll 6.0.3790.0 15 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 msieftp.dll 6.0.3790.0 230 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 msrating.dll 6.0.3790.0 132 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 mstime.dll 6.0.3790.0 491 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 occache.dll 6.0.3790.0 89 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 proctexe.ocx 6.3.3790.0 78 KB 3/25/2003
 C:\WINDOWS\system32 Intel Corporation
 sendmail.dll 6.0.3790.0 52 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 shdoclc.dll 6.0.3790.0 589 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 shdocvw.dll 6.0.3790.0 1,361 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 shfolder.dll 6.0.3790.0 23 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

shlwapi.dll 6.0.3790.0 281 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 tdc.ocx 1.3.0.3130 58 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 url.dll 6.0.3790.0 36 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 urlmon.dll 6.0.3790.0 502 KB 3/25/2003 C:\WINDOWS\system32
 Microsoft Corporation
 webcheck.dll 6.0.3790.0 262 KB 3/25/2003
 C:\WINDOWS\system32 Microsoft Corporation

 wininet.dll 6.0.3790.0 609 KB 3/25/2003 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 tpch1tb on
Primary (name=tpch1tb,
filename='c:\dev\tpch1tb.mdf',size=10mb,filegrowth=0),
FileGroup tpch1tb
```

```
(name=tpch1tb1,filename='c:\dev\tpch_1\',size=89900mb,filegrowth=0),
(name=tpch1tb2,filename='c:\dev\tpch_2\',size=89900mb,filegrowth=0),
(name=tpch1tb3,filename='c:\dev\tpch_3\',size=89900mb,filegrowth=0),
(name=tpch1tb4,filename='c:\dev\tpch_4\',size=89900mb,filegrowth=0),
(name=tpch1tb5,filename='c:\dev\tpch_5\',size=89900mb,filegrowth=0),
(name=tpch1tb6,filename='c:\dev\tpch_6\',size=89900mb,filegrowth=0),
(name=tpch1tb7,filename='c:\dev\tpch_7\',size=89900mb,filegrowth=0),
(name=tpch1tb8,filename='c:\dev\tpch_8\',size=89900mb,filegrowth=0),
(name=tpch1tb9,filename='c:\dev\tpch_9\',size=89900mb,filegrowth=0),
(name=tpch1tb10,filename='c:\dev\tpch_10\',size=89900mb,filegrowth=0),
(name=tpch1tb11,filename='c:\dev\tpch_11\',size=89900mb,filegrowth=0),
(name=tpch1tb12,filename='c:\dev\tpch_12\',size=89900mb,filegrowth=0),
(name=tpch1tb13,filename='c:\dev\tpch_13\',size=89900mb,filegrowth=0),
(name=tpch1tb14,filename='c:\dev\tpch_14\',size=89900mb,filegrowth=0),
(name=tpch1tb15,filename='c:\dev\tpch_15\',size=89900mb,filegrowth=0),
(name=tpch1tb16,filename='c:\dev\tpch_16\',size=89900mb,filegrowth=0),
(name=tpch1tb17,filename='c:\dev\tpch_17\',size=89900mb,filegrowth=0),
(name=tpch1tb18,filename='c:\dev\tpch_18\',size=89900mb,filegrowth=0),
(name=tpch1tb19,filename='c:\dev\tpch_19\',size=89900mb,filegrowth=0),
(name=tpch1tb20,filename='c:\dev\tpch_20\',size=89900mb,filegrowth=0)
```

```
Log on
(name=tpch1tbLog,filename='c:\dev\tpchlog',size=199900mb,filegrowth=0)
```

```
Alter Database tpch1tb Add FileGroup LoadFg
```

```
Alter Database tpch1tb Add File
(name=LoadFg1,
filename='c:\dev\load_1\',size=225000mb,filegrowth=0),
(name=LoadFg2,
filename='c:\dev\load_2\',size=225000mb,filegrowth=0),
(name=LoadFg3,
filename='c:\dev\load_3\',size=225000mb,filegrowth=0),
```

```
(name=LoadFg4,
filename='c:\dev\load_4\',size=225000mb,filegrowth=0),
(name=LoadFg5,
filename='c:\dev\load_5\',size=225000mb,filegrowth=0),
(name=LoadFg6,
filename='c:\dev\load_6\',size=225000mb,filegrowth=0),
(name=LoadFg7,
filename='c:\dev\load_7\',size=225000mb,filegrowth=0),
(name=LoadFg8,
filename='c:\dev\load_8\',size=225000mb,filegrowth=0)
to FileGroup LoadFg
```

B.2 CreateTable.sql

```
-- CreateTable
-- 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 bigint 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 bigint 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 tpch1tb
create index C_NATION_KEYIDX
on CUSTOMER (C_NATIONKEY)
with SORT_IN_TEMPDB
on tpch1tb

```

B.4 CreateLINEITEMIndexes.sql

```

create clustered index L_SHIPDATE_CLUIDX
on LINEITEM(L_SHIPDATE)
with fillfactor=95, SORT_IN_TEMPDB
on tpch1tb

create index L_PARTKEY_SUPPKEY_IDX
on LINEITEM (L_PARTKEY,L_SUPPKEY)
with fillfactor=95, SORT_IN_TEMPDB
on tpch1tb

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

```

```
on tpch1tb
```

B.5 CreateNATIONIndexes.sql

```

create unique clustered index N_KEY_CLUIDX
on NATION(N_NATIONKEY)
on tpch1tb
create index N_REGIONKEY_IDX
on NATION (N_REGIONKEY)
on tpch1tb

```

B.6 CreateORDERSIndexes.sql

```

create clustered index O_ORDERDATE_CLUIDX
on ORDERS (O_ORDERDATE)
with fillfactor=95, SORT_IN_TEMPDB
on tpch1tb

create index O_CUSTKEY_IDX
on ORDERS (O_CUSTKEY)
with fillfactor=95, SORT_IN_TEMPDB
on tpch1tb

create unique index O_KEY_IDX
on ORDERS(O_ORDERKEY)
with fillfactor=95, SORT_IN_TEMPDB
on tpch1tb

```

B.7 CreatePARTIndexes.sql

```

create unique clustered index P_KEY_CLUIDX
on PART(P_PARTKEY)
with SORT_IN_TEMPDB
on tpch1tb

```

B.8 CreatePARTSUPPIndexes.sql

```

create unique clustered index PS_KEY_CLUIDX
on PARTSUPP(PS_PARTKEY,PS_SUPPKEY)
with SORT_IN_TEMPDB
on tpch1tb
create index PS_SUPPKEY_IDX
on PARTSUPP (PS_SUPPKEY)
with SORT_IN_TEMPDB
on tpch1tb

```

B.9 CreateREGIONIndexes.sql

```

create unique clustered index R_KEY_CLUIDX
on REGION(R_REGIONKEY)
on tpch1tb

```

B.10 createSUPPLIERindexes.sql

```

create unique clustered index S_SUPPKEY_CLUIDX
on SUPPLIER (S_SUPPKEY)
with SORT_IN_TEMPDB
on tpch1tb
create index S_NATION_KEYIDX

```

```
on SUPPLIER (S_NATIONKEY)
with SORT_IN_TEMPDB
on tpch1tb
```

B.11 Backup.sql

```
backup database tpch1tb to
disk='c:\dev\load_1\back1tb.bak',
disk='c:\dev\load_2\back1tb.bak',
disk='c:\dev\load_3\back1tb.bak',
disk='c:\dev\load_4\back1tb.bak',
disk='c:\dev\load_5\back1tb.bak',
disk='c:\dev\load_6\back1tb.bak',
disk='c:\dev\load_7\back1tb.bak',
disk='c:\dev\load_8\back1tb.bak'
with init,stats=10
```

B.12 Restore.sql

```
restore database tpch1tb from
disk='c:\dev\load_1\back1tb.bak',
disk='c:\dev\load_2\back1tb.bak',
disk='c:\dev\load_3\back1tb.bak',
disk='c:\dev\load_4\back1tb.bak',
disk='c:\dev\load_5\back1tb.bak',
disk='c:\dev\load_6\back1tb.bak',
disk='c:\dev\load_7\back1tb.bak',
disk='c:\dev\load_8\back1tb.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=31500mb,filegrowth=0)
alter database tempdb modify file
(name=templog, filename='c:\dev\templog\',size=49950mb,filegrowth=0)
alter database tempdb add file
(name=tempdev2,
filename='c:\dev\tempdev_2\',size=31500mb,filegrowth=0),
(name=tempdev3,
filename='c:\dev\tempdev_3\',size=31500mb,filegrowth=0),
(name=tempdev4,
filename='c:\dev\tempdev_4\',size=31500mb,filegrowth=0),
(name=tempdev5,
filename='c:\dev\tempdev_5\',size=31500mb,filegrowth=0),
(name=tempdev6,
filename='c:\dev\tempdev_6\',size=31500mb,filegrowth=0),
(name=tempdev7,
filename='c:\dev\tempdev_7\',size=31500mb,filegrowth=0),
(name=tempdev8,
filename='c:\dev\tempdev_8\',size=31500mb,filegrowth=0),
(name=tempdev9,
filename='c:\dev\tempdev_9\',size=31500mb,filegrowth=0),
```

```
(name=tempdev10,
filename='c:\dev\tempdev_10\',size=31500mb,filegrowth=0),
(name=tempdev11,
filename='c:\dev\tempdev_11\',size=31500mb,filegrowth=0),
(name=tempdev12,
filename='c:\dev\tempdev_12\',size=31500mb,filegrowth=0),
(name=tempdev13,
filename='c:\dev\tempdev_13\',size=31500mb,filegrowth=0),
(name=tempdev14,
filename='c:\dev\tempdev_14\',size=31500mb,filegrowth=0),
(name=tempdev15,
filename='c:\dev\tempdev_15\',size=31500mb,filegrowth=0),
(name=tempdev16,
filename='c:\dev\tempdev_16\',size=31500mb,filegrowth=0),
(name=tempdev17,
filename='c:\dev\tempdev_17\',size=31500mb,filegrowth=0),
(name=tempdev18,
filename='c:\dev\tempdev_18\',size=31500mb,filegrowth=0),
(name=tempdev19,
filename='c:\dev\tempdev_19\',size=31500mb,filegrowth=0),
(name=tempdev20,
filename='c:\dev\tempdev_20\',size=31500mb,filegrowth=0),
(name=tempdev21,
filename='c:\dev\tempdev_21\',size=31500mb,filegrowth=0)
```

B.15 DelLoadFg.sql

```
alter database tpch1tb remove file LoadFg1
alter database tpch1tb remove file LoadFg2
alter database tpch1tb remove file LoadFg3
alter database tpch1tb remove file LoadFg4
alter database tpch1tb remove file LoadFg5
alter database tpch1tb remove file LoadFg6
alter database tpch1tb remove file LoadFg7
alter database tpch1tb remove file LoadFg8
alter database tpch1tb remove filegroup LoadFg
```


Appendix C: Query Text and Output

C.1 Qualification Queries and Output

Qualification Query 1

```

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

```

```

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

```

(4 rows affected)

Qualification Query 2

```

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

```

```

,SUPPLIER
,PARTSUPP
,NATION
,REGION
WHERE
P_PARTKEY = PS_PARTKEY
AND S_SUPPKEY = PS_SUPPKEY
AND P_SIZE = 15
AND P_TYPE LIKE '%BRASS'
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'EUROPE'
AND PS_SUPPLYCOST =
(
SELECT MIN(PS_SUPPLYCOST)
FROM
PARTSUPP
,SUPPLIER
,NATION
,REGION
WHERE P_PARTKEY = PS_PARTKEY
AND S_SUPPKEY = PS_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'EUROPE'
)
ORDER BY
S_ACCTBAL DESC
,N_NAME
,S_NAME
,P_PARTKEY
S_ACCTBAL S_NAME N_NAME
P_PARTKEY P_MFGR S_ADDRESS
S_PHONE S_COMMENT
-----
-----
9938.5300 Supplier#000005359 UNITED KINGDOM
185358 Manufacturer#4 QKuHYh,vZGiwu2FWEJoLDx04
33-429-790-6131 blithely silent pinto beans are furiously. slyly final deposits
acros
9937.8400 Supplier#000005969 ROMANIA
108438 Manufacturer#1
ANDENSOSmk,miq23Xfb5RWt6dvUcvt6Qa 29-520-692-3537
carefully slow deposits use furiously. slyly ironic platelets above the ironic
9936.2200 Supplier#000005250 UNITED KINGDOM
249 Manufacturer#4 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,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special,
9870.7800 Supplier#000001286 GERMANY
181285 Manufacturer#4
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special,
..... Additional rows deleted .....

```

29-250-925-9690 blithely bold ideas haggle quickly final, regular request
 7914.4500 Supplier#000001013 RUSSIA 125988
 Manufacturer#2 riRcntps4KEDtYScjpMIWeYF6mNnR 32-
 194-698-3365 final, ironic theodolites alongside of the ironic
 7912.9100 Supplier#000004211 GERMANY
 159180 Manufacturer#5 2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG
 17-266-947-7315 final requests integrate slyly above the silent, even
 7912.9100 Supplier#000004211 GERMANY
 184210 Manufacturer#4 2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG
 17-266-947-7315 final requests integrate slyly above the silent, even
 7894.5600 Supplier#000007981 GERMANY
 85472 Manufacturer#4 NSJ96vMROAbeXP 17-963-
 404-3760 regular, even theodolites integrate carefully. bold, special
 theodolites are slyly fluffily iron
 7887.0800 Supplier#000009792 GERMANY
 164759 Manufacturer#3 Y28ITVeYriT3kiGdV2K8fSZ
 V2UqT5H1Otz 17-988-938-4296 pending, ironic packages sleep among
 the carefully ironic accounts. quickly final accounts
 7871.5000 Supplier#000007206 RUSSIA 104695
 Manufacturer#1 3w fNcNrvmvJjE95sgWZzvW 32-432-
 452-7731 furiously dogged pinto beans cajole. bold, express notornis until
 the slyly pending
 7852.4500 Supplier#000005864 RUSSIA 8363
 Manufacturer#4 WCNfBPZeSXh3h,c 32-454-883-
 3821 blithely regular deposits
 7850.6600 Supplier#000001518 UNITED KINGDOM
 86501 Manufacturer#1 ONda3YJiHKJOC 33-730-
 383-3892 furiously final accounts wake carefully idle requests. even dolphins
 wake acc
 7843.5200 Supplier#000006683 FRANCE
 11680 Manufacturer#4 2ZJOJGkiv01Y00oCFwUGfviIbhzCdy
 16-464-517-8943 carefully bold accounts doub

(100 rows affected)

Qualification Query 3

```

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

```

```

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

```

(10 rows affected)

Qualification Query 4

```

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

```

(5 rows affected)

Qualification Query 5

```

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

```

CHINA	53724494.2566
INDIA	52035512.0002
JAPAN	45410175.6954

(5 rows affected)

Qualification Query 6

```

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

```

(1 row affected)

Qualification Query 7

```

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

```

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

(4 rows affected)

Qualification Query 8

```

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

```

(2 rows affected)

Qualification Query 9

```

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

```

```

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

```

```

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

```

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

..... Additional rows deleted

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

(175 rows affected)

Qualification Query 10

```

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

```

```

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

```

```

AND L_RETURNFLAG = 'R'
AND C_NATIONKEY = N_NATIONKEY

```

```

GROUP BY
C_CUSTKEY
,C_NAME
,C_ACCTBAL
,C_PHONE
,N_NAME
,C_ADDRESS
,C_COMMENT

```

```

ORDER BY
REVENUE DESC
C_CUSTKEY C_NAME REVENUE C_ACCTBAL
N_NAME C_ADDRESS C_PHONE
C_COMMENT

```

C_CUSTKEY	C_NAME	REVENUE	C_ACCTBAL
57040	Customer#000057040	734235.2455	632.8700
JAPAN	Eioyzzf4pp	22-895-641-3466	
143347	Customer#000143347	721002.6948	2557.4700
EGYPT	1aReFYv,Kw4	14-742-935-3718	
60838	Customer#000060838	679127.3077	2454.7700
BRAZIL	64EaJ5vMAHWJIBOxJklpNc2RjWE	12-913-494-9813	
101998	Customer#000101998	637029.5667	3790.8900
UNITED KINGDOM	01c9CILnNtfOQYmZj	33-593-865-6378	
125341	Customer#000125341	633508.0860	4983.5100
GERMANY	S29ODD6bceU8QSuueJznkNaK	17-582-695-5962	
25501	Customer#000025501	620269.7849	7725.0400
ETHIOPIA	W556MXuoiaYCCZamJL,Rn0B4ACUGdkQ8DZ	15-874-808-6793	
115831	Customer#000115831	596423.8672	5098.1000
FRANCE	rFeBbEEyk dl ne7zV5fDrmiq1oK09wV7pxqCglc 16-	715-386-3788	
84223	Customer#000084223	594998.0239	528.6500
54289	Customer#000054289	585603.3918	5583.0200
IRAN	vXCxoCsU0Bad5JQI ,oobkZ	20-834-292-4707	
39922	Customer#000039922	584878.1134	7321.1100
GERMANY	Zgy4s50l2GKN4pLDPBU8m342gIw6R	17-147-757-8036	
6226	Customer#000006226	576783.7606	2230.0900
922	Customer#00000922	576767.5333	3869.2500
GERMANY	Az9RFaut7NkPnc5zSD2PwHgVvr4jRzq	17-945-916-9648	
147946	Customer#000147946	576455.1320	2030.1300
ALGERIA	iANyZHjqhy7Ajah0pTrYyhJ	10-886-956-3143	
115640	Customer#000115640	569341.1933	6436.1000
ARGENTINA	Vtgfia9ql 7EpHgecU1X	11-411-543-4901	

```

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

```

(20 rows affected)

Qualification Query 11

```

SELECT
PS_PARTKEY
,SUM(PS_SUPPLYCOST*PS_AVAILQTY) AS VALUE
FROM
PARTSUPP
,SUPPLIER
,NATION
WHERE
PS_SUPPKEY = S_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'GERMANY'
GROUP BY
PS_PARTKEY
HAVING
SUM(PS_SUPPLYCOST*PS_AVAILQTY) >
(
SELECT
SUM(PS_SUPPLYCOST*PS_AVAILQTY) * 0.0001000000
FROM PARTSUPP
,SUPPLIER
,NATION
WHERE PS_SUPPKEY = S_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'GERMANY'
)
ORDER BY
VALUE DESC
PS_PARTKEY VALUE

```

```

-----
129760      17538456.8600
166726      16503353.9200
191287      16474801.9700
161758      16101755.5400
34452      15983844.7200
139035      15907078.3400
9403      15451755.6200
154358      15212937.8800
38823      15064802.8600
85606      15053957.1500
33354      14408297.4000

```

..... Additional rows deleted

```

128820      7892882.7200

```

```

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

```

(1048 rows affected)

Qualification Query 12

```

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

```

(2 rows affected)

Qualification Query 13

```

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

```

CUSTDIST DESC
 ,C_COUNT DESC
 C_COUNT CUSTDIST

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

(42 rows affected)

Qualification Query 14

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

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

(1 row affected)

Qualification Query 15

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

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

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

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

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

(1 row affected)

Qualification Query 16

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

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

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

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

..... Additional rows deleted

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

(18314 rows affected)

Qualification Query 17

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

348406.0542857

(1 row affected)

Qualification Query 18

```
SELECT TOP 100
C_NAME
```

```
,C_CUSTKEY
,O_ORDERKEY
,O_ORDERDATE
,O_TOTALPRICE
,SUM(L_QUANTITY)
FROM
CUSTOMER
,ORDERS
,LINEITEM
WHERE
O_ORDERKEY IN
(
SELECT
L_ORDERKEY
FROM
LINEITEM
GROUP BY
L_ORDERKEY HAVING
SUM(L_QUANTITY) > 300
)
AND C_CUSTKEY = O_CUSTKEY
AND O_ORDERKEY = L_ORDERKEY
GROUP BY
C_NAME
,C_CUSTKEY
,O_ORDERKEY
,O_ORDERDATE
,O_TOTALPRICE
ORDER BY
O_TOTALPRICE DESC
,O_ORDERDATE
C_NAME C_CUSTKEY O_ORDERKEY O_ORDERDATE
O_TOTALPRICE
```

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

.... Additional rows deleted

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

(57 rows affected)

Qualification Query 19

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

```

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

(1 row affected)

```

Qualification Query 20

```

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

```

```

FROM
LINEITEM
WHERE
L_PARTKEY = PS_PARTKEY
AND L_SUPPKEY = PS_SUPPKEY
AND L_SHIPDATE >= '1994-01-01'
AND L_SHIPDATE < DATEADD(YY,1,cast('1994-01-01' as
smalldatetime))
)
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'CANADA'
ORDER BY
S_NAME
S_NAME S_ADDRESS
-----
Supplier#000000020 iybAE,RmTymrZVYaFZva2SHj
Supplier#000000091
YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197 YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226 83qOdU2EYRdPQAQhEtm GRZEd
Supplier#000000285 Br7e1nnt1yxrw6ImgpJ7YdhFDjuBf
Supplier#000000378 FfbhyCxWvcPrO8ltp9
Supplier#000000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530 0qwCMwobKY OcmLyfRXlagA8ukENJv,
Supplier#000000688 D fw5ocppmZpYBBIPI718hCihLDZ5KhKX
Supplier#000000710 f19YPvOyb QoYwjKC,oPycpGfieBacwKJo
Supplier#000000736 16i2nMwVuovfKnuVgaSGK2rDy65DIAFLegL7
Supplier#000000761 zLSLeLQUj2XrvTTFnv7WAeYZGvvMTx882d4
Supplier#000000884 bmhEShejaS

.... Additional rows deleted ...

Supplier#000009812 APFRMy3lCbGfGa53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmUUoey7v
Supplier#000009869
ucLqxrzrBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdpAHzr1t,UQFZE
Supplier#000009974 7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

(204 rows affected)

```

Qualification Query 21

```

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

```



```

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

```

... Additional rows deleted

```

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

```

(100 rows affected)

Qualification Query 22

```

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

```

```

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

```

(7 rows affected)

Appendix D: Seeds and Query Substitution Parameters

Stream0 Seed : 806040421

14	1997-03-01					
2	1	COPPER	AMERICA			
9	goldenrod					
20	navy	1994-01-01	EGYPT			
6	1994-01-01	0.03	25			
17	Brand#23	LG BAG				
18	314					
8	UNITED KINGDOM	EUROPE	MEDIUM ANODIZED BRASS			
21	ETHIOPIA					
13	unusual deposits					
3	FURNITURE	1995-03-11				
22	14	33	34	20	16	12
	13					
16	Brand#12	LARGE BURNISHED		14	13	
	33	17	19	34	10	18
4	1994-09-01					
11	ETHIOPIA	0.0000010000				
15	1997-02-01					
1	68					
10	1995-01-01					
19	Brand#24	Brand#21	Brand#54	8	12	27
5	EUROPE	1994-01-01				
7	EGYPT	UNITED KINGDOM				
12	RAIL	TRUCK	1997-01-01			

Stream1 Seed : 806040422

14	1997-06-01					
2	39	BRASS	MIDDLE EAST			
9	firebrick					
20	aquamarine	1997-01-01	CHINA			
6	1994-01-01	0.08	25			
17	Brand#25	LG PKG				
18	315					
8	MOROCCO	AFRICA	SMALL POLISHED BRASS			
21	RUSSIA					
13	unusual deposits					
3	MACHINERY	1995-03-28				
22	28	31	22	12	18	24
	16					
16	Brand#42	PROMO POLISHED		17	27	45
	38	7	26	41	25	
4	1997-04-01					
11	CHINA	0.0000010000				
15	1994-11-01					
1	76					
10	1993-11-01					
19	Brand#21	Brand#54	Brand#53	3	13	23
5	MIDDLE EAST	1994-01-01				
7	VIETNAM	MOROCCO				
12	AIR	TRUCK	1997-01-01			

Stream2 Seed : 806040423

14	1997-09-01					
2	27	NICKEL	ASIA			
9	cyan					
20	lavender	1995-01-01	INDIA			
6	1994-01-01	0.06	24			
17	Brand#22	MED CASE				
18	313					
8	GERMANY	EUROPE	SMALL BURNISHED BRASS			
21	KENYA					
13	unusual deposits					
3	BUILDING	1995-03-13				
22	20	22	10	30	21	34
	17					
16	Brand#32	SMALL BRUSHED		13	12	19
	18	40	7	17	10	
4	1995-01-01					
11	FRANCE	0.0000010000				
15	1997-06-01					
1	84					
10	1994-08-01					
19	Brand#33	Brand#32	Brand#42	8	14	30
5	AFRICA	1994-01-01				
7	JORDAN	GERMANY				
12	REG AIR	MAIL	1997-01-01			

Stream3 Seed : 806040424

14	1997-12-01					
2	14	TIN	MIDDLE EAST			
9	chiffon					
20	slate	1994-01-01	UNITED KINGDOM			
6	1995-01-01	0.03	25			
17	Brand#24	MED BAG				
18	314					
8	UNITED STATES	AMERICA	STANDARD			
	BRUSHED STEEL					
21	FRANCE					
13	unusual deposits					
3	MACHINERY	1995-03-30				
22	33	11	21	17	18	32
	34					
16	Brand#12	ECONOMY BURNISHED		24	29	
	10	47	20	42	16	27
4	1997-08-01					
11	ROMANIA	0.0000010000				
15	1995-02-01					
1	92					
10	1993-05-01					
19	Brand#35	Brand#25	Brand#42	4	15	26
5	AMERICA	1995-01-01				
7	ETHIOPIA	UNITED STATES				
12	SHIP	MAIL	1997-01-01			

Stream4 Seed : 806040425

14	1993-03-01					
2	2	COPPER ASIA				
9	blue					
20	firebrick	1997-01-01	JORDAN			
6	1995-01-01	0.09	25			
17	Brand#21	MED PKG				
18	312					
8	MOZAMBIQUE	AFRICA	STANDARD PLATED STEEL			
21	UNITED KINGDOM					
13	unusual	packages				
3	BUILDING	1995-03-15				
22	23	12	22	24	25	17
	19					
16	Brand#42	STANDARD PLATED		27	7	
	6	1	16	47	18	49
4	1995-05-01					
11	GERMANY	0.0000010000				
15	1997-09-01					
1	100					
10	1994-02-01					
19	Brand#32	Brand#53	Brand#41	9	16	23
5	EUROPE	1995-01-01				
7	RUSSIA	MOZAMBIQUE				
12	FOB	MAIL	1993-01-01			

Stream6 Seed : 806040427

14	1993-10-01					
2	28	NICKEL ASIA				
9	violet					
20	brown	1994-01-01	PERU			
6	1995-01-01	0.04	24			
17	Brand#25	JUMBO BAG				
18	315					
8	ALGERIA	AFRICA	PROMO POLISHED STEEL			
21	INDIA					
13	unusual	packages				
3	AUTOMOBILE	1995-03-17				
22	12	22	25	33	31	16
	11					
16	Brand#12	PROMO ANODIZED	24	6	1	
	36	2	37	16	31	
4	1995-09-01					
11	INDIA	0.0000010000				
15	1993-03-01					
1	116					
10	1993-09-01					
19	Brand#41	Brand#24	Brand#34	9	18	26
5	AFRICA	1995-01-01				
7	FRANCE	ALGERIA				
12	RAIL	FOB	1993-01-01			

Stream5 Seed : 806040426

14	1993-07-01					
2	40	STEEL AFRICA				
9	aquamarine					
20	pink	1996-01-01	BRAZIL			
6	1995-01-01	0.06	24			
17	Brand#23	JUMBO CASE				
18	313					
8	INDIA	ASIA	STANDARD ANODIZED STEEL			
21	MOROCCO					
13	unusual	packages				
3	HOUSEHOLD	1995-03-01				
22	13	15	32	18	17	33
	34					
16	Brand#32	MEDIUM BRUSHED		15	36	
	27	6	29	45	18	37
4	1993-02-01					
11	SAUDI ARABIA	0.0000010000				
15	1995-06-01					
1	108					
10	1994-11-01					
19	Brand#44	Brand#41	Brand#35	4	17	30
5	MIDDLE EAST	1995-01-01				
7	KENYA	INDIA				
12	MAIL	REG AIR	1995-01-01			

Stream7 Seed : 806040428

14	1994-01-01					
2	16	TIN AFRICA				
9	spring					
20	medium	1993-01-01	GERMANY			
6	1995-01-01	0.09	25			
17	Brand#22	JUMBO PKG				
18	312					
8	PERU	AMERICA	PROMO BURNISHED			
	STEEL					
21	ALGERIA					
13	express	packages				
3	HOUSEHOLD	1995-03-03				
22	12	20	28	19	32	21
	26					
16	Brand#42	SMALL PLATED	7	14	37	
	15	24	17	9	46	
4	1993-05-01					
11	VIETNAM	0.0000010000				
15	1995-09-01					
1	63					
10	1994-06-01					
19	Brand#43	Brand#12	Brand#33	5	19	22
5	AMERICA	1995-01-01				
7	UNITED KINGDOM	PERU				
12	AIR	FOB	1993-01-01			

Appendix E: Refresh Function Source Code

E.1 CreateRF1Proc.sql

```
-- CreateRF1Proc.sql

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

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

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

set @insert_sets= @scalefactor

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

create unique clustered index NEWORDERS on #NEWORDERS
(O_ORDERKEY)

create clustered index NEWLINEITEM on #NEWLINEITEM
(L_ORDERKEY)

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

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

EXEC sp_executesql @SQLstring

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

--
-- This handles the case when the max-min/insert_sets is less 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 RF1 transaction'
rollback transaction
GOTO INSERT_TRANS
END

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

END

GO

```

E.2 CreateRF2Proc.sql

```

-- CreateRF2Proc.sql

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

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

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

set @delete_sets=@scalefactor

create table #OLDORDERS (O_ORDERKEY bigint)
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=tpch1tb
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=1000
set DBGEN_SEGMENTS=64
set DBGEN_PARALLELISM=16
set FLATFILEDRIVE=z:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=
set RF1_PARALLELISM=128
set RF2_PARALLELISM=128
set UPDATEDRIVE=X:
set UPDATEDIR=(UF_Flatfiles
set UPDATE_SETS=24

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%\%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
```

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

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

rem
rem DBGEN invokes dbgen.exe in parallel
rem

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

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

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

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

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

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

```

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

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

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

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

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

```

```

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

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

:BULKINSERTn2
osql -Usa -P%PW% -d%DB% -Q"bulk insert %2 from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%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"update statistics
LINEITEM(L_SUPPKEY) WITH SAMPLE 10 PERCENT,
NORECOMPUTE" -o %OUTPUTPATH%\SUPPKEYStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"update statistics PART(P_NAME) WITH
FULLSCAN, NORECOMPUTE" -o %OUTPUTPATH%\PNAMESStats.out
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_indexoption 'LINEITEM',
'disallowrowlocks', 'FALSE'" -o
%OUTPUTPATH%\DisallowrowLocksLINEITEM.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'ORDERS',
'disallowrowlocks', 'FALSE'" -o
%OUTPUTPATH%\DisallowrowLocksOrders.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% -Q"sp_dboption %DB%, 'torn', FALSE" -o
%OUTPUTPATH%\dboptionTornOFF.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
for /L %i in (1,1,8) do format c:\dev\load_%i /FS:NTFS /V /Q /Y
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
osql -Usa -P%PW% -d%DB% -i %DB%\DelTemp.sql -o
%OUTPUTPATH%\DelTemp.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=tpch1tb
set HOMEDRIVE=C:
set HOMEDIR=\HP_TPCH_KIT\Run
set OUTPUTDRIVE=C:
set OUTPUTDIR=\HP_TPCH_KIT\Output
set UPDATEDRIVE=X:
set UPDATEDIR=\UF_Flatfiles
set UPDATESSET=9
set UPDATESEGMENTS=64
set SEED=806040421
set SCALEFACTOR=1000
set STREAMS=7

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

%HOMEDRIVE%
cd %HOMEDIR%

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

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

set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%OUTPUTDRIVE%%OUTPUTDIR%%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND

```



```

set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUM
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%
rem
rem Create the TIMES table
rem
osql -E -d%DB% -Q"if exists (select * from sysindexes where name =
'TIMES') drop table TIMES"
osql -E -d%DB% -Q"create table TIMES(QUERY char(5),STREAM
int,START datetime)"

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

rem
rem Use the Restore.sql script in SETUP
rem

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

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

rem
rem Create the Power and five Throughput Streams
rem

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

:SETUP1
echo Qgening using seed %SEED%
%HOMEDIR%\qgen -s %SCALEFACTOR% -r %SEED% -p%1 1
seed_1.txt > %HOMEDIR%\Stream%1.sql
set /a SEED=%SEED% + 1
goto :EOF

:SETUP2

rem
rem Begin POWER run
rem

rem
rem Execute the RF1 Transaction set in parallel
rem

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

echo Running the RF1s

```

```

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

rem
rem Execute the PowerRun Queries
rem

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

rem
rem Execute the RF2 Transaction set in Parallel
rem

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

:POWERDONE
osql -E -d%DB% -Q"insert into TIMES values ('QXX',0,getdate())" -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,%3,700" -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,%3,700" -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
-sigaled: %s\n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond, szEventNames[idx] );
HANDLE hTmp = pHandles[idx];

```

```

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

```

"the semaphore is released, the count is decremented by one (or the amount \n"
"specified). When the count reaches zero, the waiter completes. If there \n"
"are multiple waiters on the same semaphore, each release releases only \n"
"the number of waiters specified in count.\n"
"\n"
"List of Events: \n"
"A list of events (alpha-numeric tags) is specified for the waiter. The \n"
"waiter doesn't complete until all of the events have been signaled. A \n"
"given event may be signaled more than once. There are two
}

ways to define \n"
"the list of events, either explicitly (-waitlist) by naming all of them or \n"
"implicitly (-waitgroup) with a prefix and a count. Using the -waitgroup \n"
"option, you provide an alpha-numeric tag which is used as the prefix for a \n"
"group of events. The event names are generated by concatenating the prefix \n"
"with \".<n>\", where <n> is 1 to the specified count. \n"
);
exit(EXIT_FAILURE);
}

Appendix G: Price Quotations

August 15, 2003

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

Mr. Pol:

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

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

Part Number	Description	Unit Price	Quantity	Price
810-00652	SQL Server 2000 Enterprise Edition <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 26% discount from the retail unit price of \$7,499.</i>	\$5,549	1	\$5,549
359-00532	SQL Server 2000 Client License <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 18% discount from the retail unit price of \$179.</i>	\$146	70	\$10,220
P72-00264	Windows Server 2003, Enterprise Edition <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 40% discount from the retail unit price of \$3,999.</i>	\$2,399	1	\$2,399
254-00170	Visual C++ Standard <i>No discounts applied</i>	\$109	1	\$109
PRO-PRORS-16U-01	Database Server Support Package <i>1 Year Term</i>	\$1,950	3	\$5,850

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

This quote is valid for the next 90 days.

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