



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant DL380 G6
using
Microsoft SQL Server 2008 Enterprise x64 Edition SP1
and
Windows Server 2008 Enterprise x64 Edition SP2

First Edition
October 2009

First Edition – October, 2009

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HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date:
Oct 7, 2009

Total System Cost

\$90,352 USD

Composite Query per Hour Metric

50,738.4
QphH@100GB

Price / Performance

\$1.79 USD
\$/QphH@100GB

Database Size

100GB

Database Manager

Microsoft SQL Server 2008 Enterprise x64 Edition SP1

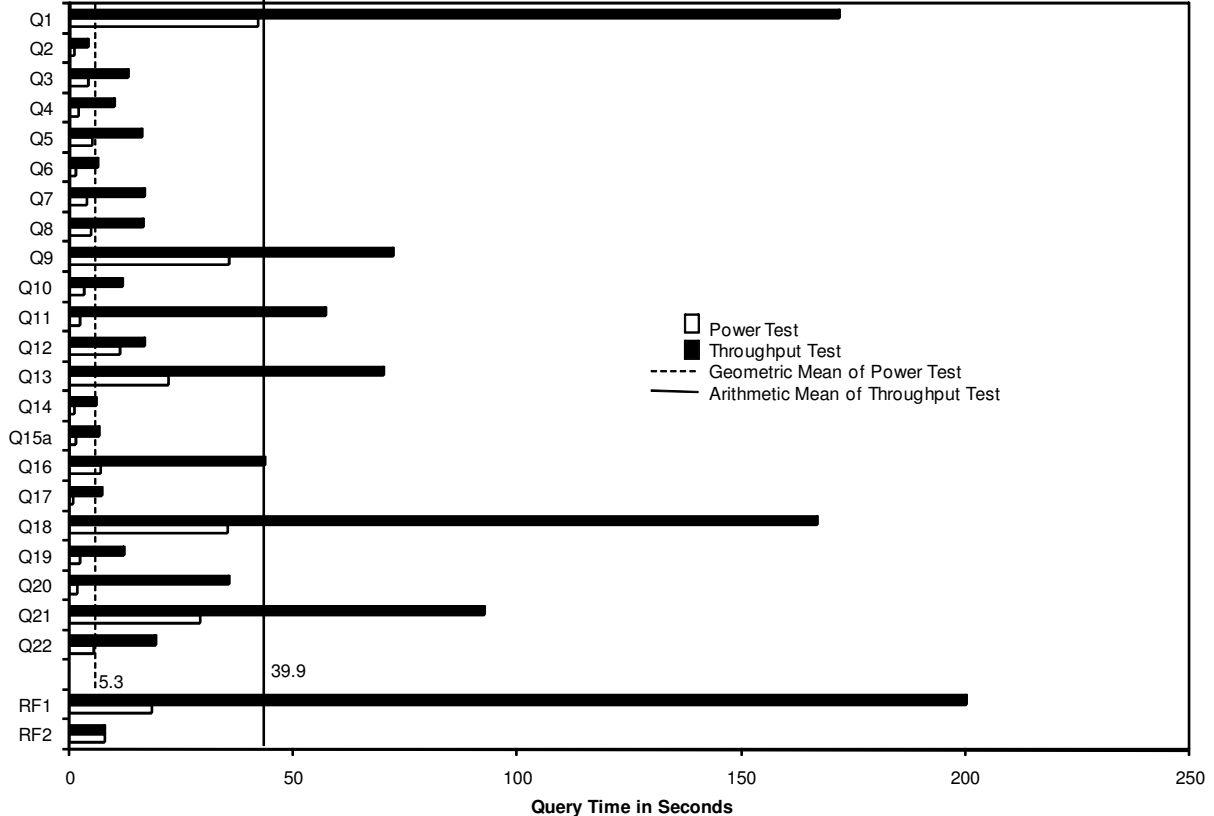
Operating System

Windows Server 2008 Enterprise Edition x64 SP2

Other Software

Availability Date

Oct 7, 2009



Database Load Time = 0:30:28

Load Included Backup: Y

Total Data Storage / Database Size = 73.44

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): Y

RAID (All): N

System Configuration:

Processors : 2x 2.93 GHz Quad Core Intel X5570
Cores : 8
Threads : 16
Memory : 144 GB
OS Disk Drives : 2x 72 GB 15K rpm SFF SAS
Network : 4x on-board GigE
Disk Controllers : 4x Smart Array P411, 1x Smart Array P410i onboard
Disks : 100x 72GB 15k rpm SAS 6G SFF drives
Total Disk Storage: 7344 GB

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

**HP ProLiant DL380 G6**

TPC-H Rev. 2.8.0

Report Date: 7-Oct-09

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price	
Server Hardware							
Brand Pricing							
HP DL380G6 CTO Chassis	494329-B21	1	1,486	1	1,486		
HP X5570 DL380 G6 FIO Kit	500094-L21	1	1,999	2	3,998		
HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21	1	990	18	17,820		
HP DL380G6 3 Slot PCI-E Riser Kit	500579-B21	1	99	1	99		
HP Smart Array P411i/512 BBWC Controller	462832-B21	1	649	4	2,596		
HP 72GB 15K rpm Hot Plug SAS 2.5 Dual Port Hard Drive	418371-B21	1	349	2	698		
HP LV1561w 15.6-inch Wide LCD Monitor	NJ711A8#ABA	1	110	1	110		
HP PS/2 Standard Keyboard	GY071AV#ABA	1	7	1	7		
HP PS/2 2-Button Scroll Mouse	EW344AV	1	2	1	2		
HP 3y 4h 24x7 ProLiant DL38x HW Support	U4545E	1	837	1		837	
Subtotal					26,816	837	
Storage							
HP StorageWorks D2700 Disk Enclosure	AJ941A	1	3,399	4	13,596		
HP 5642 Rack	358254-B21	1	865	1	865		
HP 72GB 6G SAS 15K SFF (2.5-inch) Dual Port Enterprise 3yr Wa	512545-B21	1	379	100	37,900		
HP 3y 4h 24x7 D2000 Encl HW Support	UQ540E	1	1,904	4		7,616	
Subtotal					52,361	7,616	
Hardware and Maintenance Discount							
Large Purchase and Net 30 discount	14.0%	1			(\$11,085)	(\$1,183)	
Hardware Subtotal					68,092	7,270	
Software							
SQL Server 2008 Enterprise x64 Edition	810-07580	Microsoft	2	8,487	1	8,487	incl. bellow
Windows Server 2008 Enterprise Edition (x64)	P72-03195	Microsoft	2	2,357	1	2,357	incl. bellow
SQL Server 2008 Client License	359-01912	Microsoft	2	156	25	3,900	incl. bellow
Microsoft Problem Resolution Services		Microsoft	2	245	1	245	
Subtotal					14,744	245	
Total					\$82,836	\$7,515	

Three-Year Cost of Ownership: \$90,352 USD**QpH @ 100GB: 50738.4****\$ / QpH @ 100GB: \$1.79 USD**

Pricing: 1=HP Direct: 800-203-6748; 2=Microsoft

Note 1 = Discount based on HP Direct guidance with large purchase and Net 30 discount. Applies to all lines with 1 in pricing column.

* = These components are not immediately orderable. See the FDR for more information.

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 the TPC at pricing@tpc.org. Thank you.



HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date:
Oct 7, 2009

Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 73.44
Start of Database Load	= 2009-09-28 16:44:50
End of Database Load	= 2009-09-28 17:15:18
Database Load Time	= 00:30:28
Query Streams for Throughput Test	= 5
TPC-H Power	= 67,712.9
TPC-H Throughput	= 38,019.1
TPC-H Composite Query-per-Hour Metric (QpH@100GB)	= 50,738.4
Total System Price Over 3 Years	= \$90,352
TPC-H Price/ Performance Metric (\$/QpH@100GB)	= \$1.79 USD

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 1,041.6 seconds
--	-------------------

Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	928171518	9/29/2009	8:29:56	9/29/2009	8:34:08	0:04:12
Stream01	928171519	9/29/2009	8:34:09	9/29/2009	8:47:46	0:13:37
Stream02	928171520	9/29/2009	8:34:09	9/29/2009	8:49:12	0:15:03
Stream03	928171521	9/29/2009	8:34:09	9/29/2009	8:49:52	0:15:43
Stream04	928171522	9/29/2009	8:34:09	9/29/2009	8:47:57	0:13:48
Stream05	928171523	9/29/2009	8:34:09	9/29/2009	8:49:03	0:14:54
Refresh00		9/29/2009	8:29:56	9/29/2009	8:34:09	0:04:13
Refresh01		9/29/2009	8:49:52	9/29/2009	8:50:13	0:00:20
Refresh02		9/29/2009	8:50:13	9/29/2009	8:50:33	0:00:21
Refresh03		9/29/2009	8:50:33	9/29/2009	8:50:53	0:00:20
Refresh04		9/29/2009	8:50:53	9/29/2009	8:51:12	0:00:19
Refresh05		9/29/2009	8:51:12	9/29/2009	8:51:31	0:00:19



HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date:
Oct 7, 2009

TPC-H Timing Intervals (in seconds)

Query	Q01	Q02	Q03	Q04	Q05	Q06	Q07	Q08
Stream 00	42.2	1.2	4.4	2.1	5.1	1.5	4.1	4.9
Stream 01	107.4	7.2	18.9	5.2	18.6	7.2	13.7	18.8
Stream 02	207.6	5.2	10.9	7.2	14.3	9.0	17.8	16.6
Stream 03	172.0	0.8	4.4	18.6	20.8	4.3	23.6	17.2
Stream 04	199.0	4.9	9.9	9.4	15.8	5.2	8.9	19.3
Stream 05	174.7	4.2	22.2	10.4	12.8	6.6	20.5	11.7
Min Qi	107.4	0.8	4.4	5.2	12.8	4.3	8.9	11.7
Max Qi	207.6	7.2	22.2	18.6	20.8	9.0	23.6	19.3
Avg Qi	172.1	4.5	13.3	10.2	16.5	6.5	16.9	16.7
Query	Q09	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	35.8	3.3	2.4	11.5	22.3	1.3	1.5	7.1
Stream 01	72.0	14.5	37.8	19.0	98.6	6.0	6.0	36.5
Stream 02	67.0	17.2	6.7	25.4	73.4	5.1	7.7	36.7
Stream 03	87.1	11.1	220.9	5.5	22.2	6.5	6.8	6.9
Stream 04	80.1	9.6	13.8	20.8	57.6	7.6	5.8	34.8
Stream 05	56.3	7.8	8.0	13.7	99.7	5.4	6.9	104.2
Min Qi	56.3	7.8	6.7	5.5	22.2	5.1	5.8	6.9
Max Qi	87.1	17.2	220.9	25.4	99.7	7.6	7.7	104.2
Avg Qi	72.5	12.0	57.4	16.9	70.3	6.1	6.6	43.8
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	0.9	35.5	2.6	1.8	29.2	5.6	18.6	7.9
Stream 01	11.6	153.8	10.3	27.7	106.6	19.6	12.4	7.7
Stream 02	6.9	160.9	14.4	101.5	72.6	19.1	11.7	8.9
Stream 03	9.2	197.5	4.3	7.4	69.9	26.2	12.0	7.3
Stream 04	6.2	165.4	11.8	15.8	115.9	11.4	11.1	7.7
Stream 05	3.1	157.8	20.9	26.9	99.6	20.5	11.2	7.9
Min Qi	3.1	153.8	4.3	7.4	69.9	11.4	11.1	7.3
Max Qi	11.6	197.5	20.9	101.5	115.9	26.2	12.4	8.9
Avg Qi	7.4	167.1	12.3	35.9	92.9	19.4	11.7	7.9

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant DL380 G6 using Microsoft SQL Server 2008 Enterprise x64 Edition SP1, in conformance with the requirements of the TPC Benchmark™ H Standard Specification, Revision 2.8.0. The operating system used for the benchmark was Microsoft Windows 2008 Enterprise x64 Edition SP2.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB	\$/ QphH @ 100GB
HP ProLiant DL380 G6	Microsoft SQL Server 2008 Enterprise x64 Edition SP1, Windows Server 2008 Enterprise x64 Edition SP2	\$90,352	67712.9	38019.1	50738.4	\$1.79

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.

Standard and Executive Summary Statements

Pages ii-iv contains the Executive Summary and Numerical Quantities Summary of the benchmark results for the HP ProLiant DL380 G6.

Auditor

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

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1.0 General Items

1.1 Test Sponsor

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

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

1.2 Parameter Settings

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

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

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

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

1.3 Configuration Items

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

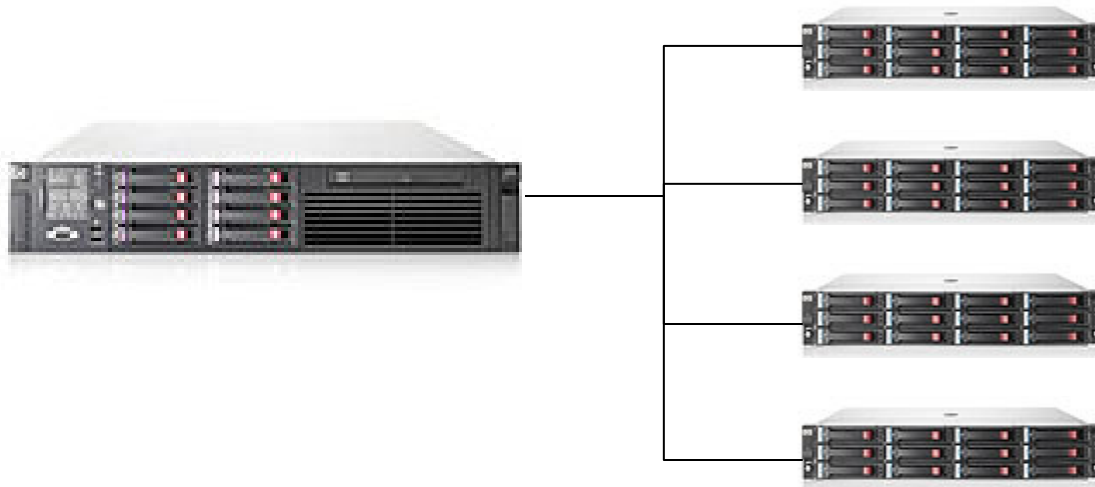
- *Number and type of processors*
- *Size of allocated memory, and any specific mapping/partitioning of memory unique to the test.*
- *Number and type of disk units (and controllers, if applicable).*
- *Number of channels or bus connections to disk units, including their protocol type.*
- *Number of LAN (e.g. Ethernet) Connections, including routers, workstations, terminals, etc., that were physically used in the test or are incorporated into the pricing structure.*

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

The server System Under Test (SUT), a HP ProLiant DL380 G6 , depicted in Figure 1.1, consisted of :

- 2x Intel X5570 2.93GHz quad core processors
- 144 GB of memory
- 4 x HP Smart Array P411 Controller
- 1 x HP Smart Array P410i Controller onboard
- 2 x 72GB Pluggable SAS 2.5" 15k rpm drives
- 100x 72GB Pluggable SAS 6G 2.5" 15k rpm drives
- 4x HP StorageWorks D2700 Disk Enclosures

Figure 1.1 Benchmarked & Priced configuration



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 2.8.0 and QGEN version 2.8.0 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 2.8.0 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 DL380 G6.

4.1.1 Atomicity of the Completed Transactions

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

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

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

4.1.2 Atomicity of Aborted Transactions

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

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

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

4.2 Consistency Requirements

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

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

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

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

4.2.1 Consistency Tests

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

The following steps were performed to verify consistency:

1. The consistency of the ORDER and LINEITEM tables was verified based on a sample of O_ORDERKEYs.

2. One hundred ACID Transactions were submitted from each of six execution streams.
3. The consistency of the ORDER and LINEITEM tables was reverified.

4.3 Isolation Requirements

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

4.3.1 Isolation Test 1 - Read-Write Conflict with Commit

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

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

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

4.3.2 Isolation Test 2 - Read-Write Conflict with Rollback

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

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

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

4.3.3 Isolation Test 3 - Write-Write Conflict with Commit

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

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

1. An ACID Transaction T1 was started for a randomly selected O_KEY, L_KEY and DELTA. The ACID transaction T1 was suspended prior to Commit.
2. Another ACID Transaction T2 was started using the same O_KEY and L_KEY and a randomly selected DELTA.
3. T2 waited.
4. The ACID transaction T1 was allowed to Commit and T2 completed.
5. It was verified that:

$$T2.L_EXTENDEDPRICE = T1.L_EXTENDEDPRICE + (DELTA1*(T1.L_EXTENDEDPRICE/T1.L_QUANTITY))$$

4.3.4 Isolation Test 4 - Write-Write Conflict with Rollback

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

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

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

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

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

The following steps were performed:

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

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

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

The following steps were performed:

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

4.4 Durability Requirements

The tested system must guarantee durability: the ability to preserve the effects of committed transactions and insure database consistency after recovery from any one of the failures listed in Clause 3.5.2.

4.4.1 Permanent Unrecoverable Failure of Any Durable Medium

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

The database log was stored on a RAID-1 protected array of two physical drives. The tables for the database were stored on 4 separate 80GB FusionIO ioDrive SSD disks. A backup of the database was taken.

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

1. The complete database was backed up.
2. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
3. While the test was running, one of the disks from the database RAID-1 log was removed.
4. After it was determined that the test would still run with the loss of a log disk, one ioDrive was detached.
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 ioDrive was reattached and log disk was replaced with new disk and RAID rebuild process started

9. When log RAID rebuild process finished a database restore was done.
10. A command was issued causing the database to run through its roll-forward recovery.
11. The counts in the success files and the HISTORY table count were compared and were found to match.

4.4.2 System Crash

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

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

4.4.3 Memory Failure

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

See section 4.4.2

5.0 Clause 4: Scaling and Database Population

5.1 Initial Cardinality of Tables

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

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

Table 5.1: Initial Number of Rows

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

5.2 Distribution of Tables and Logs Across Media

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

Microsoft SQL Server was configured on a HP ProLiant DL380 G6 with the following configuration:

- 4 x Smart Array P411 disk controller
- 1 x Smart Array P410i disk controller
- 2 x 72GB SAS 2.5" 15k rpm disk drives
- 100 x 72GB SAS 6G 2.5" 15k rpm disk drives
- 4x StorageWorks D2700 disk enclosures

All 102 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 (GB)	Contents
Embedded	A	2	1	RAID1	NTFS	68.33	OS TpchLog TempDBLog Tpch1GBLog
Slot 4	A	25	1	RAID0	NTFS	75	C:\dev\node1\ Tpch100g TempDB Tpch1GB
			2	RAID5	NTFS	150	Z:\ Backup
Slot 5	A	25	1	RAID0	NTFS	75	C:\dev\node2\ Tpch100g TempDB
			2	RAID5	NTFS	150	Z:\ Backup
Slot 3	A	25	1	RAID0	NTFS	75	C:\dev\node3\ Tpch100g TempDB
			2	RAID5	NTFS	150	Z:\ Backup
Slot 1	A	25	1	RAID0	NTFS	75	C:\dev\node4\ Tpch100g TempDB
			2	RAID5	NTFS	150	Z:\ Backup

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.

A modified DBGEN version 2.8.0 was used for database population. The modified version differs only in column order for output flatfile. The only modified file, Print.C, is included in Appendix F.8

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 30 minutes and 28 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.

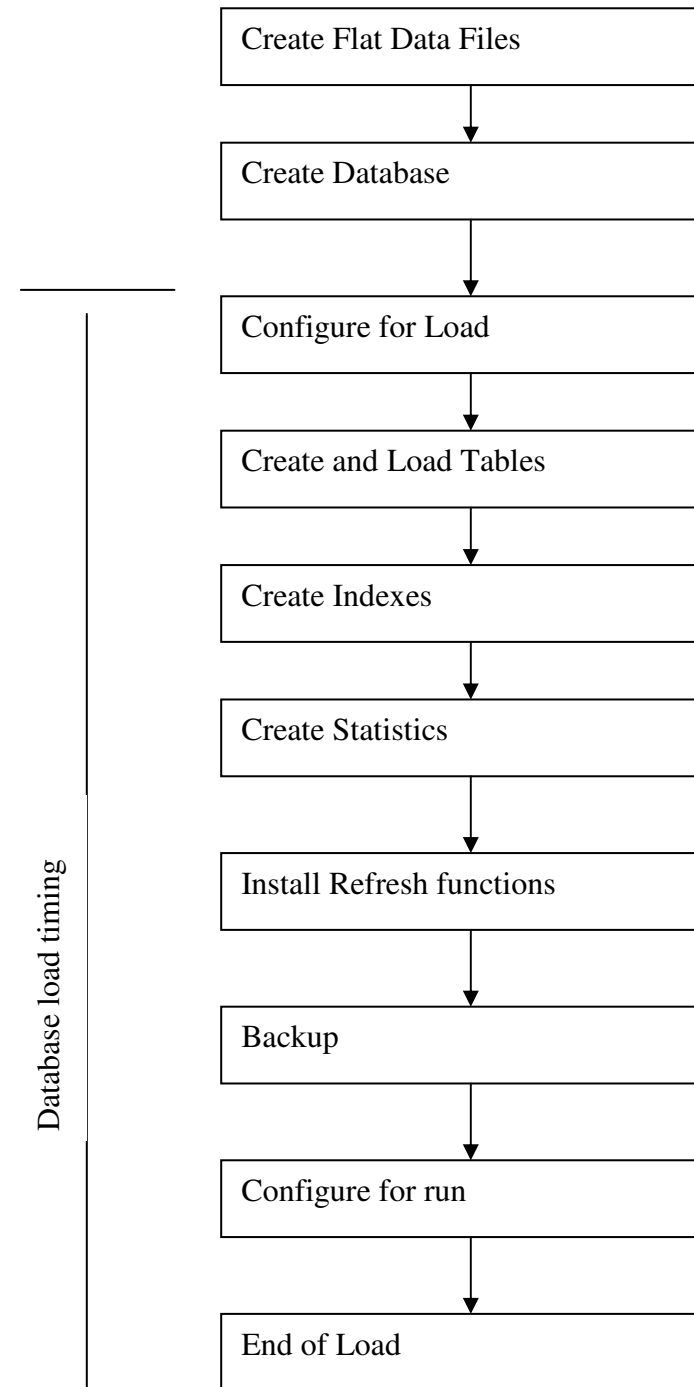
Disk Type	Number of Disks	Total Disk Space	Data Storage Ratio
72 GB	102	7344 GB	73.44

5.8 Database Load Mechanism Details and Illustration

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

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

Figure 5.8: Block Diagram of Database Load Process



6.0 Clause 5: Performance Metrics and Execution Rules Related Items

6.1 Steps in the Power Test

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

The following steps were used to implement the power test:

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

6.2 Timing Intervals for Each Query and Refresh Function

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

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

6.3 Number of Streams for The Throughput Test

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

Five streams were used for the Throughput Test.

6.4 Start and End Date/Times for Each Query Stream

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

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

6.5 Total Elapsed Time for the Measurement Interval

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

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

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

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

Stream ID	RF	Start Date	Start time	Stop Date	Stop Time
Stream00	RF1	9/29/2009	8:29:56	9/29/2009	8:30:15
Stream00	RF2	9/29/2009	8:34:01	9/29/2009	8:34:09
Stream01	RF1	9/29/2009	8:49:52	9/29/2009	8:50:05
Stream01	RF2	9/29/2009	8:50:05	9/29/2009	8:50:13
Stream02	RF1	9/29/2009	8:50:13	9/29/2009	8:50:24
Stream02	RF2	9/29/2009	8:50:24	9/29/2009	8:50:33
Stream03	RF1	9/29/2009	8:50:33	9/29/2009	8:50:45
Stream03	RF2	9/29/2009	8:50:45	9/29/2009	8:50:53
Stream04	RF1	9/29/2009	8:50:53	9/29/2009	8:51:04
Stream04	RF2	9/29/2009	8:51:04	9/29/2009	8:51:12
Stream05	RF1	9/29/2009	8:51:12	9/29/2009	8:51:23
Stream05	RF2	9/29/2009	8:51:23	9/29/2009	8:51:31

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

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

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

6.8 Performance Metrics

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

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

6.9 The Performance Metric and Numerical Quantities from Both Runs

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

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

Run	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB
Run 1	67712.9	38019.1	50738.4
Run 2	67174.5	38543.8	50883.8

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.

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

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

7.3 Profile-Directed Optimization

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

Profile-directed optimization was not used.

8.0 Clause 7: Pricing Related Items

8.1 Hardware and Software Used

A detailed list of hardware and software used in the priced system must be reported. Each item must have vendor part number, description, and release/revision level, and either general availability status or committed delivery date. If package-pricing is used, contents of the package must be disclosed. Pricing source(s) and effective date(s) of price(s) must also be reported.

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

8.2 Total 3 Year Price

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

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

8.3 Availability Date

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

The HP ProLiant DL380 G6 and all other hardware is generally available at the time of publication. The system software, Microsoft Windows Server 2008 Enterprise x64 Edition SP2 and the database software, Microsoft SQL Server 2008 Standard x64 Edition SP1 are generally available at the time of publication.

8.4 Orderability Date

For each of the components that are not orderable on the report date of the FDR, the following information must be included in the FDR:

- Name and part number of the item that is not orderable*
- The date when the component can be ordered (on or before the Availability Date)*
- The method to be used to order the component (at or below the quoted price) when that date arrives*
- The method for verifying the price*

All components are orderable on the publication date with exceptions specified in Appendix G. Price Quotations & Verification

8.5 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.
PO Box 984
Klamath, CA 95548
Telephone: (707) 482-0523
Fax: (707) 482-0575

For a copy of this disclosure, go to www.tpc.org.



PERFORMANCE METRICS INC.
TPC Certified Auditors

October 6, 2009

Mr. Daniel Pol
Hewlett-Packard Company
11445 Compaq Center Dr.
Houston, TX 77070

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

Platform: ProLiant DL380 G6
Database Manager: Microsoft SQL Server 2008 Enterprise x64 Edition
Operating System: Windows Server 2008 Enterprise x64 Edition

CPU's	Memory	Total Disks	Qpph@ 100GB	QthH @ 100GB	QphH@100GB
2 quad core Intel @ 2.93 Ghz	144 GB	102 @ 72 GB	67,712.9	38,019.1	50,738.4

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 100GB using DBGEN. The version of DBGEN was 2.8.0.
- The data generated by DBGEN was successfully compared to reference data.
- 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 a standard interactive interface. The version of QGEN was 2.8.0.
- The validation of the query text against the qualification database produced compliant results.

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Page 1
email: LornaL@PerfMetrics.com

PERFORMANCE METRICS INC.
TPC Certified Auditors

- The refresh functions were properly implemented and executed the correct number of inserts and deletes.
- The load timing was properly measured and reported.
- The execution times were correctly measured and reported.
- The performance metrics were correctly computed and reported.
- The repeatability of the measurement was verified.
- The ACID properties were successfully demonstrated and verified.
- 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 2008 Version

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

```
Microsoft SQL Server 2008 (SP1) - 10.0.2714.0 (X64)
May 14 2009 16:08:52
Copyright (c) 1988-2008 Microsoft Corporation
Enterprise Evaluation Edition (64-bit) on Windows NT 6.0
<X64> (Build 6002: Service Pack 2)
```

A.2 SQL Server 2008 Installation

The installation followed the default options.. Mixed mode authentication was used.

A.3 SQL Server 2008 Startup Parameters

```
SQLSERVER -c -x -E -T834 -T845 -T2301 -T2442
```

A.4 Microsoft SQL Server 2008 Configuration Parameters

name	minimum	maximum	config_value	run_value
access check cache bucket count	0	65536	0	0
access check cache quota	0	2147483647	0	0
Ad Hoc Distributed Queries	0	1	0	0
affinity I/O mask	-2147483648	2147483647	0	0
affinity mask	-2147483648	2147483647	65535	65535
affinity64 I/O mask	-2147483648	2147483647	0	0
affinity64 mask	-2147483648	2147483647	0	0
Agent XPs	0	1	1	1
allow updates	0	1	1	1
awe enabled	0	1	1	1
backup compression default	0	1	0	0
blocked process threshold (s)	0	86400	0	0
c2 audit mode	0	1	0	0
clr enabled	0	1	0	0
common criteria compliance enabled	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
Database Mail XPs	0	1	0	0
default full-text language	0	2147483647	1033	1033
default language	0	9999	0	0
default trace enabled	0	1	0	0
disallow results from triggers	0	1	0	0
EKM provider enabled	0	1	0	0
filestream access level	0	2	0	0
fill factor (%)	0	100	0	0

ft crawl bandwidth (max)	0	32767	100	100
ft crawl bandwidth (min)	0	32767	0	0
ft notify bandwidth (max)	0	32767	100	100
ft notify bandwidth (min)	0	32767	0	0
index create memory (KB)	704	2147483647	0	0
in-doubt xact resolution	0	2	0	0
lightweight pooling	0	1	1	1
locks	5000	2147483647	0	0
max degree of parallelism	0	64	0	0
max full-text crawl range	0	256	4	4
max server memory (MB)	16	2147483647	138000	138000
max text repl size (B)	-1	2147483647	65536	65536
max worker threads	128	32767	3200	3200
media retention	0	365	0	0
min memory per query (KB)	512	2147483647	512	512
min server memory (MB)	0	2147483647	64000	64000
nested triggers	0	1	1	1
network packet size (B)	512	32767	32767	32767
Ole Automation Procedures	0	1	0	0
open objects	0	2147483647	0	0
optimize for ad hoc workloads	0	1	0	0
PH timeout (s)	1	3600	60	60
precompute rank	0	1	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 admin connections	0	1	0	0
remote login timeout (s)	0	2147483647	0	0
remote proc trans	0	1	0	0
remote query timeout (s)	0	2147483647	0	0
Replication XPs	0	1	0	0
scan for startup procs	0	1	0	0
server trigger recursion	0	1	1	1
set working set size	0	1	0	0
show advanced options	0	1	1	1
SMO and DMO XPs	0	1	1	1
SQL Mail XPs	0	1	0	0
transform noise words	0	1	0	0
two digit year cutoff	1753	9999	2049	2049
user connections	0	32767	0	0
user options	0	32767	0	0
xp_cmdshell	0	1	0	0

A.5 Microsoft SQL Server 2008 Node Configuration

No node configuration changes were made.

A.6 Windows 2008 Configuration

The default installation of Windows 2008 Enterprise Edition was used with the following changes:
 Systems Properties -> Advanced -> Settings -> Performance Options -> Visual Effects -> Adjust for best performance
 Administrative Tools -> Local Security Policy -> Local Policies -> User Rights Assignment -> Lock pages in memory -> Add User or Group -> 'Administrator'
 Control Panel -> Power Options -> High performance
 A TCP/IP address was assigned to the system.
 Control Panel -> Windows Firewall -> Turn Windows Firewall on or off -> Off

A.7 Smart Array driver settings

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCIS
Ss2]
"Type"=dword:00000001
"Start"=dword:00000000
"ErrorControl"=dword:00000001
"Tag"=dword:00000103
"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,00,48,00,70,00,43,00,49,00,53,00,53
,\
00,73,00,32,00,2e,00,73,00,79,00,73,00,00,00
"Group"="SCSI Miniport"
```

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCIS
Ss2\Parameters]
"BusType"=dword:00000008
```

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCIS
Ss2\Parameters\Device]
"DriverParameter"="CSMI=None;"
```

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCIS
Ss2\Parameters\PnpInterface]
"5"=dword:00000001
```

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCIS
Ss2\Enum]
"0"="PCI\VEN_103C&DEV_323A&SUBSYS_3245103C&REV_01\4&29
7a62c9&0&0008"
"Count"=dword:00000002
"NextInstance"=dword:00000002
"1"="PCI\VEN_103C&DEV_323A&SUBSYS_3247103C&REV_01\4&50
34fb8&0&0030"
```

A.8 System Hardware Information

System Information report written at: 09/30/09 10:29:38

System Name: FUSE

[System Summary]

Item	Value
OS Name	Microsoft® Windows Server® 2008 Enterprise
Version	6.0.6002 Service Pack 2 Build 6002
Other OS Description	Not Available
OS Manufacturer	Microsoft Corporation
System Name	FUSE
System Manufacturer	HP

System Model	ProLiant DL380 G6
System Type	x64-based PC
Processor	Intel(R) Xeon(R) CPU X5570 @ 2.93GHz, 2933 Mhz, 4 Core(s), 8 Logical Processor(s)
Processor	Intel(R) Xeon(R) CPU X5570 @ 2.93GHz, 2933 Mhz, 4 Core(s), 8 Logical Processor(s)
BIOS Version/Date	HP P62, 7/24/2009
SMBIOS Version	2.6
Windows Directory	C:\Windows
System Directory	C:\Windows\system32
Boot Device	\Device\HarddiskVolume1
Locale	United States
Hardware Abstraction Layer	Version = "6.0.6002.18005"
User Name	FUSE\Administrator
Time Zone	Central Daylight Time
Installed Physical Memory (RAM)	144 GB
Total Physical Memory	144 GB
Available Physical Memory	1.28 GB
Total Virtual Memory	140 GB
Available Virtual Memory	866 MB
Page File Space	0 bytes

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device
I/O Port 0x00000000-0x000003AF	PCI bus
I/O Port 0x00000000-0x000003AF	Direct memory access controller

IRQ 20	Standard Universal PCI to USB Host Controller
IRQ 20	Standard Enhanced PCI to USB Host Controller

I/O Port 0x000003C0-0x000003DF	PCI bus
I/O Port 0x000003C0-0x000003DF	ATI ES1000

I/O Port 0x00000070-0x00000077	Motherboard resources
--------------------------------	-----------------------

I/O Port 0x00000070-0x00000077	System CMOS/real time clock
--------------------------------	-----------------------------

Memory Address 0xE8000000-0xEFFFFFFF	Intel(R) 82801 PCI Bridge - 244E
Memory Address 0xE8000000-0xEFFFFFFF	ATI ES1000

IRQ 22	Standard Universal PCI to USB Host Controller
IRQ 22	HP iLO Management Channel Interface Driver
IRQ 22	Standard Universal PCI to USB Host Controller

IRQ 23	Standard Universal PCI to USB Host Controller
IRQ 23	Standard Universal PCI to USB Host Controller
IRQ 23	ATI ES1000

Memory Address 0xF6000000-0xF7FFFFFF	PCI standard PCI-to-PCI bridge
--------------------------------------	--------------------------------

Memory Address 0xF6000000-0xF7FFFFFF	HP NC382i DP
Virtual Bus Device	

Memory Address 0xFED00000-0xFED03FFF	PCI bus
Memory Address 0xFED00000-0xFED03FFF	PCI bus
Memory Address 0xFED00000-0xFED03FFF	High precision event timer

IRQ 16	PCI standard PCI-to-PCI bridge
IRQ 16	HP NC382i DP Virtual Bus Device
IRQ 16	PCI standard PCI-to-PCI bridge

Memory Address 0xA0000-0xBFFFF	PCI bus	0x00000020-0x0000003F	Motherboard resources	OK
Memory Address 0xA0000-0xBFFFF	ATI ES1000	0x000000A0-0x000000BF	Motherboard resources	OK
I/O Port 0x000003B0-0x000003BB	PCI bus	0x00000090-0x0000009F	Motherboard resources	OK
I/O Port 0x000003B0-0x000003BB	ATI ES1000	0x00000050-0x00000053	Motherboard resources	OK
I/O Port 0x00001000-0x00008FFF	PCI bus	0x00000700-0x0000071F	Motherboard resources	OK
I/O Port 0x00001000-0x00008FFF	Standard Universal PCI to USB Host Controller	0x00000880-0x000008FF	Motherboard resources	OK
[DMA]		0x00000900-0x0000097F	Motherboard resources	OK
Resource Device Status		0x00000010-0x0000001F	Motherboard resources	OK
Channel 7 Direct memory access controller	OK	0x00000C80-0x00000C83	Motherboard resources	OK
[Forced Hardware]		0x00000CD4-0x00000CD7	Motherboard resources	OK
Device PNP Device ID		0x00000F50-0x00000F58	Motherboard resources	OK
[I/O]		0x000000F0-0x000000F0	Motherboard resources	OK
Resource Device Status		0x00000CA0-0x00000CA1	Motherboard resources	OK
0x00001000-0x00008FFF	PCI bus OK	0x00000CA4-0x00000CA5	Motherboard resources	OK
0x00001000-0x00008FFF	Standard Universal PCI to USB Host Controller OK	0x000002F8-0x000002FF	Motherboard resources	OK
0x00000000-0x000003AF	PCI bus OK	0x00000CA2-0x00000CA3	Microsoft Generic IPMI Compliant Device	
0x00000000-0x000003AF	Direct memory access controller OK	OK		
0x000003E0-0x00000CF7	PCI bus OK	0x00000040-0x00000043	System timer	OK
0x00000D00-0x00000FFF	PCI bus OK	0x00000080-0x0000008F	Direct memory access controller	OK
0x000003B0-0x000003BB	PCI bus OK	0x000000C0-0x000000DF	Direct memory access controller	OK
0x000003B0-0x000003BB	ATI ES1000 OK	0x00000061-0x00000061	System speaker	OK
0x000003C0-0x000003DF	PCI bus OK	0x00000060-0x00000060	Standard PS/2 Keyboard	OK
0x000003C0-0x000003DF	ATI ES1000 OK	0x00000064-0x00000064	Standard PS/2 Keyboard	OK
0x00004000-0x00004FFF	PCI standard PCI-to-PCI bridge OK	0x0000002E-0x0000002F	Extended IO Bus	OK
0x00007000-0x00007FFF	PCI standard PCI-to-PCI bridge OK	0x00000620-0x0000065F	Extended IO Bus	OK
0x00008000-0x00008FFF	PCI standard PCI-to-PCI bridge OK	0x00000680-0x0000069F	Extended IO Bus	OK
0x00006000-0x00006FFF	PCI standard PCI-to-PCI bridge OK	0x00000600-0x0000061F	Extended IO Bus	OK
0x00005000-0x00005FFF	PCI standard PCI-to-PCI bridge OK	0x00000660-0x0000067F	Extended IO Bus	OK
0x00001020-0x0000103F	Standard Universal PCI to USB Host Controller OK	0x00000300-0x0000031F	Extended IO Bus	OK
0x00001040-0x0000105F	Standard Universal PCI to USB Host Controller OK	0x000003F8-0x000003FF	Communications Port (COM1)	OK
0x00001060-0x0000107F	Standard Universal PCI to USB Host Controller OK			
0x00002000-0x00003FFF	Intel(R) 82801 PCI Bridge - 244E OK	[IRQs]		
0x00003000-0x000030FF	ATI ES1000 OK	Resource Device Status		
0x00002800-0x000028FF	HP ProLiant iLO 2 Legacy Support Function OK	IRQ 81	Microsoft ACPI-Compliant System	OK
0x00003400-0x000034FF	HP iLO Management Channel Interface Driver OK	IRQ 82	Microsoft ACPI-Compliant System	OK
0x00003800-0x0000381F	Standard Universal PCI to USB Host Controller OK	IRQ 83	Microsoft ACPI-Compliant System	OK
0x00000070-0x00000077	Motherboard resources OK	IRQ 84	Microsoft ACPI-Compliant System	OK
0x00000070-0x00000077	System CMOS/real time clock OK	IRQ 85	Microsoft ACPI-Compliant System	OK
0x00000408-0x0000040F	Motherboard resources OK	IRQ 86	Microsoft ACPI-Compliant System	OK
0x000004D0-0x000004D1	Motherboard resources OK	IRQ 87	Microsoft ACPI-Compliant System	OK
		IRQ 88	Microsoft ACPI-Compliant System	OK
		IRQ 89	Microsoft ACPI-Compliant System	OK
		IRQ 90	Microsoft ACPI-Compliant System	OK
		IRQ 91	Microsoft ACPI-Compliant System	OK
		IRQ 92	Microsoft ACPI-Compliant System	OK
		IRQ 93	Microsoft ACPI-Compliant System	OK
		IRQ 94	Microsoft ACPI-Compliant System	OK
		IRQ 95	Microsoft ACPI-Compliant System	OK
		IRQ 96	Microsoft ACPI-Compliant System	OK

IRQ 4294967247	Smart Array P411 Controller	OK
IRQ 4294967246	Smart Array P411 Controller	OK
IRQ 4294967245	Smart Array P411 Controller	OK
IRQ 4294967285	PCI standard PCI-to-PCI bridge	OK
IRQ 16	PCI standard PCI-to-PCI bridge	OK
IRQ 16	HP NC382i DP Virtual Bus Device	OK
IRQ 16	PCI standard PCI-to-PCI bridge	OK
IRQ 20	Standard Universal PCI to USB Host Controller	OK
IRQ 20	Standard Enhanced PCI to USB Host Controller	OK
IRQ 23	Standard Universal PCI to USB Host Controller	OK
IRQ 23	Standard Universal PCI to USB Host Controller	OK
IRQ 23	ATI ES1000	OK
IRQ 22	Standard Universal PCI to USB Host Controller	OK
IRQ 22	HP iLO Management Channel Interface Driver	OK
IRQ 22	Standard Universal PCI to USB Host Controller	OK
IRQ 10	HP ProLiant iLO 2 Legacy Support Function	OK
IRQ 21	HP ProLiant iLO 2 Management Controller Driver	OK
IRQ 0	System timer	OK
IRQ 1	Standard PS/2 Keyboard	OK
IRQ 12	PS/2 Compatible Mouse	OK
IRQ 4	Communications Port (COM1)	OK

[Memory]

Resource	Device	Status
0xE7000000-0xFBFFFFFF	PCI bus	OK
0xFED00000-0xFED03FFF	PCI bus	OK
0xFED00000-0xFED03FFF	PCI bus	OK
0xFED00000-0xFED03FFF	High precision event timer	OK

0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	ATI ES1000	OK
0xF9B00000-0xF9FFFFFF	PCI standard PCI-to-PCI bridge	OK
0xF9C00000-0xF9FFFFFF	Smart Array P410i Controller	OK
0xF9BF0000-0xF9BF0FFF	Smart Array P410i Controller	OK
0xFB300000-0xFB7FFFF	PCI standard PCI-to-PCI bridge	OK
0xFB400000-0xFB7FFFF	Smart Array P411 Controller	OK
0xFB3F0000-0xFB3F0FFF	Smart Array P411 Controller	OK
0xFBB00000-0xFBFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xFBC00000-0xFBFFFFFF	Smart Array P411 Controller	OK
0xFBBF0000-0xFBBF0FFF	Smart Array P411 Controller	OK
0xFAB00000-0xFAFFFFFF	PCI standard PCI-to-PCI bridge	OK
0xFAC00000-0xFAFFFFFF	Smart Array P411 Controller	OK
0xFABF0000-0xFABF0FFF	Smart Array P411 Controller	OK
0xFA300000-0xFA7FFFF	PCI standard PCI-to-PCI bridge	OK
0xFA400000-0xFA7FFFF	Smart Array P411 Controller	OK

0xFA3F0000-0xFA3F0FFF	Smart Array P411 Controller	OK
0xF6000000-0xF7FFFFFF	PCI standard PCI-to-PCI bridge	OK
0xF6000000-0xF7FFFFFF	HP NC382i DP Virtual Bus Device	OK
0xF5DF0000-0xF5DF03FF	Standard Enhanced PCI to USB Host Controller	OK
0xF5E00000-0xF5FFFFFF	Intel(R) 82801 PCI Bridge - 244E	OK
0xE8000000-0xEFFFFFFF	Intel(R) 82801 PCI Bridge - 244E	OK
0xE8000000-0xEFFFFFFF	ATI ES1000	OK
0xF5FF0000-0xF5FFFFFF	ATI ES1000	OK
0xF5FE0000-0xF5FE01FF	HP ProLiant iLO 2 Legacy Support Function	OK
0xF5FD0000-0xF5FD07FF	HP iLO Management Channel Interface Driver	OK
0xF5FC0000-0xF5FC3FFF	HP iLO Management Channel Interface Driver	OK
0xF5F00000-0xF5F7FFF	HP iLO Management Channel Interface Driver	OK
0xF5EF0000-0xF5EF00FF	HP ProLiant iLO 2 Management Controller Driver	OK
0xE0000000-0xE3FFFFFF	Motherboard resources	OK
0xFE000000-0xFEFFFFFF	Motherboard resources	OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\msg711.acm	Microsoft Corporation			
	OK	C:\Windows\system32\MSG711.ACM		
	6.0.6000.16386	14.00 KB (14,336 bytes)		
		1/19/2008 12:43 AM		
c:\windows\system32\msadp32.acm	Microsoft Corporation			
	OK	C:\Windows\system32\MSADP32.ACM		
	6.0.6000.16386	22.00 KB (22,528 bytes)		
		1/19/2008 12:43 AM		
c:\windows\system32\msgsm32.acm	Microsoft Corporation			
	OK	C:\Windows\system32\MSGSM32.ACM		
	6.0.6000.16386	28.00 KB (28,672 bytes)		
		1/19/2008 12:43 AM		
c:\windows\system32\imaadp32.acm	Microsoft Corporation			
	OK	C:\Windows\system32\IMAADP32.ACM		
	6.0.6000.16386	21.00 KB (21,504 bytes)		
		1/19/2008 12:43 AM		

[Video Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\iyuv_32.dll	Microsoft Corporation			
	OK	C:\Windows\system32\IYUV_32.DLL		
	6.0.6000.16386	52.50 KB (53,760 bytes)		
		1/19/2008 12:34 AM		
c:\windows\system32\msyuv.dll	Microsoft Corporation			
	OK	C:\Windows\system32\MYSYUV.DLL		
	6.0.6000.16386	24.50 KB (25,088 bytes)		
		1/19/2008 12:34 AM		

c:\windows\system32\msvidc32.dll Microsoft Corporation
 OK C:\Windows\system32\MSVIDC32.DLL
 6.0.6001.18000 37.50 KB (38,400 bytes)
 1/19/2008 12:43 AM

c:\windows\system32\msrle32.dll Microsoft Corporation
 OK C:\Windows\system32\MSRLE32.DLL
 6.0.6000.16386 15.50 KB (15,872 bytes)
 1/19/2008 12:43 AM

c:\windows\system32\tsbyuv.dll Microsoft Corporation
 OK C:\Windows\system32\TSBYUV.DLL
 6.0.6002.18005 14.00 KB (14,336 bytes)
 4/11/2009 11:11 AM

[CD-ROM]

Item Value

[Sound Device]

Item Value

[Display]

Item Value
 Name ATI ES1000
 PNP Device ID
 PCI\VEN_1002&DEV_515E&SUBSYS_31FB103C&REV_02\4
 &15EB80B3&0&18F0
 Adapter Type Not Available, ATI Technologies Inc. compatible

Adapter Description ATI ES1000
 Adapter RAM Not Available
 Installed Drivers Not Available
 Driver Version 6.14.10.6745
 INF File oem5.inf (ati2mtag_RN50 section)
 Color Planes Not Available
 Color Table Entries Not Available
 Resolution Not Available
 Bits/Pixel Not Available
 Memory Address 0xE8000000-0xEFFFFFFF
 I/O Port 0x00003000-0x000030FF
 Memory Address 0xF5FF0000-0xF5FFFFFF
 IRQ Channel IRQ 23
 I/O Port 0x000003B0-0x000003BB
 I/O Port 0x000003C0-0x000003DF
 Memory Address 0xA0000-0xBF000
 Driver c:\windows\system32\drivers\ati2mtag.sys (6.14.10.6745, 2.11
 MB (2,210,816 bytes), 6/26/2009 7:10 PM)

[Infrared]

Item Value

[Input]

[Keyboard]

Item Value
 Description USB Human Interface Device
 Name Enhanced (101- or 102-key)
 Layout 00000409
 PNP Device ID
 USB\VID_03F0&PID_1027&MI_00\7&596F79B&0&0000

Number of Function Keys 12
 Driver c:\windows\system32\drivers\hidusb.sys (6.0.6002.18005, 15.50
 KB (15,872 bytes), 4/11/2009 11:10 AM)

Description Standard PS/2 Keyboard
 Name Enhanced (101- or 102-key)
 Layout 00000409
 PNP Device ID ACPI\PNP0303\4&99BC81B&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 (6.0.6001.18000, 62.50
 KB (64,000 bytes), 1/19/2008 12:28 AM)

[Pointing Device]

Item Value
 Hardware Type USB Human Interface Device
 Number of Buttons 0
 Status OK
 PNP Device ID
 USB\VID_03F0&PID_1027&MI_01\7&596F79B&0&0001

Power Management Supported No
 Double Click Threshold Not Available
 Handedness Not Available
 Driver c:\windows\system32\drivers\hidusb.sys (6.0.6002.18005, 15.50
 KB (15,872 bytes), 4/11/2009 11:10 AM)

Hardware Type PS/2 Compatible Mouse
 Number of Buttons 0
 Status OK
 PNP Device ID ACPI\PNP0F13\4&99BC81B&0
 Power Management Supported No
 Double Click Threshold Not Available
 Handedness Not Available
 IRQ Channel IRQ 12
 Driver c:\windows\system32\drivers\i8042prt.sys (6.0.6001.18000, 62.50
 KB (64,000 bytes), 1/19/2008 12:28 AM)

[Modem]

Item Value

[Network]

[Adapter]

Item Value
 Name [00000000] WAN Miniport (SSTP)
 Adapter Type Not Available
 Product Type WAN Miniport (SSTP)
 Installed Yes
 PNP Device ID ROOTMS_SSTP\MINI\PORT0000
 Last Reset 9/29/2009 9:01 AM
 Index 0
 Service Name RasSstp
 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\rassstp.sys (6.0.6002.18005, 76.50
 KB (78,336 bytes), 4/11/2009 11:12 AM)

Name [00000001] WAN Miniport (L2TP)
 Adapter Type Not Available
 Product Type WAN Miniport (L2TP)

Installed Yes
 PNP Device ID ROOTMS_L2TPMINIPOINT\0000
 Last Reset 9/29/2009 9:01 AM
 Index 1
 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 (6.0.6002.18005, 122.00 KB (124,928 bytes), 4/11/2009 11:12 AM)

Name [00000002] WAN Miniport (PPTP)
 Adapter Type Wide Area Network (WAN)
 Product Type WAN Miniport (PPTP)
 Installed Yes
 PNP Device ID ROOTMS_PPTPMINIPOINT\0000
 Last Reset 9/29/2009 9:01 AM
 Index 2
 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 (6.0.6002.18005, 96.50 KB (98,816 bytes), 4/11/2009 11:12 AM)

Name [00000003] WAN Miniport (PPPOE)
 Adapter Type Wide Area Network (WAN)
 Product Type WAN Miniport (PPPOE)
 Installed Yes
 PNP Device ID ROOTMS_PPPOEMINIPOINT\0000
 Last Reset 9/29/2009 9:01 AM
 Index 3
 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 (6.0.6002.18005, 49.00 KB (50,176 bytes), 4/11/2009 11:11 AM)

Name [00000004] WAN Miniport (IPv6)
 Adapter Type Not Available
 Product Type WAN Miniport (IPv6)
 Installed Yes
 PNP Device ID ROOTMS_NDISWANIPV6\0000
 Last Reset 9/29/2009 9:01 AM
 Index 4
 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 (6.0.6002.18005, 165.50 KB (169,472 bytes), 4/11/2009 11:11 AM)

Name [00000005] WAN Miniport (Network Monitor)
 Adapter Type Not Available
 Product Type WAN Miniport (Network Monitor)
 Installed Yes
 PNP Device ID ROOTMS_NDISWANBH\0000
 Last Reset 9/29/2009 9:01 AM
 Index 5
 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 (6.0.6002.18005, 165.50 KB (169,472 bytes), 4/11/2009 11:11 AM)

Name [00000006] Broadcom NetXtreme Gigabit Ethernet
 Adapter Type Not Available
 Product Type Broadcom NetXtreme Gigabit Ethernet
 Installed Yes
 PNP Device ID Not Available
 Last Reset 9/29/2009 9:01 AM
 Index 6
 Service Name b57nd60a
 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 [00000007] HP NC382i DP Multifunction Gigabit Server Adapter
 Adapter Type Ethernet 802.3
 Product Type HP NC382i DP Multifunction Gigabit Server Adapter
 Installed Yes
 PNP Device ID B06BDRV\L2ND&PCI_163914E4&SUBSYS_7055103C&REV_20\5&6FB4662&0&20050200
 Last Reset 9/29/2009 9:01 AM
 Index 7
 Service Name l2nd
 IP Address 130.168.250.167, fe80::fcee:9957:a58c:8d73
 IP Subnet 255.255.0.0, 64
 Default IP Gateway Not Available
 DHCP Enabled Yes
 DHCP Server 130.168.253.2
 DHCP Lease Expires 10/1/2009 9:01 AM
 DHCP Lease Obtained 9/30/2009 9:01 AM
 MAC Address 00:23:7D:E1:5A:0A
 Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.5.0, 78.37 KB (80,248 bytes), 7/14/2009 3:30 PM)

Name [00000008] WAN Miniport (IP)
 Adapter Type Not Available
 Product Type WAN Miniport (IP)
 Installed Yes
 PNP Device ID ROOTMS_NDISWANIP\0000
 Last Reset 9/29/2009 9:01 AM
 Index 8
 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 (6.0.6002.18005, 165.50 KB (169,472 bytes), 4/11/2009 11:11 AM)

Name [00000009] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Not Available
Product Type Broadcom NetXtreme Gigabit Ethernet
Installed Yes
PNP Device ID Not Available
Last Reset 9/29/2009 9:01 AM
Index 9
Service Name b57nd60a
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 [00000010] Microsoft ISATAP Adapter
Adapter Type Tunnel
Product Type Microsoft ISATAP Adapter
Installed Yes
PNP Device ID ROOT*ISATAP\0000
Last Reset 9/29/2009 9:01 AM
Index 10
Service Name tunnel
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\tunnel.sys (6.0.6001.18000, 27.50 KB (28,160 bytes), 1/19/2008 12:36 AM)

Name [00000011] RAS Async Adapter
Adapter Type Wide Area Network (WAN)
Product Type RAS Async Adapter
Installed Yes
PNP Device ID SW\{EEAB7790-C514-11D1-B42B-00805FC1270E}\ASYNCMAC
Last Reset 9/29/2009 9:01 AM
Index 11
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 20:41:53:59:4E:FF
Driver c:\windows\system32\drivers\asynccmac.sys (6.0.6001.18000, 21.50 KB (22,016 bytes), 1/19/2008 12:37 AM)

Name [00000012] Microsoft 6to4 Adapter
Adapter Type Tunnel
Product Type Microsoft 6to4 Adapter

Installed Yes
PNP Device ID ROOT*6TO4MP\0000
Last Reset 9/29/2009 9:01 AM
Index 12
Service Name tunnel
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\tunnel.sys (6.0.6001.18000, 27.50 KB (28,160 bytes), 1/19/2008 12:36 AM)

Name [00000013] HP NC382i DP Multifunction Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC382i DP Multifunction Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/29/2009 9:01 AM
Index 13
Service Name l2nd
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 [00000015] HP NC382i DP Multifunction Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC382i DP Multifunction Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/29/2009 9:01 AM
Index 15
Service Name l2nd
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 [00000016] HP NC382i DP Multifunction Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC382i DP Multifunction Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/29/2009 9:01 AM
Index 16
Service Name l2nd
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

[Protocol]

Item	Value
Name	MSAFD Tcpip [TCP/IP]
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	16 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	16 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	No
Supports Expedited Data	Yes
Supports Graceful Closing	Yes
Supports Guaranteed Bandwidth	No
Supports Multicasting	No

Name	MSAFD Tcpip [UDP/IP]
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	16 bytes
Maximum Message Size	63.99 KB (65,527 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	MSAFD Tcpip [TCP/IPv6]
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	28 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	28 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	No
Supports Expedited Data	Yes
Supports Graceful Closing	Yes
Supports Guaranteed Bandwidth	No
Supports Multicasting	No

Name	MSAFD Tcpip [UDP/IPv6]
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	28 bytes
Maximum Message Size	63.99 KB (65,527 bytes)
Message Oriented	Yes
Minimum Address Size	28 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 TCPv6 Service Provider
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	28 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	28 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	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	RSVP UDPv6 Service Provider
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	28 bytes
Maximum Message Size	63.99 KB (65,527 bytes)
Message Oriented	Yes
Minimum Address Size	28 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 UDP Service Provider
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	16 bytes
Maximum Message Size	63.99 KB (65,527 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

[WinSock]

Item	Value
File	c:\windows\syswow64\wssock32.dll
Size	15.00 KB (15,360 bytes)
Version	6.0.6001.18000

File	c:\windows\system32\wssock32.dll
Size	18.00 KB (18,432 bytes)
Version	6.0.6001.18000

[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 (6.0.6001.18000, 92.00 KB (94,208 bytes), 1/19/2008 12:28 AM)

[Parallel]

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

[Storage]

[Drives]

Item	Value
Drive	C:
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	68.33 GB (73,369,907,200 bytes)
Free Space	23.61 GB (25,351,852,032 bytes)
Volume Name	
Volume Serial Number	940AE384

Drive	Z:
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	599.98 GB (644,224,057,344 bytes)
Free Space	340.51 GB (365,618,921,472 bytes)
Volume Name	backup
Volume Serial Number	A61E142A

[Disks]

Item	Value
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	HP LOGICAL VOLUME SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	0
SCSI Port	1
SCSI Target ID	4
Sectors/Track	32
Size	75.00 GB (80,529,408,000 bytes)
Total Cylinders	19,275
Total Sectors	157,284,000
Total Tracks	4,915,125
Tracks/Cylinder	255
Partition	Disk #1, Partition #0
Partition Size	75.00 GB (80,526,442,496 bytes)
Partition Starting Offset	1,048,576 bytes

Description	Disk drive
Manufacturer	(Standard disk drives)
Model	HP LOGICAL VOLUME SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	0
SCSI Port	1
SCSI Target ID	5
Sectors/Track	32
Size	150.00 GB (161,058,816,000 bytes)
Total Cylinders	38,550

Total Sectors 314,568,000
 Total Tracks 9,830,250
 Tracks/Cylinder 255
 Partition Disk #2, Partition #0
 Partition Size 150.00 GB (161,057,751,040 bytes)
 Partition Starting Offset 16,384 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model HP LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 0
 SCSI Target ID 4
 Sectors/Track 32
 Size 68.33 GB (73,372,631,040 bytes)
 Total Cylinders 17,562
 Total Sectors 143,305,920
 Total Tracks 4,478,310
 Tracks/Cylinder 255
 Partition Disk #0, Partition #0
 Partition Size 68.33 GB (73,369,911,296 bytes)
 Partition Starting Offset 1,048,576 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model HP LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 4
 Sectors/Track 32
 Size 75.00 GB (80,529,408,000 bytes)
 Total Cylinders 19,275
 Total Sectors 157,284,000
 Total Tracks 4,915,125
 Tracks/Cylinder 255
 Partition Disk #5, Partition #0
 Partition Size 75.00 GB (80,526,442,496 bytes)
 Partition Starting Offset 1,048,576 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model HP LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 3
 SCSI Target ID 5
 Sectors/Track 32
 Size 150.00 GB (161,058,816,000 bytes)
 Total Cylinders 38,550
 Total Sectors 314,568,000
 Total Tracks 9,830,250
 Tracks/Cylinder 255
 Partition Disk #6, Partition #0
 Partition Size 150.00 GB (161,057,735,168 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model HP LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 4
 Sectors/Track 32
 Size 75.00 GB (80,529,408,000 bytes)
 Total Cylinders 19,275
 Total Sectors 157,284,000
 Total Tracks 4,915,125
 Tracks/Cylinder 255
 Partition Disk #7, Partition #0
 Partition Size 75.00 GB (80,526,442,496 bytes)
 Partition Starting Offset 1,048,576 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model HP LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 5
 Sectors/Track 32
 Size 150.00 GB (161,058,816,000 bytes)
 Total Cylinders 38,550
 Total Sectors 314,568,000
 Total Tracks 9,830,250
 Tracks/Cylinder 255
 Partition Disk #8, Partition #0
 Partition Size 150.00 GB (161,057,735,168 bytes)
 Partition Starting Offset 32,256 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model HP LOGICAL VOLUME SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 1
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 4
 Sectors/Track 32
 Size 75.00 GB (80,529,408,000 bytes)
 Total Cylinders 19,275
 Total Sectors 157,284,000
 Total Tracks 4,915,125
 Tracks/Cylinder 255
 Partition Disk #3, Partition #0
 Partition Size 75.00 GB (80,526,442,496 bytes)
 Partition Starting Offset 1,048,576 bytes

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

SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 5
 Sectors/Track 32
 Size 150.00 GB (161,058,127,872 bytes)
 Total Cylinders 153,597
 Total Sectors 314,566,656
 Total Tracks 9,830,208
 Tracks/Cylinder 64
 Partition Disk #4, Partition #0
 Partition Size 150.00 GB (161,057,751,040 bytes)
 Partition Starting Offset 16,384 bytes

[SCSI]

Item Value
 Name Smart Array P410i Controller
 Manufacturer Hewlett-Packard Company
 Status OK
 PNP Device ID
 PCIIVEN_103C&DEV_323A&SUBSYS_3245103C&REV_01V4
 &297A62C9&0&0008
 Memory Address 0xF9C00000-0xF9FFFFFF
 Memory Address 0xF9BF0000-0xF9BF0FFF
 IRQ Channel IRQ 4294967284
 IRQ Channel IRQ 4294967283
 IRQ Channel IRQ 4294967282
 IRQ Channel IRQ 4294967281
 IRQ Channel IRQ 4294967280
 IRQ Channel IRQ 4294967279
 IRQ Channel IRQ 4294967278
 IRQ Channel IRQ 4294967277
 Driver c:\windows\system32\drivers\hpciss2.sys (6.18.0.64, 143.54 KB
 (146,984 bytes), 6/26/2009 7:10 PM)

Name Smart Array P411 Controller
 Manufacturer Hewlett-Packard Company
 Status OK
 PNP Device ID
 PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_01V4
 &2C5B5D67&0&0018
 Memory Address 0xFB400000-0xFB7FFFFFF
 Memory Address 0xFB3F0000-0xFB3F0FFF
 IRQ Channel IRQ 4294967276
 IRQ Channel IRQ 4294967275
 IRQ Channel IRQ 4294967274
 IRQ Channel IRQ 4294967273
 IRQ Channel IRQ 4294967272
 IRQ Channel IRQ 4294967271
 IRQ Channel IRQ 4294967270
 IRQ Channel IRQ 4294967269
 Driver c:\windows\system32\drivers\hpciss2.sys (6.18.0.64, 143.54 KB
 (146,984 bytes), 6/26/2009 7:10 PM)

Name Smart Array P411 Controller
 Manufacturer Hewlett-Packard Company
 Status OK
 PNP Device ID
 PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_01V4
 &37191C5&0&0028
 Memory Address 0xFBC00000-0xFBFFFFFF
 Memory Address 0xFBFBF0000-0xFBFBF0FFF
 IRQ Channel IRQ 4294967268
 IRQ Channel IRQ 4294967267
 IRQ Channel IRQ 4294967266
 IRQ Channel IRQ 4294967265
 IRQ Channel IRQ 4294967264
 IRQ Channel IRQ 4294967263
 IRQ Channel IRQ 4294967262

IRQ Channel IRQ 4294967261
 Driver c:\windows\system32\drivers\hpciss2.sys (6.18.0.64, 143.54 KB
 (146,984 bytes), 6/26/2009 7:10 PM)

Name Smart Array P411 Controller
 Manufacturer Hewlett-Packard Company
 Status OK
 PNP Device ID
 PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_01V4
 &370D11C1&0&0038
 Memory Address 0xFAC00000-0xFAFFFFFF
 Memory Address 0xFABF0000-0xFABF0FFF
 IRQ Channel IRQ 4294967260
 IRQ Channel IRQ 4294967259
 IRQ Channel IRQ 4294967258
 IRQ Channel IRQ 4294967257
 IRQ Channel IRQ 4294967256
 IRQ Channel IRQ 4294967255
 IRQ Channel IRQ 4294967254
 IRQ Channel IRQ 4294967253
 Driver c:\windows\system32\drivers\hpciss2.sys (6.18.0.64, 143.54 KB
 (146,984 bytes), 6/26/2009 7:10 PM)

Name Smart Array P411 Controller
 Manufacturer Hewlett-Packard Company
 Status OK
 PNP Device ID
 PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_01V4
 &14BDCE4F&0&0048
 Memory Address 0xFA400000-0xFA7FFFFFF
 Memory Address 0xFA3F0000-0xFA3F0FFF
 IRQ Channel IRQ 4294967252
 IRQ Channel IRQ 4294967251
 IRQ Channel IRQ 4294967250
 IRQ Channel IRQ 4294967249
 IRQ Channel IRQ 4294967248
 IRQ Channel IRQ 4294967247
 IRQ Channel IRQ 4294967246
 IRQ Channel IRQ 4294967245
 Driver c:\windows\system32\drivers\hpciss2.sys (6.18.0.64, 143.54 KB
 (146,984 bytes), 6/26/2009 7:10 PM)

Name Microsoft iSCSI Initiator
 Manufacturer Microsoft
 Status OK
 PNP Device ID ROOT\MSCSI\PR\0000
 Driver c:\windows\system32\drivers\msiscsi.sys (6.0.6002.18005,
 210.48 KB (215,528 bytes), 4/11/2009 11:11 AM)

[IDE]

Item Value

[Printing]

Name Driver Port Name Server Name
 Microsoft XPS Document Writer Microsoft XPS Document Writer XPSPort:

[Problem Devices]

Device PNP Device ID Error Code

[USB]

Device PNP Device ID
 Standard Universal PCI to USB Host Controller
 PCIIVEN_8086&DEV_3A34&SUBSYS_330D103C&REV_00J3
 &21436425&0&E8

Standard Universal PCI to USB Host Controller
PCIIVEN_8086&DEV_3A35&SUBSYS_330D103C&REV_003
&21436425&0&E9
Standard Universal PCI to USB Host Controller
PCIIVEN_8086&DEV_3A36&SUBSYS_330D103C&REV_003
&21436425&0&EA
Standard Universal PCI to USB Host Controller
PCIIVEN_8086&DEV_3A39&SUBSYS_330D103C&REV_003
&21436425&0&EB
Standard Enhanced PCI to USB Host Controller
PCIIVEN_8086&DEV_3A3A&SUBSYS_330D103C&REV_003
&21436425&0&EF
Standard Universal PCI to USB Host Controller
PCIIVEN_103C&DEV_3300&SUBSYS_3305103C&REV_004
&15EB80B3&0&24F0

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver	Yes	Boot
adp94xx	adp94xx	c:\windows\system32\drivers\adp94xx.sys	Kernel Driver	No	Disabled
adpahci	adpahci	c:\windows\system32\drivers\adpahci.sys	Kernel Driver	No	Disabled
adpu160m	adpu160m	c:\windows\system32\drivers\adpu160m.sys	Kernel Driver	No	Disabled
adpu320	adpu320	c:\windows\system32\drivers\adpu320.sys	Kernel Driver	No	Disabled
afd	Ancillary Function Driver for Winsock	c:\windows\system32\drivers\afd.sys	Kernel Driver	Yes	System
agp440	Intel AGP Bus Filter	c:\windows\system32\drivers\agp440.sys	Kernel Driver	Normal	No
aic78xx	aic78xx	c:\windows\system32\drivers\djsvs.sys	Kernel Driver	No	Disabled
aliide	aliide	c:\windows\system32\drivers\aliide.sys	Kernel Driver	No	Disabled
amdide	amdide	c:\windows\system32\drivers\amdide.sys	Kernel Driver	No	Disabled
amdk8	AMD K8 Processor Driver	c:\windows\system32\drivers\amdk8.sys	Kernel Driver	No	Disabled
arc	arc	c:\windows\system32\drivers\arc.sys	Kernel Driver	No	Disabled
arcsas	arcsas	c:\windows\system32\drivers\arcsas.sys	Kernel Driver	No	Disabled
asynmac	RAS Asynchronous Media Driver	c:\windows\system32\drivers\asynmac.sys	Kernel Driver		

ataapi	IDE Channel	c:\windows\system32\drivers\ataapi.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
ati2mtag	ati2mtag	c:\windows\system32\drivers\ati2mtag.sys	Kernel Driver	Yes	Manual	Running	OK	Ignore	No
b06bdrv	HP Virtual Bus Device	c:\windows\system32\drivers\bxvbda.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
b57nd60a	Broadcom NetXtreme Gigabit Ethernet - NDIS 6.0	c:\windows\system32\drivers\b57nd60a.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
blbdrive	blbdrive	c:\windows\system32\drivers\blbdrive.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
browser	Browser	c:\windows\system32\drivers\browser.sys	File System Driver	Yes	Manual	Running	OK	Normal	Normal
brfiltlo	Brother USB Mass-Storage Lower Filter Driver	c:\windows\system32\drivers\brfiltlo.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
brfiltup	Brother USB Mass-Storage Upper Filter Driver	c:\windows\system32\drivers\brfiltup.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
brserid	Brother MFC Serial Port Interface Driver (WDM)	c:\windows\system32\drivers\brserid.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
brserwdm	Brother WDM Serial driver	c:\windows\system32\drivers\brserwdm.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
brusbmdm	Brother MFC USB Fax Only Modem	c:\windows\system32\drivers\brusbmdm.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
brusbser	Brother MFC USB Serial WDM Driver	c:\windows\system32\drivers\brusbser.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
cdfs	CD/DVD File System Reader	c:\windows\system32\drivers\cdfs.sys	File System Driver	No	Disabled	Stopped	OK	Normal	No
cdrom	CD-ROM Driver	c:\windows\system32\drivers\cdrom.sys	Kernel Driver	Normal	No	No	System	Stopped	OK
circlass	Consumer IR Devices	c:\windows\system32\drivers\circlass.sys	Kernel Driver	Normal	No	No	Disabled	Stopped	OK
clfs	Common Log (CLFS)	c:\windows\system32\clfs.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No
cmdide	cmdide	c:\windows\system32\drivers\cmdide.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
compbatt	Microsoft Composite Battery Driver	c:\windows\system32\drivers\compbatt.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
cpqcidrv	HP iLO Management Channel Interface Driver	c:\windows\system32\drivers\cpqcidrv.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No

iteraid	ITERAID_Service_Install c:\windows\system32\drivers\iteraid.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
kbdclass	Keyboard Class Driver c:\windows\system32\drivers\kbdclass.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
kbdhid	Keyboard HID Driver c:\windows\system32\drivers\kbdhid.sys	Kernel Driver	Ignore	No	Yes	System	Running	OK
ksecdd Driver	KSecDD c:\windows\system32\drivers\ksecdd.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No
ksthunk	Kernel Streaming Thunks c:\windows\system32\drivers\ksthunk.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
l2nd	HP NC370 Multifunction Gigabit Server Adapter c:\windows\system32\drivers\bxnd60a.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
ltdio	Link-Layer Topology Discovery Mapper I/O Driver c:\windows\system32\drivers\ltdio.sys	Kernel Driver	Yes	Auto	Running	OK	Normal	No
lsi_fc Driver	LSI_FC c:\windows\system32\drivers\lsi_fc.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
lsi_sas Driver	LSI_SAS c:\windows\system32\drivers\lsi_sas.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
lsi_scsi Driver	LSI_SCSI c:\windows\system32\drivers\lsi_scsi.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
luafv	UAC File Virtualization c:\windows\system32\drivers\luafv.sys	File System Driver	Yes	Auto	Running	OK	Normal	No
megasas Driver	megasas c:\windows\system32\drivers\megasas.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
megasr Driver	MegaSR c:\windows\system32\drivers\megasr.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
modem Driver	Modem c:\windows\system32\drivers\modem.sys	Kernel Driver	No	Manual	Stopped	OK	Ignore	No
monitor	Microsoft Monitor Class Function Driver Service c:\windows\system32\drivers\monitor.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
mouclass	Mouse Class Driver c:\windows\system32\drivers\mouclass.sys	Kernel Driver	Normal	No	Yes	System	Running	OK
mouhid	Mouse HID Driver c:\windows\system32\drivers\mouhid.sys	Kernel Driver	Ignore	No	Yes	Manual	Running	OK
mountmgr	Mount Point Manager c:\windows\system32\drivers\mountmgr.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No
mpio	Microsoft Multi-Path Bus Driver c:\windows\system32\drivers\mpio.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
mpsdrv	Windows Firewall Authorization Driver c:\windows\system32\drivers\mpsdrv.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
mraid35x Driver	Mraid35x c:\windows\system32\drivers\mraid35x.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
mrx smb	SMB MiniRedirector Wrapper and Engine c:\windows\system32\drivers\mrx smb.sys	File System Driver	Yes	Manual	Running	OK	Normal	No
mrx smb10	SMB 1.x MiniRedirector c:\windows\system32\drivers\mrx smb10.sys	File System Driver	Yes	Manual	Running	OK	Normal	No
mrx smb20	SMB 2.0 MiniRedirector c:\windows\system32\drivers\mrx smb20.sys	File System Driver	Yes	Manual	Running	OK	Normal	No
msahci Driver	msahci c:\windows\system32\drivers\msahci.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
msdsm	Microsoft Multi-Path Device Specific Module c:\windows\system32\drivers\msdsm.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
msfs System Driver	Msfs c:\windows\system32\drivers\msfs.sys	File System Driver	No	Yes	System	Running	OK	Normal
msisadrv	ISA/EISA Class Driver c:\windows\system32\drivers\msisadrv.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No
msrpc Driver	MsRPC c:\windows\system32\drivers\msrpc.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
mssmbios	Microsoft System Management BIOS Driver c:\windows\system32\drivers\mssmbios.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
mup System Driver	Mup c:\windows\system32\drivers\mup.sys	File System Driver	No	Yes	Boot	Running	OK	Normal
ndis	NDIS System Driver c:\windows\system32\drivers\ndis.sys	Kernel Driver	Critical	No	Yes	Boot	Running	OK
ndistapi	Remote Access NDIS TAPI Driver c:\windows\system32\drivers\ndistapi.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
ndisuio	NDIS Usermode I/O Protocol c:\windows\system32\drivers\ndisuio.sys	Kernel Driver	No	Manual	Stopped	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 Driver	NETBT c:\windows\system32\drivers\netbt.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
nfrd960 Driver	nfrd960 c:\windows\system32\drivers\nfrd960.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
npfs System Driver	Npfs c:\windows\system32\drivers\npfs.sys	File System Driver	No	Yes	System	Running	OK	Normal

	Yes	Manual	Running	OK	Normal	No
	Yes					
vga Driver	vga	c:\windows\system32\drivers\vgapnp.sys			Kernel	No
	No	Manual	Stopped	OK	Ignore	No
	No					
vgasave Driver	VgaSave	c:\windows\system32\drivers\vga.sys			Kernel	No
	Yes	System	Running	OK	Ignore	No
	Yes					
viaide Driver	viaide	c:\windows\system32\drivers\viaide.sys			Kernel	No
	No	Disabled	Stopped	OK	Critical	No
	No					
vid	Virtualization Infrastructure Driver					
		c:\windows\system32\drivers\vid.sys			Kernel Driver	No
	No	Disabled	Stopped	OK	Normal	No
	No					
vmbus Driver	VMbus	c:\windows\system32\drivers\vmbus.sys			Kernel	No
	No	Disabled	Stopped	OK	Normal	No
	No					
volmgr	Volume Manager Driver					
		c:\windows\system32\drivers\volmgr.sys			Kernel Driver	No
	Yes	Boot	Running	OK	Critical	No
	Yes					
volmgrx	Dynamic Volume Manager					
		c:\windows\system32\drivers\volmgrx.sys			Kernel Driver	No
	Yes	Boot	Running	OK	Critical	No
	Yes					
volsnap	Storage volumes					
		c:\windows\system32\drivers\volsnap.sys			Kernel Driver	No
	Yes	Boot	Running	OK	Critical	No
	Critical	No	Yes			
vsmraid Driver	vsmraid	c:\windows\system32\drivers\vsmraid.sys			Kernel	No
	No	Disabled	Stopped	OK	Normal	No
	No					
wacompen	Wacom Serial Pen HID Driver					
		c:\windows\system32\drivers\wacompen.sys			Kernel Driver	No
	No	Disabled	Stopped	OK	Normal	No
	No					
wanarp	Remote Access IP ARP Driver					
		c:\windows\system32\drivers\wanarp.sys			Kernel Driver	No
	No	Manual	Stopped	OK	Normal	No
	No					
wanarpv6	Remote Access IPv6 ARP Driver					
		c:\windows\system32\drivers\wanarp.sys			Kernel Driver	No
	Yes	System	Running	OK	Normal	No
	Yes					
wd	Microsoft Watchdog Timer Driver					
		c:\windows\system32\drivers\wd.sys			Kernel Driver	No
	No	Disabled	Stopped	OK	Normal	No
	No					
wdf01000	Kernel Mode Driver Frameworks service					
		c:\windows\system32\drivers\wdf01000.sys			Kernel Driver	No
	Yes	Boot	Running	OK	Normal	No
	Yes					
wmiacpi	Microsoft Windows Management Interface for ACPI					
		c:\windows\system32\drivers\wmiacpi.sys			Kernel Driver	No
	No	Disabled	Stopped	OK	Normal	No
	No					
ws2ifsl	Winsoc IFS driver					
		c:\windows\system32\drivers\ws2ifsl.sys			Kernel Driver	No
	Normal	No	Disabled	Stopped	OK	No
	No	No				

[Signed Drivers]

Device Name	Signed	Device Class	Driver Version
Name	Device ID	Manufacturer	INF Name Driver
Generic volume	Yes	VOLUME 6.0.6002.18005	
	6/21/2006	Microsoft volume.inf	Not Available
		STORAGE\VOLUME1&19F7E59C&0&LDM#{F0753307-A9E3-11DE-97D9-00237DE15A0A}	

Generic volume	Yes	VOLUME 6.0.6002.18005	
	6/21/2006	Microsoft volume.inf	Not Available
		STORAGE\VOLUME1&19F7E59C&0&SIGNATUREC8F1A3E0FFSET10000LENGTH12BFC00000	
Generic volume	Yes	VOLUME 6.0.6002.18005	
	6/21/2006	Microsoft volume.inf	Not Available
		STORAGE\VOLUME1&19F7E59C&0&SIGNATUREC8F1A3E1OFFSET10000LENGTH12BFC00000	
Generic volume	Yes	VOLUME 6.0.6002.18005	
	6/21/2006	Microsoft volume.inf	Not Available
		STORAGE\VOLUME1&19F7E59C&0&SIGNATURE945707CBOFFSET10000LENGTH12BFC00000	
Generic volume	Yes	VOLUME 6.0.6002.18005	
	6/21/2006	Microsoft volume.inf	Not Available
		STORAGE\VOLUME1&19F7E59C&0&SIGNATURE945707C5OFFSET10000LENGTH12BFC00000	
Generic volume	Yes	VOLUME 6.0.6002.18005	
	6/21/2006	Microsoft volume.inf	Not Available
		STORAGE\VOLUME1&19F7E59C&0&SIGNATURE4B1CD82DOFFSET10000LENGTH1115300000	
Volume Manager	Yes	SYSTEM 6.0.6002.18005	
	6/21/2006	(Standard system devices) machine.inf	Not Available
		ROOT\VOLMGR\0000	
UMBus Enumerator	Yes	SYSTEM 6.0.6001.18000	
	6/21/2006	Microsoft umbus.inf	Not Available
		UMB\UMB\1&841921D&0&TSBUS	
UMBus Root Bus Enumerator	Yes	SYSTEM 6.0.6001.18000	
	6/21/2006	Microsoft umbus.inf	Not Available
		ROOT\UMBUS\0000	
Microsoft System Management BIOS Driver	Yes	SYSTEM 6.0.6002.18005	
	6/21/2006	(Standard system devices) machine.inf	Not Available
		ROOT\SYSTEM\0002	
RAS Async Adapter	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netrasa.inf	Not Available
		SW\{EEAB7790-C514-11D1-B42B-00805FC1270E}\ASYNCMAC	
Plug and Play Software Device Enumerator	Yes	SYSTEM 6.0.6002.18005	
	6/21/2006	(Standard system devices) machine.inf	Not Available
		ROOT\SYSTEM\0000	
Terminal Server Mouse Driver	Yes	SYSTEM 6.0.6002.18005	
	6/21/2006	(Standard system devices) machine.inf	Not Available
		ROOT\RDP_MOU\0000	
Terminal Server Keyboard Driver	Yes	SYSTEM 6.0.6002.18005	
	6/21/2006	(Standard system devices) machine.inf	Not Available
		ROOT\RDP_KBD\0000	
Terminal Server Device Redirector	Yes	SYSTEM 6.0.6002.18005	
	6/21/2006	(Standard system devices) machine.inf	Not Available
		ROOT\RDPDR\0000	
WAN Miniport (SSTP)	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netsstp.inf	Not Available
		ROOT\MS_SSTP\MINIPORT\0000	
WAN Miniport (PPTP)	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netrasa.inf	Not Available
		ROOT\MS_PPTP\MINIPORT\0000	
WAN Miniport (PPPOE)	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netrasa.inf	Not Available
		ROOT\MS_PPPOE\MINIPORT\0000	
WAN Miniport (IPv6)	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netrasa.inf	Not Available
		ROOT\MS_NDISWANIPV6\0000	
WAN Miniport (IP)	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netrasa.inf	Not Available
		ROOT\MS_NDISWANIP\0000	
WAN Miniport (Network Monitor)	Yes	NET 6.0.6002.18005	
	6/21/2006	Microsoft netrasa.inf	Not Available
		ROOT\MS_NDISWANBH\0000	

WAN Miniport (L2TP) 6/21/2006 Microsoft netrasa.inf	Yes	NET	6.0.6002.18005	RDPCCD	Not Available	LEGACYDRIVER	Not Available
ROOT\MS_L2TPMINIPORT\0000	Not Available	Not Available	Not Available		Not Available	Not Available	Not Available
Kernel Mode Driver Frameworks service	Not Available				Not Available	ROOTLEGACY_RDPCCD\0000	
LEGACYDRIVER	Not Available		Not Available	Remote Access Auto Connection Driver	Not Available		
Not Available	Not Available		Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available
ROOTLEGACY_WDF01000\0000				Not Available	Not Available	Not Available	Not Available
Remote Access IPv6 ARP Driver	Not Available		LEGACYDRIVER	ROOTLEGACY_RASACD\0000			
Not Available	Not Available		Not Available	QoS Packet Scheduler	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Available	Not Available	Not Available	Not Available
ROOTLEGACY_WANARPV6\0000				Not Available	Not Available	ROOTLEGACY_PSCHEM\0000	
Storage volumes	Not Available		LEGACYDRIVER	Not Available			
Available	Not Available		Not Available	PEAUTH	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
				Not Available		ROOTLEGACY_PEAUTH\0000	
Dynamic Volume Manager	Not Available		LEGACYDRIVER	pciide	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_PCIIDE\0000	
ROOTLEGACY_VOLMGRX\0000				Null	Not Available	LEGACYDRIVER	Not Available
VgaSave	Not Available		LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_NULL\0000	
Not Available	Not Available		Not Available	NSI proxy service	Not Available	LEGACYDRIVER	Not Available
				Available	Not Available	Not Available	Not Available
Terminal Services Security Filter Driver	Not Available			Not Available	Not Available	ROOTLEGACY_NSIPROXY\0000	
LEGACYDRIVER	Not Available		Not Available	NETBT	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
ROOTLEGACY_TSSECSRV\0000				Not Available	Not Available	ROOTLEGACY_NETBT\0000	
NetIO Legacy TDI Support Driver	Not Available			NDProxy	Not Available	LEGACYDRIVER	Not Available
LEGACYDRIVER	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_NDPROXY\0000	
ROOTLEGACY_TDX\0000				NDIS System Driver	Not Available	LEGACYDRIVER	Not Available
TDTCP	Not Available		LEGACYDRIVER	Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_NDIS\0000	
Not Available	Not Available		Not Available	ISA/EISA Class Driver	Not Available	LEGACYDRIVER	Not Available
TCP/IP Registry Compatibility	Not Available		LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_MSISADR\0000	
Not Available	Not Available		Not Available	Windows Firewall Authorization Driver	Not Available		
ROOTLEGACY_TCPIPREG\0000				LEGACYDRIVER	Not Available	Not Available	Not Available
TCP/IP Protocol Driver	Not Available		LEGACYDRIVER	Not Available	Not Available	ROOTLEGACY_MPSPDRV\0000	
Not Available	Not Available		Not Available	Mount Point Manager	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Available	Not Available	Not Available	Not Available
ROOTLEGACY_TCPIP\0000				Not Available	Not Available	ROOTLEGACY_MOUNTMGR\0000	
Disk VMBUS Acceleration Filter Driver	Not Available			Link-Layer Topology Discovery Mapper I/O Driver	Not Available		
LEGACYDRIVER	Not Available		Not Available	LEGACYDRIVER	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
ROOTLEGACY_STORFLT\0000				ROOTLEGACY_LLTDIO\0000			
Security Processor Loader Driver	Not Available		LEGACYDRIVER	KSecDD	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_KSECDD\0000	
ROOTLEGACY_SPLDR\0000				HTTP	Not Available	LEGACYDRIVER	Not Available
Message-oriented TCP/IP and TCP/IPv6 Protocol (SMB session)	Not Available			Not Available	Not Available	Not Available	Not Available
Available	LEGACYDRIVER	Not Available	Not Available	Not Available	Not Available	ROOTLEGACY_HTTP\0000	
Not Available	Not Available		Not Available	HpCISSs	Not Available	LEGACYDRIVER	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
ROOTLEGACY_SMB\0000				Not Available	Not Available	ROOTLEGACY_HPCISSS\0000	
Security Driver	Not Available		LEGACYDRIVER	Fusion ioDrive Device Driver	Not Available	LEGACYDRIVER	Not Available
Available	Not Available		Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available		Not Available	Not Available	Not Available	ROOTLEGACY_FIODRIVE\0000	
ROOTLEGACY_SECDRV\0000				Credisk Filter Driver	Not Available	LEGACYDRIVER	Not Available
Link-Layer Topology Discovery Responder	Not Available			Available	Not Available	Not Available	Not Available
LEGACYDRIVER	Not Available		Not Available				
Not Available	Not Available		Not Available				
ROOTLEGACY_RSPNDR\0000							
RDP Winstation Driver	Not Available		LEGACYDRIVER				
Not Available	Not Available		Not Available				
Not Available	Not Available		Not Available				
ROOTLEGACY_RDPWD\0000							
RDP Encoder Mirror Driver	Not Available		LEGACYDRIVER				
Not Available	Not Available		Not Available				
Not Available	Not Available		Not Available				
ROOTLEGACY_RDPENCDD\0000							

Not Available ROOTLEGACY_CRCDISK\0000

Common Log (CLFS) Not Available LEGACYDRIVER Not Available
 Available Not Available Not Available Not Available
 Not Available ROOTLEGACY_CLFS\0000

IDE Channel Not Available LEGACYDRIVER Not Available
 Available Not Available Not Available Not Available
 Not Available ROOTLEGACY_ATAPI\0000

Ancillary Function Driver for Winsock Not Available
 LEGACYDRIVER Not Available Not Available
 Not Available Not Available Not Available
 ROOTLEGACY_AFD\0000

Microsoft iSCSI Initiator Yes SCSIADAPTER
 6.0.6002.18005 6/21/2006 Microsoft iscsi.inf Not Available
 Available ROOTMISCIPRT\0000

ACPI Fixed Feature Button Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\FIXEDBUTTON\2&DABA3FF&2

ACPI Thermal Zone Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\THERMALZONE\THM0

System CMOS/real time clock Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0B00\4&99BC81B&0

Communications Port Yes PORTS 6.0.6001.18000
 6/21/2006 (Standard port types) mspports.inf Not Available
 Available ACPI\PNP0501\0

Extended IO Bus Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0A06\4&99BC81B&0

PS/2 Compatible Mouse Yes MOUSE 6.0.6001.18000
 6/21/2006 Microsoft msmouse.inf Not Available
 ACPI\PNP0F13\4&99BC81B&0

Standard PS/2 Keyboard Yes KEYBOARD
 6.0.6002.18005 6/21/2006 (Standard keyboards) keyboard.inf
 Not Available ACPI\PNP0303\4&99BC81B&0

System speaker Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0800\4&99BC81B&0

Direct memory access controller Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0200\4&99BC81B&0

High precision event timer Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0103\0

System timer Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0100\4&99BC81B&0

Microsoft Generic IPMI Compliant Device Yes SYSTEM
 6.0.6002.18005 6/21/2006 Microsoft ipmidrv.inf
 Not Available ACPI\IP0001\0

Motherboard resources Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available ACPI\PNP0C02\0

PCI standard ISA bridge Yes SYSTEM 6.0.6002.18005
 6/21/2006 (Standard system devices) machine.inf
 Not Available
 PCIVEN_8086&DEV_3A18&SUBSYS_00000000&REV_003
 &21436425&0&F8

HP ProLiant iLO 2 Management Controller Driver No
 MULTIFUNCTION 1.11.1.0 5/20/2009 Hewlett-Packard
 Company oem7.inf Not Available
 PCIVEN_103C&DEV_3302&SUBSYS_3305103C&REV_004
 &15EB80B3&0&26F0

HID-compliant mouse Yes MOUSE 6.0.6001.18000
 6/21/2006 Microsoft msmouse.inf Not Available
 HID\VID_03F0&PID_1027&MI_01\8&377175DA&0&0000

USB Human Interface Device Yes HIDCLASS
 6.1.6002.18005 6/21/2006 (Standard system devices) input.inf
 Not Available USB\VID_03F0&PID_1027&MI_01\7&596F79B&0&0001

HID Keyboard Device Yes KEYBOARD
 6.0.6002.18005 6/21/2006 (Standard keyboards) keyboard.inf
 Not Available HID\VID_03F0&PID_1027&MI_00\8&28E0FD3&0&0000

USB Human Interface Device Yes HIDCLASS
 6.1.6002.18005 6/21/2006 (Standard system devices) input.inf
 Not Available USB\VID_03F0&PID_1027&MI_00\7&596F79B&0&0000

USB Composite Device Yes USB 6.0.6002.18005
 6/21/2006 (Standard USB Host Controller) usb.inf Not Available
 USB\VID_03F0&PID_1027\6&125E8E38&0&1

Generic USB Hub Yes USB 6.0.6002.18005
 6/21/2006 (Generic USB Hub) usb.inf Not Available
 USB\VID_03F0&PID_1327\6&125E8E38&0&2

USB Root Hub Yes USB 6.0.6002.18005
 6/21/2006 (Standard USB Host Controller) usbport.inf
 Not Available USB\ROOT_HUB\5&340E2E29&0

Standard Universal PCI to USB Host Controller Yes USB
 6.0.6002.18005 6/21/2006 (Standard USB Host Controller) usbport.inf
 Not Available PCIVEN_103C&DEV_3300&SUBSYS_3305103C&REV_00\4
 &15EB80B3&0&24F0

HP iLO Management Channel Interface Driver No
 MULTIFUNCTION 1.14.0.0 10/16/2008 Hewlett-Packard
 Company oem4.inf Not Available
 PCIVEN_0E11&DEV_B204&SUBSYS_3305103C&REV_03\4
 &15EB80B3&0&22F0

HP ProLiant iLO 2 Legacy Support Function No
 MULTIFUNCTION 1.11.1.0 5/20/2009 Hewlett-Packard
 Company oem7.inf Not Available
 PCIVEN_0E11&DEV_B203&SUBSYS_3305103C&REV_03\4
 &15EB80B3&0&20F0

Generic Non-PnP Monitor Yes MONITOR
 6.0.6001.18000 6/21/2006 (Standard monitor types) monitor.inf
 Not Available DISPLAY\DEFAULT_MONITOR\5&2EE658E4&0&10000000
 &01&03

Generic PnP Monitor Yes MONITOR 6.0.6001.18000
 6/21/2006 (Standard monitor types) monitor.inf
 Not Available DISPLAY\AVO0000\5&2EE658E4&0&10000081&01&03

ATI ES1000 No DISPLAY 8.240.50.3000
 1/21/2008 ATI Technologies Inc. oem5.inf Not Available
 Available PCIVEN_1002&DEV_515E&SUBSYS_31FB103C&REV_02\4
 &15EB80B3&0&18F0

Intel(R) 82801 PCI Bridge - 244E Yes SYSTEM
 6.0.6002.18005 6/21/2006 Intel machine.inf
 Not Available PCIVEN_8086&DEV_244E&SUBSYS_330D103C&REV_90\3
 &21436425&0&F0

USB Root Hub Yes USB 6.0.6002.18005
 6/21/2006 (Standard USB Host Controller) usbport.inf
 Not Available USB\ROOT_HUB\20\4&2E56CC53&0

Standard Enhanced PCI to USB Host Controller Yes USB
 6.0.6002.18005 6/21/2006 (Standard USB Host Controller) usbport.inf
 Not Available PCIVEN_8086&DEV_3A3A&SUBSYS_330D103C&REV_00\3
 &21436425&0&EF

USB Root Hub Yes USB 6.0.6002.18005
 6/21/2006 (Standard USB Host Controller) usbport.inf
 Not Available USB\ROOT_HUB\4&18E22B7&0

Standard Universal PCI to USB Host Controller	Yes	USB	6.0.6002.18005	6/21/2006 (Standard USB Host Controller)	usbport.inf	Not Available	PCIIVEN_8086&DEV_3A39&SUBSYS_330D103C&REV_003&21436425&0&EB	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_341E&SUBSYS_00000000&REV_133&21436425&0&72
USB Root Hub	Yes	USB	6.0.6002.18005	6/21/2006 (Standard USB Host Controller)	usbport.inf	Not Available	PCIIVEN_8086&DEV_3A36&SUBSYS_330D103C&REV_003&21436425&0&EA	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_341D&SUBSYS_00000000&REV_133&21436425&0&71
Available USB\ROOT_HUB\4&1A1FBB6F&0								PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_341C&SUBSYS_00000000&REV_133&21436425&0&70
Standard Universal PCI to USB Host Controller	Yes	USB	6.0.6002.18005	6/21/2006 (Standard USB Host Controller)	usbport.inf	Not Available	PCIIVEN_8086&DEV_3A35&SUBSYS_330D103C&REV_003&21436425&0&E9	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_341A&SUBSYS_00000000&REV_133&21436425&0&6E
USB Root Hub	Yes	USB	6.0.6002.18005	6/21/2006 (Standard USB Host Controller)	usbport.inf	Not Available	PCIIVEN_8086&DEV_3A44&SUBSYS_330D103C&REV_003&21436425&0&E2	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3418&SUBSYS_00000000&REV_133&21436425&0&6C
Available USB\ROOT_HUB\4&39200BE0&0								PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3419&SUBSYS_00000000&REV_133&21436425&0&6D
Standard Universal PCI to USB Host Controller	Yes	USB	6.0.6002.18005	6/21/2006 (Standard USB Host Controller)	usbport.inf	Not Available	PCIIVEN_8086&DEV_3A34&SUBSYS_330D103C&REV_003&21436425&0&E8	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3418&SUBSYS_00000000&REV_133&21436425&0&6C
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3A44&SUBSYS_330D103C&REV_003&21436425&0&E2	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3418&SUBSYS_00000000&REV_133&21436425&0&6C
HP NC382i DP Multifunction Gigabit Server Adapter	No	NET	4.8.5.0	1/28/2009 Hewlett-Packard Company	oem8.inf	Not Available	B06BDRVL2ND&PCI_163914E4&SUBSYS_7055103C&REV_205&6FB4662&0&20050200	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_343D&SUBSYS_00000000&REV_133&21436425&0&6B
HP NC382i DP Virtual Bus Device	No	SYSTEM	4.6.112.0	3/11/2009 Hewlett-Packard Company	oem11.inf	Not Available	PCIIVEN_14E4&DEV_1639&SUBSYS_7055103C&REV_204&2B129C0&0&00E0	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_343C&SUBSYS_00000000&REV_133&21436425&0&6A
Available								PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_343B&SUBSYS_00000000&REV_133&21436425&0&69
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3A40&SUBSYS_330D103C&REV_003&21436425&0&E0	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_343A&SUBSYS_00000000&REV_133&21436425&0&68
PCI standard host CPU bridge	No	SYSTEM	7.1.0.0	7/8/2008 Hewlett-Packard Company	oem3.inf	Not Available	PCIIVEN_8086&DEV_3423&SUBSYS_000B003C&REV_133&21436425&0&A2	PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3411&SUBSYS_330B103C&REV_133&21436425&0&50
PCI standard host CPU bridge	No	SYSTEM	7.1.0.0	7/8/2008 Hewlett-Packard Company	oem3.inf	Not Available	PCIIVEN_8086&DEV_3422&SUBSYS_000B003C&REV_133&21436425&0&A1	Disk drive	Yes	DISKDRIVE	6.0.6002.18005	6/21/2006 (Standard disk drives)	disk.inf	Not Available	SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&372C0B5&0&000500
PCI standard host CPU bridge	No	SYSTEM	7.1.0.0	7/8/2008 Hewlett-Packard Company	oem3.inf	Not Available	PCIIVEN_8086&DEV_342E&SUBSYS_000B003C&REV_133&21436425&0&A0	Disk drive	Yes	DISKDRIVE	6.0.6002.18005	6/21/2006 (Standard disk drives)	disk.inf	Not Available	SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&372C0B5&0&000400
PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3439&SUBSYS_00000000&REV_133&21436425&0&74	HP Virtual LUN	Yes	SYSTEM	6.0.6001.18000	6/21/2006 Compaq	scsudev.inf	Not Available	SCSI\OTHER&VEN_COMPAQ&PROD SCSI_COMMUNICA
PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard system devices)	machine.inf	Not Available	PCIIVEN_8086&DEV_3A36&SUBSYS_330D103C&REV_003&21436425&0&EA	TE\5&372C0B5&0&000000							

Smart Array P411 Controller	No	SCSIADAPTER	6.18.0.64	Disk drive	Yes	DISKDRIVE	6.0.6002.18005
7/24/2009 Hewlett-Packard Company		oem12.inf	Not Available	6/21/2006 (Standard disk drives)		disk.inf	Not Available
Available				SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&153C			
PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_014				D88D&0&000500			
&14BDCE4F&0&0048				Disk drive	Yes	DISKDRIVE	6.0.6002.18005
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 (Standard disk drives)		disk.inf	Not Available
6/21/2006 (Standard system devices)		machine.inf	Not Available	SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&153C			
PCIIVEN_8086&DEV_3410&SUBSYS_330B103C&REV_133				D88D&0&000400			
&21436425&0&48				HP Virtual LUN	Yes	SYSTEM	6.0.6001.18000
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 Compaq		scsidev.inf	Not Available
6/21/2006 (Standard system devices)		machine.inf	Not Available	SCSNOTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA			
PCIIVEN_8086&DEV_340F&SUBSYS_330B103C&REV_133				TE\5&153CD88D&0&000000			
&21436425&0&40				Smart Array P411 Controller	No	SCSIADAPTER	6.18.0.64
Disk drive	Yes	DISKDRIVE	6.0.6002.18005	7/24/2009 Hewlett-Packard Company		oem12.inf	Not Available
6/21/2006 (Standard disk drives)		disk.inf	Not Available	Available			
SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1F4D				PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_014			
269E&0&000500				&2C5B5D67&0&0018			
Disk drive	Yes	DISKDRIVE	6.0.6002.18005	PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005
6/21/2006 (Standard disk drives)		disk.inf	Not Available	6/21/2006 (Standard system devices)		machine.inf	Not Available
SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&1F4D				PCIIVEN_8086&DEV_340A&SUBSYS_330B103C&REV_133			
269E&0&000400				&21436425&0&18			
HP Virtual LUN	Yes	SYSTEM	6.0.6001.18000	PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005
6/21/2006 Compaq		scsidev.inf	Not Available	6/21/2006 (Standard system devices)		machine.inf	Not Available
SCSNOTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA				PCIIVEN_8086&DEV_3409&SUBSYS_330B103C&REV_133			
TE\5&1F4D269E&0&000000				&21436425&0&10			
Smart Array P411 Controller	No	SCSIADAPTER	6.18.0.64	Disk drive	Yes	DISKDRIVE	6.0.6002.18005
7/24/2009 Hewlett-Packard Company		oem12.inf	Not Available	6/21/2006 (Standard disk drives)		disk.inf	Not Available
Available				SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&16F7			
PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_014				5118&0&000400			
&370D11C1&0&0038				HP Virtual LUN	Yes	SYSTEM	6.0.6001.18000
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 Compaq		scsidev.inf	Not Available
6/21/2006 (Standard system devices)		machine.inf	Not Available	SCSNOTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA			
PCIIVEN_8086&DEV_340E&SUBSYS_330B103C&REV_133				TE\5&16F75118&0&000000			
&21436425&0&38				Smart Array P410i Controller	No	SCSIADAPTER	6.18.0.64
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	7/24/2009 Hewlett-Packard Company		oem12.inf	Not Available
6/21/2006 (Standard system devices)		machine.inf	Not Available	Available			
PCIIVEN_8086&DEV_340D&SUBSYS_330B103C&REV_133				PCIIVEN_103C&DEV_323A&SUBSYS_3245103C&REV_014			
&21436425&0&30				&297A62C9&0&0008			
Disk drive	Yes	DISKDRIVE	6.0.6002.18005	PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005
6/21/2006 (Standard disk drives)		disk.inf	Not Available	6/21/2006 (Standard system devices)		machine.inf	Not Available
SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&A181				PCIIVEN_8086&DEV_3408&SUBSYS_330B103C&REV_133			
44E&0&000500				&21436425&0&08			
Disk drive	Yes	DISKDRIVE	6.0.6002.18005	PCI standard host CPU bridge	Yes	SYSTEM	6.0.6002.18005
6/21/2006 (Standard disk drives)		disk.inf	Not Available	6/21/2006 (Standard system devices)		machine.inf	Not Available
SCSNDISK&VEN_HP&PROD_LOGICAL_VOLUME\5&A181				PCIIVEN_8086&DEV_3406&SUBSYS_330B103C&REV_133			
44E&0&000400				&21436425&0&00			
HP Virtual LUN	Yes	SYSTEM	6.0.6001.18000	PCI bus	Yes	SYSTEM	6.0.6002.18005
6/21/2006 Compaq		scsidev.inf	Not Available	6/21/2006 (Standard system devices)		machine.inf	Not Available
SCSNOTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA				ACPIPNP0A08\2&DABA3FF&2			
TE\5&A18144E&0&000000				Intel Processor	Yes	PROCESSOR	6.0.6001.18000
Smart Array P411 Controller	No	SCSIADAPTER	6.18.0.64	6/21/2006 Intel		cpu.inf	Not Available
7/24/2009 Hewlett-Packard Company		oem12.inf	Not Available	ACPIGENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\15			
Available				Intel Processor	Yes	PROCESSOR	6.0.6001.18000
PCIIVEN_103C&DEV_323A&SUBSYS_3247103C&REV_014				6/21/2006 Intel		cpu.inf	Not Available
&37191C5&0&0028				ACPIGENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\14			
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	Intel Processor	Yes	PROCESSOR	6.0.6001.18000
6/21/2006 (Standard system devices)		machine.inf	Not Available	6/21/2006 Intel		cpu.inf	Not Available
PCIIVEN_8086&DEV_340C&SUBSYS_330B103C&REV_133				ACPIGENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\13			
&21436425&0&28				Intel Processor	Yes	PROCESSOR	6.0.6001.18000
PCI standard PCI-to-PCI bridge	Yes	SYSTEM	6.0.6002.18005	6/21/2006 Intel		cpu.inf	Not Available
6/21/2006 (Standard system devices)		machine.inf	Not Available	ACPIGENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\12			
PCIIVEN_8086&DEV_340B&SUBSYS_330B103C&REV_133							
&21436425&0&20							

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Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\11

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\10

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\9

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\8

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\7

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\6

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\5

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\4

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\3

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\2

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\1

Intel Processor      Yes      PROCESSOR      6.0.6001.18000
6/21/2006 Intel    cpu.inf        Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\0

Microsoft ACPI-Compliant System      Yes      SYSTEM
6.0.6002.18005      6/21/2006 Microsoft acpi.inf Not
Available ACPI_HAL\PNP0C08\0
ACPI x64-based PC      Yes      COMPUTER      6.0.6002.18005
6/21/2006 (Standard computers) hal.inf Not Available
ROOT\ACPI_HAL\0000
Microsoft ISATAP Adapter      Yes      NET      6.0.6002.18005
6/21/2006 Microsoft nettun.inf Not Available
ROOT*\ISATAP\0000
Microsoft 6to4 Adapter      Yes      NET      6.0.6002.18005
6/21/2006 Microsoft nettun.inf Not Available
ROOT*\6TO4MP\0000
Not Available      Not Available      Not Available      Not
Available      Not Available      Not Available
Not Available      Not Available      HTREE\ROOT\0
Not Available      Yes      Not Available
2:6.0.2:5.2.2:5.1.2:5.0 Not Available      Not Available
Not Available      Not Available      Microsoft XPS
Document Writer

[Environment Variables]

```

```

Variable Value User Name
ComSpec %SystemRoot%\system32\cmd.exe <SYSTEM>

FP_NO_HOST_CHECK NO <SYSTEM>
OS Windows_NT <SYSTEM>
Path %SystemRoot%\system32;%SystemRoot%;%SystemRoot%\Syst
em32\Wbem;%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\;C:\
Program Files (x86)\Microsoft SQL Server\100\Tools\Binn\;C:\Program
Files\Microsoft SQL Server\100\Tools\Binn\;C:\Program Files\Microsoft
SQL Server\100\DTS\Binn\;C:\Program Files (x86)\Microsoft SQL
Server\100\Tools\Binn\VSShell\Comm\7\IDE\;C:\Program Files
(x86)\Microsoft SQL Server\100\DTS\Binn\ <SYSTEM>
PATHEXT .COM; .EXE; .BAT; .CMD; .VBS; .VBE; .JS; .JSE; .WSF; .WSH; .MS
C <SYSTEM>
PROCESSOR_ARCHITECTURE AMD64 <SYSTEM>

TEMP %SystemRoot%\TEMP <SYSTEM>
TMP %SystemRoot%\TEMP <SYSTEM>
USERNAME SYSTEM <SYSTEM>
windir %SystemRoot% <SYSTEM>
NUMBER_OF_PROCESSORS 16 <SYSTEM>
PROCESSOR_LEVEL 6 <SYSTEM>
PROCESSOR_IDENTIFIER Intel64 Family 6 Model 26 Stepping 5,
GenuineIntel <SYSTEM>
PROCESSOR_REVISION 1a05 <SYSTEM>
TRACE_FORMAT_SEARCH_PATH
\\winseqfe\release\Windows6.0\lh_sp2rtm\6002.18005.090410-
1830\amd64\fre\symbols.pri\TraceFormat <SYSTEM>
DFSTRACINGON FALSE <SYSTEM>
TEMP %USERPROFILE%\AppData\Local\Temp NT
AUTHORITY\SYSTEM
TMP %USERPROFILE%\AppData\Local\Temp NT
AUTHORITY\SYSTEM
TEMP %USERPROFILE%\AppData\Local\Temp NT
AUTHORITY\LOCAL SERVICE
TMP %USERPROFILE%\AppData\Local\Temp NT
AUTHORITY\LOCAL SERVICE
TEMP %USERPROFILE%\AppData\Local\Temp NT
AUTHORITY\NETWORK SERVICE
TMP %USERPROFILE%\AppData\Local\Temp NT
AUTHORITY\NETWORK SERVICE
TEMP %USERPROFILE%\AppData\Local\Temp FUSE\Administrator
TMP %USERPROFILE%\AppData\Local\Temp FUSE\Administrator

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

[Network Connections]
Local Name Remote Name Type Status User
Name
Not Available \\depot\mnt Disk Current Connection
americas\polda

[Running Tasks]
Name Path Process ID Priority Min Working Set Max
Working Set Start Time Version Size File Date
system idle process Not Available 0 0 Not
Available Not Available Not Available Not Available
Not Available Not Available

```

system	Not Available	4	8	Not Available	6.0.6002.18005	262.00 KB (268,288 bytes)		
	Not Available	9/29/2009 9:01 AM	Not Available		4/11/2009 11:11 AM			
smss.exe	Not Available	Not Available	Not Available		svchost.exe	c:\windows\system32\svchost.exe	1600	
	Not Available	504	11	200	8	200	1380	9/29/2009 9:01 AM
	Not Available	Not Available	Not Available		6.0.6001.18000	27.00 KB (27,648 bytes)		
csrss.exe	c:\windows\system32\csrss.exe	580	13	200	svchost.exe	c:\windows\system32\svchost.exe	1616	
	1380	9/29/2009 9:01 AM	6.0.6001.18000	7.50 KB	8	200	1380	9/29/2009 9:01 AM
(7,680 bytes)	1/18/2008 11:59 PM				6.0.6001.18000	27.00 KB (27,648 bytes)		
wininit.exe	c:\windows\system32\wininit.exe	628	13	200	svchost.exe	c:\windows\system32\svchost.exe	1616	
	1380	9/29/2009 9:01 AM	6.0.6001.18000	121.00	8	200	1380	9/29/2009 9:01 AM
KB (123,904 bytes)	1/19/2008 12:17 AM				6.0.6001.18000	27.00 KB (27,648 bytes)		
csrss.exe	c:\windows\system32\csrss.exe	640	13	200	sysdown.exe	c:\windows\system32\sysdown.exe	1644	
	1380	9/29/2009 9:01 AM	6.0.6001.18000	7.50 KB	8	200	1380	9/29/2009 9:01 AM
(7,680 bytes)	1/18/2008 11:59 PM				17.54 KB (17,960 bytes)	6/26/2009 7:11 PM		
winlogon.exe	c:\windows\system32\winlogon.exe	680			svchost.exe	c:\windows\system32\svchost.exe	1704	
	13	200	1380	9/29/2009 9:01 AM	8	200	1380	9/29/2009 9:01 AM
	6.0.6002.18005	396.00 KB (405,504 bytes)			6.0.6001.18000	27.00 KB (27,648 bytes)		
	4/11/2009 11:11 AM				1/19/2008 12:02 AM			
services.exe	c:\windows\system32\services.exe	700			msdtc.exe	c:\windows\system32\msdtc.exe	2600	8
	9	200	1380	9/29/2009 9:01 AM	1380	9/29/2009 9:03 AM	2001.12.6931.18000	104.00
	6.0.6002.18005	375.50 KB (384,512 bytes)			KB (106,496 bytes)	1/19/2008 12:27 AM		
	4/11/2009 11:11 AM				csrss.exe	c:\windows\system32\csrss.exe	2772	13
lsass.exe	c:\windows\system32\lsass.exe	720	9	200	1380	9/29/2009 9:05 AM	6.0.6001.18000	7.50 KB
	1380	9/29/2009 9:01 AM	6.0.6001.18000	11.00 KB	(7,680 bytes)	1/18/2008 11:59 PM		
(11,264 bytes)	1/19/2008 12:16 AM				winlogon.exe	c:\windows\system32\winlogon.exe	2796	
lsm.exe	c:\windows\system32\lsm.exe	728	8	200	13	200	1380	9/29/2009 9:05 AM
	1380	9/29/2009 9:01 AM	6.0.6001.18000	258.50	6.0.6002.18005	396.00 KB (405,504 bytes)		
KB (264,704 bytes)	1/19/2008 12:43 AM				4/11/2009 11:11 AM			
svchost.exe	c:\windows\system32\svchost.exe	888			taskeng.exe	c:\windows\system32\taskeng.exe	3040	
	8	200	1380	9/29/2009 9:01 AM	8	200	1380	9/29/2009 9:05 AM
	6.0.6001.18000	27.00 KB (27,648 bytes)			6.0.6002.18005	259.00 KB (265,216 bytes)		
	1/19/2008 12:02 AM				4/11/2009 11:11 AM			
svchost.exe	c:\windows\system32\svchost.exe	948			rdpclip.exe	c:\windows\system32\rdpclip.exe	2268	8
	8	200	1380	9/29/2009 9:01 AM	1380	9/29/2009 9:05 AM	6.0.6002.18005	187.00
	6.0.6001.18000	27.00 KB (27,648 bytes)			KB (191,488 bytes)	4/11/2009 11:13 AM		
	1/19/2008 12:02 AM				explorer.exe	c:\windows\explorer.exe	1884	8
svchost.exe	c:\windows\system32\svchost.exe	1016			200	1380	9/29/2009 9:05 AM	6.0.6002.18005
	8	200	1380	9/29/2009 9:01 AM	2.94 MB (3,079,168 bytes)	4/11/2009 11:11 AM		
	6.0.6001.18000	27.00 KB (27,648 bytes)			sqlservr.exe	c:\program files\microsoft sql server\mssql10.mssqlserver\mssql\binn\sqlservr.exe	864	13
	1/19/2008 12:02 AM				server\mssql10.mssqlserver\mssql\binn\sqlservr.exe	864	13	
logonui.exe	c:\windows\system32\logonui.exe	292			200	1380	9/29/2009 9:05 AM	2007.100.2714.0
	13	200	1380	9/29/2009 9:01 AM	54.96 MB (57,629,016 bytes)	5/15/2009 7:38 PM		
	6.0.6001.18000	20.50 KB (20,992 bytes)			taskeng.exe	c:\windows\system32\taskeng.exe	4844	
	1/19/2008 12:17 AM				6	200	1380	9/29/2009 9:17 AM
svchost.exe	c:\windows\system32\svchost.exe	408			6.0.6002.18005	259.00 KB (265,216 bytes)		
	8	200	1380	9/29/2009 9:01 AM	4/11/2009 11:11 AM			
	6.0.6001.18000	27.00 KB (27,648 bytes)			logon.scr	c:\windows\syswow64\logon.scr	4016	4
	1/19/2008 12:02 AM				1380	9/30/2009 9:22 AM	6.0.6001.18000	5.45 MB
svchost.exe	c:\windows\system32\svchost.exe	432			(5,714,432 bytes)	1/18/2008 11:46 PM		
	8	200	1380	9/29/2009 9:01 AM	ieexplore.exe	c:\program files (x86)\internet explorer\ieexplore.exe		
	6.0.6001.18000	27.00 KB (27,648 bytes)			3392	8	200	1380
	1/19/2008 12:02 AM				7.0.6002.18005	621.17 KB (636,080 bytes)		
slsvc.exe	c:\windows\system32\slsvc.exe	532	8	200	4/11/2009 11:11 AM			
	1380	9/29/2009 9:01 AM	6.0.6002.18005	2.46 MB	svchost.exe	c:\windows\system32\svchost.exe	3216	
(2,582,016 bytes)	4/11/2009 11:12 AM				8	200	1380	9/30/2009 10:27 AM
svchost.exe	c:\windows\system32\svchost.exe	624			6.0.6001.18000	27.00 KB (27,648 bytes)		
	8	200	1380	9/29/2009 9:01 AM	1/19/2008 12:02 AM			
	6.0.6001.18000	27.00 KB (27,648 bytes)			msinfo32.exe	c:\windows\syswow64\msinfo32.exe	1112	
	1/19/2008 12:02 AM				8	200	1380	9/30/2009 10:28 AM
svchost.exe	c:\windows\system32\svchost.exe	756			6.0.6002.18005	398.50 KB (408,064 bytes)		
	8	200	1380	9/29/2009 9:01 AM	4/11/2009 11:12 AM			
	6.0.6001.18000	27.00 KB (27,648 bytes)			wmiprvse.exe	c:\windows\system32\wbem\wmiprvse.exe	1848	
	1/19/2008 12:02 AM				8	200	1380	9/30/2009 10:28 AM
svchost.exe	c:\windows\system32\svchost.exe	1180			6.0.6002.18005	343.50 KB (351,744 bytes)		
	8	200	1380	9/29/2009 9:01 AM	4/11/2009 11:11 AM			
	6.0.6001.18000	27.00 KB (27,648 bytes)			wmiprvse.exe	c:\windows\syswow64\wbem\wmiprvse.exe	3472	
	1/19/2008 12:02 AM				8	200	1380	9/30/2009 10:28 AM
spoolsv.exe	c:\windows\system32\spoolsv.exe	1516			6.0.6002.18005	241.50 KB (247,296 bytes)		
	8	200	1380	9/29/2009 9:01 AM	4/11/2009 11:11 AM			
					wmiprvse.exe	c:\windows\syswow64\wbem\wmiprvse.exe	3436	
					8	200	1380	9/30/2009 10:28 AM

6.0.6002.18005 241.50 KB (247,296 bytes)
4/11/2009 11:11 AM

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer	Path
csrss	6.0.6001.18000	7.50 KB (7,680 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\csrss.exe
ntdll	6.0.6002.18005	1.51 MB (1,582,792 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ntdll.dll
csrssrv	6.0.6001.18000	83.50 KB (85,504 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\csrssrv.dll
basesrv	6.0.6001.18000	78.50 KB (80,384 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\basesrv.dll
winsrv	6.0.6002.18005	440.00 KB (450,560 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winsrv.dll
user32	6.0.6002.18005	801.00 KB (820,224 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\user32.dll
kernel32	6.0.6002.18005	1.16 MB (1,217,536 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\kernel32.dll
gdi32	6.0.6002.18005	380.50 KB (389,632 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\gdi32.dll
advapi32	6.0.6002.18005	1.02 MB (1,065,472 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\advapi32.dll
rpert4	6.0.6002.18005	1.25 MB (1,305,600 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\rpert4.dll
lpk	6.0.6001.18000	32.00 KB (32,768 bytes)	1/19/2008 12:08 AM	Microsoft Corporation	c:\windows\system32\lpk.dll
usp10	1.626.6002.18005	607.00 KB (621,568 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\usp10.dll
msvcrt	7.0.6002.18005	606.50 KB (621,056 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msvcrt.dll
sxs	6.0.6001.18000	560.50 KB (573,952 bytes)	1/19/2008 12:00 AM	Microsoft Corporation	c:\windows\system32\sxs.dll
wininit	6.0.6001.18000	121.00 KB (123,904 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\wininit.exe
userenv	6.0.6002.18005	134.00 KB (137,216 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\userenv.dll
secur32	6.0.6002.18005	92.50 KB (94,720 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\secur32.dll
imm32	6.0.6002.18005	160.00 KB (163,840 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\imm32.dll
msctf	6.0.6002.18005	1,016.50 KB (1,040,896 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\msctf.dll
apphelp	6.0.6002.18005	196.00 KB (200,704 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\apphelp.dll
ws2_32	6.0.6002.18005	258.50 KB (264,704 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\ws2_32.dll

nsi	6.0.6001.18000	11.00 KB (11,264 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nsi.dll
mwssock	6.0.6002.18005	297.00 KB (304,128 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\mwssock.dll
wshtcpip	6.0.6001.18000	12.50 KB (12,800 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\wshtcpip.dll
wship6	6.0.6001.18000	11.00 KB (11,264 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\wship6.dll
crypt32	6.0.6002.18005	1.20 MB (1,259,520 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\crypt32.dll
msasn1	6.0.6001.18000	79.00 KB (80,896 bytes)	1/19/2008 12:57 AM	Microsoft Corporation	c:\windows\system32\msasn1.dll
credssp	6.0.6001.18000	18.00 KB (18,432 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\credssp.dll
schannel	6.0.6002.18005	327.50 KB (335,360 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\schannel.dll
netapi32	6.0.6002.18005	633.00 KB (648,192 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\netapi32.dll
psapi	6.0.6001.18000	16.50 KB (16,896 bytes)	1/19/2008 12:40 AM	Microsoft Corporation	c:\windows\system32\psapi.dll
winlogon	6.0.6002.18005	396.00 KB (405,504 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winlogon.exe
winsta	6.0.6001.18000	200.50 KB (205,312 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\winsta.dll
ntmarta	6.0.6002.18005	155.50 KB (159,232 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\ntmarta.dll
wldap32	6.0.6002.18005	321.00 KB (328,704 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wldap32.dll
samlib	6.0.6002.18005	97.00 KB (99,328 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\samlib.dll
ole32	6.0.6002.18005	1.83 MB (1,915,392 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ole32.dll
shsvcs	6.0.6002.18005	294.50 KB (301,568 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\shsvcs.dll
services	6.0.6002.18005	375.50 KB (384,512 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\services.exe
scesrv	6.0.6002.18005	390.00 KB (399,360 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\scesrv.dll
authz	6.0.6002.18005	140.00 KB (143,360 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\authz.dll
ncobjapi	6.0.6001.18000	68.50 KB (70,144 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\ncobjapi.dll
lsass	6.0.6001.18000	11.00 KB (11,264 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\lsass.exe
lsasrv	6.0.6002.18005	1.61 MB (1,688,064 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\lsasrv.dll

samsrv	6.0.6002.18005	656.00 KB (671,744 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\samsrv.dll
cryptdll	6.0.6001.18000	63.50 KB (65,024 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\cryptdll.dll
dnsapi	6.0.6002.18005	216.50 KB (221,696 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\dnsapi.dll
ntdsapi	6.0.6001.18000	143.00 KB (146,432 bytes)	1/19/2008 12:20 AM	Microsoft Corporation	c:\windows\system32\ntdsapi.dll
feclient	6.0.6002.18005	67.00 KB (68,608 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\feclient.dll
mpr	6.0.6002.18005	385.00 KB (84,992 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mpr.dll
slc	6.0.6002.18005	148.00 KB (151,552 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\slc.dll
sysntfy	6.0.6000.16386	21.00 KB (21,504 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\sysntfy.dll
wevtapi	6.0.6002.18005	385.00 KB (394,240 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wevtapi.dll
iphlpapi	6.0.6002.18005	124.00 KB (126,976 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\iphlpapi.dll
dhcpcsvc	6.0.6002.18005	262.00 KB (268,288 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\dhcpcsvc.dll
winnsi	6.0.6001.18000	21.50 KB (22,016 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\winnsi.dll
dhcpcsvc6	6.0.6002.18005	159.50 KB (163,328 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\dhcpcsvc6.dll
cngaudit	6.0.6000.16386	14.50 KB (14,848 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\cngaudit.dll
ncrypt	6.0.6002.18005	248.00 KB (253,952 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ncrypt.dll
bcrypt	6.0.6002.18005	299.50 KB (306,688 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\bcrypt.dll
msprivs	6.0.6000.16386	2.00 KB (2,048 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\msprivs.dll
kerberos	6.0.6002.18005	639.50 KB (654,848 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\kerberos.dll
msv1_0	6.0.6002.18005	259.50 KB (265,728 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msv1_0.dll
netlogon	6.0.6002.18005	700.50 KB (717,312 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\netlogon.dll
winbrand	6.0.6001.18000	851.00 KB (871,424 bytes)	1/19/2008 12:02 AM	Microsoft Corporation	c:\windows\system32\winbrand.dll
wdigest	6.0.6001.18000	193.00 KB (197,632 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\wdigest.dll
rsaenh	6.0.6002.18005	282.98 KB (289,768 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rsaenh.dll
tspkg	6.0.6001.18000	77.00 KB (78,848 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\tspkg.dll
gpapi	6.0.6002.18005	82.50 KB (84,480 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\gpapi.dll
setupapi	6.0.6002.18005	1.84 MB (1,925,120 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\setupapi.dll
oleaut32	6.0.6002.18005	827.50 KB (847,360 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\oleaut32.dll
scecli	6.0.6002.18005	230.00 KB (235,520 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\scecli.dll
rassfm	6.0.6001.18000	25.50 KB (26,112 bytes)	1/19/2008 7:51 AM	Microsoft Corporation	c:\windows\system32\rassfm.dll
dsenh	6.0.6001.18000	197.55 KB (202,296 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\dsenh.dll
cryptnet	6.0.6001.18000	127.00 KB (130,048 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\cryptnet.dll
sensapi	6.0.6001.18000	12.50 KB (12,800 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\sensapi.dll
shlwapi	6.0.6002.18005	445.00 KB (455,680 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\shlwapi.dll
comctl32	6.10.6002.18005	1.96 MB (2,050,048 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.common-controls_6595b64144ccf1df_6.0.6002.18005_none_1509f8bef40ee4da\comctl32.dll
lsm	6.0.6001.18000	258.50 KB (264,704 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\lsm.exe
wmsgapi	6.0.6000.16386	14.00 KB (14,336 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\wmsgapi.dll
clbcatq	2001.12.6931.18000	597.00 KB (611,328 bytes)	1/19/2008 12:28 AM	Microsoft Corporation	c:\windows\system32\clbcatq.dll
lsmproxy	6.0.6001.18000	43.50 KB (44,544 bytes)	1/19/2008 12:42 AM	Microsoft Corporation	c:\windows\system32\lsmproxy.dll
svchost	6.0.6001.18000	27.00 KB (27,648 bytes)	1/19/2008 12:02 AM	Microsoft Corporation	c:\windows\system32\svchost.exe
umpnpgmr	6.0.6002.18005	306.00 KB (313,344 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\umpnpgmr.dll
powrprof	6.0.6002.18005	120.50 KB (123,392 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\powrprof.dll
rpcss	6.0.6002.18005	703.00 KB (719,872 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\rpcss.dll
FirewallAPI	6.0.6001.18000	685.00 KB (701,440 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\firewallapi.dll
version	6.0.6002.18005	26.50 KB (27,136 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\version.dll
wtsapi32	6.0.6001.18000	30.50 KB (31,232 bytes)	1/19/2008 12:42 AM	Microsoft Corporation	c:\windows\system32\wtsapi32.dll

cabinet	6.0.6001.18000	91.00 KB (93,184 bytes)	1/19/2008 12:23 AM	Microsoft Corporation	c:\windows\system32\cabinet.dll
fwpuclnt	6.0.6002.18005	761.50 KB (779,776 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fwpuclnt.dll
wevtsvc	6.0.6002.18005	1.42 MB (1,491,968 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wevtsvc.dll
lmhsvc	6.0.6001.18000	23.50 KB (24,064 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\lmhsvc.dll
nlaapi	6.0.6001.18000	60.00 KB (61,440 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nlaapi.dll
napinsp	6.0.6001.18000	61.50 KB (62,976 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\napinsp.dll
winnr	6.0.6001.18000	27.00 KB (27,648 bytes)	1/19/2008 12:19 AM	Microsoft Corporation	c:\windows\system32\winnr.dll
rasadhlp	6.0.6001.18000	13.00 KB (13,312 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\rasadhlp.dll
logonui	6.0.6001.18000	20.50 KB (20,992 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\logonui.exe
authui	6.0.6002.18005	2.17 MB (2,272,256 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\authui.dll
msimg32	6.0.6001.18000	8.00 KB (8,192 bytes)	1/19/2008 12:07 AM	Microsoft Corporation	c:\windows\system32\msimg32.dll
uxtheme	6.0.6001.18000	310.00 KB (317,440 bytes)	1/19/2008 12:21 AM	Microsoft Corporation	c:\windows\system32\uxtheme.dll
gdiplus	5.2.6002.18005	2.09 MB (2,192,384 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.gdiplus_6595b64
144ccf1df_1.0.6002.18005_none_56a37cbfb59b8501					gdiplus.dll
duser	6.0.6001.18000	244.50 KB (250,368 bytes)	1/19/2008 12:09 AM	Microsoft Corporation	c:\windows\system32\duser.dll
xmllite	1.2.1009.0	176.00 KB (180,224 bytes)	1/19/2008 1:13 AM	Microsoft Corporation	c:\windows\system32\xmllite.dll
smartcardcredentialprovider	6.0.6002.18005	157.50 KB (161,280 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\smartcardcredentialprovider.dll
rasplap	6.0.6002.18005	380.50 KB (389,632 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasplap.dll
rasapi32	6.0.6002.18005	329.50 KB (337,408 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasapi32.dll
rasman	6.0.6001.18000	90.50 KB (92,672 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\rasman.dll
tapi32	6.0.6000.16386	238.00 KB (243,712 bytes)	1/19/2008 1:13 AM	Microsoft Corporation	c:\windows\system32\tapi32.dll
rtutils	6.0.6002.18005	49.50 KB (50,688 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\rtutils.dll
winmm	6.0.6002.18005	207.00 KB (211,968 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winmm.dll
oleacc	4.2.5406.0	300.50 KB (307,712 bytes)	1/19/2008 12:08 AM	Microsoft Corporation	c:\windows\system32\oleacc.dll
shell32	6.0.6002.18005	12.30 MB (12,897,792 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\shell32.dll
winscard	6.0.6002.18005	186.00 KB (190,464 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winscard.dll
shgina	6.0.6001.18000	82.50 KB (84,480 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\shgina.dll
shacct	6.0.6001.18000	96.00 KB (98,304 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\shacct.dll
propsys	7.0.6002.18005	901.50 KB (923,136 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\propsys.dll
hid	6.0.6001.18000	28.50 KB (29,184 bytes)	1/19/2008 12:33 AM	Microsoft Corporation	c:\windows\system32\hid.dll
wintrust	6.0.6001.18000	213.00 KB (218,112 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\wintrust.dll
imagehlp	6.0.6001.18000	72.50 KB (74,240 bytes)	1/19/2008 12:40 AM	Microsoft Corporation	c:\windows\system32\imagehlp.dll
gpsvc	6.0.6002.18005	702.50 KB (719,360 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\gpsvc.dll
wbemprox	6.0.6002.18005	42.50 KB (43,520 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemprox.dll
wbemcomn	6.0.6001.18000	516.00 KB (528,384 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbemcomn.dll
wbemsvc	6.0.6002.18005	121.00 KB (123,904 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemsvc.dll
fastprox	6.0.6002.18005	870.50 KB (891,392 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wbem\fastprox.dll
profsvc	6.0.6002.18005	174.00 KB (178,176 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\profsvc.dll
atl	3.5.2284.0	85.50 KB (87,552 bytes)	1/19/2008 1:09 AM	Microsoft Corporation	c:\windows\system32\atl.dll
sens	6.0.6001.18000	60.50 KB (61,952 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\sens.dll
schedsvc	6.0.6002.18005	824.00 KB (843,776 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\schedsvc.dll
ktmw32	6.0.6001.18000	14.50 KB (14,848 bytes)	1/18/2008 11:52 PM	Microsoft Corporation	c:\windows\system32\ktmw32.dll
comctl32	5.82.6001.18000	619.00 KB (633,856 bytes)	1/19/2008 3:48 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.common-controls_6595b64144ccf1df_5.82.6001.18000_none_40ba501d3c2b20ff\comctl32.dll
taskcomp	6.0.6002.18005	400.00 KB (409,600 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\taskcomp.dll
aelupsvc	6.0.6000.16386	26.00 KB (26,624 bytes)	1/18/2008 11:52 PM	Microsoft Corporation	c:\windows\system32\aelupsvc.dll
ikeext	6.0.6002.18005	444.00 KB (454,656 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ikeext.dll

seclogon	6.0.6001.18000	28.00 KB (28,672 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\seclogon.dll
wmisvc	6.0.6002.18005	216.50 KB (221,696 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wmisvc.dll
srvsvc	6.0.6002.18005	172.50 KB (176,640 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\srvsvc.dll
iphlpvc	6.0.6002.18005	218.50 KB (223,744 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\iphlpvc.dll
sqmapi	6.0.6001.18000	172.00 KB (176,128 bytes)	1/19/2008 12:11 AM	Microsoft Corporation	c:\windows\system32\sqmapi.dll
sscore	6.0.6000.16386	12.00 KB (12,288 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\sscore.dll
clusapi	6.0.6001.18000	237.50 KB (243,200 bytes)	1/19/2008 12:05 AM	Microsoft Corporation	c:\windows\system32\clusapi.dll
activeds	6.0.6001.18000	259.50 KB (265,728 bytes)	1/19/2008 12:19 AM	Microsoft Corporation	c:\windows\system32\activeds.dll
adslrpc	6.0.6002.18005	226.50 KB (231,936 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\adslrpc.dll
credui	6.0.6002.18005	186.50 KB (190,976 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\credui.dll
resutils	6.0.6001.18000	76.00 KB (77,824 bytes)	1/19/2008 12:04 AM	Microsoft Corporation	c:\windows\system32\resutils.dll
winhttp	6.0.6002.18005	429.50 KB (439,808 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winhttp.dll
vssapi	6.0.6002.18005	1.43 MB (1,495,040 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\vssapi.dll
vsstrace	6.0.6001.18000	90.00 KB (92,160 bytes)	1/19/2008 12:29 AM	Microsoft Corporation	c:\windows\system32\vsstrace.dll
wbemcore	6.0.6002.18005	1.12 MB (1,172,992 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemcore.dll
esscli	6.0.6001.18000	418.00 KB (428,032 bytes)	1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wbem\esscli.dll
wmiutils	6.0.6001.18000	128.50 KB (131,584 bytes)	1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wmiutils.dll
repdrvfs	6.0.6001.18000	372.50 KB (381,440 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbem\repdrvfs.dll
wmiprvsd	6.0.6002.18005	687.00 KB (703,488 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wbem\wmiprvsd.dll
wbemess	6.0.6001.18000	501.00 KB (513,024 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemess.dll
TSChannel	6.0.6000.16386	18.50 KB (18,944 bytes)	1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\tschannel.dll
certprop	6.0.6002.18005	48.50 KB (49,664 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\certprop.dll
sessenv	6.0.6001.18000	73.00 KB (74,752 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\sessenv.dll
ncprov	6.0.6001.18000	77.50 KB (79,360 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbem\ncprov.dll
qmgr	7.0.6002.18005	1.03 MB (1,081,856 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\qmgr.dll
shfolder	6.0.6001.18000	10.00 KB (10,240 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\shfolder.dll
bitsperf	7.0.6000.16386	22.50 KB (23,040 bytes)	1/19/2008 12:11 AM	Microsoft Corporation	c:\windows\system32\bitsperf.dll
bitsigd	7.0.6002.18005	45.50 KB (46,592 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\bitsigd.dll
rasmans	6.0.6002.18005	302.50 KB (309,760 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasmans.dll
rastapi	6.0.6002.18005	79.50 KB (81,408 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rastapi.dll
wbemcons	6.0.6001.18000	69.50 KB (71,168 bytes)	1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemcons.dll
rasppp	6.0.6002.18005	299.00 KB (306,176 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasppp.dll
mprapi	6.0.6002.18005	126.50 KB (129,536 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mprapi.dll
rasqec	6.0.6001.18000	72.00 KB (73,728 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\rasqec.dll
qutil	6.0.6001.18000	97.00 KB (99,328 bytes)	1/19/2008 12:34 AM	Microsoft Corporation	c:\windows\system32\qutil.dll
raschap	6.0.6002.18005	289.00 KB (295,936 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\raschap.dll
rastls	6.0.6002.18005	274.50 KB (281,088 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rastls.dll
cryptui	6.0.6002.18005	1,011.50 KB (1,035,776 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\cryptui.dll
slsvc	6.0.6002.18005	2.46 MB (2,582,016 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\slsvc.exe
es	2001.12.6932.18005	353.50 KB (361,984 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\es.dll
nsisvc	6.0.6001.18000	24.00 KB (24,576 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nsisvc.dll
wkssvc	6.0.6001.18000	198.00 KB (202,752 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\wkssvc.dll
fdrespub	6.0.6000.16386	32.50 KB (33,280 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\fdrespub.dll
wsdapi	6.0.6002.18005	431.50 KB (441,856 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsdapi.dll
httpapi	6.0.6001.18000	32.50 KB (33,280 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\httpapi.dll
fundisc	6.0.6002.18005	170.00 KB (174,080 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fundisc.dll

w32time	6.0.6002.18005	364.00 KB (372,736 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\w32time.dll
msxml3	8.100.5000.0	1.72 MB (1,804,288 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msxml3.dll
netprofm	6.0.6001.18000	297.00 KB (304,128 bytes)	1/19/2008 12:38 AM	Microsoft Corporation	c:\windows\system32\netprofm.dll
npmproxy	6.0.6000.16386	31.50 KB (32,256 bytes)	1/19/2008 12:38 AM	Microsoft Corporation	c:\windows\system32\npmproxy.dll
fdphost	6.0.6001.18000	15.00 KB (15,360 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\fdphost.dll
fdwsd	6.0.6002.18005	79.50 KB (81,408 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\fdwsd.dll
mlang	6.0.6001.18000	232.50 KB (238,080 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\mlang.dll
fdssdp	6.0.6002.18005	82.00 KB (83,968 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\fdssdp.dll
ssdpapi	6.0.6000.16386	49.00 KB (50,176 bytes)	1/19/2008 12:38 AM	Microsoft Corporation	c:\windows\system32\ssdpapi.dll
fdproxy	6.0.6002.18005	64.00 KB (65,536 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fdproxy.dll
actxprxy	6.0.6001.18000	979.00 KB (1,002,496 bytes)	1/19/2008 1:13 AM	Microsoft Corporation	c:\windows\system32\actxprxy.dll
sstpsvc	6.0.6001.18000	138.00 KB (141,312 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\sstpsvc.dll
normaliz	6.0.6000.16386	3.00 KB (3,072 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\normaliz.dll
dnssrslvr	6.0.6002.18005	115.00 KB (117,760 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\dnssrslvr.dll
cryptsvc	6.0.6002.18005	163.00 KB (166,912 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\cryptsvc.dll
nlasvc	6.0.6001.18000	201.50 KB (206,336 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nlasvc.dll
ncsi	6.0.6001.18000	106.50 KB (109,056 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\ncsi.dll
cfgmgr32	6.0.6001.18000	17.50 KB (17,920 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\cfgmgr32.dll
termsrv	6.0.6002.18005	534.50 KB (547,328 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\termsrv.dll
icaapi	6.0.6000.16386	20.00 KB (20,480 bytes)	1/19/2008 12:42 AM	Microsoft Corporation	c:\windows\system32\icaapi.dll
regapi	6.0.6002.18005	87.00 KB (89,088 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\regapi.dll
rdpwsx	6.0.6002.18005	115.00 KB (117,760 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rdpwsx.dll
mstlsapi	6.0.6002.18005	136.00 KB (139,264 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\mstlsapi.dll
esent	6.0.6002.18005	2.39 MB (2,506,752 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\esent.dll
msdtckrm	2001.12.6931.18000	386.00 KB (395,264 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\msdtckrm.dll
wsmSvc	6.0.6002.18005	1.04 MB (1,092,096 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsmSvc.dll
wsmprov	6.0.6001.18000	71.50 KB (73,216 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wsmprov.dll
winarsmgr	6.0.6001.18000	294.00 KB (301,056 bytes)	1/19/2008 12:14 AM	Microsoft Corporation	c:\windows\system32\winarsmgr.dll
wsmres	6.0.6001.18000	13.00 KB (13,312 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wsmres.dll
wevtfwd	6.0.6001.18000	104.50 KB (107,008 bytes)	1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wevtfwd.dll
bfe	6.0.6002.18005	447.50 KB (458,240 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\bfe.dll
mpssvc	6.0.6002.18005	589.00 KB (603,136 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mpssvc.dll
wfapiipg	6.0.6001.18000	20.00 KB (20,480 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\wfapiipg.dll
dps	6.0.6001.18000	136.00 KB (139,264 bytes)	1/19/2008 12:03 AM	Microsoft Corporation	c:\windows\system32\dps.dll
wdi	6.0.6001.18000	80.00 KB (81,920 bytes)	1/19/2008 12:03 AM	Microsoft Corporation	c:\windows\system32\wdi.dll
taskschd	6.0.6001.18000	640.50 KB (655,872 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\taskschd.dll
spoolsv	6.0.6002.18005	262.00 KB (268,288 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\spoolsv.exe
spoolss	6.0.6002.18005	232.50 KB (238,080 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\spoolss.dll
localspl	6.0.6002.18005	752.00 KB (770,048 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\localspl.dll
sfc	6.0.6000.16386	6.00 KB (6,144 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\sfc.dll
winspool	6.0.6002.18005	334.00 KB (342,016 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\winspool.drv
tcpmon	6.0.6002.18005	165.00 KB (168,960 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\tcpmon.dll
snmpapi	6.0.6000.16386	27.00 KB (27,648 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\snmpapi.dll
wsnmp32	6.0.6002.18005	60.50 KB (61,952 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsnmp32.dll
msxml6	6.20.5000.0	1.65 MB (1,733,120 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msxml6.dll
tcpmib	6.0.6000.16386	33.50 KB (34,304 bytes)	1/19/2008 1:11 AM	Microsoft Corporation	c:\windows\system32\tcpmib.dll

mgmtapi	6.0.6000.16386	22.00 KB (22,528 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\mgmtapi.dll
usbmon	6.0.6001.18000	43.00 KB (44,032 bytes)	1/19/2008 1:11 AM	Microsoft Corporation	c:\windows\system32\usbmon.dll
wls0wndh	6.0.6000.16386	9.50 KB (9,728 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\wls0wndh.dll
wsdmon	6.0.6002.18005	209.00 KB (214,016 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsdmon.dll
win32spl	6.0.6002.18005	645.00 KB (660,480 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\win32spl.dll
netrap	6.0.6001.18000	21.00 KB (21,504 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\netrap.dll
printcom	6.0.6001.18000	43.50 KB (44,544 bytes)	1/19/2008 1:10 AM	Microsoft Corporation	c:\windows\system32\printcom.dll
ipsecsvc	6.0.6002.18005	521.00 KB (533,504 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ipsecsvc.dll
fwremotesvr	6.0.6002.18005	49.00 KB (50,176 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fwremotesvr.dll
regsvc	6.0.6002.18005	202.00 KB (206,848 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\regsvc.dll
sysdown	1.2.0.0	17.54 KB (17,960 bytes)	6/26/2009 7:11 PM	Hewlett-Packard Company	c:\windows\system32\sysdown.exe
trkwns	6.0.6001.18000	114.50 KB (117,248 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\trkwns.dll
umrdp	6.0.6002.18005	247.00 KB (252,928 bytes)	4/11/2009 11:13 AM	Microsoft Corporation	c:\windows\system32\umrdp.dll
umb	6.0.6001.18000	58.50 KB (59,904 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\umb.dll
printui	6.0.6002.18005	957.50 KB (980,480 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\printui.dll
puiapi	6.0.6001.18000	185.50 KB (189,952 bytes)	1/19/2008 1:12 AM	Microsoft Corporation	c:\windows\system32\puiapi.dll
radardt	6.0.6000.16386	77.50 KB (79,360 bytes)	1/19/2008 7:52 AM	Microsoft Corporation	c:\windows\system32\radardt.dll
netman	6.0.6001.18000	340.00 KB (348,160 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\netman.dll
netshell	6.0.6002.18005	3.19 MB (3,341,312 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\netshell.dll
rasdlg	6.0.6002.18005	890.50 KB (911,872 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasdlg.dll
msdte	2001.12.6931.18000	104.00 KB (106,496 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\msdte.exe
msdctm	2001.12.6932.18005	1.43 MB (1,499,136 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\msdctm.dll
msdctprx	2001.12.6932.18005	710.50 KB (727,552 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msdctprx.dll
mtxclu	2001.12.6932.18005	353.50 KB (361,984 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mtxclu.dll
msdctlog	2001.12.6931.18000	113.00 KB (115,712 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\msdctlog.dll
xolehlp	2001.12.6931.18000	47.00 KB (48,128 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\xolehlp.dll
comres	2001.12.6931.18000	1.23 MB (1,291,264 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\comres.dll
msdctVSp1res	2001.12.6931.18000	20.50 KB (20,992 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\msdctvsp1res.dll
mtxoci	2001.12.6931.18000	148.00 KB (151,552 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\mtxoci.dll
taskeng	6.0.6002.18005	259.00 KB (265,216 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\taskeng.exe
dimjsjob	6.0.6001.18000	43.00 KB (44,032 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\dimjsjob.dll
pautoenr	6.0.6000.16386	46.00 KB (47,104 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\pautoenr.dll
certcli	6.0.6002.18005	437.00 KB (447,488 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\certcli.dll
certenroll	6.0.6002.18005	1.58 MB (1,658,368 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\certenroll.dll
wininet	7.0.6002.18005	990.50 KB (1,014,272 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wininet.dll
iertutil	7.0.6002.18005	367.00 KB (375,808 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\iertutil.dll
msctfmonitor	6.0.6002.18005	25.50 KB (26,112 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\msctfmonitor.dll
msutb	6.0.6002.18005	222.50 KB (227,840 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\msutb.dll
dwmapi	6.0.6001.18000	38.50 KB (39,424 bytes)	1/19/2008 12:10 AM	Microsoft Corporation	c:\windows\system32\dwmapi.dll
PlaySndSrv	6.0.6000.16386	74.50 KB (76,288 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\playsndsrv.dll
mmdevapi	6.0.6002.18005	199.00 KB (203,776 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mmdevapi.dll
qagent	6.0.6001.18000	245.00 KB (250,880 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\qagent.dll
rdpclip	6.0.6002.18005	187.00 KB (191,488 bytes)	4/11/2009 11:13 AM	Microsoft Corporation	c:\windows\system32\rdpclip.exe
urlmon	7.0.6002.18005	1.35 MB (1,419,264 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\urlmon.dll
explorer	6.0.6002.18005	2.94 MB (3,079,168 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\explorer.exe
shdocvw	6.0.6002.18005	1.14 MB (1,195,520 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\shdocvw.dll

browseui	6.0.6002.18005	1.57 MB (1,650,688 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\browseui.dll
windowscodecs	6.0.6002.18005	822.00 KB (841,728 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\windowscodecs.dll
ehstorshell	5.2.3790.1830	121.00 KB (123,904 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ehstorshell.dll
iconcodecservice	6.0.6000.16386	12.50 KB (12,800 bytes)	1/19/2008 7:51 AM	Microsoft Corporation	c:\windows\system32\iconcodecservice.dll
timedate	6.0.6002.18005	860.50 KB (881,152 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\timedate.cpl
ieframe	7.0.6002.18005	6.68 MB (7,005,184 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\ieframe.dll
networkexplorer	6.0.6002.18005	2.14 MB (2,247,168 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\networkexplorer.dll
cscapi	6.0.6002.18005	37.50 KB (38,400 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\cscapi.dll
ExplorerFrame	6.0.6001.18000	39.00 KB (39,936 bytes)	1/19/2008 12:21 AM	Microsoft Corporation	c:\windows\system32\explorerframe.dll
msilcfg	4.0.6000.16386	19.50 KB (19,968 bytes)	1/19/2008 12:14 AM	Microsoft Corporation	c:\windows\system32\msilcfg.dll
msi	4.5.6002.18005	2.96 MB (3,108,864 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msi.dll
stobject	6.0.6002.18005	731.00 KB (748,544 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\stobject.dll
batmeter	6.0.6001.18000	727.50 KB (744,960 bytes)	1/19/2008 12:23 AM	Microsoft Corporation	c:\windows\system32\batmeter.dll
sndvolso	6.0.6002.18005	173.50 KB (177,664 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\sndvolso.dll
pnidui	6.0.6002.18005	1.93 MB (2,024,960 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\pnidui.dll
wlanutil	6.0.6000.16386	10.00 KB (10,240 bytes)	1/19/2008 12:34 AM	Microsoft Corporation	c:\windows\system32\wlanutil.dll
cscui	6.0.6002.18005	657.00 KB (672,768 bytes)	4/11/2009 11:13 AM	Microsoft Corporation	c:\windows\system32\cscui.dll
cscdll	6.0.6002.18005	28.00 KB (28,672 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\cscdll.dll
srchadmin	7.0.6002.18005	339.50 KB (347,648 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\srchadmin.dll
webcheck	7.0.6002.18005	284.00 KB (290,816 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\webcheck.dll
bthprops	6.0.6002.18005	652.50 KB (668,160 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\bthprops.cpl
twext	6.0.6002.18005	114.00 KB (116,736 bytes)	4/11/2009 11:13 AM	Microsoft Corporation	c:\windows\system32\twext.dll
ntshrui	6.0.6001.18000	347.00 KB (355,328 bytes)	1/19/2008 12:24 AM	Microsoft Corporation	c:\windows\system32\ntshrui.dll
ehstorapi	6.0.6002.18005	128.00 KB (131,072 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ehstorapi.dll
aclui	6.0.6001.18000	153.00 KB (156,672 bytes)	1/19/2008 12:24 AM	Microsoft Corporation	c:\windows\system32\aclui.dll
networkitemfactory	6.0.6002.18005	51.00 KB (52,224 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\networkitemfactory.dll
dtsh	6.0.6000.16386	33.00 KB (33,792 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\dtsh.dll
fdwnet	6.0.6001.18000	27.00 KB (27,648 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\fdwnet.dll
cscobj	6.0.6002.18005	211.50 KB (216,576 bytes)	4/11/2009 11:13 AM	Microsoft Corporation	c:\windows\system32\cscobj.dll
thumbcache	6.0.6001.18000	102.00 KB (104,448 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\thumbcache.dll
zipfldr	6.0.6002.18005	378.00 KB (387,072 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\zipfldr.dll
sendmail	6.0.6001.18000	74.50 KB (76,288 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\sendmail.dll
mydocs	6.0.6002.18005	140.00 KB (143,360 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\mydocs.dll
drprov	6.0.6001.18000	23.50 KB (24,064 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\drprov.dll
ntlanman	6.0.6001.18000	116.00 KB (118,784 bytes)	1/19/2008 12:14 AM	Microsoft Corporation	c:\windows\system32\ntlanman.dll
sqlservr	2007.100.2714.0	54.96 MB (57,629,016 bytes)	5/15/2009 7:38 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10.mssqlserver\mssql\binn\sqlservr.exe
msvcr80	8.0.50727.4016	783.83 KB (802,640 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.4016_none_88dc01492fb256de\msvcr80.dll
msvcp80	8.0.50727.4016	1.02 MB (1,068,368 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.4016_none_88dc01492fb256de\msvcp80.dll
sqlos	2007.100.2531.0	14.85 KB (15,208 bytes)	3/30/2009 4:01 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10.mssqlserver\mssql\binn\sqlos.dll
pdh	6.0.6002.18005	300.50 KB (307,712 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\pdh.dll
opends60	2007.100.1600.22	23.52 KB (24,088 bytes)	7/10/2008 5:46 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10.mssqlserver\mssql\binn\opends60.dll
batchparser	2007.100.1600.22	170.52 KB (174,616 bytes)	7/10/2008 5:38 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10.mssqlserver\mssql\binn\batchparser.dll
instapi10	2007.100.1600.22	42.52 KB (43,544 bytes)	7/10/2008 4:39 AM	Microsoft Corporation	c:\program files\microsoft sql server\100\shared\instapi10.dll
sqllevn70	2007.100.2531.0	1.99 MB (2,086,760 bytes)	3/30/2009 3:27 AM	Microsoft Corporation	c:\program files\microsoft sql

```

server\mssql10.mssqlserver\mssql\bin\resources\1033\sqllevn70.rll
mscoree 2.0.50727.4016 393.83 KB (403,280 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\mscoree.dll
security 6.0.6000.16386 5.50 KB (5,632 bytes) 1/19/2008 12:16 AM
Microsoft Corporation
c:\windows\system32\security.dll
sqlncli10 2007.100.2531.0 3.01 MB (3,156,840 bytes)
3/30/2009 4:01 AM Microsoft Corporation
c:\windows\system32\sqlncli10.dll
comdlg32 6.0.6002.18005 537.00 KB (549,888 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\comdlg32.dll
sqlnclir10 2007.100.1600.22 224.02 KB (229,400 bytes)
7/10/2008 4:58 AM Microsoft Corporation
c:\windows\system32\1033\sqlnclir10.rll
logon 6.0.6001.18000 5.45 MB (5,714,432 bytes)
1/18/2008 11:46 PM Microsoft Corporation
c:\windows\syswow64\logon.scr
wow64 6.0.6002.18005 229.00 KB (234,496 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\wow64.dll
wow64win 6.0.6002.18005 294.50 KB (301,568 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\wow64win.dll
wow64cpu 6.0.6002.18005 17.00 KB (17,408 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\wow64cpu.dll
iexplore 7.0.6002.18005 621.17 KB (636,080 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\program files (x86)\internet explorer\iexplore.exe
tapisrv 6.0.6002.18005 311.50 KB (318,976 bytes)
4/11/2009 11:12 AM Microsoft Corporation
c:\windows\system32\tapisrv.dll
unimdm 6.0.6002.18005 312.50 KB (320,000 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\unimdm.tsp
uniplat 6.0.6001.18000 21.00 KB (21,504 bytes)
1/19/2008 12:38 AM Microsoft Corporation
c:\windows\system32\uniplat.dll
kmddsp 6.0.6000.16386 45.50 KB (46,592 bytes)
1/19/2008 12:37 AM Microsoft Corporation
c:\windows\system32\kmddsp.tsp
ndptsp 6.0.6000.16386 58.00 KB (59,392 bytes)
1/19/2008 12:37 AM Microsoft Corporation
c:\windows\system32\ndptsp.tsp
hidphone 6.0.6000.16386 38.50 KB (39,424 bytes)
1/19/2008 1:13 AM Microsoft Corporation
c:\windows\system32\hidphone.tsp
msinfo32 6.0.6002.18005 398.50 KB (408,064 bytes)
4/11/2009 11:12 AM Microsoft Corporation
c:\windows\syswow64\msinfo32.exe
wmiprvse 6.0.6002.18005 343.50 KB (351,744 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\wbem\wmiprvse.exe
cimwin32 6.0.6002.18005 1.99 MB (2,082,816 bytes)
4/11/2009 11:12 AM Microsoft Corporation
c:\windows\system32\wbem\cimwin32.dll
framedynos 6.0.6001.18000 275.00 KB (281,600 bytes)
1/19/2008 12:13 AM Microsoft Corporation
c:\windows\system32\framedynos.dll
wmi 6.0.6001.18000 5.50 KB (5,632 bytes) 1/19/2008 1:13 AM
Microsoft Corporation c:\windows\system32\wmi.dll
ntevt 6.0.6002.18005 251.00 KB (257,024 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\wbem\ntevt.dll

```

```

provthrd 6.0.6001.18000 327.50 KB (335,360 bytes)
1/19/2008 12:13 AM Microsoft Corporation
c:\windows\system32\provthrd.dll
msvcirt 7.0.6000.16386 78.50 KB (80,384 bytes)
1/18/2008 11:52 PM Microsoft Corporation
c:\windows\system32\msvcirt.dll
wsock32 6.0.6001.18000 18.00 KB (18,432 bytes)
1/19/2008 12:37 AM Microsoft Corporation
c:\windows\system32\wsock32.dll
unidrvui 0.3.6002.18005 863.00 KB (883,712 bytes)
1/19/2008 3:38 AM Microsoft Corporation
c:\windows\system32\spool\drivers\x64\3\unidrvui.dll
wmiprvse 6.0.6002.18005 241.50 KB (247,296 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\syswow64\wbem\wmiprvse.exe

[Services]

Display Name Name State Start Mode Service Type
Path Error Control Start Name Tag ID

Application Experience AeLookupSvc Running Auto
Share Process c:\windows\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Application Layer Gateway Service ALG Stopped Manual
Own Process c:\windows\system32\alg.exe Normal
NT AUTHORITY\LocalService 0
Application Information Appinfo Stopped Manual Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Application Management AppMgmt Stopped Manual Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Windows Audio Endpoint Builder AudioEndpointBuilder
Stopped Manual Share Process
c:\windows\system32\svchost.exe -k
localsystemnetworkrestricted Normal LocalSystem 0

Windows Audio AudioSrv Stopped Manual Share Process
c:\windows\system32\svchost.exe -k
localservicenetworkrestricted Normal NT AUTHORITY\LocalService
0
Base Filtering Engine BFE Running Auto Share Process
c:\windows\system32\svchost.exe -k localservicenetwork
Normal NT AUTHORITY\LocalService 0
Background Intelligent Transfer Service BITS Running Auto
Share Process c:\windows\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Computer Browser Browser Stopped Disabled Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Certificate Propagation CertPropSvc Running Manual
Share Process c:\windows\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Microsoft .NET Framework NGEN v2.0.50727_X86
clr_optimization_v2.0.50727_32 Stopped Manual Own
Process c:\windows\microsoft.net\framework\v2.0.50727\mscorsvw.exe
Ignore LocalSystem 0
Microsoft .NET Framework NGEN v2.0.50727_X64
clr_optimization_v2.0.50727_64 Stopped Manual Own
Process
c:\windows\microsoft.net\framework64\v2.0.50727\mscorsvw.ex
Ignore LocalSystem 0
COM+ System Application COMSysApp Stopped Manual
Own Process c:\windows\system32\dllhost.exe
/processid:{02d4b3f1-fd88-11d1-96d0-00805fc79235} Normal
LocalSystem 0
Cryptographic Services CryptSvc Running Auto Share
Process c:\windows\system32\svchost.exe -k networkservice Normal
NT Authority\NetworkService 0

```


Interactive Services Detection Process	UI0Detect.exe	Stopped	Manual	Own	Normal	LocalSystem	0	localsystemnetworkrestricted	Normal	LocalSystem	0
Terminal Services UserMode Port Redirector											
Running	Manual	Share Process						[Program Groups]			
	c:\windows\system32\svchost.exe -k							Group Name	Name	User Name	
localsystemnetworkrestricted	Normal	localSystem					0	Start MenuDefault:Start Menu	Default	Default	
UPnP Device Host	upnphost	Stopped	Disabled	Share Process	Normal	LocalSystem	0	Start Menu\Programs	Default:Start Menu\Programs	Default	
	c:\windows\system32\svchost.exe -k localservice							Start Menu\Programs\Accessories	Default:Start	Default	
	NT AUTHORITY\LocalService	0						Menu\Programs\Accessories	Default		
Desktop Window Manager Session ManagerUxSms		Stopped	Disabled	Share Process	Normal	LocalSystem	0	Start Menu\Programs\Accessories\Accessibility	Default:Start	Default:Start	
	c:\windows\system32\svchost.exe -k							Menu\Programs\Accessories\Accessibility	Default		
localsystemnetworkrestricted	Normal	localSystem					0	Start Menu\Programs\Accessories\System Tools	Default:Start	Default:Start	
Virtual Disk	vds	Stopped	Manual	Own Process	Normal	LocalSystem	0	Menu\Programs\Accessories\System Tools	Default	Default	
	c:\windows\system32\vds.exe							Start Menu\Programs\Maintenance	Default:Start	Default:Start	
	0							Menu\Programs\Maintenance	Default	Default	
Volume Shadow Copy Process	VSS	Stopped	Manual	Own	Normal	LocalSystem	0	Start MenuPublic:Start Menu	Public	Public	
	c:\windows\system32\vssvc.exe							Start Menu\Programs	Public:Start Menu\Programs	Public	
	0							Start Menu\Programs\Accessories	Public:Start	Public:Start	
Windows Time	W32Time	Running	Auto	Share Process	Normal	LocalSystem	0	Menu\Programs\Accessories	Public	Public	
	c:\windows\system32\svchost.exe -k localservice							Start Menu\Programs\Accessories\Accessibility	Public:Start	Public:Start	
	NT AUTHORITY\LocalService	0						Menu\Programs\Accessories\Accessibility	Public	Public	
Windows Color System	WcsPlugInService	Stopped	Manual	Share Process	Normal	LocalSystem	0	Start Menu\Programs\Accessories\System Tools	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k							Menu\Programs\Accessories\System Tools	Public	Public	
wcssvc	Normal	NT AUTHORITY\LocalService	0					Start Menu\Programs\Administrative Tools	Public:Start	Public:Start	
Diagnostic Service Host	WdiServiceHost	Stopped	Manual	Share Process	Normal	LocalSystem	0	Menu\Programs\Administrative Tools	Public	Public	
	c:\windows\system32\svchost.exe -k							Start Menu\Programs\Administrative Tools\Terminal Services	Public:Start	Public:Start	
wdisvc	Normal	NT AUTHORITY\LocalService	0					Services	Public	Public	
Diagnostic System Host	WdiSystemHost	Running	Manual	Share Process	Normal	LocalSystem	0	Start Menu\Programs\Extras and Upgrades	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k							Menu\Programs\Extras and Upgrades	Public	Public	
localsystemnetworkrestricted	Normal	LocalSystem					0	Start Menu\Programs\Fusion-io	Public:Start	Public:Start	
Windows Event Collector	Wevc	Stopped	Manual	Share Process	Normal	LocalSystem	0	Public	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k networkservice							Start Menu\Programs\Fusion-io\ioManager	Public:Start	Public:Start	
	NT AUTHORITY\NetworkService	0						Menu\Programs\Fusion-io\ioManager	Public	Public	
Problem Reports and Solutions Control Panel Support	wercplsupport	Stopped	Manual	Share Process	Normal	LocalSystem	0	Start Menu\Programs\HP System Tools	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k netsvcs							System Tools	Public	Public	
localsystemnetworkrestricted	Normal	LocalSystem					0	Start Menu\Programs\HP System Tools\HP Array Configuration Utility	Public:Start	Public:Start	
Windows Error Reporting Service	WerSvc	Stopped	Manual	Share Process	Normal	LocalSystem	0	Configuration Utility	Public	Public	
	c:\windows\system32\svchost.exe -k							Start Menu\Programs\HP System Tools\HP Array Diagnostic Utility	Public:Start	Public:Start	
wersvcgroup	Ignore	localSystem					0	Diagnostic Utility	Public	Public	
WinHTTP Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Stopped	Manual	Share Process	Normal	LocalSystem	0	Start Menu\Programs\Maintenance	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k localservice							Menu\Programs\Maintenance	Public	Public	
	NT AUTHORITY\LocalService	0						Start Menu\Programs\Microsoft SQL Server 2008	Public:Start	Public:Start	
Windows Management Instrumentation	Winmgmt	Running	Auto	Share Process	Normal	LocalSystem	0	Menu\Programs\Microsoft SQL Server 2008	Public	Public	
	c:\windows\system32\svchost.exe -k							Start Menu\Programs\Microsoft SQL Server 2008\Analysis Services	Public:Start	Public:Start	
netsvcs	Ignore	localSystem					0	Public:Start	Public:Start	Public:Start	
Windows Remote Management (WS-Management)	WinRM	Running	Auto	Share Process	Normal	LocalSystem	0	Start Menu\Programs\Microsoft SQL Server 2008\Analysis Services	Public	Public	
	c:\windows\system32\svchost.exe -k networkservice							Start Menu\Programs\Microsoft SQL Server 2008\Configuration Tools	Public:Start	Public:Start	
	NT AUTHORITY\NetworkService	0						Public:Start	Public:Start	Public:Start	
WMI Performance Adapter	wmiApSrv	Stopped	Manual	Own Process	Normal	LocalSystem	0	Start Menu\Programs\Microsoft SQL Server 2008\Documentation and Tutorials	Public:Start	Public:Start	
	c:\windows\system32\wbem\wmiaprv.exe							2008\Documentation and Tutorials	Public	Public	
	0							Start Menu\Programs\Microsoft SQL Server 2008\Integration Services	Public:Start	Public:Start	
Portable Device Enumerator Service	WPDBusEnum	Stopped	Manual	Share Process	Normal	LocalSystem	0	Public:Start	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k							Start Menu\Programs\Microsoft SQL Server 2008\Integration Services	Public	Public	
localsystemnetworkrestricted	Normal	LocalSystem					0	Start Menu\Programs\Microsoft SQL Server 2008\Performance Tools	Public:Start	Public:Start	
Windows Update	wuauclt	Stopped	Disabled	Share Process	Normal	LocalSystem	0	2008\Performance Tools	Public	Public	
	c:\windows\system32\svchost.exe -k netsvcs							Start Menu\Programs\Startup	Public:Start	Public:Start	
	LocalSystem	0						Public	Public	Public	
Windows Driver Foundation - User-mode Driver Framework	wudfsvc	Stopped	Manual	Share Process	Normal	LocalSystem	0	Start Menu\Programs\Windows PowerShell 1.0	Public:Start	Public:Start	
	c:\windows\system32\svchost.exe -k							Menu\Programs\Windows PowerShell 1.0	Public	Public	
	0							Start Menu\FUSE\Administrator:Start Menu	FUSE\Administrator	FUSE\Administrator	
	0							Start Menu\Programs	FUSE\Administrator:Start Menu\Programs	FUSE\Administrator	

Start Menu\Programs\Accessories FUSE\Administrator:Start
 Menu\Programs\Accessories FUSE\Administrator
 Start Menu\Programs\Accessories\Accessibility
 FUSE\Administrator:Start
 Menu\Programs\Accessories\Accessibility FUSE\Administrator
 Start Menu\Programs\Accessories\System Tools
 FUSE\Administrator:Start Menu\Programs\Accessories\System
 Tools FUSE\Administrator
 Start Menu\Programs\Administrative Tools FUSE\Administrator:Start
 Menu\Programs\Administrative Tools FUSE\Administrator
 Start Menu\Programs\Maintenance FUSE\Administrator:Start
 Menu\Programs\Maintenance FUSE\Administrator
 Start Menu\Programs\Startup FUSE\Administrator:Start
 Menu\Programs\Startup FUSE\Administrator
 Start Menu\Programs\StepMaster FUSE\Administrator:Start
 Menu\Programs\StepMaster FUSE\Administrator

[Startup Programs]			
Program	Command	User Name	Location
[OLE Registration]			
Object	Local Server		
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"		
Package	Not Available		
[Windows Error Reporting]			
Time	Type	Details	

Appendix B: Database Build Scripts

B.1 CreateDatabase.sql

```
--
-- File:  CREATEDATABASE.SQL
--        Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
--        Copyright Microsoft, 2006 - 2009
--
--        Drop the existing database
--
if exists (select name from sysdatabases where name = 'tpch100g')
    drop database tpch100g

CREATE DATABASE tpch100g
ON PRIMARY
(
    NAME = tpch100g_root,
    FILENAME = 'C:\tpch100g_root.mdf',
    SIZE = 10MB,
    FILEGROWTH = 10MB),

FILEGROUP DATA_FG
(
    NAME = tpch100g_data1,
    FILENAME = 'c:\dev\node1\tpch100g_data1.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data2,
    FILENAME = 'c:\dev\node2\tpch100g_data2.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data3,
    FILENAME = 'c:\dev\node3\tpch100g_data3.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data4,
    FILENAME = 'c:\dev\node4\tpch100g_data4.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data5,
    FILENAME = 'c:\dev\node1\tpch100g_data5.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data6,
    FILENAME = 'c:\dev\node2\tpch100g_data6.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data7,
    FILENAME = 'c:\dev\node3\tpch100g_data7.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data8,
    FILENAME = 'c:\dev\node4\tpch100g_data8.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data9,
    FILENAME = 'c:\dev\node1\tpch100g_data9.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data10,
    FILENAME = 'c:\dev\node2\tpch100g_data10.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data11,
```

```
FILENAME = 'c:\dev\node3\tpch100g_data11.mdf',
SIZE = 5500MB,
FILEGROWTH = 10),
(
    NAME = tpch100g_data12,
    FILENAME = 'c:\dev\node4\tpch100g_data12.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data13,
    FILENAME = 'c:\dev\node1\tpch100g_data13.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data14,
    FILENAME = 'c:\dev\node2\tpch100g_data14.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data15,
    FILENAME = 'c:\dev\node3\tpch100g_data15.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data16,
    FILENAME = 'c:\dev\node4\tpch100g_data16.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data17,
    FILENAME = 'c:\dev\node1\tpch100g_data17.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data18,
    FILENAME = 'c:\dev\node2\tpch100g_data18.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data19,
    FILENAME = 'c:\dev\node3\tpch100g_data19.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data20,
    FILENAME = 'c:\dev\node4\tpch100g_data20.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data21,
    FILENAME = 'c:\dev\node1\tpch100g_data21.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data22,
    FILENAME = 'c:\dev\node2\tpch100g_data22.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data23,
    FILENAME = 'c:\dev\node3\tpch100g_data23.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data24,
    FILENAME = 'c:\dev\node4\tpch100g_data24.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data25,
    FILENAME = 'c:\dev\node1\tpch100g_data25.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data26,
    FILENAME = 'c:\dev\node2\tpch100g_data26.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data27,
    FILENAME = 'c:\dev\node3\tpch100g_data27.mdf',
    SIZE = 5500MB,
```

```

FILEGROWTH = 10),
(
    NAME = tpch100g_data28,
    FILENAME = 'c:\dev\node4\tpch100g_data28.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data29,
    FILENAME = 'c:\dev\node1\tpch100g_data29.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data30,
    FILENAME = 'c:\dev\node2\tpch100g_data30.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data31,
    FILENAME = 'c:\dev\node3\tpch100g_data31.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_data32,
    FILENAME = 'c:\dev\node4\tpch100g_data32.mdf',
    SIZE = 5500MB,
    FILEGROWTH = 10),
FILEGROUP LOAD_FG
(
    NAME = tpch100g_load1,
    FILENAME = 'z:\load\tpch100g_load1.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load2,
    FILENAME = 'z:\load\tpch100g_load2.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load3,
    FILENAME = 'z:\load\tpch100g_load3.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load4,
    FILENAME = 'z:\load\tpch100g_load4.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load5,
    FILENAME = 'z:\load\tpch100g_load5.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load6,
    FILENAME = 'z:\load\tpch100g_load6.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load7,
    FILENAME = 'z:\load\tpch100g_load7.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load8,
    FILENAME = 'z:\load\tpch100g_load8.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load9,
    FILENAME = 'z:\load\tpch100g_load9.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load10,
    FILENAME = 'z:\load\tpch100g_load10.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load11,
    FILENAME = 'z:\load\tpch100g_load11.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load12,
    FILENAME = 'z:\load\tpch100g_load12.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),

```

```

(
    NAME = tpch100g_load13,
    FILENAME = 'z:\load\tpch100g_load13.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load14,
    FILENAME = 'z:\load\tpch100g_load14.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load15,
    FILENAME = 'z:\load\tpch100g_load15.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load16,
    FILENAME = 'z:\load\tpch100g_load16.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10)

LOG ON
(
    NAME = tpch100g_Log1,
    FILENAME = 'C:\tpch100g_Log1.mdf',
    SIZE = 20000MB,
    FILEGROWTH = 0MB)

```

B.2 CreateTables.sql

```

-- File: CREATETABLES.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
-- Copyright Microsoft, 2006 - 2009
--

```

```

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 float not null,
P_COMMENT varchar(23) not null)
on LOAD_FG

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 float not null,
S_COMMENT varchar(101) not null)
on LOAD_FG

create table PARTSUPP
(PS_PARTKEY int not null,
PS_SUPPKEY int not null,
PS_AVAILQTY int not null,
PS_SUPPLYCOST float not null,
PS_COMMENT varchar(199) not null)
on LOAD_FG

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    float          not null,
        C_MKTSEGMENT char(10)     not null,
        C_COMMENT    varchar(117)  not null)
on LOAD_FG

create table ORDERS
(O_ORDERKEY      bigint          not null,
 O_CUSTKEY       int             not null,
 O_ORDERSTATUS   char(1)         not null,
 O_TOTALPRICE    float           not null,
 O_ORDERDATE     date            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 LOAD_FG

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      float           not null,
 L_EXTENDEDPRICE float           not null,
 L_DISCOUNT     float           not null,
 L_TAX           float           not null,
 L_RETURNFLAG    char(1)         not null,
 L_LINESTATUS    char(1)         not null,
 L_SHIPDATE      date            not null,
 L_COMMITDATE    date            not null,
 L_RECEIPTDATE   date            not null,
 L_SHIPINSTRUCT char(25)        not null,
 L_SHIPMODE      char(10)        not null,
 L_COMMENT       varchar(44)     not null)
on LOAD_FG

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 LOAD_FG

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

```

B.3 CreateIndexes_1.sql

```

-- File:  CREATECLUSTEREDINDEXES.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
-- Copyright Microsoft, 2006 - 2009
--

ALTER TABLE NATION ADD CONSTRAINT PK_N_NATIONKEY
PRIMARY KEY (N_NATIONKEY)
ON DATA_FG

ALTER TABLE REGION ADD CONSTRAINT PK_R_REGIONKEY
PRIMARY KEY (R_REGIONKEY)
ON DATA_FG

CREATE INDEX N_REGIONKEY_IDX ON NATION(N_REGIONKEY)
WITH (fillfactor=100, SORT_IN_TEMPDB=ON, MAXDOP=16)

```

```

ON DATA_FG

ALTER TABLE PART ADD CONSTRAINT PK_P_PARTKEY
PRIMARY KEY (P_PARTKEY)
WITH (MAXDOP=16)
ON DATA_FG

ALTER TABLE SUPPLIER ADD CONSTRAINT PK_S_SUPPKEY
PRIMARY KEY (S_SUPPKEY)
WITH (MAXDOP=16)
ON DATA_FG

CREATE INDEX S_NATIONKEY_IDX ON
SUPPLIER(S_NATIONKEY)
WITH (FILLFACTOR=100, SORT_IN_TEMPDB=ON, MAXDOP=16)
ON DATA_FG

ALTER TABLE CUSTOMER ADD CONSTRAINT PK_C_CUSTKEY
PRIMARY KEY (C_CUSTKEY)
WITH (MAXDOP=16)
ON DATA_FG

ALTER TABLE PARTSUPP ADD CONSTRAINT
PK_PS_PARTKEY_PS_SUPPKEY PRIMARY KEY (PS_PARTKEY,
PS_SUPPKEY)
WITH (MAXDOP=16)
ON DATA_FG

CREATE CLUSTERED INDEX O_ORDERDATE_CLUIDX ON
ORDERS(O_ORDERDATE)
WITH (FILLFACTOR=95, SORT_IN_TEMPDB=ON, MAXDOP=16)
ON DATA_FG

ALTER TABLE ORDERS ADD CONSTRAINT PK_O_ORDERKEY
PRIMARY KEY (O_ORDERKEY)
WITH (FILLFACTOR = 95, MAXDOP=16)
ON DATA_FG

```

B.4 CreateIndexes_2.sql

```

-- File:  CREATEINDEXESSTREAM2.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005-1004
-- Copyright Microsoft, 2006 - 2009
--

CREATE INDEX PS_SUPPKEY_IDX ON PARTSUPP(PS_SUPPKEY)
WITH( FILLFACTOR=100, SORT_IN_TEMPDB=ON, MAXDOP=16)
ON DATA_FG

CREATE CLUSTERED INDEX L_SHIPDATE_CLUIDX ON
LINEITEM(L_SHIPDATE)
WITH ( FILLFACTOR=95, SORT_IN_TEMPDB=ON, MAXDOP=16)
ON DATA_FG

CREATE INDEX L_ORDERKEY_IDX ON LINEITEM(L_ORDERKEY)
WITH ( FILLFACTOR=95, SORT_IN_TEMPDB=ON, MAXDOP=16)
ON DATA_FG

CREATE INDEX L_PARTKEY_IDX ON LINEITEM(L_PARTKEY)
WITH (FILLFACTOR=95, SORT_IN_TEMPDB=ON, MAXDOP=16)
ON DATA_FG

```

B.5 CreateFK.sql

```

--
-- File:  CREATERFK.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005

```

```

--      Copyright Microsoft, 2006 - 2009
--

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_S_NATIONKEY' )
    ALTER TABLE SUPPLIER ADD CONSTRAINT
    FK_S_NATIONKEY
        FOREIGN KEY (S_NATIONKEY) REFERENCES
        NATION(N_NATIONKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_PS_PARTKEY' )
    ALTER TABLE PARTSUPP ADD CONSTRAINT FK_PS_PARTKEY
        FOREIGN KEY (PS_PARTKEY) REFERENCES
        PART(P_PARTKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_PS_SUPPKEY' )
    ALTER TABLE PARTSUPP ADD CONSTRAINT FK_PS_SUPPKEY
        FOREIGN KEY (PS_SUPPKEY) REFERENCES
        SUPPLIER(S_SUPPKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_C_NATIONKEY' )
    ALTER TABLE CUSTOMER ADD CONSTRAINT
    FK_C_NATIONKEY
        FOREIGN KEY (C_NATIONKEY) REFERENCES
        NATION(N_NATIONKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_O_CUSTKEY' )
    ALTER TABLE ORDERS ADD CONSTRAINT FK_O_CUSTKEY
        FOREIGN KEY (O_CUSTKEY) REFERENCES
        CUSTOMER(C_CUSTKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_N_REGIONKEY' )
    ALTER TABLE NATION ADD CONSTRAINT FK_N_REGIONKEY
        FOREIGN KEY (N_REGIONKEY) REFERENCES
        REGION(R_REGIONKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_L_ORDERKEY' )
    ALTER TABLE LINEITEM ADD CONSTRAINT FK_L_ORDERKEY
        FOREIGN KEY (L_ORDERKEY) REFERENCES
        ORDERS(O_ORDERKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_L_PARTKEY' )
    ALTER TABLE LINEITEM ADD CONSTRAINT FK_L_PARTKEY
        FOREIGN KEY (L_PARTKEY) REFERENCES
        PART(P_PARTKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_L_SUPPKEY' )
    ALTER TABLE LINEITEM ADD CONSTRAINT FK_L_SUPPKEY
        FOREIGN KEY (L_SUPPKEY) REFERENCES
        SUPPLIER(S_SUPPKEY)
GO

IF NOT EXISTS ( SELECT name FROM sysobjects WHERE name =
'FK_L_PARTKEY_SUPPKEY' )

```

```

    ALTER TABLE LINEITEM ADD CONSTRAINT
    FK_L_PARTKEY_SUPPKEY
        FOREIGN KEY (L_PARTKEY,L_SUPPKEY) REFERENCES
        PARTSUPP(PS_PARTKEY, PS_SUPPKEY)
GO

```

B.6 BackupDatabase.sql

```

backup database tpch100g to
disk='Z:\hp_backup\hp_backup1.bak',
disk='Z:\hp_backup\hp_backup2.bak',
disk='Z:\hp_backup\hp_backup3.bak',
disk='Z:\hp_backup\hp_backup4.bak',
disk='Z:\hp_backup\hp_backup5.bak',
disk='Z:\hp_backup\hp_backup6.bak',
disk='Z:\hp_backup\hp_backup7.bak',
disk='Z:\hp_backup\hp_backup8.bak'
with init,format, maxtransfersize=1048576,
BUFFERCOUNT=1000,stats=1

```

B.7 RestoreDatabase.sql

```

restore database tpch100g from
disk='Z:\hp_backup\hp_backup1.bak',
disk='Z:\hp_backup\hp_backup2.bak',
disk='Z:\hp_backup\hp_backup3.bak',
disk='Z:\hp_backup\hp_backup4.bak',
disk='Z:\hp_backup\hp_backup5.bak',
disk='Z:\hp_backup\hp_backup6.bak',
disk='Z:\hp_backup\hp_backup7.bak',
disk='Z:\hp_backup\hp_backup8.bak'
with stats=1, maxtransfersize=1048576, BUFFERCOUNT=1000, replace

```

B.8 MoveTempDB.sql

```

-- File: MOVE_RESIZE_TEMPDB.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
-- Copyright Microsoft, 2006 - 2009

```

```

ALTER DATABASE tempdb
    MODIFY FILE (NAME='tempdev',
FILENAME='C:\dev\node1\TempDB.mdf')
GO

```

```

ALTER DATABASE tempdb
    MODIFY FILE (NAME='templog', FILENAME='c:\templog.ldf')
GO

```

```

ALTER DATABASE tempdb
    MODIFY FILE (NAME='tempdev',
FILENAME='C:\dev\node1\TempDB.mdf', SIZE=20000MB,
FILEGROWTH=10)
GO

```

```
ALTER DATABASE tempdb
  MODIFY FILE (NAME='templog', FILENAME='c:\templog.ldf',
  SIZE=5000MB, FILEGROWTH=10)
GO
```

```
ALTER DATABASE tempdb
  ADD FILE (NAME='tempdev_1',
  FILENAME='c:\dev\node2\TempDB_1.mdf', SIZE=20000MB,
  FILEGROWTH=10)
GO
```

```
ALTER DATABASE tempdb
  ADD FILE (NAME='tempdev_2',
  FILENAME='c:\dev\node3\TempDB_2.mdf', SIZE=20000MB,
  FILEGROWTH=10)
GO
```

```
ALTER DATABASE tempdb
  ADD FILE (NAME='tempdev_3',
  FILENAME='c:\dev\node4\TempDB_3.mdf', SIZE=20000MB,
  FILEGROWTH=10)
GO
```

B.9 DelLoadFg.sql

```
alter database tpch100g remove file tpch100g_load1
alter database tpch100g remove file tpch100g_load2
alter database tpch100g remove file tpch100g_load3
alter database tpch100g remove file tpch100g_load4
alter database tpch100g remove file tpch100g_load5
alter database tpch100g remove file tpch100g_load6
alter database tpch100g remove file tpch100g_load7
alter database tpch100g remove file tpch100g_load8
alter database tpch100g remove file tpch100g_load9
alter database tpch100g remove file tpch100g_load10
alter database tpch100g remove file tpch100g_load11
alter database tpch100g remove file tpch100g_load12
alter database tpch100g remove file tpch100g_load13
alter database tpch100g remove file tpch100g_load14
alter database tpch100g remove file tpch100g_load15
alter database tpch100g remove file tpch100g_load16
alter database tpch100g remove filegroup LOAD_FG
```

Appendix C: Query Text and Output

C.1 Qualification Queries and Output

Qualification Query 1

-- using default substitutions

/* TPC_H Query 1 - Pricing Summary Report */

```

SELECT  L_RETURNFLAG,
        L_LINESTATUS,
        SUM(L_QUANTITY)
          AS SUM_QTY,
        SUM(L_EXTENDEDPRICE)
          AS SUM_BASE_PRICE,
        SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT))
          AS SUM_DISC_PRICE,
        SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)*(1+L_TAX))
          AS SUM_CHARGE,
        AVG(L_QUANTITY)
          AS AVG_QTY,
        AVG(L_EXTENDEDPRICE)
          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
date))
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      37734107.000000      56586554400.730301
53758257134.870041      55909065222.827415      25.522006
38273.129735      0.049985      1478493
N      F      991417.000000      1487504710.380000
1413082168.054097      1469649223.194375      25.516472
38284.467761      0.050009      38854
N      O      74476040.000000      111701729697.739110
106118230307.605260      110367043872.498210      25.502227
38249.117989      0.049997      2920374
R      F      37719753.000000      56568041380.899857
53741292684.604156      55889619119.832260      25.505794
38250.854626      0.050009      1478870

```

(4 row(s) affected)

Qualification Query 2

-- using default substitutions

/* TPC_H Query 2 - Minimum Cost Supplier */

```

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
-----
9938.530000      Supplier#000005359      UNITED KINGDOM
185358      Manufacturer#4      QKuHYh,vZGiwu2FWEJoLDx04
33-429-790-6131 blithely silent pinto beans are furiously. slyly final deposits
acros
9937.840000      Supplier#000005969      ROMANIA
108438      Manufacturer#1
ANDENSOSmk,miq23Xfb5RWt6dvUcvt6Qa      29-520-692-3537
carefully slow deposits use furiously. slyly ironic platelets above the ironic
9936.220000      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
9923.770000      Supplier#000002324      GERMANY
29821      Manufacturer#4      y3OD9UywSTok      17-
779-299-1839 quickly express packages breach quiet pinto beans. requ

```

```

9871.220000 Supplier#000006373 GERMANY
43868 Manufacturer#5 J8fcXW5TqM 17-813-
485-8637 never silent deposits integrate furiously blit
9870.780000 Supplier#000001286 GERMANY
81285 Manufacturer#2
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special,
9870.780000 Supplier#000001286 GERMANY
181285 Manufacturer#4
YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special,
9852.520000 Supplier#000008973 RUSSIA 18972
Manufacturer#2 t5L67YdBYH6o,Vz24jpDyQ9 32-188-
594-7038 quickly regular instructions wake-- carefully unusual braids into
the expres
9847.830000 Supplier#000008097 RUSSIA 130557
Manufacturer#2 xMe97bpE69NzdwLoX 32-375-640-
3593 slyly regular dependencies sleep slyly furiously express dep
9847.570000 Supplier#000006345 FRANCE 86344
Manufacturer#1 VSt3rzK3qG698u6ld8HhOByvrTcSTSvQIDQDag
16-886-766-7945 silent pinto beans should have to snooze carefully along
the final reques
9847.570000 Supplier#000006345 FRANCE
173827 Manufacturer#2
VSt3rzK3qG698u6ld8HhOByvrTcSTSvQIDQDag 16-886-766-7945 silent
pinto beans should have to snooze carefully along the final reques
9836.930000 Supplier#000007342 RUSSIA 4841
Manufacturer#4 JOIK7C1,7xrEZSSow 32-399-414-
5385 final accounts haggle. bold accounts are furiously dugouts. furiously
silent asymptotes are slyly

```

..... additional rows deleted

```

7887.080000 Supplier#000009792 GERMANY
164759 Manufacturer#3 Y28ITVeYriT3kiGdV2K8fSZ
V2UqT5H1Otz 17-988-938-4296 pending, ironic packages sleep among
the carefully ironic accounts. quickly final accounts
7871.500000 Supplier#000007206 RUSSIA 104695
Manufacturer#1 3w fNcNrvmvJJE95sgWZzvW 32-432-
452-7731 furiously dogged pinto beans cajole. bold, express notornis until
the slyly pending
7852.450000 Supplier#000005864 RUSSIA 8363
Manufacturer#4 WCNfBPZcSXh3h,c 32-454-883-
3821 blithely regular deposits
7850.660000 Supplier#000001518 UNITED KINGDOM
86501 Manufacturer#1 ONda3YJiHKJOC 33-
730-383-3892 furiously final accounts wake carefully idle requests. even
dolphins wake acc
7843.520000 Supplier#000006683 FRANCE 11680
Manufacturer#4 2Z0JGkiv01Y0oCFwUGfviIbhZCdy 16-464-
517-8943 carefully bold accounts doub

```

(100 row(s) affected)

Qualification Query 3

-- using default substitutions

/* TPC_H Query 3 - Shipping Priority */

```

SELECT TOP 10
    L_ORDERKEY,
    SUM(L_EXTENDEDPRICE*(1-L_DISCOUNT)) AS
REVENUE,
    O_ORDERDATE,
    O_SHIPRIORITY
FROM CUSTOMER,

```

```

ORDERS,
LINEITEM
WHERE C_MKTSEGMENT = 'BUILDING' AND
      C_CUSTKEY = O_CUSTKEY AND
      L_ORDERKEY = O_ORDERKEY AND
      O_ORDERDATE < '1995-03-15' AND
      L_SHIPDATE > '1995-03-15'

```

```

GROUP BY L_ORDERKEY,
          O_ORDERDATE,
          O_SHIPRIORITY
ORDER BY REVENUE DESC,
          O_ORDERDATE

```

```

L_ORDERKEY REVENUE O_ORDERDATE
O_SHIPRIORITY
-----

```

```

2456423 406181.011100 1995-03-05 00:00:00.000 0
3459808 405838.698900 1995-03-04 00:00:00.000 0
492164 390324.061000 1995-02-19 00:00:00.000 0
1188320 384537.935900 1995-03-09 00:00:00.000 0
2435712 378673.055800 1995-02-26 00:00:00.000 0
4878020 378376.795200 1995-03-12 00:00:00.000 0
5521732 375153.921500 1995-03-13 00:00:00.000 0
2628192 373133.309400 1995-02-22 00:00:00.000 0
993600 371407.459500 1995-03-05 00:00:00.000 0
2300070 367371.145200 1995-03-13 00:00:00.000 0

```

(10 row(s) affected)

Qualification Query 4

-- using default substitutions

/* TPC_H Query 4 - Order Priority Checking */

```

SELECT O_ORDERPRIORITY,
       COUNT(*) AS ORDER_COUNT
FROM ORDERS
WHERE O_ORDERDATE >= '1993-07-01' AND
      O_ORDERDATE < dateadd (mm, 3, cast ('1993-07-01' as
date)) 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 row(s) affected)

Qualification Query 5

-- using default substitutions

/* TPC_H Query 5 - Local Supplier Volume */

```

SELECT  N_NAME,
        SUM(L_EXTENDEDPRI*(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

```

```

date))
GROUP  BY      N_NAME
ORDER  BY      REVENUE DESC

```

N_NAME	REVENUE
INDONESIA	55502041.169700
VIETNAM	55295086.996700
CHINA	53724494.256600
INDIA	52035512.000200
JAPAN	45410175.695400

(5 row(s) affected)

Qualification Query 6

-- using default substitutions

/* TPC_H Query 6 - Forecasting Revenue Change */

```

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
date)) AND
        L_DISCOUNT    BETWEEN 0.06 - 0.01 AND 0.06 + 0.01
AND
        L_QUANTITY     < 24

```

```

REVENUE
-----
123141078.228300

```

(1 row(s) affected)

Qualification Query 7

-- using default substitutions

/* TPC_H Query 7 - Volume Shipping */

```

SELECT  SUPP_NATION,
        CUST_NATION,

```

```

L_YEAR,
SUM(VOLUME) AS REVENUE
FROM    ( SELECT  N1.N_NAME
            AS SUPP_NATION,
            N2.N_NAME
            AS CUST_NATION,
            datepart(yy,L_SHIPDATE)
            AS L_YEAR,
            L_EXTENDEDPRI*(1-L_DISCOUNT)
            AS VOLUME
        FROM  SUPPLIER,
            LINEITEM,
            ORDERS,
            CUSTOMER,
            NATION N1,
            NATION N2
        WHERE S_SUPPKEY      = L_SUPPKEY
AND
            O_ORDERKEY     = L_ORDERKEY
AND
            C_CUSTKEY      = O_CUSTKEY
AND
            S_NATIONKEY    =
N1.N_NATIONKEY AND
            C_NATIONKEY    =
N2.N_NATIONKEY AND
            (              (N1.N_NAME    =
'FRANCE' AND N2.N_NAME = 'GERMANY')
            OR
            (N1.N_NAME    =
'GERMANY' AND N2.N_NAME = 'FRANCE')
            ) AND
            L_SHIPDATE     BETWEEN '1995-
01-01' AND '1996-12-31'
        )
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	54639732.733600
FRANCE	GERMANY	1996	54633083.307600
GERMANY	FRANCE	1995	52531746.669700
GERMANY	FRANCE	1996	52520549.022400

(4 row(s) affected)

Qualification Query 8

-- using default substitutions

/* TPC_H Query 8 - National Market Share */

```

SELECT  O_YEAR,
        SUM(CASE WHEN  NATION = 'BRAZIL'
                  THEN  VOLUME
                  ELSE  0
                  END) / SUM(VOLUME) AS
MKT_SHARE
FROM    ( SELECT  datepart(yy,O_ORDERDATE)
            AS O_YEAR,
            L_EXTENDEDPRI * (1-
L_DISCOUNT) AS VOLUME,

```

```

                N2.N_NAME
AS NATION
FROM PART,
SUPPLIER,
LINEITEM,
ORDERS,
CUSTOMER,
NATION N1,
NATION N2,
REGION
WHERE P_PARTKEY = L_PARTKEY
AND
S_SUPPKEY = L_SUPPKEY
AND
L_ORDERKEY = O_ORDERKEY
AND
O_CUSTKEY = C_CUSTKEY
AND
C_NATIONKEY =
N1.N_NATIONKEY AND
N1.N_REGIONKEY = R_REGIONKEY
AND
R_NAME = 'AMERICA' AND
S_NATIONKEY =
N2.N_NATIONKEY AND
O_ORDERDATE BETWEEN '1995-
01-01' AND '1996-12-31' AND
ANODIZED STEEL'
P_TYPE = 'ECONOMY
) AS ALL_NATIONS
GROUP BY O_YEAR
ORDER BY O_YEAR
O_YEAR MKT_SHARE
-----
1995 0.034436
1996 0.041486
(2 row(s) affected)

```

Qualification Query 9

-- using default substitutions

/* TPC_H Query 9 - Product Type Profit Measure */

```

SELECT NATION,
O_YEAR,
SUM(AMOUNT) AS SUM_PROFIT
FROM (
SELECT N_NAME
AS NATION,
datepart(yy, 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 31342867.234500
ALGERIA 1997 57138193.023300
ALGERIA 1996 56140140.133000
ALGERIA 1995 53051469.653400
ALGERIA 1994 53867582.128600
ALGERIA 1993 54942718.132400
ALGERIA 1992 54628034.712700
ARGENTINA 1998 30211185.708100
ARGENTINA 1997 50805741.752300
ARGENTINA 1996 51923746.575500
ARGENTINA 1995 49298625.766600
ARGENTINA 1994 50835610.109500
ARGENTINA 1993 51646079.177500
ARGENTINA 1992 50410314.994800
BRAZIL 1998 27217924.383200
BRAZIL 1997 48378669.198900
BRAZIL 1996 50482870.357200
BRAZIL 1995 47623383.634900
BRAZIL 1994 47840165.725600
BRAZIL 1993 49054694.035100
BRAZIL 1992 48667639.084200
CANADA 1998 30379833.768500
CANADA 1997 50465052.311400
CANADA 1996 52560501.390400
CANADA 1995 52375332.809200
CANADA 1994 52600364.658700

```

..... additional rows deleted

```

UNITED STATES 1993 48029946.801400
UNITED STATES 1992 48671944.498300
VIETNAM 1998 30442736.059400
VIETNAM 1997 50309179.794200
VIETNAM 1996 50488161.410000
VIETNAM 1995 49658284.612500
VIETNAM 1994 50596057.260700
VIETNAM 1993 50953919.151900
VIETNAM 1992 49613838.315100

```

(175 row(s) affected)

Qualification Query 10

-- using default substitutions

/* TPC_H Query 10 - Returned Item Reporting */

```

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 date
))
AND
L_RETURNFLAG = 'R' AND
C_NATIONKEY = N_NATIONKEY
GROUP BY C_CUSTKEY,
C_NAME,
C_ACCTBAL,
C_PHONE,
N_NAME,
C_ADDRESS,
C_COMMENT
ORDER BY REVENUE DESC
C_CUSTKEY C_NAME REVENUE C_ACCTBAL
N_NAME C_ADDRESS C_PHONE
C_COMMENT
-----
-----

```

```

57040 Customer#000057040 734235.245500 632.870000
JAPAN Eioyzjf4pp 22-895-641-3466
requests sleep blithely about the furiously i
143347 Customer#000143347 721002.694800 2557.470000
EGYPT 1aReFYv,Kw4 14-742-935-3718
fluffily bold excuses haggle finally after the u
60838 Customer#000060838 679127.307700 2454.770000
BRAZIL 64EaJ5vMAHWJIBOXJklpNc2RJIWE 12-913-
494-9813 furiously even pinto beans integrate under the ruthless foxes;
ironic, even dolphins across the slyl
101998 Customer#000101998 637029.566700 3790.890000
UNITED KINGDOM 01e9CILnNtfOQYmZj 33-593-
865-6378 accounts doze blithely! enticing, final deposits sleep blithely
special accounts. slyly express accounts pla
125341 Customer#000125341 633508.086000 4983.510000
GERMANY S29ODD6bceU8QSuueJznkNaK 17-582-
695-5962 quickly express requests wake quickly blithely
25501 Customer#000025501 620269.784900 7725.040000
ETHIOPIA W556MXuoiaYCCZamJI,Rn0B4ACUGdkQ8DZ
15-874-808-6793 quickly special requests sleep evenly among the special
deposits. special deposi
115831 Customer#000115831 596423.867200 5098.100000
FRANCE rFeBbEEyk dl ne7zV5fDrmiq1oK09wV7pxqCgIc 16-
715-386-3788 carefully bold excuses sleep alongside of the thinly idle
84223 Customer#000084223 594998.023900 528.650000
UNITED KINGDOM nAVZCS6BaWap rM27N 2qBnc5WBauxbA
33-442-824-8191 pending, final ideas haggle final requests. unusual, regular
asymptotes affix according to the even foxes.
54289 Customer#000054289 585603.391800 5583.020000
IRAN vXCxoCsU0Bad5JQI ,oobkZ 20-834-292-
4707 express requests sublata blithely regular requests. regular, even ideas
solve.
39922 Customer#000039922 584878.113400 7321.110000
GERMANY Zgy4s5012GKN4pLDPBU8m342glw6R 17-
147-757-8036 even pinto beans haggle. slyly bold accounts inte
6226 Customer#000006226 576783.760600 2230.090000
UNITED KINGDOM 8gPu8,NPGkfyQQOhcIYUGPIBwC,ybP5g,

```

```

33-657-701-3391 quickly final requests against the regular instructions wake
blithely final instructions. pa
922 Customer#000000922 576767.533300 3869.250000
GERMANY Az9RFaut7NkPnc5zSD2PwHgVwr4jRzq 17-
945-916-9648 boldly final requests cajole blith
147946 Customer#000147946 576455.132000 2030.130000
ALGERIA iANyZHjqhyy7AjahOpTrYyhJ 10-886-956-
3143 furiously even accounts are blithely above the furiousl
115640 Customer#000115640 569341.193300 6436.100000
ARGENTINA Vtgfia9ql 7EpHgecU1X 11-411-543-
4901 final instructions are slyly according to the
73606 Customer#000073606 568656.857800 1785.670000
JAPAN xuR0Tro5yChDfOCrjkd2ol 22-437-653-
6966 furiously bold orbits about the furiously busy requests wake across the
furiously quiet theodolites. d
110246 Customer#000110246 566842.981500 7763.350000
VIETNAM 7KzflgX MDOq7sOkI 31-943-426-
9837 dolphins sleep blithely among the slyly final
142549 Customer#000142549 563537.236800 5085.990000
INDONESIA ChqEoK43OysjdHbtKCP6dKqjNyvvi9 19-
955-562-2398 regular, unusual dependencies boost slyly; ironic attainments
nag fluffily into the unusual packages?
146149 Customer#000146149 557254.986500 1791.550000
ROMANIA s87fvzFQpU 29-744-164-6487
silent, unusual requests detect quickly slyly regul
52528 Customer#000052528 556397.350900 551.790000
ARGENTINA NFztyTOR10UOJ 11-208-192-
3205 unusual requests detect. slyly dogged theodolites use slyly. deposit
23431 Customer#000023431 554269.536000 3381.860000
ROMANIA HgiV0phqhaIa9aydNoIlb 29-915-458-
2654 instructions nag quickly. furiously bold accounts cajol

```

(20 row(s) affected)

Qualification Query 11

-- using default substitutions

/* TPC_H Query 11 - Important Stock Identification */

```

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 17538456.860000
166726 16503353.920000
191287 16474801.970000
161758 16101755.540000
34452 15983844.720000
139035 15907078.340000
9403 15451755.620000
154358 15212937.880000
38823 15064802.860000
85606 15053957.150000
33354 14408297.400000
154747 14407580.680000
82865 14235489.780000
76094 14094247.040000
222 13937777.740000
121271 13908336.000000
55221 13716120.470000
22819 13666434.280000
76281 13646853.680000
85298 13581154.930000
85158 13554904.000000
139684 13535538.720000
31034 13498025.250000

```

... additional rows deleted ...

```

122819 7888881.020000
154731 7888301.330000
101674 7879324.600000
51968 7879102.210000
72073 7877736.110000
5182 7874521.730000

```

(1048 row(s) affected)

Qualification Query 12

-- using default substitutions

/* TPC_H Query 12 - Shipping Modes and Order Priority */

```

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 date))
GROUP BY L_SHIPMODE
ORDER BY L_SHIPMODE

L_SHIPMODE HIGH_LINE_COUNT LOW_LINE_COUNT

```

```

-----
MAIL 6202 9324
SHIP 6200 9262

```

(2 row(s) affected)

Qualification Query 13

-- using default substitutions

/* TPC_H Query 13 - Customer Distribution */

```

SELECT C_COUNT,
       COUNT(*) AS CUSTDIST
FROM   ( SELECT C_CUSTKEY,
              COUNT(O_ORDERKEY)
        FROM CUSTOMER left outer join ORDERS on
              C_CUSTKEY = O_CUSTKEY
        AND
              O_COMMENT not like
              '%special%requests%'
        )
GROUP BY C_CUSTKEY
AS C_ORDERS (C_CUSTKEY, C_COUNT)
ORDER BY C_COUNT
        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 row(s) affected)

Qualification Query 14

-- using default substitutions

/* TPC_H Query 14 - Promotion Effect */

```
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
date))
```

```
PROMO_REVENUE
-----
16.380779
```

(1 row(s) affected)

Qualification Query 15

-- using default substitutions

/* TPC_H Query 15 - Create View for Top Supplier Query */

```
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
date))
GROUP BY L_SUPPKEY
GO
```

/* TPC_H Query 15 - Top Supplier */

```
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 1772627.208700
```

(1 row(s) affected)

Qualification Query 16

-- using default substitutions

/* TPC_H Query 16 - Parts/Supplier Relationship */

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

```
P_BRAND P_TYPE P_SIZE SUPPLIER_CNT
-----
```

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

.... Additional rows deleted

```

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 row(s) affected)

Qualification Query 17

-- using default substitutions

/* TPC_H Query 17 - Small-Quantity-Order Revenue */

```

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

```

AVG_YEARLY

348406.054286

(1 row(s) affected)

Qualification Query 18

-- using default substitutions

/* TPC_H Query 18 - Large Volume Customer */

```

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
O_ORDERKEY = L_ORDERKEY
GROUP BY
C_NAME,
C_CUSTKEY,
O_ORDERKEY,
O_ORDERDATE,

```

ORDER BY	O_TOTALPRICE	O_TOTALPRICE	DESC,
C_NAME	C_CUSTKEY	O_ORDERKEY	O_ORDERDATE
O_ORDERDATE	O_TOTALPRICE		
Customer#000128120	128120	4722021	1994-04-07
00:00:00.000 544089.090000		323.000000	
Customer#000144617	144617	3043270	1997-02-12
00:00:00.000 530604.440000		317.000000	
Customer#000013940	13940	2232932	1997-04-13
00:00:00.000 522720.610000		304.000000	
Customer#000066790	66790	2199712	1996-09-30
00:00:00.000 515531.820000		327.000000	
Customer#000046435	46435	4745607	1997-07-03
00:00:00.000 508047.990000		309.000000	
Customer#000015272	15272	3883783	1993-07-28
00:00:00.000 500241.330000		302.000000	
Customer#000146608	146608	3342468	1994-06-12
00:00:00.000 499794.580000		303.000000	
Customer#000096103	96103	5984582	1992-03-16
00:00:00.000 494398.790000		312.000000	
Customer#000024341	24341	1474818	1992-11-15
00:00:00.000 491348.260000		302.000000	
Customer#000137446	137446	5489475	1997-05-23
00:00:00.000 487763.250000		311.000000	
Customer#000107590	107590	4267751	1994-11-04
00:00:00.000 485141.380000		301.000000	
Customer#000050008	50008	2366755	1996-12-09
00:00:00.000 483891.260000		302.000000	
Customer#000015619	15619	3767271	1996-08-07
00:00:00.000 480083.960000		318.000000	
Customer#000077260	77260	1436544	1992-09-12
00:00:00.000 479499.430000		307.000000	
Customer#000109379	109379	5746311	1996-10-10
00:00:00.000 478064.110000		302.000000	
Customer#000054602	54602	5832321	1997-02-09
00:00:00.000 471220.080000		307.000000	
Customer#000105995	105995	2096705	1994-07-03
00:00:00.000 469692.580000		307.000000	
Customer#000148885	148885	2942469	1992-05-31
00:00:00.000 469630.440000		313.000000	
Customer#000114586	114586	551136	1993-05-19
00:00:00.000 469605.590000		308.000000	
Customer#000105260	105260	5296167	1996-09-06
00:00:00.000 469360.570000		303.000000	
Customer#000147197	147197	1263015	1997-02-02
00:00:00.000 467149.670000		320.000000	
Customer#000064483	64483	2745894	1996-07-04
00:00:00.000 466991.350000		304.000000	
Customer#000136573	136573	2761378	1996-05-31
00:00:00.000 461282.730000		301.000000	
Customer#000016384	16384	502886	1994-04-12
00:00:00.000 458378.920000		312.000000	
Customer#000117919	117919	2869152	1996-06-20
00:00:00.000 456815.920000		317.000000	
Customer#000012251	12251	735366	1993-11-24
00:00:00.000 455107.260000		309.000000	
Customer#000120098	120098	1971680	1995-06-14
00:00:00.000 453451.230000		308.000000	
Customer#000066098	66098	5007490	1992-08-07
00:00:00.000 453436.160000		304.000000	
Customer#000117076	117076	4290656	1997-02-05
00:00:00.000 449545.850000		301.000000	
Customer#000129379	129379	4720454	1997-06-07
00:00:00.000 448665.790000		303.000000	
Customer#000126865	126865	4702759	1994-11-07
00:00:00.000 447606.650000		320.000000	

Customer#000088876	88876	983201	1993-12-30
00:00:00.000	446717.460000	304.000000	
Customer#000036619	36619	4806726	1995-01-17
00:00:00.000	446704.090000	328.000000	
Customer#000141823	141823	2806245	1996-12-29
00:00:00.000	446269.120000	310.000000	
Customer#000053029	53029	2662214	1993-08-13
00:00:00.000	446144.490000	302.000000	
Customer#000018188	18188	3037414	1995-01-25
00:00:00.000	443807.220000	308.000000	
Customer#000066533	66533	29158	1995-10-21
00:00:00.000	443576.500000	305.000000	
Customer#000037729	37729	4134341	1995-06-29
00:00:00.000	441082.970000	309.000000	
Customer#000003566	3566	2329187	1998-01-04
00:00:00.000	439803.360000	304.000000	
Customer#000045538	45538	4527553	1994-05-22
00:00:00.000	436275.310000	305.000000	
Customer#000081581	81581	4739650	1995-11-04
00:00:00.000	435405.900000	305.000000	
Customer#000119989	119989	1544643	1997-09-20
00:00:00.000	434568.250000	320.000000	
Customer#000003680	3680	3861123	1998-07-03
00:00:00.000	433525.970000	301.000000	
Customer#000113131	113131	967334	1995-12-15
00:00:00.000	432957.750000	301.000000	
Customer#000141098	141098	565574	1995-09-24
00:00:00.000	430986.690000	301.000000	
Customer#000093392	93392	5200102	1997-01-22
00:00:00.000	425487.510000	304.000000	
Customer#000015631	15631	1845057	1994-05-12
00:00:00.000	419879.590000	302.000000	
Customer#000112987	112987	4439686	1996-09-17
00:00:00.000	418161.490000	305.000000	
Customer#000012599	12599	4259524	1998-02-12
00:00:00.000	415200.610000	304.000000	
Customer#000105410	105410	4478371	1996-03-05
00:00:00.000	412754.510000	302.000000	
Customer#000149842	149842	5156581	1994-05-30
00:00:00.000	411329.350000	302.000000	
Customer#000010129	10129	5849444	1994-03-21
00:00:00.000	409129.850000	309.000000	
Customer#000069904	69904	1742403	1996-10-19
00:00:00.000	408513.000000	305.000000	
Customer#000017746	17746	6882	1997-04-09
00:00:00.000	408446.930000	303.000000	
Customer#000013072	13072	1481925	1998-03-15
00:00:00.000	399195.470000	301.000000	
Customer#000082441	82441	857959	1994-02-07
00:00:00.000	382579.740000	305.000000	
Customer#000088703	88703	2995076	1994-01-30
00:00:00.000	363812.120000	302.000000	

(57 row(s) affected)

Qualification Query 19

-- using default substitutions

/* TPC_H Query 19 - Discounted Revenue */

```
SELECT SUM(L_EXTENDEDPRICE* (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

3083843.057800

(1 row(s) affected)

Qualification Query 20

-- using default substitutions

/* TPC_H Query 20 - Potential Part Promotion */

```

SELECT S_NAME,
       S_ADDRESS
FROM   SUPPLIER,
       NATION
WHERE  S_SUPPKEY      IN      (
       PS_SUPPKEY
       PARTSUPP
       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 date))
       )
       ) AND
       S_NATIONKEY = N_NATIONKEY AND
       N_NAME      = 'CANADA'
ORDER BY S_NAME
S_NAME      S_ADDRESS
-----
Supplier#000000020 iybAE,RmTymrZVYafZva2SH,j
Supplier#000000091 YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197 YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226 83qOdU2EYRdPQAQhEtn GRZEd
Supplier#000000285 Br7e1nnt1yxrw6lmgpJ7YdhFDjuBf
Supplier#000000378 FfbhyCxWvcPrO8ltp9
Supplier#000000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530 QqwCMwobKY OcmLyfRXlagA8ukENJv,
Supplier#000000688 D fw5ocppmZpYBBIPi718hCihLDZ5KhKX
Supplier#000000710 f19YPvOyb QoYwjKC,oPycpGfieBAcwKJo
Supplier#000000736 l6i2nMwVuovfKnuVgaSGK2rDy65DIAFLegIL7
Supplier#000000761 zLSLeIQUj2XrvTTFnv7WAcyZGvvMTx882d4
Supplier#000000884 bnhEShejaS
Supplier#000000887 urEaTejH5POADP2ARf
Supplier#000000935 ij98czM 2KzWe7dDToxB8sq0UfCdvrx
Supplier#000000975 ,AC e,tBpNwKb5xMUzeohxIRn, hdZJo73gFQF8y
Supplier#000001263 rQWr6nf8ZhB2TAiIDlvo5Io
... additional rows deleted ....
Supplier#000009812 APFRMy3lCbgFga53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmnUUoeyy7v
Supplier#000009869 ucLqxzrpBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdpaHrzr1t,UQFZE
Supplier#000009974 7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

```

(204 row(s) affected)

Qualification Query 21

-- using default substitutions

/* TPC_H Query 21 - Suppliers Who Kept Orders Waiting */

```

SELECT TOP 100
       S_NAME,
       COUNT(*)      AS NUMWAIT
FROM   SUPPLIER,
       LINEITEM L1,
       ORDERS,
       NATION
WHERE  S_SUPPKEY      = L1.L_SUPPKEY
       AND
       O_ORDERKEY     = L1.L_ORDERKEY
       AND
       O_ORDERSTATUS  = 'F'
       AND
       L1.L_RECEIPTDATE > L1.L_COMMITDATE
       AND
       EXISTS (
       SELECT *
       FROM   LINEITEM L2
       WHERE  L2.L_ORDERKEY =
L1.L_ORDERKEY AND
L2.L_SUPPKEY <>
L1.L_SUPPKEY
       ) AND
       NOT EXISTS (
       SELECT *
       FROM   LINEITEM L3
       WHERE  L3.L_ORDERKEY =
L1.L_ORDERKEY
       AND
       L3.L_SUPPKEY
       <> L1.L_SUPPKEY
       AND
       L3.L_RECEIPTDATE > L3.L_COMMITDATE
       )
       ) AND
       S_NATIONKEY = N_NATIONKEY AND
       N_NAME      = 'SAUDI ARABIA'
GROUP BY S_NAME
ORDER BY NUMWAIT      DESC,
S_NAME
S_NAME      NUMWAIT
-----
Supplier#000002829 20
Supplier#000005808 18
Supplier#00000262 17
Supplier#000000496 17
Supplier#000002160 17
Supplier#000002301 17
Supplier#000002540 17
Supplier#000003063 17
Supplier#000005178 17
Supplier#000008331 17
Supplier#000002005 16
Supplier#000002095 16
Supplier#000005799 16
Supplier#000005842 16
... additional rows deleted ....
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 row(s) affected)

Qualification Query 22

-- using default substitutions

/* TPC_H Query 22 - Global Sales Opportunity */

```

SELECT  CNTRYCODE,
        COUNT(*)          AS NUMCUST,
        SUM(C_ACCTBAL) AS TOTACCTBAL
FROM    (
  SELECT  SUBSTRING(C_PHONE,1,2) AS
  CNTRYCODE,
        C_ACCTBAL
  FROM    CUSTOMER
  WHERE   SUBSTRING(C_PHONE,1,2) IN
  ('13', '31', '23', '29', '30', '18', '17') AND
  C_ACCTBAL >
  (
    SELECT  AVG(C_ACCTBAL)
    FROM    CUSTOMER
    WHERE   C_ACCTBAL > 0.00 AND
    SUBSTRING(C_PHONE,1,2) IN
    ('13', '31', '23', '29', '30', '18', '17')
  )
  AND
  *
  NOT EXISTS (
    SELECT
    FROM
    ORDERS
    WHERE
    O_CUSTKEY = C_CUSTKEY
  )
)
AS CUSTSALE
GROUP BY CNTRYCODE
ORDER BY CNTRYCODE

```

CNTRYCODE	NUMCUST	TOTACCTBAL
13	888	6737713.990000
17	861	6460573.720000
18	964	7236687.400000
23	892	6701457.950000
29	948	7158866.630000
30	909	6808436.130000
31	922	6806670.180000

(7 row(s) affected)

Appendix D: Seeds and Query Substitution Parameters

Stream0 Seed : 928171518

14	1997-10-01					
2	46	NICKEL	ASIA			
9	blue					
20	pale	1997-01-01	MOZAMBIQUE			
6	1997-01-01	0.08	24			
17	Brand#13	SM BAG				
18	314					
8	EGYPT	MIDDLE EAST	STANDARD PLATED STEEL			
21	UNITED KINGDOM					
13	pending	deposits				
3	AUTOMOBILE	1995-03-16				
22	26	27	18	25	30	32
	23					
16	Brand#41	LARGE PLATED	4	33	22	
	34	31	12	39	6	
4	1995-06-01					
11	JORDAN	0.0000010000				
15	1995-07-01					
1	90					
10	1993-12-01					
19	Brand#14	Brand#54	Brand#42	4	12	29
5	AMERICA	1997-01-01				
7	ROMANIA	EGYPT				
12	MAIL	RAIL	1997-01-01			

Stream1 Seed : 928171519

21	MOROCCO					
3	HOUSEHOLD	1995-03-01				
18	315					
5	ASIA	1997-01-01				
11	ARGENTINA	0.0000010000				
7	IRAQ	VIETNAM				
6	1997-01-01	0.05	25			
20	black	1996-01-01	FRANCE			
17	Brand#15	SM PKG				
12	TRUCK	RAIL	1993-01-01			
16	Brand#21	PROMO BRUSHED	12	39	16	
	13	30	33	19	44	
15	1993-04-01					
13	pending	packages				
10	1994-09-01					
2	34	TIN	AFRICA			
8	VIETNAM	ASIA	STANDARD ANODIZED			
STEEL						
14	1993-01-01					
19	Brand#11	Brand#42	Brand#41	9	13	25
9	aquamarine					
22	14	26	12	17	30	23
	15					
1	98					
4	1993-03-01					

Stream2 Seed : 928171520

6	1997-01-01	0.03	25			
17	Brand#12	SM DRUM				
14	1993-04-01					
16	Brand#51	MEDIUM ANODIZED	10	13		
	24	43	11	47	22	23
19	Brand#13	Brand#25	Brand#35	5	14	22
10	1993-06-01					
9	violet					
22	COPPER	ASIA				
15	1995-11-01					
8	JORDAN	MIDDLE EAST	PROMO POLISHED STEEL			
5	EUROPE	1997-01-01				
22	16	13	33	20	23	21
	19					
12	RAIL	REG AIR	1995-01-01			
7	CANADA	JORDAN				
13	pending	packages				
18	313					
1	106					
4	1995-10-01					
20	lime	1994-01-01	VIETNAM			
3	AUTOMOBILE	1995-03-18				
11	KENYA	0.0000010000				
21	INDIA					

Stream3 Seed : 928171521

8	ETHIOPIA	AFRICA	PROMO BURNISHED STEEL			
5	AFRICA	1997-01-01				
4	1993-07-01					
6	1997-01-01	0.08	24			
17	Brand#24	LG BAG				
7	SAUDI ARABIA	ETHIOPIA				
1	114					
18	314					
22	34	22	29	33	28	15
	25					
14	1993-07-01					
9	spring					
10	1994-03-01					
15	1993-08-01					
11	BRAZIL	0.0000010000				
20	steel	1993-01-01	IRAN			
2	STEEL	AFRICA				
21	ALGERIA					
19	Brand#25	Brand#13	Brand#34	10	15	29
13	pending	packages				
16	Brand#42	ECONOMY PLATED	32	47		
	49	30	21	40	48	27
12	AIR	RAIL	1993-01-01			
3	FURNITURE	1995-03-03				

Stream4 Seed : 928171522

5	AMERICA	1993-01-01				
21	PERU					
14	1993-11-01					
19	Brand#22 Brand#41 Brand#34	5	16	25		
15	1996-02-01					
17	Brand#21 LG PKG					
12	REG AIR TRUCK	1993-01-01				
6	1993-01-01	0.05	25			
4	1996-01-01					
9	seashell					
8	RUSSIA EUROPE ECONOMY BRUSHED COPPER					
16	Brand#22 STANDARD POLISHED		34	4		
	11 41 43 32		20	9		
11	MOROCCO	0.0000010000				
2	47 NICKEL EUROPE					
10	1994-12-01					
18	312					
1	61					
13	pending packages					
7	JAPAN RUSSIA					
22	14 30 25 32 16 23					
	17					
3	AUTOMOBILE	1995-03-20				
20	gainsboro	1996-01-01	ALGERIA			

Stream5 Seed : 928171523

21	INDONESIA					
15	1993-11-01					
4	1993-10-01					
6	1993-01-01	0.03	25			
7	EGYPT KENYA					
16	Brand#52 LARGE ANODIZED	3	23	1		
	18 19 24 37		9			
19	Brand#24 Brand#24 Brand#23	1	17	21		
18	314					
14	1994-02-01					
22	13 23 21 15 27 25					
	12					
11	CANADA 0.0000010000					
13	pending packages					
3	FURNITURE	1995-03-05				
1	69					
2	35 TIN AFRICA					
5	ASIA 1993-01-01					
8	KENYA AFRICA ECONOMY PLATED COPPER					
20	purple 1994-01-01 MOROCCO					
12	SHIP TRUCK	1994-01-01				
17	Brand#23 LG DRUM					
10	1993-10-01					
9	rose					

Appendix E: Refresh Function Source Code

E.1 CreateRF1Proc.sql

```
-- File:  CREATERF1PROC.SQL
--      Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
--      Copyright Microsoft, 2006 - 2009
--
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
    @current_execution INTEGER, @insert_sets INTEGER,
    @parallel_executions INTEGER, @total_executions INTEGER
AS
BEGIN
    DECLARE @startdate DATE
    DECLARE @enddate DATE
    DECLARE @edate DATE
    DECLARE @rangeStart INTEGER
    DECLARE @rangeSize INTEGER
    DECLARE @range INTEGER

    DECLARE @success INTEGER
    DECLARE @index INTEGER
    DECLARE @div INTEGER
    DECLARE @mod INTEGER
    DECLARE @skip INTEGER
    DECLARE @i INTEGER
    DECLARE @rangeSum INTEGER
    DECLARE @totRangeSize INTEGER
    DECLARE @stmt NCHAR(1000)
    DECLARE @orderSql NCHAR(1000)
    DECLARE @liSql NCHAR(1000)

    DECLARE @ErrorMessage NVARCHAR(4000)
    DECLARE @ErrorNumber INT
    DECLARE @ErrorSeverity INT
    DECLARE @ErrorState INT
    DECLARE @ErrorLine INT
    DECLARE @ErrorProcedure NVARCHAR(200)

    SET @skip = @total_executions/@parallel_executions
    SET @div = (@current_execution - 1)/@parallel_executions
    SET @mod = (@current_execution - 1) - @div * @parallel_executions
    SET @index = @mod*@skip + @div + 1

    --
    -- Get the range for this execution
    --
    SET @stmt = N'SELECT @sdate = dateadd(day,-1,min(O_ORDERDATE)),
    @edate = max(O_ORDERDATE)
    FROM NEWORDERS'
    EXEC sp_executesql @stmt,N'@sdate DATE output, @edate DATE
    output',@startdate output, @enddate output

    --SELECT 'CurrExec:'+cast(@current_execution as varchar(200))
    +','+cast(scheduler_id as varchar(200)) as [sched] from
    sys.dm_exec_requests where session_id=@@spid

    IF (@total_executions > @parallel_executions)
        BEGIN
            SET @div = (@index-1)/@skip
            SET @mod = (@index-1) - @div * @skip

            --SET @rangeSize = datediff(day, @startdate,
            @enddate)/@parallel_executions + 1
            SET @rangeSize = ((@div+1) * datediff(day, @startdate,
            @enddate))/@parallel_executions - (@div * datediff(day, @startdate,
            @enddate))/@parallel_executions

            --SET @rangeStart = @div * @rangeSize
            SET @rangeStart = (@div * datediff(day, @startdate,
            @enddate))/@parallel_executions
            SET @rangeStart = @rangeStart + (@rangeSize * @mod)/@skip

            SET @totRangeSize = ((@mod + 1) * @rangeSize)/@skip -
            (@mod * @rangeSize)/@skip
            SET @rangeSize = @totRangeSize

            IF (@rangeSize < 0)
                SET @rangeSize = 0
            IF (@insert_sets <= 0)
                SET @insert_sets = 1
            END
        ELSE
            BEGIN
                SET @rangeSize = (@current_execution * datediff(day,
                @startdate, @enddate))/@total_executions - ((@current_execution-1) *
                datediff(day, @startdate, @enddate))/@total_executions
                SET @rangeStart = ((@current_execution-1) * datediff(day,
                @startdate, @enddate))/@total_executions
                END

            SET @startdate = dateadd(day, @rangeStart, @startdate)
            IF (@index < @total_executions)
                SET @enddate = dateadd(day, @rangeSize, @startdate)

            SET @range = datediff(day, @startdate, @enddate) / @insert_sets

            --
            -- This handles the case when the max-min/insert_sets is less than 1
            --
            IF @range = 0
                SET @range = 1

            --
            -- Generate the two insert statements
            --
            SET @edate = dateadd(day, @range, @startdate)
            SET @orderSql = N'INSERT INTO ORDERS (O_ORDERKEY,
            O_CUSTKEY, O_ORDERSTATUS, O_TOTALPRICE,
            O_ORDERDATE,
            O_ORDERPRIORITY, O_CLERK, O_SHIPPRIORITY, O_COMMENT)
            (SELECT O_ORDERKEY, O_CUSTKEY,
            O_ORDERSTATUS, O_TOTALPRICE,
            O_ORDERDATE,
            O_ORDERPRIORITY, O_CLERK, O_SHIPPRIORITY, O_COMMENT
            FROM NEWORDERS
            WHERE O_ORDERDATE > @startdate
            AND O_ORDERDATE <= @edate)
            option (loop join,MaxDop 1)'
```

```

SET @liSql = N'INSERT INTO LINEITEM
(L_ORDERKEY,L_PARTKEY,L_SUPPKEY,L_LINENUMBER,L_QUAN
TITY,
                L_EXTENDEDPRICE,
L_DISCOUNT, L_TAX, L_RETURNFLAG, L_LINESTATUS,
                L_SHIPDATE,
L_COMMITDATE, L_RECEIPTDATE, L_SHIPINSTRUCT,
L_SHIPMODE, L_COMMENT)
(SELECT
L_ORDERKEY,L_PARTKEY,L_SUPPKEY,L_LINENUMBER,L_QUAN
TITY,
                L_EXTENDEDPRICE,
L_DISCOUNT, L_TAX, L_RETURNFLAG, L_LINESTATUS,
                L_SHIPDATE,
L_COMMITDATE, L_RECEIPTDATE, L_SHIPINSTRUCT,
L_SHIPMODE, L_COMMENT
FROM NEWLINEITEM, NEWORDERS
WHERE L_ORDERKEY =
O_ORDERKEY AND O_ORDERDATE > @startdate AND
O_ORDERDATE
<= @edate)
option (loop join,MaxDop 1)'

--
-- Loop through the order keys inserting sets into the
-- ORDERS and LINTEITEM tables
--
WHILE @startdate < @enddate
BEGIN
--
-- Insert into ORDERS and LINEITEM tables
--
INSERT_TRANS:
SET @success = 1
BEGIN TRANSACTION

BEGIN TRY
EXEC sp_executesql @orderSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
EXEC sp_executesql @liSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
END TRY
BEGIN CATCH
SET @success = 0
IF (error_number() = 1205) -- deadlock victim
BEGIN
PRINT 'Insert deadlock - restarting RF1'
IF (@@trancount>0)
ROLLBACK TRANSACTION
END
ELSE
BEGIN -- not a
deadlock
PRINT ERROR_MESSAGE()
SELECT @ErrorMessage =
ERROR_NUMBER(),
@ErrorSeverity =
ERROR_SEVERITY(),
@ErrorState = ERROR_STATE(),
@ErrorLine = ERROR_LINE(),
@ErrorProcedure =
ISNULL(ERROR_PROCEDURE(), '-');
SELECT @ErrorMessage = N'Error %d,
Level %d, State %d, Procedure %s, Line %d, ' +
'Message: '+ ERROR_MESSAGE();
IF (@@trancount>0)
ROLLBACK TRANSACTION
RAISERROR
(

```

```

@ErrorMessage,
@ErrorSeverity,
1,
@ErrorNumber, -- parameter:
original error number.
@ErrorSeverity, -- parameter:
original error severity.
@ErrorState, -- parameter: original
error state.
@ErrorProcedure, -- parameter:
original error procedure name.
@ErrorLine -- parameter: original
error line number.
);
END
END CATCH
IF (@success = 0) -- deadlock - redo
the inserts
GOTO INSERT_TRANS
COMMIT TRANSACTION
SET @startdate = @edate
SET @edate = dateadd(day, @range, @edate)
IF (@edate > @enddate)
SET @edate = @enddate
END
END
GO

```

E.2 CreateRF2Proc.sql

```

-- File: CREATERF2PROC.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
-- Copyright Microsoft, 2006 - 2009
--
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
@current_execution INTEGER, @delete_sets INTEGER,
@parallel_executions INTEGER, @total_executions INTEGER
AS
BEGIN
DECLARE @startdate DATE
DECLARE @enddate DATE
DECLARE @edate DATE
DECLARE @rangeStart INTEGER
DECLARE @rangeSize INTEGER
DECLARE @range INTEGER
declare @success INTEGER
declare @index INTEGER
declare @div INTEGER
declare @mod INTEGER
declare @skip INTEGER
declare @i INTEGER

```

```

declare @rangeSum INTEGER
declare @totRangeSize INTEGER
declare @sql NCHAR(1000)
declare @orderSql NCHAR(1000)
declare @liSql NCHAR(1000)

DECLARE @ErrorMessage NVARCHAR(4000)
DECLARE @ErrorNumber INT
DECLARE @ErrorSeverity INT
DECLARE @ErrorState INT
DECLARE @ErrorLine INT
DECLARE @ErrorProcedure NVARCHAR(200)

SET @skip = @total_executions/@parallel_executions
SET @div = floor((@current_execution-1)/@parallel_executions)
SET @mod = (@current_execution - 1) - @div * @parallel_executions
SET @index = @mod*@skip + @div + 1

SET @sql = N'SELECT @sdate = dateadd(day,-1,min(O_ORDERDATE)),
@edate = max(O_ORDERDATE)
FROM MOD_OLDORDERS'
EXEC sp_executesql @sql,N'@sdate DATE output, @edate DATE
output',@startdate output, @enddate output

--SELECT 'CurrExec:'+cast(@current_execution as varchar(200))
+','+cast(scheduler_id as varchar(200)) as [sched] from
sys.dm_exec_requests where session_id=@@spid

IF (@total_executions > @parallel_executions)
BEGIN
SET @div = (@index-1)/@skip
SET @mod = (@index-1) - @div * @skip

--SET @rangeSize = datediff(day, @startdate,
@enddate)/@parallel_executions + 1
SET @rangeSize = ((@div+1) * datediff(day, @startdate,
@enddate))/@parallel_executions - (@div * datediff(day, @startdate,
@enddate))/@parallel_executions

--SET @rangeStart = @div * @rangeSize
SET @rangeStart = (@div * datediff(day, @startdate,
@enddate))/@parallel_executions
SET @rangeStart = @rangeStart + (@rangeSize * @mod)/@skip

SET @totRangeSize = ((@mod + 1) * @rangeSize)/@skip -
(@mod * @rangeSize)/@skip
SET @rangeSize = @totRangeSize

IF (@rangeSize < 0)
SET @rangeSize = 0
IF (@delete_sets <= 0)
SET @delete_sets = 1
END
ELSE
BEGIN
SET @rangeSize = (@current_execution * datediff(day,
@startdate, @enddate))/@total_executions - ((@current_execution-1) *
datediff(day, @startdate, @enddate))/@total_executions
SET @rangeStart = (((@current_execution-1) * datediff(day,
@startdate, @enddate))/@total_executions
END

SET @startdate = dateadd(day, @rangeStart, @startdate)
IF (@index < @total_executions)
SET @enddate = dateadd(day, @rangeSize, @startdate)

SET @range = datediff(day, @startdate, @enddate) / @delete_sets

--
-- This handles the case when the max-min/delete_sets is less than 1

```

```

--
IF @range = 0
SET @range = 1

--
-- Loop through the order keys deleting sets from orders
-- and lineitem tables
--
SET @edate = dateadd(day, @range, @startdate)
SET @liSql = N'DELETE FROM LINEITEM WHERE L_ORDERKEY in
(SELECT O_ORDERKEY FROM
MOD_OLDORDERS
WHERE O_ORDERDATE > @startdate
AND O_ORDERDATE <= @edate)
option (loop join,MaxDop 1)'
SET @orderSql = N'DELETE FROM ORDERS WHERE O_ORDERKEY
in
(SELECT O_ORDERKEY FROM
MOD_OLDORDERS
WHERE O_ORDERDATE > @startdate
AND O_ORDERDATE <= @edate)
option (loop join,MaxDop 1)'

WHILE @startdate < @enddate
BEGIN
DELETE_TRANS:
SET @success = 1
BEGIN TRANSACTION

BEGIN TRY
EXEC sp_executesql @liSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
EXEC sp_executesql @orderSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
END TRY
BEGIN CATCH
SET @success = 0
IF (error_number() = 1205) -- deadlock victim
BEGIN
PRINT 'Delete deadlock - restarting RF2'
IF (@@trancount>0)
ROLLBACK TRANSACTION
END
ELSE
BEGIN -- not a
deadlock
PRINT ERROR_MESSAGE()
SELECT @ErrorNumber =
@ErrorSeverity =
@ErrorState = ERROR_STATE(),
@ErrorLine = ERROR_LINE(),
@ErrorProcedure =
ISNULL(ERROR_PROCEDURE(), '-');
SELECT @ErrorMessage = N'Error %d,
Level %d, State %d, Procedure %s, Line %d, ' +
'Message: '+ ERROR_MESSAGE();
IF (@@trancount>0)
ROLLBACK TRANSACTION
RAISERROR
(
@ErrorMessage,
@ErrorSeverity,
1,
@ErrorNumber, -- parameter:
original error number.

```

original error severity.	@ErrorSeverity, -- parameter:	GOTO DELETE_TRANS
error state.	@ErrorState, -- parameter: original	COMMIT TRANSACTION
original error procedure name.	@ErrorProcedure, -- parameter:	SET @startdate = @edate
error line number.	@ErrorLine -- parameter: original	SET @edate = dateadd(day, @range, @edate)
);	IF (@edate > @enddate)
	END	SET @edate = @enddate
END CATCH		END
IF (@success = 0)	-- deadlock - redo	END
the inserts		GO
}		

Appendix F: Implementation Specific Layer and Source Code

F.1 Setup.cmd

```
echo off

rem
rem Modify the following parameters for your configuration
rem

set DB=tpch100g

set HOMEDRIVE=C:
set HOMEDIR=%HP_TPC_H_KIT\Setup
set OUTPUTDRIVE=C:
set OUTPUTDIR=%HP_TPC_H_KIT\Output
set SCALEFACTOR=100
set DBGEN_SEGMENTS=16
set DBGEN_PARALLELISM=16
set FLATFILEDRIVE=z:
set FLATFILEDIR=HP_Flatfiles\
set FLATFILESUBDIR=\
set RF1_PARALLELISM=64
set RF2_PARALLELISM=64
set UPDATEDRIVE=C:
set UPDATEDIR=%HP_UF_Flatfiles
set UPDATE_SETS=20

set DoDBGEN=FALSE
set DoDBCREATE=TRUE
set DoBULKINSERT=TRUE
set DoCREATEINDEX=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
%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%
```

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

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

sqlcmd -E -Q"if exists (select * from sysdatabases where
name='%DB%')drop database %DB%" -o
%OUTPUTPATH%\DropDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -i %DB%\CreateDatabase.sql -o
%OUTPUTPATH%\CreateDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"sp_dboption %DB%,trunc. log on chkpt.,TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"sp_dboption %DB%,auto create statistics,'OFF'" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"sp_dboption %DB%,auto update statistics,'OFF'" -b
```



```

if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"alter database %DB% set PAGE_VERIFY NONE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"alter database tempdb set PAGE_VERIFY NONE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

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

sqlcmd -E -Q"sp_dboption %DB%,'trunc',TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"sp_dboption %DB%,'select into',TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -Q"sp_dboption %DB%,'torn',FALSE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

echo Dropping and Re-Creating Tables
sqlcmd -E -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
sqlcmd -E -d%DB% -Q"create table LOADTIMES(STEP
char(35),TIMESTAMP datetime)" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('LOAD
begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -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 sqlcmd -E -d%DB% -Q"drop table
%i" -o %OUTPUTPATH%\Drop_Table_%i.out
sqlcmd -E -e -d%DB% -i %DB%\CreateTables.sql -o
%OUTPUTPATH%\CreateTables.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('Create Tables
end',getdate())" -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT

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

:BULKINSERTi
echo Starting bulk inserts for %i

```

```

sqlcmd -E -d%DB% -Q"insert into LOADTIMES values (%1 bulk insert
begin',getdate())" -l 300
for /l %j in (1,1,%DBGEN_PARALLELISM%) do start cmd /C Setup
BULKINSERTn %1 %j
semaphore -wait %1 -count %DBGEN_PARALLELISM%
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values (%1
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
sqlcmd -E -e -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

:CREATEINDEX
if NOT '%DoCREATEINDEX%' == 'TRUE' goto :CLEANUP
rem
rem Create Indexes
rem

echo %TIME% Starting create indexes
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('Create indexes
begin',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -i %DB%\CreateIndexes_1.sql -o
%OUTPUTPATH%\CreateIndexes_1.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -i %DB%\CreateFK.sql -o
%OUTPUTPATH%\CreateFK.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -i %DB%\CreateIndexes_2.sql -o
%OUTPUTPATH%\CreateIndexes_2.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
echo Starting create indexes
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('Create indexes
end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
echo %TIME% Done creating indexes indexes

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

echo Setting Cleanup Options

sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('Cleanup
start',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -Q"sp_createstats " -o
%OUTPUTPATH%\CreateStats.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -I -E -e -d%DB% -Q"alter database %DB% set
date_correlation_optimization ON" -o
%OUTPUTPATH%\DateCorrelation.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT

```

```

sqlcmd -E -e -d%DB% -Q"sp_dboption '%DB%', 'auto create
statistics','OFF'" -o %OUTPUTPATH%\AutoCreateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -Q"sp_dboption '%DB%', 'auto update
statistics','OFF'" -o %OUTPUTPATH%\AutoUpdateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
rem sqlcmd -E -d%DB% -Q"sp_indexoption 'LINEITEM',
'disallowpagelocks', 'FALSE'" -o
%OUTPUTPATH%\DisallowPageLocksLINEITEM.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem sqlcmd -E -d%DB% -Q"sp_indexoption 'ORDERS', 'disallowpagelocks',
'FALSE'" -o %OUTPUTPATH%\DisallowPageLocksOrders.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -I -d%DB% -i CreateRF1Proc.sql -o
%OUTPUTPATH%\CreateRF1Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -I -d%DB% -i CreateRF2Proc.sql -o
%OUTPUTPATH%\CreateRF2Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
rem sqlcmd -E -d%DB% -Q"exec sp_tableoption 'NATION','pintable',1" -o
%OUTPUTPATH%\pinNATION.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem sqlcmd -E -d%DB% -Q"exec sp_tableoption 'REGION','pintable',1" -o
%OUTPUTPATH%\pinREGION.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem
rem sqlcmd -E -d%DB% -Q"exec sp_tableoption 'SUPPLIER','pintable',1" -o
%OUTPUTPATH%\pinSUPPLIER.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem sqlcmd -E -Q"sp_dboption %DB%, 'torn', 'FALSE'" -b
>%OUTPUTPATH%\dboptionTornOFF.out
rem if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -Q"sp_dboption %DB%, 'trunc', 'FALSE'" -b
>%OUTPUTPATH%\dboptionTrunOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT
rem sqlcmd -E -Q"sp_dboption %DB%, 'select', 'FALSE'" -b
>%OUTPUTPATH%\dboptionSelOFF.out
rem if ERRORLEVEL 1 goto :ERROR_EXIT

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

:ENDSTATS

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

```

```

sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('LOAD
end',getdate())"
sqlcmd -E -d%DB% -Q"select TIMESTAMP from LOADTIMES where
STEP='LOAD end'" -o %OUTPUTPATH%\LoadEND.out
bcp %DB%..LOADTIMES out %OUTPUTPATH%\LOADTIMES.bcp -T -
n
sqlcmd -E -d%DB% -Q"select * from LOADTIMES" -o
%OUTPUTPATH%\LoadTimes.out
echo Last step is to run Francois' dbtables-ms.sql script
sqlcmd -E -d%DB% -i dbtables-ms.sql -o %OUTPUTPATH%\dbtables-
ms.out
sqlcmd -E -d%DB% -i SetupReport.sql -o
%OUTPUTPATH%\SetupReport.out
sqlcmd -E -I -e -w300 -i RI-test-sf100.sql -o %OUTPUTPATH%\RI-test-
sf100.out
rem echo Optional step to check database validity
rem sqlcmd -E -dtpch300g -Q"dbcc checkdb('tpch300g') with
PHYSICAL_ONLY" -o %OUTPUTPATH%\CheckDb.out
rem echo Optional, and very expensive, step to check LINEITEM and
ORDERS validity
rem sqlcmd -E -dtpch300g -Q"dbcc checktable('LINEITEM')" -o
%OUTPUTPATH%\CheckLINEITEM.out
rem sqlcmd -E -dtpch300g -Q"dbcc checktable('ORDERS')" -o
%OUTPUTPATH%\CheckORDERS.out
echo Done! Check for output in %OUTPUTPATH%
goto :EOF

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

F.2 Run.cmd

echo off

rem
rem Modify the following parameters for your configuration
rem
rem This version pulls the Update Files from
rem %UPDATEDRIVE%<segment>%UPDATEDIR%
rem

set DB=tpch100g
set HOMEDRIVE=C:
set HOMEDIR=\HP_TPCH_KIT\Run
set OUTPUTDRIVE=C:
set OUTPUTDIR=\HP_TPCH_KIT\Output
set UPDATEDRIVE=C:
set UPDATEDIR=\HP_UF_Flatfiles
set UPDATESSET=7
set UPDATESEGMENTS=64
set SEED=928171518
set SCALEFACTOR=100
set STREAMS=5

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

%HOMEDRIVE%
cd %HOMEDIR%

if '%1' == 'RF1' goto RF1

```

```

if '%1' == 'RF1_LOAD' goto RF1_LOAD
if '%1' == 'RF2' goto RF2
if '%1' == 'RF2_LOAD' goto RF2_LOAD
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
sqlcmd -I -E -d%DB% -Q"if exists (select * from sysindexes where name =
'TIMES') drop table TIMES"
sqlcmd -I -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
sqlcmd -I -E -i .\Setup\%DB%\Restore.sql -b
sqlcmd -I -E -d%DB% -i .\Setup\CreateRF1Proc.sql
sqlcmd -I -E -d%DB% -i .\Setup\CreateRF2Proc.sql
if ERRORLEVEL 1 goto :ERROR_EXIT

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

rem
rem Create the Power and five Throughput Streams
rem

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

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

:SETUP2

```

```

rem
rem Begin POWER run
rem

rem
rem Execute the RF1 Transaction set in parallel
rem

:POWER
if NOT '%DoPOWER%' == 'TRUE' goto :THROUGHPUT
sqlcmd -I -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%
sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('RF1',0,getdate())"
sqlcmd -I -E -d%DB% -iRF_Procs\RF1_init.sql -o
%OUTPUTPATH%\RF1_%UPDATE_SEGMENT%_init.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /c Run
RF1_LOAD %%i %UPDATE_SEGMENT%
semaphore -wait RF1_LOAD -count %UPDATESEGMENTS%
sqlcmd -I -E -d%DB% -iRF_Procs\RF1_index.sql -o
%OUTPUTPATH%\RF1_%UPDATE_SEGMENT%_index.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run RF1 %%i
10 %UPDATESEGMENTS% %UPDATESEGMENTS%
%UPDATE_SEGMENT%
semaphore -wait RF1 -count %UPDATESEGMENTS%

rem
rem Execute the PowerRun Queries
rem

:STREAM0
if NOT '%DoPOWERStream0%' == 'TRUE' goto :STREAM0_DONE
echo Running Stream0
sqlcmd -I -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
sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('RF2',0,getdate())"
sqlcmd -I -E -d%DB% -iRF_Procs\RF2_init.sql -o
%OUTPUTPATH%\RF2_%UPDATE_SEGMENT%_init.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /c Run
RF2_LOAD %%i %UPDATE_SEGMENT%
semaphore -wait RF2_LOAD -count %UPDATESEGMENTS%
sqlcmd -I -E -d%DB% -iRF_Procs\RF2_index.sql -o
%OUTPUTPATH%\RF2_%UPDATE_SEGMENT%_index.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run RF2 %%i
10 %UPDATESEGMENTS% %UPDATESEGMENTS%
%UPDATE_SEGMENT%
semaphore -wait RF2 -count %UPDATESEGMENTS%

:POWERDONE
sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('QXX',0,getdate())" -
1300

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
sqlcmd -I -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
sqlcmd -I -E -d%DB% -iStream%2.sql -o
%OUTPUTPATH%\Stream%2.out
:LOOP1
semaphore -release THROUGHPUT_QUERIES
@if ERRORLEVEL 1 goto :LOOP1
goto :EOF

:THROUGHPUT_REFRESH
if %1 neq 1 sqlcmd -I -E -d%DB% -Q"insert into TIMES values
('RF1',%1,getdate())"
set /a UPDATE_SEGMENT=%1+%UPDATESET%

sqlcmd -I -E -d%DB% -iRF_ProcsRF1_init.sql -o
%OUTPUTPATH%\RF1_%UPDATE_SEGMENT%_init.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /c Run
RF1_LOAD %%i %UPDATE_SEGMENT%
semaphore -wait RF1_LOAD -count %UPDATESEGMENTS%
sqlcmd -I -E -d%DB% -iRF_ProcsRF1_index.sql -o
%OUTPUTPATH%\RF1_%UPDATE_SEGMENT%_index.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run RF1 %%i
10 %UPDATESEGMENTS% %UPDATESEGMENTS%
%UPDATE_SEGMENT%
semaphore -wait RF1 -count %UPDATESEGMENTS%

sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('RF2',%1,getdate())"
sqlcmd -I -E -d%DB% -iRF_ProcsRF2_init.sql -o
%OUTPUTPATH%\RF2_%UPDATE_SEGMENT%_init.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /c Run
RF2_LOAD %%i %UPDATE_SEGMENT%
semaphore -wait RF2_LOAD -count %UPDATESEGMENTS%
sqlcmd -I -E -d%DB% -iRF_ProcsRF2_index.sql -o
%OUTPUTPATH%\RF2_%UPDATE_SEGMENT%_index.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run RF2 %%i
10 %UPDATESEGMENTS% %UPDATESEGMENTS%
%UPDATE_SEGMENT%
semaphore -wait RF2 -count %UPDATESEGMENTS%

sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('RFX',%1,getdate())"
goto :EOF

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

:DONE
sqlcmd -E -d%DB% -iReport.sql -o%OUTPUTPATH%\Report.out -w120
bcp %DB%..TIMES out %OUTPUTPATH%\TIMES.bcp -T -n
osql -E -e -I -w300 -d %DB% -Q"select * from TIMES" -
o%OUTPUTPATH%\times.out
rem ----- Get SQL Configuration
sqlcmd -I -E -Q"sp_configure 'show advanced',1"
sqlcmd -I -E -Q"reconfigure with override"
sqlcmd -I -E -s, -w300 -Q"sp_configure" -
o%OUTPUTPATH%\configure.out
rem ----- Get SQL Version

sqlcmd -I -E -w300 -e -Q"select @@version" -
o%OUTPUTPATH%\sqlversion.out
sqlcmd -I -E -w300 -e -Q"sp_helpdb %DB%" -o%OUTPUTPATH%\db.out
sqlcmd -I -E -w300 -e -Q"sp_dboption %DB%" -
o%OUTPUTPATH%\dboption.out
sqlcmd -I -E -w300 -e -Q"sp_helpsort" -o%OUTPUTPATH%\sort.out
sqlcmd -I -E -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
sqlcmd -I -E -d%DB% -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 Loading data for RF1s
rem called from RF1 and THROUGHPUT_RF1
rem

:RF1_LOAD
set "SQLTEXT=bulk insert NEWLINEITEM from
'%UPATEDRIVE%%%UPATEDIR%\Lineitem.tbl.u%3.%2' with
(FieldTerminator = '|', RowTerminator = '\n,tablock)"
OSQL -I -E -I 120 -d%DB% -Q"%SQLTEXT%" -o
%OUTPUTPATH%\RF1_load_lineitem_%2_%3.out
set "SQLTEXT=bulk insert NEWORDERS from
'%UPATEDRIVE%%%UPATEDIR%\Orders.tbl.u%3.%2' with
(FieldTerminator = '|', RowTerminator = '\n,tablock)"
OSQL -I -E -I 120 -d%DB% -Q"%SQLTEXT%" -o
%OUTPUTPATH%\RF1_load_orders_%2_%3.out
:LOOP2
semaphore -release RF1_LOAD
@if ERRORLEVEL 1 goto :LOOP2
goto :EOF

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

:RF1
OSQL -I -E -I 120 -d%DB% -Q"exec RF1 %2,%3,%4,%5" -o
%OUTPUTPATH%\RF1_%2_%6.out
:LOOP3
semaphore -release RF1
@if ERRORLEVEL 1 goto :LOOP3
goto :EOF

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

```

```

:RF2_LOAD
set "SQLTEXT=bulk insert OLDORDERS_%2 from
'%UPDATEDRIVE%%UPDATEDIR%\Delete.u%3.%2' with
(FieldTerminator = '|', RowTerminator = '|,tablock)"
sqlcmd -I -E -I 120 -d%DB% -Q"%SQLTEXT%" -o
%OUTPUTPATH%\RF2_load_orders_%2_%3.out
sqlcmd -I -E -I 120 -d%DB% -Q"insert into MOD_OLDORDERS
(O_ORDERDATE, O_ORDERKEY) (select B.O_ORDERDATE,
B.O_ORDERKEY from OLDORDERS_%2 A, ORDERS B where
A.O_ORDERKEY = B.O_ORDERKEY)" -o
%OUTPUTPATH%\RF2_insert_orders_%2_%3.out
:LOOP4
semaphore -release RF2_LOAD
@if ERRORLEVEL 1 goto :LOOP4
goto :EOF

```

```

:RF2
OSQL -I -E -I 120 -d%DB% -Q"exec RF2 %2,%3,%4,%5" -o
%OUTPUTPATH%\RF2_%2_%6.out
:LOOP5
semaphore -release RF2
@if ERRORLEVEL 1 goto :LOOP5
goto :EOF

```

```

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

```

F.3 RF1_index.sql

```

create clustered index NEWORDERS_CLUIDX
on NEWORDERS (O_ORDERDATE)
on DATA_FG

```

```

create clustered index NEWLINEITEM_CLUIDX
on NEWLINEITEM (L_ORDERKEY)
on DATA_FG

```

F.4 RF1_init.sql

```

--
-- Create tables to hold RF1 input data
--
if exists (select name from sysobjects where name = 'NEWORDERS')
drop table NEWORDERS

create table NEWORDERS (O_ORDERKEY bigint not null,
O_CUSTKEY int not null,
O_ORDERSTATUS char(1) not null,
O_TOTALPRICE float not null,
O_ORDERDATE datetime not null,
O_ORDERPRIORITY char(15) not null,
O_CLERK char(15) not null,
O_SHIPPRIORITY int not null,
O_COMMENT varchar(79) not null) on
DATA_FG

if exists (select name from sysobjects where name = 'NEWLINEITEM')

```

```

drop table NEWLINEITEM
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 float not null,
L_EXTENDEDPRI float not null,
L_DISCOUNT float not null,
L_TAX float not null,
L_RETURNFLAG char(1) not null,
L_LINESTATUS char(1) not null,
L_SHIPDATE datetime not null,
L_COMMITDATE datetime not null,
L_RECEIPTDATE datetime not null,
L_SHIPINSTRUCT char(25) not null,
L_SHIPMODE char(10) not null,
L_COMMENT varchar(44) not null) on DATA_FG

```

F.5 RF2_index.sql

```

create clustered index MOD_OLDORDERS_CLUIDX on
MOD_OLDORDERS (O_ORDERDATE)

```

```

create index MOD_OLDORDERS_IDX on MOD_OLDORDERS
(O_ORDERKEY)

```

F.6 RF2_init.sql

```

--
-- Create the tables to hold input data for RF2
--
declare @segment integer
declare @sql nchar(1000)

if exists (select name from sysobjects where name = 'MOD_OLDORDERS')
drop table MOD_OLDORDERS
create table MOD_OLDORDERS (O_ORDERDATE datetime,
O_ORDERKEY bigint) on DATA_FG

set @segment = 1
while @segment <= $(UPDATESEGMENTS)
begin
set @sql = 'if exists (select name from sysobjects where name =
"OLDORDERS_'
+
RTRIM(CONVERT(varchar(30),@segment))+ "' )
drop table OLDORDERS_' +
RTRIM(CONVERT(varchar(30),@segment))
exec sp_executesql @sql
set @sql = 'create table OLDORDERS_' +
RTRIM(CONVERT(varchar(30),@segment))
+ '(O_ORDERKEY int) on DATA_FG'

```

```

exec sp_executesql @sql

set @segment = @segment + 1
end

```

F.7 Semaphore.cpp

```

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

```

```

printf( "semaphore name = %s\n", argv[2] );
printf( "semaphore count = %d\n", iCount );
hSemaphore = CreateSemaphore( NULL, 0, 2000000000,
argv[2] );
if (hSemaphore == NULL)
{
DWORD dwError = GetLastError();
cout << "ERROR* CreateSemaphore returned "
<< dwError << endl;
exit(EXIT_FAILURE);
}
for (i=0; i<iCount; i++)
{
WaitForSingleObject( hSemaphore, INFINITE );
GetLocalTime( &Time );
printf( "%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d
- released\n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond );
}
CloseHandle( hSemaphore );
}
else if ((eOP == eWaitGroup) || (eOP == eWaitList))
{
char **szEventNames;
szEventNames = new char*[iCount];
char szTmp[128];
printf( "event-list = " );
for (i=0; i<iCount; i++)
{
if (eOP == eWaitGroup)
{
wsprintf( szTmp, "%s.%d", argv[2],
i+1 );
szEventNames[i] = new
char[strlen(szTmp)+1];
strcpy( szEventNames[i], szTmp );
}
else
{
szEventNames[i] = new
char[strlen(argv[i+2])+1];
strcpy( szEventNames[i], argv[i+2] );
}
printf( " %s", szEventNames[i] );
}
printf( "\n" );
pHandles = new HANDLE[iCount-1];
for (i=0; i<iCount; i++)
{
pHandles[i] = CreateEvent( NULL, TRUE /*
manual reset */, FALSE /* initially non-signaled */, szEventNames[i] );
if (pHandles[i] == NULL)
{
DWORD dwError = GetLastError();
cout << "ERROR* CreateEvent
returned " << dwError << endl;
exit(EXIT_FAILURE);
}
}
for (i=iCount; i>0;i--)
{
int idx = WaitForMultipleObjects( i, pHandles,
FALSE /* wait for all */, INFINITE ) - WAIT_OBJECT_0;
GetLocalTime( &Time );
printf( "%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d
- signaled: %s\n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond, szEventNames[idx] );
HANDLE hTmp = pHandles[idx];

```

```

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

```

```

"the semaphore is released, the count is decremented by one
(or the amount \n"
"specified). When the count reaches zero, the waiter
completes. If there \n"
"are multiple waiters on the same semaphore, each release
releases only \n"
"the number of waiters specified in count.\n"
"\n"
"List of Events: \n"
"A list of events (alpha-numeric tags) is specified for the
waiter. The \n"
"waiter doesn't complete until all of the events have been
signaled. A \n"
"given event may be signaled more than once. There are two
ways to define \n"
"the list of events, either explicitly (-waitlist) by naming all of
them or \n"
"implicitly (-waitgroup) with a prefix and a count. Using the -waitgroup
\n"
"option, you provide an alpha-numeric tag which is used as
the prefix for a \n"
"group of events. The event names are generated by
concatenating the prefix \n"
"with \"<n>\", where <n> is 1 to the specified count. \n"
);
exit(EXIT_FAILURE);
}

```

F.8 Print.C for DBGEN

```

/*
 * $Id: print.c,v 1.3 2005/10/28 02:56:22 jms Exp $
 *
 * Revision History
 * =====
 * $Log: print.c,v $
 * Revision 1.3 2005/10/28 02:56:22 jms
 * add platform-specific printf formats to allow for DSS_HUGE data type
 *
 * Revision 1.2 2005/01/03 20:08:59 jms
 * change line terminations
 *
 * Revision 1.1.1.1 2004/11/24 23:31:47 jms
 * re-establish external server
 *
 * Revision 1.4 2004/02/18 16:26:49 jms
 * 32/64 bit changes for overflow handling needed additional changes when ported
back to windows
 *
 * Revision 1.3 2004/02/18 14:05:53 jms
 * porting changes for LINUX and 64 bit RNG
 *
 * Revision 1.2 2004/01/22 05:49:29 jms
 * AIX porting (AIX 5.1)
 *
 * Revision 1.1.1.1 2003/08/07 17:58:34 jms
 * recreation after CVS crash
 *
 * Revision 1.2 2003/08/07 17:58:34 jms
 * Convery RNG to 64bit space as preparation for new large scale RNG
 *
 * Revision 1.1.1.1 2003/04/03 18:54:21 jms
 * initial checkin
 *
 *
 *

```

```

*/
/* generate flat files for data load */
#include <stdio.h>
#ifdef VMS
#include <sys/types.h>
#endif
#ifdef SUN
#include <unistd.h>
#endif
#include <math.h>

#include "dss.h"
#include "dsstypes.h"
#include <string.h>

/*
 * Function Prototypes
 */
FILE *print_prep_PROTO((int table, int update));
int pr_drange_PROTO((int tbl, DSS_HUGE min, DSS_HUGE cnt, long num));

FILE *
print_prep(int table, int update)
{
    char upath[128];
    FILE *res;

    if (updates)
    {
        if (update > 0) /* updates */
            if (insert_segments)
            {
                int this_segment;

                if(strcmp(tdefs[table].name,"orders.tbl"))

                this_segment=++insert_orders_segment;
                else

                this_segment=++insert_lineitem_segment;
                sprintf(upath, "%s%c%s.u%d.%d",

                env_config(PATH_TAG, PATH_DFLT),

                PATH_SEP,

                tdefs[table].name, update%10000,this_segment);
            }
            else
            {
                sprintf(upath, "%s%c%s.u%d",

                env_config(PATH_TAG,

                PATH_SEP, tdefs[table].name,

                update);

                else /* deletes */
                    if (delete_segments)
                    {
                        ++delete_segment;
                        sprintf(upath,

                        "%s%cdelete.u%d.%d",

                        env_config(PATH_TAG, PATH_DFLT), PATH_SEP, -update%10000,

                        delete_segment);

                    }
                    else
                    {
                        sprintf(upath, "%s%cdelete.%d",

                        env_config(PATH_TAG,

                        PATH_DFLT), PATH_SEP, -update);

                    }
            }
    }
}

```

```

        return(fopen(upath, "w"));
    }
    res = tbl_open(table, "w");
    OPEN_CHECK(res, tdefs[table].name);
    return(res);
}

int
dbg_print(int format, FILE *target, void *data, int len, int sep)
{
    int dollars,
        cents;

    switch(format)
    {
        case DT_STR:
            if (columnar)
                fprintf(target, "%-s", len, (char *)data);
            else
                fprintf(target, "%s", (char *)data);
            break;

#ifdef MVS
        case DT_VSTR:
            /* note: only used in MVS, assumes columnar output */
            fprintf(target, "%c%c%-s",
                (len >> 8) & 0xFF, len & 0xFF, len, (char
                *)data);
            break;
#endif /* MVS */
        case DT_INT:
            if (columnar)
                fprintf(target, "%12ld", (long)data);
            else
                fprintf(target, "%ld", (long)data);
            break;
        case DT_HUGE:
            fprintf(target, HUGE_FORMAT, *(DSS_HUGE *)data);
            break;
        case DT_KEY:
            fprintf(target, "%ld", (long)data);
            break;
        case DT_MONEY:
            cents = (int)*(DSS_HUGE *)data;
            if (cents < 0)
            {
                fprintf(target, "-");
                cents = -cents;
            }
            dollars = cents / 100;
            cents %= 100;
            if (columnar)
                fprintf(target, "%12ld.%02ld", dollars, cents);
            else
                fprintf(target, "%ld.%02ld", dollars, cents);
            break;
        case DT_CHR:
            if (columnar)
                fprintf(target, "%c", *(char *)data);
            else
                fprintf(target, "%c", *(char *)data);
            break;
    }

#ifdef EOL_HANDLING
    if (sep)
#endif /* EOL_HANDLING */
        if (!columnar)
            fprintf(target, "%c", SEPARATOR);

    return(0);
}

```



```

}

int
pr_cust(customer_t *c, int mode)
{
static FILE *fp = NULL;

if (fp == NULL)
    fp = print_prep(CUST, 0);

PR_STRT(fp);
PR_HUGE(fp, &c->custkey);
if (scale <= 3000)
PR_VSTR(fp, c->name, C_NAME_LEN);
else
PR_VSTR(fp, c->name, C_NAME_LEN + 3);
PR_VSTR(fp, c->address,
(columnar)?(long)(ceil(C_ADDR_LEN * V_STR_HGH)):c->alen);
PR_HUGE(fp, &c->nation_code);
PR_STR(fp, c->phone, PHONE_LEN);
PR_MONEY(fp, &c->acctbal);
PR_STR(fp, c->mktsegment, C_MSEG_LEN);
PR_VSTR_LAST(fp, c->comment,
(columnar)?(long)(ceil(C_CMNT_LEN * V_STR_HGH)):c->clen);
PR_END(fp);

return(0);
}

/*
 * print the numbered order
 */
int
pr_order(order_t *o, int mode)
{
static FILE *fp_o = NULL;
static int last_mode = 0;

if (fp_o == NULL || mode != last_mode)
{
if (fp_o)
fclose(fp_o);
fp_o = print_prep(ORDER, mode);
last_mode = mode;
}
PR_STRT(fp_o);
PR_HUGE(fp_o, &o->okey);
PR_HUGE(fp_o, &o->custkey);
PR_CHR(fp_o, &o->orderstatus);
PR_MONEY(fp_o, &o->totalprice);
PR_STR(fp_o, o->odate, DATE_LEN);
PR_STR(fp_o, o->opriority, O_OPRIO_LEN);
PR_STR(fp_o, o->clerk, O_CLRK_LEN);
PR_INT(fp_o, o->spriority);
PR_VSTR_LAST(fp_o, o->comment,
(columnar)?(long)(ceil(O_CMNT_LEN * V_STR_HGH)):o->clen);
PR_END(fp_o);

return(0);
}

/*
 * print an order's lineitems
 */
int
pr_line(order_t *o, int mode)
{
static FILE *fp_l = NULL;
static int last_mode = 0;
long i;

```

```

if (fp_l == NULL || mode != last_mode)
{
if (fp_l)
fclose(fp_l);
fp_l = print_prep(LINE, mode);
last_mode = mode;
}

for (i = 0; i < o->lines; i++)
{
PR_STRT(fp_l);
PR_HUGE(fp_l, &o->[i].okey);
PR_HUGE(fp_l, &o->[i].partkey);
PR_HUGE(fp_l, &o->[i].suppkey);
PR_HUGE(fp_l, &o->[i].lcnt);
PR_HUGE(fp_l, &o->[i].quantity);
PR_MONEY(fp_l, &o->[i].eprice);
PR_MONEY(fp_l, &o->[i].discount);
PR_MONEY(fp_l, &o->[i].tax);
PR_CHR(fp_l, &o->[i].rflag[0]);
PR_CHR(fp_l, &o->[i].lstatus[0]);
PR_STR(fp_l, o->[i].sdate, DATE_LEN);
PR_STR(fp_l, o->[i].cdate, DATE_LEN);
PR_STR(fp_l, o->[i].rdate, DATE_LEN);
PR_STR(fp_l, o->[i].shipinstruct, L_INST_LEN);
PR_STR(fp_l, o->[i].shipmode, L_SMODE_LEN);
PR_VSTR_LAST(fp_l, o->[i].comment,
(columnar)?(long)(ceil(L_CMNT_LEN * V_STR_HGH)):o->[i].clen);
PR_END(fp_l);
}

return(0);
}

/*
 * print the numbered order *and* its associated lineitems
 */
int
pr_order_line(order_t *o, int mode)
{
tdefs[ORDER].name = tdefs[ORDER_LINE].name;
pr_order(o, mode);
pr_line(o, mode);

return(0);
}

/*
 * print the given part
 */
int
pr_part(part_t *part, int mode)
{
static FILE *p_fp = NULL;

if (p_fp == NULL)
p_fp = print_prep(PART, 0);

PR_STRT(p_fp);
PR_HUGE(p_fp, &part->partkey);
PR_VSTR(p_fp, part->name,
(columnar)?(long)P_NAME_LEN:part->nlen);
PR_STR(p_fp, part->mfg, P_MFG_LEN);
PR_STR(p_fp, part->brand, P_BRND_LEN);
PR_VSTR(p_fp, part->type,
(columnar)?(long)P_TYPE_LEN:part->tlen);
PR_HUGE(p_fp, &part->size);
PR_STR(p_fp, part->container, P_CNTR_LEN);
PR_MONEY(p_fp, &part->retailprice);

```

```

PR_VSTR_LAST(p_fp, part->comment,
(columnar)?(long)(ceil(P_CMNT_LEN * V_STR_HGH));part->clen);
PR_END(p_fp);

return(0);
}

/*
 * print the given part's suppliers
 */
int
pr_psupp(part_t *part, int mode)
{
    static FILE *ps_fp = NULL;
    long i;

    if (ps_fp == NULL)
        ps_fp = print_prep(PSUPP, mode);

    for (i = 0; i < SUPP_PER_PART; i++)
    {
        PR_START(ps_fp);
        PR_HUGE(ps_fp, &part->s[i].partkey);
        PR_HUGE(ps_fp, &part->s[i].supkey);
        PR_HUGE(ps_fp, &part->s[i].qty);
        PR_MONEY(ps_fp, &part->s[i].scost);
        PR_VSTR_LAST(ps_fp, part->s[i].comment,
(columnar)?(long)(ceil(PS_CMNT_LEN * V_STR_HGH));part->s[i].clen);
        PR_END(ps_fp);
    }

    return(0);
}

/*
 * print the given part *and* its suppliers
 */
int
pr_part_psupp(part_t *part, int mode)
{
    tdefs[PART].name = tdefs[PART_PSUPP].name;
    pr_part(part, mode);
    pr_psupp(part, mode);

    return(0);
}

int
pr_supp(supplier_t *supp, int mode)
{
    static FILE *fp = NULL;

    if (fp == NULL)
        fp = print_prep(SUPP, mode);

    PR_START(fp);
    PR_HUGE(fp, &supp->supkey);
    PR_STR(fp, supp->name, S_NAME_LEN);
    PR_VSTR(fp, supp->address,
(columnar)?(long)(ceil(S_ADDR_LEN * V_STR_HGH));supp->alen);
    PR_HUGE(fp, &supp->nation_code);
    PR_STR(fp, supp->phone, PHONE_LEN);
    PR_MONEY(fp, &supp->acctbal);
    PR_VSTR_LAST(fp, supp->comment,
(columnar)?(long)(ceil(S_CMNT_LEN * V_STR_HGH));supp->clen);
    PR_END(fp);

    return(0);
}

```

```

int
pr_nation(code_t *c, int mode)
{
    static FILE *fp = NULL;

    if (fp == NULL)
        fp = print_prep(NATION, mode);

    PR_START(fp);
    PR_HUGE(fp, &c->code);
    PR_STR(fp, c->text, NATION_LEN);
    PR_INT(fp, c->join);
    PR_VSTR_LAST(fp, c->comment,
(columnar)?(long)(ceil(N_CMNT_LEN * V_STR_HGH));c->clen);
    PR_END(fp);

    return(0);
}

int
pr_region(code_t *c, int mode)
{
    static FILE *fp = NULL;

    if (fp == NULL)
        fp = print_prep(REGION, mode);

    PR_START(fp);
    PR_HUGE(fp, &c->code);
    PR_STR(fp, c->text, REGION_LEN);
    PR_VSTR_LAST(fp, c->comment,
(columnar)?(long)(ceil(R_CMNT_LEN * V_STR_HGH));c->clen);
    PR_END(fp);

    return(0);
}

/*
 * NOTE: this routine does NOT use the BCD2_* routines. As a result,
 * it WILL fail if the keys being deleted exceed 32 bits. Since this
 * would require ~660 update iterations, this seems an acceptable
 * oversight
 */
int
pr_drange(int tbl, DSS_HUGE min, DSS_HUGE cnt, long num)
{
    static int last_num = 0;
    static FILE *dfp = NULL;
    DSS_HUGE child = -1;
    DSS_HUGE start, last, new;

    static DSS_HUGE rows_per_segment=0;
    static DSS_HUGE rows_this_segment=0;

    if (last_num != num)
    {
        if (dfp)
            fclose(dfp);
        dfp = print_prep(tbl, -num);
        if (dfp == NULL)
            return(-1);
        last_num = num;
        rows_this_segment=0;
    }

    start = MK_SPARSE(min, num/ (10000 / refresh));
    last = start - 1;
    for (child=min; cnt > 0; child++, cnt--)
    {
        new = MK_SPARSE(child, num/ (10000 / refresh));

```

```

if (gen_rng == 1 && new - last == 1)
{
    last = new;
    continue;
}
if (gen_sql)
{
    fprintf(dfp,
        "delete from %s where %s between %ld and %ld;\n",
        tdefs[ORDER].name, "o_orderkey", start, last);
    fprintf(dfp,
        "delete from %s where %s between %ld and %ld;\n",
        tdefs[LINE].name, "l_orderkey", start, last);
    fprintf(dfp, "commit work;\n");
}
else
    if (gen_rng)
    {
        PR_START(dfp);
        PR_HUGE(dfp, &start);
        PR_HUGE(dfp, &last);
        PR_END(dfp);
    }
else
    {
        if (delete_segments)
        {
            if (rows_per_segment == 0)

            rows_per_segment = (cnt / delete_segments) + 1;

            if ((++rows_this_segment) > rows_per_segment)
            {
                fclose(dfp);

                print_prep(tbl, -num);
                NULL) return(-1);
                num;

                rows_this_segment=1;

                PR_START(dfp);
                PR_HUGE(dfp, &new);
                PR_END(dfp);
            }
            start = new;
            last = new;
        }
        if (gen_rng)
        {
            PR_START(dfp);
            PR_HUGE(dfp, &start);
            PR_HUGE(dfp, &last);
            PR_END(dfp);
        }

        return(0);
    }
}
/*
* verify functions: routines which replace the pr_routines and generate a pseudo
checksum
* instead of generating the actual contents of the tables. Meant to allow large scale
data

```

```

* validation without requiring a large amount of storage
*/
int
vrf_cust(customer_t *c, int mode)
{
    VRF_START(CUST);
    VRF_INT(CUST, c->custkey);
    VRF_STR(CUST, c->name);
    VRF_STR(CUST, c->address);
    VRF_INT(CUST, c->nation_code);
    VRF_STR(CUST, c->phone);
    VRF_MONEY(CUST, c->acctbal);
    VRF_STR(CUST, c->mktsegment);
    VRF_STR(CUST, c->comment);
    VRF_END(CUST);

    return(0);
}
/*
* print the numbered order
*/
int
vrf_order(order_t *o, int mode)
{
    VRF_START(ORDER);
    VRF_HUGE(ORDER, o->okey);
    VRF_INT(ORDER, o->custkey);
    VRF_CHR(ORDER, o->orderstatus);
    VRF_MONEY(ORDER, o->totalprice);
    VRF_STR(ORDER, o->odate);
    VRF_STR(ORDER, o->opriority);
    VRF_STR(ORDER, o->clerk);
    VRF_INT(ORDER, o->spriority);
    VRF_STR(ORDER, o->comment);
    VRF_END(ORDER);

    return(0);
}
/*
* print an order's lineitems
*/
int
vrf_line(order_t *o, int mode)
{
    int i;

    for (i = 0; i < o->lines; i++)
    {
        VRF_START(LINE);
        VRF_HUGE(LINE, o->l[i].okey);
        VRF_INT(LINE, o->l[i].partkey);
        VRF_INT(LINE, o->l[i].suppkey);
        VRF_INT(LINE, o->l[i].lcnt);
        VRF_INT(LINE, o->l[i].quantity);
        VRF_MONEY(LINE, o->l[i].eprice);
        VRF_MONEY(LINE, o->l[i].discount);
        VRF_MONEY(LINE, o->l[i].tax);
        VRF_CHR(LINE, o->l[i].rflag[0]);
        VRF_CHR(LINE, o->l[i].lstatus[0]);
        VRF_STR(LINE, o->l[i].sdate);
        VRF_STR(LINE, o->l[i].cdate);
        VRF_STR(LINE, o->l[i].rdate);
        VRF_STR(LINE, o->l[i].shipinstruct);
        VRF_STR(LINE, o->l[i].shipmode);
        VRF_STR(LINE, o->l[i].comment);
        VRF_END(LINE);
    }
}

```

```

    return(0);
}
/*
 * print the numbered order *and* its associated lineitems
 */
int
vrf_order_line(order_t *o, int mode)
{
    vrf_order(o, mode);
    vrf_line(o, mode);

    return(0);
}
/*
 * print the given part
 */
int
vrf_part(part_t *part, int mode)
{
    VRF_STRT(PART);
    VRF_INT(PART, part->partkey);
    VRF_STR(PART, part->name);
    VRF_STR(PART, part->mfgnr);
    VRF_STR(PART, part->brand);
    VRF_STR(PART, part->type);
    VRF_INT(PART, part->size);
    VRF_STR(PART, part->container);
    VRF_MONEY(PART, part->retailprice);
    VRF_STR(PART, part->comment);
    VRF_END(PART);

    return(0);
}
/*
 * print the given part's suppliers
 */
int
vrf_psupp(part_t *part, int mode)
{
    long i;

    for (i = 0; i < SUPP_PER_PART; i++)
    {
        VRF_STRT(PSUPP);
        VRF_INT(PSUPP, part->s[i].partkey);
        VRF_INT(PSUPP, part->s[i].suppkey);
        VRF_INT(PSUPP, part->s[i].qty);
        VRF_MONEY(PSUPP, part->s[i].scost);
        VRF_STR(PSUPP, part->s[i].comment);
        VRF_END(PSUPP);
    }
}

```

```

    return(0);
}
/*
 * print the given part *and* its suppliers
 */
int
vrf_part_psupp(part_t *part, int mode)
{
    vrf_part(part, mode);
    vrf_psupp(part, mode);

    return(0);
}
int
vrf_supp(supplier_t *supp, int mode)
{
    VRF_STRT(SUPP);
    VRF_INT(SUPP, supp->suppkey);
    VRF_STR(SUPP, supp->name);
    VRF_STR(SUPP, supp->address);
    VRF_INT(SUPP, supp->nation_code);
    VRF_STR(SUPP, supp->phone);
    VRF_MONEY(SUPP, supp->acctbal);
    VRF_STR(SUPP, supp->comment);
    VRF_END(SUPP);

    return(0);
}
int
vrf_nation(code_t *c, int mode)
{
    VRF_STRT(NATION);
    VRF_INT(NATION, c->code);
    VRF_STR(NATION, c->text);
    VRF_INT(NATION, c->join);
    VRF_STR(NATION, c->comment);
    VRF_END(NATION);

    return(0);
}
int
vrf_region(code_t *c, int mode)
{
    VRF_STRT(REGION);
    VRF_INT(REGION, c->code);
    VRF_STR(REGION, c->text);
    VRF_STR(REGION, c->comment);
    VRF_END(fp);

    return(0);
}

```

Appendix G: Price Quotations & Verification

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

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
810-07580	SQL Server 2008 Enterprise x64 Edition Server License with 25 CALs Discount Schedule: Open Program - No Level Unit Price reflects a 39% discount from the retail unit price of \$13,969.	\$8,487	1	\$8,487
359-01912	SQL Server 2008 Client License Client Access License Discount Schedule: Open Program - No Level Unit Price reflects a 4% discount from the retail unit price of \$163.	\$156	25	\$3,900
P72-03195	Windows Server 2008 Enterprise Edition (x64) Server License with 25 CALs Discount Schedule: Open Program - No Level Unit Price reflects a 41% discount from the retail unit price of \$3,999.	\$2,357	1	\$2,357
N/A	Microsoft Problem Resolution Services Professional Support (1 Incident)	\$245	1	\$245

A list of Microsoft's resellers can be found at <http://www.microsoft.com/products/info/render.aspx?view=22&type=mn&content=22/licensing>

All products listed above are currently orderable and available.

Defect support is included in the purchase price. Additional support is available from Microsoft PSS on an incident by incident basis at \$245 per call.

This quote is valid for the next 90 days.

Reference ID: PHdapo09090290000000858.