



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant DL380 G7
using
Microsoft SQL Server 2008 R2 Enterprise Edition
and
Windows Server 2008 R2 Enterprise Edition

First Edition
July, 2010

First Edition – July, 2010

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

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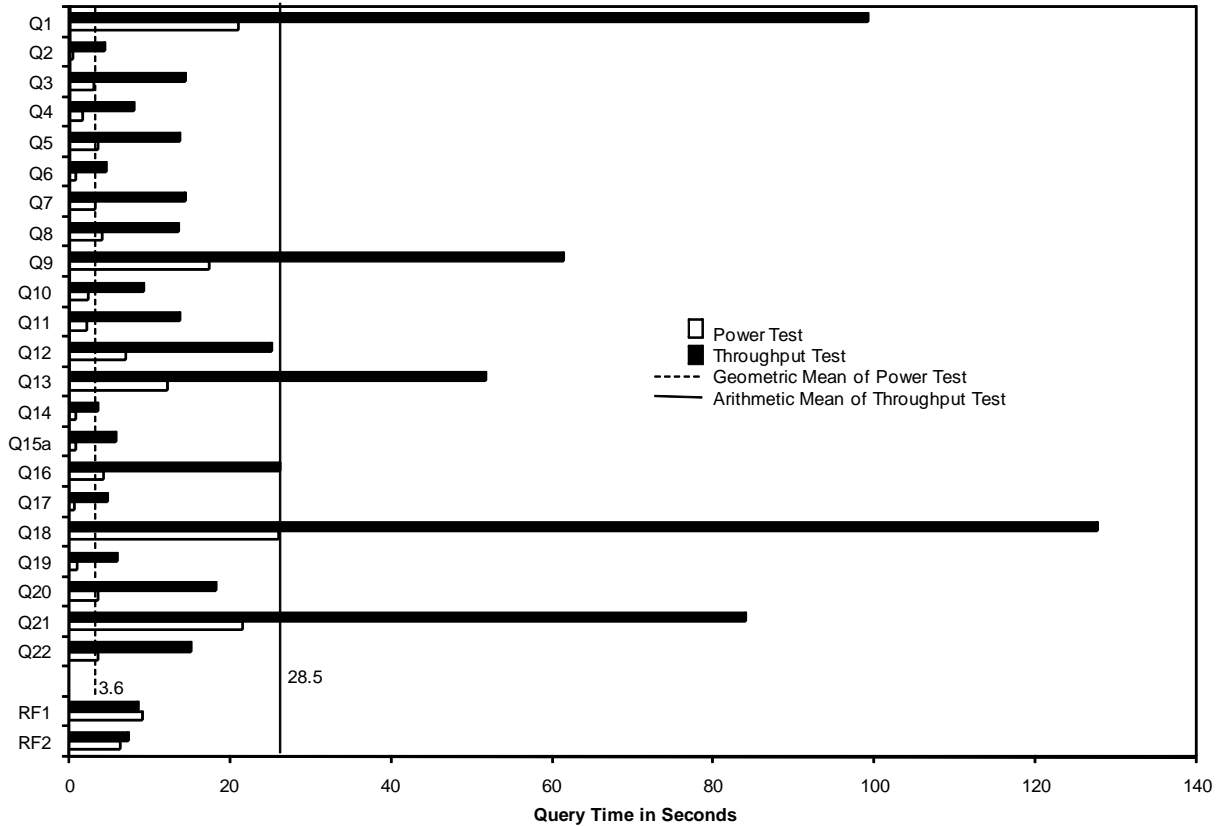


HP ProLiant DL380 G7

TPC-H Rev. 2.11.0
 TPC-Energy Rev. 1.1.1

Report Date:
Jul 2, 2010

Total System Cost		Composite Query per Hour Metric		Price / Performance		TPC-Energy Metric	
\$42,680 USD		73,974.6 QphH@100GB		\$0.58 USD \$/QphH@100GB		5.93 Watts/KQphH@100GB	
Database Size	Database Manager	Operating System	Other Software		Availability Date		
100GB	Microsoft SQL Server 2008 R2 Enterprise Edition	Windows Server 2008 R2 Enterprise Edition			Jul 2, 2010		



Database Load Time = 2:34:14	Storage Redundancy Levels			
Load Included Backup: Y	Base Tables	0	DBMS Temporary Space	0
Total Storage / Database Size = 6.84	Auxiliary Data Structures	1	OS and DBMS Software	1
Memory/Database size = 192 %				

System Configuration:

Processors : 2x 3.3 GHz 6 Core Intel X5680
Cores : 12
Threads : 24
Memory : 192 GB
OS Disk Drives : 2x 72 GB 6G 15K rpm SFF SAS
Network : 4x on-board GigE
Disk Controllers : 1x Smart Array P410i
Disks : 4x HP 60 GB SSD SFF SATA, 1x 300GB 6G 10K rpm SFF SAS
Total Disk Storage: 684 GB

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



HP ProLiant DL380 G7

TPC-H Rev. 2.11.0

Report Date: 2-Jul-10

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price	
Server Hardware							
Brand Pricing							
HP DL380G7 SFF CTO Chassis	583914-B21	1	1,591	1	1,591		
HP X5680 DL380G7 FIO Kit	587498-L21	1	2,299	2	4,598		
HP 16GB 1x16GB PC3-8500	500666-B21	1	1,549	12	18,588		
HP 512MB Flash Backed Write Cache	534916-B21	1	429	1	429		
HP 72GB 15K rpm Hot Plug SAS 2.5 Hard Drive	418371-B21	1	349	2	698		
HP 300GB 6G SAS 10K rpm SFF Hard Drive	507127-B21	1	519	1	519		
HP LE1851w 18.5-Inch wide Monitor	NK033AA#ABA HP	1	159	1	159		
HP PS/2 Keyboard And Mouse Bundle	RC464AA#ABA HP	1	39	1	39		
HP 3y 4h 24x7 ProLiant DL38x HW Support	U4545E	1	837	1		837	
Subtotal					26,621	837	
Storage							
HP 60GB 3G SATA 2.5in MDL	572071-B21	1	1,549	4	6,196		
Subtotal					6,196	0	
Hardware and Maintenance Discount							
Large Purchase and Net 30 discount	14.0%	1			(\$4,594)	(\$117)	
Hardware Subtotal					28,223	720	
Software							
SQL Server 2008 R2 Enterprise Edition with 25 CALs	810-08553	Microsoft	2	8,318	1	8,318	incl. bellow
Windows Server 2008 R2 Enterprise Edition	P72-04217	Microsoft	2	2,310	1	2,310	incl. bellow
SQL Server 2008 R2 Client Access License	359-05354	Microsoft	2	114	25	2,850	incl. bellow
Microsoft Problem Resolution Services		Microsoft	2	259	1	259	
Subtotal					13,478	259	
Total					\$41,701	\$979	

Three-Year Cost of Ownership: \$42,680 USD

QphH @ 100GB: 73974.6

\$ / QphH @ 100GB: \$0.58 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.

Audited by: Lorna Livingtree of Performance Metrics Inc.

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



HP ProLiant DL380 G7

TPC-H Rev. 2.11.0

Report Date:
Jul 2, 2010

Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 6.84
Start of Database Load	= 2010-07-01 09:38:58
End of Database Load	= 2010-07-01 12:13:12
Database Load Time	= 2 :34:14
Query Streams for Throughput Test	= 5
TPC-H Power	= 99426.3
TPC-H Throughput	= 55038.2
TPC-H Composite Query-per-Hour Metric (QpH@100GB)	= 73974.6
Total System Price Over 3 Years	= \$42,680
TPC-H Price/ Performance Metric (\$/QpH@100GB)	= \$0.58 USD

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 719.5 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	701121312	7/1/2010	14:20:20	7/1/2010	14:22:57	0:02:38
Stream01	701121313	7/1/2010	14:22:58	7/1/2010	14:33:04	0:10:05
Stream02	701121314	7/1/2010	14:22:58	7/1/2010	14:33:24	0:10:26
Stream03	701121315	7/1/2010	14:22:58	7/1/2010	14:33:36	0:10:37
Stream04	701121316	7/1/2010	14:22:58	7/1/2010	14:33:24	0:10:26
Stream05	701121317	7/1/2010	14:22:58	7/1/2010	14:33:36	0:10:38
Refresh00		7/1/2010	14:20:20	7/1/2010	14:22:58	0:02:38
Refresh01		7/1/2010	14:33:36	7/1/2010	14:33:52	0:00:16
Refresh02		7/1/2010	14:33:52	7/1/2010	14:34:08	0:00:16
Refresh03		7/1/2010	14:34:08	7/1/2010	14:34:23	0:00:14
Refresh04		7/1/2010	14:34:23	7/1/2010	14:34:41	0:00:19
Refresh05		7/1/2010	14:34:41	7/1/2010	14:34:58	0:00:16



HP ProLiant DL380 G7

TPC-H Rev. 2.11.0

Report Date:
Jul 2, 2010

TPC-H Timing Intervals (in seconds)

Query	Q01	Q02	Q03	Q04	Q05	Q06	Q07	Q08
Stream 00	21.0	0.6	3.1	1.7	3.7	0.9	3.2	4.1
Stream 01	90.3	4.3	14.6	7.9	15.3	3.6	12.7	10.2
Stream 02	101.1	5.2	14.3	7.7	13.1	4.8	15.3	14.9
Stream 03	96.7	5.4	11.1	8.7	15.6	5.2	15.2	17.1
Stream 04	104.4	2.9	13.7	7.9	12.2	4.2	13.2	14.3
Stream 05	103.5	5.0	18.6	8.0	12.9	5.4	15.8	11.8
Min Qi	90.3	2.9	11.1	7.7	12.2	3.6	12.7	10.2
Max Qi	104.4	5.4	18.6	8.7	15.6	5.4	15.8	17.1
Avg Qi	99.2	4.6	14.5	8.0	13.8	4.6	14.4	13.7
Query	Q09	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	17.4	2.4	2.3	7.0	12.3	0.8	0.9	4.4
Stream 01	58.6	8.2	15.8	11.4	62.0	4.2	6.4	24.9
Stream 02	62.2	10.2	15.3	34.1	41.9	4.0	5.5	31.2
Stream 03	70.2	10.1	15.6	26.0	49.3	2.7	4.9	24.7
Stream 04	68.7	8.8	11.8	24.4	45.3	4.6	6.6	27.4
Stream 05	48.0	9.6	10.3	30.4	60.5	2.4	5.8	22.9
Min Qi	48.0	8.2	10.3	11.4	41.9	2.4	4.9	22.9
Max Qi	70.2	10.2	15.8	34.1	62.0	4.6	6.6	31.2
Avg Qi	61.5	9.4	13.8	25.3	51.8	3.6	5.8	26.2
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	0.7	26.0	1.1	3.7	21.6	3.6	9.2	6.4
Stream 01	4.2	129.7	5.5	11.0	89.9	15.5	8.9	7.0
Stream 02	6.1	124.5	6.6	17.4	73.0	17.7	9.0	6.7
Stream 03	5.4	133.0	5.5	22.1	79.6	13.5	7.9	6.2
Stream 04	6.2	121.5	7.3	16.1	87.9	16.1	8.7	9.8
Stream 05	2.6	130.2	5.7	25.3	90.2	13.0	8.4	7.8
Min Qi	2.6	121.5	5.5	11.0	73.0	13.0	7.9	6.2
Max Qi	6.2	133.0	7.3	25.3	90.2	17.7	9.0	9.8
Avg Qi	4.9	127.8	6.1	18.4	84.1	15.2	8.6	7.5

HP ProLiant DL380 G7		Energy Summary		TPC-H Rev. 2.11.0 TPC-Energy Rev. 1.1.1
				Report Date: Jul 2, 2010
Total System Cost		Composite Query per Hour Metric		Price / Performance
\$42,680 USD		73,974.6 QphH@100GB		\$0.58 USD \$/QphH@100GB
Database Size		Database Manager	Operating System	Other Software
100GB		Microsoft SQL Server 2008 R2 Enterprise Edition	Windows Server 2008 R2 Enterprise Edition	Availability Date
Jul 2, 2010				

Numerical Quantities For Reported Energy Configuration:

REC Idle Power: **274.1 Watts**
Average Power of REC: **438.5 Watts**

Subsystem Reporting:

Secondary (subsystem) Metrics are not reported. Comparisons to other TPC-Energy Results must not reference subsystem energy information.

Lowest ambient temperature at air inlet: **20.41 Degrees Celsius**

Items in Priced Configuration not in the Reported Energy Configuration

Items in the Reported Energy Configuration not in the Measured Energy Configuration

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant DL380 G7 using Microsoft SQL Server 2008 R2 Enterprise Edition, in conformance with the requirements of the TPC Benchmark™ H Standard Specification, Revision 2.11.0. The operating system used for the benchmark was Microsoft Windows 2008 R2 Enterprise Edition.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB	\$/QphH @ 100GB
HP ProLiant DL380 G7	Microsoft SQL Server 2008 R2 Enterprise Edition, Windows Server 2008 R2 Enterprise Edition	\$42,680	99426.3	55038.2	73974.6	\$0.58

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 G7.

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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Clause 0: General Items

0.1 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.

0.2 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 but 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.

0.3 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 G7 , depicted in Figure 1.1, consisted of :

- 2x Intel X5680 3.3GHz 6 core processors
- 192 GB of memory
- 1 x HP Smart Array P410i Controller
- 4 x 60GB SSD 2.5" SATA
- 2 x 72GB Pluggable 6G SAS 2.5" 15k rpm drives
- 1 x 300GB Pluggable 6G SAS 2.5" 10k rpm drives

Figure 0.1 Benchmarked & Priced configuration



Clause 1: Logical Database Design

1.1 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.

1.2 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.

1.3 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

1.4 Replication

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

No replication was used.

Clause 2: Queries and Refresh Functions Related Items

2.1 Query Language

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

SQL was the query language used.

2.2 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 2.11.0 and QGEN version 2.11.0 were used to generate all database populations.

2.3 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 2.11.0 was used to generate the substitution parameters.

2.4 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.

2.5 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.

2.6 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.

2.7 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.

Clause 3: Database System Properties

3.1 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 G7.

3.1.1 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.

3.1.2 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.

3.2 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)

3.2.1 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.

3.3 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.

3.3.1 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.

3.3.2 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.

3.3.3 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:

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

3.3.4 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.

3.3.5 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.

3.3.6 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.

3.4 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.

3.4.1 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 HP 60GB SSD SFF SATA 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. 6 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 60GB SSD drive was removed.
5. A checkpoint was issued to force a failure.

6. The 6 streams of ACID transactions failed and recorded their number of committed transaction in success files.
7. The database log was dumped to disk.
8. A new database 60GB SSD was attached 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.

3.4.2 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. 6 streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
2. While the streams of ACID transactions were running, the SUT 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.

3.4.3 Memory Failure

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

See section 3.4.2

Clause 4: Scaling and Database Population

4.1 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 4.1 lists the TPC Benchmark H defined tables and the row count for each table as they existed upon completion of the build.

Table 4.1: Initial Number of Rows

Table Name	Row Count
Region	5
Nation	25
Supplier	1000000
Customer	15000000
Part	20000000
Partsupp	80000000
Orders	150000000
Lineitem	600037902

4.2 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 G7 with the following configuration:

- 1 x HP Smart Array P410i Controller
- 4 x 60GB SSD SFF SATA
- 2 x 72GB Pluggable 6G SAS 2.5" 15k rpm drives
- 1 x 300GB Pluggable 6G SAS 2.5" 10k rpm drives

The 300GB disk was used to store flatfiles and backup. The remaining 6 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 4.2.1

Table 4.2.1: SMART Array Controller Disk Array to Logical Drive Mapping

SMART Array Controller	SMART Logical Drive Array Letter	Number of Physical Drives in SMART LDA	SMART Logical Drive Number	SMART Fault Tolerance	Disk Format	Size (MB)	Contents
Embedded	A	2	1	RAID1	NTFS	69973	C:\ OS TpchLog TempLog Tpch1GBLog
Embedded	B	1	2	RAID0	NTFS	286069	Z:\ Backup Flatfiles
Embedded	C	1	3	RAID0	NTFS	57207	C:\dev\tpch_1 Tpch100g TempDB Tpch1g
Embedded	D	1	4	RAID0	NTFS	57207	C:\dev\tpch_2 Tpch100g TempDB
Embedded	E	1	5	RAID0	NTFS	57207	C:\dev\tpch_3 Tpch100g TempDB
Embedded	F	1	6	RAID0	NTFS	57207	C:\dev\tpch_4 Tpch100g TempDB

4.3 Mapping of Database Partitions/Replications

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

Database partitioning/replication was not used..

4.4 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 and OS.

4.5 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.

DBGEN version 2.11.0 was used for database population.

4.6 Database Load time

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

The database load time was 2 hours 34 minutes and 14 seconds.

4.7 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.

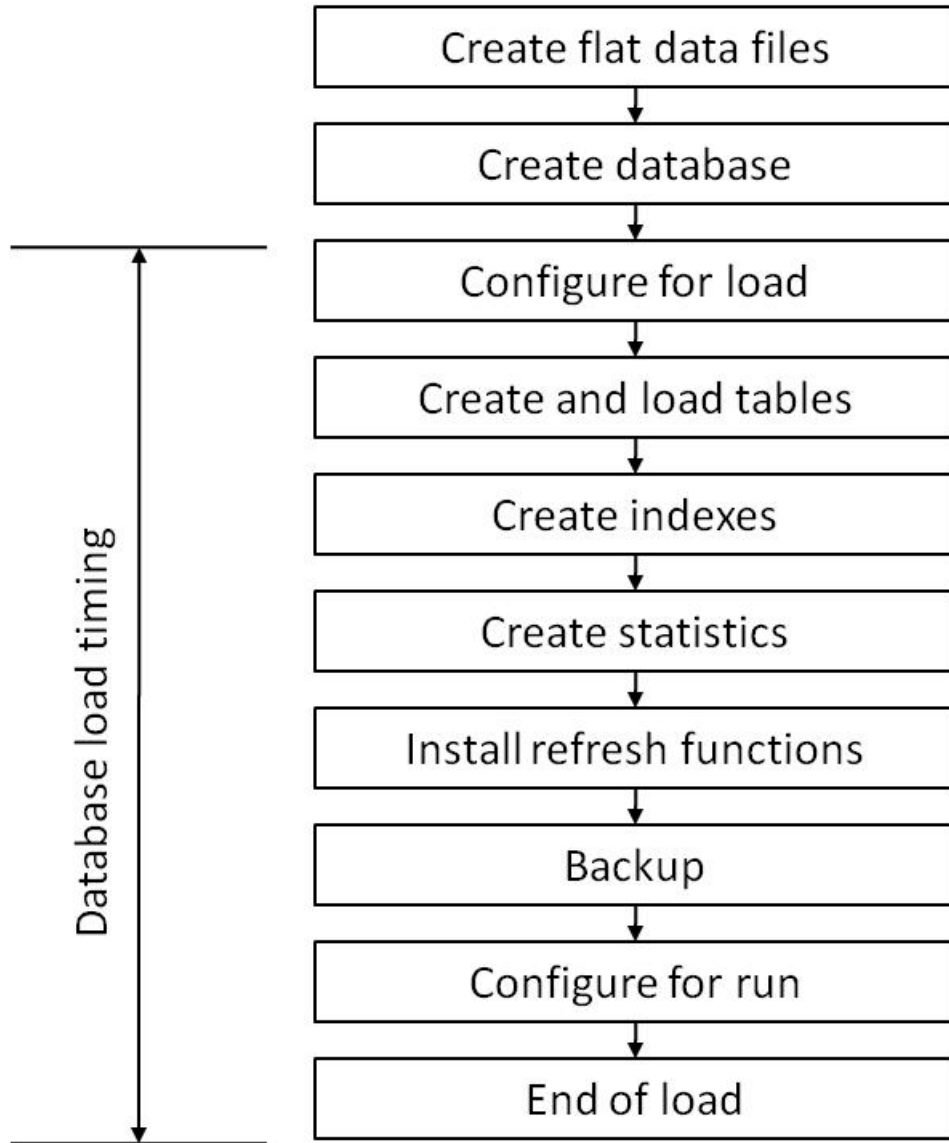
Disk Type	Number of Disks	Total Disk Space	Data Storage Ratio
72 GB	2	144 GB	6.84
60 GB	4	240 GB	
300 GB	1	300 GB	

4.8 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 4.8.

Figure 4.8: Block Diagram of Database Load Process



Clause 5: Performance Metrics and Execution Rules Related Items

5.1 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. RF1 Refresh Transaction
2. Stream 00 Execution
3. RF2 Refresh Transaction.

5.2 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.

5.3 Number of Streams for The Throughput Test

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

5 streams were used for the Throughput Test.

5.4 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.

5.5 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.

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

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

Stream ID	RF	Start Date	Start time	Stop Date	Stop Time
Stream00	RF1	7/1/2010	14:20:20	7/1/2010	14:20:29
Stream00	RF2	7/1/2010	14:22:51	7/1/2010	14:22:58
Stream01	RF1	7/1/2010	14:33:36	7/1/2010	14:33:45
Stream01	RF2	7/1/2010	14:33:45	7/1/2010	14:33:52
Stream02	RF1	7/1/2010	14:33:52	7/1/2010	14:34:02
Stream02	RF2	7/1/2010	14:34:02	7/1/2010	14:34:08
Stream03	RF1	7/1/2010	14:34:08	7/1/2010	14:34:16
Stream03	RF2	7/1/2010	14:34:16	7/1/2010	14:34:23
Stream04	RF1	7/1/2010	14:34:23	7/1/2010	14:34:31
Stream04	RF2	7/1/2010	14:34:31	7/1/2010	14:34:41
Stream05	RF1	7/1/2010	14:34:41	7/1/2010	14:34:50
Stream05	RF2	7/1/2010	14:34:50	7/1/2010	14:34:58

5.7 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.

5.8 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.

5.9 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	99426.3	55038.2	73974.6
Run 2	103770.4	55477.7	75874.5

5.10 System Activity Between Tests

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

The SUT was left idle for 10 minutes for TPC-Energy idle time measurements and the shortest power run query was repeated to confirm proper response time during idle state.

Clause 6: SUT and Driver Implementation

Related Items

6.1 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.

6.2 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 32 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 32 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 5 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.

6.3 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.

Clause 7: Pricing Related Items

7.1 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.

7.2 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.

7.3 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 G7 and all other hardware is generally available at the time of publication. The system software, Microsoft Windows Server 2008 R2 Enterprise Edition and the database software, Microsoft SQL Server 2008 R2 Enterprise Edition are generally available at the time of publication.

7.4 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.

7.5 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.

Clause 8: Full Disclosure

8.1 Supporting Files Index Table

An index for all files included in the supporting files archive as required by Clauses 8.3.2 8.3.8 must be provided in the report.

Clause	Description	Pathname
Clause 1	OS and database tunable parameters	SupportingFiles/Clause1/Parameters
Clause 2	Query substitution parameters	SupportingFiles/Clause2/QueryParameters
	Qualification queries output	SupportingFiles/Clause2/QualificationOutput
Clause 3	ACID test scripts & results	SupportingFiles/Clause3/ACID
Clause 4	Database load scripts	SupportingFiles/Clause4/TestDB_Load
	Qualification database load scripts	SupportingFiles/Clause4/QualDB_Load
Clause 5	No supporting files	
Clause 6	Implementation Specific layer source code	SupportingFiles/Clause6/ImplementationCode
	Query and refresh output	SupportingFiles/Clause6/RunOutput
Clause 7	No supporting files	
Clause 8	RF function source code	SupportingFiles/Clause8/RF_source

Clause 9: Audit 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

July 2, 2010

Mr. David Adams
Hewlett-Packard Company
11445 Compaq Center Dr.
Houston, TX 77070

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

Platform: HP ProLiant DL380 G7
Database Manager: Microsoft SQL Server 2008 R2 Enterprise Edition
Operating System: Microsoft Windows Server 2008 R2 Enterprise Edition

CPU's	Memory	Total Disks	Qpph@ 100GB	QthH @100GB	QphH@100GB
2 Intel 6 core @ 3.3 Ghz	192 GB	2 @ 72 GB 1 @ 300 GB 4 @ 60 GB SSD	99,426.3	55,038.2	73,974.6

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 2.11.0.
- 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 2.11.0.
- The validation of the query text against the qualification database produced compliant results.

PERFORMANCE METRICS INC.
TPC Certified Auditors

- The refresh functions were properly implemented and executed the correct number of inserts and deletes.
- The load timing was properly measured and reported.
- The execution times were correctly measured and reported.
- The performance metrics were correctly computed and reported.
- The repeatability of the measurement was verified.
- The ACID properties were 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 R2 Version

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

```
Microsoft SQL Server 2008 R2 (RTM) - 10.50.1446.1 (X64)
Feb 4 2010 15:51:57
Copyright (c) Microsoft Corporation
Enterprise Evaluation Edition (64-bit) on Windows NT 6.1
<X64> (Build 7600: )
```

A.2. SQL Server 2008 R2 Installation

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

A.3. SQL Server 2008 Startup Parameters

```
SQLSERVER -c -x -E -T834 -T836 -T2301
```

A.4. Microsoft SQL Server 2008 R2 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	0	0
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	0	0
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	1	1
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
in-doubt xact resolution	0	2	0	0
index create memory (KB)	704	2147483647	0	0
lightweight pooling	0	1	1	1
locks	5000	2147483647	0	0
max degree of parallelism	0	1024	0	0
max full-text crawl range	0	256	4	4
max server memory (MB)	16	2147483647	190000	190000
max text repl size (B)	-1	2147483647	65536	65536
max worker threads	128	32767	0	0
media retention	0	365	0	0
min memory per query (KB)	512	2147483647	512	512
min server memory (MB)	0	2147483647	185000	185000
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	0	0
query governor cost limit	0	2147483647	0	0
query wait (s)	-1	2147483647	2147483647	2147483647
recovery interval (min)	0	32767	32767	32767
remote access	0	1	0	0
remote admin connections	0	1	0	0
remote login timeout (s)	0	2147483647	20	20
remote proc trans	0	1	0	0
remote query timeout (s)	0	2147483647	600	600
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	512	512
xp_cmdshell	0	1	0	0

A.5. Microsoft SQL Server 2008 R2 Node Configuration

No node configuration changes were made.

A.6. Windows 2008 R2 Configuration

The default installation of Windows 2008 R2 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: 07/01/10 10:42:42
 System Name: DL380GH
 [System Summary]

Item	Value
OS Name	Microsoft Windows Server 2008 R2 Enterprise
Version	6.1.7600 Build 7600
Other OS Description	Not Available
OS Manufacturer	Microsoft Corporation
System Name	DL380GH
System Manufacturer	HP

System Model	ProLiant DL380 G7	
System Type	x64-based PC	
Processor	Intel(R) Xeon(R) CPU	X5680 @ 3.33GHz, 3333 Mhz, 6
Core(s), 12 Logical Processor(s)		
Processor	Intel(R) Xeon(R) CPU	X5680 @ 3.33GHz, 3333 Mhz, 6
Core(s), 12 Logical Processor(s)		
BIOS Version/Date	HP P67, 5/14/2010	
SMBIOS Version	2.6	
Windows Directory	C:\Windows	
System Directory	C:\Windows\system32	
Boot Device	\Device\HarddiskVolume1	
Locale	United States	
Hardware Abstraction Layer	Version = "6.1.7600.16385"	
User Name	Not Available	
Time Zone	Central Daylight Time	
Installed Physical Memory (RAM)	192 GB	
Total Physical Memory	192 GB	
Available Physical Memory	4.87 GB	
Total Virtual Memory	194 GB	
Available Virtual Memory	6.14 GB	
Page File Space	1.95 GB	
Page File	C:\pagefile.sys	

[Hardware Resources]

[Conflicts/Sharing]

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

IRQ 20 Intel(R) ICH10 Family USB Universal Host Controller - 3A34

IRQ 20 Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3A

I/O Port 0x000003C0-0x000003DF ATI ES1000

I/O Port 0x000003C0-0x000003DF PCI bus

I/O Port 0x00000070-0x00000071 System CMOS/real time clock

I/O Port 0x00000070-0x00000071 Motherboard resources

I/O Port 0x00002000-0x000020FF ATI ES1000

I/O Port 0x00002000-0x000020FF Intel(R) 82801 PCI Bridge - 244E

Memory Address 0xE8000000-0xEFFFFFFF ATI ES1000

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

IRQ 23 ATI ES1000

IRQ 23 Intel(R) ICH10 Family USB Universal Host Controller - 3A35

IRQ 23 Intel(R) ICH10 Family USB Universal Host Controller - 3A39

Memory Address 0xF2000000-0xF5FFFFFF Intel(R) ICH10

Family PCI Express Root Port 1 - 3A40

Memory Address 0xF2000000-0xF5FFFFFF Broadcom

BCM5709C NetXtreme II GigE

I/O Port 0x00003000-0x00003FFF Intel(R) ICH10 Family PCI

Express Root Port 5 - 3A48

I/O Port 0x00003000-0x00003FFF Management Controller (CORE)	HP ProLiant iLO 3	0x00003000-0x00003FFF (CORE) OK	HP ProLiant iLO 3 Management Controller
Memory Address 0xF6000000-0xF7FFFFFF BCM5709C NetXtreme II GigE	Broadcom	0x00000061-0x00000061 0x00001000-0x0000101F Host Controller - 3A34	System speaker OK Intel(R) ICH10 Family USB Universal OK
Memory Address 0xF6000000-0xF7FFFFFF Family PCI Express Root Port 3 - 3A44	Intel(R) ICH10	0x00001000-0x0000101F 0x00003800-0x000038FF (CHIF) OK	PCI bus OK HP ProLiant iLO 3 Management Controller
Memory Address 0xFED00000-0xFED03FFF	PCI bus	0x0000002E-0x0000002F	Extended IO Bus OK
Memory Address 0xFED00000-0xFED03FFF	PCI bus	0x00000620-0x0000065F	Extended IO Bus OK
Memory Address 0xFED00000-0xFED03FFF timer	High precision event	0x00000680-0x0000069F 0x00000600-0x0000061F 0x00000660-0x0000067F	Extended IO Bus OK Extended IO Bus OK Extended IO Bus OK
IRQ 16 Intel(R) ICH10 Family PCI Express Root Port 5 - 3A48		0x00000300-0x0000031F	Extended IO Bus OK
IRQ 16 Broadcom BCM5709C NetXtreme II GigE		0x00001020-0x0000103F	Intel(R) ICH10 Family USB Universal OK
IRQ 16 Intel(R) ICH10 Family PCI Express Root Port 1 - 3A40		0x00000000-0x0000003AF	Host Controller - 3A35 PCI bus OK
IRQ 16 HP ProLiant iLO 3 Management Controller (CORE)		0x00000000-0x0000003AF	Direct memory access controller OK
IRQ 16 Intel(R) ICH10 Family PCI Express Root Port 3 - 3A44			
IRQ 17 Standard Dual Channel PCI IDE Controller		0x000003E0-0x00000CF7	PCI bus OK
IRQ 17 HP ProLiant iLO 3 Management Controller (CHIF)		0x00000D00-0x00000FFF	PCI bus OK
IRQ 17 Standard Universal PCI to USB Host Controller		0x00001040-0x0000105F	Intel(R) ICH10 Family USB Universal OK
IRQ 17 Broadcom BCM5709C NetXtreme II GigE		Host Controller - 3A36 0x00000070-0x00000071	System CMOS/real time clock OK
Memory Address 0xA0000-0xBFFFF	ATI ES1000		
Memory Address 0xA0000-0xBFFFF	PCI bus	0x00000070-0x00000071	Motherboard resources OK
I/O Port 0x00001000-0x0000101F Universal Host Controller - 3A34	Intel(R) ICH10 Family USB	0x00001060-0x0000107F Host Controller - 3A39	Intel(R) ICH10 Family USB Universal OK
I/O Port 0x00001000-0x0000101F	PCI bus	0x00000408-0x0000040F	Motherboard resources OK
I/O Port 0x000003B0-0x000003BB	ATI ES1000	0x000004D0-0x000004D1	Motherboard resources OK
I/O Port 0x000003B0-0x000003BB	PCI bus	0x00000020-0x0000003F	Motherboard resources OK
[DMA]		0x000000A0-0x000000BF	Motherboard resources OK
Resource Device Status		0x00000090-0x0000009F	Motherboard resources OK
Channel 7 Direct memory access controller OK		0x00000050-0x00000053	Motherboard resources OK
[Forced Hardware]		0x00000700-0x0000071F	Motherboard resources OK
Device PNP Device ID		0x00000880-0x000008FF	Motherboard resources OK
[I/O]		0x00000900-0x0000097F	Motherboard resources OK
Resource Device Status		0x00000010-0x0000001F	Motherboard resources OK
0x00002000-0x000020FF	ATI ES1000 OK		
0x00002000-0x000020FF	Intel(R) 82801 PCI Bridge - 244E OK	0x00000CD4-0x00000CD7	Motherboard resources OK
0x000003B0-0x000003BB	ATI ES1000 OK		
0x000003B0-0x000003BB	PCI bus OK	0x00000CD0-0x00000CD3	Motherboard resources OK
0x000003C0-0x000003DF	ATI ES1000 OK		
0x000003C0-0x000003DF	PCI bus OK	0x00000F50-0x00000F58	Motherboard resources OK
0x000003F8-0x000003FF	Communications Port (COM1) OK	0x000000F0-0x000000F0	Motherboard resources OK
0x00001080-0x00001087	Standard Dual Channel PCI IDE Controller OK	0x00000CA0-0x00000CA1	Motherboard resources OK
0x00001088-0x0000108B	Standard Dual Channel PCI IDE Controller OK	0x00000CA4-0x00000CA5	Motherboard resources OK
0x00001090-0x00001097	Standard Dual Channel PCI IDE Controller OK	0x000002F8-0x000002FF	Motherboard resources OK
0x00001098-0x0000109B	Standard Dual Channel PCI IDE Controller OK	0x00000CA2-0x00000CA3	Microsoft Generic IPMI Compliant Device OK
0x000010A0-0x000010AF	Standard Dual Channel PCI IDE Controller OK	0x00003C00-0x00003C1F	Standard Universal PCI to USB Host Controller OK
0x000010B0-0x000010BF	Standard Dual Channel PCI IDE Controller OK	0x00000040-0x00000043	System timer OK
0x00003000-0x00003FFF Port 5 - 3A48	Intel(R) ICH10 Family PCI Express Root OK	0x00004000-0x00004FFF Express Root Port 1 - 3408	Intel(R) 5520/5500/X58 I/O Hub PCI OK

0x00000080-0x0000008F	Direct memory access controller	OK	IRQ 82	Microsoft ACPI-Compliant System	OK
0x000000C0-0x000000DF	Direct memory access controller	OK	IRQ 83	Microsoft ACPI-Compliant System	OK
0x00003400-0x000034FF	HP ProLiant iLO 3 Management Controller (CORE)	OK	IRQ 84	Microsoft ACPI-Compliant System	OK
0x00000060-0x00000060	Standard PS/2 Keyboard	OK	IRQ 85	Microsoft ACPI-Compliant System	OK
0x00000064-0x00000064	Standard PS/2 Keyboard	OK	IRQ 86	Microsoft ACPI-Compliant System	OK
[IRQs]			IRQ 87	Microsoft ACPI-Compliant System	OK
Resource	Device	Status	IRQ 88	Microsoft ACPI-Compliant System	OK
IRQ 23	ATI ES1000	OK	IRQ 89	Microsoft ACPI-Compliant System	OK
IRQ 23	Intel(R) ICH10 Family USB Universal Host Controller - 3A35	OK	IRQ 90	Microsoft ACPI-Compliant System	OK
IRQ 23	Intel(R) ICH10 Family USB Universal Host Controller - 3A39	OK	IRQ 91	Microsoft ACPI-Compliant System	OK
IRQ 4	Communications Port (COM1)	OK	IRQ 92	Microsoft ACPI-Compliant System	OK
IRQ 4294967292	Intel(R) 5520/5500/X58 I/O Hub PCI Express Root Port 3 - 340A	OK	IRQ 93	Microsoft ACPI-Compliant System	OK
IRQ 17	Standard Dual Channel PCI IDE Controller	OK	IRQ 94	Microsoft ACPI-Compliant System	OK
IRQ 17	HP ProLiant iLO 3 Management Controller (CHIF)	OK	IRQ 95	Microsoft ACPI-Compliant System	OK
IRQ 17	Standard Universal PCI to USB Host Controller	OK	IRQ 96	Microsoft ACPI-Compliant System	OK
IRQ 17	Broadcom BCM5709C NetXtreme II GigE	OK	IRQ 97	Microsoft ACPI-Compliant System	OK
IRQ 16	Intel(R) ICH10 Family PCI Express Root Port 5 - 3A48	OK	IRQ 98	Microsoft ACPI-Compliant System	OK
IRQ 16	Broadcom BCM5709C NetXtreme II GigE	OK	IRQ 99	Microsoft ACPI-Compliant System	OK
IRQ 16	Intel(R) ICH10 Family PCI Express Root Port 1 - 3A40	OK	IRQ 100	Microsoft ACPI-Compliant System	OK
IRQ 16	HP ProLiant iLO 3 Management Controller (CORE)	OK	IRQ 101	Microsoft ACPI-Compliant System	OK
IRQ 16	Intel(R) ICH10 Family PCI Express Root Port 3 - 3A44	OK	IRQ 102	Microsoft ACPI-Compliant System	OK
IRQ 4294967291	Intel(R) 5520/X58 I/O Hub PCI Express Root Port 4 - 340B	OK	IRQ 103	Microsoft ACPI-Compliant System	OK
IRQ 20	Intel(R) ICH10 Family USB Universal Host Controller - 3A34	OK	IRQ 104	Microsoft ACPI-Compliant System	OK
IRQ 20	Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3A	OK	IRQ 105	Microsoft ACPI-Compliant System	OK
IRQ 18	Broadcom BCM5709C NetXtreme II GigE	OK	IRQ 106	Microsoft ACPI-Compliant System	OK
IRQ 4294967290	Intel(R) 5520/X58 I/O Hub PCI Express Root Port 5 - 340C	OK	IRQ 107	Microsoft ACPI-Compliant System	OK
IRQ 19	Broadcom BCM5709C NetXtreme II GigE	OK	IRQ 108	Microsoft ACPI-Compliant System	OK
IRQ 4294967284	Smart Array P410i Controller	OK	IRQ 109	Microsoft ACPI-Compliant System	OK
IRQ 4294967283	Smart Array P410i Controller	OK	IRQ 110	Microsoft ACPI-Compliant System	OK
IRQ 4294967282	Smart Array P410i Controller	OK	IRQ 111	Microsoft ACPI-Compliant System	OK
IRQ 4294967281	Smart Array P410i Controller	OK	IRQ 112	Microsoft ACPI-Compliant System	OK
IRQ 4294967280	Smart Array P410i Controller	OK	IRQ 113	Microsoft ACPI-Compliant System	OK
IRQ 4294967279	Smart Array P410i Controller	OK	IRQ 114	Microsoft ACPI-Compliant System	OK
IRQ 4294967278	Smart Array P410i Controller	OK	IRQ 115	Microsoft ACPI-Compliant System	OK
IRQ 4294967277	Smart Array P410i Controller	OK	IRQ 116	Microsoft ACPI-Compliant System	OK
IRQ 4294967289	Intel(R) 5520/X58 I/O Hub PCI Express Root Port 6 - 340D	OK	IRQ 117	Microsoft ACPI-Compliant System	OK
IRQ 22	Intel(R) ICH10 Family USB Universal Host Controller - 3A36	OK	IRQ 118	Microsoft ACPI-Compliant System	OK
IRQ 4294967288	Intel(R) 5520/5500/X58 I/O Hub PCI Express Root Port 7 - 340E	OK	IRQ 119	Microsoft ACPI-Compliant System	OK
IRQ 12	PS/2 Compatible Mouse	OK	IRQ 120	Microsoft ACPI-Compliant System	OK
IRQ 4294967287	Intel(R) 5520/5500/X58 I/O Hub PCI Express Root Port 8 - 340F	OK	IRQ 121	Microsoft ACPI-Compliant System	OK
IRQ 0	System timer	OK	IRQ 122	Microsoft ACPI-Compliant System	OK
IRQ 4294967294	Intel(R) 5520/5500/X58 I/O Hub PCI Express Root Port 1 - 3408	OK	IRQ 123	Microsoft ACPI-Compliant System	OK
IRQ 4294967286	Intel(R) 5520/5500/X58 I/O Hub PCI Express Root Port 9 - 3410	OK	IRQ 124	Microsoft ACPI-Compliant System	OK
IRQ 81	Microsoft ACPI-Compliant System	OK	IRQ 125	Microsoft ACPI-Compliant System	OK
			IRQ 126	Microsoft ACPI-Compliant System	OK
			IRQ 127	Microsoft ACPI-Compliant System	OK
			IRQ 128	Microsoft ACPI-Compliant System	OK
			IRQ 129	Microsoft ACPI-Compliant System	OK
			IRQ 130	Microsoft ACPI-Compliant System	OK
			IRQ 131	Microsoft ACPI-Compliant System	OK
			IRQ 132	Microsoft ACPI-Compliant System	OK
			IRQ 133	Microsoft ACPI-Compliant System	OK
			IRQ 134	Microsoft ACPI-Compliant System	OK
			IRQ 135	Microsoft ACPI-Compliant System	OK
			IRQ 136	Microsoft ACPI-Compliant System	OK
			IRQ 137	Microsoft ACPI-Compliant System	OK
			IRQ 138	Microsoft ACPI-Compliant System	OK
			IRQ 139	Microsoft ACPI-Compliant System	OK
			IRQ 140	Microsoft ACPI-Compliant System	OK
			IRQ 141	Microsoft ACPI-Compliant System	OK
			IRQ 142	Microsoft ACPI-Compliant System	OK
			IRQ 143	Microsoft ACPI-Compliant System	OK
			IRQ 144	Microsoft ACPI-Compliant System	OK
			IRQ 145	Microsoft ACPI-Compliant System	OK
			IRQ 146	Microsoft ACPI-Compliant System	OK
			IRQ 147	Microsoft ACPI-Compliant System	OK
			IRQ 148	Microsoft ACPI-Compliant System	OK
			IRQ 149	Microsoft ACPI-Compliant System	OK
			IRQ 150	Microsoft ACPI-Compliant System	OK
			IRQ 151	Microsoft ACPI-Compliant System	OK

c:\windows\system32\msvidc32.dll Microsoft Corporation
 OK C:\Windows\system32\MSVIDC32.DLL
 6.1.7600.16385 37.50 KB (38,400 bytes)
 7/13/2009 7:18 PM

c:\windows\system32\msyuv.dll Microsoft Corporation
 OK C:\Windows\system32\MSYUV.DLL
 6.1.7600.16385 24.00 KB (24,576 bytes)
 7/13/2009 7:06 PM

c:\windows\system32\iyuv_32.dll Microsoft Corporation
 OK C:\Windows\system32\IYUV_32.DLL
 6.1.7600.16385 52.50 KB (53,760 bytes)
 7/13/2009 7:06 PM

c:\windows\system32\tsbyuv.dll Microsoft Corporation
 OK C:\Windows\system32\TSBYUV.DLL
 6.1.7600.16385 14.00 KB (14,336 bytes)
 7/13/2009 7:06 PM

[CD-ROM]

Item	Value
Drive	D:
Description	CD-ROM Drive
Media Loaded	No
Media Type	DVD-ROM
Name	TEAC DV-28S-V ATA Device
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	-1.00 kbytes/sec
SCSI Target ID	0
PNP Device ID	IDE\CDROMTEAC_DV-28S-V_____C.0F____\5&1F87F3DC&0&0.0.0

Driver c:\windows\system32\drivers\cdrom.sys (6.1.7600.16385, 144.00 KB (147,456 bytes), 7/13/2009 6:19 PM)

[Sound Device]

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

[Display]

Item	Value
Name	ATI ES1000
PNP Device ID	PCI\VEN_1002&DEV_515E&SUBSYS_31FB103C&REV_02\4&1712A4E7&0&18F0
Adapter Type	Not Available, ATI Technologies Inc. compatible
Adapter Description	ATI ES1000
Adapter RAM	Not Available
Installed Drivers	Not Available
Driver Version	8.240.50.5000
INF File	oem2.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	0x00002000-0x000020FF
Memory Address	0xF1CF0000-0xF1CFFFFF
IRQ Channel	IRQ 23
I/O Port	0x000003B0-0x000003BB
I/O Port	0x000003C0-0x000003DF
Memory Address	0xA0000-0xBFFFF
Driver	c:\windows\system32\drivers\ati2mtag.sys (6.14.10.6748, 2.11 MB (2,210,816 bytes), 2/2/2010 4:46 PM)

[Infrared]

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

[Input]

[Keyboard]

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

[Pointing Device]

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

[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	ROOT\MS_SSTP\MINIPOINT\0000
Last Reset	7/1/2010 9:30 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 (6.1.7600.16385, 82.00 KB (83,968 bytes), 7/13/2009 7:10 PM)
Name	[00000001] WAN Miniport (IKEv2)
Adapter Type	Not Available
Product Type	WAN Miniport (IKEv2)
Installed	Yes
PNP Device ID	ROOT\MS_AGILEVPN\MINIPOINT\0000
Last Reset	7/1/2010 9:30 AM
Index	1
Service Name	RasAgileVpn
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\agilevpn.sys (6.1.7600.16385, 59.00 KB (60,416 bytes), 7/13/2009 7:10 PM)
Name	[00000002] WAN Miniport (L2TP)
Adapter Type	Not Available
Product Type	WAN Miniport (L2TP)
Installed	Yes
PNP Device ID	ROOT\MS_L2TP\MINIPOINT\0000
Last Reset	7/1/2010 9:30 AM
Index	2
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 (6.1.7600.16385, 127.00 KB (130,048 bytes), 7/13/2009 7:10 PM)

Name [00000003] WAN Miniport (PPTP)
 Adapter Type Not Available
 Product Type WAN Miniport (PPTP)
 Installed Yes
 PNP Device ID ROOT\MS_PPTP\MINIPOINT\0000
 Last Reset 7/1/2010 9:30 AM
 Index 3
 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 Not Available
 Driver c:\windows\system32\drivers\raspptp.sys (6.1.7600.16385, 109.00 KB (111,616 bytes), 7/13/2009 7:10 PM)

Name [00000004] WAN Miniport (PPPOE)
 Adapter Type Not Available
 Product Type WAN Miniport (PPPOE)
 Installed Yes
 PNP Device ID ROOT\MS_PPPOE\MINIPOINT\0000
 Last Reset 7/1/2010 9:30 AM
 Index 4
 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 Not Available
 Driver c:\windows\system32\drivers\rasppoe.sys (6.1.7600.16385, 90.50 KB (92,672 bytes), 7/13/2009 7:10 PM)

Name [00000005] WAN Miniport (IPv6)
 Adapter Type Not Available
 Product Type WAN Miniport (IPv6)
 Installed Yes
 PNP Device ID ROOT\MS_NDISWANIPV6\0000
 Last Reset 7/1/2010 9:30 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 (6.1.7600.16385, 160.50 KB (164,352 bytes), 7/13/2009 7:10 PM)

Name [00000006] WAN Miniport (Network Monitor)
 Adapter Type Not Available

Product Type WAN Miniport (Network Monitor)
 Installed Yes
 PNP Device ID ROOT\MS_NDISWANBH\0000
 Last Reset 7/1/2010 9:30 AM
 Index 6

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 (6.1.7600.16385, 160.50 KB (164,352 bytes), 7/13/2009 7:10 PM)

Name [00000007] HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
 Adapter Type Not Available
 Product Type HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
 Installed Yes
 PNP Device ID Not Available
 Last Reset 7/1/2010 9:30 AM
 Index 7
 Service Name NXND6HP
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available

Name [00000008] Microsoft ISATAP Adapter
 Adapter Type Tunnel
 Product Type Microsoft ISATAP Adapter
 Installed Yes
 PNP Device ID ROOT*ISATAP\0000
 Last Reset 7/1/2010 9:30 AM
 Index 8
 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 (6.1.7600.16385, 122.50 KB (125,440 bytes), 7/13/2009 7:09 PM)

Name [00000009] WAN Miniport (IP)
 Adapter Type Not Available
 Product Type WAN Miniport (IP)
 Installed Yes
 PNP Device ID ROOT\MS_NDISWANIP\0000
 Last Reset 7/1/2010 9:30 AM
 Index 9
 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 (6.1.7600.16385, 160.50 KB (164,352 bytes), 7/13/2009 7:10 PM)

Name [00000010] HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 7/1/2010 9:30 AM
Index 10
Service Name NXND6HP
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 [00000011] RAS Async Adapter
Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 7/1/2010 9:30 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 Not Available

Name [00000012] Microsoft 6to4 Adapter
Adapter Type Tunnel
Product Type Microsoft 6to4 Adapter
Installed Yes
PNP Device ID ROOT*6TO4MP\0000
Last Reset 7/1/2010 9:30 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 (6.1.7600.16385, 122.50 KB (125,440 bytes), 7/13/2009 7:09 PM)

Name [00000013] HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 7/1/2010 9:30 AM
Index 13
Service Name NXND6HP
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 [00000014] Microsoft ISATAP Adapter
Adapter Type Tunnel
Product Type Microsoft ISATAP Adapter
Installed Yes
PNP Device ID ROOT*ISATAP\0001
Last Reset 7/1/2010 9:30 AM
Index 14
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 (6.1.7600.16385, 122.50 KB (125,440 bytes), 7/13/2009 7:09 PM)

Name [00000015] HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
Adapter Type Not Available
Product Type HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 7/1/2010 9:30 AM
Index 15
Service Name NXND6HP
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] Microsoft ISATAP Adapter
Adapter Type Tunnel
Product Type Microsoft ISATAP Adapter
Installed Yes
PNP Device ID ROOT*ISATAP\0002
Last Reset 7/1/2010 9:30 AM
Index 16
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 (6.1.7600.16385, 122.50 KB (125,440 bytes), 7/13/2009 7:09 PM)

Name [00000017] Microsoft ISATAP Adapter
Adapter Type Tunnel
Product Type Microsoft ISATAP Adapter
Installed Yes
PNP Device ID ROOT*ISATAP\0003

Last Reset 7/1/2010 9:30 AM
 Index 17
 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 (6.1.7600.16385, 122.50 KB (125,440 bytes), 7/13/2009 7:09 PM)

Name [00000018] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Not Available
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID Not Available
 Last Reset 7/1/2010 9:30 AM
 Index 18
 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 [00000019] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Not Available
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID Not Available
 Last Reset 7/1/2010 9:30 AM
 Index 19
 Service Name l2nd
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available

Name [00000020] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Not Available
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID Not Available
 Last Reset 7/1/2010 9:30 AM
 Index 20
 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 [00000021] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Not Available
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID Not Available
 Last Reset 7/1/2010 9:30 AM
 Index 21
 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 [00000022] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Ethernet 802.3
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID B06BDRV\L2ND&PCI_163914E4&SUBSYS_7055103C&REV_20\5&150DF45E&0&20050300
 Last Reset 7/1/2010 9:30 AM
 Index 22
 Service Name l2nd
 IP Address 130.168.208.17, fe80::9473:d7f1:dc5c:d7ad
 IP Subnet 255.255.0.0, 64
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 18:A9:05:C5:08:94
 Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.4.0, 70.00 KB (71,680 bytes), 6/10/2009 3:34 PM)

Name [00000023] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Ethernet 802.3
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID B06BDRV\L2ND&PCI_163914E4&SUBSYS_7055103C&REV_20\5&380F96BB&0&20050300
 Last Reset 7/1/2010 9:30 AM
 Index 23
 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 18:A9:05:C5:08:96
 Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.4.0, 70.00 KB (71,680 bytes), 6/10/2009 3:34 PM)

Name [00000024] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Ethernet 802.3

Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID B06BDRV\L2ND&PCI_163914E4&SUBSYS_7055103C&REV_20_5&2576E0D6&0&20050400
 Last Reset 7/1/2010 9:30 AM
 Index 24
 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 18:A9:05:C5:08:98
 Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.4.0, 70.00 KB (71,680 bytes), 6/10/2009 3:34 PM)

Name [00000025] Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Adapter Type Ethernet 802.3
 Product Type Broadcom BCM5709C NetXtreme II GigE (NDIS VBD Client)
 Installed Yes
 PNP Device ID B06BDRV\L2ND&PCI_163914E4&SUBSYS_7055103C&REV_20_5&2753E79&0&20050400
 Last Reset 7/1/2010 9:30 AM
 Index 25
 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 18:A9:05:C5:08:9A
 Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.4.0, 70.00 KB (71,680 bytes), 6/10/2009 3:34 PM)

[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\wsock32.dll
 Size 15.00 KB (15,360 bytes)
 Version 6.1.7600.16385

File c:\windows\system32\wsock32.dll
 Size 18.00 KB (18,432 bytes)
 Version 6.1.7600.16385

[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 (6.1.7600.16385, 92.00 KB (94,208 bytes), 7/13/2009 7:00 PM)

[Parallel]

Item Value

[Storage]

[Drives]

Item Value
 Drive C:
 Description Local Fixed Disk
 Compressed No
 File System NTFS
 Size 68.23 GB (73,265,049,600 bytes)
 Free Space 19.60 GB (21,048,684,544 bytes)
 Volume Name Local Disk
 Volume Serial Number 76E064F5

Drive D:
 Description CD-ROM Disc

Drive Z:
 Description Local Fixed Disk
 Compressed No
 File System NTFS

Size 279.36 GB (299,963,973,632 bytes)
 Free Space 456.25 MB (478,412,800 bytes)
 Volume Name New Volume
 Volume Serial Number 10365AE3

[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 2
 SCSI Bus 0
 SCSI Logical Unit 0
 SCSI Port 2
 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 100.00 MB (104,857,600 bytes)
 Partition Starting Offset 1,048,576 bytes
 Partition Disk #0, Partition #1
 Partition Size 68.23 GB (73,265,053,696 bytes)
 Partition Starting Offset 105,906,176 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 279.37 GB (299,966,300,160 bytes)
 Total Cylinders 71,798
 Total Sectors 585,871,680
 Total Tracks 18,308,490
 Tracks/Cylinder 255
 Partition Disk #1, Partition #0
 Partition Size 279.36 GB (299,964,039,168 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 6
 Sectors/Track 32
 Size 55.87 GB (59,986,575,360 bytes)
 Total Cylinders 14,358
 Total Sectors 117,161,280
 Total Tracks 3,661,290
 Tracks/Cylinder 255

Partition Disk #2, Partition #0
 Partition Size 55.86 GB (59,983,790,080 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 7
 Sectors/Track 32
 Size 55.87 GB (59,986,575,360 bytes)
 Total Cylinders 14,358
 Total Sectors 117,161,280
 Total Tracks 3,661,290
 Tracks/Cylinder 255

Partition Disk #3, Partition #0
 Partition Size 55.86 GB (59,983,790,080 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 8
 Sectors/Track 32
 Size 55.87 GB (59,986,575,360 bytes)
 Total Cylinders 14,358
 Total Sectors 117,161,280
 Total Tracks 3,661,290
 Tracks/Cylinder 255

Partition Disk #4, Partition #0
 Partition Size 55.86 GB (59,983,790,080 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 9
 Sectors/Track 32
 Size 55.87 GB (59,986,575,360 bytes)
 Total Cylinders 14,358
 Total Sectors 117,161,280
 Total Tracks 3,661,290
 Tracks/Cylinder 255

Partition Disk #5, Partition #0
 Partition Size 55.86 GB (59,983,790,080 bytes)
 Partition Starting Offset 1,048,576 bytes

[SCSI]

Item Value

Name Smart Array P410i Controller
 Manufacturer Hewlett-Packard Company
 Status OK
 PNP Device ID PCI\VEN_103C&DEV_323A&SUBSYS_3245103C&REV_01\4&3251E38F&0&0008
 Memory Address 0xFBC00000-0xFBFFFFFF
 Memory Address 0xFBFF0000-0xFBFF0FFF
 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 (6.20.0.64, 153.10 KB (156,776 bytes), 3/1/2010 9:24 AM)

[IDE]

Item Value
 Name Standard Dual Channel PCI IDE Controller
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCI\VEN_8086&DEV_3A20&SUBSYS_330D103C&REV_00\3&33FD14CA&0&FA
 I/O Port 0x00001080-0x00001087
 I/O Port 0x00001088-0x0000108B
 I/O Port 0x00001090-0x00001097
 I/O Port 0x00001098-0x0000109B
 I/O Port 0x000010A0-0x000010AF
 I/O Port 0x000010B0-0x000010BF
 IRQ Channel IRQ 17
 Driver c:\windows\system32\drivers\pciide.sys (6.1.7600.16385, 12.06 KB (12,352 bytes), 7/13/2009 6:19 PM)

Name ATA Channel 0
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCIIDE\IDECHANNEL\4&68F06E2&0&0
 Driver c:\windows\system32\drivers\atapi.sys (6.1.7600.16385, 23.56 KB (24,128 bytes), 7/13/2009 6:19 PM)

Name ATA Channel 1
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCIIDE\IDECHANNEL\4&68F06E2&0&1
 Driver c:\windows\system32\drivers\atapi.sys (6.1.7600.16385, 23.56 KB (24,128 bytes), 7/13/2009 6:19 PM)

[Printing]

Can't Collect Information

[Problem Devices]

Device PNP Device ID Error Code
 PS/2 Compatible Mouse ACPI\PNP0F13\4&23625D7F&0
 This device is not present, is not working properly, or does not have all its drivers installed.
 Standard PS/2 Keyboard ACPI\PNP0303\4&23625D7F&0
 This device is not present, is not working properly, or does not have all its drivers installed.

[USB]

Device PNP Device ID

Intel(R) ICH10 Family USB Universal Host Controller - 3A34
 PCI\VEN_8086&DEV_3A34&SUBSYS_330D103C&REV_00\3&33FD14CA&0&E8
 Intel(R) ICH10 Family USB Universal Host Controller - 3A35
 PCI\VEN_8086&DEV_3A35&SUBSYS_330D103C&REV_00\3&33FD14CA&0&E9
 Intel(R) ICH10 Family USB Universal Host Controller - 3A36
 PCI\VEN_8086&DEV_3A36&SUBSYS_330D103C&REV_00\3&33FD14CA&0&EA
 Intel(R) ICH10 Family USB Universal Host Controller - 3A39
 PCI\VEN_8086&DEV_3A39&SUBSYS_330D103C&REV_00\3&33FD14CA&0&EB
 Standard Universal PCI to USB Host Controller
 PCI\VEN_103C&DEV_3300&SUBSYS_3309103C&REV_01\4&20DD2EEF&0&04E4
 Intel(R) ICH10 Family USB Enhanced Host Controller - 3A3A
 PCI\VEN_8086&DEV_3A3A&SUBSYS_330D103C&REV_00\3&33FD14CA&0&EF

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
	Accept Stop				
1394ohci	1394 OHCI Compliant Host Controller	c:\windows\system32\drivers\1394ohci.sys	Kernel Driver		
	No	Manual	Stopped	OK	Normal
	No				No
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver		
	Yes	Boot	Running	OK	Critical
	Yes				No
acpipmi	ACPI Power Meter Driver	c:\windows\system32\drivers\acpipmi.sys	Kernel Driver		
	Yes	Manual	Running	OK	Normal
	Yes				No
adp94xx	adp94xx	c:\windows\system32\drivers\adp94xx.sys	Kernel Driver		
Driver	No	Manual	Stopped	OK	Normal
	No				No
adpahci	adpahci	c:\windows\system32\drivers\adpahci.sys	Kernel Driver		
Driver	No	Manual	Stopped	OK	Normal
	No				No
adpu320	adpu320	c:\windows\system32\drivers\adpu320.sys	Kernel Driver		
Driver	No	Manual	Stopped	OK	Normal
	No				No
afd	Ancillary Function Driver for Winsock	c:\windows\system32\drivers\afd.sys	Kernel Driver		
	Yes	System	Running	OK	Normal
	Yes				No
agp440	Intel AGP Bus Filter	c:\windows\system32\drivers\agp440.sys	Kernel Driver		
	No	Manual	Stopped	OK	Normal
	Normal	No	No		OK
aliide	aliide	c:\windows\system32\drivers\aliide.sys	Kernel Driver		
Driver	No	Manual	Stopped	OK	Critical
	No				No
amdide	amdide	c:\windows\system32\drivers\amdide.sys	Kernel Driver		
Driver	No	Manual	Stopped	OK	Critical
	No				No
amdk8	AMD K8 Processor Driver	c:\windows\system32\drivers\amdk8.sys	Kernel Driver		
	No	Manual	Stopped	OK	Normal
	No				No
amdppm	AMD Processor Driver	c:\windows\system32\drivers\amdppm.sys	Kernel Driver		
	No	Manual	Stopped	OK	Normal
	No				No

amdsata Driver	amdsata No No	c:\windows\system32\drivers\amdsata.sys	Kernel No	Manual Stopped OK	Normal	No
amdsbs Driver	amdsbs No No	c:\windows\system32\drivers\amdsbs.sys	Kernel No	Manual Stopped OK	Normal	No
amdtools64 Driver	AMD Special Tools Driver Yes Yes	c:\windows\system32\drivers\amdtools64.sys	Kernel No	Manual Running OK	Normal	No
amdxata Driver	amdxata Yes Yes	c:\windows\system32\drivers\amdxata.sys	Kernel No	Boot Running OK	Normal	No
appid	AppID Driver Kernel Driver Normal	c:\windows\system32\drivers\appid.sys	Kernel Driver No	No Manual Stopped	OK	
arc Driver	arc No No	c:\windows\system32\drivers\arc.sys	Kernel No	Manual Stopped OK	Normal	No
arcsas Driver	arcsas No No	c:\windows\system32\drivers\arcsas.sys	Kernel No	Manual Stopped OK	Normal	No
asynmac	RAS Asynchronous Media Driver No No	c:\windows\system32\drivers\asynmac.sys	Kernel Driver No	Manual Stopped OK	Normal	No
atapi	IDE Channel Kernel Driver Critical	c:\windows\system32\drivers\atapi.sys	Kernel Driver Yes	Boot Running OK		
ati2mtag Driver	ati2mtag Yes Yes	c:\windows\system32\drivers\ati2mtag.sys	Kernel No	Manual Running OK	Ignore	No
b06bdrv	Broadcom NetXtreme II VBD Yes Yes	c:\windows\system32\drivers\bxvbda.sys	Kernel Driver No	Manual Running OK	Normal	No
b57nd60a	Broadcom NetXtreme Gigabit Ethernet - NDIS 6.0 No No	c:\windows\system32\drivers\b57nd60a.sys	Kernel Driver No	Manual Stopped OK	Normal	No
beep Driver	Beep No No	c:\windows\system32\drivers\beep.sys	Kernel No	Manual Stopped OK	Normal	No
blbdrive Driver	blbdrive Yes Yes	c:\windows\system32\drivers\blbdrive.sys	Kernel No	System Running OK	Normal	No
bowser	Browser Support Driver Yes Yes	c:\windows\system32\drivers\bowser.sys	File System Driver No	Manual Running OK	Normal	No
brfiltlo	Brother USB Mass-Storage Lower Filter Driver No No	c:\windows\system32\drivers\brfiltlo.sys	Kernel Driver No	Manual Stopped OK	Normal	No
brfiltup	Brother USB Mass-Storage Upper Filter Driver No No	c:\windows\system32\drivers\brfiltup.sys	Kernel Driver No	Manual Stopped OK	Normal	No
brserid	Brother MFC Serial Port Interface Driver (WDM) No No	c:\windows\system32\drivers\brserid.sys	Kernel Driver No	Manual Stopped OK	Normal	No
brserwdm	Brother WDM Serial driver No No	c:\windows\system32\drivers\brserwdm.sys	Kernel Driver No	Manual Stopped OK	Normal	No
brusbmdm	Brother MFC USB Fax Only Modem No No	c:\windows\system32\drivers\brusbmdm.sys	Kernel Driver No	Manual Stopped OK	Normal	No
brusbser	Brother MFC USB Serial WDM Driver No No	c:\windows\system32\drivers\brusbser.sys	Kernel Driver No	Manual Stopped OK	Normal	No
cdafs	CD/DVD File System Reader No No	c:\windows\system32\drivers\cdfs.sys	File System Driver No	Disabled Stopped OK	Normal	No
cdrom	CD-ROM Driver Kernel Driver Normal	c:\windows\system32\drivers\cdrom.sys	Kernel Driver Yes	System Running OK		
clfs Driver	Common Log (CLFS) Yes Yes	c:\windows\system32\clfs.sys	Kernel No	Boot Running OK	Critical	No
combatt	Microsoft ACPI Control Method Battery Driver No No	c:\windows\system32\drivers\combatt.sys	Kernel Driver No	Manual Stopped OK	Normal	No
cmdide Driver	cmdide No No	c:\windows\system32\drivers\cmdide.sys	Kernel No	Manual Stopped OK	Critical	No
cng Driver	CNG Yes Yes	c:\windows\system32\drivers\cng.sys	Kernel No	Boot Running OK	Critical	No
compbatt Driver	Compbatt No No	c:\windows\system32\drivers\compbatt.sys	Kernel No	Manual Stopped OK	Critical	No
compositebus Driver	Composite Bus Enumerator Driver Yes Yes	c:\windows\system32\drivers\compositebus.sys	Kernel No	Manual Running OK	Normal	No
cpqteam	HP Network Configuration Utility No No	c:\windows\system32\drivers\cpqteam.sys	Kernel Driver No	Manual Stopped OK	Normal	No
cpuspy3 Driver	CpuSpy3 Driver No No	\\?\c:\windows\system32\drivers\cpuspy3.sys	Kernel No	Manual Stopped OK	Normal	No
credisk	Credisk Filter Driver Kernel Driver Normal	c:\windows\system32\drivers\credisk.sys	Kernel Driver No	Disabled Stopped OK		
dfsc	DFS Namespace Client Driver Yes Yes	c:\windows\system32\drivers\dfsc.sys	File System Driver No	System Running OK	Normal	No
discache	System Attribute Cache Yes Yes	c:\windows\system32\drivers\discache.sys	Kernel Driver No	System Running OK	Normal	No
disk	Disk Driver Kernel Driver Normal	c:\windows\system32\drivers\disk.sys	Kernel Driver Yes	Boot Running OK		
dxgkrnl	LDDM Graphics Subsystem No No	c:\windows\system32\drivers\dxgkrnl.sys	Kernel Driver No	Manual Stopped OK	Ignore	No
ebdrv	Broadcom NetXtreme II 10 GigE VBD No No	c:\windows\system32\drivers\evbda.sys	Kernel Driver No	Manual Stopped OK	Normal	No
elxstor Driver	elxstor No No	c:\windows\system32\drivers\elxstor.sys	Kernel No	Manual Stopped OK	Normal	No
errdev	Microsoft Hardware Error Device Driver No No	c:\windows\system32\drivers\errdev.sys	Kernel Driver No	Manual Stopped OK	Normal	No
exfat	exFAT File System Driver No No	c:\windows\system32\drivers\exfat.sys	File System Driver No			

	No	Manual	Stopped	OK	Normal	No		Yes	Boot	Running	OK	Normal	No	
fastfat	No							Yes						
	FAT12/16/32 File System Driver							i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver					
	c:\windows\system32\drivers\fastfat.sys						File System Driver		c:\windows\system32\drivers\i8042prt.sys					
	No	Manual	Stopped	OK	Normal	No		No	Manual	Stopped	OK	Normal	No	
	No							No						
fdc	Floppy Disk Controller Driver							iastorv	iaStorV c:\windows\system32\drivers\iastorv.sys					
	c:\windows\system32\drivers\fdc.sys						Kernel Driver	Driver	No	Manual	Stopped	OK	Normal	No
	No	Manual	Stopped	OK	Normal	No		No						
	No							iirsp	iirsp c:\windows\system32\drivers\iirsp.sys				Kernel	
fileinfo	File Information FS MiniFilter							Driver	No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\fileinfo.sys						File System Driver							
	No	Manual	Stopped	OK	Normal	No								
	No							intelide	intelide c:\windows\system32\drivers\intelide.sys				Kernel	
filetrace	Filetrace c:\windows\system32\drivers\filetrace.sys						File	Driver	No	Manual	Stopped	OK	Critical	No
System Driver	No	No	Manual	Stopped	OK	Normal								
	No							intelppm	Intel Processor Driver c:\windows\system32\drivers\intelppm.sys					
	No							Kernel Driver	Yes	Manual	Running	OK		
	No							Normal	No	Yes				
fiodrive	Fusion ioDrive Device Driver							ioatdma	Intel(R) QuickData Technology Device					
	c:\windows\system32\drivers\fiodrive.sys						Kernel Driver		c:\windows\system32\drivers\qd260x64.sys					
	Yes	Boot	Running	OK	Normal	No		No	Manual	Stopped	OK	Normal	No	
	Yes							No						
flpydisk	Floppy Disk Driver c:\windows\system32\drivers\flpydisk.sys							ipfilterdriver	IP Traffic Filter Driver					
	Kernel Driver	No	Manual	Stopped	OK			c:\windows\system32\drivers\ipfltdrv.sys					Kernel Driver	
	Normal	No	No					No	Manual	Stopped	OK	Normal	No	
fltmgr	FltMgr c:\windows\system32\drivers\fltmgr.sys						File							
System Driver	Yes	Boot	Running	OK	Critical									
	No	Yes						ipmidrv	IPMIDRV c:\windows\system32\drivers\ipmidrv.sys				Kernel	
	No							Driver	Yes	Manual	Running	OK	Normal	No
	No							Yes						
fsdepends	File System Dependency Minifilter							ipnat	IP Network Address Translator					
	c:\windows\system32\drivers\fsdepends.sys						File System Driver		c:\windows\system32\drivers\ipnat.sys					
	No	Manual	Stopped	OK	Critical	No		No	Manual	Stopped	OK	Normal	No	
	No							No						
gagp30kx	Microsoft Generic AGPv3.0 Filter for K8 Processor Platforms							isapnp	isapnp c:\windows\system32\drivers\isapnp.sys					
	c:\windows\system32\drivers\gagp30kx.sys						Kernel Driver	Driver	No	Manual	Stopped	OK	Critical	No
	No	Manual	Stopped	OK	Normal	No		No						
	No							No						
hdaudbus	Microsoft UAA Bus Driver for High Definition Audio							iscsipt	iScsiPort Driver c:\windows\system32\drivers\msiscsi.sys					
	c:\windows\system32\drivers\hdaudbus.sys						Kernel Driver		c:\windows\system32\drivers\msiscsi.sys					
	No	Manual	Stopped	OK	Normal	No		Kernel Driver	No	Manual	Stopped	OK		
	No							Normal	No	No				
hidbatt	HID UPS Battery Driver							kbdclass	Keyboard Class Driver					
	c:\windows\system32\drivers\hidbatt.sys						Kernel Driver		c:\windows\system32\drivers\kbdclass.sys					
	No	Manual	Stopped	OK	Normal	No		Yes	Manual	Running	OK	Normal	No	
	No							Yes						
hidusb	Microsoft HID Class Driver							kbdhid	Keyboard HID Driver c:\windows\system32\drivers\kbdhid.sys					
	c:\windows\system32\drivers\hidusb.sys						Kernel Driver		Kernel Driver c:\windows\system32\drivers\kbdhid.sys					
	No	Manual	Stopped	OK	Ignore	No		Kernel Driver	No	Manual	Stopped	OK		
	No							Ignore	No	No				
hpcisss2	HpCISSs2 c:\windows\system32\drivers\hpcisss2.sys						Kernel	ksecdd	KSecDD c:\windows\system32\drivers\ksecdd.sys					
Driver	Yes	Boot	Running	OK	Normal	No		Driver	Yes	Boot	Running	OK	Critical	No
	Yes							Yes						
hpqilo3chif	HP ProLiant Management Controller Driver (CHIF)							ksecpkg	KSecPkg c:\windows\system32\drivers\ksecpkg.sys					
	c:\windows\system32\drivers\hpqilo3chif.sys						Kernel	Driver	Yes	Boot	Running	OK	Critical	No
Driver	Yes	Manual	Running	OK	Normal	No		Yes						
	Yes							Kernel Streaming	Thunks c:\windows\system32\drivers\ksthunk.sys				Kernel Driver	
								No	Manual	Stopped	OK	Normal	No	
hpqilo3core	HP ProLiant Management Controller Driver (CORE)							l2nd	Broadcom NetXtreme II BXND					
	c:\windows\system32\drivers\hpqilo3core.sys						Kernel		c:\windows\system32\drivers\bxnd60a.sys					
Driver	Yes	Manual	Running	OK	Normal	No		Kernel Driver	Yes	Manual	Running	OK	Normal	No
	Yes							Yes						
hpqilo3whea	HP ProLiant Management Controller Driver (WHEA)							lltdio	Link-Layer Topology Discovery Mapper I/O Driver					
	c:\windows\system32\drivers\hpqilo3whea.sys						Kernel		c:\windows\system32\drivers\lltdio.sys					
Driver	Yes	System	Running	OK	Normal	No		Yes	Auto	Running	OK	Normal	No	
	Yes							Yes						
hpsamd	HpSAMD c:\windows\system32\drivers\hpsamd.sys						Kernel	lsi_fc	LSI_FC c:\windows\system32\drivers\lsi_fc.sys					
Driver	Yes	Boot	Running	OK	Normal	No		Driver	No	Manual	Stopped	OK	Normal	No
	Yes							No						
http	HTTP c:\windows\system32\drivers\http.sys						Kernel	lsi_sas	LSI_SAS c:\windows\system32\drivers\lsi_sas.sys					
Driver	Yes	Manual	Running	OK	Normal	No		Driver	No	Manual	Stopped	OK	Normal	No
	Yes							No						
hwpolicy	Hardware Policy Driver													
	c:\windows\system32\drivers\hwpolicy.sys						Kernel Driver							

lsi_sas2 Driver	LSI_SAS2 No	c:\windows\system32\drivers\lsi_sas2.sys	Kernel No	Manual Stopped	OK Normal	No	msrpc Driver	MsRPC No	c:\windows\system32\drivers\msrpc.sys	Kernel No	Manual Stopped	OK Normal	No
lsi_scsi Driver	LSI_SCSI No	c:\windows\system32\drivers\lsi_scsi.sys	Kernel No	Manual Stopped	OK Normal	No	mssmbios	Microsoft System Management BIOS Driver	c:\windows\system32\drivers\mssmbios.sys	Kernel Driver	System Running	OK Normal	No
luafv	UAC File Virtualization	c:\windows\system32\drivers\luafv.sys	File System Driver	Auto Running	OK Normal	No	mtconfig	Microsoft Input Configuration Driver	c:\windows\system32\drivers\mtconfig.sys	Kernel Driver	Manual Stopped	OK Normal	No
megasas Driver	megasas No	c:\windows\system32\drivers\megasas.sys	Kernel No	Manual Stopped	OK Normal	No	multevent Driver	MultiEvent Driver	\\?\c:\windows\system32\drivers\multeventdriver.sys	Kernel	Manual Stopped	OK Normal	No
megasr Driver	MegaSR No	c:\windows\system32\drivers\megasr.sys	Kernel No	Manual Stopped	OK Normal	No	mup System Driver	Mup	c:\windows\system32\drivers\mup.sys	File	Yes Boot	Running OK	Normal
modem Driver	Modem No	c:\windows\system32\drivers\modem.sys	Kernel No	Manual Stopped	OK Ignore	No	ndis	NDIS System Driver	c:\windows\system32\drivers\ndis.sys	Kernel Driver	Yes Boot	Running OK	Normal
monitor	Microsoft Monitor Class Function Driver Service	c:\windows\system32\drivers\monitor.sys	Kernel Driver	Manual Running	OK Normal	No	ndiscap	NDIS Capture LightWeight Filter	c:\windows\system32\drivers\ndiscap.sys	Kernel Driver	Yes Manual	Running OK	Normal
mouclass	Mouse Class Driver	c:\windows\system32\drivers\mouclass.sys	Kernel Driver	Yes Manual	Running OK	Normal	ndistapi	Remote Access NDIS TAPI Driver	c:\windows\system32\drivers\ndistapi.sys	Kernel Driver	Yes Manual	Running OK	Normal
mouhid	Mouse HID Driver	c:\windows\system32\drivers\mouhid.sys	Kernel Driver	No Manual	Stopped OK	Ignore	ndisuiop	NDIS Usermode I/O Protocol	c:\windows\system32\drivers\ndisuiop.sys	Kernel Driver	No Manual	Stopped OK	Normal
mountmgr	Mount Point Manager	c:\windows\system32\drivers\mountmgr.sys	Kernel Driver	Yes Boot	Running OK	Critical	ndiswan	Remote Access NDIS WAN Driver	c:\windows\system32\drivers\ndiswan.sys	Kernel Driver	Yes Manual	Running OK	Normal
mpio Driver	mpio No	c:\windows\system32\drivers\mpio.sys	Kernel No	Manual Stopped	OK Normal	No	ndproxy	NDIS Proxy	c:\windows\system32\drivers\ndproxy.sys	Kernel Driver	Yes Manual	Running OK	Normal
mpsdrv	Windows Firewall Authorization Driver	c:\windows\system32\drivers\mpsdrv.sys	Kernel Driver	No Manual	Stopped OK	Normal	netbios	NetBIOS Interface	c:\windows\system32\drivers\netbios.sys	File System Driver	Yes System	Running OK	Normal
mrxsmmb	SMB MiniRedirector Wrapper and Engine	c:\windows\system32\drivers\mrxsmmb.sys	File System Driver	Yes Manual	Running OK	Normal	netbt Driver	NetBT	c:\windows\system32\drivers\netbt.sys	Kernel	Yes System	Running OK	Normal
mrxsmmb10	SMB 1.x MiniRedirector	c:\windows\system32\drivers\mrxsmmb10.sys	File System Driver	Yes Manual	Running OK	Normal	nfrd960 Driver	nfrd960	c:\windows\system32\drivers\nfrd960.sys	Kernel	No Manual	Stopped OK	Normal
mrxsmmb20	SMB 2.0 MiniRedirector	c:\windows\system32\drivers\mrxsmmb20.sys	File System Driver	Yes Manual	Running OK	Normal	npfs System Driver	Npfs	c:\windows\system32\drivers\npfs.sys	File	Yes System	Running OK	Normal
msahci Driver	msahci No	c:\windows\system32\drivers\msahci.sys	Kernel No	Manual Stopped	OK Critical	No	nsiproxy	NSI proxy service driver.	c:\windows\system32\drivers\nsiproxy.sys	Kernel Driver	Yes System	Running OK	Normal
msdsm Driver	msdsm No	c:\windows\system32\drivers\msdsm.sys	Kernel No	Manual Stopped	OK Normal	No	ntfs System Driver	Ntfs	c:\windows\system32\drivers\ntfs.sys	File	Yes Manual	Running OK	Normal
msfs System Driver	Msfs No	c:\windows\system32\drivers\msfs.sys	File	Yes System	Running OK	Normal	null Driver	Null	c:\windows\system32\drivers\null.sys	Kernel	Yes System	Running OK	Normal
mshidkmdf Driver	Pass-through HID to KMDF Filter Driver	c:\windows\system32\drivers\mshidkmdf.sys	Kernel	No Manual	Stopped OK	Ignore	nvraid Driver	nvraid	c:\windows\system32\drivers\nvraid.sys	Kernel	No Manual	Stopped OK	Normal
msisadv Driver	msisadv Yes	c:\windows\system32\drivers\msisadv.sys	Kernel	Yes Boot	Running OK	Critical	nvstor Driver	nvstor	c:\windows\system32\drivers\nvstor.sys	Kernel	No Manual	Stopped OK	Critical
							nv_agp	NVIDIA nForce AGP Bus Filter	c:\windows\system32\drivers\nv_agp.sys	Kernel Driver			

	No	Manual	Stopped	OK	Normal	No		Yes	System	Running	OK	Normal	No
nxnd6hp	No							Yes					
	HP Multifunctions 1/10 Gigabit Server Adapter							rdpbus	Remote Desktop Device Redirector Bus Driver				
	c:\windows\system32\drivers\hpnd6x64.sys						Kernel Driver		c:\windows\system32\drivers\rdpbus.sys				
	No	Manual	Stopped	OK	Normal	No		Yes	Manual	Running	OK	Normal	No
	No							Yes					
ohci1394	1394 OHCI Compliant Host Controller (Legacy)							rdpcdd	RDPCDD c:\windows\system32\drivers\rdpcdd.sys				
	c:\windows\system32\drivers\ohci1394.sys						Kernel Driver		c:\windows\system32\drivers\rdpcdd.sys				
	No	Manual	Stopped	OK	Normal	No		Yes	System	Running	OK	Ignore	No
	No							Yes					
parport	Parallel port driver							rdpdr	Terminal Server Device Redirector Driver				
	c:\windows\system32\drivers\parport.sys						Kernel Driver		c:\windows\system32\drivers\rdpdr.sys				
	No	Manual	Stopped	OK	Normal	No		Yes	Manual	Running	OK	Normal	No
	Ignore	No	No					Yes					
partmgr	Partition Manager							rdpenccd	RDP Encoder Mirror Driver				
	c:\windows\system32\drivers\partmgr.sys						Kernel Driver		c:\windows\system32\drivers\rdpenccd.sys				
	Critical	No	Yes	Boot	Running	OK		Yes	System	Running	OK	Ignore	No
	No							Yes					
pci	PCI Bus Driver							rdprefmp	Reflector Display Driver used to gain access to graphics data				
	c:\windows\system32\drivers\pci.sys						Kernel Driver		c:\windows\system32\drivers\rdprefmp.sys				
	No	Manual	Stopped	OK	Normal	No		Yes	System	Running	OK	Ignore	No
	Critical	No	Yes					Yes					
pciide	pciide							rdpwd	RDP Winstation Driver				
Driver	c:\windows\system32\drivers\pciide.sys						Kernel Driver		c:\windows\system32\drivers\rdpwd.sys				
	Yes	Boot	Running	OK	Critical	No		Yes	Manual	Running	OK	Ignore	No
	Yes							Yes					
pcmcia	pcmcia							rsfx0150	RsFx0150 Driver				
Driver	c:\windows\system32\drivers\pcmcia.sys						Kernel Driver		c:\windows\system32\drivers\rsfx0150.sys				
	No	Manual	Stopped	OK	Normal	No		File System Driver	No	Disabled	Stopped	OK	
	No							Normal	No	No			
pcw	Performance Counters for Windows Driver							rspndr	Link-Layer Topology Discovery Responder				
	c:\windows\system32\drivers\pcw.sys						Kernel Driver		c:\windows\system32\drivers\rspndr.sys				
	Yes	Boot	Running	OK	Normal	No		Yes	Auto	Running	OK	Normal	No
	Yes							Yes					
peauth	PEAUTH							s3cap	s3cap				
Driver	c:\windows\system32\drivers\peauth.sys						Kernel Driver	Driver	c:\windows\system32\drivers\vms3cap.sys				
	Yes	Auto	Running	OK	Normal	No		No	Manual	Stopped	OK	Normal	No
	Yes							No					
pptpminiport	WAN Miniport (PPTP)							sacdrv	sacdrv				
	c:\windows\system32\drivers\raspptp.sys						Kernel Driver	Driver	c:\windows\system32\drivers\sacdrv.sys				
	Yes	Manual	Running	OK	Normal	No		No	Boot	Stopped	OK	Ignore	No
	Yes							No					
processor	Processor Driver							sbp2port	sbp2port				
	c:\windows\system32\drivers\processr.sys						Kernel Driver	Driver	c:\windows\system32\drivers\sbp2port.sys				
	No	Manual	Stopped	OK	Normal	No		No	Manual	Stopped	OK	Normal	No
	Normal	No	No					No					
psched	QoS Packet Scheduler							scfilter	Smart card PnP Class Filter Driver				
	c:\windows\system32\drivers\pacer.sys						Kernel Driver		c:\windows\system32\drivers\scfilter.sys				
	Normal	No	Yes	System	Running	OK		No	Manual	Stopped	OK	Normal	No
	Normal	No	Yes					No					
ql2300	ql2300							secdrv	Security Driver				
Driver	c:\windows\system32\drivers\ql2300.sys						Kernel Driver		c:\windows\system32\drivers\secdrv.sys				
	No	Manual	Stopped	OK	Normal	No		Kernel Driver	Yes	Auto	Running	OK	
	No							Normal	No	Yes			
ql40xx	ql40xx							serenum	Serenum Filter Driver				
Driver	c:\windows\system32\drivers\ql40xx.sys						Kernel Driver		c:\windows\system32\drivers\serenum.sys				
	No	Manual	Stopped	OK	Normal	No		Kernel Driver	Yes	Manual	Running	OK	
	No							Normal	No	Yes			
rasacd	Remote Access Auto Connection Driver							serial	Serial port driver				
	c:\windows\system32\drivers\rasacd.sys						Kernel Driver		c:\windows\system32\drivers\serial.sys				
	No	Manual	Stopped	OK	Normal	No		Kernel Driver	Yes	System	Running	OK	
	No							Ignore	No	Yes			
rasagilevpn	WAN Miniport (IKEv2)							sermouse	Serial Mouse Driver				
	c:\windows\system32\drivers\agilevpn.sys						Kernel Driver		c:\windows\system32\drivers\sermouse.sys				
	Yes	Manual	Running	OK	Normal	No		Kernel Driver	No	Manual	Stopped	OK	
	Yes							Normal	No	No			
rasl2tp	WAN Miniport (L2TP)							sffdisk	SFF Storage Class Driver				
	c:\windows\system32\drivers\rasl2tp.sys						Kernel Driver		c:\windows\system32\drivers\sffdisk.sys				
	Yes	Manual	Running	OK	Normal	No		No	Manual	Stopped	OK	Normal	No
	Yes							No					
rasppoe	Remote Access PPPOE Driver							sffp_mmc	SFF Storage Protocol Driver for MMC				
	c:\windows\system32\drivers\rasppoe.sys						Kernel Driver		c:\windows\system32\drivers\sffp_mmc.sys				
	Yes	Manual	Running	OK	Normal	No		No	Manual	Stopped	OK	Normal	No
	Yes							No					
rasstp	WAN Miniport (SSTP)							sffp_sd	SFF Storage Protocol Driver for SDBus				
	c:\windows\system32\drivers\rasstp.sys						Kernel Driver		c:\windows\system32\drivers\sffp_sd.sys				
	Yes	Manual	Running	OK	Normal	No		No	Manual	Stopped	OK	Normal	No
	Yes							No					
rdbs	Redirected Buffering Sub Sysytem												
	c:\windows\system32\drivers\rdbs.sys						File System Driver						

sfloppy	High-Capacity Floppy Disk Drive						Yes	System	Running	OK	Normal	No
	c:\windows\system32\drivers\sfloppy.sys	Kernel Driver					Yes					
	No	Manual	Stopped	OK	Normal	No						
sisraid2	SiSRaid2	c:\windows\system32\drivers\sisraid2.sys	Kernel Driver				Yes	Manual	Running	OK	Ignore	No
Driver	No	Manual	Stopped	OK	Normal	No	Yes					
	No											
sisraid4	SiSRaid4	c:\windows\system32\drivers\sisraid4.sys	Kernel Driver				Yes	Manual	Running	OK	Normal	No
Driver	No	Manual	Stopped	OK	Normal	No	Yes					
	No											
smb	Message-oriented TCP/IP and TCP/IPv6 Protocol (SMB session)						Yes	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\smb.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
spldr	Security Processor Loader Driver						Yes	Boot	Running	OK	Critical	No
	c:\windows\system32\drivers\spldr.sys	Kernel Driver					Yes					
	Yes	Boot	Running	OK	Critical	No	Yes					
	Yes											
srv	Server SMB 1.xxx Driver						Yes	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\srv.sys	File System Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
srv2	Server SMB 2.xxx Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\srv2.sys	File System Driver					Yes					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
srvnet	srvnet	c:\windows\system32\drivers\srvnet.sys	File System Driver				No	Manual	Stopped	OK	Normal	No
System Driver	No	Manual	Stopped	OK	Normal	No	No					
	No											
stexstor	stexstor	c:\windows\system32\drivers\stexstor.sys	Kernel Driver				No	Manual	Stopped	OK	Normal	No
Driver	No	Manual	Stopped	OK	Normal	No	No					
	No											
storflt	Disk Virtual Machine Bus Acceleration Filter Driver						Yes	Boot	Running	OK	Normal	No
	c:\windows\system32\drivers\vmstorfl.sys	Kernel Driver					Yes					
	Yes	Boot	Running	OK	Normal	No	Yes					
	Yes											
storvsc	storvsc	c:\windows\system32\drivers\storvsc.sys	Kernel Driver				No	Manual	Stopped	OK	Normal	No
Driver	No	Manual	Stopped	OK	Normal	No	No					
	No											
storvsp	storvsp	c:\windows\system32\drivers\storvsp.sys	Kernel Driver				No	Manual	Stopped	OK	Normal	No
Driver	No	Manual	Stopped	OK	Normal	No	No					
	No											
swenum	Software Bus Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\swenum.sys	Kernel Driver					Yes					
	Kernel Driver	Yes	Manual	Running	OK	Normal	No					
	Normal	No	Yes									
tcpip	TCP/IP Protocol Driver						Yes	Boot	Running	OK	Normal	No
	c:\windows\system32\drivers\tcpip.sys	Kernel Driver					Yes					
	Yes	Boot	Running	OK	Normal	No	Yes					
	Yes											
tcpip6	Microsoft IPv6 Protocol Driver						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\tcpip6.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
tcpipreg	TCP/IP Registry Compatibility						Yes	Auto	Running	OK	Normal	No
	c:\windows\system32\drivers\tcpipreg.sys	Kernel Driver					Yes					
	Yes	Auto	Running	OK	Normal	No	Yes					
	Yes											
tdpipe	TDPIPE	c:\windows\system32\drivers\tdpipe.sys	Kernel Driver				Yes	Manual	Stopped	OK	Normal	No
Driver	No	Manual	Stopped	OK	Normal	No	Yes					
	No											
tdtcp	TDTCP	c:\windows\system32\drivers\tdtcp.sys	Kernel Driver				Yes	Manual	Running	OK	Normal	No
Driver	Yes	Manual	Running	OK	Normal	No	Yes					
	Yes											
tdx	NetIO Legacy TDI Support Driver						Yes	System	Running	OK	Normal	No
	c:\windows\system32\drivers\tdx.sys	Kernel Driver					Yes					
	Yes	System	Running	OK	Normal	No	Yes					
	Yes											
termdd	Terminal Device Driver						Yes	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\termdd.sys	Kernel Driver					No					
tssecsrv	Remote Desktop Services Security Filter Driver						Yes	Manual	Running	OK	Ignore	No
	c:\windows\system32\drivers\tssecsrv.sys	Kernel Driver					Yes					
	Yes	Manual	Running	OK	Ignore	No	Yes					
	Yes											
tunnel	Microsoft Tunnel Miniport Adapter Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\tunnel.sys	Kernel Driver					Yes					
	Yes	Manual	Running	OK	Normal	No	Yes					
	Yes											
uagp35	Microsoft AGPv3.5 Filter						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\uagp35.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
udfs	udfs	c:\windows\system32\drivers\udfs.sys	File System Driver				No	Manual	Disabled	Stopped	OK	Normal
System Driver	No	Manual	Disabled	Stopped	OK	Normal	No					
	No											
uliagpkx	Uli AGP Bus Filter						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\uliagpkx.sys	Kernel Driver					Yes					
	Kernel Driver	No	Manual	Stopped	OK	Normal	No					
	Normal	No	No									
umbus	UMBus Enumerator Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\umbus.sys	Kernel Driver					Yes					
	Yes	Manual	Running	OK	Normal	No	Yes					
	Yes											
umpass	Microsoft UMPass Driver						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\umpass.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
usbccgp	Microsoft USB Generic Parent Driver						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\usbccgp.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
usbhci	Microsoft USB 2.0 Enhanced Host Controller Miniport Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\usbhci.sys	Kernel Driver					Yes					
	Yes	Manual	Running	OK	Normal	No	Yes					
	Yes											
usbhub	Microsoft USB Standard Hub Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\usbhub.sys	Kernel Driver					Yes					
	Yes	Manual	Running	OK	Normal	No	Yes					
	Yes											
usbhci	Microsoft USB Open Host Controller Miniport Driver						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\usbhci.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
usbprint	Microsoft USB PRINTER Class						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\usbprint.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
usbstor	USB Mass Storage Driver						No	Manual	Stopped	OK	Normal	No
	c:\windows\system32\drivers\usbstor.sys	Kernel Driver					No					
	No	Manual	Stopped	OK	Normal	No	No					
	No											
usbuhci	Microsoft USB Universal Host Controller Miniport Driver						Yes	Manual	Running	OK	Normal	No
	c:\windows\system32\drivers\usbuhci.sys	Kernel Driver					Yes					
	Yes	Manual	Running	OK	Normal	No	Yes					
	Yes											
vdrvroot	Microsoft Virtual Drive Enumerator Driver						Yes	Boot	Running	OK	Critical	No
	c:\windows\system32\drivers\vdrvroot.sys	Kernel Driver					Yes					
	Yes	Boot	Running	OK	Critical	No	Yes					
	Yes											
vga	vga	c:\windows\system32\drivers\vgapnp.sys	Kernel Driver				No	Manual	Stopped	OK	Ignore	No
Driver	No	Manual	Stopped	OK	Ignore	No	No					
	No											
vgasave	VgaSave	c:\windows\system32\drivers\vgasave.sys	Kernel Driver				Yes	System	Running	OK	Ignore	No
Driver	Yes	System	Running	OK	Ignore	No	Yes					
	Yes											
vhdmp	vhdmp	c:\windows\system32\drivers\vhdmp.sys	Kernel Driver				No	Manual	Stopped	OK	Normal	No
Driver	No	Manual	Stopped	OK	Normal	No	No					
	No											

```

viaide   viaide   c:\windows\system32\drivers\viaide.sys   Kernel
Driver  No      Manual  Stopped  OK      Critical  No
No
vid      Vid      c:\windows\system32\drivers\vid.sys     Kernel
Driver  No      Manual  Stopped  OK      Normal   No
No
vmbus   Virtual Machine Bus  c:\windows\system32\drivers\vmbus.sys   Kernel
Driver  No      Manual  Stopped  OK
Normal  No      No
vmbushid VMBusHID  c:\windows\system32\drivers\vmbushid.sys Kernel
Driver  No      Manual  Stopped  OK
Ignore  No      No
volmgr  Volume Manager Driver
c:\windows\system32\drivers\volmgr.sys   Kernel Driver
Yes      Boot    Running  OK      Critical  No
Yes
volmgrx Dynamic Volume Manager
c:\windows\system32\drivers\volmgrx.sys  Kernel Driver
Yes      Boot    Running  OK      Critical  No
Yes
volsnap Storage volumes  c:\windows\system32\drivers\volsnap.sys  Kernel Driver
Kernel Driver  Yes      Boot    Running  OK
Critical  No      Yes
vsmraid vsmraid  c:\windows\system32\drivers\vsmraid.sys  Kernel
Driver  No      Manual  Stopped  OK      Normal   No
No
wacompen Wacom Serial Pen HID Driver
c:\windows\system32\drivers\wacompen.sys Kernel Driver
No      Manual  Stopped  OK      Normal   No
No
wanarp  Remote Access IP ARP Driver
c:\windows\system32\drivers\wanarp.sys   Kernel Driver
No      Manual  Stopped  OK      Normal   No
No
wanarpv6 Remote Access IPv6 ARP Driver
c:\windows\system32\drivers\wanarp.sys   Kernel Driver
Yes     System  Running  OK      Normal   No
Yes
wd      Wd      c:\windows\system32\drivers\wd.sys      Kernel
Driver  No      Manual  Stopped  OK      Normal   No
No
wdf01000 Kernel Mode Driver Frameworks service
c:\windows\system32\drivers\wdf01000.sys Kernel Driver
Yes     Boot    Running  OK      Normal   No
Yes
wfpplwf WFP Lightweight Filter
c:\windows\system32\drivers\wfpplwf.sys  Kernel Driver
Yes     System  Running  OK      Normal   No
Yes
wimmount WIMMount
c:\windows\system32\drivers\wimmount.sys  File System Driver
No      Manual  Stopped  OK      Normal   No
No
wmiacpi Microsoft Windows Management Interface for ACPI
c:\windows\system32\drivers\wmiacpi.sys  Kernel Driver
No      Manual  Stopped  OK      Normal   No
No
ws2ifsl Winsock IFS Driver  c:\windows\system32\drivers\ws2ifsl.sys  Kernel Driver
Kernel Driver  No      Disabled  Stopped  OK
Normal  No      No
wudfpf User Mode Driver Frameworks Platform Driver
c:\windows\system32\drivers\wudfpf.sys   Kernel Driver
No      Manual  Stopped  OK      Normal   No
No

```

[Environment Variables]

```

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

```

```

FP_NO_HOST_CHECK  NO      <SYSTEM>
OS                Windows_NT  <SYSTEM>
Path              C:\Program
Files\HP\NCU;%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\
System32\Wbem;%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\;
%FUSION_UTILITIES%;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\Comm7\IDE\C:\Program Files
(x86)\Microsoft SQL Server\100\DTS\Binn\C:\Program Files\Microsoft
Windows Performance Toolkit\ <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>
PSModulePath
%SystemRoot%\system32\WindowsPowerShell\v1.0\Modules\
<SYSTEM>
NUMBER_OF_PROCESSORS  24      <SYSTEM>
PROCESSOR_LEVEL       6       <SYSTEM>
PROCESSOR_IDENTIFIER  Intel64 Family 6 Model 44 Stepping 1,
GenuineIntel <SYSTEM>
PROCESSOR_REVISION    2c01    <SYSTEM>
FUSION_UTILITIES C:\Program Files\Fusion-io\Utils\<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
DL380GH\Administrator
TMP   %USERPROFILE%\AppData\Local\Temp
DL380GH\Administrator

```

[Print Jobs]

Can't Collect Information

[Network Connections]

Local Name	Remote Name	Type	Status	User
Not Available	\\130.168.211.180\c\$	Disk	Current Connection	
	DL380GH\Administrator			

[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set	Max Working Set
system idle process		Not Available		0	0
Available	Not Available	Not Available		Not Available	Not Available
system	Not Available	4		8	Not Available
	Not Available	7/1/2010 9:49 AM		Not Available	Not Available
	Not Available	Not Available		Not Available	Not Available

conhost.exe	c:\windows\system32\conhost.exe	2196			7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2212	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2224						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2236	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2244						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2260	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2268						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2284	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2292						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2304	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2316						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2328	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2336						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
cmd.exe	c:\windows\system32\cmd.exe	2348	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
1380	7/1/2010 9:39 AM	6.1.7600.16385		336.50				
KB (344,576 bytes)	7/13/2009 6:34 PM							
conhost.exe	c:\windows\system32\conhost.exe	2360						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
conhost.exe	c:\windows\system32\conhost.exe	2372						
8	200	1380	7/1/2010 9:39 AM					
6.1.7600.16385		330.50 KB (338,432 bytes)						
	7/13/2009 6:38 PM							
semaphore.exe	c:\hp_tpch_kit\setup\semaphore.exe	2464		Not				
8	200	1380	7/1/2010 9:39 AM					
Available	45.50 KB (46,592 bytes)		2/19/2010 1:04 PM					
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2480	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
server\100\tools\bin\sqlcmd.exe								
bytes)	2/6/2010 6:41 AM							
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2488	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
server\100\tools\bin\sqlcmd.exe								
bytes)	2/6/2010 6:41 AM							
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2500	8	200	7/1/2010 9:39 AM	2009.100.1446.1	337.84 KB (345,952 bytes)	
server\100\tools\bin\sqlcmd.exe								
bytes)	2/6/2010 6:41 AM							

sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2644	8	200	1380			ntdll	6.1.7600.16385	1.66 MB (1,736,792 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:22 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2652	8	200	1380			csrssrv	6.1.7600.16385	42.50 KB (43,520 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:19 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2660	8	200	1380			basesrv	6.1.7600.16385	51.50 KB (52,736 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:18 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2672	8	200	1380			winsrv	6.1.7600.16385	209.00 KB (214,016 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:38 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2668	8	200	1380			user32	6.1.7600.16385	985.00 KB (1,008,640 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:38 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2684	8	200	1380			gdi32	6.1.7600.16385	395.00 KB (404,480 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:39 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2692	8	200	1380			kernel32	6.1.7600.16385	1.11 MB (1,162,240 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:28 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2700	8	200	1380			kernelbase	6.1.7600.16385	411.50 KB (421,376 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:20 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2708	8	200	1380			lpk	6.1.7600.16385	41.00 KB (41,984 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:38 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2716	8	200	1380			usp10	1.626.7600.16385	782.50 KB (801,280 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:38 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2720	8	200	1380			msvcrt	7.0.7600.16385	620.00 KB (634,880 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:19 PM	Microsoft Corporation
sqlcmd.exe	c:\program files\microsoft sql server\100\tools\bin\sqlcmd.exe	2732	8	200	1380			sxssrv	6.1.7600.16385	31.00 KB (31,744 bytes)
		7/1/2010 9:39 AM	2009.100.1446.1			337.84 KB (345,952 bytes)	2/6/2010 6:41 AM		7/13/2009 6:26 PM	Microsoft Corporation
msinfo32.exe	c:\windows\system32\msinfo32.exe				3964			sxs	6.1.7600.16385	569.50 KB (583,168 bytes)
		8	200	1380				rpert4	6.1.7600.16385	1.17 MB (1,221,632 bytes)
		6.1.7600.16385				370.00 KB (378,880 bytes)	7/13/2009 6:31 PM		7/13/2009 6:23 PM	Microsoft Corporation
wmiprvse.exe	c:\windows\system32\wbem\wmiprvse.exe				3336			cryptbase	6.1.7600.16385	43.00 KB (44,032 bytes)
		8	200	1380				wininit	6.1.7600.16385	126.00 KB (129,024 bytes)
		6.1.7600.16385				360.00 KB (368,640 bytes)	7/13/2009 6:47 PM		7/13/2009 6:52 PM	Microsoft Corporation
wmiprvse.exe	c:\windows\system32\wbem\wmiprvse.exe				4068			sechost	6.1.7600.16385	111.00 KB (113,664 bytes)
		8	200	1380				profapi	6.1.7600.16385	43.00 KB (44,032 bytes)
		6.1.7600.16385				360.00 KB (368,640 bytes)	7/13/2009 6:47 PM		7/13/2009 6:20 PM	Microsoft Corporation
		7/13/2009 6:47 PM						imm32	6.1.7600.16385	163.50 KB (167,424 bytes)
								msctf	6.1.7600.16385	1.02 MB (1,067,008 bytes)
								rpertremote	6.1.7600.16385	63.50 KB (65,024 bytes)
								apphelp	6.1.7600.16385	330.50 KB (338,432 bytes)
								ws2_32	6.1.7600.16385	289.50 KB (296,448 bytes)
									7/13/2009 6:21 PM	Microsoft Corporation
									c:\windows\system32\ws2_32.dll	

nsi	6.1.7600.16385	13.50 KB (13,824 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\nsi.dll
msocket	6.1.7600.16385	312.50 KB (320,000 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\msocket.dll
wshtcpip	6.1.7600.16385	13.00 KB (13,312 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\wshtcpip.dll
wship6	6.1.7600.16385	13.50 KB (13,824 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\wship6.dll
secur32	6.1.7600.16385	27.50 KB (28,160 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\secur32.dll
sspicli	6.1.7600.16385	133.00 KB (136,192 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\sspicli.dll
credssp	6.1.7600.16385	20.00 KB (20,480 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\credssp.dll
advapi32	6.1.7600.16385	856.50 KB (877,056 bytes)	7/13/2009 7:41 PM	Microsoft Corporation	c:\windows\system32\advapi32.dll
winlogon	6.1.7600.16385	380.00 KB (389,120 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\winlogon.exe
winsta	6.1.7600.16385	228.00 KB (233,472 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\winsta.dll
uxinit	6.1.7600.16385	24.50 KB (25,088 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\uxinit.dll
services	6.1.7600.16385	321.00 KB (328,704 bytes)	7/13/2009 6:19 PM	Microsoft Corporation	c:\windows\system32\services.exe
scext	6.1.7600.16385	87.00 KB (89,088 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\scext.dll
scsvr	6.1.7600.16385	396.50 KB (406,016 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\scsvr.dll
srvccli	6.1.7600.16385	124.50 KB (127,488 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\srvccli.dll
authz	6.1.7600.16385	173.50 KB (177,664 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\authz.dll
ubpm	6.1.7600.16385	209.00 KB (214,016 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\ubpm.dll
wtsapi32	6.1.7600.16385	53.00 KB (54,272 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\wtsapi32.dll
lsass	6.1.7600.16385	30.50 KB (31,232 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\lsass.exe
sspsrv	6.1.7600.16385	28.00 KB (28,672 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\sspsrv.dll
lsasrv	6.1.7600.16385	1.38 MB (1,446,912 bytes)	7/13/2009 6:51 PM	Microsoft Corporation	c:\windows\system32\lsasrv.dll
samsrv	6.1.7600.16385	740.00 KB (757,760 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\samsrv.dll
cryptdll	6.1.7600.16385	64.50 KB (66,048 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\cryptdll.dll
msasn1	6.1.7600.16385	43.00 KB (44,032 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\msasn1.dll
wevtapi	6.1.7600.16385	418.00 KB (428,032 bytes)	7/13/2009 6:46 PM	Microsoft Corporation	c:\windows\system32\wevtapi.dll
engaudit	6.1.7600.16385	18.50 KB (18,944 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\engaudit.dll
ncrypt	6.1.7600.16385	300.00 KB (307,200 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\ncrypt.dll
bcrypt	6.1.7600.16385	121.00 KB (123,904 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\bcrypt.dll
msprvs	6.1.7600.16385	2.00 KB (2,048 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\msprvs.dll
netjoin	6.1.7600.16385	184.50 KB (188,928 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\netjoin.dll
negoexts	6.1.7600.16385	114.50 KB (117,248 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\negoexts.dll
kerberos	6.1.7600.16385	697.50 KB (714,240 bytes)	7/13/2009 6:51 PM	Microsoft Corporation	c:\windows\system32\kerberos.dll
cryptsp	6.1.7600.16385	78.00 KB (79,872 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\cryptsp.dll
msv1_0	6.1.7600.16385	304.00 KB (311,296 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\msv1_0.dll
netlogon	6.1.7600.16385	676.50 KB (692,736 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\netlogon.dll
dnsapi	6.1.7600.16385	348.00 KB (356,352 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dnsapi.dll
logoncli	6.1.7600.16385	182.00 KB (186,368 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\logoncli.dll
schannel	6.1.7600.16385	340.50 KB (348,672 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\schannel.dll
crypt32	6.1.7600.16385	1.39 MB (1,454,592 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\crypt32.dll
wdigest	6.1.7600.16385	205.50 KB (210,432 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\wdigest.dll
rsaenh	6.1.7600.16385	274.66 KB (281,256 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\rsaenh.dll
tspkg	6.1.7600.16385	84.00 KB (86,016 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\tspkg.dll
pku2u	6.1.7600.16385	235.00 KB (240,640 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\pku2u.dll
bcryptprimitives	6.1.7600.16385	291.32 KB (298,312 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\bcryptprimitives.dll
eflsaext	6.1.7600.16385	55.50 KB (56,832 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\eflsaext.dll
scecli	6.1.7600.16385	227.00 KB (232,448 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\scecli.dll

rassfm	6.1.7600.16385	28.50 KB (29,184 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\rassfm.dll
dssenh	6.1.7600.16385	186.41 KB (190,880 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\dssenh.dll
userenv	6.1.7600.16385	104.50 KB (107,008 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\userenv.dll
gpapi	6.1.7600.16385	94.50 KB (96,768 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\gpapi.dll
cryptnet	6.1.7600.16385	135.50 KB (138,752 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\cryptnet.dll
wldap32	6.1.7600.16385	304.50 KB (311,808 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\wldap32.dll
iphlpapi	6.1.7600.16385	142.50 KB (145,920 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\iphlpapi.dll
winnsi	6.1.7600.16385	25.50 KB (26,112 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\winnsi.dll
netutils	6.1.7600.16385	28.00 KB (28,672 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\netutils.dll
samcli	6.1.7600.16385	65.50 KB (67,072 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\samcli.dll
samlib	6.1.7600.16385	104.50 KB (107,008 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\samlib.dll
dhcpcsvc6	6.1.7600.16385	53.00 KB (54,272 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dhcpcsvc6.dll
dhcpcsvc	6.1.7600.16385	85.00 KB (87,040 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dhcpcsvc.dll
certpoleng	6.1.7600.16385	70.00 KB (71,680 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\certpoleng.dll
lsm	6.1.7600.16385	325.50 KB (333,312 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\lsm.exe
sysntfy	6.1.7600.16385	22.50 KB (23,040 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\sysntfy.dll
wmsgapi	6.1.7600.16385	14.50 KB (14,848 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\wmsgapi.dll
pcwum	6.1.7600.16385	36.00 KB (36,864 bytes)	7/13/2009 6:19 PM	Microsoft Corporation	c:\windows\system32\pcwum.dll
ole32	6.1.7600.16385	1.99 MB (2,084,352 bytes)	7/13/2009 7:02 PM	Microsoft Corporation	c:\windows\system32\ole32.dll
ntmarta	6.1.7600.16385	158.50 KB (162,304 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\ntmarta.dll
clbcatq	2001.12.8530.16385	593.50 KB (607,744 bytes)	7/13/2009 7:00 PM	Microsoft Corporation	c:\windows\system32\clbcatq.dll
oleaut32	6.1.7600.16385	841.00 KB (861,184 bytes)	7/13/2009 6:59 PM	Microsoft Corporation	c:\windows\system32\oleaut32.dll
lsmproxy	6.1.7600.16385	47.50 KB (48,640 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\lsmproxy.dll
svchost	6.1.7600.16385	26.50 KB (27,136 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\svchost.exe
umpnpmgr	6.1.7600.16385	395.00 KB (404,480 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\umpnpmgr.dll
spinf	6.1.7600.16385	103.00 KB (105,472 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\spinf.dll
devrtl	6.1.7600.16385	57.00 KB (58,368 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\devrtl.dll
umpo	6.1.7600.16385	160.00 KB (163,840 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\umpo.dll
setupapi	6.1.7600.16385	1.81 MB (1,899,520 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\setupapi.dll
cfgmgr32	6.1.7600.16385	202.50 KB (207,360 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\cfgmgr32.dll
devobj	6.1.7600.16385	91.00 KB (93,184 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\devobj.dll
rpcss	6.1.7600.16385	497.50 KB (509,440 bytes)	7/13/2009 7:00 PM	Microsoft Corporation	c:\windows\system32\rpcss.dll
wmidcprv	6.1.7600.16385	187.00 KB (191,488 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\wmidcprv.dll
fastprox	6.1.7600.16385	888.00 KB (909,312 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\fastprox.dll
wbemcomn	6.1.7600.16385	517.50 KB (529,920 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbemcomn.dll
ntdsapi	6.1.7600.16385	148.50 KB (152,064 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\ntdsapi.dll
wbemprox	6.1.7600.16385	42.50 KB (43,520 bytes)	7/13/2009 6:46 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemprox.dll
wbemsvc	6.1.7600.16385	63.00 KB (64,512 bytes)	7/13/2009 6:46 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemsvc.dll
wmiutils	6.1.7600.16385	134.00 KB (137,216 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiutils.dll
wintrust	6.1.7600.16385	215.00 KB (220,160 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\wintrust.dll
rpcepmap	6.1.7600.16385	65.50 KB (67,072 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\rpcepmap.dll
firewallapi	6.1.7600.16385	730.50 KB (748,032 bytes)	7/13/2009 7:08 PM	Microsoft Corporation	c:\windows\system32\firewallapi.dll
version	6.1.7600.16385	28.50 KB (29,184 bytes)	7/13/2009 6:57 PM	Microsoft Corporation	c:\windows\system32\version.dll
wevtvc	6.1.7600.16385	1.57 MB (1,646,080 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\wevtvc.dll
lmhsvc	6.1.7600.16385	23.00 KB (23,552 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\lmhsvc.dll
nrpsrv	6.1.7600.16385	14.50 KB (14,848 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\nrpsrv.dll

dhcpcore	6.1.7600.16385	307.00 KB (314,368 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dhcpcore.dll
dhcpcore6	6.1.7600.16385	219.00 KB (224,256 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dhcpcore6.dll
nlaapi	6.1.7600.16385	68.50 KB (70,144 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\nlaapi.dll
fwpuclnt	6.1.7600.16385	316.50 KB (324,096 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\fwpuclnt.dll
rasadhlp	6.1.7600.16385	16.00 KB (16,384 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\rasadhlp.dll
winrnr	6.1.7600.16385	28.00 KB (28,672 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\winrnr.dll
napinsp	6.1.7600.16385	66.50 KB (68,096 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\napinsp.dll
logonui	6.1.7600.16385	27.00 KB (27,648 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\logonui.exe
authui	6.1.7600.16385	1.84 MB (1,926,144 bytes)	7/13/2009 6:58 PM	Microsoft Corporation	c:\windows\system32\authui.dll
cryptui	6.1.7600.16385	1.02 MB (1,065,984 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\cryptui.dll
comctl32	6.10.7600.16385	1.94 MB (2,030,080 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.common-controls_6595b64144ccf1df_6.0.7600.16385_none_fa645303170382f6\comctl32.dll
shlwapi	6.1.7600.16385	439.00 KB (449,536 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\shlwapi.dll
uxtheme	6.1.7600.16385	324.50 KB (332,288 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\uxtheme.dll
gdiplus	6.1.7600.16385	2.06 MB (2,165,248 bytes)	7/13/2009 6:40 PM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.gdiplus_6595b64144ccf1df_1.1.7600.16385_none_2b4f45e87195fcc4\gdiplus.dll
dui70	6.1.7600.16385	954.00 KB (976,896 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\dui70.dll
duser	6.1.7600.16385	254.50 KB (260,608 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\duser.dll
sndvol32	6.1.7600.16385	220.00 KB (225,280 bytes)	7/13/2009 7:19 PM	Microsoft Corporation	c:\windows\system32\sndvol32.dll
hid	6.1.7600.16385	29.50 KB (30,208 bytes)	7/13/2009 7:06 PM	Microsoft Corporation	c:\windows\system32\hid.dll
mmdevapi	6.1.7600.16385	277.50 KB (284,160 bytes)	7/13/2009 7:18 PM	Microsoft Corporation	c:\windows\system32\mmdevapi.dll
propsys	7.0.7600.16385	1.16 MB (1,212,416 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\propsys.dll
dwmapi	6.1.7600.16385	80.50 KB (82,432 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\dwmapi.dll
xmllite	1.3.1000.0	195.00 KB (199,680 bytes)	7/13/2009 7:41 PM	Microsoft Corporation	c:\windows\system32\xmllite.dll
windowscodecs	6.1.7600.16385	1.13 MB (1,189,888 bytes)	7/13/2009 6:42 PM	Microsoft Corporation	c:\windows\system32\windowscodecs.dll
winbrand	6.1.7600.16385	16.00 KB (16,384 bytes)	7/13/2009 6:30 PM	Microsoft Corporation	c:\windows\system32\winbrand.dll
vaultcredprovider	6.1.7600.16385	78.50 KB (80,384 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\vaultcredprovider.dll
smartcardcredentialprovider	6.1.7600.16385	185.50 KB (189,952 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\smartcardcredentialprovider.dll
certcredprovider	6.1.7600.16385	126.00 KB (129,024 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\certcredprovider.dll
rasplap	6.1.7600.16385	396.00 KB (405,504 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\rasplap.dll
rasapi32	6.1.7600.16385	375.50 KB (384,512 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\rasapi32.dll
rasman	6.1.7600.16385	98.00 KB (100,352 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\rasman.dll
rtutils	6.1.7600.16385	50.50 KB (51,712 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\rtutils.dll
shacct	6.1.7600.16385	132.00 KB (135,168 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\shacct.dll
gpsvc	6.1.7600.16385	758.00 KB (776,192 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\gpsvc.dll
profsvc	6.1.7600.16385	203.50 KB (208,384 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\profsvc.dll
atl	3.5.2284.0	88.50 KB (90,624 bytes)	7/13/2009 7:34 PM	Microsoft Corporation	c:\windows\system32\atl.dll
dsrole	6.1.7600.16385	32.00 KB (32,768 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\dsrole.dll
slc	6.1.7600.16385	30.00 KB (30,720 bytes)	7/13/2009 6:51 PM	Microsoft Corporation	c:\windows\system32\slc.dll
sens	6.1.7600.16385	63.00 KB (64,512 bytes)	7/13/2009 6:34 PM	Microsoft Corporation	c:\windows\system32\sens.dll
shsvcs	6.1.7600.16385	361.00 KB (369,664 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\shsvcs.dll
schedsvc	6.1.7600.16385	1.05 MB (1,104,384 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\schedsvc.dll
shell32	6.1.7600.16385	13.51 MB (14,161,920 bytes)	7/13/2009 7:04 PM	Microsoft Corporation	c:\windows\system32\shell32.dll
netapi32	6.1.7600.16385	71.00 KB (72,704 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\netapi32.dll
wkscli	6.1.7600.16385	70.00 KB (71,680 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\wkscli.dll
ktmw32	6.1.7600.16385	22.50 KB (23,040 bytes)	7/13/2009 6:19 PM	Microsoft Corporation	c:\windows\system32\ktmw32.dll
taskcomp	6.1.7600.16385	462.50 KB (473,600 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\taskcomp.dll

wmisvc	6.1.7600.16385	237.00 KB (242,688 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\wmisvc.dll
vssapi	6.1.7600.16385	1.66 MB (1,745,408 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\vssapi.dll
vsstrace	6.1.7600.16385	75.00 KB (76,800 bytes)	7/13/2009 6:36 PM	Microsoft Corporation	c:\windows\system32\vsstrace.dll
wbemcore	6.1.7600.16385	1.16 MB (1,220,096 bytes)	7/13/2009 6:48 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemcore.dll
esscli	6.1.7600.16385	430.00 KB (440,320 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\esscli.dll
repdrvfs	6.1.7600.16385	441.00 KB (451,584 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\repdrvfs.dll
wmiprvsd	6.1.7600.16385	732.50 KB (750,080 bytes)	7/13/2009 6:48 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiprvsd.dll
ncobjapi	6.1.7600.16385	67.50 KB (69,120 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\ncobjapi.dll
wbemess	6.1.7600.16385	494.00 KB (505,856 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemess.dll
sessenv	6.1.7600.16385	102.50 KB (104,960 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\sessenv.dll
ncprov	6.1.7600.16385	76.50 KB (78,336 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\ncprov.dll
es	2001.12.8530.16385	393.50 KB (402,944 bytes)	7/13/2009 7:00 PM	Microsoft Corporation	c:\windows\system32\es.dll
nsisvc	6.1.7600.16385	25.00 KB (25,600 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\nsisvc.dll
fdphost	6.1.7600.16385	16.00 KB (16,384 bytes)	7/13/2009 6:35 PM	Microsoft Corporation	c:\windows\system32\fdphost.dll
fdwsd	6.1.7600.16385	129.00 KB (132,096 bytes)	7/13/2009 6:35 PM	Microsoft Corporation	c:\windows\system32\fdwsd.dll
mlang	6.1.7600.16385	221.50 KB (226,816 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\mlang.dll
wsdapi	6.1.7600.16385	571.50 KB (585,216 bytes)	7/13/2009 6:36 PM	Microsoft Corporation	c:\windows\system32\wsdapi.dll
webservice	6.1.7600.16385	1.11 MB (1,159,168 bytes)	7/13/2009 7:01 PM	Microsoft Corporation	c:\windows\system32\webservice.dll
winhttp	6.1.7600.16385	428.50 KB (438,784 bytes)	7/13/2009 7:11 PM	Microsoft Corporation	c:\windows\system32\winhttp.dll
webio	6.1.7600.16385	385.50 KB (394,752 bytes)	7/13/2009 7:11 PM	Microsoft Corporation	c:\windows\system32\webio.dll
fdssdp	6.1.7600.16385	91.50 KB (93,696 bytes)	7/13/2009 6:35 PM	Microsoft Corporation	c:\windows\system32\fdssdp.dll
ssdpapi	6.1.7600.16385	50.00 KB (51,200 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\ssdpapi.dll
fdproxy	6.1.7600.16385	73.00 KB (74,752 bytes)	7/13/2009 6:35 PM	Microsoft Corporation	c:\windows\system32\fdproxy.dll
fundisc	6.1.7600.16385	190.00 KB (194,560 bytes)	7/13/2009 6:35 PM	Microsoft Corporation	c:\windows\system32\fundisc.dll
msxml6	6.30.7600.16385	1.91 MB (1,999,360 bytes)	7/13/2009 7:43 PM	Microsoft Corporation	c:\windows\system32\msxml6.dll
ieproxy	8.0.7600.16385	438.00 KB (448,512 bytes)	7/13/2009 6:58 PM	Microsoft Corporation	c:\program files\internet explorer\ieproxy.dll
uxsms	6.1.7600.16385	38.00 KB (38,912 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\uxsms.dll
umrdp	6.1.7600.16385	190.50 KB (195,072 bytes)	7/13/2009 7:18 PM	Microsoft Corporation	c:\windows\system32\umrdp.dll
winspool	6.1.7600.16385	431.50 KB (441,856 bytes)	7/13/2009 7:39 PM	Microsoft Corporation	c:\windows\system32\winspool.drv
umb	6.1.7600.16385	58.50 KB (59,904 bytes)	7/13/2009 6:35 PM	Microsoft Corporation	c:\windows\system32\umb.dll
netman	6.1.7600.16385	352.00 KB (360,448 bytes)	7/13/2009 7:08 PM	Microsoft Corporation	c:\windows\system32\netman.dll
netshell	6.1.7600.16385	2.53 MB (2,651,136 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\netshell.dll
rasdlg	6.1.7600.16385	840.50 KB (860,672 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\rasdlg.dll
mprapi	6.1.7600.16385	215.50 KB (220,672 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\mprapi.dll
netcfgx	6.1.7600.16385	505.00 KB (517,120 bytes)	7/13/2009 7:08 PM	Microsoft Corporation	c:\windows\system32\netcfgx.dll
hnetcfg	6.1.7600.16385	414.50 KB (424,448 bytes)	7/13/2009 7:08 PM	Microsoft Corporation	c:\windows\system32\hnetcfg.dll
dnssrslvr	6.1.7600.16385	178.00 KB (182,272 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dnssrslvr.dll
dnsex	6.1.7600.16385	8.00 KB (8,192 bytes)	7/13/2009 7:12 PM	Microsoft Corporation	c:\windows\system32\dnsex.dll
wkssvc	6.1.7600.16385	116.00 KB (118,784 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\wkssvc.dll
cissesrv	6.18.0.64	160.00 KB (163,840 bytes)	12/7/2009 6:49 PM	Hewlett-Packard Company	c:\program files\hp\cissesrv\cissesrv.exe
ProLiantMonitor	3.0.0.0	292.54 KB (299,560 bytes)	1/12/2010 6:18 PM	Hewlett-Packard Company	c:\program files\hewlett-packard\ilo 3\service\proliantmonitor.exe
sqlwriter	2009.100.1446.1	142.84 KB (146,272 bytes)	2/6/2010 6:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\90\shared\sqlwriter.exe
msvcr80	8.0.50727.4927	783.81 KB (802,624 bytes)	7/13/2009 3:37 PM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.4927_none_88dce9872fb18caf\msvcr80.dll
psapi	6.1.7600.16385	9.00 KB (9,216 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\psapi.dll
sqlwvss	2009.100.1446.1	420.84 KB (430,944 bytes)	2/6/2010 6:36 AM	Microsoft Corporation	c:\program files\microsoft sql server\90\shared\sqlwvss.dll
msvc80	8.0.50727.4927	1.02 MB (1,068,352 bytes)	7/13/2009 3:37 PM	Microsoft Corporation	

b_8.0.50727.4927_none_88dce9872fb18cafmsvcp80.dll	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3	cscapi	6.1.7600.16385	45.00 KB (46,080 bytes)	7/13/2009 6:24 PM	Microsoft Corporation				
termsrv	6.1.7600.16385	690.00 KB (706,560 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\termsrv.dll	iconcodexservice	6.1.7600.16385	14.00 KB (14,336 bytes)	7/13/2009 6:37 PM	Microsoft Corporation
icaapi	6.1.7600.16385	22.00 KB (22,528 bytes)	7/13/2009 7:16 PM	Microsoft Corporation	c:\windows\system32\icaapi.dll	timedate	6.1.7600.16385	503.00 KB (515,072 bytes)	7/13/2009 6:56 PM	Microsoft Corporation
regapi	6.1.7600.16385	92.50 KB (94,720 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\regapi.dll	actxprxy	6.1.7600.16385	936.50 KB (958,976 bytes)	7/13/2009 7:41 PM	Microsoft Corporation
tlscsp	6.1.7600.16385	72.00 KB (73,728 bytes)	7/13/2009 7:16 PM	Microsoft Corporation	c:\windows\system32\tlscsp.dll	shdocvw	6.1.7600.16385	191.50 KB (196,096 bytes)	7/13/2009 6:55 PM	Microsoft Corporation
rdpcorekmts	6.1.7600.16385	146.00 KB (149,504 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\rdpcorekmts.dll	msftedit	5.41.21.2509	781.00 KB (799,744 bytes)	7/13/2009 6:39 PM	Microsoft Corporation
rdpwsx	6.1.7600.16385	74.50 KB (76,288 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\rdpwsx.dll	mssl31	3.10.349.0	217.00 KB (222,208 bytes)	7/13/2009 6:39 PM	Microsoft Corporation
mpr	6.1.7600.16385	79.00 KB (80,896 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\mpr.dll	urlmon	8.0.7600.16385	1.42 MB (1,492,480 bytes)	7/13/2009 7:01 PM	Microsoft Corporation
taskhost	6.1.7600.16385	67.50 KB (69,120 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\taskhost.exe	iertutil	8.0.7600.16385	2.33 MB (2,440,704 bytes)	7/13/2009 6:59 PM	Microsoft Corporation
msctfmonitor	6.1.7600.16385	27.50 KB (28,160 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\msctfmonitor.dll	winmm	6.1.7600.16385	212.50 KB (217,600 bytes)	7/13/2009 7:18 PM	Microsoft Corporation
msutb	6.1.7600.16385	230.00 KB (235,520 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\msutb.dll	linkinfo	6.1.7600.16385	29.00 KB (29,696 bytes)	7/13/2009 6:55 PM	Microsoft Corporation
rdpclip	6.1.7600.16385	204.50 KB (209,408 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\rdpclip.exe	searchfolder	6.1.7600.16385	845.00 KB (865,280 bytes)	7/13/2009 6:59 PM	Microsoft Corporation
dwm	6.1.7600.16385	117.50 KB (120,320 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\dwm.exe	structuredquery	7.0.7600.16385	472.50 KB (483,840 bytes)	7/13/2009 7:29 PM	Microsoft Corporation
dwmredir	6.1.7600.16385	125.50 KB (128,512 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\dwmredir.dll	thumbcache	6.1.7600.16385	110.50 KB (113,152 bytes)	7/13/2009 6:55 PM	Microsoft Corporation
dwmcore	6.1.7600.16385	1.56 MB (1,634,304 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\dwmcore.dll	networkexplorer	6.1.7600.16385	1.60 MB (1,672,704 bytes)	7/13/2009 7:08 PM	Microsoft Corporation
d3d10_1	6.1.7600.16385	192.50 KB (197,120 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\d3d10_1.dll	stobject	6.1.7600.16385	250.00 KB (256,000 bytes)	7/13/2009 6:56 PM	Microsoft Corporation
d3d10_1core	6.1.7600.16385	311.50 KB (318,976 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\d3d10_1core.dll	batmeter	6.1.7600.16385	730.50 KB (748,032 bytes)	7/13/2009 6:56 PM	Microsoft Corporation
dxgi	6.1.7600.16385	643.00 KB (658,432 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\dxgi.dll	prnfldr	6.1.7600.16385	407.00 KB (416,768 bytes)	7/13/2009 7:40 PM	Microsoft Corporation
explorer	6.1.7600.16385	2.74 MB (2,868,224 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\explorer.exe	dxp	6.1.7600.16385	449.00 KB (459,776 bytes)	7/13/2009 7:21 PM	Microsoft Corporation
explorerframe	6.1.7600.16385	1.78 MB (1,863,680 bytes)	7/13/2009 6:57 PM	Microsoft Corporation	c:\windows\system32\explorerframe.dll	syncreg	2007.94.7600.16385	72.00 KB (73,728 bytes)	7/13/2009 7:22 PM	Microsoft Corporation
powrprof	6.1.7600.16385	163.50 KB (167,424 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\powrprof.dll	pnidui	6.1.7600.16385	1.72 MB (1,807,872 bytes)	7/13/2009 7:08 PM	Microsoft Corporation
ehstorshell	6.1.7600.16385	198.50 KB (203,264 bytes)	7/13/2009 7:00 PM	Microsoft Corporation	c:\windows\system32\ehstorshell.dll	qutil	6.1.7600.16385	105.00 KB (107,520 bytes)	7/13/2009 7:07 PM	Microsoft Corporation
ntshui	6.1.7600.16385	498.00 KB (509,952 bytes)	7/13/2009 6:57 PM	Microsoft Corporation	c:\windows\system32\ntshui.dll	actioncenter	6.1.7600.16385	762.50 KB (780,800 bytes)	7/13/2009 6:56 PM	Microsoft Corporation
	c:\windows\system32\ntshui.dll									

imapi2	6.1.7600.16385	493.50 KB (505,344 bytes)	7/13/2009 7:01 PM	Microsoft Corporation	c:\windows\system32\imapi2.dll
hgcppl	6.1.7600.16385	324.50 KB (332,288 bytes)	7/13/2009 6:57 PM	Microsoft Corporation	c:\windows\system32\hgcppl.dll
qagent	6.1.7600.16385	259.00 KB (265,216 bytes)	7/13/2009 7:07 PM	Microsoft Corporation	c:\windows\system32\qagent.dll
dfscli	6.1.7600.16385	61.50 KB (62,976 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\dfscli.dll
ieframe	8.0.7600.16385	11.78 MB (12,352,000 bytes)	7/13/2009 7:16 PM	Microsoft Corporation	c:\windows\system32\ieframe.dll
oleacc	7.0.0.0	324.00 KB (331,776 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\oleacc.dll
drprov	6.1.7600.16385	24.00 KB (24,576 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\drprov.dll
ntlanman	6.1.7600.16385	126.50 KB (129,536 bytes)	7/13/2009 6:48 PM	Microsoft Corporation	c:\windows\system32\ntlanman.dll
browcli	6.1.7600.16385	57.00 KB (58,368 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\browcli.dll
netmsg	6.1.7600.16385	2.00 KB (2,048 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\netmsg.dll
credui	6.1.7600.16385	213.00 KB (218,112 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\credui.dll
winscard	6.1.7600.16385	212.50 KB (217,600 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\winscard.dll
msilcfg	5.0.7600.16385	19.50 KB (19,968 bytes)	7/13/2009 6:48 PM	Microsoft Corporation	c:\windows\system32\msilcfg.dll
msi	5.0.7600.16385	3.06 MB (3,211,776 bytes)	7/13/2009 6:51 PM	Microsoft Corporation	c:\windows\system32\msi.dll
werconcppl	6.1.7600.16385	1.22 MB (1,280,512 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\werconcppl.dll
wer	6.1.7600.16385	473.00 KB (484,352 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\wer.dll
framedynos	6.1.7600.16385	288.50 KB (295,424 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\framedynos.dll
werctrlsupport	6.1.7600.16385	82.50 KB (84,480 bytes)	7/13/2009 6:40 PM	Microsoft Corporation	c:\windows\system32\werctrlsupport.dll
hcproviders	6.1.7600.16385	30.50 KB (31,232 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\hcproviders.dll
cpqteam	9.90.0.14	72.00 KB (73,728 bytes)	1/13/2010 6:45 AM	Hewlett-Packard Company	c:\program files\hp\ncu\cpqteam.exe
sqlservr	2009.100.1446.1	59.09 MB (61,963,104 bytes)	2/6/2010 6:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\binn\sqlservr.exe
sqlos	2009.100.1446.1	15.34 KB (15,712 bytes)	2/6/2010 6:36 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\binn\sqlos.dll
pdh	6.1.7600.16385	293.00 KB (300,032 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\pdh.dll
opends60	2009.100.1446.1	20.84 KB (21,344 bytes)	2/6/2010 6:36 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\binn\opends60.dll
batchparser	2009.100.1446.1	174.34 KB (178,528 bytes)	2/6/2010 6:40 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\binn\batchparser.dll
instapi10	2009.100.1446.1	39.34 KB (40,288 bytes)	2/6/2010 6:40 AM	Microsoft Corporation	c:\program files\microsoft sql server\100\shared\instapi10.dll
sqllevn70	2009.100.1446.1	2.01 MB (2,103,648 bytes)	2/6/2010 6:07 AM	Microsoft Corporation	c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\binn/resources\1033\sqllevn70.rll
mscoree	2.0.50727.4927	393.81 KB (403,264 bytes)	7/13/2009 3:37 PM	Microsoft Corporation	c:\windows\system32\mscoree.dll
security	6.1.7600.16385	5.00 KB (5,120 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\security.dll
sqlncli10	2009.100.1446.1	2.70 MB (2,832,736 bytes)	2/6/2010 6:36 AM	Microsoft Corporation	c:\windows\system32\sqlncli10.dll
comctl32	5.82.7600.16385	619.00 KB (633,856 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.common-controls_6595b64144ccf1df_5.82.7600.16385_none_a44af8ec57f961cf\comctl32.dll
comdlg32	6.1.7600.16385	581.50 KB (595,456 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\comdlg32.dll
sqlnclir10	2009.100.1446.1	220.84 KB (226,144 bytes)	2/6/2010 6:07 AM	Microsoft Corporation	c:\windows\system32\1033\sqlnclir10.rll
netbios	6.1.7600.16385	18.50 KB (18,944 bytes)	7/13/2009 7:09 PM	Microsoft Corporation	c:\windows\system32\netbios.dll
conhost	6.1.7600.16385	330.50 KB (338,432 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\conhost.exe
cmd	6.1.7600.16385	336.50 KB (344,576 bytes)	7/13/2009 6:34 PM	Microsoft Corporation	c:\windows\system32\cmd.exe
semaphore	Not Available	45.50 KB (46,592 bytes)	2/19/2010 1:04 PM	Not Available	c:\hp_tpch_kit\setup\semaphore.exe
wow64	6.1.7600.16385	237.50 KB (243,200 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\wow64.dll
wow64win	6.1.7600.16385	353.50 KB (361,984 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\wow64win.dll
wow64cpu	6.1.7600.16385	13.00 KB (13,312 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\wow64cpu.dll
sqlcmd	2009.100.1446.1	337.84 KB (345,952 bytes)	2/6/2010 6:41 AM	Microsoft Corporation	c:\program files\microsoft sql server\100\tools\binn\sqlcmd.exe
atl80	8.0.50727.4053	111.00 KB (113,664 bytes)	3/2/2010 8:28 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.vc80.atl_1fc8b3b9a1e18e3b_8.0.50727.4053_none_8a1a02152edb659b\atl80.dll
batchparser	2009.100.1446.1	174.34 KB (178,528 bytes)	2/6/2010 6:40 AM	Microsoft Corporation	c:\program files\microsoft sql server\100\tools\binn\batchparser.dll
acgenral	6.1.7600.16385	302.00 KB (309,248 bytes)	7/13/2009 6:40 PM	Microsoft Corporation	c:\windows\apppatch\apppatch64\acgenral.dll

sfc	6.1.7600.16385	3.00 KB (3,072 bytes)	7/13/2009 6:25 PM	Microsoft Corporation	c:\windows\system32\sfc.dll	Application Identity	AppIDSvc	Stopped	Manual	Share	Process
sfc_os	6.1.7600.16385	44.00 KB (45,056 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\sfc_os.dll	Application Information	Appinfo	Stopped	Manual	Share	Process
sqlcmd	2009.100.1446.1	22.84 KB (23,392 bytes)	2/6/2010 6:07 AM	Microsoft Corporation	c:\program files\microsoft sql server\100\tools\bin\resources\1033\sqlcmd.rll	Application Management	AppMgmt	Stopped	Manual	Share	Process
instapi	2005.90.1399.0	39.85 KB (40,808 bytes)	10/31/2009 2:16 PM	Microsoft Corporation	c:\program files\microsoft sql server\90\shared\instapi.dll	Windows Audio Endpoint Builder	AudioEndpointBuilder	Stopped	Manual	Share	Process
msinfo32	6.1.7600.16385	370.00 KB (378,880 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\msinfo32.exe	Windows Audio	AudioSrv	Stopped	Manual	Share	Process
mfc42u	6.6.8063.0	1.29 MB (1,357,312 bytes)	7/13/2009 7:35 PM	Microsoft Corporation	c:\windows\system32\mfc42u.dll	Background Intelligent Transfer Service	BITS	Stopped	Manual	Share	Process
odbc32	6.1.7600.16385	696.00 KB (712,704 bytes)	7/13/2009 7:29 PM	Microsoft Corporation	c:\windows\system32\odbc32.dll	Base Filtering Engine	BFE	Stopped	Disabled	Share	Process
odbcint	6.1.7600.16385	224.00 KB (229,376 bytes)	7/13/2009 7:28 PM	Microsoft Corporation	c:\windows\system32\odbcint.dll	Certificate Propagation	CertPropSvc	Stopped	Disabled	Share	Process
ehstorapi	6.1.7600.16385	141.50 KB (144,896 bytes)	7/13/2009 7:00 PM	Microsoft Corporation	c:\windows\system32\ehstorapi.dll	COM+ System Application	COMSysApp	Stopped	Manual	Share	Process
wmiprvse	6.1.7600.16385	360.00 KB (368,640 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiprvse.exe	Cryptographic Services	CryptSvc	Stopped	Manual	Share	Process
cimwin32	6.1.7600.16385	1.96 MB (2,055,168 bytes)	7/13/2009 6:48 PM	Microsoft Corporation	c:\windows\system32\wbem\cimwin32.dll	DCOM Server Process Launcher	DcomLaunch	Running	Auto	Share	Process
schedcli	6.1.7600.16385	23.50 KB (24,064 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\schedcli.dll	Disk Defragmenter	defragvc	Stopped	Manual	Own	Process
wmi	6.1.7600.16385	5.00 KB (5,120 bytes)	7/13/2009 7:41 PM	Microsoft Corporation	c:\windows\system32\wmi.dll	DHCP Client	Dhcp	Running	Auto	Share	Process
ntevt	6.1.7600.16385	260.00 KB (266,240 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\ntevt.dll	Display Name	Name	State	Start Mode	Service Type	
provthrd	6.1.7600.16385	300.00 KB (307,200 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\provthrd.dll	Path	Error Control		Start Name	Tag ID	
msvcirt	7.0.7600.16385	76.50 KB (78,336 bytes)	7/13/2009 6:18 PM	Microsoft Corporation	c:\windows\system32\msvcirt.dll	Application Experience	AeLookupSvc	Stopped	Manual	Share	Process
wsock32	6.1.7600.16385	18.00 KB (18,432 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\wsock32.dll	Application Layer Gateway Service	ALG	Stopped	Manual	Own	Process
tapi32	6.1.7600.16385	243.00 KB (248,832 bytes)	7/13/2009 7:41 PM	Microsoft Corporation	c:\windows\system32\tapi32.dll	Application Layer Gateway Service	ALG	Stopped	Manual	Own	Process
wmiperfclass	6.1.7600.16385	133.00 KB (136,192 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiperfclass.dll	Application Layer Gateway Service	ALG	Stopped	Manual	Own	Process
[Services]											
Application Experience											
Share Process											
normal localSystem 0											
Application Layer Gateway Service											
Own Process											
c:\windows\system32\alg.exe											
Normal NT AUTHORITY\LocalService 0											
Application Identity											
AppIDSvc											
Stopped											
Manual											
Share											
Process											
c:\windows\system32\svchost.exe -k											
localSystem 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											
localSystem 0											
Windows Audio											
AudioSrv											
Stopped											
Manual											
Share											
Process											
c:\windows\system32\svchost.exe -k											
localSystem 0											
Base Filtering Engine											
BFE											
Stopped											
Disabled											
Share											
Process											
c:\windows\system32\svchost.exe -k localservicenetwork											
Normal NT AUTHORITY\LocalService 0											
Background Intelligent Transfer Service											
BITS											
Stopped											
Manual											
Share											
Process											
c:\windows\system32\svchost.exe -k											
Normal LocalSystem 0											
Computer Browser											
Browser											
Stopped											
Disabled											
Share											
Process											
c:\windows\system32\svchost.exe -k netsvcs											
Normal LocalSystem 0											
Certificate Propagation											
CertPropSvc											
Stopped											
Disabled											
Share											
Process											
c:\windows\system32\svchost.exe -k											
netsvcs											
Normal LocalSystem 0											
HP Smart Array SAS/SATA Event Notification Service											
Cissesrv											
Running											
Auto											
Own											
Process											
c:\program files\hp\cissesrv\cissesrv.exe"											
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.exe											
Ignore											
LocalSystem 0											
COM+ System Application											
COMSysApp											
Stopped											
Manual											
Share											
Process											
c:\windows\system32\dllhost.exe											
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}											
Normal LocalSystem 0											
HP ProLiant iLO 3 Remote IML Service											
CpqRmc3											
Running											
Auto											
Share											
Process											
c:\program files\hewlett-packard\ilo3\service\proliantmonitor.exe"											
Normal LocalSystem 0											
Cryptographic Services											
CryptSvc											
Stopped											
Manual											
Share											
Process											
c:\windows\system32\svchost.exe -k networkservice											
Normal NT Authority\NetworkService 0											
DCOM Server Process Launcher											
DcomLaunch											
Running											
Auto											
Share											
Process											
c:\windows\system32\svchost.exe -k											
Normal LocalSystem 0											
Disk Defragmenter											
defragvc											
Stopped											
Manual											
Own											
Process											
c:\windows\system32\svchost.exe -k defragvc											
Normal localSystem 0											
DHCP Client											
Dhcp											
Running											
Auto											
Share											
Process											
c:\windows\system32\svchost.exe -k											
localSystem 0											
DNS Client											
Dnscache											
Running											
Auto											
Share											
Process											
c:\windows\system32\svchost.exe -k networkservice											
Normal NT AUTHORITY\NetworkService 0											
Wired AutoConfig											
dot3svc											
Stopped											
Manual											
Share											
Process											
c:\windows\system32\svchost.exe -k											

localsystemnetworkrestricted	Normal	localSystem	0	networkserviceandnoimpersonation	Normal	NT	
Diagnostic Policy Service	DPS	Stopped	Disabled	Share Process			
c:\windows\system32\svchost.exe -k localservicenetwork	Normal	NT AUTHORITY\LocalService	0	Server	LanmanServer	Stopped	Disabled
Extensible Authentication Protocol	EapHost	Stopped	Manual	Share Process			
c:\windows\system32\svchost.exe -k	Normal	localSystem	0	Workstation	LanmanWorkstation	Running	Auto
netsh	Normal	localSystem	0	Process	c:\windows\system32\svchost.exe -k networkservice	Normal	
Encrypting File System (EFS)	EFS	Stopped	Manual	Share Process			
c:\windows\system32\lsass.exe	Normal	LocalSystem	0	Link-Layer Topology Discovery Mapper	lltdsvc	Stopped	Manual
Windows Event Log	eventlog	Running	Auto	Share Process			
c:\windows\system32\svchost.exe -k	Normal	NT AUTHORITY\LocalService	0	localservice	Normal	NT AUTHORITY\LocalService	0
localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0	TCP/IP NetBIOS Helper	lmhosts	Running	Auto
COM+ Event System	EventSystem	Running	Auto	Process	c:\windows\system32\svchost.exe -k		
c:\windows\system32\svchost.exe -k localservice	Normal	NT AUTHORITY\LocalService	0	localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0
Microsoft Fibre Channel Platform Registration Service	FCRegSvc	Stopped	Manual	Share Process			
c:\windows\system32\svchost.exe -k	Normal	NT AUTHORITY\LocalService	0	Multimedia Class Scheduler	MMCSS	Stopped	Manual
localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0	Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	
Function Discovery Provider Host	fdpHost	Running	Manual	LocalSystem	0		
Share Process	c:\windows\system32\svchost.exe -k			Windows Firewall	MpsSvc	Stopped	Disabled
localservice	Normal	NT AUTHORITY\LocalService	0	Normal	NT Authority\LocalService	0	
Function Discovery Resource Publication	FDResPub	Stopped	Manual	Distributed Transaction Coordinator	MSDTC	Stopped	Disabled
Share Process	c:\windows\system32\svchost.exe -k			Own Process	c:\windows\system32\msdtc.exe	Normal	
localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0	NT AUTHORITY\NetworkService	0		
Windows Font Cache Service	FontCache	Stopped	Manual	Share Process			
c:\windows\system32\svchost.exe -k	Normal	NT AUTHORITY\LocalService	0	Microsoft iSCSI Initiator Service	MSiSCSI	Stopped	Manual
localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0	Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	
Windows Presentation Foundation Font Cache 3.0.0.0	FontCache3.0.0.0	Stopped	Manual	LocalSystem	0		
Own Process	c:\windows\microsoft.net\framework64\v3.0\wpf\presentationfont			Windows Installer	msiserver	Stopped	Manual
cache.exe	Normal	NT Authority\LocalService	0	c:\windows\system32\msiexec.exe /v		Own Process	
Group Policy Client	gpsvc	Running	Auto	LocalSystem	0	Normal	
c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0	SQL Server (MSSQLSERVER)	MSSQLSERVER	Stopped	Manual
LocalSystem	0			Own Process	"c:\program files\microsoft sql		
Human Interface Device Access	hidserv	Stopped	Manual	server\mssql10_50.mssqlserver\mssql\bin\sqlservr.exe" -smssqlserver			
Process	c:\windows\system32\svchost.exe -k			Normal	LocalSystem	0	
localsystemnetworkrestricted	Normal	LocalSystem	0	SQL Active Directory Helper Service	MSSQLServerADHelper100	Stopped	Manual
Health Key and Certificate Management	hkmsvc	Stopped	Manual	Share Process			
Share Process	c:\windows\system32\svchost.exe -k			files\microsoft sql server\100\shared\sqladhip.exe"		Normal	NT
netsh	Normal	localSystem	0	AUTHORITY\NETWORKSERVICE	0		
Windows CardSpace	idsvc	Stopped	Manual	Network Access Protection Agent	napagent	Stopped	Manual
"c:\windows\microsoft.net\framework64\v3.0\windows	Normal	LocalSystem	0	Share Process	c:\windows\system32\svchost.exe -k		
communication foundation\infocard.exe"	Normal	LocalSystem	0	networkservice	Normal	NT AUTHORITY\NetworkService	0
IKE and AuthIP IPsec Keying Modules	IKEEXT	Stopped	Auto	Netlogon	Netlogon	Stopped	Manual
Share Process	c:\windows\system32\svchost.exe -k			Process	c:\windows\system32\lsass.exe	Normal	LocalSystem
netsh	Normal	LocalSystem	0	0			
PnP-X IP Bus Enumerator	IPBusEnum	Stopped	Disabled	Network Connections	Netman	Running	Manual
Share Process	c:\windows\system32\svchost.exe -k			Process	c:\windows\system32\svchost.exe -k		
localsystemnetworkrestricted	Normal	LocalSystem	0	localsystemnetworkrestricted	Normal	LocalSystem	0
IP Helper	iphlpvc	Stopped	Disabled	Share Process			
c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0	Network List Service	netprofm	Stopped	Disabled
CNG Key Isolation	KeyIso	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k localservice	Normal	
c:\windows\system32\lsass.exe	Normal	LocalSystem	0	NT AUTHORITY\LocalService	0		
KtmRm for Distributed Transaction Coordinator	KtmRm	Stopped	Manual	Net.Tcp Port Sharing Service	NetTcpPortSharing	Stopped	Disabled
Manual	Share Process			Share Process			
c:\windows\system32\svchost.exe -k				"c:\windows\microsoft.net\framework64\v3.0\windows			
				communication foundation\smsvchost.exe"	Normal	NT	
				AUTHORITY\LocalService	0		
				Network Location Awareness	NlaSvc	Stopped	Disabled
				Process	c:\windows\system32\svchost.exe -k networkservice	Normal	
				NT AUTHORITY\NetworkService	0		
				Network Store Interface Service	nsi	Running	Auto
				Process	c:\windows\system32\svchost.exe -k localservice	Normal	
				NT Authority\LocalService	0		
				Performance Counter DLL Host	PerfHost	Stopped	Manual
				Process	c:\windows\syswow64\perfhost.exe	Normal	NT
				AUTHORITY\LocalService	0		
				Performance Logs & Alerts	pla	Stopped	Manual
				Process	c:\windows\system32\svchost.exe -k localservicenetwork	Normal	
				Normal	NT AUTHORITY\LocalService	0	

Plug and Play	PlugPlay	Running	Auto	Share Process		Remote Desktop Configuration	SessionEnv	Running	Manual
	c:\windows\system32\svchost.exe -k dcomlaunch			Normal	LocalSystem	Share Process	c:\windows\system32\svchost.exe -k		
IPsec Policy Agent	PolicyAgent	Stopped	Auto	Share Process		netsh	Normal	LocalSystem	0
	c:\windows\system32\svchost.exe -k networkservice\networkrestricted	Normal	NT Authority\NetworkService		0	Internet Connection Sharing (ICS)	Disabled	Share Process	Stopped
Power	Power	Running	Auto	Share Process			c:\windows\system32\svchost.exe -k	LocalSystem	0
	c:\windows\system32\svchost.exe -k dcomlaunch			Normal	LocalSystem	Shell Hardware Detection	ShellHWDetection	Running	Auto
User Profile Service	ProfSvc	Running	Auto	Share Process		netsh	Ignore	LocalSystem	0
	c:\windows\system32\svchost.exe -k netsvcs	Normal	NT Authority\LocalService		0	SNMP Trap	SNMPTRAP	Stopped	Manual
HP ProLiant Health Monitor Service	ProLiantMonitor	Running	Auto	Share Process		Process	c:\windows\system32\snmptrap.exe	Normal	NT
	"c:\program files\hewlett-packard\ilo 3\service\proliantmonitor.exe"	Normal	LocalSystem		0	AUTHORITY\LocalService			
Protected Storage	ProtectedStorage	Stopped	Manual	Share Process		Print Spooler	Spooler	Stopped	Disabled
	c:\windows\system32\lsass.exe	Normal	LocalSystem		0		c:\windows\system32\spoolsv.exe	Normal	Own Process
Remote Access Auto Connection Manager	RasAuto	Stopped	Manual	Share Process			LocalSystem	0	
	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem		0	Software Protection	spsvc	Stopped	Manual
Remote Access Connection Manager	RasMan	Stopped	Manual	Share Process			c:\windows\system32\spsvc.exe	Normal	NT
	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem		0	AUTHORITY\NetworkService			
Routing and Remote Access	RemoteAccess	Stopped	Disabled	Share Process		SPP Notification Service	sppuotify	Stopped	Disabled
	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem		0	Share Process	c:\windows\system32\svchost.exe -k	LocalService	Normal
Remote Registry	RemoteRegistry	Stopped	Disabled	Share Process		localservice	Normal	NT AUTHORITY\LocalService	0
	c:\windows\system32\svchost.exe -k regsvc	Normal	NT AUTHORITY\LocalService		0	SQL Server Browser	SQLBrowser	Stopped	Disabled
RPC Endpoint Mapper	RpcEptMapper	Running	Auto	Share Process		Process	"c:\program files (x86)\microsoft sql server\90\shared\sqlbrowser.exe"	Normal	NT
	c:\windows\system32\svchost.exe -k rpcss	Normal	NT AUTHORITY\NetworkService		0	AUTHORITY\LOCALSERVICE			
Remote Procedure Call (RPC) Locator	RpcLocator	Stopped	Manual	Own Process		SQL Server Agent (MSSQLSERVER)	SQLSERVERAGENT	Stopped	Manual
	c:\windows\system32\locator.exe	Normal	NT AUTHORITY\NetworkService		0	Stopped	Manual	Own Process	"c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\bin\sqlagent.exe" -i mssqlserver
Remote Procedure Call (RPC)	RpcSs	Running	Auto	Share Process		SQL Server VSS Writer	SQLWriter	Running	Auto
	c:\windows\system32\svchost.exe -k rpcss	Normal	NT AUTHORITY\NetworkService		0	Process	"c:\program files\microsoft sql server\90\shared\sqlwriter.exe"	Normal	LocalSystem
Resultant Set of Policy Provider	RSOPProv	Stopped	Manual	Share Process		SSDP Discovery	SSDPSRV	Stopped	Disabled
	c:\windows\system32\rsopprov.exe	Normal	LocalSystem		0		c:\windows\system32\svchost.exe -k	localserviceandnoimpersonation	Normal
Special Administration Console Helper	sacsrv	Stopped	Manual	Share Process		Secure Socket Tunneling Protocol Service	SstpSvc	Stopped	Manual
	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem		0	Share Process	c:\windows\system32\svchost.exe -k	localservice	Normal
Security Accounts Manager	SamSs	Running	Auto	Share Process		Microsoft Software Shadow Copy Provider	swprv	Stopped	Manual
	c:\windows\system32\lsass.exe	Normal	LocalSystem		0	Own Process	c:\windows\system32\svchost.exe -k swprv	Normal	LocalSystem
Smart Card	SCardSvr	Stopped	Manual	Share Process		HP ProLiant System Shutdown Service	sysdown	Running	Auto
	c:\windows\system32\svchost.exe -k localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService		0	Share Process	"c:\program files\hewlett-packard\ilo 3\service\proliantmonitor.exe"	Normal	LocalSystem
Task Scheduler	Schedule	Running	Auto	Share Process		Telephony TapiSrv	Stopped	Manual	Own Process
	c:\windows\system32\svchost.exe -k LocalSystem			Normal	0		c:\windows\system32\svchost.exe -k	Authority\NetworkService	0
Smart Card Removal Policy	SCPPolicySvc	Stopped	Manual	Share Process		TPM Base Services	TBS	Stopped	Manual
	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem		0	localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0
Secondary Logon	seclogon	Stopped	Manual	Share Process		Remote Desktop Services	TermService	Running	Manual
	c:\windows\system32\svchost.exe -k LocalSystem			Normal	0	Share Process	c:\windows\system32\svchost.exe -k	termsvcs	Normal
System Event Notification Service	SENS	Running	Auto	Share Process		Thread Ordering Server	THREADORDER	Stopped	Manual
	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem		0	Share Process	c:\windows\system32\svchost.exe -k	localservice	Normal
						Distributed Link Tracking Client	TrkWks	Stopped	Disabled
						Process	c:\windows\system32\svchost.exe -k	localsystemnetworkrestricted	Normal
						Windows Modules Installer	TrustedInstaller	Stopped	Manual
						Own Process	c:\windows\servicing\trustedinstaller.exe	Normal	LocalSystem
									0

Interactive Services Detection Process	UI0Detect	Stopped	Manual	Own	c:\windows\system32\svchost.exe -k	localssystemnetworkrestricted	Normal	LocalSystem	0
Remote Desktop Services UserMode Running	Port Redirector	UmRdpService	Manual	Share Process	c:\windows\system32\svchost.exe -k	localssystemnetworkrestricted	Normal	localSystem	0
UPnP Device Host	upnphost	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k	localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0
Desktop Window Manager Session Manager	UxSms	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k	localssystemnetworkrestricted	Normal	localSystem	0
Credential Manager	VaultSvc	Stopped	Manual	Share Process	c:\windows\system32\lsass.exe	0	Normal	LocalSystem	0
Virtual Disk	vds	Stopped	Manual	Own Process	c:\windows\system32\vds.exe	0	Normal	LocalSystem	0
Volume Shadow Copy Process	VSS	Stopped	Manual	Own	c:\windows\system32\vssvc.exe	0	Normal	LocalSystem	0
Windows Color System	WcsPlugInService	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	wcssvc	Normal	NT AUTHORITY\LocalService	0
Diagnostic Service Host	WdiServiceHost	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	localservice	Normal	NT AUTHORITY\LocalService	0
Diagnostic System Host	WdiSystemHost	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	localssystemnetworkrestricted	Normal	LocalSystem	0
Windows Event Collector Process	WeeSvc	Stopped	Manual	Share	c:\windows\system32\svchost.exe -k	networkservice	Normal	NT AUTHORITY\NetworkService	0
Problem Reports and Solutions Control Panel Support	werctrlsupport	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	netshvc	Normal	localSystem	0
Windows Error Reporting Service	WerSvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	wersvcgroup	Ignore	localSystem	0
WinHTTP Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	localservice	Normal	NT AUTHORITY\LocalService	0
Windows Management Instrumentation	Winmgmt	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k	netshvc	Ignore	localSystem	0
Windows Remote Management (WS-Management)	WinRM	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k	networkservice	Normal	NT AUTHORITY\NetworkService	0
WMI Performance Adapter Process	wmiApSrv	Stopped	Manual	Own	c:\windows\system32\wbem\wmiapsrv.exe	0	Normal	localSystem	0
Portable Device Enumerator Service	WPDBusEnum	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	localssystemnetworkrestricted	Normal	LocalSystem	0
Windows Update	wuauerv	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	netshvc	Normal	LocalSystem	0
Windows Driver Foundation - User-mode Driver Framework	Wudfsvc	Stopped	Manual	Share Process					

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Start Menu\Programs\AMD System Analysis Tools\SysCAT
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Analysis Tools\SysCAT DL380GH\Administrator
Start Menu\Programs\Maintenance DL380GH\Administrator:Start
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Start Menu\Programs\Microsoft Windows Performance Toolkit
DL380GH\Administrator:Start Menu\Programs\Microsoft
Windows Performance Toolkit DL380GH\Administrator
Start Menu\Programs\Startup DL380GH\Administrator:Start
Menu\Programs\Startup DL380GH\Administrator
Start Menu\Programs\StepMasterDL380GH\Administrator:Start
Menu\Programs\StepMaster DL380GH\Administrator

[Startup Programs]

Program	Command	User Name	Location
CPQTEAM	c:\program files\hp\ncu\cpqteam.exe	Public	HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
ATIModeChange	ati2mdxx.exe	Public	HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run

[OLE Registration]

Object	Local Server
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Paintbrush Picture	%systemroot%\system32\mspaint.exe
Package	Not Available
Microsoft PenInputPanel Control	Not Available

[Windows Error Reporting]

Time	Type	Details
6/7/2010 1:52 PM	Application Error	Faulting application name: wmiprvse.exe, version: 6.1.7600.16385, time stamp: 0x4a5bc794
Faulting module name: ole32.dll, version: 6.1.7600.16385, time stamp: 0x4a5be01a
Exception code: 0xc0000005
Fault offset: 0x00000000000039389
Faulting process id: 0xf10
Faulting application start time: 0x01cb054499ca2889
Faulting application path: C:\Windows\system32\wbem\wmiprvse.exe
Faulting module path: C:\Windows\system32\ole32.dll
Report Id: ea5accfb-723b-11df-970e-f4ce46be8637
6/6/2010 6:50 AM	Application Error	Faulting application name: wmiprvse.exe, version: 6.1.7600.16385, time stamp: 0x4a5bc794
Faulting module name: ole32.dll, version: 6.1.7600.16385, time stamp: 0x4a5be01a
Exception code: 0xc0000005
Fault offset: 0x00000000000039389
Faulting process id: 0xc48
Faulting application start time: 0x01cb04401537973b
Faulting application path: C:\Windows\system32\wbem\wmiprvse.exe
Faulting module path: C:\Windows\system32\ole32.dll
Report Id: d1691398-7137-11df-970e-f4ce46be8637
6/4/2010 11:45 PM	Application Error	Faulting application name: wmiprvse.exe, version: 6.1.7600.16385, time stamp: 0x4a5bc794
Faulting module name: ole32.dll, version: 6.1.7600.16385, time stamp: 0x4a5be01a
Exception code: 0xc0000005
Fault offset: 0x00000000000039389
Faulting process id: 0x880
Faulting application start time: 0x01cb033b59e2fe4a
Faulting application path: C:\Windows\system32\wbem\wmiprvse.exe
Faulting module path: C:\Windows\system32\ole32.dll
Report Id: 4c9d6143-7033-11df-970e-f4ce46be8637
5/26/2010 7:44 PM	Application Error	Faulting application name: dbgen.exe, version: 0.0.0.0, time stamp: 0x4beb365e
Faulting module name: dbgen.exe, version: 0.0.0.0, time stamp: 0x4beb365e
Exception code: 0xc0000094
Fault offset: 0x0000000000001989
Faulting process id: 0x728
Faulting application start time: 0x01cafd0bd3a41e47
Faulting application path: C:\HP_TPCH_KIT\setup\dbgen.exe
Faulting module path: C:\HP_TPCH_KIT\setup\dbgen.exe
Report Id: 12861c0a-68ff-11df-970e-f4ce46be8637
5/12/2010 7:31 PM	Application Error	Faulting application name: ProLiantMonitor.exe, version: 3.0.0.0, time stamp: 0x4b4d1128
Faulting module name: ProLiantMonitor.exe, version: 3.0.0.0, time stamp: 0x4b4d1128
Exception code: 0xc0000005
Fault offset: 0x000000000000030e9b
Faulting process id: 0x4e4
Faulting application start time: 0x01caf1512c8d0970
Faulting application path: C:\Program Files\Hewlett-Packard\iLO 3\service\ProLiantMonitor.exe
Faulting module path: C:\Program Files\Hewlett-Packard\iLO 3\service\ProLiantMonitor.exe
Report Id: 01af7137-5dfd- 11df-bb92-f4ce46be8637

6/29/2010 2:31 PM Windows Error Reporting Fault bucket , type 0
Event Name: ShellBrowserCancel
Response: Not available
Cab Id: 0
Problem signature: {F3364BA0-65B9-11CE-A9BA-00AA004AE837}
P2: Local
P3: 
P4: 
P5: 
P6: 
P7: 
P8: 
P9: 
P10: 
Attached files: 
These files may be available here: 
Analysis symbol: 
Rechecking for solution: 0
Report Id: 0bd17a60-838b-11df-a0ee-18a9054dd9e0
Report Status: 0

6/29/2010 2:31 PM Windows Error Reporting Fault bucket , type 0
Event Name: ShellBrowserCancel
Response: Not available
Cab Id: 0
Problem signature: {F3364BA0-65B9-11CE-A9BA-00AA004AE837}
P2: Local
P3: 
P4: 
P5: 
P6: 
P7: 
P8: 
P9: 
P10: 
Attached files: 
These files may be available here: 
C:\Users\Administrator\AppData\Local\Microsoft\Windows\WER\ReportQueue\AppHang_{F3364BA0-65B9-1_03f722b1c3a9f7342b324b90c4342939636d4_08a6781c
Analysis symbol: 
Rechecking for solution: 0
Report Id: 0bd17a60-838b-11df-a0ee-18a9054dd9e0
Report Status: 4

6/7/2010 1:52 PM Windows Error Reporting Fault bucket , type 0
Event Name: APPCRASH
Response: Not available
Cab Id: 0
Problem signature: wmiprvse.exe
P2: 6.1.7600.16385
P3: 4a5bc794
P4: ole32.dll
P5: 6.1.7600.16385
P6: 4a5be01a
P7: c0000005
P8: 000000000039389
P9: 
P10: 
Attached files: 
These files may be available here: 
C:\ProgramData\Microsoft\Windows\WER\Report Queue\AppCrash_wmiprvse.exe_d96fa3e73429e236c547c52b1863b14ed594c35_6dcf1f6c
Analysis symbol: 
Rechecking for solution: 0
Report Id: ea5accfb-723b-11df-970e-f4ce46be8637
Report Status: 4

6/6/2010 6:50 AM Windows Error Reporting Fault bucket , type 0
Event Name: APPCRASH
Response: Not available
Cab Id: 0
Problem signature: wmiprvse.exe
P2: 6.1.7600.16385
P3: 4a5bc794
P4: ole32.dll
P5: 6.1.7600.16385
P6: 4a5be01a
P7: c0000005
P8: 000000000039389
P9: 
P10: 
Attached files: 
These files may be available here: 
C:\ProgramData\Microsoft\Windows\WER\Report Queue\AppCrash_wmiprvse.exe_d96fa3e73429e236c547c52b1863b14ed594c35_50c68c5e
Analysis symbol: 
Rechecking for solution: 0
Report Id: d1691398-7137-11df-970e-f4ce46be8637
Report Status: 4

6/4/2010 11:45 PM Windows Error Reporting Fault bucket , type 0
Event Name:

APPCRASH
Response: Not available
Cab Id: 0
Problem signature: wmiprvse.exe
P2: 6.1.7600.16385
P3: 4a5bc794
P4: ole32.dll
P5: 6.1.7600.16385
P6: 4a5be01a
P7: c0000005
P8: 000000000039389
P9: 
P10: 
Attached files: 
These files may be available here: 
C:\ProgramData\Microsoft\Windows\WER\Report Queue\AppCrash_wmiprvse.exe_d96fa3e73429e236c547c52b1863b14ed594c35_57af37d6
Analysis symbol: 
Rechecking for solution: 0
Report Id: 4c9d6143-7033-11df-970e-f4ce46be8637
Report Status: 4

5/26/2010 7:44 PM Windows Error Reporting Fault bucket , type 0
Event Name: APPCRASH
Response: Not available
Cab Id: 0
Problem signature: dbgeng.exe
P2: 0.0.0.0
P3: 4beb365e
P4: dbgeng.exe
P5: 0.0.0.0
P6: 4beb365e
P7: c0000094
P8: 00000000001989
P9: 
P10: 
Attached files: 
These files may be available here: 
C:\Users\Administrator\AppData\Local\Microsoft\Windows\WER\ReportArchive\AppCrash_dbgeng.exe_e2196ccb578cda6fe5d459a38bc79521453ad6_2c95da34
Analysis symbol: 
Rechecking for solution: 0
Report Id: 12861c0a-68ff-11df-970e-f4ce46be8637
Report Status: 0

5/18/2010 1:17 PM Windows Error Reporting Fault bucket , type 0
Event Name: AppHangB1
Response: Not available
Cab Id: 0
Problem signature: taskmgr.exe
P2: 6.1.7600.16385
P3: 4a5bc3ee
P4: c00c
P5: 0
P6: 
P7: 
P8: 
P9: 
P10: 
Attached files: 
These files may be available here: 
C:\Users\Administrator\AppData\Local\Microsoft\Windows\WER\ReportArchive\AppHang_taskmgr.exe_ae94e055452c2a7ad971d629d2e6b4f684bc24_1f18de5f
Analysis symbol: 
Rechecking for solution: 0
Report Id: c2f188a0-627f-11df-accd-f4ce46be8637
Report Status: 0

5/12/2010 7:31 PM Windows Error Reporting Fault bucket , type 0
Event Name: APPCRASH
Response: Not available
Cab Id: 0
Problem signature: ProLiantMonitor.exe
P2: 3.0.0.0
P3: 4b4d1128
P4: ProLiantMonitor.exe
P5: 3.0.0.0
P6: 4b4d1128
P7: c0000005
P8: 000000000030e9b
P9: 
P10: 
Attached files: 
C:\Windows\Temp\WER8A2E.tmp.appcompat.txt 
C:\Windows\Temp\WER8A5D.tmp.WERInternalMetadata.xml 
C:\Windows\Temp\WER8A5E.tmp.hdmpp 
C:\Windows\Temp\WER8BE5.tmp.mdmp 
These files may be available here: 
C:\ProgramData\Microsoft\Windows\WER\Report Queue\AppCrash_ProLiantMonitor_2a334637958a2d8045dec253ce9e8a606

275_cab_0fe38c02

Analysis symbol:

Rechecking for solution: 0
Report Id:
01af7137-5dfd-11df-bb92-f4ce46be8637
Report Status: 0

5/12/2010 7:31 PM Windows Error Reporting Fault bucket , type
0
Event Name:
APPCRASH
Response: Not
available
Cab Id:
0

Problem
signature:
P1:
ProLiantMonitor.exe
P2: 3.0.0.0
P3:
4b4d1128
P4:
ProLiantMonitor.exe
P5: 3.0.0.0
P6:
4b4d1128
P7: c0000005
P8:
000000000030e9b
P9: 
P10:


Attached
files:
C:\Windows\Temp\WER8A2E.tmp.appcompat.txt

C:\Windows\Temp\WER8A5D.tmp.WERInternalMetad
ata.xml
C:\Windows\Temp\WER8A5E.tmp.hdmp�

0d;
C:\Windows\Temp\WER8BE5.tmp.mdmp


These files may be available
here:
C:\ProgramData\Microsoft\Windows\WER\Report
Queue\AppCrash_ProLiantMonitor._2a334637958a2d8045dee253ce9e8a606
275_cab_0fe38c02

Analysis symbol:

Rechecking for solution: 0
Report Id:
01af7137-5dfd-11df-bb92-f4ce46be8637
Report Status: 4

5/18/2010 1:18 PM Application Hang The program taskmgr.exe
version 6.1.7600.16385 stopped interacting with Windows and was closed.
To see if more information about the problem is available, check the problem
history in the Action Center control panel.
Process ID:
1d0c
Start Time: 01caf68c79787c55

Termination Time: 4399
Application Path:
C:\Windows\system32\taskmgr.exe
Report Id: c2f188a0-
627f-11df-accd-f4ce46be8637

Appendix B: Database Build Scripts

B.1. CreateDatabase.sql

Create Database tpch100g on

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

(name=tpch100g1,filename='c:\dev\tpch_1\tpch1.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g2,filename='c:\dev\tpch_2\tpch2.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g3,filename='c:\dev\tpch_3\tpch3.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g4,filename='c:\dev\tpch_4\tpch4.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g5,filename='c:\dev\tpch_1\tpch5.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g6,filename='c:\dev\tpch_2\tpch6.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g7,filename='c:\dev\tpch_3\tpch7.ldf',size=20000mb,filegro
wth=0),

(name=tpch100g8,filename='c:\dev\tpch_4\tpch8.ldf',size=20000mb,filegro
wth=0),

FileGroup LOAD_FG

(name=tpch1, filename='z:\load1.ldf',size=20000mb,filegrowth=0),
(name=tpch2, filename='z:\load2.ldf',size=20000mb,filegrowth=0),
(name=tpch3, filename='z:\load3.ldf',size=20000mb,filegrowth=0),
(name=tpch4, filename='z:\load4.ldf',size=20000mb,filegrowth=0),
(name=tpch5, filename='z:\load5.ldf',size=20000mb,filegrowth=0),
(name=tpch6, filename='z:\load6.ldf',size=20000mb,filegrowth=0),
(name=tpch7, filename='z:\load7.ldf',size=20000mb,filegrowth=0),
(name=tpch8, filename='z:\load8.ldf',size=20000mb,filegrowth=0)

Log on

(name=tpch100gLog,filename='C:\Logs\tpch100g_Log1.mdf',si
ze=20000mb,filegrowth=100)

B.2. CreateTables.sql

-- File: CREATETABLES.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.8.0-1006
-- Copyright Microsoft, 2008
--

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. 2.8.0-1006
--        Copyright Microsoft, 2008
--

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. 2.8.0-1006-1004
--        Copyright Microsoft, 2008
--

CREATE INDEX PS_SUPPKEY_IDX ON PARTSUPP(PS_SUPPKEY)
WITH ( FILLFACTOR=100, SORT_IN_TEMPDB=ON, MAXDOP=24)
ON DATA_FG

CREATE CLUSTERED INDEX L_SHIPDATE_CLUIDX ON
LINEITEM(L_SHIPDATE)
WITH ( FILLFACTOR=95, SORT_IN_TEMPDB=OFF, MAXDOP=24)
ON DATA_FG

CREATE INDEX L_ORDERKEY_IDX ON LINEITEM(L_ORDERKEY)
WITH ( FILLFACTOR=95, SORT_IN_TEMPDB=ON, MAXDOP=24)
ON DATA_FG

CREATE INDEX L_PARTKEY_IDX ON LINEITEM(L_PARTKEY)
WITH (FILLFACTOR=95, SORT_IN_TEMPDB=ON, MAXDOP=24)
ON DATA_FG

```

B.5. CreateFK.sql

```

--
-- File:  CREATERFK.SQL
--        Microsoft TPC-H Benchmark Kit Ver. 2.8.0-1006
--        Copyright Microsoft, 2008
--

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:\backup\backup1.bak',
disk='z:\backup\backup2.bak',
disk='z:\backup\backup3.bak',
disk='z:\backup\backup4.bak',
disk='z:\backup\backup5.bak',
disk='z:\backup\backup6.bak',
disk='z:\backup\backup7.bak',
disk='z:\backup\backup8.bak',
disk='z:\backup\backup9.bak',
disk='z:\backup\backup10.bak',
disk='z:\backup\backup11.bak',
disk='z:\backup\backup12.bak',
disk='z:\backup\backup13.bak',
disk='z:\backup\backup14.bak',
disk='z:\backup\backup15.bak',
disk='z:\backup\backup16.bak'
with init,stats=1
```

B.7. RestoreDatabase.sql

```
restore database tpch100g from
disk='z:\backup\backup1.bak',
disk='z:\backup\backup2.bak',
```

```
disk='z:\backup\backup3.bak',
disk='z:\backup\backup4.bak',
disk='z:\backup\backup5.bak',
disk='z:\backup\backup6.bak',
disk='z:\backup\backup7.bak',
disk='z:\backup\backup8.bak',
disk='z:\backup\backup9.bak',
disk='z:\backup\backup10.bak',
disk='z:\backup\backup11.bak',
disk='z:\backup\backup12.bak',
disk='z:\backup\backup13.bak',
disk='z:\backup\backup14.bak',
disk='z:\backup\backup15.bak',
disk='z:\backup\backup16.bak'
with stats=1, replace
```

B.8. MoveTempDB.sql

```
-- File: MOVETEMPDB.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.06-1002
-- Copyright Microsoft, 2008
```

```
alter database tempdb modify file
(name='tempdev',filename='c:\dev\tpch_1\tempdb1.mdf')
alter database tempdb modify file
(name='templog',filename='C:\Logs\templog.ldf')
```

B.9. ResizeTempDB.sql

```
-- File: RESIZETEMPDB.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.06-1002
-- Copyright Microsoft, 2008
```

```
alter database tempdb add file
(name=tempdev2,
filename='c:\dev\tpch_2\tempdb2.mdf',size=220MB,filegrowth=100MB),
(name=tempdev3,
filename='c:\dev\tpch_3\tempdb3.mdf',size=220MB,filegrowth=100MB),
(name=tempdev4,
filename='c:\dev\tpch_4\tempdb4.mdf',size=220MB,filegrowth=100MB),
(name=tempdev5,
filename='c:\dev\tpch_1\tempdb5.mdf',size=220MB,filegrowth=100MB),
(name=tempdev6,
filename='c:\dev\tpch_2\tempdb6.mdf',size=220MB,filegrowth=100MB),
(name=tempdev7,
filename='c:\dev\tpch_3\tempdb7.mdf',size=220MB,filegrowth=100MB),
(name=tempdev8,
filename='c:\dev\tpch_4\tempdb8.mdf',size=220MB,filegrowth=100MB)
```

B.10. DelLoadFg.sql

```
alter database tpch100g remove file tpch1
alter database tpch100g remove file tpch2
alter database tpch100g remove file tpch3
alter database tpch100g remove file tpch4
alter database tpch100g remove file tpch5
alter database tpch100g remove file tpch6
alter database tpch100g remove file tpch7
alter database tpch100g remove file tpch8
alter database tpch100g remove filegroup LOAD_FG
```

Appendix C: Query Text and Output

Qualification Queries and Output

C.1. 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_EXTENDEDPRI)
         AS SUM_BASE_PRICE,
       SUM(L_EXTENDEDPRI*(1-L_DISCOUNT))
         AS SUM_DISC_PRICE,
       SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)*(1+L_TAX))
         AS SUM_CHARGE,
       AVG(L_QUANTITY)
         AS AVG_QTY,
       AVG(L_EXTENDEDPRI)
         AS AVG_PRICE,
       AVG(L_DISCOUNT)
         AS AVG_DISC,
       COUNT_BIG(*)
         AS COUNT_ORDER
FROM   LINEITEM
WHERE  L_SHIPDATE <= dateadd(dd, 90, cast('1998-12-01' as
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 0.050093 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)

C.2. 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
                               FROM PARTSUPP,
                               SUPPLIER,
                               NATION,
                               REGION
WHERE P_PARTKEY
= PS_PARTKEY AND
= PS_SUPPKEY AND
= N_NATIONKEY AND
= R_REGIONKEY AND
= '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 J8fcXWwTqM 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 t5L67YdBYyH6o,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 Y28ITVeYriT3klGdV2K8fSZ
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 WCNfBPZeSXh3h,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 2Z0JGkiv01Y00oCFwUGfviIbhzcDy 16-464-
517-8943 carefully bold accounts doub

```

(100 row(s) affected)

C.3. Qualification Query 3

-- using default substitutions

/* TPC_H Query 3 - Shipping Priority */

```

SELECT TOP 10
L_ORDERKEY,
SUM(L_EXTENDEDPRISE*(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
-----

```

L_ORDERKEY	REVENUE	O_ORDERDATE
2456423	406181.011100	1995-03-05 00:00:00.0000 0
3459808	405838.698900	1995-03-04 00:00:00.0000 0
492164	390324.061000	1995-02-19 00:00:00.0000 0
1188320	384537.935900	1995-03-09 00:00:00.0000 0
2435712	378673.055800	1995-02-26 00:00:00.0000 0
4878020	378376.795200	1995-03-12 00:00:00.0000 0
5521732	375153.921500	1995-03-13 00:00:00.0000 0
2628192	373133.309400	1995-02-22 00:00:00.0000 0
993600	371407.459500	1995-03-05 00:00:00.0000 0
2300070	367371.145200	1995-03-13 00:00:00.0000 0

(10 row(s) affected)

C.4. 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

O_ORDERPRIORITY	ORDER_COUNT
1-URGENT	10594
2-HIGH	10476
3-MEDIUM	10410
4-NOT SPECIFIED	10556
5-LOW	10487

(5 row(s) affected)

C.5. 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)

C.6. 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)

C.7. 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
              O_ORDERKEY = L_ORDERKEY
              C_CUSTKEY   = O_CUSTKEY
              S_NATIONKEY =
              C_NATIONKEY =
              N1.N_NATIONKEY AND
              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)

C.8. 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
        P_TYPE = 'ECONOMY
ANODIZED STEEL'
) 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)

```

C.9. 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)

C.10. 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 Eioyjf4pp 22-895-641-3466
requests sleep blithely about the furiously i
143347 Customer#000143347 721002.694800 2557.470000
EGYPT IaReFYv,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 01c9CILnNtfOQYmZj 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 rrM27N 2qBnzc5WBauxbA
33-442-824-8191 pending, final ideas haggle final requests. unusual, regular
asymptotes affix according to the even foxes.
54289 Customer#000054289 585603.391800 5583.020000
IRAN vXCxoCsU0Bad5JQI ,oobkZ 20-834-292-
4707 express requests sublute blithely regular requests. regular, even ideas
solve.
39922 Customer#000039922 584878.113400 7321.110000
GERMANY Zgy4s50I2GKN4pLDPBU8m342gIw6R 17-
147-757-8036 even pinto beans haggle. slyly bold accounts inte
6226 Customer#000006226 576783.760600 2230.090000
UNITED KINGDOM 8gPu8,NPGkfyQQ0hcIYUGPIBwc,ybP5g,
33-657-701-3391 quickly final requests against the regular instructions wake
blithely final instructions. pa
922 Customer#000000922 576767.533300 3869.250000
GERMANY Az9RFaut7NkPnc5zSD2PwHgVvr4jRzq 17-
945-916-9648 boldly final requests cajole blith
147946 Customer#000147946 576455.132000 2030.130000
ALGERIA iANyZHjqhy7AJahOpTrYyhJ 10-886-956-
3143 furiously even accounts are blithely above the furiously
115640 Customer#000115640 569341.193300 6436.100000
ARGENTINA Vtgfia9qI 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 ChqEoK43OysjdHbtKCP6dKqjNyvv9 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)

C.11. 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_NATIONKEY =
N_NAME =
)
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)

C.12. 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)
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)

C.13. 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)

C.14. 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)

C.15. 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)

C.16. 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)

C.17. 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)

C.18. 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,
O_TOTALPRICE
ORDER BY
O_TOTALPRICE  DESC,
O_ORDERDATE

```

C_NAME C_CUSTKEY O_ORDERKEY
O_ORDERDATE O_TOTALPRICE

```

-----
Customer#000128120 128120 4722021 1994-04-07
00:00:00.000 544089.090000 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)

C.19. Qualification Query 19

-- using default substitutions

/* TPC_H Query 19 - Discounted Revenue */

```

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

```


3083843.057800

(1 row(s) affected)

C.20. 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 (
    SELECT PS_SUPPKEY
    FROM PARTSUPP
    WHERE PS_PARTKEY IN (
        SELECT P_PARTKEY
        FROM PART
        WHERE P_NAME like 'forest%'
    )
    AND
    PS_AVAILQTY > (
        SELECT 0.5 * sum(L_QUANTITY)
        FROM LINEITEM
        WHERE L_PARTKEY =
              PS_PARTKEY
              AND
              L_SUPPKEY =
              PS_SUPPKEY
              AND
              L_SHIPDATE >= '1994-01-01'
              AND
              L_SHIPDATE <
              dateadd(yy,1,cast('1994-01-01' as 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 Br7e1nnt1yxrw6ImgpJ7YdhFDjuBf
Supplier#000000378 FfbhyCxWvcPrO8ltp9
Supplier#000000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530 0qwCMwobKY OcmLyfRXlagA8ukENJv,
Supplier#000000688 D fw5ocppmZpYBBIPI718hCihLDZ5KhKX
Supplier#000000710 f19YPvOyb QoYwjKC,oPycpGfieBAcwKJo
Supplier#000000736 l6i2nMwVuovfKnuVgaSGK2rDy65DIAFLegil7
Supplier#000000761 zLSLeLQUj2XrvTTFnv7WAcYZGvvMTx882d4
Supplier#000000884 bmhEShejas

```

```

Supplier#000000887 urEaTejH5POADP2ARrf
Supplier#000000935 ij98czM 2KzWe7dDToxB8sq0UfCdvrx
Supplier#000000975 ,AC e,tBpNwKb5xMUzeohxlRn, hdZJo73gFQF8y
Supplier#000001263 rQWr6nf8ZhB2TAiIDlvo5I0

```

... additional rows deleted ...

```

Supplier#000009812 APFRMy3lCbgFga53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmmUUoeyy7v
Supplier#000009869 ucLqxzrpBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdpAHRzrIt,UQFZE
Supplier#000009974 7wJ,J5DKcxSU4Kp1cQLPbcAvB5AsvKT

```

(204 row(s) affected)

C.21. 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#000000262 17
Supplier#000000496 17

```

```

Supplier#000002160 17
Supplier#000002301 17
Supplier#000002540 17
Supplier#000003063 17
Supplier#000005178 17
Supplier#000008331 17
Supplier#000002005 16
Supplier#000002095 16
Supplier#000005799 16
Supplier#000005842 16

```

... 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)

C.22. 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

D.1. Stream0 Seed : 701121312

14	1996-07-01						
2	43	NICKEL	ASIA				
9	magenta						
20	chiffon	1993-01-01	KENYA				
6	1993-01-01	0.09	24				
17	Brand#31	LG BAG					
18	312						
8	GERMANY	EUROPE	LARGE ANODIZED BRASS				
21	CANADA						
13	pending	accounts					
3	BUILDING	1995-03-16					
22	18	32	21	27	13	29	
	22						
16	Brand#43	STANDARD PLATED	42	8			
	34	29	48	9	15	21	
4	1995-06-01						
11	FRANCE	0.0000010000					
15	1995-07-01						
1	96						
10	1994-07-01						
19	Brand#21	Brand#13	Brand#53	9	19	28	
5	MIDDLE EAST	1993-01-01					
7	UNITED STATES	GERMANY					
12	MAIL	TRUCK	1996-01-01				

D.2. Stream1 Seed : 701121313

21	SAUDI ARABIA						
3	HOUSEHOLD	1995-03-01					
18	313						
5	AMERICA	1993-01-01					
11	ROMANIA	0.0000010000					
7	MOZAMBIQUE	UNITED STATES					
6	1993-01-01	0.07	25				
20	mint	1997-01-01	EGYPT				
17	Brand#33	LG PKG					
12	TRUCK	FOB	1993-01-01				
16	Brand#23	MEDIUM BRUSHED	40	27			
	24	32	43	15	34	48	
15	1993-03-01						
13	unusual	deposits					
10	1993-04-01						
2	31	TIN	AFRICA				
8	UNITED STATES	AMERICA	MEDIUM				
	POLISHED STEEL						
14	1996-10-01						
19	Brand#23	Brand#51	Brand#52	4	20	24	
9	lavender						
22	14	28	17	19	11	21	
	16						
1	104						
4	1993-03-01						

D.3. Stream2 Seed : 701121314

6	1993-01-01	0.04	25				
17	Brand#35	LG DRUM					
14	1997-01-01						
16	Brand#13	PROMO ANODIZED	18	45	8		
	38	22	10	16	27		
19	Brand#25	Brand#34	Brand#41	10	10	21	
10	1994-01-01						
9	honeydew						
2	19	COPPER	ASIA				
15	1995-10-01						
8	MOZAMBIQUE	AFRICA	MEDIUM BRUSHED				
	STEEL						
5	ASIA	1993-01-01					
22	24	14	10	22	29	32	
	27						
12	RAIL	TRUCK	1997-01-01				
7	GERMANY	MOZAMBIQUE					
13	unusual	deposits					
18	315						
1	112						
4	1995-09-01						
20	white	1995-01-01	CHINA				
3	AUTOMOBILE	1995-03-18					
11	GERMANY	0.0000010000					
21	JAPAN						

D.4. Stream3 Seed : 701121315

8	INDIA	ASIA	SMALL BRUSHED STEEL				
5	EUROPE	1993-01-01					
4	1993-06-01						
6	1993-01-01	0.09	24				
17	Brand#32	MED BAG					
7	UNITED STATES	INDIA					
1	120						
18	312						
22	18	20	16	12	21	11	
	23						
14	1997-04-01						
9	frosted						
10	1994-10-01						
15	1993-07-01						
11	SAUDI ARABIA	0.0000010000					
20	indian	1993-01-01	INDIA				
2	6	BRASS	AFRICA				
21	EGYPT						
19	Brand#33	Brand#12	Brand#45	5	11	28	
13	unusual	deposits					
16	Brand#43	SMALL PLATED	46	21	39		
	18	36	3	23	28		
12	AIR	MAIL	1997-01-01				
3	HOUSEHOLD	1995-03-03					

D.5. Stream4 Seed : 701121316

5	MIDDLE EAST	1994-01-01				
21	RUSSIA					
14	1997-08-01					
19	Brand#35	Brand#55	Brand#45	10	12	24
15	1996-01-01					
17	Brand#34	MED PKG				
12	REG AIR MAIL	1997-01-01				
6	1994-01-01	0.07	24			
4	1996-01-01					
9	dim					
8	ALGERIA AFRICA	SMALL PLATED STEEL				
16	Brand#23	LARGE POLISHED	27	41	9	
	47	23	2	49	8	
11	INDIA	0.0000010000				
2	44	NICKEL EUROPE				
10	1993-08-01					
18	314					
1	67					
13	unusual deposits					
7	MOZAMBIQUE	ALGERIA				
22	33	25	30	34	15	12
	16					
3	AUTOMOBILE	1995-03-20				
20	sandy	1997-01-01	UNITED KINGDOM			

D.6. Stream5 Seed : 701121317

21	KENYA					
15	1993-10-01					
4	1993-10-01					
6	1994-01-01	0.04	25			
7	INDIA PERU					
16	Brand#13	STANDARD ANODIZED	31	13		
	30	27	41	15	16	14
19	Brand#42	Brand#33	Brand#34	6	13	20
18	312					
14	1997-11-01					
22	23	17	25	22	20	24
	33					
11	VIETNAM	0.0000010000				
13	unusual deposits					
3	FURNITURE	1995-03-05				
1	75					
2	32	TIN AFRICA				
5	AFRICA	1994-01-01				
8	PERU AMERICA	SMALL ANODIZED STEEL				
20	deep	1995-01-01	JORDAN			
12	FOB MAIL	1997-01-01				
17	Brand#31	JUMBO CASE				
10	1994-05-01					
9	cornflower					

Appendix E: Refresh Function Source Code

E.1. CreateRF1Proc.sql

```
-- File:  CREATERF1PROC.SQL
--        Microsoft TPC-H Benchmark Kit Ver. 1.00
--        Copyright Microsoft, 1999
--
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
    SET NOCOUNT OFF
    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 'Start RF1'
```

```
--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_SUPPKY,L_LINENUMBER,L_QUAN
TITY,
L_EXTENDEDPRI,
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_SUPPKY,L_LINENUMBER,L_QUAN
TITY,
L_EXTENDEDPRI,
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 LINTITEM 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
select @startdate, @edate
EXEC sp_executesql @liSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
select @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 @ErrorNumber =
@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
select 'End RF1'
END
GO

```

E.2. CreateRF2Proc.sql

```

-- File: CREATERF2PROC.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 1.00
-- Copyright Microsoft, 1999
--
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
SET NOCOUNT OFF
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 'start RF2'
--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
select @startdate, @edate
EXEC sp_executesql @orderSql, N'startdate DATE,
@edate DATE', @startdate, @edate
select @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 =
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
}

the inserts
IF (@success = 0) -- deadlock - redo
    GOTO DELETE_TRANS
COMMIT TRANSACTION
SET @startdate = @edate
SET @edate = dateadd(day, @range, @edate)
IF (@edate > @enddate)
    SET @edate = @enddate
END
select 'End RF2'
END
GO

```


Appendix F: Implementation Specific Layer and Source Code

F.1. Setup.cmd

```
echo off

rem
rem Modify the following parameters for your configuration
rem

set DB=tpch100g

set HOMEDRIVE=C:
set HOMEDIR=\HP_TPCH_KIT\Setup
set OUTPUTDRIVE=C:
set OUTPUTDIR=\HP_TPCH_KIT\Output
set SCALEFACTOR=100
set DBGEN_SEGMENTS=32
set DBGEN_PARALLELISM=32
set FLATFILEDRIVE=z:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=\
set RF1_PARALLELISM=32
set RF2_PARALLELISM=32
set UPDATEDRIVE=C:
set UPDATEDIR=\UF_Flatfiles
set UPDATE_SETS=14

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 /1 %i in (1,1,%DBGEN_SEGMENTS%) do copy dists.dss
%FLATFILEDRIVE%\%FLATFILEDIR%%i%FLATFILESUBDIR%
copy dists.dss %UPDATEDRIVE%%UPDATEDIR%
for /1 %i in (1,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS%)
do call :DBGEN_ITERATE %i

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

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

:DBGEN
%FLATFILEDRIVE%
cd %FLATFILEDIR%%2%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 :BULKINSERT %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%\dboptionTruncOFF.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 -I -E -s, -w300 -Q"sp_configure" -
o%OUTPUTPATH%\configure.out
sqlcmd -E -I -e -w300 -d %DB% -i RI-test.sql -o %OUTPUTPATH%\RI-
test.out
sqlcmd -E -I -w3000 -Q"dbcc sqlperf(logspace)" -o
%OUTPUTPATH%\logspace.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=\\UF_Flatfiles
set UPDATESSET=7
set UPDATESSEGMENTS=32
set SEED=701121312
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"
sqlcmd -I -E -d%DB% -i RF_counts.sql -o
%OUTPUTPATH%\Start_RF_Row_Count.out -b
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%
sqlcmd -I -E -d%DB% -i RF_counts.sql -o
%OUTPUTPATH%\Post_RF1_Row_Count_Stream0.out -b
rem sqlcmd -I -E -d%DB% -Q "checkpoint" -o
%OUTPUTPATH%\RF1_checkpoint.out -b
rem sqlcmd -I -E -d%DB% -i cleantemp.sql -o
%OUTPUTPATH%\CleanTempRF1.out -b

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())" -
I300
sqlcmd -I -E -d%DB% -i RF_counts.sql -o
%OUTPUTPATH%\Post_RF2_Row_Count_Stream0.out -b
rem sqlcmd -I -E -d%DB% -Q "checkpoint" -o
%OUTPUTPATH%\RF2_checkpoint.out -b
rem sqlcmd -I -E -d%DB% -i cleantemp.sql -o
%OUTPUTPATH%\CleanTempRF2.out -b

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_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%
sqlcmd -I -E -d%DB% -i RF_counts.sql -o
%OUTPUTPATH%\Post_RF1_Row_Count_Stream%1.out -b

sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('RF2',%1,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%
sqlcmd -I -E -d%DB% -i RF_counts.sql -o
%OUTPUTPATH%\Post_RF2_Row_Count_Stream%1.out -b

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 order by START" -
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
sqlcmd -E -I -w3000 -Q"dbcc sqlperf(logspace)" -o
%OUTPUTPATH%\logspace.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\I/O System" /s >%OUTPUTPATH%\session.reg
reg query
"HKLM\SYSTEM\CurrentControlSet\Services\hpqcissb\Parameters" /s
>%OUTPUTPATH%\array.reg
reg query "HKLM\SYSTEM\CurrentControlSet\Control\PriorityControl" /s
>%OUTPUTPATH%\priority.reg

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

rem
rem Subroutine for 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_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 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);
}
}

```


Appendix G: Price Quotations & Verification

Hewlett-Packard
Daniel Pol
SH 249
Houston, TX 77077

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
810-08553	SQL Server 2008 R2 Enterprise Edition <i>Server License with 25 CALs</i> <i>Discount Schedule: Open Program - Level C</i> <i>Unit Price reflects a 40% discount from the retail unit price of \$13,969.</i>	\$8,318	1	\$8,318
359-05354	SQL Server 2008 R2 Client Access License <i>Discount Schedule: Open Program - Level C</i> <i>Unit Price reflects a 30% discount from the retail unit price of \$163.</i>	\$114	25	\$2,850
P72-04217	Windows Server 2008 R2 Enterprise Edition <i>Server License with 25 CALs</i> <i>Discount Schedule: Open Program - Level C</i> <i>Unit Price reflects a 42% discount from the retail unit price of \$3,999.</i>	\$2,310	1	\$2,310
N/A	Microsoft Problem Resolution Services <i>Professional Support</i> <i>(1 Incident).</i>	\$259	1	\$259

All products are currently orderable and available through Microsoft's normal distribution channels. A list of Microsoft's resellers can be found at the Microsoft Product Information Center at <http://www.microsoft.com/products/info/render.aspx?view=22&type=how>

Defect support is included in the purchase price. Additional support is available from Microsoft PSS on an incident by incident basis at \$259 per call.

This quote is valid for the next 90 days.

Reference ID: TPCH_g3wOpiq6ZAjJNM+DREbYWNCCDVhXul+I_V1.0.0.

Appendix H: TPC-Energy Disclosure Report

H.1. TPC-Energy Clause 2-related items (Methodology)

H.1.1. Minimum ambient temperature

The minimum ambient temperature must be disclosed

Page 4 of the executive summary contains this information.

H.1.2. External electric power source characteristics

The characteristics of the external electric power source must be disclosed. In particular, the voltage, frequency in Hertz, and phase information must be reported.

The external electric power source has the following characteristics: 208V, 60Hz, single phase.

H.1.3. Air-pressure alterations

A statement is required that assures that nothing was done to alter the air-pressure in the measurement environment.

Nothing was done to alter the air-pressure in the measurement environment.

H.1.4. Temperature measurement

A description of where the temperature was measured and how it was determined that this was representative of the lowest ambient temperature is required.

Temperature was measured at the SUT air inlet and no air conditioning returns were blowing at the SUT.

H.1.5. Cooling method

If a method of cooling other than circulation of ambient air is employed in the REC, a statement describing this method must be included.

No other method of cooling was used.

H.1.6. PTD license

To be compliant with licenses associated with EMS, the following statement must be included in every FDR which contains a TPC-Energy Metric:

The power and temperature characteristics of the MEC were measured using TPC's Energy Measurement Software (EMS). This includes the EMS-PTD, a modified version of the SPEC PTDaemon, which is provided under license from the Standard Performance Evaluation Corporation (SPEC).

H.2. TPC-Energy Clause 3-related items (Metrics)

H.2.1. Primary Metric

The normalized work derived from the Performance Metric (as described in Clause 3.2.1) must be disclosed

The computation for total energy used for each measurement segment that contributes to a Performance Metric must be disclosed. If the energy of the entire Priced Configuration is not derived from direct measurements, the methods for deriving the energy for components that were not measured must be disclosed (See Clause 7.3.3.4)

The duration of each measurement that produces a Performance Metric must be disclosed

The average power requirement for each measurement that produces one of these metrics,

Power Full Load Energy									Power MI Seconds:	158		
PMU	Full Load Average Watts Reading	% of Reading Uncertainty	Watts Reading Correction	Wattage Range Setting	% of Range Uncertainty	Wattage Range Correction	Total Wattage Correction	Accuracy Correction Factor	Reported Watt / Seconds	Adjusted Watt / Seconds	Measurement Reported Seconds	Adjusted Average Watts
DB Server PMU-1	388.51	0.10%	+0.39	1500	0.10%	+1.50	+1.89	0.49%	62,161.5	62,463.7	158.1	395.1
DB Server PMU-2	0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	-	0.0
DB Server PMU-3	0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	-	0.0
DB Server Total	388.51								62,161.5	62,463.7	158.1	395.1
Storage PMU-1	0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	-	0.0
Storage PMU-2	0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	-	0.0
Storage PMU-3	0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	-	0.0
Storage PMU-4	0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	-	0.0
Storage Total	0								-	-	158.1	0.0
Monitor Name Plate	28	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	4,426.8	4,426.8	158.1	28.0
Misc PMU-2	0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	-	0.0
Misc PMU-3	0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	-	0.0
Misc Total	28								4,426.8	4,426.8	158.1	28.0
REC Total	416.51								66,588.3	66,890.5	158.1	423.1

Throughput Full Load Energy									Throughput MI Seconds:	719.5		
PMU	Full Load Average Watts Reading	% of Reading Uncertainty	Watts Reading Correction	Wattage Range Setting	% of Range Uncertainty	Wattage Range Correction	Total Wattage Correction	Accuracy Correction Factor	Reported Watt / Seconds	Adjusted Watt / Seconds	Measurement Reported Seconds	Adjusted Average Watts
DB Server PMU-1	411.7	0.10%	+0.41	1500	0.10%	+1.50	+1.91	0.46%	296,400.2	297,776.6	719.5	413.9
DB Server PMU-2	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	719.5	-
DB Server PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	719.5	-
DB Server Total	411.7								296,400.2	297,776.6	719.5	413.9
Storage PMU-1	0.0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	719.5	-
Storage PMU-2	0.0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	719.5	-
Storage PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	719.5	-
Storage PMU-4	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	719.5	-
Storage Total	0.0								-	-	719.5	-
Monitor Name Plate	28.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	20,146.0	20,146.0	719.5	28.0
Misc PMU-2	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	719.5	-
Misc PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	719.5	-
Misc Total	28.0								20,146.0	20,146.0	719.5	28.0
REC Total	439.67								316,546.2	317,922.6	719.5	441.9

The TPC-Energy Primary Metric must be disclosed, including the calculation that is used to derive it.

	Power MI Seconds	Throughput MI Seconds	Reported QphH	SUT Total Work	
	158.1	719.5	73,974.6	18,033	REC Energy Consumption
					-----> Watts / KQphH
					5.93
					SUT Total Work X 1000
	Power Watt-Secs	Throughput Watt-Secs	Full Load Avg Watts	REC Energy Consumption Watt-Secs	REC Energy Consumption Watt-Hours
Total REC	66,890	317,923	438.5	384,813	106.9
DB Server	62,464	297,777	410.5	360,240	100.1
Storage	0	0	0.0	0	0.0
Misc.	4,427	20,146	28.0	24,573	6.8

Total REC Energy Consumption = 106.9 Watt-Hours
 SUT Total Work = 18033 queries
 106.9 Watt-Hours / 18033 queries = 0.00593 Watts / QphH@100GB
 0.00593 Watts / QphH@100GB * 1000 = 5.93 Watts / KQphH@100GB

Secondary Metrics	Additional Numerical Quantities				
	Watts / KQph	Full Load Avg Watts	Full Load % of REC	Idle Avg. Watts	Idle % of REC
Database Server	19.98	410.5	93.6%	246.1	89.8%
Storage	0.00	0.0	0.0%	0.0	0.0%
Miscellaneous	1.36	28.0	6.4%	28.0	10.2%
Total REC	5.93	438.5	100%	274.1	100%

H.2.2. Secondary Metrics At Reported Performance

If the TPC-Energy Secondary Metrics are reported, the components of the REC that are included in each subsystem must be identified. This can be achieved with separate lists to be included in the FDR or with a specific designation in the price spreadsheet. Every component in the REC that consumes energy must be included in exactly one subsystem.

No TPC-Energy secondary metrics are reported.

For each defined subsystem, the calculations defined for the TPC-Energy Secondary Metrics in Clause 3.3 must be reported, using the Performance Metric of the entire SUT and the energy consumption for each REC subsystem.

No TPC-Energy secondary metrics are reported.

H.2.3. Idle Power reporting

The Idle Power measurement/calculation for the REC must be reported as numerical quantities.

PMU	Idle Load Energy								Idle Wt Seconds: 600		Reported Seconds	Adjusted Average Watts
	Full Load Average Watts Reading	% of Reading Uncertainty	Watts Reading Correction	Wattage Range Setting	% of Range Uncertainty	Wattage Range Correction	Total Wattage Correction	Accuracy Correction Factor	Reported Watt / Seconds	Adjusted Watt / Seconds		
DB Server PMU-1	243.9	0.10%	+0.24	1500	0.10%	+1.50	+1.74	0.72%	146,586.4	147,634.5	600.0	246.1
DB Server PMU-2	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	600.0	-
DB Server PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	600.0	-
DB Server Total	243.9								146,586.4	147,634.5	600.0	246.1
Storage PMU-1	0.0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	600.0	-
Storage PMU-2	0.0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	600.0	-
Storage PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	600.0	-
Storage PMU-4	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	600.0	-
Storage Total	0.0								-	-	600.0	-
Monitor Name Plate	28.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	16,800.0	16,800.0	600.0	28.0
Misc PMU-2	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	600.0	-
Misc PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	600.0	-
Misc Total	28.0								16,800.0	16,800.0	600.0	28.0
REC Total	271.9								163,386.4	164,434.5		274.1

If TPC-Energy Secondary Metrics are reported, then the Idle Power measurement/calculation for each subsystem must also be reported as numerical quantities.

No TPC-Energy secondary metrics are reported.

The length of time between the conclusion of the performance measurement and the start of the idle measurement must be reported.

Idle measurement was started 3 minutes after the conclusion of the performance measurement.

The duration of the idle measurement must be reported

Idle measurement duration was 10 minutes.

A statement is required that assures that the system is in a state that is ready to run the Application(s) of the benchmark for the duration of the idle measurement.

The system is in a state that is ready to run the Application(s) of the benchmark for the duration of the idle measurement. The auditors verified that at the end of the idle time the shortest power query submitted again met the required response time.

H.2.4. Disclosure requirements when only part of the REC is measured for power

If all PMU's of the REC are not measured for energy use, the FDR must include a description of which PMUs of REC were measured with a power analyzer. The FDR must disclose which PMUs of the REC were computed based on the energy measurements of similar PMUs. A diagram must be included that identifies the portions of the configuration which were measured for energy use and which were calculated. This diagram may be combined with other diagrams required by the TPC Benchmark Standard.

- *The method used to determine which PMUs were measured must be disclosed.*
- *The power values for the each partial-REC measurement for duration of the performance and idle measurements must be disclosed.*
- *The calculation for the power requirements of the entire REC and, if applicable, each subsystem must be disclosed.*

Monitor power usage was based on vendor max wattage specifications (name plate).

H.2.5. Disclosure requirements when component substitution is used

If the TPC Benchmark Standard allows the Priced Configuration to differ from the Measured Configuration, the methods used to assign energy or power characteristics to the substitute components must be disclosed

The Priced Configuration was identical to the Measured Configuration.

The method used to determine which PMUs were measured must be disclosed

The monitor was the only component not measured. All other components were internal to the SUT.

The power values for the each partial-REC measurement for duration of the performance and idle measurements must be disclosed.

See previous sections in Appendix H.2.

H.3. TPC-Energy Clause 4-related items (Drivers /Controller)

A statement indicating the version of EMS used must be included in the FDR, including a statement that no alterations of this code were made for the benchmark, except as specified by Clause 7.3.4.3. This includes levels for the EMS-PTD Manager, EMS-PTD and EMS-controller

EMS version was 1.1.1 and no alterations were made.

Input parameters for the EMS software must be disclosed

The following EMS script was used to configure the EMS software:

```
start log power-run1 > DBServer-DL585G7
sleep 5
start log temperature-run1 > REC-Temperature
sleep 5
```

```
time sync
sleep 5
set sample 1000 > DBServer-DL585G7
sleep 5
set sample 10000 > REC-Temperature
sleep 5
start data "run 1"
```

Any changes in the EMS components must be documented. Documentation must include a description of the issue, the reason the change was necessary for disclosure of the Result, and the changes made to resolve it. Any change to TPC-Provided Code must be included with the submission as a Supporting File.

No changes to EMS components were made.

H.4. TPC-Energy Clause 6-related items (Instrumentation)

H.4.1. Power Analyzer information

Yokogawa Model WT210
Certification date : 3/19/2010
Amperage Range setting: 5A Manual
Voltage Range setting: 300V Manual
Reading accuracy: 0.1% (from Vendor Manual)
Range accuracy: 0.1% (from Vendor Manual)

H.4.2. Temperature Sensor information

InsideOut Networks WatchPort/H USB Humidity/Temperature Sensor
Accuracy: +/-0.5° C at (-10° C to 85° C) (from Vendor website)

H.5. TPC-Energy Clause 8-related items

H.5.1. Auditor's attestation letter.



PERFORMANCE METRICS INC.
TPC Certified Auditors

July 2, 2010

Mr. David Adams
Hewlett-Packard Company
11445 Compaq Center Dr.
Houston, TX 77070

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

Platform: HP ProLiant DL380 G7
Database Manager: Microsoft SQL Server 2008 R2 Enterprise Edition
Operating System: Microsoft Windows Server 2008 R2 Enterprise Edition

CPU's	Memory	Total Disks	Qpph@100GB	QthH @100GB	QphH@100GB
2 Intel 6 core @ 3.3 Ghz	192 GB	2 @ 72 GB 1 @ 300 GB 4 @ 60 GB SSD	99,426.3	55,038.2	73,974.6

In addition to the performance metric, the energy consumption was measured during the performance runs in compliance with the TPC-Energy specification.

- The power analyzer used was verified to be approved and calibrated within one year prior to this measurement.
- The energy measurements met all requirements of the specification unless an exception is noted below.
- The calculations for the TPC-Energy Primary Metric were verified as completed correctly.
- The EMS software was verified to be the correct version and without any changes.
- The executive summary page and the FDR were verified for accuracy.

Auditor's Notes: None

Sincerely,

Lorna Livingtree
Auditor

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(707) 482-0523 fax: (707) 482-0575

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H.6. TPC-Energy Supporting Files Index

Clause	Description	Pathname
Clause 7	Energy Measurement Log Files	SupportingFiles/Energy
	Energy Measurement Configuration Files	SupportingFiles/Energy/CollectData.ems