



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant DL385 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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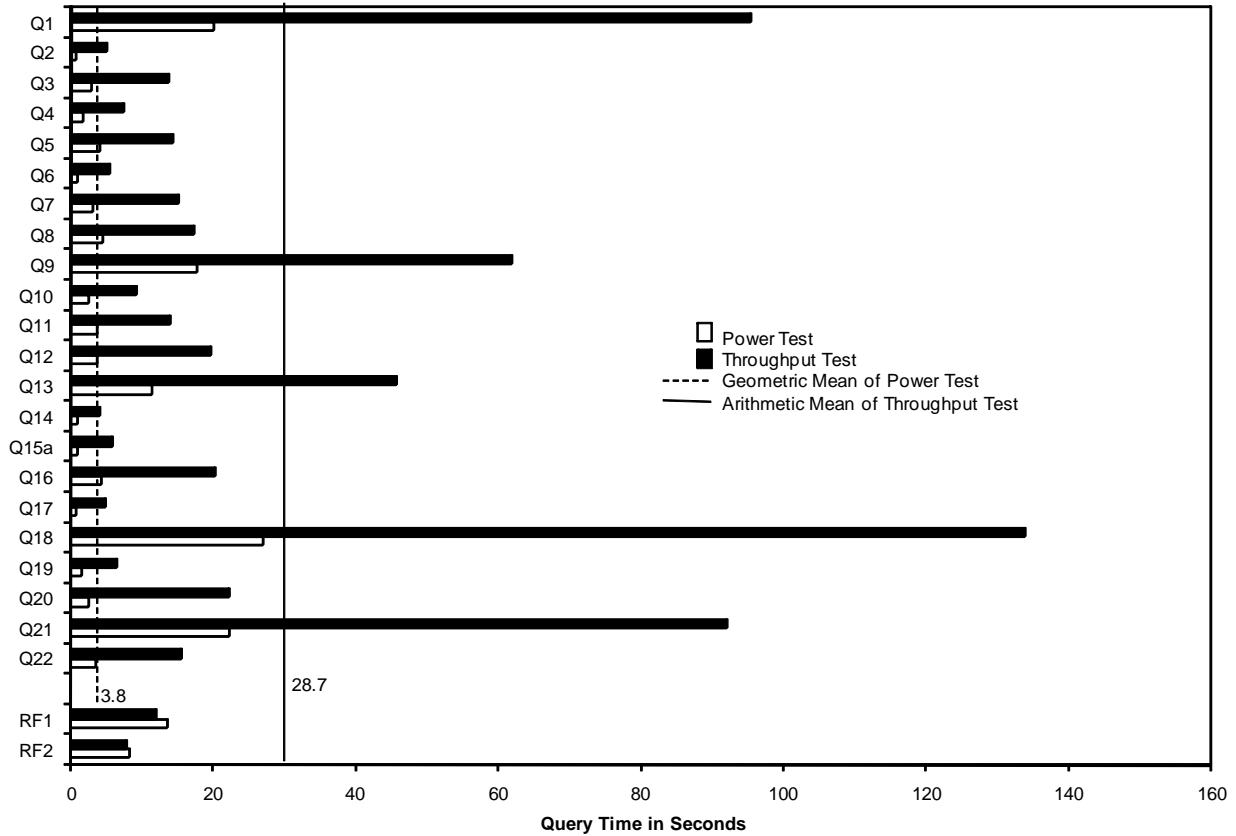


HP ProLiant DL385 G7

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

Report Date:
Jul 14, 2010

Total System Cost		Composite Query per Hour Metric		Price / Performance		TPC-Energy Metric	
\$36,271 USD		71,438.3 QphH@100GB		\$0.51 USD \$/QphH@100GB		6.48 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 14, 2010		



Database Load Time = 3:33:15	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 2.3 GHz 12 Core AMD Opteron 6176 SE
Cores : 24
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 DL385 G7

TPC-H Rev. 2.11.0

Report Date: 14-Jul-10

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price	
Server Hardware							
Brand Pricing							
HP DL385G7 SFF CTO Chassis	573122-B21	1	1,511	1	1,511		
HP 6176SE DL385G7 FIO Kit	585322-L21	1	1,799	2	3,598		
HP 8GB 2Rx4 PC3-10600R-9 Kit	593913-B21	1	509	24	12,216		
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					19,169	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			(\$3,551)	(\$117)	
Hardware Subtotal					21,814	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					\$35,292	\$979	

Three-Year Cost of Ownership: \$36,271 USD

QpH @ 100GB: 71438.3

\$ / QpH @ 100GB: \$0.51 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 DL385 G7

TPC-H Rev. 2.11.0

Report Date:
Jul 14, 2010

Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 6.84
Start of Database Load	= 2010-07-09 05:34:55
End of Database Load	= 2010-07-09 09:08:10
Database Load Time	= 3 :33:15
Query Streams for Throughput Test	= 5
TPC-H Power	= 94,761.5
TPC-H Throughput	= 53,855.6
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	= 71,438.3
Total System Price Over 3 Years	= \$36,271
TPC-H Price/ Performance Metric (\$/QphH@100GB)	= \$0.51 USD

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 735.3 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	709090810	7/9/2010	10:28:57	7/9/2010	10:31:40	0:02:43
Stream01	709090811	7/9/2010	10:31:40	7/9/2010	10:42:09	0:10:29
Stream02	709090812	7/9/2010	10:31:40	7/9/2010	10:42:05	0:10:25
Stream03	709090813	7/9/2010	10:31:40	7/9/2010	10:42:15	0:10:35
Stream04	709090814	7/9/2010	10:31:40	7/9/2010	10:42:10	0:10:30
Stream05	709090815	7/9/2010	10:31:40	7/9/2010	10:42:15	0:10:35
Refresh00		7/9/2010	10:28:57	7/9/2010	10:31:40	0:02:43
Refresh01		7/9/2010	10:42:15	7/9/2010	10:42:37	0:00:22
Refresh02		7/9/2010	10:42:37	7/9/2010	10:42:57	0:00:20
Refresh03		7/9/2010	10:42:57	7/9/2010	10:43:16	0:00:20
Refresh04		7/9/2010	10:43:16	7/9/2010	10:43:35	0:00:19
Refresh05		7/9/2010	10:43:35	7/9/2010	10:43:55	0:00:20



HP ProLiant DL385 G7

TPC-H Rev. 2.11.0

Report Date:
Jul 14, 2010

TPC-H Timing Intervals (in seconds)

Query	Q01	Q02	Q03	Q04	Q05	Q06	Q07	Q08
Stream 00	20.2	0.7	2.9	1.8	4.1	0.9	3.2	4.6
Stream 01	99.7	4.1	18.2	6.8	15.8	5.7	12.2	13.8
Stream 02	95.9	5.0	12.8	7.8	12.7	4.2	17.6	18.6
Stream 03	93.0	5.2	8.2	7.7	16.2	6.7	15.6	17.9
Stream 04	95.8	6.0	14.0	6.6	12.4	6.2	16.8	18.9
Stream 05	92.7	5.8	16.1	8.7	15.2	5.0	13.6	17.8
Min Qi	92.7	4.1	8.2	6.6	12.4	4.2	12.2	13.8
Max Qi	99.7	6.0	18.2	8.7	16.2	6.7	17.6	18.9
Avg Qi	95.4	5.2	13.9	7.5	14.5	5.6	15.2	17.4
Query	Q09	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	17.8	2.6	3.8	3.7	11.4	0.9	1.0	4.3
Stream 01	58.3	7.6	11.3	13.1	50.3	3.4	6.1	23.5
Stream 02	62.9	10.0	16.7	21.9	44.8	4.2	5.4	21.2
Stream 03	67.3	10.2	17.0	20.8	44.4	4.6	6.1	19.3
Stream 04	65.0	8.8	13.0	20.3	38.9	5.5	5.3	19.3
Stream 05	55.9	9.4	11.9	22.5	50.9	2.7	6.2	18.4
Min Qi	55.9	7.6	11.3	13.1	38.9	2.7	5.3	18.4
Max Qi	67.3	10.2	17.0	22.5	50.9	5.5	6.2	23.5
Avg Qi	61.9	9.2	14.0	19.7	45.9	4.1	5.8	20.3
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	0.8	27.1	1.5	2.5	22.2	3.5	13.7	8.2
Stream 01	5.2	131.4	5.6	26.3	95.3	15.6	13.2	8.4
Stream 02	5.6	123.8	7.1	20.2	90.7	15.9	11.9	7.9
Stream 03	4.5	140.1	7.0	23.5	84.8	15.0	11.6	8.0
Stream 04	4.4	130.3	5.6	26.0	94.5	16.7	11.5	7.6
Stream 05	4.6	144.1	7.3	15.1	95.5	14.8	12.0	7.9
Min Qi	4.4	123.8	5.6	15.1	84.8	14.8	11.5	7.6
Max Qi	5.6	144.1	7.3	26.3	95.5	16.7	13.2	8.4
Avg Qi	4.9	133.9	6.5	22.2	92.2	15.6	12.0	8.0

HP ProLiant DL385 G7		Energy Summary		TPC-H Rev. 2.11.0 TPC-Energy Rev. 1.1.1
				Report Date: Jul 14, 2010
Total System Cost		Composite Query per Hour Metric		Price / Performance
\$36,271 USD		71,438.3 QphH@100GB		\$0.51 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 14, 2010				

Numerical Quantities For Reported Energy Configuration:

REC Idle Power: **294.1 Watts**
Average Power of REC: **463.2 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 DL385 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 DL385 G7	Microsoft SQL Server 2008 R2 Enterprise Edition, Windows Server 2008 R2 Enterprise Edition	\$36,271	94761.5	53855.6	71438.3	\$0.51

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 DL385 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 DL385 G7 , depicted in Figure 1.1, consisted of :

- 2x AMD Opteron 6176 SE 2.3GHz 12 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 DL385 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 DL385 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 3 hours 33 minutes and 15 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.

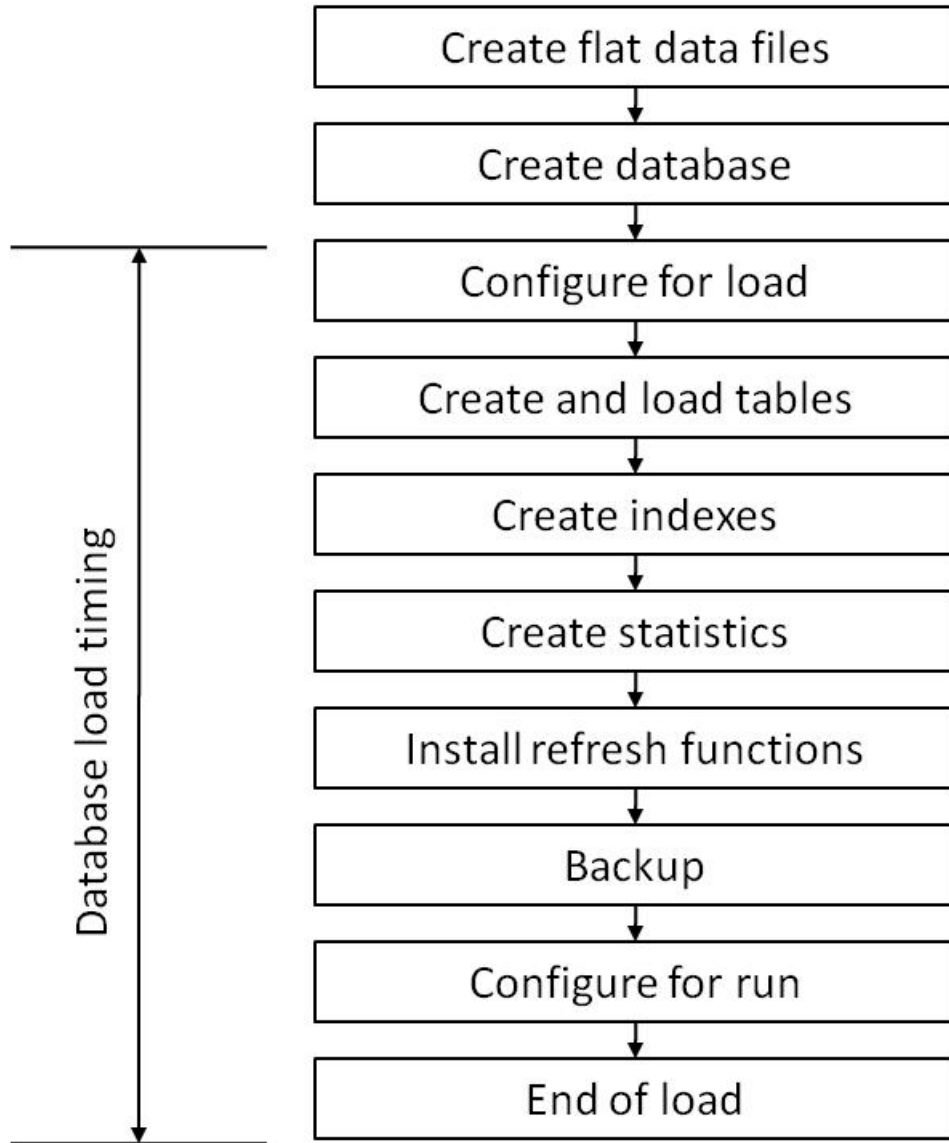
Disk Type	Number of Disks	Total Disk Space	Data Storage Ratio
72 GB	2	144 GB	6.84
60 GB	4	240 GB	
300 GB	1	300 GB	

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	7/9/2010	10:28:57	7/9/2010	10:29:10
Stream00	RF2	7/9/2010	10:31:32	7/9/2010	10:31:40
Stream01	RF1	7/9/2010	10:42:15	7/9/2010	10:42:28
Stream01	RF2	7/9/2010	10:42:28	7/9/2010	10:42:37
Stream02	RF1	7/9/2010	10:42:37	7/9/2010	10:42:49
Stream02	RF2	7/9/2010	10:42:49	7/9/2010	10:42:57
Stream03	RF1	7/9/2010	10:42:57	7/9/2010	10:43:08
Stream03	RF2	7/9/2010	10:43:08	7/9/2010	10:43:16
Stream04	RF1	7/9/2010	10:43:16	7/9/2010	10:43:28
Stream04	RF2	7/9/2010	10:43:28	7/9/2010	10:43:35
Stream05	RF1	7/9/2010	10:43:35	7/9/2010	10:43:47
Stream05	RF2	7/9/2010	10:43:47	7/9/2010	10:43:55

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 (Q_{ppH} and Q_{thH}) from the reproducibility runs.

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

Run	Q_{ppH} @ 100GB	Q_{thH} @ 100GB	Q_{pH} @ 100GB
Run 1	94761.5	53855.6	71438.3
Run 2	103799.5	53629.4	74610.4

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 48 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 48 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 DL385 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 13, 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 DL385 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 AMD 12 core @ 2.3 Ghz	192 GB	2 @ 72 GB 1 @ 300 GB 4 @ 60 GB SSD	94,761.5	53,855.6	71,438.3

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

- The database tables were defined with the proper columns, layout and sizes.
- The tested database was correctly scaled and populated for 100GB using DBGEN. The version of DBGEN was 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.

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TPC Certified Auditors

- The refresh functions were properly implemented and executed the correct number of inserts and deletes.
- The load timing was properly measured and reported.
- The execution times were correctly measured and reported.
- The performance metrics were correctly computed and reported.
- The repeatability of the measurement was verified.
- The ACID properties were 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: The atomicity, isolation and consistency tests were demonstrated on a previously published configuration using the same OS and DBMS binaries.

Sincerely,



Loma Livingtree
Auditor



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

Page 2
email: LomaL@PerfMetrics.com

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: 07/12/10 09:47:00

System Name: DL385G7H

[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	DL385G7H
System Manufacturer	HP

System Model	ProLiant DL385 G7
System Type	x64-based PC
Processor	AMD Opteron(tm) Processor 6176 SE, 2300 Mhz, 12 Core(s), 12 Logical Processor(s)
Processor	AMD Opteron(tm) Processor 6176 SE, 2300 Mhz, 12 Core(s), 12 Logical Processor(s)
BIOS Version/Date	HP A18, 6/15/2010
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	9.81 GB
Total Virtual Memory	194 GB
Available Virtual Memory	11.3 GB
Page File Space	1.95 GB
Page File	C:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device
IRQ 52	PCI standard PCI-to-PCI bridge
IRQ 52	PCI standard PCI-to-PCI bridge
I/O Port 0x00000000-0x000003AF	PCI bus
I/O Port 0x00000000-0x000003AF	Direct memory access controller
Memory Address 0xF4000000-0xF5FFFFFFF	Broadcom
BCM5709C NetXtreme II GigE	
Memory Address 0xF4000000-0xF5FFFFFFF	PCI standard PCI-to-PCI bridge
I/O Port 0x000003C0-0x000003DF	PCI bus
I/O Port 0x000003C0-0x000003DF	ATI ES1000
IRQ 32	PCI standard PCI-to-PCI bridge
IRQ 32	PCI standard PCI-to-PCI bridge
I/O Port 0x00000070-0x00000071	System CMOS/real time clock
I/O Port 0x00000070-0x00000071	Motherboard resources
IRQ 54	PCI standard PCI-to-PCI bridge
IRQ 54	PCI standard PCI-to-PCI bridge
I/O Port 0x00002000-0x00002FFF	ATI I/O Communications
Processor PCI Bus Controller	
I/O Port 0x00002000-0x00002FFF	ATI ES1000
IRQ 22	Standard Enhanced PCI to USB Host Controller
IRQ 22	Standard OpenHCD USB Host Controller
IRQ 22	Standard OpenHCD USB Host Controller
IRQ 44	HP ProLiant iLO 3 Management Controller (CHIF)
IRQ 44	Broadcom BCM5709C NetXtreme II GigE
IRQ 44	Standard Universal PCI to USB Host Controller
Memory Address 0xE8000000-0xEFFFFFFF	ATI I/O
Communications Processor PCI Bus Controller	

Memory Address 0xE8000000-0xEFFFFFFF	ATI ES1000	0x00000600-0x0000061F	Motherboard resources	OK
IRQ 23 Standard OpenHCD USB Host Controller		0x00000660-0x0000067F	Extended IO Bus	OK
IRQ 23 Standard Enhanced PCI to USB Host Controller		0x00000300-0x0000031F	Extended IO Bus	OK
IRQ 23 Standard OpenHCD USB Host Controller		0x00002000-0x00002FFF	ATI I/O Communications Processor PCI Bus Controller	OK
I/O Port 0x00003000-0x00003FFF	PCI standard PCI-to-PCI bridge	0x00002000-0x00002FFF	ATI ES1000	OK
I/O Port 0x00003000-0x00003FFF	HP ProLiant iLO 3 Management Controller (CORE)	0x00001000-0x0000FFFF	PCI bus	OK
Memory Address 0xFED00000-0xFED03FFF	PCI bus	0x00001000-0x0000FFFF	Standard Dual Channel PCI IDE Controller	OK
Memory Address 0xFED00000-0xFED03FFF	PCI bus	0x00000000-0x000003AF	PCI bus	OK
Memory Address 0xFED00000-0xFED03FFF timer	High precision event timer	0x00000000-0x000003AF	Direct memory access controller	OK
IRQ 16 Standard Dual Channel PCI IDE Controller		0x000003E0-0x00000CF7	PCI bus	OK
IRQ 16 ATI ES1000		0x00000D00-0x00000FFF	PCI bus	OK
I/O Port 0x00000A00-0x000000BF	Motherboard resources	0x000003B0-0x000003BB	PCI bus	OK
I/O Port 0x00000A00-0x000000BF controller	Programmable interrupt controller	0x000003B0-0x000003BB	ATI ES1000	OK
IRQ 28 PCI standard PCI-to-PCI bridge		0x000003C0-0x000003DF	PCI bus	OK
IRQ 28 PCI standard PCI-to-PCI bridge		0x000003C0-0x000003DF	ATI ES1000	OK
I/O Port 0x00000A00-0x000000BF	Motherboard resources	0x00004000-0x00004FFF	PCI standard PCI-to-PCI bridge	OK
I/O Port 0x00000A00-0x000000BF controller	Programmable interrupt controller	0x00003800-0x000038FF	HP ProLiant iLO 3 Management Controller (CHIF)	OK
IRQ 28 PCI standard PCI-to-PCI bridge		0x00000070-0x00000071	System CMOS/real time clock	OK
IRQ 28 PCI standard PCI-to-PCI bridge		0x00000070-0x00000071	Motherboard resources	OK
Memory Address 0xA0000-0xBFFFF	PCI bus	0x00000010-0x0000001F	Motherboard resources	OK
Memory Address 0xA0000-0xBFFFF	ATI ES1000	0x00000020-0x0000003F	Motherboard resources	OK
Memory Address 0xF8000000-0xF9FFFFFF	Broadcom	0x00000020-0x0000003F	Programmable interrupt controller	OK
Memory Address 0xF8000000-0xF9FFFFFF	PCI standard PCI-to-PCI bridge	0x000000A0-0x000000BF	Motherboard resources	OK
I/O Port 0x000003B0-0x000003BB	PCI bus	0x000000A0-0x000000BF	Programmable interrupt controller	OK
I/O Port 0x000003B0-0x000003BB	ATI ES1000	0x00000050-0x00000053	Motherboard resources	OK
I/O Port 0x00001000-0x0000FFFF	PCI bus	0x00000090-0x0000009F	Motherboard resources	OK
I/O Port 0x00001000-0x0000FFFF	Standard Dual Channel PCI IDE Controller	0x000000F0-0x000000F0	Motherboard resources	OK
I/O Port 0x00000600-0x0000061F	Extended IO Bus	0x00000379-0x0000037A	Motherboard resources	OK
I/O Port 0x00000600-0x0000061F	Motherboard resources	0x00000400-0x0000043F	Motherboard resources	OK
I/O Port 0x00000020-0x0000003F	Motherboard resources	0x000004D0-0x000004D1	Motherboard resources	OK
I/O Port 0x00000020-0x0000003F controller	Programmable interrupt controller	0x000004D6-0x000004D6	Motherboard resources	OK
[DMA]		0x00000520-0x00000520	Motherboard resources	OK
Resource Device Status		0x00000580-0x0000059F	Motherboard resources	OK
Channel 7 Direct memory access controller	OK	0x00000700-0x00000703	Motherboard resources	OK
[Forced Hardware]		0x00000820-0x0000082F	Motherboard resources	OK
Device PNP Device ID		0x00000900-0x000009FE	Motherboard resources	OK
[I/O]		0x00000C06-0x00000C07	Motherboard resources	OK
Resource Device Status		0x00000C14-0x00000C14	Motherboard resources	OK
0x0000002E-0x0000002F	Extended IO Bus	0x00000C4A-0x00000C4A	Motherboard resources	OK
0x00000620-0x0000065F	Extended IO Bus	0x00000C50-0x00000C52	Motherboard resources	OK
0x00000680-0x0000069F	Extended IO Bus			
0x00000600-0x0000061F	Extended IO Bus			

0x00000C6C-0x00000C6C	Motherboard resources	OK	IRQ 44	Broadcom BCM5709C NetXtreme II GigE	OK
0x00000C6F-0x00000C6F	Motherboard resources	OK	IRQ 44	Standard Universal PCI to USB Host Controller	OK
0x00000C80-0x00000C83	Motherboard resources	OK	IRQ 32	PCI standard PCI-to-PCI bridge	OK
0x00000C90-0x00000C9F	Motherboard resources	OK	IRQ 32	PCI standard PCI-to-PCI bridge	OK
0x00000CA0-0x00000CA5	Motherboard resources	OK	IRQ 12	PS/2 Compatible Mouse	OK
0x00000CD0-0x00000CDF	Motherboard resources	OK	IRQ 81	Microsoft ACPI-Compliant System	OK
0x00000F50-0x00000F58	Motherboard resources	OK	IRQ 82	Microsoft ACPI-Compliant System	OK
0x00000B00-0x00000B3F	Motherboard resources	OK	IRQ 83	Microsoft ACPI-Compliant System	OK
0x000002F8-0x000002FF	Motherboard resources	OK	IRQ 84	Microsoft ACPI-Compliant System	OK
0x00000500-0x0000050F	Standard Dual Channel PCI IDE Controller	OK	IRQ 85	Microsoft ACPI-Compliant System	OK
0x00001008-0x0000100B	Standard Dual Channel PCI IDE Controller	OK	IRQ 86	Microsoft ACPI-Compliant System	OK
0x00001010-0x00001017	Standard Dual Channel PCI IDE Controller	OK	IRQ 87	Microsoft ACPI-Compliant System	OK
0x00001018-0x0000101B	Standard Dual Channel PCI IDE Controller	OK	IRQ 88	Microsoft ACPI-Compliant System	OK
0x00001020-0x0000102F	Standard Dual Channel PCI IDE Controller	OK	IRQ 89	Microsoft ACPI-Compliant System	OK
0x000001F0-0x000001F7	ATA Channel 0	OK	IRQ 90	Microsoft ACPI-Compliant System	OK
0x000003F6-0x000003F6	ATA Channel 0	OK	IRQ 91	Microsoft ACPI-Compliant System	OK
0x00000170-0x00000177	ATA Channel 1	OK	IRQ 92	Microsoft ACPI-Compliant System	OK
0x00000376-0x00000376	ATA Channel 1	OK	IRQ 93	Microsoft ACPI-Compliant System	OK
0x00000CA2-0x00000CA3	Microsoft Generic IPMI Compliant Device	OK	IRQ 94	Microsoft ACPI-Compliant System	OK
0x00000C00-0x00000C01	Programmable interrupt controller	OK	IRQ 95	Microsoft ACPI-Compliant System	OK
0x00000040-0x00000043	System timer	OK	IRQ 96	Microsoft ACPI-Compliant System	OK
0x00000080-0x0000008F	Direct memory access controller	OK	IRQ 97	Microsoft ACPI-Compliant System	OK
0x000000C0-0x000000DF	Direct memory access controller	OK	IRQ 98	Microsoft ACPI-Compliant System	OK
0x00000060-0x00000060	Standard PS/2 Keyboard	OK	IRQ 99	Microsoft ACPI-Compliant System	OK
0x00000064-0x00000064	Standard PS/2 Keyboard	OK	IRQ 100	Microsoft ACPI-Compliant System	OK
0x00003C00-0x00003C1F	Standard Universal PCI to USB Host Controller	OK	IRQ 101	Microsoft ACPI-Compliant System	OK
0x000003F8-0x000003FF	Communications Port (COM1)	OK	IRQ 102	Microsoft ACPI-Compliant System	OK
0x00000061-0x00000061	System speaker	OK	IRQ 103	Microsoft ACPI-Compliant System	OK
0x00003000-0x00003FFF	HP ProLiant iLO 3 Management Controller (CORE)	OK	IRQ 104	Microsoft ACPI-Compliant System	OK
0x00003400-0x000034FF	HP ProLiant iLO 3 Management Controller (CORE)	OK	IRQ 105	Microsoft ACPI-Compliant System	OK
[IRQs]			IRQ 106	Microsoft ACPI-Compliant System	OK
Resource	Device	Status	IRQ 107	Microsoft ACPI-Compliant System	OK
IRQ 28	PCI standard PCI-to-PCI bridge	OK	IRQ 108	Microsoft ACPI-Compliant System	OK
IRQ 28	PCI standard PCI-to-PCI bridge	OK	IRQ 109	Microsoft ACPI-Compliant System	OK
IRQ 23	Standard OpenHCD USB Host Controller	OK	IRQ 110	Microsoft ACPI-Compliant System	OK
IRQ 23	Standard Enhanced PCI to USB Host Controller	OK	IRQ 111	Microsoft ACPI-Compliant System	OK
IRQ 23	Standard OpenHCD USB Host Controller	OK	IRQ 112	Microsoft ACPI-Compliant System	OK
IRQ 54	PCI standard PCI-to-PCI bridge	OK	IRQ 113	Microsoft ACPI-Compliant System	OK
IRQ 54	PCI standard PCI-to-PCI bridge	OK	IRQ 114	Microsoft ACPI-Compliant System	OK
IRQ 44	HP ProLiant iLO 3 Management Controller (CHIF)	OK	IRQ 115	Microsoft ACPI-Compliant System	OK
			IRQ 116	Microsoft ACPI-Compliant System	OK
			IRQ 117	Microsoft ACPI-Compliant System	OK
			IRQ 118	Microsoft ACPI-Compliant System	OK
			IRQ 119	Microsoft ACPI-Compliant System	OK
			IRQ 120	Microsoft ACPI-Compliant System	OK
			IRQ 121	Microsoft ACPI-Compliant System	OK
			IRQ 122	Microsoft ACPI-Compliant System	OK
			IRQ 123	Microsoft ACPI-Compliant System	OK
			IRQ 124	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 1	Standard PS/2 Keyboard	OK
IRQ 146	Microsoft ACPI-Compliant System	OK	IRQ 33	PCI standard PCI-to-PCI bridge	OK
IRQ 147	Microsoft ACPI-Compliant System	OK	IRQ 53	PCI standard PCI-to-PCI bridge	OK
IRQ 148	Microsoft ACPI-Compliant System	OK	IRQ 4	Communications Port (COM1)	OK
IRQ 149	Microsoft ACPI-Compliant System	OK	IRQ 34	PCI standard PCI-to-PCI bridge	OK
IRQ 150	Microsoft ACPI-Compliant System	OK	IRQ 24	PCI standard PCI-to-PCI bridge	OK
IRQ 151	Microsoft ACPI-Compliant System	OK	IRQ 47	HP ProLiant iLO 3 Management Controller (CORE)	OK
IRQ 152	Microsoft ACPI-Compliant System	OK			
IRQ 153	Microsoft ACPI-Compliant System	OK			
IRQ 154	Microsoft ACPI-Compliant System	OK			
IRQ 155	Microsoft ACPI-Compliant System	OK			
IRQ 156	Microsoft ACPI-Compliant System	OK	[Memory]		
IRQ 157	Microsoft ACPI-Compliant System	OK	Resource Device Status		
IRQ 158	Microsoft ACPI-Compliant System	OK	0xFDFE0000-0xFDFEFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 159	Microsoft ACPI-Compliant System	OK	0xF3700000-0xF37FFFFF	ATI I/O Communications Processor PCI Bus Controller	OK
IRQ 160	Microsoft ACPI-Compliant System	OK	0xE8000000-0xEFFFFFFF	ATI I/O Communications Processor PCI Bus Controller	OK
IRQ 161	Microsoft ACPI-Compliant System	OK	0xE8000000-0xEFFFFFFF	ATI ES1000	OK
IRQ 162	Microsoft ACPI-Compliant System	OK	0xF36A0000-0xF36A0FFF	Standard OpenHCD USB Host Controller	OK
IRQ 163	Microsoft ACPI-Compliant System	OK	0xE7F00000-0xFDFEFFFF	PCI bus	OK
IRQ 164	Microsoft ACPI-Compliant System	OK	0xFED00000-0xFED03FFF	PCI bus	OK
IRQ 165	Microsoft ACPI-Compliant System	OK	0xFED00000-0xFED03FFF	PCI bus	OK
IRQ 166	Microsoft ACPI-Compliant System	OK	0xFED00000-0xFED03FFF	High precision event timer	OK
IRQ 167	Microsoft ACPI-Compliant System	OK	0xA0000-0xBFFFF	PCI bus	OK
IRQ 168	Microsoft ACPI-Compliant System	OK	0xA0000-0xBFFFF	ATI ES1000	OK
IRQ 169	Microsoft ACPI-Compliant System	OK	0xF3B00000-0xF3BFFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 170	Microsoft ACPI-Compliant System	OK	0xF3AE0000-0xF3AE00FF	HP ProLiant iLO 3 Management Controller (CHIF)	OK
IRQ 171	Microsoft ACPI-Compliant System	OK	0xF3900000-0xF39FFFFF	HP ProLiant iLO 3 Management Controller (CHIF)	OK
IRQ 172	Microsoft ACPI-Compliant System	OK	0xF3880000-0xF38FFFFF	HP ProLiant iLO 3 Management Controller (CHIF)	OK
IRQ 173	Microsoft ACPI-Compliant System	OK	0xF3870000-0xF3877FFF	HP ProLiant iLO 3 Management Controller (CHIF)	OK
IRQ 174	Microsoft ACPI-Compliant System	OK	0xF3860000-0xF3867FFF	HP ProLiant iLO 3 Management Controller (CHIF)	OK
IRQ 175	Microsoft ACPI-Compliant System	OK	0xFDEE0000-0xFDEEFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 176	Microsoft ACPI-Compliant System	OK	0xC0000000-0xCFFFFFFF	Motherboard resources	OK
IRQ 177	Microsoft ACPI-Compliant System	OK	0xF6000000-0xF7FFFFFF	Broadcom BCM5709C NetXtreme II GigE	OK
IRQ 178	Microsoft ACPI-Compliant System	OK	0xF36F0000-0xF36F03FF	Standard Dual Channel PCI IDE Controller	OK
IRQ 179	Microsoft ACPI-Compliant System	OK	0xFDE00000-0xFDEEFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 180	Microsoft ACPI-Compliant System	OK	0xF4000000-0xF5FFFFFF	Broadcom BCM5709C NetXtreme II GigE	OK
IRQ 181	Microsoft ACPI-Compliant System	OK	0xF4000000-0xF5FFFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 182	Microsoft ACPI-Compliant System	OK	0xF36C0000-0xF36C00FF	Standard Enhanced PCI to USB Host Controller	OK
IRQ 183	Microsoft ACPI-Compliant System	OK	0xF37F0000-0xF37FFFFF	ATI ES1000	OK
IRQ 184	Microsoft ACPI-Compliant System	OK	0xFA000000-0xFBFFFFFF	Broadcom BCM5709C NetXtreme II GigE	OK
IRQ 185	Microsoft ACPI-Compliant System	OK	0xF3690000-0xF36900FF	Standard Enhanced PCI to USB Host Controller	OK
IRQ 186	Microsoft ACPI-Compliant System	OK	0xFDF00000-0xFDFEFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 187	Microsoft ACPI-Compliant System	OK	0xF8000000-0xF9FFFFFF	Broadcom BCM5709C NetXtreme II GigE	OK
IRQ 188	Microsoft ACPI-Compliant System	OK	0xF8000000-0xF9FFFFFF	PCI standard PCI-to-PCI bridge	OK
IRQ 189	Microsoft ACPI-Compliant System	OK	0xF36E0000-0xF36E0FFF	Standard OpenHCD USB Host Controller	OK
IRQ 190	Microsoft ACPI-Compliant System	OK	0xF36E0000-0xF36E0FFF	Standard OpenHCD USB Host Controller	OK
IRQ 16	Standard Dual Channel PCI IDE Controller	OK			
IRQ 16	ATI ES1000	OK			
IRQ 14	ATA Channel 0	OK			
IRQ 45	Broadcom BCM5709C NetXtreme II GigE	OK			
IRQ 15	ATA Channel 1	OK			
IRQ 29	PCI standard PCI-to-PCI bridge	OK			
IRQ 51	Broadcom BCM5709C NetXtreme II GigE	OK			
IRQ 30	PCI standard PCI-to-PCI bridge	OK			
IRQ 22	Standard Enhanced PCI to USB Host Controller	OK			
IRQ 22	Standard OpenHCD USB Host Controller	OK			
IRQ 52	PCI standard PCI-to-PCI bridge	OK			
IRQ 52	PCI standard PCI-to-PCI bridge	OK			
IRQ 48	Broadcom BCM5709C NetXtreme II GigE	OK			
IRQ 0	System timer	OK			
IRQ 4294967294	Smart Array P410i Controller	OK			
IRQ 4294967293	Smart Array P410i Controller	OK			
IRQ 4294967292	Smart Array P410i Controller	OK			
IRQ 4294967291	Smart Array P410i Controller	OK			
IRQ 4294967290	Smart Array P410i Controller	OK			
IRQ 4294967289	Smart Array P410i Controller	OK			
IRQ 4294967288	Smart Array P410i Controller	OK			
IRQ 4294967287	Smart Array P410i Controller	OK			

0xF3C00000-0xF3FFFFFF Smart Array P410i Controller OK
 0xF3BF0000-0xF3BF0FFF Smart Array P410i Controller OK
 0xF36B0000-0xF36B0FFF Standard OpenHCD USB Host Controller OK
 0xF36D0000-0xF36D0FFF Standard OpenHCD USB Host Controller OK
 0xF3800000-0xF3AFFFFFF PCI standard PCI-to-PCI bridge OK
 0xF3AF0000-0xF3AF01FF HP ProLiant iLO 3 Management Controller (CORE) OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\msg711.acm	Microsoft Corporation		OK	C:\Windows\system32\MSG711.ACM
	6.1.7600.16385	14.50 KB (14,848 bytes)		7/13/2009 7:18 PM
c:\windows\system32\imaadp32.acm	Microsoft Corporation		OK	C:\Windows\system32\IMAADP32.ACM
	6.1.7600.16385	21.50 KB (22,016 bytes)		7/13/2009 7:18 PM
c:\windows\system32\msgsm32.acm	Microsoft Corporation		OK	C:\Windows\system32\MSGSM32.ACM
	6.1.7600.16385	28.50 KB (29,184 bytes)		7/13/2009 7:18 PM
c:\windows\system32\msadp32.acm	Microsoft Corporation		OK	C:\Windows\system32\MSADP32.ACM
	6.1.7600.16385	23.50 KB (24,064 bytes)		7/13/2009 7:18 PM

[Video Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\msrle32.dll	Microsoft Corporation		OK	C:\Windows\system32\MSRLE32.DLL
	6.1.7600.16385	15.50 KB (15,872 bytes)		7/13/2009 7:18 PM
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 Writer
 Name Optiarc DVD RW AD-7561S ATA Device
 Manufacturer (Standard CD-ROM drives)
 Status OK
 Transfer Rate -1.00 kbytes/sec
 SCSI Target ID 0
 PNP Device ID IDE\CDROMOPTIARC_DVD_RW_AD-7561S____AH52____\5&30A9FC32&0&1.0.0
 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&2A2AE743&0&18A4
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	0x00002000-0x00002FFF
Memory Address	0xF37F0000-0xF37FFFFFFF
IRQ Channel	IRQ 16
I/O Port	0x000003B0-0x000003BB
I/O Port	0x000003C0-0x000003DF
Memory Address	0xA0000-0xBFFFFF
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
Description	USB Input Device
Name	Enhanced (101- or 102-key)
Layout	00000409
PNP Device ID	USB\VID_03F0&PID_7029&MI_00\7&32D48B34&0&0000
Number of Function Keys	12
Driver	c:\windows\system32\drivers\hidusb.sys (6.1.7600.16385, 29.50 KB (30,208 bytes), 7/13/2009 7:06 PM)

[Pointing Device]

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

Hardware Type USB Input Device
Number of Buttons 0
Status OK
PNP Device ID
USB\VID_03F0&PID_7029&MI_01\7&32D48B34&0&0001

Power Management Supported No
Double Click Threshold Not Available
Handedness Not Available
Driver c:\windows\system32\drivers\hidusb.sys (6.1.7600.16385, 29.50 KB (30,208 bytes), 7/13/2009 7:06 PM)

[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\MINI\PORT\0000
Last Reset 7/8/2010 8:32 PM
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\MINI\PORT\0000
Last Reset 7/8/2010 8:32 PM
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\MINI\PORT\0000
Last Reset 7/8/2010 8:32 PM
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\MINI\PORT\0000
Last Reset 7/8/2010 8:32 PM
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\MINI\PORT\0000
Last Reset 7/8/2010 8:32 PM
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\raspppoe.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_NDISWAN\IPV6\0000
Last Reset 7/8/2010 8:32 PM
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 7/8/2010 8:32 PM
 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 7/8/2010 8:32 PM
 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 7/8/2010 8:32 PM
 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 7/8/2010 8:32 PM
 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 7/8/2010 8:32 PM
 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 Wide Area Network (WAN)
 Product Type RAS Async Adapter
 Installed Yes
 PNP Device ID SW\{EEAB7790-C514-11D1-B42B-00805FC1270E}\ASYNCMAC
 Last Reset 7/8/2010 8:32 PM
 Index 11
 Service Name AsyncMac
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 20:41:53:59:4E:FF
 Driver c:\windows\system32\drivers\asyncmac.sys (6.1.7600.16385, 22.50 KB (23,040 bytes), 7/13/2009 7:10 PM)

Name [00000012] Microsoft 6to4 Adapter
 Adapter Type Tunnel
 Product Type Microsoft 6to4 Adapter
 Installed Yes
 PNP Device ID ROOT*6TO4MP\0000
 Last Reset 7/8/2010 8:32 PM
 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 7/8/2010 8:32 PM
 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 7/8/2010 8:32 PM
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 7/8/2010 8:32 PM
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 7/8/2010 8:32 PM
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 7/8/2010 8:32 PM
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 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&31321715&0&20050400
Last Reset 7/8/2010 8:32 PM
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 18:A9:05:4D:D9:DC
Driver c:\windows\system32\drivers\bxd60a.sys (4.8.4.0, 70.00 KB (71,680 bytes), 6/10/2009 3:34 PM)

Name [00000019] 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&3496B280&0&20050400
Last Reset 7/8/2010 8:32 PM
Index 19
Service Name l2nd
IP Address 130.168.211.5
IP Subnet 255.255.0.0
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:A9:05:4D:D9:DA
Driver c:\windows\system32\drivers\bxd60a.sys (4.8.4.0, 70.00 KB (71,680 bytes), 6/10/2009 3:34 PM)

Name [00000020] 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&1566B176&0&20050500
 Last Reset 7/8/2010 8:32 PM
 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 18:A9:05:4D:D9:E0
 Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.4.0, 70.00 KB
 (71,680 bytes), 6/10/2009 3:34 PM)

Name [0000021] 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&386853D3&0&20050500
 Last Reset 7/8/2010 8:32 PM
 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 18:A9:05:4D:D9:DE
 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 18.28 GB (19,623,477,248 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 19.47 GB (20,903,165,952 bytes)
Volume Name Backup

Volume Serial Number 5C823229

[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 4
 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 4
 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 4
 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 4
 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 4
 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 4
 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
 &D0DB9B7&0&0068
 Memory Address 0xF3C00000-0xF3FFFFFF
 Memory Address 0xF3BF0000-0xF3BF0FFF
 IRQ Channel IRQ 4294967294
 IRQ Channel IRQ 4294967293
 IRQ Channel IRQ 4294967292
 IRQ Channel IRQ 4294967291
 IRQ Channel IRQ 4294967290
 IRQ Channel IRQ 4294967289
 IRQ Channel IRQ 4294967288
 IRQ Channel IRQ 4294967287
 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_1002&DEV_439C&SUBSYS_1773103C&REV_00\3
 &3097523A&0&A1
 I/O Port 0x00000500-0x0000050F
 Driver c:\windows\system32\drivers\pciide.sys (6.1.7600.16385, 12.06
 KB (12,352 bytes), 7/13/2009 6:19 PM)

Name Standard Dual Channel PCI IDE Controller
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID
 PCI\VEN_1002&DEV_4390&SUBSYS_176E103C&REV_00\3
 &3097523A&0&88
 I/O Port 0x00001000-0x0000FFFF
 I/O Port 0x00001008-0x0000100B
 I/O Port 0x00001010-0x00001017
 I/O Port 0x00001018-0x0000101B
 I/O Port 0x00001020-0x0000102F
 Memory Address 0xF36F0000-0xF36F03FF
 IRQ Channel IRQ 16
 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&8120232&0&0
 I/O Port 0x000001F0-0x000001F7
 I/O Port 0x000003F6-0x000003F6
 IRQ Channel IRQ 14
 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&8120232&0&1
 I/O Port 0x00000170-0x00000177
 I/O Port 0x00000376-0x00000376
 IRQ Channel IRQ 15
 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 0
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCIIDE\IDECHANNEL\4&C1BABAC&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&C1BABAC&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&9333F3&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&9333F3&0 This
 device is not present, is not working properly, or does not have all its drivers
 installed.

[USB]

Device PNP Device ID
 Standard OpenHCD USB Host Controller
 PCI\VEN_1002&DEV_4398&SUBSYS_1770103C&REV_00\3
 &3097523A&0&99
 Standard Enhanced PCI to USB Host Controller
 PCI\VEN_1002&DEV_4396&SUBSYS_1771103C&REV_00\3
 &3097523A&0&92
 Standard Enhanced PCI to USB Host Controller
 PCI\VEN_1002&DEV_4396&SUBSYS_1771103C&REV_00\3
 &3097523A&0&9A
 Standard OpenHCD USB Host Controller
 PCI\VEN_1002&DEV_4397&SUBSYS_176F103C&REV_00\3
 &3097523A&0&90
 Standard OpenHCD USB Host Controller
 PCI\VEN_1002&DEV_4397&SUBSYS_176F103C&REV_00\3
 &3097523A&0&98
 Standard Universal PCI to USB Host Controller
 PCI\VEN_103C&DEV_3300&SUBSYS_3309103C&REV_01\4
 &2F88CDA0&0&0450
 Standard OpenHCD USB Host Controller
 PCI\VEN_1002&DEV_4398&SUBSYS_1770103C&REV_00\3
 &3097523A&0&91

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
1394ohci	1394 OHCI Compliant Host Controller	c:\windows\system32\drivers\1394ohci.sys	Kernel Driver		
	Accept Stop				
	No Manual Stopped	OK	Normal	No	
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver		
	Yes Boot Running	OK	Critical	No	
	Yes				
acpipmi	ACPI Power Meter Driver	c:\windows\system32\drivers\acpipmi.sys	Kernel Driver		

	Yes	Manual	Running	OK	Normal	No		No	Manual	Stopped	OK	Normal	No		
adp94xx Driver	adp94xx No No	c:\windows\system32\drivers\adp94xx.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	beep Driver	beep No No	c:\windows\system32\drivers\beep.sys	Kernel Driver	No	
adpahci Driver	adpahci No No	c:\windows\system32\drivers\adpahci.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	blbdrive Driver	blbdrive Yes Yes	c:\windows\system32\drivers\blbdrive.sys	Kernel Driver	No	
adpu320 Driver	adpu320 No No	c:\windows\system32\drivers\adpu320.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	browser	Browser Support Driver c:\windows\system32\drivers\browser.sys File System Driver				
afd	Ancillary Function Driver for Winsock c:\windows\system32\drivers\afd.sys Kernel Driver						Yes	System	Running	OK	Normal	No	brfiltlo	Brother USB Mass-Storage Lower Filter Driver c:\windows\system32\drivers\brfiltlo.sys Kernel Driver	
agp440	Intel AGP Bus Filter c:\windows\system32\drivers\agp440.sys Kernel Driver						No	Manual	Stopped	OK	Normal	No	brfiltup	Brother USB Mass-Storage Upper Filter Driver c:\windows\system32\drivers\brfiltup.sys Kernel Driver	
aliide Driver	aliide No No	c:\windows\system32\drivers\aliide.sys	Kernel Driver	No	Manual	Stopped	OK	Critical	No	brserid	Brother MFC Serial Port Interface Driver (WDM) c:\windows\system32\drivers\brserid.sys Kernel Driver				
amdide Driver	amdide No No	c:\windows\system32\drivers\amdide.sys	Kernel Driver	No	Manual	Stopped	OK	Critical	No	brserwdm	Brother WDM Serial driver c:\windows\system32\drivers\brserwdm.sys Kernel Driver				
amdk8	AMD K8 Processor Driver c:\windows\system32\drivers\amdk8.sys Kernel Driver						No	Manual	Stopped	OK	Normal	No	brusbmdm	Brother MFC USB Fax Only Modem c:\windows\system32\drivers\brusbmdm.sys Kernel Driver	
amdppm	AMD Processor Driver c:\windows\system32\drivers\amdppm.sys Kernel Driver						Yes	Manual	Running	OK	Normal	No	brusbser	Brother MFC USB Serial WDM Driver c:\windows\system32\drivers\brusbser.sys Kernel Driver	
amdsata Driver	amdsata No No	c:\windows\system32\drivers\amdsata.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	cdfs	CD/DVD File System Reader c:\windows\system32\drivers\cdfs.sys File System Driver				
amdsbs Driver	amdsbs No No	c:\windows\system32\drivers\amdsbs.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	cdrom	CD-ROM Driver c:\windows\system32\drivers\cdrom.sys Kernel Driver				
amdtools64 Driver	AMD Special Tools Driver c:\windows\system32\drivers\amdtools64.sys Kernel Driver						Yes	Manual	Running	OK	Normal	No	clfs Driver	Common Log (CLFS) c:\windows\system32\clfs.sys Kernel Driver	
amdxata Driver	amdxata Yes Yes	c:\windows\system32\drivers\amdxata.sys	Kernel Driver	No	Boot	Running	OK	Normal	No	cmbatt	Microsoft ACPI Control Method Battery Driver c:\windows\system32\drivers\cmbatt.sys Kernel Driver				
appid	AppID Driver c:\windows\system32\drivers\appid.sys Kernel Driver						No	Manual	Stopped	OK	Normal	No	cmdide Driver	cmdide c:\windows\system32\drivers\cmdide.sys Kernel Driver	
arc Driver	arc No No	c:\windows\system32\drivers\arc.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	cng Driver	CNG c:\windows\system32\drivers\cng.sys Kernel Driver				
arcsas Driver	arcsas No No	c:\windows\system32\drivers\arcsas.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No	compbatt Driver	Compbatt c:\windows\system32\drivers\compbatt.sys Kernel Driver				
asynmac	RAS Asynchronous Media Driver c:\windows\system32\drivers\asynmac.sys Kernel Driver						Yes	Manual	Running	OK	Normal	No	compositebus Driver	Composite Bus Enumerator Driver c:\windows\system32\drivers\compositebus.sys Kernel Driver	
atapi	IDE Channel c:\windows\system32\drivers\atapi.sys Kernel Driver						Yes	Boot	Running	OK	Critical	No	cpqteam	HP Network Configuration Utility c:\windows\system32\drivers\cpqteam.sys Kernel Driver	
ati2mtag Driver	ati2mtag Yes Yes	c:\windows\system32\drivers\ati2mtag.sys	Kernel Driver	No	Manual	Running	OK	Ignore	No	cpuspy3	CpuSpy3 Driver c:\windows\system32\drivers\cpuspy3.sys Kernel Driver				
b06bdrv	Broadcom NetXtreme II VBD c:\windows\system32\drivers\bxbvda.sys Kernel Driver						Yes	Manual	Running	OK	Normal	No			
b57nd60a	Broadcom NetXtreme Gigabit Ethernet - NDIS 6.0 c:\windows\system32\drivers\b57nd60a.sys Kernel Driver						Yes	Manual	Running	OK	Normal	No			

Driver	No	Manual	Stopped	OK	Normal	No
crdisk	Crdisk Filter Driver	c:\windows\system32\drivers\crdisk.sys		Kernel Driver	No	Disabled
dfsc	DFS Namespace Client Driver	c:\windows\system32\drivers\dfsc.sys		File System Driver	Yes	System Running
discache	System Attribute Cache	c:\windows\system32\drivers\discache.sys		Kernel Driver	Yes	System Running
disk	Disk Driver	c:\windows\system32\drivers\disk.sys		Kernel Driver	Yes	Boot Running
dxgkrnl	LDDM Graphics Subsystem	c:\windows\system32\drivers\dxgkrnl.sys		Kernel Driver	No	Manual Stopped
ebdrv	Broadcom NetXtreme II 10 GigE VBD	c:\windows\system32\drivers\evbda.sys		Kernel Driver	No	Manual Stopped
elxstor	elxstor	c:\windows\system32\drivers\elxstor.sys		Kernel Driver	No	Manual Stopped
errdev	Microsoft Hardware Error Device Driver	c:\windows\system32\drivers\errdev.sys		Kernel Driver	No	Manual Stopped
exfat	exFAT File System Driver	c:\windows\system32\drivers\exfat.sys		File System Driver	No	Manual Stopped
fastfat	FAT12/16/32 File System Driver	c:\windows\system32\drivers\fastfat.sys		File System Driver	No	Manual Stopped
fdc	Floppy Disk Controller Driver	c:\windows\system32\drivers\fdc.sys		Kernel Driver	No	Manual Stopped
fileinfo	File Information FS MiniFilter	c:\windows\system32\drivers\fileinfo.sys		File System Driver	No	Manual Stopped
filetrace	Filetrace	c:\windows\system32\drivers\filetrace.sys		File System Driver	No	Manual Stopped
fiodrive	Fusion ioDrive Device Driver	c:\windows\system32\drivers\fiodrive.sys		Kernel Driver	Yes	Boot Running
flpydisk	Floppy Disk Driver	c:\windows\system32\drivers\flpydisk.sys		Kernel Driver	No	Manual Stopped
fltmgr	FltMgr	c:\windows\system32\drivers\fltmgr.sys		File System Driver	No	Yes Boot Running
fsdepends	File System Dependency Minifilter	c:\windows\system32\drivers\fsdepends.sys		File System Driver	No	Manual Stopped
gagp30kx	Microsoft Generic AGPv3.0 Filter for K8 Processor Platforms	c:\windows\system32\drivers\gagp30kx.sys		Kernel Driver	No	Manual Stopped
hdaudbus	Microsoft UAA Bus Driver for High Definition Audio	c:\windows\system32\drivers\hdaudbus.sys		Kernel Driver		

hidbatt	HID UPS Battery Driver	c:\windows\system32\drivers\hidbatt.sys		Kernel Driver	No	Manual Stopped
hidusb	Microsoft HID Class Driver	c:\windows\system32\drivers\hidusb.sys		Kernel Driver	Yes	Manual Running
hpciss2	HpCISSs2	c:\windows\system32\drivers\hpciss2.sys		Kernel Driver	Yes	Boot Running
hpqilo3chif	HP ProLiant Management Controller Driver (CHIF)	c:\windows\system32\drivers\hpqilo3chif.sys		Kernel Driver	Yes	Manual Running
hpqilo3core	HP ProLiant Management Controller Driver (CORE)	c:\windows\system32\drivers\hpqilo3core.sys		Kernel Driver	Yes	Manual Running
hpqilo3whea	HP ProLiant Management Controller Driver (WHEA)	c:\windows\system32\drivers\hpqilo3whea.sys		Kernel Driver	Yes	System Running
hpsamd	HpSAMD	c:\windows\system32\drivers\hpsamd.sys		Kernel Driver	Yes	Boot Running
http	HTTP	c:\windows\system32\drivers\http.sys		Kernel Driver	Yes	Manual Running
hwpolicy	Hardware Policy Driver	c:\windows\system32\drivers\hwpolicy.sys		Kernel Driver	Yes	Boot Running
i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver	c:\windows\system32\drivers\i8042prt.sys		Kernel Driver	No	Manual Stopped
iastorv	iaStorV	c:\windows\system32\drivers\iastorv.sys		Kernel Driver	No	Manual Stopped
iirsp	iirsp	c:\windows\system32\drivers\iirsp.sys		Kernel Driver	No	Manual Stopped
intelide	intelide	c:\windows\system32\drivers\intelide.sys		Kernel Driver	No	Manual Stopped
intelppm	Intel Processor Driver	c:\windows\system32\drivers\intelppm.sys		Kernel Driver	No	Manual Stopped
ioatdma	Intel(R) QuickData Technology Device	c:\windows\system32\drivers\qd260x64.sys		Kernel Driver	No	Manual Stopped
ipfilterdriver	IP Traffic Filter Driver	c:\windows\system32\drivers\ipfltdrv.sys		Kernel Driver	No	Manual Stopped
ipmidrv	IPMIDRV	c:\windows\system32\drivers\ipmidrv.sys		Kernel Driver	Yes	Manual Running
ipnat	IP Network Address Translator	c:\windows\system32\drivers\ipnat.sys		Kernel Driver	No	Manual Stopped
isapnp	isapnp	c:\windows\system32\drivers\isapnp.sys		Kernel Driver	No	Manual Stopped

iscsiprt	iScsiPort Driver	c:\windows\system32\drivers\msiscsi.sys	Kernel Driver	No	Manual	Stopped	OK				
	Normal	No	No								
kbdclass	Keyboard Class Driver	c:\windows\system32\drivers\kbdclass.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
kbdhid	Keyboard HID Driver	c:\windows\system32\drivers\kbdhid.sys	Kernel Driver	Yes	Manual	Running	OK				
	Ignore	No	Yes								
ksecdd	KSecDD	c:\windows\system32\drivers\ksecdd.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No		
	Yes										
ksecpkg	KSecPkg	c:\windows\system32\drivers\ksecpkg.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No		
	Yes										
ksthunk	Kernel Streaming Thunks	c:\windows\system32\drivers\ksthunk.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
l2nd	Broadcom NetXtreme II BXND	c:\windows\system32\drivers\bxnd60a.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
ltdio	Link-Layer Topology Discovery Mapper I/O Driver	c:\windows\system32\drivers\ltdio.sys	Kernel Driver	Yes	Auto	Running	OK	Normal	No		
	Yes										
lsi_fc	LSI_FC	c:\windows\system32\drivers\lsi_fc.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
lsi_sas	LSI_SAS	c:\windows\system32\drivers\lsi_sas.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
lsi_sas2	LSI_SAS2	c:\windows\system32\drivers\lsi_sas2.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
lsi_scsi	LSI_SCSI	c:\windows\system32\drivers\lsi_scsi.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
luaflv	UAC File Virtualization	c:\windows\system32\drivers\luaflv.sys	File System Driver	Yes	Auto	Running	OK	Normal	No		
	Yes										
megasas	megasas	c:\windows\system32\drivers\megasas.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
megasr	MegaSR	c:\windows\system32\drivers\megasr.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
modem	Modem	c:\windows\system32\drivers\modem.sys	Kernel Driver	No	Manual	Stopped	OK	Ignore	No		
	No										
monitor	Microsoft Monitor Class Function Driver Service	c:\windows\system32\drivers\monitor.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
mouclass	Mouse Class Driver	c:\windows\system32\drivers\mouclass.sys	Kernel Driver	Yes	Manual	Running	OK				
	Normal	No	Yes								
mouhid	Mouse HID Driver	c:\windows\system32\drivers\mouhid.sys	Kernel Driver	Yes	Manual	Running	OK				
	Ignore	No	Yes								
mountmgr	Mount Point Manager	c:\windows\system32\drivers\mountmgr.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No		
	Yes										
mpio	mpio	c:\windows\system32\drivers\mpio.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
mpsdrv	Windows Firewall Authorization Driver	c:\windows\system32\drivers\mpsdrv.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
mrxsm	SMB MiniRedirector Wrapper and Engine	c:\windows\system32\drivers\mrxsm.sys	File System Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
mrxsm10	SMB 1.x MiniRedirector	c:\windows\system32\drivers\mrxsm10.sys	File System Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
mrxsm20	SMB 2.0 MiniRedirector	c:\windows\system32\drivers\mrxsm20.sys	File System Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
msahci	msahci	c:\windows\system32\drivers\msahci.sys	Kernel Driver	No	Manual	Stopped	OK	Critical	No		
	No										
msdsm	msdsm	c:\windows\system32\drivers\msdsm.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
msfs	Msfs	c:\windows\system32\drivers\msfs.sys	File System Driver	Yes	System	Running	OK	Normal			
	No										
mshidkmdf	Pass-through HID to KMD Filter Driver	c:\windows\system32\drivers\mshidkmdf.sys	Kernel Driver	No	Manual	Stopped	OK	Ignore	No		
	No										
msisadrv	msisadrv	c:\windows\system32\drivers\msisadrv.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No		
	Yes										
msrpc	MsRPC	c:\windows\system32\drivers\msrpc.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
mssmbios	Microsoft System Management BIOS Driver	c:\windows\system32\drivers\mssmbios.sys	Kernel Driver	Yes	System	Running	OK	Normal	No		
	Yes										
mtconfig	Microsoft Input Configuration Driver	c:\windows\system32\drivers\mtconfig.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
multevent	MultEvent Driver	\\?\c:\windows\system32\drivers\multeventdriver.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
mup	Mup	c:\windows\system32\drivers\mup.sys	File System Driver	Yes	Boot	Running	OK	Normal			
	No										
ndis	NDIS System Driver	c:\windows\system32\drivers\ndis.sys	Kernel Driver	Yes	Boot	Running	OK				
	Critical	No	Yes								
ndiscap	NDIS Capture LightWeight Filter	c:\windows\system32\drivers\ndiscap.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
ndistapi	Remote Access NDIS TAPI Driver	c:\windows\system32\drivers\ndistapi.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										
ndisuio	NDIS Usermode I/O Protocol	c:\windows\system32\drivers\ndisuio.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No		
	No										
ndiswan	Remote Access NDIS WAN Driver	c:\windows\system32\drivers\ndiswan.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No		
	Yes										

ndproxy	NDIS Proxy	c:\windows\system32\drivers\ndproxy.sys	Kernel Driver	Yes	Manual	Running	OK	processor	Processor Driver	c:\windows\system32\drivers\processr.sys	Kernel Driver	No	Manual	Stopped	OK
	Normal	No	Yes						Normal	No	No				
netbios	NetBIOS Interface	c:\windows\system32\drivers\netbios.sys	File System Driver	Yes	System	Running	OK	psched	QoS Packet Scheduler	c:\windows\system32\drivers\pacer.sys	Kernel Driver	Yes	System	Running	OK
	Normal	No	Yes						Normal	No	Yes				
netbt	NetBT	c:\windows\system32\drivers\netbt.sys	Kernel Driver	Yes	System	Running	OK	Normal	No	Yes					
Driver	Yes							ql2300	ql2300	c:\windows\system32\drivers\ql2300.sys	Kernel Driver	No	Manual	Stopped	OK
	Yes								No		Normal	No			
nfrd960	nfrd960	c:\windows\system32\drivers\nfrd960.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No						
Driver	No							ql40xx	ql40xx	c:\windows\system32\drivers\ql40xx.sys	Kernel Driver	No	Manual	Stopped	OK
	No								No		Normal	No			
npfs	Npfs	c:\windows\system32\drivers\npfs.sys	File System Driver	Yes	System	Running	OK	Normal	No						
System Driver	No							rasacd	Remote Access Auto Connection Driver	c:\windows\system32\drivers\rasacd.sys	Kernel Driver	No	Manual	Stopped	OK
	Yes								No		Normal	No			
nsiproxy	NSI proxy service driver.	c:\windows\system32\drivers\nsiproxy.sys	Kernel Driver	Yes	System	Running	OK	Normal	No						
	Yes							rasagilevpn	WAN Miniport (IKEv2)	c:\windows\system32\drivers\agilevpn.sys	Kernel Driver	Yes	Manual	Running	OK
ntfs	Ntfs	c:\windows\system32\drivers\ntfs.sys	File System Driver	Yes	Manual	Running	OK	Normal	No						
System Driver	No							rasl2tp	WAN Miniport (L2TP)	c:\windows\system32\drivers\rasl2tp.sys	Kernel Driver	Yes	Manual	Running	OK
	Yes								Yes		Normal	No			
null	Null	c:\windows\system32\drivers\null.sys	Kernel Driver	Yes	System	Running	OK	Normal	No						
Driver	Yes							rasppoe	Remote Access PPPOE Driver	c:\windows\system32\drivers\rasppoe.sys	Kernel Driver	Yes	Manual	Running	OK
	Yes								Yes		Normal	No			
nvraid	nvraid	c:\windows\system32\drivers\nvraid.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No						
Driver	No							rassttp	WAN Miniport (SSTP)	c:\windows\system32\drivers\rassttp.sys	Kernel Driver	Yes	Manual	Running	OK
	No								Yes		Normal	No			
nvstor	nvstor	c:\windows\system32\drivers\nvstor.sys	Kernel Driver	No	Manual	Stopped	OK	Critical	No						
Driver	No							rdbs	Redirected Buffering Sub System	c:\windows\system32\drivers\rdbs.sys	File System Driver	Yes	System	Running	OK
	No								Yes		Normal	No			
nv_agp	NVIDIA nForce AGP Bus Filter	c:\windows\system32\drivers\nv_agp.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No						
	No							rdpbus	Remote Desktop Device Redirector Bus Driver	c:\windows\system32\drivers\rdpbus.sys	Kernel Driver	Yes	Manual	Running	OK
nxnd6hp	HP Multifunctions 1/10 Gigabit Server Adapter	c:\windows\system32\drivers\hpnd6x64.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No						
	No							rdpcdd	RDPCDD	c:\windows\system32\drivers\rdpcdd.sys	Kernel Driver	Yes	System	Running	OK
ohci1394	1394 OHCI Compliant Host Controller (Legacy)	c:\windows\system32\drivers\ohci1394.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No						
	No							rdpdr	Terminal Server Device Redirector Driver	c:\windows\system32\drivers\rdpdr.sys	Kernel Driver	Yes	Manual	Running	OK
parport	Parallel port driver	c:\windows\system32\drivers\parport.sys	Kernel Driver	No	Manual	Stopped	OK	Ignore	No						
	Ignore	No						rdpencdd	RDP Encoder Mirror Driver	c:\windows\system32\drivers\rdpencdd.sys	Kernel Driver	Yes	System	Running	OK
partmgr	Partition Manager	c:\windows\system32\drivers\partmgr.sys	Kernel Driver	Yes	Boot	Running	OK	Ignore	No						
	Critical	No						rdprefmp	Reflector Display Driver used to gain access to graphics data	c:\windows\system32\drivers\rdprefmp.sys	Kernel Driver	Yes	System	Running	OK
pci	PCI Bus Driver	c:\windows\system32\drivers\pci.sys	Kernel Driver	Yes	Boot	Running	OK	Yes			Ignore	No			
	Critical	No						rdpwd	RDP Winstation Driver	c:\windows\system32\drivers\rdpwd.sys	Kernel Driver	Yes	Manual	Running	OK
pciide	pciide	c:\windows\system32\drivers\pciide.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No						
Driver	Yes							rsfx0150	RsFx0150 Driver	c:\windows\system32\drivers\rsfx0150.sys	File System Driver	No	Disabled	Stopped	OK
	Yes								Normal	No	No				
pcmcia	pcmcia	c:\windows\system32\drivers\pcmcia.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No						
Driver	No							rspndr	Link-Layer Topology Discovery Responder	c:\windows\system32\drivers\rspndr.sys	Kernel Driver	Yes	Auto	Running	OK
	No								Yes		Normal	No			
pcw	Performance Counters for Windows Driver	c:\windows\system32\drivers\pcw.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No						
	Yes							s3cap	s3cap	c:\windows\system32\drivers\vms3cap.sys	Kernel Driver	No	Manual	Stopped	OK
peauth	PEAUTH	c:\windows\system32\drivers\peauth.sys	Kernel Driver	Yes	Auto	Running	OK	Normal	No						
Driver	Yes							Yes			Normal	No			
pptpminiport	WAN Miniport (PPTP)	c:\windows\system32\drivers\raspptp.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No						
	Yes							Driver	No		Normal	No			
	Yes								No						

usbhub	Microsoft USB Standard Hub Driver					
	c:\windows\system32\drivers\usbhub.sys	Kernel Driver	Yes	Manual	Running	OK Normal No
usbohci	Microsoft USB Open Host Controller Miniport Driver					
	c:\windows\system32\drivers\usbohci.sys	Kernel Driver	Yes	Manual	Running	OK Normal No
usbprint	Microsoft USB PRINTER Class					
	c:\windows\system32\drivers\usbprint.sys	Kernel Driver	No	Manual	Stopped	OK Normal No
usbstor	USB Mass Storage Driver					
	c:\windows\system32\drivers\usbstor.sys	Kernel Driver	No	Manual	Stopped	OK Normal No
usbuhci	Microsoft USB Universal Host Controller Miniport Driver					
	c:\windows\system32\drivers\usbuhci.sys	Kernel Driver	Yes	Manual	Running	OK Normal No
vdrvroot	Microsoft Virtual Drive Enumerator Driver					
	c:\windows\system32\drivers\vdrvroot.sys	Kernel Driver	Yes	Boot	Running	OK Critical No
vga Driver	vga	c:\windows\system32\drivers\vgapnp.sys	Kernel	No	Manual	Stopped OK Ignore No
vgasave Driver	VgaSave	c:\windows\system32\drivers\vga.sys	Kernel	Yes	System	Running OK Ignore No
vhdmp Driver	vhdmp	c:\windows\system32\drivers\vhdmp.sys	Kernel	No	Manual	Stopped OK Normal No
viaide Driver	viaide	c:\windows\system32\drivers\viaide.sys	Kernel	No	Manual	Stopped OK Critical No
vid Driver	Vid	c:\windows\system32\drivers\vid.sys	Kernel	No	Manual	Stopped OK Normal No
vmbus	Virtual Machine Bus	c:\windows\system32\drivers\vmbus.sys	Kernel Driver	No	Manual	Stopped OK Normal No
vmbushid	VMBusHID	c:\windows\system32\drivers\vmbushid.sys	Kernel Driver	No	Manual	Stopped OK Ignore No
volmgr	Volume Manager Driver	c:\windows\system32\drivers\volmgr.sys	Kernel Driver	Yes	Boot	Running OK Critical No
volmgrx	Dynamic Volume Manager	c:\windows\system32\drivers\volmgrx.sys	Kernel Driver	Yes	Boot	Running OK Critical No
volsnap	Storage volumes	c:\windows\system32\drivers\volsnap.sys	Kernel Driver	Yes	Boot	Running OK Critical No
vsmraid Driver	vsmraid	c:\windows\system32\drivers\vsmraid.sys	Kernel	No	Manual	Stopped OK Normal No
wacompen	Wacom Serial Pen HID Driver	c:\windows\system32\drivers\wacompen.sys	Kernel Driver	No	Manual	Stopped OK Normal No
wanarp	Remote Access IP ARP Driver	c:\windows\system32\drivers\wanarp.sys	Kernel Driver	No	Manual	Stopped OK Normal No
wanarpv6	Remote Access IPv6 ARP Driver	c:\windows\system32\drivers\wanarp.sys	Kernel Driver			

wd Driver	Wd	c:\windows\system32\drivers\wd.sys	Kernel	Yes	Manual	Stopped OK Normal No
wdf01000	Kernel Mode Driver Frameworks service	c:\windows\system32\drivers\wdf01000.sys	Kernel Driver	Yes	Boot	Running OK Normal No
wfplwf	WFP Lightweight Filter	c:\windows\system32\drivers\wfplwf.sys	Kernel Driver	Yes	System	Running OK Normal No
wimmount	WIMMount	c:\windows\system32\drivers\wimmount.sys	File System Driver	No	Manual	Stopped OK Normal No
wmiacpi	Microsoft Windows Management Interface for ACPI	c:\windows\system32\drivers\wmiacpi.sys	Kernel Driver	No	Manual	Stopped OK Normal No
ws2ifsl	Winsock IFS Driver	c:\windows\system32\drivers\ws2ifsl.sys	Kernel Driver	No	Disabled	Stopped OK Normal No
wudfpf	User Mode Driver Frameworks Platform Driver	c:\windows\system32\drivers\wudfpf.sys	Kernel Driver	No	Manual	Stopped OK Normal 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%\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\Common7\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;.MSC		<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	16		<SYSTEM>
PROCESSOR_IDENTIFIER	AMD64 Family 16 Model 9 Stepping 1, AuthenticAMD		<SYSTEM>
PROCESSOR_REVISION	0901		<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

	6.1.7600.16385	330.50 KB (338,432 bytes)			
	7/13/2009 6:38 PM				
csrss.exe	c:\windows\system32\csrss.exe	2972 13 200	1380	7/9/2010 10:24 AM	6.1.7600.16385
(7,680 bytes)	7/13/2009 6:19 PM				
winlogon.exe	c:\windows\system32\winlogon.exe	2608	13	200	1380
	7/9/2010 10:24 AM				
	6.1.7600.16385	380.00 KB (389,120 bytes)			
	7/13/2009 6:52 PM				
taskhost.exe	c:\windows\system32\taskhost.exe	4048	8	200	1380
	7/9/2010 10:24 AM				
	6.1.7600.16385	67.50 KB (69,120 bytes)			
	7/13/2009 6:31 PM				
rdpclip.exe	c:\windows\system32\rdpclip.exe	3044 8 200	1380	7/9/2010 10:24 AM	6.1.7600.16385
KB (209,408 bytes)	7/13/2009 7:17 PM				
sppsvc.exe	c:\windows\system32\sppsvc.exe	2448 8 200	1380	7/9/2010 10:24 AM	6.1.7600.16385
(3,524,608 bytes)	7/13/2009 8:05 PM				
dwm.exe	c:\windows\system32\dwm.exe	3248 8 200	1380	7/9/2010 10:24 AM	6.1.7600.16385
KB (120,320 bytes)	7/13/2009 6:37 PM				
explorer.exe	c:\windows\explorer.exe	1944 8	200	1380	7/9/2010 10:24 AM
	6.1.7600.16385	2.74 MB (2,868,224 bytes)			
	7/13/2009 6:56 PM				
cpqteam.exe	c:\program files\hp\ncu\cpqteam.exe	2484	8	200	1380
	7/9/2010 10:24 AM				
	72.00 KB (73,728 bytes)	1/13/2010 6:45 AM			
mmc.exe	c:\windows\system32\mmc.exe	2732 8 200	1380	7/9/2010 10:24 AM	6.1.7600.16385
(2,144,256 bytes)	7/13/2009 6:49 PM				
msinfo32.exe	c:\windows\system32\msinfo32.exe	2884	8	200	1380
	7/12/2010 9:45 AM				
	6.1.7600.16385	370.00 KB (378,880 bytes)			
	7/13/2009 6:31 PM				
wmiprvse.exe	c:\windows\system32\wbem\wmiprvse.exe	3964	8	200	1380
	7/12/2010 9:45 AM				
	6.1.7600.16385	360.00 KB (368,640 bytes)			
	7/13/2009 6:47 PM				
wmiprvse.exe	c:\windows\system32\wbem\wmiprvse.exe	3472	8	200	1380
	7/12/2010 9:45 AM				
	6.1.7600.16385	360.00 KB (368,640 bytes)			
	7/13/2009 6:47 PM				

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer	Path
csrss	6.1.7600.16385	7.50 KB (7,680 bytes)	7/13/2009 6:19 PM	Microsoft Corporation	c:\windows\system32\csrss.exe
ntdll	6.1.7600.16385	1.66 MB (1,736,792 bytes)	7/13/2009 6:22 PM	Microsoft Corporation	c:\windows\system32\ntdll.dll
csrssrv	6.1.7600.16385	42.50 KB (43,520 bytes)	7/13/2009 6:19 PM	Microsoft Corporation	c:\windows\system32\csrssrv.dll
basesrv	6.1.7600.16385	51.50 KB (52,736 bytes)	7/13/2009 6:18 PM	Microsoft Corporation	c:\windows\system32\basesrv.dll
winsrv	6.1.7600.16385	209.00 KB (214,016 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\winsrv.dll
user32	6.1.7600.16385	985.00 KB (1,008,640 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\user32.dll
gdi32	6.1.7600.16385	395.00 KB (404,480 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\gdi32.dll

kernel32	6.1.7600.16385	1.11 MB (1,162,240 bytes)	7/13/2009 6:28 PM	Microsoft Corporation	c:\windows\system32\kernel32.dll
kernelbase	6.1.7600.16385	411.50 KB (421,376 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\kernelbase.dll
lpk	6.1.7600.16385	41.00 KB (41,984 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\lpk.dll
usp10	1.626.7600.16385	782.50 KB (801,280 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\usp10.dll
msvcr7	7.0.7600.16385	620.00 KB (634,880 bytes)	7/13/2009 6:19 PM	Microsoft Corporation	c:\windows\system32\msvcr7.dll
sxssrv	6.1.7600.16385	31.00 KB (31,744 bytes)	7/13/2009 6:26 PM	Microsoft Corporation	c:\windows\system32\sxssrv.dll
sxs	6.1.7600.16385	569.50 KB (583,168 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\sxs.dll
rpert4	6.1.7600.16385	1.17 MB (1,221,632 bytes)	7/13/2009 6:23 PM	Microsoft Corporation	c:\windows\system32\rpert4.dll
cryptbase	6.1.7600.16385	43.00 KB (44,032 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\cryptbase.dll
wininit	6.1.7600.16385	126.00 KB (129,024 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\wininit.exe
sechost	6.1.7600.16385	111.00 KB (113,664 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\sechost.dll
profapi	6.1.7600.16385	43.00 KB (44,032 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\profapi.dll
imm32	6.1.7600.16385	163.50 KB (167,424 bytes)	7/13/2009 6:38 PM	Microsoft Corporation	c:\windows\system32\imm32.dll
msctf	6.1.7600.16385	1.02 MB (1,067,008 bytes)	7/13/2009 6:40 PM	Microsoft Corporation	c:\windows\system32\msctf.dll
rpctrremote	6.1.7600.16385	63.50 KB (65,024 bytes)	7/13/2009 6:59 PM	Microsoft Corporation	c:\windows\system32\rpctrremote.dll
apphelp	6.1.7600.16385	330.50 KB (338,432 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\apphelp.dll
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
scesrv	6.1.7600.16385	396.50 KB (406,016 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\scesrv.dll
srvcli	6.1.7600.16385	124.50 KB (127,488 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\srvcli.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
sspisrv	6.1.7600.16385	28.00 KB (28,672 bytes)	7/13/2009 6:20 PM	Microsoft Corporation	c:\windows\system32\sspisrv.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
cngaudit	6.1.7600.16385	18.50 KB (18,944 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\cngaudit.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
msprivs	6.1.7600.16385	2.00 KB (2,048 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\msprivs.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
eflsiaext	6.1.7600.16385	55.50 KB (56,832 bytes)	7/13/2009 6:50 PM	Microsoft Corporation	c:\windows\system32\eflsiaext.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	186.61 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
dhcpcsvc	6.1.7600.16385	85.00 KB (87,040 bytes)	7/13/2009 6:21 PM	Microsoft Corporation	c:\windows\system32\dhcpcsvc.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
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
umpnprmgr	6.1.7600.16385	395.00 KB (404,480 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\umpnprmgr.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
wmidcpv	6.1.7600.16385	187.00 KB (191,488 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\wbem\wmidcpv.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
wevtvsc	6.1.7600.16385	1.57 MB (1,646,080 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\wevtvsc.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
winmr	6.1.7600.16385	28.00 KB (28,672 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\winmr.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
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
shsvcs	6.1.7600.16385	361.00 KB (369,664 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\shsvcs.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
actxprxy	6.1.7600.16385	936.50 KB (958,976 bytes)	7/13/2009 7:41 PM	Microsoft Corporation	c:\windows\system32\actxprxy.dll
appmgmts	6.1.7600.16385	189.00 KB (193,536 bytes)	7/13/2009 6:54 PM	Microsoft Corporation	c:\windows\system32\appmgmts.dll
adslrpc	6.1.7600.16385	231.00 KB (236,544 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\adslrpc.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
cisserv	6.18.0.64	160.00 KB (163,840 bytes)	12/7/2009 6:49 PM	Hewlett-Packard Company	c:\program files\hp\cisserv\cisserv.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
msvcp80	8.0.50727.4927	1.02 MB (1,068,352 bytes)	7/13/2009 3:37 PM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.4927_none_88dce9872fb18caf\msvcp80.dll
termsrv	6.1.7600.16385	690.00 KB (706,560 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\termsrv.dll
icaapi	6.1.7600.16385	22.00 KB (22,528 bytes)	7/13/2009 7:16 PM	Microsoft Corporation	c:\windows\system32\icaapi.dll

regapi	6.1.7600.16385	92.50 KB (94,720 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\regapi.dll
tlscsp	6.1.7600.16385	72.00 KB (73,728 bytes)	7/13/2009 7:16 PM	Microsoft Corporation	c:\windows\system32\tlscsp.dll
rdpcorekmts	6.1.7600.16385	146.00 KB (149,504 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\rdpcorekmts.dll
rdpwsx	6.1.7600.16385	74.50 KB (76,288 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\rdpwsx.dll
mpr	6.1.7600.16385	79.00 KB (80,896 bytes)	7/13/2009 7:10 PM	Microsoft Corporation	c:\windows\system32\mpr.dll
taskhost	6.1.7600.16385	67.50 KB (69,120 bytes)	7/13/2009 6:31 PM	Microsoft Corporation	c:\windows\system32\taskhost.exe
msctfmonitor	6.1.7600.16385	27.50 KB (28,160 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\msctfmonitor.dll
msutb	6.1.7600.16385	230.00 KB (235,520 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\msutb.dll
dimsjob	6.1.7600.16385	39.50 KB (40,448 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\dimsjob.dll
taskschd	6.1.7600.16385	1.11 MB (1,168,896 bytes)	7/13/2009 6:47 PM	Microsoft Corporation	c:\windows\system32\taskschd.dll
netprofm	6.1.7600.16385	449.00 KB (459,776 bytes)	7/13/2009 7:12 PM	Microsoft Corporation	c:\windows\system32\netprofm.dll
rdpclip	6.1.7600.16385	204.50 KB (209,408 bytes)	7/13/2009 7:17 PM	Microsoft Corporation	c:\windows\system32\rdpclip.exe
dwm	6.1.7600.16385	117.50 KB (120,320 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\dwm.exe
dwmredir	6.1.7600.16385	125.50 KB (128,512 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\dwmredir.dll
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
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
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
dxgi	6.1.7600.16385	643.00 KB (658,432 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\dxgi.dll
explorer	6.1.7600.16385	2.74 MB (2,868,224 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\explorer.exe
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
powrprof	6.1.7600.16385	163.50 KB (167,424 bytes)	7/13/2009 6:27 PM	Microsoft Corporation	c:\windows\system32\powrprof.dll
ehstorshell	6.1.7600.16385	198.50 KB (203,264 bytes)	7/13/2009 7:00 PM	Microsoft Corporation	c:\windows\system32\ehstorshell.dll
ntshrui	6.1.7600.16385	498.00 KB (509,952 bytes)	7/13/2009 6:57 PM	Microsoft Corporation	c:\windows\system32\ntshrui.dll
cscapi	6.1.7600.16385	45.00 KB (46,080 bytes)	7/13/2009 6:24 PM	Microsoft Corporation	c:\windows\system32\cscapi.dll
iconcodservice	6.1.7600.16385	14.00 KB (14,336 bytes)	7/13/2009 6:37 PM	Microsoft Corporation	c:\windows\system32\iconcodservice.dll
timedate	6.1.7600.16385	503.00 KB (515,072 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\timedate.cpl
shdocvw	6.1.7600.16385	191.50 KB (196,096 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\shdocvw.dll
msls31	3.10.349.0	217.00 KB (222,208 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\msls31.dll
urlmon	8.0.7600.16385	1.42 MB (1,492,480 bytes)	7/13/2009 7:01 PM	Microsoft Corporation	c:\windows\system32\urlmon.dll
iertutil	8.0.7600.16385	2.33 MB (2,440,704 bytes)	7/13/2009 6:59 PM	Microsoft Corporation	c:\windows\system32\iertutil.dll
winmm	6.1.7600.16385	212.50 KB (217,600 bytes)	7/13/2009 7:18 PM	Microsoft Corporation	c:\windows\system32\winmm.dll
linkinfo	6.1.7600.16385	29.00 KB (29,696 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\linkinfo.dll
stobject	6.1.7600.16385	250.00 KB (256,000 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\stobject.dll
batmeter	6.1.7600.16385	730.50 KB (748,032 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\batmeter.dll
prnfldr	6.1.7600.16385	407.00 KB (416,768 bytes)	7/13/2009 7:40 PM	Microsoft Corporation	c:\windows\system32\prnfldr.dll
dxp	6.1.7600.16385	449.00 KB (459,776 bytes)	7/13/2009 7:21 PM	Microsoft Corporation	c:\windows\system32\dxp.dll
syncreg	2007.94.7600.16385	72.00 KB (73,728 bytes)	7/13/2009 7:22 PM	Microsoft Corporation	c:\windows\system32\syncreg.dll
pnidui	6.1.7600.16385	1.72 MB (1,807,872 bytes)	7/13/2009 7:08 PM	Microsoft Corporation	c:\windows\system32\pnidui.dll
quutil	6.1.7600.16385	105.00 KB (107,520 bytes)	7/13/2009 7:07 PM	Microsoft Corporation	c:\windows\system32\quutil.dll
actioncenter	6.1.7600.16385	762.50 KB (780,800 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\actioncenter.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
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
werconcp	6.1.7600.16385	1.22 MB (1,280,512 bytes)	7/13/2009 6:41 PM	Microsoft Corporation	c:\windows\system32\werconcp.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
wercplsupport	6.1.7600.16385	82.50 KB (84,480 bytes)	7/13/2009 6:40 PM	Microsoft Corporation	c:\windows\system32\wercplsupport.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
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
structuredquery	7.0.7600.16385	472.50 KB (483,840 bytes)	7/13/2009 7:29 PM	Microsoft Corporation	c:\windows\system32\structuredquery.dll
networkexplorer	6.1.7600.16385	1.60 MB (1,672,704 bytes)	7/13/2009 7:08 PM	Microsoft Corporation	c:\windows\system32\networkexplorer.dll
msftedit	5.41.21.2509	781.00 KB (799,744 bytes)	7/13/2009 6:39 PM	Microsoft Corporation	c:\windows\system32\msftedit.dll
searchfolder	6.1.7600.16385	845.00 KB (865,280 bytes)	7/13/2009 6:59 PM	Microsoft Corporation	c:\windows\system32\searchfolder.dll
thumbcache	6.1.7600.16385	110.50 KB (113,152 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\thumbcache.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
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
zipfldr	6.1.7600.16385	357.50 KB (366,080 bytes)	7/13/2009 6:56 PM	Microsoft Corporation	c:\windows\system32\zipfldr.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
browcli	6.1.7600.16385	57.00 KB (58,368 bytes)	7/13/2009 6:53 PM	Microsoft Corporation	c:\windows\system32\browcli.dll
twext	6.1.7600.16385	168.50 KB (172,544 bytes)	7/13/2009 6:55 PM	Microsoft Corporation	c:\windows\system32\twext.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
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
sppsvc	6.1.7600.16385	3.36 MB (3,524,608 bytes)	7/13/2009 8:05 PM	Microsoft Corporation	c:\windows\system32\sppsvc.exe
sppwinob	6.1.7600.16385	409.00 KB (418,816 bytes)	7/13/2009 6:51 PM	Microsoft Corporation	c:\windows\system32\sppwinob.dll
sppobj	6.1.7600.16385	1.03 MB (1,082,880 bytes)	7/13/2009 6:52 PM	Microsoft Corporation	c:\windows\system32\sppobj.dll
mmc	6.1.7600.16385	2.04 MB (2,144,256 bytes)	7/13/2009 6:49 PM	Microsoft Corporation	c:\windows\system32\mmc.exe
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
odbc32	6.1.7600.16385	696.00 KB (712,704 bytes)	7/13/2009 7:29 PM	Microsoft Corporation	c:\windows\system32\odbc32.dll
mmcbase	6.1.7600.16385	348.00 KB (356,352 bytes)	7/13/2009 6:46 PM	Microsoft Corporation	c:\windows\system32\mmcbase.dll
odbcint	6.1.7600.16385	224.00 KB (229,376 bytes)	7/13/2009 7:28 PM	Microsoft Corporation	c:\windows\system32\odbcint.dll
mmcmdmgr	6.1.7600.16385	3.06 MB (3,205,120 bytes)	7/13/2009 6:48 PM	Microsoft Corporation	c:\windows\system32\mmcmdmgr.dll

msxml3 8.110.7600.16385 1.79 MB (1,876,992 bytes)
7/13/2009 7:42 PM Microsoft Corporation
c:\windows\system32\msxml3.dll

m scorwks 2.0.50727.4927 9.59 MB (10,059,072 bytes)
7/13/2009 3:37 PM Microsoft Corporation
c:\windows\microsoft.net\framework64\v2.0.50727\mscorwks.dll

m scorlib.ni 2.0.50727.4927 14.85 MB (15,566,848 bytes)
7/14/2009 12:08 AM Microsoft Corporation
c:\windows\assembly\nativeimages_v2.0.50727_64\mscorlib\9a017aa8d51322f18a40f414fa35872d\mscorlib.ni.dll

System.ni 2.0.50727.4927 10.11 MB (10,597,376 bytes)
7/14/2009 12:08 AM Microsoft Corporation
c:\windows\assembly\nativeimages_v2.0.50727_64\system\247913fa7aefcf04ea33d28d24ab611\system.ni.dll

MMCEX.ni 6.1.7600.16385 2.22 MB (2,327,040 bytes)
7/14/2009 12:11 AM Not Available
c:\windows\assembly\nativeimages_v2.0.50727_64\mmcx\495a1d4acb8ce34924a0bc7ceff429e\mmcx.ni.dll

MMCFxCommon.ni 6.1.7600.16385 408.00 KB (417,792 bytes)
7/14/2009 12:10 AM Not Available
c:\windows\assembly\nativeimages_v2.0.50727_64\mmcfxcommon\93374f3b7034e8f0af28cf29f414b4a3\mmcfxcommon.ni.dll

System.Configuration.ni 2.0.50727.4927 1.25 MB (1,308,160 bytes)
7/14/2009 12:08 AM Microsoft Corporation
c:\windows\assembly\nativeimages_v2.0.50727_64\system.configuration\907b2b3dae591e0484acf0ea63e8caa\system.configuration.ni.dll

System.Xml.ni 2.0.50727.4927 6.63 MB (6,948,864 bytes)
7/14/2009 12:09 AM Microsoft Corporation
c:\windows\assembly\nativeimages_v2.0.50727_64\system.xml\1fb1b14199d6aec70df1a0626a3ae5f2\system.xml.ni.dll

System.Drawing.ni 2.0.50727.4927 2.20 MB (2,311,168 bytes)
7/14/2009 12:09 AM Microsoft Corporation
c:\windows\assembly\nativeimages_v2.0.50727_64\system.drawing\10f1e1ffca16e550af8a8fd7685a48ef\system.drawing.ni.dll

System.Windows.Forms.ni 2.0.50727.4927 16.57 MB (17,378,816 bytes)
7/14/2009 12:09 AM Microsoft Corporation
c:\windows\assembly\nativeimages_v2.0.50727_64\system.windows.forms\2e0044fa7cabadce65fa8964fe2c90dd\system.windows.forms.ni.dll

diasymreader 8.0.50727.4927 778.32 KB (797,000 bytes)
7/13/2009 3:37 PM Microsoft Corporation
c:\windows\microsoft.net\framework64\v2.0.50727\diasymreader.dll

Microsoft.ManagementConsole.ni 6.1.7600.16385 779.00 KB (797,696 bytes)
7/14/2009 12:10 AM Not Available
c:\windows\assembly\nativeimages_v2.0.50727_64\microsoft.managementconsole\92af4acb9fb3d8c89c5c364a1ad6b230\microsoft.managementconsole.ni.dll

tsadmin 6.1.7600.16385 440.00 KB (450,560 bytes)
7/13/2009 5:11 PM Not Available
c:\windows\system32\tsadmin.dll

m scorjit 2.0.50727.4927 1.50 MB (1,576,768 bytes)
7/13/2009 3:37 PM Microsoft Corporation
c:\windows\microsoft.net\framework64\v2.0.50727\mscorjit.dll

wts 6.1.7600.16385 10.00 KB (10,240 bytes)
7/13/2009 7:17 PM Microsoft Corporation
c:\windows\system32\wts.dll

util.dll 6.1.7600.16385 34.00 KB (34,816 bytes)
7/13/2009 7:17 PM Microsoft Corporation
c:\windows\system32\util.dll

msinfo32 6.1.7600.16385 370.00 KB (378,880 bytes)
7/13/2009 6:31 PM Microsoft Corporation
c:\windows\system32\msinfo32.exe

ehstorapi 6.1.7600.16385 141.50 KB (144,896 bytes)
7/13/2009 7:00 PM Microsoft Corporation
c:\windows\system32\ehstorapi.dll

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

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

schedcli 6.1.7600.16385 23.50 KB (24,064 bytes)
7/13/2009 6:53 PM Microsoft Corporation
c:\windows\system32\schedcli.dll

wmi 6.1.7600.16385 5.00 KB (5,120 bytes)
7/13/2009 7:41 PM Microsoft Corporation
c:\windows\system32\wmi.dll

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

provthrd 6.1.7600.16385 300.00 KB (307,200 bytes)
7/13/2009 6:47 PM Microsoft Corporation
c:\windows\system32\provthrd.dll

m svcirt 7.0.7600.16385 76.50 KB (78,336 bytes)
7/13/2009 6:18 PM Microsoft Corporation
c:\windows\system32\msvcirt.dll

wsock32 6.1.7600.16385 18.00 KB (18,432 bytes)
7/13/2009 7:10 PM Microsoft Corporation
c:\windows\system32\wsock32.dll

tapi32 6.1.7600.16385 243.00 KB (248,832 bytes)
7/13/2009 7:41 PM Microsoft Corporation
c:\windows\system32\tapi32.dll

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

[Services]

Display Name	Name	State	Start Mode	Service Type
Path	Error Control	Start Name	Tag ID	
Application Experience	AeLookupSvc	Stopped	Manual	Manual
Share Process	c:\windows\system32\svchost.exe -k			
netsh	Normal localSystem	0		
Application Layer Gateway Service	ALG	Stopped	Manual	Manual
NT AUTHORITY\LocalService	c:\windows\system32\alg.exe	Normal		
Application Identity	AppIDSvc	Stopped	Manual	Share Process
NT AUTHORITY\LocalService	c:\windows\system32\svchost.exe -k			
localizationandnoimpersonation	Normal	NT Authority\LocalService	0	
Application Information	Appinfo	Stopped	Manual	Share
Process	c:\windows\system32\svchost.exe -k	netsh	Normal	
LocalSystem	0			
Application Management	AppMgmt	Running	Manual	Share
Process	c:\windows\system32\svchost.exe -k	netsh	Normal	
LocalSystem	0			
Windows Audio Endpoint Builder	AudioEndpointBuilder	Stopped	Manual	Share Process
Process	c:\windows\system32\svchost.exe -k			
localsystemnetworkrestricted	Normal	LocalSystem	0	
Windows Audio	AudioSrv	Stopped	Manual	Share Process
Process	c:\windows\system32\svchost.exe -k			
localizationandnoimpersonation	Normal	NT AUTHORITY\LocalService	0	
Base Filtering Engine	BFE	Stopped	Disabled	Share Process
Process	c:\windows\system32\svchost.exe -k	localizationandnoimpersonation	Normal	
NT AUTHORITY\LocalService	0			
Background Intelligent Transfer Service	BITS	Stopped	Manual	Manual
Share Process	c:\windows\system32\svchost.exe -k			
netsh	Normal LocalSystem	0		
Computer Browser	Browser	Stopped	Disabled	Share Process
Process	c:\windows\system32\svchost.exe -k	netsh	Normal	
LocalSystem	0			

Certificate Propagation	CertPropSvc	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k	Function Discovery Resource Publication	FDResPub	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
netsvcs	Normal	LocalSystem	0			localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0		
HP Smart Array SAS/SATA Event Notification Service	Cissesrv	Running		Auto	Own Process "c:\program files\hp\cissesrv\cissesrv.exe"	Windows Font Cache Service	FontCache	Stopped	Manual	Share	Process c:\windows\system32\svchost.exe -k
	Normal	LocalSystem	0			localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	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	Windows Presentation Foundation Font Cache 3.0.0.0	FontCache3.0.0.0	Stopped	Manual	Own Process	c:\windows\microsoft.net\framework64\v3.0\wpf\presentationfont
	Ignore	LocalSystem	0			cache.exe	Normal	NT Authority\LocalService	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	Group Policy Client	gpsvc	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs
	Ignore	LocalSystem	0				LocalSystem	0		Normal	
COM+ System Application	COMSysApp	Stopped	Manual	Own Process	c:\windows\system32\dllhost.exe	Human Interface Device Access	hidserv	Stopped	Manual	Share	Process c:\windows\system32\svchost.exe -k
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}		Normal	LocalSystem	0		localsystemnetworkrestricted	Normal	LocalSystem	0		
HP ProLiant iLO 3 Remote IML Service	CpqRcmc3	Running	Auto	Share Process	"c:\program files\hewlett-packard\ilo3\service\proliantmonitor.exe"	Health Key and Certificate Management	hkmsvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
	Normal	LocalSystem	0			netsvcs	Normal	localSystem	0		
Cryptographic Services	CryptSvc	Stopped	Manual	Share	Process c:\windows\system32\svchost.exe -k networkservice	Windows CardSpace	idsvc	Stopped	Manual	Share Process	"c:\windows\microsoft.net\framework64\v3.0\windows
	NT Authority\NetworkService	0		Normal		communication foundation\infocard.exe"	Normal	LocalSystem	0		
DCOM Server Process Launcher	DcomLaunch	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k	IKE and AuthIP IPsec Keying Modules	IKEEXT	Stopped	Auto	Share Process	c:\windows\system32\svchost.exe -k
dcomlaunch	Normal	LocalSystem	0			netsvcs	Normal	LocalSystem	0		
Disk Defragmenter	defragsvc	Stopped	Manual	Own Process	c:\windows\system32\svchost.exe -k defragsvc	PnP-X IP Bus Enumerator	IPBusEnum	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k
	LocalSystem	0		Normal		localsystemnetworkrestricted	Normal	LocalSystem	0		
DHCP Client	Dhcp	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k	IP Helper	iphlpsvc	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k netsvcs
localservicenetworkrestricted	Normal	NT Authority\LocalService	0				LocalSystem	0		Normal	
DNS Client	Dnscache	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k networkservice	CNG Key Isolation	KeyIso	Stopped	Manual	Share Process	c:\windows\system32\lsass.exe
	NT AUTHORITY\NetworkService	0		Normal		0		Normal	LocalSystem		
Wired AutoConfig	dot3svc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	KtmRm for Distributed Transaction Coordinator		KtmRm	Stopped	Manual	Share Process
localsystemnetworkrestricted	Normal	localSystem	0			networkserviceandnoimpersonation	Normal	NT			
Diagnostic Policy Service	DPS	Stopped	Disabled	Share	Process c:\windows\system32\svchost.exe -k localservicenetwork	AUTHORITY\NetworkService	0				
	Normal	NT AUTHORITY\LocalService	0			Server	LanmanServer	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k netsvcs
Extensible Authentication Protocol	EapHost	Stopped	Manual	Share	Process c:\windows\system32\svchost.exe -k	Workstation	LanmanWorkstation	Running	Auto	Share	Process c:\windows\system32\svchost.exe -k networkservice
netsvcs	Normal	localSystem	0				NT AUTHORITY\NetworkService	0		Normal	
Encrypting File System (EFS)	EFS	Stopped	Manual	Share	Process c:\windows\system32\lsass.exe	Link-Layer Topology Discovery Mapper	lldtsvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k
	Normal	LocalSystem	0			localservice	Normal	NT AUTHORITY\LocalService	0		
Windows Event Log	eventlog	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k	TCP/IP NetBIOS Helper	lmhosts	Running	Auto	Share	Process c:\windows\system32\svchost.exe -k
localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0			localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0		
COM+ Event System	EventSystem	Running	Auto	Share	Process c:\windows\system32\svchost.exe -k localservice	Multimedia Class Scheduler	MMCSS	Stopped	Manual	Share	Process c:\windows\system32\svchost.exe -k netsvcs
	NT AUTHORITY\LocalService	0		Normal			LocalSystem	0		Normal	
Microsoft Fibre Channel Platform Registration Service	FCRegSvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k	Windows Firewall	MpsSvc	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k localservicenetwork
localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0				Normal	NT Authority\LocalService	0		
Function Discovery Provider Host	fdPHost	Running	Manual	Share Process	c:\windows\system32\svchost.exe -k	Distributed Transaction Coordinator	MSDTC	Stopped	Disabled	Own Process	c:\windows\system32\msdtc.exe
localservice	Normal	NT AUTHORITY\LocalService	0				NT AUTHORITY\NetworkService	0		Normal	
						Microsoft iSCSI Initiator Service	MSiSCSI	Stopped	Manual	Share	Process c:\windows\system32\svchost.exe -k netsvcs
							LocalSystem	0		Normal	

Windows Installer	msiserver	Stopped	Manual	Own Process		Routing and Remote Access	RemoteAccess	Stopped	Disabled	
	c:\windows\system32\msiexec.exe /v			Normal			Share Process	c:\windows\system32\svchost.exe -k		
	LocalSystem	0				netsh	Normal	localSystem	0	
SQL Server (MSSQLSERVER)	MSSQLSERVER	Stopped	Manual	Own Process		Remote Registry	RemoteRegistry	Stopped	Disabled	Share
	"c:\program files\microsoft sql server\mssql10_50\mssqlserver\mssql\bin\sqlservr.exe" -smssqlserver			Normal		Process	c:\windows\system32\svchost.exe -k regsvc	Normal	NT	
	LocalSystem	0				AUTHORITY\LocalService	0			
SQL Active Directory Helper Service	MSSQLServerADHelper100	Stopped	Disabled	Own Process		RPC Endpoint Mapper	RpcEptMapper	Running	Auto	
	files\microsoft sql server\100\shared\sqladhlp.exe"			Normal		Share Process	c:\windows\system32\svchost.exe -k rpsvc	Normal	NT	
	AUTHORITY\NETWORKSERVICE	0				Normal	NT AUTHORITY\NetworkService	0		
Network Access Protection Agent	napagent	Stopped	Manual	Share Process		Remote Procedure Call (RPC) Locator	RpcLocator	Stopped		
	Share Process			Normal		Manual	Own Process			
networkservice	c:\windows\system32\svchost.exe -k			NT AUTHORITY\NetworkService			c:\windows\system32\locator.exe	Normal	NT	
	0					AUTHORITY\NetworkService	0			
Netlogon	Netlogon	Stopped	Manual	Share Process		Remote Procedure Call (RPC)	RpcSs	Running	Auto	Share
	c:\windows\system32\lsass.exe			Normal		Process	c:\windows\system32\svchost.exe -k rpsvc	Normal	NT	
	0					AUTHORITY\NetworkService	0			
Network Connections	Netman	Running	Manual	Share Process		Resultant Set of Policy Provider	RSOPProv	Stopped	Manual	Share
	c:\windows\system32\svchost.exe -k			Normal		Process	c:\windows\system32\rsopprov.exe	Normal		
localsystemnetworkrestricted	Normal	LocalSystem	0			LocalSystem	0			
Network List Service	netprofm	Stopped	Disabled	Share Process		Special Administration Console Helper	sacsrv	Stopped	Manual	
	c:\windows\system32\svchost.exe -k localservice			Normal		Share Process	c:\windows\system32\svchost.exe -k			
	NT AUTHORITY\LocalService	0				netsh	Normal	LocalSystem	0	
Net.Tcp Port Sharing Service	NetTcpPortSharing	Stopped	Disabled	Share Process		Security Accounts Manager	SamSs	Running	Auto	Share
	Share Process			Normal		Process	c:\windows\system32\lsass.exe	Normal	LocalSystem	
	"c:\windows\microsoft.net\framework64\v3.0\windows communication foundation\smsvchost.exe"			Normal		0				
	AUTHORITY\LocalService	0				Smart Card	SCardSvr	Stopped	Manual	Share Process
Network Location Awareness	NlaSvc	Stopped	Disabled	Share Process			c:\windows\system32\svchost.exe -k			
	c:\windows\system32\svchost.exe -k networkservice			Normal		localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0	
	NT AUTHORITY\NetworkService	0				Task Scheduler	Schedule	Running	Auto	Share Process
Network Store Interface Service	nsi	Running	Auto	Share Process			c:\windows\system32\svchost.exe -k netsh	Normal		
	c:\windows\system32\svchost.exe -k localservice			Normal		LocalSystem	0			
	NT Authority\LocalService	0				Smart Card Removal Policy	SCPPolicySvc	Stopped	Manual	
Performance Counter DLL Host	PerfHost	Stopped	Manual	Own Process		Share Process	c:\windows\system32\svchost.exe -k			
	c:\windows\system32\perfhost.exe			Normal		netsh	Normal	LocalSystem	0	
	AUTHORITY\LocalService	0				Secondary Logon	seclogon	Stopped	Manual	Share Process
Performance Logs & Alerts	pla	Stopped	Manual	Share Process			c:\windows\system32\svchost.exe -k netsh	Normal		
	c:\windows\system32\svchost.exe -k localservice			Normal		LocalSystem	0			
	NT AUTHORITY\LocalService	0				System Event Notification Service	SENS	Running	Auto	
Plug and Play	PlugPlay	Running	Auto	Share Process			c:\windows\system32\svchost.exe -k			
	c:\windows\system32\svchost.exe -k dcomlaunch			Normal		netsh	Normal	LocalSystem	0	
	LocalSystem	0				Remote Desktop Configuration	SessionEnv	Running	Manual	
IPsec Policy Agent	PolicyAgent	Stopped	Auto	Share Process			c:\windows\system32\svchost.exe -k			
	c:\windows\system32\svchost.exe -k			Normal		netsh	Normal	localSystem	0	
	networkservicenetworkrestricted	Normal	NT Authority\NetworkService	0		Internet Connection Sharing (ICS)	SharedAccess	Stopped		
	0					Disabled	Share Process			
Power	Power	Running	Auto	Share Process			c:\windows\system32\svchost.exe -k			
	c:\windows\system32\svchost.exe -k dcomlaunch			Normal		Shell Hardware Detection	ShellHWDetection	Running	Auto	
	LocalSystem	0				Share Process	c:\windows\system32\svchost.exe -k			
						netsh	Ignore	LocalSystem	0	
User Profile Service	ProfSvc	Running	Auto	Share Process		SNMP Trap	SNMPTRAP	Stopped	Manual	Own
	c:\windows\system32\svchost.exe -k netsh			Normal		Process	c:\windows\system32\snmptrap.exe	Normal	NT	
	LocalSystem	0				AUTHORITY\LocalService	0			
HP ProLiant Health Monitor Service	ProLiantMonitor	Running		Share Process		Print Spooler	Spooler	Stopped	Disabled	Own Process
	"c:\program files\hewlett-packard\ilo 3\service\proliantmonitor.exe"			Normal			c:\windows\system32\spoolsv.exe	Normal		
	0					LocalSystem	0			
Protected Storage	ProtectedStorage	Stopped	Manual	Share Process		Software Protection	spsvc	Running	Manual	Own Process
	c:\windows\system32\lsass.exe			Normal			c:\windows\system32\spssvc.exe	Normal	NT	
	0					AUTHORITY\NetworkService	0			
Remote Access Auto Connection Manager	RasAuto	Stopped	Manual	Share Process		SPP Notification Service	sppuinotify	Stopped	Disabled	
	Share Process			Normal		Share Process	c:\windows\system32\svchost.exe -k			
netsh	c:\windows\system32\svchost.exe -k			LocalSystem		localservice	Normal	NT AUTHORITY\LocalService	0	
	0					SQL Server Browser	SQLBrowser	Stopped	Disabled	Own
Remote Access Connection Manager	RasMan	Stopped	Manual	Share Process			"c:\program files (x86)\microsoft sql server\90\shared\sqlbrowser.exe"	Normal	NT	
	c:\windows\system32\svchost.exe -k			Normal		AUTHORITY\LOCALSERVICE	0			
netsh	Normal	LocalSystem	0							

SQL Server Agent (MSSQLSERVER)	SQLSERVERAGENT	Stopped	Manual	Own Process	"c:\program files\microsoft sql server\mssql10_50.mssqlserver\mssql\binn\sqlagent.exe" -i mssqlserver	Normal	LocalSystem	0	
SQL Server VSS Writer	SQLWriterRunning	Auto	Own Process	"c:\program files\microsoft sql server\90\shared\sqlwriter.exe"	Normal	LocalSystem	0		
SSDP Discovery	SSDPSRV	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0	
Secure Socket Tunneling Protocol Service	SstpSvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k localservice	Normal	NT Authority\LocalService	0	
Microsoft Software Shadow Copy Provider	swprv	Stopped	Manual	Own Process	c:\windows\system32\svchost.exe -k swprv	Normal	LocalSystem	0	
HP ProLiant System Shutdown Service	sysdown	Running	Auto	Share Process	"c:\program files\hewlett-packard\ilo3\service\proliantmonitor.exe"	Normal	LocalSystem	0	
Telephony TapiSrv		Stopped	Manual	Own Process	c:\windows\system32\svchost.exe -k tapisrv	Normal	NT AUTHORITY\NetworkService	0	
TPM Base Services	TBS	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k localserviceandnoimpersonation	Normal	NT AUTHORITY\LocalService	0	
Remote Desktop Services	TermService	Running	Manual	Share Process	c:\windows\system32\svchost.exe -k termsvcs	Normal	NT Authority\NetworkService	0	
Thread Ordering Server	THREADORDER	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k localservice	Normal	NT AUTHORITY\LocalService	0	
Distributed Link Tracking Client	TrkWks	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k localsystemnetworkrestricted	Normal	LocalSystem	0	
Windows Modules Installer	TrustedInstaller	Stopped	Manual	Own Process	c:\windows\servicing\trustedinstaller.exe	Normal	LocalSystem	0	
Interactive Services Detection	UI0Detect	Stopped	Manual	Own Process	c:\windows\system32\ui0detect.exe	Normal	LocalSystem	0	
Remote Desktop Services UserMode Port Redirector	UmRdpService	Running	Manual	Share Process	c:\windows\system32\svchost.exe -k localsystemnetworkrestricted	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 localsystemnetworkrestricted	Normal	LocalSystem	0	
Credential Manager	VaultSvc	Stopped	Manual	Share Process	c:\windows\system32\lsass.exe	Normal	LocalSystem	0	
Virtual Disk	vds	Stopped	Manual	Own Process	c:\windows\system32\vds.exe	Normal	LocalSystem	0	
Volume Shadow Copy	VSS	Stopped	Manual	Own Process	c:\windows\system32\vssvc.exe	Normal	LocalSystem	0	
Windows 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 localsystemnetworkrestricted	Normal	LocalSystem	0	
Windows Event Collector	Weccsvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k networkservice	Normal	NT AUTHORITY\NetworkService	0	
Problem Reports and Solutions Control Panel Support	wercplsupport	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k netsvcs	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	Wimgmt	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	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	wmiApSrv	Stopped	Manual	Own Process	c:\windows\system32\wbem\wmiapsrv.exe	Normal	LocalSystem	0	
Portable Device Enumerator Service	WPDBusEnum	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k localsystemnetworkrestricted	Normal	LocalSystem	0	
Windows Update	wuauerv	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0	
Windows Driver Foundation - User-mode Driver Framework	wudfsvc	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k localsystemnetworkrestricted	Normal	LocalSystem	0	
[Program Groups]									
Group Name	Name	User Name							
Start Menu\Default	Start Menu	Default							
Start Menu\Programs	Default	Start Menu\Programs	Default						
Start Menu\Programs\Accessories	Default	Start Menu\Programs\Accessories	Default						
Start Menu\Programs\Accessories\Accessibility	Default	Start Menu\Programs\Accessories\Accessibility	Default						
Start Menu\Programs\Accessories\System Tools	Default	Start Menu\Programs\Accessories\System Tools	Default						
Start Menu\Programs\Maintenance	Default	Start Menu\Programs\Maintenance	Default						
Start Menu\Public	Start Menu	Public							
Start Menu\Programs	Public	Start Menu\Programs	Public						
Start Menu\Programs\Accessories	Public	Start Menu\Programs\Accessories	Public						
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Start Menu\Programs\Microsoft SQL Server 2008\Configuration Tools Public:Start Menu\Programs\Microsoft SQL Server 2008\Configuration Tools Public	Start Menu\Programs\AMD System Analysis Tools\SysCAT DL385G7H\Administrator:Start Menu\Programs\AMD System Analysis Tools\SysCAT DL385G7H\Administrator
Start Menu\Programs\Microsoft SQL Server 2008 R2 Public:Start Menu\Programs\Microsoft SQL Server 2008 R2 Public	Start Menu\Programs\Maintenance DL385G7H\Administrator:Start Menu\Programs\Maintenance DL385G7H\Administrator
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Start Menu\Programs\Microsoft SQL Server 2008 R2\Documentation and Tutorials Public:Start Menu\Programs\Microsoft SQL Server 2008 R2\Documentation and Tutorials Public	Start Menu\Programs\StepMasterDL385G7H\Administrator:Start Menu\Programs\StepMaster DL385G7H\Administrator
Start Menu\Programs\Microsoft SQL Server 2008 R2\Integration Services Public:Start Menu\Programs\Microsoft SQL Server 2008 R2\Integration Services Public	[Startup Programs]
Start Menu\Programs\Microsoft SQL Server 2008 R2\Performance Tools Public:Start Menu\Programs\Microsoft SQL Server 2008 R2\Performance Tools Public	Program Command User Name Location CPQTEAM c:\program files\hp\ncu\cpqteam.exe Public HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
Start Menu\Programs\Startup Public:Start Menu\Programs\Startup Public	[OLE Registration]
Start MenuDL385G7H\Administrator:Start Menu DL385G7H\Administrator	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
Start Menu\Programs DL385G7H\Administrator:Start Menu\Programs DL385G7H\Administrator	[Windows Error Reporting]
Start Menu\Programs\Accessories DL385G7H\Administrator:Start Menu\Programs\Accessories DL385G7H\Administrator	Time Type Details
Start Menu\Programs\Accessories\Accessibility DL385G7H\Administrator:Start Menu\Programs\Accessories\Accessibility DL385G7H\Administrator	
Start Menu\Programs\Accessories\System Tools DL385G7H\Administrator:Start Menu\Programs\Accessories\System Tools DL385G7H\Administrator	
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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 = (
MIN(PS_SUPPLYCOST)
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 J8fcXW'sTqM 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
-----
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
-----
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 Az9RFaut7NkPnc5zSD2PwHgVwr4jRzq 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_SUPPKEY AND
        S_NATIONKEY =
N_NATIONKEY AND
'GERMANY'
)
ORDER BY VALUE DESC
PS_PARTKEY VALUE
-----
129760 17538456.860000
166726 16503353.920000
191287 16474801.970000
161758 16101755.540000
34452 15983844.720000
139035 15907078.340000
9403 15451755.620000
154358 15212937.880000
38823 15064802.860000
85606 15053957.150000
33354 14408297.400000
154747 14407580.680000
82865 14235489.780000
76094 14094247.040000
222 13937777.740000
121271 13908336.000000
55221 13716120.470000
22819 13666434.280000
76281 13646853.680000
85298 13581154.930000
85158 13554904.000000
139684 13535538.720000
31034 13498025.250000

```

... additional rows deleted ...

```

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

```

(1048 row(s) affected)

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)
GROUP BY C_COUNT
ORDER BY CUSTDIST DESC,
C_COUNT DESC

```

C_COUNT CUSTDIST

```

-----
0 50004
9 6641
10 6566
11 6058
8 5949
12 5553
13 4989
19 4748
7 4707
18 4625
15 4552
17 4530
14 4484
20 4461
16 4323
21 4217
22 3730
6 3334
23 3129
24 2622
25 2079
5 1972
26 1593
27 1185
4 1033

```

```

28      869
29      559
3       398
30     373
31     235
2      144
32     128
33      71
34      48
35      33
1       23
36     17
37      7
40      4
38      4
39      2
41      1

```

(42 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)
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 AND
       O_ORDERKEY = L_ORDERKEY
GROUP BY C_NAME,
         C_CUSTKEY,
         O_ORDERKEY,
         O_ORDERDATE,
         O_TOTALPRICE
ORDER BY O_TOTALPRICE DESC,
         O_ORDERDATE

```

C_NAME C_CUSTKEY O_ORDERKEY
O_ORDERDATE O_TOTALPRICE

```

-----
Customer#000128120 128120 4722021 1994-04-07
00:00:00.000 544089.090000 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#00000020 iybAE,RmTymrZVYafZva2SH,j
Supplier#00000091 YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#00000197 YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#00000226 83qOdU2EYRdPQAQhEtn GRZEd
Supplier#00000285 Br7e1nnt1yxrw6ImgpJ7YdhFDjuBf
Supplier#00000378 FfbhyCxWvcPrO8ltp9
Supplier#00000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#00000530 0qwCMwobKY OcmLyfRXlagA8ukENJv,
Supplier#00000688 D fw5ocppmZpYBBIPI718hCihLDZ5KhKX
Supplier#00000710 f19YPvOyb QoYwjKC,oPycpGfieBAcwKJo
Supplier#00000736 l6i2nMwVuovfKnuVgaSGK2rDy65DIAFLegil7
Supplier#00000761 zLSLeLQUj2XrvTTFnv7WAcYZGvvMTx882d4
Supplier#00000884 bmhEShejas

```

```

Supplier#00000887 urEaTejH5POADP2ARrf
Supplier#00000935 ij98czM 2KzWe7dDToxB8sq0UfCdvrx
Supplier#00000975 ,AC e,tBpNwKb5xMUzeohxlRn, hdZJo73gFQF8y
Supplier#00001263 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#00000289 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 : 709090810

14	1993-06-01						
2	48	BRASS	MIDDLE EAST				
9	peach						
20	royal	1997-01-01	CHINA				
6	1993-01-01	0.09	25				
17	Brand#12	LG PKG					
18	313						
8	MOZAMBIQUE	AFRICA	ECONOMY ANODIZED				
BRASS							
21	RUSSIA						
13	express	packages					
3	FURNITURE	1995-03-29					
22	28	18	29	11	25	26	
	20						
16	Brand#21	MEDIUM ANODIZED			42	40	
	12	41	43	2	27	44	
4	1997-07-01						
11	UNITED STATES	0.0000010000					
15	1993-09-01						
1	105						
10	1994-08-01						
19	Brand#24	Brand#54	Brand#44	8	19	27	
5	EUROPE	1993-01-01					
7	UNITED STATES	MOZAMBIQUE					
12	RAIL	SHIP	1993-01-01				

D.2. Stream1 Seed : 709090811

21	KENYA						
3	AUTOMOBILE	1995-03-14					
18	314						
5	AFRICA	1993-01-01					
11	JAPAN	0.0000010000					
7	MOZAMBIQUE	INDIA					
6	1993-01-01	0.07	24				
20	cream	1995-01-01	INDIA				
17	Brand#14	MED CASE					
12	AIR	SHIP	1993-01-01				
16	Brand#11	ECONOMY PLATED			7	11	
	30	18	32	13	41	49	
15	1996-04-01						
13	express	packages					
10	1993-05-01						
2	36	NICKEL	ASIA				
8	INDIA	ASIA	LARGE POLISHED BRASS				
14	1993-10-01						
19	Brand#32	Brand#32	Brand#44	3	20	23	
9	navy						
22	31	25	19	20	24	17	
	10						
1	113						
4	1995-04-01						

D.3. Stream2 Seed : 709090812

6	1993-01-01	0.04	24				
17	Brand#11	MED JAR					
14	1994-01-01						
16	Brand#41	STANDARD POLISHED			24	32	
	14	40	29	49	30	28	
19	Brand#34	Brand#25	Brand#33	8	10	30	
10	1994-02-01						
9	metallic						
2	24	TIN	MIDDLE EAST				
15	1994-01-01						
8	ALGERIA	AFRICA	LARGE BURNISHED BRASS				
5	AMERICA	1993-01-01					
22	33	14	21	16	24	32	
	28						
12	REG AIR	SHIP	1994-01-01				
7	INDIA	ALGERIA					
13	express	packages					
18	312						
1	60						
4	1997-11-01						
20	olive	1994-01-01	UNITED KINGDOM				
3	FURNITURE	1995-03-31					
11	ALGERIA	0.0000010000					
21	FRANCE						

D.4. Stream3 Seed : 709090813

8	PERU	AMERICA	MEDIUM BRUSHED STEEL				
5	ASIA	1993-01-01					
4	1995-07-01						
6	1993-01-01	0.02	25				
17	Brand#13	MED PKG					
7	ALGERIA	PERU					
1	68						
18	314						
22	23	13	30	16	17	28	
	12						
14	1994-04-01						
9	light						
10	1994-11-01						
15	1996-07-01						
11	JORDAN	0.0000010000					
20	beige	1997-01-01	JORDAN				
2	12	COPPER	ASIA				
21	UNITED KINGDOM						
19	Brand#31	Brand#53	Brand#32	3	11	26	
13	express	requests					
16	Brand#21	LARGE ANODIZED	2	1	30		
	29	25	37	15	47		
12	FOB	SHIP	1994-01-01				
3	MACHINERY	1995-03-17					

D.5. Stream4 Seed : 709090814

5	EUROPE	1994-01-01				
21	MOZAMBIQUE					
14	1994-07-01					
19	Brand#43	Brand#41	Brand#31	9	12	22
15	1994-04-01					
17	Brand#15	JUMBO CASE				
12	MAIL	SHIP	1994-01-01			
6	1994-01-01		0.07		24	
4	1993-04-01					
9	ivory					
8	INDONESIA	ASIA	MEDIUM PLATED STEEL			
16	Brand#11	PROMO BURNISHED		31	24	
	33	18	22	43	3	38
11	ARGENTINA	0.0000010000				
2	49	STEEL	AFRICA			
10	1993-09-01					
18	315					
1	76					
13	express	requests				
7	PERU	INDONESIA				
22	12	23	14	30	16	25
	31					
3	BUILDING	1995-03-02				
20	lawn	1996-01-01	BRAZIL			

D.6. Stream5 Seed : 709090815

21	INDIA					
15	1996-11-01					
4	1995-11-01					
6	1994-01-01		0.04		24	
7	INDIA	ARGENTINA				
16	Brand#41	SMALL POLISHED	25		44	24
	35	11	34	5	9	
19	Brand#45	Brand#24	Brand#21	4	13	30
18	313					
14	1994-10-01					
22	31	14	17	23	20	24
	34					
11	KENYA	0.0000010000				
13	special	requests				
3	MACHINERY	1995-03-19				
1	84					
2	37	NICKEL	ASIA			
5	MIDDLE EAST	1994-01-01				
8	ARGENTINA	AMERICA			MEDIUM	
	ANODIZED STEEL					
20	smoke	1994-01-01			PERU	
12	TRUCK	REG AIR	1994-01-01			
17	Brand#12	JUMBO JAR				
10	1994-06-01					
9	goldenrod					

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_SUPPKEY,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_SUPPKEY,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 =
@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=48
set RF2_PARALLELISM=48
set UPDATEDRIVE=Z:
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 :BULKINSERTi %%i
echo for NATION and REGION
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('Nation/Region
insert begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -Q"bulk insert NATION from
'%FLATFILEDRIVE%\%FLATFILEDIR%1%\%FLATFILESUBDIR%\Natio
n.tbl' with (FieldTerminator = '|', RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_Nation.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -Q"bulk insert REGION from
'%FLATFILEDRIVE%\%FLATFILEDIR%1%\%FLATFILESUBDIR%\Regio
n.tbl' with (FieldTerminator = '|', RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_Region.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -Q"insert into LOADTIMES values ('Nation/Region
insert end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :CREATEINDEX

```

```

:BULKINSERTi
echo Starting bulk inserts for %i

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

echo Setting Cleanup Options

```

```

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

```

```

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

```

```

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

```

```

:BACKUP

```

```

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

```

```

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

```

```

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

```

```

:ENDSTATS

```

```

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

```

```

sqlcmd -E -d%DB% -Q"insert into LOADTIMES values ('LOAD
end', getdate())"
sqlcmd -E -d%DB% -Q"select TIMESTAMP from LOADTIMES where
STEP='LOAD end'" -o %OUTPUTPATH%\LoadEND.out
bcp %DB%..LOADTIMES out %OUTPUTPATH%\LOADTIMES.bcp -T -
n
sqlcmd -E -d%DB% -Q"select * from LOADTIMES" -o
%OUTPUTPATH%\LoadTimes.out
echo Last step is to run Francois' dbtables-ms.sql script
sqlcmd -E -d%DB% -i dbtables-ms.sql -o %OUTPUTPATH%\dbtables-
ms.out
sqlcmd -E -d%DB% -i SetupReport.sql -o
%OUTPUTPATH%\SetupReport.out
sqlcmd -E -I -e -w300 -d %DB% -i RI-test-sf100.sql -o
%OUTPUTPATH%\RI-test-sf100.out
sqlcmd -E -I -w3000 -Q"dbcc sqlperf(logspace)" -o
%OUTPUTPATH%\logspace.out
rem echo Optional step to check datab ase 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 %UPDRIVE%\segment>%UPDIR%
rem

```

```

set DB=tpch100g
set HOMEDRIVE=C:
set HOMEDIR=\HP_TPCH_KIT\Run
set OUTPUTDRIVE=C:
set OUTPUTDIR=\HP_TPCH_KIT\Output
set UPDRIVE=Z:
set UPDIR=\UF_Flatfiles
set UPDATES=7
set UPDATESEGMENTS=48
set SEED=709090810
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())" -
1300
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% -i Stream%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
sqlcmd -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
'%UPDATESDRIVE%%%UPDATESDIR%\Lineitem.tbl.u%3.%2' with
(FieldTerminator = '|', RowTerminator ='\n',tablock)"
OSQL -I -E -l 120 -d%DB% -Q"%SQLTEXT%" -o
%OUTPUTPATH%\RF1_load_lineitem%2_%3.out
set "SQLTEXT=bulk insert NEWORDERS from
'%UPDATESDRIVE%%%UPDATESDIR%\Orders.tbl.u%3.%2' with
(FieldTerminator = '|', RowTerminator ='\n',tablock)"
OSQL -I -E -l 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: TPC_H_g3wOpiq6ZA tJNM+DREbYWNCCDVhXuI+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:	163.4		
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	413.09	0.10%	+0.41	1500	0.10%	+1.50	+1.91	0.46%	67,746.0	68,059.7	163.4	416.5
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	413.09								67,746.0	68,059.7	163.4	416.5
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%	4,575.2	4,575.2	163.4	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								4,575.2	4,575.2	163.4	28.0
REC Total	441.09								72,321.2	72,634.9	163.4	444.5

Throughput Full Load Energy									Throughput MI Seconds:	735.3		
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	437.0	0.10%	+0.44	1500	0.10%	+1.50	+1.94	0.44%	321,598.0	323,023.6	735.3	439.3
DB Server PMU-2	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	735.3	-
DB Server PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	735.3	-
DB Server Total	437.0								321,598.0	323,023.6	735.3	439.3
Storage PMU-1	0.0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	735.3	-
Storage PMU-2	0.0	0.10%	+0.00	0	0.10%	+0.00	+0.00	0.00%	-	-	735.3	-
Storage PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	735.3	-
Storage PMU-4	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	735.3	-
Storage Total	0.0								-	-	735.3	-
Monitor Name Plate	28.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	20,588.4	20,588.4	735.3	28.0
Misc PMU-2	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	735.3	-
Misc PMU-3	0.0	0.00%	+0.00	0	0.00%	+0.00	+0.00	0.00%	-	-	735.3	-
Misc Total	28.0								20,588.4	20,588.4	735.3	28.0
REC Total	464.95								342,186.4	343,612.0	719.5	477.6

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	REC Energy Consumption }=====> Watts / KQphH
	163.4	735.3	71,438.3	17,834	
	SUT Total Work X 1000				6.48
	Power Watt-Secs	Throughput Watt-Secs	Full Load Avg Watts	REC Energy Consumption Watt-Secs	
Total REC	72,635	343,612	463.2	416,247	
DB Server	68,060	323,024	435.2	391,083	
Storage	0	0	0.0	0	
Misc.	4,575	20,588	28.0	25,164	

Total REC Energy Consumption = 115.6 Watt-Hours
 SUT Total Work = 17834 queries
 115.6 Watt-Hours / 17834 queries = 0.00648 Watts / QphH@100GB
 0.00648 Watts / QphH@100GB * 1000 = 6.48 Watts / KQphH@100GB

Secondary Metrics		Additional Numerical Quantities			
		Full Load Avg Watts	Full Load % of REC	Idle Avg. Watts	Idle % of REC
Database Server	21.93	435.2	94.0%	266.1	90.5%
Storage	0.00	0.0	0.0%	0.0	0.0%
Miscellaneous	1.41	28.0	6.0%	28.0	9.5%
Total REC	6.48	463.2	100%	294.1	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	Full Load Average Watts Reading	% of Reading Uncertainty	Watts Reading Correction	Idle Load Energy					Idle MW Seconds: 600.0		Reported Seconds	Adjusted Average Watts
				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	263.9	0.10%	+0.26	1500	0.10%	+1.50	+1.76	0.67%	158,602.0	159,662.1	600.0	266.1
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	263.9								158,602.0	159,662.1	600.0	266.1
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	291.9								175,402.0	176,462.1		294.1

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 6 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 > DBServerDL385G7
sleep 5
start log temperature-run1 > REC-DBServerTempDL385G7
sleep 5
```

```
time sync
sleep 5
set sample 1000 > DBServerDL385G7
sleep 5
set sample 10000 > REC-DBServerTempDL385G7
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 : 12/10/2009
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 13, 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 DL385 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 AMD 12 core @ 2.3 Ghz	192 GB	2 @ 72 GB 1 @ 300 GB 4 @ 60 GB SSD	94,761.5	53,855.6	71,438.3

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,

Loma Livingtree
Auditor



PO Box 984 Klamath, CA 95548
(707) 482-0523 fax: (707) 482-0575

Page 1
email: LomaL@PerfMetrics.com

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