



# Hewlett-Packard Company

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

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**First Edition  
September, 2009**

First Edition – September, 2009

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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.

All performance data contained in this report was obtained in a rigorously controlled environment. Results obtained in other operating environments may vary significantly. No warranty of system performance or price/performance is expressed or implied in this report.

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# Abstract

## Overview

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

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB	\$ / QphH @ 100GB
HP ProLiant DL380 G6	Microsoft SQL Server 2008 Enterprise x64 Edition SP1, Windows Server 2008 Enterprise x64 Edition SP2	\$55,246	72110.5	36190.8	51085.6	\$1.09

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

## Standard and Executive Summary Statements

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

## Auditor

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



# HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date:  
Sep 4, 2009

Total System Cost

**\$55,246 USD**

Composite Query per Hour Metric

**51,085.6**  
QphH@100GB

Price / Performance

**\$1.09 USD**  
\$ / QphH@100GB

Database Size

**100GB**

Database Manager

**Microsoft SQL Server 2008 Enterprise x64 Edition SP1**

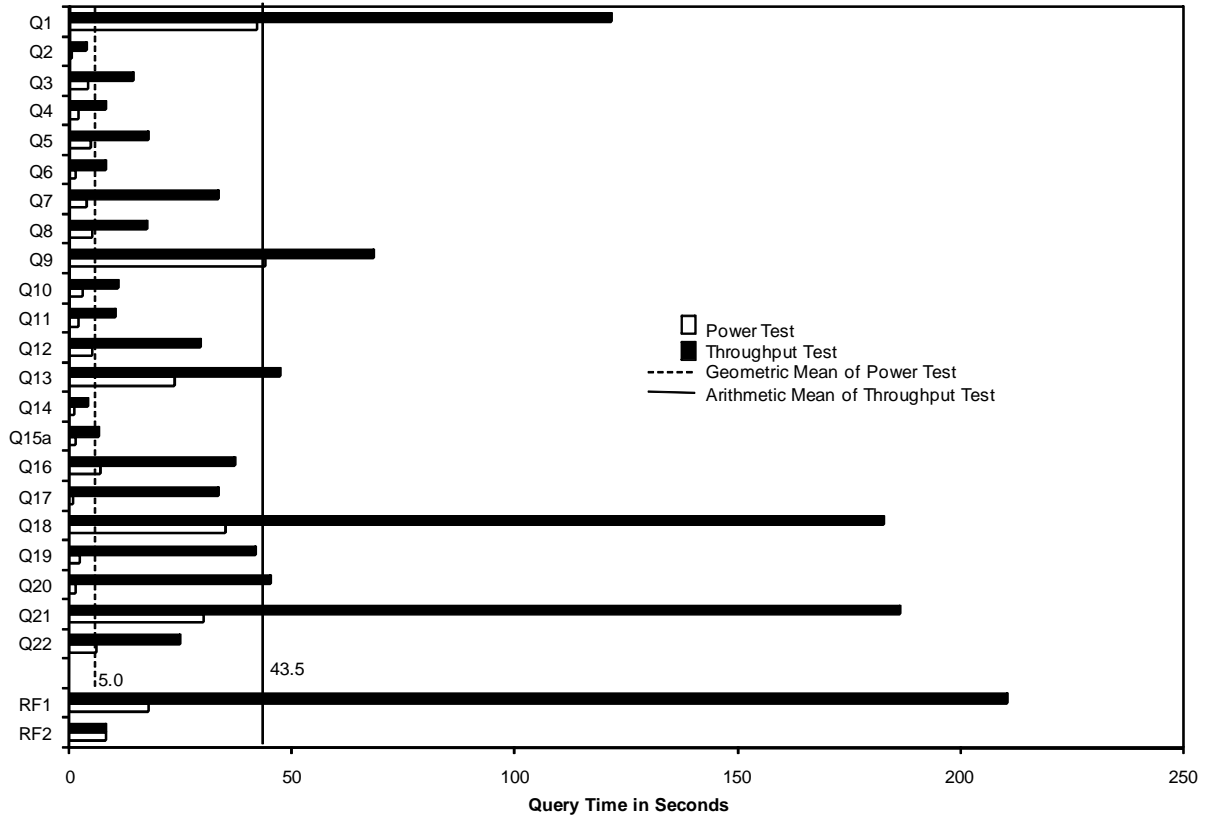
Operating System

**Windows Server 2008 Enterprise Edition x64 SP2**

Other Software

Availability Date

**Oct 5, 2009**



Database Load Time = 1:18:41

Load Included Backup: Y

Total Data Storage / Database Size = 7.58

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): Y

RAID (All): N

### System Configuration:

**Processors :** 2x 2.93 GHz Quad Core Intel X5570  
**Cores :** 8  
**Threads :** 16  
**Memory :** 144 GB  
**OS Disk Drives :** 2x 72 GB 15K rpm SFF SAS  
**Network :** 4x on-board GigE  
**Disk Controllers :** 1x Smart Array P410  
**Disks :** 4x FusionIO ioDrive SSD 80GB , 2x 146 GB 10K rpm SFF SAS  
**Total Disk Storage:** 758 GB

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



HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date: 4-Sep-09

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price
<b>Server Hardware</b>						
<b>Brand Pricing</b>						
HP DL380G6 CTO Chassis	494329-B21	HP	1,486	1	1,486	
HP X5570 DL380 G6 FIO Kit	500094-L21	HP	1,999	2	3,998	
HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21	HP	990	18	17,820	
HP DL380G6 3 Slot PCI-E Riser Kit	500579-B21	HP	99	1	99	
HP 72GB 15K rpm Hot Plug SAS 2.5 Dual Port Hard Drive	418371-B21	HP	359	2	718	
HP 146GB 6G SAS 10K SFF (2.5") Dual Port Hard Drive	507125-B21	HP	349	2	698	
HP LV1561w 15.6-inch Wide LCD Monitor	NJ711A8#ABA	HP	110	1	110	
HP PS/2 Standard Keyboard	GY071AV#ABA	HP	7	1	7	
HP PS/2 2-Button Scroll Mouse	EW344AV	HP	2	1	2	
HP 3y 4h 24x7 ProLiant DL38x HW Support	U4545E	HP	837	1		837
<b>Subtotal</b>					<b>24,938</b>	<b>837</b>
<b>Storage</b>						
Fusion-io ioDrive 80GB		FusionIO	3,015	4	12,060	
Fusion-io ioDrive 80GB - spares		FusionIO	3,015	2		6,030
<b>Subtotal</b>					<b>12,060</b>	<b>6,030</b>
<b>Hardware and Maintenance Discount</b>						
Large Purchase and Net 30 discount	14.0%	HP		1		
<b>Hardware Subtotal</b>					<b>(\$3,491)</b>	<b>(\$117)</b>
<b>Software</b>						
SQL Server 2008 Enterprise x64 Edition	810-07580	Microsoft	8,487	1	8,487	incl. bellow
Windows Server 2008 Enterprise Edition (x64)	P72-03195	Microsoft	2,357	1	2,357	incl. bellow
SQL Server 2008 Client License	359-01912	Microsoft	156	25	3,900	incl. bellow
Microsoft Problem Resolution Services		Microsoft	245	1		245
<b>Subtotal</b>					<b>14,744</b>	<b>245</b>
<b>Total</b>					<b>\$48,251</b>	<b>\$6,995</b>

Three-Year Cost of Ownership: \$55,246 USD

QpH @ 100GB: 51085.6

\$/ QpH @ 100GB: \$1.09 USD

Pricing: 1=HP Direct: 800-203-6748; 2=Microsoft; 3=Dell.com

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

Audited by: Lorna Livingtree of Performance Metrics Inc.

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



## HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date:  
Sep 4, 2009

### Numerical Quantities

#### Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 7.58
Start of Database Load	= 2009-09-02 21:48:15
End of Database Load	= 2009-09-02 23:06:56
Database Load Time	= 01:18:41
Query Streams for Throughput Test	= 5
TPC-H Power	= 72,110.5
TPC-H Throughput	= 36,190.8
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	= 51,085.6
Total System Price Over 3 Years	= \$56,836
TPC-H Price/ Performance Metric (\$/QphH@100GB)	= \$1.12 USD

#### Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 1,094.2 seconds
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#### Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	902230656	9/3/2009	8:33:51	9/3/2009	8:38:06	0:04:15
Stream01	902230657	9/3/2009	8:38:06	9/3/2009	8:54:41	0:16:35
Stream02	902230658	9/3/2009	8:38:06	9/3/2009	8:53:45	0:15:39
Stream03	902230659	9/3/2009	8:38:06	9/3/2009	8:54:39	0:16:33
Stream04	902230660	9/3/2009	8:38:06	9/3/2009	8:52:38	0:14:32
Stream05	902230661	9/3/2009	8:38:06	9/3/2009	8:54:27	0:16:21
Refresh00		9/3/2009	8:33:51	9/3/2009	8:38:06	0:04:16
Refresh01		9/3/2009	8:54:41	9/3/2009	8:55:02	0:00:21
Refresh02		9/3/2009	8:55:02	9/3/2009	8:55:24	0:00:22
Refresh03		9/3/2009	8:55:24	9/3/2009	8:55:42	0:00:18
Refresh04		9/3/2009	8:55:42	9/3/2009	8:56:01	0:00:19
Refresh05		9/3/2009	8:56:01	9/3/2009	8:56:21	0:00:20



## HP ProLiant DL380 G6

TPC-H Rev. 2.8.0

Report Date:  
Sep 4, 2009

### TPC-H Timing Intervals (in seconds)

Query	Q01	Q02	Q03	Q04	Q05	Q06	Q07	Q08
Stream 00	42.2	0.6	4.3	2.1	5.0	1.5	4.1	5.1
Stream 01	94.4	3.7	19.9	2.4	25.9	20.8	55.8	12.0
Stream 02	146.8	2.7	15.9	10.5	16.5	4.7	60.7	15.8
Stream 03	61.0	6.0	9.8	9.2	13.8	5.4	11.0	10.5
Stream 04	141.3	3.9	10.1	8.6	10.4	5.4	19.1	31.2
Stream 05	165.1	4.2	16.1	10.3	23.1	5.9	21.4	18.6
Min Qi	61.0	2.7	9.8	2.4	10.4	4.7	11.0	10.5
Max Qi	165.1	6.0	19.9	10.5	25.9	20.8	60.7	31.2
Avg Qi	121.7	4.1	14.4	8.2	17.9	8.4	33.6	17.6
Query	Q09	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	44.1	3.0	2.2	5.2	23.6	1.3	1.6	7.2
Stream 01	44.7	16.0	9.0	41.0	40.6	2.8	7.4	38.3
Stream 02	71.2	9.6	12.6	14.6	47.2	2.6	5.9	43.3
Stream 03	102.3	10.4	9.9	45.8	46.1	6.7	6.5	37.5
Stream 04	60.1	8.3	8.2	27.1	60.9	4.5	6.3	37.2
Stream 05	64.2	10.5	12.9	20.1	42.8	4.6	7.3	29.7
Min Qi	44.7	8.3	8.2	14.6	40.6	2.6	5.9	29.7
Max Qi	102.3	16.0	12.9	45.8	60.9	6.7	7.4	43.3
Avg Qi	68.5	11.0	10.5	29.7	47.5	4.2	6.7	37.2
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	0.8	35.2	2.4	1.6	30.2	6.1	17.9	8.4
Stream 01	90.1	163.8	14.6	64.7	204.6	22.5	12.2	8.5
Stream 02	5.6	163.7	61.3	85.4	126.3	16.4	13.3	8.9
Stream 03	12.2	203.9	24.0	15.9	306.3	39.4	10.1	7.9
Stream 04	17.4	164.0	44.9	45.9	142.7	15.4	10.4	8.1
Stream 05	42.2	218.5	64.7	14.6	153.0	31.1	11.3	8.2
Min Qi	5.6	163.7	14.6	14.6	126.3	15.4	0.0	7.9
Max Qi	90.1	218.5	64.7	85.4	306.3	39.4	13.3	8.9
Avg Qi	33.5	182.8	41.9	45.3	186.6	25.0	9.0	8.3

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## 1.0 General Items

### 1.1 Test Sponsor

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

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

### 1.2 Parameter Settings

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

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

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

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

### 1.3 Configuration Items

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

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

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

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

- 2x Intel X5570 2.93GHz quad core processors
- 144 GB of memory
- 1 x HP Smart Array P410 Controller
- 1 x HP Smart Array P411 Controller
- 2 x 72GB Pluggable SAS 2.5" 15k rpm drives
- 4x 80GB FusionIO ioDrive SSD
- 2x 146GB Pluggable SAS 2.5" 10k rpm drives

**Figure 1.1 Benchmarked & Priced configuration**



## 2.0 Clause 1: Logical Database Design

---

### 2.1 Table Definitions

*Listings must be provided for all table definition statements and all other statements used to set up the test and qualification databases. (8.1.2.1)*

Appendix B, "Database Build Scripts," contains the table definitions and the program used to load the database.

### 2.2 Physical Organization of Database

*The physical organization of tables and indices, within the test and qualification databases, must be disclosed. If the column ordering of any table is different from that specified in Clause 1.4, it must be noted.*

Appendix B, "Database Build Scripts," contains the DDL for the index definitions.

### 2.3 Horizontal Partitioning

*Horizontal partitioning of tables and rows in the test and qualification databases (see Clause 1.5.4) must be disclosed.*

Horizontal partitioning was not used

### 2.4 Replication

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

No replication was used.

## 3.0 Clause 2: Queries and Refresh Functions Related Items

---

### 3.1 Query Language

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

SQL was the query language used.

### 3.2 Random Number Generation

*The method of verification for the random number generation must be described unless the supplied DBGEN and QGEN were used.*

The TPC-supplied DBGEN version 2.8.0 and QGEN version 2.8.0 were used to generate all database populations.

### 3.3 Substitution Parameters Generation

*The method used to generate values for substitution parameters must be disclosed. If QGEN is not used for this purpose, then the source code of any non-commercial tool used must be disclosed. If QGEN is used, the version number, release number, modification number and patch level of QGEN must be disclosed.*

The supplied QGEN version 2.8.0 was used to generate the substitution parameters.

### 3.4 Query Text and Output Data from Database

*The executable query text used for query validation must be disclosed along with the corresponding output data generated during the execution of the query text against the qualification database. If minor modifications (see Clause 2.2.3) have been applied to any functional query definitions or approved variants in order to obtain executable query text, these modifications must be disclosed and justified. The justification for a particular minor query modification can apply collectively to all queries for which it has been used. The output data for the power and throughput tests must be made available electronically upon request.*

Appendix C contains the query text and query output. The following modifications were used:

- In Q1, Q4, Q5, Q6, Q10, Q12, Q14, Q15 and Q20, the “dateadd” function is used to perform date arithmetic.
- In Q7, Q8 and Q9, the “datepart” function is used to extract part of a date (e.g., “YY”).
- In Q2, Q3, Q10, Q18 and Q21, the “top” function is used to restrict the number of output rows.
- The word GO is used as a command delimiter.

### 3.5 Query Substitution Parameters and Seeds Used

*All the query substitution parameters used during the performance test must be disclosed in tabular format, along with the seeds used to generate these parameters.*

Appendix D contains the seed and query substitution parameters used.

### **3.6 Isolation Level**

*The isolation level used to run the queries must be disclosed. If the isolation level does not map closely to one of the isolation levels defined in Clause 3.4, additional descriptive detail must be provided.*

The queries and transactions were run with isolation level 1.

### **3.7 Refresh Functions**

*The details of how the refresh functions were implemented must be disclosed (including source code of any non-commercial program used).*

Appendix E contains the source code for the refresh functions.

## 4.0 Clause 3: Database System Properties

### 4.1 Atomicity Requirements

*The results of the ACID tests must be disclosed along with a description of how the ACID requirements were met. This includes disclosing the code written to implement the ACID Transaction and Query.*

All ACID tests were conducted according to specification. The Atomicity, Isolation, Consistency and Durability tests were performed on the HP ProLiant DL380 G6.

#### 4.1.1 Atomicity of the Completed Transactions

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

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

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

#### 4.1.2 Atomicity of Aborted Transactions

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

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

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

### 4.2 Consistency Requirements

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

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

$O\_TOTALPRICE = SUM(L\_EXTENDEDPRICE - L\_DISCOUNT) * (1 + L\_TAX)$   
*For each ORDER and LINEITEM defined by (O\_ORDERKEY = L\_ORDERKEY)*

#### 4.2.1 Consistency Tests

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

The following steps were performed to verify consistency:

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

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

### 4.3 Isolation Requirements

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

#### 4.3.1 Isolation Test 1 - Read-Write Conflict with Commit

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

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

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

#### 4.3.2 Isolation Test 2 - Read-Write Conflict with Rollback

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

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

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

#### 4.3.3 Isolation Test 3 - Write-Write Conflict with Commit

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

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

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

$$T2.L\_EXTENDEDPRICE = T1.L\_EXTENDEDPRICE + (DELTA1*(T1.L\_EXTENDEDPRICE/T1.L\_QUANTITY))$$

#### 4.3.4 Isolation Test 4 - Write-Write Conflict with Rollback

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

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



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

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

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

The following steps were performed:

1. An ACID Transaction T1 for a randomly selected O\_KEY, L\_KEY and DELTA. The ACID Transaction T1 was suspended prior to Commit.
2. Another ACID Transaction T2 was started using random values for PS\_PARTKEY and PS\_SUPPKEY.
3. T2 completed.
4. T1 completed and the appropriate rows in the ORDER, LINEITEM and HISTORY tables were changed.

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

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

The following steps were performed:

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

### 4.4 Durability Requirements

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

#### 4.4.1 Permanent Unrecoverable Failure of Any Durable Medium

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

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

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

1. The complete database was backed up.
2. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
3. While the test was running, one of the disks from the database RAID-1 log was removed.
4. After it was determined that the test would still run with the loss of a log disk, one ioDrive was detached.
5. A checkpoint was issued to force a failure.
6. The six streams of ACID transactions failed and recorded their number of committed transaction in success files.
7. The database log was dumped to disk.
8. The database ioDrive was reattached and log disk was replaced with new disk and RAID rebuild process started

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

#### **4.4.2 System Crash**

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

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

#### **4.4.3 Memory Failure**

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

See section 4.4.2

## 5.0 Clause 4: Scaling and Database Population

---

### 5.1 Initial Cardinality of Tables

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

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

**Table 5. 1: Initial Number of Rows**

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

### 5.2 Distribution of Tables and Logs Across Media

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

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

- 1 x Smart Array P410 disk controller
- 1 x Smart Array P411 disk controller
- 2 x 72GB SAS 2.5" 15k rpm disk drives
- 4 x 80GB FusionIO ioDrive SSD disk drives

All 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 5.2.1

The internal storage connected to the embedded controller (Array C, Logical drive 3) was disconnected after load.

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

SMART Array Controller	SMART Logical Drive Array Letter	Number of Physical Drives in SMART LDA	SMART Logical Drive Number	SMART Fault Tolerance	Disk Format	Size (MB)	Contents
Embedded	A	2	1	RAID1	NTFS	72000	OS TpchLog TempDBLog Tpch1GBLog
Embedded	B	2	2	RAID0	NTFS	292000	Backup
Slot 1		1	1	RAID0	NTFS	80000	C:\dev\node1\ Tpch100g TempDB Tpch1GB
Slot 2		1	1	RAID0	NTFS	80000	C:\dev\node2\ Tpch100g TempDB
Slot 3		1	1	RAID0	NTFS	80000	C:\dev\node3\ Tpch100g TempDB
Slot 4		1	1	RAID0	NTFS	80000	C:\dev\node4\ Tpch100g TempDB
Embedded	C	4	3	RAID0	NTFS	584000	Flatfiles

### 5.3 Mapping of Database Partitions/Replications

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

Database partitioning/replication was not used..

### 5.4 Implementation of RAID

*Implementations may use some form of RAID to ensure high availability. If used for data, auxiliary storage (e.g. indexes) or temporary space, the level of RAID used must be disclosed for each device.*

RAID 0 was used for database filegroups and tempdb, and RAID 1 for database recovery logs.

### 5.5 DBGEN Modifications

*The version number, release number, modification number, and patch level of DBGEN must be disclosed. Any modifications to the DBGEN (see Clause 4.2.1) source code must be disclosed. In the event that a program other than DBGEN was used to populate the database, it must be disclosed in its entirety.*

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

## 5.6 Database Load time

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

The database load time was 51 minutes and 16 seconds.

## 5.7 Data Storage Ratio

*The data storage ratio must be disclosed. It is computed by dividing the total data storage of the priced configuration (expressed in GB) by the size chosen for the test database as defined in 4.1.3.1. The ratio must be reported to the nearest 1/100<sup>th</sup>, rounded up.*

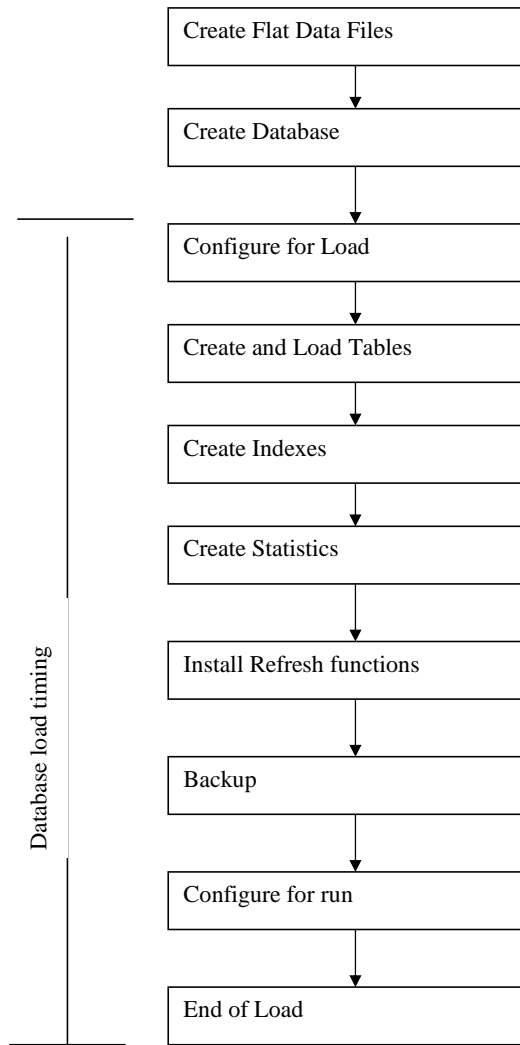
Disk Type	Number of Disks	Total Disk Space	Data Storage Ratio
80 GB	4	320 GB	7.58
72 GB	2	144 GB	
146 GB	2	292 GB	

## 5.8 Database Load Mechanism Details and Illustration

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

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

**Figure 5.8: Block Diagram of Database Load Process**



## ***6.0 Clause 5: Performance Metrics and Execution Rules Related Items***

---

### **6.1 Steps in the Power Test**

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

The following steps were used to implement the power test:

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

### **6.2 Timing Intervals for Each Query and Refresh Function**

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

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

### **6.3 Number of Streams for The Throughput Test**

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

Five streams were used for the Throughput Test.

### **6.4 Start and End Date/Times for Each Query Stream**

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

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

### **6.5 Total Elapsed Time for the Measurement Interval**

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

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

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

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

Stream ID	RF	Start Date	Start time	Stop Date	Stop Time
Stream00	RF1	9/3/2009	8:33:51	9/3/2009	8:34:08
Stream00	RF2	9/3/2009	8:37:58	9/3/2009	8:38:06
Stream01	RF1	9/3/2009	8:54:41	9/3/2009	8:54:54
Stream01	RF2	9/3/2009	8:54:54	9/3/2009	8:55:02
Stream02	RF1	9/3/2009	8:55:02	9/3/2009	8:55:15
Stream02	RF2	9/3/2009	8:55:15	9/3/2009	8:55:24
Stream03	RF1	9/3/2009	8:55:24	9/3/2009	8:55:35
Stream03	RF2	9/3/2009	8:55:35	9/3/2009	8:55:42
Stream04	RF1	9/3/2009	8:55:42	9/3/2009	8:55:53
Stream04	RF2	9/3/2009	8:55:53	9/3/2009	8:56:01
Stream05	RF1	9/3/2009	8:56:01	9/3/2009	8:56:12
Stream05	RF2	9/3/2009	8:56:12	9/3/2009	8:56:21

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

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

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

## 6.8 Performance Metrics

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

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

## 6.9 The Performance Metric and Numerical Quantities from Both Runs

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

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

Run	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB
Run 1	72302.7	36598.9	51441.2
Run 2	72110.5	36190.8	51085.6

## 6.11 System Activity Between Tests

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

SUT was restarted between runs.



## 7.0 Clause 6: SUT and Driver Implementation

### Related Items

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#### 7.1 Driver

*A detailed description of how the driver performs its functions must be supplied, including any related source code or scripts. This description should allow an independent reconstruction of the driver.*

Two scripts were used. The first one was used to create and load the database, while the second was used to run the Power and Throughput tests. These scripts are in Appendix F. A C program, semaphore.c, was used for coordination of parallel processes.

#### 7.2 Implementation Specific Layer (ISL)

*If an implementation-specific layer is used, then a detailed description of how it performs its functions must be supplied, including any related source code or scripts. This description should allow an independent reconstruction of the implementation-specific layer.*

A command script was used to control and track the execution of queries. The scripts are contained in Appendix F. Qgen was used to generate the query streams, along with the appropriate substitution values.

The following steps are performed, to accomplish the Power and Throughput Runs:

##### 1. Power Run

- Execute 64 concurrent RF1 processes, each of which will apply a segment of an update set generated by dbgen.
- Each process submits multiple transactions, where a transaction spans a set of orders and their associated line items.
- Execute the Stream0 queries, in the prescribed order.
- Execute 64 concurrent RF2 processes, each of which will apply a segment of an update set generated by dbgen. Each thread submits multiple transactions, where a transaction spans a set of orders and their associated line items.

##### 2. Throughput Run

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

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

#### 7.3 Profile-Directed Optimization

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

Profile-directed optimization was not used.

## 8.0 Clause 7: Pricing Related Items

### 8.1 Hardware and Software Used

---

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

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

### 8.2 Total 3 Year Price

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

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

### 8.3 Availability Date

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

The HP ProLiant DL380 G6 and all other hardware is generally available at the time of publication. The system software, Microsoft Windows Server 2008 Enterprise x64 Edition SP2 and the database software, Microsoft SQL Server 2008 Standard x64 Edition SP1 are generally available at the time of publication. The FusionIO driver 1.2.6 will be available October 5, 2009.

### 8.4 Orderability Date

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

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

All components are orderable on the publication date.

### 8.5 Country-Specific Pricing

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

The configuration is priced for the United States of America.

## 9.0 Clause 9: Related Items

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### 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](http://www.tpc.org).



**PERFORMANCE METRICS INC.**  
TPC Certified Auditors

September 4, 2009

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

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

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

CPU's	Memory	Total Disks	Qpph@ 100GB	QthH @ 100GB	QphH@100GB
2 quad core Intel @ 2.93 Ghz	144 GB	2 @ 72 GB 4 @ 80 GB 2 @ 146 GB	<b>72,110.5</b>	<b>36,190.8</b>	<b>51,085.6</b>

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

- The database tables were defined with the proper columns, layout and sizes.
- The tested database was correctly scaled and populated for 100GB using DBGEN. The version of DBGEN was 2.8.0.
- The data generated by DBGEN was successfully compared to reference data.
- The qualification database layout was identical to the tested database except for the size of the files.
- The query text was verified to use only compliant variants and minor modifications.
- The executable query text was generated by QGEN and submitted through a standard interactive interface. The version of QGEN was 2.8.0.
- The validation of the query text against the qualification database produced compliant results.

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TPC Certified Auditors

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- The refresh functions were properly implemented and executed the correct number of inserts and deletes.
- The load timing was properly measured and reported.
- The execution times were correctly measured and reported.
- The performance metrics were correctly computed and reported.
- The repeatability of the measurement was verified.
- The ACID properties were successfully demonstrated and verified.
- The system pricing was checked for major components and maintenance.
- The executive summary pages of the FDR were verified for accuracy.

Auditor's Notes: None

Sincerely,



Lorna Livingtree  
Auditor

---

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# Appendix A: Tunable Parameters

- Note: These are the settings used during the power test. The settings altered for the load are documented in Appendix B.

## A.1 Microsoft SQL Server 2008 Version

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

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

## A.2 SQL Server 2008 Installation

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

## A.3 SQL Server 2008 Startup Parameters

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

## A.4 Microsoft SQL Server 2008 Configuration Parameters

name	minimum	maximum	config_value	run_value
access check cache bucket count	0	65536	0	0
access check cache quota	0	2147483647	0	0
Ad Hoc Distributed Queries	0	1	0	0
affinity I/O mask	-2147483648	2147483647	0	0
affinity mask	-2147483648	2147483647	65535	65535
affinity64 I/O mask	-2147483648	2147483647	0	0
affinity64 mask	-2147483648	2147483647	0	0
Agent XPs	0	1	1	1
allow updates	0	1	1	1
awe enabled	0	1	1	1
backup compression default	0	1	0	0
blocked process threshold (s)	0	86400	0	0
c2 audit mode	0	1	0	0
clr enabled	0	1	0	0
common criteria compliance enabled	0	1	0	0
cost threshold for parallelism	0	32767	0	0
cross db ownership chaining	0	1	0	0
cursor threshold	-1	2147483647	-1	-1
Database Mail XPs	0	1	0	0
default full-text language	0	2147483647	1033	1033
default language	0	9999	0	0
default trace enabled	0	1	0	0
disallow results from triggers	0	1	0	0
EKM provider enabled	0	1	0	0
filestream access level	0	2	0	0
fill factor (%)	0	100	0	0

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

## A.5 Microsoft SQL Server 2008 Node Configuration

No node configuration changes were made.

## A.6 Windows 2008 Configuration

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

## A.7 Smart Array driver settings

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCISSs2]
"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\HpCISSs2\Parameters]
"BusType"=dword:00000008

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCISSs2\Parameters\Device]
"DriverParameter"="CSMI=None;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCISSs2\Parameters\PnpInterface]
"5"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\HpCISSs2\Enum]
"0"="PCI\VEN_103C&DEV_323A&SUBSYS_3245103C&REV_01\4&297a62c9&0&0008"
"Count"=dword:00000002
"NextInstance"=dword:00000002
"1"="PCI\VEN_103C&DEV_323A&SUBSYS_3247103C&REV_01\4&5034fb8&0&0030"
```

## A.8 System Hardware Information

System Information report written at: 09/02/09 17:55:51  
 System Name: FUSE  
 [System Summary]

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

```
System Model      ProLiant DL380 G6
System Type      x64-based PC
Processor        Intel(R) Xeon(R) CPU           X5570 @ 2.93GHz, 2933 Mhz, 4
Core(s), 8 Logical Processor(s)
Processor        Intel(R) Xeon(R) CPU           X5570 @ 2.93GHz, 2933 Mhz, 4
Core(s), 8 Logical Processor(s)
BIOS Version/Date HP P62, 7/24/2009
SMBIOS Version   2.6
Windows Directory C:\Windows
System Directory C:\Windows\system32
Boot Device      \Device\HarddiskVolume1
Locale           United States
Hardware Abstraction Layer Version = "6.0.6002.18005"
User Name        FUSE\Administrator
Time Zone        Central Daylight Time
Installed Physical Memory (RAM) 144 GB
Total Physical Memory 144 GB
Available Physical Memory 1.32 GB
Total Virtual Memory 140 GB
Available Virtual Memory 1.04 GB
Page File Space 0 bytes
```

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device	Bus
I/O Port 0x00000000-0x000003AF		PCI bus
I/O Port 0x00000000-0x000003AF		Direct memory access controller
IRQ 20	Standard Universal PCI to USB Host Controller	
IRQ 20	Standard Enhanced PCI to USB Host Controller	
I/O Port 0x000003C0-0x000003DF		PCI bus
I/O Port 0x000003C0-0x000003DF		ATI ES1000
I/O Port 0x00000070-0x00000077		Motherboard resources
I/O Port 0x00000070-0x00000077		System CMOS/real time clock
Memory Address 0xE8000000-0xFFFFFFFF		Intel(R) 82801 PCI Bridge - 244E
Memory Address 0xE8000000-0xFFFFFFFF		ATI ES1000
IRQ 22	Standard Universal PCI to USB Host Controller	
IRQ 22	HP iLO Management Channel Interface Driver	
IRQ 22	Standard Universal PCI to USB Host Controller	
IRQ 23	Standard Universal PCI to USB Host Controller	
IRQ 23	Standard Universal PCI to USB Host Controller	
IRQ 23	ATI ES1000	
Memory Address 0xFED00000-0xFED03FFF		PCI bus
Memory Address 0xFED00000-0xFED03FFF		PCI bus
Memory Address 0xFED00000-0xFED03FFF		High precision event timer
IRQ 16	PCI standard PCI-to-PCI bridge	
IRQ 16	HP NC382i DP Virtual Bus Device	
IRQ 16	PCI standard PCI-to-PCI bridge	
Memory Address 0xA0000-0xBFFFF		PCI bus
Memory Address 0xA0000-0xBFFFF		ATI ES1000

Memory Address 0xF8000000-0xF9FFFFFF PCI bridge	PCI standard PCI-to-	0x00000020-0x0000003F	Motherboard resources	OK
Memory Address 0xF8000000-0xF9FFFFFF Virtual Bus Device	HP NC382i DP	0x000000A0-0x000000BF	Motherboard resources	OK
I/O Port 0x000003B0-0x000003BB	PCI bus	0x00000090-0x0000009F	Motherboard resources	OK
I/O Port 0x000003B0-0x000003BB	ATI ES1000	0x00000050-0x00000053	Motherboard resources	OK
I/O Port 0x00001000-0x00004FFF	PCI bus	0x00000700-0x0000071F	Motherboard resources	OK
I/O Port 0x00001000-0x00004FFF Host Controller	Standard Universal PCI to USB	0x00000880-0x000008FF	Motherboard resources	OK
I/O Port 0x00004000-0x00004FFF	PCI standard PCI-to-PCI bridge	0x00000900-0x0000097F	Motherboard resources	OK
I/O Port 0x00004000-0x00004FFF	Smart Array P410i Controller	0x00000010-0x0000001F	Motherboard resources	OK
		0x00000C80-0x00000C83	Motherboard resources	OK
[DMA]		0x00000CD4-0x00000CD7	Motherboard resources	OK
Resource Device Status Channel 7 Direct memory access controller OK		0x00000F50-0x00000F58	Motherboard resources	OK
[Forced Hardware]		0x00000F00-0x00000F00	Motherboard resources	OK
Device PNP Device ID		0x00000CA0-0x00000CA1	Motherboard resources	OK
[L/O]		0x00000CA4-0x00000CA5	Motherboard resources	OK
Resource Device Status 0x00001000-0x00004FFF Standard Universal PCI to USB Host Controller OK	PCI bus OK Standard Universal PCI to USB Host	0x00000CA2-0x00000CA3 OK	Microsoft Generic IPMI Compliant Device	
0x00000000-0x000003AF Direct memory access controller OK	PCI bus OK Direct memory access controller OK	0x00000040-0x00000043 0x00000080-0x0000008F	System timer OK Direct memory access controller OK	
0x000003E0-0x00000CF7 0x00000D00-0x00000FFF	PCI bus OK PCI bus OK	0x000000C0-0x000000DF 0x00000061-0x00000061	Direct memory access controller OK System speaker OK	
0x000003B0-0x000003BB 0x000003B0-0x000003BB	PCI bus OK ATI ES1000 OK	0x00000060-0x00000060	Standard PS/2 Keyboard OK	
0x000003C0-0x000003DF 0x000003C0-0x000003DF	PCI bus OK ATI ES1000 OK	0x00000064-0x00000064	Standard PS/2 Keyboard OK	
0x00004000-0x00004FFF	PCI standard PCI-to-PCI bridge OK Smart Array P410i Controller OK	0x0000002E-0x0000002F 0x00000620-0x0000065F 0x00000680-0x0000069F 0x00000600-0x0000061F 0x00000660-0x0000067F 0x00000300-0x0000031F	Extended IO Bus OK Extended IO Bus OK Extended IO Bus OK Extended IO Bus OK Extended IO Bus OK Extended IO Bus OK	
0x00001020-0x0000103F Controller OK	Standard Universal PCI to USB Host	0x000003F8-0x000003FF	Communications Port (COM1) OK	
0x00001040-0x0000105F Controller OK	Standard Universal PCI to USB Host			
0x00001060-0x0000107F Controller OK	Standard Universal PCI to USB Host			
0x00002000-0x00003FFF OK	Intel(R) 82801 PCI Bridge - 244E	[IRQs]		
0x00003000-0x000030FF 0x00002800-0x000028FF Function OK	ATI ES1000 OK HP ProLiant iLO 2 Legacy Support	Resource Device Status		
0x00003400-0x000034FF Driver OK	HP iLO Management Channel Interface	IRQ 81 Microsoft ACPI-Compliant System OK		
0x00003800-0x0000381F Controller OK	Standard Universal PCI to USB Host	IRQ 82 Microsoft ACPI-Compliant System OK		
0x00000070-0x00000077	Motherboard resources OK	IRQ 83 Microsoft ACPI-Compliant System OK		
0x00000070-0x00000077	System CMOS/real time clock OK	IRQ 84 Microsoft ACPI-Compliant System OK		
0x00000408-0x0000040F	Motherboard resources OK	IRQ 85 Microsoft ACPI-Compliant System OK		
0x000004D0-0x000004D1	Motherboard resources OK	IRQ 86 Microsoft ACPI-Compliant System OK		
		IRQ 87 Microsoft ACPI-Compliant System OK		
		IRQ 88 Microsoft ACPI-Compliant System OK		
		IRQ 89 Microsoft ACPI-Compliant System OK		
		IRQ 90 Microsoft ACPI-Compliant System OK		
		IRQ 91 Microsoft ACPI-Compliant System OK		
		IRQ 92 Microsoft ACPI-Compliant System OK		
		IRQ 93 Microsoft ACPI-Compliant System OK		
		IRQ 94 Microsoft ACPI-Compliant System OK		
		IRQ 95 Microsoft ACPI-Compliant System OK		
		IRQ 96 Microsoft ACPI-Compliant System OK		



IRQ 97 Microsoft ACPI-Compliant System OK  
 IRQ 98 Microsoft ACPI-Compliant System OK  
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IRQ 167 Microsoft ACPI-Compliant System OK  
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 IRQ 190 Microsoft ACPI-Compliant System OK  
 IRQ 4294967294 PCI standard PCI-to-PCI bridge OK  
 IRQ 4294967284 Smart Array P410i Controller OK  
 IRQ 4294967283 Smart Array P410i Controller OK  
 IRQ 4294967282 Smart Array P410i Controller OK  
 IRQ 4294967281 Smart Array P410i Controller OK  
 IRQ 4294967280 Smart Array P410i Controller OK  
 IRQ 4294967279 Smart Array P410i Controller OK  
 IRQ 4294967278 Smart Array P410i Controller OK  
 IRQ 4294967277 Smart Array P410i Controller OK  
 IRQ 4294967289 PCI standard PCI-to-PCI bridge OK  
 IRQ 4294967293 PCI standard PCI-to-PCI bridge OK  
 IRQ 24 Fusion ioDrive OK  
 IRQ 4294967288 PCI standard PCI-to-PCI bridge OK  
 IRQ 4294967287 PCI standard PCI-to-PCI bridge OK  
 IRQ 4294967286 PCI standard PCI-to-PCI bridge OK  
 IRQ 4294967292 PCI standard PCI-to-PCI bridge OK  
 IRQ 30 Fusion ioDrive OK  
 IRQ 4294967291 PCI standard PCI-to-PCI bridge OK  
 IRQ 31 Fusion ioDrive OK  
 IRQ 4294967290 PCI standard PCI-to-PCI bridge OK  
 IRQ 32 Fusion ioDrive OK  
 IRQ 4294967285 PCI standard PCI-to-PCI bridge OK  
 IRQ 16 PCI standard PCI-to-PCI bridge OK  
 IRQ 16 HP NC382i DP Virtual Bus Device OK  
 IRQ 16 PCI standard PCI-to-PCI bridge OK  
 IRQ 20 Standard Universal PCI to USB Host Controller OK  
 IRQ 20 Standard Enhanced PCI to USB Host Controller OK  
 IRQ 23 Standard Universal PCI to USB Host Controller OK  
 IRQ 23 Standard Universal PCI to USB Host Controller OK  
 IRQ 23 ATI ES1000 OK  
 IRQ 22 Standard Universal PCI to USB Host Controller OK  
 IRQ 22 HP iLO Management Channel Interface Driver OK  
 IRQ 22 Standard Universal PCI to USB Host Controller OK  
 IRQ 10 HP ProLiant iLO 2 Legacy Support Function OK  
 IRQ 21 HP ProLiant iLO 2 Management Controller Driver OK  
 IRQ 0 System timer OK  
 IRQ 1 Standard PS/2 Keyboard OK

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IRQ 12 PS/2 Compatible Mouse OK
IRQ 4 Communications Port (COM1) OK

[Memory]

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

0xA0000-0xBFFFF PCI bus OK
0xA0000-0xBFFFF ATI ES1000 OK
0xFB700000-0xFBFFFFFF PCI standard PCI-to-PCI bridge OK

0xFB800000-0xFBFFFFFF Smart Array P410i Controller OK

0xFB7F0000-0xFB7FFFF Smart Array P410i Controller OK

0xFB7F0000-0xFB7FFFF PCI standard PCI-to-PCI bridge OK

0xFBFF0000-0xFBFFFFFF Fusion ioDrive OK
0xFBE00000-0xFBEFFFFFF PCI standard PCI-to-PCI bridge OK

0xFBEF0000-0xFBEFFFFFF Fusion ioDrive OK
0xFBD00000-0xFBDFFFFFF PCI standard PCI-to-PCI bridge OK

0xFBDF0000-0xFBDFFFFFFF Fusion ioDrive OK
0xFBC00000-0xFBCFFFFFF PCI standard PCI-to-PCI bridge OK

0xFBCF0000-0xFBCFFFFFF Fusion ioDrive OK
0xF8000000-0xF9FFFFFF PCI standard PCI-to-PCI bridge OK

0xF8000000-0xF9FFFFFF HP NC382i DP Virtual Bus Device
OK
0xF7DF0000-0xF7DF03FF Standard Enhanced PCI to USB Host
Controller OK
0xF7E00000-0xF7FFFFFF Intel(R) 82801 PCI Bridge - 244E
OK
0xE8000000-0xEFFFFFFF Intel(R) 82801 PCI Bridge - 244E
OK
0xE8000000-0xEFFFFFFF ATI ES1000 OK
0xF7FF0000-0xF7FFFFFF ATI ES1000 OK
0xF7FE0000-0xF7FE01FF HP ProLiant iLO 2 Legacy Support
Function OK
0xF7FD0000-0xF7FD07FF HP iLO Management Channel Interface
Driver OK
0xF7FC0000-0xF7FC3FFF HP iLO Management Channel Interface
Driver OK
0xF7F00000-0xF7F7FFFF HP iLO Management Channel Interface
Driver OK
0xF7EF0000-0xF7EF00FF HP ProLiant iLO 2 Management Controller
Driver OK
0xE0000000-0xE3FFFFFF Motherboard resources OK

0xFE000000-0xFEBFFFFFF Motherboard resources OK

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[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description	Status	File
Version	Size	Creation Date		

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

[Video Codecs]

CODEC	Manufacturer	Description	Status	File	
Version	Size	Creation Date			
c:\windows\system32\iyuv_32.dll	Microsoft Corporation	OK	C:\Windows\system32\IYUV_32.DLL	52.50 KB (53,760 bytes)	1/19/2008 12:34 AM
c:\windows\system32\msyuv.dll	Microsoft Corporation	OK	C:\Windows\system32\MSYUV.DLL	24.50 KB (25,088 bytes)	1/19/2008 12:34 AM
c:\windows\system32\msrle32.dll	Microsoft Corporation	OK	C:\Windows\system32\MSRLE32.DLL	15.50 KB (15,872 bytes)	1/19/2008 12:43 AM
c:\windows\system32\msvidc32.dll	Microsoft Corporation	OK	C:\Windows\system32\MSVIDC32.DLL	37.50 KB (38,400 bytes)	1/19/2008 12:43 AM
c:\windows\system32\tsbyuv.dll	Microsoft Corporation	OK	C:\Windows\system32\TSBYUV.DLL	14.00 KB (14,336 bytes)	4/11/2009 11:11 AM

[CD-ROM]

Item	Value
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[Sound Device]

Item	Value
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[Display]

Item	Value
Name	ATI ES1000
PNP Device ID	PCI\VEN_1002&DEV_515E&SUBSYS_31FB103C&REV_02\4&15EB80B3&0&18F0
Adapter Type	Not Available, ATI Technologies Inc. compatible
Adapter Description	ATI ES1000
Adapter RAM	Not Available
Installed Drivers	Not Available
Driver Version	6.14.10.6745
INF File	oem5.inf (ati2mtag_RN50 section)
Color Planes	Not Available
Color Table Entries	Not Available
Resolution	Not Available
Bits/Pixel	Not Available
Memory Address	0xE8000000-0xEFFFFFFF
I/O Port	0x00003000-0x000030FF

Memory Address 0xF7FF0000-0xF7FFFFFF  
 IRQ Channel IRQ 23  
 I/O Port 0x00003B0-0x00003BB  
 I/O Port 0x00003C0-0x00003DF  
 Memory Address 0xA0000-0xBFFFF  
 Driver c:\windows\system32\drivers\ati2mtag.sys (6.14.10.6745, 2.11 MB (2,210,816 bytes), 6/26/2009 7:10 PM)

[Infrared]

Item Value

[Input]

[Keyboard]

Item Value  
 Description USB Human Interface Device  
 Name Enhanced (101- or 102-key)  
 Layout 00000409  
 PNP Device ID USB\VID\_03F0&PID\_1027&MI\_00\7&596F79B&0&0000

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

Description Standard PS/2 Keyboard  
 Name Enhanced (101- or 102-key)  
 Layout 00000409  
 PNP Device ID ACPI\PNP0303\4&99BC81B&0  
 Number of Function Keys 12  
 I/O Port 0x00000060-0x00000060  
 I/O Port 0x00000064-0x00000064  
 IRQ Channel IRQ 1  
 Driver c:\windows\system32\drivers\i8042prt.sys (6.0.6001.18000, 62.50 KB (64,000 bytes), 1/19/2008 12:28 AM)

[Pointing Device]

Item Value  
 Hardware Type USB Human Interface Device  
 Number of Buttons 0  
 Status OK  
 PNP Device ID USB\VID\_03F0&PID\_1027&MI\_01\7&596F79B&0&0001

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

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

[Modem]

Item Value

[Network]

[Adapter]

Item Value  
 Name [00000000] WAN Miniport (SSTP)  
 Adapter Type Not Available  
 Product Type WAN Miniport (SSTP)  
 Installed Yes  
 PNP Device ID ROOT\MS\_SSTPMINIPOINT\0000  
 Last Reset 9/2/2009 4:22 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 (6.0.6002.18005, 76.50 KB (78,336 bytes), 4/11/2009 11:12 AM)

Name [00000001] WAN Miniport (L2TP)  
 Adapter Type Not Available  
 Product Type WAN Miniport (L2TP)  
 Installed Yes  
 PNP Device ID ROOT\MS\_L2TPMINIPOINT\0000  
 Last Reset 9/2/2009 4:22 PM  
 Index 1  
 Service Name Rasl2tp  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address Not Available  
 Driver c:\windows\system32\drivers\rasl2tp.sys (6.0.6002.18005, 122.00 KB (124,928 bytes), 4/11/2009 11:12 AM)

Name [00000002] WAN Miniport (PPTP)  
 Adapter Type Wide Area Network (WAN)  
 Product Type WAN Miniport (PPTP)  
 Installed Yes  
 PNP Device ID ROOT\MS\_PPTPMINIPOINT\0000  
 Last Reset 9/2/2009 4:22 PM  
 Index 2  
 Service Name PptpMiniport  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address 50:50:54:50:30:30  
 Driver c:\windows\system32\drivers\raspptp.sys (6.0.6002.18005, 96.50 KB (98,816 bytes), 4/11/2009 11:12 AM)

Name [00000003] WAN Miniport (PPPOE)  
 Adapter Type Wide Area Network (WAN)  
 Product Type WAN Miniport (PPPOE)  
 Installed Yes  
 PNP Device ID ROOT\MS\_PPPOEMINIPOINT\0000  
 Last Reset 9/2/2009 4:22 PM

Index 3  
Service Name RasPppoe  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled No  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address 33:50:6F:45:30:30  
Driver c:\windows\system32\drivers\rasppoe.sys (6.0.6002.18005, 49.00 KB (50,176 bytes), 4/11/2009 11:11 AM)

Name [00000004] WAN Miniport (IPv6)  
Adapter Type Not Available  
Product Type WAN Miniport (IPv6)  
Installed Yes  
PNP Device ID ROOT\MS\_NDISWANIPV6\0000  
Last Reset 9/2/2009 4:22 PM

Index 4  
Service Name NdisWan  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled No  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available  
Driver c:\windows\system32\drivers\ndiswan.sys (6.0.6002.18005, 165.50 KB (169,472 bytes), 4/11/2009 11:11 AM)

Name [00000005] WAN Miniport (Network Monitor)  
Adapter Type Not Available  
Product Type WAN Miniport (Network Monitor)  
Installed Yes  
PNP Device ID ROOT\MS\_NDISWANBH\0000  
Last Reset 9/2/2009 4:22 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 (6.0.6002.18005, 165.50 KB (169,472 bytes), 4/11/2009 11:11 AM)

Name [00000006] Broadcom NetXtreme Gigabit Ethernet  
Adapter Type Not Available  
Product Type Broadcom NetXtreme Gigabit Ethernet  
Installed Yes  
PNP Device ID Not Available  
Last Reset 9/2/2009 4:22 PM

Index 6  
Service Name b57nd60a  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled Yes  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available

Name [00000007] HP NC382i DP Multifunction Gigabit Server Adapter

Adapter Type Ethernet 802.3  
Product Type HP NC382i DP Multifunction Gigabit Server Adapter

Installed Yes  
PNP Device ID B06BDRV\L2ND&PCI\_163914E4&SUBSYS\_7055103C&REV\_20\_5&6FB4662&0&20050200  
Last Reset 9/2/2009 4:22 PM

Index 7  
Service Name l2nd  
IP Address 130.168.250.167, fe80::fcee:9957:a58c:8d73  
IP Subnet 255.255.0.0, 64  
Default IP Gateway Not Available  
DHCP Enabled Yes  
DHCP Server 130.168.253.2  
DHCP Lease Expires 9/3/2009 4:22 PM  
DHCP Lease Obtained 9/2/2009 4:22 PM  
MAC Address 00:23:7D:E1:5A:0A  
Driver c:\windows\system32\drivers\bxnd60a.sys (4.8.5.0, 78.37 KB (80,248 bytes), 7/14/2009 3:30 PM)

Name [00000008] WAN Miniport (IP)  
Adapter Type Not Available  
Product Type WAN Miniport (IP)  
Installed Yes  
PNP Device ID ROOT\MS\_NDISWANIP\0000  
Last Reset 9/2/2009 4:22 PM

Index 8  
Service Name NdisWan  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled No  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available  
Driver c:\windows\system32\drivers\ndiswan.sys (6.0.6002.18005, 165.50 KB (169,472 bytes), 4/11/2009 11:11 AM)

Name [00000009] Broadcom NetXtreme Gigabit Ethernet  
Adapter Type Not Available  
Product Type Broadcom NetXtreme Gigabit Ethernet  
Installed Yes  
PNP Device ID Not Available  
Last Reset 9/2/2009 4:22 PM

Index 9  
Service Name b57nd60a  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled Yes  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available

Name [00000010] Microsoft ISATAP Adapter  
Adapter Type Tunnel  
Product Type Microsoft ISATAP Adapter  
Installed Yes  
PNP Device ID ROOT\\*ISATAP\0000  
Last Reset 9/2/2009 4:22 PM

Index 10  
Service Name tunnel  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled No  
DHCP Server Not Available

DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available  
Driver c:\windows\system32\drivers\tunnel.sys (6.0.6001.18000, 27.50 KB (28,160 bytes), 1/19/2008 12:36 AM)

Name [00000011] RAS Async Adapter  
Adapter Type Wide Area Network (WAN)  
Product Type RAS Async Adapter  
Installed Yes  
PNP Device ID SW{EEAB7790-C514-11D1-B42B-00805FC1270E}\ASYNCMAC  
Last Reset 9/2/2009 4:22 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 (6.0.6001.18000, 21.50 KB (22,016 bytes), 1/19/2008 12:37 AM)

Name [00000012] Microsoft 6to4 Adapter  
Adapter Type Tunnel  
Product Type Microsoft 6to4 Adapter  
Installed Yes  
PNP Device ID ROOT\\*6TO4MP\0000  
Last Reset 9/2/2009 4:22 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 (6.0.6001.18000, 27.50 KB (28,160 bytes), 1/19/2008 12:36 AM)

Name [00000013] HP NC382i DP Multifunction Gigabit Server Adapter  
Adapter Type Not Available  
Product Type HP NC382i DP Multifunction Gigabit Server Adapter  
Installed Yes  
PNP Device ID Not Available  
Last Reset 9/2/2009 4:22 PM  
Index 13  
Service Name l2nd  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled Yes  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available

Name [00000015] HP NC382i DP Multifunction Gigabit Server Adapter  
Adapter Type Not Available  
Product Type HP NC382i DP Multifunction Gigabit Server Adapter  
Installed Yes

PNP Device ID Not Available  
Last Reset 9/2/2009 4:22 PM  
Index 15  
Service Name l2nd  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled Yes  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available

Name [00000016] HP NC382i DP Multifunction Gigabit Server Adapter  
Adapter Type Not Available  
Product Type HP NC382i DP Multifunction Gigabit Server Adapter

Installed Yes  
PNP Device ID Not Available  
Last Reset 9/2/2009 4:22 PM  
Index 16  
Service Name l2nd  
IP Address Not Available  
IP Subnet Not Available  
Default IP Gateway Not Available  
DHCP Enabled Yes  
DHCP Server Not Available  
DHCP Lease Expires Not Available  
DHCP Lease Obtained Not Available  
MAC Address Not Available

[Protocol]

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

Name	MSAFD Tcpip [TCP/IPv6]
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	28 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	28 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	No
Supports Expedited Data	Yes
Supports Graceful Closing	Yes
Supports Guaranteed Bandwidth	No
Supports Multicasting	No
Name	MSAFD Tcpip [UDP/IPv6]
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	28 bytes
Maximum Message Size	63.99 KB (65,527 bytes)
Message Oriented	Yes
Minimum Address Size	28 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	Yes
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	No
Supports Expedited Data	No
Supports Graceful Closing	No
Supports Guaranteed Bandwidth	No
Supports Multicasting	Yes
Name	RSVP TCPv6 Service Provider
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	28 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	28 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	Yes
Supports Expedited Data	Yes
Supports Graceful Closing	Yes
Supports Guaranteed Bandwidth	No
Supports Multicasting	No
Name	RSVP TCP Service Provider
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	16 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	16 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	Yes
Supports Expedited Data	Yes
Supports Graceful Closing	Yes
Supports Guaranteed Bandwidth	No
Supports Multicasting	No
Name	RSVP UDPv6 Service Provider
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	28 bytes
Maximum Message Size	63.99 KB (65,527 bytes)
Message Oriented	Yes
Minimum Address Size	28 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	Yes
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	Yes
Supports Expedited Data	No
Supports Graceful Closing	No
Supports Guaranteed Bandwidth	No
Supports Multicasting	Yes
Name	RSVP UDP Service Provider
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	16 bytes
Maximum Message Size	63.99 KB (65,527 bytes)
Message Oriented	Yes
Minimum Address Size	16 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	Yes
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	Yes
Supports Expedited Data	No
Supports Graceful Closing	No
Supports Guaranteed Bandwidth	No
Supports Multicasting	Yes
[WinSock]	
Item	Value
File	c:\windows\syswow64\wsock32.dll
Size	15.00 KB (15,360 bytes)
Version	6.0.6001.18000
File	c:\windows\system32\wsock32.dll
Size	18.00 KB (18,432 bytes)
Version	6.0.6001.18000
[Ports]	
[Serial]	
Item	Value
Name	Communications Port (COM1)
Status	OK
PNP Device ID	ACPI\PNP0501\0
Maximum Input Buffer Size	0
Maximum Output Buffer Size	No
Settable Baud Rate	Yes
Settable Data Bits	Yes
Settable Flow Control	Yes
Settable Parity	Yes
Settable Parity Check	Yes
Settable Stop Bits	Yes
Settable RLSD	Yes
Supports RLSD	Yes

Supports 16 Bit Mode No  
 Supports Special Characters No  
 Baud Rate 9600  
 Bits/Byte 8  
 Stop Bits 1  
 Parity None  
 Busy No  
 Abort Read/Write on Error No  
 Binary Mode Enabled Yes  
 Continue Xmit on XOff No  
 CTS Outflow Control No  
 Discard NULL Bytes No  
 DSR Outflow Control 0  
 DSR Sensitivity 0  
 DTR Flow Control Type Enable  
 EOF Character 0  
 Error Replace Character 0  
 Error Replacement Enabled No  
 Event Character 0  
 Parity Check Enabled No  
 RTS Flow Control Type Enable  
 XOff Character 19  
 XOffXmit Threshold 512  
 XOn Character 17  
 XOnXmit Threshold 2048  
 XOnXOff InFlow Control 0  
 XOnXOff OutFlow Control 0  
 IRQ Channel IRQ 4  
 I/O Port 0x000003F8-0x000003FF  
 Driver c:\windows\system32\drivers\serial.sys (6.0.6001.18000, 92.00 KB (94,208 bytes), 1/19/2008 12:28 AM)

[Parallel]

Item	Value
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[Storage]

[Drives]

Item	Value
Drive C:	
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	68.33 GB (73,369,907,200 bytes)
Free Space	23.19 GB (24,898,813,952 bytes)
Volume Name	
Volume Serial Number	940AE384
Drive Y:	
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	273.40 GB (293,561,430,016 bytes)
Free Space	121.51 GB (130,472,132,608 bytes)
Volume Name	New Volume
Volume Serial Number	C87BFFA1

[Disks]

Item	Value
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	Fusion ioDrive 80GB
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk

Partitions	1
SCSI Bus	0
SCSI Logical Unit	13
SCSI Port	0
SCSI Target ID	0
Sectors/Track	64
Size	74.93 GB (80,455,139,328 bytes)
Total Cylinders	9,591
Total Sectors	157,138,944
Total Tracks	2,455,296
Tracks/Cylinder	256
Partition	Disk #3, Partition #0
Partition Size	74.93 GB (80,455,139,328 bytes)
Partition Starting Offset	1,048,576 bytes
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	Fusion ioDrive 80GB
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	16
SCSI Port	0
SCSI Target ID	0
Sectors/Track	64
Size	74.93 GB (80,455,139,328 bytes)
Total Cylinders	9,591
Total Sectors	157,138,944
Total Tracks	2,455,296
Tracks/Cylinder	256
Partition	Disk #2, Partition #0
Partition Size	74.93 GB (80,455,139,328 bytes)
Partition Starting Offset	1,048,576 bytes
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	Fusion ioDrive 80GB
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	7
SCSI Port	0
SCSI Target ID	0
Sectors/Track	64
Size	74.93 GB (80,455,139,328 bytes)
Total Cylinders	9,591
Total Sectors	157,138,944
Total Tracks	2,455,296
Tracks/Cylinder	256
Partition	Disk #1, Partition #0
Partition Size	74.93 GB (80,455,139,328 bytes)
Partition Starting Offset	1,048,576 bytes
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	Fusion ioDrive 80GB
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	1
SCSI Bus	0
SCSI Logical Unit	10
SCSI Port	0
SCSI Target ID	0
Sectors/Track	64
Size	74.93 GB (80,455,139,328 bytes)

Total Cylinders 9,591  
 Total Sectors 157,138,944  
 Total Tracks 2,455,296  
 Tracks/Cylinder 256  
 Partition Disk #0, Partition #0  
 Partition Size 74.93 GB (80,455,139,328 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 0  
 SCSI Target ID 4  
 Sectors/Track 32  
 Size 68.33 GB (73,372,631,040 bytes)  
 Total Cylinders 17,562  
 Total Sectors 143,305,920  
 Total Tracks 4,478,310  
 Tracks/Cylinder 255  
 Partition Disk #4, Partition #0  
 Partition Size 68.33 GB (73,369,911,296 bytes)  
 Partition Starting Offset 1,048,576 bytes

Description Disk drive  
 Manufacturer (Standard disk drives)  
 Model HP LOGICAL VOLUME SCSI Disk Device  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus 0  
 SCSI Logical Unit 0  
 SCSI Port 0  
 SCSI Target ID 5  
 Sectors/Track 32  
 Size 273.40 GB (293,561,548,800 bytes)  
 Total Cylinders 70,265  
 Total Sectors 573,362,400  
 Total Tracks 17,917,575  
 Tracks/Cylinder 255  
 Partition Disk #5, Partition #0  
 Partition Size 273.40 GB (293,561,434,112 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&297A62C9&0&0008
Memory Address	0xFB800000-0xFBFFFFFF
Memory Address	0xFB7F0000-0xFB7F0FFF
I/O Port	0x00004000-0x00004FFF
IRQ Channel	IRQ 4294967284
IRQ Channel	IRQ 4294967283
IRQ Channel	IRQ 4294967282
IRQ Channel	IRQ 4294967281
IRQ Channel	IRQ 4294967280
IRQ Channel	IRQ 4294967279
IRQ Channel	IRQ 4294967278
IRQ Channel	IRQ 4294967277

Driver c:\windows\system32\drivers\hpcisss2.sys (6.14.0.64, 83.54 KB (85,544 bytes), 6/26/2009 7:10 PM)

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

[IDE]

Item	Value
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[Printing]

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

[Problem Devices]

Device	PNP Device ID	Error Code
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[USB]

Device	PNP Device ID
Standard Universal PCI to USB Host Controller	PCI\VEN_8086&DEV_3A34&SUBSYS_330D103C&REV_00\3&21436425&0&E8
Standard Universal PCI to USB Host Controller	PCI\VEN_8086&DEV_3A35&SUBSYS_330D103C&REV_00\3&21436425&0&E9
Standard Universal PCI to USB Host Controller	PCI\VEN_8086&DEV_3A36&SUBSYS_330D103C&REV_00\3&21436425&0&EA
Standard Universal PCI to USB Host Controller	PCI\VEN_8086&DEV_3A39&SUBSYS_330D103C&REV_00\3&21436425&0&EB
Standard Enhanced PCI to USB Host Controller	PCI\VEN_8086&DEV_3A3A&SUBSYS_330D103C&REV_00\3&21436425&0&EF
Standard Universal PCI to USB Host Controller	PCI\VEN_103C&DEV_3300&SUBSYS_3305103C&REV_00\4&15EB80B3&0&24F0

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver	Yes	No
adp94xx	adp94xx	c:\windows\system32\drivers\adp94xx.sys	Kernel Driver	No	No
adpahci	adpahci	c:\windows\system32\drivers\adpahci.sys	Kernel Driver	No	No
adpu160m	adpu160m	c:\windows\system32\drivers\adpu160m.sys	Kernel Driver	No	No



adpu320 Driver	adpu320	c:\windows\system32\drivers\adpu320.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
afd	Ancillary Function Driver for Winsock								
	c:\windows\system32\drivers\afd.sys		Kernel Driver	Yes	System	Running	OK	Normal	No
agp440	Intel AGP Bus Filter								
	c:\windows\system32\drivers\agp440.sys		Kernel Driver	No	Manual	Stopped	OK	Normal	No
aic78xx Driver	aic78xx	c:\windows\system32\drivers\djsvs.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
aliide Driver	aliide	c:\windows\system32\drivers\aliide.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
amdide Driver	amdide	c:\windows\system32\drivers\amdide.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
amdK8	AMD K8 Processor Driver								
	c:\windows\system32\drivers\amdK8.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
arc Driver	arc	c:\windows\system32\drivers\arc.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
arcscas Driver	arcscas	c:\windows\system32\drivers\arcscas.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
asynmac	RAS Asynchronous Media Driver								
	c:\windows\system32\drivers\asynmac.sys		Kernel Driver	Yes	Manual	Running	OK	Normal	No
atapi	IDE Channel								
	c:\windows\system32\drivers\atapi.sys		Kernel Driver	Yes	Boot	Running	OK	Critical	No
ati2mtag Driver	ati2mtag	c:\windows\system32\drivers\ati2mtag.sys	Kernel Driver	Yes	Manual	Running	OK	Ignore	No
b06bdrv	HP Virtual Bus Device								
	c:\windows\system32\drivers\b06bdrv.sys		Kernel Driver	Yes	Boot	Running	OK	Normal	No
b57nd60a	Broadcom NetXtreme Gigabit Ethernet - NDIS 6.0								
	c:\windows\system32\drivers\b57nd60a.sys		Kernel Driver	No	Manual	Stopped	OK	Normal	No
blbdrive Driver	blbdrive	c:\windows\system32\drivers\blbdrive.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
browser System Driver	Browser	c:\windows\system32\drivers\browser.sys	File System Driver	No	Yes	Manual	Running	OK	Normal
brfiltlo	Brother USB Mass-Storage Lower Filter Driver								
	c:\windows\system32\drivers\brfiltlo.sys		Kernel Driver	No	Manual	Stopped	OK	Normal	No
brfiltup	Brother USB Mass-Storage Upper Filter Driver								
	c:\windows\system32\drivers\brfiltup.sys		Kernel Driver	No	Manual	Stopped	OK	Normal	No
brserid	Brother MFC Serial Port Interface Driver (WDM)								
	c:\windows\system32\drivers\brserid.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
brserwdm	Brother WDM Serial driver								
	c:\windows\system32\drivers\brserwdm.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
brusbmdm	Brother MFC USB Fax Only Modem								
	c:\windows\system32\drivers\brusbmdm.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
brusbser	Brother MFC USB Serial WDM Driver								
	c:\windows\system32\drivers\brusbser.sys		Kernel Driver	No	Manual	Stopped	OK	Normal	No
cdfs	CD/DVD File System Reader								
	c:\windows\system32\drivers\cdfs.sys		File System Driver	No	Disabled	Stopped	OK	Normal	No
cdrom	CD-ROM Driver								
	c:\windows\system32\drivers\cdrom.sys		Kernel Driver	No	System	Stopped	OK	Normal	No
circlass	Consumer IR Devices								
	c:\windows\system32\drivers\circlass.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
clfs Driver	Common Log (CLFS)								
	c:\windows\system32\clfs.sys		Kernel Driver	Yes	Boot	Running	OK	Critical	No
cmdide Driver	cmdide	c:\windows\system32\drivers\cmdide.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
compbatt	Microsoft Composite Battery Driver								
	c:\windows\system32\drivers\compbatt.sys		Kernel Driver	No	Disabled	Stopped	OK	Critical	No
cpqcidrv	HP iLO Management Channel Interface Driver								
	c:\windows\system32\drivers\cpqcidrv.sys		Kernel Driver	Yes	Manual	Running	OK	Normal	No
credisk	Credisk Filter Driver								
	c:\windows\system32\drivers\credisk.sys		Kernel Driver	Yes	Boot	Running	OK	Normal	No
csc	Offline Files Driver								
	c:\windows\system32\drivers\csc.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
dfsc	DFS Namespace Client Driver								
	c:\windows\system32\drivers\dfsc.sys		File System Driver	Yes	System	Running	OK	Normal	No
disk	Disk Driver								
	c:\windows\system32\drivers\disk.sys		Kernel Driver	Yes	Boot	Running	OK	Normal	No
dxgkrnl	LDDM Graphics Subsystem								
	c:\windows\system32\drivers\dxgkrnl.sys		Kernel Driver	No	Manual	Stopped	OK	Ignore	No
e1g60	Intel(R) PRO/1000 NDIS 6 Adapter Driver								
	c:\windows\system32\drivers\e1g6032e.sys		Kernel Driver	No	Manual	Stopped	OK	Normal	No
elxstor Driver	elxstor	c:\windows\system32\drivers\elxstor.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
errdev	Microsoft Hardware Error Device Driver								
	c:\windows\system32\drivers\errdev.sys		Kernel Driver	No	Disabled	Stopped	OK	Normal	No
exfat	exFAT File System Driver								
	c:\windows\system32\drivers\exfat.sys		File System Driver	No	Manual	Stopped	OK	Normal	No
fastfat	FAT12/16/32 File System Driver								
	c:\windows\system32\drivers\fastfat.sys		File System Driver	No	Manual	Stopped	OK	Normal	No
fdc	Floppy Disk Controller Driver								
	c:\windows\system32\drivers\fdc.sys		Kernel Driver						

	No	Disabled	Stopped	OK	Normal	No	intelppm	Intel Processor Driver	c:\windows\system32\drivers\intelppm.sys	Kernel Driver	Yes	Manual	Running	OK
fileinfo	No							Kernel Driver		Yes	Manual	Running	OK	
	No							Normal	No	Yes				
	No							File System Driver						
	No	Manual	Stopped	OK	Normal	No	ioatdma	Intel(R) QuickData Technology Device	c:\windows\system32\drivers\qd260x64.sys	Kernel Driver	No	Disabled	Stopped	OK
filetrace	No													
System Driver	No	Manual	Stopped	OK	Normal		ipfilterdriver	IP Traffic Filter Driver	c:\windows\system32\drivers\ipfltdrv.sys	Kernel Driver	No	Manual	Stopped	OK
	No													
	No													
fiordrive	Yes	Boot	Running	OK	Normal	No	ipmidrv	IPMIDRV	c:\windows\system32\drivers\ipmidrv.sys	Kernel Driver	Yes	Manual	Running	OK
	Yes													
	Yes													
flpydisk	Yes													
	Yes													
	Yes													
fltmgr	Yes	Boot	Running	OK	File	Critical	ipnat	IP Network Address Translator	c:\windows\system32\drivers\ipnat.sys	Kernel Driver	No	Manual	Stopped	OK
System Driver	Yes	Boot	Running	OK	File	Critical								
	No													
	No													
gagp30kx	No						irenum	IR Bus Enumerator	c:\windows\system32\drivers\irenum.sys	Kernel Driver	No	Manual	Stopped	OK
	No													
	No													
	No													
hdaudbus	No						isapnp	PnP ISA/EISA Bus Driver	c:\windows\system32\drivers\isapnp.sys	Kernel Driver	No	Disabled	Stopped	OK
	No													
	No													
hidbth	No						iscsiprt	iScsiPort Driver	c:\windows\system32\drivers\msiscsi.sys	Kernel Driver	Yes	Manual	Running	OK
	No													
	No													
hidir	No						iteatapi	ITEATAPI_Service_Install	c:\windows\system32\drivers\iteatapi.sys	Kernel Driver	No	Disabled	Stopped	OK
	No													
	No													
hidusb	No						iteraid	ITERAID_Service_Install	c:\windows\system32\drivers\iteraid.sys	Kernel Driver	No	Disabled	Stopped	OK
	No													
	No													
hpciss	Yes	Boot	Running	OK	Kernel	No	kbdclass	Keyboard Class Driver	c:\windows\system32\drivers\kbdclass.sys	Kernel Driver	Yes	System	Running	OK
Driver	Yes	Boot	Running	OK	Kernel	No								
	Yes													
	Yes													
hpciss2	Yes	Boot	Running	OK	Kernel	No	kbdhid	Keyboard HID Driver	c:\windows\system32\drivers\kbdhid.sys	Kernel Driver	Yes	System	Running	OK
Driver	Yes	Boot	Running	OK	Kernel	No								
	Yes													
	Yes													
hpqilo2	Yes	Manual	Running	OK	Kernel	No	ksecdd	KSecDD	c:\windows\system32\drivers\ksecdd.sys	Kernel Driver	Yes	Boot	Running	OK
Driver	Yes	Manual	Running	OK	Kernel	No	Driver							
	Yes													
	Yes													
http	Yes	Manual	Running	OK	Kernel	No	ksthunk	Kernel Streaming Thunks	c:\windows\system32\drivers\ksthunk.sys	Kernel Driver	No	Manual	Stopped	OK
Driver	Yes	Manual	Running	OK	Kernel	No								
	Yes													
	Yes													
i2omp	No						l2nd	HP NC370 Multifunction Gigabit Server Adapter	c:\windows\system32\drivers\bxnd60a.sys	Kernel Driver	Yes	Manual	Running	OK
Driver	No													
	No													
	No													
i8042prt	Yes	System	Running	OK	Kernel	No	lldio	Link-Layer Topology Discovery Mapper I/O Driver	c:\windows\system32\drivers\lldio.sys	Kernel Driver	Yes	Auto	Running	OK
	Yes	System	Running	OK	Kernel	No								
	Yes													
	Yes													
iastorv	No						lsi_fc	LSI_FC	c:\windows\system32\drivers\lsi_fc.sys	Kernel Driver	No	Disabled	Stopped	OK
	No													
	No													
	No													
iirsp	No						lsi_sas	LSI_SAS	c:\windows\system32\drivers\lsi_sas.sys	Kernel Driver	No	Disabled	Stopped	OK
Driver	No													
	No													
	No													
intelide	No						lsi_scsi	LSI_SCSI	c:\windows\system32\drivers\lsi_scsi.sys	Kernel Driver	No	Disabled	Stopped	OK
Driver	No													
	No													
	No													
	No						luafv	UAC File Virtualization	c:\windows\system32\drivers\luafv.sys	File System Driver				

	Yes	Auto	Running	OK	Normal	No	mup	Mup	c:\windows\system32\drivers\mup.sys	File									
	Yes						System Driver	Yes	Boot	Running	OK	Normal							
megasas	megasas	c:\windows\system32\drivers\megasas.sys	Kernel					No	Yes										
Driver	No	Disabled	Stopped	OK	Normal	No	ndis	NDIS System Driver	c:\windows\system32\drivers\ndis.sys	Kernel Driver	Yes	Boot	Running	OK					
	No							Critical	No	Yes									
megasr	MegaSR	c:\windows\system32\drivers\megasr.sys	Kernel				ndistapi	Remote Access NDIS TAPI Driver	c:\windows\system32\drivers\ndistapi.sys	Kernel Driver	Yes	Manual	Running	OK					
Driver	No	Disabled	Stopped	OK	Normal	No		Yes	Manual	Running	OK	Normal	No						
	No							Yes											
modem	Modem	c:\windows\system32\drivers\modem.sys	Kernel				ndisuio	NDIS Usermode I/O Protocol	c:\windows\system32\drivers\ndisuio.sys	Kernel Driver	No	Manual	Stopped	OK					
Driver	No	Manual	Stopped	OK	Ignore	No		No											
	No							No											
monitor	Microsoft Monitor Class Function Driver Service						ndiswan	Remote Access NDIS WAN Driver	c:\windows\system32\drivers\ndiswan.sys	Kernel Driver	Yes	Manual	Running	OK					
	No							Yes	Manual	Running	OK	Normal	No						
	Yes	Manual	Running	OK	Normal	No		Yes											
mouclass	Mouse Class Driver	c:\windows\system32\drivers\mouclass.sys	Kernel Driver	Yes	System	Running	OK	ndproxy	NDIS Proxy	c:\windows\system32\drivers\ndproxy.sys	Kernel Driver	Yes	Manual	Running	OK				
	Normal	No	Yes					Normal	No	Yes									
mouhid	Mouse HID Driver	c:\windows\system32\drivers\mouhid.sys	Kernel Driver	Yes	Manual	Running	OK	netbios	NetBIOS Interface	c:\windows\system32\drivers\netbios.sys	File System Driver	Yes	System	Running	OK				
	Ignore	No	Yes					Normal	No	Yes									
mountmgr	Mount Point Manager	c:\windows\system32\drivers\mountmgr.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No										
	Yes							netbt	NETBT	c:\windows\system32\drivers\netbt.sys	Kernel Driver	Yes	System	Running	OK				
	Yes							Yes											
mpio	Microsoft Multi-Path Bus Driver	c:\windows\system32\drivers\mpio.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No	nfrd960	nfrd960	c:\windows\system32\drivers\nfrd960.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
	No																		
mpsdrv	Windows Firewall Authorization Driver	c:\windows\system32\drivers\mpsdrv.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No	npfs	Npfs	c:\windows\system32\drivers\npfs.sys	File System Driver	Yes	System	Running	OK	Normal	
	Yes																		
mraid35x	Mraid35x	c:\windows\system32\drivers\mraid35x.sys	Kernel							nsiproxy	NSI proxy service	c:\windows\system32\drivers\nsiproxy.sys	Kernel Driver	Yes	System	Running	OK		
Driver	No	Disabled	Stopped	OK	Normal	No		Normal	No	ntfs	Ntfs	c:\windows\system32\drivers\ntfs.sys	File System Driver	Yes	Manual	Running	OK	Normal	
	No																		
mrxsm	SMB MiniRedirector Wrapper and Engine	c:\windows\system32\drivers\mrxsm.sys	File System Driver	Yes	Manual	Running	OK	Normal	No	null	Null	c:\windows\system32\drivers\null.sys	Kernel Driver	Yes	System	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	nvraid	NVIDIA nForce RAID Driver	c:\windows\system32\drivers\nvraid.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
	Yes																		
mrxsm20	SMB 2.0 MiniRedirector	c:\windows\system32\drivers\mrxsm20.sys	File System Driver	Yes	Manual	Running	OK	Normal	No	nvstor	nvstor	c:\windows\system32\drivers\nvstor.sys	Kernel Driver	No	Disabled	Stopped	OK	Critical	No
	Yes																		
msahci	msahci	c:\windows\system32\drivers\msahci.sys	Kernel							nv_agp	NVIDIA nForce AGP Bus Filter	c:\windows\system32\drivers\nv_agp.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
Driver	No	Disabled	Stopped	OK	Critical	No													
	No									ohci1394	NEC FireWarden OHCI Compliant IEEE 1394 Host Controller	c:\windows\system32\drivers\ohci1394.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
msdsm	Microsoft Multi-Path Device Specific Module	c:\windows\system32\drivers\msdsm.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No	parport	Parallel port driver	c:\windows\system32\drivers\parport.sys	Kernel Driver	No	Disabled	Stopped	OK		
	No																		
msfs	Msfs	c:\windows\system32\drivers\msfs.sys	File System Driver	Yes	System	Running	OK	Normal		partmgr	Partition Manager	c:\windows\system32\drivers\partmgr.sys	Kernel Driver	Yes	Boot	Running	OK		
	No																		
msisadv	ISA/EISA Class Driver	c:\windows\system32\drivers\msisadv.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No	pci	PCI Bus Driver	c:\windows\system32\drivers\pci.sys	Kernel Driver	Yes	Boot	Running	OK		
	Yes																		
msrpc	MsRPC	c:\windows\system32\drivers\msrpc.sys	Kernel																
Driver	No	Manual	Stopped	OK	Normal	No				pciide	pciide	c:\windows\system32\drivers\pciide.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No
	No																		
mssmbios	Microsoft System Management BIOS Driver	c:\windows\system32\drivers\mssmbios.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No										
	Yes																		

pcmcia Driver	pcmcia	c:\windows\system32\drivers\pcmcia.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
peauth Driver	PEAUTH	c:\windows\system32\drivers\peauth.sys	Kernel Driver	Yes	Auto	Running	OK	Normal	No
pptpminiport	WAN Miniport (PPTP)								
		c:\windows\system32\drivers\rasptp.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
processor	Processor Driver	c:\windows\system32\drivers\processr.sys	Kernel Driver	No	Disabled	Stopped	OK		
psched	QoS Packet Scheduler	c:\windows\system32\drivers\pacer.sys	Kernel Driver	Yes	System	Running	OK		
ql2300	QLLogic Fibre Channel Miniport Driver	c:\windows\system32\drivers\ql2300.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
ql40xx	QLLogic iSCSI Miniport Driver	c:\windows\system32\drivers\ql40xx.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
rasacd	Remote Access Auto Connection Driver	c:\windows\system32\drivers\rasacd.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
rasl2tp	WAN Miniport (L2TP)	c:\windows\system32\drivers\rasl2tp.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
rasppoe	Remote Access PPPOE Driver	c:\windows\system32\drivers\rasppoe.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
rasstp	WAN Miniport (SSTP)	c:\windows\system32\drivers\rasstp.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
rdbs	Redirected Buffering Sub System	c:\windows\system32\drivers\rdbs.sys	File System Driver	Yes	System	Running	OK	Normal	No
rdpdd Driver	RDPCCDD	c:\windows\system32\drivers\rdpdd.sys	Kernel Driver	Yes	System	Running	OK	Ignore	No
rdpdr	Terminal Server Device Redirector Driver	c:\windows\system32\drivers\rdpdr.sys	Kernel Driver	Yes	Manual	Running	OK	Normal	No
rdpencdd	RDP Encoder Mirror Driver	c:\windows\system32\drivers\rdpencdd.sys	Kernel Driver	Yes	System	Running	OK	Ignore	No
rdpwd	RDP Winstation Driver	c:\windows\system32\drivers\rdpwd.sys	Kernel Driver	Yes	Manual	Running	OK	Ignore	No
rsfx0103	RsFx0103 Driver	c:\windows\system32\drivers\rsfx0103.sys	File System Driver	No	Disabled	Stopped	OK	Normal	No
rspndr	Link-Layer Topology Discovery Responder	c:\windows\system32\drivers\rspndr.sys	Kernel Driver	Yes	Auto	Running	OK	Normal	No
s3cap	Microsoft Emulated S3 Device Cap Driver	c:\windows\system32\drivers\s3cap.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sacdrv Driver	sacdrv	c:\windows\system32\drivers\sacdrv.sys	Kernel Driver	No	Boot	Stopped	OK	Ignore	No
sbp2port	SBP-2 Transport/Protocol Bus Driver								
		c:\windows\system32\drivers\sbp2port.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
secdrv	Security Driver	c:\windows\system32\drivers\secdrv.sys	Kernel Driver	Normal	No	Yes			
serenum	Serenum Filter Driver	c:\windows\system32\drivers\serenum.sys	Kernel Driver	Normal	Yes	Manual	Running	OK	
serial	Serial port driver	c:\windows\system32\drivers\serial.sys	Kernel Driver	Ignore	No	Yes			
sermouse	Serial Mouse Driver	c:\windows\system32\drivers\sermouse.sys	Kernel Driver	Normal	No	Disabled	Stopped	OK	
sffdisk	SFF Storage Class Driver	c:\windows\system32\drivers\sffdisk.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sffp_mmc	SFF Storage Protocol Driver for MMC	c:\windows\system32\drivers\sffp_mmc.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
sffp_sd	SFF Storage Protocol Driver for SDBus	c:\windows\system32\drivers\sffp_sd.sys	Kernel Driver	No	Manual	Stopped	OK	Normal	No
sfloppy	High-Capacity Floppy Disk Drive	c:\windows\system32\drivers\sfloppy.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sisraid2 Driver	SiSRaid2	c:\windows\system32\drivers\sisraid2.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
sisraid4 Driver	SiSRaid4	c:\windows\system32\drivers\sisraid4.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
smb	Message-oriented TCP/IP and TCP/IPV6 Protocol (SMB session)	c:\windows\system32\drivers\smb.sys	Kernel Driver	Yes	System	Running	OK	Normal	No
spldr	Security Processor Loader Driver	c:\windows\system32\drivers\spldr.sys	Kernel Driver	Yes	Boot	Running	OK	Critical	No
srv System Driver	srv	c:\windows\system32\drivers\srv.sys	File System Driver	No	Yes	Manual	Running	OK	Normal
srv2 System Driver	srv2	c:\windows\system32\drivers\srv2.sys	File System Driver	No	Yes	Manual	Running	OK	Normal
srvnet System Driver	srvnet	c:\windows\system32\drivers\srvnet.sys	File System Driver	No	Yes	Manual	Running	OK	Normal
storflt	Disk VMBUS Acceleration Filter Driver	c:\windows\system32\drivers\storflt.sys	Kernel Driver	Yes	Boot	Running	OK	Normal	No
storvsc Driver	storvsc	c:\windows\system32\drivers\storvsc.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No
storvsp	Microsoft Virtual Disk Server Driver	c:\windows\system32\drivers\storvsp.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal	No

swenum	Software Bus Driver	c:\windows\system32\drivers\swenum.sys	Kernel Driver	Yes	Manual	Running	OK	
	Normal	No	Yes					
symc8xx	Symc8xx	c:\windows\system32\drivers\symc8xx.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
sym_hi	Sym_hi	c:\windows\system32\drivers\sym_hi.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
sym_u3	Sym_u3	c:\windows\system32\drivers\sym_u3.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
tcpip	TCP/IP Protocol Driver	c:\windows\system32\drivers\tcpip.sys	Kernel Driver	Yes	Boot	Running	OK	Normal
	Yes							No
tcpip6	Microsoft IPv6 Protocol Driver	c:\windows\system32\drivers\tcpip6.sys	Kernel Driver	No	Manual	Stopped	OK	Normal
	No							No
tcpipreg	TCP/IP Registry Compatibility	c:\windows\system32\drivers\tcpipreg.sys	Kernel Driver	Yes	Auto	Running	OK	Normal
	Yes							No
tdpipe	TDPIPE	c:\windows\system32\drivers\tdpipe.sys	Kernel	No	Manual	Stopped	OK	Normal
Driver	No							No
tdtcp	TDTCP	c:\windows\system32\drivers\tdtcp.sys	Kernel	Yes	Manual	Running	OK	Normal
Driver	Yes							No
tdx	NetIO Legacy TDI Support Driver	c:\windows\system32\drivers\tdx.sys	Kernel Driver	Yes	System	Running	OK	Normal
	Yes							No
termdd	Terminal Device Driver	c:\windows\system32\drivers\termdd.sys	Kernel Driver	Yes	System	Running	OK	Normal
	Yes							No
tssecsrv	Terminal Services Security Filter Driver	c:\windows\system32\drivers\tssecsrv.sys	Kernel Driver	Yes	Manual	Running	OK	Ignore
	Yes							No
tunnel	Microsoft IPv6 Tunnel Miniport Adapter Driver	c:\windows\system32\drivers\tunnel.sys	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes							No
uagp35	Microsoft AGPv3.5 Filter	c:\windows\system32\drivers\uagp35.sys	Kernel Driver	No	Manual	Stopped	OK	Normal
	No							No
udfs	udfs	c:\windows\system32\drivers\udfs.sys	File	No	Disabled	Stopped	OK	Normal
System Driver	No							
uliagpkx	Uli AGP Bus Filter	c:\windows\system32\drivers\uliagpkx.sys	Kernel Driver	No	Manual	Stopped	OK	Normal
	Normal	No						No
uliahci	uliahci	c:\windows\system32\drivers\uliahci.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
ulsata	Ulsata	c:\windows\system32\drivers\ulsata.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
ulsata2	ulsata2	c:\windows\system32\drivers\ulsata2.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
umbus	UMBus Enumerator Driver	c:\windows\system32\drivers\umbus.sys	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes							No
umpass	Microsoft UMPass Driver	c:\windows\system32\drivers\umpass.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal
	No							No
usbccgp	Microsoft USB Generic Parent Driver	c:\windows\system32\drivers\usbccgp.sys	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes							No
usbcir	eHome Infrared Receiver (USBCIR)	c:\windows\system32\drivers\usbcir.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal
	No							No
usbhci	Microsoft USB 2.0 Enhanced Host Controller Miniport Driver	c:\windows\system32\drivers\usbhci.sys	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes							No
usbhub	Microsoft USB Standard Hub Driver	c:\windows\system32\drivers\usbhub.sys	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes							No
usbhcci	Microsoft USB Open Host Controller Miniport Driver	c:\windows\system32\drivers\usbhcci.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal
	No							No
usbprint	Microsoft USB PRINTER Class	c:\windows\system32\drivers\usbprint.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal
	No							No
usbstor	USB Mass Storage Driver	c:\windows\system32\drivers\usbstor.sys	Kernel Driver	No	Manual	Stopped	OK	Normal
	No							No
usbuhci	Microsoft USB Universal Host Controller Miniport Driver	c:\windows\system32\drivers\usbuhci.sys	Kernel Driver	Yes	Manual	Running	OK	Normal
	Yes							No
vga	vga	c:\windows\system32\drivers\vgapnp.sys	Kernel	No	Manual	Stopped	OK	Ignore
Driver	No							No
vgasave	VgaSave	c:\windows\system32\drivers\vgasave.sys	Kernel	Yes	System	Running	OK	Ignore
Driver	Yes							No
viaide	viaide	c:\windows\system32\drivers\viaide.sys	Kernel	No	Disabled	Stopped	OK	Critical
Driver	No							No
vid	Virtualization Infrastructure Driver	c:\windows\system32\drivers\vid.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal
	No							No
vmbus	VMBus	c:\windows\system32\drivers\vmbus.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
volmgr	Volume Manager Driver	c:\windows\system32\drivers\volmgr.sys	Kernel Driver	Yes	Boot	Running	OK	Critical
	Yes							No
volmgrx	Dynamic Volume Manager	c:\windows\system32\drivers\volmgrx.sys	Kernel Driver	Yes	Boot	Running	OK	Critical
	Yes							No
volsnap	Storage volumes	c:\windows\system32\drivers\volsnap.sys	Kernel Driver	Yes	Boot	Running	OK	Critical
	Critical	No						Yes
vsmraid	vsmraid	c:\windows\system32\drivers\vsmraid.sys	Kernel	No	Disabled	Stopped	OK	Normal
Driver	No							No
wacompen	Wacom Serial Pen HID Driver	c:\windows\system32\drivers\wacompen.sys	Kernel Driver	No	Disabled	Stopped	OK	Normal
	No							No



	Not Available	Not Available	
	ROOT\LEGACY_TCPIPREG\0000		
TCP/IP Protocol Driver	Not Available	LEGACYDRIVER	
	Not Available	Not Available	
	Not Available	Not Available	
	ROOT\LEGACY_TCPIP\0000		
Disk VMBUS Acceleration Filter Driver	Not Available		
	LEGACYDRIVER	Not Available	
	Not Available	Not Available	
	ROOT\LEGACY_STORFLT\0000		
Security Processor Loader Driver	Not Available	LEGACYDRIVER	
	Not Available	Not Available	
	Not Available	Not Available	
	ROOT\LEGACY_SPLDR\0000		
Message-oriented TCP/IP and TCP/IPv6 Protocol (SMB session)	Not Available		
Available	LEGACYDRIVER	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_SMB\0000		
Security Driver	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_SECDRV\0000	
Link-Layer Topology Discovery Responder	Not Available		
	LEGACYDRIVER	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_RSPNDR\0000		
RDP Winstation Driver	Not Available	LEGACYDRIVER	
	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_RDPWD\0000		
RDP Encoder Mirror Driver	Not Available	LEGACYDRIVER	
	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_RDPENCDD\0000		
RDP CDD	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_RDP CDD\0000	
Remote Access Auto Connection Driver	Not Available		
	LEGACYDRIVER	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_RASACD\0000		
QoS Packet Scheduler	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_PSCHEDE\0000	
PEAUTH	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_PEAUTH\0000	
pciide	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_PCIIDE\0000	
Null	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_NULL\0000	
NSI proxy service	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_NSIPROXY\0000	
NETBT	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_NETBT\0000	
NDProxy	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_NDPROXY\0000	
NDIS System Driver	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_NDIS\0000	

ISA/EISA Class Driver	Not Available	LEGACYDRIVER	
	Not Available	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_MSISADRV\0000		
Windows Firewall Authorization Driver	Not Available		
	LEGACYDRIVER	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_MP SDRV\0000		
Mount Point Manager	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_MOUNTMGR\0000	
Link-Layer Topology Discovery Mapper I/O Driver	Not Available		
	LEGACYDRIVER	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_LLTDIO\0000		
KSecDD	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_KSECDD\0000	
HTTP	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_HTTP\0000	
HpCISSs	Not Available	LEGACYDRIVER	Not Available
	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_HPCISSS\0000	
Credisk Filter Driver	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_CRCDISK\0000	
Common Log (CLFS)	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_CLFS\0000	
IDE Channel	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available
	Not Available	ROOT\LEGACY_ATAPI\0000	
Ancillary Function Driver for Winsock	Not Available		
	LEGACYDRIVER	Not Available	Not Available
	Not Available	Not Available	Not Available
	ROOT\LEGACY_AFD\0000		
Microsoft iSCSI Initiator	Yes	SCSIADAPTER	
Available	6.0.6002.18005	6/21/2006 Microsoft iscsi.inf	Not Available
	ROOT\ISCSIPRT\0000		
ACPI Fixed Feature Button	Yes	SYSTEM	6.0.6002.18005
	6/21/2006 (Standard system devices)	machine.inf	
	Not Available	ACPI\FIXEDBUTTON\2&DABA3FF&2	
ACPI Thermal Zone	Yes	SYSTEM	6.0.6002.18005
	6/21/2006 (Standard system devices)	machine.inf	
	Not Available	ACPI\THERMALZONE\THM0	
System CMOS/real time clock	Yes	SYSTEM	6.0.6002.18005
	6/21/2006 (Standard system devices)	machine.inf	
	Not Available	ACPI\PNP0B00\4&99BC81B&0	
Communications Port	Yes	PORTS	6.0.6001.18000
Available	6/21/2006 (Standard port types)	msports.inf	Not Available
	ACPI\PNP0501\0		
Extended IO Bus	Yes	SYSTEM	6.0.6002.18005
	6/21/2006 (Standard system devices)	machine.inf	
	Not Available	ACPI\PNP0A06\4&99BC81B&0	
PS/2 Compatible Mouse	Yes	MOUSE	6.0.6001.18000
	6/21/2006 Microsoft	m mouse.inf	Not Available
	ACPI\PNP0F13\4&99BC81B&0		
Standard PS/2 Keyboard	Yes	KEYBOARD	
	6.0.6002.18005	6/21/2006 (Standard keyboards)	
	keyboard.inf	Not Available	
	ACPI\PNP0303\4&99BC81B&0		
System speaker	Yes	SYSTEM	6.0.6002.18005
	6/21/2006 (Standard system devices)	machine.inf	
	Not Available	ACPI\PNP0800\4&99BC81B&0	

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

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

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

Microsoft Generic IPMI Compliant Device Yes SYSTEM  
6.0.6002.18005 6/21/2006 Microsoft ipmidrv.inf  
Not Available ACPI\PI0001\0

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

PCI standard ISA bridge Yes SYSTEM 6.0.6002.18005  
6/21/2006 (Standard system devices) machine.inf  
Not Available  
PCI\VEN\_8086&DEV\_3A18&SUBSYS\_00000000&REV\_00\3  
&21436425&0&F8

HP ProLiant iLO 2 Management Controller Driver No  
MULTIFUNCTION 1.11.1.0 5/20/2009 Hewlett-Packard  
Company oem7.inf Not Available  
PCI\VEN\_103C&DEV\_3302&SUBSYS\_3305103C&REV\_00\4  
&15EB80B3&0&26F0

HID-compliant mouse Yes MOUSE 6.0.6001.18000  
6/21/2006 Microsoft msmouse.inf Not Available  
HID\VID\_03F0&PID\_1027&MI\_01\8&377175DA&0&0000

USB Human Interface Device Yes HIDCLASS  
6.1.6002.18005 6/21/2006 (Standard system devices)  
input.inf Not Available  
USB\VID\_03F0&PID\_1027&MI\_01\7&596F79B&0&0001

HID Keyboard Device Yes KEYBOARD  
6.0.6002.18005 6/21/2006 (Standard keyboards)  
keyboard.inf Not Available  
HID\VID\_03F0&PID\_1027&MI\_00\8&28E0FD3&0&0000

USB Human Interface Device Yes HIDCLASS  
6.1.6002.18005 6/21/2006 (Standard system devices)  
input.inf Not Available  
USB\VID\_03F0&PID\_1027&MI\_00\7&596F79B&0&0000

USB Composite Device Yes USB 6.0.6002.18005  
6/21/2006 (Standard USB Host Controller) usb.inf Not  
Available USB\VID\_03F0&PID\_1027\6&125E8E38&0&1

Generic USB Hub Yes USB 6.0.6002.18005  
6/21/2006 (Generic USB Hub) usb.inf Not Available  
USB\VID\_03F0&PID\_1327\6&125E8E38&0&2

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

Standard Universal PCI to USB Host Controller Yes USB  
6.0.6002.18005 6/21/2006 (Standard USB Host Controller)  
usbport.inf Not Available  
PCI\VEN\_103C&DEV\_3300&SUBSYS\_3305103C&REV\_00\4  
&15EB80B3&0&24F0

HP iLO Management Channel Interface Driver No  
MULTIFUNCTION 1.14.0.0 10/16/2008 Hewlett-  
Packard Company oem4.inf Not Available  
PCI\VEN\_0E11&DEV\_B204&SUBSYS\_3305103C&REV\_03\4  
&15EB80B3&0&22F0

HP ProLiant iLO 2 Legacy Support Function No  
MULTIFUNCTION 1.11.1.0 5/20/2009 Hewlett-Packard  
Company oem7.inf Not Available  
PCI\VEN\_0E11&DEV\_B203&SUBSYS\_3305103C&REV\_03\4  
&15EB80B3&0&20F0

Generic Non-PnP Monitor Yes MONITOR  
6.0.6001.18000 6/21/2006 (Standard monitor types)

monitor.inf Not Available  
DISPLAY\DEFAULT\_MONITOR\5&2EE658E4&0&10000000  
&01&03

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

ATI ES1000 No DISPLAY 8.240.50.3000  
1/21/2008 ATI Technologies Inc. oem5.inf Not  
Available  
PCI\VEN\_1002&DEV\_515E&SUBSYS\_31FB103C&REV\_02\4  
&15EB80B3&0&18F0

Intel(R) 82801 PCI Bridge - 244E Yes SYSTEM  
6.0.6002.18005 6/21/2006 Intel machine.inf  
Not Available  
PCI\VEN\_8086&DEV\_244E&SUBSYS\_330D103C&REV\_90\3  
&21436425&0&F0

USB Root Hub Yes USB 6.0.6002.18005  
6/21/2006 (Standard USB Host Controller) usbport.inf Not  
Available USB\ROOT\_HUB2\4&2E56CC53&0

Standard Enhanced PCI to USB Host Controller Yes USB  
6.0.6002.18005 6/21/2006 (Standard USB Host Controller)  
usbport.inf Not Available  
PCI\VEN\_8086&DEV\_3A3A&SUBSYS\_330D103C&REV\_00\3  
&21436425&0&EF

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

Standard Universal PCI to USB Host Controller Yes USB  
6.0.6002.18005 6/21/2006 (Standard USB Host Controller)  
usbport.inf Not Available  
PCI\VEN\_8086&DEV\_3A39&SUBSYS\_330D103C&REV\_00\3  
&21436425&0&EB

USB Root Hub Yes USB 6.0.6002.18005  
6/21/2006 (Standard USB Host Controller) usbport.inf Not  
Available USB\ROOT\_HUB\4&1A1FBB6F&0

Standard Universal PCI to USB Host Controller Yes USB  
6.0.6002.18005 6/21/2006 (Standard USB Host Controller)  
usbport.inf Not Available  
PCI\VEN\_8086&DEV\_3A36&SUBSYS\_330D103C&REV\_00\3  
&21436425&0&EA

USB Root Hub Yes USB 6.0.6002.18005  
6/21/2006 (Standard USB Host Controller) usbport.inf Not  
Available USB\ROOT\_HUB\4&23B0C36D&0

Standard Universal PCI to USB Host Controller Yes USB  
6.0.6002.18005 6/21/2006 (Standard USB Host Controller)  
usbport.inf Not Available  
PCI\VEN\_8086&DEV\_3A35&SUBSYS\_330D103C&REV\_00\3  
&21436425&0&E9

USB Root Hub Yes USB 6.0.6002.18005  
6/21/2006 (Standard USB Host Controller) usbport.inf Not  
Available USB\ROOT\_HUB\4&39200BE0&0

Standard Universal PCI to USB Host Controller Yes USB  
6.0.6002.18005 6/21/2006 (Standard USB Host Controller)  
usbport.inf Not Available  
PCI\VEN\_8086&DEV\_3A34&SUBSYS\_330D103C&REV\_00\3  
&21436425&0&E8

PCI standard PCI-to-PCI bridge Yes SYSTEM 6.0.6002.18005  
6/21/2006 (Standard system devices) machine.inf  
Not Available  
PCI\VEN\_8086&DEV\_3A44&SUBSYS\_330D103C&REV\_00\3  
&21436425&0&E2

HP NC382i DP Multifunction Gigabit Server Adapter No NET  
4.8.5.0 1/28/2009 Hewlett-Packard Company oem8.inf  
Not Available  
B06BDRV\L2ND&PCI\_163914E4&SUBSYS\_7055103C&REV  
\_20\5&6FB4662&0&20050200

HP NC382i DP Virtual Bus Device No SYSTEM 4.6.112.0  
3/11/2009 Hewlett-Packard Company oem11.inf Not





PCI\VEN_8086&DEV_340B&SUBSYS_330B103C&REV_13\3	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\11
&21436425&0&20	
Disk drive Yes DISKDRIVE 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard disk drives) disk.inf Not Available	6/21/2006 Intel cpu.inf Not Available
PCI\DISK\FUSIONIO_IODRIVE_80GB_0001\5&35410A35	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\10
&0	
Fusion ioDrive No FUSION-IO DEVICES	Intel Processor Yes PROCESSOR 6.0.6001.18000
1.2.6.29927 6/18/2009 Fusion-io oem2.inf Not	6/21/2006 Intel cpu.inf Not Available
Available	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\9
PCI\VEN_1AED&DEV_1005&SUBSYS_10101AED&REV_01\	
4&2C5B5D67&0&0018	
PCI standard PCI-to-PCI bridge Yes SYSTEM 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard system devices) machine.inf	6/21/2006 Intel cpu.inf Not Available
Not Available	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\8
PCI\VEN_8086&DEV_340A&SUBSYS_330B103C&REV_13\3	
&21436425&0&18	
PCI standard PCI-to-PCI bridge Yes SYSTEM 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard system devices) machine.inf	6/21/2006 Intel cpu.inf Not Available
Not Available	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\7
PCI\VEN_8086&DEV_3409&SUBSYS_330B103C&REV_13\3	
&21436425&0&10	
Disk drive Yes DISKDRIVE 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard disk drives) disk.inf Not Available	6/21/2006 Intel cpu.inf Not Available
SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&16F7	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\6
5118&0&000500	
Disk drive Yes DISKDRIVE 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard disk drives) disk.inf Not Available	6/21/2006 Intel cpu.inf Not Available
SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&16F7	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\5
5118&0&000400	
HP Virtual LUN Yes SYSTEM 6.0.6001.18000	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 Compaq scsdev.inf Not Available	6/21/2006 Intel cpu.inf Not Available
SCSI\OTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\3
TE\5&16F75118&0&000000	
Smart Array P410i Controller No SCSIADAPTER 6.14.0.64	Intel Processor Yes PROCESSOR 6.0.6001.18000
1/7/2009 Hewlett-Packard Company oem6.inf Not	6/21/2006 Intel cpu.inf Not Available
Available	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\2
PCI\VEN_103C&DEV_323A&SUBSYS_3245103C&REV_01\4	
&297A62C9&0&0008	
PCI standard PCI-to-PCI bridge Yes SYSTEM 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard system devices) machine.inf	6/21/2006 Intel cpu.inf Not Available
Not Available	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\1
PCI\VEN_8086&DEV_3408&SUBSYS_330B103C&REV_13\3	
&21436425&0&08	
PCI standard host CPU bridge Yes SYSTEM 6.0.6002.18005	Intel Processor Yes PROCESSOR 6.0.6001.18000
6/21/2006 (Standard system devices) machine.inf	6/21/2006 Intel cpu.inf Not Available
Not Available	ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\0
PCI\VEN_8086&DEV_3406&SUBSYS_330B103C&REV_13\3	
&21436425&0&00	
PCI bus Yes SYSTEM 6.0.6002.18005 6/21/2006 (Standard	Microsoft ACPI-Compliant System Yes SYSTEM
system devices) machine.inf Not Available	6.0.6002.18005 6/21/2006 Microsoft acpi.inf Not
ACPI\PNP0A08\2&DABA3FF&2	Available ACPI_HAL\PNP0C08\0
Intel Processor Yes PROCESSOR 6.0.6001.18000	ACPI x64-based PC Yes COMPUTER 6.0.6002.18005
6/21/2006 Intel cpu.inf Not Available	6/21/2006 (Standard computers) hal.inf Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\15	ROOT\ACPI_HAL\0000
	Microsoft ISATAP Adapter Yes NET 6.0.6002.18005
Intel Processor Yes PROCESSOR 6.0.6001.18000	6/21/2006 Microsoft nettun.inf Not Available
6/21/2006 Intel cpu.inf Not Available	ROOT\*ISATAP\0000
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\14	Microsoft 6to4 Adapter Yes NET 6.0.6002.18005
	6/21/2006 Microsoft nettun.inf Not Available
Intel Processor Yes PROCESSOR 6.0.6001.18000	ROOT\*6TO4MP\0000
6/21/2006 Intel cpu.inf Not Available	Not Available Not Available Not Available Not
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\13	Available Not Available Not Available Not Available
	Not Available Not Available HTREE\ROOT\0
Intel Processor Yes PROCESSOR 6.0.6001.18000	Not Available Yes Not Available
6/21/2006 Intel cpu.inf Not Available	2:6.0.2:5.2:2:5.1:2:5.0 Not Available Not Available
ACPI\GENUINEINTEL_-_EM64T_FAMILY_6_MODEL_26\12	Not Available Not Available Microsoft XPS
	Document Writer
Intel Processor Yes PROCESSOR 6.0.6001.18000	[Environment Variables]
6/21/2006 Intel cpu.inf Not Available	Variable Value User Name

ComSpec	%SystemRoot%\system32\cmd.exe	<SYSTEM>	system	Not Available	4	8	Not Available
FP_NO_HOST_CHECK	NO	<SYSTEM>		Not Available		9/2/2009 4:22 PM	Not Available
OS	Windows_NT	<SYSTEM>		Not Available		Not Available	
Path	%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\;C:\Program Files (x86)\Microsoft SQL Server\100\Tools\Binn\;C:\Program Files\Microsoft SQL Server\100\Tools\Binn\;C:\Program Files (x86)\Microsoft SQL Server\100\Tools\Binn\;C:\Program Files (x86)\Microsoft SQL Server\100\Tools\Binn\VSShell\;C:\Program Files (x86)\Microsoft SQL Server\100\DTS\Binn\;C:\Program Files (x86)\Microsoft SQL Server\100\DTS\Binn\	<SYSTEM>	smss.exe	Not Available	552	11	200 1380
C	<SYSTEM>			Not Available		9/2/2009 4:22 PM	Not Available
PROCESSOR_ARCHITECTURE	AMD64	<SYSTEM>		Not Available		Not Available	
TEMP	%SystemRoot%\TEMP	<SYSTEM>	csrss.exe	c:\windows\system32\csrss.exe	628	13	200
TMP	%SystemRoot%\TEMP	<SYSTEM>		1380	9/2/2009 4:22 PM	6.0.6001.18000	7.50 KB
USERNAME	SYSTEM	<SYSTEM>		(7,680 bytes)	1/18/2008 11:59 PM		
windir	%SystemRoot%	<SYSTEM>	csrss.exe	c:\windows\system32\csrss.exe	676	13	200
NUMBER_OF_PROCESSORS	16	<SYSTEM>		1380	9/2/2009 4:22 PM	6.0.6001.18000	7.50 KB
PROCESSOR_LEVEL	6	<SYSTEM>		(7,680 bytes)	1/18/2008 11:59 PM		
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 26 Stepping 5, GenuineIntel	<SYSTEM>	wininit.exe	c:\windows\system32\wininit.exe	684	13	200
PROCESSOR_REVISION	1a05	<SYSTEM>		1380	9/2/2009 4:22 PM	6.0.6001.18000	121.00
TRACE_FORMAT_SEARCH_PATH	\\winseqlf\release\Windows6.0\lh_sp2rtm\6002.18005.090410-1830\amd64fre\symbols.pri	<SYSTEM>	winlogon.exe	c:\windows\system32\winlogon.exe			728
DFSTRACINGON	FALSE	<SYSTEM>		13	200	1380	9/2/2009 4:22 PM
TEMP %USERPROFILE%\AppData\Local\Temp	NT			6.0.6002.18005	396.00 KB (405,504 bytes)		4/11/2009 11:11 AM
AUTHORITY\SYSTEM			services.exe	c:\windows\system32\services.exe			748
TMP %USERPROFILE%\AppData\Local\Temp	NT			9	200	1380	9/2/2009 4:22 PM
AUTHORITY\SYSTEM			lsass.exe	c:\windows\system32\lsass.exe	768	9	200
TEMP %USERPROFILE%\AppData\Local\Temp	NT			6.0.6002.18005	375.50 KB (384,512 bytes)		4/11/2009 11:11 AM
AUTHORITY\LOCAL SERVICE				1380	9/2/2009 4:22 PM	6.0.6001.18000	11.00 KB
TMP %USERPROFILE%\AppData\Local\Temp	NT			(11,264 bytes)	1/19/2008 12:16 AM		
AUTHORITY\LOCAL SERVICE			lsm.exe	c:\windows\system32\lsm.exe	776	8	200
TEMP %USERPROFILE%\AppData\Local\Temp	NT			1380	9/2/2009 4:22 PM	6.0.6001.18000	258.50
AUTHORITY\NETWORK SERVICE				KB (264,704 bytes)	1/19/2008 12:43 AM		
TMP %USERPROFILE%\AppData\Local\Temp	NT		svchost.exe	c:\windows\system32\svchost.exe			936
AUTHORITY\NETWORK SERVICE				8	200	1380	9/2/2009 4:22 PM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
AUTHORITY\LOCAL SERVICE			svchost.exe	c:\windows\system32\svchost.exe			996
TEMP %USERPROFILE%\AppData\Local\Temp	NT			8	200	1380	9/2/2009 4:22 PM
AUTHORITY\NETWORK SERVICE				6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
TMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator		svchost.exe	c:\windows\system32\svchost.exe			456
AUTHORITY\LOCAL SERVICE				8	200	1380	9/2/2009 4:22 PM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
AUTHORITY\LOCAL SERVICE			logonui.exe	c:\windows\system32\logonui.exe			468
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			13	200	1380	9/2/2009 4:22 PM
AUTHORITY\LOCAL SERVICE				6.0.6001.18000	20.50 KB (20,992 bytes)		1/19/2008 12:17 AM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator		svchost.exe	c:\windows\system32\svchost.exe			604
AUTHORITY\LOCAL SERVICE				8	200	1380	9/2/2009 4:22 PM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
AUTHORITY\LOCAL SERVICE			svchost.exe	c:\windows\system32\svchost.exe			592
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			8	200	1380	9/2/2009 4:22 PM
AUTHORITY\LOCAL SERVICE				6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator		svchost.exe	c:\windows\system32\svchost.exe			608
AUTHORITY\LOCAL SERVICE				8	200	1380	9/2/2009 4:22 PM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
AUTHORITY\LOCAL SERVICE			svchost.exe	c:\windows\system32\svchost.exe			1088
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			8	200	1380	9/2/2009 4:22 PM
AUTHORITY\LOCAL SERVICE				6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator		svchost.exe	c:\windows\system32\svchost.exe			1244
AUTHORITY\LOCAL SERVICE				8	200	1380	9/2/2009 4:22 PM
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			6.0.6001.18000	27.00 KB (27,648 bytes)		1/19/2008 12:02 AM
AUTHORITY\LOCAL SERVICE			spoolsv.exe	c:\windows\system32\spoolsv.exe			1584
TEMP %USERPROFILE%\AppData\Local\Temp	FUSE\Administrator			8	200	1380	9/2/2009 4:22 PM

	6.0.6002.18005	262.00 KB (268,288 bytes)		
	4/11/2009 11:11 AM			
svchost.exe	c:\windows\system32\svchost.exe	1744		
8	200 1380	9/2/2009 4:22 PM		
	6.0.6001.18000	27.00 KB (27,648 bytes)		
	1/19/2008 12:02 AM			
svchost.exe	c:\windows\system32\svchost.exe	1756		
8	200 1380	9/2/2009 4:22 PM		
	6.0.6001.18000	27.00 KB (27,648 bytes)		
	1/19/2008 12:02 AM			
sysdown.exe	c:\windows\system32\sysdown.exe	1872		
8	200 1380	9/2/2009 4:22 PM	1.2.0.0	
	17.54 KB (17,960 bytes)	6/26/2009 7:11 PM		
svchost.exe	c:\windows\system32\svchost.exe	1896		
8	200 1380	9/2/2009 4:22 PM		
	6.0.6001.18000	27.00 KB (27,648 bytes)		
	1/19/2008 12:02 AM			
taskeng.exe	c:\windows\system32\taskeng.exe	2236		
6	200 1380	9/2/2009 4:22 PM		
	6.0.6002.18005	259.00 KB (265,216 bytes)		
	4/11/2009 11:11 AM			
csrss.exe	c:\windows\system32\csrss.exe	2364 13	200	
1380	9/2/2009 4:22 PM	6.0.6001.18000	7.50 KB	
	(7,680 bytes)	1/18/2008 11:59 PM		
winlogon.exe	c:\windows\system32\winlogon.exe	2420		
13	200 1380	9/2/2009 4:22 PM		
	6.0.6002.18005	396.00 KB (405,504 bytes)		
	4/11/2009 11:11 AM			
taskeng.exe	c:\windows\system32\taskeng.exe	2652		
8	200 1380	9/2/2009 4:22 PM		
	6.0.6002.18005	259.00 KB (265,216 bytes)		
	4/11/2009 11:11 AM			
rdpclip.exe	c:\windows\system32\rdpclip.exe	2700 8	200	
1380	9/2/2009 4:22 PM	6.0.6002.18005	187.00	
	KB (191,488 bytes)	4/11/2009 11:13 AM		
explorer.exe	c:\windows\explorer.exe	2792 8		
200	1380	9/2/2009 4:22 PM	6.0.6002.18005	
	2.94 MB (3,079,168 bytes)	4/11/2009 11:11 AM		
msdtc.exe	c:\windows\system32\msdtc.exe	2540 8	200	
1380	9/2/2009 4:24 PM	2001.12.6931.18000	104.00	
	KB (106,496 bytes)	1/19/2008 12:27 AM		
svchost.exe	c:\windows\system32\svchost.exe	2808		
8	200 1380	9/2/2009 4:25 PM		
	6.0.6001.18000	27.00 KB (27,648 bytes)		
	1/19/2008 12:02 AM			
sqlservr.exe	c:\program files\microsoft sql			
server\mssql10.mssqlserver\mssql\bin\sqlservr.exe	1272 13			
200	1380	9/2/2009 4:25 PM	2007.100.2714.0	
	54.96 MB (57,629,016 bytes)	5/15/2009 7:38 PM		
cmd.exe	c:\windows\system32\cmd.exe	1084 8	200	
1380	9/2/2009 4:28 PM	6.0.6001.18000	354.50	
	KB (363,008 bytes)	1/19/2008 12:05 AM		
logon.scr	c:\windows\syswow64\logon.scr	4964 4	200	
1380	9/2/2009 4:32 PM	6.0.6001.18000	5.45 MB	
	(5,714,432 bytes)	1/18/2008 11:46 PM		
taskmgr.exe	c:\windows\system32\taskmgr.exe	4544		
13	200 1380	9/2/2009 5:20 PM		
	6.0.6001.18000	188.00 KB (192,512 bytes)		
	1/19/2008 12:23 AM			
msinfo32.exe	c:\windows\syswow64\msinfo32.exe	3188		
8	200 1380	9/2/2009 5:54 PM		
	6.0.6002.18005	398.50 KB (408,064 bytes)		
	4/11/2009 11:12 AM			
wmiprvse.exe	c:\windows\system32\wbem\wmiprvse.exe	4012		
8	200 1380	9/2/2009 5:54 PM		
	6.0.6002.18005	343.50 KB (351,744 bytes)		
	4/11/2009 11:11 AM			
wmiprvse.exe	c:\windows\syswow64\wbem\wmiprvse.exe	4904		
8	200 1380	9/2/2009 5:54 PM		

	6.0.6002.18005	241.50 KB (247,296 bytes)		
	4/11/2009 11:11 AM			
wmiprvse.exe	c:\windows\syswow64\wbem\wmiprvse.exe	3540		
8	200 1380	9/2/2009 5:55 PM		
	6.0.6002.18005	241.50 KB (247,296 bytes)		
	4/11/2009 11:11 AM			

[Loaded Modules]

Name	Version	Size	File Date	Manufacturer	Path
csrss	6.0.6001.18000	7.50 KB (7,680 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\csrss.exe
ntdll	6.0.6002.18005	1.51 MB (1,582,792 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ntdll.dll
csrssv	6.0.6001.18000	83.50 KB (85,504 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\csrssv.dll
basesrv	6.0.6001.18000	78.50 KB (80,384 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\basesrv.dll
winsrv	6.0.6002.18005	440.00 KB (450,560 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winsrv.dll
user32	6.0.6002.18005	801.00 KB (820,224 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\user32.dll
kernel32	6.0.6002.18005	1.16 MB (1,217,536 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\kernel32.dll
gdi32	6.0.6002.18005	380.50 KB (389,632 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\gdi32.dll
advapi32	6.0.6002.18005	1.02 MB (1,065,472 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\advapi32.dll
rpcrt4	6.0.6002.18005	1.25 MB (1,305,600 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\rpcrt4.dll
lpk	6.0.6001.18000	32.00 KB (32,768 bytes)	1/19/2008 12:08 AM	Microsoft Corporation	c:\windows\system32\lpk.dll
usp10	1.626.6002.18005	607.00 KB (621,568 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\usp10.dll
msvcrt	7.0.6002.18005	606.50 KB (621,056 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msvcrt.dll
sxs	6.0.6001.18000	560.50 KB (573,952 bytes)	1/19/2008 12:00 AM	Microsoft Corporation	c:\windows\system32\sxs.dll
wininit	6.0.6001.18000	121.00 KB (123,904 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\wininit.exe
userenv	6.0.6002.18005	134.00 KB (137,216 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\userenv.dll
secur32	6.0.6002.18005	92.50 KB (94,720 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\secur32.dll
imm32	6.0.6002.18005	160.00 KB (163,840 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\imm32.dll
msctf	6.0.6002.18005	1,016.50 KB (1,040,896 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\msctf.dll

apphelp	6.0.6002.18005	196.00 KB (200,704 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\apphelp.dll
ws2_32	6.0.6002.18005	258.50 KB (264,704 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\ws2_32.dll
nsi	6.0.6001.18000	11.00 KB (11,264 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nsi.dll
mswsock	6.0.6002.18005	297.00 KB (304,128 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\mswsock.dll
wshtcpip	6.0.6001.18000	12.50 KB (12,800 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\wshtcpip.dll
wship6	6.0.6001.18000	11.00 KB (11,264 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\wship6.dll
crypt32	6.0.6002.18005	1.20 MB (1,259,520 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\crypt32.dll
msasn1	6.0.6001.18000	79.00 KB (80,896 bytes)	1/19/2008 12:57 AM	Microsoft Corporation	c:\windows\system32\msasn1.dll
credssp	6.0.6001.18000	18.00 KB (18,432 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\credssp.dll
schannel	6.0.6002.18005	327.50 KB (335,360 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\schannel.dll
netapi32	6.0.6002.18005	633.00 KB (648,192 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\netapi32.dll
psapi	6.0.6001.18000	16.50 KB (16,896 bytes)	1/19/2008 12:40 AM	Microsoft Corporation	c:\windows\system32\psapi.dll
winlogon	6.0.6002.18005	396.00 KB (405,504 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winlogon.exe
winsta	6.0.6001.18000	200.50 KB (205,312 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\winsta.dll
ntmarta	6.0.6002.18005	155.50 KB (159,232 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\ntmarta.dll
wldap32	6.0.6002.18005	321.00 KB (328,704 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wldap32.dll
samlib	6.0.6002.18005	97.00 KB (99,328 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\samlib.dll
ole32	6.0.6002.18005	1.83 MB (1,915,392 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ole32.dll
shsvcs	6.0.6002.18005	294.50 KB (301,568 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\shsvcs.dll
services	6.0.6002.18005	375.50 KB (384,512 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\services.exe
scesrv	6.0.6002.18005	390.00 KB (399,360 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\scesrv.dll
authz	6.0.6002.18005	140.00 KB (143,360 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\authz.dll
ncobjapi	6.0.6001.18000	68.50 KB (70,144 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\ncobjapi.dll
lsass	6.0.6001.18000	11.00 KB (11,264 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\lsass.exe
lsasrv	6.0.6002.18005	1.61 MB (1,688,064 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\lsasrv.dll
samsrv	6.0.6002.18005	656.00 KB (671,744 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\samsrv.dll
cryptdll	6.0.6001.18000	63.50 KB (65,024 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\cryptdll.dll
dnsapi	6.0.6002.18005	216.50 KB (221,696 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\dnsapi.dll
ntdsapi	6.0.6001.18000	143.00 KB (146,432 bytes)	1/19/2008 12:20 AM	Microsoft Corporation	c:\windows\system32\ntdsapi.dll
feclient	6.0.6002.18005	67.00 KB (68,608 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\feclient.dll
mpr	6.0.6002.18005	83.00 KB (84,992 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mpr.dll
slc	6.0.6002.18005	148.00 KB (151,552 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\slc.dll
sysntfy	6.0.6000.16386	21.00 KB (21,504 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\sysntfy.dll
wevtapi	6.0.6002.18005	385.00 KB (394,240 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wevtapi.dll
iphlpapi	6.0.6002.18005	124.00 KB (126,976 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\iphlpapi.dll
dhcpcsvc	6.0.6002.18005	262.00 KB (268,288 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\dhcpcsvc.dll
winnsi	6.0.6001.18000	21.50 KB (22,016 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\winnsi.dll
dhcpcsvc6	6.0.6002.18005	159.50 KB (163,328 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\dhcpcsvc6.dll
engaudit	6.0.6000.16386	14.50 KB (14,848 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\engaudit.dll
ncrypt	6.0.6002.18005	248.00 KB (253,952 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ncrypt.dll
bcrypt	6.0.6002.18005	299.50 KB (306,688 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\bcrypt.dll
msprvs	6.0.6000.16386	2.00 KB (2,048 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\msprvs.dll
kerberos	6.0.6002.18005	639.50 KB (654,848 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\kerberos.dll
msv1_0	6.0.6002.18005	259.50 KB (265,728 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msv1_0.dll
netlogon	6.0.6002.18005	700.50 KB (717,312 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\netlogon.dll
winbrand	6.0.6001.18000	851.00 KB (871,424 bytes)	1/19/2008 12:02 AM	Microsoft Corporation	c:\windows\system32\winbrand.dll

wdigest	6.0.6001.18000	193.00 KB (197,632 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\wdigest.dll
rsaenh	6.0.6002.18005	282.98 KB (289,768 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rsaenh.dll
tspkg	6.0.6001.18000	77.00 KB (78,848 bytes)	1/19/2008 12:16 AM	Microsoft Corporation	c:\windows\system32\tspkg.dll
gpapi	6.0.6002.18005	82.50 KB (84,480 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\gpapi.dll
setupapi	6.0.6002.18005	1.84 MB (1,925,120 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\setupapi.dll
oleaut32	6.0.6002.18005	827.50 KB (847,360 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\oleaut32.dll
scecli	6.0.6002.18005	230.00 KB (235,520 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\scecli.dll
rassfm	6.0.6001.18000	25.50 KB (26,112 bytes)	1/19/2008 7:51 AM	Microsoft Corporation	c:\windows\system32\rassfm.dll
dsenh	6.0.6001.18000	197.55 KB (202,296 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\dsenh.dll
cryptnet	6.0.6001.18000	127.00 KB (130,048 bytes)	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\cryptnet.dll
sensapi	6.0.6001.18000	12.50 KB (12,800 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\sensapi.dll
shlwapi	6.0.6002.18005	445.00 KB (455,680 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\shlwapi.dll
comctl32	6.10.6002.18005	1.96 MB (2,050,048 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.common-controls_6595b64144ccf1df_6.0.6002.18005_none_1509f8bef40ee4da\comctl32.dll
lsm	6.0.6001.18000	258.50 KB (264,704 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\lsm.exe
wmsgapi	6.0.6000.16386	14.00 KB (14,336 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\wmsgapi.dll
clbcatq	2001.12.6931.18000	597.00 KB (611,328 bytes)	1/19/2008 12:28 AM	Microsoft Corporation	c:\windows\system32\clbcatq.dll
lsmproxy	6.0.6001.18000	43.50 KB (44,544 bytes)	1/19/2008 12:42 AM	Microsoft Corporation	c:\windows\system32\lsmproxy.dll
svchost	6.0.6001.18000	27.00 KB (27,648 bytes)	1/19/2008 12:02 AM	Microsoft Corporation	c:\windows\system32\svchost.exe
umpnprmgr	6.0.6002.18005	306.00 KB (313,344 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\umpnprmgr.dll
powrprof	6.0.6002.18005	120.50 KB (123,392 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\powrprof.dll
rpss	6.0.6002.18005	703.00 KB (719,872 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\rpss.dll
FirewallAPI	6.0.6001.18000	685.00 KB (701,440 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\firewallapi.dll
version	6.0.6002.18005	26.50 KB (27,136 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\version.dll
wtsapi32	6.0.6001.18000	30.50 KB (31,232 bytes)	1/19/2008 12:42 AM	Microsoft Corporation	c:\windows\system32\wtsapi32.dll
cabinet	6.0.6001.18000	91.00 KB (93,184 bytes)	1/19/2008 12:23 AM	Microsoft Corporation	c:\windows\system32\cabinet.dll
fwpuclnt	6.0.6002.18005	761.50 KB (779,776 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fwpuclnt.dll
wevtvsc	6.0.6002.18005	1.42 MB (1,491,968 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wevtvsc.dll
lmhsvc	6.0.6001.18000	23.50 KB (24,064 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\lmhsvc.dll
nlaapi	6.0.6001.18000	60.00 KB (61,440 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nlaapi.dll
napinsp	6.0.6001.18000	61.50 KB (62,976 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\napinsp.dll
winrnr	6.0.6001.18000	27.00 KB (27,648 bytes)	1/19/2008 12:19 AM	Microsoft Corporation	c:\windows\system32\winrnr.dll
rasadhlp	6.0.6001.18000	13.00 KB (13,312 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\rasadhlp.dll
logonui	6.0.6001.18000	20.50 KB (20,992 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\logonui.exe
authui	6.0.6002.18005	2.17 MB (2,272,256 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\authui.dll
msimg32	6.0.6001.18000	8.00 KB (8,192 bytes)	1/19/2008 12:07 AM	Microsoft Corporation	c:\windows\system32\msimg32.dll
uxtheme	6.0.6001.18000	310.00 KB (317,440 bytes)	1/19/2008 12:21 AM	Microsoft Corporation	c:\windows\system32\uxtheme.dll
gdiplus	5.2.6002.18005	2.09 MB (2,192,384 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft.windows.gdiplus_6595b64144ccf1df_1.0.6002.18005_none_56a37cbfb59b8501\gdiplus.dll
duser	6.0.6001.18000	244.50 KB (250,368 bytes)	1/19/2008 12:09 AM	Microsoft Corporation	c:\windows\system32\duser.dll
xmllite	1.2.1009.0	176.00 KB (180,224 bytes)	1/19/2008 1:13 AM	Microsoft Corporation	c:\windows\system32\xmllite.dll
smartcardcredentialprovider	6.0.6002.18005	157.50 KB (161,280 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\smartcardcredentialprovider.dll
raslapl	6.0.6002.18005	380.50 KB (389,632 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\raslapl.dll
rasapi32	6.0.6002.18005	329.50 KB (337,408 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasapi32.dll
rasman	6.0.6001.18000	90.50 KB (92,672 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\rasman.dll
tapi32	6.0.6000.16386	238.00 KB (243,712 bytes)	1/19/2008 1:13 AM	Microsoft Corporation	c:\windows\system32\tapi32.dll
rtutils	6.0.6002.18005	49.50 KB (50,688 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\rtutils.dll

winmm	6.0.6002.18005	207.00 KB (211,968 bytes)		wbemcomn	6.0.6001.18000	516.00 KB (528,384 bytes)	
	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winmm.dll		1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbemcomn.dll
oleacc	4.2.5406.0	300.50 KB (307,712 bytes)	1/19/2008 12:08 AM	iphlpvc	6.0.6002.18005	218.50 KB (223,744 bytes)	
		Microsoft Corporation	c:\windows\system32\oleacc.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\iphlpvc.dll
shell32	6.0.6002.18005	12.30 MB (12,897,792 bytes)		sqmapi	6.0.6001.18000	172.00 KB (176,128 bytes)	
	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\shell32.dll		1/19/2008 12:11 AM	Microsoft Corporation	c:\windows\system32\sqmapi.dll
winscard	6.0.6002.18005	186.00 KB (190,464 bytes)		srvsvc	6.0.6002.18005	172.50 KB (176,640 bytes)	
	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winscard.dll		4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\srvsvc.dll
shgina	6.0.6001.18000	82.50 KB (84,480 bytes)		sscore	6.0.6000.16386	12.00 KB (12,288 bytes)	
	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\shgina.dll		1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\sscore.dll
shacct	6.0.6001.18000	96.00 KB (98,304 bytes)		clusapi	6.0.6001.18000	237.50 KB (243,200 bytes)	
	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\shacct.dll		1/19/2008 12:05 AM	Microsoft Corporation	c:\windows\system32\clusapi.dll
propsys	7.0.6002.18005	901.50 KB (923,136 bytes)		activeds	6.0.6001.18000	259.50 KB (265,728 bytes)	
	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\propsys.dll		1/19/2008 12:19 AM	Microsoft Corporation	c:\windows\system32\activeds.dll
hid	6.0.6001.18000	28.50 KB (29,184 bytes)		adslrpc	6.0.6002.18005	226.50 KB (231,936 bytes)	
	1/19/2008 12:33 AM	Microsoft Corporation	c:\windows\system32\hid.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\adslrpc.dll
wintrust	6.0.6001.18000	213.00 KB (218,112 bytes)		credui	6.0.6002.18005	186.50 KB (190,976 bytes)	
	1/19/2008 12:15 AM	Microsoft Corporation	c:\windows\system32\wintrust.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\credui.dll
imagehlp	6.0.6001.18000	72.50 KB (74,240 bytes)		resutils	6.0.6001.18000	76.00 KB (77,824 bytes)	
	1/19/2008 12:40 AM	Microsoft Corporation	c:\windows\system32\imagehlp.dll		1/19/2008 12:04 AM	Microsoft Corporation	c:\windows\system32\resutils.dll
gpsvc	6.0.6002.18005	702.50 KB (719,360 bytes)		winhttp	6.0.6002.18005	429.50 KB (439,808 bytes)	
	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\gpsvc.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\winhttp.dll
profsvc	6.0.6002.18005	174.00 KB (178,176 bytes)		vssapi	6.0.6002.18005	1.43 MB (1,495,040 bytes)	
	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\profsvc.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\vssapi.dll
atl	3.5.2284.0	85.50 KB (87,552 bytes)	1/19/2008 1:09 AM	vsstrace	6.0.6001.18000	90.00 KB (92,160 bytes)	
		Microsoft Corporation	c:\windows\system32\atl.dll		1/19/2008 12:29 AM	Microsoft Corporation	c:\windows\system32\vsstrace.dll
sens	6.0.6001.18000	60.50 KB (61,952 bytes)		wbemcore	6.0.6002.18005	1.12 MB (1,172,992 bytes)	
	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\sens.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemcore.dll
schedsvc	6.0.6002.18005	824.00 KB (843,776 bytes)		esscli	6.0.6001.18000	418.00 KB (428,032 bytes)	
	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\schedsvc.dll		1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wbem\esscli.dll
ktmw32	6.0.6001.18000	14.50 KB (14,848 bytes)		fastprox	6.0.6002.18005	870.50 KB (891,392 bytes)	
	1/18/2008 11:52 PM	Microsoft Corporation	c:\windows\system32\ktmw32.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wbem\fastprox.dll
comctl32	5.82.6001.18000	619.00 KB (633,856 bytes)		wbemsvcs	6.0.6002.18005	121.00 KB (123,904 bytes)	
	1/19/2008 3:48 AM	Microsoft Corporation	c:\windows\winsxs\amd64_microsoft-windows-common-controls_6595b64144ccf1df_5.82.6001.18000_none_40ba501d3c2b20ff\comctl32.dll		4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemsvcs.dll
taskcomp	6.0.6002.18005	400.00 KB (409,600 bytes)		wmiutils	6.0.6001.18000	128.50 KB (131,584 bytes)	
	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\taskcomp.dll		1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wmiutils.dll
aelupsvc	6.0.6000.16386	26.00 KB (26,624 bytes)		repdrvfs	6.0.6001.18000	372.50 KB (381,440 bytes)	
	1/18/2008 11:52 PM	Microsoft Corporation	c:\windows\system32\aelupsvc.dll		1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbem\repdrvfs.dll
ikeext	6.0.6002.18005	444.00 KB (454,656 bytes)		wmiprvsd	6.0.6002.18005	687.00 KB (703,488 bytes)	
	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ikeext.dll		4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wbem\wmiprvsd.dll
seclogon	6.0.6001.18000	28.00 KB (28,672 bytes)		wbemess	6.0.6001.18000	501.00 KB (513,024 bytes)	
	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\seclogon.dll		1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemess.dll
wmisvc	6.0.6002.18005	216.50 KB (221,696 bytes)		TSChannel	6.0.6000.16386	18.50 KB (18,944 bytes)	
	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wmisvc.dll		1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\tchannel.dll
				certprop	6.0.6002.18005	48.50 KB (49,664 bytes)	
					4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\certprop.dll

sessenv	6.0.6001.18000	73.00 KB (74,752 bytes)	1/19/2008 12:43 AM	Microsoft Corporation	c:\windows\system32\sessenv.dll
ncprov	6.0.6001.18000	77.50 KB (79,360 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wbem\ncprov.dll
qmgr	7.0.6002.18005	1.03 MB (1,081,856 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\qmgr.dll
shfolder	6.0.6001.18000	10.00 KB (10,240 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\shfolder.dll
bitsperf	7.0.6000.16386	22.50 KB (23,040 bytes)	1/19/2008 12:11 AM	Microsoft Corporation	c:\windows\system32\bitsperf.dll
bitsigd	7.0.6002.18005	45.50 KB (46,592 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\bitsigd.dll
rasmans	6.0.6002.18005	302.50 KB (309,760 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasmans.dll
rastapi	6.0.6002.18005	79.50 KB (81,408 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rastapi.dll
rasppp	6.0.6002.18005	299.00 KB (306,176 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasppp.dll
mprapi	6.0.6002.18005	126.50 KB (129,536 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mprapi.dll
rasqec	6.0.6001.18000	72.00 KB (73,728 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\rasqec.dll
quilt	6.0.6001.18000	97.00 KB (99,328 bytes)	1/19/2008 12:34 AM	Microsoft Corporation	c:\windows\system32\quilt.dll
raschap	6.0.6002.18005	289.00 KB (295,936 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\raschap.dll
rastls	6.0.6002.18005	274.50 KB (281,088 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rastls.dll
cryptui	6.0.6002.18005	1,011.50 KB (1,035,776 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\cryptui.dll
slsvc	6.0.6002.18005	2.46 MB (2,582,016 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\slsvc.exe
es	2001.12.6932.18005	353.50 KB (361,984 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\es.dll
nsisvc	6.0.6001.18000	24.00 KB (24,576 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nsisvc.dll
wkssvc	6.0.6001.18000	198.00 KB (202,752 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\wkssvc.dll
fdrespub	6.0.6000.16386	32.50 KB (33,280 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\fdrespub.dll
wsdapi	6.0.6002.18005	431.50 KB (441,856 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsdapi.dll
httpapi	6.0.6001.18000	32.50 KB (33,280 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\httpapi.dll
fundisc	6.0.6002.18005	170.00 KB (174,080 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fundisc.dll
msxml3	8.100.5000.0	1.72 MB (1,804,288 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msxml3.dll
w32time	6.0.6002.18005	364.00 KB (372,736 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\w32time.dll
netprofm	6.0.6001.18000	297.00 KB (304,128 bytes)	1/19/2008 12:38 AM	Microsoft Corporation	c:\windows\system32\netprofm.dll
npmproxy	6.0.6000.16386	31.50 KB (32,256 bytes)	1/19/2008 12:38 AM	Microsoft Corporation	c:\windows\system32\npmproxy.dll
sstpsvc	6.0.6001.18000	138.00 KB (141,312 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\sstpsvc.dll
normaliz	6.0.6000.16386	3.00 KB (3,072 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\normaliz.dll
fdphost	6.0.6001.18000	15.00 KB (15,360 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\fdphost.dll
fdwsd	6.0.6002.18005	79.50 KB (81,408 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\fdwsd.dll
mlang	6.0.6001.18000	232.50 KB (238,080 bytes)	1/19/2008 12:22 AM	Microsoft Corporation	c:\windows\system32\mlang.dll
fdssdp	6.0.6002.18005	82.00 KB (83,968 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\fdssdp.dll
ssdpapi	6.0.6000.16386	49.00 KB (50,176 bytes)	1/19/2008 12:38 AM	Microsoft Corporation	c:\windows\system32\ssdpapi.dll
fdproxy	6.0.6002.18005	64.00 KB (65,536 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fdproxy.dll
actxprxy	6.0.6001.18000	979.00 KB (1,002,496 bytes)	1/19/2008 1:13 AM	Microsoft Corporation	c:\windows\system32\actxprxy.dll
dnssrsvr	6.0.6002.18005	115.00 KB (117,760 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\dnssrsvr.dll
cryptsvc	6.0.6002.18005	163.00 KB (166,912 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\cryptsvc.dll
nlasvc	6.0.6001.18000	201.50 KB (206,336 bytes)	1/19/2008 12:36 AM	Microsoft Corporation	c:\windows\system32\nlasvc.dll
ncsi	6.0.6001.18000	106.50 KB (109,056 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\ncsi.dll
cfgmgr32	6.0.6001.18000	17.50 KB (17,920 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\cfgmgr32.dll
termsrv	6.0.6002.18005	534.50 KB (547,328 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\termsrv.dll
icaapi	6.0.6000.16386	20.00 KB (20,480 bytes)	1/19/2008 12:42 AM	Microsoft Corporation	c:\windows\system32\icaapi.dll
regapi	6.0.6002.18005	87.00 KB (89,088 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\regapi.dll
rdpwsx	6.0.6002.18005	115.00 KB (117,760 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rdpwsx.dll
mstlsapi	6.0.6002.18005	136.00 KB (139,264 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\mstlsapi.dll



esent	6.0.6002.18005	2.39 MB (2,506,752 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\esent.dll
msdtckrm	2001.12.6931.18000	386.00 KB (395,264 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\msdtckrm.dll
wsmSvc	6.0.6002.18005	1.04 MB (1,092,096 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsmSvc.dll
wsmprov	6.0.6001.18000	71.50 KB (73,216 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wsmprov.dll
winsmgr	6.0.6001.18000	294.00 KB (301,056 bytes)	1/19/2008 12:14 AM	Microsoft Corporation	c:\windows\system32\winsmgr.dll
wsmres	6.0.6001.18000	13.00 KB (13,312 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\wsmres.dll
wewtfwd	6.0.6001.18000	104.50 KB (107,008 bytes)	1/19/2008 12:12 AM	Microsoft Corporation	c:\windows\system32\wewtfwd.dll
bfe	6.0.6002.18005	447.50 KB (458,240 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\bfe.dll
mpssvc	6.0.6002.18005	589.00 KB (603,136 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\mpssvc.dll
wfapigp	6.0.6001.18000	20.00 KB (20,480 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\wfapigp.dll
dps	6.0.6001.18000	136.00 KB (139,264 bytes)	1/19/2008 12:03 AM	Microsoft Corporation	c:\windows\system32\dps.dll
wdi	6.0.6001.18000	80.00 KB (81,920 bytes)	1/19/2008 12:03 AM	Microsoft Corporation	c:\windows\system32\wdi.dll
taskschd	6.0.6001.18000	640.50 KB (655,872 bytes)	1/19/2008 12:13 AM	Microsoft Corporation	c:\windows\system32\taskschd.dll
spoolsv	6.0.6002.18005	262.00 KB (268,288 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\spoolsv.exe
spoolss	6.0.6002.18005	232.50 KB (238,080 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\spoolss.dll
localspl	6.0.6002.18005	752.00 KB (770,048 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\localspl.dll
sfc	6.0.6000.16386	6.00 KB (6,144 bytes)	1/18/2008 11:59 PM	Microsoft Corporation	c:\windows\system32\sfc.dll
winspool	6.0.6002.18005	334.00 KB (342,016 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\winspool.drv
tcpmon	6.0.6002.18005	165.00 KB (168,960 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\tcpmon.dll
snmpapi	6.0.6000.16386	27.00 KB (27,648 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\snmpapi.dll
wsnmp32	6.0.6002.18005	60.50 KB (61,952 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsnmp32.dll
msxml6	6.20.5000.0	1.65 MB (1,733,120 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\msxml6.dll
tcpmib	6.0.6000.16386	33.50 KB (34,304 bytes)	1/19/2008 1:11 AM	Microsoft Corporation	c:\windows\system32\tcpmib.dll
mgmtapi	6.0.6000.16386	22.00 KB (22,528 bytes)	1/19/2008 12:37 AM	Microsoft Corporation	c:\windows\system32\mgmtapi.dll
usbmon	6.0.6001.18000	43.00 KB (44,032 bytes)	1/19/2008 1:11 AM	Microsoft Corporation	c:\windows\system32\usbmon.dll
wls0wndh	6.0.6000.16386	9.50 KB (9,728 bytes)	1/19/2008 12:17 AM	Microsoft Corporation	c:\windows\system32\wls0wndh.dll
wsdmon	6.0.6002.18005	209.00 KB (214,016 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\wsdmon.dll
win32spl	6.0.6002.18005	645.00 KB (660,480 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\win32spl.dll
netrap	6.0.6001.18000	21.00 KB (21,504 bytes)	1/19/2008 12:18 AM	Microsoft Corporation	c:\windows\system32\netrap.dll
printcom	6.0.6001.18000	43.50 KB (44,544 bytes)	1/19/2008 1:10 AM	Microsoft Corporation	c:\windows\system32\printcom.dll
ipsecsvc	6.0.6002.18005	521.00 KB (533,504 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\ipsecsvc.dll
fwremotesvr	6.0.6002.18005	49.00 KB (50,176 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\fwremotesvr.dll
regsvc	6.0.6002.18005	202.00 KB (206,848 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\regsvc.dll
sysdown	1.2.0.0	17.54 KB (17,960 bytes)	6/26/2009 7:11 PM	Hewlett-Packard Company	c:\windows\system32\sysdown.exe
trkwns	6.0.6001.18000	114.50 KB (117,248 bytes)	1/19/2008 12:27 AM	Microsoft Corporation	c:\windows\system32\trkwns.dll
umrpd	6.0.6002.18005	247.00 KB (252,928 bytes)	4/11/2009 11:13 AM	Microsoft Corporation	c:\windows\system32\umrpd.dll
umb	6.0.6001.18000	58.50 KB (59,904 bytes)	1/19/2008 12:06 AM	Microsoft Corporation	c:\windows\system32\umb.dll
printui	6.0.6002.18005	957.50 KB (980,480 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\printui.dll
puiapi	6.0.6001.18000	185.50 KB (189,952 bytes)	1/19/2008 1:12 AM	Microsoft Corporation	c:\windows\system32\puiapi.dll
radardt	6.0.6000.16386	77.50 KB (79,360 bytes)	1/19/2008 7:52 AM	Microsoft Corporation	c:\windows\system32\radardt.dll
netman	6.0.6001.18000	340.00 KB (348,160 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\netman.dll
netshell	6.0.6002.18005	3.19 MB (3,341,312 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\netshell.dll
rasdlg	6.0.6002.18005	890.50 KB (911,872 bytes)	4/11/2009 11:11 AM	Microsoft Corporation	c:\windows\system32\rasdlg.dll
hnetcfg	6.0.6001.18000	423.50 KB (433,664 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\hnetcfg.dll
netcfgx	6.0.6001.18000	492.00 KB (503,808 bytes)	1/19/2008 12:35 AM	Microsoft Corporation	c:\windows\system32\netcfgx.dll
wbemprox	6.0.6002.18005	42.50 KB (43,520 bytes)	4/11/2009 11:12 AM	Microsoft Corporation	c:\windows\system32\wbem\wbemprox.dll

taskeng	6.0.6002.18005	259.00 KB (265,216 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	taskeng.exe
dimsjob	6.0.6001.18000	43.00 KB (44,032 bytes)
	1/19/2008 12:18 AM	Microsoft Corporation
	c:\windows\system32\	dimsjob.dll
pautoenr	6.0.6000.16386	46.00 KB (47,104 bytes)
	1/19/2008 12:18 AM	Microsoft Corporation
	c:\windows\system32\	pautoenr.dll
certcli	6.0.6002.18005	437.00 KB (447,488 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	certcli.dll
certenroll	6.0.6002.18005	1.58 MB (1,658,368 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	certenroll.dll
wininet	7.0.6002.18005	990.50 KB (1,014,272 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	wininet.dll
iertutil	7.0.6002.18005	367.00 KB (375,808 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	iertutil.dll
msctfmonitor	6.0.6002.18005	25.50 KB (26,112 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	msctfmonitor.dll
msutb	6.0.6002.18005	222.50 KB (227,840 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	msutb.dll
dwmapi	6.0.6001.18000	38.50 KB (39,424 bytes)
	1/19/2008 12:10 AM	Microsoft Corporation
	c:\windows\system32\	dwmapi.dll
PlaySndSrv	6.0.6000.16386	74.50 KB (76,288 bytes)
	1/19/2008 12:43 AM	Microsoft Corporation
	c:\windows\system32\	playsndsrv.dll
mmdevapi	6.0.6002.18005	199.00 KB (203,776 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	mmdevapi.dll
qagent	6.0.6001.18000	245.00 KB (250,880 bytes)
	1/19/2008 12:35 AM	Microsoft Corporation
	c:\windows\system32\	qagent.dll
rdpclip	6.0.6002.18005	187.00 KB (191,488 bytes)
	4/11/2009 11:13 AM	Microsoft Corporation
	c:\windows\system32\	rdpclip.exe
urlmon	7.0.6002.18005	1.35 MB (1,419,264 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	urlmon.dll
explorer	6.0.6002.18005	2.94 MB (3,079,168 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\	explorer.exe
shdocvw	6.0.6002.18005	1.14 MB (1,195,520 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	shdocvw.dll
browseui	6.0.6002.18005	1.57 MB (1,650,688 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	browseui.dll
windowscodecs	6.0.6002.18005	822.00 KB (841,728 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	windowscodecs.dll
ehstorshell	5.2.3790.1830	121.00 KB (123,904 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	ehstorshell.dll
iconcodeservice	6.0.6000.16386	12.50 KB (12,800 bytes)
	1/19/2008 7:51 AM	Microsoft Corporation
	c:\windows\system32\	iconcodeservice.dll
timedate	6.0.6002.18005	860.50 KB (881,152 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	timedate.cpl
ieframe	7.0.6002.18005	6.68 MB (7,005,184 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	ieframe.dll

networkexplorer	6.0.6002.18005	2.14 MB (2,247,168 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	networkexplorer.dll
cscapi	6.0.6002.18005	37.50 KB (38,400 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	cscapi.dll
ExplorerFrame	6.0.6001.18000	39.00 KB (39,936 bytes)
	1/19/2008 12:21 AM	Microsoft Corporation
	c:\windows\system32\	explorerframe.dll
msiltcfg	4.0.6000.16386	19.50 KB (19,968 bytes)
	1/19/2008 12:14 AM	Microsoft Corporation
	c:\windows\system32\	msiltcfg.dll
msi	4.5.6002.18005	2.96 MB (3,108,864 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	msi.dll
stobject	6.0.6002.18005	731.00 KB (748,544 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	stobject.dll
batmeter	6.0.6001.18000	727.50 KB (744,960 bytes)
	1/19/2008 12:23 AM	Microsoft Corporation
	c:\windows\system32\	batmeter.dll
sndvolso	6.0.6002.18005	173.50 KB (177,664 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	sndvolso.dll
pnidui	6.0.6002.18005	1.93 MB (2,024,960 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	pnidui.dll
wlanutil	6.0.6000.16386	10.00 KB (10,240 bytes)
	1/19/2008 12:34 AM	Microsoft Corporation
	c:\windows\system32\	wlanutil.dll
cscui	6.0.6002.18005	657.00 KB (672,768 bytes)
	4/11/2009 11:13 AM	Microsoft Corporation
	c:\windows\system32\	cscui.dll
cscdll	6.0.6002.18005	28.00 KB (28,672 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	cscdll.dll
srchadmin	7.0.6002.18005	339.50 KB (347,648 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	srchadmin.dll
webcheck	7.0.6002.18005	284.00 KB (290,816 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation
	c:\windows\system32\	webcheck.dll
bthprops	6.0.6002.18005	652.50 KB (668,160 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	bthprops.cpl
ntshrui	6.0.6001.18000	347.00 KB (355,328 bytes)
	1/19/2008 12:24 AM	Microsoft Corporation
	c:\windows\system32\	ntshrui.dll
ehstorapi	6.0.6002.18005	128.00 KB (131,072 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	ehstorapi.dll
networkitemfactory	6.0.6002.18005	51.00 KB (52,224 bytes)
	4/11/2009 11:12 AM	Microsoft Corporation
	c:\windows\system32\	networkitemfactory.dll
drprov	6.0.6001.18000	23.50 KB (24,064 bytes)
	1/19/2008 12:43 AM	Microsoft Corporation
	c:\windows\system32\	drprov.dll
ntlanman	6.0.6001.18000	116.00 KB (118,784 bytes)
	1/19/2008 12:14 AM	Microsoft Corporation
	c:\windows\system32\	ntlanman.dll
cscobj	6.0.6002.18005	211.50 KB (216,576 bytes)
	4/11/2009 11:13 AM	Microsoft Corporation
	c:\windows\system32\	cscobj.dll
thumbcache	6.0.6001.18000	102.00 KB (104,448 bytes)
	1/19/2008 12:22 AM	Microsoft Corporation
	c:\windows\system32\	thumbcache.dll
twext	6.0.6002.18005	114.00 KB (116,736 bytes)
	4/11/2009 11:13 AM	Microsoft Corporation
	c:\windows\system32\	twext.dll

zipfldr	6.0.6002.18005	378.00 KB (387,072 bytes)	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3
	4/11/2009 11:12 AM	Microsoft Corporation	b_8.0.50727.4016_none_88dc01492fb256de\msvcp80.dll
	c:\windows\system32\zipfldr.dll		sqlos
sendmail	6.0.6001.18000	74.50 KB (76,288 bytes)	2007.100.2531.0
	1/19/2008 12:22 AM	Microsoft Corporation	3/30/2009 4:01 AM
	c:\windows\system32\sendmail.dll		Microsoft Corporation
mydocs	6.0.6002.18005	140.00 KB (143,360 bytes)	c:\program files\microsoft sql
	4/11/2009 11:12 AM	Microsoft Corporation	server\mssql10.mssqlserver\mssql\binn\sqlos.dll
	c:\windows\system32\mydocs.dll		pdh
mmcsheht	6.0.6001.18000	124.50 KB (127,488 bytes)	6.0.6002.18005
	1/19/2008 12:11 AM	Microsoft Corporation	4/11/2009 11:12 AM
	c:\windows\system32\mmcsheht.dll		Microsoft Corporation
hhsetup	6.0.6000.16386	52.00 KB (53,248 bytes)	c:\windows\system32\pdh.dll
	1/19/2008 12:57 AM	Microsoft Corporation	opends60
	c:\windows\system32\hhsetup.dll		2007.100.1600.22
msdtc	2001.12.6931.18000	104.00 KB (106,496 bytes)	7/10/2008 5:46 AM
	1/19/2008 12:27 AM	Microsoft Corporation	Microsoft Corporation
	c:\windows\system32\msdtc.exe		c:\program files\microsoft sql
msdtctm	2001.12.6932.18005	1.43 MB (1,499,136 bytes)	server\mssql10.mssqlserver\mssql\binn\opends60.dll
	4/11/2009 11:12 AM	Microsoft Corporation	batchparser
	c:\windows\system32\msdtctm.dll		2007.100.1600.22
msdtcprx	2001.12.6932.18005	710.50 KB (727,552 bytes)	170.52 KB (174,616 bytes)
	4/11/2009 11:11 AM	Microsoft Corporation	7/10/2008 5:38 AM
	c:\windows\system32\msdtcprx.dll		Microsoft Corporation
mtxclu	2001.12.6932.18005	353.50 KB (361,984 bytes)	c:\program files\microsoft sql
	4/11/2009 11:11 AM	Microsoft Corporation	server\mssql10.mssqlserver\mssql\binn\batchparser.dll
	c:\windows\system32\mtxclu.dll		instapi10
msdtclog	2001.12.6931.18000	113.00 KB (115,712 bytes)	2007.100.1600.22
	1/19/2008 12:27 AM	Microsoft Corporation	42.52 KB (43,544 bytes)
	c:\windows\system32\msdtclog.dll		7/10/2008 4:39 AM
xolehlp	2001.12.6931.18000	47.00 KB (48,128 bytes)	Microsoft Corporation
	1/19/2008 12:27 AM	Microsoft Corporation	c:\program files\microsoft sql server\100\shared\instapi10.dll
	c:\windows\system32\xolehlp.dll		sqllevn70
comres	2001.12.6931.18000	1.23 MB (1,291,264 bytes)	2007.100.2531.0
	1/19/2008 12:27 AM	Microsoft Corporation	1.99 MB (2,086,760 bytes)
	c:\windows\system32\comres.dll		3/30/2009 3:27 AM
msdtcVSpres	2001.12.6931.18000	20.50 KB (20,992 bytes)	Microsoft Corporation
	1/19/2008 12:27 AM	Microsoft Corporation	c:\program files\microsoft sql
	c:\windows\system32\msdtcvspres.dll		server\mssql10.mssqlserver\mssql\binn\resources\1033\sqllevn70.rll
mtxoci	2001.12.6931.18000	148.00 KB (151,552 bytes)	mscoree
	1/19/2008 12:27 AM	Microsoft Corporation	2.0.50727.4016
	c:\windows\system32\mtxoci.dll		393.83 KB (403,280 bytes)
tapisrv	6.0.6002.18005	311.50 KB (318,976 bytes)	4/11/2009 11:11 AM
	4/11/2009 11:12 AM	Microsoft Corporation	Microsoft Corporation
	c:\windows\system32\tapisrv.dll		c:\windows\system32\mscoree.dll
unimdm	6.0.6002.18005	312.50 KB (320,000 bytes)	security
	4/11/2009 11:11 AM	Microsoft Corporation	6.0.6000.16386
	c:\windows\system32\unimdm.tsp		5.50 KB (5,632 bytes)
uniplat	6.0.6001.18000	21.00 KB (21,504 bytes)	1/19/2008 12:16 AM
	1/19/2008 12:38 AM	Microsoft Corporation	Microsoft Corporation
	c:\windows\system32\uniplat.dll		c:\windows\system32\security.dll
kmddsp	6.0.6000.16386	45.50 KB (46,592 bytes)	sqlncli10
	1/19/2008 12:37 AM	Microsoft Corporation	2007.100.2531.0
	c:\windows\system32\kmddsp.tsp		3.01 MB (3,156,840 bytes)
ndptsp	6.0.6000.16386	58.00 KB (59,392 bytes)	3/30/2009 4:01 AM
	1/19/2008 12:37 AM	Microsoft Corporation	Microsoft Corporation
	c:\windows\system32\ndptsp.tsp		c:\windows\system32\sqlncli10.dll
hidphone	6.0.6000.16386	38.50 KB (39,424 bytes)	comdlg32
	1/19/2008 1:13 AM	Microsoft Corporation	6.0.6002.18005
	c:\windows\system32\hidphone.tsp		537.00 KB (549,888 bytes)
sqlserv	2007.100.2714.0	54.96 MB (57,629,016 bytes)	4/11/2009 11:11 AM
	5/15/2009 7:38 PM	Microsoft Corporation	Microsoft Corporation
	c:\program files\microsoft sql		c:\windows\system32\comdlg32.dll
server\mssql10.mssqlserver\mssql\binn\sqlserv.exe			sqlnclir10
msvcr80	8.0.50727.4016	783.83 KB (802,640 bytes)	2007.100.1600.22
	4/11/2009 11:11 AM	Microsoft Corporation	224.02 KB (229,400 bytes)
	c:\windows\winsxs\amd64_microsoft.vc80.crt_1fc8b3b9a1e18e3		7/10/2008 4:58 AM
b_8.0.50727.4016_none_88dc01492fb256de\msvcr80.dll			Microsoft Corporation
msvcp80	8.0.50727.4016	1.02 MB (1,068,368 bytes)	c:\windows\system32\1033\sqlnclir10.rll
	4/11/2009 11:11 AM	Microsoft Corporation	cmd
			6.0.6001.18000
			354.50 KB (363,008 bytes)
			1/19/2008 12:05 AM
			Microsoft Corporation
			c:\windows\system32\cmd.exe
			logon
			6.0.6001.18000
			5.45 MB (5,714,432 bytes)
			1/18/2008 11:46 PM
			Microsoft Corporation
			c:\windows\syswow64\logon.scr
			wow64
			6.0.6002.18005
			229.00 KB (234,496 bytes)
			4/11/2009 11:11 AM
			Microsoft Corporation
			c:\windows\system32\wow64.dll
			wow64win
			6.0.6002.18005
			294.50 KB (301,568 bytes)
			4/11/2009 11:11 AM
			Microsoft Corporation
			c:\windows\system32\wow64win.dll
			wow64cpu
			6.0.6002.18005
			17.00 KB (17,408 bytes)
			4/11/2009 11:11 AM
			Microsoft Corporation
			c:\windows\system32\wow64cpu.dll
			taskmgr
			6.0.6001.18000
			188.00 KB (192,512 bytes)
			1/19/2008 12:23 AM
			Microsoft Corporation
			c:\windows\system32\taskmgr.exe
			utildll
			6.0.6001.18000
			34.00 KB (34,816 bytes)
			1/19/2008 12:42 AM
			Microsoft Corporation
			c:\windows\system32\utildll.dll
			msinfo32
			6.0.6002.18005
			398.50 KB (408,064 bytes)
			4/11/2009 11:12 AM
			Microsoft Corporation
			c:\windows\syswow64\msinfo32.exe
			wmiprvse
			6.0.6002.18005
			343.50 KB (351,744 bytes)
			4/11/2009 11:11 AM
			Microsoft Corporation
			c:\windows\system32\wbem\wmiprvse.exe

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cimwin32 6.0.6002.18005 1.99 MB (2,082,816 bytes)
4/11/2009 11:12 AM Microsoft Corporation
c:\windows\system32\wbem\cimwin32.dll
framedynos 6.0.6001.18000 275.00 KB (281,600 bytes)
1/19/2008 12:13 AM Microsoft Corporation
c:\windows\system32\framedynos.dll
wmi 6.0.6001.18000 5.50 KB (5,632 bytes) 1/19/2008 1:13 AM
Microsoft Corporation c:\windows\system32\wmi.dll

ntevt 6.0.6002.18005 251.00 KB (257,024 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\system32\wbem\ntevt.dll
provthrd 6.0.6001.18000 327.50 KB (335,360 bytes)
1/19/2008 12:13 AM Microsoft Corporation
c:\windows\system32\provthrd.dll
msvcirt 7.0.6000.16386 78.50 KB (80,384 bytes)
1/18/2008 11:52 PM Microsoft Corporation
c:\windows\system32\msvcirt.dll
wsock32 6.0.6001.18000 18.00 KB (18,432 bytes)
1/19/2008 12:37 AM Microsoft Corporation
c:\windows\system32\wsock32.dll
unidrvui 0.3.6002.18005 863.00 KB (883,712 bytes)
1/19/2008 3:38 AM Microsoft Corporation
c:\windows\system32\spool\drivers\x64\3\unidrvui.dll
wmiprvse 6.0.6002.18005 241.50 KB (247,296 bytes)
4/11/2009 11:11 AM Microsoft Corporation
c:\windows\syswow64\wbem\wmiprvse.exe

```

[Services]

Display Name	Name	State	Start Mode	Service Type	Tag ID
Path	Error Control		Start Name		
Application Experience	AeLookupSvc	Running	Auto		
Share Process	c:\windows\system32\svchost.exe -k				
netsvcs	Normal localSystem	0			
Application Layer Gateway Service	ALG	Stopped	Manual		
Own Process	c:\windows\system32\alg.exe		Normal		
NT AUTHORITY\LocalService	0				
Application Information	Appinfo	Stopped	Manual	Share	
Process	c:\windows\system32\svchost.exe -k netsvcs	Normal			
LocalSystem	0				
Application Management	AppMgmt	Stopped	Manual	Share	
Process	c:\windows\system32\svchost.exe -k netsvcs	Normal			
LocalSystem	0				
Windows Audio Endpoint Builder	AudioEndpointBuilder	Stopped	Manual	Share Process	
Share Process	c:\windows\system32\svchost.exe -k				
localSystemnetworkrestricted	Normal	LocalSystem	0		
Windows Audio	AudioSrv	Stopped	Manual	Share Process	
Share Process	c:\windows\system32\svchost.exe -k				
localSystemnetworkrestricted	Normal	NT AUTHORITY\LocalService	0		
Base Filtering Engine BFE	Running	Auto	Share Process		
Share Process	c:\windows\system32\svchost.exe -k localSystemnetworkrestricted				
Normal	NT AUTHORITY\LocalService	0			
Background Intelligent Transfer Service	BITS	Running	Auto		
Share Process	c:\windows\system32\svchost.exe -k				
Normal	LocalSystem	0			
Computer Browser	Browser	Stopped	Disabled	Share Process	
Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal			
LocalSystem	0				
Certificate Propagation	CertPropSvc	Running	Manual		
Share Process	c:\windows\system32\svchost.exe -k				
Normal	LocalSystem	0			
Microsoft .NET Framework NGEN v2.0.50727_X86	clr_optimization_v2.0.50727_X86	Stopped	Manual	Own	
Process	c:\windows\microsoft.net\framework\v2.0.50727\mscorsvw.exe				
Ignore	LocalSystem	0			

```

Microsoft .NET Framework NGEN v2.0.50727_X64
clr_optimization_v2.0.50727_64 Stopped Manual Own
Process
c:\windows\microsoft.net\framework64\v2.0.50727\mscorsvw.exe
Ignore LocalSystem 0
COM+ System Application COMSysApp Stopped Manual
Own Process c:\windows\system32\dlhhost.exe
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235} Normal
LocalSystem 0
Cryptographic Services CryptSvc Running Auto Share
Process c:\windows\system32\svchost.exe -k networkservice Normal
NT Authority\NetworkService 0
Offline Files CscService Stopped Disabled Share Process
c:\windows\system32\svchost.exe -k
localSystemnetworkrestricted Normal LocalSystem 0
DCOM Server Process Launcher DcomLaunch Running Auto
Share Process c:\windows\system32\svchost.exe -k
Normal LocalSystem 0
DHCP Client Dhcp Running Auto Share Process
c:\windows\system32\svchost.exe -k
localSystemnetworkrestricted Normal NT Authority\LocalService
0
DNS Client Dnscache Running Auto Share Process
c:\windows\system32\svchost.exe -k networkservice Normal
NT AUTHORITY\NetworkService 0
Wired AutoConfig dot3svc Stopped Manual Share Process
c:\windows\system32\svchost.exe -k
localSystemnetworkrestricted Normal LocalSystem 0
Diagnostic Policy Service DPS Running Auto Share
Process c:\windows\system32\svchost.exe -k localSystemnetwork
Normal NT AUTHORITY\LocalService 0
Extensible Authentication Protocol EapHost Stopped Manual
Share Process c:\windows\system32\svchost.exe -k
netsvcs Normal localSystem 0
Windows Event Log EventLog Running Auto Share Process
c:\windows\system32\svchost.exe -k
localSystemnetworkrestricted Normal NT AUTHORITY\LocalService
0
COM+ Event System EventSystem Running Auto Share
Process c:\windows\system32\svchost.exe -k localService Normal
NT AUTHORITY\LocalService 0
Microsoft Fibre Channel Platform Registration Service FCRegSvc Stopped
Manual Share Process
c:\windows\system32\svchost.exe -k
localSystemnetworkrestricted Normal NT AUTHORITY\LocalService
0
Function Discovery Provider Host fdHost Running Manual
Share Process c:\windows\system32\svchost.exe -k
localService Normal NT AUTHORITY\LocalService 0
Function Discovery Resource Publication FDResPub Running Auto
Share Process c:\windows\system32\svchost.exe -k
localService Normal NT AUTHORITY\LocalService 0
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
cache.exe Normal NT Authority\LocalService 0
Group Policy Client gpsvc Running Auto Own Process
c:\windows\system32\svchost.exe -k gpsvcgroup Normal
LocalSystem 0
Human Interface Device Access hidserv Stopped Manual Share
Process c:\windows\system32\svchost.exe -k
localSystemnetworkrestricted Normal LocalSystem 0
Health Key and Certificate Management hkmsvc Stopped Manual
Share Process c:\windows\system32\svchost.exe -k
netsvcs Normal localSystem 0

```

Windows CardSpace	idsvc	Stopped	Manual	Share Process		Network List Service	netprofm	Running	Auto	Share Process	
	"c:\windows\microsoft.net\framework64\v3.0\windows						c:\windows\system32\svchost.exe -k localservice			Normal	
communication foundation\infocard.exe"			Normal	LocalSystem	0	NT AUTHORITY\LocalService	0				
IKE and AuthIPsec Keying Modules		IKEEXT	Running	Auto		Net.Tcp Port Sharing Service	NetTcpPortSharing	Stopped	Disabled		
	Share Process						"c:\windows\microsoft.net\framework64\v3.0\windows				
netsvcs	Normal	LocalSystem	0			communication foundation\smsvchost.exe"	Normal	NT			
PnP-X IP Bus Enumerator	IPBusEnum	Stopped	Disabled			AUTHORITY\LocalService	0				
	Share Process					Network Location Awareness	NlaSvc	Running	Auto	Share	
localsystemnetworkrestricted	Normal	LocalSystem	0			Process	c:\windows\system32\svchost.exe -k networkservice			Normal	
IP Helper	iphlpvc	Running	Auto	Share Process		Network Store Interface Service	nsi	Running	Auto	Share	
	c:\windows\system32\svchost.exe -k netsvc			Normal		Process	c:\windows\system32\svchost.exe -k localservice			Normal	
LocalSystem	0					NT Authority\LocalService	0				
CNG Key Isolation	KeyIso	Stopped	Manual	Share Process		Performance Counter DLL Host	PerfHost	Stopped	Manual	Own	
	c:\windows\system32\lsass.exe			Normal	LocalSystem	Process	c:\windows\syswow64\perfhst.exe			Normal	NT
0						AUTHORITY\LocalService	0				
KtmRm for Distributed Transaction Coordinator				KtmRm	Running	Performance Logs & Alerts	pla	Stopped	Manual	Share	
	Auto			Share Process		Process	c:\windows\system32\svchost.exe -k localservice			nonetwork	
	c:\windows\system32\svchost.exe -k networkservice			Normal		Normal	NT AUTHORITY\LocalService	0			
NT AUTHORITY\NetworkService	0					Plug and Play	PlugPlay	Running	Auto	Share Process	
Server	LanmanServer	Running	Auto	Share Process			c:\windows\system32\svchost.exe -k dcomlaunch			Normal	
	c:\windows\system32\svchost.exe -k netsvc			Normal		LocalSystem	0				
LocalSystem	0					IPsec Policy Agent	PolicyAgent	Running	Auto	Share	
Workstation	LanmanWorkstation	Running	Auto	Share		Process	c:\windows\system32\svchost.exe -k				
Process	c:\windows\system32\svchost.exe -k localservice			Normal		networkservice	networkrestricted	Normal	NT Authority\NetworkService	0	
NT AUTHORITY\LocalService	0					User Profile Service	ProfSvc	Running	Auto	Share Process	
Link-Layer Topology Discovery Mapper	ltdsvc	Stopped	Manual				c:\windows\system32\svchost.exe -k netsvc			Normal	
	Share Process					LocalSystem	0				
localservice	Normal	NT AUTHORITY\LocalService	0			Protected Storage	ProtectedStorage	Stopped	Manual	Share	
TCPIP NetBIOS Helper	lmhosts	Running	Auto	Share		Process	c:\windows\system32\lsass.exe			Normal	LocalSystem
	c:\windows\system32\svchost.exe -k					0					
localservicenetworkrestricted	Normal	NT AUTHORITY\LocalService	0			Remote Access Auto Connection Manager	RasAuto	Stopped	Manual		
0						Share Process	c:\windows\system32\svchost.exe -k				
Multimedia Class Scheduler	MMCSS	Stopped	Manual	Share		netsvcs	Normal	localSystem	0		
	c:\windows\system32\svchost.exe -k netsvc			Normal		LocalSystem	0				
Windows Firewall	MpsSvc	Running	Auto	Share Process		Remote Access Connection Manager	RasMan	Running	Manual		
	c:\windows\system32\svchost.exe -k localservice			nonetwork		Share Process	c:\windows\system32\svchost.exe -k				
Normal	NT Authority\LocalService	0				netsvcs	Normal	localSystem	0		
Distributed Transaction Coordinator	MSDTC	Running	Auto			Routing and Remote Access	RemoteAccess	Stopped	Disabled		
	Own Process					Share Process	c:\windows\system32\svchost.exe -k				
NT AUTHORITY\NetworkService	0					netsvcs	Normal	localSystem	0		
Microsoft iSCSI Initiator Service	MSISCSI	Stopped	Manual	Share		Remote Registry	RemoteRegistry	Running	Auto	Share	
	c:\windows\system32\svchost.exe -k netsvc			Normal		Process	c:\windows\system32\svchost.exe -k regsvc			Normal	NT
LocalSystem	0					AUTHORITY\LocalService	0				
Windows Installer	msiserver	Stopped	Manual	Own Process		Remote Procedure Call (RPC) Locator	RpcLocator			Stopped	
	c:\windows\system32\msiexec /v			Normal	LocalSystem	Manual	Own Process				
0						c:\windows\system32\locator.exe	Normal	NT			
SQL Server (MSSQLSERVER)	MSSQLSERVER	Stopped	Manual			AUTHORITY\NetworkService	0				
	Own Process					Remote Procedure Call (RPC)	RpcSs	Running	Auto	Share	
server\mssql10.mssqlserver\mssql\binn\sqlservr.exe"	-smssqlserver			Normal		Process	c:\windows\system32\svchost.exe -k rps			Normal	NT
LocalSystem	0					AUTHORITY\NetworkService	0				
SQL Active Directory Helper Service	MSSQLServerADHelper100	Stopped	Disabled	Own Process		Resultant Set of Policy Provider	RSOPProv	Stopped	Manual	Share	
	"c:\program					Process	c:\windows\system32\rsopprov.exe			Normal	
files\microsoft sql server\100\shared\sqladhlp.exe"	Normal	NT				LocalSystem	0				
AUTHORITY\NETWORK SERVICE	0					Special Administration Console Helper	sacsvr	Stopped	Manual		
Network Access Protection Agent	napagent	Stopped	Manual			Share Process	c:\windows\system32\svchost.exe -k				
	Share Process					netsvcs	Normal	LocalSystem	0		
networkservice	Normal	NT AUTHORITY\NetworkService	0			Security Accounts Manager	SamSs	Running	Auto	Share	
0						Process	c:\windows\system32\lsass.exe			Normal	LocalSystem
Netlogon	Netlogon	Stopped	Manual	Share Process		0					
	c:\windows\system32\lsass.exe			Normal	LocalSystem	Smart Card	SCardSvr	Stopped	Manual	Share Process	
0						c:\windows\system32\svchost.exe -k localservice				Normal	
Network Connections	Netman	Running	Manual	Share Process		NT AUTHORITY\LocalService	0				
	c:\windows\system32\svchost.exe -k					Task Scheduler	Schedule	Running	Auto	Share Process	
localsystemnetworkrestricted	Normal	LocalSystem	0			LocalSystem	0				
0						Smart Card Removal Policy	SCPolicySvc	Stopped	Manual		
						Share Process	c:\windows\system32\svchost.exe -k				
						netsvcs	Normal	LocalSystem	0		

Secondary Logon	seclogon	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs			Normal	
	LocalSystem	0			
System Event Notification Service		SENS	Running	Auto	
	Share Process	c:\windows\system32\svchost.exe -k			
	Normal	LocalSystem	0		
Terminal Services Configuration	SessionEnv		Running	Manual	
	Share Process	c:\windows\system32\svchost.exe -k			
	Normal	LocalSystem	0		
Internet Connection Sharing (ICS)		SharedAccess		Stopped	
	Disabled	Share Process			
	c:\windows\system32\svchost.exe -k netsvcs			Normal	
	LocalSystem	0			
Shell Hardware Detection	ShellHWDetection		Running	Auto	
	Share Process	c:\windows\system32\svchost.exe -k			
	Ignore	LocalSystem	0		
Software Licensing	slsvc	Running	Auto	Own Process	
	c:\windows\system32\slsvc.exe			Normal	NT
AUTHORITY\NetworkService		0			
SL UI Notification Service	SLUINotify		Stopped	Manual	
	Share Process	c:\windows\system32\svchost.exe -k			
	Normal	NT AUTHORITY\LocalService	0		
SNMP Trap	SNMPTRAP		Stopped	Manual	Own
	Process	c:\windows\system32\snmptrap.exe		Normal	NT
	AUTHORITY\LocalService	0			
Print Spooler	Spooler	Running	Auto	Own Process	
	c:\windows\system32\spoolsv.exe			Normal	
	LocalSystem	0			
SQL Server Browser	SQLBrowser		Stopped	Disabled	Own
	Process	"c:\program files (x86)\microsoft sql server\90\shared\sqlbrowser.exe" Normal		NT AUTHORITY\LOCAL	SERVICE 0
SQL Server Agent (MSSQLSERVER)	SQLSERVERAGENT		Stopped	Manual	Own Process
	files\microsoft sql server\mssql10.mssqlserver\mssql\bin\sqlagent.exe" -i			Normal	LocalSystem
	Normal	LocalSystem	0		
SQL Server VSS Writer	SQLWriter	Stopped	Disabled	Own Process	
	Process	"c:\program files\microsoft sql server\90\shared\sqlwriter.exe"		Normal	LocalSystem
	Normal	LocalSystem	0		
SSDP Discovery	SSDPSRV	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k localservice			Normal	
	NT AUTHORITY\LocalService	0			
Secure Socket Tunneling Protocol Service	SstpSvc	Running	Manual	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	Normal	NT Authority\LocalService	0		
Microsoft Software Shadow Copy Provider	swprv		Stopped	Manual	
	Own Process	c:\windows\system32\svchost.exe -k swprv		Normal	
	Normal	LocalSystem	0		
HP ProLiant System Shutdown Service	sysdown	Running	Auto	Own Process	
	Own Process	c:\windows\system32\sysdown.exe		Normal	LocalSystem
	Normal	LocalSystem	0		
Superfetch SysMain	Stopped	Disabled	Share Process		
	c:\windows\system32\svchost.exe -k			Normal	
	localsystemnetworkrestricted	Ignore	LocalSystem	0	
Telephony TapiSrv	Running	Manual	Own Process		
	c:\windows\system32\svchost.exe -k tapisrv		Normal	NT	
	AUTHORITY\NetworkService	0			
TPM Base Services	TBS	Stopped	Auto	Share Process	
	c:\windows\system32\svchost.exe -k localservice			Normal	
	NT AUTHORITY\LocalService	0			
Terminal Services	TermService	Running	Auto	Share Process	
	Process	c:\windows\system32\svchost.exe -k networkservice		Normal	
	NT Authority\NetworkService	0			
Themes	Themes	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs			Normal	
	LocalSystem	0			
Thread Ordering Server	THREADORDER	Stopped	Manual	Share Process	
	Process	c:\windows\system32\svchost.exe -k		Normal	
	localservice	Normal	NT AUTHORITY\LocalService	0	
Distributed Link Tracking Client	TrkWks	Running	Auto	Share Process	
	Process	c:\windows\system32\svchost.exe -k		Normal	
	localsystemnetworkrestricted	Normal	LocalSystem	0	
Windows Modules Installer	TrustedInstaller	Stopped	Manual	Own Process	
	Own Process	c:\windows\servicing\trustedinstaller.exe		Normal	LocalSystem
	Normal	LocalSystem	0		
Interactive Services Detection	UI0Detect	Stopped	Manual	Own Process	
	Process	c:\windows\system32\ui0detect.exe		Normal	
	LocalSystem	0			
Terminal Services UserMode Port Redirector				UmRdpService	
	Running	Manual	Share Process		
	c:\windows\system32\svchost.exe -k			Normal	LocalSystem
	localsystemnetworkrestricted	Normal	LocalSystem	0	
UPnP Device Host	upnphost	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k localservice			Normal	
	NT AUTHORITY\LocalService	0			
Desktop Window Manager Session Manager	UxSms	Stopped	Disabled	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	localsystemnetworkrestricted	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	
	Process	c:\windows\system32\vssvc.exe		Normal	LocalSystem
	0				
Windows Time	W32Time	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k localservice			Normal	
	NT AUTHORITY\LocalService	0			
Windows Color System	WcsPlugInService	Stopped	Manual	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	wcssvc	Normal	NT AUTHORITY\LocalService	0	
Diagnostic Service Host	WdiServiceHost	Stopped	Manual	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	wdisvc	Normal	NT AUTHORITY\LocalService	0	
Diagnostic System Host	WdiSystemHost	Running	Manual	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	localsystemnetworkrestricted	Normal	LocalSystem	0	
Windows Event Collector	Wecevc	Stopped	Manual	Share Process	
	Process	c:\windows\system32\svchost.exe -k networkservice		Normal	
	NT AUTHORITY\NetworkService	0			
Problem Reports and Solutions Control Panel Support	werplsupport	Stopped	Manual	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs			Normal	
	LocalSystem	0			
Windows Error Reporting Service	WerSvc	Stopped	Disabled	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	wersvcgroup	Ignore	LocalSystem	0	
WinHTTP Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Stopped	Manual	Share Process	
	Process	c:\windows\system32\svchost.exe -k localservice		Normal	
	NT AUTHORITY\LocalService	0			
Windows Management Instrumentation	Winmgmt	Running	Auto	Share Process	
	Share Process	c:\windows\system32\svchost.exe -k		Normal	
	netsvcs	Ignore	LocalSystem	0	
Windows Remote Management (WS-Management)	WinRM	Running	Auto	Share Process	
	Process	c:\windows\system32\svchost.exe -k networkservice		Normal	
	NT AUTHORITY\NetworkService	0			
WMI Performance Adapter	wmiApSrv	Stopped	Manual	Own Process	
	Process	c:\windows\system32\wbem\wmiaprv.exe		Normal	
	LocalSystem	0			

Portable Device Enumerator Service	WPDBusEnum	Stopped			Start Menu\Programs\Microsoft SQL Server 2008	Public:Start
Manual Share Process					Menu\Programs\Microsoft SQL Server 2008	Public
c:\windows\system32\svchost.exe -k					Start Menu\Programs\Microsoft SQL Server 2008\Analysis Services	
localsystemnetworkrestricted	Normal	LocalSystem	0		Public:Start Menu\Programs\Microsoft SQL Server	
Windows Update	wuauerv	Stopped	Disabled	Share Process	2008\Analysis Services	Public
c:\windows\system32\svchost.exe -k netsvcs	Normal				Start Menu\Programs\Microsoft SQL Server 2008\Configuration Tools	
LocalSystem	0				Public:Start Menu\Programs\Microsoft SQL Server	
Windows Driver Foundation - User-mode Driver Framework				wudfsvc	2008\Configuration Tools	Public
Stopped Manual Share Process					Start Menu\Programs\Microsoft SQL Server 2008\Documentation and	
c:\windows\system32\svchost.exe -k					Tutorials	Public:Start Menu\Programs\Microsoft SQL Server
localsystemnetworkrestricted	Normal	LocalSystem	0		2008\Documentation and Tutorials	Public
					Start Menu\Programs\Microsoft SQL Server 2008\Integration Services	
					Public:Start Menu\Programs\Microsoft SQL Server	
					2008\Integration Services	Public
[Program Groups]					Start Menu\Programs\Microsoft SQL Server 2008\Performance Tools	
Group Name	Name	User Name			Public:Start Menu\Programs\Microsoft SQL Server	
Start MenuDefault:Start Menu	Default	Default			2008\Performance Tools	Public
Start Menu\Programs	Default:Start Menu\Programs	Default			Start Menu\Programs\Startup	Public:Start Menu\Programs\Startup
Start Menu\Programs\Accessories	Default:Start	Default:Start			Public	
Menu\Programs\Accessories	Default				Start Menu\Programs\Windows PowerShell 1.0	Public:Start
Start Menu\Programs\Accessories\Accessibility	Default:Start	Default:Start			Menu\Programs\Windows PowerShell 1.0	Public
Menu\Programs\Accessories\Accessibility	Default				Start Menu\FUSE\Administrator:Start Menu	FUSE\Administrator
Start Menu\Programs\Accessories\System Tools	Default:Start	Default:Start			Start Menu\Programs	FUSE\Administrator:Start Menu\Programs
Menu\Programs\Accessories\System Tools	Default				FUSE\Administrator	
Start Menu\Programs\Maintenance	Default:Start	Default:Start			Start Menu\Programs\Accessories	FUSE\Administrator:Start
Menu\Programs\Maintenance	Default				Menu\Programs\Accessories	FUSE\Administrator
Start MenuPublic:Start Menu	Public				Start Menu\Programs\Accessories\Accessibility	FUSE\Administrator:Start
Start Menu\Programs\Accessories	Public:Start	Public:Start			Menu\Programs\Accessories\Accessibility	FUSE\Administrator
Menu\Programs\Accessories	Public				Start Menu\Programs\Accessories\System Tools	
Start Menu\Programs\Accessories\Accessibility	Public:Start	Public:Start			FUSE\Administrator:Start Menu\Programs\Accessories\System	
Menu\Programs\Accessories\Accessibility	Public				Tools	FUSE\Administrator
Start Menu\Programs\Accessories\System Tools	Public:Start	Public:Start			Start Menu\Programs\Administrative Tools	FUSE\Administrator:Start
Menu\Programs\Accessories\System Tools	Public				Menu\Programs\Administrative Tools	FUSE\Administrator
Start Menu\Programs\Administrative Tools	Public:Start	Public:Start			Start Menu\Programs\Maintenance	FUSE\Administrator:Start
Menu\Programs\Administrative Tools	Public				Menu\Programs\Maintenance	FUSE\Administrator
Start Menu\Programs\Administrative Tools(Terminal Services					Start Menu\Programs\Startup	FUSE\Administrator:Start
Public:Start Menu\Programs\Administrative Tools(Terminal					Menu\Programs\Startup	FUSE\Administrator
Services	Public				Start Menu\Programs\StepMaster	FUSE\Administrator:Start
Start Menu\Programs\Extras and Upgrades	Public:Start	Public:Start			Menu\Programs\StepMaster	FUSE\Administrator
Menu\Programs\Extras and Upgrades	Public					
Start Menu\Programs\Fusion-io	Public:Start Menu\Programs\Fusion-io	Public:Start			[Startup Programs]	
Public					Program	Command
Start Menu\Programs\Fusion-io\joManager	Public:Start	Public:Start			User Name	Location
Menu\Programs\Fusion-io\joManager	Public					
Start Menu\Programs\HP System Tools	Public:Start Menu\Programs\HP	Public:Start			[OLE Registration]	
System Tools	Public				Object	Local Server
Start Menu\Programs\HP System Tools\HP Array Configuration Utility					WordPad Document	"%programfiles%\windows
Public:Start Menu\Programs\HP System Tools\HP Array					nt\accessories\wordpad.exe"	
Configuration Utility	Public				Package	Not Available
Start Menu\Programs\HP System Tools\HP Array Diagnostic Utility					[Windows Error Reporting]	
Public:Start Menu\Programs\HP System Tools\HP Array					Time	Type
Diagnostics Utility	Public				Details	
Start Menu\Programs\Maintenance	Public:Start	Public:Start				
Menu\Programs\Maintenance	Public					

# Appendix B: Database Build Scripts

## B.1 CreateDatabase.sql

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

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

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

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



```

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

```

```

(
    NAME = tpch100g_load13,
    FILENAME = 'z:\load\tpch100g_load13.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load14,
    FILENAME = 'z:\load\tpch100g_load14.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load15,
    FILENAME = 'z:\load\tpch100g_load15.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10),
(
    NAME = tpch100g_load16,
    FILENAME = 'z:\load\tpch100g_load16.mdf',
    SIZE = 11000MB,
    FILEGROWTH = 10)
LOG ON
(
    NAME = tpch100g_Log1,
    FILENAME = 'C:\tpch100g_Log1.mdf',
    SIZE = 20000MB,
    FILEGROWTH = 0MB)

```

## B.2 CreateTables.sql

```

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

```

```

create table PART
(P_PARTKEY int not null,
P_NAME varchar(55) not null,
P_MFGR char(25) not null,
P_BRAND char(10) not null,
P_TYPE varchar(25) not null,
P_SIZE int not null,
P_CONTAINER char(10) not null,
P_RETAILPRICE float not null,
P_COMMENT varchar(23) not null)
on LOAD_FG

create table SUPPLIER
(S_SUPPKEY int not null,
S_NAME char(25) not null,
S_ADDRESS varchar(40) not null,
S_NATIONKEY int not null,
S_PHONE char(15) not null,
S_ACCTBAL float not null,
S_COMMENT varchar(101) not null)
on LOAD_FG

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

create table CUSTOMER
(C_CUSTKEY int not null,
C_NAME varchar(25) not null,
C_ADDRESS varchar(40) not null,
C_NATIONKEY int not null,

```

```

        C_PHONE      char(15)      not null,
        C_ACCTBAL    float          not null,
        C_MKTSEGMENT char(10)      not null,
        C_COMMENT    varchar(117)   not null)
on LOAD_FG

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

create table LINEITEM
(L_ORDERKEY      bigint          not null,
 L_PARTKEY       int             not null,
 L_SUPPKEY       int             not null,
 L_LINENUMBER    int             not null,
 L_QUANTITY      float          not null,
 L_EXTENDEDPRICE float          not null,
 L_DISCOUNT     float          not null,
 L_TAX           float          not null,
 L_RETURNFLAG    char(1)         not null,
 L_LINestatus    char(1)         not null,
 L_SHIPDATE      date            not null,
 L_COMMITDATE    date            not null,
 L_RECEIPTDATE   date            not null,
 L_SHIPINSTRUCT  char(25)       not null,
 L_SHIPMODE      char(10)       not null,
 L_COMMENT       varchar(44)     not null)
on LOAD_FG

create table NATION
(N_NATIONKEY     int             not null,
 N_NAME          char(25)        not null,
 N_REGIONKEY    int             not null,
 N_COMMENT       varchar(152)    not null)
on LOAD_FG

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

```

### B.3 CreateIndexes\_1.sql

```

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

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

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

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

```

```

ON DATA_FG

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

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

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

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

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

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

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

```

### B.4 CreateIndexes\_2.sql

```

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

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

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

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

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

```

### B.5 CreateFK.sql

```

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

```

```

-- Copyright Microsoft, 2006 - 2009
--

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

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

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

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

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

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

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

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

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

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

```

```

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

```

## B.6 BackupDatabase.sql

```

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

```

## B.7 RestoreDatabase.sql

```

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

```

## B.8 MoveTempDB.sql

```

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

```

```

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

```

```

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

```

```

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

```

```

ALTER DATABASE tempdb

```

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

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

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

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

## B.9 DelLoadFg.sql

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

# Appendix C: Query Text and Output

## C.1 Qualification Queries and Output

### Qualification Query 1

-- using default substitutions

/\* TPC\_H Query 1 - Pricing Summary Report \*/

```

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

L_RETURNFLAG L_LINESTATUS SUM_QTY
SUM_BASE_PRICE SUM_DISC_PRICE SUM_CHARGE
AVG_QTY AVG_PRICE AVG_DISC
COUNT_ORDER

```

```

-----
A   F   37734107.000000   56586554400.730301
53758257134.870041   55909065222.827415   25.522006
38273.129735         0.049985         1478493
N   F   991417.000000    1487504710.380000
1413082168.054097   1469649223.194375   25.516472
38284.467761        0.050093         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)

### Qualification Query 2

-- using default substitutions

/\* TPC\_H Query 2 - Minimum Cost Supplier \*/

```

SELECT  TOP 100
        S_ACCTBAL,
        S_NAME,
        N_NAME,
        P_PARTKEY,
        P_MFGR,
        S_ADDRESS,
        S_PHONE,
        S_COMMENT
FROM    PART,
        SUPPLIER,
        PARTSUPP,
        NATION,
        REGION
WHERE   P_PARTKEY = PS_PARTKEY AND
        S_SUPPKEY = PS_SUPPKEY AND
        P_SIZE = 15 AND
        P_TYPE LIKE '%%BRASS' AND
        S_NATIONKEY = N_NATIONKEY AND
        N_REGIONKEY = R_REGIONKEY AND
        R_NAME = 'EUROPE' AND
        PS_SUPPLYCOST = (
        SELECT
        MIN(PS_SUPPLYCOST)
        FROM  PARTSUPP,
        SUPPLIER,
        NATION,
        REGION
        WHERE P_PARTKEY
        = PS_PARTKEY AND
        S_SUPPKEY
        = PS_SUPPKEY AND
        S_NATIONKEY
        = N_NATIONKEY AND
        N_REGIONKEY
        = R_REGIONKEY AND
        R_NAME
        = 'EUROPE'
        )
ORDER  BY      S_ACCTBAL DESC,
               N_NAME,
               S_NAME,
               P_PARTKEY
        S_ACCTBAL S_NAME N_NAME
P_PARTKEY P_MFGR S_ADDRESS
S_PHONE S_COMMENT

```

```

-----
9938.530000 Supplier#000005359 UNITED KINGDOM
185358 Manufacturer#4 QKuHYh,vZGiwu2FWEJoLDx04
33-429-790-6131 blithely silent pinto beans are furiously. slyly final deposits
across
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 J8fcXWstqM 17-813-
485-8637 never silent deposits integrate furiously blit
9870.780000 Supplier#000001286 GERMANY
81285 Manufacturer#2
YKA.E2fjiVd7eUrzp2Ei8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special.
9870.780000 Supplier#000001286 GERMANY
181285 Manufacturer#4
YKA.E2fjiVd7eUrzp2Ei8j1QxGo2DFnosaTEH 17-516-924-4574 final
theodolites cajole slyly special.
9852.520000 Supplier#000008973 RUSSIA 18972
Manufacturer#2 t5L67YdBYH6o,Vz24jpDyQ9 32-188-
594-7038 quickly regular instructions wake-- carefully unusual braids into
the expres
9847.830000 Supplier#000008097 RUSSIA 130557
Manufacturer#2 xMe97bpE69NzdWLoX 32-375-640-
3593 slyly regular dependencies sleep slyly furiously express dep
9847.570000 Supplier#000006345 FRANCE 86344
Manufacturer#1 VSt3rzK3qG698u6ld8HhOBByvrTcSTsvQIDQDag
16-886-766-7945 silent pinto beans should have to snooze carefully along
the final reqes
9847.570000 Supplier#000006345 FRANCE
173827 Manufacturer#2
VSt3rzK3qG698u6ld8HhOBByvrTcSTsvQIDQDag 16-886-766-7945 silent
pinto beans should have to snooze carefully along the final reqes
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 Y28ITVeYrIT3kiGdV2K8ISZ
V2UgT5H1Otz 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 notormis until
the slyly pending
7852.450000 Supplier#000005864 RUSSIA 8363
Manufacturer#4 WCNfBPZcSxh3h,c 32-454-883-
3821 blithely regular deposits
7850.660000 Supplier#000001518 UNITED KINGDOM
86501 Manufacturer#1 ONda3YJHJKJOC 33-
730-383-3892 furiously final accounts wake carefully idle requests. even
dolphins wake acc
7843.520000 Supplier#000006683 FRANCE 11680
Manufacturer#4 2Z0JGkiV01Y00oCFwUGfvlbhzCdy 16-464-
517-8943 carefully bold accounts doub

```

(100 row(s) affected)

### Qualification Query 3

-- using default substitutions

/\* TPC\_H Query 3 - Shipping Priority \*/

```

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

```

```

ORDERS,
LINEITEM
WHERE C_MKTSEGMENT = 'BUILDING' AND
C_CUSTKEY = O_CUSTKEY AND
L_ORDERKEY = O_ORDERKEY AND
O_ORDERDATE < '1995-03-15' AND
L_SHIPDATE > '1995-03-15'
GROUP BY L_ORDERKEY,
O_ORDERDATE,
O_SHIPPRIORITY
ORDER BY REVENUE DESC,
O_ORDERDATE

```

```

L_ORDERKEY REVENUE O_ORDERDATE
O_SHIPPRIORITY
-----

```

```

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

```

(10 row(s) affected)

### Qualification Query 4

-- using default substitutions

/\* TPC\_H Query 4 - Order Priority Checking \*/

```

SELECT O_ORDERPRIORITY,
COUNT(*) AS ORDER_COUNT
FROM ORDERS
WHERE O_ORDERDATE >= '1993-07-01' AND
O_ORDERDATE < dateadd(mm, 3, cast('1993-07-01' as
date)) AND
EXISTS (
SELECT *
FROM LINEITEM
WHERE L_ORDERKEY
= O_ORDERKEY AND
L_COMMITDATE
< L_RECEIPTDATE
)
GROUP BY O_ORDERPRIORITY
ORDER BY O_ORDERPRIORITY

```

```

O_ORDERPRIORITY ORDER_COUNT
-----

```

```

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

```

(5 row(s) affected)

### Qualification Query 5

-- using default substitutions

/\* TPC\_H Query 5 - Local Supplier Volume \*/

```
SELECT N_NAME,
SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)) AS
REVENUE
FROM CUSTMER,
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(Y, 1, cast ('1994-01-01' as
```

```
date))
GROUP BY N_NAME
ORDER BY REVENUE DESC
```

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

(5 row(s) affected)

### Qualification Query 6

-- using default substitutions

/\* TPC\_H Query 6 - Forecasting Revenue Change \*/

```
SELECT SUM(L_EXTENDEDPRI*L_DISCOUNT) AS
REVENUE
FROM LINEITEM
WHERE L_SHIPDATE >= '1994-01-01' AND
L_SHIPDATE < dateadd (yy, 1, cast('1994-01-01' as
date)) AND
L_DISCOUNT BETWEEN 0.06 - 0.01 AND 0.06 + 0.01
AND
L_QUANTITY < 24
```

```
REVENUE
-----
123141078.228300
```

(1 row(s) affected)

### Qualification Query 7

-- using default substitutions

/\* TPC\_H Query 7 - Volume Shipping \*/

```
SELECT SUPP_NATION,
CUST_NATION,
```

```
L_YEAR,
SUM(VOLUME) AS REVENUE
FROM ( SELECT N1.N_NAME
AS SUPP_NATION,
N2.N_NAME
AS CUST_NATION,
datepart(yy,L_SHIPDATE)
AS L_YEAR,
L_EXTENDEDPRI*(1-L_DISCOUNT)
AS VOLUME
FROM SUPPLIER,
LINEITEM,
ORDERS,
CUSTOMER,
NATION N1,
NATION N2
WHERE S_SUPPKEY = L_SUPPKEY
```

```
AND
O_ORDERKEY = L_ORDERKEY
```

```
AND
C_CUSTKEY = O_CUSTKEY
```

```
AND
S_NATIONKEY =
```

```
N1.N_NATIONKEY AND
C_NATIONKEY =
```

```
N2.N_NATIONKEY AND
(N1.N_NAME =
```

```
'FRANCE' AND N2.N_NAME = 'GERMANY')
OR
(N1.N_NAME =
```

```
'GERMANY' AND N2.N_NAME = 'FRANCE')
) AND
L_SHIPDATE BETWEEN '1995-
```

```
01-01' AND '1996-12-31'
```

```
)
GROUP BY AS SHIPPING
SUPP_NATION,
```

```
CUST_NATION,
```

```
L_YEAR
```

```
ORDER BY SUPP_NATION,
```

```
CUST_NATION,
```

```
L_YEAR
```

```
SUPP_NATION CUST_NATION L_YEAR
REVENUE
```

```
-----
```

```
FRANCE GERMANY 1995 54639732.733600
```

```
FRANCE GERMANY 1996 54633083.307600
```

```
GERMANY FRANCE 1995 52531746.669700
```

```
GERMANY FRANCE 1996 52520549.022400
```

```
(4 row(s) affected)
```

### Qualification Query 8

-- using default substitutions

/\* TPC\_H Query 8 - National Market Share \*/

```
SELECT O_YEAR,
SUM(CASE WHEN NATION = 'BRAZIL'
THEN VOLUME
ELSE 0
END) / SUM(VOLUME) AS
```

```
MKT_SHARE
```

```
FROM ( SELECT datepart(yy,O_ORDERDATE)
```

```
AS O_YEAR,
```

```
L_EXTENDEDPRI * (1-
```

```
L_DISCOUNT) AS VOLUME,
```

```

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)

```

### 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
) AS PROFIT
GROUP BY NATION,
O_YEAR
ORDER BY NATION,
O_YEAR DESC
NATION O_YEAR SUM_PROFIT
-----
ALGERIA 1998 31342867.234500
ALGERIA 1997 57138193.023300
ALGERIA 1996 56140140.133000
ALGERIA 1995 53051469.653400
ALGERIA 1994 53867582.128600
ALGERIA 1993 54942718.132400
ALGERIA 1992 54628034.712700
ARGENTINA 1998 30211185.708100
ARGENTINA 1997 50805741.752300
ARGENTINA 1996 51923746.575500
ARGENTINA 1995 49298625.766600
ARGENTINA 1994 50835610.109500
ARGENTINA 1993 51646079.177500
ARGENTINA 1992 50410314.994800
BRAZIL 1998 27217924.383200
BRAZIL 1997 48378669.198900
BRAZIL 1996 50482870.357200
BRAZIL 1995 47623383.634900
BRAZIL 1994 47840165.725600
BRAZIL 1993 49054694.035100
BRAZIL 1992 48667639.084200
CANADA 1998 30379833.768500
CANADA 1997 50465052.311400
CANADA 1996 52560501.390400
CANADA 1995 52375332.809200
CANADA 1994 52600364.658700

```

..... additional rows deleted .....

```

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

```

(175 row(s) affected)

### Qualification Query 10

```

-- using default substitutions
/* TPC_H Query 10 - Returned Item Reporting */
SELECT TOP 20
C_CUSTKEY,
C_NAME,
SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)) AS
REVENUE,

```



```

C_ACCTBAL,
N_NAME,
C_ADDRESS,
C_PHONE,
C_COMMENT
FROM CUSTOMER,
ORDERS,
LINEITEM,
NATION
WHERE C_CUSTKEY = O_CUSTKEY AND
L_ORDERKEY = O_ORDERKEY AND
O_ORDERDATE >= '1993-10-01'
AND
O_ORDERDATE < dateadd(mm, 3, cast('1993-10-01' as date
))
AND
L_RETURNFLAG = 'R' AND
C_NATIONKEY = N_NATIONKEY
GROUP BY C_CUSTKEY,
C_NAME,
C_ACCTBAL,
C_PHONE,
N_NAME,
C_ADDRESS,
C_COMMENT
ORDER BY REVENUE DESC
C_CUSTKEY C_NAME REVENUE C_ACCTBAL
N_NAME C_ADDRESS C_PHONE
C_COMMENT
-----

```

```

-----
57040 Customer#000057040 734235.245500 632.870000
JAPAN EioyZj4fpp 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 01e9CILnNtfoQYmZj 33-593-
865-6378 accounts doze blithely! enticing, final deposits sleep blithely
special accounts. slyly express accounts pla
125341 Customer#000125341 633508.086000 4983.510000
GERMANY S29ODD6bceU8QSuEJznkNaK 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 ne7zV5fDrmiq1oK09wV7pxqCglc 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 Zgy4s50l2GKN4pLDPBU8m342glw6R 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#00000922 576767.533300 3869.250000
GERMANY Az9RFaut7NkPnc5zSD2PwHgVvr4jRzq 17-
945-916-9648 boldly final requests cajole blith
147946 Customer#000147946 576455.132000 2030.130000
ALGERIA iANyZHjghyy7AjahOpTrYyHJ 10-886-956-
3143 furiously even accounts are blithely above the furiousl
115640 Customer#000115640 569341.193300 6436.100000
ARGENTINA Vtgifa9qI 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 ChqEoK43OysjdHbtKCp6dKqjNyyvi9 19-
955-562-2398 regular, unusual dependencies boost slyly; ironic attainments
nag fluffily into the unusual packages?
146149 Customer#000146149 557254.986500 1791.550000
ROMANIA s87fvzFQpU 29-744-164-6487
silent, unusual requests detect quickly slyly regul
52528 Customer#000052528 556397.350900 551.790000
ARGENTINA NFztyTOR10UOJ 11-208-192-
3205 unusual requests detect. slyly dogged theodolites use slyly. deposit
23431 Customer#000023431 554269.536000 3381.860000
ROMANIA HgiV0phqhaIa9aydNoIlb 29-915-458-
2654 instructions nag quickly. furiously bold accounts cajol

```

(20 row(s) affected)

### Qualification Query 11

-- using default substitutions

/\* TPC\_H Query 11 - Important Stock Identification \*/

```

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

```

```

129760 17538456.860000
166726 16503353.920000
191287 16474801.970000
161758 16101755.540000
34452 15983844.720000
139035 15907078.340000
9403 15451755.620000
154358 15212937.880000
38823 15064802.860000
85606 15053957.150000
33354 14408297.400000
154747 14407580.680000
82865 14235489.780000
76094 14094247.040000
222 13937777.740000
121271 13908336.000000
55221 13716120.470000
22819 13666434.280000
76281 13646853.680000
85298 13581154.930000
85158 13554904.000000
139684 13535538.720000
31034 13498025.250000

```

... additional rows deleted ...

```

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

```

(1048 row(s) affected)

### Qualification Query 12

-- using default substitutions

/\* TPC\_H Query 12 - Shipping Modes and Order Priority \*/

```

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

```

```

-----
MAIL 6202 9324
SHIP 6200 9262

```

(2 row(s) affected)

### Qualification Query 13

-- using default substitutions

/\* TPC\_H Query 13 - Customer Distribution \*/

```

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

```

C\_COUNT CUSTDIST

```

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

```

40 4  
 38 4  
 39 2  
 41 1

(42 row(s) affected)

### Qualification Query 14

-- using default substitutions

/\* TPC\_H Query 14 - Promotion Effect \*/

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

PROMO\_REVENUE  
 -----  
 16.380779

(1 row(s) affected)

### Qualification Query 15

-- using default substitutions

/\* TPC\_H Query 15 - Create View for Top Supplier Query \*/

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

/\* TPC\_H Query 15 - Top Supplier \*/

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

```
)
ORDER BY S_SUPPKEY
```

DROP VIEW REVENUE0

```
S_SUPPKEY S_NAME S_ADDRESS
S_PHONE TOTAL_REVENUE
```

```
-----
8449 Supplier#000008449 Wp34zim9qYFbVctdW
20-469-856-8873 1772627.208700
```

(1 row(s) affected)

### Qualification Query 16

-- using default substitutions

/\* TPC\_H Query 16 - Parts/Supplier Relationship \*/

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

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

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

.... Additional rows deleted .....

```

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

```

(18314 row(s) affected)

### Qualification Query 17

-- using default substitutions

/\* TPC\_H Query 17 - Small-Quantity-Order Revenue \*/

```

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

```

AVG\_YEARLY

-----

348406.054286

(1 row(s) affected)

### Qualification Query 18

-- using default substitutions

/\* TPC\_H Query 18 - Large Volume Customer \*/

```

SELECT TOP 100
C_NAME,
C_CUSTKEY,
O_ORDERKEY,
O_ORDERDATE,
O_TOTALPRICE,
SUM(L_QUANTITY)
FROM CUSTOMER,
ORDERS,
LINEITEM
WHERE O_ORDERKEY IN ( SELECT
L_ORDERKEY
FROM
LINEITEM
GROUP BY
L_ORDERKEY HAVING SUM(L_QUANTITY) > 300
)
AND
C_CUSTKEY = O_CUSTKEY
O_ORDERKEY = L_ORDERKEY
GROUP BY
C_NAME,
C_CUSTKEY,
O_ORDERKEY,
O_ORDERDATE,

```

```

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)

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

REVENUE

-----  
3083843.057800

(1 row(s) affected)

### Qualification Query 20

-- using default substitutions

/\* TPC\_H Query 20 - Potential Part Promotion \*/

```

SELECT S_NAME,
       S_ADDRESS
FROM   SUPPLIER,
       NATION
WHERE  S_SUPPKEY IN ( SELECT
                       PS_SUPPKEY
                       PARTSUPP
                       PS_PARTKEY in ( SELECT P_PARTKEY
                                       FROM PART
                                       WHERE P_NAME like 'forest%'
                                       )
                       AND
                       PS_AVAILQTY
                       > ( SELECT 0.5 * sum(L_QUANTITY)
                           FROM LINEITEM
                           WHERE L_PARTKEY =
                               PS_PARTKEY
                               AND
                               L_SUPPKEY =
                               PS_SUPPKEY
                               AND
                               L_SHIPDATE >= '1994-
                               01-01'
                               AND
                               L_SHIPDATE <
                               dateadd(yy,1,cast('1994-01-01' as date))
                           )
                       )
       AND
       S_NATIONKEY = N_NATIONKEY
       AND
       N_NAME = 'CANADA'
ORDER  BY S_NAME
S_NAME S_ADDRESS
-----
Supplier#00000020 iybAE,RmTymrZVYaFZva2SHj
Supplier#00000091 YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#00000197 YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#00000226 83qOdU2EYRdPQAQhEtn GRZEd
Supplier#00000285 Br7eInnt1yxrw6lmgpJ7YdhFDjuBf
Supplier#00000378 FfbhyCxWvcPrO8ltp9
Supplier#00000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#00000530 OqwCMwobkY OcmLyfRXlagA8ukENJv,
Supplier#00000688 D fw5ocppmZpYBBIP1718hCihLDZ5KhKX
Supplier#00000710 fl9YPvOyb QoYwjKC,oPycpGfieBAcwKJo
Supplier#00000736 l6i2nMwVuovfKnuVgaSGK2rDy65DIAFLegiL7
Supplier#00000761 zISLeLQUj2XrvTTFnv7WAcYZGvvMTx882d4
Supplier#00000884 bmhEShejaS
Supplier#00000887 urEaTejH5POADP2ARrf
Supplier#00000935 ij98czM 2KzWe7dTOx8sq0UfCdvrx
Supplier#00000975 .AC e,tBpNwKb5xMUzeohxIRn, hdZJo73gFQF8y
Supplier#000001263 rQWr6n8ZhB2AiIDlvo5lo
... additional rows deleted ....
Supplier#000009812 APFRMy3lCbgFga53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmnUuoeyy7v
Supplier#000009869 ucLqzrpBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdpAHzr1t,UQFZE
Supplier#000009974 7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

```

(204 row(s) affected)

### Qualification Query 21

-- using default substitutions

/\* TPC\_H Query 21 - Suppliers Who Kept Orders Waiting \*/

```

SELECT TOP 100
       S_NAME,
       COUNT(*) AS NUMWAIT
FROM   SUPPLIER,
       LINEITEM L1,
       ORDERS,
       NATION
WHERE  S_SUPPKEY = L1.L_SUPPKEY
       AND
       O_ORDERKEY = L1.L_ORDERKEY
       AND
       O_ORDERSTATUS = 'F'
       AND
       L1.L_RECEIPTDATE > L1.L_COMMITDATE
       AND
       EXISTS ( SELECT *
                FROM LINEITEM L2
                WHERE L2.L_ORDERKEY =
                    L1.L_ORDERKEY
                    AND
                    L2.L_SUPPKEY <>
                    L1.L_SUPPKEY
                )
       AND
       NOT EXISTS ( SELECT *
                    FROM LINEITEM L3
                    WHERE L3.L_ORDERKEY
                        = L1.L_ORDERKEY
                        AND
                        L3.L_SUPPKEY
                        <> L1.L_SUPPKEY
                    )
       AND
       L3.L_RECEIPTDATE > L3.L_COMMITDATE
       )
GROUP  BY S_NAME
ORDER  BY NUMWAIT DESC,
         S_NAME
S_NAME NUMWAIT
-----
Supplier#000002829 20
Supplier#000005808 18
Supplier#00000262 17
Supplier#00000496 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#00000811 12
Supplier#00000821 12

```

```

Supplier#00001337 12
Supplier#00001916 12
Supplier#00001925 12
Supplier#00002039 12
Supplier#00002357 12
Supplier#00002483 12

```

(100 row(s) affected)

## Qualification Query 22

-- using default substitutions

/\* TPC\_H Query 22 - Global Sales Opportunity \*/

```

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

```

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

(7 row(s) affected)

# Appendix D: Seeds and Query Substitution Parameters

## Stream0 Seed : 902230656

14	1993-04-01					
2	27	COPPER	AFRICA			
9	papaya					
20	navajo	1996-01-01	VIETNAM			
6	1997-01-01	0.08	25			
17	Brand#31	WRAP CASE				
18	312					
8	VIETNAM	ASIA	LARGE BRUSHED COPPER			
21	ROMANIA					
13	express	packages				
3	BUILDING	1995-03-04				
22	17	34	32	26	10	18
	25					
16	Brand#13	STANDARD POLISHED	11	31		
	35	21	26	13	34	6
4	1993-08-01					
11	BRAZIL	0.0000010000				
15	1997-06-01					
1	113					
10	1994-12-01					
19	Brand#54	Brand#45	Brand#14	7	17	23
5	AMERICA	1997-01-01				
7	SAUDI ARABIA	VIETNAM				
12	RAIL	SHIP	1993-01-01			

## Stream1 Seed : 902230657

21	JAPAN					
3	MACHINERY	1995-03-20				
18	313					
5	ASIA	1997-01-01				
11	MOROCCO	0.0000010000				
7	JAPAN	JORDAN				
6	1997-01-01	0.06	25			
20	aquamarine	1995-01-01			IRAQ	
17	Brand#43	WRAP BAG				
12	AIR	SHIP	1993-01-01			
16	Brand#44	MEDIUM BRUSHED	44	27		
	22	23	47	40	10	6
15	1995-02-01					
13	express	packages				
10	1993-10-01					
2	14	STEEL	EUROPE			
8	JORDAN	MIDDLE EAST	LARGE PLATED COPPER			
14	1993-07-01					
19	Brand#51	Brand#33	Brand#53	2	18	30
9	navajo					
22	21	24	19	14	13	34
	29					
1	61					
4	1996-03-01					

## Stream2 Seed : 902230658

6	1993-01-01	0.03	24			
17	Brand#45	WRAP PKG				
14	1993-10-01					
16	Brand#34	PROMO BURNISHED	27	4		
	9	13	3	21	37	46
19	Brand#53	Brand#11	Brand#53	8	19	26
10	1994-07-01					
9	medium					
2	2	BRASS	AFRICA			
15	1997-09-01					
8	ETHIOPIA	AFRICA	LARGE ANODIZED COPPER			
5	EUROPE	1993-01-01				
22	33	22	20	28	17	25
	29					
12	SHIP	REG AIR	1993-01-01			
7	EGYPT	ETHIOPIA				
13	special	packages				
18	315					
1	69					
4	1993-11-01					
20	lace	1993-01-01	ALGERIA			
3	BUILDING	1995-03-06				
11	CANADA	0.0000010000				
21	EGYPT					

## Stream3 Seed : 902230659

8	RUSSIA	EUROPE	MEDIUM BRUSHED TIN			
5	MIDDLE EAST	1993-01-01				
4	1996-06-01					
6	1993-01-01	0.08	25			
17	Brand#42	SM CASE				
7	VIETNAM	RUSSIA				
1	77					
18	313					
22	24	33	15	23	34	18
	31					
14	1994-02-01					
9	lawn					
10	1993-04-01					
15	1995-06-01					
11	MOZAMBIQUE	0.0000010000				
20	sky	1997-01-01	MOROCCO			
2	40	NICKEL	EUROPE			
21	VIETNAM					
19	Brand#15	Brand#54	Brand#42	3	20	23
13	special	packages				
16	Brand#14	SMALL PLATED	18	46	26	
	27	38	31	6	14	
12	FOB	REG AIR	1994-01-01			
3	HOUSEHOLD	1995-03-22				



**Stream4 Seed : 902230660**

```

5 AFRICA 1993-01-01
21 JORDAN
14 1994-05-01
19 Brand#12 Brand#32 Brand#41 8 10 30
15 1993-03-01
17 Brand#44 SM BAG
12 MAIL REG AIR 1994-01-01
6 1993-01-01 0.06 25
4 1994-03-01
9 hot
8 KENYA AFRICA MEDIUM PLATED TIN
16 Brand#44 LARGE BRUSHED 21 14 28
45 8 7 39 10
11 EGYPT 0.0000010000
2 28 TIN AMERICA
10 1994-01-01
18 314
1 85
13 special requests
7 JORDAN KENYA
22 20 28 14 10 12 31
17
3 BUILDING 1995-03-08
20 drab 1995-01-01 ETHIOPIA

```

**Stream5 Seed : 902230661**

```

21 ETHIOPIA
15 1995-09-01
4 1996-10-01
6 1993-01-01 0.03 24
7 ETHIOPIA FRANCE
16 Brand#34 STANDARD ANODIZED 6 35
20 10 32 47 5 13
19 Brand#14 Brand#24 Brand#45 4 11 26
18 312
14 1994-08-01
22 29 23 33 19 10 31
21
11 PERU 0.0000010000
13 special requests
3 HOUSEHOLD 1995-03-24
1 93
2 15 STEEL EUROPE
5 ASIA 1993-01-01
8 FRANCE EUROPE MEDIUM ANODIZED TIN
20 peru 1994-01-01 ROMANIA
12 TRUCK REG AIR 1994-01-01
17 Brand#41 SM PKG
10 1994-10-01
9 gainsboro

```

# Appendix E: Refresh Function Source Code

## E.1 CreateRF1Proc.sql

```
-- File: CREATERF1PROC.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
-- Copyright Microsoft, 2006 - 2009
--
IF exists (SELECT name FROM sysobjects WHERE name = 'RF1')
    DROP PROCEDURE RF1
GO
--
-- Create a stored RefreshInsert procedure which will catch the deadlock
-- victim abort and restart the insert transaction.
--
CREATE PROCEDURE RF1
    @current_execution INTEGER, @insert_sets INTEGER,
    @parallel_executions INTEGER, @total_executions INTEGER
AS
BEGIN
    DECLARE @startdate DATE
    DECLARE @enddate DATE
    DECLARE @edate DATE
    DECLARE @rangeStart INTEGER
    DECLARE @rangeSize INTEGER
    DECLARE @range INTEGER
    DECLARE @success INTEGER
    DECLARE @index INTEGER
    DECLARE @div INTEGER
    DECLARE @mod INTEGER
    DECLARE @skip INTEGER
    DECLARE @i INTEGER
    DECLARE @rangeSum INTEGER
    DECLARE @totRangeSize INTEGER
    DECLARE @stmt NCHAR(1000)
    DECLARE @orderSql NCHAR(1000)
    DECLARE @liSql NCHAR(1000)
    DECLARE @ErrorMessage NVARCHAR(4000)
    DECLARE @ErrorNumber INT
    DECLARE @ErrorSeverity INT
    DECLARE @ErrorState INT
    DECLARE @ErrorLine INT
    DECLARE @ErrorProcedure NVARCHAR(200)
    SET @skip = @total_executions/@parallel_executions
    SET @div = (@current_execution - 1)/@parallel_executions
    SET @mod = (@current_execution - 1) - @div * @parallel_executions
    SET @index = @mod * @skip + @div + 1
    --
    -- Get the range for this execution
    --
    SET @stmt = N'SELECT @sdate = dateadd(day,-1,min(O_ORDERDATE)),
    @edate = max(O_ORDERDATE)
    FROM NEWORDERS'
    EXEC sp_executesql @stmt,N'@sdate DATE output, @edate DATE
    output',@startdate output, @enddate output
```

```
--SELECT 'CurrExec:' + cast(@current_execution as varchar(200))
+','+cast(scheduler_id as varchar(200)) as [sched] from
sys.dm_exec_requests where session_id=@@spid
IF (@total_executions > @parallel_executions)
    BEGIN
        SET @div = (@index-1)/@skip
        SET @mod = (@index-1) - @div * @skip
        --SET @rangeSize = datediff(day, @startdate,
    @enddate)/@parallel_executions + 1
        SET @rangeSize = ((@div+1) * datediff(day, @startdate,
    @enddate))/@parallel_executions - (@div * datediff(day, @startdate,
    @enddate))/@parallel_executions
        --SET @rangeStart = @div * @rangeSize
        SET @rangeStart = (@div * datediff(day, @startdate,
    @enddate))/@parallel_executions
        SET @rangeStart = @rangeStart + (@rangeSize * @mod)/@skip
        SET @totRangeSize = ((@mod + 1) * @rangeSize)/@skip -
    (@mod * @rangeSize)/@skip
        SET @rangeSize = @totRangeSize
        IF (@rangeSize < 0)
            SET @rangeSize = 0
        IF (@insert_sets <= 0)
            SET @insert_sets = 1
        END
    ELSE
        BEGIN
            SET @rangeSize = (@current_execution * datediff(day,
    @startdate, @enddate))/@total_executions - ((@current_execution-1) *
    datediff(day, @startdate, @enddate))/@total_executions
            SET @rangeStart = ((@current_execution-1) * datediff(day,
    @startdate, @enddate))/@total_executions
            END
        SET @startdate = dateadd(day, @rangeStart, @startdate)
        IF (@index < @total_executions)
            SET @enddate = dateadd(day, @rangeSize, @startdate)
        SET @range = datediff(day, @startdate, @enddate) / @insert_sets
        --
        -- This handles the case when the max-min/insert_sets is less than 1
        --
        IF @range = 0
            SET @range = 1
        --
        -- Generate the two insert statements
        --
        SET @edate = dateadd(day, @range, @startdate)
        SET @orderSql = N'INSERT INTO ORDERS (O_ORDERKEY,
    O_CUSTKEY, O_ORDERSTATUS, O_TOTALPRICE,
    O_ORDERDATE,
    O_ORDERPRIORITY, O_CLERK, O_SHIPPRIORITY, O_COMMENT)
    (SELECT O_ORDERKEY, O_CUSTKEY,
    O_ORDERSTATUS, O_TOTALPRICE,
    O_ORDERDATE,
    O_ORDERPRIORITY, O_CLERK, O_SHIPPRIORITY, O_COMMENT
    FROM NEWORDERS
    WHERE O_ORDERDATE > @startdate
    AND O_ORDERDATE <= @edate)
    option (loop join,MaxDop 1)'
```

```

SET @liSql = N'INSERT INTO LINEITEM
(L_ORDERKEY,L_PARTKEY,L_SUPPKEY,L_LINENUMBER,L_QUAN
TITY,
                L_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 LINEITEM tables
--
WHILE @startdate < @enddate
BEGIN
--
-- Insert into ORDERS and LINEITEM tables
--
INSERT_TRANS:
SET @success = 1
BEGIN TRANSACTION

    BEGIN TRY
        EXEC sp_executesql @orderSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
        EXEC sp_executesql @liSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
    END TRY
    BEGIN CATCH
        SET @success = 0
        IF (error_number() = 1205) -- deadlock victim
            BEGIN
                PRINT 'Insert deadlock - restarting RF1'
                IF (@@trancount>0)
                    ROLLBACK TRANSACTION
            END
        ELSE
            BEGIN -- not a
                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
IF (@success = 0) -- deadlock - redo
the inserts
    GOTO INSERT_TRANS
COMMIT TRANSACTION
SET @startdate = @edate
SET @edate = dateadd(day, @range, @edate)
IF (@edate > @enddate)
    SET @edate = @enddate
END
END
GO

```

## E.2 CreateRF2Proc.sql

```

-- File: CREATERF2PROC.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 2.7.0-1005
-- Copyright Microsoft, 2006 - 2009
--
IF exists (SELECT name FROM sysobjects WHERE name = 'RF2')
DROP PROCEDURE RF2
GO
--
-- Create a stored Refresh Delete procedure which will catch the deadlock
-- victim abort and restart the delete transaction.
--
CREATE PROCEDURE RF2
@current_execution INTEGER, @delete_sets INTEGER,
@parallel_executions INTEGER, @total_executions INTEGER
AS
BEGIN
DECLARE @startdate DATE
DECLARE @enddate DATE
DECLARE @edate DATE
DECLARE @rangeStart INTEGER
DECLARE @rangeSize INTEGER
DECLARE @range INTEGER
declare @success INTEGER
declare @index INTEGER
declare @div INTEGER
declare @mod INTEGER
declare @skip INTEGER
declare @i INTEGER

```

```

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

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

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

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

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

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

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

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

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

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

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

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

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

```

```

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

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

WHILE @startdate < @enddate
BEGIN

DELETE_TRANS:
SET @success = 1
BEGIN TRANSACTION

BEGIN TRY
EXEC sp_executesql @liSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
EXEC sp_executesql @orderSql, N'@startdate DATE,
@edate DATE', @startdate, @edate
END TRY
BEGIN CATCH
SET @success = 0
IF (error_number() = 1205) -- deadlock victim
BEGIN
PRINT 'Delete deadlock - restarting RF2'
IF (@@trancount>0)
ROLLBACK TRANSACTION
END
ELSE
BEGIN -- not a
deadlock
PRINT ERROR_MESSAGE()
SELECT @ErrorNumber =
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.

```

```

original error severity.      @ErrorSeverity, -- parameter:
error state.                 @ErrorState,   -- parameter: original
original error procedure name. @ErrorProcedure, -- parameter:
error line number.          @ErrorLine    -- parameter: original
                             );
                             END
        END CATCH
        IF (@success = 0)      -- deadlock - redo
the inserts
}

GOTO DELETE_TRANS
COMMIT TRANSACTION
SET @startdate = @edate
SET @edate = dateadd(day, @range, @edate)
IF (@edate > @enddate)
    SET @edate = @enddate
END
END
GO

```

# Appendix F: Implementation Specific Layer and Source Code

## F.1 Setup.cmd

```
echo off

rem
rem Modify the following parameters for your configuration
rem

set DB=tpch100g

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

set DoDBGEN=FALSE
set DoDBCREATE=TRUE
set DoBULKINSERT=TRUE
set DoCREATEINDEX=TRUE
set DoCLEANUP=TRUE
set DoBACKUP=TRUE
set DoENDSTATS=TRUE

%HOMEDRIVE%
cd %HOMEDIR%

if '%1' == 'DBGEN' goto :DBGEN
if '%1' == 'BULKINSERTn' goto :BULKINSERTn

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

echo Finding next output directory in
%OUTPUTDRIVE%%OUTPUTDIR%
set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%HOMEDRIVE%%HOMEDIR%\%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBER%
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%
```

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

rem
rem DBGEN invokes dbgen.exe in parallel
rem

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

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

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

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

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

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

```

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

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

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

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

echo Starting bulk inserts
for %%i in (LINEITEM ORDERS CUSTOMER PART PARTSUPP
SUPPLIER) do call :BULKINSERTi %%i
echo for NATION and REGION
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values (Nation/Region
insert begin,getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
sqlcmd -E -e -d%DB% -Q"bulk insert NATION from
%FLATFILEDRIVE%\%FLATFILEDIR%\%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%\%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 (%i bulk insert
begin,getdate())" -l 300
for /l %%j in (1,1,%DBGEN_PARALLELISM%) do start cmd /C Setup
BULKINSERTn %i %%j
semaphore -wait %i -count %DBGEN_PARALLELISM%
sqlcmd -E -d%DB% -Q"insert into LOADTIMES values (%i
end,getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :EOF

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

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

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

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

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

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

```

```

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

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

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

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

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

:ENDSTATS

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

```

```

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

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

F.2 Run.cmd

echo off

rem
rem Modify the following parameters for your configuration
rem
rem This version pulls the Update Files from
rem %UPDRIVE%\segment%\UPDATEDIR%
rem

set DB=tpch100g
set HOMEDRIVE=C:
set HOMEDIR=\\HP_TPCH_KIT\Run
set OUTPUTDRIVE=C:
set OUTPUTDIR=\\HP_TPCH_KIT\Output
set UPDRIVE=C:
set UPDATEDIR=\\HP_UF_Flatfiles
set UPDATESSET=7
set UPDATESSEGMENTS=64
set SEED=902230656
set SCALEFACTOR=100
set STREAMS=5

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

%HOMEDRIVE%
cd %HOMEDIR%

if %1 == 'RF1' goto RF1

```



```

if %1' == 'RF1_LOAD' goto RF1_LOAD
if %1' == 'RF2' goto RF2
if %1' == 'RF2_LOAD' goto RF2_LOAD
if %1' == 'THROUGHPUT_STREAM' goto :THROUGHPUT_STREAM

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

set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%OUTPUTDRIVE%%OUTPUTDIR%%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%%OUTPUTNUM
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%
rem
rem Create the TIMES table
rem
sqlcmd -I -E -d%DB% -Q"if exists (select * from sysindexes where name =
'TIMES') drop table TIMES"
sqlcmd -I -E -d%DB% -Q"create table TIMES(QUERY char(5),STREAM
int,START datetime)"

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

rem
rem Use the Restore.sql script in SETUP
rem

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

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

rem
rem Create the Power and five Throughput Streams
rem

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

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

:SETUP2

rem
rem Begin POWER run
rem

rem
rem Execute the RF1 Transaction set in parallel
rem

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

echo Running the RF1s
set /a UPDATE_SEGMENT=%1+%UPDATESET%
sqlcmd -I -E -d%DB% -Q"insert into TIMES values (RF1',0,getdate())"
sqlcmd -I -E -d%DB% -iRF_Procs\RF1_init.sql -o
%OUTPUTPATH%\RF1_UPDATE_SEGMENT%_init.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run
RF1_LOAD %%i UPDATE_SEGMENT%
semaphore -wait RF1_LOAD -count %UPDATESEGMENTS%
sqlcmd -I -E -d%DB% -iRF_Procs\RF1_index.sql -o
%OUTPUTPATH%\RF1_UPDATE_SEGMENT%_index.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run RF1 %%i
10 %UPDATESEGMENTS% %UPDATESEGMENTS%
%UPDATE_SEGMENT%
semaphore -wait RF1 -count %UPDATESEGMENTS%

rem
rem Execute the PowerRun Queries
rem

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

rem
rem Execute the RF2 Transaction set in Parallel
rem

if NOT %DoPOWERRefresh%' == 'TRUE' goto :POWERDONE
echo Running the RF2s
sqlcmd -I -E -d%DB% -Q"insert into TIMES values (RF2',0,getdate())"
sqlcmd -I -E -d%DB% -iRF_Procs\RF2_init.sql -o
%OUTPUTPATH%\RF2_UPDATE_SEGMENT%_init.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run
RF2_LOAD %%i UPDATE_SEGMENT%
semaphore -wait RF2_LOAD -count %UPDATESEGMENTS%
sqlcmd -I -E -d%DB% -iRF_Procs\RF2_index.sql -o
%OUTPUTPATH%\RF2_UPDATE_SEGMENT%_index.out -b
for /l %%i in (1,1,%UPDATESEGMENTS%) do start cmd /C Run RF2 %%i
10 %UPDATESEGMENTS% %UPDATESEGMENTS%
%UPDATE_SEGMENT%
semaphore -wait RF2 -count %UPDATESEGMENTS%

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

rem
rem Execute the THROUGHPUT Run
rem

```

```

:THROUGHPUT
if NOT %DoTHROUGHPUT% == 'TRUE' goto :DONE
echo Running the Throughput Streams

for /l %%i in (1,1,%STREAMS%) do start /abovenormal cmd /C Run
THROUGHPUT_STREAM %%i
sqlcmd -I -E -d%DB% -Q"insert into TIMES values ('RF1',1,getdate())"
semaphore -wait THROUGHPUT_QUERIES -count %STREAMS%

for /l %%j in (1,1,%STREAMS%) do call :THROUGHPUT_REFRESH
%%j
goto :DONE

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

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

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

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

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

sqlcmd -I -E -w300 -e -Q"select @@version" -
o%OUTPUTPATH%\sqlversion.out
sqlcmd -I -E -w300 -e -Q"sp_helpdb %DB%" -o%OUTPUTPATH%\db.out
sqlcmd -I -E -w300 -e -Q"sp_dboption %DB%" -
o%OUTPUTPATH%\dboption.out
sqlcmd -I -E -w300 -e -Q"sp_helpsort" -o%OUTPUTPATH%\sort.out
sqlcmd -I -E -w300 -e -d%DB% -ilocking.sql -
o%OUTPUTPATH%\locking.out
rem ----- Get query plans
@echo set showplan_all on >%OUTPUTPATH%\stream.sql
@echo go >>%OUTPUTPATH%\stream.sql
type stream0.sql >>%OUTPUTPATH%\stream.sql
sqlcmd -I -E -d%DB% -w3000 -i%OUTPUTPATH%\stream.sql -
o%OUTPUTPATH%\plans.out

rem ----- Get Boot.ini
TYPE c:\boot.ini >%OUTPUTPATH%\boot.ini
reg query "HKLM\SYSTEM\CurrentControlSet\Control\Session
Manager\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
'%UPDRIVE%'%UPDIR%\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
'%UPDRIVE%'%UPDIR%\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 -l 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 <= S(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\n",
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\n",
signed: %s\n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond, szEventNames[idx]);
HANDLE hTmp = pHandles[idx];

```

```

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

```

```

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

```

## F.8 Print.C for DBGEN

```

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

```

```

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

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

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

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

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

                if (strcmp(tdefs[table].name, "orders.tbl"))
                {
                    this_segment = ++insert_orders_segment;
                }
                else
                {
                    this_segment = ++insert_lineitem_segment;
                    sprintf(upath, "%s%c%s.u%d.%d",
                        env_config(PATH_TAG, PATH_DFLT),
                        PATH_SEP,
                        tdefs[table].name, update%10000, this_segment);
                }
                else
                {
                    sprintf(upath, "%s%c%s.u%d",
                        env_config(PATH_TAG,
                            PATH_DFLT),
                        PATH_SEP,
                        tdefs[table].name,
                        update);
                }
                else /* deletes */
                {
                    if (delete_segments)
                    {
                        ++delete_segment;
                        sprintf(upath,
                            "%s%cdelete.u%d.%d",
                            env_config(PATH_TAG, PATH_DFLT), PATH_SEP, -update%10000,
                            delete_segment);
                    }
                    else
                    {
                        sprintf(upath, "%s%cdelete.%d",
                            env_config(PATH_TAG,
                                PATH_DFLT), PATH_SEP, -update);
                    }
                }
            }
        return(fopen(upath, "w"));
    }
    res = tbl_open(table, "w");
    OPEN_CHECK(res, tdefs[table].name);
    return(res);
}

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

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

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

    return(0);
}

```

```

}

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

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

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

    return(0);
}

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

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

    return(0);
}

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

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

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

    return(0);
}

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

    return(0);
}

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

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

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

```

```

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

return(0);
}

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

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

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

    return(0);
}

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

    return(0);
}

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

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

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

    return(0);
}

```

```

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

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

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

    return(0);
}

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

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

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

    return(0);
}

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

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

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

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

```





```

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

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

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

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

```

```

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

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

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

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

    return(0);
}

```

## *Appendix G: Price Quotations & Verification*

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

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

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

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

A list of Microsoft's resellers can be found at

**<http://www.microsoft.com/products/info/render.aspx?view=22&type=mn&content=22/licensing>**

All products listed above are currently orderable and available.

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

This quote is valid for the next 90 days.

Reference ID: PHdapo0909030000004272.

dvnation  
cart.cgi Shopping Cart

Quantity	Product	Price	Shipping	Options	Subtotal
6	ioDrive 80GB	\$2995.00	\$20 ea		\$17970.00

Subtotal: \$17970.00  
Shipping: \$120.00  
Sales Tax: \$1482.53  
Grand Total: \$19572.53

Please verify the following information. When you are confident that it is correct, click the 'Click Here to Continue' button below.

**Customer Information**

Customer Number: mambiar91645

**Billing Address**

Name: raghu nambiar  
Company:  
Street: 11445 Compaq Center Dr W  
City: houston  
State: TX  
Zip: 77070  
Country: United States of America  
Phone: 281 516 2748  
E-Mail: raghu.nambiar@hnp.com

**Shipping Address**



Name: raghu nambiar  
Company:  
Street: 11445 Compaq Center Dr W  
City: houston  
State: TX  
Zip: 77070  
Country: United States of America  
PO Number:  
Comments:

**You MUST click the above button to enter your order.**  
**You WILL receive a confirmation email detailing your order. If you do not receive a confirmation email, then you failed to complete submission of your order.**



**King Cart Shopping Cart Services**

[www.kingcart.com](http://www.kingcart.com)

 	<b>ioDrive</b> (PCI-E x4)			
	CAPACITY	READ	WRITE	NAND SPECIAL PRICE
	80GB	800MB/5600MB/SSLC	High IOPS	80GB \$2999 <a href="#">ORDER</a>
	160GB	800MB/5600MB/SSLC	High IOPS	160GB \$7200 <a href="#">ORDER</a>
	320GB	800MB/5600MB/SMLC	High IOPS	320GB \$14,400 <a href="#">ORDER</a>
<b>ioDrive DUO</b>				
CAPACITY	READ	WRITE	NAND SPECIAL PRICE	
320GB	1.5GB/S	1.4GB/S	SLC Fastest SSD 320GB \$11,900 <a href="#">ORDER</a>	
640GB	1.5GB/S	1.4GB/S	MLC Fastest SSD 640GB \$9,795 <a href="#">ORDER</a>	
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