



TPC BenchmarkTM H
Full Disclosure Report
DELL PowerEdge 6650/2.0GHz
PowerVault 220S
Using
Microsoft Windows 2003 Server Enterprise Edition and
Microsoft SQL Server 2000 Enterprise Edition SP3



Second Edition

Submitted for Review

June 11, 2003

Updated to reflect new component pricing.

Dell Computer Corp PowerEdge 6650 Server with Microsoft Windows 2003 Server Enterprise Edition and Microsoft SQL Server 2000 Enterprise Edition SP3

Second Printing June 2003

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Abstract

This report document the methodology and results of the TPC Benchmark R test conducted on the PowerEdge 6650 Server using SQL Server 2000 SP3 in conformance with the requirements of the TPC-H Benchmark Specification. The operating system used for the benchmark was Microsoft Windows 2003 Server Enterprise Edition.

Hardware	Software	Total System Cost
Dell PowerEdge 6650 with Quad 2.0GHz Intel Xeon MP Dell PowerVault 22XS Storage Enclosures	Microsoft Windows Server 2003 Enterprise Edition Microsoft SQL Server 2000 SP3 Enterprise Edition	\$89,748

TPC-H Power@100GB	TPC-H Throughput@100GB	QphH@100GB	\$/QphH@100GB
2721.5	1446.4	1984.0	\$45.00

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

In order to verify compliance to the TPC-H benchmark specification, Lorna Livingtree, Performance Metrics, Inc., audited the benchmark configuration, environment and methodology used to produce and validate the test results, and the pricing model used to calculate the price/performance. The auditor's letter of attestation is attached as Appendix G.



**PowerEdge 6650/2.0GHz Using
Microsoft Windows 2003
Server Enterprise Edition and
SQL Server 2000 SP3 EE**

TPC-H Revision 2.0

**Report Date:
April 28, 2003**

**Total System Cost
\$89,748**

**TPC-H Composite Query per Hour
1984.0 QphH@100GB**

**Price/Performance
\$45.00/QphH@100GB**

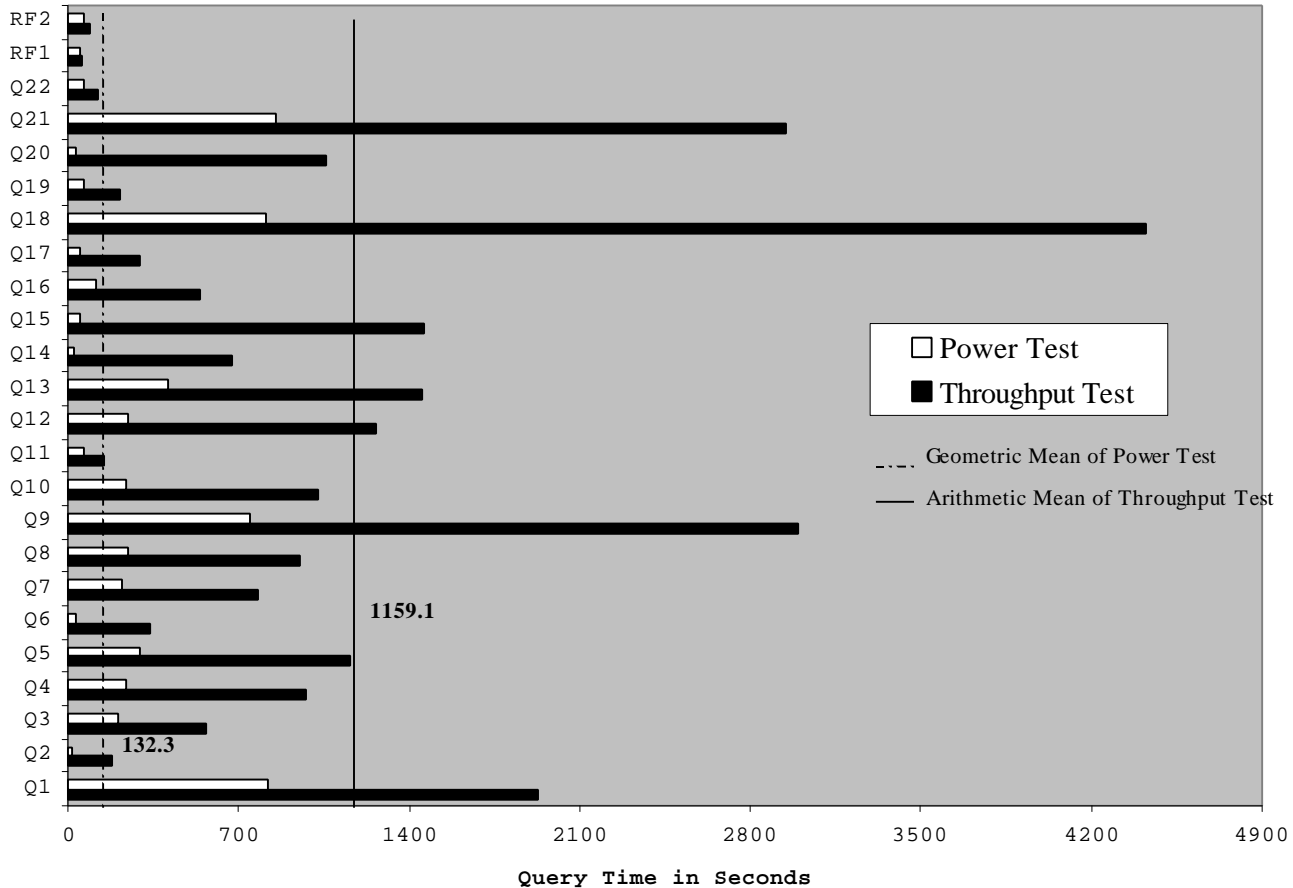
**Database Size
100GB**

**Database Manager
Microsoft SQL Server 2000 SP3
Enterprise Edition**

**Operating System
Microsoft Windows 2003
Server Enterprise Edition**

**Other Software
Visual C++ .NET Standard**

**Availability Date
May 27, 2003**



**Database Load Time
3:53:32**

**Total Disk/Database Size
16.76**

**Load Includes Backup
Y**

**RAID (Base tables only)
N**

**RAID (Base tables and auxiliary data
structures)
N**

**RAID (Everything)
Y**

System Configuration

Processors: 4 – 2.0GHz/512kB L2/2MB L3 Intel Xeon MP
Memory: 8GB RAM
Disk Drives: 1 – 36GB 15k HDD
 14 – 36GB 10k HDD
 70 – 18GB 15k HDD

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



**PowerEdge 6650/2.0GHz using
Windows 2003 Server EE and SQL
Server 2000 EE SP3**

TPC-H Revision 2.0.0

Report Date 4/28/03

Price/Performance

Performance

Availability Date

\$45 / QphH@100GB

1984.0 QphH@100GB

5/27/2003

Description	Part No.	Third Party		Unit Price	Quantity	Extended Price	3 Yr Maintenance Price
		Brand	Price				
Database Server Hardware:							
SYSTEM: PowerEdge 6650 2.0GHz/2MB L3	221-1983	1	1	\$6,658	1	\$6,658	
PROC: Quad Procs, 2.0GHz/2MB Xeon	311-2348	1	1	\$14,999	1	\$14,999	
MEM: 8GB RAM	311-1548	1	1	\$4,499	1	\$4,499	
DISK: 1x36GB 15k SCSI	340-3785	1	1	\$449	1	\$449	
NIC: Dual Integrated Broadcom Gigabit NIC Adapters	Included in SYSTEM.					\$0	
CONTROLLER: LSI MegaRAID Elite 1650	4942510264A	2	2	\$970	6	\$5,820	
SPARES: LSI MegaRAID Elite 1650	Spares priced to spec.	2	2	\$970	2		\$1,940
ACCESSORY: Rapid Rail Racks	310-1453	1	1	\$349	1	\$349	
MAINT: 3 Years 4Hour-7x24, SILVER Support (Initial/2Yr Ext.)	900-6370/900-6352	1	1	\$1,282	1		\$1,282
POWER: AC Switch (Dual Power Cords)	310-1446	1	1	\$299	1	\$299	
MONITOR: DELL E551 15"	320-0960	1	1	\$149	1	\$149	
Database Server Software:						Database Server	
						Hardware Subtotal:	\$33,222
OS: Windows 2003 Enterprise Server	P72-00264	3	3	\$2,399	1	\$2,399	Included below.
DBMS: SQL Server 2000 Enterprise Edition	810-00652	3	3	\$5,549	1	\$5,549	Included below.
DBMS: SQL Server 2000 Client License	359-00532	3	3	\$7,300	1	\$7,300	Included below.
APP: Visual C++ .NET Standard	254-00170	3	3	\$109	1	\$109	Included below.
MAINT: Microsoft DB Server Support Package	PRO-PRORS-16U-01	3	3	\$1,950	3		\$5,850
						Database Server	
						Software Subtotal:	\$15,357
SYSTEM: PowerVault 220S - 14 HDD Storage System	220-4476	1	1	\$1,256	6	\$7,536	
ACCESSORY: PowerVault 220 Locking Bezel	313-1308	1	1	\$39	6	\$234	
CTRL: Ultra3 SCSI Redundant Enclosure Management Module	340-3090	1	1	\$634	6	\$3,804	
POWER: Redundant Power Option	310-0677/310-0682	1	1	\$299	6	\$1,794	
ACCESSORY: Rapid Rails	310-0684	1	1	\$114	6	\$684	
DISK: 7x36GB 10k SCSI	340-3293	1	1	\$1,743	2	\$3,486	
DISK: 7x18GB 15k SCSI	340-3554	1	1	\$1,743	10	\$17,430	
CBL: 2 Cables,PERC,12M, PV220S	310-1686	1	1	\$99	6	\$594	
MAINT: 3 Years 4Hr/7x24, SILVER Support (Initial/2Yr Ext.)	900-6790/900-6792	1	1	\$1,099	6		\$6,594
RACK: PE4210,DOORS,GRND,42U,PS	220-4492	1	1	\$606	1	\$606	
RACK ACCESSORY: 42U Rack, Interconnect Kit, PS to TS	310-1283	1	1	\$119	1	\$119	
RACK POWER: Power Strip, 6 Socket	310-0081	1	1	\$69	1	\$69	
RACK MAINT: 3 Years BRONZE Support (Initial/2Yr Ext.)	900-6220/900-6222	1	1	\$283	1		\$283
Storage Subtotal:						\$36,356	\$6,877
Total:						\$84,935	\$15,949
Dell Discounts:*						(\$11,136)	
3 Year Cost of Ownership		\$89,748					
QphH@100GB		1984					
\$/ QphH@100GB		\$45.00					

* Dell discount is based upon total system cost as purchased by a regular customer. Pricing may be verified by calling 1-800-BUY-DELL and referencing quote number 106668362 as the complex quote.

1 Dell

2 www.buyisillogic.com

3 Microsoft

Independently Audited by:

Lorna Livingtree

Performance Metrics

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 section of the TPC benchmark specifications.

If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.



Numerical Quantities Summary

Measurement Results:

Database Scale Factor	100
Total Data Storage/Database Size	16.76
Start of Database Load	4/19/2003 17:12:01
End of Database Load	4/19/2003 21:05:33
Database Load Time	3:53:32
Query Streams for Throughput Test	5
TPC-H Power	2721.5
TPC-H Throughput	1446.4
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	1984.0
Total System Price Over 3 Years	\$89,748
TPC-H Price Performance Metric (\$/QphH@100GB)	\$45

Measurement Interval:

Measurement Interval in Throughput Test (Ts) = 27379 seconds

Duration of stream execution:

	Seed	Start Date/Time	End Date/Time	Duration
Stream00	419210533	4/22/03 15:35:36	4/22/03 17:15:09	1:39:33
Stream01	419210534	4/22/03 17:15:09	4/23/03 00:13:58	6:58:49
Stream02	419210535	4/22/03 17:15:09	4/23/03 00:39:07	7:23:57
Stream03	419210536	4/22/03 17:15:09	4/23/03 00:33:10	7:18:01
Stream04	419210537	4/22/03 17:15:09	4/23/03 00:36:17	7:21:08
Stream05	419210538	4/22/03 17:15:09	4/22/03 23:38:11	6:23:02
Refresh00		4/22/03 15:35:36	4/22/03 17:15:09	1:39:33
Refresh01		4/23/03 00:39:07	4/23/03 00:41:15	0:02:09
Refresh02		4/23/03 00:41:15	4/23/03 00:43:48	0:02:33
Refresh03		4/23/03 00:43:48	4/23/03 00:46:20	0:02:32
Refresh04		4/23/03 00:46:20	4/23/03 00:48:54	0:02:34
Refresh05		4/23/03 00:48:54	4/23/03 00:51:27	0:02:33



Numerical Quantities Summary

Timing Intervals in Seconds:

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream00	818.6	15.2	207.5	237.3	294.2	33.8	224.2	249.9
Stream01	1804.1	256.8	660.2	1113.2	1432	258.5	824.6	444.9
Stream02	1903.1	103.5	985.2	882.9	1239.9	45.2	843	402.4
Stream03	1864.5	275.9	317.9	805.4	1266.2	590.8	1137.7	2122.9
Stream04	2053.4	138.7	279	1035.5	721.3	328.2	451.2	1260.1
Stream05	2003.3	142	570.5	1044.5	1107.9	474.5	652.1	542.6
Min Qi	1804.1	103.5	279	805.4	721.3	45.2	451.2	402.4
Max Qi	2053.4	275.9	985.2	1113.2	1432	590.8	1137.7	2122.9
Avg Qi	1925.7	183.4	562.6	976.3	1153.5	339.4	781.7	954.6
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream00	750.8	234.1	64	248.2	408	24.7	49.8	116.9
Stream01	2820.6	1071.6	162.9	1609.4	1804.7	541.1	1666	426.9
Stream02	1978.1	958	133.4	1314.2	1256	1343	1134	767
Stream03	2908.2	1027.1	206.5	1112.2	1623.6	725.5	1367.7	322.7
Stream04	4614	1099.1	112.3	1215.8	1550.5	145.7	1298.3	762.4
Stream05	2673	982.3	140.2	1071.5	1045.6	589.5	1849.4	413.8
Min Qi	1978.1	958	112.3	1071.5	1045.6	145.7	1134	322.7
Max Qi	4614	1099.1	206.5	1609.4	1804.7	1343	1849.4	767
Avg Qi	2998.8	1027.6	151.1	1264.6	1456.1	669	1463.1	538.6
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream00	48.3	814.5	65.5	29.8	853.5	68.9	51.7	63.1
Stream01	528.4	4794.6	372.4	198.4	2185.8	152.2	45.5	83
Stream02	242.3	4573.8	215.9	3980.7	2184.6	151	66.5	86
Stream03	342	4522.4	104.3	165.2	3349.4	123.4	66.6	85.3
Stream04	189.5	3610.1	95.4	806.6	4627	74.3	64.2	89.4
Stream05	171.6	4623.7	268.7	150	2369.7	95.2	63.8	89.4
Min Qi	171.6	3610.1	95.4	150	2184.6	74.3	45.5	83
Max Qi	528.4	4794.6	372.4	3980.7	4627	152.2	66.6	89.4
Avg Qi	294.8	4424.9	211.3	1060.2	2943.3	119.2	61.3	86.6

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General Items

Test Sponsor

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

DELL Computer Corporation is the sponsor of this TPC Benchmark™ H result.

Parameter Settings

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

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

Providing a full list of all parameters and options can satisfy this requirement, as long as all those that have been modified from their default values have been clearly identified and these parameters and options are only set once.

Comment 1: *In the event that some parameters and options are set multiple times, it must be easily discernible by an interested reader when the parameter or option was modified and what new value it received each time.*

Comment 2: *This requirement can be satisfied by providing a full list of all parameters and options, as long as all those that have been modified from their default values have been clearly identified and these parameters and options are only set once.*

Details of system and database configurations and parameters are provided in Appendix A.

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 in 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 System Under Test (SUT), a DELL PowerEdge 6650 Server, depicted in the next diagram, consists of:

- 4 - 2.0GHz Intel ® Xeon MP Processors, each with 2MB of L3 cache.
- 8GB RAM.
- 6 - LSI MegaRAID Elite 1650 RAID Controllers, each with 64MB RAM of cache.
- 6 - PowerVault 22XS.
- 70 – 18GB 15k HDD.
- 14 – 36GB 10k HDD.
- 1– 36GB 15k HDD.

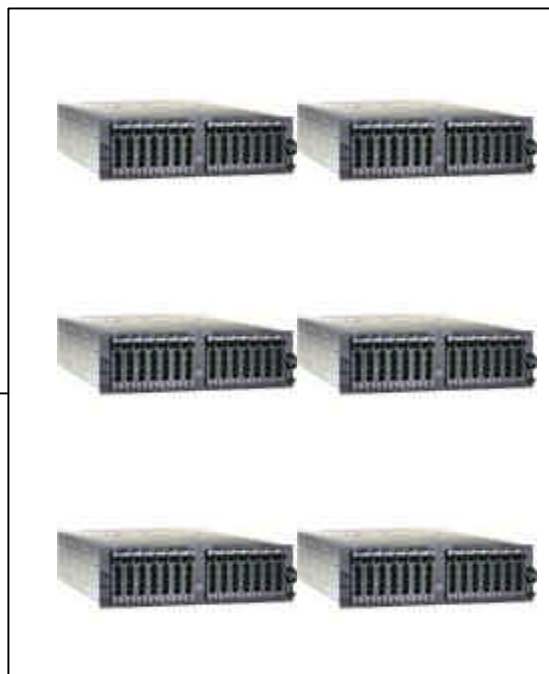
The flat files were stored using an LSI MegaRaid Elite 1650 controller connected to a PV22XS with 14- 36GB 15k drives. After the load test, that controller was removed from the server and the attached PV22XS was powered down. These components were not priced since they were only used to hold the flat files. Per *Clause 7.1.1 System Under Test* in TPC-H v2.0.0 which states:

Specifically excluded from the priced system calculation are:

- *End-user communication devices and related cables, connectors, and concentrators;*
- *Equipment and tools used exclusively in the production of the full disclosure report;*
- *Equipment and tools used exclusively for the execution of the DBGEN or QGEN (see Clause 2.1.4 and Clause 4.2.1) programs.*

Measured and Priced Configuration

The measured and priced configurations are the same.



Processors: 4 – Intel Xeon MP2.0GHz/ 256kB L2/ 2MB L3
Memory: 8GB RAM
Controllers: 6 – LSI MegaRaid 1650 64MB Cache
Disks: 6 – PowerVault 22XS
70 – 18GB 15k HDD
14 – 36GB 10k HDD
1 – 36GB 15k HDD

Clause 1: Logical Database Design

Table Definitions

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

Appendix B contains the scripts that create and analyze the tables and indexes for the TPC-H database.

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.

No record clustering or index clustering was used for this benchmark.

Horizontal Partitioning

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

The database layout is described in the tables in Clause 4.

Replication

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

Replication was not used for this benchmark.

Clause 2: Queries and Update Functions

Query Language

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

SQL was the query language used to implement all queries.

Random Number Generation

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

Version 1.3.0 of DBGEN and version 1.3.0 of QGEN were used to generate the random numbers for this TPC-H benchmark.

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.

QGEN version 1.3.0 was used to generate the substitution parameters.

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 minor query modifications used in this implementation include the following:

- 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.

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.

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 were run with isolation level 1.

Refresh Function Source Code

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

The source code for the refresh functions are included in Appendix E.

Clause 3: Database System Properties

Atomicity

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.

Atomicity of Completed Transaction

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.

1. The total prices 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 was 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.

Aborted Transaction

Perform the ACID transaction for a randomly selected set of input data, substituting 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.

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, and verified to not have changed.

Consistency

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

$$O_TOTALPRICE = SUM(trunc(trunc(L_EXTENDEDPRICE *(1 - L_DISCOUNT),2) * (1+L_TAX),2)) \text{ for each ORDERS and LINEITEM defined by } (O_ORDERKEY = L_ORDERKEY)$$

Consistency Test

Verify that ORDER and LINEITEM tables are initially consistent, submit the prescribed number of ACID Transactions with randomly selected input parameters, and re-verify the consistency of the ORDER and LINEITEM tables.

1. The consistency of the ORDER and LINEITEM tables was verified based on a sample of O_ORDERKEYs.
2. 100 ACID transactions were submitted from each of 6 execution streams.
3. The consistency of the ORDER and LINEITEM tables was verified a second time with the same O_ORDERKEYs.

Isolation

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.

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.

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 completed and did not see the uncommitted changes made by the ACID transaction.
3. The ACID transaction was committed.

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.

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 completed and did not see the uncommitted changes made by the ACID transaction.
3. The ACID transaction was rolled back.

Write-Write Conflict with Commit

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

1. An ACID transaction, T1, was started for a randomly selected O_KEY, L_KEY, and DELTA. The ACID transaction was suspended prior to commit.
2. A second ACID transaction, T2, was started using the same O_KEY and L_KEY and a different randomly selected DELTA.
3. T2 waited.
4. T1 was allowed to commit and then T2 completed.
5. It was verified that T2.L_EXTENDPRICE was calculated correctly.

Write-Write Conflict with Rollback

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

1. An ACID transaction, T1, was started for a randomly selected O_KEY, L_KEY, and DELTA. The ACID transaction was suspended prior to rollback.
2. A second ACID transaction, T2, was started using the same O_KEY and L_KEY and a different randomly selected DELTA.
3. T2 waited.
4. T1 was allowed to rollback and then T2 completed.
5. It was verified that T2.L_EXTENDPRICE was calculated correctly.

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.

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.

Durability

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.

Failure of a 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 logs were stored on a RAID-10.

The tables for the database were stored on RAID-0 stripes.

1. The database was backed up to an alternate disk media.
2. Six streams of ACID transactions were started.
3. While the test was running one drive of the mirrored set of logs was disabled.
4. After it was determined that the test would still run with the loss of a log disk, a data disk was disabled.

5. The six streams of ACID transactions failed and we recorded their numbers of committed transactions in success files.
6. The database was brought down.
7. The datafiles were restored to their state prior to the ACID transaction streams.
8. The database ran through its recovery mode.
9. The counts in the success files and the HISTORY table count were compared. The counts matched.

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.
2. While the streams of ACID transactions were running the system was powered off.
3. When power was restored the system rebooted and the database was restarted.
4. The database went through a recovery period.
5. The success file and the HISTORY table counts were compared, and they matched.

Memory Failure

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

The system crash test and the memory failure test were combined. See the previous section.

Clause 4: Scaling and Database Population

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.

Initial number of rows

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

Distribution of Tables and Logs Across Media

The distribution of tables and logs across all media must be explicitly described.

Microsoft SQL Server was configured on a Dell PowerEdge 6650 with the following configuration:

- 6 x LSI MegaRAID Elite 1650 Disk Controllers
- 6 x PowerVault 22XS Enclosures
- 70 x 18GB 15k rpm disk drives
- 14 x 36GB 10k rpm disk drives

The 70- 18GB 15k disks were used to hold table data, indexes, and the temporary database (TempDB) files. The 14- 36GB 10k disks were used to hold the database log.

A detailed description of distribution of database file groups and log can be found below.

Distribution of Storage

Controller	Logical Disk Drive	Description of Content
0	0	RAID 0 stripe for tpch_fg
0	1	RAID 0 stripe for tempdb
0	2	RAID 0 stripe for load_fg
1	0	RAID 0 stripe for tpch_fg
1	1	RAID 0 stripe for tempdb
1	2	RAID 0 stripe for load_fg

2	0	RAID 0 stripe for tpch_fg
2	1	RAID 0 stripe for tempdb
2	2	RAID 0 stripe for load_fg
3	0	RAID 0 stripe for tpch_fg
3	1	RAID 0 stripe for tempdb
3	2	RAID 0 stripe for load_fg
4	0	RAID 0 stripe for tpch_fg
4	1	RAID 0 stripe for tempdb
4	2	RAID 0 stripe for load_fg
5	0	RAID 0 stripe for tpch_fg
5	1	RAID 0 stripe for tempdb
5	2	RAID 0 stripe for load_fg
5	3	RAID 0 stripe for tpch1GB_fg
6	0	RAID 1/0 for tpch log
6	1	RAID 1/0 for database backups and update files
6	2	RAID 1/0 for tpch_1GB log

Partitioning and Replication

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

Neither database partitioning nor replication was used for this implementation.

RAID Implementations

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 the database files and tempDB. RAID 1/0 was used for the database logs.

DBGEN Version and Modifications

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

The supplied DBGEN Version 1.3.0 was used for database population. No modifications were made to DBGEN.

Database Load time

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

Database load time was 3 hours 53 minutes 32 seconds.

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, rounded up.

Data Storage Ratio

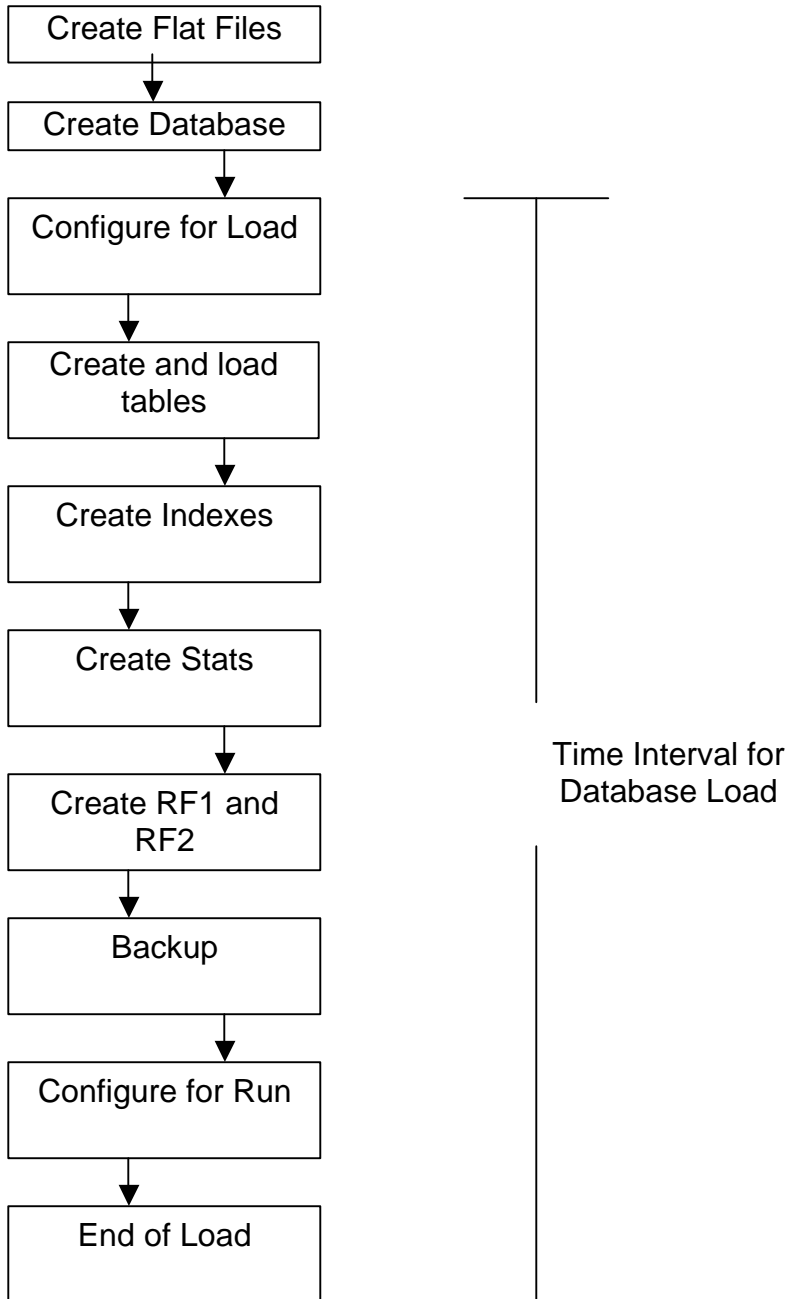
Disk Type	Number of Disks	Space per Disk	Subtotal Disk Space	Total Disk Storage	Data Storage Ratio
18GB 15k	70	16.76GB	1173.2GB		
36GB 10k	14	33.53GB	469.42GB		
36GB 15k	1	33.53GB	33.53GB		
				1676.15GB	16.76

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.

DBGGEN was used to create the flat files. The figure below describes the load procedure.

Database Load Process



Clause 5: Performance Metrics and Execution Rules

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. Database restart.
2. RF1 update transaction.
3. Stream 00 execution.
4. RF2 update transaction.

Timing Intervals

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

The power test timing intervals are disclosed in the Numerical Quantities Summary at the beginning of this document.

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.

Start/Finish Time of Each Query Stream

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

The throughput test start time and finish time for each stream are disclosed in the Numerical Quantities Summary at the beginning of this document.

Total Elapsed Time

The total elapsed time of the measurement interval must be reported for the throughput test.

The total elapsed time of the throughput test was 27,379 seconds.

Start/Finish Time for Refresh Functions

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

The start and finish time for each refresh function in the update stream are disclosed in the Numerical Quantities Summary at the beginning of this document.

Timing Intervals for Each Query and Each Update

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 contained in the Numerical Quantities Summary disclosed earlier in this document.

Performance Metrics

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

The performance metrics, and the numbers, on which they are based, are contained in the Numerical Quantities section of the Executive Summary.

Reproducibility Method

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 percent differences for the metrics:

Percentage Differences in Benchmark Executions

Run	QppH@100GB	QthH@100GB	QphH@100GB
1	2,723.9	1,445.2	1,984.1
2	2,721.5	1,446.4	1,984.0
Percent Difference	0.1%	0.1%	0.01%

System Activity Between Run1 and Run2

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

SQL Server was restarted and the server was rebooted between Runs.

Clause 6: SUT and Driver Implementation

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 to launch the load test and to execute the performance runs. These scripts are listed in Appendix F. The semaphore program was used to coordinate the execution of the processes in parallel.

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 were performed, to complete the Power and Throughput Runs:

1. Power Run

- Execute sixteen 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 Stream0 queries in the prescribed order.
- Execute sixteen 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 indication completion.
- Execute five consecutive RF1/RF2 transactions, against ascending Update sets produced by Dbgen.
- The first RF1 waits on a semaphore prior to beginning its insert operations.

Each step is time stamped by the script and 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.

Profile-Directed Optimization

If profile-directed optimization as described in Clause 5.2.9 is used, such use must be disclosed. In particular, the procedure and any scripts used to perform the optimization must be disclosed.

Profile-directed optimization was not used.

Clause 7: Pricing

Hardware and Software Used in the Priced System

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 the hardware and software used in the priced system is included in the Executive Summary at the beginning of this document. The price quotes are located in Appendix G.

Total Three 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 price sheet of all the hardware and software used in this configuration, including the 3-year maintenance cost, and total price, is included in the executive summary at the beginning of this document. This purchase qualifies for a 14% discount from Dell Computer Corporation. The price quotes are located in Appendix G.

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.

All Dell hardware is available at the time of publication. All other hardware is available at the time of publication.

The system software, Microsoft Windows 2003 Server, Enterprise Edition, used in this benchmark run will be available by May 27, 2003. The database software, Microsoft SQL Server 2000 Enterprise Edition is generally available at the time of publication. Service Pack 3 for Microsoft SQL Server 2000 is generally available at the time of publication.

Clause 8: Auditor-Related Items

Auditor's 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.

Lorna Livingtree of Performance Metrics audited this implementation of the TPC Benchmark H. Information regarding the audit process may be obtained from:

Performance Metrics, Inc.
137 Yankton St., Suite 101
Folsom, CA 95630
(Phone) (916) 985-1131
(Fax) (916) 985-1185
E-mail: lorna@perfmetrics.com

Requests for this TPC Benchmark H Full Disclosure Report should be sent to:
Transaction Processing Performance Council
c/o Shanley Public Relations
777 North First Street, Suite 6000
San Jose, CA 95112-6311 USA
Telephone: (408) 295-8894
Fax: (408) 295-9768



PERFORMANCE METRICS INC.
TPC Certified Auditors

April 28, 2003

Mr. Kong Yang
Dell Computer Corporation
One Dell Way
Round Rock, TX 78682

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

Platform: PowerEdge 6650
Database Manager: Microsoft SQL Server 2000 Enterprise Edition
Operating System: Microsoft Windows 2003 Enterprise Server

CPU's	Memory	Total Disks	QppH@100GB	QthH@100GB	QphH@100GB
4 Intel Xeon MP @ 2 Ghz	8 GB	70 @ 18GB,15Krpm 14 @ 36GB,10Krpm 1 @ 36GB,15Krpm	2,721.5	1,446.4	1,984.0

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 1.3.0.
- The qualification database layout was identical to the tested database except that it spanned a smaller subset of the SUT.
- The query text was verified to be compliant.
- The executable query text was generated by QGEN and submitted through Microsoft's standard OSQL interactive interface. The version of QGEN was 1.3.0.
- The validation of the query text against the qualification database produced compliant results.

PERFORMANCE METRICS INC.
TPC Certified Auditors

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

Auditor's Notes:
None.

Sincerely,



Lorna Livingtree
Auditor

Appendix A: Tunable Parameters

Microsoft SQL Server 2000 Version

E:\TPCH>isql -E -Q"select @@version"

```
-----
---
-----
-----
```

Microsoft SQL Server 2000 - 8.00.760 (Intel X86)
 Dec 17 2002 14:22:05
 Copyright (c) 1988-2003 Microsoft Corporation
 Enterprise Edition on Windows NT 5.2 (Build 3663:)

(1 row affected)

SQL Server Installation

Microsoft SQL Server 2000 was installed on the SUT. All default options were selected during the install except:

“Custom installation” was selected and Binary Sort Order was used. (Collation Settings>SQL Collation>Binary)

Microsoft SQL Server 2000 Service Pack 3 was installed.

SQL Server Startup Parameters

SQLSERVER -x -c -g100

Where:

- x Disable the Keeping of CPU time and cache-hit ratio statistics.
- c Start SQL Server independently of Windows NT Service Control Manager
- g Reserve 100MB for non-buffer pool allocations.

SQL Server 2000 Configuration Parameters

E:\TPCH>isql -E -Q"exec sp_configure"

name	minimum	maximum	config_value	run_value
affinity mask	-2147483648	2147483647	255	255
allow updates	0	1	0	0
awe enabled	0	1	1	1
c2 audit mode	0	1	0	0
cost threshold for parallelism	0	32767	5	5
Cross DB Ownership Chaining	0	1	0	0
cursor threshold	-1	2147483647	-1	-1
default full-text language	0	2147483647	1033	1033
default language	0	9999	0	0
fill factor (%)	0	100	0	0
index create memory (KB)				

	704	2147483647	0	0
lightweight pooling	0	1	1	1
locks	5000	2147483647	0	0
max degree of parallelism	0	32	8	8
max server memory (MB)	4	2147483647	7000	7000
max text repl size (B)	0	2147483647	65536	65536
max worker threads	32	32767	512	512
media retention	0	365	0	0
min memory per query (KB)	512	2147483647	1024	1024
min server memory (MB)	0	2147483647	0	0
nested triggers	0	1	1	1
network packet size (B)	512	65536	32768	32768
open objects	0	2147483647	0	0
priority boost	0	1	1	1
query governor cost limit	0	2147483647	0	0
query wait (s)	-1	2147483647	-1	-1
recovery interval (min)	0	32767	32767	32767
remote access	0	1	1	1
remote login timeout (s)	0	2147483647	20	20
remote proc trans	0	1	0	0
remote query timeout (s)	0	2147483647	600	600
scan for startup procs	0	1	0	0
set working set size	0	1	0	0
show advanced options	0	1	1	1
two digit year cutoff	1753	9999	2049	2049
user connections	0	32767	0	0
user options	0	32767	0	0

Windows 2003 Server Configuration

The default installation of Windows 2003 Enterprise Server Build 3663 was used. All default options were selected during the install except:
 - A TCP/IP address was configured on the system.

- Updated installation to optimize performance for applications. (System Properties > Advanced > Performance Options > Programs)
 Boot.ini parameters:
 /PAE – Allow the system to use addresses above 4GB
 /fastdetect – Disables NTDETECT serial and parallel port device detection at the specified communications ports.

System Hardware Information

System Information report written at: 04/20/03 10:47:22
 System Name: TPCH
 [System Summary]

Item	Value
OS Name	Microsoft® Windows® .NET Enterprise Server
Version	5.2.3663 Build 3663
OS Manufacturer	Microsoft Corporation
System Name	TPCH
System Manufacturer	Dell Computer Corporation
System Model	PowerEdge 6650
System Type	X86-based PC
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
Processor	x86 Family 15 Model 2 Stepping 2
GenuineIntel	~1989 Mhz
BIOS Version/Date	Dell Computer Corporation A09, 3/4/2003
SMBIOS Version	2.3
Windows Directory	C:\WINDOWS
System Directory	C:\WINDOWS\system32
Boot Device	\Device\HarddiskVolume1
Locale	United States
Hardware Abstraction Layer	Version = "5.2.3663.0 (main.020715-1506)"
User Name	TPCH\Administrator
Time Zone	Central Daylight Time
Total Physical Memory	8,192.00 MB
Available Physical Memory	7.42 GB
Total Virtual Memory	17.27 GB
Available Virtual Memory	16.80 GB
Page File Space	9.52 GB
Page File	E:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device
I/O Port 0x00000000-0x000003AF	PCI bus
I/O Port 0x00000000-0x000003AF	Direct memory access controller
Memory Address 0xFC800000-0xFC9FFFFFF	PCI bus
Memory Address 0xFC800000-0xFC9FFFFFF	LSI
Logic MegaRAID Elite 1650/1700 RAID Controller	
Memory Address 0xFCE00000-0xFCFFFFFF	PCI bus
Memory Address 0xFCE00000-0xFCFFFFFF	LSI
Logic MegaRAID Elite 1650/1700 RAID Controller	
IRQ 15	System board
IRQ 15	Secondary IDE Channel
Memory Address 0xFD000000-0xFE1FFFFFF	PCI bus
Memory Address 0xFD000000-0xFE1FFFFFF	RAGE
XL PCI (Microsoft Corporation)	
Memory Address 0xA0000-0xBFFFF	PCI bus
Memory Address 0xA0000-0xBFFFF	RAGE XL PCI
(Microsoft Corporation)	
Memory Address 0xFC600000-0xFC7FFFFFF	PCI bus
Memory Address 0xFC600000-0xFC7FFFFFF	LSI
Logic MegaRAID Elite 1650/1700 RAID Controller	
I/O Port 0x000003B0-0x000003DF	PCI bus
I/O Port 0x000003B0-0x000003DF	RAGE XL PCI (Microsoft Corporation)
Memory Address 0xFCA00000-0xFCBFFFFFF	PCI bus
Memory Address 0xFCA00000-0xFCBFFFFFF	LSI
Logic MegaRAID Elite 1650/1700 RAID Controller	

[DMA]

Resource	Device	Status
Channel 4	Direct memory access controller	OK
Channel 2	Standard floppy disk controller	OK

[Forced Hardware]

Device PNP Device ID

[I/O]

Resource	Device	Status
0x00000000-0x000003AF	PCI bus	OK
0x00000000-0x000003AF	Direct memory access controller	OK
0x000003B0-0x000003DF	PCI bus	OK
0x000003B0-0x000003DF	RAGE XL PCI (Microsoft Corporation)	OK
0x000003E0-0x00000CF7	PCI bus	OK
0x00000D00-0x00000FFF	PCI bus	OK
0x0000E000-0x0000EFFF	PCI bus	OK

0x0000EC00-0x0000ECFF Adaptec AIC-7892
 Ultra160 PCI SCSI Card OK
 0x0000E800-0x0000E8FF RAGE XL PCI (Microsoft Corporation) OK
 0x000003C0-0x000003DF RAGE XL PCI (Microsoft Corporation) OK
 0x00000080-0x0000009F Direct memory access controller OK
 0x000000C0-0x000000DF Direct memory access controller OK
 0x0000040B-0x0000040B Direct memory access controller OK
 0x000004D6-0x000004D6 Direct memory access controller OK
 0x000000F0-0x000000FF Numeric data processor OK
 0x00000020-0x0000003F Programmable interrupt controller OK
 0x000000A0-0x000000BF Programmable interrupt controller OK
 0x000004D0-0x000004D1 Programmable interrupt controller OK
 0x00000061-0x00000061 System speaker OK
 0x00000040-0x0000005F System timer OK
 0x000003F0-0x000003F5 Standard floppy disk controller OK
 0x000003F7-0x000003F7 Standard floppy disk controller OK
 0x00000060-0x00000060 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK
 0x00000064-0x00000064 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK
 0x000003F8-0x000003FF Communications Port (COM1) OK
 0x00000070-0x0000007F System CMOS/real time clock OK
 0x00000800-0x0000087F System board OK
 0x000008A0-0x000008AF System board OK
 0x000008E0-0x000008E3 System board OK
 0x000000E0-0x000000EF System board OK
 0x00000C00-0x00000CD7 System board OK
 0x00000F50-0x00000F58 System board OK
 0x000008B0-0x000008BF Standard Dual Channel PCI IDE Controller OK
 0x000001F0-0x000001F7 Primary IDE Channel OK
 0x000003F6-0x000003F6 Primary IDE Channel OK
 0x00000170-0x00000177 Secondary IDE Channel OK
 0x00000376-0x00000376 Secondary IDE Channel OK
 0x00000A79-0x00000A79 ISAPNP Read Data Port OK
 0x00000279-0x00000279 ISAPNP Read Data Port OK
 0x00000274-0x00000277 ISAPNP Read Data Port OK
 0x0000D000-0x0000DFFF PCI bus OK
 0x0000B000-0x0000CFFF PCI bus OK

[IRQs]

Resource	Device	Status
IRQ 9	Microsoft ACPI-Compliant System	OK
IRQ 16	Adaptec AIC-7892 Ultra160 PCI SCSI Card	OK
IRQ 13	Numeric data processor	OK
IRQ 0	System timer	OK
IRQ 6	Standard floppy disk controller	OK

IRQ 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
IRQ 12	PS/2 Compatible Mouse	OK
IRQ 4	Communications Port (COM1)	OK
IRQ 8	System CMOS/real time clock	OK
IRQ 15	System board	OK
IRQ 15	Secondary IDE Channel	OK
IRQ 14	Primary IDE Channel	OK
IRQ 3	ServerWorks (RCC) PCI to USB Open Host Controller	OK
IRQ 21	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
IRQ 22	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
IRQ 18	Broadcom NetXtreme Gigabit Ethernet	OK
IRQ 25	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
IRQ 23	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
IRQ 24	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
IRQ 29	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK

[Memory]

Resource	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	RAGE XL PCI (Microsoft Corporation)	OK
0xDC000-0xE7FFF	PCI bus	OK
0xFD000000-0xFE1FFFFF	PCI bus	OK
0xFD000000-0xFE1FFFFF	RAGE XL PCI (Microsoft Corporation)	OK
0xFE102000-0xFE102FFF	Adaptec AIC-7892 Ultra160 PCI SCSI Card	OK
0xFE101000-0xFE101FFF	RAGE XL PCI (Microsoft Corporation)	OK
0xFE100000-0xFE100FFF	ServerWorks (RCC) PCI to USB Open Host Controller	OK
0xFCE00000-0xFCFFFFFF	PCI bus	OK
0xFCE00000-0xFCFFFFFF	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
0xFCE10000-0xFCE1FFFF	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
0xFCC00000-0xFCDFFFFF	PCI bus	OK
0xFCD00000-0xFCD0FFFF	Broadcom NetXtreme Gigabit Ethernet	OK
0xFCA00000-0xFCBFFFFF	PCI bus	OK
0xFCA00000-0xFCBFFFFF	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
0xFC800000-0xFC9FFFFF	PCI bus	OK
0xFC800000-0xFC9FFFFF	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
0xFC810000-0xFC81FFFF	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
0xFC600000-0xFC7FFFFF	PCI bus	OK
0xFC600000-0xFC7FFFFF	LSI Logic MegaRAID Elite 1650/1700 RAID Controller	OK
0xFB100000-0xFC5FFFFF	PCI bus	OK

[Components]

4.4.4000 180.00 KB (184,320 bytes) 2/5/2003

1:05 PM

c:\windows\system32\msrle32.dll Microsoft Corporation
OK C:\WINDOWS\system32\MSRLE32.DLL
5.2.3663.0 (main.020715-1506) 10.50 KB
(10,752 bytes) 7/29/2002 1:33 PM

[Multimedia]

c:\windows\system32\tsbyuv.dll Microsoft Corporation
OK C:\WINDOWS\system32\TSBYUV.DLL
5.2.3663.0 (main.020715-1506) 8.00 KB (8,192
bytes) 7/16/2002 8:48 AM

[Audio Codecs]

c:\windows\system32\ir32_32.dll Not Available
OK C:\WINDOWS\system32\IR32_32.DLL
Not Available 194.50 KB (199,168 bytes)
7/29/2002 1:24 PM

CODEC Manufacturer Description Status File
Version Size Creation Date
c:\windows\system32\msg723.acm Microsoft Corporation
OK C:\WINDOWS\system32\MSG723.ACM
4.4.4000 116.00 KB (118,784 bytes) 2/5/2003

c:\windows\system32\iyuv_32.dll Microsoft Corporation
OK C:\WINDOWS\system32\IYUV_32.DLL
5.2.3663.0 (main.020715-1506) 45.00 KB
(46,080 bytes) 7/16/2002 8:47 AM

1:05 PM
c:\windows\system32\msadp32.acm Microsoft
Corporation OK
C:\WINDOWS\system32\MSADP32.ACM
5.2.3663.0 (main.020715-1506) 14.50 KB
(14,848 bytes) 7/29/2002 1:31 PM

c:\windows\system32\msyuv.dll Microsoft Corporation
OK C:\WINDOWS\system32\MSYUV.DLL
5.2.3663.0 (main.020715-1506) 16.50 KB
(16,896 bytes) 7/16/2002 8:47 AM

c:\windows\system32\msgsm32.acm Microsoft
Corporation OK
C:\WINDOWS\system32\MSGSM32.ACM
5.2.3663.0 (main.020715-1506) 20.00 KB
(20,480 bytes) 7/29/2002 1:32 PM

c:\windows\system32\msh263.drv Microsoft Corporation
OK C:\WINDOWS\system32\MSH263.DRV
4.4.4000 280.00 KB (286,720 bytes)
7/16/2002 8:46 AM

c:\windows\system32\sl_anet.acm Sipro Lab Telecom Inc.
Sipro Lab Telecom Audio Codec OK
C:\WINDOWS\system32\SL_ANET.ACM 3.02
84.00 KB (86,016 bytes) 7/29/2002 1:56 PM

c:\windows\system32\iccvvid.dll Radius Inc.
OK C:\WINDOWS\system32\ICCVVID.DLL
1.10.0.6 108.00 KB (110,592 bytes)
7/29/2002 1:21 PM

c:\windows\system32\tssoft32.acm DSP GROUP, INC.
OK C:\WINDOWS\system32\TSSOFT32.ACM
1.01 9.50 KB (9,728 bytes) 7/29/2002 2:00

c:\windows\system32\msvidc32.dll Microsoft Corporation
OK C:\WINDOWS\system32\MSVIDC32.DLL
5.2.3663.0 (main.020715-1506) 26.50 KB
(27,136 bytes) 7/29/2002 1:33 PM

PM
c:\windows\system32\msg711.acm Microsoft Corporation
OK C:\WINDOWS\system32\MSG711.ACM
5.2.3663.0 (main.020715-1506) 10.00 KB
(10,240 bytes) 7/29/2002 1:32 PM

[CD-ROM]

Item Value

c:\windows\system32\imaadp32.acm Microsoft
Corporation OK
C:\WINDOWS\system32\IMAADP32.ACM
5.2.3663.0 (main.020715-1506) 15.50 KB
(15,872 bytes) 7/29/2002 1:22 PM

[Sound Device]

Item Value

c:\windows\system32\l3codeca.acm Fraunhofer
Institut Integrierte Schaltungen IIS Fraunhofer IIS MPEG
Layer-3 Codec OK
C:\WINDOWS\system32\L3CODECA.ACM
1, 9, 0, 0305 284.00 KB (290,816 bytes)
7/29/2002 1:25 PM

[Display]

Item Value
Name RAGE XL PCI (Microsoft Corporation)
PNP Device ID
PCI\VEN_1002&DEV_4752&SUBSYS_010A1028
&REV_27\3&13C0B0C5&0&20
Adapter Type ATI RAGE XL PCI (B41), ATI
Technologies Inc. compatible
Adapter Description RAGE XL PCI (Microsoft
Corporation)
Adapter RAM 8.00 MB (8,388,608 bytes)
Installed Drivers ati2drad.dll
Driver Version 5.10.2600.6009
INF File atiixpad.inf (ati2mpad section)
Color Planes 1
Color Table Entries 4294967296
Resolution 1024 x 768 x 60 hertz

c:\windows\system32\msaud32.acm Microsoft
Corporation Windows Media Audio Codec OK
C:\WINDOWS\system32\MSAUD32.ACM
8.00.00.4477 288.00 KB (294,912 bytes)
7/29/2002 1:31 PM

[Video Codecs]

CODEC Manufacturer Description Status File
Version Size Creation Date
c:\windows\system32\msh261.drv Microsoft Corporation
OK C:\WINDOWS\system32\MSH261.DRV

Bits/Pixel 32
 Memory Address 0xFD000000-0xFE1FFFFF
 I/O Port 0x0000E800-0x0000E8FF
 Memory Address 0xFE101000-0xFE101FFF
 I/O Port 0x000003B0-0x000003DF
 I/O Port 0x000003C0-0x000003DF
 Memory Address 0xA0000-0xBFFFF
 Driver c:\windows\system32\drivers\ati2mpad.sys
 (5.10.2600.6009 built by: jlu, 296.13 KB (303,232 bytes),
 2/5/2003 6:52 AM)

[Infrared]

Item Value

[Input]

[Keyboard]

Item Value
 Description Standard 101/102-Key or Microsoft Natural
 PS/2 Keyboard
 Name Enhanced (101- or 102-key)
 Layout 00000409
 PNP Device ID ACPI\PNP0303\4&25F73A82&0
 Number of Function Keys 12
 I/O Port 0x00000060-0x00000060
 I/O Port 0x00000064-0x00000064
 IRQ Channel IRQ 1
 Driver c:\windows\system32\drivers\i8042prt.sys
 (5.2.3663.0 (main.020715-1506), 50.50 KB (51,712 bytes),
 7/29/2002 1:21 PM)

[Pointing Device]

Item Value
 Hardware Type PS/2 Compatible Mouse
 Number of Buttons 3
 Status OK
 PNP Device ID ACPI\PNP0F13\4&25F73A82&0
 Power Management Supported No
 Double Click Threshold 6
 Handedness Right Handed Operation
 IRQ Channel IRQ 12
 Driver c:\windows\system32\drivers\i8042prt.sys
 (5.2.3663.0 (main.020715-1506), 50.50 KB (51,712 bytes),
 7/29/2002 1:21 PM)

[Modem]

Item Value
 Name U.S. Robotics 56K FAX EXT
 Description U.S. Robotics 56K FAX EXT
 Device ID Modem0
 Device Type External Modem
 Attached To COM1
 Answer Mode Not Available
 PNP Device ID Not Available
 Provider Name Microsoft

Modem INF Path mdmusrgl.inf
 Modem INF Section ModemUSR2082
 Blind Off X4
 Blind On X3
 Compression Off &K0
 Compression On &K1
 Error Control Forced &M5
 Error Control Off &M0
 Error Control On &M4
 Flow Control Hard &H1&R2&I0
 Flow Control Off &H0&I0&R1
 Flow Control Soft &H2&I2&R1
 DCB
 Default <
 Inactivity Timeout 0
 Modulation Bell B1
 Modulation CCITT B0
 Prefix AT
 Pulse P
 Reset ATZ<cr>
 Responses Key Name U.S. Robotics 56K FAX EXT::U.S.
 Robotics Corporation::Microsoft
 Speaker Mode Dial M1
 Speaker Mode Off M0
 Speaker Mode On M2
 Speaker Mode Setup M3
 Speaker Volume High L3
 Speaker Volume Low L0
 Speaker Volume Med L2
 String Format Not Available
 Terminator <cr>
 Tone T

[Network]

[Adapter]

Item Value
 Name [00000001] Broadcom NetXtreme Gigabit Ethernet
 Adapter Type Ethernet 802.3
 Product Type Broadcom NetXtreme Gigabit Ethernet
 Installed Yes
 PNP Device ID
 PCI\VEN_14E4&DEV_1644&SUBSYS_01091028
 &REV_14\3&29E81982&0&10
 Last Reset 4/20/2003 10:39 AM
 Index 1
 Service Name b57w2k
 IP Address 192.1.10.77
 IP Subnet 255.255.255.0
 Default IP Gateway Not Available
 DHCP Enabled No
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 00:06:5B:0E:41:12
 Memory Address 0xFCD00000-0xFCD0FFFF
 IRQ Channel IRQ 18

Driver c:\windows\system32\drivers\b57xp32.sys (2.67.0.0 built by: WinDDK, 131.63 KB (134,784 bytes), 2/5/2003 6:52 AM)

Name [00000002] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Not Available
Product Type Broadcom NetXtreme Gigabit Ethernet
Installed Yes
PNP Device ID PCI\VEN_14E4&DEV_1644&SUBSYS_01091028&REV_14\3&29E81982&0&08
Last Reset 4/20/2003 10:39 AM
Index 2
Service Name b57w2k
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
Driver c:\windows\system32\drivers\b57xp32.sys (2.67.0.0 built by: WinDDK, 131.63 KB (134,784 bytes), 2/5/2003 6:52 AM)

Name [00000003] RAS Async Adapter
Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 4/20/2003 10:39 AM
Index 3
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000004] WAN Miniport (L2TP)
Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID ROOT\MS_L2TPMINIPOINT\0000
Last Reset 4/20/2003 10:39 AM
Index 4
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Driver c:\windows\system32\drivers\rasl2tp.sys (5.2.3663.0 (main.020715-1506), 61.63 KB (63,104 bytes), 7/29/2002 1:50 PM)

Name [00000005] 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 4/20/2003 10:39 AM
Index 5
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Driver c:\windows\system32\drivers\raspptp.sys (5.2.3663.0 (main.020715-1506), 56.00 KB (57,344 bytes), 7/29/2002 1:50 PM)

Name [00000006] 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 4/20/2003 10:39 AM
Index 6
Service Name RasPppoe
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 33:50:6F:45:30:30
Driver c:\windows\system32\drivers\rasppoe.sys (5.2.3663.0 (main.020715-1506), 36.88 KB (37,760 bytes), 7/29/2002 1:50 PM)

Name [00000007] Direct Parallel
Adapter Type Not Available
Product Type Direct Parallel
Installed Yes
PNP Device ID ROOT\MS_PTIMINIPOINT\0000
Last Reset 4/20/2003 10:39 AM
Index 7
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Driver c:\windows\system32\drivers\raspti.sys (5.2.3663.0 (main.020715-1506), 16.38 KB (16,768 bytes), 7/29/2002 1:50 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 4/20/2003 10:39 AM
Index 8
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\ndiswan.sys (5.2.3663.0 (main.020715-1506), 87.13 KB (89,216 bytes), 7/29/2002 1:33 PM)

[Protocol]

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

Name	MSAFD Tcpip [UDP/IP]
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	16 bytes
Maximum Message Size	63.93 KB (65,467 bytes)
Message Oriented	Yes
Minimum Address Size	16 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	Yes
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	No
Supports Expedited Data	No
Supports Graceful Closing	No
Supports Guaranteed Bandwidth	No

Supports Multicasting Yes

Name	RSVP UDP Service Provider
Connectionless Service	Yes
Guarantees Delivery	No
Guarantees Sequencing	No
Maximum Address Size	16 bytes
Maximum Message Size	63.93 KB (65,467 bytes)
Message Oriented	Yes
Minimum Address Size	16 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	Yes
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	Yes
Supports Expedited Data	No
Supports Graceful Closing	No
Supports Guaranteed Bandwidth	No
Supports Multicasting	Yes

Name	RSVP TCP Service Provider
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	16 bytes
Maximum Message Size	0 bytes
Message Oriented	No
Minimum Address Size	16 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	Yes
Supports Expedited Data	Yes
Supports Graceful Closing	Yes
Supports Guaranteed Bandwidth	No
Supports Multicasting	No

Name	MSAFD NetBIOS [\\Device\NetBT_Tcpip_{1DE90762-4D11-4613-A685-DC25CAA7B89B}] SEQUENCE 0
Connectionless Service	No
Guarantees Delivery	Yes
Guarantees Sequencing	Yes
Maximum Address Size	20 bytes
Maximum Message Size	62.50 KB (64,000 bytes)
Message Oriented	Yes
Minimum Address Size	20 bytes
Pseudo Stream Oriented	No
Supports Broadcasting	No
Supports Connect Data	No
Supports Disconnect Data	No
Supports Encryption	No
Supports Expedited Data	No
Supports Graceful Closing	No
Supports Guaranteed Bandwidth	No
Supports Multicasting	No

Name	MSAFD NetBIOS [\\Device\NetBT_Tcpip_{1DE90762-4D11-4613-A685-DC25CAA7B89B}] DATAGRAM 0
------	---

Connectionless Service Yes
 Guarantees Delivery No
 Guarantees Sequencing No
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting Yes
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{78401EAB-49C3-46CF-B875-DF0CD2EABE43}] SEQUENCEPACKET 1
 Connectionless Service No
 Guarantees Delivery Yes
 Guarantees Sequencing Yes
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting No
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{78401EAB-49C3-46CF-B875-DF0CD2EABE43}] DATAGRAM 1
 Connectionless Service Yes
 Guarantees Delivery No
 Guarantees Sequencing No
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting Yes
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{78401EAB-49C3-46CF-B875-DF0CD2EABE43}] SEQUENCEPACKET 2
 Connectionless Service No

Guarantees Delivery Yes
 Guarantees Sequencing Yes
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting No
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{7DC6E3B1-3062-4BB6-94BE-9594079A5C1C}] DATAGRAM 2
 Connectionless Service Yes
 Guarantees Delivery No
 Guarantees Sequencing No
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting Yes
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{223AB459-B6B4-48A5-9D6D-508419E0E5F9}] SEQUENCEPACKET 3
 Connectionless Service No
 Guarantees Delivery Yes
 Guarantees Sequencing Yes
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting No
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

Name MSAFD NetBIOS
 [\Device\NetBT_Tcpip_{223AB459-B6B4-48A5-9D6D-508419E0E5F9}] DATAGRAM 3
 Connectionless Service Yes
 Guarantees Delivery No

Guarantees Sequencing No
 Maximum Address Size 20 bytes
 Maximum Message Size 62.50 KB (64,000 bytes)
 Message Oriented Yes
 Minimum Address Size 20 bytes
 Pseudo Stream Oriented No
 Supports Broadcasting Yes
 Supports Connect Data No
 Supports Disconnect Data No
 Supports Encryption No
 Supports Expedited Data No
 Supports Graceful Closing No
 Supports Guaranteed Bandwidth No
 Supports Multicasting No

[WinSock]

Item Value
 File c:\windows\system32\winsock.dll
 Size 2.80 KB (2,864 bytes)
 Version 3.10

File c:\windows\system32\wsock32.dll
 Size 22.00 KB (22,528 bytes)
 Version 5.2.3663.0 (main.020715-1506)

[Ports]

[Serial]

Item Value
 Name Communications Port (COM1)
 Status OK
 PNP Device ID ACPI\PNP0501\1
 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
 I/O Port 0x000003F8-0x000003FF
 IRQ Channel IRQ 4
 Driver c:\windows\system32\drivers\serial.sys (5.2.3663.0
 (main.020715-1506), 61.63 KB (63,104 bytes), 7/29/2002
 1:55 PM)

[Parallel]

Item Value

[Storage]

[Drives]

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

 Drive B:
 Description Local Fixed Disk
 Compressed No
 File System NTFS
 Size 197.98 GB (212,582,334,464 bytes)
 Free Space 24.72 GB (26,539,655,168 bytes)
 Volume Name Backup
 Volume Serial Number 1003CBA5

 Drive C:
 Description Local Fixed Disk
 Compressed No
 File System NTFS
 Size 7.81 GB (8,389,750,784 bytes)
 Free Space 6.46 GB (6,933,479,424 bytes)
 Volume Name
 Volume Serial Number 084C30C3

 Drive D:
 Description CD-ROM Disc

 Drive E:
 Description Local Fixed Disk
 Compressed No
 File System NTFS
 Size 26.10 GB (28,023,521,280 bytes)
 Free Space 21.64 GB (23,237,328,896 bytes)
 Volume Name Work
 Volume Serial Number BCEC9DE7

Drive G:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available

Drive H:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available

Drive L:
 Description Local Fixed Disk
 Compressed Not Available
 File System Not Available
 Size Not Available
 Free Space Not Available
 Volume Name Not Available
 Volume Serial Number Not Available

[Disks]

Item	Value
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	FUJITSU MAM3367MC SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	2
SCSI Bus	0
SCSI Logical Unit	0
SCSI Port	7
SCSI Target ID	0
Sectors/Track	63
Size	33.91 GB (36,413,314,560 bytes)
Total Cylinders	4,427
Total Sectors	71,119,755
Total Tracks	1,128,885
Tracks/Cylinder	255
Partition Disk #11, Partition #0	
Partition Size	7.81 GB (8,389,753,344 bytes)
Partition Starting Offset	32,256 bytes
Partition Disk #11, Partition #1	
Partition Size	26.10 GB (28,023,528,960 bytes)
Partition Starting Offset	8,389,785,600 bytes
Description	Disk drive
Manufacturer	(Standard disk drives)
Model	MEGARAID LD 0 MEGARAID SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk

Partitions	3
SCSI Bus	3
SCSI Logical Unit	0
SCSI Port	2
SCSI Target ID	0
Sectors/Track	63
Size	118.11 GB (126,817,367,040 bytes)
Total Cylinders	15,418
Total Sectors	247,690,170
Total Tracks	3,931,590
Tracks/Cylinder	255
Partition Disk #2, Partition #0	
Partition Size	39.07 GB (41,948,895,744 bytes)
Partition Starting Offset	32,256 bytes
Partition Disk #2, Partition #1	
Partition Size	39.07 GB (41,948,928,000 bytes)
Partition Starting Offset	41,948,928,000 bytes
Partition Disk #2, Partition #2	
Partition Size	39.97 GB (42,919,511,040 bytes)
Partition Starting Offset	83,897,856,000 bytes

Description	Disk drive
Manufacturer	(Standard disk drives)
Model	MEGARAID LD 0 MEGARAID SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	3
SCSI Bus	3
SCSI Logical Unit	0
SCSI Port	3
SCSI Target ID	0
Sectors/Track	63
Size	118.11 GB (126,817,367,040 bytes)
Total Cylinders	15,418
Total Sectors	247,690,170
Total Tracks	3,931,590
Tracks/Cylinder	255
Partition Disk #4, Partition #0	
Partition Size	39.07 GB (41,948,895,744 bytes)
Partition Starting Offset	32,256 bytes
Partition Disk #4, Partition #1	
Partition Size	39.07 GB (41,948,928,000 bytes)
Partition Starting Offset	41,948,928,000 bytes
Partition Disk #4, Partition #2	
Partition Size	39.97 GB (42,919,511,040 bytes)
Partition Starting Offset	83,897,856,000 bytes

Description	Disk drive
Manufacturer	(Standard disk drives)
Model	MEGARAID LD 0 MEGARAID SCSI Disk Device
Bytes/Sector	512
Media Loaded	Yes
Media Type	Fixed hard disk
Partitions	4
SCSI Bus	3
SCSI Logical Unit	0
SCSI Port	6
SCSI Target ID	0
Sectors/Track	63
Size	118.71 GB (127,458,938,880 bytes)

Total Cylinders 15,496
 Total Sectors 248,943,240
 Total Tracks 3,951,480
 Tracks/Cylinder 255
 Partition Disk #9, Partition #0
 Partition Size 39.07 GB (41,948,895,744 bytes)
 Partition Starting Offset 32,256 bytes
 Partition Disk #9, Partition #1
 Partition Size 39.07 GB (41,948,928,000 bytes)
 Partition Starting Offset 41,948,928,000 bytes
 Partition Disk #9, Partition #2
 Partition Size 8.79 GB (9,442,621,440 bytes)
 Partition Starting Offset 83,897,856,000 bytes
 Partition Disk #9, Partition #3
 Partition Size 31.77 GB (34,110,236,160 bytes)
 Partition Starting Offset 93,340,477,440 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model MEGARAID LD 0 MEGARAID SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 3
 SCSI Bus 3
 SCSI Logical Unit 0
 SCSI Port 5
 SCSI Target ID 0
 Sectors/Track 63
 Size 118.11 GB (126,817,367,040 bytes)
 Total Cylinders 15,418
 Total Sectors 247,690,170
 Total Tracks 3,931,590
 Tracks/Cylinder 255
 Partition Disk #7, Partition #0
 Partition Size 39.07 GB (41,948,895,744 bytes)
 Partition Starting Offset 32,256 bytes
 Partition Disk #7, Partition #1
 Partition Size 39.07 GB (41,948,928,000 bytes)
 Partition Starting Offset 41,948,928,000 bytes
 Partition Disk #7, Partition #2
 Partition Size 39.97 GB (42,919,511,040 bytes)
 Partition Starting Offset 83,897,856,000 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model MEGARAID LD 0 MEGARAID SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 3
 SCSI Bus 3
 SCSI Logical Unit 0
 SCSI Port 4
 SCSI Target ID 0
 Sectors/Track 63
 Size 237.05 GB (254,531,289,600 bytes)
 Total Cylinders 30,945
 Total Sectors 497,131,425
 Total Tracks 7,890,975
 Tracks/Cylinder 255

Partition Disk #6, Partition #0
 Partition Size 31.25 GB (33,559,110,144 bytes)
 Partition Starting Offset 32,256 bytes
 Partition Disk #6, Partition #1
 Partition Size 7.81 GB (8,389,785,600 bytes)
 Partition Starting Offset 33,559,142,400 bytes
 Partition Disk #6, Partition #2
 Partition Size 197.98 GB (212,582,361,600 bytes)
 Partition Starting Offset 41,948,928,000 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model MEGARAID LD 0 MEGARAID SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 3
 SCSI Bus 3
 SCSI Logical Unit 0
 SCSI Port 1
 SCSI Target ID 0
 Sectors/Track 63
 Size 118.11 GB (126,817,367,040 bytes)
 Total Cylinders 15,418
 Total Sectors 247,690,170
 Total Tracks 3,931,590
 Tracks/Cylinder 255
 Partition Disk #0, Partition #0
 Partition Size 39.07 GB (41,948,895,744 bytes)
 Partition Starting Offset 32,256 bytes
 Partition Disk #0, Partition #1
 Partition Size 39.07 GB (41,948,928,000 bytes)
 Partition Starting Offset 41,948,928,000 bytes
 Partition Disk #0, Partition #2
 Partition Size 39.97 GB (42,919,511,040 bytes)
 Partition Starting Offset 83,897,856,000 bytes

Description Disk drive
 Manufacturer (Standard disk drives)
 Model MEGARAID LD 1 MEGARAID SCSI Disk Device
 Bytes/Sector 512
 Media Loaded Yes
 Media Type Fixed hard disk
 Partitions 3
 SCSI Bus 3
 SCSI Logical Unit 0
 SCSI Port 2
 SCSI Target ID 1
 Sectors/Track 63
 Size 118.11 GB (126,817,367,040 bytes)
 Total Cylinders 15,418
 Total Sectors 247,690,170
 Total Tracks 3,931,590
 Tracks/Cylinder 255
 Partition Disk #3, Partition #0
 Partition Size 39.07 GB (41,948,895,744 bytes)
 Partition Starting Offset 32,256 bytes
 Partition Disk #3, Partition #1
 Partition Size 39.07 GB (41,948,928,000 bytes)
 Partition Starting Offset 41,948,928,000 bytes
 Partition Disk #3, Partition #2

Partition Size 39.97 GB (42,919,511,040 bytes)
Partition Starting Offset 83,897,856,000 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model MEGARAID LD 1 MEGARAID SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 3
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 1
Sectors/Track 63
Size 118.11 GB (126,817,367,040 bytes)
Total Cylinders 15,418
Total Sectors 247,690,170
Total Tracks 3,931,590
Tracks/Cylinder 255
Partition Disk #5, Partition #0
Partition Size 39.07 GB (41,948,895,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #5, Partition #1
Partition Size 39.07 GB (41,948,928,000 bytes)
Partition Starting Offset 41,948,928,000 bytes
Partition Disk #5, Partition #2
Partition Size 39.97 GB (42,919,511,040 bytes)
Partition Starting Offset 83,897,856,000 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model MEGARAID LD 1 MEGARAID SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 3
SCSI Logical Unit 0
SCSI Port 6
SCSI Target ID 1
Sectors/Track 63
Size 118.71 GB (127,458,938,880 bytes)
Total Cylinders 15,496
Total Sectors 248,943,240
Total Tracks 3,951,480
Tracks/Cylinder 255
Partition Disk #10, Partition #0
Partition Size 39.07 GB (41,948,895,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #10, Partition #1
Partition Size 39.07 GB (41,948,928,000 bytes)
Partition Starting Offset 41,948,928,000 bytes
Partition Disk #10, Partition #2
Partition Size 40.56 GB (43,552,857,600 bytes)
Partition Starting Offset 83,897,856,000 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model MEGARAID LD 1 MEGARAID SCSI Disk Device
Bytes/Sector 512

Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 3
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 1
Sectors/Track 63
Size 118.11 GB (126,817,367,040 bytes)
Total Cylinders 15,418
Total Sectors 247,690,170
Total Tracks 3,931,590
Tracks/Cylinder 255
Partition Disk #8, Partition #0
Partition Size 39.07 GB (41,948,895,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #8, Partition #1
Partition Size 39.07 GB (41,948,928,000 bytes)
Partition Starting Offset 41,948,928,000 bytes
Partition Disk #8, Partition #2
Partition Size 39.97 GB (42,919,511,040 bytes)
Partition Starting Offset 83,897,856,000 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model MEGARAID LD 1 MEGARAID SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 3
SCSI Logical Unit 0
SCSI Port 1
SCSI Target ID 1
Sectors/Track 63
Size 118.11 GB (126,817,367,040 bytes)
Total Cylinders 15,418
Total Sectors 247,690,170
Total Tracks 3,931,590
Tracks/Cylinder 255
Partition Disk #1, Partition #0
Partition Size 39.07 GB (41,948,895,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #1, Partition #1
Partition Size 23.44 GB (25,169,356,800 bytes)
Partition Starting Offset 41,948,928,000 bytes
Partition Disk #1, Partition #2
Partition Size 23.44 GB (25,169,356,800 bytes)
Partition Starting Offset 67,118,284,800 bytes
Partition Disk #1, Partition #3
Partition Size 32.16 GB (34,529,725,440 bytes)
Partition Starting Offset 92,287,641,600 bytes

[SCSI]

Item Value

[IDE]

Item Value
Name Standard Dual Channel PCI IDE Controller

Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID
 PCI\VEN_1166&DEV_0212&SUBSYS_02121166&
 REV_93\3&13C0B0C5&0&79
 I/O Port 0x000008B0-0x000008BF
 Driver c:\windows\system32\drivers\pciide.sys (5.2.3663.0
 (main.020715-1506), 3.50 KB (3,584 bytes), 7/29/2002 1:49
 PM)

Name Primary IDE Channel
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status OK
 PNP Device ID PCIIDE\IDECHANNEL\4&10A8249&0&0
 I/O Port 0x000001F0-0x000001F7
 I/O Port 0x000003F6-0x000003F6
 IRQ Channel IRQ 14
 Driver c:\windows\system32\drivers\atapi.sys (5.2.3663.0
 (main.020715-1506), 90.38 KB (92,544 bytes), 7/29/2002
 1:09 PM)

Name Secondary IDE Channel
 Manufacturer (Standard IDE ATA/ATAPI controllers)
 Status Error
 PNP Device ID PCIIDE\IDECHANNEL\4&10A8249&0&1
 I/O Port 0x00000170-0x00000177
 I/O Port 0x00000376-0x00000376
 IRQ Channel IRQ 15
 Driver c:\windows\system32\drivers\atapi.sys (5.2.3663.0
 (main.020715-1506), 90.38 KB (92,544 bytes), 7/29/2002
 1:09 PM)

[Printing]

Name	Driver	Port Name	Server Name
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[Problem Devices]

Device PNP Device ID Error Code
 Secondary IDE Channel
 PCIIDE\IDECHANNEL\4&10A8249&0&1 This
 device cannot find enough free resources that it can use.
 Broadcom NetXtreme Gigabit Ethernet #2
 PCI\VEN_14E4&DEV_1644&SUBSYS_01091028
 &REV_14\3&29E81982&0&08 This device is disabled.

[USB]

Device PNP Device ID
 ServerWorks (RCC) PCI to USB Open Host Controller
 PCI\VEN_1166&DEV_0220&SUBSYS_02201166&
 REV_05\3&13C0B0C5&0&7A
 USB Root Hub USB\ROOT_HUB\4&1A0F8909&0

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
abiosdsk	Abiosdsk	Not Available	Kernel Driver	Ignore	No
acpi	Microsoft ACPI Driver	c:\windows\system32\drivers\acpi.sys	Kernel Driver	Normal	No
acpiec	ACPIEC	c:\windows\system32\drivers\acpiec.sys	Kernel Driver	Normal	No
adpu160m	adpu160m	c:\windows\system32\drivers\adpu160m.sys	Kernel Driver	Normal	No
adpu320	adpu320	Not Available	Kernel Driver	Normal	No
afcnt	afcnt	Not Available	Kernel Driver	Normal	No
afd	AFD Networking Support Environment	c:\windows\system32\drivers\afd.sys	Kernel Driver	Normal	No
aha154x	Aha154x	Not Available	Kernel Driver	Normal	No
aic78u2	aic78u2	Not Available	Kernel Driver	Normal	No
aic78xx	aic78xx	Not Available	Kernel Driver	Normal	No
aliide	AliIde	Not Available	Kernel Driver	Normal	No
asynmac	RAS Asynchronous Media Driver	c:\windows\system32\drivers\asynmac.sys	Kernel Driver	Normal	No
atapi	Standard IDE/ESDI Hard Disk Controller	c:\windows\system32\drivers\atapi.sys	Kernel Driver	Normal	No
atdisk	Atdisk	Not Available	Kernel Driver	Ignore	No
ati2mpad	ati2mpad	c:\windows\system32\drivers\ati2mpad.sys	Kernel Driver	Ignore	No
atmarpc	ATM ARP Client Protocol	c:\windows\system32\drivers\atmarpc.sys	Kernel Driver	Normal	No
audstub	Audio Stub Driver	c:\windows\system32\drivers\audstub.sys	Kernel Driver	Normal	No
b57w2k	Broadcom NetXtreme Gigabit Ethernet	c:\windows\system32\drivers\b57xp32.sys	Kernel Driver	Normal	No

beep	Beep	c:\windows\system32\drivers\beep.sys							
	Kernel Driver	Yes	System	Running	OK				
	Normal	No	Yes						
cbidf2k	cbidf2k	c:\windows\system32\drivers\cbidf2k.sys							
	Kernel Driver	No	Disabled	Stopped	OK				
	Normal	No	No						
cd20xrnt	cd20xrnt	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
cdfs	Cdfs	c:\windows\system32\drivers\cdfs.sys							
	File System Driver	Yes	Disabled	Running					
	OK	Normal	No	Yes					
cdrom	CD-ROM Driver								
	c:\windows\system32\drivers\cdrom.sys		Kernel						
Driver	Yes	System	Running	OK	Normal	No			
	Yes								
changer	Changer	Not Available	Kernel Driver	No					
	System	Stopped	OK	Ignore	No	No			
clusdisk	Cluster Disk Driver								
	c:\windows\system32\drivers\clusdisk.sys		Kernel						
Driver	No	Disabled	Stopped	OK	Normal	No			
	No								
cmdide	CmdIde	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
cpqarray	Cpqarray	Not Available	Kernel Driver						
	No	Disabled	Stopped	OK	Normal	No			
	No								
cpqarry2	cpqarry2	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
cpqcissm	cpqcissm	Not Available	Kernel						
Driver	No	Disabled	Stopped	OK	Normal	No			
	No								
cpqfcalm	cpqfcalm	Not Available	Kernel						
Driver	No	Disabled	Stopped	OK	Normal	No			
	No								
crecdisk	CRC Disk Filter Driver								
	c:\windows\system32\drivers\crecdisk.sys		Kernel						
Driver	Yes	Boot	Running	OK	Normal	No			
	Yes								
dac960nt	dac960nt	Not Available	Kernel						
Driver	No	Disabled	Stopped	OK	Normal	No			
	No								
dfsdriver	DfsDriver								
	c:\windows\system32\drivers\dfs.sys		File						
System Driver	Yes	Boot	Running	OK	Normal				
	No	Yes							
disk	Disk Driver								
	c:\windows\system32\drivers\disk.sys		Kernel						
Driver	Yes	Boot	Running	OK	Normal	No			
	Yes								
dmboot	dmboot	c:\windows\system32\drivers\dmboot.sys							
	Kernel Driver	No	Disabled	Stopped	OK				
	Normal	No	No						
dmio	Logical Disk Manager Driver								
	c:\windows\system32\drivers\dmio.sys		Kernel						
Driver	Yes	Boot	Running	OK	Normal	No			
	Yes								
dmload	dmload	c:\windows\system32\drivers\dmload.sys							
	Kernel Driver	Yes	Boot	Running	OK				
	Normal	No	Yes						
dpti2o	dpti2o	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
em	em	\\?\c:\windows\system32\drivers\em.sys							
	Kernel Driver	No	Manual	Stopped	OK				
	Normal	No	No						
fastfat	Fastfat	c:\windows\system32\drivers\fastfat.sys							
	File System Driver	No	Disabled	Stopped	OK				
	OK	Normal	No	No					
fdc	Floppy Disk Controller Driver								
	c:\windows\system32\drivers\fdc.sys		Kernel						
Driver	Yes	Manual	Running	OK	Normal	No			
	Yes								
fips	Fips	c:\windows\system32\drivers\fips.sys							
	Kernel Driver	Yes	System	Running	OK				
	Normal	No	Yes						
flpydisk	Floppy Disk Driver								
	c:\windows\system32\drivers\flpydisk.sys		Kernel						
Driver	Yes	Manual	Running	OK	Normal	No			
	Yes								
ftdisk	Volume Manager Driver								
	c:\windows\system32\drivers\ftdisk.sys		Kernel						
Driver	Yes	Boot	Running	OK	Normal	No			
	Yes								
gpc	Generic Packet Classifier								
	c:\windows\system32\drivers\msgpc.sys		Kernel						
Driver	Yes	Manual	Running	OK	Normal	No			
	Yes								
hpn	hpn	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
hpt3xx	hpt3xx	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
http	HTTP	c:\windows\system32\drivers\http.sys							
	Kernel Driver	No	Manual	Stopped	OK				
	Normal	No	No						
i2omgmt	i2omgmt	Not Available	Kernel						
Driver	No	System	Stopped	OK	Normal	No			
	No								
i2omp	i2omp	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver								
	c:\windows\system32\drivers\i8042prt.sys		Kernel						
Driver	Yes	System	Running	OK	Normal	No			
	Yes								
imapi	CD-Burning Filter Driver								
	c:\windows\system32\drivers\imapi.sys		Kernel						
Driver	No	System	Stopped	OK	Normal	No			
	No								
intelide	IntelIde	Not Available	Kernel Driver	No					
	Disabled	Stopped	OK	Normal	No	No			
interruptaffinityfilter	Interrupt Affinity Filter								
	c:\windows\system32\drivers\intfiltr.sys		Kernel						
Driver	Yes	Boot	Running	OK	Normal	No			
	Yes								
ipfilterdriver	IP Traffic Filter Driver								
	c:\windows\system32\drivers\ipfltdrv.sys		Kernel						
Driver	No	Manual	Stopped	OK	Normal	No			
	No								
ipinip	IP in IP Tunnel Driver								
	c:\windows\system32\drivers\ipinip.sys		Kernel						
Driver	No	Manual	Stopped	OK	Normal	No			
	No								
ipnat	IP Network Address Translator								
	c:\windows\system32\drivers\ipnat.sys		Kernel						

Driver	No	Manual	Stopped	OK	Normal	No	Driver	Yes	Manual	Running	OK	Normal	No								
ipsec	IPSEC driver							ndisuiio	NDIS Usermode I/O Protocol												
	c:\windows\system32\drivers\ipsec.sys						Kernel		c:\windows\system32\drivers\ndisuiio.sys					Kernel							
Driver	Yes	System	Running	OK	Normal	No	Driver	Yes	Manual	Running	OK	Normal	No								
	Yes								Yes												
ipsraidn	ipsraidn	Not Available	Kernel Driver	No			ndiswan	Remote Access NDIS WAN Driver													
	Disabled						Stopped	OK	Normal	No	No		c:\windows\system32\drivers\ndiswan.sys		Kernel						
isapnp	PnP ISA/EISA Bus Driver							Driver	Yes	Manual	Running	OK	Normal	No							
	c:\windows\system32\drivers\isapnp.sys						Kernel		Yes												
Driver	Yes	Boot	Running	OK	Critical	No	ndproxy	NDIS Proxy													
	Yes								c:\windows\system32\drivers\ndproxy.sys					Kernel							
kbdclass	Keyboard Class Driver							Driver	Yes	Manual	Running	OK	Normal	No							
	c:\windows\system32\drivers\kbdclass.sys						Kernel		Yes												
Driver	Yes	System	Running	OK	Normal	No	netbios	NetBIOS Interface													
	Yes								c:\windows\system32\drivers\netbios.sys					File							
ksecdd	KSecDD							System Driver	Yes	System	Running	OK	Normal								
	c:\windows\system32\drivers\ksecdd.sys						Kernel		No					Yes							
Driver	Yes	Boot	Running	OK	Normal	No	netbt	NetBios over Tcpip													
	Yes								c:\windows\system32\drivers\netbt.sys					Kernel							
Ip6nds35	Ip6nds35	Not Available	Kernel Driver	No			Driver	Yes	System	Running	OK	Normal	No								
Driver	No	Disabled	Stopped	OK	Normal	No		Yes													
	No							nfrd960	nfrd960	Not Available	Kernel Driver	No									
mnmdd	mnmdd	c:\windows\system32\drivers\mnmdd.sys				Kernel Driver	Yes	System	Running	OK	Ignore	No	Yes								
	Kernel Driver						Yes	System	Running	OK	Ignore	No	Yes								
modem	Modem	c:\windows\system32\drivers\modem.sys				Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No								
	Kernel Driver						No	Manual	Stopped	OK	Ignore	No	No								
mouclass	Mouse Class Driver							null	Null					c:\windows\system32\drivers\null.sys	Kernel Driver	Yes	System	Running	OK		
	c:\windows\system32\drivers\mouclass.sys						Kernel		Kernel Driver					Yes	System	Running	OK	Normal	No		
Driver	Yes	System	Running	OK	Normal	No		Normal					No	Yes							
	Yes							parport	Parport	c:\windows\system32\drivers\parport.sys				Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No
mountmgr	Mount Point Manager								Kernel Driver					No	Manual	Stopped	OK	Ignore	No	No	
	c:\windows\system32\drivers\mountmgr.sys						Kernel		Ignore					No	No						
Driver	Yes	Boot	Running	OK	Normal	No	partmgr	Partition Manager													
	Yes								c:\windows\system32\drivers\partmgr.sys					Kernel							
mraid35x	mraid35x							Driver	Yes	Boot	Running	OK	Normal	No							
	c:\windows\system32\drivers\mraid35x.sys						Kernel		Yes												
Driver	Yes	Boot	Running	OK	Normal	No	parvdm	ParVdm	c:\windows\system32\drivers\parvdm.sys				Kernel Driver	No	Auto	Stopped	OK	Ignore	No	No	
	Yes								Kernel Driver					No	Auto	Stopped	OK	Ignore	No	No	
mrxdav	WebDav Client Redirector							pci	PCI Bus Driver												
	c:\windows\system32\drivers\mrxdav.sys						File		c:\windows\system32\drivers\pci.sys					Kernel							
System Driver	No	Manual	Stopped	OK	Normal		Driver	Yes	Boot	Running	OK	Critical	No								
	No								Yes												
mrxsmb	MRXSMB							pciide	PCIIde	c:\windows\system32\drivers\pciide.sys				Kernel Driver	Yes	Boot	Running	OK	Normal	No	Yes
	c:\windows\system32\drivers\mrxsmb.sys						File		Kernel Driver					Yes	Boot	Running	OK	Normal	No	Yes	
System Driver	Yes	System	Running	OK	Normal		pcmcia	Pcmcia	c:\windows\system32\drivers\pcmcia.sys				Kernel Driver	No	Disabled	Stopped	OK	Normal	No	No	
	No						Yes		Kernel Driver					No	Disabled	Stopped	OK	Normal	No	No	
msfs	Msfs	c:\windows\system32\drivers\msfs.sys				File System Driver	Yes	System	Running	OK	Normal	No	Yes								
	File System Driver						Yes	System	Running	OK	Normal	No	Yes								
mup	Mup	c:\windows\system32\drivers\mup.sys				File System Driver	Yes	Boot	Running	OK	Normal	No	Yes								
	File System Driver						Yes	Boot	Running	OK	Normal	No	Yes								
ndis	NDIS System Driver							pdcomp	PDCOMP	Not Available			Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No	
	c:\windows\system32\drivers\ndis.sys						Kernel		No					Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No
Driver	Yes	Boot	Running	OK	Normal	No	pdframe	PDFRAME	Not Available			Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No	No	
	Yes								No					Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No
ndistapi	Remote Access NDIS TAPI Driver							pdreli	PDRELI	Not Available			Kernel Driver	No	Manual	Stopped	OK	Ignore	No	No	No
	c:\windows\system32\drivers\ndistapi.sys						Kernel		Manual					Stopped	OK	Ignore	No	No	No	No	No

pdframe	PDRFRAME	Not Available	Kernel	Driver	Yes	Manual	Running	OK	Normal	No
Driver	No	Manual	Stopped	OK	Ignore	No				
perc2	perc2	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
perc2hib	perc2hib	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
pptpminiport	WAN Miniport (PPTP)									
	c:\windows\system32\drivers\raspppt.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
processor	Processor Driver									
	c:\windows\system32\drivers\processr.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
ptilink	Direct Parallel Link Driver									
	c:\windows\system32\drivers\ptilink.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
ql1080	ql1080	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql10wnt	QL10wnt	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql12160	ql12160	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql1240	ql1240	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql1280	ql1280	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql2100	ql2100	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql2200	ql2200	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
ql2300	ql2300	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
rasacd	Remote Access Auto Connection Driver									
	c:\windows\system32\drivers\rasacd.sys			Kernel						
Driver	Yes	System	Running	OK	Normal	No				
	Yes									
rasl2tp	WAN Miniport (L2TP)									
	c:\windows\system32\drivers\rasl2tp.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
raspppoe	Remote Access PPPOE Driver									
	c:\windows\system32\drivers\raspppoe.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
raspti	Direct Parallel									
	c:\windows\system32\drivers\raspti.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
rdbss	Rdbss	c:\windows\system32\drivers\rdbss.sys								
	File System Driver	Yes	System	Running						
	OK	Normal	No	Yes						
rdpcdd	RDPCDD									
	c:\windows\system32\drivers\rdpcdd.sys			Kernel						
Driver	Yes	System	Running	OK	Ignore	No				
	Yes									
rdpdr	Terminal Server Device Redirector Driver									
	c:\windows\system32\drivers\rdpdr.sys			Kernel						
Driver	Yes	System	Running	OK	Normal	No				
	Yes									
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
rdpwd	RDPWD									
	c:\windows\system32\drivers\rdpwd.sys			Kernel						
Driver	Yes	Manual	Running	OK	Ignore	No				
	Yes									
redbook	Digital CD Audio Playback Filter Driver									
	c:\windows\system32\drivers\redbook.sys			Kernel						
Driver	Yes	System	Running	OK	Normal	No				
	Yes									
secdrv	Secdrv	c:\windows\system32\drivers\secdrv.sys								
	Kernel Driver	No	Manual	Stopped	OK					
	Normal	No	No							
serenum	Serenum Filter Driver									
	c:\windows\system32\drivers\serenum.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
serial	Serial port driver									
	c:\windows\system32\drivers\serial.sys			Kernel						
Driver	Yes	System	Running	OK	Ignore	No				
	Yes									
sfloppy	Sfloppy	c:\windows\system32\drivers\sfloppy.sys								
	Kernel Driver	No	System	Stopped	OK					
	Ignore	No	No							
simbad	Simbad	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
sparrow	Sparrow	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
srv	Srv	c:\windows\system32\drivers\srv.sys								
	File System Driver	Yes	Manual	Running						
	OK	Normal	No	Yes						
swenum	Software Bus Driver									
	c:\windows\system32\drivers\swenum.sys			Kernel						
Driver	Yes	Manual	Running	OK	Normal	No				
	Yes									
symc810	symc810		Not Available	Kernel						
Driver	No	Disabled	Stopped	OK	Normal	No				
	No									
symc8xx	symc8xx		Not Available	Kernel						
Driver	No	Disabled	Stopped	OK	Normal	No				
	No									
symmpi	symmpi	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
sym_hi	sym_hi	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
sym_u3	sym_u3	Not Available	Kernel Driver	No						
	Disabled	Stopped	OK	Normal	No	No				
tcpip	TCP/IP Protocol Driver									
	c:\windows\system32\drivers\tcpip.sys			Kernel						
Driver	Yes	System	Running	OK	Normal	No				
	Yes									
tdpipe	TDPIPE	c:\windows\system32\drivers\tdpipe.sys								
	Kernel Driver	No	Manual	Stopped	OK					
	Ignore	No	No							
tdtcp	TDTCP	c:\windows\system32\drivers\tdtcp.sys								
	Kernel Driver	Yes	Manual	Running	OK					
	Ignore	No	Yes							
termdd	Terminal Device Driver									
	c:\windows\system32\drivers\termdd.sys			Kernel						
Driver	Yes	System	Running	OK	Normal	No				
	Yes									

toside	TosIde	Not Available	Kernel Driver	No
	Disabled	Stopped	OK	Normal
udfs	Udfs	c:\windows\system32\drivers\udfs.sys		No
	File System Driver		No	Disabled
	OK	Normal	No	Stopped
ultra	ultra	Not Available	Kernel Driver	No
	Disabled	Stopped	OK	Normal
update	Microcode Update Driver			No
Driver	Yes	Manual	Running	OK
	Yes			Normal
usbhub	USB2 Enabled Hub			No
Driver	Yes	Manual	Running	OK
	Yes			Normal
usbohci	Microsoft USB Open Host Controller Miniport			No
Driver	Yes	Manual	Running	OK
	Yes			Normal
vgasave	VGA Display Controller.			No
Driver	Yes	System	Running	OK
	Yes			Ignore
viaide	ViaIde	Not Available	Kernel Driver	No
	Disabled	Stopped	OK	Normal
volsnap	VolSnap	c:\windows\system32\drivers\volsnap.sys		No
Driver	Yes	Manual	Running	OK
	Yes			Normal
wanarp	Remote Access IP ARP Driver			No
Driver	Yes	Manual	Running	OK
	Yes			Normal
wdica	WDICA	Not Available	Kernel Driver	No
	Manual	Stopped	OK	Ignore
wlbs	Network Load Balancing			No
Driver	No	Manual	Stopped	OK
	No			Normal

[Signed Drivers]

Device Name	Signed	Device Class	Driver Version
Driver Date	Driver Name	Manufacturer	Device ID
Not Available	Not Available	Not Available	Not Available
Available	Not Available	Not Available	Not Available
Available	Not Available	HTREE\ROOT\0	
ACPI Multiprocessor PC	Yes	COMPUTER	
computers)	5.2.3663.0	7/15/2002	(Standard
	hal.inf	Not Available	
	ROOT\ACPI_HAL\0000		
Microsoft ACPI-Compliant System	Yes	SYSTEM	
Processor	5.2.3663.0	7/15/2002	Microsoft
	acpi.inf	Not Available	ACPI_HAL\PNP0C08\0
	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\0		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf

	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\1		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\2		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\3		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\4		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\5		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\6		
Processor	Yes	PROCESSOR	5.2.3663.0
	7/15/2002	(Standard processor types)	cpu.inf
	Not Available	ACPI\GENUINEINTEL_-	
	_X86_FAMILY_15_MODEL_2\7		
PCI bus	Yes	SYSTEM	5.2.3663.0
	7/15/2002	(Standard system devices)	
	machine.inf	Not Available	
	ACPI\PNP0A03\1		
ServerWorks Grand Champion - NorthBridge High End	Yes	SYSTEM	5.2.3663.0
	7/15/2002	ServerWorks (RCC)	
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&		
	REV_22\3&13C0B0C5&0&00		
ServerWorks Grand Champion - NorthBridge High End	Yes	SYSTEM	5.2.3663.0
	7/15/2002	ServerWorks (RCC)	
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&		
	REV_00\3&13C0B0C5&0&01		
ServerWorks Grand Champion - NorthBridge High End	Yes	SYSTEM	5.2.3663.0
	7/15/2002	ServerWorks (RCC)	
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&		
	REV_00\3&13C0B0C5&0&02		
ServerWorks Grand Champion - NorthBridge High End	Yes	SYSTEM	5.2.3663.0
	7/15/2002	ServerWorks (RCC)	
	machine.inf	Not Available	
	PCI\VEN_1166&DEV_0011&SUBSYS_00000000&		
	REV_00\3&13C0B0C5&0&03		
Adaptec AIC-7892 Ultra160 PCI SCSI Card	Yes	SCSIADAPTER	5.2.3663.0
	7/15/2002	Adaptec pnpscsi.inf	Not Available
	PCI\VEN_9005&DEV_008F&SUBSYS_010A1028		
	&REV_02\3&13C0B0C5&0&18		
Disk drive	Yes	DISKDRIVE	5.2.3663.0
	7/15/2002	(Standard disk drives)	disk.inf

Not Available
 SCSI\DISK&VEN_FUJITSU&PROD_MAM3367M
 C&REV_5A01\4&2DD1245A&0&000
 PE 1x5 Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsdev.inf Not Available
 SCSI\PROCESSOR&VEN_PE/PV&PROD_1X5_SC
 SI_BP&REV_1.1\4&2DD1245A&0&060
 RAGE XL PCI (Microsoft Corporation) Yes
 DISPLAY 5.10.2600.6009 7/2/2001ATI
 Technologies Inc.atixpad.inf Not Available
 PCI\VEN_1002&DEV_4752&SUBSYS_010A1028
 &REV_27\3&13C0B0C5&0&20
 Default Monitor Yes MONITOR 5.1.2001.0
 6/6/2001(Standard monitor types) monitor.inf
 Not Available
 DISPLAY\DEFAULT_MONITOR\4&181F08A1&0
 &80000000&00&04
 PCI standard host CPU bridge Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 PCI\VEN_1166&DEV_0201&SUBSYS_00000000&
 REV_93\3&13C0B0C5&0&78
 Direct memory access controller Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ACPI\PNP0200\4&25F73A82&0
 Numeric data processor Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ACPI\PNP0C04\4&25F73A82&0
 Programmable interrupt controller Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ACPI\PNP0000\4&25F73A82&0
 System speaker Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0800\4&25F73A82&0
 System timer Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0100\4&25F73A82&0
 Standard floppy disk controller Yes FDC
 5.2.3663.0 7/15/2002 (Standard floppy
 disk controllers) fdc.inf Not Available
 ACPI\PNP0700\4&25F73A82&0
 Floppy disk drive Yes FLOPPYDISK 5.2.3663.0
 7/15/2002 (Standard floppy disk drives)
 fpydisk.inf Not Available
 FDC\GENERIC_FLOPPY_DRIVE\5&1AE2F47D&
 0&0
 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
 Yes KEYBOARD 5.2.3663.0
 7/15/2002 (Standard keyboards)
 keyboard.inf Not Available
 ACPI\PNP0303\4&25F73A82&0
 PS/2 Compatible Mouse Yes MOUSE 5.2.3663.0
 7/15/2002 Microsoft msmouse.inf
 Not Available ACPI\PNP0F13\4&25F73A82&0

Communications Port Yes PORTS 5.2.3663.0
 7/15/2002 (Standard port types)
 msports.inf Not Available ACPI\PNP0501\1
 System CMOS/real time clock Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ACPI\PNP0B00\4&25F73A82&0
 System board Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0C01\2
 Standard Dual Channel PCI IDE Controller Yes HDC
 5.2.3663.0 7/15/2002 (Standard IDE
 ATA/ATAPI controllers) mshdc.inf Not Available
 PCI\VEN_1166&DEV_0212&SUBSYS_02121166&
 REV_93\3&13C0B0C5&0&79
 Primary IDE Channel Yes HDC 5.2.3663.0
 7/15/2002 (Standard IDE ATA/ATAPI
 controllers) mshdc.inf Not Available
 PCI\IDE\IDECHANNEL\4&10A8249&0&0
 CD-ROM Drive Yes CDROM 5.2.3663.0
 7/15/2002 (Standard CD-ROM drives)
 cdrom.inf Not Available
 IDE\CDROMTEAC_CD-
 224E_____3.7D_____5&3125DC
 91&0&0.0.0
 Secondary IDE Channel Yes HDC 5.2.3663.0
 7/15/2002 (Standard IDE ATA/ATAPI
 controllers) mshdc.inf Not Available
 PCI\IDE\IDECHANNEL\4&10A8249&0&1
 ServerWorks (RCC) PCI to USB Open Host Controller
 Yes USB 5.2.3663.0 7/15/2002
 ServerWorks (RCC) usbport.inf Not
 Available
 PCI\VEN_1166&DEV_0220&SUBSYS_02201166&
 REV_05\3&13C0B0C5&0&7A
 USB Root Hub Yes USB 5.2.3663.0
 7/15/2002 (Standard USB Host Controller)
 usbport.inf Not Available
 USB\ROOT_HUB\4&1A0F8909&0
 PCI standard host CPU bridge Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 PCI\VEN_1166&DEV_0225&SUBSYS_00000000&
 REV_00\3&13C0B0C5&0&7B
 ISAPNP Read Data Port Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ISAPNP\READDATAPORT\0
 PCI standard host CPU bridge Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 PCI\VEN_1166&DEV_0010&SUBSYS_00000000&
 REV_03\3&13C0B0C5&0&80
 PCI standard host CPU bridge Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 PCI\VEN_1166&DEV_0010&SUBSYS_00000000&
 REV_03\3&13C0B0C5&0&82
 PCI standard host CPU bridge Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system

devices) machine.inf	Not Available			scsidev.inf	Not Available		
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&13C0B0C5&0&88				SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS			
DELL PV22XS Backplane	Yes	SYSTEM		&REV_E.10\4&1E374441&0&060			
5.2.3663.0	7/15/2002	(Standard system		DELL PV22XS Backplane	Yes	SYSTEM	
devices) machine.inf	Not Available			5.2.3663.0	7/15/2002	Dell	
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&13C0B0C5&0&8A				scsidev.inf	Not Available		
DELL PV22XS Backplane	Yes	SYSTEM		SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS			
5.2.3663.0	7/15/2002	(Standard system		&REV_E.10\4&1E374441&0&160			
devices) machine.inf	Not Available			RAID Virtual Device	Yes	SYSTEM	
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&13C0B0C5&0&90				5.2.3663.0	7/15/2002	American	
DELL PV22XS Backplane	Yes	SYSTEM		Megatrends, Inc.	scsidev.inf	Not Available	
5.2.3663.0	7/15/2002	(Standard system		SCSI\OTHER&VEN__RAID&PROD__DUMMY			
devices) machine.inf	Not Available			DEVICE&REV_0000\4&1E374441&0&2390			
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&13C0B0C5&0&92				Disk drive	Yes	DISKDRIVE	5.2.3663.0
DELL PV22XS Backplane	Yes	SYSTEM		7/15/2002	(Standard disk drives)	disk.inf	
5.2.3663.0	7/15/2002	(Standard system		Not Available			
devices) machine.inf	Not Available			SCSI\DISK&VEN_MEGARAID&PROD__LD__0_			
PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&13C0B0C5&0&92				MEGARAID&REV_4&1E374441&0&300			
DELL PV22XS Backplane	Yes	SYSTEM	5.2.3663.0	Disk drive	Yes	DISKDRIVE	5.2.3663.0
5.2.3663.0	7/15/2002	(Standard system devices)		7/15/2002	(Standard disk drives)	disk.inf	
machine.inf	Not Available			Not Available			
ACPI\PNP0A03\2				SCSI\DISK&VEN_MEGARAID&PROD__LD__1_			
LSI Logic MegaRAID Elite 1650/1700 RAID Controller				MEGARAID&REV_4&1E374441&0&310			
No	SCSIADAPTER	6.31.2.32		PCI bus	Yes	SYSTEM	5.2.3663.0
1/22/2003	LSI Logic Corp.,	oem1.inf	Not Available	7/15/2002	(Standard system devices)		
Available				machine.inf	Not Available		
PCI\VEN_101E&DEV_1960&SUBSYS_0494101E				ACPI\PNP0A03\3			
&REV_01\3&1070020&0&08				Broadcom NetXtreme Gigabit Ethernet	Yes	NET	
DELL PV22XS Backplane	Yes	SYSTEM		2.67.0.0	7/15/2002	Broadcom	
5.2.3663.0	7/15/2002	Dell		netb57xp.inf	Not Available		
scsidev.inf	Not Available			PCI\VEN_14E4&DEV_1644&SUBSYS_01091028			
SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS				&REV_14\3&29E81982&0&08			
&REV_E.10\4&3AC90B97&0&060				Broadcom NetXtreme Gigabit Ethernet	Yes	NET	
DELL PV22XS Backplane	Yes	SYSTEM		2.67.0.0	7/15/2002	Broadcom	
5.2.3663.0	7/15/2002	Dell		netb57xp.inf	Not Available		
scsidev.inf	Not Available			PCI\VEN_14E4&DEV_1644&SUBSYS_01091028			
SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS				&REV_14\3&29E81982&0&10			
&REV_E.10\4&3AC90B97&0&160				PCI bus	Yes	SYSTEM	5.2.3663.0
RAID Virtual Device	Yes	SYSTEM		7/15/2002	(Standard system devices)		
5.2.3663.0	7/15/2002	American		machine.inf	Not Available		
Megatrends, Inc.	scsidev.inf	Not Available		ACPI\PNP0A03\4			
SCSI\OTHER&VEN__RAID&PROD__DUMMY				LSI Logic MegaRAID Elite 1650/1700 RAID Controller			
DEVICE&REV_0000\4&3AC90B97&0&2390				No	SCSIADAPTER	6.31.2.32	
Disk drive	Yes	DISKDRIVE	5.2.3663.0	1/22/2003	LSI Logic Corp.,	oem1.inf	Not Available
7/15/2002	(Standard disk drives)	disk.inf		Available			
Not Available				PCI\VEN_101E&DEV_1960&SUBSYS_0494101E			
SCSI\DISK&VEN_MEGARAID&PROD__LD__0_				&REV_01\3&172E68DD&0&08			
MEGARAID&REV_4&3AC90B97&0&300				DELL PV22XS Backplane	Yes	SYSTEM	
Disk drive	Yes	DISKDRIVE	5.2.3663.0	5.2.3663.0	7/15/2002	Dell	
7/15/2002	(Standard disk drives)	disk.inf		scsidev.inf	Not Available		
Not Available				SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS			
SCSI\DISK&VEN_MEGARAID&PROD__LD__1_				&REV_E.10\4&381C7342&0&060			
MEGARAID&REV_4&3AC90B97&0&310				DELL PV22XS Backplane	Yes	SYSTEM	
LSI Logic MegaRAID Elite 1650/1700 RAID Controller				5.2.3663.0	7/15/2002	Dell	
No	SCSIADAPTER	6.31.2.32		scsidev.inf	Not Available		
1/22/2003	LSI Logic Corp.,	oem1.inf	Not Available	SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS			
Available				&REV_E.10\4&381C7342&0&160			
PCI\VEN_101E&DEV_1960&SUBSYS_0494101E				RAID Virtual Device	Yes	SYSTEM	
&REV_01\3&1070020&0&10				5.2.3663.0	7/15/2002	American	
DELL PV22XS Backplane	Yes	SYSTEM		Megatrends, Inc.	scsidev.inf	Not Available	
5.2.3663.0	7/15/2002	Dell					

SCSI\OTHER&VEN__RAID&PROD__DUMMY
 DEVICE&REV_0000\4&381C7342&0&2390
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__0_
 MEGARAID&REV_4&381C7342&0&300
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__1_
 MEGARAID&REV_4&381C7342&0&310
 PCI bus Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0A03\5
 LSI Logic MegaRAID Elite 1650/1700 RAID Controller
 No SCSIADAPTER 6.31.2.32
 1/22/2003 LSI Logic Corp., oem1.infNot
 Available
 PCI\VEN_101E&DEV_1960&SUBSYS_0494101E
 &REV_01\3&474B838&0&08
 DELL PV22XS Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsidev.inf Not Available
 SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS
 &REV_E.10\4&2F8E5CBA&0&060
 DELL PV22XS Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsidev.inf Not Available
 SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS
 &REV_E.10\4&2F8E5CBA&0&160
 RAID Virtual Device Yes SYSTEM
 5.2.3663.0 7/15/2002 American
 Megatrends, Inc. scsidev.inf Not Available
 SCSI\OTHER&VEN__RAID&PROD__DUMMY
 DEVICE&REV_0000\4&2F8E5CBA&0&2390
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__0_
 MEGARAID&REV_4&2F8E5CBA&0&300
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__1_
 MEGARAID&REV_4&2F8E5CBA&0&310
 LSI Logic MegaRAID Elite 1650/1700 RAID Controller
 No SCSIADAPTER 6.31.2.32
 1/22/2003 LSI Logic Corp., oem1.infNot
 Available
 PCI\VEN_101E&DEV_1960&SUBSYS_0494101E
 &REV_01\3&474B838&0&10
 DELL PV22XS Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsidev.inf Not Available
 SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS
 &REV_E.10\4&3A330C87&0&060
 DELL PV22XS Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsidev.inf Not Available

SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS
 &REV_E.10\4&3A330C87&0&160
 RAID Virtual Device Yes SYSTEM
 5.2.3663.0 7/15/2002 American
 Megatrends, Inc. scsidev.inf Not Available
 SCSI\OTHER&VEN__RAID&PROD__DUMMY
 DEVICE&REV_0000\4&3A330C87&0&2390
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__0_
 MEGARAID&REV_4&3A330C87&0&300
 PCI bus Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0A03\6
 LSI Logic MegaRAID Elite 1650/1700 RAID Controller
 No SCSIADAPTER 6.31.2.32
 1/22/2003 LSI Logic Corp., oem1.infNot
 Available
 PCI\VEN_101E&DEV_1960&SUBSYS_0494101E
 &REV_01\3&E44F86D&0&08
 DELL PV22XS Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsidev.inf Not Available
 SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS
 &REV_E.10\4&10BD8712&0&060
 DELL PV22XS Backplane Yes SYSTEM
 5.2.3663.0 7/15/2002 Dell
 scsidev.inf Not Available
 SCSI\PROCESSOR&VEN_DELL&PROD_PV22XS
 &REV_E.10\4&10BD8712&0&160
 RAID Virtual Device Yes SYSTEM
 5.2.3663.0 7/15/2002 American
 Megatrends, Inc. scsidev.inf Not Available
 SCSI\OTHER&VEN__RAID&PROD__DUMMY
 DEVICE&REV_0000\4&10BD8712&0&2390
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__0_
 MEGARAID&REV_4&10BD8712&0&300
 Disk drive Yes DISKDRIVE 5.2.3663.0
 7/15/2002 (Standard disk drives) disk.inf
 Not Available
 SCSI\DISK&VEN_MEGARAID&PROD__LD__1_
 MEGARAID&REV_4&10BD8712&0&310
 PCI bus Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)
 machine.inf Not Available
 ACPI\PNP0A03\7
 ACPI Fixed Feature Button Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ACPI\FIXEDBUTTON\2&DABA3FF&0
 Logical Disk Manager Yes SYSTEM
 5.2.3663.0 7/15/2002 (Standard system
 devices) machine.inf Not Available
 ROOT\DMIO\0000
 Volume Manager Yes SYSTEM 5.2.3663.0
 7/15/2002 (Standard system devices)

machine.inf Not Available
 ROOT\FTDISK\0000
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REB092B092OFFSET7E00LENGTH1F4117A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REB092B092OFFSET1F411F800LENGTH686551E00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7713OFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7713OFFSET9C459D800LENGTH9C459D800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7713OFFSET1388B3B000LENGTH9FE33C400
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7712OFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7712OFFSET9C459D800LENGTH5DC35E800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7712OFFSETFA08FC000LENGTH5DC35E800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C7712OFFSET157CC5A800LENGTH80A21CC00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771FOFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771FOFFSET9C459D800LENGTH9C459D800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771FOFFSET1388B3B000LENGTH9FE33C400
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771EOFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771EOFFSET9C459D800LENGTH9C459D800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771EOFFSET1388B3B000LENGTH9FE33C400
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771BOFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771BOFFSET9C459D800LENGTH9C459D800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771BOFFSET1388B3B000LENGTH9FE33C400
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771AOFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771AOFFSET9C459D800LENGTH9C459D800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 REE40C771AOFFSET1388B3B000LENGTH9FE33C400
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 RE9268BFD3OFFSET7E00LENGTH9C4595A00
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available
 STORAGE\VOLUME\1&30A96598&0&SIGNATU
 RE9268BFD3OFFSET9C459D800LENGTH9C459D800
 Generic volume Yes VOLUME 5.2.3663.0
 7/15/2002 Microsoft volume.inf
 Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE9268BFD3OFFSET1388B3B000LENGTH232D2F800
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE9268BFD3OFFSET15BB86A800LENGTH7F120E600
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE9268BFD2OFFSET7E00LENGTH9C4595A00
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE9268BFD2OFFSET9C459D800LENGTH9C459D800
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE9268BFD2OFFSET1388B3B000LENGTHA23F3DE00
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE6A58E1EAFFSET7E00LENGTH7D0476200
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE6A58E1EAFFSET7D047E000LENGTH1F411F800
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
RE6A58E1EAFFSET9C459D800LENGTH317EE56A00
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
REE40C771DOFFSET7E00LENGTH9C4595A00
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
REE40C771DOFFSET9C459D800LENGTH9C459D800
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
REE40C771DOFFSET1388B3B000LENGTH9FE33C400
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
REE40C771COFFSET7E00LENGTH9C4595A00
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
REE40C771COFFSET9C459D800LENGTH9C459D800
Generic volume Yes VOLUME 5.2.3663.0
7/15/2002 Microsoft volume.inf
Not Available

STORAGE\VOLUME\1&30A96598&0&SIGNATU
REE40C771COFFSET1388B3B000LENGTH9FE33C400
AFD Networking Support Environment Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_AFD\0000
Beep Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_BEEP\0000
CRC Disk Filter Driver Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_CRCDISK\0000
dmboot Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_DMBOOT\0000
dmload Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_DMLOAD\0000
em Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_EM\0000
Fips Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_FIPS\0000
Generic Packet Classifier Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_GPC\0000
IPSEC driver Not Available LEGACYDRIVER
Not Available Not Available Not Available
Not Available Not Available
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ksecdd Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
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ROOT\LEGACY_KSECDD\0000
mnmdd Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_MNMDD\0000
mountmgr Not Available LEGACYDRIVER
Not Available Not Available Not Available
Not Available Not Available
ROOT\LEGACY_MOUNTMGR\0000
NDIS System Driver Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_NDIS\0000
Remote Access NDIS TAPI Driver Not Available
LEGACYDRIVER Not Available Not

Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_NDISTAPI\0000		
NDIS Usermode I/O Protocol	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_NDISUIO\0000		
NDProxy	LEGACYDRIVER	Not Available	Not
Not Available	Not Available	Not Available	Not
Not Available	Not Available		
Not Available	ROOT\LEGACY_NDPROXY\0000		
NetBios over Tcpip	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_NETBT\0000		
Null	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	Not Available		
Available	ROOT\LEGACY_NULL\0000		
Partition Manager	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_PARTMGR\0000		
ParVdm	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	Not Available		
Available	ROOT\LEGACY_PARVDM\0000		
Remote Access Auto Connection Driver	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_RASACD\0000		
RDPCCD	LEGACYDRIVER	Not Available	Not
Not Available	Not Available	Not Available	Not
Not Available	Not Available		
Not Available	ROOT\LEGACY_RDPCCD\0000		
RDPWD	LEGACYDRIVER	Not Available	Not
Not Available	Not Available	Not Available	Not
Not Available	Not Available		
Not Available	ROOT\LEGACY_RDPWD\0000		
TCP/IP Protocol Driver	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_TCPIP\0000		
TDTCP	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	Not Available		
Available	ROOT\LEGACY_TDTCP\0000		
VGA Display Controller.	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_VGASAVE\0000		
volsnap	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	Not Available		
Available	ROOT\LEGACY_VOLSNAP\0000		
Remote Access IP ARP Driver	LEGACYDRIVER	Not Available	Not
Available	Not Available	Not Available	Not
Available	ROOT\LEGACY_WANARP\0000		
Audio Codecs	Yes	MEDIA 5.2.3663.0	
	7/15/2002	(Standard system devices) wave.inf	
	Not Available	ROOT\MEDIA\MS_MMADM	

Legacy Audio Drivers	Yes	MEDIA 5.2.3663.0	
	7/15/2002	(Standard system devices) wave.inf	
	Not Available	ROOT\MEDIA\MS_MMDRV	
Media Control Devices	Yes	MEDIA 5.2.3663.0	
	7/15/2002	(Standard system devices) wave.inf	
	Not Available	ROOT\MEDIA\MS_MMMCI	
Legacy Video Capture Devices	Yes	MEDIA	
	5.2.3663.0	7/15/2002	(Standard system
devices) wave.inf	Not Available		
		ROOT\MEDIA\MS_MMVCD	
Video Codecs	Yes	MEDIA 5.2.3663.0	
	7/15/2002	(Standard system devices) wave.inf	
	Not Available	ROOT\MEDIA\MS_MMVID	
WAN Miniport (L2TP)	Yes	NET 5.2.3663.0	
	7/15/2002	Microsoft	netrasa.inf
	Not Available	ROOT\MS_L2TPMINIPOINT\0000	
WAN Miniport (IP)	Yes	NET 5.2.3663.0	
	7/15/2002	Microsoft	netrasa.inf
	Not Available	ROOT\MS_NDISWANIP\0000	
WAN Miniport (PPPOE)	Yes	NET 5.2.3663.0	
	7/15/2002	Microsoft	netrasa.inf
	Not Available	ROOT\MS_PPPOEMINIPOINT\0000	
WAN Miniport (PPTP)	Yes	NET 5.2.3663.0	
	7/15/2002	Microsoft	netrasa.inf
	Not Available	ROOT\MS_PPTPMINIPOINT\0000	
Direct Parallel	Yes	NET 5.2.3663.0	
	7/15/2002	Microsoft	netrasa.inf
	Not Available	ROOT\MS_PTIMINIPOINT\0000	
Terminal Server Device Redirector	Yes	SYSTEM	
	5.2.3663.0	7/15/2002	(Standard system
devices) machine.inf	Not Available		
		ROOT\RDPDR\0000	
Terminal Server Keyboard Driver	Yes	SYSTEM	
	5.2.3663.0	7/15/2002	(Standard system
devices) machine.inf	Not Available		
		ROOT\RDP_KBD\0000	
Terminal Server Mouse Driver	Yes	SYSTEM	
	5.2.3663.0	7/15/2002	(Standard system
devices) machine.inf	Not Available		
		ROOT\RDP_MOU\0000	
Plug and Play Software Device Enumerator	Yes		
	SYSTEM	5.2.3663.0	7/15/2002
	(Standard system devices) machine.inf		Not
Available		ROOT\SYSTEM\0000	
Microcode Update Device	Yes	SYSTEM	
	5.2.3663.0	7/15/2002	(Standard system
devices) machine.inf	Not Available		
		ROOT\SYSTEM\0001	

[Environment Variables]

Variable Value	User Name
ComSpec	%SystemRoot%\system32\cmd.exe
	<SYSTEM>
Path	C:\mksnt;C:\WINDOWS\system32;C:\WINDOWS;C
	:\WINDOWS\System32\Wbem;C:\PROGRA~1\MICROS~1\8
	0\Tools\BINN;C:\Program Files\Microsoft SQL
Server\80\Tools\BINN	<SYSTEM>
windir	%SystemRoot% <SYSTEM>

```

OS      Windows_NT    <SYSTEM>
PROCESSOR_ARCHITECTURE x86    <SYSTEM>
PROCESSOR_LEVEL      15    <SYSTEM>
PROCESSOR_IDENTIFIER x86 Family 15 Model 2
Stepping 2, GenuineIntel <SYSTEM>
PROCESSOR_REVISION   0202  <SYSTEM>
NUMBER_OF_PROCESSORS 8      <SYSTEM>
ClusterLog          C:\WINDOWS\Cluster\cluster.log
                  <SYSTEM>
PATHEXT
.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF
;.WSH <SYSTEM>
TEMP %SystemRoot%\TEMP <SYSTEM>
TMP %SystemRoot%\TEMP <SYSTEM>
ROOTDIR C:/ <SYSTEM>
SHELL C:/mksnt/sh.exe <SYSTEM>
HOME C:/Documents and Settings/Administrator
      <SYSTEM>
TMPDIR C:/WINDOWS/TEMP <SYSTEM>
TEMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\SYSTEM
TMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\SYSTEM
TEMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\LOCAL SERVICE
TMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\LOCAL SERVICE
TEMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\NETWORK SERVICE
TMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\NETWORK SERVICE
TEMP %USERPROFILE%\Local Settings\Temp
TPCH\Administrator
TMP %USERPROFILE%\Local Settings\Temp
TPCH\Administrator

```

[Print Jobs]

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

[Network Connections]

Local Name	Remote Name	Type	Status	User
Name				

[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set	Max Working Set	Start Time	Version	Size
	File Date							
system	idle process	Not Available	0	0				
	Not Available	Not Available	Not Available	Not Available				
	Not Available	Not Available	Not Available	Not Available				
system	Not Available	4	8	0	1413120			
	Not Available	Not Available	Not Available	Not Available				
	Not Available	Not Available	Not Available	Not Available				

```

smss.exe:c:\windows\system32\smss.exe 308 11
204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 46.00 KB
(47,104 bytes) 7/29/2002 1:57 PM
csrss.exe Not Available 424 13 Not Available
Not Available 4/20/2003 10:39 AM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe 448
13 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 512.00 KB
(524,288 bytes) 7/29/2002 2:04 PM
services.exe c:\windows\system32\services.exe 492
9 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 99.00 KB
(101,376 bytes) 7/29/2002 1:55 PM
lsass.exe c:\windows\system32\lsass.exe 504 9
204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 13.00 KB
(13,312 bytes) 7/29/2002 1:27 PM
svchost.exe c:\windows\system32\svchost.exe 688
8 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 12.00 KB
(12,288 bytes) 7/29/2002 1:58 PM
svchost.exe c:\windows\system32\svchost.exe 724
8 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 12.00 KB
(12,288 bytes) 7/29/2002 1:58 PM
svchost.exe Not Available 876 8 Not
Available Not Available 4/20/2003 10:39 AM
Not Available Not Available Not Available
svchost.exe Not Available 924 8 Not
Available Not Available 4/20/2003 10:39 AM
Not Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe 936
8 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 12.00 KB
(12,288 bytes) 7/29/2002 1:58 PM
spoolsv.exe c:\windows\system32\spoolsv.exe 1104
8 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 51.00 KB
(52,224 bytes) 7/29/2002 1:57 PM
msdtc.exe Not Available 1132 8 Not
Available Not Available 4/20/2003 10:39 AM
Not Available Not Available Not Available
llssrv.exe Not Available 1392 8 Not
Available Not Available 4/20/2003 10:39 AM
Not Available Not Available Not Available
svchost.exe Not Available 1476 8 Not
Available Not Available 4/20/2003 10:39 AM
Not Available Not Available Not Available
lserver.exe c:\windows\system32\lserver.exe 1612
8 204800 14131204/20/2003 10:39 AM
5.2.3663.0 (main.020715-1506) 312.00 KB
(319,488 bytes) 4/8/2003 5:07 PM
dfssvc.exe c:\windows\system32\dfssvc.exe 1824
8 204800 14131204/20/2003 10:40 AM
5.2.3663.0 (main.020715-1506) 120.00 KB
(122,880 bytes) 7/29/2002 1:16 PM
mssearch.exe c:\program files\common
files\system\mssearch\bin\mssearch.exe 1856 8
204800 14131204/20/2003 10:40 AM

```



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9.107.8320.0 68.00 KB (69,632 bytes)
12/4/2002 10:52 AM
explorer.exe c:\windows\explorer.exe 2016 8
204800 14131204/20/2003 10:40 AM
6.00.3663.0 (main.020715-1506) 989.50 KB
(1,013,248 bytes) 7/29/2002 1:18 PM
sqlmangr.exe c:\program files\microsoft sql
server\80\tools\bin\sqlmangr.exe 196 8 204800
14131204/20/2003 10:40 AM
2000.080.0760.00 72.57 KB (74,308 bytes)
4/4/2003 12:49 PM
winvnc.exe c:\program files\orl\vnc\winvnc.exe 204
8 204800 14131204/20/2003 10:40 AM
3, 3, 3, 7204.00 KB (208,896 bytes) 2/5/2003
2:22 PM
svchost.exe c:\windows\system32\svchost.exe 392
8 204800 14131204/20/2003 10:40 AM
5.2.3663.0 (main.020715-1506) 12.00 KB
(12,288 bytes) 7/29/2002 1:58 PM
helpctr.exe
c:\windows\pchealth\helpctr\binaries\helpctr.exe
2720 8 204800 14131204/20/2003 10:44
AM 5.2.3663.0 (main.020715-1506) 670.00 KB
(686,080 bytes) 2/5/2003 1:06 PM
helpsvc.exe
c:\windows\pchealth\helpctr\binaries\helpsvc.exe
2768 8 204800 14131204/20/2003 10:44
AM 5.2.3663.0 (main.020715-1506) 683.50 KB
(699,904 bytes) 2/5/2003 1:06 PM
helphost.exe
c:\windows\pchealth\helpctr\binaries\helphost.exe
2824 8 204800 14131204/20/2003 10:44
AM 5.2.3663.0 (main.020715-1506) 103.00 KB
(105,472 bytes) 2/5/2003 1:06 PM
wmiprvse.exe Not Available 2892 8 Not
Available Not Available 4/20/2003 10:45 AM
Not Available Not Available Not Available
helpctr.exe
c:\windows\pchealth\helpctr\binaries\helpctr.exe
3012 8 204800 14131204/20/2003 10:45
AM 5.2.3663.0 (main.020715-1506) 670.00 KB
(686,080 bytes) 2/5/2003 1:06 PM

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[Loaded Modules]

Name	Version	Size	File Date	Manufacturer
smss	5.2.3663.0 (main.020715-1506)	46.00 KB	7/29/2002 1:57 PM	Microsoft Corporation
ntdll	5.2.3663.0 (main.020715-1506)	697.50 KB	7/29/2002 1:36 PM	Microsoft Corporation
winlogon	5.2.3663.0 (main.020715-1506)	512.00 KB	7/29/2002 2:04 PM	Microsoft Corporation
kernel32	5.2.3663.0 (main.020715-1506)	934.50 KB	7/29/2002 1:25 PM	Microsoft Corporation

```

msvcrt 7.0.3663.0 (main.020715-1506) 319.50 KB
(327,168 bytes) 7/29/2002 1:33 PM Microsoft
Corporation c:\windows\system32\msvcrt.dll
advapi32 5.2.3663.0 (main.020715-1506) 526.00
KB (538,624 bytes) 7/29/2002 1:09 PM
Microsoft Corporation
c:\windows\system32\advapi32.dll
rpcrt4 5.2.3663.0 (main.020715-1506) 544.50 KB
(557,568 bytes) 7/29/2002 1:51 PM Microsoft
Corporation c:\windows\system32\rpcrt4.dll
user32 5.2.3663.0 (main.020715-1506) 547.50 KB
(560,640 bytes) 7/29/2002 2:01 PM Microsoft
Corporation c:\windows\system32\user32.dll
gdi32 5.2.3663.0 (main.020715-1506) 246.00 KB
(251,904 bytes) 7/29/2002 1:20 PM Microsoft
Corporation c:\windows\system32\gdi32.dll
userenv 5.2.3663.0 (main.020715-1506) 710.00 KB
(727,040 bytes) 7/29/2002 2:01 PM Microsoft
Corporation c:\windows\system32\userenv.dll
nddeapi 5.2.3663.0 (main.020715-1506) 15.00 KB
(15,360 bytes) 7/29/2002 1:33 PM Microsoft
Corporation c:\windows\system32\nddeapi.dll
crypt32 5.131.3663.0 (main.020715-1506) 545.00 KB
(558,080 bytes) 7/29/2002 1:14 PM Microsoft
Corporation c:\windows\system32\crypt32.dll
msasn1 5.2.3663.0 (main.020715-1506) 51.00 KB
(52,224 bytes) 7/29/2002 1:31 PM Microsoft
Corporation c:\windows\system32\msasn1.dll
secur32 5.2.3663.0 (main.020715-1506) 57.00 KB
(58,368 bytes) 7/29/2002 1:55 PM Microsoft
Corporation c:\windows\system32\secur32.dll
winsta 5.2.3663.0 (main.020715-1506) 48.00 KB
(49,152 bytes) 7/29/2002 2:05 PM Microsoft
Corporation c:\windows\system32\winsta.dll
netapi32 5.2.3663.0 (main.020715-1506) 309.50 KB
(316,928 bytes) 7/29/2002 1:34 PM Microsoft
Corporation c:\windows\system32\netapi32.dll
profmap 5.2.3663.0 (main.020715-1506) 21.00 KB
(21,504 bytes) 7/29/2002 1:50 PM Microsoft
Corporation c:\windows\system32\profmap.dll
regapi 5.2.3663.0 (main.020715-1506) 47.00 KB
(48,128 bytes) 7/29/2002 1:51 PM Microsoft
Corporation c:\windows\system32\regapi.dll
ws2_32 5.2.3663.0 (main.020715-1506) 77.00 KB
(78,848 bytes) 7/29/2002 2:06 PM Microsoft
Corporation c:\windows\system32\ws2_32.dll
ws2help 5.2.3663.0 (main.020715-1506) 19.00 KB
(19,456 bytes) 7/29/2002 2:06 PM Microsoft
Corporation c:\windows\system32\ws2help.dll
authz 5.2.3663.0 (main.020715-1506) 56.50 KB
(57,856 bytes) 7/29/2002 1:09 PM Microsoft
Corporation c:\windows\system32\authz.dll
psapi 5.2.3663.0 (main.020715-1506) 21.00 KB
(21,504 bytes) 7/29/2002 1:50 PM Microsoft
Corporation c:\windows\system32\psapi.dll
version 5.2.3663.0 (main.020715-1506) 16.50 KB
(16,896 bytes) 7/29/2002 2:02 PM Microsoft
Corporation c:\windows\system32\version.dll
setupapi 5.2.3663.0 (main.020715-1506) 917.50 KB
(939,520 bytes) 7/29/2002 1:55 PM Microsoft
Corporation c:\windows\system32\setupapi.dll

```

msgina	5.2.3663.0 (main.020715-1506)	1.19 MB		winspool	5.2.3663.0 (main.020715-1506)	131.50	
(1,252,864 bytes)	7/29/2002 1:32 PM	Microsoft Corporation	c:\windows\system32\msgina.dll	KB (134,656 bytes)	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\winspool.drv
shsvcs	6.00.3663.0 (main.020715-1506)	122.50 KB		mpr	5.2.3663.0 (main.020715-1506)	55.00 KB	
(125,440 bytes)	7/29/2002 1:56 PM	Microsoft Corporation	c:\windows\system32\shsvcs.dll	(56,320 bytes)	7/29/2002 1:30 PM	Microsoft Corporation	c:\windows\system32\mpr.dll
shlwapi	6.00.3663.0 (main.020715-1506)	269.00 KB		comctl32	5.82 (main.020715-1506)	559.50 KB	
(275,456 bytes)	7/29/2002 1:56 PM	Microsoft Corporation	c:\windows\system32\shlwapi.dll	(572,928 bytes)	2/5/2003 6:50 AM	Microsoft Corporation	c:\windows\winsxs\x86_microsoft.windows.common
sfc	5.2.3663.0 (main.020715-1506)	4.50 KB (4,608 bytes)					-controls_6595b64144ccf1df_5.82.0.0_x-ww_8a69ba05\comctl32.dll
	7/29/2002 1:55 PM	Microsoft Corporation	c:\windows\system32\sfc.dll	uxtheme	6.00.3663.0 (main.020715-1506)	190.50 KB	
sfc_os	5.2.3663.0 (main.020715-1506)	130.00 KB		(195,072 bytes)	7/29/2002 2:02 PM	Microsoft Corporation	c:\windows\system32\uxtheme.dll
(133,120 bytes)	7/29/2002 1:55 PM	Microsoft Corporation	c:\windows\system32\sfc_os.dll	samlib	5.2.3663.0 (main.020715-1506)	40.50 KB	
wintrust	5.131.3663.0 (main.020715-1506)	155.00 KB		(41,472 bytes)	7/29/2002 1:54 PM	Microsoft Corporation	c:\windows\system32\samlib.dll
(158,720 bytes)	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\wintrust.dll	cscui	5.2.3663.0 (main.020715-1506)	299.00 KB	
ole32	5.2.3663.0 (main.020715-1506)	1.08 MB		(306,176 bytes)	7/29/2002 1:14 PM	Microsoft Corporation	c:\windows\system32\cscui.dll
(1,134,592 bytes)	7/29/2002 1:48 PM	Microsoft Corporation	c:\windows\system32\ole32.dll	oleaut32	5.2.3663.0	483.50 KB (495,104 bytes)	
imagehlp	5.2.3663.0 (main.020715-1506)	123.00 KB (125,952 bytes)			7/29/2002 1:48 PM	Microsoft Corporation	c:\windows\system32\oleaut32.dll
	7/29/2002 1:22 PM	Microsoft Corporation	c:\windows\system32\imagehlp.dll	clbcatq	2001.12.4593.0 (main.020715-1506)	465.50 KB (476,672 bytes)	
comctl32	6.0 (main.020715-1506)	905.00 KB (926,720 bytes)			2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\clbcatq.dll
	2/5/2003 6:50 AM	Microsoft Corporation	c:\windows\winsxs\x86_microsoft.windows.common	comres	2001.12.4593.0 (main.020715-1506)	778.00 KB (796,672 bytes)	
			-controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll		7/29/2002 1:14 PM	Microsoft Corporation	c:\windows\system32\comres.dll
winscard	5.2.3663.0 (main.020715-1506)	93.50 KB (95,744 bytes)		ntmarta	5.2.3663.0 (main.020715-1506)	110.50 KB (113,152 bytes)	
	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\wincard.dll	(113,152 bytes)	7/29/2002 1:36 PM	Microsoft Corporation	c:\windows\system32\ntmarta.dll
wtsapi32	5.2.3663.0 (main.020715-1506)	17.00 KB (17,408 bytes)		services	5.2.3663.0 (main.020715-1506)	99.00 KB (101,376 bytes)	
	7/29/2002 2:07 PM	Microsoft Corporation	c:\windows\system32\wtsapi32.dll	(101,376 bytes)	7/29/2002 1:55 PM	Microsoft Corporation	c:\windows\system32\services.exe
sxs	5.2.3663.0 (main.020715-1506)	685.50 KB (701,952 bytes)		scesrv	5.2.3663.0 (main.020715-1506)	301.00 KB (308,224 bytes)	
	7/29/2002 1:58 PM	Microsoft Corporation	c:\windows\system32\sxs.dll	(308,224 bytes)	7/29/2002 1:54 PM	Microsoft Corporation	c:\windows\system32\scesrv.dll
winmm	5.2.3663.0 (main.020715-1506)	163.00 KB (166,912 bytes)		umpnpgmr	5.2.3663.0 (main.020715-1506)	115.00 KB (117,760 bytes)	
	7/29/2002 2:04 PM	Microsoft Corporation	c:\windows\system32\winmm.dll		7/29/2002 2:01 PM	Microsoft Corporation	c:\windows\system32\umpnpgmr.dll
shell32	6.00.3663.0 (main.020715-1506)	7.69 MB (8,067,072 bytes)		ncobjapi	5.2.3663.0 (main.020715-1506)	33.00 KB (33,792 bytes)	
	7/29/2002 1:56 PM	Microsoft Corporation	c:\windows\system32\shell32.dll	(33,792 bytes)	7/29/2002 1:33 PM	Microsoft Corporation	c:\windows\system32\ncobjapi.dll
rsaenh	5.2.3663.0 (main.020715-1506)	174.07 KB (178,248 bytes)		msvcp60	6.05.2144.0	388.00 KB (397,312 bytes)	
	7/29/2002 1:51 PM	Microsoft Corporation	c:\windows\system32\rsaenh.dll		7/29/2002 1:33 PM	Microsoft Corporation	c:\windows\system32\msvcp60.dll
wldap32	5.2.3663.0 (main.020715-1506)	167.00 KB (171,008 bytes)		eventlog	5.2.3663.0 (main.020715-1506)	58.50 KB (59,904 bytes)	
	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\wldap32.dll	(59,904 bytes)	7/29/2002 1:18 PM	Microsoft Corporation	c:\windows\system32\eventlog.dll
cscdll	5.2.3663.0 (main.020715-1506)	92.50 KB (94,720 bytes)		lsass	5.2.3663.0 (main.020715-1506)	13.00 KB (13,312 bytes)	
	7/29/2002 1:14 PM	Microsoft Corporation	c:\windows\system32\cscdll.dll	(13,312 bytes)	7/29/2002 1:27 PM	Microsoft Corporation	c:\windows\system32\lsass.exe
wlnotify	5.2.3663.0 (main.020715-1506)	84.50 KB (86,528 bytes)		lsasrv	5.2.3663.0 (main.020715-1506)	711.00 KB (728,064 bytes)	
	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\wlnotify.dll	(728,064 bytes)	7/29/2002 1:27 PM	Microsoft Corporation	c:\windows\system32\lsasrv.dll

samsrv	5.2.3663.0 (main.020715-1506)	408.00 KB	(417,792 bytes)	7/29/2002 1:54 PM	Microsoft Corporation	c:\windows\system32\samsrv.dll
cryptdll	5.2.3663.0 (main.020715-1506)	30.00 KB	(30,720 bytes)	7/29/2002 1:14 PM	Microsoft Corporation	c:\windows\system32\cryptdll.dll
dnsapi	5.2.3663.0 (main.020715-1506)	141.50 KB	(144,896 bytes)	7/29/2002 1:16 PM	Microsoft Corporation	c:\windows\system32\dnsapi.dll
ntdsapi	5.2.3663.0 (main.020715-1506)	67.00 KB	(68,608 bytes)	7/29/2002 1:36 PM	Microsoft Corporation	c:\windows\system32\ntdsapi.dll
msprivs	5.2.3663.0 (main.020715-1506)	44.00 KB	(45,056 bytes)	7/29/2002 1:32 PM	Microsoft Corporation	c:\windows\system32\msprivs.dll
kerberos	5.2.3663.0 (main.020715-1506)	299.00 KB	(306,176 bytes)	7/29/2002 1:25 PM	Microsoft Corporation	c:\windows\system32\kerberos.dll
msv1_0	5.2.3663.0 (main.020715-1506)	114.50 KB	(117,248 bytes)	7/29/2002 1:33 PM	Microsoft Corporation	c:\windows\system32\msv1_0.dll
netlogon	5.2.3663.0 (main.020715-1506)	401.50 KB	(411,136 bytes)	7/29/2002 1:34 PM	Microsoft Corporation	c:\windows\system32\netlogon.dll
w32time	5.2.3663.0 (main.020715-1506)	205.50 KB	(210,432 bytes)	7/29/2002 2:02 PM	Microsoft Corporation	c:\windows\system32\w32time.dll
iphlpapi	5.2.3663.0 (main.020715-1506)	80.50 KB	(82,432 bytes)	7/29/2002 1:22 PM	Microsoft Corporation	c:\windows\system32\iphlpapi.dll
schannel	5.2.3663.0 (main.020715-1506)	138.50 KB	(141,824 bytes)	7/29/2002 1:54 PM	Microsoft Corporation	c:\windows\system32\schannel.dll
wdigest	5.2.3663.0 (main.020715-1506)	59.50 KB	(60,928 bytes)	7/29/2002 2:03 PM	Microsoft Corporation	c:\windows\system32\wdigest.dll
rassfm	5.2.3663.0 (main.020715-1506)	20.50 KB	(20,992 bytes)	7/29/2002 1:50 PM	Microsoft Corporation	c:\windows\system32\rassfm.dll
kdcsvc	5.2.3663.0 (main.020715-1506)	190.50 KB	(195,072 bytes)	7/29/2002 1:25 PM	Microsoft Corporation	c:\windows\system32\kdcsvc.dll
ntlsa	5.2.3663.0 (main.020715-1506)	1.40 MB	(1,465,344 bytes)	7/29/2002 1:36 PM	Microsoft Corporation	c:\windows\system32\ntlsa.dll
ntdsatq	5.2.3663.0 (main.020715-1506)	27.50 KB	(28,160 bytes)	7/29/2002 1:36 PM	Microsoft Corporation	c:\windows\system32\ntdsatq.dll
mswsock	5.2.3663.0 (main.020715-1506)	243.50 KB	(249,344 bytes)	7/29/2002 1:33 PM	Microsoft Corporation	c:\windows\system32\mswsock.dll
esent	5.2.3663.0 (main.020715-1506)	925.50 KB	(947,712 bytes)	7/29/2002 1:18 PM	Microsoft Corporation	c:\windows\system32\esent.dll
certcli	5.2.3663.0 (main.020715-1506)	215.00 KB	(220,160 bytes)	7/29/2002 1:10 PM	Microsoft Corporation	c:\windows\system32\certcli.dll
atl	3.05.2144	82.00 KB	(83,968 bytes)	7/29/2002 1:09 PM	Microsoft Corporation	c:\windows\system32\atl.dll
cryptui	5.131.3663.0 (main.020715-1506)	463.50 KB	(474,624 bytes)	7/29/2002 1:14 PM	Microsoft Corporation	c:\windows\system32\cryptui.dll
scecli	5.2.3663.0 (main.020715-1506)	174.00 KB	(178,176 bytes)	7/29/2002 1:54 PM	Microsoft Corporation	c:\windows\system32\scecli.dll
ipsecsvc	5.2.3663.0 (main.020715-1506)	158.00 KB	(161,792 bytes)	7/29/2002 1:24 PM	Microsoft Corporation	c:\windows\system32\ipsecsvc.dll
oakley	5.2.3663.0 (main.020715-1506)	251.00 KB	(257,024 bytes)	7/29/2002 1:36 PM	Microsoft Corporation	c:\windows\system32\oakley.dll
winipsec	5.2.3663.0 (main.020715-1506)	29.00 KB	(29,696 bytes)	7/29/2002 2:04 PM	Microsoft Corporation	c:\windows\system32\winipsec.dll
pstorsvc	5.2.3663.0 (main.020715-1506)	24.00 KB	(24,576 bytes)	7/29/2002 1:50 PM	Microsoft Corporation	c:\windows\system32\pstorsvc.dll
psbase	5.2.3663.0 (main.020715-1506)	81.00 KB	(82,944 bytes)	7/29/2002 1:50 PM	Microsoft Corporation	c:\windows\system32\psbase.dll
wshtcpip	5.2.3663.0 (main.020715-1506)	17.00 KB	(17,408 bytes)	7/29/2002 2:07 PM	Microsoft Corporation	c:\windows\system32\wshtcpip.dll
dssenh	5.2.3663.0 (main.020715-1506)	129.07 KB	(132,168 bytes)	7/29/2002 1:17 PM	Microsoft Corporation	c:\windows\system32\dssenh.dll
wlbsctrl	5.2.3663.0 (main.020715-1506)	75.50 KB	(77,312 bytes)	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\wlbsctrl.dll
svchost	5.2.3663.0 (main.020715-1506)	12.00 KB	(12,288 bytes)	7/29/2002 1:58 PM	Microsoft Corporation	c:\windows\system32\svchost.exe
rpcss	5.2.3663.0 (main.020715-1506)	266.00 KB	(272,384 bytes)	7/29/2002 1:51 PM	Microsoft Corporation	c:\windows\system32\rpcss.dll
termsrv	5.2.3663.0 (main.020715-1506)	215.00 KB	(220,160 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\termsrv.dll
icaapi	5.2.3663.0 (main.020715-1506)	10.00 KB	(10,240 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\icaapi.dll
mstlsapi	5.2.3663.0 (main.020715-1506)	103.00 KB	(105,472 bytes)	7/29/2002 1:33 PM	Microsoft Corporation	c:\windows\system32\mstlsapi.dll
activeds	5.2.3663.0 (main.020715-1506)	184.50 KB	(188,928 bytes)	7/29/2002 1:08 PM	Microsoft Corporation	c:\windows\system32\activeds.dll
adslrpc	5.2.3663.0 (main.020715-1506)	139.50 KB	(142,848 bytes)	7/29/2002 1:09 PM	Microsoft Corporation	c:\windows\system32\adslrpc.dll
credui	5.2.3663.0 (main.020715-1506)	161.00 KB	(164,864 bytes)	7/29/2002 1:14 PM	Microsoft Corporation	c:\windows\system32\credui.dll
rdpwsx	5.2.3663.0 (main.020715-1506)	79.63 KB	(81,544 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\rdpwsx.dll
wzcsvc	5.2.3663.0 (main.020715-1506)	271.00 KB	(277,504 bytes)	7/16/2002 8:48 AM	Microsoft Corporation	c:\windows\system32\wzcsvc.dll

rtutils 5.2.3663.0 (main.020715-1506) 31.00 KB
 (31,744 bytes) 7/29/2002 1:52 PM Microsoft
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 wmi 5.2.3663.0 (main.020715-1506) 6.50 KB (6,656
 bytes) 7/29/2002 2:05 PM Microsoft Corporation
 c:\windows\system32\wmi.dll
 dhcpcsvc 5.2.3663.0 (main.020715-1506) 101.00
 KB (103,424 bytes) 7/29/2002 1:16 PM
 Microsoft Corporation
 c:\windows\system32\dhcpcsvc.dll
 rastls 5.2.3663.0 (main.020715-1506) 147.50 KB
 (151,040 bytes) 7/29/2002 1:50 PM Microsoft
 Corporation c:\windows\system32\rastls.dll
 mprapi 5.2.3663.0 (main.020715-1506) 78.00 KB
 (79,872 bytes) 7/29/2002 1:30 PM Microsoft
 Corporation c:\windows\system32\mprapi.dll
 rasapi32 5.2.3663.0 (main.020715-1506) 217.00 KB
 (222,208 bytes) 7/29/2002 1:50 PM Microsoft
 Corporation c:\windows\system32\rasapi32.dll
 rasman 5.2.3663.0 (main.020715-1506) 55.00 KB
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 Corporation c:\windows\system32\rasman.dll
 tapi32 5.2.3663.0 (main.020715-1506) 169.50 KB
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 raschap 5.2.3663.0 (main.020715-1506) 105.00 KB
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 schedsvc 5.2.3663.0 (main.020715-1506) 164.00
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 msidle 6.00.3663.0 (main.020715-1506) 5.50 KB (5,632
 bytes) 7/29/2002 1:32 PM Microsoft Corporation
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 wkssvc 5.2.3663.0 (main.020715-1506) 122.00 KB
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 wiarpc 5.2.3663.0 (main.020715-1506) 29.50 KB
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 cryptsvc 5.2.3663.0 (main.020715-1506) 49.00 KB
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 Corporation c:\windows\system32\cryptsvc.dll
 vssapi 5.2.3663.0 (main.020715-1506) 471.00 KB
 (482,304 bytes) 7/29/2002 2:02 PM Microsoft
 Corporation c:\windows\system32\vssapi.dll
 dmserver 5.2.3663.0 (main.020715-1506) 22.00
 KB (22,528 bytes) 7/29/2002 1:16 PM
 Microsoft Corporation
 c:\windows\system32\dmserver.dll
 ersvc 5.2.3663.0 (main.020715-1506) 21.00 KB
 (21,504 bytes) 7/29/2002 1:18 PM Microsoft
 Corporation c:\windows\system32\ersvc.dll
 es 2001.12.4593.0 (main.020715-1506) 218.00
 KB (223,232 bytes) 7/29/2002 1:18 PM
 Microsoft Corporation
 c:\windows\system32\es.dll
 pchsvc 5.2.3663.0 (main.020715-1506) 30.00 KB
 (30,720 bytes) 2/5/2003 1:06 PM Microsoft

Corporation
 c:\windows\pchealth\helpctr\binaries\pchsvc.dll
 srvsvc 5.2.3663.0 (main.020715-1506) 87.50 KB
 (89,600 bytes) 7/29/2002 1:57 PM Microsoft
 Corporation c:\windows\system32\srvsvc.dll
 mprdim 5.2.3663.0 (main.020715-1506) 49.00 KB
 (50,176 bytes) 7/29/2002 1:30 PM Microsoft
 Corporation c:\windows\system32\mprdim.dll
 iptrmgr 5.2.3663.0 (main.020715-1506) 163.50 KB
 (167,424 bytes) 7/29/2002 1:24 PM Microsoft
 Corporation c:\windows\system32\iptrmgr.dll
 rtm 5.2.3663.0 (main.020715-1506) 101.50 KB
 (103,936 bytes) 7/29/2002 1:52 PM Microsoft
 Corporation c:\windows\system32\rtm.dll
 wsock32 5.2.3663.0 (main.020715-1506) 22.00 KB
 (22,528 bytes) 7/29/2002 2:07 PM Microsoft
 Corporation c:\windows\system32\wsock32.dll
 iprtprio 5.2.3663.0 (main.020715-1506) 4.00 KB (4,096
 bytes) 7/29/2002 1:24 PM Microsoft Corporation
 c:\windows\system32\iprtprio.dll
 seclogon 5.2.3663.0 (main.020715-1506) 15.50 KB
 (15,872 bytes) 7/29/2002 1:54 PM Microsoft
 Corporation c:\windows\system32\seclogon.dll
 sens 5.2.3663.0 (main.020715-1506) 35.00 KB
 (35,840 bytes) 7/29/2002 1:55 PM Microsoft
 Corporation c:\windows\system32\sens.dll
 igmpv2 5.2.3663.0 (main.020715-1506) 127.50 KB
 (130,560 bytes) 7/29/2002 1:22 PM Microsoft
 Corporation c:\windows\system32\igmpv2.dll
 ipbootp 5.2.3663.0 (main.020715-1506) 34.50 KB
 (35,328 bytes) 7/29/2002 1:22 PM Microsoft
 Corporation c:\windows\system32\ipbootp.dll
 mprddm 5.2.3663.0 (main.020715-1506) 71.00 KB
 (72,704 bytes) 7/29/2002 1:30 PM Microsoft
 Corporation c:\windows\system32\mprddm.dll
 iashlpr 5.2.3663.0 (main.020715-1506) 30.50 KB
 (31,232 bytes) 7/29/2002 1:21 PM Microsoft
 Corporation c:\windows\system32\iaslpr.dll
 iasrad 5.2.3663.0 (main.020715-1506) 108.50 KB
 (111,104 bytes) 7/29/2002 1:21 PM Microsoft
 Corporation c:\windows\system32\iasrad.dll
 iaspolicy 5.2.3663.0 (main.020715-1506) 18.00 KB
 (18,432 bytes) 7/29/2002 1:21 PM Microsoft
 Corporation c:\windows\system32\iaspolicy.dll
 iassvcs 5.2.3663.0 (main.020715-1506) 67.00 KB
 (68,608 bytes) 7/29/2002 1:21 PM Microsoft
 Corporation c:\windows\system32\iassvcs.dll
 rasppp 5.2.3663.0 (main.020715-1506) 193.50 KB
 (198,144 bytes) 7/29/2002 1:50 PM Microsoft
 Corporation c:\windows\system32\rasppp.dll
 ntlsapapi 5.2.3663.0 (main.020715-1506) 7.00 KB (7,168
 bytes) 7/29/2002 1:36 PM Microsoft Corporation
 c:\windows\system32\ntlsapi.dll
 rasmans 5.2.3663.0 (main.020715-1506) 161.50 KB
 (165,376 bytes) 7/29/2002 1:50 PM Microsoft
 Corporation c:\windows\system32\rasmans.dll
 netcfgx 5.2.3663.0 (main.020715-1506) 616.00 KB
 (630,784 bytes) 7/29/2002 1:34 PM Microsoft
 Corporation c:\windows\system32\netcfgx.dll

trkwns	5.2.3663.0 (main.020715-1506)	80.50 KB	(82,432 bytes)	7/29/2002 2:00 PM	Microsoft Corporation	c:\windows\system32\trkwns.dll
wmisvc	5.2.3663.0 (main.020715-1506)	113.50 KB	(116,224 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wmisvc.dll
wbemcomn	5.2.3663.0 (main.020715-1506)	205.00 KB	(209,920 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemcomn.dll
wuauerv	5.4.3663.0 (main.020715-1506)	9.00 KB	(9,216 bytes)	2/5/2003 1:03 PM	Microsoft Corporation	c:\windows\system32\wuauerv.dll
wuaueng	5.4.3663.0 (main.020715-1506)	183.00 KB	(187,392 bytes)	2/5/2003 1:03 PM	Microsoft Corporation	c:\windows\system32\wuaueng.dll
advpack	6.00.3663.0 (main.020715-1506)	93.00 KB	(95,232 bytes)	7/29/2002 1:09 PM	Microsoft Corporation	c:\windows\system32\advpack.dll
wininet	6.00.3663.0 (main.020715-1506)	581.00 KB	(594,944 bytes)	7/29/2002 2:04 PM	Microsoft Corporation	c:\windows\system32\wininet.dll
browser	5.2.3663.0 (main.020715-1506)	49.50 KB	(50,688 bytes)	7/29/2002 1:10 PM	Microsoft Corporation	c:\windows\system32\browser.dll
winmr	5.2.3663.0 (main.020715-1506)	14.50 KB	(14,848 bytes)	7/29/2002 2:05 PM	Microsoft Corporation	c:\windows\system32\winmr.dll
actxprxy	6.00.3663.0 (main.020715-1506)	95.00 KB	(97,280 bytes)	7/29/2002 1:08 PM	Microsoft Corporation	c:\windows\system32\actxprxy.dll
rasadhlp	5.2.3663.0 (main.020715-1506)	6.00 KB	(6,144 bytes)	7/29/2002 1:50 PM	Microsoft Corporation	c:\windows\system32\rasadhlp.dll
netman	5.2.3663.0 (main.020715-1506)	147.00 KB	(150,528 bytes)	7/29/2002 1:34 PM	Microsoft Corporation	c:\windows\system32\netman.dll
wzcsapi	5.2.3663.0 (main.020715-1506)	24.00 KB	(24,576 bytes)	7/16/2002 8:48 AM	Microsoft Corporation	c:\windows\system32\wzcsapi.dll
netshell	5.2.3663.0 (main.020715-1506)	1.57 MB	(1,648,128 bytes)	7/29/2002 1:35 PM	Microsoft Corporation	c:\windows\system32\netshell.dll
clusapi	5.2.3663.0 (main.020715-1506)	54.50 KB	(55,808 bytes)	7/29/2002 1:11 PM	Microsoft Corporation	c:\windows\system32\clusapi.dll
rastapi	5.2.3663.0 (main.020715-1506)	54.50 KB	(55,808 bytes)	7/29/2002 1:50 PM	Microsoft Corporation	c:\windows\system32\rastapi.dll
hnetcfg	5.2.3663.0 (main.020715-1506)	241.50 KB	(247,296 bytes)	7/29/2002 1:20 PM	Microsoft Corporation	c:\windows\system32\hnetcfg.dll
wbemprox	5.2.3663.0 (main.020715-1506)	16.00 KB	(16,384 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemprox.dll
wbemcore	5.2.3663.0 (main.020715-1506)	448.50 KB	(459,264 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemcore.dll
esscli	5.2.3663.0 (main.020715-1506)	232.00 KB	(237,568 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\esscli.dll
fastprox	5.2.3663.0 (main.020715-1506)	434.50 KB	(444,928 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\fastprox.dll
wbemsvc	5.2.3663.0 (main.020715-1506)	42.50 KB	(43,520 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemsvc.dll
wmiutils	5.2.3663.0 (main.020715-1506)	88.50 KB	(90,624 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiutils.dll
repldrvfs	5.2.3663.0 (main.020715-1506)	140.00 KB	(143,360 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\repldrvfs.dll
rasdlg	5.2.3663.0 (main.020715-1506)	637.00 KB	(652,288 bytes)	7/29/2002 1:50 PM	Microsoft Corporation	c:\windows\system32\rasdlg.dll
wmiprvsd	5.2.3663.0 (main.020715-1506)	403.50 KB	(413,184 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wmiprvsd.dll
wbemess	5.2.3663.0 (main.020715-1506)	253.00 KB	(259,072 bytes)	2/5/2003 1:02 PM	Microsoft Corporation	c:\windows\system32\wbem\wbemess.dll
iassdo	5.2.3663.0 (main.020715-1506)	247.50 KB	(253,440 bytes)	7/29/2002 1:21 PM	Microsoft Corporation	c:\windows\system32\iassdo.dll
iasrecst	5.2.3663.0 (main.020715-1506)	143.50 KB	(146,944 bytes)	7/29/2002 1:21 PM	Microsoft Corporation	c:\windows\system32\iasrecst.dll
msjetoledb40	4.00.6508.0	340.03 KB	(348,195 bytes)	7/29/2002 1:32 PM	Microsoft Corporation	c:\windows\system32\msjetoledb40.dll
msjet40	4.00.6508.1	1.43 MB	(1,503,260 bytes)	7/29/2002 1:32 PM	Microsoft Corporation	c:\windows\system32\msjet40.dll
mswstr10	4.00.6508.0	600.03 KB	(614,431 bytes)	7/29/2002 1:33 PM	Microsoft Corporation	c:\windows\system32\mswstr10.dll
msjter40	4.00.6508.0	52.03 KB	(53,279 bytes)	7/29/2002 1:32 PM	Microsoft Corporation	c:\windows\system32\msjter40.dll
msjint40	4.00.6508.0	148.03 KB	(151,583 bytes)	7/29/2002 1:32 PM	Microsoft Corporation	c:\windows\system32\msjint40.dll
oledb32	2.72.8713.0 built by: (dagbuild)	424.00 KB	(434,176 bytes)	2/5/2003 1:05 PM	Microsoft Corporation	c:\program files\common files\system\oledb\oledb32.dll
msdart	2.72.8713.0 built by: (dagbuild)	140.00 KB	(143,360 bytes)	7/29/2002 1:31 PM	Microsoft Corporation	c:\windows\system32\msdart.dll
comdlg32	6.00.3663.0 (main.020715-1506)	255.00 KB	(261,120 bytes)	7/29/2002 1:11 PM	Microsoft Corporation	c:\windows\system32\comdlg32.dll
oledb32r	2.72.8713.0 built by: (dagbuild)	68.00 KB	(69,632 bytes)	2/5/2003 1:05 PM	Microsoft Corporation	c:\windows\system32\oledb32r.dll

Corporation	c:\program files\common files\system\ole				
db\oledb32r.dll					
msjtes404.00.6508.0	236.03 KB (241,695 bytes)				
	7/29/2002 1:32 PM	Microsoft Corporation			
	c:\windows\system32\msjtes40.dll				
vbajet32 6.1.943130.03	KB (30,749 bytes)		7/29/2002 2:02		
PM	Microsoft Corporation				
	c:\windows\system32\vbajet32.dll				
expsrv 6.0.9589371.53	KB (380,445 bytes)				
	7/29/2002 1:18 PM	Microsoft Corporation			
	c:\windows\system32\expsrv.dll				
iasnap 5.2.3663.0 (main.020715-1506)	63.50 KB				
(65,024 bytes)	7/29/2002 1:21 PM	Microsoft Corporation			
	c:\windows\system32\iasnap.dll				
vbscript 5.6.0.7727	388.00 KB (397,312 bytes)				
	7/29/2002 2:02 PM	Microsoft Corporation			
	c:\windows\system32\vbscript.dll				
mfc42 6.05.2178.0	960.00 KB (983,040 bytes)				
	7/29/2002 1:29 PM	Microsoft Corporation			
	c:\windows\system32\mfc42.dll				
iassam 5.2.3663.0 (main.020715-1506)	98.50 KB				
(100,864 bytes)	7/29/2002 1:21 PM	Microsoft Corporation			
	c:\windows\system32\iassam.dll				
iasacct 5.2.3663.0 (main.020715-1506)	35.00 KB				
(35,840 bytes)	7/29/2002 1:21 PM	Microsoft Corporation			
	c:\windows\system32\iasacct.dll				
winhttp 5.2.3663.0 (main.020715-1506)	322.50 KB				
(330,240 bytes)	2/5/2003 6:50 AM	Microsoft Corporation			
	c:\windows\winsxs\x86_microsoft.windows.winhttp_				
6595b64144ccf1df_5.1.0.0_x-ww_e0651936\winhttp.dll					
qmgr 6.5.3663.0 (main.020715-1506)	234.00 KB				
(239,616 bytes)	2/5/2003 1:06 PM	Microsoft Corporation			
	c:\windows\system32\qmgr.dll				
shfolder 6.00.3663.0 (main.020715-1506)	22.50 KB				
(23,040 bytes)	7/29/2002 1:56 PM	Microsoft Corporation			
	c:\windows\system32\shfolder.dll				
qmgrprxy 6.5.3663.0 (main.020715-1506)	18.00				
KB (18,432 bytes)	2/5/2003 1:06 PM	Microsoft Corporation			
	c:\windows\system32\qmgrprxy.dll				
sensapi 5.2.3663.0 (main.020715-1506)	6.00 KB (6,144				
bytes)	7/29/2002 1:55 PM	Microsoft Corporation			
	c:\windows\system32\sensapi.dll				
ncprov 5.2.3663.0 (main.020715-1506)	42.50 KB				
(43,520 bytes)	2/5/2003 1:02 PM	Microsoft Corporation			
	c:\windows\system32\wbem\ncprov.dll				
wbemcons 5.2.3663.0 (main.020715-1506)	69.00				
KB (70,656 bytes)	2/5/2003 1:02 PM	Microsoft Corporation			
	c:\windows\system32\wbem\wbemcons.dll				
spoolsv 5.2.3663.0 (main.020715-1506)	51.00 KB				
(52,224 bytes)	7/29/2002 1:57 PM	Microsoft Corporation			
	c:\windows\system32\spoolsv.exe				
spoolss 5.2.3663.0 (main.020715-1506)	75.50 KB				
(77,312 bytes)	7/29/2002 1:57 PM	Microsoft Corporation			
	c:\windows\system32\spoolss.dll				
localspl 5.2.3663.0 (main.020715-1506)	284.00 KB				
(290,816 bytes)	7/29/2002 1:27 PM	Microsoft Corporation			
	c:\windows\system32\localspl.dll				
cnbjmon 5.2.3631.0 (Lab03_dev(skatar).020509-1043)	45.50 KB (46,592 bytes)		7/16/2002 8:46 AM		
	Microsoft Corporation				
	c:\windows\system32\cnbjmon.dll				
pjlmon 5.2.3663.0 (main.020715-1506)	14.00 KB				
(14,336 bytes)	7/16/2002 8:47 AM	Microsoft Corporation			
	c:\windows\system32\pjlmon.dll				
tcpmon 5.2.3663.0 (main.020715-1506)	41.50 KB				
(42,496 bytes)	7/29/2002 1:59 PM	Microsoft Corporation			
	c:\windows\system32\tcpmon.dll				
usbmon 5.2.3663.0 (main.020715-1506)	16.00 KB				
(16,384 bytes)	7/29/2002 2:01 PM	Microsoft Corporation			
	c:\windows\system32\usbmon.dll				
wshqos 5.2.3663.0 (main.020715-1506)	22.50 KB				
(23,040 bytes)	7/29/2002 2:07 PM	Microsoft Corporation			
	c:\windows\system32\wshqos.dll				
win32spl 5.2.3663.0 (main.020715-1506)	120.00				
KB (122,880 bytes)	7/29/2002 2:04 PM	Microsoft Corporation			
	c:\windows\system32\win32spl.dll				
netrap 5.2.3663.0 (main.020715-1506)	11.50 KB				
(11,776 bytes)	7/29/2002 1:34 PM	Microsoft Corporation			
	c:\windows\system32\netrap.dll				
inetpp 5.2.3663.0 (main.020715-1506)	68.50 KB				
(70,144 bytes)	7/29/2002 1:22 PM	Microsoft Corporation			
	c:\windows\system32\inetpp.dll				
icmp 5.2.3663.0 (main.020715-1506)	4.00 KB (4,096				
bytes)	7/29/2002 1:21 PM	Microsoft Corporation			
	c:\windows\system32\icmp.dll				
lserver 5.2.3663.0 (main.020715-1506)	312.00 KB				
(319,488 bytes)	4/8/2003 5:07 PM	Microsoft Corporation			
	c:\windows\system32\lserver.exe				
tls236 5.2.3663.0 (main.020715-1506)	27.00 KB				
(27,648 bytes)	2/5/2003 1:12 PM	Microsoft Corporation			
	c:\windows\system32\tls236.dll				
dfssvc 5.2.3663.0 (main.020715-1506)	120.00 KB				
(122,880 bytes)	7/29/2002 1:16 PM	Microsoft Corporation			
	c:\windows\system32\dfssvc.exe				
resutils 5.2.3663.0 (main.020715-1506)	56.00 KB				
(57,344 bytes)	7/29/2002 1:51 PM	Microsoft Corporation			
	c:\windows\system32\resutils.dll				
mfc42u 6.05.2178.0	960.00 KB (983,040 bytes)				
	7/29/2002 1:29 PM	Microsoft Corporation			
	c:\windows\system32\mfc42u.dll				
mssearch 9.107.8320.0	68.00 KB (69,632 bytes)				
	12/4/2002 10:52 AM	Microsoft Corporation			
	c:\program files\common				
files\system\mssearch\bin\mssearch.exe					
mssws 9.107.8320.0	32.00 KB (32,768 bytes)				
	12/4/2002 10:52 AM	Microsoft Corporation			
	c:\program files\common				
files\system\mssearch\bin\mssws.dll					
mssrch 9.107.8320.0	1.24 MB (1,302,528 bytes)				
	12/4/2002 10:52 AM	Microsoft Corporation			
	c:\progra~1\common~1\system\mssearch\bin\mssrch.				
dll					
security 5.2.3663.0 (main.020715-1506)	5.00 KB (5,120				
bytes)	7/29/2002 1:55 PM	Microsoft Corporation			
	c:\windows\system32\security.dll				
tquery 9.107.8320.0	1.46 MB (1,536,000 bytes)				
	12/4/2002 10:52 AM	Microsoft Corporation			

c:\program files\common files\system\mssearch\bin\tquery.dll	Microsoft Corporation	c:\windows\system32\cfgmgr32.dll	
propdefs 9.107.8320.0	136.00 KB (139,264 bytes)	12/4/2002 10:52 AM	Microsoft Corporation
c:\progra~1\common~1\system\mssearch\bin\propdef			
s.dll			
srchidx 9.107.8320.0	384.00 KB (393,216 bytes)	12/4/2002 10:52 AM	Microsoft Corporation
c:\progra~1\common~1\system\mssearch\bin\srchidx.			
dll			
iprop 5.2.3663.0 (main.020715-1506)	3.50 KB (3,584 bytes)	7/29/2002 1:24 PM	Microsoft Corporation
c:\windows\system32\iprop.dll			
explorer 6.00.3663.0 (main.020715-1506)	989.50 KB (1,013,248 bytes)	7/29/2002 1:18 PM	Microsoft Corporation
c:\windows\explorer.exe			
browseui 6.00.3663.0 (main.020715-1506)	999.50 KB (1,023,488 bytes)	7/29/2002 1:10 PM	Microsoft Corporation
c:\windows\system32\browseui.dll			
shdocvw 6.00.3663.0 (main.020715-1506)	1.28 MB (1,341,952 bytes)	7/29/2002 1:55 PM	Microsoft Corporation
c:\windows\system32\shdocvw.dll			
apphelp 5.2.3663.0 (main.020715-1506)	117.00 KB (119,808 bytes)	7/29/2002 1:09 PM	Microsoft Corporation
c:\windows\system32\apphelp.dll			
themeui 6.00.3663.0 (main.020715-1506)	360.00 KB (368,640 bytes)	7/29/2002 1:59 PM	Microsoft Corporation
c:\windows\system32\themeui.dll			
msimg32 5.2.3663.0 (main.020715-1506)	4.50 KB (4,608 bytes)	7/29/2002 1:32 PM	Microsoft Corporation
c:\windows\system32\msimg32.dll			
linkinfo 5.2.3663.0 (main.020715-1506)	15.50 KB (15,872 bytes)	7/29/2002 1:27 PM	Microsoft Corporation
c:\windows\system32\linkinfo.dll			
ntshrui 6.00.3663.0 (main.020715-1506)	134.50 KB (137,728 bytes)	7/29/2002 1:36 PM	Microsoft Corporation
c:\windows\system32\ntshrui.dll			
urlmon 6.00.3663.0 (main.020715-1506)	442.00 KB (452,608 bytes)	7/29/2002 2:01 PM	Microsoft Corporation
c:\windows\system32\urlmon.dll			
webcheck 6.00.3663.0 (main.020715-1506)	253.50 KB (259,584 bytes)	7/29/2002 2:04 PM	Microsoft Corporation
c:\windows\system32\webcheck.dll			
stobject 5.2.3663.0 (main.020715-1506)	116.50 KB (119,296 bytes)	7/29/2002 1:58 PM	Microsoft Corporation
c:\windows\system32\stobject.dll			
batmeter 6.00.3663.0 (main.020715-1506)	28.00 KB (28,672 bytes)	7/29/2002 1:10 PM	Microsoft Corporation
c:\windows\system32\batmeter.dll			
powrprof 6.00.3663.0 (main.020715-1506)	14.00 KB (14,336 bytes)	7/29/2002 1:49 PM	Microsoft Corporation
c:\windows\system32\powrprof.dll			
printui 5.2.3663.0 (main.020715-1506)	522.00 KB (534,528 bytes)	7/29/2002 1:49 PM	Microsoft Corporation
c:\windows\system32\printui.dll			
cfgmgr32 5.2.3663.0 (main.020715-1506)	17.00 KB (17,408 bytes)	7/29/2002 1:11 PM	Microsoft Corporation
c:\windows\system32\cfgmgr32.dll			
drprov 5.2.3663.0 (main.020715-1506)	12.00 KB (12,288 bytes)	7/29/2002 1:17 PM	Microsoft Corporation
c:\windows\system32\drprov.dll			
ntlanman 5.2.3663.0 (main.020715-1506)	39.50 KB (40,448 bytes)	7/29/2002 1:36 PM	Microsoft Corporation
c:\windows\system32\ntlanman.dll			
netui0 5.2.3663.0 (main.020715-1506)	73.00 KB (74,752 bytes)	7/29/2002 1:35 PM	Microsoft Corporation
c:\windows\system32\netui0.dll			
netui1 5.2.3663.0 (main.020715-1506)	176.50 KB (180,736 bytes)	7/29/2002 1:35 PM	Microsoft Corporation
c:\windows\system32\netui1.dll			
davclnt 5.2.3663.0 (main.020715-1506)	23.00 KB (23,552 bytes)	7/29/2002 1:15 PM	Microsoft Corporation
c:\windows\system32\davclnt.dll			
sqlmangr 2000.080.0760.00	72.57 KB (74,308 bytes)	4/4/2003 12:49 PM	Microsoft Corporation
c:\program files\microsoft sql server\80\tools\binn\sqlmangr.exe			
sqlunirl 2000.080.0728.00	176.56 KB (180,800 bytes)	7/29/2002 1:57 PM	Microsoft Corporation
c:\windows\system32\sqlunirl.dll			
w95scm 2000.080.0760.00	48.56 KB (49,728 bytes)	4/4/2003 12:49 PM	Microsoft Corporation
c:\program files\microsoft sql server\80\tools\binn\w95scm.dll			
odbc32 3.520.8713.0	212.00 KB (217,088 bytes)	7/29/2002 1:47 PM	Microsoft Corporation
c:\windows\system32\odbc32.dll			
sqlsvc 2000.080.0760.00	92.56 KB (94,784 bytes)	4/4/2003 12:49 PM	Microsoft Corporation
c:\program files\microsoft sql server\80\tools\binn\sqlsvc.dll			
odbcbc 2000.081.9030.00	24.00 KB (24,576 bytes)	7/29/2002 1:47 PM	Microsoft Corporation
c:\windows\system32\odbcbc.dll			
sqlresld 2000.080.0382.00	28.56 KB (29,248 bytes)	4/4/2003 12:49 PM	Microsoft Corporation
c:\program files\microsoft sql server\80\tools\binn\sqlresld.dll			
tsappcmp 5.2.3663.0 (main.020715-1506)	54.00 KB (55,296 bytes)	7/29/2002 2:00 PM	Microsoft Corporation
c:\windows\system32\tsappcmp.dll			
odbcint 3.520.8713.0	92.00 KB (94,208 bytes)	7/29/2002 1:47 PM	Microsoft Corporation
c:\windows\system32\odbcint.dll			
sqlsvc 2000.080.0194.00	24.00 KB (24,576 bytes)	4/4/2003 12:49 PM	Microsoft Corporation
c:\program files\microsoft sql server\80\tools\binn\resources\1033\sqlsvc.rll			
sqlmangr 2000.080.0194.00	96.00 KB (98,304 bytes)	4/4/2003 12:49 PM	Microsoft Corporation
c:\program files\microsoft sql server\80\tools\binn\resources\1033\sqlmangr.rll			
winvnc 3, 3, 3, 7204.00	KB (208,896 bytes)	2/5/2003 2:22 PM	AT&T Research Labs Cambridge
c:\program files\orl\vnc\winvnc.exe			

vnchooks	3, 3, 3, 632.00 KB (32,768 bytes)	2/5/2003 2:22 PM	Microsoft Corporation	c:\program files\orl\vlc\vnchooks.dll
omnithread_rt	Not Available	44.00 KB (45,056 bytes)	2/5/2003 2:22 PM	Not Available
				c:\windows\system32\omnithread_rt.dll
tapisrv	5.2.3663.0 (main.020715-1506)	234.00 KB (239,616 bytes)	7/29/2002 1:59 PM	Microsoft Corporation
				c:\windows\system32\tapisrv.dll
unimdm	5.2.3663.0 (main.020715-1506)	188.50 KB (193,024 bytes)	7/29/2002 2:01 PM	Microsoft Corporation
				c:\windows\system32\unimdm.tsp
uniplat	5.2.3663.0 (main.020715-1506)	14.50 KB (14,848 bytes)	7/29/2002 2:01 PM	Microsoft Corporation
				c:\windows\system32\uniplat.dll
kmddsp	5.2.3663.0 (main.020715-1506)	32.50 KB (33,280 bytes)	7/29/2002 1:25 PM	Microsoft Corporation
				c:\windows\system32\kmddsp.tsp
ndptsp	5.2.3663.0 (main.020715-1506)	54.50 KB (55,808 bytes)	7/29/2002 1:33 PM	Microsoft Corporation
				c:\windows\system32\ndptsp.tsp
ipconf	5.2.3663.0 (main.020715-1506)	16.50 KB (16,896 bytes)	7/29/2002 1:22 PM	Microsoft Corporation
				c:\windows\system32\ipconf.tsp
h323	5.2.3663.0 (main.020715-1506)	249.00 KB (254,976 bytes)	7/29/2002 1:20 PM	Microsoft Corporation
				c:\windows\system32\h323.tsp
hidphone	5.2.3663.0 (main.020715-1506)	28.00 KB (28,672 bytes)	7/29/2002 1:20 PM	Microsoft Corporation
				c:\windows\system32\hidphone.tsp
hid	5.2.3663.0 (main.020715-1506)	17.00 KB (17,408 bytes)	7/16/2002 8:47 AM	Microsoft Corporation
				c:\windows\system32\hid.dll
remotesp	5.2.3663.0 (main.020715-1506)	73.00 KB (74,752 bytes)	7/29/2002 1:51 PM	Microsoft Corporation
				c:\windows\system32\remotesp.tsp
adsl dp	5.2.3663.0 (main.020715-1506)	160.50 KB (164,352 bytes)	7/29/2002 1:09 PM	Microsoft Corporation
				c:\windows\system32\adsl dp.dll
helpctr	5.2.3663.0 (main.020715-1506)	670.00 KB (686,080 bytes)	2/5/2003 1:06 PM	Microsoft Corporation
				c:\windows\pchealth\helpctr\binaries\helpctr.exe
hcappres	5.2.3663.0 (main.020715-1506)	6.50 KB (6,656 bytes)	2/5/2003 1:06 PM	Microsoft Corporation
				c:\windows\pchealth\helpctr\binaries\hcappres.dll
itss	5.2.3663.0 (main.020715-1506)	118.50 KB (121,344 bytes)	7/29/2002 1:24 PM	Microsoft Corporation
				c:\windows\system32\itss.dll
pchshell	5.2.3663.0 (main.020715-1506)	94.00 KB (96,256 bytes)	2/5/2003 1:06 PM	Microsoft Corporation
				c:\windows\pchealth\helpctr\binaries\pchshell.dll
mlang	6.00.3663.0 (main.020715-1506)	564.50 KB (578,048 bytes)	7/29/2002 1:29 PM	Microsoft Corporation
				c:\windows\system32\mlang.dll
mshtml	6.00.3663.0 (main.020715-1506)	2.57 MB (2,690,560 bytes)	7/29/2002 1:32 PM	Microsoft Corporation
				c:\windows\system32\mshtml.dll
msimtf	5.2.3663.0 (main.020715-1506)	141.00 KB (144,384 bytes)	7/29/2002 1:32 PM	Microsoft Corporation
				c:\windows\system32\msimtf.dll
mscftf	5.2.3663.0 (main.020715-1506)	273.00 KB (279,552 bytes)	7/29/2002 1:31 PM	Microsoft Corporation
				c:\windows\system32\mscftf.dll
shdoclc	6.00.3663.0 (main.020715-1506)	521.00 KB (533,504 bytes)	7/29/2002 1:55 PM	Microsoft Corporation
				c:\windows\system32\shdoclc.dll
msxml3	8.40.8806.0	1.06 MB (1,107,968 bytes)	7/29/2002 1:33 PM	Microsoft Corporation
				c:\windows\system32\msxml3.dll
jscrip	5.6.0.7727	412.00 KB (421,888 bytes)	7/29/2002 1:24 PM	Microsoft Corporation
				c:\windows\system32\jscrip.dll
msls31	3.10.349.0	137.00 KB (140,288 bytes)	7/29/2002 1:32 PM	Microsoft Corporation
				c:\windows\system32\msls31.dll
imm32	5.2.3663.0 (main.020715-1506)	104.00 KB (106,496 bytes)	7/29/2002 1:22 PM	Microsoft Corporation
				c:\windows\system32\imm32.dll
mshtml	6.00.3663.0 (main.020715-1506)	424.00 KB (434,176 bytes)	7/29/2002 1:32 PM	Microsoft Corporation
				c:\windows\system32\mshtml.dll
imgutil	6.00.3663.0 (main.020715-1506)	30.00 KB (30,720 bytes)	7/29/2002 1:22 PM	Microsoft Corporation
				c:\windows\system32\imgutil.dll
wbemdisp	5.2.3663.0 (main.020715-1506)	164.50 KB (168,448 bytes)	2/5/2003 1:02 PM	Microsoft Corporation
				c:\windows\system32\wbem\wbemdisp.dll
wshom	5.6.0.7727	92.00 KB (94,208 bytes)	7/29/2002 2:07 PM	Microsoft Corporation
				c:\windows\system32\wshom.ocx
scrrun	5.6.0.7727	144.00 KB (147,456 bytes)	7/29/2002 1:54 PM	Microsoft Corporation
				c:\windows\system32\scrrun.dll
oleacc	4.2.5406.0 (main.020715-1506)	164.50 KB (168,448 bytes)	7/29/2002 1:48 PM	Microsoft Corporation
				c:\windows\system32\oleacc.dll
hhctrl	5.2.3663.0 (main.020715-1506)	485.50 KB (497,152 bytes)	7/29/2002 1:20 PM	Microsoft Corporation
				c:\windows\system32\hhctrl.ocx
mscoree	1.0.3705.0	128.00 KB (131,072 bytes)	2/5/2003 1:03 PM	Microsoft Corporation
				c:\windows\system32\mscoree.dll
mscorie	1.0.3705.0	72.00 KB (73,728 bytes)	2/5/2003 1:03 PM	Microsoft Corporation
				c:\windows\microsoft.net\framework\v1.0.3705\mscorie.dll
msvcr70	7.00.9466.0	336.00 KB (344,064 bytes)	2/5/2003 1:03 PM	Microsoft Corporation
				c:\windows\microsoft.net\framework\v1.0.3705\msvcr70.dll
helpsvc	5.2.3663.0 (main.020715-1506)	683.50 KB (699,904 bytes)	2/5/2003 1:06 PM	Microsoft Corporation
				c:\windows\pchealth\helpctr\binaries\helpsvc.exe

itircl 5.2.3663.0 (main.020715-1506) 139.50 KB
 (142,848 bytes) 7/29/2002 1:24 PM Microsoft
 Corporation c:\windows\system32\itircl.dll
 helphost 5.2.3663.0 (main.020715-1506) 103.00 KB
 (105,472 bytes) 2/5/2003 1:06 PM Microsoft
 Corporation
 c:\windows\pchealth\helpctr\binaries\helphost.exe
 msinfo 5.2.3663.0 (main.020715-1506) 352.00 KB
 (360,448 bytes) 2/5/2003 1:06 PM Microsoft
 Corporation
 c:\windows\pchealth\helpctr\binaries\msinfo.dll
 riched32 5.2.3663.0 (main.020715-1506) 3.50 KB (3,584
 bytes) 7/29/2002 1:51 PM Microsoft Corporation
 c:\windows\system32\riched32.dll
 riched20 5.31.23.1217 394.50 KB (403,968 bytes)
 7/29/2002 1:51 PM Microsoft Corporation
 c:\windows\system32\riched20.dll

[Services]

Display Name	Name	State	Start Mode	Service Type	Path	Error Control	Start Name	Tag ID
Alerter	Alerter	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k localservice	Normal	NT AUTHORITY\LocalService	0
Application Layer Gateway Service	ALG	Stopped	Manual	Own Process	c:\windows\system32\alg.exe	Normal	NT AUTHORITY\LocalService	0
Application Management	AppMgmt	Stopped	Manual	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Windows Audio	AudioSrv	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Background Intelligent Transfer Service	BITS	Running	Manual	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Computer Browser	Browser	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Indexing Service	CiSvc	Stopped	Manual	Share Process	c:\windows\system32\cisvc.exe	Normal	LocalSystem	0
ClipBook	ClipSrv	Stopped	Disabled	Own Process	c:\windows\system32\clipsrv.exe	Normal	LocalSystem	0
COM+ System Application	COMSysApp	Stopped	Manual	Own Process	c:\windows\system32\dlhhost.exe			
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}								
Cryptographic Services	CryptSvc	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Distributed File System	Dfs	Running	Auto	Own Process	c:\windows\system32\dfssvc.exe	Normal	LocalSystem	0
DHCP Client	Dhcp	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k networkservice	Normal	NT AUTHORITY\NetworkService	0

Logical Disk Manager Administrative Service	dmdadmin	Stopped	Manual	Share Process	c:\windows\system32\dmdadmin.exe /com	Normal	LocalSystem	0
Logical Disk Manager	dmserver	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
DNS Client	Dnscache	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k networkservice	Normal	NT AUTHORITY\NetworkService	0
Error Reporting Service	ERSvc	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Ignore	LocalSystem	0
Event Log	Eventlog	Running	Auto	Share Process	c:\windows\system32\services.exe	Normal	LocalSystem	0
COM+ Event System	EventSystem	Running	Manual	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Help and Support	helpsvc	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Human Interface Device Access	HidServ	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
HTTP SSL	HTTPFilter	Stopped	Manual	Share Process	c:\windows\system32\lsass.exe	Normal	LocalSystem	0
IMAPI CD-Burning COM Service	ImapiService	Stopped	Disabled	Own Process	"c:\windows\system32\imapi.exe"	Normal	LocalSystem	0
Intersite Messaging	IsmServ	Stopped	Disabled	Own Process	c:\windows\system32\ismserv.exe	Normal	LocalSystem	0
Kerberos Key Distribution Center	kdc	Stopped	Disabled	Share Process	c:\windows\system32\lsass.exe	Normal	LocalSystem	0
Server	lanmanserver	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Workstation	lanmanworkstation	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
License Logging	LicenseService	Running	Auto	Own Process	c:\windows\system32\llssrv.exe	Normal	NT AUTHORITY\NetworkService	0
TCP/IP NetBIOS Helper	LmHosts	Running	Auto	Share Process	c:\windows\system32\svchost.exe -k localservice	Normal	NT AUTHORITY\LocalService	0
Messenger	Messenger	Stopped	Disabled	Share Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
NetMeeting Remote Desktop Sharing	mnmsrvc	Stopped	Disabled	Own Process	c:\windows\system32\mnmsrvc.exe	Normal	LocalSystem	0
Distributed Transaction Coordinator	MSDTC	Running	Auto	Own Process				

c:\windows\system32\msdtc.exe	Normal	NT								c:\windows\system32\sessmgr.exe	Normal									
AUTHORITY\NetworkService	0									LocalSystem	0									
Windows Installer	MSIServer	Stopped	Manual							Routing and Remote Access	RemoteAccess	Running								
Share Process	c:\windows\system32\msiexec.exe									Auto	Share Process									
/v	Normal	LocalSystem	0							c:\windows\system32\svchost.exe -k netsvcs	Normal									
Microsoft Search	MSSEARCH	Running	Auto	Share						LocalSystem	0									
Process "c:\program files\common files\system\mssearch\bin\mssearch.exe"	Normal									Remote Registry	RemoteRegistry	Running	Auto	Share						
LocalSystem	0									Process	c:\windows\system32\svchost.exe -k regsvc	Normal								
MSSQLSERVER	MSSQLSERVER	Stopped	Manual	Own						NT AUTHORITY\LocalService	0									
Process	e:\progra~1\micro~1\mssql\binn\sqlservr.exe									Remote Procedure Call (RPC) Locator	RpcLocator									
Normal	LocalSystem	0								Stopped	Manual	Own	Process							
MSSQLServerADHelper	MSSQLServerADHelper	Stopped	Manual	Own	Process					c:\windows\system32\locator.exe	Normal	NT								
Manual	Own	Process	c:\program files\microsoft sql server\80\tools\binn\sqladhlp.exe	Normal						AUTHORITY\NetworkService	0									
LocalSystem	0									Remote Procedure Call (RPC)	RpcSs	Running	Auto	Share						
Network DDE	NetDDE	Stopped	Disabled	Share	Process					Share	Process	c:\windows\system32\svchost -k								
c:\windows\system32\netdde.exe	Normal									Normal	LocalSystem	0								
LocalSystem	0									Resultant Set of Policy Provider	RSOPProv	Stopped								
Network DDE DSDM	NetDDEdsdm	Stopped	Disabled							Manual	Share	Process								
Share	Process	c:\windows\system32\netdde.exe	Normal	LocalSystem	0					c:\windows\system32\rsopprov.exe	Normal									
Normal	LocalSystem	0								LocalSystem	0									
Net Logon	Netlogon	Stopped	Manual	Share						Special Administration Console Helper	sacsvr	Stopped								
Process	c:\windows\system32\lsass.exe	Normal								Manual	Share	Process								
LocalSystem	0									c:\windows\system32\svchost.exe -k netsvcs	Normal									
LocalSystem	0									LocalSystem	0									
Network Connections	Netman	Running	Manual	Share						Security Accounts Manager	SamSs	Running	Auto	Share						
Process	c:\windows\system32\svchost.exe -k netsvcs	Normal								Share	Process	c:\windows\system32\lsass.exe								
LocalSystem	0									Normal	LocalSystem	0								
Network Location Awareness (NLA)	Nla	Running								Smart Card	SCardSvr	Stopped	Manual	Share						
Manual	Share	Process								Process	c:\windows\system32\scardsvr.exe	Ignore	NT							
c:\windows\system32\svchost.exe -k netsvcs	Normal									AUTHORITY\LocalService	0									
LocalSystem	0									Task Scheduler	Schedule	Running	Auto	Share						
File Replication	NtFrs	Stopped	Manual	Own	Process					Process	c:\windows\system32\svchost.exe -k netsvcs	Normal								
c:\windows\system32\ntfrs.exe	Ignore									LocalSystem	0									
LocalSystem	0									Secondary Logon	seclogon	Running	Auto	Share	Process					
NT LM Security Support Provider	NtLmSsp	Running								c:\windows\system32\svchost.exe -k netsvcs	Ignore									
Manual	Share	Process								LocalSystem	0									
c:\windows\system32\lsass.exe	Normal									System Event Notification	SENS	Running	Auto	Share						
LocalSystem	0									Process	c:\windows\system32\svchost.exe -k netsvcs	Normal								
LocalSystem	0									LocalSystem	0									
Removable Storage	NtmsSvc	Stopped	Manual							Internet Connection Firewall (ICF) / Internet Connection										
Share	Process	c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0					Sharing (ICS)	SharedAccess	Stopped	Disabled	Share						
Normal	LocalSystem	0								Process	c:\windows\system32\svchost.exe -k netsvcs	Normal								
LocalSystem	0									LocalSystem	0									
Plug and Play	PlugPlay	Running	Auto	Share						Shell Hardware Detection	ShellHWDetection	Running								
Process	c:\windows\system32\services.exe	Normal								Auto	Share	Process								
LocalSystem	0									c:\windows\system32\svchost.exe -k netsvcs	Ignore									
LocalSystem	0									LocalSystem	0									
IPSEC Services	PolicyAgent	Running	Auto	Share						Print Spooler	Spooler	Running	Auto	Own	Process					
Process	c:\windows\system32\lsass.exe	Normal								c:\windows\system32\spoolsv.exe	Normal									
LocalSystem	0									LocalSystem	0									
Protected Storage	ProtectedStorage	Running	Auto	Share						SQLSERVERAGENT	SQLSERVERAGENT	Stopped								
Process	c:\windows\system32\lsass.exe	Normal								Manual	Own	Process								
LocalSystem	0									e:\progra~1\micro~1\mssql\binn\sqlagent.exe										
Remote Access Auto Connection Manager	RasAuto	Stopped								Normal	LocalSystem	0								
Manual	Share	Process								Windows Image Acquisition (WIA)	stisvc	Stopped								
c:\windows\system32\svchost.exe -k netsvcs	Normal									Disabled	Share	Process								
LocalSystem	0									c:\windows\system32\svchost.exe -k imgsvc	Normal									
LocalSystem	0									NT AUTHORITY\LocalService	0									
Remote Access Connection Manager	RasMan	Running								Microsoft Software Shadow Copy Provider	swprv	Stopped								
Manual	Share	Process								Manual	Own	Process								
c:\windows\system32\svchost.exe -k netsvcs	Normal																			
LocalSystem	0																			
Remote Desktop Help Session Manager	RDSessMgr	Stopped	Manual	Own	Process															

```

c:\windows\system32\svchost.exe -k swprv Normal
LocalSystem 0
Performance Logs and Alerts SysmonLog Stopped
Auto Own Process
c:\windows\system32\smlogsvc.exe Normal NT
Authority\NetworkService 0
Telephony TapiSrv Running Manual Share Process
c:\windows\system32\svchost.exe -k tapisrv Normal
LocalSystem 0
Terminal Services TermService Running Manual
Share Process c:\windows\system32\svchost.exe -
k termsvcs Normal LocalSystem 0
Terminal Server Licensing TermServLicensing Running
Auto Own Process
c:\windows\system32\lsrver.exe Normal
LocalSystem 0
Themes Themes Stopped DisabledShare Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Telnet TlntSvr Stopped DisabledOwn Process
c:\windows\system32\tlntsvr.exe Normal NT
AUTHORITY\LOCAL SERVICE 0
Distributed Link Tracking Server TrkSvr Stopped Disabled
Share Process c:\windows\system32\svchost.exe -
k netsvcs Normal LocalSystem 0
Distributed Link Tracking Client TrkWks Running Auto
Share Process c:\windows\system32\svchost.exe -
k netsvcs Normal LocalSystem 0
Terminal Services Session Directory Tssdis Stopped
DisabledOwn Process
c:\windows\system32\tssdis.exe Normal
LocalSystem 0
Upload Manager uploadmgr Stopped DisabledShare
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Uninterruptible Power Supply UPS Stopped Manual
Own Process c:\windows\system32\ups.exe
Normal LocalSystem 0
Virtual Disk Service vds Stopped Manual Own
Process c:\windows\system32\svchost.exe -k vds.exe Normal
LocalSystem 0
Volume Shadow Copy VSS Stopped Manual Own
Process c:\windows\system32\svchost.exe -k vssvc.exe Normal
LocalSystem 0
Windows Time W32Time Running Auto Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
WebClient WebClient Stopped DisabledShare
Process c:\windows\system32\svchost.exe -k localservice
Normal NT AUTHORITY\LocalService 0
WinHTTP Web Proxy Auto-Discovery Service
WinHttpAutoProxySvc Stopped Manual Share
Process c:\windows\system32\svchost.exe -k localservice
Normal NT AUTHORITY\LocalService 0
Windows Management Instrumentation winmgmt
Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Ignore
LocalSystem 0
Portable Media Serial Number WmdmPmSp Stopped
Manual Share Process

```

```

c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Windows Management Instrumentation Driver Extensions
Wmi Stopped Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
WMI Performance Adapter WmiApSrv Stopped
Manual Own Process
c:\windows\system32\wbem\wmiapsrv.exe Normal
LocalSystem 0
Automatic Updates wuauserv Running Auto
Share Process c:\windows\system32\svchost.exe -
k netsvcs Normal LocalSystem 0
Wireless Configuration WZCSVC Running Auto
Share Process c:\windows\system32\svchost.exe -
k netsvcs Normal LocalSystem 0

```

[Program Groups]

```

Group Name Name User Name
Accessories Default User:Accessories Default User
Accessories\Accessibility Default
User:Accessories\Accessibility Default User
Accessories\Entertainment Default
User:Accessories\Entertainment Default User
Startup Default User:Startup Default User
Accessories All Users:Accessories All Users
Accessories\Accessibility All Users:Accessories\Accessibility
All Users
Accessories\Communications All
Users:Accessories\Communications All Users
Accessories\Entertainment All
Users:Accessories\Entertainment All Users
Accessories\System Tools All Users:Accessories\System
Tools All Users
Administrative Tools All Users:Administrative Tools
All Users
Microsoft SQL Server All Users:Microsoft SQL Server
All Users
Microsoft SQL Server - Switch All Users:Microsoft SQL
Server - Switch All Users
MKS Toolkit All Users:MKS Toolkit All Users
Startup All Users:Startup All Users
VNC All Users:VNC All Users
VNC\Administrative Tools All
Users:VNC\Administrative Tools All Users
Accessories NT AUTHORITY\SYSTEM:Accessories
NT AUTHORITY\SYSTEM
Accessories\Accessibility NT
AUTHORITY\SYSTEM:Accessories\Accessibility NT
AUTHORITY\SYSTEM
Accessories\Entertainment NT
AUTHORITY\SYSTEM:Accessories\Entertainment NT
AUTHORITY\SYSTEM
Startup NT AUTHORITY\SYSTEM:Startup NT
AUTHORITY\SYSTEM
Accessories Tpch\Administrator:Accessories
Tpch\Administrator
Accessories\Accessibility
Tpch\Administrator:Accessories\Accessibility
Tpch\Administrator

```

Accessories\Entertainment
 TPC\Administrator:Accessories\Entertainment
 TPC\Administrator
 Administrative Tools
 TPC\Administrator:Administrative Tools
 TPC\Administrator
 Startup TPC\Administrator:Startup
 TPC\Administrator

[Startup Programs]

Program Command	User Name	Location
desktop desktop.ini Startup	NT AUTHORITY\SYSTEM	
desktop desktop.ini WinVNC.exe winvnc.exe.lnk Startup	TPC\Administrator	Startup
desktop desktop.ini	.DEFAULT	Startup
desktop desktop.ini Service Manager	All Users	Common Startup
c:\progra~1\microso~1\80\tools\binn\sqlmangr.exe /n All Users	All Users	Common Startup

[OLE Registration]

Object	Local Server
Sound (OLE2)	sndrec32.exe
Media Clip	mplay32.exe
Video Clip	mplay32.exe /avi
MIDI Sequence	mplay32.exe /midi
Sound	Not Available
Media Clip	Not Available
Windows Media Player 7	Not Available
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Windows Media Services DRM Storage object	Not Available
Adobe Acrobat Document	e:\downlo~1\acroba~1.0\reader\acrord32.exe
Bitmap Image	mspaint.exe

[Windows Error Reporting]

Time	Type	Details
4/10/2003 9:30 AM	Application Hang	Application HelpCtr.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

4/10/2003 9:30 AM	Application Hang	Application HelpCtr.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

4/4/2003 10:16 AM	Application Hang	Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

3/14/2003 2:43 PM	Application Hang	Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

3/14/2003 1:40 PM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 3/14/2003 8:36 AM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 3/10/2003 10:53 AM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 3/10/2003 10:51 AM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 3/5/2003 9:04 AM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 2/17/2003 3:26 PM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 2/7/2003 2:50 PM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

 2/7/2003 10:49 AM Application Hang
 Application mmc.exe, version 5.2.3663.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

[Internet Settings]

[Internet Explorer]

[Following are sub-categories of this main category]
 [Summary]

Item	Value
Version	6.0.3663.0
Build	63663
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available
Cipher Strength	128-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company
actxprxy.dll	6.0.3663.0	95 KB	7/29/2002	C:\WINDOWS\system32	Microsoft Corporation

advpack.dll	6.0.3663.0	93 KB	7/29/2002	mshta.exe	6.0.3663.0	27 KB	7/29/2002
1:09:03 PM	C:\WINDOWS\system32	Microsoft		1:32:11 PM	C:\WINDOWS\system32	Microsoft	
Corporation				Corporation			
asctrls.ocx	6.0.3663.0	89 KB	7/29/2002	mshtml.dll	6.0.3663.0	2,628 KB	
1:09:36 PM	C:\WINDOWS\system32	Microsoft		7/29/2002 1:32:12 PM	C:\WINDOWS\system32		
Corporation				Microsoft Corporation			
browsecl.dll	6.0.3663.0	62 KB	7/29/2002	mshtml.tlb	6.0.3663.0	1,319 KB	
1:10:34 PM	C:\WINDOWS\system32	Microsoft		7/29/2002 1:32:13 PM	C:\WINDOWS\system32		
Corporation				Microsoft Corporation			
browseui.dll	6.0.3663.0	1,000 KB		mshtmlled.dll	6.0.3663.0	424 KB	7/29/2002
7/29/2002 1:10:35 PM	C:\WINDOWS\system32			1:32:13 PM	C:\WINDOWS\system32	Microsoft	
Microsoft Corporation				Corporation			
cdfview.dll	6.0.3663.0	141 KB	7/29/2002	mshtmlmer.dll	6.0.3663.0	55 KB	7/29/2002
1:10:50 PM	C:\WINDOWS\system32	Microsoft		1:32:14 PM	C:\WINDOWS\system32	Microsoft	
Corporation				Corporation			
comctl32.dll	5.82.3663.0	560 KB	7/29/2002	msident.dll	6.0.3663.0	47 KB	7/29/2002
1:11:51 PM	C:\WINDOWS\system32	Microsoft		1:32:16 PM	C:\WINDOWS\system32	Microsoft	
Corporation				Corporation			
dxttrans.dll	6.3.3663.0	188 KB	7/29/2002	msidntld.dll	6.0.3663.0	15 KB	7/29/2002
1:17:50 PM	C:\WINDOWS\system32	Microsoft		1:32:17 PM	C:\WINDOWS\system32	Microsoft	
Corporation				Corporation			
dxtmsft.dll	6.3.3663.0	332 KB	7/29/2002	msieftp.dll	6.0.3663.0	232 KB	7/29/2002
1:17:49 PM	C:\WINDOWS\system32	Microsoft		1:32:17 PM	C:\WINDOWS\system32	Microsoft	
Corporation				Corporation			
iecont.dll	<File Missing>	Not Available	Not Available	msrating.dll	6.0.3663.0	132 KB	7/29/2002
Available	Not Available	Not Available	Not Available	1:33:02 PM	C:\WINDOWS\system32	Microsoft	
iecontlc.dll	<File Missing>	Not Available	Not Available	Corporation			
Available	Not Available	Not Available	Not Available	mstime.dll	6.0.3663.0	490 KB	7/29/2002
iedkcs32.dll	16.0.3663.0	292 KB	7/29/2002	1:33:14 PM	C:\WINDOWS\system32	Microsoft	
1:22:03 PM	C:\WINDOWS\system32	Microsoft		Corporation			
Corporation				occache.dll	6.0.3663.0	88 KB	7/29/2002
iepeers.dll	6.0.3663.0	229 KB	7/29/2002	1:36:56 PM	C:\WINDOWS\system32	Microsoft	
1:22:08 PM	C:\WINDOWS\system32	Microsoft		Corporation			
Corporation				proctexe.ocx	6.3.3663.0	78 KB	7/29/2002
iesetup.dll	6.0.3663.0	59 KB	7/29/2002	1:50:00 PM	C:\WINDOWS\system32	Intel Corporation	
1:22:09 PM	C:\WINDOWS\system32	Microsoft		sendmail.dll	6.0.3663.0	54 KB	7/29/2002
Corporation				1:55:07 PM	C:\WINDOWS\system32	Microsoft	
ieunit.inf	Not Available	19 KB	7/29/2002	Corporation			
1:22:11 PM	C:\WINDOWS\system32	Not Available	Not Available	shdoclc.dll	6.0.3663.0	521 KB	7/29/2002
ieexplore.exe	6.0.3663.0	90 KB	7/29/2002	1:55:57 PM	C:\WINDOWS\system32	Microsoft	
1:22:12 PM	C:\Program Files\Internet Explorer			Corporation			
Microsoft Corporation				shdocvw.dll	6.0.3663.0	1,311 KB	
imgutil.dll	6.0.3663.0	30 KB	7/29/2002	7/29/2002 1:55:57 PM	C:\WINDOWS\system32		
1:22:31 PM	C:\WINDOWS\system32	Microsoft		Microsoft Corporation			
Corporation				shfolder.dll	6.0.3663.0	23 KB	7/29/2002
inetctl.cpl	6.0.3663.0	296 KB	7/29/2002	1:56:01 PM	C:\WINDOWS\system32	Microsoft	
1:22:35 PM	C:\WINDOWS\system32	Microsoft		Corporation			
Corporation				shlwapi.dll	6.0.3663.0	269 KB	7/29/2002
inetctlc.dll	6.0.3663.0	108 KB	7/29/2002	1:56:04 PM	C:\WINDOWS\system32	Microsoft	
1:22:35 PM	C:\WINDOWS\system32	Microsoft		Corporation			
Corporation				tdc.ocx	1.3.0.3130	57 KB	7/29/2002 1:59:22 PM
inseng.dll	6.0.3663.0	71 KB	7/29/2002	C:\WINDOWS\system32	Microsoft Corporation		
1:22:48 PM	C:\WINDOWS\system32	Microsoft		url.dll	6.0.3663.0	40 KB	7/29/2002 2:01:36 PM
Corporation				C:\WINDOWS\system32	Microsoft Corporation		
mlang.dll	6.0.3663.0	565 KB	7/29/2002	urlmon.dll	6.0.3663.0	442 KB	7/29/2002
1:29:34 PM	C:\WINDOWS\system32	Microsoft		2:01:37 PM	C:\WINDOWS\system32	Microsoft	
Corporation				Corporation			
msencode.dll	2000.7.25.0	92 KB	7/29/2002	webcheck.dll	6.0.3663.0	254 KB	7/29/2002
1:31:53 PM	C:\WINDOWS\system32	Not Available		2:04:06 PM	C:\WINDOWS\system32	Microsoft	
				Corporation			

wininet.dll 6.0.3663.0 581 KB 7/29/2002
2:04:46 PM C:\WINDOWS\system32 Microsoft Corporation

Name
No publisher information available

[Connectivity]

[Security]

Item Value
Connection Preference Never dial

Zone Security Level
My Computer Custom
Local intranet Medium-low
Trusted sites Low
Internet Medium
Restricted sites High

LAN Settings

AutoConfigProxy Not Available
AutoProxyDetectMode Disabled
AutoConfigURL
Proxy Disabled
ProxyServer
ProxyOverride

[Cache]

[Following are sub-categories of this main category]
[Summary]

Item Value
Page Refresh Type Automatic
Temporary Internet Files Folder C:\Documents and Settings\NetworkService\Local Settings\Temporary Internet Files
Total Disk Space Not Available
Available Disk Space Not Available
Maximum Cache Size Not Available
Available Cache Size Not Available

[List of Objects]

Program File Status CodeBase
No cached object information available

[Content]

[Following are sub-categories of this main category]
[Summary]

Item Value
Content Advisor Disabled

[Personal Certificates]

Issued To Issued By Validity Signature
Algorithm
No personal certificate information available

[Other People Certificates]

Issued To Issued By Validity Signature
Algorithm
No other people certificate information available

[Publishers]

Appendix B: Database Build Scripts

CreateDatabase.sql

```
-- CreateDatabase
-- for use with StepMaster
-- Uses FileGroups

--
-- Drop the existing database
--
if exists (select name from sysdatabases where name = 'tpch')
    drop database tpch

CREATE DATABASE tpch
ON PRIMARY
(
    NAME = tpch_root,
    FILENAME = 'E:\tpch_root.mdf',
    SIZE = 10MB,
    FILEGROWTH = 0),
FILEGROUP TPCF_FG
(
    NAME = tpch_1,
    FILENAME = 'E:\dev\tpch1\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_2,
    FILENAME = 'E:\dev\tpch2\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_3,
    FILENAME = 'E:\dev\tpch3\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_4,
    FILENAME = 'E:\dev\tpch4\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_5,
    FILENAME = 'E:\dev\tpch5\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_6,
    FILENAME = 'E:\dev\tpch6\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_7,
    FILENAME = 'E:\dev\tpch7\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_8,
    FILENAME = 'E:\dev\tpch8\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_9,
    FILENAME = 'E:\dev\tpch9\',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = tpch_10,
    FILENAME = 'E:\dev\tpch10\',
    SIZE = 21000MB,
    FILEGROWTH = 0)
```

LOG ON

```
(
    NAME = tpch_log,
    FILENAME = 'L:',
    SIZE = 17000MB,
    FILEGROWTH = 0)
```

ALTER Database tpch Add Filegroup LOAD_FG

ALTER Database tpch Add FILE

```
(
    NAME = load_1,
    FILENAME = 'E:\dev\load1\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_2,
    FILENAME = 'E:\dev\load2\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_3,
    FILENAME = 'E:\dev\load3\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_4,
    FILENAME = 'E:\dev\load4\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_5,
    FILENAME = 'E:\dev\load5\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_6,
    FILENAME = 'E:\dev\load6\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_7,
    FILENAME = 'E:\dev\load7\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_8,
    FILENAME = 'E:\dev\load8\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_9,
    FILENAME = 'E:\dev\load9\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0),
(
    NAME = load_10,
    FILENAME = 'E:\dev\load10\load.ldf',
    SIZE = 21000MB,
    FILEGROWTH = 0)
```

to Filegroup LOAD_FG

CreateTables.sql

```
-- File: CREATETABLES.SQL
-- Microsoft TPC-H Benchmark Kit Ver. 1.00
-- Copyright Microsoft, 1999
--
```

create table PART


```

(P_PARTKEY int not null,
P_NAME varchar(55) not null,
P_MFGR char(25) not null,
P_BRAND char(10) not null,
P_TYPE varchar(25) not null,
P_SIZE int not null,
P_CONTAINER char(10) not null,
P_RETAILPRICE money not null,
P_COMMENT varchar(23) not null)
on 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 money 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 money 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 money not null,
C_MKTSEGMENT char(10) not null,
C_COMMENT varchar(117) not null)
on LOAD_FG

```

```

create table ORDERS
(O_ORDERKEY int not null,
O_CUSTKEY int not null,
O_ORDERSTATUS char(1) not null,
O_TOTALPRICE money 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 LOAD_FG

```

```

create table LINEITEM
(L_ORDERKEY int not null,
L_PARTKEY int not null,
L_SUPPKEY int not null,
L_LINENUMBER int not null,
L_QUANTITY money not null,
L_EXTENDEDPRICE money not null,
L_DISCOUNT money not null,
L_TAX money not null,

```

```

L_RETURNFLAG char(1) not null,
L_LINestatus char(1) not null,
L_SHIPDATE 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 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

```

CreateCustomerIndexes.sql

```

create unique clustered index C_KEY_CLUIDX on
CUSTOMER(C_CUSTKEY)
with SORT_IN_TEMPDB
on TPCH_FG
create index C_NATION_KEYIDX on CUSTOMER
(C_NATIONKEY)
with SORT_IN_TEMPDB
on TPCH_FG

```

CreateLineItemIndexes.sql

```

create clustered index L_SHIPDATE_CLUIDX on
LINEITEM(L_SHIPDATE)
with fillfactor=95, SORT_IN_TEMPDB
on TPCH_FG
create index L_PARTKEY_SUPPKEY_IDX on LINEITEM
(L_PARTKEY,L_SUPPKEY)
with fillfactor=95, SORT_IN_TEMPDB
on TPCH_FG
create index L_ORDERKEY_IDX on LINEITEM
(L_ORDERKEY)
with fillfactor=95, SORT_IN_TEMPDB
on TPCH_FG

```

CreateNationIndexes.sql

```

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

```

CreateOrdersIndexes.sql

```

create clustered index O_ORDERDATE_CLUIDX on
ORDERS (O_ORDERDATE)
with fillfactor=95, SORT_IN_TEMPDB
on TPCH_FG
create index O_CUSTKEY_IDX on ORDERS
(O_CUSTKEY)
with fillfactor=95, SORT_IN_TEMPDB
on TPCH_FG
create unique index O_KEY_IDX on
ORDERS(O_ORDERKEY)
with fillfactor=95, SORT_IN_TEMPDB
on TPCH_FG

```

CreatePartIndexes.sql

```

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

```

CreatePartSuppIndexes.sql

```

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

```

CreateRegionIndexes.sql

```

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

```

CreateSupplierIndexes.sql

```

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

```

Backup.sql

```

-- File: BACKUPDATABASE.SQL
-- Microsoft TPC-H Benchmark Kit Version
1.00
-- Copyright Microsoft, 1999
--
backup database tpch to b1, b2, b3, b4 with init, stats=10

```

Backupdev.sql

```

-- File: BACKUPDEV.SQL

```

```

--
-- Purpose: Creates tpch database Backup Devices

```

```

use master
go

```

```

exec sp_dropdevice 'b1'
go

```

```

exec sp_dropdevice 'b2'
go

```

```

exec sp_dropdevice 'b3'
go

```

```

exec sp_dropdevice 'b4'
go

```

```

exec sp_addumpdevice 'disk','b1','b:\b1'
go

```

```

exec sp_addumpdevice 'disk','b2','b:\b2'
go

```

```

exec sp_addumpdevice 'disk','b3','b:\b3'
go

```

```

exec sp_addumpdevice 'disk','b4','b:\b4'
go

```

BackupDev_nodev.sql

```

-- File: BACKUPDEV_nodev.SQL
--
-- Purpose: Creates tpch database Backup Devices

```

```

use master
go

```

```

-- exec sp_dropdevice 'b1'
-- go

```

```

-- exec sp_dropdevice 'b2'
-- go

```

```

-- exec sp_dropdevice 'b3'
-- go

```

```

-- exec sp_dropdevice 'b4'
-- go

```

```

exec sp_addumpdevice 'disk','b1','b:\b1'
go

```

```

exec sp_addumpdevice 'disk','b2','b:\b2'
go

```

```

exec sp_addumpdevice 'disk','b3','b:\b3'
go

```

```

exec sp_addumpdevice 'disk','b4','b:\b4'
go

```

AddTempDB.sql

```

alter database tempdb modify file
(name=tempdev, filename='E:\temp\tempdev\',size=15000mb)
alter database tempdb modify file
(name=templog, filename='E:\temp\templog\',size=15000mb)
alter database tempdb add file
(name=tempdev1,
filename='E:\temp\tempdb1\',size=15000mb),
(name=tempdev2,
filename='E:\temp\tempdb2\',size=15000mb),
(name=tempdev3,
filename='E:\temp\tempdb3\',size=15000mb),
(name=tempdev4,
filename='E:\temp\tempdb4\',size=15000mb),
(name=tempdev5,
filename='E:\temp\tempdb5\',size=15000mb),
(name=tempdev6,
filename='E:\temp\tempdb6\',size=15000mb),
(name=tempdev7,
filename='E:\temp\tempdb7\',size=15000mb),
(name=tempdev8,
filename='E:\temp\tempdb8\',size=15000mb),
(name=tempdev9,
filename='E:\temp\tempdb9\',size=15000mb)

```

MoveTempDB.sql

```

--
-- Copyright (c) 1999-2000 Intel Corporation
--
-- MoveTemp.sql

alter database tempdb modify file
(name=tempdev,filename='E:\temp\tempdev\',SIZE=15MB)

alter database tempdb modify file
(name=templog,filename='E:\temp\templog\',SIZE=10MB)

```

DloadFG.sql

```

alter database tpch remove file load_1
alter database tpch remove file load_2
alter database tpch remove file load_3
alter database tpch remove file load_4
alter database tpch remove file load_5
alter database tpch remove file load_6
alter database tpch remove file load_7
alter database tpch remove file load_8
alter database tpch remove file load_9
alter database tpch remove file load_10
alter database tpch remove filegroup LOAD_FG

```

Appendix C: Query Text 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(*)
           AS COUNT_ORDER
FROM LINEITEM
WHERE L_SHIPDATE <= dateadd(dd, -90, '1998-12-01')
GROUP BY  L_RETURNFLAG,
           L_LINESTATUS
ORDER BY  L_RETURNFLAG,
           L_LINESTATUS
    
```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
 17> 18> 19> 20> 21> 22> 23> L_RETURNFLAG
 L_LINESTATUS SUM_QTY SUM_BASE_PRICE
 SUM_DISC_PRICE SUM_CHARGE
 AVG_QTY AVG_PRICE
 AVG_DISC COUNT_ORDER

A	F	37,734,107.00	
56,586,554,400.73			
		53,758,257,134.87	55,909,065,224.70
		25.52	38,273.13
		0.05	1478493
N	F	991,417.00	1,487,504,710.38
		1,413,082,168.05	1,469,649,223.24
		25.52	38,284.47
		0.05	38854
N	O	74,476,040.00	
111,701,729,697.74			
		106,118,230,307.61	110,367,043,876.24
		25.50	38,249.12
		0.05	2920374
R	F	37,719,753.00	
56,568,041,380.90			
		53,741,292,684.60	55,889,619,121.70
		25.51	38,250.85

(4 rows 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
    
```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
 17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29> 30>
 31> 32> 33> 34> 35> 36> 37> 38> 39> 40> 41>

S_ACCTBAL	S_NAME	N_NAME
P_PARTKEY	P_MFGR	
S_ADDRESS		S_PHONE
S_COMMENT		


```

ke acc
7,843.52 Supplier#000006683    FRANCE
11680 Manufacturer#4
2Z0JGkiv01Y00oCFwUGfviIbhzCdy    16-464-
517-8943
carefully bold accounts doub

```

(100 rows 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_SHIPRIORITY
FROM        CUSTOMER,
            ORDERS,
            LINEITEM
WHERE      C_MKTSEGMENT    = 'BUILDING' AND
            C_CUSTKEY      = O_CUSTKEY AND
            L_ORDERKEY     = O_ORDERKEY AND
            O_ORDERDATE    < '1995-03-15' AND
            L_SHIPDATE     > '1995-03-15'
GROUP BY   L_ORDERKEY,
            O_ORDERDATE,
            O_SHIPRIORITY
ORDER BY   REVENUE DESC,
            O_ORDERDATE

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> L_ORDERKEY REVENUE
O_ORDERDATE O_SHIPRIORITY

```

```

-----
2456423      406,181.01  Mar 5 1995 12:00AM
0
3459808      405,838.70  Mar 4 1995 12:00AM
0
492164       390,324.06  Feb 19 1995 12:00AM
0
1188320      384,537.94  Mar 9 1995 12:00AM
0
2435712      378,673.06  Feb 26 1995 12:00AM
0
4878020      378,376.80  Mar 12 1995 12:00AM
0
5521732      375,153.92  Mar 13 1995 12:00AM
0
2628192      373,133.31  Feb 22 1995 12:00AM
0
993600       371,407.46  Mar 5 1995 12:00AM
0
2300070      367,371.15  Mar 13 1995 12:00AM
0

```

(10 rows 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, '1993-
07-01') AND
            EXISTS        (
                SELECT      *
                FROM        LINEITEM
                WHERE      L_ORDERKEY
                = O_ORDERKEY AND
                L_COMMITDATE < L_RECEIPTDATE
            )
GROUP BY   O_ORDERPRIORITY
ORDER BY   O_ORDERPRIORITY

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> O_ORDERPRIORITY ORDER_COUNT

```

```

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

```

(5 rows affected)

Qualification Query 5

-- using default substitutions

/* TPC_H Query 5 - Local Supplier Volume */

```

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

```

```
ORDER BY REVENUE DESC
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> N_NAME
REVENUE
```

```
-----
INDONESIA          55,502,041.17
VIETNAM           55,295,087.00
CHINA             53,724,494.26
INDIA            52,035,512.00
JAPAN            45,410,175.70
```

(5 rows affected)

Qualification Query 6

-- using default substitutions

/* TPC_H Query 6 - Forecasting Revenue Change */

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

```
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> REVENUE
-----
123,141,078.23
```

(1 row 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_EXTENDEDPRICE*(1-
L_DISCOUNT) AS VOLUME
    FROM SUPPLIER,
        LINEITEM,
        ORDERS,
        CUSTOMER,
        NATION N1,
        NATION N2
```

```
WHERE S_SUPPKEY = L_SUPPKEY
AND
    O_ORDERKEY =
L_ORDERKEY AND
    C_CUSTKEY = O_CUSTKEY
AND
    S_NATIONKEY =
N1.N_NATIONKEY AND
    C_NATIONKEY =
N2.N_NATIONKEY AND
    ( (N1.N_NAME =
'FRANCE' AND N2.N_NAME = 'GERMANY')
OR
    (N1.N_NAME =
'GERMANY' AND N2.N_NAME = 'FRANCE')
) AND
    L_SHIPDATE BETWEEN
'1995-01-01' AND '1996-12-31'
) AS SHIPPING
GROUP BY SUPP_NATION,
    CUST_NATION,
    L_YEAR
ORDER BY SUPP_NATION,
    CUST_NATION,
    L_YEAR
```

```
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29> 30>
31> 32> 33> 34> 35> 36> SUPP_NATION
CUST_NATION L_YEAR
REVENUE
```

```
-----
FRANCE GERMANY 1995
54,639,732.73
FRANCE GERMANY 1996
54,633,083.31
GERMANY FRANCE 1995
52,531,746.67
GERMANY FRANCE 1996
52,520,549.02
```

(4 rows 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_EXTENDEDPRICE * (1-
L_DISCOUNT) AS VOLUME,
N2.N_NAME
AS NATION
FROM PART,
SUPPLIER,
LINEITEM,
ORDERS,
CUSTOMER,
NATION N1,
NATION N2,
REGION
WHEREP_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
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29> 30>
31> 32> 33> 34> O_YEAR MKT_SHARE
-----
1995 0.03
1996 0.04

```

(2 rows 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_EXTENDEDPRICE*(1-
L_DISCOUNT)-PS_SUPPLYCOST*L_QUANTITY AS
AMOUNT

```

```

FROM PART,
SUPPLIER,
LINEITEM,
PARTSUPP,
ORDERS,
NATION
WHERE S_SUPPKEY = L_SUPPKEY
AND
PS_SUPPKEY = L_SUPPKEY
AND
PS_PARTKEY = L_PARTKEY
AND
P_PARTKEY = L_PARTKEY
AND
O_ORDERKEY =
L_ORDERKEY AND
S_NATIONKEY =
N_NATIONKEY AND
P_NAME LIKE
'%%green%%'
) AS PROFIT
GROUP BY NATION,
O_YEAR
ORDER BY NATION,
O_YEAR DESC

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29>
NATION O_YEAR SUM_PROFIT
-----
ALGERIA 1998 31,342,867.23
ALGERIA 1997 57,138,193.02
ALGERIA 1996 56,140,140.13
ALGERIA 1995 53,051,469.65
ALGERIA 1994 53,867,582.13
ALGERIA 1993 54,942,718.13
ALGERIA 1992 54,628,034.71
ARGENTINA 1998 30,211,185.71
ARGENTINA 1997 50,805,741.75
ARGENTINA 1996 51,923,746.58
ARGENTINA 1995 49,298,625.77
ARGENTINA 1994 50,835,610.11
ARGENTINA 1993 51,646,079.18
ARGENTINA 1992 50,410,314.99

```

---- Additional Rows Deleted ----

```

UNITED STATES 1998 25,126,238.95
UNITED STATES 1997 50,077,306.42
UNITED STATES 1996 48,048,649.47
UNITED STATES 1995 48,809,032.42
UNITED STATES 1994 49,296,747.18
UNITED STATES 1993 48,029,946.80
UNITED STATES 1992 48,671,944.50
VIETNAM 1998 30,442,736.06
VIETNAM 1997 50,309,179.79
VIETNAM 1996 50,488,161.41
VIETNAM 1995 49,658,284.61
VIETNAM 1994 50,596,057.26
VIETNAM 1993 50,953,919.15
VIETNAM 1992 49,613,838.32

```

(175 rows affected)

Qualification Query 10

-- using default substitutions

/* TPC_H Query 10 - Returned Item Reporting */

```

SELECT      TOP 20
           C_CUSTKEY,
           C_NAME,
           SUM(L_EXTENDEDPRICE*(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, '1993-
10-01') 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
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29> 30>
31> 32> C_CUSTKEY C_NAME      REVENUE
           C_ACCTBAL      N_NAME
           C_ADDRESS      C_PHONE
           C_COMMENT

```

```

-----
-----
-----
-----
-----

```

```

57040 Customer#000057040      734,235.25
           632.87 JAPAN
Eioyjf4pp      22-895-641-3466
requests sleep blithely about the furiously i

143347 Customer#000143347      721,002.69

```

```

2,557.47 EGYPT
1aReFYv,Kw4      14-742-935-3718
fluffily bold excuses haggle finally after the u

60838 Customer#000060838      679,127.31
           2,454.77 BRAZIL
64EaJ5vMAHWJIBOXJklpNc2RJiWE      12-
913-494-9813
           furiously even pinto beans integrate under the
ruthless foxes; ironic,
           even dolphins across the slyl
101998 Customer#000101998      637,029.57
           3,790.89 UNITED KINGDOM
01c9CILnNtfOQYmZj      33-593-865-
6378
           accounts doze blithely! enticing, final deposits sleep
blithely special
           accounts. slyly express accounts pla
125341 Customer#000125341      633,508.09
           4,983.51 GERMANY
S29ODD6bceU8QSuueJznkNaK      17-582-
695-5962
           quickly express requests wake quickly blithely

25501 Customer#000025501      620,269.78
           7,725.04 ETHIOPIA
W556MXuoiaYCCZamJI,Rn0B4ACUGdkQ8DZ
15-874-808-6793
           quickly special requests sleep evenly among the
special deposits. speci
           al deposi
115831 Customer#000115831      596,423.87
           5,098.10 FRANCE
rFeBbEEyk dl ne7zV5fDrmiq1oK09wV7pxqCgIc
16-715-386-3788
           carefully bold excuses sleep alongside of the thinly
idle

84223 Customer#000084223      594,998.02
           528.65 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      585,603.39
           5,583.02 IRAN
vXCxocSuoBad5JQI ,oobkZ      20-834-292-
4707
           express requests sublate blithely regular requests.
regular, even ideas
           solve.
39922 Customer#000039922      584,878.11
           7,321.11 GERMANY
Zgy4s50I2GKN4pLDPBU8m342gIw6R      17-
147-757-8036
           even pinto beans haggle. slyly bold accounts inte

6226 Customer#000006226      576,783.76
           2,230.09 UNITED KINGDOM

```

8gPu8,NPGkfyQQ0hcIYUGPIBWc,ybP5g, 33-
657-701-3391
quickly final requests against the regular instructions
wake blithely f
inal instructions. pa
922 Customer#000000922 576,767.53
3,869.25 GERMANY
Az9RFaut7NkPnc5zSD2PwHgVwr4jRzq 17-
945-916-9648
boldly final requests cajole blith

147946 Customer#000147946 576,455.13
2,030.13 ALGERIA
iANyZHjqhy7Ajah0pTrYyhJ 10-886-956-
3143
furiously even accounts are blithely above the
furiousl

115640 Customer#000115640 569,341.19
6,436.10 ARGENTINA
Vtgfia9qI 7EpHgecU1X 11-411-543-
4901
final instructions are slyly according to the

73606 Customer#000073606 568,656.86
1,785.67 JAPAN
xuR0Tro5yChDfOCrjkd2ol 22-437-653-
6966
furiously bold orbits about the furiously busy
requests wake across the
furiously quiet theodolites. d

110246 Customer#000110246 566,842.98
7,763.35 VIETNAM
7KzflgX MDOq7sOkI 31-943-426-
9837
dolphins sleep blithely among the slyly final

142549 Customer#000142549 563,537.24
5,085.99 INDONESIA
ChqEoK43OysjdHbtKCp6dKqjNyvvi9 19-
955-562-2398
regular, unusual dependencies boost slyly; ironic
attainments nag fluff
ily into the unusual packages?

146149 Customer#000146149 557,254.99
1,791.55 ROMANIA
s87fvzFQpU 29-744-164-6487
silent, unusual requests detect quickly slyly regul

52528 Customer#000052528 556,397.35
551.79 ARGENTINA
NFztyTOR10UOJ 11-208-192-3205
unusual requests detect. slyly dogged theodolites use
slyly. deposit

23431 Customer#000023431 554,269.54
3,381.86 ROMANIA
HgiV0phqhaIa9aydNoIlb 29-915-458-
2654
instructions nag quickly. furiously bold accounts
cajol

(20 rows 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
WHEREPS_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
            WHEREPS_SUPPKEY =
            S_SUPPKEY AND
            S_NATIONKEY =
            N_NATIONKEY AND
            N_NAME
            = 'GERMANY'
            )
ORDER BY   VALUE DESC
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> PS_PARTKEY VALUE
-----
129760      17,538,456.86
166726      16,503,353.92
191287      16,474,801.97
161758      16,101,755.54
34452       15,983,844.72
139035      15,907,078.34
9403        15,451,755.62
154358      15,212,937.88
38823       15,064,802.86
85606       15,053,957.15
33354       14,408,297.40
154747      14,407,580.68
82865       14,235,489.78

---- Additional Rows Deleted ----
113808      7,893,353.88
27901       7,892,952.00
128820      7,892,882.72
25891       7,890,511.20
122819      7,888,881.02

```

```

154731      7,888,301.33
101674      7,879,324.60
51968       7,879,102.21
72073       7,877,736.11
5182        7,874,521.73

```

(1048 rows 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, '1994-01-
01')
GROUP BY   L_SHIPMODE
ORDER BY   L_SHIPMODE

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> L_SHIPMODE
HIGH_LINE_COUNT LOW_LINE_COUNT
-----

```

```

MAIL      6202    9324
SHIP      6200    9262

```

(2 rows 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)
GROUP BY   C_COUNT
ORDER BY   CUSTDIST DESC,
            C_COUNT DESC

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 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

```

(42 rows 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, '1995-09-01')
    
```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14>
PROMO_REVENUE
-----
16.380778626395540
    
```

(1 row 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, '1996-01-01')
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)
    
```

```

)
ORDER BY   S_SUPPKEY
    
```

DROP VIEW REVENUE0

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 1> 2> 3> 4>
5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16> 17> 18> 19>
S_SUPPKEY S_NAME          S_ADDRESS
S_PHONE   TOTAL_REVENUE
-----
    
```

```

8449 Supplier#000008449   Wp34zim9qYFbVctdW
20-469-856-8873         1,772,627.21
    
```

(1 row 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
    
```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 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
Brand#35 PROMO BRUSHED NICKEL         14
24
Brand#41 ECONOMY BRUSHED STEEL        9
24

```

---- Additional Rows Deleted ----

```

Brand#32 STANDARD ANODIZED COPPER     23
3
Brand#33 SMALL ANODIZED BRASS          9    3
Brand#35 MEDIUM ANODIZED TIN          19    3
Brand#51 SMALL PLATED BRASS           23    3
Brand#52 MEDIUM BRUSHED BRASS         45
3
Brand#53 MEDIUM BRUSHED TIN           45    3
Brand#54 ECONOMY POLISHED BRASS        9
3
Brand#55 PROMO PLATED BRASS           19    3
Brand#55 STANDARD PLATED TIN          49    3

```

(18314 rows affected)

Qualification Query 17

-- using default substitutions

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

```

SELECT      SUM(L_EXTENDEDPRICE)/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
)
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15>
AVG_YEARLY
-----
348406.0542857
(1 row 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 AND
O_ORDERKEY = L_ORDERKEY
GROUP BY C_NAME,
C_CUSTKEY,
O_ORDERKEY,
O_ORDERDATE,
O_TOTALPRICE
ORDER BY O_TOTALPRICE DESC,
O_ORDERDATE

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28>
C_NAME      C_CUSTKEY O_ORDERKEY
O_ORDERDATE
O_TOTALPRICE
-----
Customer#000128120      128120 4722021 Apr 7
1994 12:00AM
544,089.09      323.00
Customer#000144617      144617 3043270 Feb 12
1997 12:00AM

```

Customer#000013940	13940	530,604.44	317.00	2232932	Apr 13	1997 12:00AM
Customer#000066790	66790	522,720.61	304.00	2199712	Sep 30	1996 12:00AM
Customer#000046435	46435	515,531.82	327.00	4745607	Jul 3 1997	12:00AM
Customer#000015272	15272	508,047.99	309.00	3883783	Jul 28 1993	12:00AM
Customer#000146608	146608	500,241.33	302.00	3342468	Jun 12	1994 12:00AM
Customer#000096103	96103	499,794.58	303.00	5984582	Mar 16	1992 12:00AM
Customer#000024341	24341	494,398.79	312.00	1474818	Nov 15	1992 12:00AM
Customer#000137446	137446	491,348.26	302.00	5489475	May 23	1997 12:00AM
Customer#000107590	107590	487,763.25	311.00	4267751	Nov 4	1994 12:00AM
Customer#000050008	50008	485,141.38	301.00	2366755	Dec 9	1996 12:00AM
---- Additional Rows Deleted ----						
Customer#000093392	93392	425,487.51	304.00	5200102	Jan 22 1997	12:00AM
Customer#000015631	15631	419,879.59	302.00	1845057	May 12	1994 12:00AM
Customer#000112987	112987	418,161.49	305.00	4439686	Sep 17	1996 12:00AM
Customer#000012599	12599	415,200.61	304.00	4259524	Feb 12	1998 12:00AM
Customer#000105410	105410	412,754.51	302.00	4478371	Mar 5	1996 12:00AM
Customer#000149842	149842	411,329.35	302.00	5156581	May 30	1994 12:00AM
Customer#000010129	10129	409,129.85	309.00	5849444	Mar 21	1994 12:00AM
Customer#000069904	69904	408,513.00	305.00	1742403	Oct 19	1996 12:00AM
Customer#000017746	17746	408,446.93	303.00	6882	Apr 9 1997	12:00AM

Customer#000013072	13072	399,195.47	301.00	1481925	Mar 15	1998 12:00AM
Customer#000082441	82441	382,579.74	305.00	857959	Feb 7 1994	12:00AM
Customer#000088703	88703	363,812.12	302.00	2995076	Jan 30	1994 12:00AM

(57 rows affected)

Qualification Query 19

-- using default substitutions

/* TPC_H Query 19 - Discounted Revenue */

```

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

```

```

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'
)

```

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29> 30>
31> 32> 33> 34> 35> 36> 37> REVENUE

```

3,083,843.06

(1 row 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
FROM
PARTSUPP
WHERE
PS_PARTKEY in (
SELECT
P_PARTKEY
FROM PART
WHERE P_NAME like 'forest%'
)
AND
sum(L_QUANTITY) > (
SELECT
PS_AVAILQTY
FROM PARTSUPP
WHERE P_PARTKEY = PS_PARTKEY
AND
L_SUPPKEY = PS_SUPPKEY
AND
L_SHIPDATE >= '1994-01-01'
AND

```

```

L_SHIPDATE <
dateadd(yy,1,'1994-01-01')
)
)
AND
S_NATIONKEY = N_NATIONKEY
AND
N_NAME = 'CANADA'
ORDER BY S_NAME
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> S_NAME
S_ADDRESS

```

```

-----
Supplier#000000020 iybAE,RmTymrZVYafZva2SH.j
Supplier#000000091
YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197
YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226 83qOdU2EYRdPQAQhEtn GRZED
Supplier#000000285 Br7e1nnt1yxrw6ImpgJ7YdhFDjuBf
Supplier#000000378 FfbhyCxWvcPrO8ltp9
Supplier#000000402
i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530 OqwCMwobKY
OcmLyfRXlagA8ukENJv,
Supplier#000000688 D
fw5ocppmZpYBBIP1718hCihLDZ5KhKX
Supplier#000000710 f19YPvOyb
QoYwjKC,oPycpGfieBAcwKJo
Supplier#000000736
l6i2nMwVuovfKnuVgaSGK2rDy65DIAFLegIL7
Supplier#000000761
zISLelQUj2XrvTTFnv7WAcYZGvvMTx882d4
Supplier#000000884 bhmEShejaS
Supplier#000000887 urEaTejH5POADP2ARrf
Supplier#000000935 ij98czM
2KzWe7dDT0xB8sq0UfCdvrx
Supplier#000000975 ,AC e,tBpNwKb5xMUzeohxIRn,
hdZJo73gFQF8y

```

---- Additional Rows Deleted ----

```

Supplier#000009601 51m637bO,Rw5DnHWFUvLacRx9
Supplier#000009709
rRnCbHYgDgl9PZYnyWKVYSUW0vKg
Supplier#000009753 wLhVEcRmd7PkJF4FBnGK7Z
Supplier#000009796 z,y4Idmr15DOvPUqYG
Supplier#000009799 4wNjXGa4OKWI
Supplier#000009811 E3iuyq7UnZxU7oPZIE2Gu6
Supplier#000009812
APFRMy3lCbGfGa53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmnUUoeyy7v
Supplier#000009869
ucLqxzrpBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdpaHRzr1t,UQFZE
Supplier#000009974
7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

```

(204 rows affected)

Qualification Query 21

-- using default substitutions

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

```

SELECT      TOP 100
           S_NAME,
           COUNT(*)      AS NUMWAIT
FROM SUPPLIER,
     LINEITEM L1,
     ORDERS,
     NATION
WHERE S_SUPPKEY      = L1.L_SUPPKEY
     AND
     O_ORDERKEY      = L1.L_ORDERKEY
     AND
     O_ORDERSTATUS   = 'F'
     AND
     L1.L_RECEIPTDATE > L1.L_COMMITDATE
     AND
     EXISTS (
           SELECT      *
           FROM LINEITEM L2
           WHERE L2.L_ORDERKEY
             = L1.L_ORDERKEY
             AND
             L2.L_SUPPKEY <>
             L1.L_SUPPKEY
           )
     AND
     NOT EXISTS (
           SELECT      *
           FROM LINEITEM L3
           WHERE
             L3.L_ORDERKEY      =
             L1.L_ORDERKEY
             AND
             L3.L_SUPPKEY      <>
             L1.L_SUPPKEY
             AND
             L3.L_RECEIPTDATE   > L3.L_COMMITDATE
           )
     AND
     S_NATIONKEY = N_NATIONKEY
     AND
     N_NAME      = 'SAUDI ARABIA'
GROUP BY   S_NAME
ORDER BY   NUMWAIT   DESC,
           S_NAME

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> 25> 26> 27> 28> 29> 30>
31> 32> S_NAME NUMWAIT

Supplier#000002829	20
Supplier#000005808	18
Supplier#000000262	17
Supplier#000000496	17
Supplier#000002160	17
Supplier#000002301	17
Supplier#000002540	17
Supplier#000003063	17
Supplier#000005178	17
Supplier#000008331	17
Supplier#000002005	16
Supplier#000002095	16

---- Additional Rows Deleted ----

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

(100 rows affected)

Qualification Query 22

-- using default substitutions

/* TPC_H Query 22 - Global Sales Opportunity */

```

SELECT      C_NTRYCODE,
           COUNT(*)      AS NUMCUST,
           SUM(C_ACCTBAL) AS TOTACCTBAL
FROM (
     SELECT
           SUBSTRING(C_PHONE,1,2) AS
           C_NTRYCODE,
           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   C_NTRYCODE
ORDER BY   C_NTRYCODE

```

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11> 12> 13> 14> 15> 16>
17> 18> 19> 20> 21> 22> 23> 24> C_NTRYCODE
NUMCUST TOTACCTBAL

13	888	6,737,713.99
17	861	6,460,573.72
18	964	7,236,687.40

23	892	6,701,457.95
29	948	7,158,866.63
30	909	6,808,436.13
31	922	6,806,670.18

(7 rows affected)

**Appendix D: Seeds and Query
Substitution Parameters**

Stream0 Seed: 419210533

14 1994-03-01
 2 16 NICKEL AFRICA
 9 drab
 20 antique 1993-01-01 KENYA
 6 1997-01-01 0.06 25
 17 Brand#55 MED CAN
 18 315
 8 RUSSIAEUROPE SMALL POLISHED
 NICKEL
 21 EGYPT
 13 express packages
 3 AUTOMOBILE 1995-03-05
 22 24 30 22 19 16 11
 18
 16 Brand#45 PROMO POLISHED 38
 29 16 27 41 19 13
 26
 4 1993-09-01
 11 FRANCE 0.0001000000
 15 1996-03-01
 1 83
 10 1994-01-01
 19 Brand#31 Brand#13 Brand#55
 5 13 21
 5 EUROPE 1997-01-01
 7 JORDAN RUSSIA
 12 REG AIR SHIP 1994-01-01

Stream1 Seed: 419210534

21 VIETNAM
 3 FURNITURE 1995-03-21
 18 313
 5 MIDDLE EAST 1997-01-01
 11 ROMANIA 0.0001000000
 7 ETHIOPIA KENYA
 6 1997-01-01 0.03 25
 20 lace 1997-01-01 CANADA
 17 Brand#52 JUMBO BOX
 12 SHIP AIR 1993-01-01
 16 Brand#25 SMALL BRUSHED 17
 11 4 8 31 40 48
 2
 15 1993-12-01
 13 express requests
 10 1994-10-01
 2 4 TIN EUROPE
 8 KENYA AFRICA SMALL BURNISHED
 BRASS
 14 1994-06-01
 19 Brand#43 Brand#51 Brand#44
 10 14 28
 9 cream
 22 23 34 29 33 26 16
 24
 1 91
 4 1996-04-01

Stream2 Seed: 419210535

6 1993-01-01 0.09 24
 17 Brand#54 JUMBO JAR
 14 1994-09-01
 16 Brand#15 ECONOMY BURNISHED
 35 30 36 38 21 32
 24 27
 19 Brand#45 Brand#34 Brand#44
 5 15 24
 10 1993-07-01
 9 chartreuse
 2 42 COPPER AFRICA
 15 1996-07-01
 8 FRANCE EUROPE STANDARD
 BRUSHED BRASS
 5 AFRICA 1993-01-01
 22 28 15 27 21 32 20
 34
 12 FOB SHIP 1994-01-01
 7 RUSSIAFRANCE
 13 express requests
 18 314
 1 99
 4 1994-01-01
 20 sky 1995-01-01 CHINA
 3 MACHINERY 1995-03-07
 11 GERMANY 0.0001000000
 21 JORDAN

Stream3 Seed: 419210536

8 UNITED KINGDOM EUROPE
 STANDARD PLATED BRASS
 5 AMERICA 1993-01-01
 4 1996-08-01
 6 1993-01-01 0.06 25
 17 Brand#51 JUMBO CAN
 7 KENYA UNITED KINGDOM
 1 107
 18 312
 22 19 15 22 18 17 25
 20
 14 1995-01-01
 9 blanched
 10 1994-05-01
 15 1994-03-01
 11 SAUDI ARABIA 0.0001000000
 20 dodger 1994-01-01 INDIA
 2 29 STEEL EUROPE
 21 ETHIOPIA
 19 Brand#42 Brand#22 Brand#43
 1 16 20
 13 special requests
 16 Brand#45 STANDARD PLATED 7
 13 12 9 8 25 39
 35
 12 TRUCK REG AIR 1994-01-01
 3 FURNITURE 1995-03-23

Stream4 Seed: 419210537

5 ASIA 1993-01-01
 21 UNITED KINGDOM
 14 1995-04-01
 19 Brand#54 Brand#55 Brand#32
 6 17 28
 15 1996-10-01
 17 Brand#53 WRAP BOX
 12 RAIL REG AIR 1995-01-01
 6 1993-01-01 0.04 25
 4 1994-05-01
 9 antique
 8 MOROCCO AFRICA STANDARD
 ANODIZED BRASS
 16 Brand#25 MEDIUM BRUSHED 34
 35 47 38 8 17 24
 9
 11 INDIA 0.0001000000
 2 17 NICKEL AMERICA
 10 1993-02-01
 18 313
 1 115
 13 special requests
 7 FRANCE MOROCCO
 22 32 23 18 14 26 28
 30
 3 MACHINERY 1995-03-09
 20 peru 1997-01-01 RUSSIA

Stream5 Seed: 419210538

21 MOROCCO
 15 1994-07-01
 4 1996-12-01
 6 1993-01-01 0.09 24
 7 UNITED KINGDOM GERMANY
 16 Brand#15 PROMO ANODIZED 45
 22 7 26 10 9 36
 41
 19 Brand#51 Brand#43 Brand#31
 1 18 24
 18 315
 14 1995-07-01
 22 15 13 14 25 27 19
 18
 11 VIETNAM 0.0001000000
 13 special requests
 3 BUILDING 1995-03-25
 1 62
 2 5 TIN EUROPE
 5 EUROPE 1993-01-01
 8 GERMANY EUROPE PROMO
 POLISHED BRASS
 20 blush 1996-01-01 JAPAN
 12 AIR REG AIR 1995-01-01
 17 Brand#55 WRAP JAR
 10 1993-11-01
 9 turquoise

Appendix E: Refresh Functions

CreateRF1Proc.sql

```
-- CreateRF1Proc.sql
if exists (select name from sysobjects where name = 'RF1')
drop procedure RF1
GO
--
-- Create a stored RefreshInsert procedure which will catch the
deadlock
-- victim abort and restart the insert transaction.
--
CREATE PROCEDURE RF1
@flatfiledir CHAR(40), @updateset INTEGER, @segment
INTEGER,
@scalefactor INTEGER
AS
BEGIN
DECLARE @min_orderkey INTEGER
DECLARE @max_orderkey INTEGER
DECLARE @range INTEGER
DECLARE @max_set INTEGER
DECLARE @SQLstring NVARCHAR(255)
DECLARE @insert_sets INTEGER
set @insert_sets= @scalefactor
--
-- Create the insert tables
--
create table #NEWORDERS (
O_ORDERKEY int not null,
O_CUSTKEY int not null,
O_ORDERSTATUS char(1) not null,
O_TOTALPRICE money 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
)
create table #NEWLINEITEM(
L_ORDERKEY int not null,
L_PARTKEY int not null,
L_SUPPKEY int not null,
L_LINENUMBER int not null,
L_QUANTITY money not null,
L_EXTENDEDPRICE money not null,
L_DISCOUNT money not null,
L_TAX money not null,
L_RETURNFLAG char(1) not null,
L_LINESTATUS char(1) not null,
L_SHIPDATE 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
)
create unique clustered index NEWORDERS on
#NEWORDERS
(O_ORDERKEY)
create clustered index NEWLINEITEM on #NEWLINEITEM
```

```
(L_ORDERKEY)
--
-- Generate an SQL statement inserting the current updateset
value into
-- the command. Next execute the statement to bulk load the
new lineitem
-- insert values.
--
SET @SQLstring="bulk insert #NEWLINEITEM from ""
+ RTRIM(convert(CHAR,@flatfiledir)) + "\Lineitem.tbl.u"
+ RTRIM(Convert(char,@updateset)) + "."
+ RTRIM(convert(char,@segment))
+ "" with
(FieldTerminator='|',RowTerminator='\n',order(L_ORDERKE
Y),codepage='
RAW',TABLOCK)"
EXEC sp_executesql @SQLstring
--
-- Generate an SQL statement inserting the current updateset
value into
-- the command. Next execute the statement to bulk load the
new order
-- insert values.
--
SET @SQLstring="bulk insert #NEWORDERS from ""
+ RTRIM(convert(CHAR,@flatfiledir)) + "\Orders.tbl.u"
+ RTRIM(Convert(char,@updateset)) + "."
+ RTRIM(convert(char,@segment))
+ "" with
(FieldTerminator='|',RowTerminator='\n',order(O_ORDERKE
Y),CODEPAGE='RAW',TABLOCK)"
EXEC sp_executesql @SQLstring
--
-- Obtain minimum and maximum order key and compute the
range of each
-- set to be inserted into the ORDERS and LINEITEM tables.
--
SELECT
@min_orderkey=MIN(O_ORDERKEY),@max_orderkey=M
AX(O_ORDERKEY) FROM #NEWORDERS
SET @range = (@max_orderkey - @min_orderkey) /
@insert_sets
--
-- This handles the case when the max-min/insert_sets is less
that 1
--
IF @range = 0
-- BEGIN
SET @range = (@max_orderkey - @min_orderkey) / 1
-- END
--
-- Loop through the order keys only inserting a sets into the
-- ORDERS and LINTTEITEM tables
--
SET @max_set = @min_orderkey - 1
WHILE @max_set < @max_orderkey
BEGIN
--
-- Set the range from min_orderkey to max_set
--
SET @max_set = @min_orderkey + @range
```

```

if @max_set > @max_orderkey
SET @max_set = @max_orderkey + 1
--
-- Insert into ORDERS and LINEITEM tables
INSERT_TRANS:
begin transaction
insert into ORDERS SELECT * FROM #NEWORDERS
WHERE O_ORDERKEY >= @min_orderkey AND
O_ORDERKEY < @max_set
insert into LINEITEM SELECT * FROM #NEWLINEITEM
WHERE L_ORDERKEY >= @min_orderkey AND
L_ORDERKEY
< @max_set
commit transaction
--
-- If deadlock victim abort then restart the transaction
--
if (@@error = 1205)
BEGIN
print 'Insert deadlock - restarting RF1 transaction'
rollback transaction
GOTO INSERT_TRANS
END
--
-- Move min_orderkey to start of next insert set
--
SET @min_orderkey = @max_set
END
END
GO

```

CreateRF2Proc.sql

```

-- CreateRF2Proc.sql
if exists (select name from sysobjects where name = 'RF2')
drop procedure RF2
GO
--
-- Create a stored Refresh Delete procedure which will catch
the deadlock
-- victim abort and restart the delete transaction.
--
CREATE PROCEDURE RF2
@flatfiledir CHAR(40), @updateset INTEGER, @segment
INTEGER,
@scalefactor INTEGER
AS
BEGIN
DECLARE @min_orderkey INTEGER
DECLARE @max_orderkey INTEGER
DECLARE @range INTEGER
DECLARE @max_set INTEGER
DECLARE @SQLstring NVARCHAR(255)
DECLARE @delete_sets INTEGER
set @delete_sets=@scalefactor
create table #OLDORDERS (O_ORDERKEY int)
create unique clustered index OLDORDERS
on #OLDORDERS (O_ORDERKEY)
with sorted_data
--

```

```

-- Generate an SQL statement inserting the current updateset
value into
-- the command. Next execute the statement to bulk load the
old order
-- delete values
--
SET @SQLstring="bulk insert #OLDORDERS from '"
+ RTRIM(convert(CHAR,@flatfiledir)) + "\Delete.u"
+ RTRIM(Convert(char,@updateset)) + "."
+ RTRIM(convert(char,@segment))
+ "' with
(order(O_ORDERKEY),codepage='RAW',TABLOCK)"
EXEC sp_executesql @SQLstring
--
-- Obtain minimum and maximum order key and compute the
-- range of each delete set
--
SELECT
@min_orderkey=MIN(O_ORDERKEY),@max_orderkey=M
AX(O_ORDE
RKEY) FROM #OLDORDERS
SET @range = (@max_orderkey - @min_orderkey) /
@delete_sets
--
-- This handles the case when the max-min/delete_sets is less
that 1
--
IF @range = 0
-- BEGIN
SET @range = (@max_orderkey - @min_orderkey) / 1
-- END
--
-- Loop through the order keys only deleting sets from orders
-- and lineitem tables
--
SET @max_set = @min_orderkey - 1
WHILE @max_set < @max_orderkey
BEGIN
--
-- Set the range from min_orderkey to max_set
--
SET @max_set = @min_orderkey + @range
if @max_set > @max_orderkey
SET @max_set = @max_orderkey + 1
--
-- Delete from ORDERS and LINEITEM table
--
DELETE_TRANS:
begin transaction
delete from ORDERS where O_ORDERKEY in
(select * from #OLDORDERS WHERE O_ORDERKEY >=
@min_orderkey AND O_ORDERKEY < @max_set)
delete from LINEITEM where L_ORDERKEY in
(select * from #OLDORDERS WHERE O_ORDERKEY >=
@min_orderkey AND O_ORDERKEY < @max_set)
commit transaction
--
-- If deadlock victim abort then restart the transaction
--
if (@@error = 1205)
BEGIN

```



```
print 'Delete deadlock - restarting RF2 transaction'  
rollback transaction  
GOTO DELETE_TRANS  
END  
--  
-- Move min_orderkey to start of next delete set  
--  
SET @min_orderkey = @max_set  
END  
END  
GO
```

**Appendix F: Implementation Specific
Layer and Source Code**

Launch.cmd

```
echo off
rem
rem Modify the following parameters for your configuration
rem
set DB=tpch
rem
rem set sql's 'sa' user password here
rem
set PW=
set HOMEDRIVE=E:
set HOMEDIR=\TPCH
set OUTPUTDRIVE=E:
set OUTPUTDIR=\TPCH\Output
set SCALEFACTOR=100
set DBGEN_SEGMENTS=24
set DBGEN_PARALLELISM=8
set FLATFILEDRIVE=F:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=\
set RF1_PARALLELISM=16
set RF2_PARALLELISM=16
set UPDATEDRIVE=B:
set UPDATEDIR=\UF_Flatfiles\
set UPDATE_SETS=18
set DoDBGEN=FALSE
set DoDBCREATE=TRUE
set DoBULKINSERT=TRUE
set DoCLEANUP=TRUE
set DoBACKUP=TRUE
set DoENDSTATS=TRUE
%HOMEDRIVE%
cd %HOMEDIR%
if '%1' == 'DBGEN' goto :DBGEN
if '%1' == 'BULKINSERTn' goto :BULKINSERTn
echo Checking for existence of HOMEDIR and OUTPUTDIR
echo %HOMEDRIVE%%HOMEDIR%
%OUTPUTDRIVE%%OUTPUTDIR%
%UPDATEDRIVE%%UPDATEDIR%
if NOT EXIST %HOMEDRIVE%%HOMEDIR% goto
:ERROR_EXIT
if NOT EXIST %OUTPUTDRIVE%%OUTPUTDIR% goto
:ERROR_EXIT
if NOT EXIST %UPDATEDRIVE%%UPDATEDIR% goto
:ERROR_EXIT
echo Finding next output directory in
%OUTPUTDRIVE%%OUTPUTDIR%
set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBE
R% goto :OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%\%O
UTPUTNUMBER%
echo Output will be found at %OUTPUTPATH%
```

```
mkdir %OUTPUTPATH%
if NOT '%DoDBGEN%' == 'TRUE' goto :DBCREATE
rem
rem DBGEN invokes dbgen.exe in parallel
rem
echo Starting DBGEN of FlatFiles
for /1 %%i in (1,1,%DBGEN_SEGMENTS%) do mkdir
%FLATFILEDRIVE%\%FLATFILEDIR%% %i%FLATFILE
SUBDIR%
for /1 %%i in (1,1,%DBGEN_SEGMENTS%) do xcopy
dists.dss
%FLATFILEDRIVE%\%FLATFILEDIR%% %i%FLATFILE
SUBDIR% /Y
xcopy dists.dss %UPDATEDRIVE%%UPDATEDIR% /Y

for /1 %%i in
(1,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS%)
do call :DBGEN_ITERATE %%i
echo Starting DBGEN of Update Files
%UPDATEDRIVE%
cd %UPDATEDIR%
%HOMEDRIVE%%HOMEDIR%\dbgen -U
%UPDATE_SETS% -s %SCALEFACTOR% -f -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 /1 %%i in (%FIRST%,1,%LAST%) do start cmd /C launch
DBGEN %%i
semaphore -wait DBGEN -count
%DBGEN_PARALLELISM%
goto :EOF
:DBGEN
%FLATFILEDRIVE%
echo \%FLATFILEDIR%% %2%FLATFILESUBDIR%
cd \%FLATFILEDIR%% %2%FLATFILESUBDIR%
%HOMEDRIVE%%HOMEDIR%\dbgen -fF -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
isql -Usa -P%PW% -Q"if exists (select * from sysdatabases
where name='%DB%')drop database %DB%" -o
%OUTPUTPATH%\DropDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
```

```

isql -Usa -P%PW% -i %DB%\CreateDatabase.sql -o
%OUTPUTPATH%\CreateDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
rem isql -Usa -P%PW% -Q"sp_dboption
%DB%, 'trunc', TRUE" -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem isql -Usa -P%PW% -Q"sp_dboption %DB%, 'select
into', TRUE" -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem isql -Usa -P%PW% -Q"sp_dboption
%DB%, 'torn', FALSE" -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT

:BULKINSERT
if NOT '%DoBULKINSERT%' == 'TRUE' goto :CLEANUP
rem
rem BULKINSERT starts a process per
%DBGEN_PARALLELISM%
rem Each process inserts one or more segments
rem
isql -Usa -P%PW% -Q"sp_dboption %DB%, 'trunc', TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -Q"sp_dboption %DB%, 'select
into', TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
echo Dropping and Re-Creating Tables
isql -Usa -P%PW% -d%DB% -Q"if exists (select * from
sysobjects where name = 'LOADTIMES') drop table
LOADTIMES" -b -o
%OUTPUTPATH%\Drop_Loadtimes.out
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"create table
LOADTIMES(STEP char(35),TIMESTAMP datetime)" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values('CREATE TABLES begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
for %i in (REGION NATION SUPPLIER PARTSUPP
PART CUSTOMER ORDERS LINEITEM) do isql -Usa -
P%PW% -d%DB% -Q"drop table %i" -o
%OUTPUTPATH%\Drop_Table_%i.out
isql -Usa -P%PW% -d%DB% -i %DB%\CreateTables.sql -o
%OUTPUTPATH%\CreateTables.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values('CREATE TABLES end',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
echo "Starting bulk inserts!"
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('LOAD begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
for %i in (LINEITEM ORDERS CUSTOMER PART
PARTSUPP SUPPLIER) do call :BULKINSERTi %i
echo for NATION and REGION
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values('Nation/Region insert begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"bulk insert NATION from
'%FLATFILEDRIVE%\%FLATFILEDIR% 1% FLATFILESU
BDIR%\Nation.tbl' with (FieldTerminator = '|',

```

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RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_Nation.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -i
%DB%\CreateNATIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"bulk insert REGION from
'%FLATFILEDRIVE%\%FLATFILEDIR% 1% FLATFILESU
BDIR%\Region.tbl' with (FieldTerminator = '|',
RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_Region.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -
i%DB%\CreateREGIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values('Nation/Region insert end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :CLEANUP
:BULKINSERTi
echo "Starting bulk inserts for %i"
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('%i bulk insert begin',getdate())" -l 300
for /l %j in (1,1,%DBGEN_PARALLELISM%) do start
cmd /C launch BULKINSERTn %i %j
semaphore -wait %i -count %DBGEN_PARALLELISM%
echo "Starting create indexes for %i"
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('%i create index begin',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -i %DB%\Create%1Indexes.sql
-o %OUTPUTPATH%\Create%1Indexes.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('%i end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :EOF
:BULKINSERTn
for /l %k in
(%3,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS
%) do call :BULKINSERTn2 BULKINSERTn2 %2 %k
semaphore -release %2
goto :EOF
:BULKINSERTn2
isql -Usa -P%PW% -d%DB% -Q"bulk insert %2 from
'%FLATFILEDRIVE%\%FLATFILEDIR% %3% FLATFILES
UBDIR%\%2.tbl.%3' with (FieldTerminator = '|',
RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_%2_%3.out -b -l 300
goto :EOF

echo "End of Bulk Inserts!"

:CLEANUP
if NOT '%DoCLEANUP%' == 'TRUE' goto :BACKUP
rem
rem CLEANUP sets statistics and lock options
rem
echo Setting Cleanup Options
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('Cleanup start',getdate())" -b

```

```

if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"sp_createstats" -o
%OUTPUTPATH%\CreateStats.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"sp_dboption '%DB%', 'auto
create statistics', 'OFF'" -o
%OUTPUTPATH%\AutoCreateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"sp_dboption '%DB%', 'auto
update statistics', 'OFF'" -o
%OUTPUTPATH%\AutoUpdateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"sp_indexoption
'LINEITEM', 'disallowpagelocks', 'TRUE'" -o
%OUTPUTPATH%\DisallowPageLocksLINEITEM.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'ORDERS',
'disallowpagelocks', 'TRUE'" -o
%OUTPUTPATH%\DisallowPageLocksOrders.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -i CreateRF1Proc.sql -o
%OUTPUTPATH%\CreateRF1Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -i CreateRF2Proc.sql -o
%OUTPUTPATH%\CreateRF2Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'NATION', 'pintable', '1'" -o
%OUTPUTPATH%\pinNATION.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'REGION', 'pintable', '1'" -o
%OUTPUTPATH%\pinREGION.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
rem
rem isql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'SUPPLIER', 'pintable', '1'" -o
%OUTPUTPATH%\pinSUPPLIER.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -Q"sp_dboption %DB%, 'trunc', 'FALSE" -
b >%OUTPUTPATH%\dboptionTrunOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -Q"sp_dboption %DB%, 'select', 'FALSE" -
b >%OUTPUTPATH%\dboptionSelOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('Cleanup end', getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
:BACKUP
rem
rem BACKUP is the final step, using a script
rem
if NOT '%DoBACKUP%' == 'TRUE' goto :ENDSTATS
echo Starting Backup
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('Backup start', getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
echo Deleting LoadFg filegroup
isql -Usa -P%PW% -d%DB% -i %DB%\DLoadFG.sql -o
%OUTPUTPATH%\DLoadFG.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT

rem isql -Usa -P%PW% -i %DB%\Backupdev.sql -o
%OUTPUTPATH%\Backupdev.out -b
isql -Usa -P%PW% -i %DB%\Backupdev_nODEV.sql -o
%OUTPUTPATH%\Backupdev.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
echo "Start of Backup!"
isql -Usa -P%PW% -d%DB% -i %DB%\Backup.sql -o
%OUTPUTPATH%\Backup.out -b
echo "End of Backup!"
if ERRORLEVEL 1 goto :ERROR_EXIT
isql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES
values ('Backup end', getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
:ENDSTATS
if NOT '%DoENDSTATS%' == 'TRUE' goto :EOF isql -Usa -
P%PW% -d%DB% -Q"insert into LOADTIMES values
('LOAD end', getdate())"
isql -Usa -P%PW% -d%DB% -Q"select TIMESTAMP from
LOADTIMES where STEP='LOAD end'" -o
%OUTPUTPATH%\LoadEND.out
bcp %DB%..LOADTIMES out
%OUTPUTPATH%\LOADTIMES.bcp -Usa -P%PW% -n
echo Last step is to run Lorna's sql script
isql -Usa -P%PW% -d%DB% -i dbcheck.sql -o
%OUTPUTPATH%\dbcheck.out
rem isql -Usa -P%PW% -d%DB% -i SetupReport.sql -o
%OUTPUTPATH%\SetupReport.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

```

Runh.cmd

```

echo off
rem
rem Modify the following parameters for your configuration
rem
rem This version pulls the Update Files from
rem %UPDATEDRIVE%<segment>%UPDATEDIR%
rem
set DB=tpch
set HOMEDRIVE=E:
set HOMEDIR=\TPCH\Script
set OUTPUTDRIVE=E:
set OUTPUTDIR=\TPCH\Script\Output
set UPDATEDRIVE=B:
set UPDATEDIR=\UF_Flatfiles
set UPDATESSET=1
set UPDATESEGMENTS=16
set SEED=419210533
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' == 'RF2' goto RF2
if '%1' == 'THROUGHPUT_STREAM' goto
:THROUGHPUT_STREAM
echo Checking for existence of HOMEDIR and OUTPUTDIR
if NOT EXIST %HOMEDRIVE%%HOMEDIR% goto
:ERROR_EXIT
if NOT EXIST %OUTPUTDRIVE%%OUTPUTDIR% goto
:ERROR_EXIT
set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%OUTPUTDRIVE%%OUTPUTDIR%%OUTPUTNUMBE
R% goto :OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%%O
UTPUTNUMBER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%

if NOT '%DoRESTORE%' == 'TRUE' goto :SETUP
rem
rem Use the Restore.sql script in SETUP
rem
echo Starting Restore
isql -E -i E:\tpch\Restore.sql -b
isql -E -d%DB% -i E:\tpch\CreateRF1Proc.sql
isql -E -d%DB% -i E:\tpch\CreateRF2Proc.sql

rem Create the TIMES table
rem
isql -E -d%DB% -Q"if exists (select * from sysindexes where
name = 'TIMES') drop table TIMES"
isql -E -d%DB% -Q"create table TIMES(QUERY
char(5),STREAM int,START datetime)"

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
REM for /l %%i in (0,1,%STREAMS%) do
%HOMEDIR%\qgen -s %SCALEFACTOR% -r %SEED% -
p%%i > %HOMEDIR%\Stream%%i.sql

%HOMEDRIVE%%HOMEDIR%\qgen -s
%SCALEFACTOR% -r 419210533 -p0 >
%HOMEDIR%\Stream0.sql -l
%HOMEDIR%\Stream0_parameters.out
%HOMEDRIVE%%HOMEDIR%\qgen -s
%SCALEFACTOR% -r 419210534 -p1 >

```

```

%HOMEDIR%\Stream1.sql -l
%HOMEDIR%\Stream1_parameters.out
%HOMEDRIVE%%HOMEDIR%\qgen -s
%SCALEFACTOR% -r 419210535 -p2 >
%HOMEDIR%\Stream2.sql -l
%HOMEDIR%\Stream2_parameters.out
%HOMEDRIVE%%HOMEDIR%\qgen -s
%SCALEFACTOR% -r 419210536 -p3 >
%HOMEDIR%\Stream3.sql -l
%HOMEDIR%\Stream3_parameters.out
%HOMEDRIVE%%HOMEDIR%\qgen -s
%SCALEFACTOR% -r 419210537 -p4 >
%HOMEDIR%\Stream4.sql -l
%HOMEDIR%\Stream4_parameters.out
%HOMEDRIVE%%HOMEDIR%\qgen -s
%SCALEFACTOR% -r 419210538 -p5 >
%HOMEDIR%\Stream5.sql -l
%HOMEDIR%\Stream5_parameters.out

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

rem
rem Create the TIMES table
rem
isql -E -d%DB% -Q"if exists (select * from sysindexes where
name = 'TIMES') drop table TIMES"
isql -E -d%DB% -Q"create table TIMES(QUERY
char(5),STREAM int,START datetime)"

rem
rem Begin POWER run
rem
rem
rem Execute the RF1 Transaction set in parallel
rem
:POWER
if NOT '%DoPOWER%' == 'TRUE' goto :THROUGHPUT
isql -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%
isql -E -d%DB% -Q"insert into TIMES values
('RF1',0,getdate())"
for /l %%i in (1,1,%UPDATESEGMETS%) do start
/abovenormal cmd /C runh RF1 %UPDATE_SEGMENT%
%%i
semaphore -wait RF1 -count %UPDATESEGMETS%
rem
rem Execute the PowerRun Queries
rem
:STREAM0
if NOT '%DoPOWERStream0%' == 'TRUE' goto
:STREAM0_DONE

```

```

echo "Running Stream0"
isql -E -d%DB% -i%HOMEDIR%\Stream0.sql -o
%OUTPUTPATH%\Stream0.out -b
echo "Ending Stream0"
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"
isql -E -d%DB% -Q"insert into TIMES values
('RF2',0,getdate())"
for /1 %%i in (1,1,%UPDATESEGMENTS%) do start
/abovenormal cmd /C runh RF2 %UPDATE_SEGMENT%
%%i
semaphore -wait RF2 -count %UPDATESEGMENTS%
:POWERDONE
echo "Power Done!"
isql -E -d%DB% -Q"insert into TIMES values
('QXX',0,getdate())" -l300
rem
rem Execute the THROUGHPUT Run
rem
:THROUGHPUT
if NOT '%DoTHROUGHPUT%' == 'TRUE' goto :DONE
echo Running the Throughput Streams
for /1 %%i in (1,1,%STREAMS%) do start /abovenormal cmd
/C runh THROUGHPUT_STREAM %%i
isql -E -d%DB% -Q"insert into TIMES values
('RF1',1,getdate())"
semaphore -wait THROUGHPUT_QUERIES -count
%STREAMS%
for /1 %%j in (1,1,%STREAMS%) do call
:THROUGHPUT_REFRESH %%j
goto :DONE
:THROUGHPUT_STREAM
E:\tpch\echo "Throughput Stream %2"
isql -E -d%DB% -i%HOMEDIR%\Stream%2.sql -o
%OUTPUTPATH%\Stream%2.out
semaphore -release THROUGHPUT_QUERIES
goto :EOF
:THROUGHPUT_REFRESH
if %1 neq 1 isql -E -d%DB% -Q"insert into TIMES
values('RF1',%1,getdate())"
set /a UPDATE_SEGMENT=%1+%UPDATESET%
for /1 %%i in (1,1,%UPDATESEGMENTS%) do start
/abovenormal cmd /C runh RF1 %UPDATE_SEGMENT%
%%i
semaphore -wait RF1 -count %UPDATESEGMENTS%
isql -E -d%DB% -Q"insert into TIMES values
('RF2',%1,getdate())"
for /1 %%i in (1,1,%UPDATESEGMENTS%) do start
/abovenormal cmd /C runh RF2 %UPDATE_SEGMENT%
%%i
semaphore -wait RF2 -count %UPDATESEGMENTS%
isql -E -d%DB% -Q"insert into TIMES values
('RFX',%1,getdate())"
goto :EOF
rem

```

```

rem Final Step -- Write out completion to Log
rem
:DONE
isql -E -d%DB% -i E:\tpch\Report.sql -
o%OUTPUTPATH%\Report.out -w120
rem bcp %DB%..TIMES out %OUTPUTPATH%\TIMES.bcp
-Usa -P -n

```

```

rem ----- Get SQL Configuration
isql -E -Q"sp_configure 'show advanced',1"
isql -E -Q"reconfigure with override"
isql -E -n -s, -w300 -Q"sp_configure" -
o%OUTPUTPATH%\configure.out
rem ----- Get SQL Version
isql -E -n -w300 -e -Q"select @@version" -
o%OUTPUTPATH%\sqlversion.out
isql -E -n -w300 -e -Q"sp_helpdb %DB%" -
o%OUTPUTPATH%\db.out
isql -E -n -w300 -e -Q"sp_dboption %DB%" -
o%OUTPUTPATH%\dboption.out
isql -E -n -w300 -e -Q"sp_helpsort" -
o%OUTPUTPATH%\sort.out
rem isql -E -n -w300 -e -d%DB% -ilocking.sql -
o%OUTPUTPATH%\locking.out
rem ----- Get query plans
@echo set showplan_all on >%OUTPUTPATH%\stream.sql
@echo go >>%OUTPUTPATH%\stream.sql
type stream0.sql >>%OUTPUTPATH%\stream.sql
isql -E -d%DB% -n -w3000 -i%OUTPUTPATH%\stream.sql -
o%OUTPUTPATH%\plans.out

```

```

rem ----- Get Boot.ini
TYPE c:\boot.ini >%OUTPUTPATH%\boot.ini
rem reg query
"HKLM\SYSTEM\CurrentControlSet\Control\Session
Manager\I/O System" /s >%OUTPUTPATH%\session.reg
reg query
"HKLM\SYSTEM\CurrentControlSet\Services\mraid35x\Para
meters" /s >%OUTPUTPATH%\array.reg
reg query
"HKLM\SYSTEM\CurrentControlSet\Control\PriorityControl
" /s >%OUTPUTPATH%\priority.reg

```

```

echo Done! Output can be found at %OUTPUTPATH%
goto :EOF
rem
rem Subroutine for Executing RF1s
rem called from RF1 and THROUGHPUT_RF1
rem
:RF1
rem isql -E -l 120 -d%DB% -Q"exec RF2
'%UPDATEDRIVE%%3%UPDATEDIR%',%2,%3,%SCALE
FACTOR%" -o %OUTPUTPATH%\RF2_%2_%3.out
osql -E -l 120 -d%DB% -Q"exec RF1
'%UPDATEDRIVE%%UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF1_%2_%3.out
semaphore -release RF1
goto :EOF
rem

```

```

rem Subroutine for Executing RF2s
rem called from RF2 and THROUGHPUT_RF2
rem
:RF2
rem isql -E -I 120 -d%DB% -Q"exec RF2
"%UPDATEDRIVE%%3%UPDATEDIR%',%2,%3,%SCALE
FACTOR%" -o %OUTPUTPATH%\RF2_%2_%3.out
osql -E -I 120 -d%DB% -Q"exec RF2
"%UPDATEDRIVE%%UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF2_%2_%3.out
semaphore -release RF2
goto :EOF
:ERROR_EXIT
echo Run aborted due to error
echo Check output in %OUTPUTPATH%
%HOMEDRIVE%
cd %HOMEDIR%
exit /B

```

Semaphore.cpp

```

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

```

```

}
// check that
else if (argc != 3)
goto usage;
else
iCount = 1;
}
else if (eOP == eWaitGroup)
{
if ((argc != 5) || (_stricmp(argv[3], "-count") != 0))
goto usage;
iCount = atoi(argv[4]);
if (iCount < 1)
goto usage;
}
else
// eWaitList or eSignal
iCount = argc - 2;
if (eOP == eWait)
{
printf( "semaphore name = %s\n", argv[2] );

printf( "semaphore count = %d\n", iCount );
hSemaphore = CreateSemaphore( NULL, 0, 2000000000,
argv[2] );
if (hSemaphore == NULL)
{
DWORD dwError = GetLastError();
cout << "*ERROR* CreateSemaphore returned "
<< dwError << endl;
exit(EXIT_FAILURE);
}
for (i=0; i<iCount; i++)
{
WaitForSingleObject( hSemaphore, INFINITE );
GetLocalTime( &Time );
printf( "%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d
- released\n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond );
}
CloseHandle( hSemaphore );
}
else if ((eOP == eWaitGroup) || (eOP == eWaitList))
{
char **szEventNames;
szEventNames = new char*[iCount];
char szTmp[128];
printf( "event-list = " );
for (i=0; i<iCount; i++)
{
if (eOP == eWaitGroup)
{
wsprintf( szTmp, "%s.%d", argv[2],
i+1 );
szEventNames[i] = new
char[strlen(szTmp)+1];
strcpy( szEventNames[i], szTmp );
}
else
{

```



```

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

```

```

else if (eOP == eSignal)
{
for (i=0; i<iCount; i++)
{
HANDLE hHandle = OpenEvent(
EVENT_MODIFY_STATE, FALSE, argv[i+2] );
if (hHandle == NULL)
{
DWORD dwError = GetLastError();
cout << "*ERROR* OpenEvent
returned " << dwError << endl;
exit(EXIT_FAILURE);
}
SetEvent( hHandle );
CloseHandle( hHandle );
}
}
exit(EXIT_SUCCESS);
// syntax was bad; show usage and quit
usage:
printf(
"Semaphore Utility - Ver. 1.2 - 26-Jul-99 \n"
"Copyright (C) Microsoft Corp 1999. All rights reserved.\n\n"
"usage: \n"
" semaphore { -wait | -release } <semaphore-name> [ -count
<count> ] \n"
" semaphore { -waitlist | -signal } <event-list> \n"
" semaphore -waitgroup <event-prefix> -count <count>\n"
"\n"
"<semaphore-name> == alpha-numeric identifier \n"
"<count> == integer > 0; default value = 1 \n"
"<event-list> == { <event-name> ... } \n"
"<event-name> == alpha-numeric identifier \n"
"<event-prefix> == alpha-numeric identifier \n"
"\n"
"There are two modes to choose from: a semaphore or a list
of events. \n"
"\n"
"Semaphore mode: \n"
"A semaphore is a single identifier with an associated count.
Each time \n"
"the semaphore is released, the count is decremented by one
(or the amount \n"
"specified). When the count reaches zero, the waiter
completes. If there \n"
"are multiple waiters on the same semaphore, each release
releases only \n"
"the number of waiters specified in count.\n"
"\n"
"List of Events: \n"
"A list of events (alpha-numeric tags) is specified for the
waiter. The \n"
"waiter doesn't complete until all of the events have been
signaled. A \n"
"given event may be signaled more than once. There are two
ways to define \n"
"the list of events, either explicitly (-waitlist) by naming all of
them or \n"
"implicitly (-waitgroup) with a prefix and a count. Using the -
waitgroup
\n"

```

```
"option, you provide an alpha-numeric tag which is used as
the prefix for a \n"
"group of events. The event names are generated by
concatenating the prefix \n"
"with \".<n>\", where <n> is 1 to the specified count. \n"
);
exit(EXIT_FAILURE);
}
}
```

Appendix G: Price Quotations

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
<http://www.microsoft.com/>

Microsoft

June 11, 2003

Dell Computer
Corporation
Kong Yang
RR5
One Dell Way
Round Rock, TX 78682

Mr. Yang:

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

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

Part Number	Description	Unit Price	Quantity	Price
254-00170	Visual C++ Standard <i>No discounts applied</i>	\$109	1	\$109

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

This quote is valid for the next 90 days.

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

Reference ID: PCkoya0311067574

Please include this Reference ID in any correspondence regarding this price quote.

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
<http://www.microsoft.com/>

Microsoft

April 4, 2003

Dell Computer
Corporation
Kong Yang
RR5
One Dell Way
Round Rock, TX 78682

Mr. Yang:

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

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

Part Number	Description	Unit Price	Quantity	Price
810-00652	SQL Server 2000 Enterprise Edition <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 26% discount from the retail unit price of \$7,499.</i>	\$5,549	1	\$5,549
359-00532	SQL Server 2000 Client License <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 18% discount from the retail unit price of \$179.</i>	\$146	50	\$7,300
P72-00264	Windows Server 2003, Enterprise Server <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 40% discount from the retail unit price of \$3,999.</i>	\$2,399	1	\$2,399
659-00844	Visual Studio Professional <i>No discounts applied</i>	\$1,079	1	\$1,079
PRO-PRORS-16U-01	Database Server Support Package <i>1 Year Term</i>	\$1,950	3	\$5,850

Some products may not be currently orderable but will be available through Microsoft's normal distribution channels by April 2, 2003.

This quote is valid for the next 90 days.

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

Reference ID: PHkoya0304047924

Please include this Reference ID in any correspondence regarding this price quote.



PRICE QUOTE

Page 1 of 1

Date: 04/18/03
Company: Dell Computer
Contact Name: Kong Yang
Phone Number: 512-723-6051
Fax Number:

LSI LOGIC Elite 1650 MegaRAID Controller:

Item	Part No.	Price per Unit	Description
Elite 1650 RAID Controller	4942510264A	\$970.00	<ul style="list-style-type: none">• 2 – Channel U160 PCI RAID Controller• 64MB Cache

Conditions:

1. All pricing is quoted FOB factory, Thailand; shipping and insurance are additional.
2. Terms of sale to be determined prior to shipment
3. Three-year limited warranty on parts and labor is offered for hardware products.

This quotation is valid for 60 days from the date shown and is subject to the conditions as listed.