



Hewlett-Packard Company

TPC Benchmark™ H
Full Disclosure Report
for
HP ProLiant DL580-G2
using
Microsoft SQL Server 2000 Enterprise Edition
and
Windows 2000 Advanced Server

Second Edition
March 2003

Second Edition – March, 2003

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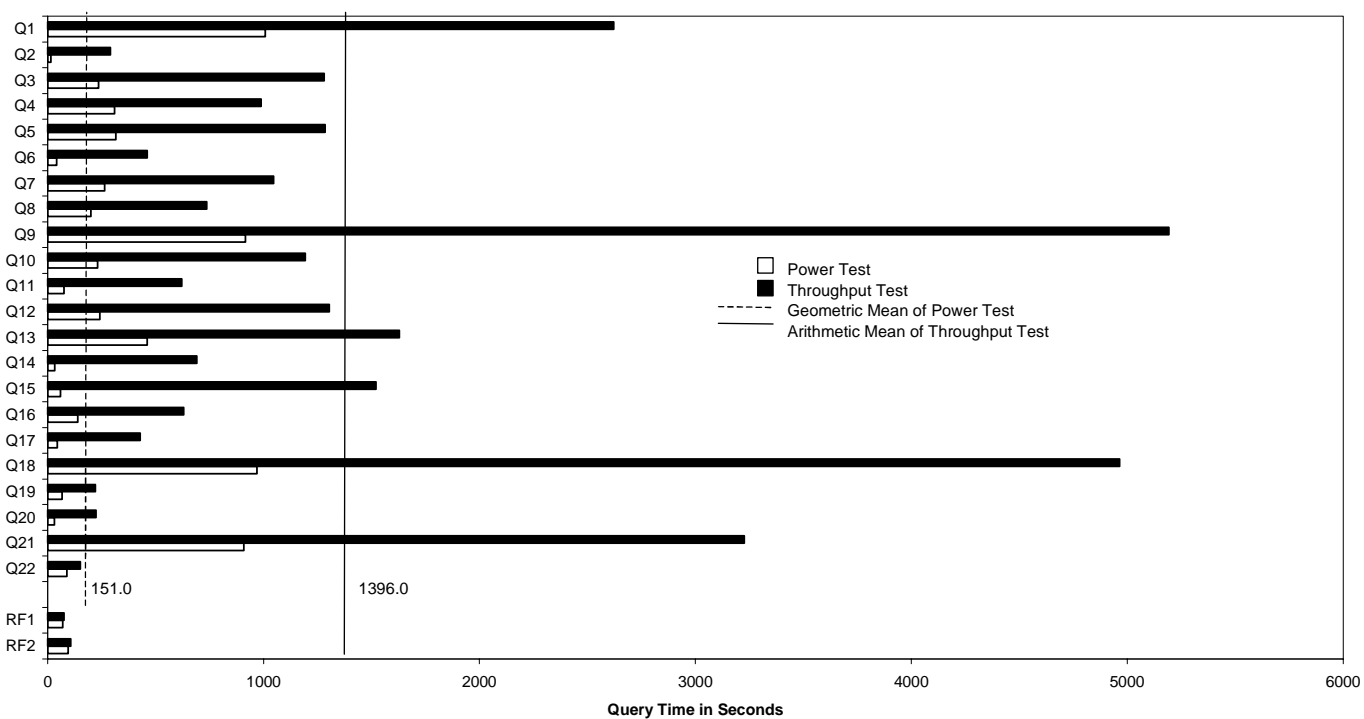
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Hewlett-Packard Company	HP ProLiant DL580 G2	TPC-H Rev. 2.0		
		Report Date: June 26, 2002		
Total System Cost	Composite Query per Hour Metric	Price / Performance		
\$111,460	1695.0 QphH@100GB	\$66 \$/ QphH@100GB		
Database Size	Database Manager	Operating System	Other Software	Availability Date
100GB	Microsoft SQL Server 2000 Enterprise Edition	Microsoft Windows 2000 Advanced Server	Visual Studio Professional 6.0	June 26, 2002



Database Load Time = 3:34:14	Load Included Backup: Y	Total Data Storage / Database Size = 12.35
RAID (Base tables only): N	RAID (Base tables and auxiliary data structures): N	RAID (All): N

System Configuration:

Processors : 4 x Intel Xeon MP 1.6GHz with 1MB ECC L3 cache
Memory : 4 GB memory
Disk Controllers : 6 x Smart Array 5304
Disks : 2 x 9.1 GB 10K RPM drive
 72 x 18.2 GB 15K RPM drives
Total Disk Storage: 1328.6 GB

Hewlett-Packard		HP ProLiant DL580 G2		TPC-H Rev. 2.0		
Company					Report Date:	26-Jun-02
Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware		Brand Pricing				
HP ProLiant DL580 X1600 2P X2G	201203-001	1	18576.00	1	18,576	
1.6 GHz 1M processor	226776-B21	1	5132.00	2	10,264	
4GB (4x1GB)	202172-B21	1	2433.00	1	2,433	
S5500 15" Monitor	261602-169	1	169	1	169	
Scroll Mouse Carbon	231947-B21	1	5	1	5	
PS/2 Easy Access Internet Mouse	265977-001	1	12	1	12	
Belkin USB 10/100 FastEthernet	F5D5050	3	30	1	30	
Rack Model 9142 (42U - Opal) - Flat Pallet	120663-B21	1	1,321	1	1,321	
Rack Sidewall Kit	120670-B21	1	207	1	207	
UPS T1500 XR	204155-002	1	621	1	621	
CarePaq 3YR 24X7 4HR 500 SERIES SVR (FM-MI724-36)	401782-002	1	1,795	1		1,795
Subtotal					33,638	1,795
Storage						
HP SMART Array Controller 5304 - 4SCSI channels	158939-B21	1	2,052	6	12,312	
StorageWorks Enclosure Model 4354R - Rack-mountable	190211-001	1	3,523	6	21,138	
18.2GB Pluggable Ultra3 SCSI 10K 1" Universal HDD	142673-B22	1	311	2	622	
18.2 GB Hot-Plug Wide U3 15K 1"	188122-B22	1	390	72	28,080	
18.2 GB Hot-Plug Wide U3 15K 1" (10% spare)	188122-B22	1	390	8	3,120	
CarePaq 3YR 24X7/4HR EMPTY DISK ENCL (FM-4E724-36)	171242-002	1	157	6		942
Subtotal					65,272	942
Hardware and Maintenance Discount						
Large Purchase and Net 30 discount	16.0%	1			(\$15,826)	(\$438)
Hardware Subtotal					83,084	2,299
Software						
Microsoft SQL Server 2000 Enterprise Edition	810-00845 Microsoft	2	5,549	1	5,549	9,750
Microsoft SQL Server 2000 Client Licenses	359-00532 Microsoft	2	7,300	1	7,300	included
Microsoft Windows 2000 Advanced Server	C10-00475 Microsoft	2	2,399	1	2,399	included
Microsoft Visual Studio Professional 6.0 Win32	659-00390 Microsoft	2	1,079	1	1,079	included
Subtotal					16,327	9,750
Total					\$99,411	\$12,049
Three-Year Cost of Ownership:					\$111,460	
QphH Rating:					1695.0	
\$ / QphH:					\$66	

Pricing: 1=HP; 2= Microsoft; 3=EMS Computing

Note: The benchmark results and test methodology were audited by Lorna Livingtree of Performance Metrics; Rev. 1.3 submission on 6/26/2002; Rev. 2.0 upgrade 3/12/2003.

Audited by: Lorna Livingtree of Performance Metrics Inc.

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

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Company**

HP ProLiant DL580 G2

TPC-H Rev. 2.0

Report Date:
June 26, 2002

Numerical Quantities

Measurement Results:

Database Scale Factor	= 100
Total Data Storage / Database Size	= 12.35
Start of Database Load	= 2002-06-24 19:41:17
End of Database Load	= 2002-06-24 23:15:31
Database Load Time	= 3:34:14
Query Streams for Throughput Test	= 5
TPC-H Power	= 2385.5
TPC-H Throughput	= 1204.4
TPC-H Composite Query-per-Hour Metric (QphH@100GB)	= 1695.0
Total System Price Over 5 Years	= \$111,460
TPC-H Price/ Performance Metric (\$/QphH@100GB)	= \$66

Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 32878.0 seconds
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Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	624231530	6/25/02	10:42:37	6/25/02	12:36:19	1:53:41
Stream01	624231531	6/25/02	12:36:20	6/25/02	21:11:51	8:35:32
Stream02	624231532	6/25/02	12:36:20	6/25/02	21:29:02	8:52:42
Stream03	624231533	6/25/02	12:36:20	6/25/02	21:23:31	8:47:12
Stream04	624231534	6/25/02	12:36:20	6/25/02	20:33:15	7:56:55
Stream05	624231535	6/25/02	12:36:20	6/25/02	21:02:56	8:26:37
Refresh00		6/25/02	10:42:37	6/25/02	12:36:19	1:53:41
Refresh01		6/25/02	21:29:02	6/25/02	21:31:54	0:02:52
Refresh02		6/25/02	21:31:54	6/25/02	21:35:00	0:03:06
Refresh03		6/25/02	21:35:00	6/25/02	21:38:06	0:03:06
Refresh04		6/25/02	21:38:06	6/25/02	21:41:12	0:03:06
Refresh05		6/25/02	21:41:12	6/25/02	21:44:18	0:03:05

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HP ProLiant DL580 G2

TPC-H Rev. 2.0

Report Date:
June 26, 2002

TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	1007.1	16.0	235.7	309.8	316.1	41.4	264.2	200.2
Stream 01	2082.7	261.9	939.6	698.9	1139.0	520.8	721.7	345.2
Stream 02	2911.8	231.1	1774.8	1143.6	1311.6	172.9	903.0	287.0
Stream 03	3108.9	299.8	435.6	1053.6	2015.1	727.5	1040.4	1131.9
Stream 04	2257.5	262.3	1151.7	933.6	816.3	505.2	1653.6	1355.1
Stream 05	2743.3	402.3	2099.1	1116.1	1143.6	377.8	910.9	569.7
Min Qi	2082.7	231.1	435.6	698.9	816.3	172.9	721.7	287.0
Max Qi	3108.9	402.3	2099.1	1143.6	2015.1	727.5	1653.6	1355.1
Avg Qi	2620.8	291.5	1280.2	989.2	1285.1	460.8	1045.9	737.8
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	915.5	232.4	76.0	241.5	460.6	33.5	59.0	140.0
Stream 01	5410.8	1129.2	899.3	1799.4	2016.5	937.7	1820.7	290.4
Stream 02	6770.6	891.9	937.0	1325.8	1670.2	1381.0	1493.6	1515.9
Stream 03	5010.7	1049.3	656.5	868.4	1606.4	705.3	2027.0	399.8
Stream 04	3836.4	1123.7	252.4	1389.3	1621.3	366.8	983.9	611.3
Stream 05	4935.1	1772.5	361.0	1133.6	1230.7	60.4	1277.0	332.2
Min Qi	3836.4	891.9	252.4	868.4	1230.7	60.4	983.9	290.4
Max Qi	6770.6	1772.5	937.0	1799.4	2016.5	1381.0	2027.0	1515.9
Avg Qi	5192.7	1193.3	621.2	1303.3	1629.0	690.2	1520.4	629.9
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	44.3	968.8	66.4	31.1	907.9	89.2	70.6	94.8
Stream 01	372.9	5849.6	113.8	144.3	3309.3	128.8	64.4	106.7
Stream 02	444.8	4555.9	308.4	176.6	1615.7	139.8	78.8	107.1
Stream 03	343.6	4133.4	408.8	186.0	4274.4	150.2	79.0	107.1
Stream 04	667.6	4755.1	184.9	157.2	3591.8	138.8	78.3	107.7
Stream 05	312.2	5527.9	90.7	459.2	3343.3	198.4	78.2	107.0
Min Qi	312.2	4133.4	90.7	144.3	1615.7	128.8	64.4	106.7
Max Qi	667.6	5849.6	408.8	459.2	4274.4	198.4	79.0	107.7
Avg Qi	428.2	4964.4	221.3	224.7	3226.9	151.2	75.7	107.1

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant DL580 using Microsoft SQL Server 2000 Enterprise Edition SP2, in conformance with the requirements of the TPC Benchmark™ H Standard Specification, Revision 2.0. The operating system used for the benchmark was Microsoft Windows 2000 Advanced Server with Service Pack 2.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB	\$ / QphH @ 100GB
HP ProLiant DL580 G2	Microsoft SQL Server 2000 Microsoft Windows 2000 Advanced Server	\$111,460	2385.5	1204.4	1695.0	\$ 66

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

Standard and Executive Summary Statements

Pages ii-iv contains the Executive Summary and Numerical Quantities Summary of the benchmark results for the HP ProLiant DL580 G2.

Auditor

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

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1.0 General Items

1.1 Test Sponsor

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

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

1.2 Parameter Settings

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

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

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

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

1.3 Configuration Items

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

- *Number and type of processors*
- *Size of allocated memory, and any specific mapping/partitioning of memory unique to the test.*
- *Number and type of disk units (and controllers, if applicable).*
- *Number of channels or bus connections to disk units, including their protocol type.*
- *Number of LAN (e.g. Ethernet) Connections, including routers, workstations, terminals, etc., that were physically used in the test or are incorporated into the pricing structure.*
- *Type and the run-time execution location of software components (e.g., DBMS, query processing tools/languages, middle-ware components, software drivers, etc.).*

The server System Under Test (SUT), a HP ProLiant DL580 G2, depicted in Figure 1.1, consisted of :

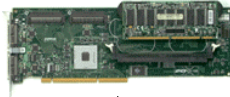
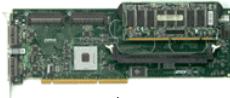
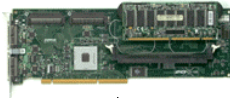
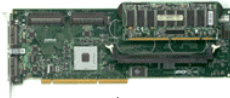
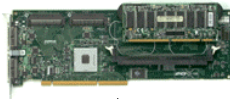
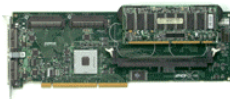
- 4x Intel Xeon MP 1.6GHz / 1MB ECC L3 Cache
- 4096 MB of memory
- 6 x HP 5304 Array Controllers
- 6 x StorageWorks Enclosure 4354R
- 2 x 9.1GB Pluggable SCSI-3 10K rpm 1" height drives
- 72 x 18.2GB Pluggable SCSI-3 15K rpm 1" height drives
- 1x USB 10/100 FastEthernet adapter

Figure 1.1 Benchmarked configuration

**6x StorageWorks 4354R
72x 18.2 GB 15k rpm drives**



6x Smart Array 5304



ProLiant DL580 G2

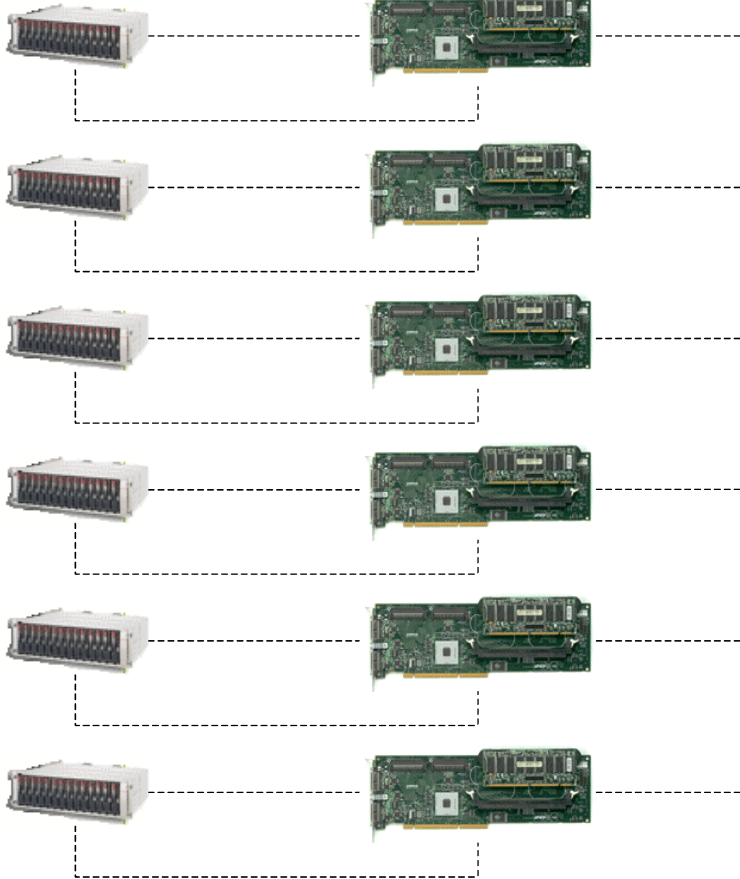


**4x Intel Xeon MP 1.6GHz
4 GB Memory
2x 9.1 GB 10k rpm drives**

Figure 1.2 Priced configuration

**6x StorageWorks 4354R
72x 18.2 GB 15k rpm drives**

6x Smart Array 5304



ProLiant DL580 G2



**4x Intel Xeon MP 1.6GHz
4 GB Memory
2x 18.2 GB 10k rpm drives**

As the 9.1 GB 10K rpm disk drives used in the benchmarked configuration are no longer available they are substituted with 18.2 GB 10K rpm disk drives in the priced configuration.

2.0 Clause 1: Logical Database Design

2.1 Table Definitions

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

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

2.2 Physical Organization of Database

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

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

2.3 Horizontal Partitioning

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

Horizontal partitioning was not used

2.4 Replication

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

No replication was used.

3.0 Clause 2: Queries and Refresh Functions Related Items

3.1 Query Language

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

SQL was the query language used.

3.2 Random Number Generation

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

The TPC-supplied DBGEN version 1.3.0 and QGEN version 1.3.0 were used to generate all database populations.

3.3 Substitution Parameters Generation

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

The supplied QGEN version 1.3.0 was used to generate the substitution parameters.

3.4 Query Text and Output Data from Database

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

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

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

3.5 Query Substitution Parameters and Seeds Used

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

Appendix D contains the seed and query substitution parameters used.

3.6 Isolation Level

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

The queries and transactions were run with isolation level 1.

3.7 Refresh Functions

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

Appendix E contains the source code for the refresh functions.

4.0 Clause 3: Database System Properties

4.1 Atomicity Requirements

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

All ACID tests were conducted according to specification. The Atomicity, Isolation, Consistency and Durability tests were performed on the HP ProLiant DL580 G2.

4.1.1 Atomicity of the Completed Transactions

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

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

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

4.1.2 Atomicity of Aborted Transactions

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

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

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

4.2 Consistency Requirements

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

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

$$O_TOTALPRICE = SUM(L_EXTENDEDPRICE - L_DISCOUNT) * (1 + L_TAX)$$
For each ORDER and LINEITEM defined by (O_ORDERKEY = L_ORDERKEY)

4.2.1 Consistency Tests

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

The following steps were performed to verify consistency:

1. The consistency of the ORDER and LINEITEM tables was verified based on a sample of O_ORDERKEYs.
2. One hundred ACID Transactions were submitted from each of six execution streams.

3. The consistency of the ORDER and LINEITEM tables was reverified.

4.3 Isolation Requirements

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

4.3.1 Isolation Test 1 - Read-Write Conflict with Commit

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

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

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

4.3.2 Isolation Test 2 - Read-Write Conflict with Rollback

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

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

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

4.3.3 Isolation Test 3 - Write-Write Conflict with Commit

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

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

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

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

4.3.4 Isolation Test 4 - Write-Write Conflict with Rollback

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

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

1. An ACID Transaction T1 was started for a randomly selected O_KEY, L_KEY and DELTA. The ACID Transaction T1 was suspended prior to Rollback.

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

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

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

The following steps were performed:

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

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

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

The following steps were performed:

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

4.4 Durability Requirements

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

4.4.1 Permanent Unrecoverable Failure of Any Durable Medium and Loss of System Power

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

The database log was stored on a RAID-1 protected array of six physical drives. The tables for the database were stored on 12 RAID-0 arrays each containing 6 physical drives. A backup of the database was taken. The backup was spread across 12 RAID-1 arrays.

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

1. The complete database was backed up.
2. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
3. While the test was running, one of the disks from the database RAID-1 log was removed.
4. After it was determined that the test would still run with the loss of a log disk, one physical drive of a RAID-0 data volume was removed.
5. A checkpoint was issued to force a failure.
6. The six streams of ACID transactions failed and recorded their number of committed transaction in success files.
7. The database log was dumped to disk.
8. The database and log disks were replaced with new disks and RAID-1 rebuild process started
9. When log RAID-1 rebuild process finished a database restore was done.
10. A command was issued causing the database to run through its roll-forward recovery.
11. The counts in the success files and the HISTORY table count were compared and were found to match.

4.4.2 System Crash

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

1. Six streams of ACID transactions were started. Each stream executed a minimum of 100 transactions.
2. While the streams of ACID transactions were running, the system was powered off.
3. When power was restored, the system 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 were found to match.

4.4.3 Memory Failure

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

See section 4.4.2

5.0 Clause 4: Scaling and Database Population

5.1 Initial Cardinality of Tables

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

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

Table 5. 1: Initial Number of Rows

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

5.2 Distribution of Tables and Logs Across Media

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

Microsoft SQL Server was configured on a HP ProLiant DL580 G2 with the following configuration:

- 6 x Smart Array 5304 disk controllers
- 6 x StorageWorks Enclosure 4354R
- 72 x 18.2GB 15k rpm external disk drives
- 2 x 9.1GB 10k rpm internal disk drives
- 1 x USB 10/100 FastEthernet NIC

All 72 disks were used to hold table data, indexes, database log and the temporary database (TempDB).

A detailed description of distribution of database filegroups and log can be found in Table 5.2.1 and Table 5.2.2

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

SMART Array Controller Number	SMART Logical Drive Array Letter	Number of Physical Drives in SMART LDA	SMART Logical Drive Number	SMART Fault Tolerance	Disk Format	Size (MB)	Contents
0	A	6	1	RAID0	RAW	16000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0	RAW	15000	TempLog
			5	RAID0	RAW	3000	Tpch1g
0	B	6	1	RAID0	RAW	16000	Tpch100g
			2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	RAW	2000	Tpch1glog
			1	A	6	1	RAID0
1	A	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			1	B	6	1	RAID0
1	B	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			2	A	6	1	RAID0
2	A	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	RAW	20000	Tpch100glog
			2	B	6	1	RAID0
2	B	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			3	A	6	1	RAID0
3	A	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			3	B	6	1	RAID0
3	B	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			4	A	6	1	RAID0
4	A	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			4	B	6	1	RAID0
4	B	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			5	A	6	1	RAID0
5	A	6	2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles
			5	B	6	1	RAID0

			2	RAID0	RAW	10000	TempDB
			3	RAID0+1	NTFS	18000	LoadFg
			4	RAID0+1	NTFS	21000	Flatfiles

5.3 Mapping of Database Partitions/Replications

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

Database partitioning/replication was not used..

5.4 Implementation of RAID

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

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

5.5 DBGEN Modifications

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

The standard distribution DBGEN version 1.3.0 was used for database population. No modifications were made.

5.6 Database Load time

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

The database load time was 3 hour 34 minutes 14 seconds.

5.7 Data Storage Ratio

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

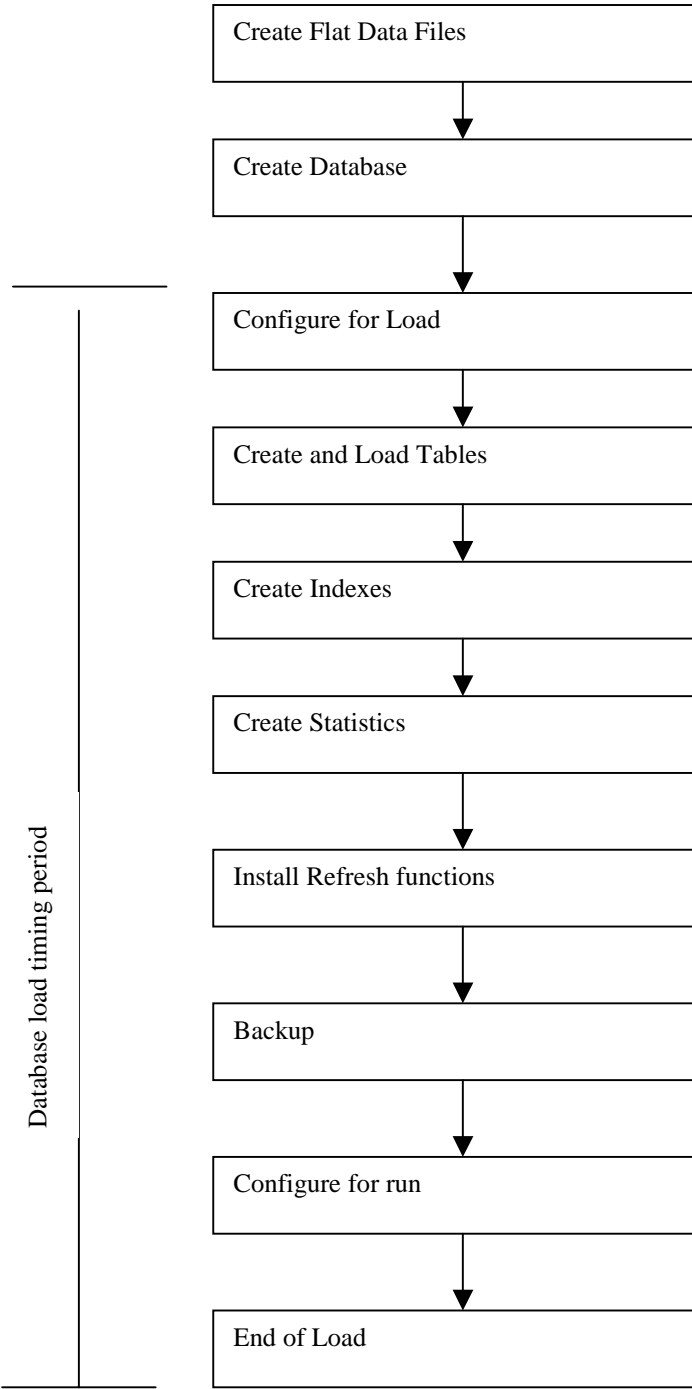
Disk Type	Number of Disks	Space per Disk	Total Disk Space	Data Storage Ratio
9.1 GB 10k rpm Ultra3 SCSI	2	8.46 GB	16.92 GB	
18.2 GB 15k rpm Ultra3 SCSI	72	16.92 GB	1218.24 GB	12.35

5.8 Database Load Mechanism Details and Illustration

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

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

Figure 5.8: Block Diagram of Database Load Process



6.0 Clause 5: Performance Metrics and Execution Rules Related Items

6.1 Steps in the Power Test

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

The following steps were used to implement the power test:

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

6.2 Timing Intervals for Each Query and Refresh Function

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

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

6.3 Number of Streams for The Throughput Test

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

Five streams were used for the Throughput Test.

6.4 Start and End Date/Times for Each Query Stream

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

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

6.5 Total Elapsed Time for the Measurement Interval

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

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

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

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

Stream ID	RF	Start Date	Start time	Stop Date	Stop Time
Stream00	RF1	6/25/2002	10:42:37	6/25/2002	10:43:48
Stream00	RF2	6/25/2002	12:34:45	6/25/2002	12:36:19
Stream01	RF1	6/25/2002	21:29:03	6/25/2002	21:30:07
Stream01	RF2	6/25/2002	21:30:07	6/25/2002	21:31:54
Stream02	RF1	6/25/2002	21:31:54	6/25/2002	21:33:13
Stream02	RF2	6/25/2002	21:33:13	6/25/2002	21:35:00
Stream03	RF1	6/25/2002	21:35:00	6/25/2002	21:36:19
Stream03	RF2	6/25/2002	21:36:19	6/25/2002	21:38:06
Stream04	RF1	6/25/2002	21:38:06	6/25/2002	21:39:25
Stream04	RF2	6/25/2002	21:39:25	6/25/2002	21:41:12
Stream05	RF1	6/25/2002	21:41:12	6/25/2002	21:42:31
Stream05	RF2	6/25/2002	21:42:31	6/25/2002	21:44:18

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

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

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

6.8 Performance Metrics

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

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

6.9 The Performance Metric and Numerical Quantities from Both Runs

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

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

Run	QppH @ 100GB	QthH @ 100GB	QphH @ 100GB
Run 1	2420.5	1207.7	1709.8
Run 2	2385.5	1204.4	1695.0

6.11 System Activity Between Tests

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

The system was restarted between runs.

7.0 Clause 6: SUT and Driver Implementation

Related Items

7.1 Driver

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

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

7.2 Implementation Specific Layer (ISL)

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

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

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

1. Power Run

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

7.3 Profile-Directed Optimization

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

Profile-directed optimization was not used.

8.0 Clause 7: Pricing Related Items

8.1 Hardware and Software Used

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

A detailed list of all hardware and software, including the 5-year price, is provided in the Executive Summary at the front of this report. The price quotations are included in Appendix G, at the end of this document.

8.2 Total 3 Year Price

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

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. The price quotations are included in Appendix G, at the end of this document. For a large purchase and cash discount, this purchase qualifies for a 16% discount from Hewlett-Packard Company.

8.3 Availability Date

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

The HP ProLiant DL580 G2, system memory, additional processors, disk controllers and hard drives are available at the time of publication. All other hardware is generally available at the time of publication.

The system software, Microsoft Windows 2000 Advanced Server, used in this test is generally available at the time of publication. Service Pack 2 for Microsoft Windows 2000 Advanced Server is generally available at the time of publication. The database software, Microsoft SQL Server 2000 Enterprise Edition is generally available at the time of publication. Service Pack 2 for Microsoft SQL Server 2000 is generally available at the time of publication.

8.4 Country-Specific Pricing

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

The configuration is priced for the United States of America

9.0 Clause 9: Related Items

9.1 Auditors' Report

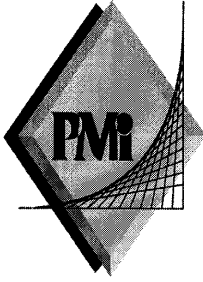
The auditor's agency name, address, phone number, and Attestation letter with a brief audit summary report indicating compliance must be included in the full disclosure report. A statement should be included specifying who to contact in order to obtain further information regarding the audit process.

This implementation of the TPC Benchmark H was audited by Lorna Livingtree of Performance Metrics. Further information regarding the audit process may be obtained from:

Performance Metrics, Inc.
137 Yankton St., Suite 101
Folsom, CA 95630
(phone) (916) 985-1131
(fax) (916) 985-1185
e-mail: lorna@perfmtrics.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

June 25, 2002

Mr. Daniel Pol
Hewlett-Packard
Database Performance Lab
20555 SH 249
Houston, TX 77070

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

Platform: Proliant DL580 X1600 2P X2G
Database Manager: Microsoft SQL Server 2000 Enterprise Edition
Operating System: Microsoft Windows 2000 Advanced Server

CPU's	Memory	Total Disks	QppH@100GB	QthH@100GB	QphH@100GB
4 Pentium III Xeons MP @ 1.6 Ghz	4 GB	2 @ 9GB,10Krpm 72 @ 18GB,15Krpm	2,385.5	1204.4	1,695.0

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 for the size of the files.
- The query text was verified to use only compliant variants and minor modifications.
- The executable query text was generated by QGEN and submitted through 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.

137 Yankton St. Suite 101, Folsom, CA 95630
(916) 985-1131 fax: (916) 985-1185 email: Lorna@PerfMetrics.com

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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.
- The performance metrics were correctly computed.
- 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:

The 9 GB disk used for the OS on the measured system are no longer orderable. The sponsor has substituted an 18 GB disks in the priced configuration. All other aspects of the disk are the same. This substitution is compliant with the substitution rules.

Sincerely,



Lorna Livingtree
Auditor

Appendix A: Tunable Parameters

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

A.1 Microsoft SQL Server 2000 Version

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

```
Microsoft SQL Server 2000 - 8.00.534 (Intel X86)
Nov 19 2001 13:23:50
Copyright (c) 1988-2000 Microsoft Corporation
Enterprise Edition on Windows NT5.0(Build2195:ServicePack 2)
```

A.2 SQL Server 2000 Installation

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

- Database Server Enterprise Edition was installed.
- “Custom installation” was selected. The SQL Server
- Development tools were not installed.
- Binary Sort Order was used. (Collation Settings>Collation Designator>Binary)
- Services Accounts > Customized > SQL Server > Use Local System Account Authentication Mode > Mixed > Blank Password
- Microsoft SQL Server 2000 Service Pack 2 was installed using the default settings during installation.

A.3 SQL Server 2000 Startup Parameters

```
SQLSERVER -x -c -g100 -t3502
```

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.
- t3502 Display Checkpoints in the database Log

A.4 Microsoft SQL Server 2000 Configuration Parameters

name	minimum	maximum	config_value	run_value
affinity mask	-2147483648	2147483647	255	255
allow updates	0	1	0	0
awe enabled	0	1	0	0
c2 audit mode	0	1	0	0
cost threshold for parallelism	0	32767	5	5
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	0	0
max server memory (MB)	4	2147483647	2147483647	2147483647
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	512	512
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

A.5 Windows 2000 Configuration

The default installation of Windows 2000 Advanced Server Build 2195 was used. All default options were selected during the install except:

- A TCP/IP address was configured on the system.
- Terminal Services was installed.
- The Microsoft Windows 2000 Service Pack 2 was installed.

Updated installation to optimize performance for applications. (System Properties > Advanced > Performance Options > Select Applications.)

The system paging file was increased to 4092MB

Boot.ini parameters:

- /3GB - Give SQL Server access to 3GB memory
- /NOPAE - Don't allow the system to use addresses above 4GB

A.6 HP SMART Array Controller Cache Settings and registry entries

The HP SMART Array Controller cache settings for all drives was configured for the default ratio of 50% read / 50% write . The HP SMART Array Controller cache was enabled for all drives.

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\cpqccis
b]
"Type"=dword:00000001
"Start"=dword:00000000
```



```

>ErrorControl"=dword:00000001
"Tag"=dword:00000102
"ImagePath"=hex(2):53,00,79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,
44,00,\
52,00,49,00,56,00,45,00,52,00,53,00,5c,00,63,00,70,00,71,00,63,00,69,00,73
.\
00,73,00,62,00,2e,00,73,00,79,00,73,00,00,00
"DisplayName"="Compaq Smart Array Controllers Non-Miniport Driver"
"Group"="port"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\cpqciss
b\Parameters]
"CompletionMode"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\cpqciss
b\Security]
"Security"=hex:01,00,14,80,a0,00,00,00,ac,00,00,00,14,00,00,00,30,00,00,00
,02,\
00,1c,00,01,00,00,00,02,80,14,00,ff,01,0f,00,01,01,00,00,00,00,01,00,00,\
00,00,02,00,70,00,04,00,00,00,00,18,00,fd,01,02,00,01,01,00,00,00,00,00
.\
05,12,00,00,00,74,00,69,00,00,00,1c,00,ff,01,0f,00,01,02,00,00,00,00,05,\
20,00,00,00,20,02,00,00,76,00,65,00,00,00,18,00,8d,01,02,00,01,01,00,00,00
.\
00,00,05,0b,00,00,00,20,02,00,00,00,00,1c,00,fd,01,02,00,01,02,00,00,00,00,
\
00,05,20,00,00,00,23,02,00,00,76,00,65,00,01,01,00,00,00,00,05,12,00,00
.\
00,01,01,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\cpqciss
b\Enum]
"0"="PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&10
70020&0&08"
"Count"=dword:00000006
"NextInstance"=dword:00000006
"1"="PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&10
70020&0&10"
"2"="PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&29
e81982&0&08"
"3"="PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&29
e81982&0&10"
"4"="PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&17
2e68dd&0&08"
"5"="PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3&17
2e68dd&0&10"

```

A.7 System Hardware Information

System Information report written at: 06/18/2002 12:04:25 PM
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item	Value
OS Name	Microsoft Windows 2000 Advanced Server
Version	5.0.2195 Service Pack 2 Build 2195
OS Manufacturer	Microsoft Corporation

```

System Name          LEAP
System Manufacturer  Compaq
System Model         ProLiant DL580 G2
System Type          X86-based PC
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor            x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
BIOS Version         12/25/44
Windows Directory    C:\WINNT
System Directory     C:\WINNT\System32
Boot Device          \Device\Harddisk0\Partition1
Locale               United States
User Name            LEAP\Administrator
Time Zone            Central Daylight Time
Total Physical Memory 3,997,200 KB
Available Physical Memory 1,034,892 KB
Total Virtual Memory 12,022,864 KB
Available Virtual Memory 6,171,532 KB
Page File Space      8,025,664 KB
Page File            C:\pagefile.sys

[Hardware Resources]

[ Following are sub-categories of this main category ]

[Conflicts/Sharing]

Resource  Device
IRQ 5     Base System Device
IRQ 5     Compaq PCI Hotplug Controller
IRQ 7     Base System Device
IRQ 7     Standard OpenHCD USB Host Controller
IRQ 4     Communications Port (COM1)
IRQ 4     Compaq PCI Hotplug Controller

[DMA]

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

[Forced Hardware]

Device  PNP Device ID
No Forced Hardware

[L/O]

Address Range  Device  Status
0x0000-0x0CFF  PCI bus  OK
0x0000-0x0CFF  PCI bus  OK
0x0000-0x0CFF  Direct memory access controller  OK
0x03B0-0x03BB  PCI bus  OK
0x03B0-0x03BB  ATI Technologies Inc. RAGE XL PCI  OK
0x03C0-0x03DF  PCI bus  OK
0x03C0-0x03DF  ATI Technologies Inc. RAGE XL PCI  OK
0x1800-0x18FF  Base System Device  OK
0x2400-0x24FF  Base System Device  OK
0x2800-0x28FF  ATI Technologies Inc. RAGE XL PCI  OK
0x0A79-0x0A79  ISAPNP Read Data Port  OK
0x0279-0x0279  ISAPNP Read Data Port  OK
0x02F4-0x02F7  ISAPNP Read Data Port  OK
0x0F50-0x0F58  Motherboard resources  OK
0x0020-0x0021  Programmable interrupt controller  OK
0x00A0-0x00A1  Programmable interrupt controller  OK

```

0x0C00-0x0C01	Programmable interrupt controller	OK
0x0040-0x0043	System timer	OK
0x0080-0x008F	Direct memory access controller	OK
0x00C0-0x00DF	Direct memory access controller	OK
0x040B-0x040B	Direct memory access controller	OK
0x04D6-0x04D6	Direct memory access controller	OK
0x0061-0x0061	System speaker	OK
0x0060-0x0060	Standard 101/102-Key or Microsoft Natural PS/2	
Keyboard	OK	
0x0064-0x0064	Standard 101/102-Key or Microsoft Natural PS/2	
Keyboard	OK	
0x002E-0x002F	Extended IO Bus	OK
0x0220-0x0223	Extended IO Bus	OK
0x0230-0x0233	Extended IO Bus	OK
0x0240-0x025F	Extended IO Bus	OK
0x0260-0x0267	Extended IO Bus	OK
0x03F8-0x03FF	Communications Port (COM1)	OK
0x03F2-0x03F5	Standard floppy disk controller	OK
0x03F7-0x03F7	Standard floppy disk controller	OK
0x2000-0x200F	Standard Dual Channel PCI IDE Controller	OK
0x01F0-0x01F7	Primary IDE Channel	OK
0x03F6-0x03F6	Primary IDE Channel	OK
0x0170-0x0177	Secondary IDE Channel	OK
0x0376-0x0376	Secondary IDE Channel	OK
0x3000-0x30FF	PCI bus	OK
0x3000-0x30FF	Compaq Smart Array 5i	OK
0x4000-0x44FF	PCI bus	OK
0x4000-0x44FF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0x4400-0x44FF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0x5000-0x54FF	PCI bus	OK
0x5000-0x54FF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0x5400-0x54FF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0x6000-0x64FF	PCI bus	OK
0x6000-0x64FF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0x6400-0x64FF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK

[IRQs]

IRQ Number	Device
9	Microsoft ACPI-Compliant System
5	Base System Device
5	Compaq PCI Hotplug Controller
7	Base System Device
7	Standard OpenHCD USB Host Controller
1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12	PS/2 Compatible Mouse
4	Communications Port (COM1)
4	Compaq PCI Hotplug Controller
6	Standard floppy disk controller
14	Primary IDE Channel
31	Compaq Smart Array 5i
18	Compaq Smart Array 5300 Controller (Non-Miniport)
16	Compaq Smart Array 5300 Controller (Non-Miniport)
22	Compaq Smart Array 5300 Controller (Non-Miniport)
20	Compaq Smart Array 5300 Controller (Non-Miniport)
26	Compaq Smart Array 5300 Controller (Non-Miniport)
24	Compaq Smart Array 5300 Controller (Non-Miniport)

[Memory]

Range	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	ATI Technologies Inc. RAGE XL PCI	OK
0xF4F00000-0xF6FFFFFF	PCI bus	OK

0xF6FF0000-0xF6FF01FF	Base System Device	OK
0xF6FE0000-0xF6FE07FF	Base System Device	OK
0xF6FD0000-0xF6FD1FFF	Base System Device	OK
0xF6F00000-0xF6F7FFFF	Base System Device	OK
0xF5000000-0xF5FFFFFF	ATI Technologies Inc. RAGE XL PCI	OK
0xF4FF0000-0xF4FF0FFF	ATI Technologies Inc. RAGE XL PCI	OK
0xF4FE0000-0xF4FE0FFF	Standard OpenHCD USB Host Controller	OK
0xF7000000-0xF71FFFFFF	PCI bus	OK
0xF71C0000-0xF71FFFFFF	Compaq Smart Array 5i	OK
0xF70F0000-0xF70F3FFF	Compaq Smart Array 5i	OK
0xF7200000-0xF76FFFFFF	PCI bus	OK
0xF76C0000-0xF76FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7500000-0xF75FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF74C0000-0xF74FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7300000-0xF73FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF72F0000-0xF72F0FFF	Compaq PCI Hotplug Controller	OK
0xF7700000-0xF7BFFFFFF	PCI bus	OK
0xF7BC0000-0xF7BFFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7A00000-0xF7AFFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF79C0000-0xF79FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7800000-0xF78FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF77F0000-0xF77F0FFF	Compaq PCI Hotplug Controller	OK
0xF7C00000-0xF7FFFFFF	PCI bus	OK
0xF7C00000-0xF7FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7FC0000-0xF7FFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7E00000-0xF7EFFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK
0xF7DC0000-0xF7DFFFFFF	Compaq Smart Array 5300 Controller (Non-Miniport)	OK

[Components]

[Following are sub-categories of this main category]

[Multimedia]

[Following are sub-categories of this main category]

[Audio Codecs]

Codec	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\winnt\system32\iac25_32.ax	Intel Corporation	Indeo® audio software	Indeo® audio	
	OK	C:\WINNT\System32\IAC25_32.AX	12/7/1999 6:00:00 AM	2.05.53
		195.00 KB (199,680 bytes)		
c:\winnt\system32\msg723.acm	Microsoft Corporation			
	OK	C:\WINNT\System32\MSG723.ACM	6/4/2002 3:58:30 PM	4.4.3385
		106.77 KB (109,328 bytes)		
c:\winnt\system32\lhacm.acm	Microsoft Corporation			
	OK	C:\WINNT\System32\LHACM.ACM	6/4/2002 3:58:31 PM	4.4.3385
		33.27 KB (34,064 bytes)		
c:\winnt\system32\msgsm32.acm	Microsoft Corporation			
	OK	C:\WINNT\System32\MSGSM32.ACM		
		5.00.2134.1	22.27 KB (22,800 bytes)	
			12/7/1999 6:00:00 AM	

```

c:\winnt\system32\tsoft32.acm DSP GROUP, INC. OK
C:\WINNT\System32\TSOFT32.ACM 1.01 9.27 KB
(9,488 bytes) 12/7/1999 6:00:00 AM
c:\winnt\system32\msadp32.acm Microsoft Corporation
OK C:\WINNT\System32\MSADP32.ACM
5.00.2134.1 14.77 KB (15,120 bytes)
12/7/1999 6:00:00 AM
c:\winnt\system32\imaadp32.acm Microsoft Corporation
OK C:\WINNT\System32\IMAADP32.ACM
5.00.2134.1 16.27 KB (16,656 bytes)
12/7/1999 6:00:00 AM
c:\winnt\system32\msg711.acm Microsoft Corporation
OK C:\WINNT\System32\MSG711.ACM
5.00.2134.1 10.27 KB (10,512 bytes)
12/7/1999 6:00:00 AM

```

[Video Codecs]

Codec	Manufacturer	Description	Status	File
c:\winnt\system32\ir50_32.dll	Intel Corporation	Indeo® video 5.10	OK	C:\WINNT\System32\IR50_32.DLL R.5.10.15.2.55 737.50 KB (755,200 bytes) 12/7/1999 6:00:00 AM
c:\winnt\system32\msh261.drv	Microsoft Corporation	MSH261.DRV	4.4.3385	163.77 KB (167,696 bytes) 6/4/2002 3:58:30 PM
c:\winnt\system32\msh263.drv	Microsoft Corporation	MSH263.DRV	4.4.3385	252.27 KB (258,320 bytes) 6/4/2002 3:58:07 PM
c:\winnt\system32\msrle32.dll	Microsoft Corporation	MSRLE32.DLL	OK	C:\WINNT\System32\MSRLE32.DLL 5.00.2134.1 10.77 KB (11,024 bytes) 12/7/1999 6:00:00 AM
c:\winnt\system32\ir32_32.dll	Intel(R) Corporation	IR32_32.DLL	OK	Not Available 194.50 KB (199,168 bytes) 12/7/1999 6:00:00 AM
c:\winnt\system32\iccvld.dll	Radius Inc.	ICCVLD.DLL	OK	1.10.0.6 108.00 KB (110,592 bytes) 12/7/1999 6:00:00 AM
c:\winnt\system32\msvidc32.dll	Microsoft Corporation	MSVIDC32.DLL	OK	C:\WINNT\System32\MSVIDC32.DLL 5.00.2134.1 27.27 KB (27,920 bytes) 12/7/1999 6:00:00 AM

[CD-ROM]

Item	Value
Drive	Unknown
Description	Unknown
Media Loaded	Unknown
Media Type	Unknown
Name	Unknown
Manufacturer	Unknown
Status	Unknown
Transfer Rate	Unknown
SCSI Target ID	Unknown
PNP Device ID	Unknown

[Sound Device]

Item	Value
No sound devices	

[Display]

Item	Value
Name	ATI Technologies Inc. RAGE XL PCI

Item	Value
PNP Device ID	PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3&267A616A&0&18
Adapter Type	ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description	ATI Technologies Inc. RAGE XL PCI
Adapter RAM	8.00 MB (8,388,608 bytes)
Installed Drivers	atidrab.dll
Driver Version	5.00.2179.1
INF File	display.inf (atirage3 section)
Color Planes	1
Color Table Entries	65536
Resolution	1024 x 768 x 60 hertz
Bits/Pixel	16

[Infrared]

Item	Value
No infrared devices	

[Input]

[Following are sub-categories of this main category]

[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&35118DFF&0
NumberOfFunctionKeys	12

[Pointing Device]

Item	Value
Hardware Type	PS/2 Compatible Mouse
Number of Buttons	2
Status	OK
PNP Device ID	ACPI\PNP0F13\4&35118DFF&0
Power Management Supported	False
Double Click Threshold	6
Handedness	Right Handed Operation

[Modem]

Item	Value
No modems	

[Network]

[Following are sub-categories of this main category]

[Adapter]

Item	Value
Name	[00000000] RAS Async Adapter
Adapter Type	Not Available
Product Name	RAS Async Adapter
Installed	True
PNP Device ID	Not Available
Last Reset	6/17/2002 8:28:57 AM
Index	0
Service Name	AsyncMac
IP Address	Not Available
IP Subnet	Not Available

Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Service Name Not Available

Name [00000001] WAN Miniport (L2TP)
 Adapter Type Not Available
 Product Name WAN Miniport (L2TP)
 Installed True
 PNP Device ID ROOT\MS_L2TPMINIPORT\0000
 Last Reset 6/17/2002 8:28:57 AM
 Index 1
 Service Name Rasl2tp
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Service Name Rasl2tp
 Driver c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1)

Name [00000002] WAN Miniport (PPTP)
 Adapter Type Wide Area Network (WAN)
 Product Name WAN Miniport (PPTP)
 Installed True
 PNP Device ID ROOT\MS_PPTPMINIPORT\0000
 Last Reset 6/17/2002 8:28:57 AM
 Index 2
 Service Name PptpMiniport
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 50:50:54:50:30:30
 Service Name PptpMiniport
 Driver c:\winnt\system32\drivers\rasptp.sys (47856, 5.00.2160.1)

Name [00000003] Direct Parallel
 Adapter Type Not Available
 Product Name Direct Parallel
 Installed True
 PNP Device ID ROOT\MS_PTMINIPORT\0000
 Last Reset 6/17/2002 8:28:57 AM
 Index 3
 Service Name Raspti
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Service Name Raspti
 Driver c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1)

Name [00000004] WAN Miniport (IP)
 Adapter Type Not Available
 Product Name WAN Miniport (IP)
 Installed True
 PNP Device ID ROOT\MS_NDISWANIP\0000

Last Reset 6/17/2002 8:28:57 AM
 Index 4
 Service Name NdisWan
 IP Address Not Available
 IP Subnet Not Available
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address Not Available
 Service Name NdisWan
 Driver c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779)

Name [00000005] Compaq NC7770 Gigabit Server Adapter
 Adapter Type Not Available
 Product Name Compaq NC7770 Gigabit Server Adapter
 Installed True
 PNP Device ID Not Available
 Last Reset 6/17/2002 8:28:57 AM
 Index 5
 Service Name q57w2k
 IP Address 130.168.211.202
 IP Subnet 255.255.0.0
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 00:05:1B:00:00:F8
 Service Name Not Available

Name [00000006] Belkin USB Ethernet Adapter
 Adapter Type Ethernet 802.3
 Product Name Belkin USB Ethernet Adapter
 Installed True
 PNP Device ID USB\VID_050D&PID_0121\0001
 Last Reset 6/17/2002 8:28:57 AM
 Index 6
 Service Name ADM8511
 IP Address 130.168.211.202
 IP Subnet 255.255.0.0
 Default IP Gateway Not Available
 DHCP Enabled False
 DHCP Server Not Available
 DHCP Lease Expires Not Available
 DHCP Lease Obtained Not Available
 MAC Address 00:05:1B:00:00:F8
 Service Name ADM8511
 Driver c:\winnt\system32\drivers\net8511.sys (24424, 2.03.2000.1110)

[Protocol]

Item	Value
Name	MSAFD Tcpip [TCP/IP]
ConnectionlessService	False
GuaranteesDelivery	True
GuaranteesSequencing	True
MaximumAddressSize	16 bytes
MaximumMessageSize	0 bytes
MessageOriented	False
MinimumAddressSize	16 bytes
PseudoStreamOriented	False
SupportsBroadcasting	False
SupportsConnectData	False
SupportsDisconnectData	False
SupportsEncryption	False
SupportsExpeditedData	True
SupportsGracefulClosing	True

SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD Tcpip [UDP/IP]
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 16 bytes
 MaximumMessageSize 65467 bytes
 MessageOriented True
 MinimumAddressSize16 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting True

Name RSVP UDP Service Provider
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 16 bytes
 MaximumMessageSize 65467 bytes
 MessageOriented True
 MinimumAddressSize16 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption True
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting True

Name RSVP TCP Service Provider
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 16 bytes
 MaximumMessageSize 0 bytes
 MessageOriented False
 MinimumAddressSize16 bytes
 PseudoStreamOriented False
 SupportsBroadcasting False
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption True
 SupportsExpeditedData True
 SupportsGracefulClosing True
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{6C287214-FFB3-4F4F-9CEA-FE5679587839}] SEQUENCE 3
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False

SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{6C287214-FFB3-4F4F-9CEA-FE5679587839}] DATAGRAM 3
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8221AC83-5ACE-4B57-91C9-FBB687E27F3F}] SEQUENCE 0
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting False
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8221AC83-5ACE-4B57-91C9-FBB687E27F3F}] DATAGRAM 0
 ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{6775CDAE-A567-4C86-B9EC-E7174A918435}] SEQUENCE 1
 ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes

MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting False
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{6775CDAE-A567-4C86-B9EC-E7174A918435}] DATAGRAM 1

ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{E72C2559-D828-46A9-AC7C-B92AFE27F149}] SEQUENCE 2

ConnectionlessService False
 GuaranteesDelivery True
 GuaranteesSequencing True
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting False
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{E72C2559-D828-46A9-AC7C-B92AFE27F149}] DATAGRAM 2

ConnectionlessService True
 GuaranteesDelivery False
 GuaranteesSequencing False
 MaximumAddressSize 20 bytes
 MaximumMessageSize 64000 bytes
 MessageOriented True
 MinimumAddressSize 20 bytes
 PseudoStreamOriented False
 SupportsBroadcasting True
 SupportsConnectData False
 SupportsDisconnectData False
 SupportsEncryption False
 SupportsExpeditedData False
 SupportsGracefulClosing False
 SupportsGuaranteedBandwidth False
 SupportsMulticasting False

[WinSock]

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

File	c:\winnt\system32\wsock32.dll
Version	5.00.2195.2871
Size	21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item	Value
Name	COM1
Status	OK
PNP Device ID	ACPI\PNP0501\0
Maximum Input Buffer Size	0
Maximum Output Buffer Size	False
Settable Baud Rate	True
Settable Data Bits	True
Settable Flow Control	True
Settable Parity	True
Settable Parity Check	True
Settable Stop Bits	True
Settable RLSD	True
Supports RLSD	True
Supports 16 Bit Mode	False
Supports Special Characters	False
Baud Rate	9600
Bits/Byte	8
Stop Bits	1
Parity	None
Busy	0
Abort Read/Write on Error	0
Binary Mode Enabled	-1
Continue XMit on XOff	0
CTS Outflow Control	0
Discard NULL Bytes	0
DSR Outflow Control	0
DSR Sensitivity	0
DTR Flow Control Type	Enable
EOF Character	0
Error Replace Character	0
Error Replacement Enabled	0
Event Character	0
Parity Check Enabled	0
RTS Flow Control Type	Enable
XOff Character	19
XOffXMit Threshold	512
XOn Character	17
XOnXMit Threshold	2048
XOnXOff InFlow Control	0
XOnXOff OutFlow Control	0
IRQ Number	4
I/O Port	0x03F8-0x03FF
Driver	c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item	Value
No parallel port information	

[Storage]

[Following are sub-categories of this main category]

[Drives]

Item	Value
Drive A:	
Description	3 1/2 Inch Floppy Drive
Drive C:	
Description	Local Fixed Disk
Compressed	False
File System	NTFS
Size	8.46 GB (9,086,955,520 bytes)
Free Space	2.61 GB (2,798,260,224 bytes)
Volume Name	
Volume Serial Number	ECADC731
Partition	Disk #8, Partition #0
Partition Size	8.46 GB (9,086,959,616 bytes)
Starting Offset	16384 bytes
Drive Description	Disk drive
Drive Manufacturer	(Standard disk drives)
Drive Model	COMPAQ LOGICAL VOLUME SCSI Disk Device
Drive BytesPerSector	512
Drive MediaLoaded	True
Drive MediaType	Fixed hard disk media
Drive Partitions	1
Drive SCSIBus	0
Drive SCSILogicalUnit	0
Drive SCSIPort	2
Drive SCSTargetId	4
Drive SectorsPerTrack	32
Drive Size	9091153920 bytes
Drive TotalCylinders	2176
Drive TotalSectors	17756160
Drive TotalTracks	554880
Drive TracksPerCylinder	255
Drive E:	
Description	Local Fixed Disk
Compressed	False
File System	NTFS
Size	17.57 GB (18,868,756,480 bytes)
Free Space	2.01 GB (2,154,459,136 bytes)
Volume Name	
Volume Serial Number	CC2B0D6A
Partition	Disk #11, Partition #0
Partition Size	17.57 GB (18,868,760,064 bytes)
Starting Offset	32256 bytes
Drive Description	\\.\PHYSICALDRIVE11
Drive Manufacturer	Not Available
Drive Model	Not Available
Drive BytesPerSector	512
Drive MediaLoaded	True
Drive MediaType	Fixed hard disk media
Drive Partitions	1
Drive SCSIBus	Not Available
Drive SCSILogicalUnit	Not Available
Drive SCSIPort	Not Available
Drive SCSTargetId	Not Available
Drive SectorsPerTrack	63
Drive Size	18868792320 bytes
Drive TotalCylinders	2294
Drive TotalSectors	36853110
Drive TotalTracks	584970
Drive TracksPerCylinder	255
Drive F:	
Description	Local Fixed Disk
Compressed	False

File System	NTFS
Size	17.57 GB (18,868,756,480 bytes)
Free Space	2.01 GB (2,154,479,616 bytes)
Volume Name	
Volume Serial Number	2C3E4423
Partition	Disk #14, Partition #0
Partition Size	17.57 GB (18,868,760,064 bytes)
Starting Offset	32256 bytes
Drive Description	\\.\PHYSICALDRIVE14
Drive Manufacturer	Not Available
Drive Model	Not Available
Drive BytesPerSector	512
Drive MediaLoaded	True
Drive MediaType	Fixed hard disk media
Drive Partitions	1
Drive SCSIBus	Not Available
Drive SCSILogicalUnit	Not Available
Drive SCSIPort	Not Available
Drive SCSTargetId	Not Available
Drive SectorsPerTrack	63
Drive Size	18868792320 bytes
Drive TotalCylinders	2294
Drive TotalSectors	36853110
Drive TotalTracks	584970
Drive TracksPerCylinder	255
Drive G:	
Description	Local Fixed Disk
Compressed	False
File System	NTFS
Size	17.57 GB (18,868,756,480 bytes)
Free Space	2.01 GB (2,154,479,616 bytes)
Volume Name	
Volume Serial Number	3C47E309
Partition	Disk #26, Partition #0
Partition Size	17.57 GB (18,868,760,064 bytes)
Starting Offset	32256 bytes
Drive Description	\\.\PHYSICALDRIVE26
Drive Manufacturer	Not Available
Drive Model	Not Available
Drive BytesPerSector	512
Drive MediaLoaded	True
Drive MediaType	Fixed hard disk media
Drive Partitions	1
Drive SCSIBus	Not Available
Drive SCSILogicalUnit	Not Available
Drive SCSIPort	Not Available
Drive SCSTargetId	Not Available
Drive SectorsPerTrack	63
Drive Size	18868792320 bytes
Drive TotalCylinders	2294
Drive TotalSectors	36853110
Drive TotalTracks	584970
Drive TracksPerCylinder	255
Drive H:	
Description	Local Fixed Disk
Compressed	False
File System	NTFS
Size	17.57 GB (18,868,756,480 bytes)
Free Space	2.01 GB (2,154,479,616 bytes)
Volume Name	
Volume Serial Number	284FE09D
Partition	Disk #29, Partition #0
Partition Size	17.57 GB (18,868,760,064 bytes)
Starting Offset	32256 bytes
Drive Description	\\.\PHYSICALDRIVE29
Drive Manufacturer	Not Available
Drive Model	Not Available
Drive BytesPerSector	512

Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 18868792320 bytes
 Drive TotalCylinders 2294
 Drive TotalSectors 36853110
 Drive TotalTracks 584970
 Drive TracksPerCylinder 255

Drive I:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number 7457860C

Drive J:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number 005FDE1C

Drive K:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number C06820D8

Drive L:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number 6C74A094

Drive M:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number E881AA6B
 Partition Disk #2, Partition #0
 Partition Size 17.57 GB (18,868,760,064 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE2
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available

Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 18868792320 bytes
 Drive TotalCylinders 2294
 Drive TotalSectors 36853110
 Drive TotalTracks 584970
 Drive TracksPerCylinder 255

Drive N:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number CC8B315E
 Partition Disk #5, Partition #0
 Partition Size 17.57 GB (18,868,760,064 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE5
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 18868792320 bytes
 Drive TotalCylinders 2294
 Drive TotalSectors 36853110
 Drive TotalTracks 584970
 Drive TracksPerCylinder 255

Drive O:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 2.01 GB (2,154,479,616 bytes)
 Volume Name
 Volume Serial Number 2C9494B9
 Partition Disk #19, Partition #0
 Partition Size 17.57 GB (18,868,760,064 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE19
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 18868792320 bytes
 Drive TotalCylinders 2294
 Drive TotalSectors 36853110
 Drive TotalTracks 584970
 Drive TracksPerCylinder 255

Drive P:
 Description Local Fixed Disk
 Compressed False

File System NTFS
 Size 17.57 GB (18,868,756,480 bytes)
 Free Space 17.51 GB (18,800,594,944 bytes)
 Volume Name
 Volume Serial Number C49F5659
 Partition Disk #23, Partition #0
 Partition Size 17.57 GB (18,868,760,064 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE23
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 18868792320 bytes
 Drive TotalCylinders 2294
 Drive TotalSectors 36853110
 Drive TotalTracks 584970
 Drive TracksPerCylinder 255

Drive Z:
 Description Local Fixed Disk
 Compressed False
 File System NTFS
 Size 164.79 GB (176,940,904,448 bytes)
 Free Space 52.63 GB (56,506,720,256 bytes)
 Volume Name New Volume
 Volume Serial Number 14D8EAFC
 Partition Disk #6, Partition #0
 Partition Size 20.60 GB (22,117,745,664 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE6
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 2211777920 bytes
 Drive TotalCylinders 2689
 Drive TotalSectors 43198785
 Drive TotalTracks 685695
 Drive TracksPerCylinder 255
 Partition Disk #7, Partition #0
 Partition Size 20.60 GB (22,117,745,664 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE7
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 2211777920 bytes

Drive TotalCylinders 2689
 Drive TotalSectors 43198785
 Drive TotalTracks 685695
 Drive TracksPerCylinder 255
 Partition Disk #15, Partition #0
 Partition Size 20.60 GB (22,117,745,664 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE15
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 2211777920 bytes
 Drive TotalCylinders 2689
 Drive TotalSectors 43198785
 Drive TotalTracks 685695
 Drive TracksPerCylinder 255
 Partition Disk #16, Partition #0
 Partition Size 20.60 GB (22,117,745,664 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE16
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 2211777920 bytes
 Drive TotalCylinders 2689
 Drive TotalSectors 43198785
 Drive TotalTracks 685695
 Drive TracksPerCylinder 255
 Partition Disk #30, Partition #0
 Partition Size 20.60 GB (22,117,745,664 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE30
 Drive Manufacturer Not Available
 Drive Model Not Available
 Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSIbus Not Available
 Drive SCSILogicalUnit Not Available
 Drive SCSIPort Not Available
 Drive SCSTargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 2211777920 bytes
 Drive TotalCylinders 2689
 Drive TotalSectors 43198785
 Drive TotalTracks 685695
 Drive TracksPerCylinder 255
 Partition Disk #31, Partition #0
 Partition Size 20.60 GB (22,117,745,664 bytes)
 Starting Offset 32256 bytes
 Drive Description \\.\PHYSICALDRIVE31
 Drive Manufacturer Not Available
 Drive Model Not Available

Drive BytesPerSector 512
 Drive MediaLoaded True
 Drive MediaType Fixed hard disk media
 Drive Partitions 1
 Drive SCSI Bus Not Available
 Drive SCSI LogicalUnit Not Available
 Drive SCSI Port Not Available
 Drive SCSI TargetId Not Available
 Drive SectorsPerTrack 63
 Drive Size 2211777920 bytes
 Drive TotalCylinders 2689
 Drive TotalSectors 43198785
 Drive TotalTracks 685695
 Drive TracksPerCylinder 255

[SCSI]

Item	Value
Name	Compaq Smart Array 5i
Caption	Compaq Smart Array 5i
Driver	cpqcissm
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_01\3 &13C0B0C5&0&08
Device ID	PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_01\3 &13C0B0C5&0&08
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	31
I/O Port	0x3000-0x30FF
Driver	c:\winnt\system32\drivers\cpqcissm.sys (14992, 5.40.2.0)
Name	Compaq Smart Array 5300 Controller (Non-Miniport)
Caption	Compaq Smart Array 5300 Controller (Non-Miniport)
Driver	cpqcissb
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &1070020&0&08
Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &1070020&0&08
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	18
I/O Port	0x4000-0x44FF
Driver	c:\winnt\system32\drivers\cpqcissb.sys (37248, 5.01.11.02)
Name	Compaq Smart Array 5300 Controller (Non-Miniport)
Caption	Compaq Smart Array 5300 Controller (Non-Miniport)
Driver	cpqcissb
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &1070020&0&10
Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &1070020&0&10
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	16
I/O Port	0x4400-0x44FF
Driver	c:\winnt\system32\drivers\cpqcissb.sys (37248, 5.01.11.02)

Name	Compaq Smart Array 5300 Controller (Non-Miniport)
Caption	Compaq Smart Array 5300 Controller (Non-Miniport)
Driver	cpqcissb
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &29E81982&0&08
Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &29E81982&0&08
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	22
I/O Port	0x5000-0x54FF
Driver	c:\winnt\system32\drivers\cpqcissb.sys (37248, 5.01.11.02)
Name	Compaq Smart Array 5300 Controller (Non-Miniport)
Caption	Compaq Smart Array 5300 Controller (Non-Miniport)
Driver	cpqcissb
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &29E81982&0&10
Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &29E81982&0&10
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	20
I/O Port	0x5400-0x54FF
Driver	c:\winnt\system32\drivers\cpqcissb.sys (37248, 5.01.11.02)
Name	Compaq Smart Array 5300 Controller (Non-Miniport)
Caption	Compaq Smart Array 5300 Controller (Non-Miniport)
Driver	cpqcissb
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &172E68DD&0&08
Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &172E68DD&0&08
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	26
I/O Port	0x6000-0x64FF
Driver	c:\winnt\system32\drivers\cpqcissb.sys (37248, 5.01.11.02)
Name	Compaq Smart Array 5300 Controller (Non-Miniport)
Caption	Compaq Smart Array 5300 Controller (Non-Miniport)
Driver	cpqcissb
Status	OK
PNP Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &172E68DD&0&10
Device ID	PCI\VEN_0E11&DEV_B060&SUBSYS_40700E11&REV_02\3 &172E68DD&0&10
Device Map	Not Available
Index	Not Available
Max Number Controlled	Not Available
IRQ Number	24
I/O Port	0x6400-0x64FF
Driver	c:\winnt\system32\drivers\cpqcissb.sys (37248, 5.01.11.02)

[Printing]

Name Port Name Server Name
No printing information

[Problem Devices]

Device PNP Device ID Error Code
Base System Device
PCI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_01\3
&267A616A&0&10 28
Base System Device
PCI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_01\3
&267A616A&0&12 28
COMPAQ LOGICAL VOLUME Disk Device
CPQCISS\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLU
ME\4&16A16360&0&0000004000000000 10

[USB]

Device PNP Device ID
Standard OpenHCD USB Host Controller
PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3
&267A616A&0&7A
USB Root Hub USB\ROOT_HUB\4&AF5358C&0
Belkin USB Ethernet Adapter USB\VID_050D&PID_0121\0001

[Software Environment]

[Following are sub-categories of this main category]

[Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
	Accept Stop				
abiosdsk	Abiosdsk	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Ignore	False
abp480n5	abp480n5	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
acpi	Microsoft ACPI Driver				
	c:\winnt\system32\drivers\acpi.sys		Kernel Driver		
	True	Boot	Running	OK	Normal
	True				False
acpiec	ACPIEC	c:\winnt\system32\drivers\acpiec.sys			Kernel
Driver	False	Disabled	Stopped	OK	Normal
	False				False
adm8511	Belkin USB Ethernet Adapter				
	c:\winnt\system32\drivers\net8511.sys		Kernel Driver		
	True	Manual	Running	OK	Normal
	True				False
adpu160m	adpu160m	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
afd	AFD Networking Support Environment				
	c:\winnt\system32\drivers\afd.sys		Kernel Driver		
	Auto	Running	OK	Normal	False
	True				True
aha154x	Aha154x	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
aic116x	aic116x	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
aic78u2	aic78u2	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
aic78xx	aic78xx	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
ami0nt	ami0nt	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
amsint	amsint	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
asc	asc	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False

asc3350p	asc3350p	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
asc3550	asc3550	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
asynctac	RAS Asynchronous Media Driver				
	c:\winnt\system32\drivers\asynctac.sys		Kernel Driver		
	False	Manual	Stopped	OK	Normal
	False				False
atapi	Standard IDE/ESDI Hard Disk Controller				
	c:\winnt\system32\drivers\atapi.sys		Kernel Driver		
	True	Boot	Running	OK	Normal
	True				False
atdisk	Atdisk	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Ignore	False
atirage3	atirage3	c:\winnt\system32\drivers\atimpab.sys	Kernel		
Driver	True	Manual	Running	OK	Ignore
	True				False
atmarpc	ATM ARP Client Protocol				
	c:\winnt\system32\drivers\atmarpc.sys		Kernel Driver		
	False	Manual	Stopped	OK	Normal
	False				False
audstub	Audio Stub Driver	c:\winnt\system32\drivers\audstub.sys			
	Kernel Driver	True	Manual	Running	OK
	Normal	False	True		
beep	Beep	c:\winnt\system32\drivers\beep.sys			Kernel
Driver	True	System	Running	OK	Normal
	True				False
buslogic	BusLogic	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
cd20xmt	cd20xmt	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
cdaudio	Cdaudio	c:\winnt\system32\drivers\cdaudio.sys	Kernel		
Driver	False	System	Stopped	OK	Ignore
	False				False
cdfs	Cdfs	c:\winnt\system32\drivers\cdfs.sys	File		
System Driver	True	Disabled	Running	OK	Normal
	False	True			
cdrom	CD-ROM Driver	c:\winnt\system32\drivers\cdrom.sys			
	Kernel Driver	True	System	Running	OK
	Normal	False	True		
changer	Changer	Not Available	Kernel Driver	False	False
	System	Stopped	OK	Ignore	False
cpqarray	Cpqarray	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
cpqarray2	cpqarray2	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
cpqcissb	Compaq Smart Array Controllers Non-Miniport Driver				
	c:\winnt\system32\drivers\cpqcissb.sys		Kernel Driver		
	True	Boot	Running	OK	Normal
	True				False
cpqcissd	Compaq Smart Array Controllers Non-Miniport Disk Driver				
	c:\winnt\system32\drivers\cpqcissd.sys		Kernel Driver		
	True	Boot	Running	OK	Normal
	True				False
cpqcisse	CPQCISSE	c:\winnt\system32\drivers\cpqcisse.sys			
	Kernel Driver	True	System	Running	OK
	Normal	False	True		
cpqcissm	cpqcissm	c:\winnt\system32\drivers\cpqcissm.sys	Kernel		
Driver	True	Boot	Running	OK	Normal
	True				False
cpqfcalm	cpqfcalm	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
cpqfws2e	cpqfws2e	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False
cqdetect	Compaq Hardware Detection Service				
	c:\winnt\system32\drivers\cqdetect.sys		Kernel Driver		
	False	Manual	Stopped	OK	Normal
	False				False
dac960nt	dac960nt	Not Available	Kernel Driver	False	False
	Disabled	Stopped	OK	Normal	False

deckzpsx	deckzpsx	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
dfsdriver	DfsDriver	c:\winnt\system32\drivers\dfs.sys	File System Driver			
	True	Boot	Running	OK	Normal	False
	True					
disk	Disk Driver	c:\winnt\system32\drivers\disk.sys				
	Kernel Driver	True	Boot	Running	OK	
	Normal	False	True			
diskperf	Diskperf	c:\winnt\system32\drivers\diskperf.sys	Kernel			
Driver	False	Disabled	Stopped	OK	Normal	False
	False					
dmboot	dmboot	c:\winnt\system32\drivers\dmboot.sys	Kernel			
Driver	False	Disabled	Stopped	OK	Normal	False
	False					
dmio	Logical Disk Manager Driver	c:\winnt\system32\drivers\dmio.sys	Kernel Driver			
	True	Boot	Running	OK	Normal	False
	True					
dmload	dmload	c:\winnt\system32\drivers\dmload.sys	Kernel			
Driver	True	Boot	Running	OK	Normal	False
	True					
efs	EFS	c:\winnt\system32\drivers\efs.sys	File System Driver			
	True	Disabled	Running	OK	Normal	False
	True					
fastfat	Fastfat	c:\winnt\system32\drivers\fastfat.sys	File			
System Driver	True	Disabled	Running	OK	Normal	
	False	True				
fd16_700	Fd16_700	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
fdc	Floppy Disk Controller Driver	c:\winnt\system32\drivers\fdc.sys	Kernel Driver	True		
	Manual	Running	OK	Normal	False	True
	True					
fips	Fips	c:\winnt\system32\drivers\fips.sys	Kernel			
Driver	True	Auto	Running	OK	Normal	False
	True					
fireport	fireport	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
flashpnt	flashpnt	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
flpydisk	Floppy Disk Driver	c:\winnt\system32\drivers\flpydisk.sys				
	Kernel Driver	True	Manual	Running	OK	
	Normal	False	True			
ftdisk	Volume Manager Driver	c:\winnt\system32\drivers\ftdisk.sys	Kernel Driver			
	True	Boot	Running	OK	Normal	False
	True					
gpc	Generic Packet Classifier	c:\winnt\system32\drivers\msgpc.sys	Kernel Driver			
	True	Manual	Running	OK	Normal	False
	True					
i8042prt	i8042 Keyboard and PS/2 Mouse Port Driver	c:\winnt\system32\drivers\i8042prt.sys	Kernel Driver			
	True	System	Running	OK	Normal	False
	True					
ini910u	ini910u	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
intelide	IntelIde	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
ipfilterdriver	IP Traffic Filter Driver	c:\winnt\system32\drivers\ipfltdrv.sys	Kernel Driver			
	False	Manual	Stopped	OK	Normal	False
	False					
ipinip	IP in IP Tunnel Driver	c:\winnt\system32\drivers\ipinip.sys				
	Kernel Driver	False	Manual	Stopped	OK	
	Normal	False	False			
ipnat	IP Network Address Translator	c:\winnt\system32\drivers\ipnat.sys	Kernel Driver			
	False	Manual	Stopped	OK	Normal	False
	False					

ipsec	IPSEC driver	c:\winnt\system32\drivers\ipsec.sys				
	Kernel Driver	True	Manual	Running	OK	
	Normal	False	True			
ipsraidn	ipsraidn	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
isapnp	PnP ISA/EISA Bus Driver	c:\winnt\system32\drivers\isapnp.sys				
	True	Boot	Running	OK	Kernel Driver	
	True				Critical	False
kbdclass	Keyboard Class Driver	c:\winnt\system32\drivers\kbdclass.sys	Kernel Driver			
	True	System	Running	OK	Normal	False
	True					
ksecdd	KSecDD	c:\winnt\system32\drivers\ksecdd.sys	Kernel			
Driver	True	Boot	Running	OK	Normal	False
	True					
lbrtfdc	lbrtfdc	Not Available	Kernel Driver	False		
	System	Stopped	OK	Ignore	False	False
lp6nds35	lp6nds35	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
mmdd	mmdd	c:\winnt\system32\drivers\mmdd.sys	Kernel			
Driver	True	System	Running	OK	Ignore	False
	True					
modem	Modem	c:\winnt\system32\drivers\modem.sys	Kernel			
Driver	False	Manual	Stopped	OK	Ignore	False
	False					
mouclass	Mouse Class Driver	c:\winnt\system32\drivers\mouclass.sys				
	Kernel Driver	True	System	Running	OK	
	Normal	False	True			
mountmgr	MountMgr	c:\winnt\system32\drivers\mountmgr.sys	Kernel			
Driver	True	Boot	Running	OK	Normal	False
	True					
mraid35x	mraid35x	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
mrxsmb	MRXSMB	c:\winnt\system32\drivers\mrxsmb.sys	File			
System Driver	True	System	Running	OK	Normal	
	False	True				
msfs	Msfs	c:\winnt\system32\drivers\msfs.sys	File			
System Driver	True	System	Running	OK	Normal	
	False	True				
mskssrv	Microsoft Streaming Service Proxy	c:\winnt\system32\drivers\mskssrv.sys	Kernel Driver			
	False	Manual	Stopped	OK	Normal	False
	False					
mspclock	Microsoft Streaming Clock Proxy	c:\winnt\system32\drivers\mspclock.sys	Kernel Driver			
	False	Manual	Stopped	OK	Normal	False
	False					
mspqm	Microsoft Streaming Quality Manager Proxy	c:\winnt\system32\drivers\mspqm.sys	Kernel Driver			
	False	Manual	Stopped	OK	Normal	False
	False					
mup	Mup	c:\winnt\system32\drivers\mup.sys	File			
System Driver	True	Boot	Running	OK	Normal	
	False	True				
ncrc710	Nrc710	Not Available	Kernel Driver	False		
	Disabled	Stopped	OK	Normal	False	False
ndis	NDIS System Driver	c:\winnt\system32\drivers\ndis.sys				
	Kernel Driver	True	Boot	Running	OK	
	Normal	False	True			
ndistapi	Remote Access NDIS TAPI Driver	c:\winnt\system32\drivers\ndistapi.sys	Kernel Driver			
	True	Manual	Running	OK	Normal	False
	True					
ndiswan	Remote Access NDIS WAN Driver	c:\winnt\system32\drivers\ndiswan.sys	Kernel Driver			
	True	Manual	Running	OK	Normal	False
	True					

ndproxy	NDIS Proxy	c:\winnt\system32\drivers\ndproxy.sys	Kernel Driver	True	Manual	Running	OK	Normal	False	
netbios	NetBIOS Interface	c:\winnt\system32\drivers\netbios.sys	File System Driver	True	System	Running	OK	Normal	False	
netbt	NetBios over Tcpip	c:\winnt\system32\drivers\netbt.sys	Kernel Driver	True	System	Running	OK	Normal	False	
netdetect	NetDetect	c:\winnt\system32\drivers\netdect.sys	Kernel Driver	False	Manual	Stopped	OK	Normal	False	
npfs	Npfs	c:\winnt\system32\drivers\npfs.sys	File System Driver	True	System	Running	OK	Normal	False	
ntfs	Ntfs	c:\winnt\system32\drivers\ntfs.sys	File System Driver	True	Disabled	Running	OK	Normal	False	
null	Null	c:\winnt\system32\drivers\null.sys	Kernel Driver	True	System	Running	OK	Normal	False	
nwnlflt	IPX Traffic Filter Driver	c:\winnt\system32\drivers\nwnlflt.sys	Kernel Driver	False	Manual	Stopped	OK	Normal	False	
nwnl fwd	IPX Traffic Forwarder Driver	c:\winnt\system32\drivers\nwnl fwd.sys	Kernel Driver	False	Manual	Stopped	OK	Normal	False	
openhci	Microsoft USB Open Host Controller Driver	c:\winnt\system32\drivers\openhci.sys	Kernel Driver	True	Manual	Running	OK	Normal	False	
parallel	Parallel	c:\winnt\system32\drivers\parallel.sys	Kernel Driver	False	Auto	Stopped	OK	Ignore	False	
parport	Parport	c:\winnt\system32\drivers\parport.sys	Kernel Driver	False	Auto	Stopped	OK	Ignore	False	
partmgr	PartMgr	c:\winnt\system32\drivers\partmgr.sys	Kernel Driver	True	Boot	Running	OK	Normal	False	
parvdm	ParVdm	c:\winnt\system32\drivers\parvdm.sys	Kernel Driver	False	Auto	Stopped	OK	Ignore	False	
pci	PCI Bus Driver	c:\winnt\system32\drivers\pci.sys	Kernel Driver	True	Boot	Running	OK	Critical	False	
pcidump	PCIDump	Not Available	Kernel Driver	Stopped	OK	Ignore	False	False	False	
pciide	PCIIde	c:\winnt\system32\drivers\pciide.sys	Kernel Driver	True	Boot	Running	OK	Normal	False	
pcmcia	Pcmcia	c:\winnt\system32\drivers\pcmcia.sys	Kernel Driver	False	Disabled	Stopped	OK	Normal	False	
pdcomp	PDCOMP	Not Available	Kernel Driver	Manual	Stopped	OK	Ignore	False	False	
pdframe	PDFRAME	Not Available	Kernel Driver	False	Manual	Stopped	OK	Ignore	False	
pdreli	PDRELI	Not Available	Kernel Driver	Manual	Stopped	OK	Ignore	False	False	
pdrframe	PDRFRAME	Not Available	Kernel Driver	False	Manual	Stopped	OK	Ignore	False	
pptpminiport	WAN Miniport (PPTP)	c:\winnt\system32\drivers\raspptp.sys	Kernel Driver	True	Manual	Running	OK	Normal	False	
ptilink	Direct Parallel Link Driver	c:\winnt\system32\drivers\ptilink.sys	Kernel Driver	True	Manual	Running	OK	Normal	False	
q57w2k	Compaq NC7770 Gigabit Server Adapter	c:\winnt\system32\drivers\q57w2k.sys	Kernel Driver	False	Manual	Stopped	OK	Normal	False	
ql1080	ql1080	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
ql10wnt	Ql10wnt	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
ql1240	ql1240	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
ql2100	ql2100	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
rasacd	Remote Access Auto Connection Driver	c:\winnt\system32\drivers\rasacd.sys	Kernel Driver	True	System	Running	OK	Normal	False	
rasl2tp	WAN Miniport (L2TP)	c:\winnt\system32\drivers\rasl2tp.sys	Kernel Driver	True	Manual	Running	OK	Normal	False	
raspti	Direct Parallel	c:\winnt\system32\drivers\raspti.sys	Kernel Driver	Normal	False	True	Manual	Running	OK	
rca	Microsoft Streaming Network Raw Channel Access	c:\winnt\system32\drivers\rca.sys	Kernel Driver	Manual	Stopped	OK	Normal	False	False	
rdbss	Rdbss	c:\winnt\system32\drivers\rdbss.sys	File System Driver	True	System	Running	OK	Normal	False	
rdpdr	Terminal Server Device Redirector Driver	c:\winnt\system32\drivers\rdpdr.sys	Kernel Driver	True	Manual	Running	OK	Normal	False	
rdpwd	RDPWD	c:\winnt\system32\drivers\rdpwd.sys	Kernel Driver	True	Manual	Running	OK	Ignore	False	
redbook	Digital CD Audio Playback Filter Driver	c:\winnt\system32\drivers\redbook.sys	Kernel Driver	False	System	Stopped	OK	Normal	False	
serenum	Serenum Filter Driver	c:\winnt\system32\drivers\serenum.sys	Kernel Driver	Normal	False	True	Manual	Running	OK	
serial	Serial port driver	c:\winnt\system32\drivers\serial.sys	Kernel Driver	Ignore	False	True	System	Running	OK	
sfloppy	Sfloppy	c:\winnt\system32\drivers\sfloppy.sys	Kernel Driver	False	System	Stopped	OK	Ignore	False	
sglfb	sglfb	Not Available	Kernel Driver	System	Stopped	OK	Normal	False	False	
simbad	Simbad	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
sparrow	Sparrow	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
srv	Srv	c:\winnt\system32\drivers\srv.sys	File System Driver	True	Manual	Running	OK	Normal	False	
swenum	Software Bus Driver	c:\winnt\system32\drivers\swenum.sys	Kernel Driver	Normal	False	True	Manual	Running	OK	
symc810	symc810	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	
symc8xx	symc8xx	Not Available	Kernel Driver	Disabled	Stopped	OK	Normal	False	False	

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sym_hi  sym_hi  Not Available      Kernel Driver      False
        Disabled Stopped OK        Normal  False  False
tcpip   TCP/IP Protocol Driver
        c:\winnt\system32\drivers\tcpip.sys      Kernel Driver
        True     System  Running  OK        Normal  False
        True
tdasync TDASYNC      c:\winnt\system32\drivers\tdasync.sys      Kernel Driver
        Kernel Driver      False  Manual  Stopped  OK
        Ignore  False  False
tdipx   TDIPX      c:\winnt\system32\drivers\tdipx.sys      Kernel
Driver  False  Manual  Stopped  OK        Ignore  False
        False
tdnetb  TDNETB    c:\winnt\system32\drivers\tdnetb.sys      Kernel
Driver  False  Manual  Stopped  OK        Ignore  False
        False
tdpipe  TDPIPE    c:\winnt\system32\drivers\tdpipe.sys      Kernel
Driver  False  Manual  Stopped  OK        Ignore  False
        False
tdspix  TDSPX     c:\winnt\system32\drivers\tdspix.sys      Kernel
Driver  False  Manual  Stopped  OK        Ignore  False
        False
tdtcp   TDTCP     c:\winnt\system32\drivers\tdtcp.sys      Kernel
Driver  True   Manual  Running  OK        Ignore  False
        True
termdd  Terminal Device Driver
        c:\winnt\system32\drivers\termdd.sys      Kernel Driver
        True   Auto   Running  OK        Normal  False
        True
tga     tga       Not Available      Kernel Driver      False
        System Stopped OK        Ignore  False  False
udfs    Udfs      c:\winnt\system32\drivers\udfs.sys      File
System Driver  False  Disabled Stopped  OK        Normal
        False
ultra66 ultra66   Not Available      Kernel Driver      False
        Disabled Stopped OK        Normal  False  False
update  Microcode Update Driver
        c:\winnt\system32\drivers\update.sys      Kernel Driver
        True   Manual  Running  OK        Normal  False
        True
usbhub  Microsoft USB Standard Hub Driver
        c:\winnt\system32\drivers\usbhub.sys      Kernel Driver
        True   Manual  Running  OK        Normal  False
        True
vgasave VgaSave   c:\winnt\system32\drivers\vga.sys      Kernel
Driver  True   System  Running  OK        Ignore  False
        True
wanarp  Remote Access IP ARP Driver
        c:\winnt\system32\drivers\wanarp.sys      Kernel Driver
        True   Manual  Running  OK        Normal  False
        True
wdica   WDICA     Not Available      Kernel Driver      False
        Manual  Stopped OK        Ignore  False  False

[Environment Variables]

Variable Value  User Name
ComSpec  %SystemRoot%\system32\cmd.exe      <SYSTEM>
Os2LibPath %SystemRoot%\system32\os2\dll;
        <SYSTEM>
Path
        %SystemRoot%\system32;%SystemRoot%;%SystemRoot%\Syst
em32\Wbem;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 1 Stepping 1,
GenuineIntel      <SYSTEM>
PROCESSOR_REVISION 0101    <SYSTEM>

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NUMBER_OF_PROCESSORS 8      <SYSTEM>
PATHEXT
        .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
        <SYSTEM>
TEMP      %SystemRoot%\TEMP      <SYSTEM>
TMP       %SystemRoot%\TEMP      <SYSTEM>
TEMP      %USERPROFILE%\Local Settings\Temp LEAP\Administrator
TMP       %USERPROFILE%\Local Settings\Temp LEAP\Administrator

[Jobs]

[ Following are sub-categories of this main category ]

[Print]

Document Size  Owner  Notify  Status  Time Submitted
Start Time  Until Time Elapsed Time  Pages Printed
Job ID  Priority  Parameters Driver Name  Print
Processor  Host Print Queue  Data Type Name
No print jobs

[Network Connections]

Local Name  Remote Name  Type  Status  User
Name
Not Available  \\inforb\audit_fdr  Disk  Degraded
        LEAP\dpol

[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  Unknown  Unknown
system  Not Available  8  8  0  1413120
        Not Available  Unknown  Unknown  Unknown
smss.exe c:\winnt\system32\smss.exe 224 11 204800
1413120 6/17/2002 1:29:16 PM 5.00.2195.2901
44.27 KB (45,328 bytes) 12/7/1999 6:00:00 AM
csrss.exe Not Available 252 13 Not Available
Not Available 6/17/2002 1:29:21 PM  Unknown
        Unknown  Unknown
winlogon.exe c:\winnt\system32\winlogon.exe 276 13
204800 1413120 6/17/2002 1:29:22 PM
5.00.2195.2953 173.77 KB (177,936 bytes)
12/7/1999 6:00:00 AM
services.exe c:\winnt\system32\services.exe 304 9
204800 1413120 6/17/2002 1:29:24 PM
5.00.2195.2780 86.77 KB (88,848 bytes)
12/7/1999 6:00:00 AM
lsass.exe c:\winnt\system32\lsass.exe 316 9 204800
1413120 6/17/2002 1:29:24 PM 5.00.2195.2964
32.77 KB (33,552 bytes) 12/7/1999 6:00:00 AM
termsrv.exe c:\winnt\system32\termsrv.exe 428 10
204800 1413120 6/17/2002 1:29:25 PM
5.00.2195.2342 137.27 KB (140,560 bytes)
6/11/2002 2:41:39 PM
svchost.exe c:\winnt\system32\svchost.exe 532 8
204800 1413120 6/17/2002 1:29:26 PM
5.00.2134.1 7.77 KB (7,952 bytes) 12/7/1999 6:00:00
AM
spoolsv.exe c:\winnt\system32\spoolsv.exe 560 8
204800 1413120 6/17/2002 1:29:26 PM
5.00.2161.1 43.77 KB (44,816 bytes) 6/4/2002
10:50:04 AM
svchost.exe c:\winnt\system32\svchost.exe 596 8
204800 1413120 6/17/2002 1:29:26 PM

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5.00.2134.1      7.77 KB (7,952 bytes) 12/7/1999 6:00:00 AM
llsrvr.exe c:\winnt\system32\llsrvr.exe 624 9 204800
1413120 6/17/2002 1:29:26 PM 5.00.2195.2649
114.27 KB (117,008 bytes) 5/4/2001 12:05:02 PM
regsvr.exe c:\winnt\system32\regsvr.exe 672 8 204800
1413120 6/17/2002 1:29:27 PM 5.00.2195.2104
65.27 KB (66,832 bytes) 6/11/2002 2:41:38 PM
mstask.exe c:\winnt\system32\mstask.exe 688 8 204800
1413120 6/17/2002 1:29:27 PM 4.71.2195.1
115.27 KB (118,032 bytes) 6/11/2002 2:41:36 PM
dfssvc.exe c:\winnt\system32\dfssvc.exe 856 8 204800
1413120 6/17/2002 1:29:33 PM 5.00.2195.2841
88.27 KB (90,384 bytes) 6/11/2002 2:41:33 PM
explorer.exe c:\winnt\explorer.exe 488 8 204800
1413120 6/17/2002 1:33:03 PM 5.00.3315.2846
237.27 KB (242,960 bytes) 6/11/2002 2:41:40 PM
sqlmangr.exe c:\program files\microsoft sql
server\80\tools\bin\sqlmangr.exe 992 8 204800
1413120 6/17/2002 1:33:04 PM 2000.080.0382.00
72.57 KB (74,308 bytes) 6/14/2002 3:05:00 PM
sqlservr.exe c:\program files\microsoft sql
server\mssql\bin\sqlservr.exe 1048 13 204800 1413120
6/17/2002 1:33:06 PM 2000.080.0534.00 7.10 MB
(7,442,513 bytes) 6/14/2002 3:00:32 PM
cmd.exe c:\winnt\system32\cmd.exe 1056 8 204800
1413120 6/17/2002 1:33:07 PM 5.00.2195.2104
230.77 KB (236,304 bytes) 12/7/1999 6:00:00 AM
mdm.exe c:\winnt\system32\mdm.exe 1372 8 204800
1413120 6/18/2002 11:20:09 AM 6.00.8424 121.29
KB (124,200 bytes) 6/4/2002 10:57:40 AM
cmd.exe c:\winnt\system32\cmd.exe 408 8 204800
1413120 6/18/2002 11:27:39 AM 5.00.2195.2104
230.77 KB (236,304 bytes) 12/7/1999 6:00:00 AM
taskmgr.exe c:\winnt\system32\taskmgr.exe 1232 13
204800 1413120 6/18/2002 11:33:36 AM
5.00.2137.1 85.77 KB (87,824 bytes)
12/7/1999 6:00:00 AM
notepad.exe c:\winnt\system32\notepad.exe 964 8
204800 1413120 6/18/2002 11:38:12 AM
5.00.2140.1 49.77 KB (50,960 bytes)
12/7/1999 6:00:00 AM
mmc.exe c:\winnt\system32\mmc.exe 200 8 204800
1413120 6/18/2002 12:02:54 PM 5.00.2195.2301
589.27 KB (603,408 bytes) 6/11/2002 2:41:35 PM
winmgmt.exe c:\winnt\system32\wbem\winmgmt.exe 1412
8 204800 1413120 6/18/2002 12:03:20 PM
1.50.1085.0029 192.08 KB (196,685 bytes)
6/11/2002 2:41:41 PM
svchost.exe c:\winnt\system32\svchost.exe 1496 8
204800 1413120 6/18/2002 12:03:40 PM
5.00.2134.1 7.77 KB (7,952 bytes) 12/7/1999 6:00:00 AM
AM
rsvp.exe c:\winnt\system32\rsvp.exe 1476 8 204800
1413120 6/18/2002 12:03:58 PM 5.00.2167.1
172.77 KB (176,912 bytes) 12/7/1999 6:00:00 AM

[Loaded Modules]

Name Version Size File Date Manufacturer Path
traffic.dll 5.00.2139.1 30.77 KB (31,504 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\traffic.dll
rsvp.exe 5.00.2167.1 172.77 KB (176,912 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\rsvp.exe
tapisrv.dll 5.00.2195.2955 169.27 KB (173,328 bytes)
6/11/2002 2:41:39 PM Microsoft Corporation
c:\winnt\system32\tapisrv.dll

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wshnetbs.dll 5.00.2134.1 7.77 KB (7,952 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\wshnetbs.dll
ntevt.dll 1.50.1085.0000 192.06 KB (196,669 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\wbem\ntevt.dll
perfos.dll 5.00.2155.1 21.27 KB (21,776 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\perfos.dll
framedyn.dll 1.50.1085.0000 164.05 KB (167,992 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll 1.50.1085.0038 1.02 MB (1,073,232 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\cimwin32.dll
adslldp.dll 5.00.2195.2778 119.77 KB (122,640 bytes)
6/11/2002 2:41:32 PM Microsoft Corporation
c:\winnt\system32\adslldp.dll
provthrd.dll 1.50.1085.0000 68.07 KB (69,708 bytes)
6/4/2002 3:58:18 PM Microsoft Corporation
c:\winnt\system32\wbem\provthrd.dll
dsprov.dll 1.50.1085.0000 196.06 KB (200,761 bytes) 6/4/2002
3:58:19 PM Microsoft Corporation
c:\winnt\system32\wbem\dsprov.dll
mofd.dll 1.50.1085.0007 136.07 KB (139,332 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\mofd.dll
wmiprov.dll 1.50.1085.0032 108.07 KB (110,660 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\wmiprov.dll
wbemess.dll 1.50.1085.0039 364.07 KB (372,804 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemess.dll
wbemcore.dll 1.50.1085.0036 628.07 KB (643,140 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemcore.dll
winmgmt.exe 1.50.1085.0029 192.08 KB (196,685 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\winmgmt.exe
fastprox.dll 1.50.1085.0037 144.08 KB (147,536 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\fastprox.dll
wbemsvc.dll 1.50.1085.0007 40.07 KB (41,036 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemsvc.dll
wbemcomn.dll 1.50.1085.0021 692.07 KB (708,675 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemcomn.dll
wbemprox.dll 1.50.1085.0045 40.08 KB (41,040 bytes)
6/11/2002 2:41:41 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemprox.dll
rassapi.dll 5.00.2188.1 14.27 KB (14,608 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\rassapi.dll
adsnt.dll 5.00.2195.2778 195.27 KB (199,952 bytes)
6/11/2002 2:41:32 PM Microsoft Corporation
c:\winnt\system32\adsnt.dll
dbghelp.dll 5.00.2195.2104 159.27 KB (163,088 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\dbghelp.dll
localec.dll 5.00.2195.2130 230.27 KB (235,792 bytes)
6/11/2002 2:41:35 PM Microsoft Corporation
c:\winnt\system32\localec.dll
devmgr.dll 5.00.2166.1 215.77 KB (220,944 bytes)
12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\devmgr.dll
filemgmt.dll 5.00.2195.2165 287.27 KB (294,160 bytes)
6/11/2002 2:41:34 PM Microsoft Corporation
c:\winnt\system32\filemgmt.dll

```

pdh.dll	5.00.2195.2739	147.77 KB (151,312 bytes)	6/11/2002 2:41:38 PM	Microsoft Corporation	c:\winnt\system32\pdh.dll
smlogcfg.dll	5.00.2195.2485	273.27 KB (279,824 bytes)	6/11/2002 2:41:39 PM	Microsoft Corporation	c:\winnt\system32\smlogcfg.dll
cabinet.dll	5.00.2147.1	54.77 KB (56,080 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\cabinet.dll
msinfo32.dll	5.00.2177.1	312.27 KB (319,760 bytes)	6/4/2002 3:58:26 PM	Microsoft Corporation	c:\program files\common files\microsoft
shared\msinfo\msinfo32.dll					
riched20.dll	5.30.23.1205	421.27 KB (431,376 bytes)	6/11/2002 2:41:38 PM	Microsoft Corporation	c:\winnt\system32\riched20.dll
riched32.dll	5.00.2134.1	3.77 KB (3,856 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\riched32.dll
els.dll	5.00.2175.1	151.27 KB (154,896 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\els.dll
ntmsmgr.dll	1,0,0,1	427.77 KB (438,032 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation and HighGround Systems, Inc.	c:\winnt\system32\ntmsmgr.dll
mmfutil.dll	1.50.1085.0000	32.06 KB (32,829 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\mmfutil.dll
logdrive.dll	1.50.1085.0000	200.06 KB (204,863 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\logdrive.dll
dfrgres.dll	5.00.2150.1	27.50 KB (28,160 bytes)	12/7/1999 6:00:00 AM	Executive Software International, Inc.	c:\winnt\system32\dfrgres.dll
dfrgsnap.dll	5.00.2195.2104	41.77 KB (42,768 bytes)	6/11/2002 2:41:33 PM	Executive Software International, Inc.	c:\winnt\system32\dfrgsnap.dll
dmskres.dll	2195.2104.297.3	119.50 KB (122,368 bytes)	6/11/2002 2:41:33 PM	Microsoft Corp., VERITAS Software	c:\winnt\system32\dmskres.dll
dmutil.dll	2195.2104.297.3	42.27 KB (43,280 bytes)	6/11/2002 2:41:33 PM	VERITAS Software Corp.	c:\winnt\system32\dmutil.dll
ntmsapi.dll	5.00.1948.1	51.77 KB (53,008 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\ntmsapi.dll
dmskmgr.dll	2215.2215.297.3	160.27 KB (164,112 bytes)	6/11/2002 2:41:33 PM	Microsoft Corp., VERITAS Software	c:\winnt\system32\dmskmgr.dll
mycomput.dll	5.00.2134.1	107.77 KB (110,352 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\mycomput.dll
mmcndmgr.dll	5.00.2178.1	815.27 KB (834,832 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\mmcndmgr.dll
mmc.exe	5.00.2195.2301	589.27 KB (603,408 bytes)	6/11/2002 2:41:35 PM	Microsoft Corporation	c:\winnt\system32\mmc.exe
notepad.exe	5.00.2140.1	49.77 KB (50,960 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\notepad.exe
util.dll	5.00.2153.1	25.77 KB (26,384 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\util.dll
vdmdbg.dll	5.00.2134.1	29.27 KB (29,968 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\vdmdbg.dll
taskmgr.exe	5.00.2137.1	85.77 KB (87,824 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\taskmgr.exe
psapi.dll	5.00.2134.1	28.27 KB (28,944 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\psapi.dll
mdm.exe	6.00.8424	121.29 KB (124,200 bytes)	6/4/2002 10:57:40 AM	Microsoft Corporation	c:\winnt\system32\mdm.exe
cmd.exe	5.00.2195.2104	230.77 KB (236,304 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\cmd.exe
sqlresld.dll	2000.080.0382.00	28.56 KB (29,248 bytes)	6/14/2002 3:00:49 PM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\sqlresld.dll
improv.dll	2000.080.0534.00	104.58 KB (107,088 bytes)	6/14/2002 3:00:49 PM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\improv.dll
oledb32r.dll	2.62.7926.0	68.27 KB (69,904 bytes)	6/11/2002 2:54:41 PM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32r.dll
oledb32.dll	2.62.7926.0	448.27 KB (459,024 bytes)	6/11/2002 2:54:41 PM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32.dll
msdatl3.dll	2.62.7926.0	92.27 KB (94,480 bytes)	6/11/2002 2:54:41 PM	Microsoft Corporation	c:\program files\common files\system\ole db\msdatl3.dll
msdart.dll	2.62.7926.0	144.27 KB (147,728 bytes)	6/11/2002 2:54:41 PM	Microsoft Corporation	c:\winnt\system32\msdart.dll
sqloledb.dll	2000.080.0528	484.08 KB (495,697 bytes)	6/11/2002 2:54:47 PM	Microsoft Corporation	c:\program files\common files\system\ole db\sqloledb.dll
ssmslpcn.dll	2000.080.0534.00	28.56 KB (29,244 bytes)	6/14/2002 3:00:48 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssmslpcn.dll
security.dll	5.00.2154.1	5.77 KB (5,904 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\security.dll
ssnetlib.dll	2000.080.0534.00	84.56 KB (86,588 bytes)	6/14/2002 3:00:44 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssnetlib.dll
ssnmpn70.dll	2000.080.0534.00	24.56 KB (25,148 bytes)	6/14/2002 3:00:48 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssnmpn70.dll
mtxclu.dll	2000.2.3471.1	51.27 KB (52,496 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\mtxclu.dll
msdctprx.dll	2000.2.3471.1	665.77 KB (681,744 bytes)	6/11/2002 2:41:35 PM	Microsoft Corporation	c:\winnt\system32\msdctprx.dll
xolehlp.dll	1999.9.3421.3	17.27 KB (17,680 bytes)	10:56:56 AM	Microsoft Corporation	c:\winnt\system32\xolehlp.dll
sqllevn70.rll	2000.080.0534.00	28.00 KB (28,672 bytes)	6/14/2002 3:00:49 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\resources\1033\sqllevn70.rll
msvcirt.dll	6.10.8637.0	76.05 KB (77,878 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\msvcirt.dll
sqlsort.dll	2000.080.0534.00	576.56 KB (590,396 bytes)	6/14/2002 3:00:46 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlsort.dll
ums.dll	2000.080.0382.00	48.07 KB (49,228 bytes)	6/14/2002 3:00:43 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ums.dll
opends60.dll	2000.080.0194.00	24.06 KB (24,639 bytes)	6/14/2002 3:00:43 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\opends60.dll
sqlservr.exe	2000.080.0534.00	7.10 MB (7,442,513 bytes)	6/14/2002 3:00:32 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlservr.exe
sqlmangr.rll	2000.080.0194.00	96.00 KB (98,304 bytes)	6/14/2002 3:05:01 PM	Microsoft Corporation	

c:\program files\microsoft sql server\80\tools\bin\resources\1033\sqlmangr.rll
 sqlsvc.rll 2000.080.0194.00 24.00 KB (24,576 bytes)
 6/14/2002 3:04:47 PM Microsoft Corporation
 c:\program files\microsoft sql server\80\tools\bin\resources\1033\sqlsvc.rll
 odbciint.dll 3.520.7926.0 88.00 KB (90,112 bytes)
 6/11/2002 2:54:41 PM Microsoft Corporation
 c:\winnt\system32\odbciint.dll
 sqlresld.dll 2000.080.0382.00 28.56 KB (29,248 bytes)
 6/14/2002 3:04:46 PM Microsoft Corporation
 c:\program files\microsoft sql server\80\tools\bin\sqlresld.dll
 odbcbcp.dll 2000.080.0528.00 28.57 KB (29,252 bytes)
 6/11/2002 2:54:46 PM Microsoft Corporation
 c:\winnt\system32\odbcbcp.dll
 sqlsvc.dll 2000.080.0382.00 92.56 KB (94,784 bytes)
 6/14/2002 3:04:46 PM Microsoft Corporation
 c:\program files\microsoft sql server\80\tools\bin\sqlsvc.dll
 odbcs32.dll 3.520.7926.0 216.27 KB (221,456 bytes)
 6/11/2002 2:54:41 PM Microsoft Corporation
 c:\winnt\system32\odbcs32.dll
 w95scm.dll 2000.080.0194.00 48.56 KB (49,728 bytes)
 6/14/2002 3:04:45 PM Microsoft Corporation
 c:\program files\microsoft sql server\80\tools\bin\w95scm.dll
 comdlg32.dll 5.00.3103.1000 236.77 KB (242,448 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\comdlg32.dll
 sqlunirl.dll 2000.080.0380.00 176.56 KB (180,800 bytes) 4/9/2001
 9:46:18 AM Microsoft Corporation
 c:\winnt\system32\sqlunirl.dll
 sqlmangr.exe 2000.080.0382.00 72.57 KB (74,308 bytes)
 6/14/2002 3:05:00 PM Microsoft Corporation
 c:\program files\microsoft sql server\80\tools\bin\sqlmangr.exe
 usp10.dll 1.0325.2195.2104 308.27 KB (315,664 bytes)
 6/11/2002 2:41:40 PM Microsoft Corporation
 c:\winnt\system32\usp10.dll
 ntmarta.dll 5.00.2195.2862 98.77 KB (101,136 bytes)
 6/11/2002 2:41:37 PM Microsoft Corporation
 c:\winnt\system32\ntmarta.dll
 imgutil.dll 5.00.3315.2870 30.77 KB (31,504 bytes)
 6/11/2002 2:41:34 PM Microsoft Corporation
 c:\winnt\system32\imgutil.dll
 webvw.dll 5.00.2920.0000 1.06 MB (1,115,408 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\webvw.dll
 msls31.dll 3.10.337.0 145.27 KB (148,752 bytes) 12/7/1999 6:00:00
 AM Microsoft Corporation c:\winnt\system32\msls31.dll
 mshtml.dll 5.00.3315.2870 2.24 MB (2,345,232 bytes)
 6/11/2002 2:41:35 PM Microsoft Corporation
 c:\winnt\system32\mshtml.dll
 hhsetup.dll 4.74.8702 66.27 KB (67,856 bytes) 12/7/1999 6:00:00
 AM Microsoft Corporation c:\winnt\system32\hhsetup.dll
 msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\msvcp50.dll
 mmshext.dll 5.00.2153.1 24.27 KB (24,848 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\mmshext.dll
 shdoclc.dll 5.00.3315.2879 324.50 KB (332,288 bytes)
 6/11/2002 2:41:39 PM Microsoft Corporation
 c:\winnt\system32\shdoclc.dll
 faxshell.dll 5.00.2134.1 8.27 KB (8,464 bytes) 12/7/1999 6:00:00
 AM Microsoft Corporation c:\winnt\system32\faxshell.dll
 msacm32.dll 5.00.2134.1 65.27 KB (66,832 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\msacm32.dll
 avifil32.dll 5.00.2134.1 76.27 KB (78,096 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\avifil32.dll

msvfw32.dll 5.00.2134.1 113.77 KB (116,496 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\msvfw32.dll
 docprop2.dll 5.00.2178.1 297.77 KB (304,912 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\docprop2.dll
 imm32.dll 5.00.2195.2821 94.27 KB (96,528 bytes)
 6/11/2002 2:41:34 PM Microsoft Corporation
 c:\winnt\system32\imm32.dll
 thumbvbw.dll 5.00.2920.0000 183.27 KB (187,664 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\thumbvbw.dll
 wininet.dll 5.00.3315.1000 456.77 KB (467,728 bytes)
 6/11/2002 2:41:40 PM Microsoft Corporation
 c:\winnt\system32\wininet.dll
 msdbg.dll 6.00.8424 67.50 KB (69,120 bytes) 6/4/2002 10:57:40
 AM Microsoft Corporation c:\winnt\system32\msdbg.dll
 pdm.dll 6.00.8424 179.27 KB (183,574 bytes) 6/4/2002 10:57:40
 AM Microsoft Corporation c:\winnt\system32\pdm.dll
 mlang.dll 5.00.3103.1000 510.77 KB (523,024 bytes)
 6/11/2002 2:41:35 PM Microsoft Corporation
 c:\winnt\system32\mlang.dll
 urlmon.dll 5.00.3315.1000 441.27 KB (451,856 bytes)
 6/11/2002 2:41:40 PM Microsoft Corporation
 c:\winnt\system32?urlmon.dll
 browselc.dll 5.00.3315.2846 34.50 KB (35,328 bytes)
 6/11/2002 2:41:32 PM Microsoft Corporation
 c:\winnt\system32\browselc.dll
 linkinfo.dll 5.00.2134.1 15.77 KB (16,144 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\linkinfo.dll
 powrprof.dll 5.00.3103.1000 13.27 KB (13,584 bytes)
 6/11/2002 2:41:38 PM Microsoft Corporation
 c:\winnt\system32\powrprof.dll
 batmeter.dll 5.00.3103.1000 20.27 KB (20,752 bytes)
 6/11/2002 2:41:32 PM Microsoft Corporation
 c:\winnt\system32\batmeter.dll
 stobject.dll 5.00.2195.2780 79.27 KB (81,168 bytes)
 6/11/2002 2:41:39 PM Microsoft Corporation
 c:\winnt\system32\stobject.dll
 webcheck.dll 5.00.3315.1000 251.77 KB (257,808 bytes)
 6/11/2002 2:41:40 PM Microsoft Corporation
 c:\winnt\system32\webcheck.dll
 netui1.dll 5.00.2134.1 210.27 KB (215,312 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\netui1.dll
 netui0.dll 5.00.2134.1 70.27 KB (71,952 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\netui0.dll
 ntlanman.dll 5.00.2157.1 35.27 KB (36,112 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\ntlanman.dll
 ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\ntshrui.dll
 mydocs.dll 5.00.2920.0000 55.77 KB (57,104 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\mydocs.dll
 browseui.dll 5.00.3315.2846 788.77 KB (807,696 bytes)
 6/11/2002 2:41:32 PM Microsoft Corporation
 c:\winnt\system32/browseui.dll
 shdocvw.dll 5.00.3315.2879 1.05 MB (1,104,144 bytes)
 6/11/2002 2:41:39 PM Microsoft Corporation
 c:\winnt\system32\shdocvw.dll
 explorer.exe 5.00.3315.2846 237.27 KB (242,960 bytes)
 6/11/2002 2:41:40 PM Microsoft Corporation
 c:\winnt\explorer.exe
 resutils.dll 5.00.2195.2787 39.77 KB (40,720 bytes)
 6/11/2002 2:41:38 PM Microsoft Corporation
 c:\winnt\system32\resutils.dll

clusapi.dll	5.00.2195.2104	54.27 KB (55,568 bytes)	6/11/2002 2:41:33 PM	Microsoft Corporation	c:\winnt\system32\clusapi.dll
dfssvc.exe	5.00.2195.2841	88.27 KB (90,384 bytes)	6/11/2002 2:41:33 PM	Microsoft Corporation	c:\winnt\system32\dfssvc.exe
msidle.dll	5.00.2920.0000	6.27 KB (6,416 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\msidle.dll
mstask.exe	4.71.2195.1	115.27 KB (118,032 bytes)	6/11/2002 2:41:36 PM	Microsoft Corporation	c:\winnt\system32\mstask.exe
regsvc.exe	5.00.2195.2104	65.27 KB (66,832 bytes)	6/11/2002 2:41:38 PM	Microsoft Corporation	c:\winnt\system32\regsvc.exe
llsrpc.dll	5.00.2149.1	45.77 KB (46,864 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\llsrpc.dll
llsrv.exe	5.00.2195.2649	114.27 KB (117,008 bytes)	5/4/2001 12:05:02 PM	Microsoft Corporation	c:\winnt\system32\llsrv.exe
rasdlg.dll	5.00.2195.2671	514.27 KB (526,608 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\rasdlg.dll
netcfgx.dll	5.00.2195.2228	534.77 KB (547,600 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\netcfgx.dll
rasmans.dll	5.00.2195.2728	147.27 KB (150,800 bytes)	6/11/2002 2:41:38 PM	Microsoft Corporation	c:\winnt\system32\rasmans.dll
wmi.dll	5.00.2191.1	6.27 KB (6,416 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\wmi.dll
netshell.dll	5.00.2195.2779	457.27 KB (468,240 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\netshell.dll
netman.dll	5.00.2195.2779	89.27 KB (91,408 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\netman.dll
ntmsdba.dll	5.00.2195.2779	167.27 KB (171,280 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\ntmsdba.dll
sens.dll	5.00.2163.1	36.77 KB (37,648 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\sens.dll
ntmssvc.dll	5.00.2195.2779	391.27 KB (400,656 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\ntmssvc.dll
txfaux.dll	2000.2.3471.1	374.27 KB (383,248 bytes)	6/11/2002 2:41:39 PM	Microsoft Corporation	c:\winnt\system32\txfaux.dll
es.dll	2000.2.3471.1	222.27 KB (227,600 bytes)	6/11/2002 2:41:34 PM	Microsoft Corporation	c:\winnt\system32\es.dll
inetpp.dll	5.00.2195.2842	65.27 KB (66,832 bytes)	6/11/2002 2:41:34 PM	Microsoft Corporation	c:\winnt\system32\inetpp.dll
win32spl.dll	5.00.2195.2780	92.27 KB (94,480 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\win32spl.dll
usbmon.dll	5.00.2195.2780	11.27 KB (11,536 bytes)	6/11/2002 2:41:40 PM	Microsoft Corporation	c:\winnt\system32\usbmon.dll
tcpmon.dll	5.00.2195.2780	40.77 KB (41,744 bytes)	6/11/2002 2:41:39 PM	Microsoft Corporation	c:\winnt\system32\tcpmon.dll
pjlmon.dll	5.00.2165.1	12.77 KB (13,072 bytes)	11/30/1999 5:39:36 PM	Microsoft Corporation	c:\winnt\system32\pjlmon.dll
cnbjmon.dll	5.00.2134.1	43.77 KB (44,816 bytes)	11/30/1999 5:38:48 PM	Microsoft Corporation	c:\winnt\system32\cnbjmon.dll
localspl.dll	5.00.2195.2793	246.77 KB (252,688 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\localspl.dll
spoolss.dll	5.00.2161.1	61.77 KB (63,248 bytes)	6/4/2002 10:50:04 AM	Microsoft Corporation	c:\winnt\system32\spoolss.dll
spoolsv.exe	5.00.2161.1	43.77 KB (44,816 bytes)	6/4/2002 10:50:04 AM	Microsoft Corporation	c:\winnt\system32\spoolsv.exe
rpcss.dll	5.00.2195.2815	231.27 KB (236,816 bytes)	6/11/2002 2:41:38 PM	Microsoft Corporation	c:\winnt\system32\rpcss.dll
svchost.exe	5.00.2134.1	7.77 KB (7,952 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\svchost.exe
rdpwsx.dll	5.00.2180.1	94.40 KB (96,664 bytes)	6/4/2002 10:56:58 AM	Microsoft Corporation	c:\winnt\system32\rdpwsx.dll
ntlsapi.dll	5.00.2134.1	6.77 KB (6,928 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\ntlsapi.dll
mstlsapi.dll	5.00.2181.1	24.77 KB (25,360 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\mstlsapi.dll
icaapi.dll	5.00.2134.1	118.77 KB (121,616 bytes)	6/4/2002 10:56:57 AM	Microsoft Corporation	c:\winnt\system32\icaapi.dll
regapi.dll	5.00.2155.1	35.27 KB (36,112 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\regapi.dll
termsrv.exe	5.00.2195.2342	137.27 KB (140,560 bytes)	6/11/2002 2:41:39 PM	Microsoft Corporation	c:\winnt\system32\termsrv.exe
dssenh.dll	5.00.2195.2228	142.77 KB (146,192 bytes)	6/11/2002 2:42:01 PM	Microsoft Corporation	c:\winnt\system32\dssenh.dll
oakley.dll	5.00.2195.2785	378.77 KB (387,856 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\oakley.dll
mfc42u.dll	6.00.8665.0	972.05 KB (995,384 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\mfc42u.dll
polagent.dll	5.00.2183.1	108.27 KB (110,864 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\polagent.dll
scecli.dll	5.00.2195.2780	105.27 KB (107,792 bytes)	6/11/2002 2:41:39 PM	Microsoft Corporation	c:\winnt\system32\scecli.dll
atl.dll	3.00.8449	57.56 KB (58,938 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\atl.dll
certcli.dll	5.00.2195.2778	130.77 KB (133,904 bytes)	6/11/2002 2:41:32 PM	Microsoft Corporation	c:\winnt\system32\certcli.dll
ntdsatq.dll	5.00.2195.2878	31.27 KB (32,016 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\ntdsatq.dll
ntdsa.dll	5.00.2195.2899	990.77 KB (1,014,544 bytes)	6/11/2002 2:41:37 PM	Microsoft Corporation	c:\winnt\system32\ntdsa.dll
kdcsvc.dll	5.00.2195.2878	137.77 KB (141,072 bytes)	6/11/2002 2:41:35 PM	Microsoft Corporation	c:\winnt\system32\kdcsvc.dll
sfmapi.dll	5.00.2134.1	38.77 KB (39,696 bytes)	12/7/1999 6:00:00 AM	Microsoft Corporation	c:\winnt\system32\sfmapi.dll
rassfm.dll	5.00.2195.2671	21.27 KB (21,776 bytes)	6/11/2002 2:41:38 PM	Microsoft Corporation	c:\winnt\system32\rassfm.dll
mpr.dll	5.00.2195.2779	53.27 KB (54,544 bytes)	6/11/2002 2:41:35 PM	Microsoft Corporation	c:\winnt\system32\mpr.dll

rsabase.dll 5.00.2195.2228 128.27 KB (131,344 bytes) 5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\rsabase.dll
schannel.dll 5.00.2195.2922 138.27 KB (141,584 bytes) 5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\schannel.dll
netlogon.dll 5.00.2195.2865 357.77 KB (366,352 bytes) 6/11/2002 2:41:37 PM Microsoft Corporation
c:\winnt\system32\netlogon.dll
kerberos.dll 5.00.2195.2913 198.77 KB (203,536 bytes) 6/11/2002 2:41:35 PM Microsoft Corporation
c:\winnt\system32\kerberos.dll
msprivs.dll 5.00.2154.1 41.50 KB (42,496 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\msprivs.dll
samsrv.dll 5.00.2195.2918 369.77 KB (378,640 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\samsrv.dll
lsasrv.dll 5.00.2195.2964 492.77 KB (504,592 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\lsasrv.dll
lsass.exe 5.00.2195.2964 32.77 KB (33,552 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\lsass.exe
msi.dll 1.11.2405.0 1.69 MB (1,767,184 bytes) 6/11/2002 2:41:36 PM Microsoft Corporation
c:\winnt\system32\msi.dll
apppmgtms.dll 5.00.2168.1 117.77 KB (120,592 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\apppmgtms.dll
esent.dll 6.0.3940.13 1.08 MB (1,135,376 bytes) 6/11/2002 2:41:34 PM Microsoft Corporation
c:\winnt\system32\esent.dll
wmicore.dll 5.00.2195.2842 72.27 KB (74,000 bytes) 6/11/2002 2:41:40 PM Microsoft Corporation
c:\winnt\system32\wmicore.dll
rasadhlp.dll 5.00.2168.1 7.27 KB (7,440 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\rasadhlp.dll
winnr.dll 5.00.2160.1 18.77 KB (19,216 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\winnr.dll
rnr20.dll 5.00.2195.2871 35.77 KB (36,624 bytes) 6/11/2002 2:41:38 PM Microsoft Corporation
c:\winnt\system32\rnr20.dll
wshtcpip.dll 5.00.2195.2104 17.27 KB (17,680 bytes) 6/11/2002 2:41:40 PM Microsoft Corporation
c:\winnt\system32\wshtcpip.dll
msafd.dll 5.00.2195.2779 106.77 KB (109,328 bytes) 6/11/2002 2:41:35 PM Microsoft Corporation
c:\winnt\system32\msafd.dll
mswsock.dll 5.00.2195.2871 62.77 KB (64,272 bytes) 6/11/2002 2:41:37 PM Microsoft Corporation
c:\winnt\system32\mswsock.dll
msgsvc.dll 5.00.2195.2939 34.27 KB (35,088 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\msgsvc.dll
browser.dll 5.00.2195.2778 48.27 KB (49,424 bytes) 6/11/2002 2:41:32 PM Microsoft Corporation
c:\winnt\system32\browser.dll
alrsvc.dll 5.00.2134.1 17.77 KB (18,192 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\alrsvc.dll
trkwns.dll 5.00.2166.1 88.77 KB (90,896 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\trkwns.dll
seclogon.dll 5.00.2135.1 15.77 KB (16,144 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\seclogon.dll

psbase.dll 5.00.2195.2779 111.77 KB (114,448 bytes) 6/11/2002 2:41:38 PM Microsoft Corporation
c:\winnt\system32\psbase.dll
cryptsvc.dll 5.00.2181.1 61.77 KB (63,248 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\cryptsvc.dll
cryptdll.dll 5.00.2135.1 41.27 KB (42,256 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\cryptdll.dll
wkssvc.dll 5.00.2195.2780 95.27 KB (97,552 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\wkssvc.dll
srvsvc.dll 5.00.2195.2904 79.27 KB (81,168 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\srvsvc.dll
cfgmgr32.dll 5.00.2134.1 16.77 KB (17,168 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\cfgmgr32.dll
dmserver.dll 2195.2778.297.3 11.77 KB (12,048 bytes) 6/11/2002 2:41:33 PM VERITAS Software Corp.
c:\winnt\system32\dmserver.dll
lmhsvc.dll 5.00.2195.2778 9.77 KB (10,000 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\lmhsvc.dll
dnssrslvr.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 6/11/2002 2:41:33 PM Microsoft Corporation
c:\winnt\system32\dnssrslvr.dll
tapi32.dll 5.00.2182.1 123.27 KB (126,224 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\tapi32.dll
rasman.dll 5.00.2195.2780 54.77 KB (56,080 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\rasman.dll
rasapi32.dll 5.00.2195.2671 189.77 KB (194,320 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\rasapi32.dll
rtutils.dll 5.00.2168.1 43.77 KB (44,816 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\rtutils.dll
adslldpc.dll 5.00.2195.2842 127.27 KB (130,320 bytes) 6/11/2002 2:41:32 PM Microsoft Corporation
c:\winnt\system32\adslldpc.dll
activeds.dll 5.00.2195.2778 174.77 KB (178,960 bytes) 6/11/2002 2:41:30 PM Microsoft Corporation
c:\winnt\system32\activeds.dll
mprapi.dll 5.00.2181.1 79.27 KB (81,168 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\mprapi.dll
iphlpapi.dll 5.00.2173.2 67.77 KB (69,392 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\iphlpapi.dll
icmp.dll 5.00.2134.1 7.27 KB (7,440 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\icmp.dll
dhcpcsvc.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\dhcpcsvc.dll
eventlog.dll 5.00.2178.1 43.77 KB (44,816 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\eventlog.dll
ntdsapi.dll 5.00.2195.2661 55.77 KB (57,104 bytes) 6/11/2002 2:41:37 PM Microsoft Corporation
c:\winnt\system32\ntdsapi.dll
scesrv.dll 5.00.2195.2780 226.27 KB (231,696 bytes) 6/11/2002 2:41:39 PM Microsoft Corporation
c:\winnt\system32\scesrv.dll
umpnpgm.dll 5.00.2182.1 86.27 KB (88,336 bytes) 12/7/1999 6:00:00 AM Microsoft Corporation
c:\winnt\system32\umpnpgm.dll

services.exe	5.00.2195.2780	86.77 KB (88,848 bytes)	winmm.dll	5.00.2161.1	184.77 KB (189,200 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\services.exe			c:\winnt\system32\winmm.dll		
msv1_0.dll	5.00.2195.2900	111.77 KB (114,448 bytes)	winsta.dll	5.00.2195.2386	36.77 KB (37,648 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	6/11/2002 2:41:40 PM		Microsoft Corporation
c:\winnt\system32\msv1_0.dll			c:\winnt\system32\winsta.dll		
clbcatq.dll	2000.2.3471.1	496.77 KB (508,688 bytes)	wsock32.dll	5.00.2195.2871	21.27 KB (21,776 bytes)
6/11/2002 2:41:32 PM		Microsoft Corporation	6/11/2002 2:41:40 PM		Microsoft Corporation
c:\winnt\system32\clbcatq.dll			c:\winnt\system32\wsock32.dll		
oleaut32.dll	2.40.4517	612.27 KB (626,960 bytes)	dnsapi.dll	5.00.2195.2785	130.77 KB (133,904 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	6/11/2002 2:41:33 PM		Microsoft Corporation
c:\winnt\system32\oleaut32.dll			c:\winnt\system32\dnsapi.dll		
csoui.dll	5.00.2195.2959	228.27 KB (233,744 bytes)	wldap32.dll	5.00.2195.2797	125.27 KB (128,272 bytes)
6/11/2002 2:41:33 PM		Microsoft Corporation	6/11/2002 2:41:40 PM		Microsoft Corporation
c:\winnt\system32\csoui.dll			c:\winnt\system32\wldap32.dll		
winspool.drv	5.00.2195.2780	109.77 KB (112,400 bytes)	ws2help.dll	5.00.2134.1	17.77 KB (18,192 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\winspool.drv			c:\winnt\system32\ws2help.dll		
winscard.dll	5.00.2134.1	77.27 KB (79,120 bytes)	ws2_32.dll	5.00.2195.2780	67.77 KB (69,392 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	6/11/2002 2:41:40 PM		Microsoft Corporation
c:\winnt\system32\winscard.dll			c:\winnt\system32\ws2_32.dll		
wlnotify.dll	5.00.2195.2780	53.77 KB (55,056 bytes)	samlib.dll	5.00.2195.2780	49.77 KB (50,960 bytes)
6/11/2002 2:41:40 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\wlnotify.dll			c:\winnt\system32\samlib.dll		
cscdll.dll	5.00.2195.2401	98.27 KB (100,624 bytes)	netrap.dll	5.00.2134.1	11.27 KB (11,536 bytes)
6/11/2002 2:41:33 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\cscdll.dll			c:\winnt\system32\netrap.dll		
lz32.dll	5.00.2134.1	9.77 KB (10,000 bytes)	netapi32.dll	5.00.2195.2808	303.77 KB (311,056 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	6/11/2002 2:41:37 PM		Microsoft Corporation
c:\winnt\system32\lz32.dll			c:\winnt\system32\netapi32.dll		
version.dll	5.00.2134.1	15.77 KB (16,144 bytes)	profmap.dll	5.00.2181.1	29.27 KB (29,968 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\version.dll			c:\winnt\system32\profmap.dll		
rsaenh.dll	5.00.2195.2228	130.77 KB (133,904 bytes)	secur32.dll	5.00.2195.2862	46.77 KB (47,888 bytes)
6/11/2002 2:42:01 PM		Microsoft Corporation	6/11/2002 2:41:39 PM		Microsoft Corporation
c:\winnt\system32\rsaenh.dll			c:\winnt\system32\secur32.dll		
mscat32.dll	5.131.2134.1	7.77 KB (7,952 bytes)	sfc.dll	5.00.2195.2896	92.11 KB (94,320 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	6/11/2002 2:41:39 PM		Microsoft Corporation
c:\winnt\system32\mscat32.dll			c:\winnt\system32\sfc.dll		
ole32.dll	5.00.2195.2887	969.77 KB (993,040 bytes)	nddeapi.dll	5.00.2137.1	15.27 KB (15,632 bytes)
6/11/2002 2:41:38 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\ole32.dll			c:\winnt\system32\nddeapi.dll		
imagehlp.dll	5.00.2195.2778	125.77 KB (128,784 bytes)	userenv.dll	5.00.2195.2780	361.77 KB (370,448 bytes)
5/4/2001 12:05:02 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\imagehlp.dll			c:\winnt\system32\userenv.dll		
msasn1.dll	5.00.2134.1	51.27 KB (52,496 bytes)	user32.dll	5.00.2195.2821	392.77 KB (402,192 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\msasn1.dll			c:\winnt\system32\user32.dll		
crypt32.dll	5.131.2195.2833	451.27 KB (462,096 bytes)	gdi32.dll	5.00.2195.2778	228.77 KB (234,256 bytes)
6/11/2002 2:41:33 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\crypt32.dll			c:\winnt\system32\gdi32.dll		
wintrust.dll	5.131.2195.2779	162.27 KB (166,160 bytes)	rpcrt4.dll	5.00.2195.2832	437.27 KB (447,760 bytes)
6/11/2002 2:41:40 PM		Microsoft Corporation	6/11/2002 2:41:38 PM		Microsoft Corporation
c:\winnt\system32\wintrust.dll			c:\winnt\system32\rpcrt4.dll		
shlwapi.dll	5.00.3315.1000	282.77 KB (289,552 bytes)	advapi32.dll	5.00.2195.2867	351.77 KB (360,208 bytes)
6/11/2002 2:41:39 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\shlwapi.dll			c:\winnt\system32\advapi32.dll		
shell32.dll	5.00.3315.2902	2.25 MB (2,359,056 bytes)	kernel32.dll	5.00.2195.2778	714.77 KB (731,920 bytes)
6/11/2002 2:41:39 PM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\shell32.dll			c:\winnt\system32\kernel32.dll		
msgina.dll	5.00.2195.2779	324.27 KB (332,048 bytes)	msvcr7.dll	6.10.8924.0	284.05 KB (290,869 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\msgina.dll			c:\winnt\system32\msvcr7.dll		
comctl32.dll	5.81	537.77 KB (550,672 bytes)	winlogon.exe	5.00.2195.2953	173.77 KB (177,936 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	12/7/1999 6:00:00 AM		Microsoft Corporation
c:\winnt\system32\comctl32.dll			c:\winnt\system32\winlogon.exe		
setupapi.dll	5.00.2195.2663	555.77 KB (569,104 bytes)	sfcfiles.dll	5.00.2195.2967	948.27 KB (971,024 bytes)
12/7/1999 6:00:00 AM		Microsoft Corporation	6/11/2002 2:41:39 PM		Microsoft Corporation
c:\winnt\system32\setupapi.dll			c:\winnt\system32\sfcfiles.dll		

ntdll.dll 5.00.2195.2779 478.77 KB (490,256 bytes) 5/4/2001
 12:05:02 PM Microsoft Corporation
 c:\winnt\system32\ntdll.dll
 smss.exe 5.00.2195.2901 44.27 KB (45,328 bytes)
 12/7/1999 6:00:00 AM Microsoft Corporation
 c:\winnt\system32\smss.exe

[Services]

Display Name	Name	State	Start Mode	Service Type
Path Error Control			Start Name	Tag ID
Alerter	Alerter	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Application Management Process	AppMgmt	Running	Manual	Share
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Computer Browser	Browser	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Indexing Service	cisvc	Stopped	Manual	Share Process
	c:\winnt\system32\cisvc.exe	0	Normal	LocalSystem
ClipBook	ClipSrv	Stopped	Manual	Own Process
	c:\winnt\system32\clipsrv.exe	0	Normal	LocalSystem
Distributed File System Process	Dfs	Running	Auto	Own
	c:\winnt\system32\dfssvc.exe	0	Normal	LocalSystem
DHCP Client	Dhcp	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Logical Disk Manager	Administrative Service		dmadmin	Stopped
Manual Share Process			c:\winnt\system32\dmadmin.exe	0
/com	Normal	LocalSystem		
Logical Disk Manager	dmserver	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
DNS Client	Dnscache	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Event Log	Eventlog	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
COM+ Event System Process	EventSystem	Running	Manual	Share
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
Fax Service	Fax	Stopped	Manual	Own Process
	c:\winnt\system32\faxsvc.exe	0	Normal	LocalSystem
Intersite Messaging	IsmServ	Stopped	Disabled	Own Process
	c:\winnt\system32\ismserv.exe	0	Normal	LocalSystem
Kerberos Key Distribution Center			kdc	Stopped
Share Process			c:\winnt\system32\lsass.exe	0
LocalSystem				Normal
Server	lanmanserver	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Workstation Process	lanmanworkstation	Running	Auto	Share
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
License Logging Service	LicenseService	Running	Auto	Own Process
	c:\winnt\system32\llssrv.exe	0	Normal	LocalSystem
TCP/IP NetBIOS Helper Service Process	LmHosts	Running	Auto	Share
	c:\winnt\system32\services.exe	0	Normal	LocalSystem

Messenger	Messenger	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
NetMeeting	Remote Desktop Sharing		mnmsrvc	Stopped
Own Process			c:\winnt\system32\mnmsrvc.exe	0
LocalSystem				Normal
Distributed Transaction Coordinator			MSDTC	Stopped
Own Process			c:\winnt\system32\msdtc.exe	0
LocalSystem				Normal
Windows Installer	MSIServer	Stopped	Manual	Share Process
	c:\winnt\system32\msiexec.exe /v	0	Normal	LocalSystem
MSSQLSERVER Process	MSSQLSERVER	Stopped	Manual	Own
	c:\progra~1\microso~3\mssql\binn\sqlservr.exe	0	Normal	LocalSystem
MSSQLServerADHelper	MSSQLServerADHelper	Stopped	Manual	Own Process
	c:\program files\microsoft sql server\80\tools\binn\sqladhlp.exe	0	Normal	LocalSystem
Network DDE	NetDDE	Stopped	Manual	Share Process
	c:\winnt\system32\netdde.exe	0	Normal	LocalSystem
Network DDE Process	DSDMNetDDEdsdm	Stopped	Manual	Share
	c:\winnt\system32\netdde.exe	0	Normal	LocalSystem
Net Logon	Netlogon	Stopped	Manual	Share Process
	c:\winnt\system32\lsass.exe	0	Normal	LocalSystem
Network Connections	Netman	Running	Manual	Share Process
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
File Replication	NtFrs	Stopped	Manual	Own Process
	c:\winnt\system32\ntfrs.exe	0	Ignore	LocalSystem
NT LM Security Support Provider			NtLmSsp	Stopped
Share Process			c:\winnt\system32\lsass.exe	0
LocalSystem				Normal
Removable Storage	NtmsSvc	Running	Auto	Share Process
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
Plug and Play	PlugPlay	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
IPSEC Policy Agent Process	PolicyAgent	Running	Auto	Share
	c:\winnt\system32\lsass.exe	0	Normal	LocalSystem
Protected Storage	ProtectedStorage	Running	Auto	Share Process
	c:\winnt\system32\services.exe	0	Normal	LocalSystem
Remote Access Auto Connection Manager	RasAuto	Stopped	Manual	Share Process
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
Remote Access Connection Manager	RasMan	Stopped	Manual	Share Process
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
Routing and Remote Access	RemoteAccess	Stopped	Disabled	Share Process
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
Remote Registry Service	RemoteRegistry	Running	Auto	Own Process
	c:\winnt\system32\regsvc.exe	0	Normal	LocalSystem
Remote Procedure Call (RPC) Locator	RpcLocator	Stopped	Manual	Own Process
	c:\winnt\system32\locator.exe	0	Normal	LocalSystem
Remote Procedure Call (RPC) Process	RpcSs	Running	Auto	Share
	c:\winnt\system32\svchost.exe -k	0	Normal	LocalSystem
QoS RSVP	RSVP	Running	Manual	Own Process
	c:\winnt\system32\rsvp.exe -s	0	Normal	LocalSystem

Security Accounts Manager Process	SamSs	Running	Auto	Share
c:\winnt\system32\lsass.exe		Normal	LocalSystem	
Smart Card Helper	SCardDrv	Stopped	Manual	Share Process
c:\winnt\system32\scardsvr.exe		Ignore	LocalSystem	
Smart Card	SCardSvr	Stopped	Manual	Share Process
c:\winnt\system32\scardsvr.exe		Ignore	LocalSystem	
Task Scheduler	Schedule	Running	Auto	Share Process
c:\winnt\system32\mstask.exe		Normal	LocalSystem	
RunAs Service	seclogon	Running	Auto	Share Process
c:\winnt\system32\services.exe		Ignore	LocalSystem	
System Event Notification Process	SENS	Running	Auto	Share
c:\winnt\system32\svchost.exe		Normal	LocalSystem	0
Internet Connection Sharing	SharedAccess	Stopped	Manual	Share Process
c:\winnt\system32\svchost.exe		Normal	LocalSystem	0
Print Spooler	Spooler	Running	Auto	Own Process
c:\winnt\system32\spoolsv.exe		Normal	LocalSystem	0
SQLSERVERAGENT	SQLSERVERAGENT	Stopped	Manual	Own Process
c:\progra~1\micros~3\mssql\binn\sqlagent.exe		Normal	LocalSystem	0
Performance Logs and Alerts	SysmonLog	Stopped	Manual	Own Process
c:\winnt\system32\smlogsvc.exe		Normal	LocalSystem	0
Telephony TapiSrv	Running	Manual	Share Process	Normal
c:\winnt\system32\svchost.exe		LocalSystem	0	
Terminal Services	TermService	Running	Auto	Own Process
c:\winnt\system32\termsrv.exe		Normal	LocalSystem	0
Telnet	TlntSvr	Stopped	Manual	Own Process
c:\winnt\system32\tlntsvr.exe		Normal	LocalSystem	0
Distributed Link Tracking Server	TrkSvr	Stopped	Manual	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
Distributed Link Tracking Client	TrkWks	Running	Auto	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
Uninterruptible Power Supply	UPS	Stopped	Manual	Own Process
c:\winnt\system32\ups.exe		Normal	LocalSystem	0
Utility Manager	UtilMan	Stopped	Manual	Own Process
c:\winnt\system32\utilman.exe		Normal	LocalSystem	0
Windows Time	W32Time	Stopped	Manual	Share Process
c:\winnt\system32\services.exe		Normal	LocalSystem	0
Windows Management Instrumentation	WinMgmt	Running	Auto	Own Process
c:\winnt\system32\wbem\winmgmt.exe		Ignore	LocalSystem	0
Windows Management Instrumentation Driver Extensions		Running	Manual	Share Process
c:\winnt\system32\services.exe		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
Accessories\System Tools	Default User:Accessories\System Tools	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\Games	All Users:Accessories\Games	All Users
Accessories\Microsoft Script Debugger	All Users:Accessories\Microsoft Script Debugger	All Users
Accessories\System Tools	All Users:Accessories\System Tools	All Users
Administrative Tools	All Users:Administrative Tools	All Users
Compaq System Tools	All Users:Compaq System Tools	All Users
Microsoft SQL Server	All Users:Microsoft SQL Server	All Users
Startup	All Users:Startup	All Users
Accessories	LEAP\Administrator:Accessories	LEAP\Administrator
Accessories\Accessibility	LEAP\Administrator:Accessories\Accessibility	LEAP\Administrator
Accessories\Entertainment	LEAP\Administrator:Accessories\Entertainment	LEAP\Administrator
Accessories\System Tools	LEAP\Administrator:Accessories\System Tools	LEAP\Administrator
Administrative Tools	LEAP\Administrator:Administrative Tools	LEAP\Administrator
Startup	LEAP\Administrator:Startup	LEAP\Administrator

[Startup Programs]

Program	Command	User Name	Location
Service Manager	c:\progra~1\micros~3\80\tools\binn\sqlmangr.exe	/n	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 /mid
Sound	Not Available
Media Clip	Not Available
Image Document	"C:\Program Files\Windows NT\Accessories\ImageVue\KodakImg.exe"
WordPad Document	"%ProgramFiles%\Windows NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage object	Not Available
Bitmap Image	mspaint.exe

[Internet Explorer 5]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Version	5.00.3315.1000
Build	53315.1000
Product ID	51879-000-0000007-05917
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available

Cipher Strength 168-bit
 Content Advisor Disabled
 IEAK Install No

[File Versions]

File	Version	Size	Date	Path	Company
advapi32.dll	5.0.2195.2867	352 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
advpack.dll	5.0.3103.1000	87 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
browsecl.dll	5.0.3315.2846	35 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
browseui.dll	5.0.3315.2846	789 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ckcnv.exe	5.0.2189.1 9 KB	12/7/1999 7:00:00 AM		C:\WINNT\system32	Microsoft Corporation
comctl32.dll	5.81.3103.1000	538 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
crypt32.dll	5.131.2195.2833	451 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ehhsig.dll	<File Missing>	Not Available	Not Available		
iemigrat.dll	<File Missing>	Not Available	Not Available		
iesetup.dll	5.0.3103.1000	57 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ieexplore.exe	5.0.2920.0 59 KB	12/7/1999 7:00:00 AM		C:\Program Files\Internet Explorer	Microsoft Corporation
imagehlp.dll	5.0.2195.2778	126 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
imghelp.dll	<File Missing>	Not Available	Not Available		
inseng.dll	5.0.3103.1000	72 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
jobexec.dll	5.0.0.1 47 KB	12/7/1999 7:00:00 AM		C:\WINNT\system32	Microsoft Corporation
jscrip.dll	5.1.0.5907 476 KB	5/4/2001 12:05:02 PM		C:\WINNT\system32	Microsoft Corporation
jsproxy.dll	5.0.2920.0 13 KB	12/7/1999 7:00:00 AM		C:\WINNT\system32	Microsoft Corporation
msaahtml.dll	<File Missing>	Not Available	Not Available		
mshtml.dll	5.0.3315.2870	2290 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
msjava.dll	5.0.3802.0 923 KB	5/4/2001 12:05:02 PM		C:\WINNT\system32	Microsoft Corporation
msoss.dll	<File Missing>	Not Available	Not Available		
msxml.dll	8.0.5718.1 493 KB	5/4/2001 12:05:02 PM		C:\WINNT\system32	Microsoft Corporation
occache.dll	5.0.3103.1000	86 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ole32.dll	5.0.2195.2887	970 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
oleaut32.dll	2.40.4517.0	612 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
olepro32.dll	5.0.4517.0 160 KB	5/4/2001 12:05:02 PM		C:\WINNT\system32	Microsoft Corporation
rsabase.dll	5.0.2195.2228	128 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
rsaenh.dll	5.0.2195.2228	131 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
rsapi32.dll	<File Missing>	Not Available	Not Available		
rsasig.dll	<File Missing>	Not Available	Not Available		
schannel.dll	5.1.2195.0 138 KB	5/4/2001 12:05:02 PM		C:\WINNT\system32	Microsoft Corporation

shdoc401.dll	<File Missing>	Not Available	Not Available		
shdocvw.dll	5.0.3315.2879	1078 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
shell32.dll	5.0.3315.2902	2304 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
shlwapi.dll	5.0.3315.1000	283 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
url.dll	5.0.2920.0 82 KB	12/7/1999 7:00:00 AM		C:\WINNT\system32	Microsoft Corporation
urlmon.dll	5.0.3315.1000	441 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
vbscript.dll	5.1.0.5907 428 KB	5/4/2001 12:05:02 PM		C:\WINNT\system32	Microsoft Corporation
webcheck.dll	5.0.3315.1000	252 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
win.com	5.0.2134.1 24 KB	12/7/1999 7:00:00 AM		C:\WINNT\system32	Microsoft Corporation
wininet.dll	5.0.3315.1000	457 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
winsock.dll	3.10.0.103 3 KB	12/7/1999 7:00:00 AM		C:\WINNT\system32	Microsoft Corporation
wintrust.dll	5.131.2195.2779	162 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
wsock.vxd	<File Missing>	Not Available	Not Available		
wsock32.dll	5.0.2195.2871	21 KB	5/4/2001 12:05:02 PM	C:\WINNT\system32	Microsoft Corporation
wsock32n.dll	<File Missing>	Not Available	Not Available		

[Connectivity]

Item	Value
Connection Preference	Never dial
EnableHttp1.1	1
ProxyHttp1.1	0

LAN Settings

AutoConfigProxy	wininet.dll
AutoProxyDetectMode	Enabled
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\Administrator\Local Settings\Temporary Internet Files
Total Disk Space	8665 MB
Available Disk Space	2668 MB
Maximum Cache Size	270 MB
Available Cache Size	271 MB

[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
Administrator	Administrator	6/4/2002 to 5/11/2102	sha1RSA

[Other People Certificates]

Issued To	Issued By	Validity	Signature Algorithm
-----------	-----------	----------	---------------------

No other people certificate information available

[Publishers]

Name
No publisher information available

[Security]

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

Appendix B: Database Build Scripts

B.1 CreateDatabase.sql

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

```
Create Database tpch100g on
Primary (name=tpch100g, filename='c:\dev\tpch100g.mdf',size=10mb),
FileGroup tpch100g
  (name=tpch100g1,filename='c:\dev\tpch100_1',size=15950mb),
  (name=tpch100g2,filename='c:\dev\tpch100_2',size=15950mb),
  (name=tpch100g3,filename='c:\dev\tpch100_3',size=15950mb),
  (name=tpch100g4,filename='c:\dev\tpch100_4',size=15950mb),
  (name=tpch100g5,filename='c:\dev\tpch100_5',size=15950mb),
  (name=tpch100g6,filename='c:\dev\tpch100_6',size=15950mb),
  (name=tpch100g7,filename='c:\dev\tpch100_7',size=15950mb),
  (name=tpch100g8,filename='c:\dev\tpch100_8',size=15950mb),
  (name=tpch100g9,filename='c:\dev\tpch100_9',size=15950mb),
  (name=tpch100g10,filename='c:\dev\tpch100_10',size=15950mb),
  (name=tpch100g11,filename='c:\dev\tpch100_11',size=15950mb),
  (name=tpch100g12,filename='c:\dev\tpch100_12',size=15950mb)
```

```
Log on
  (name=tpch100gLog,filename='c:\dev\tpch100log',size=19000
mb)
```

```
Alter Database tpch100g Add FileGroup LoadFg
```

```
Alter Database tpch100g Add File
  (name=LoadFg1, filename='e:\load.ldf',size=17500mb),
  (name=LoadFg2, filename='f:\load.ldf',size=17500mb),
  (name=LoadFg3, filename='g:\load.ldf',size=17500mb),
  (name=LoadFg4, filename='h:\load.ldf',size=17500mb),
  (name=LoadFg5, filename='i:\load.ldf',size=17500mb),
  (name=LoadFg6, filename='j:\load.ldf',size=17500mb),
  (name=LoadFg7, filename='k:\load.ldf',size=17500mb),
  (name=LoadFg8, filename='l:\load.ldf',size=17500mb),
  (name=LoadFg9, filename='m:\load.ldf',size=17500mb),
  (name=LoadFg10, filename='n:\load.ldf',size=17500mb),
  (name=LoadFg11, filename='o:\load.ldf',size=17500mb),
  (name=LoadFg12, filename='p:\load.ldf',size=17500mb)
to FileGroup LoadFg
```

B.2 CreateTables.sql

```
- CreateTables
-- Uses filegroups
```

```
--
-- BASE TABLES
--
```

```
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 LoadFg
```

```
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 LoadFg
```

```
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 LoadFg
```

```
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 LoadFg
```

```
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 LoadFg
```

```
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 LoadFg
```

```
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 LoadFg

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

B.3 CreateCUSTOMERIndexes.sql

```
create unique clustered index C_KEY_CLUIDX
  on CUSTOMER(C_CUSTKEY)
  with SORT_IN_TEMPDB
  on tpch100g
create index C_NATION_KEYIDX
  on CUSTOMER (C_NATIONKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.4 CreateLINEITEMIndexes.sql

```
create clustered index L_SHIPDATE_CLUIDX
  on LINEITEM(L_SHIPDATE)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create index L_PARTKEY_SUPPKEY_IDX
  on LINEITEM (L_PARTKEY,L_SUPPKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create index L_ORDERKEY_IDX
  on LINEITEM (L_ORDERKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g
```

B.5 CreateNATIONIndexes.sql

```
create unique clustered index N_KEY_CLUIDX
  on NATION(N_NATIONKEY)
  on tpch100g
create index N_REGIONKEY_IDX
  on NATION (N_REGIONKEY)
  on tpch100g
```

B.6 CreateORDERSIndexes.sql

```
create clustered index O_ORDERDATE_CLUIDX
  on ORDERS (O_ORDERDATE)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create index O_CUSTKEY_IDX
  on ORDERS (O_CUSTKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g

create unique index O_KEY_IDX
  on ORDERS(O_ORDERKEY)
  with fillfactor=95, SORT_IN_TEMPDB
  on tpch100g
```

B.7 CreatePARTIndexes.sql

```
create unique clustered index P_KEY_CLUIDX
  on PART(P_PARTKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.8 CreatePARTSUPPIndexes.sql

```
create unique clustered index PS_KEY_CLUIDX
  on PARTSUPP(PS_PARTKEY,PS_SUPPKEY)
  with SORT_IN_TEMPDB
  on tpch100g
create index PS_SUPPKEY_IDX
  on PARTSUPP (PS_SUPPKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.9 CreateREGIONIndexes.sql

```
create unique clustered index R_KEY_CLUIDX
  on REGION(R_REGIONKEY)
  on tpch100g
```

B.10 createSUPPLIERindexes.sql

```
create unique clustered index S_SUPPKEY_CLUIDX
  on SUPPLIER (S_SUPPKEY)
  with SORT_IN_TEMPDB
  on tpch100g
create index S_NATION_KEYIDX
  on SUPPLIER (S_NATIONKEY)
  with SORT_IN_TEMPDB
  on tpch100g
```

B.11 Backup.sql

```
backup database tpch100g to
disk='e:\test.bak',
disk='f:\test.bak',
disk='g:\test.bak',
disk='h:\test.bak',
disk='i:\test.bak',
disk='j:\test.bak',
disk='k:\test.bak',
disk='l:\test.bak',
disk='m:\test.bak',
disk='n:\test.bak',
disk='o:\test.bak'
with init,stats=10
```

B.12 Restore.sql

```
restore database tpch100g from
disk='e:\test.bak',
disk='f:\test.bak',
disk='g:\test.bak',
disk='h:\test.bak',
disk='i:\test.bak',
disk='j:\test.bak',
```

```
disk='k:\test.bak',
disk='l:\test.bak',
disk='m:\test.bak',
disk='n:\test.bak',
disk='o:\test.bak'
-- disk='p:\test.bak'
with stats=10, replace
```

B.13 MoveTemp.sql

```
alter database tempdb modify file
(name=tempdev,filename='c:\dev\tempdev\',size=15MB)
alter database tempdb modify file
(name=templog,filename='c:\dev\templog\',size=20MB)
```

B.14 AddTemp.sql

```
alter database tempdb modify file
(name=tempdev, filename='c:\dev\tempdev\',size=9950mb)
alter database tempdb modify file
(name=templog, filename='c:\dev\templog\',size=14950mb)
alter database tempdb add file
(name=tempdev2, filename='c:\dev\tempdev_2\',size=9950mb),
(name=tempdev3, filename='c:\dev\tempdev_3\',size=9950mb),
(name=tempdev4, filename='c:\dev\tempdev_4\',size=9950mb),
(name=tempdev5, filename='c:\dev\tempdev_5\',size=9950mb),
(name=tempdev6, filename='c:\dev\tempdev_6\',size=9950mb),
(name=tempdev7, filename='c:\dev\tempdev_7\',size=9950mb),
(name=tempdev8, filename='c:\dev\tempdev_8\',size=9950mb),
(name=tempdev9, filename='c:\dev\tempdev_9\',size=9950mb),
(name=tempdev10, filename='c:\dev\tempdev_10\',size=9950mb),
(name=tempdev11, filename='c:\dev\tempdev_11\',size=9950mb),
(name=tempdev12, filename='c:\dev\tempdev_12\',size=9950mb)
```

B.15 DelLoadFg.sql

```
alter database tpch100g remove file LoadFg1
alter database tpch100g remove file LoadFg2
alter database tpch100g remove file LoadFg3
alter database tpch100g remove file LoadFg4
alter database tpch100g remove file LoadFg5
alter database tpch100g remove file LoadFg6
alter database tpch100g remove file LoadFg7
alter database tpch100g remove file LoadFg8
alter database tpch100g remove file LoadFg9
alter database tpch100g remove file LoadFg10
alter database tpch100g remove file LoadFg11
alter database tpch100g remove file LoadFg12
alter database tpch100g remove filegroup LoadFg
```

Appendix C: Query Text and Output

C.1 Qualification Queries and Output

Qualification Query 1

-- using default substitutions

/* tpch 1.sql */

```
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
L_RETURNFLAG L_LINESTATUS SUM_QTY
SUM_BASE_PRICE SUM_DISC_PRICE SUM_CHARGE
AVG_QTY AVG_PRICE AVG_DISC
COUNT_ORDER
```

```
-----
-----
----
A      F      37734107.0000  56586554400.7300
53758257134.8700  55909065224.7041      25.5220
38273.1297      .0499  1478493
N      F      991417.0000  1487504710.3800
1413082168.0541  1469649223.2395      25.5164      38284.4677
.0500  38854
N      O      74476040.0000  111701729697.7400
106118230307.6056  110367043876.2372      25.5022
38249.1179      .0499  2920374
R      F      37719753.0000  56568041380.9000
53741292684.6040  55889619121.7027      25.5057
38250.8546      .0500  1478870
```

(4 rows affected)

Qualification Query 2

-- using default substitutions

/* tpch 2.sql */

```
SELECT TOP 100
S_ACCTBAL
,S_NAME
,N_NAME
```

```
,P_PARTKEY
,P_MFGR
,S_ADDRESS
,S_PHONE
,S_COMMENT
FROM
PART
,SUPPLIER
,PARTSUPP
,NATION
,REGION
WHERE
P_PARTKEY = PS_PARTKEY
AND S_SUPPKEY = PS_SUPPKEY
AND P_SIZE = 15
AND P_TYPE LIKE '%BRASS'
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'EUROPE'
AND PS_SUPPLYCOST =
(
SELECT MIN(PS_SUPPLYCOST)
FROM
PARTSUPP
,SUPPLIER
,NATION
,REGION
WHERE P_PARTKEY = PS_PARTKEY
AND S_SUPPKEY = PS_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'EUROPE'
)
ORDER BY
S_ACCTBAL DESC
,N_NAME
,S_NAME
,P_PARTKEY
,S_ACCTBAL S_NAME N_NAME
P_PARTKEY P_MFGR S_ADDRESS
S_PHONE S_COMMENT
-----
-----
9938.5300 Supplier#000005359 UNITED KINGDOM
185358 Manufacturer#4 QKuHYh,vZGiwu2FWEJolDx04
33-429-790-6131 blithely silent pinto beans are furiously. slyly final deposits
acros
9937.8400 Supplier#000005969 ROMANIA
108438 Manufacturer#1
ANDENSOSmk,miq23Xfb5RWt6dvUcvt6Qa 29-520-692-3537
carefully slow deposits use furiously. slyly ironic platelets above the ironic
9936.2200 Supplier#000005250 UNITED KINGDOM
249 Manufacturer#4 B3rqp0xbSEim4Mpy2RH J 33-320-
228-2957 blithely special packages are. stealthily express deposits across the
closely final instructi
9923.7700 Supplier#000002324 GERMANY
29821 Manufacturer#4 y3OD9UywSTok 17-779-
299-1839 quickly express packages breach quiet pinto beans. requ
9871.2200 Supplier#000006373 GERMANY
43868 Manufacturer#5 J8fcXWstQM 17-813-485-
8637 never silent deposits integrate furiously blit
9870.7800 Supplier#000001286 GERMANY
81285 Manufacturer#2
YKA,E2fjVd7eUrzp2Ef8j1QxGo2DFnosATEH 17-516-924-4574 final
theodolites cajole slyly special,
```

9870.7800 Supplier#000001286 GERMANY
 181285 Manufacturer#4
 YKA,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 17-516-924-4574 final
 theodolites cajole slyly special,
 9852.5200 Supplier#000008973 RUSSIA 18972
 Manufacturer#2 t5L67YdBYH6o,Vz24jpDyQ9 32-188-
 594-7038 quickly regular instructions wake-- carefully unusual braids into
 the expres
 9847.8300 Supplier#000008097 RUSSIA 130557
 Manufacturer#2 xMe97bpE69NzdwLoX 32-375-640-
 3593 slyly regular dependencies sleep slyly furiously express dep
 9847.5700 Supplier#000006345 FRANCE
 86344 Manufacturer#1
 VS3rzk3qG698u6ld8HhOBYvrTcStSVQIDQDag 16-886-766-7945 silent
 pinto beans should have to snooze carefully along the final reqes
 7914.4500 Supplier#000001013 RUSSIA 125988
 Manufacturer#2 riRcntps4KEDtYScjpMIWeYF6mNnR 32-
 194-698-3365 final, ironic theodolites alongside of the ironic

 Additional rows deleted

7912.9100 Supplier#000004211 GERMANY
 159180 Manufacturer#5 2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG
 17-266-947-7315 final requests integrate slyly above the silent, even
 7912.9100 Supplier#000004211 GERMANY
 184210 Manufacturer#4 2wQRVovHrm3,v03IKzfTd,1PYsFXQFFOG
 17-266-947-7315 final requests integrate slyly above the silent, even
 7894.5600 Supplier#000007981 GERMANY
 85472 Manufacturer#4 NSJ96vMROAbeXP 17-963-
 404-3760 regular, even theodolites integrate carefully. bold, special
 theodolites are slyly fluffily iron
 7887.0800 Supplier#000009792 GERMANY
 164759 Manufacturer#3 Y28ITVeYriT3kiGdV2K8fSZ
 V2UqT5H1Otz 17-988-938-4296 pending, ironic packages sleep among
 the carefully ironic accounts. quickly final accounts
 7871.5000 Supplier#000007206 RUSSIA 104695
 Manufacturer#1 3w fNCnrVmvJjE95sgWZzvW 32-432-
 452-7731 furiously dogged pinto beans cajole. bold, express notornis until
 the slyly pending
 7852.4500 Supplier#000005864 RUSSIA 8363
 Manufacturer#4 WCNfBPZeSXh3h,c 32-454-883-
 3821 blithely regular deposits
 7850.6600 Supplier#000001518 UNITED KINGDOM
 86501 Manufacturer#1 ONda3YJiHKJOC 33-730-
 383-3892 furiously final accounts wake carefully idle requests. even dolphins
 wake acc
 7843.5200 Supplier#000006683 FRANCE
 11680 Manufacturer#4 2Z0JGkiv01Y00oCFwUGfviIbhzCdy
 16-464-517-8943 carefully bold accounts doub

(100 rows affected)

Qualification Query 3

-- using default substitutions

/* tpch 3.sql */

```
SELECT TOP 10
L_ORDERKEY
,SUM(L_EXTENDEDPRIE*(1-L_DISCOUNT)) AS REVENUE
,O_ORDERDATE
,O_SHIPRIORITY
FROM
CUSTOMER
,ORDERS
,LINEITEM
WHERE
C_MKTSEGMENT = 'BUILDING'
AND C_CUSTKEY = O_CUSTKEY
```

```
AND L_ORDERKEY = O_ORDERKEY
AND O_ORDERDATE < '1995-03-15'
AND L_SHIPDATE > '1995-03-15'
GROUP BY
L_ORDERKEY
,O_ORDERDATE
,O_SHIPRIORITY
ORDER BY
REVENUE DESC
,O_ORDERDATE
L_ORDERKEY REVENUE O_ORDERDATE
O_SHIPRIORITY
```

2456423	406181.0111	1995-03-05 00:00:00.000	0
3459808	405838.6989	1995-03-04 00:00:00.000	0
492164	390324.0610	1995-02-19 00:00:00.000	0
1188320	384537.9359	1995-03-09 00:00:00.000	0
2435712	378673.0558	1995-02-26 00:00:00.000	0
4878020	378376.7952	1995-03-12 00:00:00.000	0
5521732	375153.9215	1995-03-13 00:00:00.000	0
2628192	373133.3094	1995-02-22 00:00:00.000	0
993600	371407.4595	1995-03-05 00:00:00.000	0
2300070	367371.1452	1995-03-13 00:00:00.000	0

(10 rows affected)

Qualification Query 4

-- using default substitutions

/* tpch 4.sql */

```
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
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

/* tpch 5.sql */

```
SELECT
N_NAME
,SUM(L_EXTENDEDPRIE*(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(YEAR, 1, '1994-01-01')
GROUP BY
N_NAME
ORDER BY
REVENUE DESC
N_NAME          REVENUE
-----
INDONESIA          55502041.1697
VIETNAM           55295086.9967
CHINA             53724494.2566
INDIA             52035512.0002
JAPAN            45410175.6954

```

(5 rows affected)

Qualification Query 6

-- using default substitutions

/* tpch 6.sql */

```

SELECT
SUM(L_EXTENDEDPRI * 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
REVENUE
-----

```

123141078.2283

(1 row affected)

Qualification Query 7

-- using default substitutions

/* tpch 7.sql */

```

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(YEAR,L_SHIPDATE) AS L_YEAR
,L_EXTENDEDPRI*(1-L_DISCOUNT) AS VOLUME
FROM

```

```

SUPPLIER
,LINEITEM
,ORDERS
,CUSTOMER
,NATION N1
,NATION N2
WHERE S_SUPPKEY = L_SUPPKEY
AND O_ORDERKEY = L_ORDERKEY
AND C_CUSTKEY = O_CUSTKEY
AND S_NATIONKEY = N1.N_NATIONKEY
AND C_NATIONKEY = N2.N_NATIONKEY
AND (
(N1.N_NAME = 'FRANCE' AND N2.N_NAME = 'GERMANY')
OR
(N1.N_NAME = 'GERMANY' AND N2.N_NAME = 'FRANCE')
)
AND L_SHIPDATE BETWEEN '1995-01-01' AND '1996-12-31'
)
AS SHIPPING
GROUP BY
SUPP_NATION
,CUST_NATION
,L_YEAR
ORDER BY
SUPP_NATION
,CUST_NATION
,L_YEAR
SUPP_NATION      CUST_NATION      L_YEAR
REVENUE
-----
FRANCE           GERMANY           1995
54639732.7336
FRANCE           GERMANY           1996
54633083.3076
GERMANY          FRANCE            1995
52531746.6697
GERMANY          FRANCE            1996
52520549.0224

```

(4 rows affected)

Qualification Query 8

-- using default substitutions

/* tpch 8.sql */

```

SELECT
O_YEAR
,SUM(CASE WHEN NATION = 'BRAZIL'
THEN VOLUME
ELSE 0
END) / SUM(VOLUME) AS MKT_SHARE
FROM
(
SELECT
DATEPART(YEAR,O_ORDERDATE) AS O_YEAR
,L_EXTENDEDPRI * (1-L_DISCOUNT) AS VOLUME
,N2.N_NAME AS NATION
FROM
PART
,SUPPLIER
,LINEITEM
,ORDERS
,CUSTOMER
,NATION N1
,NATION N2
,REGION
WHERE
P_PARTKEY = L_PARTKEY

```

```

AND S_SUPPKEY = L_SUPPKEY
AND L_ORDERKEY = O_ORDERKEY
AND O_CUSTKEY = C_CUSTKEY
AND C_NATIONKEY = N1.N_NATIONKEY
AND N1.N_REGIONKEY = R_REGIONKEY
AND R_NAME = 'AMERICA'
AND S_NATIONKEY = N2.N_NATIONKEY
AND O_ORDERDATE BETWEEN '1995-01-01' AND '1996-12-31'
AND P_TYPE = 'ECONOMY ANODIZED STEEL'
) AS ALL_NATIONS
GROUP BY
O_YEAR
ORDER BY
O_YEAR
O_YEAR   MKT_SHARE
-----
1995     .0344
1996     .0414

```

(2 rows affected)

Qualification Query 9

-- using default substitutions

/* tpch 9.sql */

```

SELECT
NATION
,O_YEAR
,SUM(AMOUNT) AS SUM_PROFIT
FROM
(
SELECT
N_NAME AS NATION
,DATEPART(YY, O_ORDERDATE) AS O_YEAR
,L_EXTENDEDPRI*(1-L_DISCOUNT)-
PS_SUPPLYCOST*L_QUANTITY AS AMOUNT
FROM
PART
,SUPPLIER
,LINEITEM
,PARTSUPP
,ORDERS
,NATION
WHERE
S_SUPPKEY = L_SUPPKEY
AND PS_SUPPKEY = L_SUPPKEY
AND PS_PARTKEY = L_PARTKEY
AND P_PARTKEY = L_PARTKEY
AND O_ORDERKEY = L_ORDERKEY
AND S_NATIONKEY = N_NATIONKEY
AND P_NAME LIKE '%green%'
)
AS PROFIT
GROUP BY
NATION
,O_YEAR
ORDER BY
NATION
,O_YEAR DESC
NATION      O_YEAR   SUM_PROFIT
-----
ALGERIA     1998   31342867.2345
ALGERIA     1997   57138193.0233
ALGERIA     1996   56140140.1330
ALGERIA     1995   53051469.6534
ALGERIA     1994   53867582.1286
ALGERIA     1993   54942718.1324
ALGERIA     1992   54628034.7127

```

```

ARGENTINA   1998   30211185.7081
UNITED STATES 1993   48029946.8014
UNITED STATES 1992   48671944.4983

```

..... Additional rows deleted

```

VIETNAM     1998   30442736.0594
VIETNAM     1997   50309179.7942
VIETNAM     1996   50488161.4100
VIETNAM     1995   49658284.6125
VIETNAM     1994   50596057.2607
VIETNAM     1993   50953919.1519
VIETNAM     1992   49613838.3151

```

(175 rows affected)

Qualification Query 10

-- using default substitutions

/* tpch 10.sql */

```

SELECT TOP 20
C_CUSTKEY
,C_NAME
,SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)) AS REVENUE
,C_ACCTBAL
,N_NAME
,C_ADDRESS
,C_PHONE
,C_COMMENT
FROM
CUSTOMER
,ORDERS
,LINEITEM
,NATION
WHERE
C_CUSTKEY = O_CUSTKEY
AND L_ORDERKEY = O_ORDERKEY
AND O_ORDERDATE >= '1993-10-01'
AND O_ORDERDATE < DATEADD(MM, 3, '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
C_CUSTKEY  C_NAME      REVENUE      C_ACCTBAL
N_NAME    C_ADDRESS    C_PHONE
-----
---
57040 Customer#000057040          734235.2455      632.8700
JAPAN     Eioyzjf4pp          22-895-641-3466
requests sleep blithely about the furiously i
143347 Customer#000143347          721002.6948      2557.4700
EGYPT     1aReFYv,Kw4          14-742-935-3718
fluffily bold excuses haggle finally after the u
60838 Customer#000060838          679127.3077      2454.7700
BRAZIL    64EaJ5vMAHWJIBOXJklpNc2RjWE      12-913-
494-9813 furiously even pinto beans integrate under the ruthless foxes;
ironic, even dolphins across the slyl

```

101998 Customer#000101998 637029.5667 3790.8900
 UNITED KINGDOM 01e9CILnNtfOQYmZj 33-593-
 865-6378 accounts doze blithely! enticing, final deposits sleep blithely
 special accounts. slyly express accounts pla
 125341 Customer#000125341 633508.0860 4983.5100
 GERMANY S29ODD6bceU8QSuuEJznkNaK 17-582-
 695-5962 quickly express requests wake quickly blithely
 25501 Customer#000025501 620269.7849 7725.0400
 ETHIOPIA W556MXuoiaYCCZamJI,Rn0B4ACUGdkQ8DZ
 15-874-808-6793 quickly special requests sleep evenly among the special
 deposits. special deposi
 115831 Customer#000115831 596423.8672 5098.1000
 FRANCE rFeBbEEyk dl ne7zV5fDrmiq1oK09wV7pxqCgIc 16-
 715-386-3788 carefully bold excuses sleep alongside of the thinly idle
 84223 Customer#000084223 594998.0239 528.6500
 UNITED KINGDOM nAVZCs6BaWap rrM27N 2qBnze5WBauxbA
 33-442-824-8191 pending, final ideas haggle final requests. unusual, regular
 asymptotes affix according to the even foxes.
 54289 Customer#000054289 585603.3918 5583.0200
 IRAN vXCxoCsU0Bad5JQI ,oobkZ 20-834-292-
 4707 express requests sublate blithely regular requests. regular, even ideas
 solve.
 39922 Customer#000039922 584878.1134 7321.1100
 GERMANY Zgy4s5012GKN4pLDPBU8m342glw6R 17-
 147-757-8036 even pinto beans haggle. slyly bold accounts inte
 6226 Customer#000006226 576783.7606 2230.0900
 UNITED KINGDOM 8gPu8,NPGkfyQQ0hcIYUGPIBWc,ybP5g,
 33-657-701-3391 quickly final requests against the regular instructions wake
 blithely final instructions. pa
 922 Customer#000000922 576767.5333 3869.2500
 GERMANY Az9RFaut7NkPnc5zSD2PwHgVwr4jRzq 17-
 945-916-9648 boldly final requests cajole blith
 147946 Customer#000147946 576455.1320 2030.1300
 ALGERIA iANyZHjqhy7Ajah0pTrYyhJ 10-886-956-
 3143 furiously even accounts are blithely above the furiousl
 115640 Customer#000115640 569341.1933 6436.1000
 ARGENTINA Vtgifia9qI 7EpHgecU1X 11-411-543-
 4901 final instructions are slyly according to the
 73606 Customer#000073606 568656.8578 1785.6700
 JAPAN xuR0Tro5yChDfOCrjkd2ol 22-437-653-
 6966 furiously bold orbits about the furiously busy requests wake across the
 furiously quiet theodolites. d
 110246 Customer#000110246 566842.9815 7763.3500
 VIETNAM 7KzflgX MDOq7sOkI 31-943-426-
 9837 dolphins sleep blithely among the slyly final
 142549 Customer#000142549 563537.2368 5085.9900
 INDONESIA ChqEoK43OysjdHbtKCp6dKqjNyvvi9 19-
 955-562-2398 regular, unusual dependencies boost slyly; ironic attainments
 nag fluffily into the unusual packages?
 146149 Customer#000146149 557254.9865 1791.5500
 ROMANIA s87fvzFQpU 29-744-164-6487
 silent, unusual requests detect quickly slyly regul
 52528 Customer#000052528 556397.3509 551.7900
 ARGENTINA NFztyTOR10UOJ 11-208-192-
 3205 unusual requests detect. slyly dogged theodolites use slyly. deposit
 23431 Customer#000023431 554269.5360 3381.8600
 ROMANIA HgiVOpqhala9aydNoIlb 29-915-458-
 2654 instructions nag quickly. furiously bold accounts cajol

(20 rows affected)

Qualification Query 11

-- using default substitutions

/* tpch 11.sql */

```
SELECT
PS_PARTKEY
,SUM(PS_SUPPLYCOST*PS_AVAILQTY) AS VALUE
```

```
FROM
PARTSUPP
,SUPPLIER
,NATION
WHERE
PS_SUPPKEY = S_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'GERMANY'
GROUP BY
PS_PARTKEY
HAVING
SUM(PS_SUPPLYCOST*PS_AVAILQTY) >
(
SELECT
SUM(PS_SUPPLYCOST*PS_AVAILQTY) * 0.0001000000
FROM PARTSUPP
,SUPPLIER
,NATION
WHERE PS_SUPPKEY = S_SUPPKEY
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'GERMANY'
)
ORDER BY
VALUE DESC
PS_PARTKEY VALUE
-----
129760 17538456.8600
166726 16503353.9200
191287 16474801.9700
161758 16101755.5400
34452 15983844.7200
139035 15907078.3400
9403 15451755.6200
154358 15212937.8800
38823 15064802.8600
85606 15053957.1500
33354 14408297.4000
154747 14407580.6800
82865 14235489.7800
76094 14094247.0400
```

..... Additional rows deleted

```
171154 7896814.5000
79373 7896186.0000
113808 7893353.8800
27901 7892952.0000
128820 7892882.7200
25891 7890511.2000
122819 7888881.0200
154731 7888301.3300
101674 7879324.6000
51968 7879102.2100
72073 7877736.1100
5182 7874521.7300
```

(1048 rows affected)

Qualification Query 12

-- using default substitutions

/* tpch 12.sql */

```
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
L_SHIPMODE HIGH_LINE_COUNT LOW_LINE_COUNT
-----
MAIL          6202      9324
SHIP          6200      9262

```

(2 rows affected)

Qualification Query 13

-- using default substitutions

/* tpch 13.sql */

```

SELECT
C_COUNT
,COUNT(*) AS CUSTDIST
FROM
(
SELECT
C_CUSTKEY
,COUNT(O_ORDERKEY)
FROM
CUSTOMER LEFT OUTER JOIN ORDERS ON
C_CUSTKEY = O_CUSTKEY
AND O_COMMENT NOT LIKE '%special%requests%'
GROUP BY
C_CUSTKEY
) AS C_ORDERS (C_CUSTKEY, C_COUNT)
GROUP BY
C_COUNT
ORDER BY
CUSTDIST DESC
,C_COUNT DESC
C_COUNT  CUSTDIST
-----

```

```

0      50004
9      6641
10     6566
11     6058
8      5949
12     5553
13     4989
19     4748
7      4707
18     4625
15     4552
17     4530
14     4484

```

```

20     4461
16     4323
21     4217
22     3730
6      3334
23     3129
24     2622
25     2079
5      1972
26     1593
27     1185
4      1033
28     869
29     559
3      398
30     373
31     235
2      144
32     128
33     71
34     48
35     33
1      23
36     17
37     7
40     4
38     4
39     2
41     1

```

(42 rows affected)

Qualification Query 14

-- using default substitutions

/* tpch 14.sql */

```

SELECT
100.00 * SUM (CASE
WHEN P_TYPE LIKE 'PROMO%' THEN L_EXTENDEDPRICE*(1-
L_DISCOUNT)
ELSE 0 END
) / SUM(L_EXTENDEDPRICE*(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')
PROMO_REVENUE
-----

```

16.380778626395540

(1 row affected)

Qualification Query 15

-- using default substitutions

/* tpch 15.sql */

```

if exists (select * from sysindexes where name = 'REVENUE0')
drop view REVENUE0

```

```

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

```

```

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

```

```

DROP VIEW REVENUE0
S_SUPPKEY S_NAME S_ADDRESS
S_PHONE TOTAL_REVENUE
-----

```

```

8449 Supplier#000008449 Wp34zim9qYFbVctdW
20-469-856-8873 1772627.2087

```

(1 row affected)

Qualification Query 16

-- using default substitutions

/* tpch 16.sql */

```

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

```

```

,P_TYPE
,P_SIZE
P_BRAND P_TYPE P_SIZE SUPPLIER_CNT
-----
Brand#41 MEDIUM BRUSHED TIN 3 28
Brand#54 STANDARD BRUSHED COPPER 14 27
Brand#11 STANDARD BRUSHED TIN 23 24
Brand#11 STANDARD BURNISHED BRASS 36 24
Brand#15 MEDIUM ANODIZED NICKEL 3 24
Brand#15 SMALL ANODIZED BRASS 45 24
Brand#15 SMALL BURNISHED NICKEL 19 24

```

..... 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

/* tpch 17.sql */

```

SELECT
SUM(L_EXTENDEDPRI)/7.0 AS AVG_YEARLY
FROM
LINEITEM
,PART
WHERE
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#23'
AND P_CONTAINER = 'MED BOX'
AND L_QUANTITY <
(
SELECT
0.2 * AVG(L_QUANTITY)
FROM LINEITEM
WHERE L_PARTKEY = P_PARTKEY
)
AVG_YEARLY
-----
348406.0542857

```

(1 row affected)

Qualification Query 18

-- using default substitutions

/* tpch 18.sql */

```

SELECT TOP 100
C_NAME
,C_CUSTKEY
,O_ORDERKEY
,O_ORDERDATE
,O_TOTALPRICE
,SUM(L_QUANTITY)
FROM
CUSTOMER
,ORDERS

```

```

.LINEITEM
WHERE
O_ORDERKEY IN
(
SELECT
L_ORDERKEY
FROM
LINEITEM
GROUP BY
L_ORDERKEY HAVING
SUM(L_QUANTITY) > 300
)
AND C_CUSTKEY = O_CUSTKEY
AND O_ORDERKEY = L_ORDERKEY
GROUP BY
C_NAME
,C_CUSTKEY
,O_ORDERKEY
,O_ORDERDATE
,O_TOTALPRICE
ORDER BY
O_TOTALPRICE DESC
,O_ORDERDATE
C_NAME      C_CUSTKEY  O_ORDERKEY  O_ORDERDATE
O_TOTALPRICE

```

```

-----
Customer#000128120      128120   4722021  1994-04-07 00:00:00.000
544089.0900      323.0000
Customer#000093392      93392    5200102  1997-01-22 00:00:00.000
425487.5100      304.0000
Customer#000015631      15631    1845057  1994-05-12 00:00:00.000
419879.5900      302.0000
Customer#000112987      112987   4439686  1996-09-17 00:00:00.000
418161.4900      305.0000

```

.... Additional rows deleted

```

Customer#000012599      12599    4259524  1998-02-12 00:00:00.000
415200.6100      304.0000
Customer#000105410      105410   4478371  1996-03-05 00:00:00.000
412754.5100      302.0000
Customer#000149842      149842   5156581  1994-05-30 00:00:00.000
411329.3500      302.0000
Customer#000010129      10129    5849444  1994-03-21 00:00:00.000
409129.8500      309.0000
Customer#000069904      69904    1742403  1996-10-19 00:00:00.000
408513.0000      305.0000
Customer#000017746      17746    6882    1997-04-09 00:00:00.000
408446.9300      303.0000
Customer#000013072      13072    1481925  1998-03-15 00:00:00.000
399195.4700      301.0000
Customer#000082441      82441    857959   1994-02-07 00:00:00.000
382579.7400      305.0000
Customer#000088703      88703    2995076  1994-01-30 00:00:00.000
363812.1200      302.0000

```

(57 rows affected)

Qualification Query 19

-- using default substitutions

/* tpch 19.sql */

```

SELECT
SUM(L_EXTENDEDPRI* (1 - L_DISCOUNT)) AS REVENUE
FROM
LINEITEM

```

```

,PART
WHERE
(
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#12'
AND P_CONTAINER IN ('SM CASE', 'SM BOX', 'SM PACK', 'SM PKG')
AND L_QUANTITY >= 1 AND L_QUANTITY <= 1 + 10
AND P_SIZE BETWEEN 1 AND 5
AND L_SHIPMODE IN ('AIR', 'AIR REG')
AND L_SHIPINSTRUCT = 'DELIVER IN PERSON'
)
OR
(
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#23'
AND P_CONTAINER IN ('MED BAG', 'MED BOX', 'MED PKG', 'MED
PACK')
AND L_QUANTITY >= 10 AND L_QUANTITY <= 10 + 10
AND P_SIZE BETWEEN 1 AND 10
AND L_SHIPMODE IN ('AIR', 'AIR REG')
AND L_SHIPINSTRUCT = 'DELIVER IN PERSON'
)
)
OR
(
P_PARTKEY = L_PARTKEY
AND P_BRAND = 'Brand#34'
AND P_CONTAINER IN ('LG CASE', 'LG BOX', 'LG PACK', 'LG PKG')
AND L_QUANTITY >= 20 AND L_QUANTITY <= 20 + 10
AND P_SIZE BETWEEN 1 AND 15
AND L_SHIPMODE IN ('AIR', 'AIR REG')
AND L_SHIPINSTRUCT = 'DELIVER IN PERSON'
)
)
REVENUE
-----
3083843.0578

```

(1 row affected)

Qualification Query 20

-- using default substitutions

/* tpch 20.sql */

```

SELECT
S_NAME
,S_ADDRESS
FROM
SUPPLIER
,NATION
WHERE
S_SUPPKEY IN
(
SELECT
PS_SUPPKEY
FROM
PARTSUPP
WHERE
PS_PARTKEY IN
(
SELECT
P_PARTKEY
FROM
PART
WHERE
P_NAME LIKE 'forest%'
)
)
AND PS_AVAILQTY >
(

```

```

SELECT
0.5 * SUM(L_QUANTITY)
FROM
LINEITEM
WHERE
L_PARTKEY = PS_PARTKEY
AND L_SUPPKEY = PS_SUPPKEY
AND L_SHIPDATE >= '1994-01-01'
AND L_SHIPDATE < DATEADD(YY,1,'1994-01-01')
)
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'CANADA'
ORDER BY
S_NAME
S_NAME          S_ADDRESS
-----
Supplier#00000020  iybAE,RmTymrZVYaFZva2SH,j
Supplier#00000091
YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197  YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226  83qOdU2EYRdPQAQhEtn GRZEd
Supplier#000009601  51m637bO,Rw5DnHWFUvLacRx9
Supplier#000009709  rRnCbHYgDgl9PZYnyWKVYSUW0vKg
Supplier#000009753  wLhVEcRmd7PkJF4FBnGK7Z

```

.... Additional rows deleted ...

```

Supplier#000009796  z,y4Idmr15DOvPUqYG
Supplier#000009799  4wNjXGa4OKW1
Supplier#000009811  E3iuyq7UnZxU7oPZle2Gu6
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

/* tpch 21.sql */

```

SELECT TOP 100
S_NAME
,COUNT(*) AS NUMWAIT
FROM
SUPPLIER
,LINEITEM L1
,ORDERS
,NATION
WHERE
S_SUPPKEY = L1.L_SUPPKEY
AND O_ORDERKEY = L1.L_ORDERKEY
AND O_ORDERSTATUS = 'F'
AND L1.L_RECEIPTDATE > L1.L_COMMITDATE
AND EXISTS
(
SELECT
*
FROM
LINEITEM L2
WHERE
L2.L_ORDERKEY = L1.L_ORDERKEY
AND L2.L_SUPPKEY <> L1.L_SUPPKEY

```

```

)
AND NOT EXISTS
(
SELECT
*
FROM
LINEITEM L3
WHERE
L3.L_ORDERKEY = L1.L_ORDERKEY
AND L3.L_SUPPKEY <> L1.L_SUPPKEY
AND L3.L_RECEIPTDATE > L3.L_COMMITDATE
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'SAUDI ARABIA'
GROUP BY
S_NAME
ORDER BY
NUMWAIT DESC
,S_NAME
S_NAME          NUMWAIT
-----
Supplier#000002829      20
Supplier#000005808      18
Supplier#000000262      17
Supplier#000000496      17
Supplier#000002160      17
Supplier#000002301      17
Supplier#000002540      17
Supplier#000003063      17
Supplier#000005178      17
Supplier#000008331      17
Supplier#000002005      16
Supplier#000002095      16
Supplier#000005799      16
Supplier#000005842      16
Supplier#000006450      16
Supplier#000006939      16
Supplier#000009200      16
Supplier#000009727      16
Supplier#000000486      15
Supplier#000000565      15
Supplier#000001046      15
Supplier#000001047      15
Supplier#000001161      15

```

... Additional rows deleted ...

```

Supplier#000001336      15
Supplier#000001435      15
Supplier#000003075      15
Supplier#000003335      15
Supplier#000005649      15
Supplier#000006027      15
Supplier#000006795      15
Supplier#000006800      15
Supplier#000006824      15
Supplier#000007131      15
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

/* tpch 22.sql */

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

```
-----
13      888      6737713.9900
17      861      6460573.7200
18      964      7236687.4000
23      892      6701457.9500
29      948      7158866.6300
30      909      6808436.1300
31      922      6806670.1800
```

(7 rows affected)

Appendix D: Seeds and Query Substitution Parameters

Stream0 Seed : 621024923

14	1994-04-01						
2	18	BRASS	EUROPE				
9	magenta						
20	moccasin	1997-01-01	RUSSIA				
6	1996-01-01	0.08	25				
17	Brand#32	SM DRUM					
18	313						
8	CHINA	ASIA	LARGE ANODIZED NICKEL				
21	UNITED STATES						
13	pending	packages					
3	FURNITURE	1995-03-24					
22	22	26	27	32	17	18	
	13						
16	Brand#53	SMALL POLISHED	15	16	50		
	46	34	35	30	4		
4	1996-09-01						
11	MOZAMBIQUE	0.0000010000					
15	1993-09-01						
1	105						
10	1994-04-01						
19	Brand#13	Brand#55	Brand#44	1	15	23	
5	MIDDLE EAST	1996-01-01					
7	VIETNAM	CHINA					
12	RAIL	TRUCK	1994-01-01				

Stream1 Seed : 621024924

21	PERU						
3	AUTOMOBILE	1995-03-09					
18	314						
5	AFRICA	1997-01-01					
11	EGYPT	0.0000010000					
7	JORDAN	IRAN					
6	1997-01-01	0.06	24				
20	almond	1996-01-01	JAPAN				
17	Brand#34	LG BAG					
12	AIR	TRUCK	1994-01-01				
16	Brand#33	ECONOMY ANODIZED	42	14			
	11	34	31	8	44	6	
15	1996-04-01						
13	pending	requests					
10	1995-01-01						
2	6	NICKEL	AMERICA				
8	IRAN	MIDDLE EAST	MEDIUM POLISHED BRASS				
14	1994-07-01						
19	Brand#21	Brand#43	Brand#43	6	16	30	
9	lavender						
22	22	21	33	24	12	19	
	31						
1	113						
4	1994-06-01						

Stream2 Seed : 621024925

6	1997-01-01	0.03	24				
17	Brand#31	LG PKG					
14	1994-10-01						
16	Brand#23	STANDARD BURNISHED	34	18			
	26	35	3	15	46	33	
19	Brand#23	Brand#21	Brand#32	1	17	27	
10	1993-10-01						
9	honeydew						
2	44	TIN	MIDDLE EAST				
15	1993-12-01						
8	BRASS	BRAZIL	AMERICA	MEDIUM BURNISHED			
5	AMERICA	1997-01-01					
22	31	33	11	27	26	25	
	30						
12	REG AIR	TRUCK	1994-01-01				
7	ETHIOPIA	BRAZIL					
13	unusual	requests					
18	312						
1	60						
4	1996-12-01						
20	khaki	1994-01-01	BRAZIL				
3	FURNITURE	1995-03-26					
11	PERU	0.0000010000					
21	INDONESIA						

Stream3 Seed : 621024926

8	ROMANIA	EUROPE	SMALL BRUSHED BRASS				
5	ASIA	1997-01-01					
4	1994-09-01						
6	1997-01-01	0.09	25				
17	Brand#33	LG DRUM					
7	RUSSIA	ROMANIA					
1	68						
18	313						
22	26	20	15	33	18	13	
	14						
14	1995-02-01						
9	frosted						
10	1994-07-01						
15	1996-07-01						
11	ETHIOPIA	0.0000010000					
20	sienna	1993-01-01	MOZAMBIQUE				
2	31	COPPER	AMERICA				
21	ARGENTINA						
19	Brand#25	Brand#14	Brand#32	7	18	23	
13	unusual	requests					
16	Brand#53	MEDIUM POLISHED	2	5			
	3	8	24	46	14	6	
12	SHIP	TRUCK	1995-01-01				
3	MACHINERY	1995-03-11					

Stream4 Seed : 621024927

5	EUROPE	1997-01-01				
21	CHINA					
14	1995-05-01					
19	Brand#32	Brand#42	Brand#21	2	19	30
15	1994-04-01					
17	Brand#35	MED BAG				
12	MAIL	TRUCK	1994-01-01			
6	1997-01-01		0.06	24		
4	1997-04-01					
9	dim					
8	IRAQ	MIDDLE EAST	SMALL PLATED BRASS			
16	Brand#33	ECONOMY BRUSHED		9	13	
	38	14	46	20	37	19
11	CHINA	0.0000010000				
2	19	BRASS	MIDDLE EAST			
10	1993-04-01					
18	315					
1	76					
13	unusual	requests				
7	KENYA	IRAQ				
22	25	19	12	13	30	15
	26					
3	FURNITURE		1995-03-28			
20	dim	1996-01-01	FRANCE			

Stream5 Seed : 621024928

21	IRAN					
15	1996-10-01					
4	1995-01-01					
6	1997-01-01		0.04	24		
7	FRANCE	CANADA				
16	Brand#23	SMALL BURNISHED			27	4
	22	43	35	14	2	38
19	Brand#34	Brand#35	Brand#25	7	20	26
18	312					
14	1995-08-01					
22	31	18	20	26	12	22
	10					
11	FRANCE	0.0000010000				
13	unusual	accounts				
3	MACHINERY		1995-03-13			
1	84					
2	7	NICKEL	ASIA			
5	MIDDLE EAST		1997-01-01			
8	CANADA	AMERICA				SMALL ANODIZED STEEL
20	peach		1995-01-01			VIETNAM
12	TRUCK	MAIL	1995-01-01			
17	Brand#32	MED PKG				
10	1994-02-01					
9	cornflower					

Appendix E: Refresh Function Source Code

E.1 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_ORDERKEY),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_ORDERKEY),CODEPA
GE='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=MAX(O_ORDE
RKEY) FROM #NEWORDERS
SET @range = (@max_orderkey - @min_orderkey) / @insert_sets

--
-- This handles the case when the max-min/insert_sets is less than 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 LINTeITEM 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 #NEWLINITEM
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

```

E.2 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=MAX(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 than 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

F.1 Setup.cmd

```
echo off

rem
rem Modify the following parameters for your configuration
rem

set DB=tpch100g
rem
rem set sql's 'sa' user password here
rem
set PW=

set HOMEDRIVE=C:
set HOMEDIR=(HP_TPCH\TPCH_Script)\Setup
set OUTPUTDRIVE=c:
set OUTPUTDIR=(HP_TPCH\TPCH_Script)\Output
set SCALEFACTOR=100
set DBGEN_SEGMENTS=24
set DBGEN_PARALLELISM=8
set FLATFILEDRIVE=z:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=\
set RF1_PARALLELISM=16
set RF2_PARALLELISM=16
set UPDATEDRIVE=z:
set UPDATEDIR=(UF_Flatfiles
set UPDATE_SETS=18

set DoDBGEN=FALSE
set DoDBCREATE=FALSE
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
if NOT EXIST %HOMEDRIVE%%HOMEDIR% goto :ERROR_EXIT
if NOT EXIST %OUTPUTDRIVE%%OUTPUTDIR% goto :ERROR_EXIT
if NOT EXIST %UPDATEDRIVE%%UPDATEDIR% goto :ERROR_EXIT

echo Finding next output directory in
%OUTPUTDRIVE%%OUTPUTDIR%
set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%HOMEDRIVE%%HOMEDIR%\%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND

set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUMBER%
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%

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

rem
rem DBGEN invokes dbgen.exe in parallel
rem

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

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

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

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

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

osql -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
osql -Usa -P%PW% -i %DB%\CreateDatabase.sql -o
%OUTPUTPATH%\CreateDatabase.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
```

```

rem osql -Usa -P%PW% -Q"sp_dboption %DB%,trunc',TRUE" -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem osql -Usa -P%PW% -Q"sp_dboption %DB%,'select into',TRUE" -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT
rem osql -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

osql -Usa -P%PW% -Q"sp_dboption %DB%,trunc',TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%,'select into',TRUE" -b
if ERRORLEVEL 1 goto :ERROR_EXIT

echo Dropping and Re-Creating Tables
osql -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
osql -Usa -P%PW% -d%DB% -Q"create table LOADTIMES(STEP
char(35),TIMESTAMP datetime)" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -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 osql -Usa -P%PW% -d%DB% -
Q"drop table %%i" -o %OUTPUTPATH%\Drop_Table_%%i.out
osql -Usa -P%PW% -d%DB% -i%DB%\CreateTables.sql -o
%OUTPUTPATH%\CreateTables.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -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
osql -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
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values
('Nation/Region insert begin',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"bulk insert NATION from
'%FLATFILEDRIVE%\%FLATFILEDIR%1%FLATFILESUBDIR%\Natio
n.tbl' with (FieldTerminator = '|', RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_Nation.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i%DB%\CreateNATIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"bulk insert REGION from
'%FLATFILEDRIVE%\%FLATFILEDIR%1%FLATFILESUBDIR%\Regio
n.tbl' with (FieldTerminator = '|', RowTerminator ='\n',tablock)" -o
%OUTPUTPATH%\BulkInsert_Region.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i%DB%\CreateREGIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -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 %1
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values (%1 bulk
insert begin',getdate())" -l 300
for /1 %%j in (1,1,%DBGEN_PARALLELISM%) do start cmd /C Setup
BULKINSERTn %1 %%j
semaphore -wait %1 -count %DBGEN_PARALLELISM%
echo Starting create indexes for %1
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values (%1
create index begin',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i %DB%\Create%1Indexes.sql -o
%OUTPUTPATH%\Create%1Indexes.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values (%1
end',getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :EOF

:BULKINSERTn
for /1 %%k in
(%3,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS%) do call
:BULKINSERTn2 BULKINSERTn2 %2 %%k
semaphore -release %2
goto :EOF

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

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

echo Setting Cleanup Options
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Cleanup
start',getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_createstats" -o
%OUTPUTPATH%\CreateStats.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_dboption '%DB%',auto create
statistics','OFF" -o %OUTPUTPATH%\AutoCreateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_dboption '%DB%',auto update
statistics','OFF" -o %OUTPUTPATH%\AutoUpdateStats.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'LINEITEM',
'disallowpagelocks', 'TRUE" -o
%OUTPUTPATH%\DisallowPageLocksLINEITEM.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'ORDERS',
'disallowpagelocks', 'TRUE" -o
%OUTPUTPATH%\DisallowPageLocksOrders.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i CreateRF1Proc.sql -o
%OUTPUTPATH%\CreateRF1Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i CreateRF2Proc.sql -o
%OUTPUTPATH%\CreateRF2Proc.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'NATION','pintable','1" -o %OUTPUTPATH%\pinNATION.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT

```

```

osql -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 osql -Usa -P%PW% -d%DB% -Q"exec sp_tableoption
'SUPPLIER','pintable',1" -o %OUTPUTPATH%\pinSUPPLIER.out -b
rem if ERRORLEVEL 1 goto :ERROR_EXIT

osql -Usa -P%PW% -Q"sp_dboption %DB%, 'trunc', FALSE" -b
>%OUTPUTPATH%\dboptionTrunOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'select', FALSE" -b
>%OUTPUTPATH%\dboptionSelOFF.out
if ERRORLEVEL 1 goto :ERROR_EXIT

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

osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('LOAD
end',getdate())"
osql -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 Francois' dbtables-ms.sql script
osql -Usa -P%PW% -d%DB% -i dbtables-ms.sql -o
%OUTPUTPATH%\dbtables-ms.out
osql -Usa -P%PW% -d%DB% -i SetupReport.sql -o
%OUTPUTPATH%\SetupReport.out
rem echo Optional step to check database validity
rem osql -Usa -P%PW% -dtpch300g -Q"dbcc checkdb('tpch300g') with
PHYSICAL_ONLY" -o %OUTPUTPATH%\CheckDb.out
rem echo Optional, and very expensive, step to check LINEITEM and
ORDERS validity
rem osql -Usa -P%PW% -dtpch300g -Q"dbcc checktable('LINEITEM')" -o
%OUTPUTPATH%\CheckLINEITEM.out
rem osql -Usa -P%PW% -dtpch300g -Q"dbcc checktable('ORDERS')" -o
%OUTPUTPATH%\CheckORDERS.out
echo Done! Check for output in %OUTPUTPATH%
goto :EOF

:ERROR_EXIT
echo Setup aborted due to errors

```

```

echo Check output in %OUTPUTPATH%
exit /B

```

F.2 Run.cmd

```

echo off

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

set DB=tpch100g
set HOMEDRIVE=c:
set HOMEDIR=\HP_TPCH\TPCH_Script\Run
set OUTPUTDRIVE=c:
set OUTPUTDIR=\HP_TPCH\TPCH_Script\Output
set UPDRIVE=z:
set UPDRIVE=UF_Flatfiles
set UPDATESET=7
set UPDATESEGMENTS=16
set SEED=623031651
set SCALEFACTOR=100
set STREAMS=5

set DoRESTORE=FALSE
set DoSETUP=FALSE
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
%HOMEDRIVE%\OUTPUTDIR%\%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND
set
OUTPUTPATH=%OUTPUTDRIVE%\OUTPUTDIR%\%OUTPUTNUM
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%

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

rem
rem Use the Restore.sql script in SETUP
rem

echo Starting Restore
osql -E -i ..\Setup\%DB%\Restore.sql -b

```

```

osql -E -d%DB% -i ..\Setup\CreateRF1Proc.sql
osql -E -d%DB% -i ..\Setup\CreateRF2Proc.sql
if ERRORLEVEL 1 goto :ERROR_EXIT

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

rem
rem Create the Power and five Throughput Streams
rem

echo QGening the Power and Throughput Streams
pushd templates
REM for /l %%i in (0,1,%STREAMS%) do %HOMEDIR%\qgen -s
%SCALEFACTOR% -r %SEED% -p%%i > %HOMEDIR%\Stream%%i.sql
%HOMEDIR%\qgen -s %SCALEFACTOR% -r 623031651 -p0 >
%HOMEDIR%\Stream0.sql
%HOMEDIR%\qgen -s %SCALEFACTOR% -r 623031652 -p1 >
%HOMEDIR%\Stream1.sql
%HOMEDIR%\qgen -s %SCALEFACTOR% -r 623031653 -p2 >
%HOMEDIR%\Stream2.sql
%HOMEDIR%\qgen -s %SCALEFACTOR% -r 623031654 -p3 >
%HOMEDIR%\Stream3.sql
%HOMEDIR%\qgen -s %SCALEFACTOR% -r 623031655 -p4 >
%HOMEDIR%\Stream4.sql
%HOMEDIR%\qgen -s %SCALEFACTOR% -r 623031656 -p5 >
%HOMEDIR%\Stream5.sql
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
osql -E -d%DB% -Q"if exists (select * from sysindexes where name =
'TIMES') drop table TIMES"
osql -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
osql -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%
osql -E -d%DB% -Q"insert into TIMES values ('RF1',0,getdate())"
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF1 %UPDATE_SEGMENT% %%i
semaphore -wait RF1 -count %UPDATESEGMENTS%

rem
rem Execute the PowerRun Queries
rem

:STREAM0

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

rem
rem Execute the RF2 Transaction set in Parallel
rem

if NOT '%DoPOWERRefresh%' == 'TRUE' goto :POWERDONE
echo Running the RF2s
osql -E -d%DB% -Q"insert into TIMES values ('RF2',0,getdate())"
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF2 %UPDATE_SEGMENT% %%i
semaphore -wait RF2 -count %UPDATESEGMENTS%

:POWERDONE
osql -E -d%DB% -Q"insert into TIMES values ('QXX',0,getdate())" -I300

rem
rem Execute the THROUGHPUT Run
rem

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

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

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

:THROUGHPUT_STREAM
osql -E -d%DB% -iStream%2.sql -o %OUTPUTPATH%\Stream%2.out
semaphore -release THROUGHPUT_QUERIES
goto :EOF

:THROUGHPUT_REFRESH
if %1 neq 1 osql -E -d%DB% -Q"insert into TIMES values
('RF1',%1,getdate())"
set /a UPDATE_SEGMENT=%1+%UPDATESET%
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF1 %UPDATE_SEGMENT% %%i
semaphore -wait RF1 -count %UPDATESEGMENTS%
osql -E -d%DB% -Q"insert into TIMES values ('RF2',%1,getdate())"
for /l %%i in (1,1,%UPDATESEGMENTS%) do start /abovenormal cmd /C
Run RF2 %UPDATE_SEGMENT% %%i
semaphore -wait RF2 -count %UPDATESEGMENTS%
osql -E -d%DB% -Q"insert into TIMES values ('RFX',%1,getdate())"
goto :EOF

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

:DONE
osql -E -d%DB% -iReport.sql -o%OUTPUTPATH%\Report.out -w120
bcp %DB%..TIMES out %OUTPUTPATH%\TIMES.bcp -Usa -P -n
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 osql -E -1 120 -d%DB% -Q"exec RF1
"%UPDATEDRIVE%%3%UPDATEDIR%',%2,%3,SCALEFACTOR%" -
o %OUTPUTPATH%\RF1_%2_%3.out
rem Dani osql -E -1 120 -d%DB% -Q"exec RF1
"%UPDATEDRIVE%%3%UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF1_%2_%3.out
osql -E -1 120 -d%DB% -Q"exec RF1
"%UPDATEDRIVE%%3%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 osql -E -1 120 -d%DB% -Q"exec RF2
"%UPDATEDRIVE%%3%UPDATEDIR%',%2,%3,SCALEFACTOR%" -
o %OUTPUTPATH%\RF2_%2_%3.out
rem Dani osql -E -1 120 -d%DB% -Q"exec RF2
"%UPDATEDRIVE%%3%UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF2_%2_%3.out
osql -E -1 120 -d%DB% -Q"exec RF2
"%UPDATEDRIVE%%3%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%
exit /B

```

F.3 Semaphore.cpp

```

#define _WIN32_WINNT 0x0400
#include <windows.h>
#include <string.h>
#include <iostream.h>
#include <stdlib.h>
#include <stdio.h>
#include <assert.h>
void main(int argc, char **argv)
{
typedef enum { eUnknown, eWait, eSignal, eRelease, eWaitList,
eWaitGroup } OPERATION;
OPERATION eOP = eUnknown;
int iCount;
int i;
HANDLE hSemaphore;
HANDLE *pHandles;
SYSTEMTIME Time;
if (argc < 3)
goto usage;
if (_stricmp(argv[1], "-wait") == 0)
eOP = eWait;
else if (_stricmp(argv[1], "-signal") == 0)
eOP = eSignal;
else if (_stricmp(argv[1], "-release") == 0)
eOP = eRelease;
else if (_stricmp(argv[1], "-waitlist") == 0)

```

```

eOP = eWaitList;
else if (_stricmp(argv[1], "-waitgroup") == 0)
eOP = eWaitGroup;
else goto usage;
if ((eOP == eWait) || (eOP == eRelease))
{
// argv[2] is the semaphore name
// if -count option specified, then there must be exactly 5 args
if ((argc == 5) && (_stricmp(argv[3], "-count") == 0))
{
iCount = atoi(argv[4]);
if (iCount < 1)
goto usage;
}
// check that
else if (argc != 3)
goto usage;
else
iCount = 1;
}
else if (eOP == eWaitGroup)
{
if ((argc != 5) || (_stricmp(argv[3], "-count") != 0))
goto usage;
iCount = atoi(argv[4]);
if (iCount < 1)
goto usage;
}
else
// eWaitList or eSignal
iCount = argc - 2;
if (eOP == eWait)
{
printf("semaphore name = %s\n", argv[2]);
printf("semaphore count = %d\n", iCount);
hSemaphore = CreateSemaphore( NULL, 0, 2000000000,
argv[2] );
if (hSemaphore == NULL)
{
DWORD dwError = GetLastError();
cout << "ERROR* CreateSemaphore returned "
<< dwError << endl;
exit(EXIT_FAILURE);
}
for (i=0; i<iCount; i++)
{
WaitForSingleObject( hSemaphore, INFINITE );
GetLocalTime( &Time );
printf( "%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d
-released\n",
Time.wYear, Time.wMonth,
Time.wDay, Time.wHour, Time.wMinute, Time.wSecond );
}
CloseHandle( hSemaphore );
}
else if ((eOP == eWaitGroup) || (eOP == eWaitList))
{
char **szEventNames;
szEventNames = new char*[iCount];
char szTmp[128];
printf("event-list =");
for (i=0; i<iCount; i++)
{
if (eOP == eWaitGroup)
{
wsprintf( szTmp, "%s.%d", argv[2],
i+1 );
szEventNames[i] = new
char[strlen(szTmp)+1];
strcpy( szEventNames[i], szTmp );
}

```

```

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

```

```

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

```

Appendix G: Price Quotations

EMS Computing

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USB 10/100 FETH EXT ADPT SOHO NTWK F

\$29.95
MFG # F5D5050



THE BELKIN USB 10/100 ETHERNET ADAPTER FOR PC THE EASIEST SOLUTION FOR CONNECTING YOUR LAPTOP DESKTOP COMPUTERS TO A BROADBAND INTERNET MODEM A 10/100 BASE-T ETHERNET NETWORK. EASY TO INSTALL PLUGS INTO ANY AVAILABLE USB PORT AND LETS YOU CONNECT TO A CABLE OR DSL MODEM AS WELL AS SHARE FILES AND PRINTERS WITH COMPUTERS THAT ARE CONNECTED TO THE NETWORK. THIS SOLUTION ADDS AN RJ45 ETHERNET PORT TO YOUR PC VIA THE COMPUTER.

CHECK STOCK

ADD TO WISH LIST

Summary

- **Bus/Interface Type:** USB
- **Compliances/Certifications:** USB 1.0 , USB 1.1
- **Configuration:** Plug and Play (PnP)
- **Drivers/NOS Support:** Windows 2000 , Windows 98 , Windows ME
- **Form Factor:** External
- **LAN Connectors / Channels:** Fast Ethernet 10/100BaseTX-RJ45
- **Manufacturer:** BELKIN - COMPONENTS
- **Misc Features:** Attached USB Cable , Auto-Detection , LED(s) , Plug and Play
- **Network Type:** Ethernet , Fast Ethernet
- **Power Characteristics:** Host Supplied
- **Quantity:** Single Pack
- **Standards:** IEEE 802.3 , IEEE 802.3u
- **Type Device:** Network Adapter
- **Weight:** 0.45 lbs

QUICK OVERVIEW

- LIFETIME WARRANTY
- CONNECT YOUR PC TO A NETWORK OR BROADBAND MODEM
- SHARE YOUR INTERNET CONNECTION- PERFECT FOR MULTIPLAYER GAMING ACCESS AUDIO AND VIDEO AND OTHER HIGH-END INTERNET FUNCTIONS
- INSTALLS EASILY INTO ANY AVAILABLE USB PORT- ELIMINATES THE NEED OF OPENING YOUR PC CASE
- COMPACT DESIGN ALLOWS YOU TO ACCESS THE HOME NETWORK WHILE STAYING AWAY FROM HOME
- EXCHANGE DATA QUICKLY BETWEEN CONNECTED PCS AND NOTEBOOKS SHARE FILES AND PERIPHERALS AND COMMUNICATE VIA E-MAIL
- AUTO-DETECTION FEATURE OFFERS FUTURE SCALABILITY OF 10BASE-T NETWORKS
- COMPLIANT WITH USB 1.0 AND 1.1 AND ETHERNET IEEE 802.3 AND 802.3U STANDARDS
- MONITOR NETWORK TRAFFIC AND TROUBLESHOOTING WITH LED INDICATORS
- PLUG AND PLAY COMPATIBLE
- SUPPORTS WIN98 ME 2000
- COMPATIBLE PLUG-AND-PLAY
- FREE TECHNICAL SUPPORT

SYSTEM AND OTHER REQUIREMENTS

http://www.ems.com/specs.asp?pid="367513"&sid="3d0e373603016dc0274241de460e05de"&price="\$29.95 6/17/2002

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

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

Microsoft

June 19, 2002

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

Daniel:

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	Price
810-00652	SQL Server 2000 Enterprise Edition <i>Server license only - No CALs</i> <i>Discount schedule: Open Program - No Level</i>	\$5,549
359-00532	SQL Server 2000 Client License <i>50 Client Licenses @ \$146.00 each</i> <i>Discount schedule: Open Program - No Level</i>	\$7,300
C10-00475	Windows 2000 Advanced Server <i>Server license only - No CALs</i> <i>Discount schedule: Open Program - No Level</i>	\$2,399
659-00390	Visual Studio Professional 6.0 Win32	\$ 1,079
	5-year maintenance for above software (\$2095 per year)	\$9,750

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: PHdapo0219061141

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