



# Hewlett-Packard Company

---

TPC Benchmark™ H  
Full Disclosure Report  
for  
HP ProLiant DL760G2 8P  
using  
Microsoft SQL Server 2000 Enterprise Edition  
and  
Windows Server 2003, Enterprise Edition

---

**First Edition**  
**September 2003**

First Edition – September, 2003

Hewlett-Packard Company (HP), the Sponsor of this benchmark test, believes that the information in this document is accurate as of the publication date. The information in this document is subject to change without notice. The Sponsor assumes no responsibility for any errors that may appear in this document.

The pricing information in this document is believed to accurately reflect the current prices as of the publication date. However, the Sponsor provides no warranty of the pricing information in this document.

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

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

Copyright 2003 Hewlett-Packard Company.

All rights reserved. Permission is hereby granted to reproduce this document in whole or in part provided the copyright notice printed above is set forth in full text or on the title page of each item reproduced.

### **Printed in the United States September, 2003**

NonStop, ProLiant DL760G2, and ProLiant are registered trademarks of Hewlett-Packard Company.

Microsoft, Windows 2003 and SQL Server 2000 are registered trademarks of Microsoft Corporation.

TPC Benchmark, TPC-H, QppH, QthH and QphH are trademarks of the Transaction Processing Performance Council.

All other brand or product names mentioned herein must be considered trademarks or registered trademarks of their respective owners.

# Abstract

## Overview

This report documents the methodology and results of the TPC Benchmark™ H test conducted on the HP ProLiant DL760G2 using Microsoft SQL Server 2000 Enterprise Edition SP3, 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 2003 Enterprise Edition.

The benchmark results are summarized in the following table.

<b>Hardware</b>	<b>Software</b>	<b>Total System Cost</b>	<b>QppH @ 300GB</b>	<b>QthH @ 300GB</b>	<b>QphH @ 300GB</b>	<b>\$ / QphH @ 300GB</b>
<b>HP ProLiant DL760G2 8P</b>	<b>Microsoft SQL Server 2000 SP3 Windows Server 2003, Enterprise Edition</b>	<b>\$172,288</b>	<b>5630.5</b>	<b>2932.8</b>	<b>4063.6</b>	<b>\$ 43</b>

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.

Requests for this TPC Benchmark H Full Disclosure Report should be sent to:

Transaction Processing Performance Council (TPC)  
c/o Shanley Public Relations  
777 North First Street, Suite 600  
San Jose, CA 95112 USA  
Telephone: (408) 295-8894  
Fax: (408) 295-9768

or

Hewlett-Packard Company  
Database Performance Engineering  
P.O. Box 692000  
Houston, TX 77269-2000

## Standard and Executive Summary Statements

Pages ii-iv contains the Executive Summary and Numerical Quantities Summary of the benchmark results for the HP ProLiant DL760G2.

## Auditor

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



# HP ProLiant DL760G2 8P

TPC-H Rev. 2.0

Report Date:  
Sep 26, 2003

Total System Cost

**\$172,288**

Composite Query per Hour Metric

**4063.6**

QphH@300GB

Price / Performance

**\$43**

\$ / QphH@300GB

Database Size

**300GB**

Database Manager

**Microsoft SQL  
Server 2000  
Enterprise Edition**

Operating System

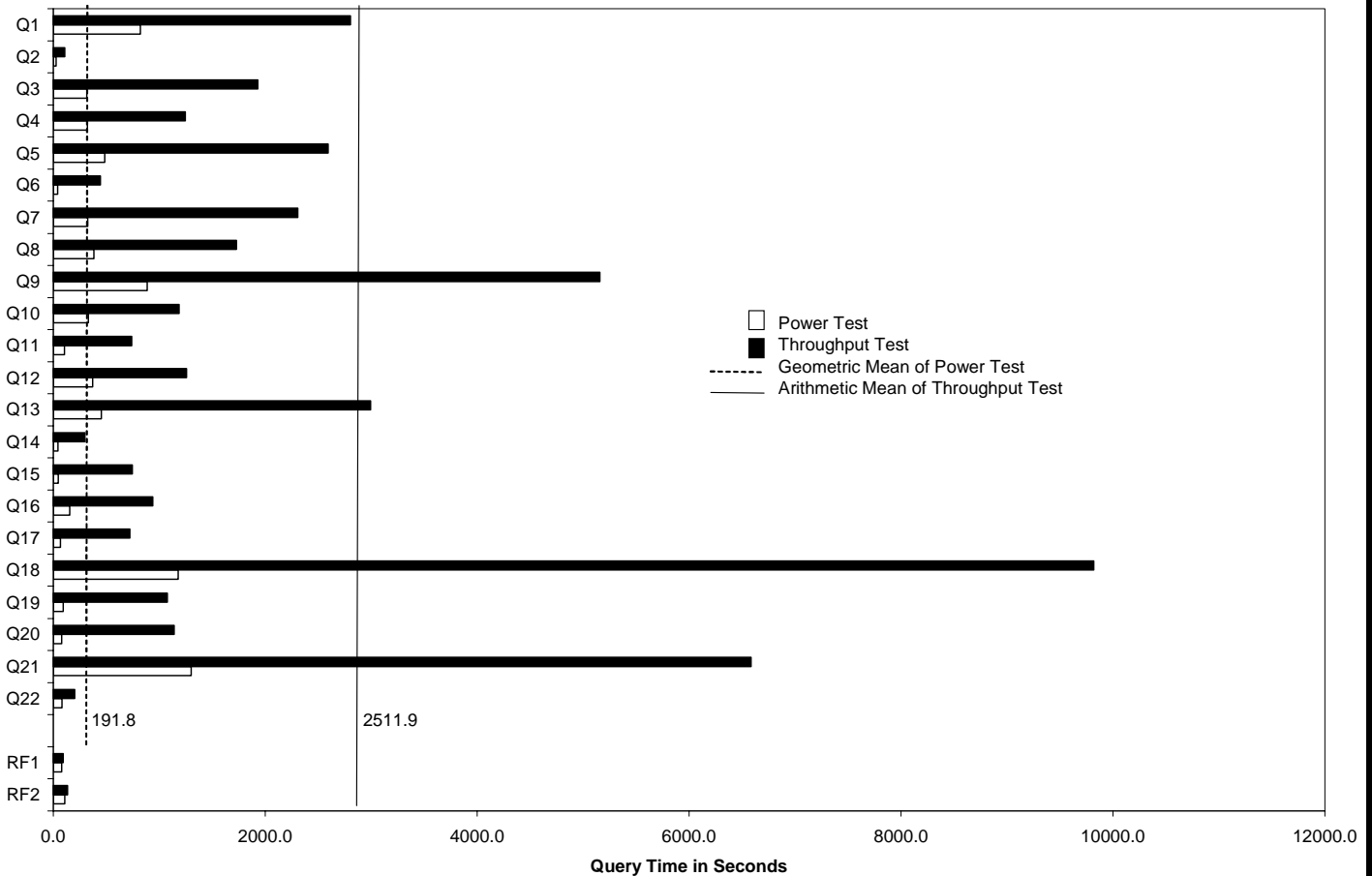
**Windows Server  
2003, Enterprise  
Edition**

Other Software

**Visual C++  
.Net Standard**

Availability Date

**Sep 26, 2003**



Database Load Time = 11:05:44

Load Included Backup: Y

Total Data Storage / Database Size = 8.48

RAID (Base tables only): N

RAID (Base tables and auxiliary data structures): N

RAID (All): N

**System Configuration:**

- Processors :** 8 x Intel Xeon MP 2.8 GHz with 2MB L2 cache
- Memory :** 16 GB memory
- Disk Controllers :** 5x Smart Array 5302
- Disks :** 142 x 18.2 GB 15K RPM drives, 2x 72GB 15K RPM drives
- Total Disk Storage:** 2542.6 GB

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

**HP ProLiant DL760 G2 8P**

TPC-H Rev. 2.0

Report Date:

26-Sep-03

Description	Part Number	Third Party	Unit Price	Qty	Extended Price	3 yr. Maint. Price
<b>Server Hardware</b>						
<b>Brand Pricing</b>						
ProLiant DL760 G2 X2.8-2M 4P 4G - 4GB addressable RAM, 1GB redundant RAM - integrated Smart Array 5i controller	326703-B21	1	49,199	1	49,199	
X2.8-2M 4P DL760 G2	334037-B21	1	29,699	1	29,699	
512 REG PC133	236853-B21	1	339	22	7,458	
Monitor 15" S5500	261602-169	1	129	1	129	
PS/2 scroll mse HP carbonite	DK725AV	1	10	1	10	
HP Enhanced Keyboard	DG170AV#ABA	1	10	1	10	
Rack Model 9142 (42U - Opal) - Flat Pallet	120663-B21	1	1,321	1	1,321	
Rack Sidewall Kit	120670-B21	1	207	1	207	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	299	2	598	
72 GB Hot-Plug Wide U320 15K 1"	286778-B22	1	909	2	1,818	
UPS T1500 XR	204155-002	1	621	1	621	
Servers 700 Series CarePaq, 3yr 7x24, 4hr resp.	401784-002	1	3,390	1		3,390
<b>Subtotal</b>					<b>91,070</b>	<b>3,390</b>
<b>Storage</b>						
Smart Array 5302/128	283552-B21	1	1,299	5	6,495	
StorageWorks Enclosure Model 4314R - Rack-mountable	190209-001	1	2,955	10	29,550	
18.2 GB Hot-Plug Wide U320 15K 1"	286775-B22	1	299	140	41,860	
18.2 GB Hot-Plug Wide U320 15K 1" (10% spare)	286775-B22	1	299	14	4,186	
CarePaq 43xx Enclosure, 3yr, 7x24, 4hr resp.	171242-002	1	157	10		1,570
<b>Subtotal</b>					<b>82,091</b>	<b>1,570</b>
<b>Hardware and Maintenance Discount</b>						
Large Purchase and Net 30 discount	16.0%	1			(\$27,706)	(\$794)
<b>Hardware Subtotal</b>					<b>145,455</b>	<b>4,166</b>
<b>Software</b>						
Microsoft SQL Server 2000 Enterprise Edition	810-00652	Microsoft	2	5,549	1	5,549
Database Server Support Package	RO-PRORS-16U-01	Microsoft	2	1,950	3	5,850
Microsoft SQL Server 2000 Client Licenses	359-00532	Microsoft	2	146	60	8,760
Windows Server 2003, Enterprise Edition	P72-00264	Microsoft	2	2,399	1	2,399
Visual C++ .Net Standard	254-00170	Microsoft	2	109	1	109
<b>Subtotal</b>					<b>16,817</b>	<b>5,850</b>
<b>Total</b>					<b>\$162,272</b>	<b>\$10,016</b>

**3-Year Cost of Ownership: \$172,288****QpH Rating: 4063.6****\$/QpH@100GB: \$43**

Pricing: 1=HP; 2= Microsoft

Note: The benchmark results and test methodology were audited by Lorna Livingtree of Performance Metrics

**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](mailto:pricing@tpc.org). Thank you.



**HP ProLiant DL760G2 8P**

TPC-H Rev. 2.0

Report Date:  
**Sep 26, 2003**

## Numerical Quantities

### Measurement Results:

Database Scale Factor	= 300
Total Data Storage / Database Size	= 8.48
Start of Database Load	= 2003-09-09 11:47:44
End of Database Load	= 2003-09-09 22:53:28
Database Load Time	= 11:05:44
Query Streams for Throughput Test	= 6
TPC-H Power	= 5630.5
TPC-H Throughput	= 2932.8
TPC-H Composite Query-per-Hour Metric (QpH@300GB)	= 4063.6
Total System Price Over 3 Years	= \$172,288
TPC-H Price/ Performance Metric (\$/QpH@300GB)	= \$43

### Measurement Intervals:

Measurement Interval in Throughput Test (Ts)	= 48608.1 seconds
--	-------------------

### Duration of Stream Execution:

Stream ID	Seed	Start Date	Start time	Stop Date	Stop Time	Duration
Stream00	909225328	9/9/2003	23:28:38	9/10/2003	1:43:59	2:15:21
Stream01	909225329	9/10/2003	1:43:59	9/10/2003	13:46:19	12:02:20
Stream02	909225330	9/10/2003	1:43:59	9/10/2003	14:50:48	13:06:49
Stream03	909225331	9/10/2003	1:43:59	9/10/2003	14:33:43	12:49:44
Stream04	909225332	9/10/2003	1:43:59	9/10/2003	14:37:56	12:53:57
Stream05	909225333	9/10/2003	1:43:59	9/10/2003	14:31:39	12:47:40
Stream06	909225334	9/10/2003	1:43:59	9/10/2003	14:48:29	13:04:30
Refresh00		9/9/2003	23:28:38	9/10/2003	1:43:59	2:15:21
Refresh01		9/10/2003	14:50:49	9/10/2003	14:54:15	0:03:27
Refresh02		9/10/2003	14:54:16	9/10/2003	14:58:11	0:03:55
Refresh03		9/10/2003	14:58:11	9/10/2003	15:02:13	0:04:02
Refresh04		9/10/2003	15:02:13	9/10/2003	15:06:08	0:03:55
Refresh05		9/10/2003	15:06:09	9/10/2003	15:10:12	0:04:03
Refresh06		9/10/2003	15:10:12	9/10/2003	15:14:07	0:03:55



# HP ProLiant DL760G2 8P

TPC-H Rev. 2.0

Report Date:  
Sep 26, 2003

## TPC-H Timing Intervals (in seconds)

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Stream 00	822.8	28.7	315.5	322.4	486.8	42.4	326.8	382.4
Stream 01	1970.8	89.6	1713.1	925.7	2653.7	406.9	2285.6	1613.6
Stream 02	3356.6	79.6	2792.7	1418.7	2509.7	103.0	2223.9	1576.3
Stream 03	1906.5	178.5	863.6	1633.6	2461.4	521.5	2211.8	2502.2
Stream 04	3030.7	108.7	1737.0	1056.9	2514.9	618.4	3428.7	1844.7
Stream 05	3329.4	128.7	1647.9	1205.9	3155.5	467.8	1690.7	1267.9
Stream 06	3244.6	67.0	2838.4	1232.2	2264.2	558.8	2008.9	1582.7
Min Qi	1906.5	67.0	863.6	925.7	2264.2	103.0	1690.7	1267.9
Max Qi	3356.6	178.5	2838.4	1633.6	3155.5	618.4	3428.7	2502.2
Avg Qi	2806.4	108.7	1932.1	1245.5	2593.2	446.1	2308.3	1731.2
Query	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Stream 00	885.9	332.4	106.3	370.6	454.3	45.8	46.3	154.7
Stream 01	3764.1	1251.9	748.8	1167.4	2466.7	192.0	213.8	867.3
Stream 02	6941.8	1510.5	1035.4	798.4	2682.1	403.2	489.6	1379.3
Stream 03	4284.5	1133.2	791.8	822.5	3938.5	308.2	320.9	973.7
Stream 04	5410.0	1098.5	395.5	902.5	2670.6	349.8	377.5	904.7
Stream 05	5416.8	927.3	553.7	2725.0	2514.1	387.1	445.6	755.0
Stream 06	5133.8	1211.9	922.8	1137.7	3702.3	155.0	2624.5	763.1
Min Qi	3764.1	927.3	395.5	798.4	2466.7	155.0	213.8	755.0
Max Qi	6941.8	1510.5	1035.4	2725.0	3938.5	403.2	2624.5	1379.3
Avg Qi	5158.5	1188.9	741.3	1258.9	2995.7	299.2	745.3	940.5
Query	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	69.2	1179.7	93.3	79.5	1302.3	82.9	79.8	110.1
Stream 01	752.7	9677.0	1918.1	1405.3	7065.9	190.6	70.4	136.2
Stream 02	1195.8	9792.8	1279.3	1814.4	3634.7	192.2	100.6	134.9
Stream 03	655.5	10148.5	1033.3	1181.3	8125.6	188.4	99.8	142.2
Stream 04	600.3	9806.7	338.9	1320.9	7732.4	190.1	99.9	135.1
Stream 05	460.5	9680.2	1266.1	650.9	7140.7	244.4	101.1	142.1
Stream 06	666.7	9821.8	628.3	482.5	5812.2	210.6	101.1	134.1
Min Qi	460.5	9677.0	338.9	482.5	3634.7	188.4	70.4	134.1
Max Qi	1195.8	10148.5	1918.1	1814.4	8125.6	244.4	101.1	142.2
Avg Qi	721.9	9821.2	1077.3	1142.6	6585.3	202.7	95.5	137.4

# Table of Contents

---

ABSTRACT .....	I
OVERVIEW .....	I
STANDARD AND EXECUTIVE SUMMARY STATEMENTS .....	I
AUDITOR .....	I
TABLE OF CONTENTS .....	II
1.0 GENERAL ITEMS.....	5
1.1 TEST SPONSOR .....	5
1.2 PARAMETER SETTINGS .....	5
1.3 CONFIGURATION ITEMS .....	5
2.0 CLAUSE 1: LOGICAL DATABASE DESIGN .....	7
2.1 TABLE DEFINITIONS .....	7
2.2 PHYSICAL ORGANIZATION OF DATABASE .....	7
2.3 HORIZONTAL PARTITIONING.....	7
2.4 REPLICATION.....	7
3.0 CLAUSE 2: QUERIES AND REFRESH FUNCTIONS RELATED ITEMS .....	8
3.1 QUERY LANGUAGE .....	8
3.2 RANDOM NUMBER GENERATION.....	8
3.3 SUBSTITUTION PARAMETERS GENERATION .....	8
3.4 QUERY TEXT AND OUTPUT DATA FROM DATABASE.....	8
3.5 QUERY SUBSTITUTION PARAMETERS AND SEEDS USED .....	8
3.6 ISOLATION LEVEL .....	9
3.7 REFRESH FUNCTIONS .....	9
4.0 CLAUSE 3: DATABASE SYSTEM PROPERTIES .....	10
4.1 ATOMICITY REQUIREMENTS .....	10
4.2 CONSISTENCY REQUIREMENTS .....	10
4.3 ISOLATION REQUIREMENTS .....	11
4.4 DURABILITY REQUIREMENTS .....	12
5.0 CLAUSE 4: SCALING AND DATABASE POPULATION .....	14
5.1 INITIAL CARDINALITY OF TABLES .....	14
5.2 DISTRIBUTION OF TABLES AND LOGS ACROSS MEDIA.....	14
5.3 MAPPING OF DATABASE PARTITIONS/REPLICATIONS .....	16
5.4 IMPLEMENTATION OF RAID .....	16
5.5 DBGEN MODIFICATIONS .....	17
5.6 DATABASE LOAD TIME .....	17
5.7 DATA STORAGE RATIO .....	17
5.8 DATABASE LOAD MECHANISM DETAILS AND ILLUSTRATION .....	17
6.0 CLAUSE 5: PERFORMANCE METRICS AND EXECUTION RULES RELATED ITEMS .....	19
6.1 STEPS IN THE POWER TEST .....	19
6.2 TIMING INTERVALS FOR EACH QUERY AND REFRESH FUNCTION .....	19
6.3 NUMBER OF STREAMS FOR THE THROUGHPUT TEST .....	19
6.4 START AND END DATE/TIMES FOR EACH QUERY STREAM .....	19
6.5 TOTAL ELAPSED TIME FOR THE MEASUREMENT INTERVAL .....	19
6.6 REFRESH FUNCTION START DATE/TIME AND FINISH DATE/TIME.....	19
6.7 TIMING INTERVALS FOR EACH QUERY AND EACH REFRESH FUNCTION FOR EACH STREAM .....	20



6.8 PERFORMANCE METRICS .....	20
6.9 THE PERFORMANCE METRIC AND NUMERICAL QUANTITIES FROM BOTH RUNS .....	20
6.11 SYSTEM ACTIVITY BETWEEN TESTS.....	20
7.0 CLAUSE 6: SUT AND DRIVER IMPLEMENTATION RELATED ITEMS.....	21
7.1 DRIVER.....	21
7.2 IMPLEMENTATION SPECIFIC LAYER (ISL) .....	21
7.3 PROFILE-DIRECTED OPTIMIZATION .....	21
8.0 CLAUSE 7: PRICING RELATED ITEMS .....	22
8.1 HARDWARE AND SOFTWARE USED.....	22
8.2 TOTAL 3 YEAR PRICE.....	22
8.3 AVAILABILITY DATE.....	22
8.4 COUNTRY-SPECIFIC PRICING.....	22
9.0 CLAUSE 9: RELATED ITEMS .....	23
9.1 AUDITORS' REPORT .....	23
APPENDIX A: TUNABLE PARAMETERS .....	26
A.1 MICROSOFT SQL SERVER 2000 VERSION .....	26
A.2 SQL SERVER 2000 INSTALLATION .....	26
A.3 SQL SERVER 2000 STARTUP PARAMETERS.....	26
A.4 MICROSOFT SQL SERVER 2000 CONFIGURATION PARAMETERS .....	26
A.5 WINDOWS 2003 CONFIGURATION.....	26
A.6 HP SMART ARRAY CONTROLLER CACHE SETTINGS AND REGISTRY ENTRIES .....	26
A.7 SYSTEM HARDWARE INFORMATION .....	27
A.8 SERVER REGISTRY PARAMETERS.....	70
APPENDIX B: DATABASE BUILD SCRIPTS .....	71
B.1 CREATEDATABASE.SQL .....	71
B.2 CREATETABLES.SQL.....	71
B.3 CREATECUSTOMERINDEXES.SQL.....	72
B.4 CREATELINEITEMINDEXES.SQL .....	72
B.5 CREATENATIONINDEXES.SQL .....	72
B.6 CREATEORDERSINDEXES.SQL .....	72
B.7 CREATEPARTINDEXES.SQL .....	73
B.8 CREATEPARTSUPPINDEXES.SQL .....	73
B.9 CREATEREGIONINDEXES.SQL .....	73
B.10 CREATESUPPLIERINDEXES.SQL.....	73
B.11 BACKUP.SQL.....	73
B.12 RESTORE.SQL.....	73
B.13 MOVETEMP.SQL .....	73
B.14 ADDTEMP.SQL.....	73
B.15 DELLOADFG.SQL.....	74
APPENDIX C: QUERY TEXT AND OUTPUT .....	75
C.1 QUALIFICATION QUERIES AND OUTPUT.....	75
APPENDIX D: SEEDS AND QUERY SUBSTITUTION PARAMETERS.....	84
APPENDIX E: REFRESH FUNCTION SOURCE CODE.....	86
E.1 CREATERF1PROC.SQL.....	86
E.2 CREATERF2PROC.SQL.....	87
APPENDIX F: IMPLEMENTATION SPECIFIC LAYER AND SOURCE CODE.....	88

F.1 SETUP.CMD .....	88
F.2 RUN.CMD .....	90
F.3 SEMAPHORE.CPP .....	92
APPENDIX G: PRICE QUOTATIONS .....	95

# 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

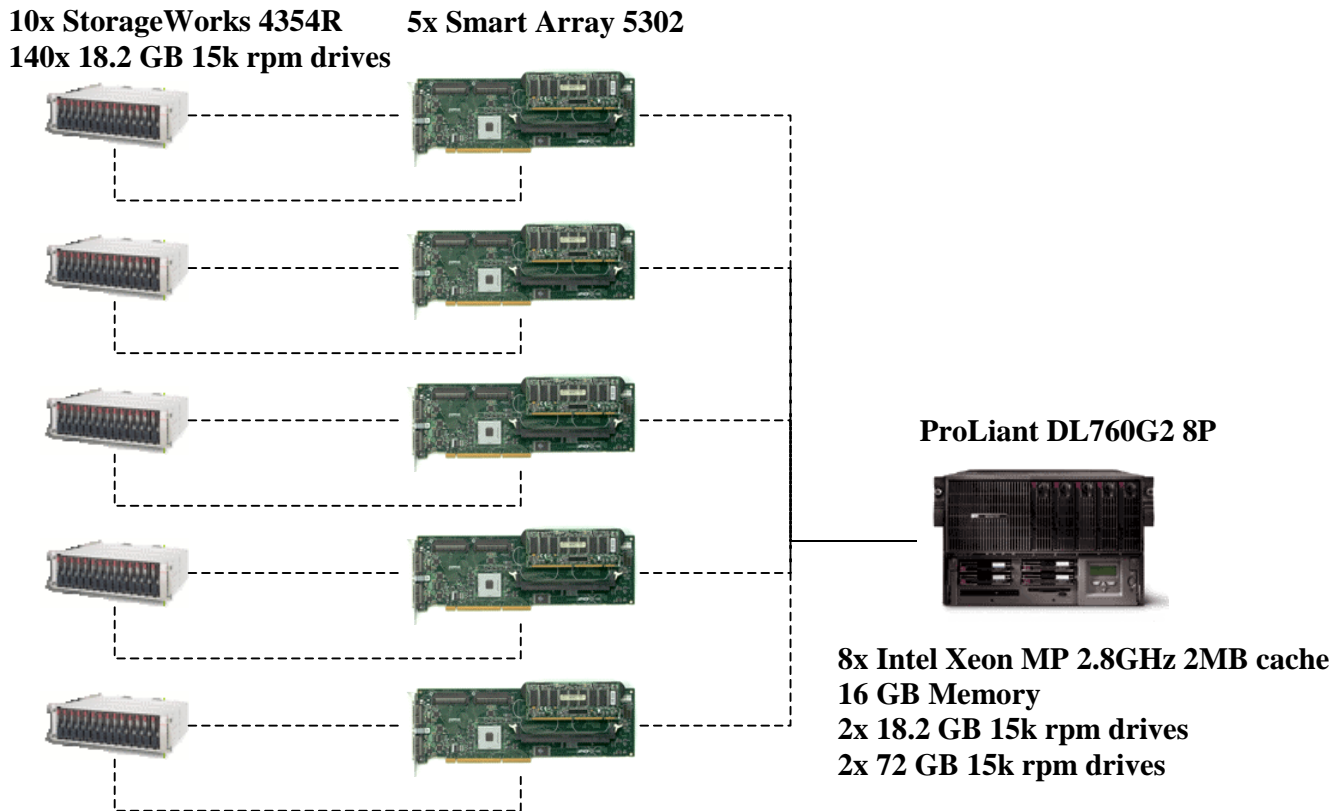
*Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences. This includes, but is not limited to:*

- *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 DL760G2 8P , depicted in Figure 1.1, consisted of :

- 8x Intel Xeon MP 2.8GHz with 2MB L2 Cache
- 16 GB of memory
- 5 x HP 5302 Array Controllers
- 10 x StorageWorks Enclosure 4354R
- 142 x 18.2GB Pluggable Ultra320 15K rpm 1" height drives
- 2 x 72GB Pluggable Ultra320 15K rpm 1" height drives

**Figure 1.1 Benchmarked and 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 DL760G2.

### 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 7 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 two physical drives. The tables for the database were stored on 10 RAID-0 arrays each containing 14 physical drives. A backup of the database was taken. The backup was spread across 10 RAID-5 arrays.

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

1. The complete database was backed up.
2. Seven 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 7 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 rebuild process started
9. When log RAID rebuild process finished a database restore was done.
10. A command was issued causing the database to run through its roll-forward recovery.
11. The counts in the success files and the HISTORY table count were compared and were found to match.

#### **4.4.2 System Crash**

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

1. Seven 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	3,000,000
Customer	45,000,000
Part	60,000,000
Partsupp	240,000,000
Orders	450,000,000
Lineitem	1,799,989,091

## 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 DL760G2 with the following configuration:

- 5 x Smart Array 5302 disk controllers
- 10 x StorageWorks Enclosure 4354R
- 140 x 18.2GB 15k rpm external disk drives
- 2 x 18.2GB 15k rpm internal disk drives
- 2 x 72GB 15k rpm internal disk drives

All 144 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

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

SMART Array Controller	SMART Logical Drive Array Letter	Number of Physical Drives in SMART LDA	SMART Logical Drive Number	SMART Fault Tolerance	Disk Format	Size (MB)	Contents
Slot 1	A	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 1	B	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 1	C	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 1	D	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 3	A	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 3	B	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 3	C	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 3	D	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 5	A	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 5	B	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 5	C	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg

			4	RAID5	NTFS	18000	Flatfiles
Slot 5	D	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Slot 7	A	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID5	NTFS	23600	LoadFg
Slot 7	B	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
			5	RAID0	RAW	3000	Tpch1G
Slot 7	C	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Slot 7	D	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Slot 11	A	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Slot 11	B	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Slot 11	C	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Slot 11	D	7	1	RAID0	RAW	25000	Tpch300g
			2	RAID0	RAW	20000	TempDB
			3	RAID5	NTFS	24000	LoadFg
			4	RAID5	NTFS	18000	Flatfiles
Embedded	A	2	1	RAID1+0	NTFS	17000	OS
Embedded	B	2	1	RAID1+0	RAW	40000	TpchLog
			2	RAID0	RAW	30000	TempLog
			1	RAID1+0	RAW	500	Tpch1GLog

### 5.3 Mapping of Database Partitions/Replications

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

Database partitioning/replication was not used..

### 5.4 Implementation of RAID

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

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

## 5.5 DBGEN Modifications

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

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 11 hours 5 minutes 44 seconds.

## 5.7 Data Storage Ratio

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

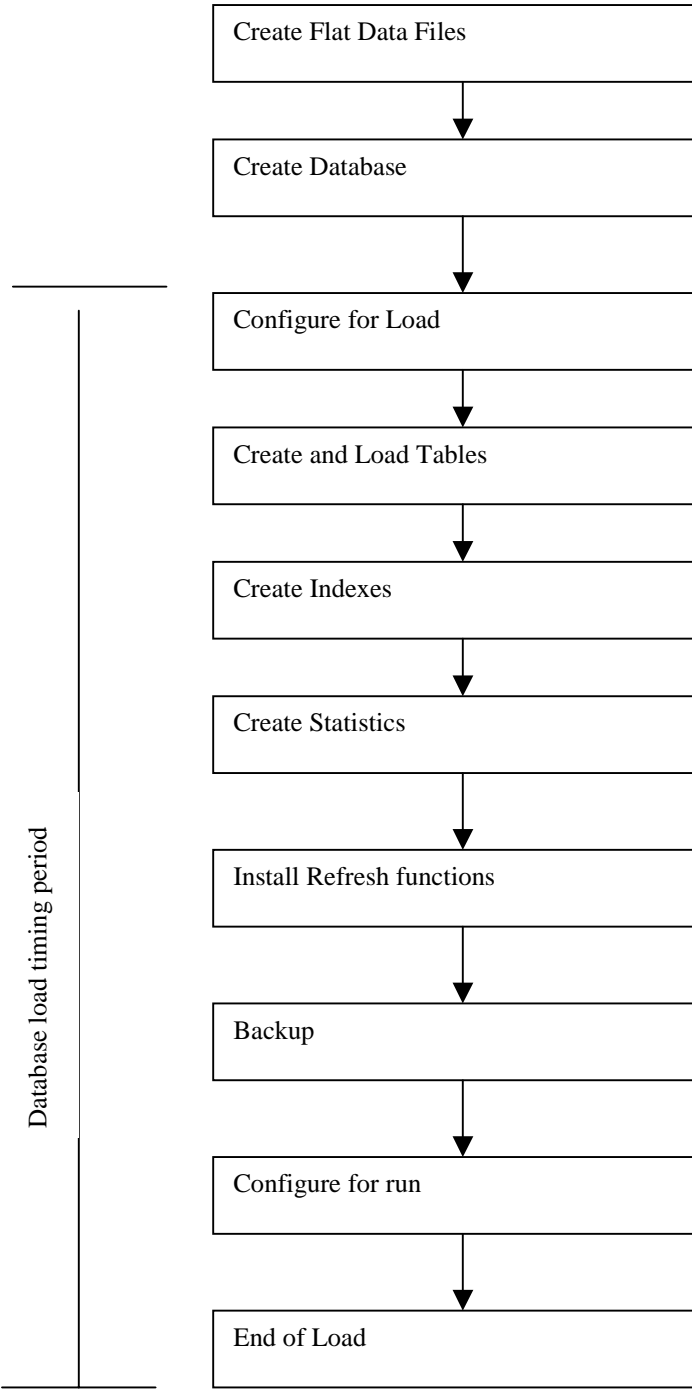
Disk Type	Number of Disks	Space per Disk	Total Disk Space	Data Storage Ratio
18.2 GB 15k rpm Ultra320 SCSI	142	16.95 GB	2406.9 GB	8.48
72 GB 15k rpm Ultra320 SCSI	2	67.83 GB	135.66 GB	

## 5.8 Database Load Mechanism Details and Illustration

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

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

Figure 5.8: Block Diagram of Database Load Process





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

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

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

The following steps were used to implement the power test:

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

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

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

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

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

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

Six streams were used for the Throughput Test.

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

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

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

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

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

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

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

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

Stream ID	RF	Start Date	Start time	Stop Date	Stop Time
Stream00	RF1	9/9/2003	23:28:38	9/9/2003	23:29:58
Stream00	RF2	9/10/2003	1:42:09	9/10/2003	1:43:59
Stream01	RF1	9/10/2003	14:50:49	9/10/2003	14:51:59
Stream01	RF2	9/10/2003	14:51:59	9/10/2003	14:54:16
Stream02	RF1	9/10/2003	14:54:16	9/10/2003	14:55:56
Stream02	RF2	9/10/2003	14:55:56	9/10/2003	14:58:11
Stream03	RF1	9/10/2003	14:58:11	9/10/2003	14:59:51
Stream03	RF2	9/10/2003	14:59:51	9/10/2003	15:02:13
Stream04	RF1	9/10/2003	15:02:13	9/10/2003	15:03:53
Stream04	RF2	9/10/2003	15:03:53	9/10/2003	15:06:09
Stream05	RF1	9/10/2003	15:06:09	9/10/2003	15:07:50
Stream05	RF2	9/10/2003	15:07:50	9/10/2003	15:10:12
Stream06	RF1	9/10/2003	15:10:12	9/10/2003	15:11:53
Stream06	RF2	9/10/2003	15:11:53	9/10/2003	15:14:07

## 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	5630.5	2932.8	4063.6
Run 2	5620.9	2940.4	4065.5

## 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.*

SQL Server 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 128 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 128 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 six 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 six consecutive RF1/RF2 transactions, against ascending Update sets produced by dbgen. The first RF1 waits on a semaphore prior to beginning its insert operations.

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

### 7.3 Profile-Directed Optimization

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

Profile-directed optimization was not used.

# 8.0 Clause 7: Pricing Related Items

## 8.1 Hardware and Software Used

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

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

## 8.2 Total 3 Year Price

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

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. The price quotations are included in Appendix G, at the end of this document. As a large purchase, this purchase qualifies for a 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 DL760G2, 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 Server 2003, Enterprise Edition and the database software, Microsoft SQL Server 2000 Enterprise Edition is generally available at the time of publication. Service Pack 3 for Microsoft SQL Server 2000 is generally available at the time of publication.

## 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

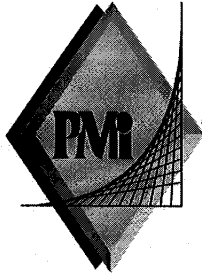
*The auditor's agency name, address, phone number, and Attestation letter with a brief audit summary report indicating compliance must be included in the full disclosure report. A statement should be included specifying who to contact in order to obtain further information regarding the audit process.*

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**

September 22, 2003

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 DL760G2 8P  
Database Manager: Microsoft SQL Server 2000 Enterprise Edition  
Operating System: Microsoft Windows Server 2003, Enterprise Server

CPU's	Memory	Total Disks	QppH@100GB	QthH@100GB	QphH@100GB
8 Intel Xeon MP @ 2.8 Ghz	16 GB	142 @ 18GB, 15Krpm 2 @ 72GB, 15Krpm	<b>5,630.5</b>	<b>2,932.8</b>	<b>4,063.6</b>

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

- The database tables were defined with the proper columns, layout and sizes.
- The tested database was correctly scaled and populated for 300GB 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

Page 1

**PERFORMANCE METRICS INC.**  
**TPC Certified Auditors**

---

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

Auditor's Notes:

None.

Sincerely,



Lorna Livingtree  
Auditor

# Appendix A: Tunable Parameters

- 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 - 8.00.761 (Intel X86)
Feb 27 2003 12:09:37
Copyright (c) 1988-2003 Microsoft Corporation
Enterprise Edition on Windows NT 5.2 (Build 3790: )
```

## 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>SQL Collation>Binary)
- Services Accounts > Customized > SQL Server > Use Local System Account Authentication Mode > Mixed > Blank Password
- Microsoft SQL Server 2000 Service Pack 3 was installed using the default settings during installation.

## A.3 SQL Server 2000 Startup Parameters

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

Where :

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

## A.4 Microsoft SQL Server 2000 Configuration Parameters

name	,minimum	,maximum	,config_value	,run_value
affinity mask	,-2147483648,	2147483647,	65535,	65535
allow updates	, 0,	1,	1,	1
awe enabled	, 0,	1,	1,	1
c2 audit mode	, 0,	1,	0,	0
cost threshold for parallelism	, 0,	32767,	0,	0
Cross DB Ownership Chaining	, 0,	1,	0,	0
cursor threshold	, -1,	2147483647,	-1,	-1
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,	16,	16
max server memory (MB)	, 4,	2147483647,	2147483647,	
max text repl size (B)	, 0,	2147483647,	65536,	65536
max worker threads	, 32,	32767,	1800,	1800
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 2003 Configuration

The default installation of Windows 2003 Enterprise Edition was used. All default options were selected during the install except:

- A TCP/IP address was configured on the system.

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

Boot.ini parameters:

- /3GB - Give SQL Server access to 3GB memory
- /PAE - 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 cache ratio of 0% read / 100% write .

The HP SMART Array Controller cache was enabled for all drives.

Windows Registry Editor Version 5.00

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hpcqis
b]
"Type"=dword:00000001
"Start"=dword:00000000
"ErrorControl"=dword:00000001
"Tag"=dword:00000102
"ImagePath"=hex(2):73,00,79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,
44,00,\
```





I/O Port 0x00001800-0x00002FFF Management Controller	Compaq Advanced System	0x00001000-0x0000107F	Motherboard resources	OK
Memory Address 0xA0000-0xBFFFF Memory Address 0xA0000-0xBFFFF Adapter	PCI bus Standard VGA Graphics	0x00001080-0x000010FF 0x00000040-0x00000043 0x00000080-0x0000008F	Motherboard resources System timer Direct memory access controller	OK OK OK
I/O Port 0x00007000-0x00007FFF I/O Port 0x00007000-0x00007FFF (Non-Miniport)	PCI bus Smart Array 5300 Controller	0x000000C0-0x000000DF 0x0000040B-0x0000040B	Direct memory access controller Direct memory access controller	OK OK
I/O Port 0x000003B0-0x000003BB I/O Port 0x000003B0-0x000003BB Adapter	PCI bus Standard VGA Graphics	0x000004D6-0x000004D6 0x00000061-0x00000061 0x000003F8-0x000003FF	Direct memory access controller System speaker Communications Port (COM1)	OK OK OK
I/O Port 0x00008000-0x00008FFF I/O Port 0x00008000-0x00008FFF (Non-Miniport)	PCI bus Smart Array 5300 Controller	0x000003F2-0x000003F5 0x000003F7-0x000003F7	Standard floppy disk controller Standard floppy disk controller	OK OK
[DMA]		0x00000060-0x00000060 Natural PS/2 Keyboard	Standard 101/102-Key or Microsoft	OK
Resource Device Status Channel 7 Direct memory access controller Channel 2 Standard floppy disk controller	OK OK	0x00000064-0x00000064 Natural PS/2 Keyboard	Standard 101/102-Key or Microsoft	OK
[Forced Hardware]		0x00002820-0x0000282F 0x000001F0-0x000001F7 0x000003F6-0x000003F6 0x00000170-0x00000177	CSB5 IDE Controller Primary IDE Channel Primary IDE Channel Secondary IDE Channel	OK OK OK OK
Device PNP Device ID		0x00000376-0x00000376	Secondary IDE Channel	OK
[I/O]		0x00000A79-0x00000A79	ISAPNP Read Data Port	OK
Resource Device Status 0x00000000-0x000017FF 0x00000000-0x000017FF	PCI bus OK Direct memory access controller OK	0x00000279-0x00000279	ISAPNP Read Data Port	OK
0x000003B0-0x000003BB 0x000003B0-0x000003BB	PCI bus OK Standard VGA Graphics Adapter OK	0x00000274-0x00000277	ISAPNP Read Data Port	OK
0x000003C0-0x000003DF 0x000003C0-0x000003DF	PCI bus OK Standard VGA Graphics Adapter OK	0x00000020-0x00000021 OK	Programmable interrupt controller	
0x00001800-0x00002FFF 0x00001800-0x00002FFF Controller OK	PCI bus OK Compaq Advanced System Management	0x000000A0-0x000000A1 OK	Programmable interrupt controller	
0x00002000-0x000020FF	Standard VGA Graphics Adapter OK	0x000004D0-0x000004D1 OK	Programmable interrupt controller	
0x00002400-0x000024FF OK	Compaq Smart Array 5i Controller	0x00003000-0x00003FFF 0x00003000-0x00003FFF Miniport) OK	PCI bus OK Smart Array 5300 Controller (Non- Miniport) OK	
0x00000F50-0x00000F58	Motherboard resources	0x00005000-0x00005FFF 0x00005000-0x00005FFF	PCI bus OK Smart Array 5300 Controller (Non- Miniport) OK	
0x00000F57-0x00000F57	Motherboard resources	0x00006000-0x00006FFF 0x00006000-0x00006FFF	PCI bus OK Smart Array 5300 Controller (Non- Miniport) OK	
0x00000700-0x0000076F	Motherboard resources	0x00007000-0x00007FFF 0x00007000-0x00007FFF	PCI bus OK Smart Array 5300 Controller (Non- Miniport) OK	
0x00000900-0x0000095F	Motherboard resources	0x00008000-0x00008FFF 0x00008000-0x00008FFF	PCI bus OK Smart Array 5300 Controller (Non- Miniport) OK	
0x00000800-0x0000081F	Motherboard resources			
0x00000010-0x0000001F	Motherboard resources			
0x00000022-0x0000002F	Motherboard resources			
0x00000070-0x00000073	Motherboard resources			
0x00000092-0x00000092	Motherboard resources			
0x00000C00-0x00000CD7	Motherboard resources			
		[IRQs]		
		Resource Device Status		
		IRQ 9 Microsoft ACPI-Compliant System		OK
		IRQ 47 BCM5701 Gigabit Ethernet		OK
		IRQ 5 Compaq Advanced System Management Controller		OK
		IRQ 40 Compaq Smart Array 5i Controller		OK
		IRQ 0 System timer		OK
		IRQ 4 Communications Port (COM1)		OK
		IRQ 6 Standard floppy disk controller		OK

IRQ 12 PS/2 Compatible Mouse OK  
 IRQ 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK  
 IRQ 14 Primary IDE Channel OK  
 IRQ 11 ServerWorks (RCC) PCI to USB Open Host Controller OK  
 IRQ 39 hp Memory Host Controller OK  
 IRQ 32 hp Memory Host Controller OK  
 IRQ 38 hp Memory Host Controller OK  
 IRQ 3 Compaq PCI Hotplug Controller OK  
 IRQ 3 Compaq PCI Hotplug Controller OK  
 IRQ 3 Compaq PCI Hotplug Controller OK  
 IRQ 3 Compaq PCI Hotplug Controller OK  
 IRQ 3 Compaq PCI Hotplug Controller OK  
 IRQ 3 Compaq PCI Hotplug Controller OK  
 IRQ 43 Smart Array 5300 Controller (Non-Miniport) OK  
 IRQ 19 Smart Array 5300 Controller (Non-Miniport) OK  
 IRQ 23 Smart Array 5300 Controller (Non-Miniport) OK  
 IRQ 27 Smart Array 5300 Controller (Non-Miniport) OK  
 IRQ 31 Smart Array 5300 Controller (Non-Miniport) OK

[Memory]

Resource	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	Standard VGA Graphics Adapter	OK
0xF5E0000-0xF7FFFFFF	PCI bus	OK
0xF7FF0000-0xF7FFFFFF	BCM5701 Gigabit Ethernet	OK
0xF7FE0000-0xF7FE00FF	Compaq Advanced System Management Controller	OK
0xF6000000-0xF6FFFFFF	Standard VGA Graphics Adapter	OK
0xF5FF0000-0xF5FF0FFF	Standard VGA Graphics Adapter	OK
0xF5F80000-0xF5FBFFFF	Compaq Smart Array 5i Controller	OK
0xF5EF0000-0xF5EF3FFF	Compaq Smart Array 5i Controller	OK
0xC0000-0xDFFFF	Motherboard resources	OK
0xF5F70000-0xF5F70FFF	ServerWorks (RCC) PCI to USB Open Host Controller	OK
0xF5F60000-0xF5F607FF	hp Memory Host Controller	OK
0xF5F50000-0xF5F507FF	hp Memory Host Controller	OK
0xF5F40000-0xF5F407FF	hp Memory Host Controller	OK
0xF5F30000-0xF5F30FFF	Compaq PCI Hotplug Controller	OK
0xFEC00000-0xFFFFFFFF	Advanced programmable interrupt controller	OK
0xF5B00000-0xF5DFFFFF	PCI bus	OK
0xF5DC0000-0xF5DFFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5C00000-0xF5CFFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5BF0000-0xF5BF0FFF	Compaq PCI Hotplug Controller	OK
0xF5800000-0xF5AFFFFF	PCI bus	OK
0xF5AC0000-0xF5AFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5900000-0xF59FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK

Resource	Device	Status
0xF58F0000-0xF58F0FFF	Compaq PCI Hotplug Controller	OK
0xF5500000-0xF57FFFFFFF	PCI bus	OK
0xF57C0000-0xF57FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5600000-0xF56FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF55F0000-0xF55F0FFF	Compaq PCI Hotplug Controller	OK
0xF5200000-0xF54FFFFFFF	PCI bus	OK
0xF54C0000-0xF54FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5300000-0xF53FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF52F0000-0xF52F0FFF	Compaq PCI Hotplug Controller	OK
0xF4F00000-0xF51FFFFFFF	PCI bus	OK
0xF51C0000-0xF51FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF5000000-0xF50FFFFFFF	Smart Array 5300 Controller (Non-Miniport)	OK
0xF4FF0000-0xF4FF0FFF	Compaq PCI Hotplug Controller	OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC	Manufacturer	Description	Status	File
	Version	Size	Creation Date	
c:\windows\system32\msg723.acm	OK	116.00 KB (118,784 bytes)	4/23/2003 10:58 AM	Microsoft Corporation C:\WINDOWS\system32\MSG723.ACM
c:\windows\system32\l3codeca.acm	OK	284.00 KB (290,816 bytes)	3/25/2003 12:00 AM	Fraunhofer Institut Integrierte Schaltungen IIS Fraunhofer IIS MPEG Layer-3 Codec OK C:\WINDOWS\system32\L3CODECA.ACM 1, 9, 0, 0305
c:\windows\system32\msaud32.acm	OK	288.00 KB (294,912 bytes)	3/25/2003 12:00 AM	Microsoft Corporation Windows Media Audio Codec C:\WINDOWS\system32\MSAUD32.ACM 8.00.00.4487
c:\windows\system32\tssoft32.acm	OK	9.50 KB (9,728 bytes)	3/25/2003 12:00 AM	DSP GROUP, INC. C:\WINDOWS\system32\TSSOFT32.ACM 1.01
c:\windows\system32\msgsm32.acm	OK	20.50 KB (20,992 bytes)	3/25/2003 12:00 AM	Microsoft Corporation C:\WINDOWS\system32\MSGSM32.ACM 5.2.3790.0 (srv03_rtm.030324-2048)
c:\windows\system32\imaadp32.acm	OK	15.50 KB (15,872 bytes)	3/25/2003 12:00 AM	Microsoft Corporation C:\WINDOWS\system32\IMAADP32.ACM 5.2.3790.0 (srv03_rtm.030324-2048)
c:\windows\system32\msadp32.acm	OK	14.50 KB (14,848 bytes)	3/25/2003 12:00 AM	Microsoft Corporation C:\WINDOWS\system32\MSADP32.ACM 5.2.3790.0 (srv03_rtm.030324-2048)
c:\windows\system32\sl_anet.acm	OK	84.00 KB (86,016 bytes)	3/25/2003 12:00 AM	Sipro Lab Telecom Inc. Sipro Lab Telecom Audio Codec OK C:\WINDOWS\system32\SL_ANET.ACM 3.02

c:\windows\system32\msg711.acm Microsoft Corporation  
 OK C:\WINDOWS\system32\MSG711.ACM  
 5.2.3790.0 (srv03\_rtm.030324-2048) 10.00 KB (10,240  
 bytes) 3/25/2003 12:00 AM

[Video Codecs]

CODEC	Manufacturer	Description	Status	File
Version	Size	Creation Date		
c:\windows\system32\msh261.drv	Microsoft Corporation			
OK	C:\WINDOWS\system32\MSH261.DRV			
4.4.4000	180.00 KB (184,320 bytes)	4/23/2003 10:58 AM		

c:\windows\system32\tsbyuv.dll Microsoft Corporation  
 OK C:\WINDOWS\system32\TSBYUV.DLL  
 5.2.3790.0 (srv03\_rtm.030324-2048) 8.00 KB (8,192  
 bytes) 3/24/2003 7:50 PM

c:\windows\system32\msyuv.dll Microsoft Corporation  
 OK C:\WINDOWS\system32\MSYUV.DLL  
 5.2.3790.0 (srv03\_rtm.030324-2048) 16.50 KB (16,896  
 bytes) 3/24/2003 7:49 PM

c:\windows\system32\msvidc32.dll Microsoft Corporation  
 OK C:\WINDOWS\system32\MSVIDC32.DLL 5.2.3790.0  
 (srv03\_rtm.030324-2048) 26.50 KB (27,136 bytes)  
 3/25/2003 12:00 AM

c:\windows\system32\msrle32.dll Microsoft Corporation  
 OK C:\WINDOWS\system32\MSRLE32.DLL  
 5.2.3790.0 (srv03\_rtm.030324-2048) 10.50 KB (10,752  
 bytes) 3/25/2003 12:00 AM

c:\windows\system32\iyuv\_32.dll Microsoft Corporation  
 OK C:\WINDOWS\system32\IYUV\_32.DLL  
 5.2.3790.0 (srv03\_rtm.030324-2048) 45.00 KB (46,080  
 bytes) 3/24/2003 7:49 PM

c:\windows\system32\msh263.drv Microsoft Corporation  
 OK C:\WINDOWS\system32\MSH263.DRV  
 4.4.4000 284.00 KB (290,816 bytes) 3/24/2003 7:46 PM

[CD-ROM]

Item	Value
Drive	D:
Description	CD-ROM Drive
Media Loaded	No
Media Type	CD-ROM
Name	COMPAQ CD-224E
Manufacturer	(Standard CD-ROM drives)
Status	OK
Transfer Rate	Not Available
SCSI Target ID	0
PNP Device ID	IDE\CDROMCOMPAQ_CD-224E\A.8D\5&FB0C83D&0&0.0.0
Driver	c:\windows\system32\drivers\cdrom.sys (5.2.3790.0 (srv03_rtm.030324-2048), 49.50 KB (50,688 bytes), 3/25/2003 12:00 AM)

[Sound Device]

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

[Display]

Item	Value
Name	Standard VGA Graphics Adapter
PNP Device ID	PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3&267A616A&0&68

Adapter Type ATI MACH64, (Standard display types) compatible

Adapter Description Standard VGA Graphics Adapter  
 Adapter RAM 7.94 MB (8,323,072 bytes)  
 Installed Drivers vga.dll,framebuf.dll,vga256.dll,vga64k.dll  
 Driver Version 5.2.3790.0  
 INF File display.inf (vga section)  
 Color Planes 1  
 Color Table Entries 65536  
 Resolution 1024 x 768 x 1 hertz  
 Bits/Pixel 16  
 Memory Address 0xF6000000-0xF6FFFFFF  
 I/O Port 0x00002000-0x000020FF  
 Memory Address 0xF5FF0000-0xF5FF0FFF  
 I/O Port 0x000003B0-0x000003BB  
 I/O Port 0x000003C0-0x000003DF  
 Memory Address 0xA0000-0xBFFFFF  
 Driver c:\windows\system32\drivers\vgapnp.sys (5.2.3790.0 (srv03\_rtm.030324-2048), 23.00 KB (23,552 bytes), 4/23/2003 11:20 AM)

[Infrared]

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

[Input]

[Keyboard]

Item	Value
Description	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name	Enhanced (101- or 102-key)
Layout	00000409
PNP Device ID	ACPI\PNP0303\4&35118DFF&0
Number of Function Keys	12
I/O Port	0x00000060-0x00000060
I/O Port	0x00000064-0x00000064
IRQ Channel	IRQ 1
Driver	c:\windows\system32\drivers\i8042prt.sys (5.2.3790.0 (srv03_rtm.030324-2048), 68.50 KB (70,144 bytes), 3/25/2003 12:00 AM)

[Pointing Device]

Item	Value
Hardware Type	PS/2 Compatible Mouse
Number of Buttons	3
Status	OK
PNP Device ID	ACPI\PNP0F13\4&35118DFF&0
Power Management Supported	No
Double Click Threshold	6
Handedness	Right Handed Operation
IRQ Channel	IRQ 12
Driver	c:\windows\system32\drivers\i8042prt.sys (5.2.3790.0 (srv03_rtm.030324-2048), 68.50 KB (70,144 bytes), 3/25/2003 12:00 AM)

[Modem]

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

[Network]

[Adapter]

Item Value  
 Name [00000001] BCM5701 Gigabit Ethernet  
 Adapter Type Ethernet 802.3  
 Product Type BCM5701 Gigabit Ethernet  
 Installed Yes  
 PNP Device ID PCI\VEN\_14E4&DEV\_1645&SUBSYS\_007C0E11&REV\_15\3  
 &267A616A&0&08  
 Last Reset 9/9/2003 11:24 PM  
 Index 1  
 Service Name b57w2k  
 IP Address 130.168.253.49  
 IP Subnet 255.255.0.0  
 Default IP Gateway Not Available  
 DHCP Enabled Yes  
 DHCP Server 130.168.253.2  
 DHCP Lease Expires 9/12/2003 11:26 AM  
 DHCP Lease Obtained 9/11/2003 11:26 AM  
 MAC Address 00:08:02:ED:24:7E  
 Memory Address 0xF7FF0000-0xF7FFFFFF  
 IRQ Channel IRQ 47  
 Driver c:\windows\system32\drivers\b57xp32.sys (2.91.0.0 built by:  
 WinDDK, 137.00 KB (140,288 bytes), 4/23/2003 5:45 AM)

Name [00000002] RAS Async Adapter  
 Adapter Type Not Available  
 Product Type RAS Async Adapter  
 Installed Yes  
 PNP Device ID Not Available  
 Last Reset 9/9/2003 11:24 PM  
 Index 2  
 Service Name AsyncMac  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)  
 Adapter Type Not Available  
 Product Type WAN Miniport (L2TP)  
 Installed Yes  
 PNP Device ID ROOT\MS\_L2TPMINIPORT\0000  
 Last Reset 9/9/2003 11:24 PM  
 Index 3  
 Service Name Rasl2tp  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address Not Available  
 Driver c:\windows\system32\drivers\rasl2tp.sys (5.2.3790.0  
 (srv03\_rtm.030324-2048), 77.00 KB (78,848 bytes), 3/25/2003 12:00 AM)

Name [00000004] WAN Miniport (PPTP)  
 Adapter Type Wide Area Network (WAN)  
 Product Type WAN Miniport (PPTP)  
 Installed Yes  
 PNP Device ID ROOT\MS\_PPTPMINIPORT\0000  
 Last Reset 9/9/2003 11:24 PM  
 Index 4  
 Service Name PptpMiniport  
 IP Address Not Available

IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address 50:50:54:50:30:30  
 Driver c:\windows\system32\drivers\raspptp.sys (5.2.3790.0  
 (srv03\_rtm.030324-2048), 70.50 KB (72,192 bytes), 3/25/2003 12:00 AM)

Name [00000005] WAN Miniport (PPPOE)  
 Adapter Type Wide Area Network (WAN)  
 Product Type WAN Miniport (PPPOE)  
 Installed Yes  
 PNP Device ID ROOT\MS\_PPPOEMINIPORT\0000  
 Last Reset 9/9/2003 11:24 PM  
 Index 5  
 Service Name RasPppoe  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address 33:50:6F:45:30:30  
 Driver c:\windows\system32\drivers\rasppoe.sys (5.2.3790.0  
 (srv03\_rtm.030324-2048), 38.00 KB (38,912 bytes), 3/25/2003 12:00 AM)

Name [00000006] Direct Parallel  
 Adapter Type Not Available  
 Product Type Direct Parallel  
 Installed Yes  
 PNP Device ID ROOT\MS\_PTMINIPORT\0000  
 Last Reset 9/9/2003 11:24 PM  
 Index 6  
 Service Name Raspti  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address Not Available  
 Driver c:\windows\system32\drivers\raspti.sys (5.2.3790.0  
 (srv03\_rtm.030324-2048), 18.50 KB (18,944 bytes), 3/25/2003 12:00 AM)

Name [00000007] WAN Miniport (IP)  
 Adapter Type Not Available  
 Product Type WAN Miniport (IP)  
 Installed Yes  
 PNP Device ID ROOT\MS\_NDISWANIP\0000  
 Last Reset 9/9/2003 11:24 PM  
 Index 7  
 Service Name NdisWan  
 IP Address Not Available  
 IP Subnet Not Available  
 Default IP Gateway Not Available  
 DHCP Enabled No  
 DHCP Server Not Available  
 DHCP Lease Expires Not Available  
 DHCP Lease Obtained Not Available  
 MAC Address Not Available  
 Driver c:\windows\system32\drivers\ndiswan.sys (5.2.3790.0  
 (srv03\_rtm.030324-2048), 96.50 KB (98,816 bytes), 3/25/2003 12:00 AM)

[Protocol]

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

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

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

Name RSVP TCP Service Provider  
Connectionless Service No  
Guarantees Delivery Yes  
Guarantees Sequencing Yes  
Maximum Address Size 16 bytes  
Maximum Message Size 0 bytes  
Message Oriented No  
Minimum Address Size 16 bytes  
Pseudo Stream Oriented No  
Supports Broadcasting No  
Supports Connect Data No  
Supports Disconnect Data No

Supports Encryption Yes  
Supports Expedited Data Yes  
Supports Graceful Closing Yes  
Supports Guaranteed Bandwidth No  
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT\_Tcpi\_{CA2439EE-BE9E-4085-A654-C735B28BA36E}] SEQPACKE 0  
Connectionless Service No  
Guarantees Delivery Yes  
Guarantees Sequencing Yes  
Maximum Address Size 20 bytes  
Maximum Message Size 62.50 KB (64,000 bytes)  
Message Oriented Yes  
Minimum Address Size 20 bytes  
Pseudo Stream Oriented No  
Supports Broadcasting No  
Supports Connect Data No  
Supports Disconnect Data No  
Supports Encryption No  
Supports Expedited Data No  
Supports Graceful Closing No  
Supports Guaranteed Bandwidth No  
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT\_Tcpi\_{CA2439EE-BE9E-4085-A654-C735B28BA36E}] DATAGRAM 0  
Connectionless Service Yes  
Guarantees Delivery No  
Guarantees Sequencing No  
Maximum Address Size 20 bytes  
Maximum Message Size 62.50 KB (64,000 bytes)  
Message Oriented Yes  
Minimum Address Size 20 bytes  
Pseudo Stream Oriented No  
Supports Broadcasting Yes  
Supports Connect Data No  
Supports Disconnect Data No  
Supports Encryption No  
Supports Expedited Data No  
Supports Graceful Closing No  
Supports Guaranteed Bandwidth No  
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT\_Tcpi\_{20534380-CFA6-4C5A-AACB-7052D7B3EAF5}] SEQPACKE 1  
Connectionless Service No  
Guarantees Delivery Yes  
Guarantees Sequencing Yes  
Maximum Address Size 20 bytes  
Maximum Message Size 62.50 KB (64,000 bytes)  
Message Oriented Yes  
Minimum Address Size 20 bytes  
Pseudo Stream Oriented No  
Supports Broadcasting No  
Supports Connect Data No  
Supports Disconnect Data No  
Supports Encryption No  
Supports Expedited Data No  
Supports Graceful Closing No  
Supports Guaranteed Bandwidth No  
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT\_Tcpi\_{20534380-CFA6-4C5A-AACB-7052D7B3EAF5}] DATAGRAM 1  
Connectionless Service Yes  
Guarantees Delivery No  
Guarantees Sequencing No  
Maximum Address Size 20 bytes  
Maximum Message Size 62.50 KB (64,000 bytes)

Message Oriented Yes  
 Minimum Address Size 20 bytes  
 Pseudo Stream Oriented No  
 Supports Broadcasting Yes  
 Supports Connect Data No  
 Supports Disconnect Data No  
 Supports Encryption No  
 Supports Expedited Data No  
 Supports Graceful Closing No  
 Supports Guaranteed Bandwidth No  
 Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT\_Tcpip\_{D00E26DD-F8E7-44E4-ABA3-6BC585769BC9}] SEQUENCEPACKET 2  
 Connectionless Service No  
 Guarantees Delivery Yes  
 Guarantees Sequencing Yes  
 Maximum Address Size 20 bytes  
 Maximum Message Size 62.50 KB (64,000 bytes)  
 Message Oriented Yes  
 Minimum Address Size 20 bytes  
 Pseudo Stream Oriented No  
 Supports Broadcasting No  
 Supports Connect Data No  
 Supports Disconnect Data No  
 Supports Encryption No  
 Supports Expedited Data No  
 Supports Graceful Closing No  
 Supports Guaranteed Bandwidth No  
 Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT\_Tcpip\_{D00E26DD-F8E7-44E4-ABA3-6BC585769BC9}] DATAGRAM 2  
 Connectionless Service Yes  
 Guarantees Delivery No  
 Guarantees Sequencing No  
 Maximum Address Size 20 bytes  
 Maximum Message Size 62.50 KB (64,000 bytes)  
 Message Oriented Yes  
 Minimum Address Size 20 bytes  
 Pseudo Stream Oriented No  
 Supports Broadcasting Yes  
 Supports Connect Data No  
 Supports Disconnect Data No  
 Supports Encryption No  
 Supports Expedited Data No  
 Supports Graceful Closing No  
 Supports Guaranteed Bandwidth No  
 Supports Multicasting No

[WinSock]

Item	Value
File	c:\windows\system32\winsock.dll
Size	2.80 KB (2,864 bytes)
Version	3.10
File	c:\windows\system32\wsock32.dll
Size	22.00 KB (22,528 bytes)
Version	5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]

[Serial]

Item	Value
Name	Communications Port (COM1)
Status	OK

PNP Device ID ACPI\PNP0501\0  
 Maximum Input Buffer Size 0  
 Maximum Output Buffer Size No  
 Settable Baud Rate Yes  
 Settable Data Bits Yes  
 Settable Flow Control Yes  
 Settable Parity Yes  
 Settable Parity Check Yes  
 Settable Stop Bits Yes  
 Settable RLSD Yes  
 Supports RLSD Yes  
 Supports 16 Bit Mode No  
 Supports Special Characters No  
 Baud Rate 9600  
 Bits/Byte 8  
 Stop Bits 1  
 Parity None  
 Busy No  
 Abort Read/Write on Error No  
 Binary Mode Enabled Yes  
 Continue Xmit on XOff No  
 CTS Outflow Control No  
 Discard NULL Bytes No  
 DSR Outflow Control 0  
 DSR Sensitivity 0  
 DTR Flow Control Type Enable  
 EOF Character 0  
 Error Replace Character 0  
 Error Replacement Enabled No  
 Event Character 0  
 Parity Check Enabled No  
 RTS Flow Control Type Enable  
 XOff Character 19  
 XOffXmit Threshold 512  
 XOn Character 17  
 XOnXmit Threshold 2048  
 XOnXOff InFlow Control 0  
 XOnXOff OutFlow Control 0  
 IRQ Channel IRQ 4  
 I/O Port 0x000003F8-0x000003FF  
 Driver c:\windows\system32\drivers\serial.sys (5.2.3790.0 (srv03\_rtm.030324-2048), 76.00 KB (77,824 bytes), 3/25/2003 12:00 AM)

[Parallel]

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

[Storage]

[Drives]

Item	Value
Drive A:	3 1/2 Inch Floppy Drive
Drive C:	Local Fixed Disk
Description	Local Fixed Disk
Compressed	No
File System	NTFS
Size	16.95 GB (18,198,999,040 bytes)
Free Space	8.67 GB (9,309,896,704 bytes)
Volume Name	
Volume Serial Number	50EDFD29
Drive D:	CD-ROM Disc
Description	CD-ROM Disc

Drive Z:  
 Description Local Fixed Disk  
 Compressed No  
 File System NTFS  
 Size 351.45 GB (377,361,526,784 bytes)  
 Free Space 10.75 GB (11,537,580,032 bytes)  
 Volume Name New Volume  
 Volume Serial Number 8896D615

[Disks]

Item Value  
 Description \\.\PHYSICALDRIVE51  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #51, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE52  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #52, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE53  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045

Tracks/Cylinder 255  
 Partition Disk #53, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE54  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #54, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE55  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #55, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE56  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #56, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE57  
 Manufacturer Not Available



Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #57, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE58  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #58, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE59  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #59, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE60  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #60, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE61  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #61, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE62  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #62, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE63  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430

Tracks/Cylinder 255  
Partition Disk #63, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE64  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #64, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE65  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.43 GB (25,161,131,520 bytes)  
Total Cylinders 3,059  
Total Sectors 49,142,835  
Total Tracks 780,045  
Tracks/Cylinder 255  
Partition Disk #65, Partition #0  
Partition Size 23.43 GB (25,161,099,264 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE66  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 17.57 GB (18,868,792,320 bytes)  
Total Cylinders 2,294  
Total Sectors 36,853,110  
Total Tracks 584,970  
Tracks/Cylinder 255  
Partition Disk #66, Partition #0  
Partition Size 17.57 GB (18,868,760,064 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE67  
Manufacturer Not Available

Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.07 GB (24,766,318,080 bytes)  
Total Cylinders 3,011  
Total Sectors 48,371,715  
Total Tracks 767,805  
Tracks/Cylinder 255  
Partition Disk #67, Partition #0  
Partition Size 23.07 GB (24,766,285,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE68  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 24.41 GB (26,205,742,080 bytes)  
Total Cylinders 3,186  
Total Sectors 51,183,090  
Total Tracks 812,430  
Tracks/Cylinder 255  
Partition Disk #68, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE69  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #69, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE70  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #70, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE71  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #71, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE72  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #72, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE73  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995

Tracks/Cylinder 255  
 Partition Disk #73, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE74  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #74, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE75  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #75, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE76  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #76, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE77  
 Manufacturer Not Available

Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #77, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE78  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #78, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE79  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #79, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE80  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #80, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE81  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #81, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE82  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #82, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE83  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970

Tracks/Cylinder 255  
Partition Disk #83, Partition #0  
Partition Size 17.57 GB (18,868,760,064 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE84  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.07 GB (24,766,318,080 bytes)  
Total Cylinders 3,011  
Total Sectors 48,371,715  
Total Tracks 767,805  
Tracks/Cylinder 255  
Partition Disk #84, Partition #0  
Partition Size 23.07 GB (24,766,285,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE16  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 24.41 GB (26,205,742,080 bytes)  
Total Cylinders 3,186  
Total Sectors 51,183,090  
Total Tracks 812,430  
Tracks/Cylinder 255  
Partition Disk #16, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE17  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #17, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE18  
Manufacturer Not Available

Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.43 GB (25,161,131,520 bytes)  
Total Cylinders 3,059  
Total Sectors 49,142,835  
Total Tracks 780,045  
Tracks/Cylinder 255  
Partition Disk #18, Partition #0  
Partition Size 23.43 GB (25,161,099,264 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE19  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 17.57 GB (18,868,792,320 bytes)  
Total Cylinders 2,294  
Total Sectors 36,853,110  
Total Tracks 584,970  
Tracks/Cylinder 255  
Partition Disk #19, Partition #0  
Partition Size 17.57 GB (18,868,760,064 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE20  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 24.41 GB (26,205,742,080 bytes)  
Total Cylinders 3,186  
Total Sectors 51,183,090  
Total Tracks 812,430  
Tracks/Cylinder 255  
Partition Disk #20, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE21  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #21, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE22  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #22, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE23  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #23, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE24  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430

Tracks/Cylinder 255  
 Partition Disk #24, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE25  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #25, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE26  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #26, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE27  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #27, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE28  
 Manufacturer Not Available

Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #28, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE29  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #29, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE30  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #30, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE31  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #31, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE32  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.07 GB (24,766,318,080 bytes)  
 Total Cylinders 3,011  
 Total Sectors 48,371,715  
 Total Tracks 767,805  
 Tracks/Cylinder 255  
 Partition Disk #32, Partition #0  
 Partition Size 23.07 GB (24,766,285,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE33  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 2.93 GB (3,142,056,960 bytes)  
 Total Cylinders 382  
 Total Sectors 6,136,830  
 Total Tracks 97,410  
 Tracks/Cylinder 255  
 Partition Disk #33, Partition #0  
 Partition Size 2.93 GB (3,142,024,704 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE34  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430

Tracks/Cylinder 255  
Partition Disk #34, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE35  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #35, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE36  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.43 GB (25,161,131,520 bytes)  
Total Cylinders 3,059  
Total Sectors 49,142,835  
Total Tracks 780,045  
Tracks/Cylinder 255  
Partition Disk #36, Partition #0  
Partition Size 23.43 GB (25,161,099,264 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE37  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 17.57 GB (18,868,792,320 bytes)  
Total Cylinders 2,294  
Total Sectors 36,853,110  
Total Tracks 584,970  
Tracks/Cylinder 255  
Partition Disk #37, Partition #0  
Partition Size 17.57 GB (18,868,760,064 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE38  
Manufacturer Not Available

Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 24.41 GB (26,205,742,080 bytes)  
Total Cylinders 3,186  
Total Sectors 51,183,090  
Total Tracks 812,430  
Tracks/Cylinder 255  
Partition Disk #38, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE39  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #39, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE40  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.43 GB (25,161,131,520 bytes)  
Total Cylinders 3,059  
Total Sectors 49,142,835  
Total Tracks 780,045  
Tracks/Cylinder 255  
Partition Disk #40, Partition #0  
Partition Size 23.43 GB (25,161,099,264 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE41  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available



SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #41, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE42  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #42, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE43  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #43, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE44  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045

Tracks/Cylinder 255  
 Partition Disk #44, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE45  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #45, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE46  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #46, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE47  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #47, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE48  
 Manufacturer Not Available

Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #48, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE49  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #49, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE50  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.07 GB (24,766,318,080 bytes)  
 Total Cylinders 3,011  
 Total Sectors 48,371,715  
 Total Tracks 767,805  
 Tracks/Cylinder 255  
 Partition Disk #50, Partition #0  
 Partition Size 23.07 GB (24,766,285,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE0  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #0, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE1  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995  
 Tracks/Cylinder 255  
 Partition Disk #1, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE2  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #2, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE3  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970

Tracks/Cylinder 255  
Partition Disk #3, Partition #0  
Partition Size 17.57 GB (18,868,760,064 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE4  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 24.41 GB (26,205,742,080 bytes)  
Total Cylinders 3,186  
Total Sectors 51,183,090  
Total Tracks 812,430  
Tracks/Cylinder 255  
Partition Disk #4, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE5  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #5, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE6  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 23.43 GB (25,161,131,520 bytes)  
Total Cylinders 3,059  
Total Sectors 49,142,835  
Total Tracks 780,045  
Tracks/Cylinder 255  
Partition Disk #6, Partition #0  
Partition Size 23.43 GB (25,161,099,264 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE7  
Manufacturer Not Available

Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 17.57 GB (18,868,792,320 bytes)  
Total Cylinders 2,294  
Total Sectors 36,853,110  
Total Tracks 584,970  
Tracks/Cylinder 255  
Partition Disk #7, Partition #0  
Partition Size 17.57 GB (18,868,760,064 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE8  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 24.41 GB (26,205,742,080 bytes)  
Total Cylinders 3,186  
Total Sectors 51,183,090  
Total Tracks 812,430  
Tracks/Cylinder 255  
Partition Disk #8, Partition #0  
Partition Size 24.41 GB (26,205,709,824 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE9  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available  
SCSI Port Not Available  
SCSI Target ID Not Available  
Sectors/Track 63  
Size 19.53 GB (20,966,238,720 bytes)  
Total Cylinders 2,549  
Total Sectors 40,949,685  
Total Tracks 649,995  
Tracks/Cylinder 255  
Partition Disk #9, Partition #0  
Partition Size 19.53 GB (20,966,206,464 bytes)  
Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE10  
Manufacturer Not Available  
Model Not Available  
Bytes/Sector 512  
Media Loaded Yes  
Media Type Fixed hard disk  
Partitions 1  
SCSI Bus Not Available  
SCSI Logical Unit Not Available

SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #10, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE11  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #11, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE12  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 24.41 GB (26,205,742,080 bytes)  
 Total Cylinders 3,186  
 Total Sectors 51,183,090  
 Total Tracks 812,430  
 Tracks/Cylinder 255  
 Partition Disk #12, Partition #0  
 Partition Size 24.41 GB (26,205,709,824 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE13  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 19.53 GB (20,966,238,720 bytes)  
 Total Cylinders 2,549  
 Total Sectors 40,949,685  
 Total Tracks 649,995

Tracks/Cylinder 255  
 Partition Disk #13, Partition #0  
 Partition Size 19.53 GB (20,966,206,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE14  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 23.43 GB (25,161,131,520 bytes)  
 Total Cylinders 3,059  
 Total Sectors 49,142,835  
 Total Tracks 780,045  
 Tracks/Cylinder 255  
 Partition Disk #14, Partition #0  
 Partition Size 23.43 GB (25,161,099,264 bytes)  
 Partition Starting Offset 32,256 bytes

Description \\.\PHYSICALDRIVE15  
 Manufacturer Not Available  
 Model Not Available  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus Not Available  
 SCSI Logical Unit Not Available  
 SCSI Port Not Available  
 SCSI Target ID Not Available  
 Sectors/Track 63  
 Size 17.57 GB (18,868,792,320 bytes)  
 Total Cylinders 2,294  
 Total Sectors 36,853,110  
 Total Tracks 584,970  
 Tracks/Cylinder 255  
 Partition Disk #15, Partition #0  
 Partition Size 17.57 GB (18,868,760,064 bytes)  
 Partition Starting Offset 32,256 bytes

Description Disk drive  
 Manufacturer (Standard disk drives)  
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus 4  
 SCSI Logical Unit 0  
 SCSI Port 2  
 SCSI Target ID 0  
 Sectors/Track 32  
 Size 16.95 GB (18,203,197,440 bytes)  
 Total Cylinders 4,357  
 Total Sectors 35,553,120  
 Total Tracks 1,111,035  
 Tracks/Cylinder 255  
 Partition Disk #85, Partition #0  
 Partition Size 16.95 GB (18,199,003,136 bytes)  
 Partition Starting Offset 16,384 bytes

Description Disk drive  
 Manufacturer (Standard disk drives)

Model COMPAQ LOGICAL VOLUME SCSI Disk Device  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus 4  
 SCSI Logical Unit 0  
 SCSI Port 2  
 SCSI Target ID 1  
 Sectors/Track 32  
 Size 39.06 GB (41,942,138,880 bytes)  
 Total Cylinders 10,039  
 Total Sectors 81,918,240  
 Total Tracks 2,559,945  
 Tracks/Cylinder 255  
 Partition Disk #86, Partition #0  
 Partition Size 39.06 GB (41,940,670,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description Disk drive  
 Manufacturer (Standard disk drives)  
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus 4  
 SCSI Logical Unit 0  
 SCSI Port 2  
 SCSI Target ID 2  
 Sectors/Track 32  
 Size 29.30 GB (31,455,559,680 bytes)  
 Total Cylinders 7,529  
 Total Sectors 61,436,640  
 Total Tracks 1,919,895  
 Tracks/Cylinder 255  
 Partition Disk #87, Partition #0  
 Partition Size 29.29 GB (31,453,438,464 bytes)  
 Partition Starting Offset 32,256 bytes

Description Disk drive  
 Manufacturer (Standard disk drives)  
 Model COMPAQ LOGICAL VOLUME SCSI Disk Device  
 Bytes/Sector 512  
 Media Loaded Yes  
 Media Type Fixed hard disk  
 Partitions 1  
 SCSI Bus 4  
 SCSI Logical Unit 0  
 SCSI Port 2  
 SCSI Target ID 3  
 Sectors/Track 32  
 Size 498.05 MB (522,240,000 bytes)  
 Total Cylinders 125  
 Total Sectors 1,020,000  
 Total Tracks 31,875  
 Tracks/Cylinder 255  
 Partition Disk #88, Partition #0  
 Partition Size 494.16 MB (518,160,384 bytes)  
 Partition Starting Offset 32,256 bytes

[SCSI]

Item Value  
 Name Compaq Smart Array 5i Controller  
 Manufacturer Compaq  
 Status OK  
 PNP Device ID  
 PCI\VEN\_0E11&DEV\_B178&SUBSYS\_40800E11&REV\_01\3  
 &267A616A&0&70

Memory Address 0xF5F80000-0xF5FBFFFF  
 I/O Port 0x00002400-0x000024FF  
 Memory Address 0xF5EF0000-0xF5EF3FFF  
 IRQ Channel IRQ 40  
 Driver c:\windows\system32\drivers\cpqcissm.sys (5.8.74.1 built by:  
 Microsoft, 13.00 KB (13,312 bytes), 6/6/2003 10:01 AM)

Name Smart Array 5300 Controller (Non-Miniport)  
 Manufacturer Hewlett-Packard  
 Status OK  
 PNP Device ID  
 PCI\VEN\_0E11&DEV\_B060&SUBSYS\_40700E11&REV\_02\3  
 &13C0B0C5&0&10  
 Memory Address 0xF5DC0000-0xF5DFFFFF  
 Memory Address 0xF5C00000-0xF5CFFFFF  
 I/O Port 0x00003000-0x00003FFF  
 IRQ Channel IRQ 43  
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:  
 WinDDK, 38.00 KB (38,912 bytes), 4/23/2003 11:34 AM)

Name Smart Array 5300 Controller (Non-Miniport)  
 Manufacturer Hewlett-Packard  
 Status OK  
 PNP Device ID  
 PCI\VEN\_0E11&DEV\_B060&SUBSYS\_40700E11&REV\_02\3  
 &1070020&0&08  
 Memory Address 0xF5AC0000-0xF5AFFFFF  
 Memory Address 0xF5900000-0xF59FFFFF  
 I/O Port 0x00005000-0x00005FFF  
 IRQ Channel IRQ 19  
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:  
 WinDDK, 38.00 KB (38,912 bytes), 4/23/2003 11:34 AM)

Name Smart Array 5300 Controller (Non-Miniport)  
 Manufacturer Hewlett-Packard  
 Status OK  
 PNP Device ID  
 PCI\VEN\_0E11&DEV\_B060&SUBSYS\_40700E11&REV\_02\3  
 &29E81982&0&08  
 Memory Address 0xF57C0000-0xF57FFFFF  
 Memory Address 0xF5600000-0xF56FFFFF  
 I/O Port 0x00006000-0x00006FFF  
 IRQ Channel IRQ 23  
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:  
 WinDDK, 38.00 KB (38,912 bytes), 4/23/2003 11:34 AM)

Name Smart Array 5300 Controller (Non-Miniport)  
 Manufacturer Hewlett-Packard  
 Status OK  
 PNP Device ID  
 PCI\VEN\_0E11&DEV\_B060&SUBSYS\_40700E11&REV\_02\3  
 &172E68DD&0&08  
 Memory Address 0xF54C0000-0xF54FFFFF  
 Memory Address 0xF5300000-0xF53FFFFF  
 I/O Port 0x00007000-0x00007FFF  
 IRQ Channel IRQ 27  
 Driver c:\windows\system32\drivers\hpqcissb.sys (5.6.2.32 built by:  
 WinDDK, 38.00 KB (38,912 bytes), 4/23/2003 11:34 AM)

Name Smart Array 5300 Controller (Non-Miniport)  
 Manufacturer Hewlett-Packard  
 Status OK  
 PNP Device ID  
 PCI\VEN\_0E11&DEV\_B060&SUBSYS\_40700E11&REV\_02\3  
 &474B838&0&08  
 Memory Address 0xF51C0000-0xF51FFFFF  
 Memory Address 0xF5000000-0xF50FFFFF  
 I/O Port 0x00008000-0x00008FFF  
 IRQ Channel IRQ 31

Driver c:\windows\system32\drivers\hpcqissb.sys (5.6.2.32 built by: WinDDK, 38.00 KB (38,912 bytes), 4/23/2003 11:34 AM)

[IDE]

Item Value  
 Name CSB5 IDE Controller  
 Manufacturer ServerWorks  
 Status OK  
 PNP Device ID PCI\VEN\_1166&DEV\_0212&SUBSYS\_02121166&REV\_93\3&267A616A&0&79  
 I/O Port 0x00002820-0x0000282F  
 Driver c:\windows\system32\drivers\pciide.sys (5.2.3790.0 (srv03\_rtm.030324-2048), 5.50 KB (5,632 bytes), 3/25/2003 12:00 AM)

Name Primary IDE Channel  
 Manufacturer (Standard IDE ATA/ATAPI controllers)  
 Status OK  
 PNP Device ID PCI\IDE\IDECHANNEL\4&1024D5C6&0&0  
 I/O Port 0x000001F0-0x000001F7  
 I/O Port 0x000003F6-0x000003F6  
 IRQ Channel IRQ 14  
 Driver c:\windows\system32\drivers\atapi.sys (5.2.3790.0 (srv03\_rtm.030324-2048), 89.00 KB (91,136 bytes), 3/25/2003 12:00 AM)

Name Secondary IDE Channel  
 Manufacturer (Standard IDE ATA/ATAPI controllers)  
 Status OK  
 PNP Device ID PCI\IDE\IDECHANNEL\4&1024D5C6&0&1  
 I/O Port 0x00000170-0x00000177  
 I/O Port 0x00000376-0x00000376  
 Driver c:\windows\system32\drivers\atapi.sys (5.2.3790.0 (srv03\_rtm.030324-2048), 89.00 KB (91,136 bytes), 3/25/2003 12:00 AM)

[Printing]

Name	Driver	Port	Name	Server Name
CCA15109	on ccaprint02	(from DPOL)	in session 3	HP LaserJet 4100
Series	PCL	TS002		
Labprinter on inforb	(from DPOL)	in session 3		HP LaserJet 5Si/5Si
MX PS	TS001			

[Problem Devices]

Device	PNP Device ID	Error Code
--------	---------------	------------

[USB]

Device PNP Device ID  
 ServerWorks (RCC) PCI to USB Open Host Controller  
 PCI\VEN\_1166&DEV\_0220&SUBSYS\_02201166&REV\_05\3&267A616A&0&7A  
 USB Root Hub USB\ROOT\_HUB\4&AF5358C&0

[Software Environment]

[System Drivers]

Name	Description	File	Type	Started	Start
Mode	State	Status	Error Control	Accept	Pause
	Accept	Stop			

abiosdsk	Abiosdsk	Not Available	Kernel Driver	No
	Disabled	Stopped	Ignore	No
acpi	Microsoft ACPI Driver		Kernel Driver	
	c:\windows\system32\drivers\acpi.sys		Normal	No
	Yes	Boot	Running	OK
	Yes			
acpiec	ACPIEC	c:\windows\system32\drivers\acpiec.sys	Kernel	
Driver	No	Disabled	Stopped	OK
	No		Normal	No
adpu160m	adpu160m	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
adpu320	adpu320	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
afcnt	afcnt	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
afd	AFD Networking Support Environment		Kernel Driver	
	c:\windows\system32\drivers\afd.sys		Normal	No
	Yes	Auto	Running	OK
	Yes			
aha154x	Aha154x	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
aic78u2	aic78u2	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
aic78xx	aic78xx	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
aliide	AliIde	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			
asynctac	RAS Asynchronous Media Driver		Kernel Driver	
	c:\windows\system32\drivers\asynctac.sys		Normal	No
	No	Manual	Stopped	OK
	No			
atapi	Standard IDE/ESDI Hard Disk Controller		Kernel Driver	
	c:\windows\system32\drivers\ataapi.sys		Normal	No
	Yes	Boot	Running	OK
	Yes			
atdisk	Atdisk	Not Available	Kernel Driver	No
	Disabled	Stopped	Ignore	No
	OK			
ati2mpad	ati2mpad	c:\windows\system32\drivers\ati2mpad.sys	Kernel	
Driver	No	Manual	Stopped	OK
	No		Ignore	No
atmarpc	ATM ARP Client Protocol		Kernel Driver	
	c:\windows\system32\drivers\atmarpc.sys		Normal	No
	No	Manual	Stopped	OK
	No			
audstub	Audio Stub Driver	c:\windows\system32\drivers\audstub.sys	Kernel Driver	
	Kernel Driver	Yes	Manual	Running
	Normal	No	Yes	OK
	Yes			
b57w2k	BCM5701 Gigabit Ethernet		Kernel Driver	
	c:\windows\system32\drivers\b57xp32.sys		Normal	No
	Yes	Manual	Running	OK
	Yes			
beep	Beep	c:\windows\system32\drivers\beep.sys	Kernel	
Driver	Yes	System	Running	OK
	Yes			
cbidf2k	cbidf2k	c:\windows\system32\drivers\cbidf2k.sys	Kernel	
Driver	No	Disabled	Stopped	OK
	No		Normal	No
cd20xmt	cd20xmt	Not Available	Kernel Driver	No
	Disabled	Stopped	Normal	No
	OK			









[Signed Drivers]

Device Name	Signed	Device Class	Driver Version
Name	Driver Date	Manufacturer	INF Name Driver
Not Available	Not Available	Not Available	Not Available
Available	Not Available	Not Available	Not Available
Not Available	Not Available	HTREE\ROOT\0	
ACPI Multiprocessor PC	Yes	COMPUTER	
5.2.3790.0 10/1/2002 (Standard computers)		hal.inf	Not Available
Available	ROOT\ACPI_HAL\0000		
Microsoft ACPI-Compliant System	Yes	SYSTEM	
5.2.3790.0 10/1/2002 (Standard computers)		acpi.inf	Not Available
ACPI_HAL\PNP0C08\0			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\0			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\1			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\2			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\3			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\4			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\5			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\6			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\7			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\8			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\9			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\10			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\11			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\12			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		

ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\13			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\14			
Processor	Yes	PROCESSOR	5.2.3790.0 10/1/2002 (Standard processor types)
cpu.inf	Not Available		
ACPI\GENUINEINTEL_-_X86_FAMILY_15_MODEL_2\15			
PCI bus devices)	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
machine.inf	Not Available		ACPI\PNP0A03\0
BCM5701	Yes	NET	2.91.0.0
10/1/2002	Narrowcom	netb57xp.inf	Not Available
Available			
PCI\VEN_14E4&DEV_1645&SUBSYS_007C0E11&REV_15\3			
&267A616A&0&08			
Compaq Advanced System Management Controller	Yes	SYSTEM	
5.2.3790.0 10/1/2002	Compaq	machine.inf	Not Available
Available			
PCI\VEN_0E11&DEV_A0F0&SUBSYS_B0F30E11&REV_00\3			
&267A616A&0&60			
Standard VGA Graphics Adapter	Yes	DISPLAY	5.2.3790.0
10/1/2002 (Standard display types)		display.inf	Not Available
Available			
PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_27\3			
&267A616A&0&68			
Default Monitor	Yes	MONITOR	5.1.2001.0 6/6/2001
(Standard monitor types)		monitor.inf	Not Available
Available			
DISPLAY\DEFAULT_MONITOR\4&85FC1EE&0&12345678			
&00&0D			
Compaq Smart Array 5i Controller	Yes	SCSIADAPTER	
5.2.3790.0 10/1/2002	Compaq	pnpscsi.inf	Not Available
PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_01\3			
&267A616A&0&70			
Compaq Virtual LUN	Yes	SYSTEM	5.2.3790.0 10/1/2002
scsidesv.inf	Not Available		
SCSI\OTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICA			
TE&REV_CISS\4&37E0A253&0&000			
Disk drive	Yes	DISKDRIVE	5.2.3790.0 10/1/2002 (Standard disk drives)
disk.inf	Not Available		
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&REV_2.48\4&37E0A253&0&400			
Disk drive	Yes	DISKDRIVE	5.2.3790.0 10/1/2002 (Standard disk drives)
disk.inf	Not Available		
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&REV_2.48\4&37E0A253&0&410			
Disk drive	Yes	DISKDRIVE	5.2.3790.0 10/1/2002 (Standard disk drives)
disk.inf	Not Available		
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&REV_2.48\4&37E0A253&0&420			
Disk drive	Yes	DISKDRIVE	5.2.3790.0 10/1/2002 (Standard disk drives)
disk.inf	Not Available		
SCSI\DISK&VEN_COMPAQ&PROD_LOGICAL_VOLUME&REV_2.48\4&37E0A253&0&430			
ServerWorks Champion CSB5 - SouthBridge	Yes	SYSTEM	
5.2.3790.0 10/1/2002	ServerWorks (RCC)	machine.inf	Not Available
Not Available			
PCI\VEN_1166&DEV_0201&SUBSYS_00000000&REV_93\3			
&267A616A&0&78			
Motherboard resources	Yes	SYSTEM	5.2.3790.0
10/1/2002 (Standard system devices)		machine.inf	Not Available
Not Available			
ACPI\PNP0C02\0			
System timer	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
machine.inf	Not Available		
ACPI\PNP0100\4&35118DFF&0			
Direct memory access controller	Yes	SYSTEM	5.2.3790.0
10/1/2002 (Standard system devices)		machine.inf	Not Available















IPSEC driver	Not Available	LEGACYDRIVER	Not Available	Remote Access IP ARP Driver	Not Available	LEGACYDRIVER	Not Available
Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_IPSEC\0000	Not Available	Not Available	Not Available	Not Available	Not Available
ksecdd	Not Available	LEGACYDRIVER	Not Available	ROOT\LEGACY_WANARP\0000	Not Available	Not Available	Not Available
Not Available	Not Available	Not Available	Not Available	Audio Codecs	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	ROOT\LEGACY_KSECDD\0000	Not Available	wave.inf	Not Available	Not Available	Not Available
mmnmd	Not Available	LEGACYDRIVER	Not Available	ROOT\MEDIA\MS_MMADM	Not Available	Not Available	Not Available
Not Available	Not Available	Not Available	Not Available	Legacy Audio Drivers	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	ROOT\LEGACY_MNMDD\0000	Not Available	wave.inf	Not Available	Not Available	Not Available
mountmgr	Not Available	LEGACYDRIVER	Not Available	ROOT\MEDIA\MS_MMDRV	Not Available	Not Available	Not Available
Not Available	Not Available	Not Available	Not Available	Media Control Devices	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	ROOT\LEGACY_MOUNTMGR\0000	Not Available	wave.inf	Not Available	Not Available	Not Available
NDIS System Driver	Not Available	LEGACYDRIVER	Not Available	Available	ROOT\MEDIA\MS_MMMCI	Not Available	Not Available
Available	Not Available	Not Available	Not Available	Legacy Video Capture Devices	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	ROOT\LEGACY_NDIS\0000	Not Available	10/1/2002 (Standard system devices)	wave.inf	Not Available	Not Available
Remote Access NDIS TAPI Driver	Not Available	LEGACYDRIVER	Not Available	Available	ROOT\MEDIA\MS_MMVCD	Not Available	Not Available
LEGACYDRIVER	Not Available	Not Available	Not Available	Video Codecs	Yes	MEDIA	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	ROOT\LEGACY_NDISTAPI\0000	Not Available	wave.inf	Not Available	Not Available	Not Available
NDIS Usermode I/O Protocol	Not Available	LEGACYDRIVER	Not Available	ROOT\MEDIA\MS_MMVID	Not Available	Not Available	Not Available
Not Available	Not Available	Not Available	Not Available	WAN Miniport (L2TP)	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
Not Available	Not Available	ROOT\LEGACY_NDISUIO\0000	Not Available	netrasa.inf	Not Available	Not Available	Not Available
NDProxy	Not Available	LEGACYDRIVER	Not Available	ROOT\MS_L2TPMINIPORT\0000	Not Available	Not Available	Not Available
Not Available	Not Available	Not Available	Not Available	WAN Miniport (IP)	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
Not Available	Not Available	ROOT\LEGACY_NDPROXY\0000	Not Available	netrasa.inf	Not Available	Not Available	ROOT\MS_NDISWANIP\0000
NetBios over Tcpip	Not Available	LEGACYDRIVER	Not Available	WAN Miniport (PPPOE)	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
Available	Not Available	Not Available	Not Available	netrasa.inf	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_NETBT\0000	Not Available	ROOT\MS_PPPOEMINIPORT\0000	Not Available	Not Available	Not Available
Null	Not Available	LEGACYDRIVER	Not Available	WAN Miniport (PPTP)	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
Not Available	Not Available	Not Available	Not Available	netrasa.inf	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_NULL\0000	Not Available	ROOT\MS_PPTPMINIPORT\0000	Not Available	Not Available	Not Available
Partition Manager	Not Available	LEGACYDRIVER	Not Available	Direct Parallel	Yes	NET	5.2.3790.0 10/1/2002 Microsoft
Available	Not Available	Not Available	Not Available	netrasa.inf	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_PARTMGR\0000	Not Available	ROOT\MS_PTMINIPORT\0000	Not Available	Not Available	Not Available
Remote Access Auto Connection Driver	Not Available	LEGACYDRIVER	Not Available	Terminal Server Device Redirector	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
LEGACYDRIVER	Not Available	Not Available	Not Available	machine.inf	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_RASACD\0000	Not Available	ROOT\RDPDR\0000	Not Available	Not Available	Not Available
RDPCCDD	Not Available	LEGACYDRIVER	Not Available	Terminal Server Keyboard Driver	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	Not Available	Not Available	machine.inf	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_RDPCCDD\0000	Not Available	ROOT\RDP_KBD\0000	Not Available	Not Available	Not Available
RDPWD	Not Available	LEGACYDRIVER	Not Available	Terminal Server Mouse Driver	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	Not Available	Not Available	10/1/2002 (Standard system devices)	machine.inf	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_RDPWD\0000	Not Available	Not Available	ROOT\RDP_MOU\0000	Not Available	Not Available
sacdrv	Not Available	LEGACYDRIVER	Not Available	Plug and Play Software Device Enumerator	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	Not Available	Not Available	5.2.3790.0 10/1/2002 (Standard system devices)	machine.inf	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_SACDRV\0000	Not Available	ROOT\SYSTEM\0000	Not Available	Not Available	Not Available
startdss	Not Available	LEGACYDRIVER	Not Available	Microcode Update Device	Yes	SYSTEM	5.2.3790.0 10/1/2002 (Standard system devices)
Not Available	Not Available	Not Available	Not Available	10/1/2002 (Standard system devices)	machine.inf	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_STARTDSS\0000	Not Available	Not Available	ROOT\SYSTEM\0001	Not Available	Not Available
TCP/IP Protocol Driver	Not Available	LEGACYDRIVER	Not Available	Not Available	Yes	Not Available	2:5.0,2:5.1,2:5.2
Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_TCPIP\0000	Not Available	Not Available	Not Available	Not Available	Not Available
TDTCP	Not Available	LEGACYDRIVER	Not Available	session 3	Yes	Not Available	2:5.0,2:5.1,2:5.2
Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_TDTCP\0000	Not Available	Not Available	Not Available	Not Available	Not Available
volsnap	Not Available	LEGACYDRIVER	Not Available	session 3	Yes	Not Available	Labprinter on inforb (from DPOL) in
Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Not Available	Not Available	ROOT\LEGACY_VOLSNAP\0000	Not Available	[Environment Variables]	Not Available	Not Available	Not Available
Remote Access IP ARP Driver	Not Available	LEGACYDRIVER	Not Available	Variable	Value	User Name	
Not Available	Not Available	Not Available	Not Available	ComSpec	%SystemRoot%\system32\cmd.exe	<SYSTEM>	
Not Available	Not Available	ROOT\LEGACY_IPSEC\0000	Not Available	Path	%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;C:\Program Files\Microsoft SQL Server\80\Tools\BINN	<SYSTEM>	
Not Available	Not Available	ROOT\LEGACY_WANARP\0000	Not Available				

```
windir %SystemRoot% <SYSTEM>
OS Windows_NT <SYSTEM>
PROCESSOR_ARCHITECTURE x86 <SYSTEM>

PROCESSOR_LEVEL 15 <SYSTEM>
PROCESSOR_IDENTIFIER x86 Family 15 Model 2 Stepping 5,
GenuineIntel <SYSTEM>
PROCESSOR_REVISION 0205 <SYSTEM>
NUMBER_OF_PROCESSORS 16 <SYSTEM>
ClusterLogC:\WINDOWS\Cluster\cluster.log <SYSTEM>
```

```
PATHEXT
.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
<SYSTEM>
```

```
TEMP %SystemRoot%\TEMP <SYSTEM>
TMP %SystemRoot%\TEMP <SYSTEM>
WV_GATEWAY_CFG <SYSTEM>
JSERV <SYSTEM>
TEMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\SYSTEM
TMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\SYSTEM
TEMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\LOCAL SERVICE
TMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\LOCAL SERVICE
TEMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\NETWORK SERVICE
TMP %USERPROFILE%\Local Settings\Temp NT
AUTHORITY\NETWORK SERVICE
TEMP %USERPROFILE%\Local Settings\Temp
DB2BUSTER\Administrator
TMP %USERPROFILE%\Local Settings\Temp
DB2BUSTER\Administrator
```

[Print Jobs]

Document	Size	Owner	Notify	Status	Time Submitted

[Network Connections]

Local Name	Remote Name	Type	Status	User
Not Available	\\INFORB\audit_fdr	Disk	Current Connection	
	DB2BUSTER\dpol			

[Running Tasks]

Name	Path	Process ID	Priority	Min Working Set	Max Working Set
system idle process		Not Available		0	Not Available
Available	Not Available	Not Available		Not Available	Not Available
system	Not Available	4	8	0	1413120
smss.exe	Not Available	476	11	204800	1413120
csrss.exe	Not Available	524	13	Not Available	Not Available
winlogon.exe	c:\windows\system32\winlogon.exe	13	204800	1413120	9/9/2003 11:25 PM
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			536.50 KB (549,376	
	3/25/2003 12:00 AM				

services.exe	c:\windows\system32\services.exe	592			
9	204800	1413120	9/9/2003 11:25 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			102.00 KB (104,448	
	3/25/2003 12:00 AM				
lsass.exe	c:\windows\system32\lsass.exe	604	9	204800	
	1413120	9/9/2003 11:25 PM	5.2.3790.0 (srv03_rtm.030324-2048)		
svchost.exe	c:\windows\system32\svchost.exe	764			
8	204800	1413120	9/9/2003 11:25 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			13.00 KB (13,312	
	3/25/2003 12:00 AM				
svchost.exe	c:\windows\system32\svchost.exe	804			
8	204800	1413120	9/9/2003 11:25 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			13.00 KB (13,312	
	3/25/2003 12:00 AM				
svchost.exe	Not Available	968	8	Not Available	
Available	Not Available	9/9/2003 11:25 PM		Not Available	
svchost.exe	Not Available	Not Available			
svchost.exe	Not Available	1020	8	Not Available	
Available	Not Available	9/9/2003 11:25 PM		Not Available	
svchost.exe	Not Available	Not Available			
svchost.exe	c:\windows\system32\svchost.exe	1032			
8	204800	1413120	9/9/2003 11:25 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			13.00 KB (13,312	
	3/25/2003 12:00 AM				
spoolsv.exe	c:\windows\system32\spoolsv.exe	1216			
8	204800	1413120	9/9/2003 11:25 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			55.00 KB (56,320	
	3/25/2003 12:00 AM				
msdtc.exe	Not Available	1260	8	Not Available	
Not Available	Not Available	9/9/2003 11:25 PM		Not Available	
svchost.exe	Not Available	Not Available			
svchost.exe	c:\windows\system32\svchost.exe	1576			
8	204800	1413120	9/9/2003 11:25 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			13.00 KB (13,312	
	3/25/2003 12:00 AM				
svchost.exe	Not Available	1608	8	Not Available	
Available	Not Available	9/9/2003 11:25 PM		Not Available	
dfssvc.exe	c:\windows\system32\dfssvc.exe	1928	8	204800	
	1413120	9/9/2003 11:25 PM	5.2.3790.0 (srv03_rtm.030324-2048)		
wmiprvse.exe	Not Available	256	8	Not Available	
Available	Not Available	9/9/2003 11:26 PM		Not Available	
csrss.exe	Not Available	372	13	Not Available	
Not Available	Not Available	9/9/2003 11:26 PM		Not Available	
winlogon.exe	c:\windows\system32\winlogon.exe	396			
13	204800	1413120	9/9/2003 11:26 PM		
bytes)	5.2.3790.0 (srv03_rtm.030324-2048)			536.50 KB (549,376	
	3/25/2003 12:00 AM				
rdpclip.exe	c:\windows\system32\rdpclip.exe	1000	8	204800	
	1413120	9/9/2003 11:26 PM	5.2.3790.0 (srv03_rtm.030324-2048)		
explorer.exe	c:\windows\explorer.exe	1016	8		
	204800	1413120	9/9/2003 11:26 PM	6.00.3790.0	
bytes)	(srv03_rtm.030324-2048)			1,008.50 KB (1,032,704 bytes)	
	3/25/2003 12:00 AM				
cmd.exe	c:\windows\system32\cmd.exe	2064	8	204800	
	1413120	9/9/2003 11:27 PM	5.2.3790.0 (srv03_rtm.030324-2048)		
sqlservr.exe	c:\program files\microsoft sql server\mssql\binn\sqlservr.exe	5604	13	204800	1413120
	9/10/2003 6:24 PM	2000.080.0761.00	7.11 MB (7,450,664		
bytes)	6/12/2003 2:25 PM				
logon.scr	Not Available	5532	4	Not Available	
Not Available	Not Available	9/11/2003 10:19 AM		Not Available	
Not Available	Not Available	Not Available			

csrss.exe	Not Available	4464	13	Not Available	winsta	5.2.3790.0 (srv03_rtm.030324-2048)	51.00 KB (52,224 bytes)
	Not Available	9/11/2003 2:22 PM	Not Available			3/25/2003 12:00 AM	Microsoft Corporation
	Not Available	Not Available	Not Available			c:\windows\system32\winsta.dll	
winlogon.exe	c:\windows\system32\winlogon.exe	5024			netapi32	5.2.3790.0 (srv03_rtm.030324-2048)	317.00 KB (324,608 bytes)
	13	204800	1413120	9/11/2003 2:22 PM		3/25/2003 12:00 AM	Microsoft Corporation
	5.2.3790.0 (srv03_rtm.030324-2048)					c:\windows\system32\netapi32.dll	
	3/25/2003 12:00 AM				profmap	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528 bytes)
rdpclip.exe	c:\windows\system32\rdpclip.exe	5292	8	204800		3/25/2003 12:00 AM	Microsoft Corporation
	1413120	9/11/2003 2:22 PM	5.2.3790.0 (srv03_rtm.030324-2048)			c:\windows\system32\profmap.dll	
	53.00 KB (54,272 bytes)				regapi	5.2.3790.0 (srv03_rtm.030324-2048)	48.50 KB (49,664 bytes)
explorer.exe	c:\windows\explorer.exe	292	8			3/25/2003 12:00 AM	Microsoft Corporation
	204800	1413120	9/11/2003 2:22 PM	6.00.3790.0		c:\windows\system32\regapi.dll	
	(srv03_rtm.030324-2048)				ws2_32	5.2.3790.0 (srv03_rtm.030324-2048)	87.50 KB (89,600 bytes)
	1,008.50 KB (1,032,704 bytes)					3/25/2003 12:00 AM	Microsoft Corporation
	3/25/2003 12:00 AM				ws2help	5.2.3790.0 (srv03_rtm.030324-2048)	19.50 KB (19,968 bytes)
cmd.exe	c:\windows\system32\cmd.exe	5744	8	204800		3/25/2003 12:00 AM	Microsoft Corporation
	1413120	9/11/2003 3:00 PM	5.2.3790.0 (srv03_rtm.030324-2048)			c:\windows\system32\ws2help.dll	
	374.00 KB (382,976 bytes)				psapi	5.2.3790.0 (srv03_rtm.030324-2048)	21.50 KB (22,016 bytes)
msinfo32.exe	c:\program files\common files\microsoft					3/25/2003 12:00 AM	Microsoft Corporation
shared\msinfo\msinfo32.exe	4240	8	204800	1413120		c:\windows\system32\psapi.dll	
	9/11/2003 3:41 PM	5.2.3790.0 (srv03_rtm.030324-2048)			version	5.2.3790.0 (srv03_rtm.030324-2048)	17.00 KB (17,408 bytes)
	40.50 KB (41,472 bytes)					3/25/2003 12:00 AM	Microsoft Corporation
wmiprvse.exe	Not Available	4080	8	Not Available		c:\windows\system32\version.dll	
Available	Not Available	9/11/2003 3:41 PM	Not Available	Not Available		5.2.3790.0 (srv03_rtm.030324-2048)	1,014.50 KB (1,038,848 bytes)
	Not Available	Not Available	Not Available			3/25/2003 12:00 AM	Microsoft Corporation
						c:\windows\system32\setupapi.dll	
[Loaded Modules]							
Name	Version	Size	File Date	Manufacturer	Path		
winlogon	5.2.3790.0 (srv03_rtm.030324-2048)	536.50 KB (549,376 bytes)				msgina	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\winlogon.exe					shsvcs	6.00.3790.0 (srv03_rtm.030324-2048)
ntdll	5.2.3790.0 (srv03_rtm.030324-2048)	722.50 KB (739,840 bytes)					3/25/2003 12:00 AM
	3/25/2003 12:00 AM	Microsoft Corporation				shlwapi	6.00.3790.0 (srv03_rtm.030324-2048)
	c:\windows\system32\ntdll.dll						3/25/2003 12:00 AM
kernel32	5.2.3790.0 (srv03_rtm.030324-2048)	965.00 KB (988,160 bytes)				sfc	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\kernel32.dll					sfc_os	5.2.3790.0 (srv03_rtm.030324-2048)
msvcrt	7.0.3790.0 (srv03_rtm.030324-2048)	319.50 KB (327,168 bytes)					3/25/2003 12:00 AM
	3/25/2003 12:00 AM	Microsoft Corporation				wintrust	5.131.3790.0 (srv03_rtm.030324-2048)
	c:\windows\system32\msvcrt.dll						3/25/2003 12:00 AM
advapi32	5.2.3790.0 (srv03_rtm.030324-2048)	559.50 KB (572,928 bytes)				ole32	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\advapi32.dll					imagehlp	5.2.3790.0 (srv03_rtm.030324-2048)
rpcrt4	5.2.3790.0 (srv03_rtm.030324-2048)	643.50 KB (658,944 bytes)					3/25/2003 12:00 AM
	3/25/2003 12:00 AM	Microsoft Corporation				comctl32	6.0 (srv03_rtm.030324-2048)
	c:\windows\system32\rpcrt4.dll						907.00 KB (928,768 bytes)
user32	5.2.3790.0 (srv03_rtm.030324-2048)	562.00 KB (575,488 bytes)					4/23/2003 5:32 AM
	3/25/2003 12:00 AM	Microsoft Corporation					Microsoft Corporation
	c:\windows\system32\user32.dll						c:\windows\winsxs\x86_microsoft.windows.common-controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll
gdi32	5.2.3790.0 (srv03_rtm.030324-2048)	263.00 KB (269,312 bytes)				winscard	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\gdi32.dll						Microsoft Corporation
userenv	5.2.3790.0 (srv03_rtm.030324-2048)	732.50 KB (750,080 bytes)				wtsapi32	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\userenv.dll						Microsoft Corporation
nddeapi	5.2.3790.0 (srv03_rtm.030324-2048)	16.00 KB (16,384 bytes)				winmm	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\nddeapi.dll						Microsoft Corporation
crypt32	5.131.3790.0 (srv03_rtm.030324-2048)	598.00 KB (612,352 bytes)				sxs	5.2.3790.0 (srv03_rtm.030324-2048)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\crypt32.dll						Microsoft Corporation
msasn1	5.2.3790.0 (srv03_rtm.030324-2048)	58.00 KB (59,392 bytes)					733.00 KB (750,592 bytes)
	3/25/2003 12:00 AM	Microsoft Corporation					3/25/2003 12:00 AM
	c:\windows\system32\msasn1.dll						Microsoft Corporation
secur32	5.2.3790.0 (srv03_rtm.030324-2048)	63.00 KB (64,512 bytes)					c:\windows\system32\sxs.dll
	3/25/2003 12:00 AM	Microsoft Corporation					
	c:\windows\system32\secur32.dll						

shell32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\shell32.dll	7.79 MB (8,166,400 bytes)	umpnpgm5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\umpnpgm.dll	121.50 KB (124,416 bytes)
wldap32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wldap32.dll	158.00 KB (161,792 bytes)	ncobjapi5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ncobjapi.dll	34.50 KB (35,328 bytes)
rsaenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rsaenh.dll	176.83 KB (181,072 bytes)	eventlog5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\eventlog.dll	60.50 KB (61,952 bytes)
cscdll bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cscdll.dll	99.00 KB (101,376 bytes)	lsass5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\lsass.exe	13.00 KB (13,312 bytes)
wlnotify bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wlnotify.dll	87.50 KB (89,600 bytes)	lsasrv5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\lsasrv.dll	780.50 KB (799,232 bytes)
winspool bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\winspool.drv	140.00 KB (143,360 bytes)	samsrv5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\samsrv.dll	452.00 KB (462,848 bytes)
mpr bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mpr.dll	56.00 KB (57,344 bytes)	cryptdll5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cryptdll.dll	34.00 KB (34,816 bytes)
comctl32 controls_6595b64144cc1fd_5.82.0.0_x-ww_8a69ba05\comctl32.dll	5.82 (srv03_rtm.030324-2048) 4/23/2003 5:32 AM Microsoft Corporation c:\windows\winsxs\x86_microsoft.windows.common- controls_6595b64144cc1fd_5.82.0.0_x-ww_8a69ba05\comctl32.dll	561.00 KB (574,464 bytes)	samlib5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\samlib.dll	49.00 KB (50,176 bytes)
uxtheme bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\uxtheme.dll	196.00 KB (200,704 bytes)	msprivs5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msprivs.dll	46.50 KB (47,616 bytes)
clbcatq bytes)	2001.12.4720.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\clbcatq.dll	481.00 KB (492,544 bytes)	kerberos5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\kerberos.dll	332.50 KB (340,480 bytes)
oleaut32 Microsoft Corporation	5.2.3790.0 486.00 KB (497,664 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\oleaut32.dll	3/25/2003 12:00 AM Microsoft Corporation	msv1_05.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msv1_0.dll	127.00 KB (130,048 bytes)
comres bytes)	2001.12.4720.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\comres.dll	778.00 KB (796,672 bytes)	netlogon5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\netlogon.dll	409.00 KB (418,816 bytes)
wbemprox bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\wbem\wbemprox.dll	17.50 KB (17,920 bytes)	w32time5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\w32time.dll	216.00 KB (221,184 bytes)
wbemcomn KB (216,576 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wbem\wbemcomn.dll	211.50 KB (216,576 bytes)	iphlpapi5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\iphlpapi.dll	82.50 KB (84,480 bytes)
wbemsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\wbem\wbemsvc.dll	42.50 KB (43,520 bytes)	schannel5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\schannel.dll	149.50 KB (153,088 bytes)
fastprox bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\wbem\fastprox.dll	443.00 KB (453,632 bytes)	wdigest5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wdigest.dll	61.00 KB (62,464 bytes)
msvcp60 Microsoft Corporation	6.05.2144.0 388.00 KB (397,312 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msvcp60.dll	388.00 KB (397,312 bytes)	rassfm5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rassfm.dll	20.50 KB (20,992 bytes)
ntdsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ntdsapi.dll	76.00 KB (77,824 bytes)	kdcsvc5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\kdcsvc.dll	221.00 KB (226,304 bytes)
dnsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dnsapi.dll	147.50 KB (151,040 bytes)	ntdsa5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ntdsa.dll	1.45 MB (1,520,640 bytes)
services bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\services.exe	102.00 KB (104,448 bytes)	ntdsatq5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ntdsatq.dll	32.00 KB (32,768 bytes)
scesrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\scesrv.dll	316.50 KB (324,096 bytes)	mswsock5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mswsock.dll	254.00 KB (260,096 bytes)
authz bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\authz.dll	67.00 KB (68,608 bytes)	esent5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\esent.dll	1.01 MB (1,056,256 bytes)
			scecli5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\scecli.dll	179.50 KB (183,808 bytes)

wshtcpip bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wshcpip.dll	18.00 KB (18,432)	rastls bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rastls.dll	155.00 KB (158,720)
ipsecsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ipsecsvc.dll	162.50 KB (166,400)	cryptui bytes)	5.131.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cryptui.dll	473.50 KB (484,864)
oakley bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\oakley.dll	325.50 KB (333,312)	mprapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mprapi.dll	81.00 KB (82,944)
winipsec bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\winipsec.dll	34.50 KB (35,328)	rasapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rasapi32.dll	227.50 KB (232,960)
pstorsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\pstorsvc.dll	24.00 KB (24,576)	rasman bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rasman.dll	56.50 KB (57,856)
psbase bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\psbase.dll	81.00 KB (82,944)	tapi32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\tapi32.dll	175.00 KB (179,200)
dssenh bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dssenh.dll	131.33 KB (134,480)	raschap bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\raschap.dll	106.00 KB (108,544)
wlbsctrl bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wlbsctrl.dll	78.00 KB (79,872)	schedsvcs bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:58 AM Microsoft Corporation c:\windows\system32\schedsvcs.dll	176.00 KB (180,224)
svchost bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\svchost.exe	13.00 KB (13,312)	msidle bytes)	6.00.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\msidle.dll	5.50 KB (5,632)
rpss bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rpss.dll	276.50 KB (283,136)	wkssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wkssvc.dll	125.00 KB (128,000)
ntmarta bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\ntmarta.dll	114.00 KB (116,736)	wiarpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wiarpc.dll	30.00 KB (30,720)
termsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\termsrv.dll	216.50 KB (221,696)	cryptsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\cryptsvc.dll	51.00 KB (52,224)
icaapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\icaapi.dll	10.50 KB (10,752)	certcli bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\certcli.dll	228.00 KB (233,472)
mstlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\mstlsapi.dll	104.50 KB (107,008)	vssapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\vssapi.dll	528.00 KB (540,672)
activeds bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\activeds.dll	189.00 KB (193,536)	dmserver bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dmserver.dll	24.00 KB (24,576)
adslrpc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\adslrpc.dll	142.50 KB (145,920)	es bytes)	2001.12.4720.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\es.dll	221.50 KB (226,816)
credui bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\credui.dll	159.00 KB (162,816)	pchsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:58 AM Microsoft Corporation c:\windows\system32\pchsvc.dll	31.50 KB (32,256)
atl bytes)	3.05.2283 83.00 KB (84,992 bytes) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\atl.dll		srvsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\srvsvc.dll	89.00 KB (91,136)
rdpwsx bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\rdpwsx.dll	80.13 KB (82,056)	seclogon bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\seclogon.dll	16.50 KB (16,896)
wzcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 6:15 AM Microsoft Corporation c:\windows\system32\wzcsvc.dll	272.50 KB (279,040)	trkwks bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\trkwks.dll	85.00 KB (87,040)
rtutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\rtutils.dll	32.00 KB (32,768)	wmisvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\wbem\wmisvc.dll	131.00 KB (134,144)
wmi bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\wmi.dll	6.50 KB (6,656)	wuauerv bytes)	5.4.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\wuauerv.dll	10.50 KB (10,752)
dhcpcsvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048) 3/25/2003 12:00 AM Microsoft Corporation c:\windows\system32\dhcpcsvc.dll	101.50 KB (103,936)	wuaueng bytes)	5.4.3790.0 (srv03_rtm.030324-2048) 4/23/2003 10:54 AM Microsoft Corporation c:\windows\system32\wuaueng.dll	188.50 KB (193,024)

advpack bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	93.50 KB (95,744	netcfgx bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	726.00 KB (743,424
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\advpack.dll			c:\windows\system32\netcfgx.dll	
wininet bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	609.00 KB (623,616	ntlsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	8.00 KB (8,192
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wininet.dll			c:\windows\system32\ntlsapi.dll	
sens bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	35.50 KB (36,352	spoolsv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	55.00 KB (56,320
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\sens.dll			c:\windows\system32\spoolsv.exe	
comsvcs bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	1.14 MB (1,199,616	spoolss bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	79.00 KB (80,896
	4/23/2003 10:54 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\comsvcs.dll			c:\windows\system32\spoolss.dll	
browser bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	70.50 KB (72,192	localspl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	304.50 KB (311,808
	3/25/2003 12:00 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\browser.dll			c:\windows\system32\localspl.dll	
netrap bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	11.50 KB (11,776	cnbjmon (46,592 bytes)	5.2.3680.0 (Lab03_dev(skatar).020509-1043)	45.50 KB
	3/25/2003 12:00 AM Microsoft Corporation			3/24/2003 7:48 PM Microsoft Corporation	
	c:\windows\system32\netrap.dll			c:\windows\system32\cnbjmon.dll	
wbemcore bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	457.00 KB (467,968	pjlmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.00 KB (15,360
	4/23/2003 10:54 AM Microsoft Corporation			3/24/2003 7:49 PM Microsoft Corporation	
	c:\windows\system32\wbem\wbemcore.dll			c:\windows\system32\pjlmon.dll	
esscli bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	235.50 KB (241,152	tcpmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	44.00 KB (45,056
	4/23/2003 10:54 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wbem\esscli.dll			c:\windows\system32\tcpmon.dll	
wmiutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	90.50 KB (92,672	mgmtapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	14.00 KB (14,336
	4/23/2003 10:54 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\system32\wbem\wmiutils.dll			c:\windows\system32\mgmtapi.dll	
winhttp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	327.50 KB (335,360	snmpapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920
	4/23/2003 5:32 AM Microsoft Corporation			3/25/2003 12:00 AM Microsoft Corporation	
	c:\windows\winsxs\x86_microsoft.windows.winhttp_6595b64144			c:\windows\system32\snmpapi.dll	
ccf1df_5.1.0.0_x-ww_e0651936\winhttp.dll			wsnmp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	39.50 KB (40,448
repdrvfs bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	165.00 KB (168,960		3/25/2003 12:00 AM Microsoft Corporation	
	4/23/2003 10:54 AM Microsoft Corporation			c:\windows\system32\wsnmp32.dll	
	c:\windows\system32\wbem\repdrvfs.dll			usbmon bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
wmiprvsd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	405.50 KB (415,232		3/25/2003 12:00 AM Microsoft Corporation	17.00 KB (17,408
	4/23/2003 10:54 AM Microsoft Corporation			c:\windows\system32\usbmon.dll	
	c:\windows\system32\wbem\wmiprvsd.dll			winnr bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
wbemess bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	256.50 KB (262,656		3/25/2003 12:00 AM Microsoft Corporation	15.00 KB (15,360
	4/23/2003 10:54 AM Microsoft Corporation			c:\windows\system32\winnr.dll	
	c:\windows\system32\wbem\wbemess.dll			wshqos bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
ncprov bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	43.00 KB (44,032		3/25/2003 12:00 AM Microsoft Corporation	23.00 KB (23,552
	4/23/2003 10:54 AM Microsoft Corporation			c:\windows\system32\wshqos.dll	
	c:\windows\system32\wbem\ncprov.dll			win32spl bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
netman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	209.00 KB (214,016		3/25/2003 12:00 AM Microsoft Corporation	94.50 KB (96,768
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\win32spl.dll	
	c:\windows\system32\netman.dll			inetpp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
wzcsapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	24.50 KB (25,088		3/25/2003 12:00 AM Microsoft Corporation	71.50 KB (73,216
	3/25/2003 6:15 AM Microsoft Corporation			c:\windows\system32\inetpp.dll	
	c:\windows\system32\wzcsapi.dll			icmp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
netshell bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	1.67 MB (1,747,456		3/25/2003 12:00 AM Microsoft Corporation	4.50 KB (4,608
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\icmp.dll	
	c:\windows\system32\netshell.dll			ps5ui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
clusapi bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	56.00 KB (57,344		8/13/2003 2:34 PM Microsoft Corporation	129.50 KB (132,608
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\spool\drivers\w32x86\3\ps5ui.dll	
	c:\windows\system32\clusapi.dll			unidrvui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
hnetcfg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	243.50 KB (249,344		8/13/2003 2:34 PM Microsoft Corporation	197.50 KB (202,240
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\spool\drivers\w32x86\3\unidrvui.dll	
	c:\windows\system32\hnetcfg.dll			ersvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
rasdlg bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	642.00 KB (657,408		3/25/2003 12:00 AM Microsoft Corporation	22.00 KB (22,528
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\ersvc.dll	
	c:\windows\system32\rasdlg.dll			dfssvc bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
rasadhlp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	6.50 KB (6,656		3/25/2003 12:00 AM Microsoft Corporation	130.50 KB (133,632
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\dfssvc.exe	
	c:\windows\system32\rasadhlp.dll			resutils bytes)	5.2.3790.0 (srv03_rtm.030324-2048)
xactsrv bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	86.50 KB (88,576		3/25/2003 12:00 AM Microsoft Corporation	59.00 KB (60,416
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\resutils.dll	
	c:\windows\system32\xactsrv.dll			mfc42u bytes)	6.05.3014.0
actxprxy bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	95.00 KB (97,280		3/25/2003 12:00 AM Microsoft Corporation	960.00 KB (983,040 bytes)
	3/25/2003 12:00 AM Microsoft Corporation			c:\windows\system32\mfc42u.dll	
	c:\windows\system32\actxprxy.dll				

wsock32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	22.00 KB (22,528 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\wsock32.dll
rdpsnd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	18.00 KB (18,432 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\rdpsnd.dll
scredir bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	27.00 KB (27,648 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\scredir.dll
cscui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	305.00 KB (312,320 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cscui.dll
msacm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	21.00 KB (21,504 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msacm32.drv
msacm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	67.50 KB (69,120 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msacm32.dll
imaadp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	15.50 KB (15,872 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\imaadp32.acm
msadp32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	14.50 KB (14,848 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msadp32.acm
msg711 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	10.00 KB (10,240 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msg711.acm
msgsm32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	20.50 KB (20,992 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msgsm32.acm
tssoft32 GROUP, INC.	1.01 9.50 KB (9,728 bytes)		3/25/2003 12:00 AM	DSP GROUP, INC.	c:\windows\system32\tssoft32.acm
tsd32	1.03 16.50 KB (16,896 bytes)		3/25/2003 12:00 AM	DSP GROUP, INC.	c:\windows\system32\tsd32.dll
msg723	4.4.4000 116.00 KB (118,784 bytes)		4/23/2003 10:58 AM	Microsoft Corporation	c:\windows\system32\msg723.acm
msaud32	8.00.00.4487 288.00 KB (294,912 bytes)		3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msaud32.acm
sl_anet	3.02 84.00 KB (86,016 bytes)		3/25/2003 12:00 AM	Sipro Lab Telecom Inc.	c:\windows\system32\sl_anet.acm
l3codeca	1, 9, 0, 0305 284.00 KB (290,816 bytes)		3/25/2003 12:00 AM	Fraunhofer Institut Integrierte Schaltungen	c:\windows\system32\l3codeca.acm
IIS printui bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	536.50 KB (549,376 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\printui.dll
cfgmgr32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	17.50 KB (17,920 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cfgmgr32.dll
cabinet bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	61.00 KB (62,464 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cabinet.dll
rdpclip bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	53.00 KB (54,272 bytes)	4/23/2003 10:54 AM	Microsoft Corporation	c:\windows\system32\rdpclip.exe
explorer (1,032,704 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1,008.50 KB	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\explorer.exe
browseui bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1.01 MB (1,057,280 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\browseui.dll
shdocvw bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	1.33 MB (1,393,664 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shdocvw.dll
apphelp bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	122.00 KB (124,928 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\apphelp.dll
themeui bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	360.50 KB (369,152 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\themeui.dll
msimg32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	4.50 KB (4,608 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msimg32.dll
linkinfo bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	16.50 KB (16,896 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\linkinfo.dll
ntshrui bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	136.00 KB (139,264 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntshrui.dll
urlmon bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	501.50 KB (513,536 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\urlmon.dll
webcheck bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	261.50 KB (267,776 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\webcheck.dll
stobject bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	117.50 KB (120,320 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\stobject.dll
batmeter bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	28.50 KB (29,184 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\batmeter.dll
powrprof bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	14.50 KB (14,848 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\powrprof.dll
drprov bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	12.50 KB (12,800 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\drprov.dll
ntlanman bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	41.00 KB (41,984 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\ntlanman.dll
netui0 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	75.50 KB (77,312 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\netui0.dll
netui1 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	184.00 KB (188,416 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\netui1.dll
davclnt bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	23.50 KB (24,064 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\davclnt.dll
zipfldr bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	316.00 KB (323,584 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\zipfldr.dll
browsecl bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	62.00 KB (63,488 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\browsecl.dll
shdoclc bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	588.50 KB (602,624 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shdoclc.dll
sendmail bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	52.00 KB (53,248 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\sendmail.dll
mydocs bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	88.00 KB (90,112 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mydocs.dll
cmd bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	374.00 KB (382,976 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\cmd.exe
sqlservr	2000.080.0761.00 7.11 MB (7,450,664 bytes)		6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlservr.exe
opends60	2000.080.0194.00 24.06 KB (24,639 bytes)		6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\opends60.dll

ums	2000.080.0760.00	52.55 KB (53,808 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ums.dll
sqlsort	2000.080.0760.00	576.56 KB (590,396 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlsort.dll
msvcirt bytes)	7.0.3790.0 (srv03_rtm.030324-2048)	50.00 KB (51,200 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msvcirt.dll
sqllevn70	2000.080.0760.00	28.00 KB (28,672 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\resources\1033\sqllevn70.rll
xolehlp bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	8.50 KB (8,704 bytes)	4/23/2003 10:54 AM	Microsoft Corporation	c:\windows\system32\xolehlp.dll
msdtcprx bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	427.50 KB (437,760 bytes)	4/23/2003 10:54 AM	Microsoft Corporation	c:\windows\system32\msdtcprx.dll
mtxclu bytes)	2001.12.4720.0 (srv03_rtm.030324-2048)	74.50 KB (76,288 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\mtxclu.dll
ssnetlib	2000.080.0760.00	80.56 KB (82,492 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssnetlib.dll
ssnmpn70	2000.080.0534.00	24.56 KB (25,148 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssnmpn70.dll
security bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	5.50 KB (5,632 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\security.dll
ssmslpcn	2000.080.0760.00	28.56 KB (29,244 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\ssmslpcn.dll
sqloledb bytes)	2000.085.1022.00 (srv03_rtm.030324-2048)	536.00 KB (548,864 bytes)	4/23/2003 10:58 AM	Microsoft Corporation	c:\program files\common files\system\ole db\sqloledb.dll
msdart bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	164.00 KB (167,936 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\msdart.dll
comdlg32 bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	261.00 KB (267,264 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\comdlg32.dll
msdatl3 bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	96.00 KB (98,304 bytes)	4/23/2003 10:58 AM	Microsoft Corporation	c:\program files\common files\system\ole db\msdatl3.dll
oledb32 bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	500.00 KB (512,000 bytes)	4/23/2003 10:58 AM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32.dll
oledb32r bytes)	2.80.1022.0 (srv03_rtm.030324-2048)	68.00 KB (69,632 bytes)	4/23/2003 10:58 AM	Microsoft Corporation	c:\program files\common files\system\ole db\oledb32r.dll
impprov	2000.080.0760.00	100.58 KB (102,992 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\impprov.dll
sqlresld	2000.080.0382.00	28.56 KB (29,248 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\80\com\sqlresld.dll
xpstar	2000.080.0760.00	280.56 KB (287,296 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\xpstar.dll
sqlsvc	2000.080.0760.00	92.56 KB (94,784 bytes)	6/12/2003 2:26 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\sqlsvc.dll
odbc32 bytes)	3.525.1022.0 (srv03_rtm.030324-2048)	232.00 KB (237,568 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\odbc32.dll
odbcbcnp bytes)	2000.085.1022.00 (srv03_rtm.030324-2048)	24.00 KB (24,576 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\odbcbcnp.dll
w95scm	2000.080.0760.00	48.56 KB (49,728 bytes)	6/12/2003 2:26 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\w95scm.dll
sqlunirl	2000.080.0728.00	176.56 KB (180,800 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\sqlunirl.dll
shfolder bytes)	6.00.3790.0 (srv03_rtm.030324-2048)	23.00 KB (23,552 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\shfolder.dll
odbcint bytes)	3.525.1022.0 (srv03_rtm.030324-2048)	92.00 KB (94,208 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\odbcint.dll
sqlsvc	2000.080.0194.00	24.00 KB (24,576 bytes)	6/12/2003 2:26 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\resources\1033\sqlsvc.rll
xpstar	2000.080.0760.00	36.00 KB (36,864 bytes)	6/12/2003 2:25 PM	Microsoft Corporation	c:\program files\microsoft sql server\mssql\binn\resources\1033\xpstar.rll
msinfo32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	40.50 KB (41,472 bytes)	4/23/2003 10:58 AM	Microsoft Corporation	c:\program files\common files\microsoft shared\msinfo\msinfo32.exe
msinfo bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	358.50 KB (367,104 bytes)	4/23/2003 10:58 AM	Microsoft Corporation	c:\windows\pchealth\helpctr\binaries\msinfo.dll
riched32 bytes)	5.2.3790.0 (srv03_rtm.030324-2048)	3.50 KB (3,584 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\riched32.dll
riched20	5.31.23.1218	406.00 KB (415,744 bytes)	3/25/2003 12:00 AM	Microsoft Corporation	c:\windows\system32\riched20.dll
[Services]					
Display Name	Name	State	Start Mode	Service Type	
Path	Error Control		Start Name	Tag ID	
Alerter	Alerter	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k localservice				Normal
Application Layer Gateway Service			ALG	Stopped	Manual
	Own Process		c:\windows\system32\alg.exe		Normal
	NT AUTHORITY\LocalService		0		
Application Management Process	AppMgmt	Stopped	Manual	Share	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem		0		
Windows Audio	AudioSrv	Stopped	Disabled	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem		0		
Background Intelligent Transfer Service			BITS	Stopped	Manual
	Share Process		c:\windows\system32\svchost.exe -k		
	Normal		LocalSystem		0
Computer Browser	Browser	Running	Auto	Share Process	
	c:\windows\system32\svchost.exe -k netsvcs				Normal
	LocalSystem		0		



Indexing Service	CiSvc	Stopped	Disabled	Share Process		Messenger Messenger	Stopped	Disabled	Share Process	
	c:\windows\system32\cisvc.exe		Normal	LocalSystem	0		c:\windows\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
ClipBook	ClipSrv	Stopped	Disabled	Own Process		NetMeeting Remote Desktop Sharing	Stopped	Disabled		
	c:\windows\system32\clipsrv.exe		Normal	LocalSystem	0		c:\windows\system32\mnmsrvc.exe			
COM+ System Application		COMSysApp		Stopped	Manual	Distributed Transaction Coordinator	Running	Auto		
	Own Process	c:\windows\system32\dlhhost.exe					Own Process	c:\windows\system32\msdtc.exe	Normal	
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}				Normal		NT AUTHORITY\NetworkService		0		
	LocalSystem			0		Windows Installer	MSIServer	Stopped	Manual	Share Process
Cryptographic Services		CryptSvc	Running	Auto	Share		c:\windows\system32\msiexec.exe /v	Normal		
Process	c:\windows\system32\svchost.exe -k netsvcs			Normal			LocalSystem	0		
	LocalSystem			0		MSSQLSERVER	MSSQLSERVER	Stopped	Manual	Own
Distributed File System		Dfs	Running	Auto	Own	Process	c:\progra~1\microso~1\mssql\binn\sqlservr.exe			Normal
Process	c:\windows\system32\dfsrv.exe			Normal	LocalSystem		LocalSystem	0		
	0					MSSQLServerADHelper	MSSQLServerADHelper	Stopped		
DHCP Client	Dhcp	Running	Auto	Share Process		Manual	Own Process	c:\program files\microsoft sql		0
	c:\windows\system32\svchost.exe -k networkservice			Normal		server\80\tools\binn\sqladhlp.exe	Normal	LocalSystem		
	NT AUTHORITY\NetworkService			0		Network DDE	NetDDE	Stopped	Disabled	Share Process
Logical Disk Manager Administrative Service		dmadmin		Stopped			c:\windows\system32\netdde.exe	Normal		LocalSystem
Manual	Share Process						0			
	c:\windows\system32\dmadmin.exe /com			Normal		Network DDE DSDM	NetDDEdsdm	Stopped	Disabled	Share
	LocalSystem			0		Process	c:\windows\system32\netdde.exe	Normal		LocalSystem
Logical Disk Managerdmserver		Running	Auto	Share Process			0			
	c:\windows\system32\svchost.exe -k netsvcs			Normal		Net Logon	Netlogon	Stopped	Manual	Share Process
	LocalSystem			0			c:\windows\system32\lsass.exe	Normal		LocalSystem
DNS Client	Dnscache	Running	Auto	Share Process			0			
	c:\windows\system32\svchost.exe -k networkservice			Normal		Network Connections	Netman	Running	Manual	Share Process
	NT AUTHORITY\NetworkService			0			c:\windows\system32\svchost.exe -k netsvcs	Normal		
Error Reporting Service		ERSvc	Running	Auto	Share		LocalSystem	0		
Process	c:\windows\system32\svchost.exe -k winerr			Ignore		Network Location Awareness (NLA)	Nla	Running	Manual	
	LocalSystem			0		Share Process	c:\windows\system32\svchost.exe -k			
Event Log	Eventlog	Running	Auto	Share Process		netsvcs	Normal	LocalSystem	0	
	c:\windows\system32\services.exe			Normal		File Replication	NtFrs	Stopped	Manual	Own Process
	LocalSystem			0			c:\windows\system32\ntfrs.exe	Ignore		LocalSystem
COM+ Event System	EventSystem		Running	Manual	Share		0			
Process	c:\windows\system32\svchost.exe -k netsvcs			Normal		NT LM Security Support Provider		NtLmSsp	Stopped	Manual
	LocalSystem			0		Share Process	c:\windows\system32\lsass.exe	Normal		
Help and Support	helpsvc	Running	Auto	Share Process			LocalSystem	0		
	c:\windows\system32\svchost.exe -k netsvcs			Normal		Removable Storage	NtmsSvc	Stopped	Manual	Share Process
	LocalSystem			0			c:\windows\system32\svchost.exe -k netsvcs	Normal		
Human Interface Device Access	HidServ	Stopped	Disabled	Share			LocalSystem	0		
Process	c:\windows\system32\svchost.exe -k netsvcs			Normal		Plug and Play	PlugPlay	Running	Auto	Share Process
	LocalSystem			0			c:\windows\system32\services.exe			Normal
HTTP SSLHTTPFilter		Stopped	Manual	Share Process			LocalSystem	0		
	c:\windows\system32\lsass.exe			Normal	LocalSystem	IPSEC Services	PolicyAgent	Running	Auto	Share
	0					Process	c:\windows\system32\lsass.exe	Normal		LocalSystem
IMAPI CD-Burning COM Service		ImapiService		Stopped			0			
	Disabled	Own Process				Protected Storage	ProtectedStorage	Running	Auto	Share
	Normal	LocalSystem		0		Process	c:\windows\system32\lsass.exe	Normal		LocalSystem
Intersite Messaging	IsmServ	Stopped	Disabled	Own Process			0			
	c:\windows\system32\ismserv.exe			Normal		Remote Access Auto Connection Manager	RasAuto	Stopped	Manual	
	LocalSystem			0		Share Process	c:\windows\system32\svchost.exe -k			
Kerberos Key Distribution Center		kdc	Stopped	Disabled		netsvcs	Normal	LocalSystem	0	
	Share Process	c:\windows\system32\lsass.exe		Normal		Remote Access Connection Manager	RasMan	Stopped	Manual	
	LocalSystem			0		Share Process	c:\windows\system32\svchost.exe -k			
Server	lanmanserver	Running	Auto	Share Process		netsvcs	Normal	LocalSystem	0	
	c:\windows\system32\svchost.exe -k netsvcs			Normal		Remote Desktop Help Session Manager	RDSSessMgr			Stopped
	LocalSystem			0		Manual	Own Process			
Workstation	lanmanworkstation	Running	Auto	Share			c:\windows\system32\sessmgr.exe			Normal
Process	c:\windows\system32\svchost.exe -k netsvcs			Normal			LocalSystem	0		
	LocalSystem			0		Routing and Remote Access	RemoteAccess	Stopped	Disabled	
License Logging	LicenseService	Stopped	Disabled	Own		Share Process	c:\windows\system32\svchost.exe -k			
Process	c:\windows\system32\llsrrv.exe			Normal	NT	netsvcs	Normal	LocalSystem	0	
	NT AUTHORITY\NetworkService			0		Remote Registry	RemoteRegistry	Running	Auto	Share
TCP/IP NetBIOS Helper	LmHosts	Running	Auto	Share		Process	c:\windows\system32\svchost.exe -k regsvc	Normal		NT
Process	c:\windows\system32\svchost.exe -k localservice			Normal			NT AUTHORITY\LocalService			0
	NT AUTHORITY\LocalService			0		Remote Procedure Call (RPC) Locator	RpcLocator			Stopped
						Manual	Own Process			

```

c:\windows\system32\locator.exe Normal NT
AUTHORITY\NetworkService 0
Remote Procedure Call (RPC) RpcSs Running Auto Share
Process c:\windows\system32\svchost -k rpcss Normal
LocalSystem 0
Resultant Set of Policy Provider RSoPProv Stopped Manual Share
Process c:\windows\system32\rsopprov.exe Normal
LocalSystem 0
Special Administration Console Helper sacsvr Stopped Manual
Share Process c:\windows\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Security Accounts Manager SamSs Running Auto Share
Process c:\windows\system32\lsass.exe Normal LocalSystem
0
Smart Card SCardSvr Stopped Manual Share Process
c:\windows\system32\scardsvr.exe Ignore NT
AUTHORITY\LocalService 0
Task Scheduler Schedule Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Secondary Logon seclogon Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Ignore
LocalSystem 0
System Event Notification SENS Running Auto Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Internet Connection Firewall (ICF) / Internet Connection Sharing (ICS)
SharedAccess Stopped Disabled Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Shell Hardware Detection ShellHWDetection Running Auto
netsvcs Ignore LocalSystem 0
Print Spooler Spooler Running Auto Own Process
c:\windows\system32\spoolsv.exe Normal
LocalSystem 0
SQLSERVERAGENT SQLSERVERAGENT Stopped
Manual Own Process
c:\progra~1\micros~1\mssql\bin\sqlagent.exe Normal
LocalSystem 0
Windows Image Acquisition (WIA) stisvc Stopped Disabled
Share Process c:\windows\system32\svchost.exe -k
imgsvc Normal NT AUTHORITY\LocalService 0
Microsoft Software Shadow Copy Provider swprv Stopped Manual
Own Process c:\windows\system32\svchost.exe -k swprv
Normal LocalSystem 0
Performance Logs and Alerts SysmonLog Stopped Manual
Own Process c:\windows\system32\smlogsvc.exe
Normal NT Authority\NetworkService 0
Telephony TapiSrv Stopped Manual Share Process
c:\windows\system32\svchost.exe -k tapisrv Normal
LocalSystem 0
Terminal Services TermService Running Manual Share
Process c:\windows\system32\svchost.exe -k termvcs Normal
LocalSystem 0
Themes Themes Stopped Disabled Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Telnet TlntSvr Stopped Disabled Own Process
c:\windows\system32\tlntsvr.exe Normal NT
AUTHORITY\LocalService 0
Distributed Link Tracking Server TrkSvr Stopped Disabled Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Distributed Link Tracking Client TrkWks Running Auto Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Terminal Services Session Directory Tssdis Stopped Disabled
Own Process c:\windows\system32\tssdis.exe Normal
LocalSystem 0

```

```

Upload Manager uploadmgr Stopped Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Uninterruptible Power Supply UPS Stopped Manual Own
Process c:\windows\system32\ups.exe Normal NT
AUTHORITY\LocalService 0
Virtual Disk Service vds Stopped Manual Own Process
c:\windows\system32\vds.exe Normal LocalSystem
0
Volume Shadow Copy VSS Stopped Manual Own
Process c:\windows\system32\vssvc.exe Normal LocalSystem
0
Windows Time W32Time Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
WebClient Stopped Disabled Share Process
c:\windows\system32\svchost.exe -k localservice Normal
NT AUTHORITY\LocalService 0
WinHTTP Web Proxy Auto-Discovery Service
WinHttpAutoProxySvc Stopped Manual Share
Process c:\windows\system32\svchost.exe -k localservice Normal
NT AUTHORITY\LocalService 0
Windows Management Instrumentation winmgmt Running Auto
Share Process c:\windows\system32\svchost.exe -k
netsvcs Ignore LocalSystem 0
Portable Media Serial Number Service WndmPmSN Stopped
Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Windows Management Instrumentation Driver Extensions Wmi
Stopped Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
WMI Performance Adapter WmiApSrv Stopped Manual
Own Process c:\windows\system32\wbem\wmiaprv.exe
Normal LocalSystem 0
Automatic Updates wuauerv Running Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Wireless Configuration WZCSVC Running Auto Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0

[Program Groups]

Group Name Name User Name
Accessories Default User:Accessories Default User
Accessories\Accessibility Default User:Accessories\Accessibility
Default User
Accessories\Entertainment Default User:Accessories\Entertainment
Default User
Startup Default User:Startup Default User
Accessories All Users:Accessories All Users
Accessories\Accessibility All Users:Accessories\Accessibility
All Users
Accessories\Communications All Users:Accessories\Communications
All Users
Accessories\Entertainment All Users:Accessories\Entertainment
All Users
Accessories\System Tools All Users:Accessories\System Tools
All Users
Administrative Tools All Users:Administrative Tools All Users
Microsoft SQL Server All Users:Microsoft SQL Server All Users
Startup All Users:Startup All Users
Accessories NT AUTHORITY\SYSTEM:Accessories NT
AUTHORITY\SYSTEM
Accessories\Accessibility NT
AUTHORITY\SYSTEM:Accessories\Accessibility NT
AUTHORITY\SYSTEM

```

Accessories\Entertainment NT  
 AUTHORITY\SYSTEM:Accessories\Entertainment NT  
 AUTHORITY\SYSTEM  
 Startup NT AUTHORITY\SYSTEM:Startup NT  
 AUTHORITY\SYSTEM  
 Accessories DB2BUSTER\Administrator:Accessories  
 DB2BUSTER\Administrator  
 Accessories\Accessibility  
 DB2BUSTER\Administrator:Accessories\Accessibility  
 DB2BUSTER\Administrator  
 Accessories\Entertainment  
 DB2BUSTER\Administrator:Accessories\Entertainment  
 DB2BUSTER\Administrator  
 Administrative Tools DB2BUSTER\Administrator:Administrative Tools  
 DB2BUSTER\Administrator  
 Startup DB2BUSTER\Administrator:Startup  
 DB2BUSTER\Administrator

[Startup Programs]

Program	Command	User Name	Location
desktop	desktop.ini	NT AUTHORITY\SYSTEM	Startup
desktop	desktop.ini	DB2BUSTER\Administrator	Startup
desktop	desktop.ini	.DEFAULT	Startup
desktop	desktop.ini	All Users	Common Startup

[OLE Registration]

Object	Local Server	Location
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	
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"	
Windows Media Services DRM Storage object		Not Available
Bitmap Image	mspaint.exe	

[Windows Error Reporting]

Time	Type	Details

[Internet Settings]

[Internet Explorer]

[ Following are sub-categories of this main category ]

[Summary]

Item	Value
Version	6.0.3790.0
Build	63790
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	CCA15109 on ccaprint02 (from DPOL) in session 3,winspool,TS002
Cipher Strength	128-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company

actxprxy.dll	6.0.3790.0	95 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
advpack.dll	6.0.3790.0	94 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
asctrls.ocx	6.0.3790.0	90 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
browsecl.dll	6.0.3790.0	62 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
browseui.dll	6.0.3790.0	1,033 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
cdfview.dll	6.0.3790.0	144 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
comctl32.dll	5.82.3790.0	561 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
dxtrans.dll	6.3.3790.0	198 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
dxtmsft.dll	6.3.3790.0	344 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
iecont.dll	<File Missing>	Not Available	Not Available		
iecontlc.dll	<File Missing>	Not Available	Not Available		
iedkcs32.dll	16.0.3790.0	300 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
iepeers.dll	6.0.3790.0	230 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
iesetup.dll	6.0.3790.0	59 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
ieunit.inf	Not Available	20 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Not Available
ieexplore.exe	6.0.3790.0	90 KB	3/25/2003 1:00:00 AM	C:\Program Files\Internet Explorer	Microsoft Corporation
imgutil.dll	5.2.3790.0	35 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
inetctl.cpl	6.0.3790.0	303 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
inetctl.dll	6.0.3790.0	109 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
inseng.dll	6.0.3790.0	72 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
mlang.dll	6.0.3790.0	570 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
msencode.dll	2002.10.4.0	112 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Not Available
mshta.exe	6.0.3790.0	26 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.dll	6.0.3790.0	2,848 KB	3/25/2003 1:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation

```

mshtml.tlb 6.0.3790.0 1,319 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

mshtml.dll 6.0.3790.0 444 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

mshtml.dll 6.0.3790.0 55 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

msident.dll 6.0.3790.0 47 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

msident.dll 6.0.3790.0 15 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

msieftp.dll 6.0.3790.0 230 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

msrating.dll 6.0.3790.0 132 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

mstime.dll 6.0.3790.0 491 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

occache.dll 6.0.3790.0 89 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

proctexe.ocx 6.3.3790.0 78 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Intel Corporation

sendmail.dll 6.0.3790.0 52 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

shdoclc.dll 6.0.3790.0 589 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

shdocvw.dll 6.0.3790.0 1,361 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

shfolder.dll 6.0.3790.0 23 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

shlwapi.dll 6.0.3790.0 281 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

tdc.ocx 1.3.0.3130 58 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

url.dll 6.0.3790.0 36 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

urlmon.dll 6.0.3790.0 502 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

webcheck.dll 6.0.3790.0 262 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

wininet.dll 6.0.3790.0 609 KB 3/25/2003 1:00:00 AM
C:\WINDOWS\system32 Microsoft Corporation

```

[Connectivity]

```

Item Value
Connection Preference Never dial

```

LAN Settings

```

AutoConfigProxy Not Available
AutoProxyDetectMode Disabled

```

```

AutoConfigURL
Proxy Disabled
ProxyServer
ProxyOverride

```

[Cache]

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

```

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

```

[List of Objects]

```

Program File Status CodeBase
No cached object information available

```

[Content]

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

```

Item Value
Content Advisor Disabled

```

[Personal Certificates]

```

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

```

[Other People Certificates]

```

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

```

[Publishers]

```

Name
No publisher information available

```

[Security]

```

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

```

## A.8 Server Registry Parameters

Windows Registry Editor Version 5.00

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session
Manager\I/O System]
"CountOperations"=dword:00000000

```

# Appendix B: Database Build Scripts

## B.1 CreateDatabase.sql

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

```
Create Database tpch300g on
Primary (name=tpch300g,
filename='c:\dev\tpch300g.mdf',size=10mb,filegrowth=0),
FileGroup tpch300g

(name=tpch300g1,filename='c:\dev\tpch_1\',size=24950mb,filegrowth=0),

(name=tpch300g2,filename='c:\dev\tpch_2\',size=24950mb,filegrowth=0),

(name=tpch300g3,filename='c:\dev\tpch_3\',size=24950mb,filegrowth=0),

(name=tpch300g4,filename='c:\dev\tpch_4\',size=24950mb,filegrowth=0),

(name=tpch300g5,filename='c:\dev\tpch_5\',size=24950mb,filegrowth=0),

(name=tpch300g6,filename='c:\dev\tpch_6\',size=24950mb,filegrowth=0),

(name=tpch300g7,filename='c:\dev\tpch_7\',size=24950mb,filegrowth=0),

(name=tpch300g8,filename='c:\dev\tpch_8\',size=24950mb,filegrowth=0),

(name=tpch300g9,filename='c:\dev\tpch_9\',size=24950mb,filegrowth=0),

(name=tpch300g10,filename='c:\dev\tpch_10\',size=24950mb,filegrowth=0
),

(name=tpch300g11,filename='c:\dev\tpch_11\',size=24950mb,filegrowth=0
),

(name=tpch300g12,filename='c:\dev\tpch_12\',size=24950mb,filegrowth=0
),

(name=tpch300g13,filename='c:\dev\tpch_13\',size=24950mb,filegrowth=0
),

(name=tpch300g14,filename='c:\dev\tpch_14\',size=24950mb,filegrowth=0
),

(name=tpch300g15,filename='c:\dev\tpch_15\',size=24950mb,filegrowth=0
),

(name=tpch300g16,filename='c:\dev\tpch_16\',size=24950mb,filegrowth=0
),

(name=tpch300g17,filename='c:\dev\tpch_17\',size=24950mb,filegrowth=0
),

(name=tpch300g18,filename='c:\dev\tpch_18\',size=24950mb,filegrowth=0
),

(name=tpch300g19,filename='c:\dev\tpch_19\',size=24950mb,filegrowth=0
),

(name=tpch300g20,filename='c:\dev\tpch_20\',size=24950mb,filegrowth=0
)
```

```
Log on
      (name=tpch300gLog,filename='c:\dev\tpchlog\',size=39900mb,f
ilegrowth=0)
```

```
Alter Database tpch300g Add FileGroup LoadFg
```

```
Alter Database tpch300g Add File
      (name=LoadFg1,
filename='c:\dev\load_1\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg2,
filename='c:\dev\load_2\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg3,
filename='c:\dev\load_3\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg4,
filename='c:\dev\load_4\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg5,
filename='c:\dev\load_5\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg6,
filename='c:\dev\load_6\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg7,
filename='c:\dev\load_7\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg8,
filename='c:\dev\load_8\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg9,
filename='c:\dev\load_9\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg10,
filename='c:\dev\load_10\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg11,
filename='c:\dev\load_11\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg12,
filename='c:\dev\load_12\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg13,
filename='c:\dev\load_13\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg14,
filename='c:\dev\load_14\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg15,
filename='c:\dev\load_15\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg16,
filename='c:\dev\load_16\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg17,
filename='c:\dev\load_17\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg18,
filename='c:\dev\load_18\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg19,
filename='c:\dev\load_19\load.ldf',size=23900mb,filegrowth=0),
      (name=LoadFg20,
filename='c:\dev\load_20\load.ldf',size=23900mb,filegrowth=0)
```

```
to FileGroup LoadFg
```

## B.2 CreateTable.sql

```
-- CreateTable
-- 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      smalldatetime 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       smalldatetime not null,
 L_COMMITDATE     smalldatetime not null,
 L_RECEIPTDATE    smalldatetime 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 tpch300g to
disk='c:\dev\load_1\test.bak',
disk='c:\dev\load_2\test.bak',
disk='c:\dev\load_3\test.bak',
disk='c:\dev\load_4\test.bak',
disk='c:\dev\load_5\test.bak',
disk='c:\dev\load_6\test.bak',
disk='c:\dev\load_7\test.bak',
disk='c:\dev\load_8\test.bak',
disk='c:\dev\load_9\test.bak',
disk='c:\dev\load_10\test.bak',
disk='c:\dev\load_11\test.bak',
disk='c:\dev\load_12\test.bak',
disk='c:\dev\load_13\test.bak',
disk='c:\dev\load_14\test.bak',
disk='c:\dev\load_15\test.bak',
disk='c:\dev\load_16\test.bak',
disk='c:\dev\load_17\test.bak',
disk='c:\dev\load_18\test.bak',
disk='c:\dev\load_19\test.bak',
disk='c:\dev\load_20\test.bak',
disk='c:\dev\load_21\test.bak',
disk='c:\dev\load_22\test.bak',
disk='c:\dev\load_23\test.bak',
disk='c:\dev\load_24\test.bak'
```

with init,stats=10

## B.12 Restore.sql

```
restore database tpch300g from
disk='c:\dev\load_1\test.bak',
disk='c:\dev\load_2\test.bak',
disk='c:\dev\load_3\test.bak',
disk='c:\dev\load_4\test.bak',
disk='c:\dev\load_5\test.bak',
disk='c:\dev\load_6\test.bak',
disk='c:\dev\load_7\test.bak',
disk='c:\dev\load_8\test.bak',
disk='c:\dev\load_9\test.bak',
disk='c:\dev\load_10\test.bak',
disk='c:\dev\load_11\test.bak',
disk='c:\dev\load_12\test.bak',
disk='c:\dev\load_13\test.bak',
disk='c:\dev\load_14\test.bak',
disk='c:\dev\load_15\test.bak',
disk='c:\dev\load_16\test.bak',
disk='c:\dev\load_17\test.bak',
disk='c:\dev\load_18\test.bak',
disk='c:\dev\load_19\test.bak',
disk='c:\dev\load_20\test.bak',
disk='c:\dev\load_21\test.bak',
disk='c:\dev\load_22\test.bak',
disk='c:\dev\load_23\test.bak',
disk='c:\dev\load_24\test.bak'
with stats=1, 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=19950mb,filegrowth=0)
alter database tempdb modify file
  (name=templog,filename='c:\dev\templog\',size=29900mb,filegrowth=0)
alter database tempdb add file
  (name=tempdev2,
filename='c:\dev\tempdev_2\',size=19950mb,filegrowth=0),
  (name=tempdev3,
filename='c:\dev\tempdev_3\',size=19950mb,filegrowth=0),
  (name=tempdev4,
filename='c:\dev\tempdev_4\',size=19950mb,filegrowth=0),
  (name=tempdev5,
filename='c:\dev\tempdev_5\',size=19950mb,filegrowth=0),
  (name=tempdev6,
filename='c:\dev\tempdev_6\',size=19950mb,filegrowth=0),
  (name=tempdev7,
filename='c:\dev\tempdev_7\',size=19950mb,filegrowth=0),
  (name=tempdev8,
filename='c:\dev\tempdev_8\',size=19950mb,filegrowth=0),
  (name=tempdev9,
filename='c:\dev\tempdev_9\',size=19950mb,filegrowth=0),
  (name=tempdev10,
filename='c:\dev\tempdev_10\',size=19950mb,filegrowth=0),
  (name=tempdev11,
filename='c:\dev\tempdev_11\',size=19950mb,filegrowth=0),
```

```
(name=tempdev12,  
filename='c:\dev\tempdev_12\',size=19950mb,filegrowth=0),  
(name=tempdev13,  
filename='c:\dev\tempdev_13\',size=19950mb,filegrowth=0),  
(name=tempdev14,  
filename='c:\dev\tempdev_14\',size=19950mb,filegrowth=0),  
(name=tempdev15,  
filename='c:\dev\tempdev_15\',size=19950mb,filegrowth=0),  
(name=tempdev16,  
filename='c:\dev\tempdev_16\',size=19950mb,filegrowth=0),  
(name=tempdev17,  
filename='c:\dev\tempdev_17\',size=19950mb,filegrowth=0),  
(name=tempdev18,  
filename='c:\dev\tempdev_18\',size=19950mb,filegrowth=0),  
(name=tempdev19,  
filename='c:\dev\tempdev_19\',size=19950mb,filegrowth=0),  
(name=tempdev20,  
filename='c:\dev\tempdev_20\',size=19950mb,filegrowth=0)
```

## 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 file LoadFg13  
alter database tpch100g remove file LoadFg14  
alter database tpch100g remove file LoadFg15  
alter database tpch100g remove file LoadFg16  
alter database tpch100g remove file LoadFg17  
alter database tpch100g remove file LoadFg18  
alter database tpch100g remove file LoadFg19  
alter database tpch100g remove file LoadFg20  
alter database tpch100g remove filegroup LoadFg
```



# Appendix C: Query Text and Output

## C.1 Qualification Queries and Output

### Qualification Query 1

```

SELECT
L_RETURNFLAG
,L_LINESTATUS
,SUM(L_QUANTITY) AS SUM_QTY
,SUM(L_EXTENDEDPRI) AS SUM_BASE_PRICE
,SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)) AS SUM_DISC_PRICE
,SUM(L_EXTENDEDPRI*(1-L_DISCOUNT)*(1+L_TAX)) AS
SUM_CHARGE
,AVG(L_QUANTITY) AS AVG_QTY
,AVG(L_EXTENDEDPRI) AS AVG_PRICE
,AVG(L_DISCOUNT) AS AVG_DISC
,COUNT(*) AS COUNT_ORDER
FROM
LINEITEM
WHERE
L_SHIPDATE <= DATEADD(dd, -90, cast('1998/12/01' as smalldatetime))
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

```

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,E2fjiVd7eUrzp2Ef8j1QxGo2DFnosaTEH 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,
..... Additional rows deleted .....

```

29-250-925-9690 blithely bold ideas haggle quickly final, regular request  
 7914.4500 Supplier#000001013 RUSSIA 125988  
 Manufacturer#2 riRcntps4KEDtYScjpMIWeYF6mNnR 32-  
 194-698-3365 final, ironic theodolites alongside of the ironic  
 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 2ZJOJGkiv01Y00oCFwUGfviIbhzCdy  
 16-464-517-8943 carefully bold accounts doub

(100 rows affected)

### Qualification Query 3

```

SELECT TOP 10
L_ORDERKEY
,SUM(L_EXTENDEDPRICE*(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

```

SELECT
O_ORDERPRIORITY
,COUNT(*) AS ORDER_COUNT
FROM
ORDERS
WHERE O_ORDERDATE >= '1993-07-01'
AND O_ORDERDATE < DATEADD(mm, 3, cast('1993-07-01' as
smalldatetime))
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

```

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

```

SELECT
SUM(L_EXTENDEDPRISE*L_DISCOUNT) AS REVENUE
FROM
LINEITEM
WHERE
L_SHIPDATE >= '1994-01-01'
AND L_SHIPDATE < dateadd (yy, 1, cast('1994-01-01' as smalldatetime))
AND L_DISCOUNT BETWEEN .06 - 0.01 AND .06 + 0.01
AND L_QUANTITY < 24
REVENUE
-----
123141078.2283

```

(1 row affected)

### Qualification Query 7

```

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(Y,Y,L_SHIPDATE) AS L_YEAR
,L_EXTENDEDPRISE*(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

```

SELECT
O_YEAR
,SUM(CASE WHEN NATION = 'BRAZIL'
THEN VOLUME
ELSE 0
END) / SUM(VOLUME) AS MKT_SHARE
FROM
(
SELECT
DATEPART(Y,Y,O_ORDERDATE) AS O_YEAR
,L_EXTENDEDPRISE * (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

```

SELECT
NATION
,O_YEAR
,SUM(AMOUNT) AS SUM_PROFIT
FROM
(
SELECT
N_NAME AS NATION
,DATEPART(Y,Y,O_ORDERDATE) AS O_YEAR

```

```

.L_EXTENDEDPRISE*(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
ARGENTINA	1997	50805741.7523
ARGENTINA	1996	51923746.5755
ARGENTINA	1995	49298625.7666

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

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

```

SELECT TOP 20
C_CUSTKEY
,C_NAME
,SUM(L_EXTENDEDPRISE*(1-L_DISCOUNT)) AS REVENUE
,C_ACCTBAL
,N_NAME
,C_ADDRESS
,C_PHONE
,C_COMMENT
FROM
CUSTOMER
,ORDERS
,LINEITEM
,NATION
WHERE
C_CUSTKEY = O_CUSTKEY
AND L_ORDERKEY = O_ORDERKEY
AND O_ORDERDATE >= '1993-10-01'

```

```

AND O_ORDERDATE < DATEADD(MM, 3, cast('1993-10-01' as
smalldatetime))

```

```

AND L_RETURNFLAG = 'R'
AND C_NATIONKEY = N_NATIONKEY

```

```

GROUP BY
C_CUSTKEY
,C_NAME
,C_ACCTBAL
,C_PHONE
,N_NAME
,C_ADDRESS
,C_COMMENT
ORDER BY
REVENUE DESC
C_CUSTKEY C_NAME REVENUE C_ACCTBAL
N_NAME C_ADDRESS C_PHONE
C_COMMENT

```

C_CUSTKEY	C_NAME	REVENUE	C_ACCTBAL
57040	Customer#000057040	734235.2455	632.8700
JAPAN	Eioyzzf4pp	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	
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	01c9CILnNtfOQYmZj	33-593-865-6378	
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	
695-5962	quickly express requests wake quickly blithely		
25501	Customer#000025501	620269.7849	7725.0400
ETHIOPIA	W556MXuoiaYCCZamJL,Rn0B4ACUGdkQ8DZ	15-874-808-6793	
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 ne7zV5fDrmiq1oK09wV7pxqCglc 16-	715-386-3788	
715-386-3788	carefully bold excuses sleep alongside of the thinly idle		
84223	Customer#000084223	594998.0239	528.6500
UNITED KINGDOM	nAVZCs6BaWap rrM27N 2qBnzc5WBauxbA	33-442-824-8191	
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	
4707	express requests sublute blithely regular requests. regular, even ideas		
solve.			
39922	Customer#000039922	584878.1134	7321.1100
GERMANY	Zgy4s50l2GKN4pLDPBU8m342gIw6R	17-147-757-8036	
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	
33-657-701-3391	quickly final requests against the regular instructions wake		
blithely	final instructions. pa		
922	Customer#000000922	576767.5333	3869.2500
GERMANY	Az9RFaut7NkPnc5zSD2PwHgVvr4jRzq	17-945-916-9648	
17-945-916-9648	boldly final requests cajole blith		
147946	Customer#000147946	576455.1320	2030.1300
ALGERIA	iANyZHjqhy7Ajah0pTrYyhJ	10-886-956-3143	
10-886-956-3143	furiously even accounts are blithely above the furiousl		
115640	Customer#000115640	569341.1933	6436.1000
ARGENTINA	Vtgfia9ql 7EpHgecU1X	11-411-543-4901	
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      ChqEoK43OysjdHbtKCp6dKqjNyyvi9      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      HgiV0phqhala9aydNoIlb      29-915-458-
2654 instructions nag quickly. furiously bold accounts cajol

```

(20 rows affected)

### Qualification Query 11

```

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

```

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

```

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

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

```
-----
16.380778626395540
```

(1 row affected)

### Qualification Query 15

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, cast('1996-01-01' as
smalldatetime))
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

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

```
FROM SUPPLIER
WHERE S_COMMENT LIKE '%Customer%Complaints%'
)
```

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

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

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

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

```
SELECT
SUM(L_EXTENDEDPRISE)/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

```
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#000144617	144617	3043270	1997-02-12 00:00:00.000
530604.4400	317.0000		
Customer#000013940	13940	2232932	1997-04-13 00:00:00.000
522720.6100	304.0000		
Customer#000066790	66790	2199712	1996-09-30 00:00:00.000
515531.8200	327.0000		
Customer#000046435	46435	4745607	1997-07-03 00:00:00.000
508047.9900	309.0000		
Customer#000015272	15272	3883783	1993-07-28 00:00:00.000
500241.3300	302.0000	418161.4900	305.0000

.... Additional rows deleted ....

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

```
SELECT
SUM(L_EXTENDEDPRISE* (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

```

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

```

```

FROM
LINEITEM
WHERE
L_PARTKEY = PS_PARTKEY
AND L_SUPPKEY = PS_SUPPKEY
AND L_SHIPDATE >= '1994-01-01'
AND L_SHIPDATE < DATEADD(YY,1,cast('1994-01-01' as
smalldatetime))
)
)
AND S_NATIONKEY = N_NATIONKEY
AND N_NAME = 'CANADA'
ORDER BY
S_NAME
S_NAME S_ADDRESS
-----
Supplier#000000020 iybAE,RmTymrZVYaFZva2SHj
Supplier#000000091
YV45D7TkfdQanOOZ7q9QxkyGUapU1oOWU6q3
Supplier#000000197 YC2Acon6kjY3zj3Fbxs2k4Vdf7X0cd2F
Supplier#000000226 83qOdU2EYRdPQAQhEtm GRZEd
Supplier#000000285 Br7e1nnt1yxrw6ImgpJ7YdhFDjuBf
Supplier#000000378 FfbhyCxWvcPrO8ltp9
Supplier#000000402 i9Sw4DoyMhzhKXCH9By,AYSgmD
Supplier#000000530 0qwCMwobKY OcmLyfRXlagA8ukENJv,
Supplier#000000688 D fw5ocppmZpYBBIPI718hCihLDZ5KhKX
Supplier#000000710 f19YPvOyb QoYwjKC,oPycpGfieBacwKJo
Supplier#000000736 16i2nMwVuovfKnuVgaSGK2rDy65DIAFLegL7
Supplier#000000761 zLSLeLQUj2XrvTTFnv7WAcyZGvvMTx882d4
Supplier#000000884 bmhEShejaS

.... Additional rows deleted ...

Supplier#000009812 APFRMy3lCbGfGa53n5t9DxzFPQPgnjrGt32
Supplier#000009862 rJzweWeN58
Supplier#000009868 ROjGgx5gvtkmUUoey7v
Supplier#000009869
ucLqxrzrBTRMewGSM29t0rNTM30g1Tu3Xgg3mKag
Supplier#000009899 7XdPAHrzr1t,UQFZE
Supplier#000009974 7wJ,J5DKcxSU4Kp1cQLpbcAvB5AsvKT

(204 rows affected)

```

### Qualification Query 21

```

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#0000002160     17
Supplier#000002301      17
Supplier#000002540      17
Supplier#000003063      17
Supplier#000005178      17

```

... Additional rows deleted ....

```

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

```

(100 rows affected)

### Qualification Query 22

```

SELECT
CNTRYCODE
,COUNT(*) AS NUMCUST
,SUM(C_ACCTBAL) AS TOTACCTBAL
FROM
(
SELECT
SUBSTRING(C_PHONE,1,2) AS CNTRYCODE
,C_ACCTBAL
FROM
CUSTOMER
WHERE
SUBSTRING(C_PHONE,1,2) IN
('13', '31', '23', '29', '30', '18', '17')
AND C_ACCTBAL > (
SELECT
AVG(C_ACCTBAL)
FROM
CUSTOMER
WHERE
C_ACCTBAL > 0.00

```

```

AND SUBSTRING(C_PHONE,1,2) IN
('13', '31', '23', '29', '30', '18', '17')
)
AND NOT EXISTS (
SELECT
*
FROM
ORDERS
WHERE
O_CUSTKEY = C_CUSTKEY
)
) AS CUSTSALE
GROUP BY
CNTRYCODE
ORDER BY
CNTRYCODE
CNTRYCODE NUMCUST  TOTACCTBAL
-----
13          888    6737713.9900
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 : 909225328

14	1996-05-01					
2	46	TIN	AFRICA			
9	snow					
20	bisque	1996-01-01	GERMANY			
6	1996-01-01	0.08	24			
17	Brand#55	LG PKG				
18	315					
8	IRAN	MIDDLE EAST	PROMO BURNISHED STEEL			
21	MOZAMBIQUE					
13	unusual	accounts				
3	HOUSEHOLD	1995-03-06				
22	17	21	24	25	31	10
	18					
16	Brand#55	ECONOMY BRUSHED		17	44	
	11	15	6	8	32	28
4	1993-12-01					
11	FRANCE	0.0000003333				
15	1993-03-01					
1	94					
10	1993-06-01					
19	Brand#21	Brand#42	Brand#13	7	20	30
5	AFRICA	1996-01-01				
7	VIETNAM	IRAN				
12	RAIL	TRUCK	1996-01-01			

## Stream1 Seed : 909225329

14	1996-08-01					
2	34	COPPER	EUROPE			
9	sandy					
20	light	1994-01-01	VIETNAM			
6	1996-01-01	0.06	24			
17	Brand#52	LG DRUM				
18	312					
8	BRAZIL	AMERICA	ECONOMY BRUSHED			
STEEL						
21	INDIA					
13	unusual	accounts				
3	AUTOMOBILE	1995-03-23				
22	28	13	12	14	31	25
	29					
16	Brand#35	SMALL BURNISHED		36	22	
	29	37	6	21	9	19
4	1996-07-01					
11	ROMANIA	0.0000003333				
15	1995-10-01					
1	102					
10	1994-03-01					
19	Brand#23	Brand#25	Brand#13	2	10	26
5	AMERICA	1996-01-01				
7	JORDAN	BRAZIL				
12	AIR	TRUCK	1996-01-01			

## Stream2 Seed : 909225330

14	1996-11-01					
2	22	BRASS	AMERICA			
9	red					
20	spring	1993-01-01	IRAQ			
6	1996-01-01	0.03	25			
17	Brand#53	MED BAG				
18	314					
8	ROMANIA	EUROPE	ECONOMY PLATED			
COPPER						
21	ALGERIA					
13	unusual	deposits				
3	FURNITURE	1995-03-08				
22	11	34	16	23	27	20
	22					
16	Brand#25	LARGE PLATED		44	3	45
	1	49	13	38	6	
4	1994-04-01					
11	GERMANY	0.0000003333				
15	1993-07-01					
1	110					
10	1995-01-01					
19	Brand#35	Brand#13	Brand#52	7	11	23
5	ASIA	1996-01-01				
7	ETHIOPIA	ROMANIA				
12	REG AIR	MAIL	1996-01-01			

## Stream3 Seed : 909225331

14	1997-03-01					
2	9	NICKEL	EUROPE			
9	peru					
20	forest	1996-01-01	ARGENTINA			
6	1996-01-01	0.09	24			
17	Brand#55	MED PKG				
18	315					
8	IRAQ	MIDDLE EAST	ECONOMY ANODIZED			
COPPER						
21	PERU					
13	unusual	deposits				
3	AUTOMOBILE	1995-03-25				
22	17	32	27	22	21	29
	14					
16	Brand#55	PROMO BRUSHED		27	14	4
	36	19	6	28	2	
4	1996-11-01					
11	SAUDI ARABIA	0.0000003333				
15	1996-01-01					
1	118					
10	1993-10-01					
19	Brand#32	Brand#41	Brand#51	3	12	30
5	EUROPE	1996-01-01				
7	RUSSIA	IRAQ				
12	SHIP	MAIL	1997-01-01			

**Stream4 Seed : 909225332**

14	1997-06-01						
2	47	TIN	AMERICA				
9	olive						
20	puff	1995-01-01	MOZAMBIQUE				
6	1996-01-01	0.06	24				
17	Brand#52	MED DRUM					
18	313						
8	CANADA	AMERICA	LARGE POLISHED COPPER				
21	IRAN						
13	unusual	deposits					
3	FURNITURE	1995-03-10					
22	17	15	33	28	31	25	
	34						
16	Brand#35	MEDIUM ANODIZED			30	11	
	44	40	7	48	38	13	
4	1994-08-01						
11	INDIA	0.0000003333					
15	1993-10-01						
1	65						
10	1994-07-01						
19	Brand#34	Brand#34	Brand#55	8	13	26	
5	MIDDLE EAST	1996-01-01					
7	KENYA	CANADA					
12	MAIL	SHIP	1993-01-01				

**Stream5 Seed : 909225333**

14	1997-09-01						
2	35	COPPER	MIDDLE EAST				
9	midnight						
20	chartreuse	1993-01-01	ETHIOPIA				
6	1997-01-01	0.04	25				
17	Brand#54	JUMBO BAG					
18	314						
8	SAUDI ARABIA	MIDDLE EAST	LARGE				
	BURNISHED COPPER						
21	BRAZIL						
13	unusual	deposits					
3	MACHINERY	1995-03-27					

22	17	28	32	26	10	18	
	12						
16	Brand#25	ECONOMY PLATED			34	2	
	5	10	26	40	42	22	
4	1997-03-01						
11	VIETNAM	0.0000003333					
15	1996-05-01						
1	73						
10	1993-04-01						
19	Brand#41	Brand#12	Brand#44	3	14	22	
5	AFRICA	1997-01-01					
7	FRANCE	SAUDI ARABIA					
12	TRUCK	MAIL	1997-01-01				

**Stream6 Seed : 909225334**

14	1997-12-01						
2	23	STEEL	AMERICA				
9	lime						
20	mint	1996-01-01	SAUDI ARABIA				
6	1997-01-01	0.09	24				
17	Brand#51	JUMBO PKG					
18	312						
8	JAPAN	ASIA	MEDIUM BRUSHED COPPER				
21	ROMANIA						
13	unusual	deposits					
3	BUILDING	1995-03-12					
22	30	27	26	13	24	33	
	17						
16	Brand#55	STANDARD POLISHED			37	14	
	39	38	34	33	40	23	
4	1994-12-01						
11	INDONESIA	0.0000003333					
15	1994-01-01						
1	81						
10	1994-01-01						
19	Brand#43	Brand#45	Brand#44	8	15	29	
5	AMERICA	1997-01-01					
7	UNITED KINGDOM	JAPAN					
12	RAIL	FOB	1997-01-01				

# 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 smalldatetime 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 smalldatetime not null,
    L_COMMITDATE smalldatetime not null,
    L_RECEIPTDATE smalldatetime 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=tpch300g
rem
rem set sql's 'sa' user password here
rem
set PW=

set HOMEDRIVE=C:
set HOMEDIR=(\HP_TPCH_KIT\Setup
set OUTPUTDRIVE=c:
set OUTPUTDIR=(\HP_TPCH_KIT\Output
set SCALEFACTOR=300
set DBGEN_SEGMENTS=32
set DBGEN_PARALLELISM=16
set FLATFILEDRIVE=z:
set FLATFILEDIR=Flatfiles\
set FLATFILESUBDIR=(
set RF1_PARALLELISM=128
set RF2_PARALLELISM=128
set UPDATEDRIVE=z:
set UPDATEDIR=(\UF_Flatfiles
set UPDATE_SETS=21

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

%HOMEDRIVE%
cd %HOMEDIR%

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

echo Checking for existence of HOMEDIR and OUTPUTDIR
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 /l %%i in (1,1,%DBGEN_SEGMENTS%) do copy dists.dss
%FLATFILEDRIVE%\%FLATFILEDIR%\%i%\FLATFILESUBDIR%
Copy dists.dss %UPDATEDRIVE%%UPDATEDIR%
for /l %%i in (1,%DBGEN_PARALLELISM%,%DBGEN_SEGMENTS%)
do call :DBGEN_ITERATE %%i

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

:DBGEN_ITERATE
set FIRST=%1
set /a LAST=%FIRST%+%DBGEN_PARALLELISM%-1
echo DBGening sets %FIRST% through %LAST%
for /l %%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
```

```

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
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'torn', FALSE" -b
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
osql -Usa -P%PW% -Q"sp_dboption %DB%, 'torn', FALSE" -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), TIME stamp datetime)" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('LOAD
begin', getdate())" -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('Create
Tables begin', getdate())" -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
for %i in (REGION NATION SUPPLIER PARTSUPP PART
CUSTOMER ORDERS LINEITEM) do 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())" -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT

echo Starting bulk inserts
for %i in (LINEITEM ORDERS CUSTOMER PART PARTSUPP
SUPPLIER) do call :BULKINSERT %i
echo for NATION and REGION
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 NATION from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%FLATFILESUBDIR%\Natio
n.tbl' with (FieldTerminator = '|', RowTerminator = '\n', tablock)" -o
%OUTPUTPATH%\BulkInsert_Nation.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i%DB%\CreateREGIONIndexes.sql -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"bulk insert REGION from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%FLATFILESUBDIR%\Regio
n.tbl' with (FieldTerminator = '|', RowTerminator = '\n', tablock)" -o
%OUTPUTPATH%\BulkInsert_Region.out -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
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 %i
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('%i bulk
insert begin', getdate())" -l 300
for /l %j in (1,1,%DBGEN_PARALLELISM%) do start cmd /C Setup
BULKINSERTn %i %j
semaphore -wait %i -count %DBGEN_PARALLELISM%
echo Starting create indexes for %i
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('%i
create index begin', getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -i%DB%\Create%IIndexes.sql -o
%OUTPUTPATH%\Create%IIndexes.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"insert into LOADTIMES values ('%i
end', getdate())" -b -l 300
if ERRORLEVEL 1 goto :ERROR_EXIT
goto :EOF

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

:BULKINSERTn2
osql -Usa -P%PW% -d%DB% -Q"bulk insert %2 from
'%FLATFILEDRIVE%\%FLATFILEDIR%\%3FLATFILESUBDIR%\%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"update statistics
LINEITEM(L_SUPPKEY) WITH FULLSCAN, NORECOMPUTE" -o
%OUTPUTPATH%\L_SUPPKEY.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"update statistics
LINEITEM(L_ORDERKEY_IDX) WITH FULLSCAN, NORECOMPUTE"
-o %OUTPUTPATH%\L_ORDERKEY_IDX.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"update statistics ORDERS(O_KEY_IDX)
WITH FULLSCAN, NORECOMPUTE" -o
%OUTPUTPATH%\O_KEY_IDX.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"UPDATE STATISTICS
PART(P_NAME) WITH FULLSCAN, NORECOMPUTE" -o
%OUTPUTPATH%\P_NAME.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', 'FALSE'" -o
%OUTPUTPATH%\DisallowPageLocksLINEITEM.out -b
if ERRORLEVEL 1 goto :ERROR_EXIT
osql -Usa -P%PW% -d%DB% -Q"sp_indexoption 'ORDERS',
'disallowpagelocks', 'FALSE'" -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%, 'torn',FALSE" -b
>%OUTPUTPATH%\dboptionTornOFF.out
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
bcd %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
echo Done! Check for output in %OUTPUTPATH%
goto :EOF

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

```

## F.2 Run.cmd

```

echo off

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

set DB=tpch300g
set HOMEDRIVE=C:
set HOMEDIR=\\HP_TPCH_KIT\Run
set OUTPUTDRIVE=C:
set OUTPUTDIR=\\HP_TPCH_KIT\Output
set UPDATEDRIVE=Z:
set UPDATEDIR=\\UF_Flatfiles
set UPDATESSET=8
set UPDATESEGMENTS=128
set SEED=909225328
set SCALEFACTOR=300
set STREAMS=6

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

%HOMEDRIVE%
cd %HOMEDIR%

if '%1' == 'RF1' goto RF1
if '%1' == 'RF2' goto RF2
if '%1' == 'THROUGHPUT_STREAM' goto :THROUGHPUT_STREAM

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

set OUTPUTNUMBER=1
:OUTPUTLOOP
if NOT EXIST
%OUTPUTDRIVE%%OUTPUTDIR%%OUTPUTNUMBER% goto
:OUTPUTLOOPEND
set /a OUTPUTNUMBER=%OUTPUTNUMBER%+1
goto :OUTPUTLOOP
:OUTPUTLOOPEND

```



```

set
OUTPUTPATH=%OUTPUTDRIVE%%OUTPUTDIR%\%OUTPUTNUM
BER%
echo Output will be found at %OUTPUTPATH%
mkdir %OUTPUTPATH%
rem
rem Create the TIMES table
rem
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)"

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
for /1 %%i in (0,1,%STREAMS%) do call :SETUP1 %%i
for /1 %%i in (1,1,%STREAMS%) do echo insert into TIMES values
('QXX',%%i,getdate())>> %HOMEDIR%\Stream%%i.sql
for /1 %%i in (1,1,%STREAMS%) do echo go>>
%HOMEDIR%\Stream%%i.sql
for /1 %%i in (0,1,%STREAMS%) do copy %HOMEDIR%\Stream%%i.sql
%OUTPUTPATH%
popd
goto :SETUP2

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

:SETUP2

rem
rem Begin POWER run
rem

rem
rem Execute the RF1 Transaction set in parallel
rem

:POWER
if NOT '%DoPOWER%' == 'TRUE' goto :THROUGHPUT
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 /1 %%i in (1,1,%UPDATESEGMENTS%) do start /HIGH 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 /1 %%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 /1 %%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 /1 %%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 /1 %%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 /1 %%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
rem ----- Get SQL Configuration
osql -E -Q"sp_configure 'show advanced',1"
osql -E -Q"reconfigure with override"
osql -E -n -s, -w300 -Q"sp_configure" -o%OUTPUTPATH%\configure.out
rem ----- Get SQL Version
osql -E -n -w300 -e -Q"select @@version" -
o%OUTPUTPATH%\sqlversion.out
osql -E -n -w300 -e -Q"sp_helpdb %DB%" -o%OUTPUTPATH%\db.out
osql -E -n -w300 -e -Q"sp_dboption %DB%" -
o%OUTPUTPATH%\dboption.out
osql -E -n -w300 -e -Q"sp_helpsort" -o%OUTPUTPATH%\sort.out
osql -E -n -w300 -e -d%DB% -ilocking.sql -
o%OUTPUTPATH%\locking.out
rem ----- Get query plans
@echo set showplan_all on >%OUTPUTPATH%\stream.sql
@echo go >>%OUTPUTPATH%\stream.sql
type stream0.sql >>%OUTPUTPATH%\stream.sql
osql -E -d%DB% -n -w3000 -i%OUTPUTPATH%\stream.sql -
o%OUTPUTPATH%\plans.out

```

```

rem ----- Get Boot.ini
TYPE c:\boot.ini >%OUTPUTPATH%\boot.ini
reg query "HKLM\SYSTEM\CurrentControlSet\Control\Session
Manager\IO System" /s >%OUTPUTPATH%\session.reg
reg query
"HKLM\SYSTEM\CurrentControlSet\Services\hpqcissb\Parameters" /s
>%OUTPUTPATH%\array.reg
reg query "HKLM\SYSTEM\CurrentControlSet\Control\PriorityControl" /s
>%OUTPUTPATH%\priority.reg

```

```

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

```

```

rem
rem Subroutine for Executing RF1s
rem called from RF1 and THROUGHPUT_RF1
rem
:RF1
rem osql -E -l 120 -d%DB% -Q"exec RF1
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,%SCALEFACTOR%" -o
%OUTPUTPATH%\RF1_%2_%3.out
osql -E -l 120 -d%DB% -Q"exec RF1
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF1_%2_%3.out
semaphore -release RF1
goto :EOF

```

```

rem
rem Subroutine for Executing RF2s
rem called from RF2 and THROUGHPUT_RF2
rem
:RF2
rem osql -E -l 120 -d%DB% -Q"exec RF2
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,%SCALEFACTOR%" -o
%OUTPUTPATH%\RF2_%2_%3.out
osql -E -l 120 -d%DB% -Q"exec RF2
'%UPDATEDRIVE%% UPDATEDIR%',%2,%3,100" -o
%OUTPUTPATH%\RF2_%2_%3.out
semaphore -release RF2
goto :EOF

```

```

:ERROR_EXIT
echo Run aborted due to error
echo Check output in %OUTPUTPATH%
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, 200000000,
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-sigaled */, 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*

September 11, 2003

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

Mr. Pol:

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

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

Part Number	Description	Unit Price	Quantity	Price
810-00652	<b>SQL Server 2000 Enterprise Edition</b> <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 26% discount from the retail unit price of \$7,499.</i>	\$5,549	1	\$5,549
359-00532	<b>SQL Server 2000 Client License</b> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 18% discount from the retail unit price of \$179.</i>	\$146	60	\$8,760
P72-00264	<b>Windows Server 2003, Enterprise Edition</b> <i>Server license only - No CALs</i> <i>Discount Schedule: Open Program - No Level</i> <i>Unit Price reflects a 40% discount from the retail unit price of \$3,999.</i>	\$2,399	1	\$2,399
254-00170	<b>Visual C++ Standard</b> <i>No discounts applied</i>	\$109	1	\$109
PRO-PRORS-16U-01	<b>Database Server Support Package</b> <i>1 Year Term</i>	\$1,950	3	\$5,850

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](mailto:jamiere@microsoft.com).