TPC Benchmark™ D
Full Disclosure Report

Sun Enterprise™ 6000 Cluster

Using

Informix-Dynamic Server AD/XP

Submitted for Review

February 24, 1998

TPC Benchmark D Full Disclosure Report

Release 7.3.4

First Printing

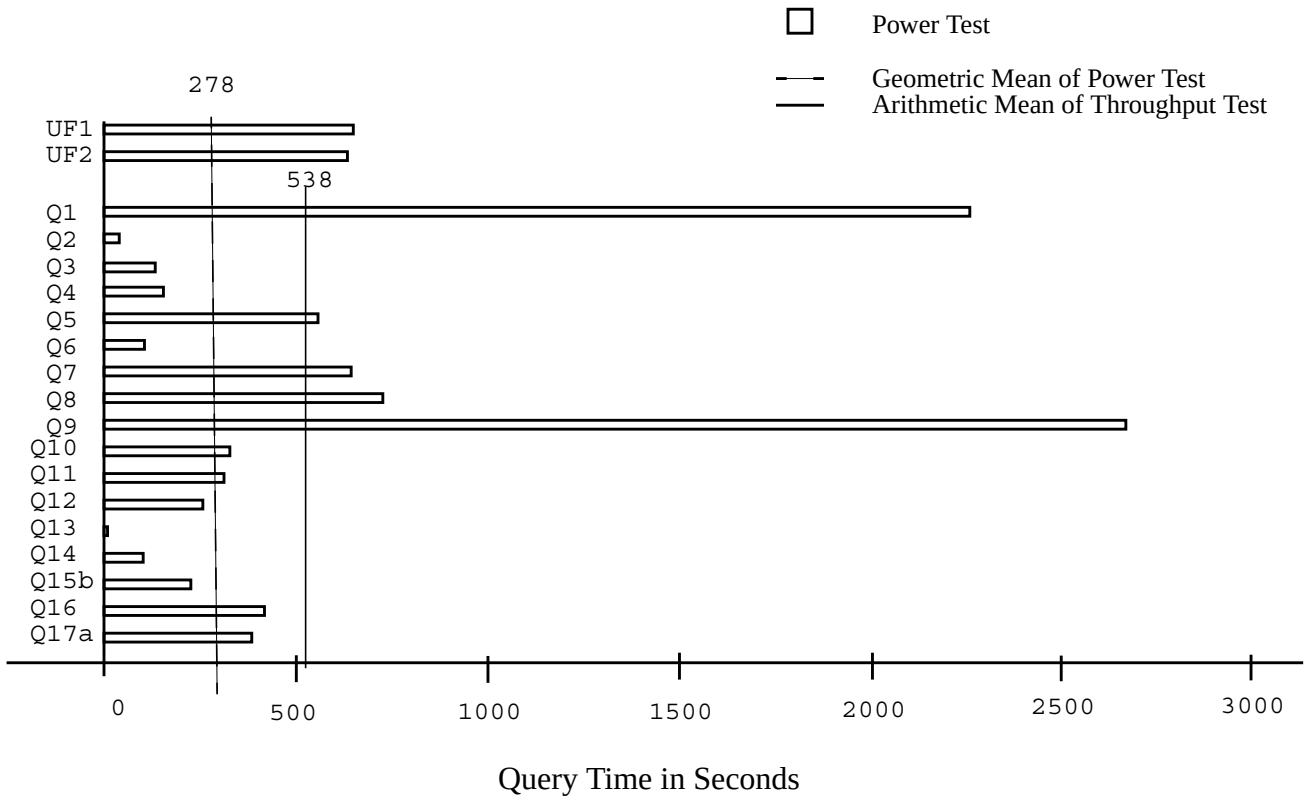
TRADEMARKS

Sun Enterprise 6000 Cluster with Informix IDS AD/XP

TPC-D Rev. 1.3.1

Report Date: **February 24, 1998**

Total System Cost	TPC-D Power	TPC-D Throughput	Price/Performance	
$11,766,932	**12,931.9** QppD@1000GB	**5,850.3** QthD@1000GB	**$1,353** $ per QphD@1000GB	
Database Size	Database Manager	Operating System	Other Software	Availability Date
1,000 GB	**INFORMIX Dynamic Server AD/XP 8.21**	**Solaris 2.6**	**Sun Enterprise Cluster 2.1**	**June 15, 1998**



Query Time in Seconds

Database Load Time = 11 hours 55 minute 23 seconds	Disk Size/Database Size = 8.52	RAID : Y (1)

System Configuration:

Nodes:	Four Sun Enterprise 6000
Processors per node:	24 336 Mhz UltraSPARC II CPUs each with 4MB E-Cache
Memory per node:	16GB
Disks per node:	2 Multipacks with 12 4.2GB disks, 16 StorEdge A5000 each with 14 9GB disks, 1 Multipacks with 6 2.1 GB disks
Total Storage per node:	2,129.4 GB

Sun Enterprise 6000 Cluster with Informix IDS AD/XP

TPC-D Rev. 1.3.1

Report Date: February 24, 1998

Description	Part Number	Source	Unit Price	Qty	Disc	Ext. Price	5 Yr. Maint.
Server Hardware							
E6002A	E6002	2	112,500	4		450,000	595,630
CPU/Memory board	2601A	2	6,750	48		324,000	486,467
336MHz/4MB UltraSPARC II	2560A	2	14,250	96		1,368,000	
1GB memory (8 * 128MB)	7023A	2	12,000	64		768,000	
PS/300W for Ex000	954A	2	1,350	24		32,400	
SBus I/O board	2610A	2	5,625	16		90,000	
FCAL SBus Host adapter	6730A	2	2,025	32		64,800	
FCAL GBIC Module	6731AR4	2	450	32		14,400	
SBus SCI board	1073A	2	3,375	16		54,000	
SCI Cable	3825A	2	188	16		3,000	
SCI Switch	3876A	2	13,125	4		52,500	
Subtotal						**3,221,100**	**1,082,097**
Storage							
127GB StorEdge A5000 Array	SG-ARY-011A-127G	2	47,250	64		3,024,000	1,187,021
MultiPacks (12 * 4.2GB disks)	x5516A	2	12,450	8		99,600	
MultiPacks (6 * 2.1GB disks)	x5515A	2	6,600	4		26,400	
Subtotal						**3,150,000**	**1,187,021**
SunService Discount (10% Volume + 5% yearly prepayment)							(340,368)
Hardware Subtotal						**6,371,100**	**1,928,750**
Software							
Solaris Server Software	SOLS-C	1	100	1		100	
SPARC Compiler C/C++ 4.2	WCC-4.2-P	1	995	1		995	969
Sun Cluster Software 2.1	CLUS-2.1-E6000	1	24,000	4		96,000	97,920
Sun Cluster XPS for E6000	CLUS-2.1-XPS2-L	1	4,000	4		16,000	16,320
						0	
Informix Dynamic Server AD/XP		3	2,200	960		2,112,000	1,925,600
Informix license volume discount					**37%**	(781,440)	
Subtotal						**1,443,555**	**2,040,809**
SunService Discount (10% Volume + 5% yearly prepayment)							(17,281)
Software Subtotal						**1,443,555**	**2,023,528**

Notes:

1. Sun Microsystems Inc.

2. CAT Technology Inc

3. Informix Software Inc.

	Total	**7,814,655**
Service for all hardware and software (except for Informix	**5Yr. cost**	**$11,766,932**
Server) is from Sun Microsystems Inc.	**QphD@1TB**	**8,698**
	$/QphD@1TB	**$1,353**

Audited by: François Raab, Information Paradigm, Inc.

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the standard components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchase 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 the TPC at pricing@tpc.org. Thank you.

Sun INFORMIX

Sun Enterprise 6000 Cluster with Informix IDS AD/XP

TPC-D Rev. 1.3.1

Report Date: February 24, 1998

Numerical Quantity Summary

Measurement Results:

Database Scaling Factor (SF/Size)	= 1,000 GB
Total Data Storage / Database Size	= 8.52
Database Load Time	= 11 hours 55 minute 23 seconds
Query Streams for Throughput Test	= 0
TPC-D Power Metric (QppD@1000GB)	= 12,931.9
TPC-D Throughput Metric (QthD@1000GB)	= 5,850.3
Composite QphD@1000GB	= 8,698
Total System Price Over 5 Years	= $11,766,932
TPC-D Price/Performance Metric	= $1,353

Measurement Intervals:

Measurement Interval in Throughput Test (Ts) = 10,461 seconds

Duration of Stream Execution:

Stream ID	Seed	Start Date	Start Time	End Date	End Time
Stream00	2191998	Thu Feb 19 1998	14:18:28 PST	Thu Feb 19 1998	17:12:49 PST
UF1		Thu Feb 19 1998	14:18:28 PST	Thu Feb 19 1998	14:29:29 PST
UF2		Thu Feb 19 1998	17:01:56 PST	Thu Feb 19 1998	17:12:49 PST

TPC-D Timing Intervals (in seconds)

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2256.9	49.5	133.1	162.5	561.5	102.7	647.3	690.0	2661.4	304.5

Q11	Q12	Q13	Q14	Q15b	Q16	Q17a	UF1	UF2
298.0	257.0	6.8	96.6	197.1	374.2	347.1	661.0	653.7

Information Paradigm

TPC TRANSACTION PROCESSING PERFORMANCE COUNCIL

Certified Auditor

Test Sponsors:

Bob Gerber
XPS Executive Architect
Informix Software, Inc.
921 SW Washington Street
Portland, OR 97205

John Bongiovanni
Director, Database Engineering
Sun Microsystems, Inc.
2550 Garcia Avenue
Mountain View, CA 94043

February 23, 1998

I verified the TPC Benchmark™ D performance of the following configuration:

Platform: Sun Enterprise 6000 Cluster
DataBase Manager: INFORMIX Dynamic Server AD/XP Version 8.21
Operating System: Solaris Version 2.6

The results were:

CPU's Speed	Memory	Disks	QppD@1000GB	QthD@1000GB
4-Node Sun Enterprise 6000 Cluster (configuration per node)				
24 x UltraSPARC II (336 Mhz) 4MB E-Cache/cpu	16 GB Main	224 x 9 GB 24 x 4.2 GB 6 x 2.1 GB	12931.9	5850.3

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

- The TIME table was not used
- The input variables were generated by QGEN
- The database was populated using DBGEN
- The database was maintained by the "Reset" method
- The throughput metric was computed using the results from the power test
- The ratio between the longest and the shortest query was such that no query timing was adjusted
- A compliant implementation specific layer was used
- The query text was produced using compliant variants and minor modifications

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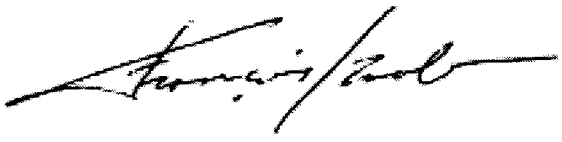
- The database records were defined with the proper layout and size
- The database was properly scaled to 1000GB and populated accordingly
- The database load time was correctly measured and reported
- The ACID Properties were verified and met
- The reported execution times were correctly measured and reported
- Measurement repeatability was verified
- At least 8 hours of database log was configured
- The system pricing was verified for major components and maintenance
- The major pages from the FDR were verified for accuracy

Additional Audit Notes:

None.

Respectfully Yours,



François Raab
President

TPC Benchmark D Overview

The TPC Benchmark™ D (TPC-D) is a Decision Support benchmark. It is a suite of business-oriented queries and concurrent updates. The queries and the data populating the database have been chosen to have broad industry-wide relevance while maintaining a sufficient degree of ease of implementation. This benchmark illustrates Decision Support systems that:

- Examine large volumes of data
- Execute queries with a high degree of complexity
- Give answers to critical business questions

TPC-D evaluates the performance of various Decision Support systems by the execution of sets of queries against a standard database under controlled conditions. The TPC-D queries:

- Give answers to real-world business questions
- Are far more complex than most OLTP transactions
- Include a rich breadth of operators and selectivity constraints
- Generate intensive activity on the part of the database server component of the system under test
- Are executed against a database complying to specific population and scaling requirements
- Are implemented with constraints derived from staying closely synchronized with an on-line production database

Table of Contents

1. General Items

1.1 Benchmark Sponsor

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

Sun Microsystems Inc. and Informix Software Inc. are the sponsors of this TPC-D benchmark.

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 but not limited to:

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

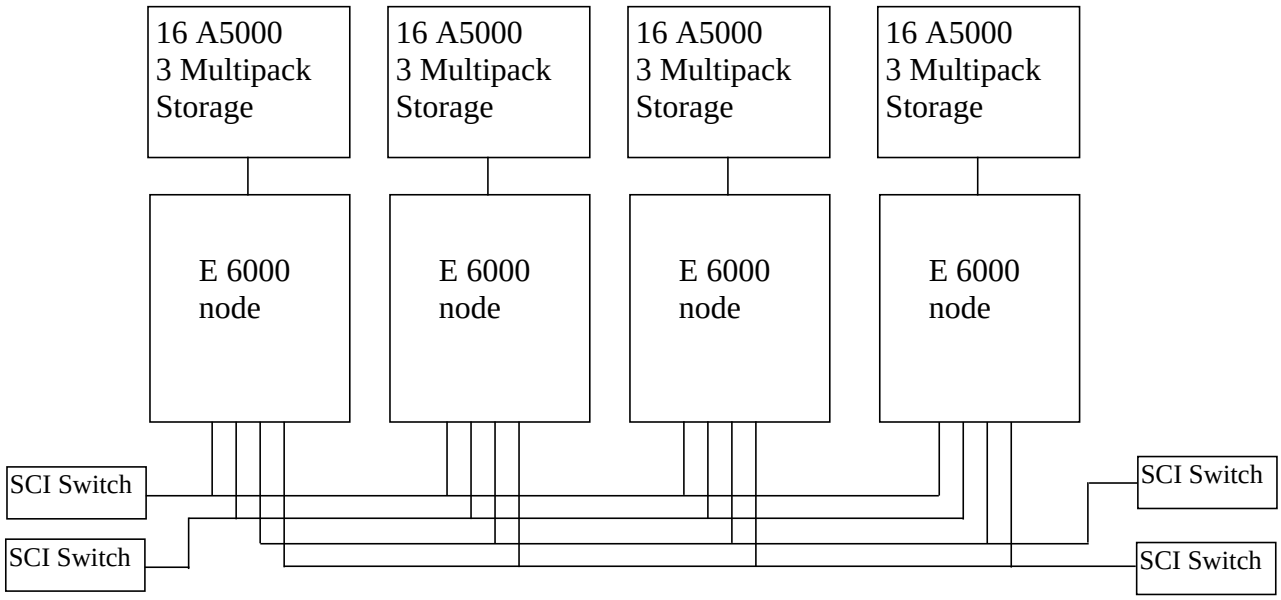
This requirement can be satisfied by providing a full list of all parameters and options.

Appendix A contains the Solaris and Informix parameters used in this benchmark.

1.3 Configuration Diagram

Provide diagrams of both the measured and priced configurations, accompanied by a description of the differences. This includes, but is not limited to:

- Sun Enterprise 6000 Cluster (four nodes), each node with:
  - 24 336 Mhz UltraSPARC II CPUs each with 4MB E-Cache
  - 16 GB of memory
  - 2 Multipacks with 12 4.2GB disks, 16 StorEdge A5000 each with 14 9GB disks, 1 Multipacks with 6 2.1 GB disks
  - 1 Ethernet controller
  - 4 SBus SCI controllers



Tested and priced configurations are identical.

2. Clause 1 Logical Database Design

2.1 Database Definition Statements

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

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

2.2 Physical Organization

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

No record clustering or index clustering was used. Default column ordering was used. Refer to the table create statements in Appendix B for further details.

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 used for all tables and indexes except nation and region. Refer to the table / index create statements in Appendix B for more details.

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2.4 Replication

While there are some restrictions placed upon physical replication of objects in the test and qualification databases (see Clause 1.5.6), any such replication must be disclosed.

No replication was used.

3. Clause 2 Queries and Update Functions

3.1 Query Language

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

SQL was the query language used to implement all queries.

3.2 Verifying Method for Random Number Generation

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

TPC supplied versions 1.3.0 of DBGEN and QGEN were used for this TPC-D benchmark.

3.3 Generating Values for Substitution Parameters

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 Qualification 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 test, 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 allowed minor modifications were applied:

- In Q2, Q3 and Q10, the Informix SELECT ...FIRST N mechanism was used to return the correct number of rows (clause 2.1.2.8)
- All date expressions were adapted to appropriate INFORMIX syntax (clause 2.2.3.3(c))
- In Q7, Q8, Q9 and Q13 which use a nested table expression solely for the purposes of grouping on an expression, table names were used in the FROM clause instead of the form using a nested table expression. The GROUP BY / ORDER BY was modified to use an ordinal.
- In Q8 in the outermost select, in accordance with 2.2.3.3f, round(..., 2) is used for intermediate arithmetic result precision.

- In Q15b and Q17a, in accordance with 2.1.2.7, a storage allocation directive was used for the creation of the temporary table.

3.5 Query Substitution Parameters and Seeds Used

The query substitution parameters used for all performance tests must be disclosed in tabular format, along with the seeds used to generate these parameters.

Appendix D contains the seed and query substitution parameters.

3.6 Query Isolation Level

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

The queries and transactions were run with the isolation level “Level 2” (repeatable read).

3.7 Source Code of Update Functions

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

The update function is part of the implementation-specific layer/driver code included in Appendix E.

3.8 Database maintenance Option

The details of the database maintenance option selected (.i.e., reset or evolve) must be disclosed (including source code of any non-commercial program used).

This implementation uses the evolve method.

4. Clause 3 Database System Properties

4.0 ACID Properties

The ACID (Atomicity, Consistency, Isolation and Durability) properties of transaction processing system must be supported by the system under test during the timed portion of this benchmark. Since TPC-D is not a transaction processing benchmark, the ACID properties must be evaluated outside the timed portion of the test.

Source code for the ACID test is included in Appendix C.

4.1 Atomicity

The system under test must guarantee that transactions are atomic; the system will either perform all individual operations on the data, or will assure that no partially completed operations leave any effects on the data.

4.1.1 Completed Transaction

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

1. The total 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 Aborted Transaction

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

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

4.2 Consistency

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

4.2.1 Consistency Test

Verify that ORDER and LINEITEM tables are initially consistent, submit the prescribed number of ACID Transactions with randomly selected input parameters, and re-verify the consistency of the ORDER and LINEITEM 4.2.1.

1. The consistency of the ORDER and LINEITEM tables was verified based on a sample of O_ORDERKEY's.
2. 100 ACID Transactions were submitted from each of 2 execution streams.
3. The consistency of the ORDER and LINEITEM tables was re-verified.

4.3 Isolation

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

4.3.1 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.

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 the 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 Read-Write Conflict with Rollback

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

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

4.3.3 Write-Write Conflict with Commit

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

1. An ACID Transaction, T1, was started for a randomly selected O_KEY, L_KEY, and DELTA. 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. 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 Write-Write Conflict with Rollback

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

1. An ACID Transaction, T1, was started for a randomly selected O_KEY, L_KEY, and DELTA. T1 was suspended prior to ROLLBACK.
2. Another ACID Transaction, T2, was started using the same O_KEY and L_KEY 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 Concurrent Progress of Read and Write Transactions

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

1. An ACID Transaction, T1, was started for a randomly selected O_KEY, L_KEY, and DELTA. T1 was suspended prior to ROLLBACK.
2. Another ACID Transaction, T2, was started which did the following:

   For random values of PS_PARTKEY and PS_SUPPKEY, all columns of the PARTSUPP table for which PS_PARTKEY and PS_SUPPKEY are equal, are returned.
3. T2 completed.
4. T1 was allowed to COMMIT.
5. It was verified that appropriate rows in ORDER, LINEITEM and HISTORY tables were changed.

4.3.6 Read-Only Query Conflict with Update Transaction

Demonstrate that 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.

1. An ACID Transaction, T1, executing Q 1 against the qualification database, was started using a randomly selected DELTA.
2. An ACID Transaction T2, was started for a randomly selected O_KEY, L_KEY and DELTA.
3. Transaction T1 completed executing Q 1.
4. A third transaction, T3, executing Q 1 was started, using a DELTA random but different from T1's.
5. T2 completed and appropriate rows in the ORDER, LINEITEM and HISTORY tables had been changed.
6. T3 completed executing Q1.

4.4 Durability

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

4.4.1 Failure of a Durable Medium

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

The disks containing TPC-D tables and log files were mirrored. During the durability test the disk containing one side of a data file mirror was removed from its cabinet. Similarly the disk containing one side of a log file mirror was removed from its cabinet. The test continued uninterrupted, using the remaining side of the mirror.

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.

The system crash and memory failure tests were combined. Power to the server was turned off during the durability test. When power was restored, the system rebooted and the database was restarted. The durability success file and the HISTORY table were compared successfully.

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. Clause 4 Scaling and Database Population

5.1 Ending Cardinality of Tables

The cardinality (i.e., 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	Rows
Order	1,500,000,000
Lineitem	5,999,989,709
Customer	150,000,000
Part	200,000,000
Supplier	10,000,000
Partsupp	800,000,000
Nation	25
Region	5

5.2 Distribution of Tables and Logs Across Media

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

- All table and index data, except for nation and region, were distributed across 448 (9GB) disks and mirrored with a second set of 448 (9GB) disks. Nation and region were placed in the root dbspace. Root dbspace was placed on 16 of the same disks used for table/index data. Database temp space was placed on 384 of the same disks used for all table/index data.
- 16 (4.2GB) drives were used for logical database logs and mirrored on a second set of 16 (4.2GB) disks.
- 16 (4.2GB) drives were used for physical database logs and mirrored on a second set of 16 (4.2GB) disks.

5.3 Database partition/replication mapping

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

The database was not replicated.

5.4 RAID feature

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 must be disclosed for each device.

Raid 1 was used for all database tables, indices, root dbspace and logs.

5.5 Modifications to the DBGEN

Any modifications to the DBGEN (see clause 4.2.1) source code must be disclosed. In the event that a program other than DBGEN was used to populate the database, it must be disclosed in its entirety.

The supplied DBGEN version 1.3.0 was used to generate the database population for this benchmark.

5.6 Database Content of Initial Ten Rows

The content of the first 10 rows of each table in the test database must be disclosed.

Appendix F contains the first 10 rows of each table in the test database.

5.7 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 55 minutes 23 seconds.

5.8 Data Storage Ratio

The data storage ratio must be disclosed. It is computed as the ratio between the total amount of priced disk space, and the chosen test database size as defined in Clause 4.1.3.

The data storage ratio is computed from the following information:

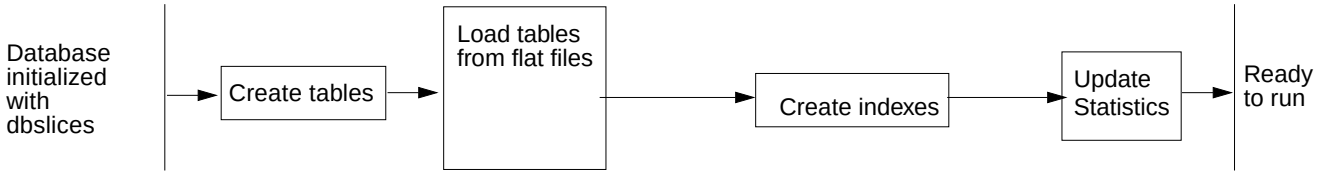
Disk Type	# of Disks	Space per Disk	Sub-Total Disk Space
StorEdge	896	9 GB	8064 GB
Multipack	96	4.2 GB	403.2 GB
Multipack	24	2.1 GB	50.4 GB
		Total Space	**8517.6 GB**
		Data Storage Ratio	**8.52**

5.9 Database Load Mechanism Details and Illustration

The details of the database load mechanism must be described and illustrated with a block diagram.

The test database was loaded using Pload which read the data from flat files created by the DBGEN program. The data was split into 500 flat files for the lineitem and order, 100 flat files for partsupplier, part, supplier and customer tables and 1 each for nation and region.

The qualification database used identical scripts to create and load the data with adjustments for the size difference. Only one flat file was used for each table to load the data from.



6. Clause 5 Performance Metrics and Execution Rules

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. Database Restart
2. UF1 Update Transaction
3. Stream 00 Execution
4. UF2 Update Transaction

6.2 Timing Intervals for Each Query and Update Functions

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

The power test timing intervals are:

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2256.9	49.5	133.1	162.5	561.5	102.7	647.3	690.0	2661.4	304.5

Q11	Q12	Q13	Q14	Q15b	Q16	Q17a	UF1	UF2
298.0	257.0	6.8	96.6	197.1	374.2	347.1	661.0	653.7

6.3 Number of Streams for the Throughput Test

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

A single query stream throughput metric was calculated using the timing from the power test, as indicated in 5.3.1.4. A separate throughput test was not run.

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 throughput test start time and finish time for each stream are contained in the Numerical Quantity Summary earlier in this document.

6.5 Total Elapsed Time of the Measurement Interval

The total elapsed time of the measurement interval.

The total elapsed time of the throughput test is contained in the Numerical Quantity Summary earlier in this document.

6.6 Update 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.

The start and finish time for each update function in the update stream are contained in the Numerical Quantity Summary earlier in this document.

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

The timing intervals for each query and each update function for each stream must be reported for the throughput test.

The timing intervals for each query and each update function for the throughput test are contained in the Numerical Quantity Summary earlier in this document.

6.8 Performance Metrics

Verify that the metrics are computed as required.

The performance metrics, and the numbers on which they are based, are contained in the Numerical Quantity Summary earlier in this document.

6.9 Reproducibility Method

A description of the method used to determine the reproducibility of the measurements must be reported. This must include the performance metrics (QppD, QthD, and QphD) from the reproducibility runs.

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

Run ID	QppD@1000GB	QthD@1000GB	QphD@1000GB
Run 1	13,092.4	5,891.9	8,782.9
Run 2	12,931.9	5,850.3	8,698.0
Difference	1.2%	0.7%	1.0%

7. Clause 6 SUT and Driver Implementation

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.

The Power Test is performed by a shell script. First, QGEN is called to insert parameters into a set of query templates.

For each power-test run

- a shell script, **UF1.sh**, performs the UF1 (insert function).
- then the queries are performed in the order defined by 5.3.4.4
- then a shell script, **UF2.sh** performs the UF2 (delete) function.

In all cases, all inserts, deletes, and queries are executed by submitting the appropriate SQL to the utility DB-Access, as described under the Implementation Specific Layer description.

The time (using gettimeofday()) is recorded in seconds to a resolution of 0.01 seconds before and after each UF update function or query execution. The difference is computed and directed to a file to record performance.

7.2 Implementation-Specific Layer

If any 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.

DB-Access is an Informix database utility that facilitates access and manipulation of data in an Informix database. Dbaccess is invoked from the command-line mode on the SUT, specifying access to the TPC-D database. It runs an input file containing either the QGEN generated SQL for the queries or SQL for the update functions.

The environment variables INFORMIXDIR and INFORMIXSERVER were set appropriately for execution of DB-Access.

7.3 Update Function

uf1.sh is implemented using the Informix Pload functionality. **uf2.sh** uses the delete SQL syntax. Logical consistency of the database is ensured by using a single transaction to do all the inserts (or deletes) in both tables.

8. Clause 7 Pricing

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.

Refer to the Executive Summary.

8.2 Total Five Year Price

The total 5-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.

The total 5-year price of the configuration is $11,766,932. For details of pricing, see the second page of the Executive Summary.

Hardware prices are from reseller price quotes. Refer to Appendix G.

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 reported availability date for the priced system must be the date at which all components are committed to be available.

All components of the priced system will be available by June 15, 1998.

9. Auditor's Information and Attestation Letter

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.

The auditor's attestation letter is included at the front of this report.

Appendix A. Informix and Solaris Parameters

Informix Parameters:

All parameters are changes from defaults.

==========

onconfig.tpcd.run

==========

```
#*****************************************************************
#
#          INFORMIX SOFTWARE, INC.
#
#  Title:       onconfig.tpcd
#  Sccsid:      @(#)onconfig.tpcd
#  Description: INFORMIX-OnLine Configuration Parameters for TPC-D
#
#*****************************************************************

# Root Dbspace Configuration


ROOTSLICE    rootdbs                 # Root dbspace name
ROOTPATH     /nlinks/rootdbs.%c
ROOTSIZE     1500000                 # Size of root dbspace (Kbytes)

# Physical Log Configuration

#PHYSSLICE       rootdbs         # Location (dbspace) of physical log
#PHYSFILE        50000           # Physical log file size (Kbytes)

PHYSSLICE       physlice         # Location (dbspace) of physical log
PHYSFILE        1800000          # Physical log file size (Kbytes)

# Logical Log Configuration

LOGFILES     3        # Number of logical log files
LOGSIZE      50000    # Logical log size (Kbytes)

# Diagnostics

MSGPATH      /tpcd/informix/online.log
CONSOLE      /tpcd/informix/online.log
ALARMPROGRAM                    # Alarm program path

# System Archive Tape Device

TAPEDEV    /dev/null # Tape device path
TAPEBLK    32        # Tape block size (Kbytes)
TAPESIZE   102400    # Maximum amount of data to put on tape (Kbytes)

# Log Archive Tape Device

#LTAPEDEV  /dev/null # Log tape device path
LTAPEBLK   32        # Log tape block size (Kbytes)
LTAPESIZE  102400    # Max amount of data to put on log tape (Kbytes)

# System Configuration

SERVERNUM        0      # Unique id corresponding to a OnLine instance
DBSERVERNAME     bitxps # Name of default database server
DEADLOCK_TIMEOUT 60     # Max time to wait of lock in distributed env.
RESIDENT         1      # Forced residency flag (Yes = 1, No = 0)

MULTIPROCESSOR   1      # 0 for single-processor,1 for multi-processor
SINGLE_CPU_VP    0      # If non-zero, limit number of cpu vps to one
NUMCPUVPS        6     # Number of user (cpu) vps

NOAGE            1        # Process aging

CONFIGSIZE       LARGE
#
# Shared Memory Parameters

LOCKS          800000      # Maximum number of locks
BUFFERS        130000      # Maximum number of shared buffers
NUMAIOVPS      1           # Number of IO vps
#NUMAIOVPS      0           # Number of IO vps
PHYSBUFF       128         # Physical log buffer size (Kbytes)
LOGBUFF        128         # Logical log buffer size (Kbytes)
LOGSMAX        24          # Maximum number of logical log files
CLEANERS       48          # Number of buffer cleaner processes
SHMBASE        0x0A000000L # Shared memory base address
SHMVIRTSIZE    2000000     # initial virtual shared memory segment size
SHMADD         32768       # Size of new shared memory segments
(Kbytes)
SHMTOTAL       0           # Total shared memory (Kbytes). 0=>unlimited
CKPTINTVL      9999999     # Check point interval (in sec)
LRUS           24          # Number of LRU queues
LRU_MAX_DIRTY  60          # LRU percent dirty begin cleaning limit
LRU_MIN_DIRTY  40          # LRU percent dirty end cleaning limit
LTXHWM         50          # Long transaction high water mark
percentage
LTXEHWM        50          # Long transaction high water mark
(exclusive)
TXTIMEOUT      300         # Transaction timeout (in sec)
STACKSIZE      32          # Stack size (Kbytes)

LOG_BACKUP_MODE     NONE

OFF_RECVRY_THREADS   10   # Default number of offline worker threads
ON_RECVRY_THREADS    1    # Default number of online worker threads

# Data Replication Variables
# DRAUTO: 0 manual, 1 retain type, 2 reverse type
DRAUTO           0        # DR automatic switchover
DRINTERVAL       30       # DR max time between DR buffer flushes (in
sec)
DRTIMEOUT        30       # DR network timeout (in sec)
DRLOSTFOUND      /tpcd/informix/xps/dr.lostfound

# Read Ahead Variables
RA_PAGES         64       # Number of pages to attempt to read ahead
RA_THRESHOLD     32       # Number of pages left before next group

DBSPACETEMP        tdbs   # Default temp dbspaces

DUMPDIR      /tpcd/informix/dumps
DUMPSHMEM    0
DUMPGCORE    0
DUMPCORE     0
DUMPCNT      0
                          # a single user's session

ADTMODE      0                  # Auditing mode
ADTPATH      /tpcd/informix/xps # Directory where audit trails
                                # will be written by OnLine
ADTSIZE      50000        # Maximum size of any single audit trail
file
ADTERR       0            # 0 ==> retry failed audit writes; 1 ==>
log failure

#FILLFACTOR  90      # Fill factor for building indexes

# method for OnLine to use when determining current time
USEOSTIME    0

# Parallel Database Queries (pdq)
PDQPRIORITY       100     # Degree of parallelism: 0 => OFF, 1 => LOW,
                          # -2 => HIGH, max of 100.
MAX_PDQPRIORITY   100     # Maximum allowed pdqprioirity
DS_MAX_QUERIES    1       # Maximum number of decision support queries
DS_TOTAL_MEMORY   3000000 # Decision support memory (Kbytes)
DS_MAX_SCANS     1000000 # Maximum number of decision support scans
DATASKIP          OFF     # List of dbspaces to skip

DS_HASHSIZE     251
DS_POOLSIZE     500

SENDEPDS        6

COSERVER        1
NODE            akita

SADDR           h1scid0:15000,2,0
LADDR           h1scid0:15010,18,0
HADDR           h1scid0:15050,1,0

SADDR           h1scid1:15100,2,1
LADDR           h1scid1:15110,18,1
HADDR           h1scid1:15150,1,1

SADDR           h1scid2:15200,2,2
LADDR           h1scid2:15210,18,2
HADDR           h1scid2:15250,1,2

SADDR           h1scid3:15300,2,3
LADDR           h1scid3:15310,18,3
HADDR           h1scid3:15350,1,3

SADDR           h1scid0:15400,2,4
LADDR           h1scid0:15410,18,4
HADDR           h1scid0:15450,1,4

SADDR           h1scid0:15500,2,5
LADDR           h1scid0:15510,18,5
HADDR           h1scid0:15550,1,5

END

COSERVER        2
NODE            akita
```

```
SADDR           h1scid0:16000,2,0
LADDR           h1scid0:16010,18,0
HADDR           h1scid0:16050,1,0

SADDR           h1scid1:16100,2,1
LADDR           h1scid1:16110,18,1
HADDR           h1scid1:16150,1,1

SADDR           h1scid2:16200,2,2
LADDR           h1scid2:16210,18,2
HADDR           h1scid2:16250,1,2

SADDR           h1scid3:16300,2,3
LADDR           h1scid3:16310,18,3
HADDR           h1scid3:16350,1,3

SADDR           h1scid1:16400,2,4
LADDR           h1scid1:16410,18,4
HADDR           h1scid1:16450,1,4

SADDR           h1scid1:16500,2,5
LADDR           h1scid1:16510,18,5
HADDR           h1scid1:16550,1,5

END

COSERVER        3
NODE            akita

SADDR           h1scid0:17000,2,0
LADDR           h1scid0:17010,18,0
HADDR           h1scid0:17050,1,0

SADDR           h1scid1:17100,2,1
LADDR           h1scid1:17110,18,1
HADDR           h1scid1:17150,1,1

SADDR           h1scid2:17200,2,2
LADDR           h1scid2:17210,18,2
HADDR           h1scid2:17250,1,2

SADDR           h1scid3:17300,2,3
LADDR           h1scid3:17310,18,3
HADDR           h1scid3:17350,1,3

SADDR           h1scid2:17400,2,4
LADDR           h1scid2:17410,18,4
HADDR           h1scid2:17450,1,4

SADDR           h1scid2:17500,2,5
LADDR           h1scid2:17510,18,5
HADDR           h1scid2:17550,1,5

END

COSERVER        4
NODE            akita

SADDR           h1scid0:18000,2,0
LADDR           h1scid0:18010,18,0
HADDR           h1scid0:18050,1,0

SADDR           h1scid1:18100,2,1
LADDR           h1scid1:18110,18,1
HADDR           h1scid1:18150,1,1

SADDR           h1scid2:18200,2,2
LADDR           h1scid2:18210,18,2
HADDR           h1scid2:18250,1,2

SADDR           h1scid3:18300,2,3
LADDR           h1scid3:18310,18,3
HADDR           h1scid3:18350,1,3

SADDR           h1scid3:18400,2,4
LADDR           h1scid3:18410,18,4
HADDR           h1scid3:18450,1,4

SADDR           h1scid3:18500,2,5
LADDR           h1scid3:18510,18,5
HADDR           h1scid3:18550,1,5

END

COSERVER        5
NODE            mutt

SADDR           h2scid1:15000,2,0
LADDR           h2scid1:15010,18,0
HADDR           h2scid1:15050,1,0

SADDR           h2scid2:15100,2,1
LADDR           h2scid2:15110,18,1
HADDR           h2scid2:15150,1,1

SADDR           h2scid3:15200,2,2
LADDR           h2scid3:15210,18,2
HADDR           h2scid3:15250,1,2

SADDR           h2scid0:15300,2,3
LADDR           h2scid0:15310,18,3
HADDR           h2scid0:15350,1,3

SADDR           h2scid1:15400,2,4
LADDR           h2scid1:15410,18,4
HADDR           h2scid1:15450,1,4

SADDR           h2scid1:15500,2,5
LADDR           h2scid1:15510,18,5
HADDR           h2scid1:15550,1,5

END

COSERVER        6
NODE            mutt

SADDR           h2scid1:16000,2,0
LADDR           h2scid1:16010,18,0
HADDR           h2scid1:16050,1,0

SADDR           h2scid2:16100,2,1
LADDR           h2scid2:16110,18,1
HADDR           h2scid2:16150,1,1

SADDR           h2scid3:16200,2,2
LADDR           h2scid3:16210,18,2
HADDR           h2scid3:16250,1,2

SADDR           h2scid0:16300,2,3
LADDR           h2scid0:16310,18,3
HADDR           h2scid0:16350,1,3

SADDR           h2scid2:16400,2,4
LADDR           h2scid2:16410,18,4
HADDR           h2scid2:16450,1,4

SADDR           h2scid2:16500,2,5
LADDR           h2scid2:16510,18,5
HADDR           h2scid2:16550,1,5

END

COSERVER        7
NODE            mutt

SADDR           h2scid1:17000,2,0
LADDR           h2scid1:17010,18,0
HADDR           h2scid1:17050,1,0

SADDR           h2scid2:17100,2,1
LADDR           h2scid2:17110,18,1
HADDR           h2scid2:17150,1,1

SADDR           h2scid3:17200,2,2
LADDR           h2scid3:17210,18,2
HADDR           h2scid3:17250,1,2

SADDR           h2scid0:17300,2,3
LADDR           h2scid0:17310,18,3
HADDR           h2scid0:17350,1,3

SADDR           h2scid3:17400,2,4
LADDR           h2scid3:17410,18,4
HADDR           h2scid3:17450,1,4

SADDR           h2scid3:17500,2,5
LADDR           h2scid3:17510,18,5
HADDR           h2scid3:17550,1,5

END

COSERVER        8
NODE            mutt

SADDR           h2scid1:18000,2,0
LADDR           h2scid1:18010,18,0
HADDR           h2scid1:18050,1,0

SADDR           h2scid2:18100,2,1
LADDR           h2scid2:18110,18,1
HADDR           h2scid2:18150,1,1

SADDR           h2scid3:18200,2,2
LADDR           h2scid3:18210,18,2
HADDR           h2scid3:18250,1,2

SADDR           h2scid0:18300,2,3
LADDR           h2scid0:18310,18,3
HADDR           h2scid0:18350,1,3
```

```
SADDR           h2scid0:18400,2,4
LADDR           h2scid0:18410,18,4
HADDR           h2scid0:18450,1,4

SADDR           h2scid0:18500,2,5
LADDR           h2scid0:18510,18,5
HADDR           h2scid0:18550,1,5

END

COSERVER        9
NODE            pug1

SADDR           h3scid2:15000,2,0
LADDR           h3scid2:15010,18,0
HADDR           h3scid2:15050,1,0

SADDR           h3scid3:15100,2,1
LADDR           h3scid3:15110,18,1
HADDR           h3scid3:15150,1,1

SADDR           h3scid0:15200,2,2
LADDR           h3scid0:15210,18,2
HADDR           h3scid0:15250,1,2

SADDR           h3scid1:15300,2,3
LADDR           h3scid1:15310,18,3
HADDR           h3scid1:15350,1,3

SADDR           h3scid2:15400,2,4
LADDR           h3scid2:15410,18,4
HADDR           h3scid2:15450,1,4

SADDR           h3scid2:15500,2,5
LADDR           h3scid2:15510,18,5
HADDR           h3scid2:15550,1,5

END

COSERVER        10
NODE            pug1

SADDR           h3scid2:16000,2,0
LADDR           h3scid2:16010,18,0
HADDR           h3scid2:16050,1,0

SADDR           h3scid3:16100,2,1
LADDR           h3scid3:16110,18,1
HADDR           h3scid3:16150,1,1

SADDR           h3scid0:16200,2,2
LADDR           h3scid0:16210,18,2
HADDR           h3scid0:16250,1,2

SADDR           h3scid1:16300,2,3
LADDR           h3scid1:16310,18,3
HADDR           h3scid1:16350,1,3

SADDR           h3scid3:16400,2,4
LADDR           h3scid3:16410,18,4
HADDR           h3scid3:16450,1,4

SADDR           h3scid3:16500,2,5
LADDR           h3scid3:16510,18,5
HADDR           h3scid3:16550,1,5

END

COSERVER        11
NODE            pug1

SADDR           h3scid2:17000,2,0
LADDR           h3scid2:17010,18,0
HADDR           h3scid2:17050,1,0

SADDR           h3scid3:17100,2,1
LADDR           h3scid3:17110,18,1
HADDR           h3scid3:17150,1,1

SADDR           h3scid0:17200,2,2
LADDR           h3scid0:17210,18,2
HADDR           h3scid0:17250,1,2

SADDR           h3scid1:17300,2,3
LADDR           h3scid1:17310,18,3
HADDR           h3scid1:17350,1,3

SADDR           h3scid0:17400,2,4
LADDR           h3scid0:17410,18,4
HADDR           h3scid0:17450,1,4

SADDR           h3scid0:17500,2,5
LADDR           h3scid0:17510,18,5
HADDR           h3scid0:17550,1,5

END

COSERVER        12
NODE            pug1

SADDR           h3scid2:18000,2,0
LADDR           h3scid2:18010,18,0
HADDR           h3scid2:18050,1,0

SADDR           h3scid3:18100,2,1
LADDR           h3scid3:18110,18,1
HADDR           h3scid3:18150,1,1

SADDR           h3scid0:18200,2,2
LADDR           h3scid0:18210,18,2
HADDR           h3scid0:18250,1,2

SADDR           h3scid1:18300,2,3
LADDR           h3scid1:18310,18,3
HADDR           h3scid1:18350,1,3

SADDR           h3scid1:18400,2,4
LADDR           h3scid1:18410,18,4
HADDR           h3scid1:18450,1,4

SADDR           h3scid1:18500,2,5
LADDR           h3scid1:18510,18,5
HADDR           h3scid1:18550,1,5

END

COSERVER        13
NODE            mastiff

SADDR           h4scid3:15000,2,0
LADDR           h4scid3:15010,18,0
HADDR           h4scid3:15050,1,0

SADDR           h4scid0:15100,2,1
LADDR           h4scid0:15110,18,1
HADDR           h4scid0:15150,1,1

SADDR           h4scid1:15200,2,2
LADDR           h4scid1:15210,18,2
HADDR           h4scid1:15250,1,2

SADDR           h4scid2:15300,2,3
LADDR           h4scid2:15310,18,3
HADDR           h4scid2:15350,1,3

SADDR           h4scid3:15400,2,4
LADDR           h4scid3:15410,18,4
HADDR           h4scid3:15450,1,4

SADDR           h4scid3:15500,2,5
LADDR           h4scid3:15510,18,5
HADDR           h4scid3:15550,1,5

END

COSERVER        14
NODE            mastiff

SADDR           h4scid3:16000,2,0
LADDR           h4scid3:16010,18,0
HADDR           h4scid3:16050,1,0

SADDR           h4scid0:16100,2,1
LADDR           h4scid0:16110,18,1
HADDR           h4scid0:16150,1,1

SADDR           h4scid1:16200,2,2
LADDR           h4scid1:16210,18,2
HADDR           h4scid1:16250,1,2

SADDR           h4scid2:16300,2,3
LADDR           h4scid2:16310,18,3
HADDR           h4scid2:16350,1,3

SADDR           h4scid0:16400,2,4
LADDR           h4scid0:16410,18,4
HADDR           h4scid0:16450,1,4

SADDR           h4scid0:16500,2,5
LADDR           h4scid0:16510,18,5
HADDR           h4scid0:16550,1,5

END

COSERVER        15
NODE            mastiff

SADDR           h4scid3:17000,2,0
LADDR           h4scid3:17010,18,0
HADDR           h4scid3:17050,1,0
```

```
SADDR           h4scid0:17100,2,1
LADDR           h4scid0:17110,18,1
HADDR           h4scid0:17150,1,1

SADDR           h4scid1:17200,2,2
LADDR           h4scid1:17210,18,2
HADDR           h4scid1:17250,1,2

SADDR           h4scid2:17300,2,3
LADDR           h4scid2:17310,18,3
HADDR           h4scid2:17350,1,3

SADDR           h4scid1:17400,2,4
LADDR           h4scid1:17410,18,4
HADDR           h4scid1:17450,1,4

SADDR           h4scid1:17500,2,5
LADDR           h4scid1:17510,18,5
HADDR           h4scid1:17550,1,5

END

COSERVER        16
NODE            mastiff

SADDR           h4scid3:18000,2,0
LADDR           h4scid3:18010,18,0
HADDR           h4scid3:18050,1,0

SADDR           h4scid0:18100,2,1
LADDR           h4scid0:18110,18,1
HADDR           h4scid0:18150,1,1

SADDR           h4scid1:18200,2,2
LADDR           h4scid1:18210,18,2
HADDR           h4scid1:18250,1,2

SADDR           h4scid2:18300,2,3
LADDR           h4scid2:18310,18,3
HADDR           h4scid2:18350,1,3

SADDR           h4scid2:18400,2,4
LADDR           h4scid2:18410,18,4
HADDR           h4scid2:18450,1,4

SADDR           h4scid2:18500,2,5
LADDR           h4scid2:18510,18,5
HADDR           h4scid2:18550,1,5

END
```

==========

onconfig.tpcd.load

==========

```
#*****************************************************************
#
#          INFORMIX SOFTWARE, INC.
#
#  Title:       onconfig.tpcd
#  Sccsid:      @(#)onconfig.tpcd
#  Description: INFORMIX-OnLine Configuration Parameters for TPC-D
#
#*****************************************************************

# Root Dbspace Configuration


ROOTSLICE    rootdbs                 # Root dbspace name
ROOTPATH     /nlinks/rootdbs.%c
ROOTSIZE     1500000                 # Size of root dbspace (Kbytes)

# Physical Log Configuration

PHYSSLICE       rootdbs         # Location (dbspace) of physical log
PHYSFILE        50000           # Physical log file size (Kbytes)

# Logical Log Configuration

LOGFILES     3        # Number of logical log files
LOGSIZE      50000    # Logical log size (Kbytes)

# Diagnostics

MSGPATH      /tpcd/informix/online.log
CONSOLE      /tpcd/informix/online.log
ALARMPROGRAM                    # Alarm program path

# System Archive Tape Device

TAPEDEV    /dev/null # Tape device path
TAPEBLK    32        # Tape block size (Kbytes)
TAPESIZE   102400    # Maximum amount of data to put on tape (Kbytes)

# Log Archive Tape Device

#LTAPEDEV  /dev/null # Log tape device path
LTAPEBLK   32        # Log tape block size (Kbytes)
LTAPESIZE  102400    # Max amount of data to put on log tape (Kbytes)

# System Configuration

SERVERNUM        0      # Unique id corresponding to a OnLine instance
DBSERVERNAME     bitxps # Name of default database server
DEADLOCK_TIMEOUT 60     # Max time to wait of lock in distributed env.
RESIDENT         1      # Forced residency flag (Yes = 1, No = 0)

MULTIPROCESSOR   1      # 0 for single-processor,1 for multi-processor
SINGLE_CPU_VP    0      # If non-zero, limit number of cpu vps to one
NUMCPUVPS        6     # Number of user (cpu) vps

NOAGE            0        # Process aging

CONFIGSIZE       LARGE
#
# Shared Memory Parameters

LOCKS          100000      # Maximum number of locks
BUFFERS        5000        # Maximum number of shared buffers
NUMAIOVPS      0           # Number of IO vps
PHYSBUFF       128         # Physical log buffer size (Kbytes)
LOGBUFF        64          # Logical log buffer size (Kbytes)
LOGSMAX        24          # Maximum number of logical log files
CLEANERS       24          # Number of buffer cleaner processes
SHMBASE        0x0A000000L # Shared memory base address
SHMVIRTSIZE    2000000     # initial virtual shared memory segment size
SHMADD         32768       # Size of new shared memory segments
(Kbytes)
SHMTOTAL       0           # Total shared memory (Kbytes). 0=>unlimited
CKPTINTVL      9999999     # Check point interval (in sec)
LRUS           24          # Number of LRU queues
LRU_MAX_DIRTY  60          # LRU percent dirty begin cleaning limit
LRU_MIN_DIRTY  40          # LRU percent dirty end cleaning limit
LTXHWM         50          # Long transaction high water mark
percentage
LTXEHWM        50          # Long transaction high water mark
(exclusive)
TXTIMEOUT      300         # Transaction timeout (in sec)
STACKSIZE      32          # Stack size (Kbytes)

LOG_BACKUP_MODE     NONE

OFF_RECVRY_THREADS   10   # Default number of offline worker threads
ON_RECVRY_THREADS    1    # Default number of online worker threads

# Data Replication Variables
# DRAUTO: 0 manual, 1 retain type, 2 reverse type
DRAUTO           0     # DR automatic switchover
DRINTERVAL       30    # DR max time between DR buffer flushes (in
sec)
DRTIMEOUT        30    # DR network timeout (in sec)
DRLOSTFOUND      /tpcd/informix/xps/dr.lostfound

# Read Ahead Variables
RA_PAGES         64    # Number of pages to attempt to read ahead
RA_THRESHOLD     32    # Number of pages left before next group

DBSPACETEMP        tdbs    # Default temp dbspaces

DUMPDIR      /tpcd/informix/dumps
DUMPSHMEM    0
DUMPGCORE    0
DUMPCORE     0
DUMPCNT      0
                      # a single user's session

ADTMODE      0                  # Auditing mode
ADTPATH      /tpcd/informix/xps # Directory where audit trails
                                # will be written by OnLine
ADTSIZE      50000   # Maximum size of any single audit trail file
ADTERR       0       # 0 ==> retry failed audit writes; 1 ==> log
failure

#FILLFACTOR  90      # Fill factor for building indexes

# method for OnLine to use when determining current time
USEOSTIME    0

# Parallel Database Queries (pdq)
PDQPRIORITY       100     # Degree of parallelism: 0 => OFF, 1 => LOW,
                          # -2 => HIGH, max of 100.
MAX_PDQPRIORITY   100     # Maximum allowed pdqprioirity
DS_MAX_QUERIES    1      # Maximum number of decision support queries
DS_TOTAL_MEMORY   3000000 # Decision support memory (Kbytes)
DS_MAX_SCANS     1000000 # Maximum number of decision support scans
DATASKIP          OFF     # List of dbspaces to skip

DS_HASHSIZE     251
```

```
DS_POOLSIZE     500

SENDEPDS        8


COSERVER        1
NODE            akita

SADDR           h1scid0:15000,10,0
LADDR           h1scid0:15010,30,0
HADDR           h1scid0:15050,10,0

SADDR           h1scid1:15100,10,1
LADDR           h1scid1:15110,30,1
HADDR           h1scid1:15150,10,1

SADDR           h1scid2:15200,10,2
LADDR           h1scid2:15210,30,2
HADDR           h1scid2:15250,10,2

SADDR           h1scid3:15300,10,3
LADDR           h1scid3:15310,30,3
HADDR           h1scid3:15350,10,3

SADDR           h1scid0:15400,10,4
LADDR           h1scid0:15410,30,4
HADDR           h1scid0:15450,10,4

SADDR           h1scid0:15500,10,5
LADDR           h1scid0:15510,30,5
HADDR           h1scid0:15550,10,5

END

COSERVER        2
NODE            akita

SADDR           h1scid0:16000,10,0
LADDR           h1scid0:16010,30,0
HADDR           h1scid0:16050,10,0

SADDR           h1scid1:16100,10,1
LADDR           h1scid1:16110,30,1
HADDR           h1scid1:16150,10,1

SADDR           h1scid2:16200,10,2
LADDR           h1scid2:16210,30,2
HADDR           h1scid2:16250,10,2

SADDR           h1scid3:16300,10,3
LADDR           h1scid3:16310,30,3
HADDR           h1scid3:16350,10,3

SADDR           h1scid1:15400,10,4
LADDR           h1scid1:15410,30,4
HADDR           h1scid1:15450,10,4

SADDR           h1scid1:15500,10,5
LADDR           h1scid1:15510,30,5
HADDR           h1scid1:15550,10,5

END

COSERVER        3
NODE            akita

SADDR           h1scid0:17000,10,0
LADDR           h1scid0:17010,30,0
HADDR           h1scid0:17050,10,0

SADDR           h1scid1:17100,10,1
LADDR           h1scid1:17110,30,1
HADDR           h1scid1:17150,10,1

SADDR           h1scid2:17200,10,2
LADDR           h1scid2:17210,30,2
HADDR           h1scid2:17250,10,2

SADDR           h1scid3:17300,10,3
LADDR           h1scid3:17310,30,3
HADDR           h1scid3:17350,10,3

SADDR           h1scid2:15400,10,4
LADDR           h1scid2:15410,30,4
HADDR           h1scid2:15450,10,4

SADDR           h1scid2:15500,10,5
LADDR           h1scid2:15510,30,5
HADDR           h1scid2:15550,10,5

END

COSERVER        4
NODE            akita

SADDR           h1scid0:18000,10,0
LADDR           h1scid0:18010,30,0
HADDR           h1scid0:18050,10,0

SADDR           h1scid1:18100,10,1
LADDR           h1scid1:18110,30,1
HADDR           h1scid1:18150,10,1

SADDR           h1scid2:18200,10,2
LADDR           h1scid2:18210,30,2
HADDR           h1scid2:18250,10,2

SADDR           h1scid3:18300,10,3
LADDR           h1scid3:18310,30,3
HADDR           h1scid3:18350,10,3

SADDR           h1scid3:15400,10,4
LADDR           h1scid3:15410,30,4
HADDR           h1scid3:15450,10,4

SADDR           h1scid3:15500,10,5
LADDR           h1scid3:15510,30,5
HADDR           h1scid3:15550,10,5

END

COSERVER        5
NODE            mutt

SADDR           h2scid0:15000,10,0
LADDR           h2scid0:15010,30,0
HADDR           h2scid0:15050,10,0

SADDR           h2scid1:15100,10,1
LADDR           h2scid1:15110,30,1
HADDR           h2scid1:15150,10,1

SADDR           h2scid2:15200,10,2
LADDR           h2scid2:15210,30,2
HADDR           h2scid2:15250,10,2

SADDR           h2scid3:15300,10,3
LADDR           h2scid3:15310,30,3
HADDR           h2scid3:15350,10,3

SADDR           h2scid0:15400,10,4
LADDR           h2scid0:15410,30,4
HADDR           h2scid0:15450,10,4

SADDR           h2scid0:15500,10,5
LADDR           h2scid0:15510,30,5
HADDR           h2scid0:15550,10,5

END

COSERVER        6
NODE            mutt

SADDR           h2scid0:16000,10,0
LADDR           h2scid0:16010,30,0
HADDR           h2scid0:16050,10,0

SADDR           h2scid1:16100,10,1
LADDR           h2scid1:16110,30,1
HADDR           h2scid1:16150,10,1

SADDR           h2scid2:16200,10,2
LADDR           h2scid2:16210,30,2
HADDR           h2scid2:16250,10,2

SADDR           h2scid3:16300,10,3
LADDR           h2scid3:16310,30,3
HADDR           h2scid3:16350,10,3

SADDR           h2scid1:15400,10,4
LADDR           h2scid1:15410,30,4
HADDR           h2scid1:15450,10,4

SADDR           h2scid1:15500,10,5
LADDR           h2scid1:15510,30,5
HADDR           h2scid1:15550,10,5

END

COSERVER        7
NODE            mutt

SADDR           h2scid0:17000,10,0
LADDR           h2scid0:17010,30,0
HADDR           h2scid0:17050,10,0

SADDR           h2scid1:17100,10,1
LADDR           h2scid1:17110,30,1
HADDR           h2scid1:17150,10,1
```

```
SADDR           h2scid2:17200,10,2
LADDR           h2scid2:17210,30,2
HADDR           h2scid2:17250,10,2

SADDR           h2scid3:17300,10,3
LADDR           h2scid3:17310,30,3
HADDR           h2scid3:17350,10,3

SADDR           h2scid2:15400,10,4
LADDR           h2scid2:15410,30,4
HADDR           h2scid2:15450,10,4

SADDR           h2scid2:15500,10,5
LADDR           h2scid2:15510,30,5
HADDR           h2scid2:15550,10,5

END

COSERVER        8
NODE            mutt

SADDR           h2scid0:18000,10,0
LADDR           h2scid0:18010,30,0
HADDR           h2scid0:18050,10,0

SADDR           h2scid1:18100,10,1
LADDR           h2scid1:18110,30,1
HADDR           h2scid1:18150,10,1

SADDR           h2scid2:18200,10,2
LADDR           h2scid2:18210,30,2
HADDR           h2scid2:18250,10,2

SADDR           h2scid3:18300,10,3
LADDR           h2scid3:18310,30,3
HADDR           h2scid3:18350,10,3

SADDR           h2scid3:15400,10,4
LADDR           h2scid3:15410,30,4
HADDR           h2scid3:15450,10,4

SADDR           h2scid3:15500,10,5
LADDR           h2scid3:15510,30,5
HADDR           h2scid3:15550,10,5

END

COSERVER        9
NODE            pug1

SADDR           h3scid0:15000,10,0
LADDR           h3scid0:15010,30,0
HADDR           h3scid0:15050,10,0

SADDR           h3scid1:15100,10,1
LADDR           h3scid1:15110,30,1
HADDR           h3scid1:15150,10,1

SADDR           h3scid2:15200,10,2
LADDR           h3scid2:15210,30,2
HADDR           h3scid2:15250,10,2

SADDR           h3scid3:15300,10,3
LADDR           h3scid3:15310,30,3
HADDR           h3scid3:15350,10,3

SADDR           h3scid0:15400,10,4
LADDR           h3scid0:15410,30,4
HADDR           h3scid0:15450,10,4

SADDR           h3scid0:15500,10,5
LADDR           h3scid0:15510,30,5
HADDR           h3scid0:15550,10,5

END

COSERVER        10
NODE            pug1

SADDR           h3scid0:16000,10,0
LADDR           h3scid0:16010,30,0
HADDR           h3scid0:16050,10,0

SADDR           h3scid1:16100,10,1
LADDR           h3scid1:16110,30,1
HADDR           h3scid1:16150,10,1

SADDR           h3scid2:16200,10,2
LADDR           h3scid2:16210,30,2
HADDR           h3scid2:16250,10,2

SADDR           h3scid3:16300,10,3
LADDR           h3scid3:16310,30,3
HADDR           h3scid3:16350,10,3

SADDR           h3scid1:15400,10,4
LADDR           h3scid1:15410,30,4
HADDR           h3scid1:15450,10,4

SADDR           h3scid1:15500,10,5
LADDR           h3scid1:15510,30,5
HADDR           h3scid1:15550,10,5

END

COSERVER        11
NODE            pug1

SADDR           h3scid0:17000,10,0
LADDR           h3scid0:17010,30,0
HADDR           h3scid0:17050,10,0

SADDR           h3scid1:17100,10,1
LADDR           h3scid1:17110,30,1
HADDR           h3scid1:17150,10,1

SADDR           h3scid2:17200,10,2
LADDR           h3scid2:17210,30,2
HADDR           h3scid2:17250,10,2

SADDR           h3scid3:17300,10,3
LADDR           h3scid3:17310,30,3
HADDR           h3scid3:17350,10,3

SADDR           h3scid2:15400,10,4
LADDR           h3scid2:15410,30,4
HADDR           h3scid2:15450,10,4

SADDR           h3scid2:15500,10,5
LADDR           h3scid2:15510,30,5
HADDR           h3scid2:15550,10,5

END

COSERVER        12
NODE            pug1

SADDR           h3scid0:18000,10,0
LADDR           h3scid0:18010,30,0
HADDR           h3scid0:18050,10,0

SADDR           h3scid1:18100,10,1
LADDR           h3scid1:18110,30,1
HADDR           h3scid1:18150,10,1

SADDR           h3scid2:18200,10,2
LADDR           h3scid2:18210,30,2
HADDR           h3scid2:18250,10,2

SADDR           h3scid3:18300,10,3
LADDR           h3scid3:18310,30,3
HADDR           h3scid3:18350,10,3

SADDR           h3scid3:15400,10,4
LADDR           h3scid3:15410,30,4
HADDR           h3scid3:15450,10,4

SADDR           h3scid3:15500,10,5
LADDR           h3scid3:15510,30,5
HADDR           h3scid3:15550,10,5

END

COSERVER        13
NODE            mastiff

SADDR           h4scid0:15000,10,0
LADDR           h4scid0:15010,30,0
HADDR           h4scid0:15050,10,0

SADDR           h4scid1:15100,10,1
LADDR           h4scid1:15110,30,1
HADDR           h4scid1:15150,10,1

SADDR           h4scid2:15200,10,2
LADDR           h4scid2:15210,30,2
HADDR           h4scid2:15250,10,2

SADDR           h4scid3:15300,10,3
LADDR           h4scid3:15310,30,3
HADDR           h4scid3:15350,10,3

SADDR           h4scid0:15400,10,4
LADDR           h4scid0:15410,30,4
HADDR           h4scid0:15450,10,4

SADDR           h4scid0:15500,10,5
LADDR           h4scid0:15510,30,5
HADDR           h4scid0:15550,10,5
```

```
END

COSERVER        14
NODE            mastiff

SADDR           h4scid0:16000,10,0
LADDR           h4scid0:16010,30,0
HADDR           h4scid0:16050,10,0

SADDR           h4scid1:16100,10,1
LADDR           h4scid1:16110,30,1
HADDR           h4scid1:16150,10,1

SADDR           h4scid2:16200,10,2
LADDR           h4scid2:16210,30,2
HADDR           h4scid2:16250,10,2

SADDR           h4scid3:16300,10,3
LADDR           h4scid3:16310,30,3
HADDR           h4scid3:16350,10,3

SADDR           h4scid1:15400,10,4
LADDR           h4scid1:15410,30,4
HADDR           h4scid1:15450,10,4

SADDR           h4scid1:15500,10,5
LADDR           h4scid1:15510,30,5
HADDR           h4scid1:15550,10,5

END

COSERVER        15
NODE            mastiff

SADDR           h4scid0:17000,10,0
LADDR           h4scid0:17010,30,0
HADDR           h4scid0:17050,10,0

SADDR           h4scid1:17100,10,1
LADDR           h4scid1:17110,30,1
HADDR           h4scid1:17150,10,1

SADDR           h4scid2:17200,10,2
LADDR           h4scid2:17210,30,2
HADDR           h4scid2:17250,10,2

SADDR           h4scid3:17300,10,3
LADDR           h4scid3:17310,30,3
HADDR           h4scid3:17350,10,3

SADDR           h4scid2:15400,10,4
LADDR           h4scid2:15410,30,4
HADDR           h4scid2:15450,10,4

SADDR           h4scid2:15500,10,5
LADDR           h4scid2:15510,30,5
HADDR           h4scid2:15550,10,5

END

COSERVER        16
NODE            mastiff

SADDR           h4scid0:18000,10,0
LADDR           h4scid0:18010,30,0
HADDR           h4scid0:18050,10,0

SADDR           h4scid1:18100,10,1
LADDR           h4scid1:18110,30,1
HADDR           h4scid1:18150,10,1

SADDR           h4scid2:18200,10,2
LADDR           h4scid2:18210,30,2
HADDR           h4scid2:18250,10,2

SADDR           h4scid3:18300,10,3
LADDR           h4scid3:18310,30,3
HADDR           h4scid3:18350,10,3

SADDR           h4scid3:15400,10,4
LADDR           h4scid3:15410,30,4
HADDR           h4scid3:15450,10,4

SADDR           h4scid3:15500,10,5
LADDR           h4scid3:15510,30,5
HADDR           h4scid3:15550,10,5

END
```

Environment Variables

```
export INFORMIXDIR=/tpcd/8.2/sqldist
export ONCONFIG=onconfig.tpcd
export DBDATE=Y4MD-
export BENCH_BASE="/tpcd"
export DSS_CONFIG="${BENCH_BASE}/informix/dbgen1.2/dist"
export DSS_SEED=$DSS_CONFIG
export TMPDIR="/tmp"
export INFORMIXSERVER=bitxps.1
export DEBUG=MAXSCAN:14
export XMF_DBG_EXPFLIST=1
export XMF_DBG_SBF_ALLOCNUM=2000
export DFM_DBG_FLCQLEN=30
export DFM_DBG_FLCMAXQ=2500
export DFM_DBG_FLCPEND=3000
```

Solaris Parameters:

/etc/system (changes to standard)

```
set maxusers=1024
set pt_cnt=1024
set msgsys:msginfo_msgmax=8192
set msgsys:msginfo_msgmnb=65535
set msgsys:msginfo_msgmni=650
set msgsys:msginfo_msgtql=1200
set msgsys:msginfo_msgseg=19200
set msgsys:msginfo_msgssz=128
set shmsys:shminfo_shmmax=4026531839
set shmsys:shminfo_shmmni=650
set shmsys:shminfo_shmseg=200
set semsys:seminfo_semmap=3000
set semsys:seminfo_semmni=3000
set semsys:seminfo_semmns=3000
set semsys:seminfo_semmnu=3000
set semsys:seminfo_semmsl=1000
set semsys:seminfo_semume=1000
set tune_t_fsflushr = 30
set autoup = 180
set bufhwm = 5000
* vxvm_START
forceload: drv/vxdmp
forceload: drv/vxio
forceload: drv/vxspec
* vxvm_END
```

/etc/rc2.d/S99infxsetup

```
#!/usr/bin/sh

# Script to set the read policy for the plexes and the udp settings
# required for Informix.

# UDP stuff...

/usr/sbin/ndd -set /dev/udp udp_recv_hiwat 65536
/usr/sbin/ndd -set /dev/udp udp_xmit_hiwat 65536
/usr/sbin/ndd -set /dev/udp udp_do_checksum 0


/usr/sbin/vxvol -g tpcd rdpol prefer line1vol1 line1vol1-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol1 line2vol1-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol1 ordervol1-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol1 restvol1-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol2 line1vol2-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol2 line2vol2-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol2 ordervol2-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol2 restvol2-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol3 line1vol3-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol3 line2vol3-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol3 ordervol3-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol3 restvol3-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol4 line1vol4-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol4 line2vol4-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol4 ordervol4-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol4 restvol4-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol5 line1vol5-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol5 line2vol5-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol5 ordervol5-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol5 restvol5-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol6 line1vol6-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol6 line2vol6-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol6 ordervol6-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol6 restvol6-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol7 line1vol7-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol7 line2vol7-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol7 ordervol7-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol7 restvol7-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol8 line1vol8-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol8 line2vol8-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol8 ordervol8-01
```

```
/usr/sbin/vxvol -g tpcd rdpol prefer restvol8 restvol8-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol9 line1vol9-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol9 line2vol9-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol9 ordervol9-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol9 restvol9-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol10 line1vol10-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol10 line2vol10-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol10 ordervol10-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol10 restvol10-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol11 line1vol11-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol11 line2vol11-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol11 ordervol11-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol11 restvol11-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol12 line1vol12-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol12 line2vol12-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol12 ordervol12-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol12 restvol12-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol13 line1vol13-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol13 line2vol13-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol13 ordervol13-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol13 restvol13-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol14 line1vol14-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol14 line2vol14-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol14 ordervol14-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol14 restvol14-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol15 line1vol15-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol15 line2vol15-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol15 ordervol15-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol15 restvol15-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol16 line1vol16-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol16 line2vol16-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol16 ordervol16-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol16 restvol16-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol17 line1vol17-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol17 line2vol17-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol17 ordervol17-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol17 restvol17-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol18 line1vol18-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol18 line2vol18-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol18 ordervol18-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol18 restvol18-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol19 line1vol19-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol19 line2vol19-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol19 ordervol19-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol19 restvol19-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol20 line1vol20-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol20 line2vol20-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol20 ordervol20-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol20 restvol20-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol21 line1vol21-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol21 line2vol21-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol21 ordervol21-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol21 restvol21-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol22 line1vol22-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol22 line2vol22-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol22 ordervol22-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol22 restvol22-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol23 line1vol23-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol23 line2vol23-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol23 ordervol23-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol23 restvol23-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol24 line1vol24-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol24 line2vol24-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol24 ordervol24-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol24 restvol24-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol25 line1vol25-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol25 line2vol25-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol25 ordervol25-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol25 restvol25-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol26 line1vol26-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol26 line2vol26-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol26 ordervol26-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol26 restvol26-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol27 line1vol27-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol27 line2vol27-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol27 ordervol27-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol27 restvol27-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol28 line1vol28-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol28 line2vol28-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol28 ordervol28-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol28 restvol28-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol29 line1vol29-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol29 line2vol29-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol29 ordervol29-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol29 restvol29-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol30 line1vol30-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol30 line2vol30-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol30 ordervol30-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol30 restvol30-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol31 line1vol31-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol31 line2vol31-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol31 ordervol31-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol31 restvol31-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol32 line1vol32-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol32 line2vol32-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol32 ordervol32-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol32 restvol32-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol33 line1vol33-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol33 line2vol33-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol33 ordervol33-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol33 restvol33-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol34 line1vol34-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol34 line2vol34-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol34 ordervol34-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol34 restvol34-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol35 line1vol35-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol35 line2vol35-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol35 ordervol35-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol35 restvol35-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol36 line1vol36-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol36 line2vol36-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol36 ordervol36-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol36 restvol36-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol37 line1vol37-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol37 line2vol37-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol37 ordervol37-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol37 restvol37-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol38 line1vol38-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol38 line2vol38-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol38 ordervol38-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol38 restvol38-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol39 line1vol39-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol39 line2vol39-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol39 ordervol39-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol39 restvol39-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol40 line1vol40-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol40 line2vol40-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol40 ordervol40-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol40 restvol40-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol41 line1vol41-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol41 line2vol41-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol41 ordervol41-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol41 restvol41-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol42 line1vol42-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol42 line2vol42-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol42 ordervol42-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol42 restvol42-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol43 line1vol43-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol43 line2vol43-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol43 ordervol43-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol43 restvol43-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol44 line1vol44-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol44 line2vol44-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol44 ordervol44-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol44 restvol44-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol45 line1vol45-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol45 line2vol45-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol45 ordervol45-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol45 restvol45-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol46 line1vol46-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol46 line2vol46-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol46 ordervol46-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol46 restvol46-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol47 line1vol47-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol47 line2vol47-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol47 ordervol47-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol47 restvol47-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol48 line1vol48-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol48 line2vol48-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol48 ordervol48-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol48 restvol48-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol49 line1vol49-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol49 line2vol49-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol49 ordervol49-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol49 restvol49-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol50 line1vol50-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol50 line2vol50-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol50 ordervol50-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol50 restvol50-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol51 line1vol51-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol51 line2vol51-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol51 ordervol51-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol51 restvol51-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol52 line1vol52-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol52 line2vol52-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol52 ordervol52-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol52 restvol52-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol53 line1vol53-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol53 line2vol53-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol53 ordervol53-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol53 restvol53-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol54 line1vol54-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol54 line2vol54-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol54 ordervol54-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol54 restvol54-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol55 line1vol55-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol55 line2vol55-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol55 ordervol55-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol55 restvol55-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol56 line1vol56-01
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/usr/sbin/vxvol -g tpcd rdpol prefer line2vol56 line2vol56-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol56 ordervol56-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol56 restvol56-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol57 line1vol57-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol57 line2vol57-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol57 ordervol57-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol57 restvol57-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol58 line1vol58-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol58 line2vol58-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol58 ordervol58-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol58 restvol58-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol59 line1vol59-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol59 line2vol59-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol59 ordervol59-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol59 restvol59-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol60 line1vol60-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol60 line2vol60-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol60 ordervol60-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol60 restvol60-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol61 line1vol61-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol61 line2vol61-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol61 ordervol61-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol61 restvol61-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol62 line1vol62-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol62 line2vol62-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol62 ordervol62-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol62 restvol62-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol63 line1vol63-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol63 line2vol63-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol63 ordervol63-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol63 restvol63-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol64 line1vol64-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol64 line2vol64-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol64 ordervol64-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol64 restvol64-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol65 line1vol65-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol65 line2vol65-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol65 ordervol65-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol65 restvol65-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol66 line1vol66-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol66 line2vol66-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol66 ordervol66-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol66 restvol66-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol67 line1vol67-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol67 line2vol67-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol67 ordervol67-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol67 restvol67-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol68 line1vol68-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol68 line2vol68-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol68 ordervol68-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol68 restvol68-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol69 line1vol69-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol69 line2vol69-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol69 ordervol69-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol69 restvol69-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol70 line1vol70-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol70 line2vol70-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol70 ordervol70-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol70 restvol70-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol71 line1vol71-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol71 line2vol71-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol71 ordervol71-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol71 restvol71-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol72 line1vol72-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol72 line2vol72-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol72 ordervol72-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol72 restvol72-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol73 line1vol73-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol73 line2vol73-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol73 ordervol73-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol73 restvol73-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol74 line1vol74-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol74 line2vol74-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol74 ordervol74-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol74 restvol74-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol75 line1vol75-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol75 line2vol75-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol75 ordervol75-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol75 restvol75-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol76 line1vol76-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol76 line2vol76-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol76 ordervol76-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol76 restvol76-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol77 line1vol77-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol77 line2vol77-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol77 ordervol77-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol77 restvol77-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol78 line1vol78-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol78 line2vol78-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol78 ordervol78-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol78 restvol78-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol79 line1vol79-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol79 line2vol79-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol79 ordervol79-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol79 restvol79-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol80 line1vol80-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol80 line2vol80-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol80 ordervol80-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol80 restvol80-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol81 line1vol81-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol81 line2vol81-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol81 ordervol81-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol81 restvol81-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol82 line1vol82-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol82 line2vol82-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol82 ordervol82-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol82 restvol82-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol83 line1vol83-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol83 line2vol83-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol83 ordervol83-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol83 restvol83-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol84 line1vol84-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol84 line2vol84-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol84 ordervol84-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol84 restvol84-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol85 line1vol85-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol85 line2vol85-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol85 ordervol85-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol85 restvol85-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol86 line1vol86-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol86 line2vol86-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol86 ordervol86-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol86 restvol86-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol87 line1vol87-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol87 line2vol87-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol87 ordervol87-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol87 restvol87-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol88 line1vol88-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol88 line2vol88-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol88 ordervol88-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol88 restvol88-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol89 line1vol89-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol89 line2vol89-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol89 ordervol89-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol89 restvol89-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol90 line1vol90-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol90 line2vol90-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol90 ordervol90-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol90 restvol90-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol91 line1vol91-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol91 line2vol91-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol91 ordervol91-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol91 restvol91-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol92 line1vol92-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol92 line2vol92-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol92 ordervol92-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol92 restvol92-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol93 line1vol93-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol93 line2vol93-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol93 ordervol93-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol93 restvol93-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol94 line1vol94-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol94 line2vol94-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol94 ordervol94-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol94 restvol94-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol95 line1vol95-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol95 line2vol95-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol95 ordervol95-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol95 restvol95-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol96 line1vol96-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol96 line2vol96-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol96 ordervol96-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol96 restvol96-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol97 line1vol97-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol97 line2vol97-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol97 ordervol97-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol97 restvol97-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol98 line1vol98-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol98 line2vol98-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol98 ordervol98-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol98 restvol98-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol99 line1vol99-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol99 line2vol99-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol99 ordervol99-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol99 restvol99-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol100 line1vol100-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol100 line2vol100-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol100 ordervol100-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol100 restvol100-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol101 line1vol101-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol101 line2vol101-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol101 ordervol101-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol101 restvol101-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol102 line1vol102-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol102 line2vol102-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol102 ordervol102-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol102 restvol102-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol103 line1vol103-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol103 line2vol103-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol103 ordervol103-01
```

```
/usr/sbin/vxvol -g tpcd rdpol prefer restvol103 restvol103-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol104 line1vol104-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol104 line2vol104-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol104 ordervol104-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol104 restvol104-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol105 line1vol105-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol105 line2vol105-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol105 ordervol105-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol105 restvol105-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol106 line1vol106-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol106 line2vol106-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol106 ordervol106-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol106 restvol106-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol107 line1vol107-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol107 line2vol107-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol107 ordervol107-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol107 restvol107-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol108 line1vol108-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol108 line2vol108-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol108 ordervol108-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol108 restvol108-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol109 line1vol109-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol109 line2vol109-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol109 ordervol109-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol109 restvol109-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol110 line1vol110-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol110 line2vol110-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol110 ordervol110-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol110 restvol110-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol111 line1vol111-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol111 line2vol111-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol111 ordervol111-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol111 restvol111-01
/usr/sbin/vxvol -g tpcd rdpol prefer line1vol112 line1vol112-01
/usr/sbin/vxvol -g tpcd rdpol prefer line2vol112 line2vol112-01
/usr/sbin/vxvol -g tpcd rdpol prefer ordervol112 ordervol112-01
/usr/sbin/vxvol -g tpcd rdpol prefer restvol112 restvol112-01

/usr/sbin/vxvol -g tpcd rdpol prefer rootvol1 rootvol1-01
/usr/sbin/vxvol -g tpcd rdpol prefer rootvol2 rootvol2-01
/usr/sbin/vxvol -g tpcd rdpol prefer rootvol3 rootvol3-01
/usr/sbin/vxvol -g tpcd rdpol prefer rootvol4 rootvol4-01

/usr/sbin/vxvol -g flatdg rdpol prefer logvol1 logvol1-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol2 logvol2-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol3 logvol3-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol4 logvol4-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol5 logvol5-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol6 logvol6-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol7 logvol7-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol8 logvol8-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol9 logvol9-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol10 logvol10-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol11 logvol11-01
/usr/sbin/vxvol -g flatdg rdpol prefer logvol12 logvol12-01

/usr/sbin/vxvol -g tpcd rdpol round lx1vol1
/usr/sbin/vxvol -g tpcd rdpol round lx1vol2
/usr/sbin/vxvol -g tpcd rdpol round lx1vol3
/usr/sbin/vxvol -g tpcd rdpol round lx1vol4
/usr/sbin/vxvol -g tpcd rdpol round lx1vol5
/usr/sbin/vxvol -g tpcd rdpol round lx1vol6
/usr/sbin/vxvol -g tpcd rdpol round lx1vol7
/usr/sbin/vxvol -g tpcd rdpol round lx1vol8
/usr/sbin/vxvol -g tpcd rdpol round lx1vol9
/usr/sbin/vxvol -g tpcd rdpol round lx1vol10
/usr/sbin/vxvol -g tpcd rdpol round lx1vol11
/usr/sbin/vxvol -g tpcd rdpol round lx1vol12
/usr/sbin/vxvol -g tpcd rdpol round lx1vol13
/usr/sbin/vxvol -g tpcd rdpol round lx1vol14
/usr/sbin/vxvol -g tpcd rdpol round lx1vol15
/usr/sbin/vxvol -g tpcd rdpol round lx1vol16
/usr/sbin/vxvol -g tpcd rdpol round lx1vol17
/usr/sbin/vxvol -g tpcd rdpol round lx1vol18
/usr/sbin/vxvol -g tpcd rdpol round lx1vol19
/usr/sbin/vxvol -g tpcd rdpol round lx1vol20
/usr/sbin/vxvol -g tpcd rdpol round lx1vol21
/usr/sbin/vxvol -g tpcd rdpol round lx1vol22
/usr/sbin/vxvol -g tpcd rdpol round lx1vol23
/usr/sbin/vxvol -g tpcd rdpol round lx1vol24
/usr/sbin/vxvol -g tpcd rdpol round lx1vol25
/usr/sbin/vxvol -g tpcd rdpol round lx1vol26
/usr/sbin/vxvol -g tpcd rdpol round lx1vol27
/usr/sbin/vxvol -g tpcd rdpol round lx1vol28
/usr/sbin/vxvol -g tpcd rdpol round lx1vol29
/usr/sbin/vxvol -g tpcd rdpol round lx1vol30
/usr/sbin/vxvol -g tpcd rdpol round lx1vol31
/usr/sbin/vxvol -g tpcd rdpol round lx1vol32
/usr/sbin/vxvol -g tpcd rdpol round lx1vol33
/usr/sbin/vxvol -g tpcd rdpol round lx1vol34
/usr/sbin/vxvol -g tpcd rdpol round lx1vol35
/usr/sbin/vxvol -g tpcd rdpol round lx1vol36
/usr/sbin/vxvol -g tpcd rdpol round lx1vol37
/usr/sbin/vxvol -g tpcd rdpol round lx1vol38
/usr/sbin/vxvol -g tpcd rdpol round lx1vol39
/usr/sbin/vxvol -g tpcd rdpol round lx1vol40
/usr/sbin/vxvol -g tpcd rdpol round lx1vol41
/usr/sbin/vxvol -g tpcd rdpol round lx1vol42
/usr/sbin/vxvol -g tpcd rdpol round lx1vol43
/usr/sbin/vxvol -g tpcd rdpol round lx1vol44
/usr/sbin/vxvol -g tpcd rdpol round lx1vol45
/usr/sbin/vxvol -g tpcd rdpol round lx1vol46
/usr/sbin/vxvol -g tpcd rdpol round lx1vol47
/usr/sbin/vxvol -g tpcd rdpol round lx1vol48
/usr/sbin/vxvol -g tpcd rdpol round lx1vol49
/usr/sbin/vxvol -g tpcd rdpol round lx1vol50
/usr/sbin/vxvol -g tpcd rdpol round lx1vol51
/usr/sbin/vxvol -g tpcd rdpol round lx1vol52
/usr/sbin/vxvol -g tpcd rdpol round lx1vol53
/usr/sbin/vxvol -g tpcd rdpol round lx1vol54
/usr/sbin/vxvol -g tpcd rdpol round lx1vol55
/usr/sbin/vxvol -g tpcd rdpol round lx1vol56
/usr/sbin/vxvol -g tpcd rdpol round lx1vol57
/usr/sbin/vxvol -g tpcd rdpol round lx1vol58
/usr/sbin/vxvol -g tpcd rdpol round lx1vol59
/usr/sbin/vxvol -g tpcd rdpol round lx1vol60
/usr/sbin/vxvol -g tpcd rdpol round lx1vol61
/usr/sbin/vxvol -g tpcd rdpol round lx1vol62
/usr/sbin/vxvol -g tpcd rdpol round lx1vol63
/usr/sbin/vxvol -g tpcd rdpol round lx1vol64
/usr/sbin/vxvol -g tpcd rdpol round lx1vol65
/usr/sbin/vxvol -g tpcd rdpol round lx1vol66
/usr/sbin/vxvol -g tpcd rdpol round lx1vol67
/usr/sbin/vxvol -g tpcd rdpol round lx1vol68
/usr/sbin/vxvol -g tpcd rdpol round lx1vol69
/usr/sbin/vxvol -g tpcd rdpol round lx1vol70
/usr/sbin/vxvol -g tpcd rdpol round lx1vol71
/usr/sbin/vxvol -g tpcd rdpol round lx1vol72
/usr/sbin/vxvol -g tpcd rdpol round lx1vol73
/usr/sbin/vxvol -g tpcd rdpol round lx1vol74
/usr/sbin/vxvol -g tpcd rdpol round lx1vol75
/usr/sbin/vxvol -g tpcd rdpol round lx1vol76
/usr/sbin/vxvol -g tpcd rdpol round lx1vol77
/usr/sbin/vxvol -g tpcd rdpol round lx1vol78
/usr/sbin/vxvol -g tpcd rdpol round lx1vol79
/usr/sbin/vxvol -g tpcd rdpol round lx1vol80
/usr/sbin/vxvol -g tpcd rdpol round inxvol1
/usr/sbin/vxvol -g tpcd rdpol round inxvol2
/usr/sbin/vxvol -g tpcd rdpol round inxvol3
/usr/sbin/vxvol -g tpcd rdpol round inxvol4
/usr/sbin/vxvol -g tpcd rdpol round inxvol5
/usr/sbin/vxvol -g tpcd rdpol round inxvol6
/usr/sbin/vxvol -g tpcd rdpol round inxvol7
/usr/sbin/vxvol -g tpcd rdpol round inxvol8
/usr/sbin/vxvol -g tpcd rdpol round inxvol9
/usr/sbin/vxvol -g tpcd rdpol round inxvol10
/usr/sbin/vxvol -g tpcd rdpol round inxvol11
/usr/sbin/vxvol -g tpcd rdpol round inxvol12
/usr/sbin/vxvol -g tpcd rdpol round inxvol13
/usr/sbin/vxvol -g tpcd rdpol round inxvol14
/usr/sbin/vxvol -g tpcd rdpol round inxvol15
/usr/sbin/vxvol -g tpcd rdpol round inxvol16
/usr/sbin/vxvol -g tpcd rdpol round inxvol17
/usr/sbin/vxvol -g tpcd rdpol round inxvol18
/usr/sbin/vxvol -g tpcd rdpol round inxvol19
/usr/sbin/vxvol -g tpcd rdpol round inxvol20
/usr/sbin/vxvol -g tpcd rdpol round inxvol21
/usr/sbin/vxvol -g tpcd rdpol round inxvol22
/usr/sbin/vxvol -g tpcd rdpol round inxvol23
/usr/sbin/vxvol -g tpcd rdpol round inxvol24
/usr/sbin/vxvol -g tpcd rdpol round inxvol25
/usr/sbin/vxvol -g tpcd rdpol round inxvol26
/usr/sbin/vxvol -g tpcd rdpol round inxvol27
/usr/sbin/vxvol -g tpcd rdpol round inxvol28
/usr/sbin/vxvol -g tpcd rdpol round inxvol29
/usr/sbin/vxvol -g tpcd rdpol round inxvol30
/usr/sbin/vxvol -g tpcd rdpol round inxvol31
/usr/sbin/vxvol -g tpcd rdpol round inxvol32
/usr/sbin/vxvol -g tpcd rdpol round inxvol33
/usr/sbin/vxvol -g tpcd rdpol round inxvol34
/usr/sbin/vxvol -g tpcd rdpol round inxvol35
/usr/sbin/vxvol -g tpcd rdpol round inxvol36
/usr/sbin/vxvol -g tpcd rdpol round inxvol37
/usr/sbin/vxvol -g tpcd rdpol round inxvol38
/usr/sbin/vxvol -g tpcd rdpol round inxvol39
/usr/sbin/vxvol -g tpcd rdpol round inxvol40
/usr/sbin/vxvol -g tpcd rdpol round inxvol41
/usr/sbin/vxvol -g tpcd rdpol round inxvol42
/usr/sbin/vxvol -g tpcd rdpol round inxvol43
/usr/sbin/vxvol -g tpcd rdpol round inxvol44
/usr/sbin/vxvol -g tpcd rdpol round inxvol45
/usr/sbin/vxvol -g tpcd rdpol round inxvol46
/usr/sbin/vxvol -g tpcd rdpol round inxvol47
/usr/sbin/vxvol -g tpcd rdpol round inxvol48
/usr/sbin/vxvol -g tpcd rdpol round inxvol49
/usr/sbin/vxvol -g tpcd rdpol round inxvol50
/usr/sbin/vxvol -g tpcd rdpol round inxvol51
/usr/sbin/vxvol -g tpcd rdpol round inxvol52
/usr/sbin/vxvol -g tpcd rdpol round inxvol53
/usr/sbin/vxvol -g tpcd rdpol round inxvol54
```

```
/usr/sbin/vxvol -g tpcd rdpol round inxvol55
/usr/sbin/vxvol -g tpcd rdpol round inxvol56
/usr/sbin/vxvol -g tpcd rdpol round inxvol57
/usr/sbin/vxvol -g tpcd rdpol round inxvol58
/usr/sbin/vxvol -g tpcd rdpol round inxvol59
/usr/sbin/vxvol -g tpcd rdpol round inxvol60
/usr/sbin/vxvol -g tpcd rdpol round inxvol61
/usr/sbin/vxvol -g tpcd rdpol round inxvol62
/usr/sbin/vxvol -g tpcd rdpol round inxvol63
/usr/sbin/vxvol -g tpcd rdpol round inxvol64
/usr/sbin/vxvol -g tpcd rdpol round inxvol65
/usr/sbin/vxvol -g tpcd rdpol round inxvol66
/usr/sbin/vxvol -g tpcd rdpol round inxvol67
/usr/sbin/vxvol -g tpcd rdpol round inxvol68
/usr/sbin/vxvol -g tpcd rdpol round inxvol69
/usr/sbin/vxvol -g tpcd rdpol round inxvol70
/usr/sbin/vxvol -g tpcd rdpol round inxvol71
/usr/sbin/vxvol -g tpcd rdpol round inxvol72
/usr/sbin/vxvol -g tpcd rdpol round inxvol73
/usr/sbin/vxvol -g tpcd rdpol round inxvol74
/usr/sbin/vxvol -g tpcd rdpol round inxvol75
/usr/sbin/vxvol -g tpcd rdpol round inxvol76
/usr/sbin/vxvol -g tpcd rdpol round inxvol77
/usr/sbin/vxvol -g tpcd rdpol round inxvol78
/usr/sbin/vxvol -g tpcd rdpol round inxvol79
/usr/sbin/vxvol -g tpcd rdpol round inxvol80
/usr/sbin/vxvol -g tpcd rdpol round inxvol81
/usr/sbin/vxvol -g tpcd rdpol round inxvol82
/usr/sbin/vxvol -g tpcd rdpol round inxvol83
/usr/sbin/vxvol -g tpcd rdpol round inxvol84
/usr/sbin/vxvol -g tpcd rdpol round inxvol85
/usr/sbin/vxvol -g tpcd rdpol round inxvol86
/usr/sbin/vxvol -g tpcd rdpol round inxvol87
/usr/sbin/vxvol -g tpcd rdpol round inxvol88
/usr/sbin/vxvol -g tpcd rdpol round inxvol89
/usr/sbin/vxvol -g tpcd rdpol round inxvol90
/usr/sbin/vxvol -g tpcd rdpol round inxvol91
/usr/sbin/vxvol -g tpcd rdpol round inxvol92
/usr/sbin/vxvol -g tpcd rdpol round inxvol93
/usr/sbin/vxvol -g tpcd rdpol round inxvol94
/usr/sbin/vxvol -g tpcd rdpol round inxvol95
/usr/sbin/vxvol -g tpcd rdpol round inxvol96
/usr/sbin/vxvol -g tpcd rdpol round inxvol97
/usr/sbin/vxvol -g tpcd rdpol round inxvol98
/usr/sbin/vxvol -g tpcd rdpol round inxvol99
/usr/sbin/vxvol -g tpcd rdpol round inxvol100
/usr/sbin/vxvol -g tpcd rdpol round inxvol101
/usr/sbin/vxvol -g tpcd rdpol round inxvol102
/usr/sbin/vxvol -g tpcd rdpol round inxvol103
/usr/sbin/vxvol -g tpcd rdpol round inxvol104
/usr/sbin/vxvol -g tpcd rdpol round inxvol105
/usr/sbin/vxvol -g tpcd rdpol round inxvol106
/usr/sbin/vxvol -g tpcd rdpol round inxvol107
/usr/sbin/vxvol -g tpcd rdpol round inxvol108
/usr/sbin/vxvol -g tpcd rdpol round inxvol109
/usr/sbin/vxvol -g tpcd rdpol round inxvol110
/usr/sbin/vxvol -g tpcd rdpol round inxvol111
/usr/sbin/vxvol -g tpcd rdpol round inxvol112
```

Appendix B. Programs and Scripts

==========

build_database

==========

```
#!/bin/ksh

export INFORMIXDIR=/tpcd/8.2/sqldist

echo Init xps at `date`

cp $INFORMIXDIR/etc/onconfig.tpcd.load $INFORMIXDIR/etc/onconfig.tpcd
rsh mutt cp $INFORMIXDIR/etc/onconfig.tpcd.load
$INFORMIXDIR/etc/onconfig.tpcd &
rsh pug1 cp $INFORMIXDIR/etc/onconfig.tpcd.load
$INFORMIXDIR/etc/onconfig.tpcd &
rsh mastiff cp $INFORMIXDIR/etc/onconfig.tpcd.load
$INFORMIXDIR/etc/onconfig.tpcd &

echo "Going to build the sysmaster database ..."
iyxps 16

echo Done with init xps at `date`

echo Begin create database and load at `date`
./create_and_load tpcd
echo Done create and load at `date`

echo Start checkpoint at `date`
xctl onmode -c
echo Done checkpoint at `date`

echo Start creating Index at `date`
./create_index
echo Done creating Index at `date`

echo start checkpoint at `date`
xctl onmode -c
echo done checkpoint at `date`

echo alter table lock mode page at `date`
./alter_table
echo done at `date`

echo Start update stats at `date`
./update_stats
echo Done update stats at `date`

echo Start checkpoint at `date`
xctl onmode -c
echo Done checkpoint at `date`

bringdn_xps 16

cp $INFORMIXDIR/etc/onconfig.tpcd.run $INFORMIXDIR/etc/onconfig.tpcd
rsh mutt cp $INFORMIXDIR/etc/onconfig.tpcd.run
$INFORMIXDIR/etc/onconfig.tpcd &
rsh pug1 cp $INFORMIXDIR/etc/onconfig.tpcd.run
$INFORMIXDIR/etc/onconfig.tpcd &
rsh mastiff cp $INFORMIXDIR/etc/onconfig.tpcd.run
$INFORMIXDIR/etc/onconfig.tpcd &

bringup_xps 16

echo End of timing, ready for runs `date`
```

==========

create_and_load

==========

```
#!/bin/ksh

# Script to create the database, move the logs, create the tables and
load them.

if (( $# != 1 )); then
        echo "Usage:  $0 DBNAME"
        exit
fi

export DBDATE=y4md-
export DBNAME=$1

#
# Create the database with log
#
dbaccess -e - - <<EOF
create database $DBNAME with log ;
grant dba to "public";
EOF

#
# Move the logical logs to different disks
#
./move_logs.sh

#
# Create all the dbslices
#

echo "Slice config before slice creation"
xctl onstat -d
echo "Create all slices"
cd slices
./create_slices
cd ..
echo "Slice config after slice creation"
xctl onstat -d


#
# now load data for each of the tables
#
# echo begin load at `date`

echo "Start timing"
echo "Star table creation at `date`"
for i in nation region supplier part customer partsupp order lineitem
do
    echo begin create and load of table $i at `date`
    dbaccess -e - - < $i.ld
    echo done load of table $i at `date`
```

```
done

echo done loading all at `date`

exit 0
```

========== nation.ld ==========

```
database tpcd;
set pdqpriority 100;

create table nation
  (
    n_nationkey                         integer,
    n_name                              char(25),
    n_regionkey                         integer,
    n_comment                           varchar(152)
  ) in rootdbs.1 lock mode table;

alter table nation type (raw);

create external table nation_ext
sameas nation using (
        format "delimited",
        datafiles ("disk:1:/fs1/nation.tbl")
);

insert into nation select * from nation_ext;

drop table nation_ext;

alter table nation type (operational);

close database;
```

========== region.ld ==========

```
database tpcd;
set pdqpriority 100;

create table region
  (
    r_regionkey                         integer,
    r_name                              char(25),
    r_comment                           varchar(152)
  ) in rootdbs.1 lock mode table;


alter table region type (raw);

create external table region_ext
sameas region using (
        format "delimited",
        datafiles ("disk:1:/fs1/region.tbl")
);

insert into region select * from region_ext;

drop table region_ext;

alter table region type(operational);

close database;
```

========== supplier.ld ==========

```
database tpcd;
set pdqpriority 100;

create  table supplier
  (
    s_suppkey                           integer not null,
    s_name                              char(25),
    s_address                           varchar(40),
    s_nationkey                         integer,
    s_phone                             char(15),
    s_acctbal                           decimal(12,2),
    s_comment                           varchar(101)
  ) fragment by hash(s_suppkey) in restdbs extent size 5000 next size
500
    lock mode table;

alter table supplier type (raw);


create external table supplier_ext
sameas supplier using (
        format "delimited",
        datafiles ("disk:1:/fs1/supplier.tbl.1",
 "disk:2:/fs2/supplier.tbl.2",
 "disk:3:/fs3/supplier.tbl.3",
 "disk:4:/fs4/supplier.tbl.4",
 "disk:5:/fs1/supplier.tbl.5",
 "disk:6:/fs2/supplier.tbl.6",
 "disk:7:/fs3/supplier.tbl.7",
 "disk:8:/fs4/supplier.tbl.8",
 "disk:9:/fs1/supplier.tbl.9",
 "disk:10:/fs2/supplier.tbl.10",
 "disk:11:/fs3/supplier.tbl.11",
 "disk:12:/fs4/supplier.tbl.12",
 "disk:13:/fs1/supplier.tbl.13",
 "disk:14:/fs2/supplier.tbl.14",
 "disk:15:/fs3/supplier.tbl.15",
 "disk:16:/fs4/supplier.tbl.16",
 "disk:1:/fs1/supplier.tbl.17",
 "disk:2:/fs2/supplier.tbl.18",
 "disk:3:/fs3/supplier.tbl.19",
 "disk:4:/fs4/supplier.tbl.20",
 "disk:5:/fs1/supplier.tbl.21",
 "disk:6:/fs2/supplier.tbl.22",
 "disk:7:/fs3/supplier.tbl.23",
 "disk:8:/fs4/supplier.tbl.24",
 "disk:9:/fs1/supplier.tbl.25",
 "disk:10:/fs2/supplier.tbl.26",
 "disk:11:/fs3/supplier.tbl.27",
 "disk:12:/fs4/supplier.tbl.28",
 "disk:13:/fs1/supplier.tbl.29",
 "disk:14:/fs2/supplier.tbl.30",
 "disk:15:/fs3/supplier.tbl.31",
 "disk:16:/fs4/supplier.tbl.32",
 "disk:1:/fs1/supplier.tbl.33",
 "disk:2:/fs2/supplier.tbl.34",
 "disk:3:/fs3/supplier.tbl.35",
 "disk:4:/fs4/supplier.tbl.36",
 "disk:5:/fs1/supplier.tbl.37",
 "disk:6:/fs2/supplier.tbl.38",
 "disk:7:/fs3/supplier.tbl.39",
 "disk:8:/fs4/supplier.tbl.40",
 "disk:9:/fs1/supplier.tbl.41",
 "disk:10:/fs2/supplier.tbl.42",
 "disk:11:/fs3/supplier.tbl.43",
 "disk:12:/fs4/supplier.tbl.44",
 "disk:13:/fs1/supplier.tbl.45",
 "disk:14:/fs2/supplier.tbl.46",
 "disk:15:/fs3/supplier.tbl.47",
 "disk:16:/fs4/supplier.tbl.48",
 "disk:1:/fs1/supplier.tbl.49",
 "disk:2:/fs2/supplier.tbl.50",
 "disk:3:/fs3/supplier.tbl.51",
 "disk:4:/fs4/supplier.tbl.52",
 "disk:5:/fs1/supplier.tbl.53",
 "disk:6:/fs2/supplier.tbl.54",
 "disk:7:/fs3/supplier.tbl.55",
 "disk:8:/fs4/supplier.tbl.56",
 "disk:9:/fs1/supplier.tbl.57",
 "disk:10:/fs2/supplier.tbl.58",
 "disk:11:/fs3/supplier.tbl.59",
 "disk:12:/fs4/supplier.tbl.60",
 "disk:13:/fs1/supplier.tbl.61",
 "disk:14:/fs2/supplier.tbl.62",
 "disk:15:/fs3/supplier.tbl.63",
 "disk:16:/fs4/supplier.tbl.64",
 "disk:1:/fs1/supplier.tbl.65",
 "disk:2:/fs2/supplier.tbl.66",
 "disk:3:/fs3/supplier.tbl.67",
 "disk:4:/fs4/supplier.tbl.68",
 "disk:5:/fs1/supplier.tbl.69",
 "disk:6:/fs2/supplier.tbl.70",
 "disk:7:/fs3/supplier.tbl.71",
 "disk:8:/fs4/supplier.tbl.72",
 "disk:9:/fs1/supplier.tbl.73",
 "disk:10:/fs2/supplier.tbl.74",
 "disk:11:/fs3/supplier.tbl.75",
 "disk:12:/fs4/supplier.tbl.76",
 "disk:13:/fs1/supplier.tbl.77",
 "disk:14:/fs2/supplier.tbl.78",
 "disk:15:/fs3/supplier.tbl.79",
 "disk:16:/fs4/supplier.tbl.80",
 "disk:1:/fs1/supplier.tbl.81",
 "disk:2:/fs2/supplier.tbl.82",
 "disk:3:/fs3/supplier.tbl.83",
 "disk:4:/fs4/supplier.tbl.84",
 "disk:5:/fs1/supplier.tbl.85",
 "disk:6:/fs2/supplier.tbl.86",
 "disk:7:/fs3/supplier.tbl.87",
 "disk:8:/fs4/supplier.tbl.88",
 "disk:9:/fs1/supplier.tbl.89",
 "disk:10:/fs2/supplier.tbl.90",
 "disk:11:/fs3/supplier.tbl.91",
 "disk:12:/fs4/supplier.tbl.92",
 "disk:13:/fs1/supplier.tbl.93",
```

```
 "disk:14:/fs2/supplier.tbl.94",
 "disk:15:/fs3/supplier.tbl.95",
 "disk:16:/fs4/supplier.tbl.96",
 "disk:1:/fs1/supplier.tbl.97",
 "disk:2:/fs2/supplier.tbl.98",
 "disk:3:/fs3/supplier.tbl.99",
 "disk:4:/fs4/supplier.tbl.100"),
        rejectfile "/tmp/supplier.%c",
        express
);

insert into supplier select * from supplier_ext;

drop table supplier_ext;

alter table supplier type(operational);


close database;
```

part.ld

```
database tpcd;
set pdqpriority 100;
create table part
  (
    p_partkey                   integer,
    p_name                      varchar(55),
    p_mfgr                      char(25),
    p_brand                     char(10),
    p_type                      varchar(25),
    p_size                      integer,
    p_container                 char(10),
    p_retailprice   decimal(12,2),
    p_comment                   varchar(23)
  ) fragment by hash(p_partkey) in restdbs extent size 105000 next
size 500
    lock mode table;

alter table part type (raw);


create external table part_ext
sameas part using (
        format "delimited",
        datafiles ("disk:1:/fs1/part.tbl.1",
 "disk:2:/fs2/part.tbl.2",
 "disk:3:/fs3/part.tbl.3",
 "disk:4:/fs4/part.tbl.4",
 "disk:5:/fs1/part.tbl.5",
 "disk:6:/fs2/part.tbl.6",
 "disk:7:/fs3/part.tbl.7",
 "disk:8:/fs4/part.tbl.8",
 "disk:9:/fs1/part.tbl.9",
 "disk:10:/fs2/part.tbl.10",
 "disk:11:/fs3/part.tbl.11",
 "disk:12:/fs4/part.tbl.12",
 "disk:13:/fs1/part.tbl.13",
 "disk:14:/fs2/part.tbl.14",
 "disk:15:/fs3/part.tbl.15",
 "disk:16:/fs4/part.tbl.16",
 "disk:1:/fs1/part.tbl.17",
 "disk:2:/fs2/part.tbl.18",
 "disk:3:/fs3/part.tbl.19",
 "disk:4:/fs4/part.tbl.20",
 "disk:5:/fs1/part.tbl.21",
 "disk:6:/fs2/part.tbl.22",
 "disk:7:/fs3/part.tbl.23",
 "disk:8:/fs4/part.tbl.24",
 "disk:9:/fs1/part.tbl.25",
 "disk:10:/fs2/part.tbl.26",
 "disk:11:/fs3/part.tbl.27",
 "disk:12:/fs4/part.tbl.28",
 "disk:13:/fs1/part.tbl.29",
 "disk:14:/fs2/part.tbl.30",
 "disk:15:/fs3/part.tbl.31",
 "disk:16:/fs4/part.tbl.32",
 "disk:1:/fs1/part.tbl.33",
 "disk:2:/fs2/part.tbl.34",
 "disk:3:/fs3/part.tbl.35",
 "disk:4:/fs4/part.tbl.36",
 "disk:5:/fs1/part.tbl.37",
 "disk:6:/fs2/part.tbl.38",
 "disk:7:/fs3/part.tbl.39",
 "disk:8:/fs4/part.tbl.40",
 "disk:9:/fs1/part.tbl.41",
 "disk:10:/fs2/part.tbl.42",
 "disk:11:/fs3/part.tbl.43",
 "disk:12:/fs4/part.tbl.44",
 "disk:13:/fs1/part.tbl.45",
 "disk:14:/fs2/part.tbl.46",
 "disk:15:/fs3/part.tbl.47",
 "disk:16:/fs4/part.tbl.48",
 "disk:1:/fs1/part.tbl.49",
 "disk:2:/fs2/part.tbl.50",
 "disk:3:/fs3/part.tbl.51",
 "disk:4:/fs4/part.tbl.52",
 "disk:5:/fs1/part.tbl.53",
 "disk:6:/fs2/part.tbl.54",
 "disk:7:/fs3/part.tbl.55",
 "disk:8:/fs4/part.tbl.56",
 "disk:9:/fs1/part.tbl.57",
 "disk:10:/fs2/part.tbl.58",
 "disk:11:/fs3/part.tbl.59",
 "disk:12:/fs4/part.tbl.60",
 "disk:13:/fs1/part.tbl.61",
 "disk:14:/fs2/part.tbl.62",
 "disk:15:/fs3/part.tbl.63",
 "disk:16:/fs4/part.tbl.64",
 "disk:1:/fs1/part.tbl.65",
 "disk:2:/fs2/part.tbl.66",
 "disk:3:/fs3/part.tbl.67",
 "disk:4:/fs4/part.tbl.68",
 "disk:5:/fs1/part.tbl.69",
 "disk:6:/fs2/part.tbl.70",
 "disk:7:/fs3/part.tbl.71",
 "disk:8:/fs4/part.tbl.72",
 "disk:9:/fs1/part.tbl.73",
 "disk:10:/fs2/part.tbl.74",
 "disk:11:/fs3/part.tbl.75",
 "disk:12:/fs4/part.tbl.76",
 "disk:13:/fs1/part.tbl.77",
 "disk:14:/fs2/part.tbl.78",
 "disk:15:/fs3/part.tbl.79",
 "disk:16:/fs4/part.tbl.80",
 "disk:1:/fs1/part.tbl.81",
 "disk:2:/fs2/part.tbl.82",
 "disk:3:/fs3/part.tbl.83",
 "disk:4:/fs4/part.tbl.84",
 "disk:5:/fs1/part.tbl.85",
 "disk:6:/fs2/part.tbl.86",
 "disk:7:/fs3/part.tbl.87",
 "disk:8:/fs4/part.tbl.88",
 "disk:9:/fs1/part.tbl.89",
 "disk:10:/fs2/part.tbl.90",
 "disk:11:/fs3/part.tbl.91",
 "disk:12:/fs4/part.tbl.92",
 "disk:13:/fs1/part.tbl.93",
 "disk:14:/fs2/part.tbl.94",
 "disk:15:/fs3/part.tbl.95",
 "disk:16:/fs4/part.tbl.96",
 "disk:1:/fs1/part.tbl.97",
 "disk:2:/fs2/part.tbl.98",
 "disk:3:/fs3/part.tbl.99",
 "disk:4:/fs4/part.tbl.100"),
        rejectfile "/tmp/parts.%c",
        express
);

insert into part select * from part_ext;

drop table part_ext;

alter table part type (operational);



close database;
```

customer.ld

```
database tpcd;
set pdqpriority 100;

create table customer
  (
  c_custkey         integer,
  c_name            varchar(25),
  c_address         varchar(40),
  c_nationkey       integer,
  c_phone           char(15),
  c_acctbal         decimal(12,2),
  c_mktsegment      char(10),
  c_comment         varchar(117)
  ) fragment by hash(c_custkey) in restdbs extent size 115000 next
size 500
  lock mode table;

alter table customer type (raw);

create external table cust_ext
sameas customer using (
        format "delimited",
                datafiles ("disk:1:/fs1/customer.tbl.1",
```

```
"disk:2:/fs2/customer.tbl.2",
"disk:3:/fs3/customer.tbl.3",
"disk:4:/fs4/customer.tbl.4",
"disk:5:/fs1/customer.tbl.5",
"disk:6:/fs2/customer.tbl.6",
"disk:7:/fs3/customer.tbl.7",
"disk:8:/fs4/customer.tbl.8",
"disk:9:/fs1/customer.tbl.9",
"disk:10:/fs2/customer.tbl.10",
"disk:11:/fs3/customer.tbl.11",
"disk:12:/fs4/customer.tbl.12",
"disk:13:/fs1/customer.tbl.13",
"disk:14:/fs2/customer.tbl.14",
"disk:15:/fs3/customer.tbl.15",
"disk:16:/fs4/customer.tbl.16",
"disk:1:/fs1/customer.tbl.17",
"disk:2:/fs2/customer.tbl.18",
"disk:3:/fs3/customer.tbl.19",
"disk:4:/fs4/customer.tbl.20",
"disk:5:/fs1/customer.tbl.21",
"disk:6:/fs2/customer.tbl.22",
"disk:7:/fs3/customer.tbl.23",
"disk:8:/fs4/customer.tbl.24",
"disk:9:/fs1/customer.tbl.25",
"disk:10:/fs2/customer.tbl.26",
"disk:11:/fs3/customer.tbl.27",
"disk:12:/fs4/customer.tbl.28",
"disk:13:/fs1/customer.tbl.29",
"disk:14:/fs2/customer.tbl.30",
"disk:15:/fs3/customer.tbl.31",
"disk:16:/fs4/customer.tbl.32",
"disk:1:/fs1/customer.tbl.33",
"disk:2:/fs2/customer.tbl.34",
"disk:3:/fs3/customer.tbl.35",
"disk:4:/fs4/customer.tbl.36",
"disk:5:/fs1/customer.tbl.37",
"disk:6:/fs2/customer.tbl.38",
"disk:7:/fs3/customer.tbl.39",
"disk:8:/fs4/customer.tbl.40",
"disk:9:/fs1/customer.tbl.41",
"disk:10:/fs2/customer.tbl.42",
"disk:11:/fs3/customer.tbl.43",
"disk:12:/fs4/customer.tbl.44",
"disk:13:/fs1/customer.tbl.45",
"disk:14:/fs2/customer.tbl.46",
"disk:15:/fs3/customer.tbl.47",
"disk:16:/fs4/customer.tbl.48",
"disk:1:/fs1/customer.tbl.49",
"disk:2:/fs2/customer.tbl.50",
"disk:3:/fs3/customer.tbl.51",
"disk:4:/fs4/customer.tbl.52",
"disk:5:/fs1/customer.tbl.53",
"disk:6:/fs2/customer.tbl.54",
"disk:7:/fs3/customer.tbl.55",
"disk:8:/fs4/customer.tbl.56",
"disk:9:/fs1/customer.tbl.57",
"disk:10:/fs2/customer.tbl.58",
"disk:11:/fs3/customer.tbl.59",
"disk:12:/fs4/customer.tbl.60",
"disk:13:/fs1/customer.tbl.61",
"disk:14:/fs2/customer.tbl.62",
"disk:15:/fs3/customer.tbl.63",
"disk:16:/fs4/customer.tbl.64",
"disk:1:/fs1/customer.tbl.65",
"disk:2:/fs2/customer.tbl.66",
"disk:3:/fs3/customer.tbl.67",
"disk:4:/fs4/customer.tbl.68",
"disk:5:/fs1/customer.tbl.69",
"disk:6:/fs2/customer.tbl.70",
"disk:7:/fs3/customer.tbl.71",
"disk:8:/fs4/customer.tbl.72",
"disk:9:/fs1/customer.tbl.73",
"disk:10:/fs2/customer.tbl.74",
"disk:11:/fs3/customer.tbl.75",
"disk:12:/fs4/customer.tbl.76",
"disk:13:/fs1/customer.tbl.77",
"disk:14:/fs2/customer.tbl.78",
"disk:15:/fs3/customer.tbl.79",
"disk:16:/fs4/customer.tbl.80",
"disk:1:/fs1/customer.tbl.81",
"disk:2:/fs2/customer.tbl.82",
"disk:3:/fs3/customer.tbl.83",
"disk:4:/fs4/customer.tbl.84",
"disk:5:/fs1/customer.tbl.85",
"disk:6:/fs2/customer.tbl.86",
"disk:7:/fs3/customer.tbl.87",
"disk:8:/fs4/customer.tbl.88",
"disk:9:/fs1/customer.tbl.89",
"disk:10:/fs2/customer.tbl.90",
"disk:11:/fs3/customer.tbl.91",
"disk:12:/fs4/customer.tbl.92",
"disk:13:/fs1/customer.tbl.93",
"disk:14:/fs2/customer.tbl.94",
"disk:15:/fs3/customer.tbl.95",
"disk:16:/fs4/customer.tbl.96",
 "disk:1:/fs1/customer.tbl.97",
 "disk:2:/fs2/customer.tbl.98",
 "disk:3:/fs3/customer.tbl.99",
 "disk:4:/fs4/customer.tbl.100"),
 rejectfile "/tmp/customer.%c",
       express
);

insert into customer select * from cust_ext;

drop table cust_ext;

alter table customer type (operational);


close database;
```

partsupp.ld

```
database tpcd;
set pdqpriority 100;

create table partsupp
  (
    ps_partkey                          integer ,
    ps_suppkey                          integer ,
    ps_availqty                         integer,
    ps_supplycost   decimal(12,2),
    ps_comment                          varchar(199)
  ) fragment by hash(ps_partkey) in psdbs
lock mode table ;

alter table partsupp type (raw);


create external table partsupp_ext
sameas partsupp using (
       format "delimited",
       datafiles ("disk:1:/fs1/partsupp.tbl.1",
 "disk:2:/fs2/partsupp.tbl.2",
 "disk:3:/fs3/partsupp.tbl.3",
 "disk:4:/fs4/partsupp.tbl.4",
 "disk:5:/fs1/partsupp.tbl.5",
 "disk:6:/fs2/partsupp.tbl.6",
 "disk:7:/fs3/partsupp.tbl.7",
 "disk:8:/fs4/partsupp.tbl.8",
 "disk:9:/fs1/partsupp.tbl.9",
 "disk:10:/fs2/partsupp.tbl.10",
 "disk:11:/fs3/partsupp.tbl.11",
 "disk:12:/fs4/partsupp.tbl.12",
 "disk:13:/fs1/partsupp.tbl.13",
 "disk:14:/fs2/partsupp.tbl.14",
 "disk:15:/fs3/partsupp.tbl.15",
 "disk:16:/fs4/partsupp.tbl.16",
 "disk:1:/fs1/partsupp.tbl.17",
 "disk:2:/fs2/partsupp.tbl.18",
 "disk:3:/fs3/partsupp.tbl.19",
 "disk:4:/fs4/partsupp.tbl.20",
 "disk:5:/fs1/partsupp.tbl.21",
 "disk:6:/fs2/partsupp.tbl.22",
 "disk:7:/fs3/partsupp.tbl.23",
 "disk:8:/fs4/partsupp.tbl.24",
 "disk:9:/fs1/partsupp.tbl.25",
 "disk:10:/fs2/partsupp.tbl.26",
 "disk:11:/fs3/partsupp.tbl.27",
 "disk:12:/fs4/partsupp.tbl.28",
 "disk:13:/fs1/partsupp.tbl.29",
 "disk:14:/fs2/partsupp.tbl.30",
 "disk:15:/fs3/partsupp.tbl.31",
 "disk:16:/fs4/partsupp.tbl.32",
 "disk:1:/fs1/partsupp.tbl.33",
 "disk:2:/fs2/partsupp.tbl.34",
 "disk:3:/fs3/partsupp.tbl.35",
 "disk:4:/fs4/partsupp.tbl.36",
 "disk:5:/fs1/partsupp.tbl.37",
 "disk:6:/fs2/partsupp.tbl.38",
 "disk:7:/fs3/partsupp.tbl.39",
 "disk:8:/fs4/partsupp.tbl.40",
 "disk:9:/fs1/partsupp.tbl.41",
 "disk:10:/fs2/partsupp.tbl.42",
 "disk:11:/fs3/partsupp.tbl.43",
 "disk:12:/fs4/partsupp.tbl.44",
 "disk:13:/fs1/partsupp.tbl.45",
 "disk:14:/fs2/partsupp.tbl.46",
 "disk:15:/fs3/partsupp.tbl.47",
 "disk:16:/fs4/partsupp.tbl.48",
 "disk:1:/fs1/partsupp.tbl.49",
 "disk:2:/fs2/partsupp.tbl.50",
 "disk:3:/fs3/partsupp.tbl.51",
 "disk:4:/fs4/partsupp.tbl.52",
 "disk:5:/fs1/partsupp.tbl.53",
 "disk:6:/fs2/partsupp.tbl.54",
```

```
 "disk:7:/fs3/partsupp.tbl.55",
 "disk:8:/fs4/partsupp.tbl.56",
 "disk:9:/fs1/partsupp.tbl.57",
 "disk:10:/fs2/partsupp.tbl.58",
 "disk:11:/fs3/partsupp.tbl.59",
 "disk:12:/fs4/partsupp.tbl.60",
 "disk:13:/fs1/partsupp.tbl.61",
 "disk:14:/fs2/partsupp.tbl.62",
 "disk:15:/fs3/partsupp.tbl.63",
 "disk:16:/fs4/partsupp.tbl.64",
 "disk:1:/fs1/partsupp.tbl.65",
 "disk:2:/fs2/partsupp.tbl.66",
 "disk:3:/fs3/partsupp.tbl.67",
 "disk:4:/fs4/partsupp.tbl.68",
 "disk:5:/fs1/partsupp.tbl.69",
 "disk:6:/fs2/partsupp.tbl.70",
 "disk:7:/fs3/partsupp.tbl.71",
 "disk:8:/fs4/partsupp.tbl.72",
 "disk:9:/fs1/partsupp.tbl.73",
 "disk:10:/fs2/partsupp.tbl.74",
 "disk:11:/fs3/partsupp.tbl.75",
 "disk:12:/fs4/partsupp.tbl.76",
 "disk:13:/fs1/partsupp.tbl.77",
 "disk:14:/fs2/partsupp.tbl.78",
 "disk:15:/fs3/partsupp.tbl.79",
 "disk:16:/fs4/partsupp.tbl.80",
 "disk:1:/fs1/partsupp.tbl.81",
 "disk:2:/fs2/partsupp.tbl.82",
 "disk:3:/fs3/partsupp.tbl.83",
 "disk:4:/fs4/partsupp.tbl.84",
 "disk:5:/fs1/partsupp.tbl.85",
 "disk:6:/fs2/partsupp.tbl.86",
 "disk:7:/fs3/partsupp.tbl.87",
 "disk:8:/fs4/partsupp.tbl.88",
 "disk:9:/fs1/partsupp.tbl.89",
 "disk:10:/fs2/partsupp.tbl.90",
 "disk:11:/fs3/partsupp.tbl.91",
 "disk:12:/fs4/partsupp.tbl.92",
 "disk:13:/fs1/partsupp.tbl.93",
 "disk:14:/fs2/partsupp.tbl.94",
 "disk:15:/fs3/partsupp.tbl.95",
 "disk:16:/fs4/partsupp.tbl.96",
 "disk:1:/fs1/partsupp.tbl.97",
 "disk:2:/fs2/partsupp.tbl.98",
 "disk:3:/fs3/partsupp.tbl.99",
 "disk:4:/fs4/partsupp.tbl.100"),
        rejectfile "/tmp/partsuppr.%c",
        express
);

insert into partsupp select * from partsupp_ext;

drop table partsupp_ext;

alter table partsupp type (operational);

close database;
```

========== order.ld ==========

```
database tpcd;
set pdqpriority 100;

create table order
  (
    o_orderkey                          decimal (12,0) ,
    o_custkey                           integer,
    o_orderstatus   char(1),
    o_totalprice    decimal(12,2),
    o_orderdate                         date,
    o_orderpriority char(15),
    o_clerk                             char(15),
    o_shippriority  integer,
    o_comment                           varchar(79)
  ) fragment by hybrid(o_orderkey) expression

    o_orderdate < '1992-02-01' in odbs1,
    o_orderdate >= '1992-02-01' and o_orderdate < '1992-03-01' in
odbs2,
    o_orderdate >= '1992-03-01' and o_orderdate < '1992-04-01' in
odbs3,
    o_orderdate >= '1992-04-01' and o_orderdate < '1992-05-01' in
odbs4,
    o_orderdate >= '1992-05-01' and o_orderdate < '1992-06-01' in
odbs5,
    o_orderdate >= '1992-06-01' and o_orderdate < '1992-07-01' in
odbs6,
    o_orderdate >= '1992-07-01' and o_orderdate < '1992-08-01' in
odbs7,
    o_orderdate >= '1992-08-01' and o_orderdate < '1992-09-01' in
odbs8,
    o_orderdate >= '1992-09-01' and o_orderdate < '1992-10-01' in
odbs9,
    o_orderdate >= '1992-10-01' and o_orderdate < '1992-11-01' in
odbs10,
    o_orderdate >= '1992-11-01' and o_orderdate < '1992-12-01' in
odbs11,
    o_orderdate >= '1992-12-01' and o_orderdate < '1993-01-01' in
odbs12,

    o_orderdate >= '1993-01-01' and o_orderdate < '1993-02-01' in
odbs13,
    o_orderdate >= '1993-02-01' and o_orderdate < '1993-03-01' in
odbs14,
    o_orderdate >= '1993-03-01' and o_orderdate < '1993-04-01' in
odbs15,
    o_orderdate >= '1993-04-01' and o_orderdate < '1993-05-01' in
odbs16,
    o_orderdate >= '1993-05-01' and o_orderdate < '1993-06-01' in
odbs17,
    o_orderdate >= '1993-06-01' and o_orderdate < '1993-07-01' in
odbs18,
    o_orderdate >= '1993-07-01' and o_orderdate < '1993-08-01' in
odbs19,
    o_orderdate >= '1993-08-01' and o_orderdate < '1993-09-01' in
odbs20,
    o_orderdate >= '1993-09-01' and o_orderdate < '1993-10-01' in
odbs21,
    o_orderdate >= '1993-10-01' and o_orderdate < '1993-11-01' in
odbs22,
    o_orderdate >= '1993-11-01' and o_orderdate < '1993-12-01' in
odbs23,
    o_orderdate >= '1993-12-01' and o_orderdate < '1994-01-01' in
odbs24,

    o_orderdate >= '1994-01-01' and o_orderdate < '1994-02-01' in
odbs25,
    o_orderdate >= '1994-02-01' and o_orderdate < '1994-03-01' in
odbs26,
    o_orderdate >= '1994-03-01' and o_orderdate < '1994-04-01' in
odbs27,
    o_orderdate >= '1994-04-01' and o_orderdate < '1994-05-01' in
odbs28,
    o_orderdate >= '1994-05-01' and o_orderdate < '1994-06-01' in
odbs29,
    o_orderdate >= '1994-06-01' and o_orderdate < '1994-07-01' in
odbs30,
    o_orderdate >= '1994-07-01' and o_orderdate < '1994-08-01' in
odbs31,
    o_orderdate >= '1994-08-01' and o_orderdate < '1994-09-01' in
odbs32,
    o_orderdate >= '1994-09-01' and o_orderdate < '1994-10-01' in
odbs33,
    o_orderdate >= '1994-10-01' and o_orderdate < '1994-11-01' in
odbs34,
    o_orderdate >= '1994-11-01' and o_orderdate < '1994-12-01' in
odbs35,
    o_orderdate >= '1994-12-01' and o_orderdate < '1995-01-01' in
odbs36,

    o_orderdate >= '1995-01-01' and o_orderdate < '1995-02-01' in
odbs37,
    o_orderdate >= '1995-02-01' and o_orderdate < '1995-03-01' in
odbs38,
    o_orderdate >= '1995-03-01' and o_orderdate < '1995-04-01' in
odbs39,
    o_orderdate >= '1995-04-01' and o_orderdate < '1995-05-01' in
odbs40,
    o_orderdate >= '1995-05-01' and o_orderdate < '1995-06-01' in
odbs41,
    o_orderdate >= '1995-06-01' and o_orderdate < '1995-07-01' in
odbs42,
    o_orderdate >= '1995-07-01' and o_orderdate < '1995-08-01' in
odbs43,
    o_orderdate >= '1995-08-01' and o_orderdate < '1995-09-01' in
odbs44,
    o_orderdate >= '1995-09-01' and o_orderdate < '1995-10-01' in
odbs45,
    o_orderdate >= '1995-10-01' and o_orderdate < '1995-11-01' in
odbs46,
    o_orderdate >= '1995-11-01' and o_orderdate < '1995-12-01' in
odbs47,
    o_orderdate >= '1995-12-01' and o_orderdate < '1996-01-01' in
odbs48,

    o_orderdate >= '1996-01-01' and o_orderdate < '1996-02-01' in
odbs49,
    o_orderdate >= '1996-02-01' and o_orderdate < '1996-03-01' in
odbs50,
    o_orderdate >= '1996-03-01' and o_orderdate < '1996-04-01' in
odbs51,
    o_orderdate >= '1996-04-01' and o_orderdate < '1996-05-01' in
odbs52,
    o_orderdate >= '1996-05-01' and o_orderdate < '1996-06-01' in
odbs53,
    o_orderdate >= '1996-06-01' and o_orderdate < '1996-07-01' in
odbs54,
```

```
    o_orderdate >= '1996-07-01' and o_orderdate < '1996-08-01' in
odbs55,
    o_orderdate >= '1996-08-01' and o_orderdate < '1996-09-01' in
odbs56,
    o_orderdate >= '1996-09-01' and o_orderdate < '1996-10-01' in
odbs57,
    o_orderdate >= '1996-10-01' and o_orderdate < '1996-11-01' in
odbs58,
    o_orderdate >= '1996-11-01' and o_orderdate < '1996-12-01' in
odbs59,
    o_orderdate >= '1996-12-01' and o_orderdate < '1997-01-01' in
odbs60,

    o_orderdate >= '1997-01-01' and o_orderdate < '1997-02-01' in
odbs61,
    o_orderdate >= '1997-02-01' and o_orderdate < '1997-03-01' in
odbs62,
    o_orderdate >= '1997-03-01' and o_orderdate < '1997-04-01' in
odbs63,
    o_orderdate >= '1997-04-01' and o_orderdate < '1997-05-01' in
odbs64,
    o_orderdate >= '1997-05-01' and o_orderdate < '1997-06-01' in
odbs65,
    o_orderdate >= '1997-06-01' and o_orderdate < '1997-07-01' in
odbs66,
    o_orderdate >= '1997-07-01' and o_orderdate < '1997-08-01' in
odbs67,
    o_orderdate >= '1997-08-01' and o_orderdate < '1997-09-01' in
odbs68,
    o_orderdate >= '1997-09-01' and o_orderdate < '1997-10-01' in
odbs69,
    o_orderdate >= '1997-10-01' and o_orderdate < '1997-11-01' in
odbs70,
    o_orderdate >= '1997-11-01' and o_orderdate < '1997-12-01' in
odbs71,
    o_orderdate >= '1997-12-01' and o_orderdate < '1998-01-01' in
odbs72,

    o_orderdate >= '1998-01-01' and o_orderdate < '1998-02-01' in
odbs73,
    o_orderdate >= '1998-02-01' and o_orderdate < '1998-03-01' in
odbs74,
    o_orderdate >= '1998-03-01' and o_orderdate < '1998-04-01' in
odbs75,
    o_orderdate >= '1998-04-01' and o_orderdate < '1998-05-01' in
odbs76,
    o_orderdate >= '1998-05-01' and o_orderdate < '1998-06-01' in
odbs77,
    o_orderdate >= '1998-06-01' and o_orderdate < '1998-07-01' in
odbs78,
    o_orderdate >= '1998-07-01' and o_orderdate < '1998-08-01' in
odbs79,
    o_orderdate >= '1998-08-01' and o_orderdate < '1998-09-01' in
odbs80,
    o_orderdate >= '1998-09-01' and o_orderdate < '1998-10-01' in
odbs81,
    o_orderdate >= '1998-10-01' and o_orderdate < '1998-11-01' in
odbs82,
    o_orderdate >= '1998-11-01' and o_orderdate < '1998-12-01' in
odbs83,
    o_orderdate >= '1998-12-01' in odbs84
    extent size 90000 next size 500
    lock mode table;

alter table order type (raw);

create external table order_ext
sameas order using (
        format "delimited",
        datafiles ("disk:1:/fs1/order.tbl.1",
 "disk:2:/fs2/order.tbl.2",
 "disk:3:/fs3/order.tbl.3",
 "disk:4:/fs4/order.tbl.4",
 "disk:5:/fs1/order.tbl.5",
 "disk:6:/fs2/order.tbl.6",
 "disk:7:/fs3/order.tbl.7",
 "disk:8:/fs4/order.tbl.8",
 "disk:9:/fs1/order.tbl.9",
 "disk:10:/fs2/order.tbl.10",
 "disk:11:/fs3/order.tbl.11",
 "disk:12:/fs4/order.tbl.12",
 "disk:13:/fs1/order.tbl.13",
 "disk:14:/fs2/order.tbl.14",
 "disk:15:/fs3/order.tbl.15",
 "disk:16:/fs4/order.tbl.16",
 "disk:1:/fs1/order.tbl.17",
 "disk:2:/fs2/order.tbl.18",
 "disk:3:/fs3/order.tbl.19",
 "disk:4:/fs4/order.tbl.20",
 "disk:5:/fs1/order.tbl.21",
 "disk:6:/fs2/order.tbl.22",
 "disk:7:/fs3/order.tbl.23",
 "disk:8:/fs4/order.tbl.24",
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 "disk:10:/fs2/order.tbl.26",
 "disk:11:/fs3/order.tbl.27",
 "disk:12:/fs4/order.tbl.28",
 "disk:13:/fs1/order.tbl.29",
 "disk:14:/fs2/order.tbl.30",
 "disk:15:/fs3/order.tbl.31",
 "disk:16:/fs4/order.tbl.32",
 "disk:1:/fs1/order.tbl.33",
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 "disk:8:/fs4/order.tbl.40",
 "disk:9:/fs1/order.tbl.41",
 "disk:10:/fs2/order.tbl.42",
 "disk:11:/fs3/order.tbl.43",
 "disk:12:/fs4/order.tbl.44",
 "disk:13:/fs1/order.tbl.45",
 "disk:14:/fs2/order.tbl.46",
 "disk:15:/fs3/order.tbl.47",
 "disk:16:/fs4/order.tbl.48",
 "disk:1:/fs1/order.tbl.49",
 "disk:2:/fs2/order.tbl.50",
 "disk:3:/fs3/order.tbl.51",
 "disk:4:/fs4/order.tbl.52",
 "disk:5:/fs1/order.tbl.53",
 "disk:6:/fs2/order.tbl.54",
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 "disk:11:/fs3/order.tbl.59",
 "disk:12:/fs4/order.tbl.60",
 "disk:13:/fs1/order.tbl.61",
 "disk:14:/fs2/order.tbl.62",
 "disk:15:/fs3/order.tbl.63",
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 "disk:6:/fs2/order.tbl.102",
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 "disk:15:/fs3/order.tbl.111",
 "disk:16:/fs4/order.tbl.112",
 "disk:1:/fs1/order.tbl.113",
 "disk:2:/fs2/order.tbl.114",
 "disk:3:/fs3/order.tbl.115",
 "disk:4:/fs4/order.tbl.116",
 "disk:5:/fs1/order.tbl.117",
 "disk:6:/fs2/order.tbl.118",
 "disk:7:/fs3/order.tbl.119",
 "disk:8:/fs4/order.tbl.120",
 "disk:9:/fs1/order.tbl.121",
```

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"disk:10:/fs2/order.tbl.122",
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"disk:12:/fs4/order.tbl.124",
"disk:13:/fs1/order.tbl.125",
"disk:14:/fs2/order.tbl.126",
"disk:15:/fs3/order.tbl.127",
"disk:16:/fs4/order.tbl.128",
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"disk:4:/fs4/order.tbl.260",
"disk:5:/fs1/order.tbl.261",
"disk:6:/fs2/order.tbl.262",
"disk:7:/fs3/order.tbl.263",
"disk:8:/fs4/order.tbl.264",
"disk:9:/fs1/order.tbl.265",
"disk:10:/fs2/order.tbl.266",
"disk:11:/fs3/order.tbl.267",
"disk:12:/fs4/order.tbl.268",
"disk:13:/fs1/order.tbl.269",
"disk:14:/fs2/order.tbl.270",
"disk:15:/fs3/order.tbl.271",
"disk:16:/fs4/order.tbl.272",
"disk:1:/fs1/order.tbl.273",
"disk:2:/fs2/order.tbl.274",
"disk:3:/fs3/order.tbl.275",
"disk:4:/fs4/order.tbl.276",
"disk:5:/fs1/order.tbl.277",
"disk:6:/fs2/order.tbl.278",
"disk:7:/fs3/order.tbl.279",
"disk:8:/fs4/order.tbl.280",
"disk:9:/fs1/order.tbl.281",
"disk:10:/fs2/order.tbl.282",
"disk:11:/fs3/order.tbl.283",
"disk:12:/fs4/order.tbl.284",
"disk:13:/fs1/order.tbl.285",
"disk:14:/fs2/order.tbl.286",
"disk:15:/fs3/order.tbl.287",
"disk:16:/fs4/order.tbl.288",
"disk:1:/fs1/order.tbl.289",
"disk:2:/fs2/order.tbl.290",
"disk:3:/fs3/order.tbl.291",
"disk:4:/fs4/order.tbl.292",
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"disk:15:/fs3/order.tbl.495",
"disk:16:/fs4/order.tbl.496",
"disk:1:/fs1/order.tbl.497",
"disk:2:/fs2/order.tbl.498",
"disk:3:/fs3/order.tbl.499",
"disk:4:/fs4/order.tbl.500"),
       rejectfile "/tmp/orderr.%c",
```

```
        express
);

insert into order select * from order_ext;

drop table order_ext;

alter table order type (operational);

close database;
```

==========
lineitem.ld
==========

```
database tpcd;
set pdqpriority 100;

create table lineitem
  (
  l_orderkey                            decimal(12,0) ,
  l_partkey                             integer,
  l_suppkey                             integer,
  l_linenumber                          integer,
  l_quantity                            decimal(12,2) not null,
  l_extendedprice   decimal(12,2) not null,
  l_discount                            decimal(12,2) not null,
  l_tax
decimal(12,2),
  l_returnflag                          char(1),
  l_linestatus                          char(1),
  l_shipdate                            date,
  l_commitdate                          date,
  l_receiptdate                         date,
  l_shipinstruct    char(25),
  l_shipmode                            char(10),
  l_comment                             varchar(44)
  ) fragment by hybrid (l_orderkey) expression

    l_shipdate < '1992-02-01' in ldbs1,
    l_shipdate >= '1992-02-01' and l_shipdate < '1992-03-01' in ldbs2,
    l_shipdate >= '1992-03-01' and l_shipdate < '1992-04-01' in ldbs3,
    l_shipdate >= '1992-04-01' and l_shipdate < '1992-05-01' in ldbs4,
    l_shipdate >= '1992-05-01' and l_shipdate < '1992-06-01' in ldbs5,
    l_shipdate >= '1992-06-01' and l_shipdate < '1992-07-01' in ldbs6,
    l_shipdate >= '1992-07-01' and l_shipdate < '1992-08-01' in ldbs7,
    l_shipdate >= '1992-08-01' and l_shipdate < '1992-09-01' in ldbs8,
    l_shipdate >= '1992-09-01' and l_shipdate < '1992-10-01' in ldbs9,
    l_shipdate >= '1992-10-01' and l_shipdate < '1992-11-01' in
ldbs10,
    l_shipdate >= '1992-11-01' and l_shipdate < '1992-12-01' in
ldbs11,
    l_shipdate >= '1992-12-01' and l_shipdate < '1993-01-01' in
ldbs12,

    l_shipdate >= '1993-01-01' and l_shipdate < '1993-02-01' in
ldbs13,
    l_shipdate >= '1993-02-01' and l_shipdate < '1993-03-01' in
ldbs14,
    l_shipdate >= '1993-03-01' and l_shipdate < '1993-04-01' in
ldbs15,
    l_shipdate >= '1993-04-01' and l_shipdate < '1993-05-01' in
ldbs16,
    l_shipdate >= '1993-05-01' and l_shipdate < '1993-06-01' in
ldbs17,
    l_shipdate >= '1993-06-01' and l_shipdate < '1993-07-01' in
ldbs18,
    l_shipdate >= '1993-07-01' and l_shipdate < '1993-08-01' in
ldbs19,
    l_shipdate >= '1993-08-01' and l_shipdate < '1993-09-01' in
ldbs20,
    l_shipdate >= '1993-09-01' and l_shipdate < '1993-10-01' in
ldbs21,
    l_shipdate >= '1993-10-01' and l_shipdate < '1993-11-01' in
ldbs22,
    l_shipdate >= '1993-11-01' and l_shipdate < '1993-12-01' in
ldbs23,
    l_shipdate >= '1993-12-01' and l_shipdate < '1994-01-01' in
ldbs24,

    l_shipdate >= '1994-01-01' and l_shipdate < '1994-02-01' in
ldbs25,
    l_shipdate >= '1994-02-01' and l_shipdate < '1994-03-01' in
ldbs26,
    l_shipdate >= '1994-03-01' and l_shipdate < '1994-04-01' in
ldbs27,
    l_shipdate >= '1994-04-01' and l_shipdate < '1994-05-01' in
ldbs28,
    l_shipdate >= '1994-05-01' and l_shipdate < '1994-06-01' in
ldbs29,
    l_shipdate >= '1994-06-01' and l_shipdate < '1994-07-01' in
ldbs30,
    l_shipdate >= '1994-07-01' and l_shipdate < '1994-08-01' in
ldbs31,
    l_shipdate >= '1994-08-01' and l_shipdate < '1994-09-01' in
ldbs32,
    l_shipdate >= '1994-09-01' and l_shipdate < '1994-10-01' in
ldbs33,
    l_shipdate >= '1994-10-01' and l_shipdate < '1994-11-01' in
ldbs34,
    l_shipdate >= '1994-11-01' and l_shipdate < '1994-12-01' in
ldbs35,
    l_shipdate >= '1994-12-01' and l_shipdate < '1995-01-01' in
ldbs36,

    l_shipdate >= '1995-01-01' and l_shipdate < '1995-02-01' in
ldbs37,
    l_shipdate >= '1995-02-01' and l_shipdate < '1995-03-01' in
ldbs38,
    l_shipdate >= '1995-03-01' and l_shipdate < '1995-04-01' in
ldbs39,
    l_shipdate >= '1995-04-01' and l_shipdate < '1995-05-01' in
ldbs40,
    l_shipdate >= '1995-05-01' and l_shipdate < '1995-06-01' in
ldbs41,
    l_shipdate >= '1995-06-01' and l_shipdate < '1995-07-01' in
ldbs42,
    l_shipdate >= '1995-07-01' and l_shipdate < '1995-08-01' in
ldbs43,
    l_shipdate >= '1995-08-01' and l_shipdate < '1995-09-01' in
ldbs44,
    l_shipdate >= '1995-09-01' and l_shipdate < '1995-10-01' in
ldbs45,
    l_shipdate >= '1995-10-01' and l_shipdate < '1995-11-01' in
ldbs46,
    l_shipdate >= '1995-11-01' and l_shipdate < '1995-12-01' in
ldbs47,
    l_shipdate >= '1995-12-01' and l_shipdate < '1996-01-01' in
ldbs48,

    l_shipdate >= '1996-01-01' and l_shipdate < '1996-02-01' in
ldbs49,
    l_shipdate >= '1996-02-01' and l_shipdate < '1996-03-01' in
ldbs50,
    l_shipdate >= '1996-03-01' and l_shipdate < '1996-04-01' in
ldbs51,
    l_shipdate >= '1996-04-01' and l_shipdate < '1996-05-01' in
ldbs52,
    l_shipdate >= '1996-05-01' and l_shipdate < '1996-06-01' in
ldbs53,
    l_shipdate >= '1996-06-01' and l_shipdate < '1996-07-01' in
ldbs54,
    l_shipdate >= '1996-07-01' and l_shipdate < '1996-08-01' in
ldbs55,
    l_shipdate >= '1996-08-01' and l_shipdate < '1996-09-01' in
ldbs56,
    l_shipdate >= '1996-09-01' and l_shipdate < '1996-10-01' in
ldbs57,
    l_shipdate >= '1996-10-01' and l_shipdate < '1996-11-01' in
ldbs58,
    l_shipdate >= '1996-11-01' and l_shipdate < '1996-12-01' in
ldbs59,
    l_shipdate >= '1996-12-01' and l_shipdate < '1997-01-01' in
ldbs60,

    l_shipdate >= '1997-01-01' and l_shipdate < '1997-02-01' in
ldbs61,
    l_shipdate >= '1997-02-01' and l_shipdate < '1997-03-01' in
ldbs62,
    l_shipdate >= '1997-03-01' and l_shipdate < '1997-04-01' in
ldbs63,
    l_shipdate >= '1997-04-01' and l_shipdate < '1997-05-01' in
ldbs64,
    l_shipdate >= '1997-05-01' and l_shipdate < '1997-06-01' in
ldbs65,
    l_shipdate >= '1997-06-01' and l_shipdate < '1997-07-01' in
ldbs66,
    l_shipdate >= '1997-07-01' and l_shipdate < '1997-08-01' in
ldbs67,
    l_shipdate >= '1997-08-01' and l_shipdate < '1997-09-01' in
ldbs68,
    l_shipdate >= '1997-09-01' and l_shipdate < '1997-10-01' in
ldbs69,
    l_shipdate >= '1997-10-01' and l_shipdate < '1997-11-01' in
ldbs70,
    l_shipdate >= '1997-11-01' and l_shipdate < '1997-12-01' in
ldbs71,
    l_shipdate >= '1997-12-01' and l_shipdate < '1998-01-01' in
ldbs72,

    l_shipdate >= '1998-01-01' and l_shipdate < '1998-02-01' in
ldbs73,
    l_shipdate >= '1998-02-01' and l_shipdate < '1998-03-01' in
ldbs74,
    l_shipdate >= '1998-03-01' and l_shipdate < '1998-04-01' in
ldbs75,
    l_shipdate >= '1998-04-01' and l_shipdate < '1998-05-01' in
ldbs76,
    l_shipdate >= '1998-05-01' and l_shipdate < '1998-06-01' in
```

```
ldbs77,
    l_shipdate >= '1998-06-01' and l_shipdate < '1998-07-01' in
ldbs78,
    l_shipdate >= '1998-07-01' and l_shipdate < '1998-08-01' in
ldbs79,
    l_shipdate >= '1998-08-01' and l_shipdate < '1998-09-01' in
ldbs80,
    l_shipdate >= '1998-09-01' and l_shipdate < '1998-10-01' in
ldbs81,
    l_shipdate >= '1998-10-01' and l_shipdate < '1998-11-01' in
ldbs82,
    l_shipdate >= '1998-11-01' and l_shipdate < '1998-12-01' in
ldbs83,
    l_shipdate >= '1998-12-01' in ldbs84
    extent size 380000 next size 500
    lock mode table;

alter table lineitem type (raw);

create external table lineitem_ext
sameas lineitem using (
        format "delimited",
        datafiles ("disk:1:/fs1/lineitem.tbl.1",
 "disk:2:/fs2/lineitem.tbl.2",
 "disk:3:/fs3/lineitem.tbl.3",
 "disk:4:/fs4/lineitem.tbl.4",
 "disk:5:/fs1/lineitem.tbl.5",
 "disk:6:/fs2/lineitem.tbl.6",
 "disk:7:/fs3/lineitem.tbl.7",
 "disk:8:/fs4/lineitem.tbl.8",
 "disk:9:/fs1/lineitem.tbl.9",
 "disk:10:/fs2/lineitem.tbl.10",
 "disk:11:/fs3/lineitem.tbl.11",
 "disk:12:/fs4/lineitem.tbl.12",
 "disk:13:/fs1/lineitem.tbl.13",
 "disk:14:/fs2/lineitem.tbl.14",
 "disk:15:/fs3/lineitem.tbl.15",
 "disk:16:/fs4/lineitem.tbl.16",
 "disk:1:/fs1/lineitem.tbl.17",
 "disk:2:/fs2/lineitem.tbl.18",
 "disk:3:/fs3/lineitem.tbl.19",
 "disk:4:/fs4/lineitem.tbl.20",
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 "disk:6:/fs2/lineitem.tbl.22",
 "disk:7:/fs3/lineitem.tbl.23",
 "disk:8:/fs4/lineitem.tbl.24",
 "disk:9:/fs1/lineitem.tbl.25",
 "disk:10:/fs2/lineitem.tbl.26",
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 "disk:8:/fs4/lineitem.tbl.56",
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 "disk:11:/fs3/lineitem.tbl.75",
 "disk:12:/fs4/lineitem.tbl.76",
 "disk:13:/fs1/lineitem.tbl.77",
 "disk:14:/fs2/lineitem.tbl.78",
 "disk:15:/fs3/lineitem.tbl.79",
 "disk:16:/fs4/lineitem.tbl.80",
 "disk:1:/fs1/lineitem.tbl.81",
 "disk:2:/fs2/lineitem.tbl.82",
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 "disk:5:/fs1/lineitem.tbl.85",
 "disk:6:/fs2/lineitem.tbl.86",
 "disk:7:/fs3/lineitem.tbl.87",
 "disk:8:/fs4/lineitem.tbl.88",
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"disk:15:/fs3/lineitem.tbl.495",
"disk:16:/fs4/lineitem.tbl.496",
"disk:1:/fs1/lineitem.tbl.497",
"disk:2:/fs2/lineitem.tbl.498",
"disk:3:/fs3/lineitem.tbl.499",
"disk:4:/fs4/lineitem.tbl.500"),
                    rejectfile "/tmp/liner.%c",
                    express
) ;

insert into lineitem select * from lineitem_ext;

drop table lineitem_ext;

alter table lineitem type(operational);

close database;
```

==========
create_index
==========

```
#!/usr/bin/ksh

# Script to create all the indexes.

export DBNAME=tpcd

echo start creating l_x1_ored at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100;
create index l_x1_ored on lineitem (
                                      l_orderkey,
                                      l_returnflag,
                                      l_extendedprice,
                                      l_discount)
  fragment by hash(l_orderkey) in llind ;
EOF
echo end creating l_x1_ored at `date`

xctl onmode -c

echo start creating l_x2_pqe at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100 ;
create index l_x2_pqe on lineitem (
                                      l_partkey,
                l_quantity,
                l_extendedprice)
  fragment by hybrid(l_orderkey) expression
l_partkey  < 7142858 in restind1,
l_partkey  >= 7142858 and l_partkey < 14285716 in restind2,
l_partkey  >= 14285716 and l_partkey < 21428574 in restind3,
```

```
l_partkey  >= 21428574 and l_partkey < 28571432 in restind4,
l_partkey  >= 28571432 and l_partkey < 35714290 in restind5,
l_partkey  >= 35714290 and l_partkey < 42857148 in restind6,
l_partkey  >= 42857148 and l_partkey < 50000006 in restind7,
l_partkey  >= 50000006 and l_partkey < 57142864 in restind8,
l_partkey  >= 57142864 and l_partkey < 64285722 in restind9,
l_partkey  >= 64285722 and l_partkey < 71428580 in restind10,
l_partkey  >= 71428580 and l_partkey < 78571438 in restind11,
l_partkey  >= 78571438 and l_partkey < 85714296 in restind12,
l_partkey  >= 85714296 and l_partkey < 92857154 in restind13,
l_partkey  >= 92857154 and l_partkey < 100000012 in restind14,
l_partkey  >= 100000012 and l_partkey < 107142870 in restind15,
l_partkey  >= 107142870 and l_partkey < 114285728 in restind16,
l_partkey  >= 114285728 and l_partkey < 121428586 in restind17,
l_partkey  >= 121428586 and l_partkey < 128571444 in restind18,
l_partkey  >= 128571444 and l_partkey < 135714302 in restind19,
l_partkey  >= 135714302 and l_partkey < 142857160 in restind20,
l_partkey  >= 142857160 and l_partkey < 150000018 in restind21,
l_partkey  >= 150000018 and l_partkey < 157142876 in restind22,
l_partkey  >= 157142876 and l_partkey < 164285734 in restind23,
l_partkey  >= 164285734 and l_partkey < 171428592 in restind24,
l_partkey  >= 171428592 and l_partkey < 178571450 in restind25,
l_partkey  >= 178571450 and l_partkey < 185714308 in restind26,
l_partkey  >= 185714308 and l_partkey < 192857166 in restind27,
l_partkey  >= 192857166 in restind28 ;
EOF
echo end creating l_x2_pqe at `date`

xctl onmode -c

echo start creating o_x1_k at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100 ;
create index o_x1_k on order (o_orderkey)
   fragment by hash(o_orderkey) in o1ind ;
EOF
echo end creating o_x1_k at `date`

xctl onmode -c

echo start creating o_x2_ckd at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100 ;
create index o_x2_ckd on order
                                        (o_clerk,
                o_orderkey,
                o_orderdate)
fragment by hybrid(o_orderkey) expression
o_clerk  < 'Clerk#000035715' in restind1,
o_clerk  >= 'Clerk#000035715' and o_clerk < 'Clerk#000071430' in
restind2,
o_clerk  >= 'Clerk#000071430' and o_clerk < 'Clerk#000107145' in
restind3,
o_clerk  >= 'Clerk#000107145' and o_clerk < 'Clerk#000142860' in
restind4,
o_clerk  >= 'Clerk#000142860' and o_clerk < 'Clerk#000178575' in
restind5,
o_clerk  >= 'Clerk#000178575' and o_clerk < 'Clerk#000214290' in
restind6,
o_clerk  >= 'Clerk#000214290' and o_clerk < 'Clerk#000250005' in
restind7,
o_clerk  >= 'Clerk#000250005' and o_clerk < 'Clerk#000285720' in
restind8,
o_clerk  >= 'Clerk#000285720' and o_clerk < 'Clerk#000321435' in
restind9,
o_clerk  >= 'Clerk#000321435' and o_clerk < 'Clerk#000357150' in
restind10,
o_clerk  >= 'Clerk#000357150' and o_clerk < 'Clerk#000392865' in
restind11,
o_clerk  >= 'Clerk#000392865' and o_clerk < 'Clerk#000428580' in
restind12,
o_clerk  >= 'Clerk#000428580' and o_clerk < 'Clerk#000464295' in
restind13,
o_clerk  >= 'Clerk#000464295' and o_clerk < 'Clerk#000500010' in
restind14,
o_clerk  >= 'Clerk#000500010' and o_clerk < 'Clerk#000535725' in
restind15,
o_clerk  >= 'Clerk#000535725' and o_clerk < 'Clerk#000571440' in
restind16,
o_clerk  >= 'Clerk#000571440' and o_clerk < 'Clerk#000607155' in
restind17,
o_clerk  >= 'Clerk#000607155' and o_clerk < 'Clerk#000642870' in
restind18,
o_clerk  >= 'Clerk#000642870' and o_clerk < 'Clerk#000678585' in
restind19,
o_clerk  >= 'Clerk#000678585' and o_clerk < 'Clerk#000714300' in
restind20,
o_clerk  >= 'Clerk#000714300' and o_clerk < 'Clerk#000750015' in
restind21,
o_clerk  >= 'Clerk#000750015' and o_clerk < 'Clerk#000785730' in
restind22,
o_clerk  >= 'Clerk#000785730' and o_clerk < 'Clerk#000821445' in
restind23,
o_clerk  >= 'Clerk#000821445' and o_clerk < 'Clerk#000857160' in
restind24,
o_clerk  >= 'Clerk#000857160' and o_clerk < 'Clerk#000892875' in
restind25,
o_clerk  >= 'Clerk#000892875' and o_clerk < 'Clerk#000928590' in
restind26,
o_clerk  >= 'Clerk#000928590' and o_clerk < 'Clerk#000964305' in
restind27,
o_clerk  >= 'Clerk#000964305' in restind28;
EOF
echo end creating o_x2_ckd at `date`

xctl onmode -c

echo start creating ps_x1 at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100;
create unique index ps_i1 on partsupp (ps_partkey,
                                       ps_suppkey,
                                       ps_supplycost)
fragment by hybrid(ps_partkey) expression
ps_partkey  < 7142858 in restind1,
ps_partkey  >= 7142858 and ps_partkey < 14285716 in restind2,
ps_partkey  >= 14285716 and ps_partkey < 21428574 in restind3,
ps_partkey  >= 21428574 and ps_partkey < 28571432 in restind4,
ps_partkey  >= 28571432 and ps_partkey < 35714290 in restind5,
ps_partkey  >= 35714290 and ps_partkey < 42857148 in restind6,
ps_partkey  >= 42857148 and ps_partkey < 50000006 in restind7,
ps_partkey  >= 50000006 and ps_partkey < 57142864 in restind8,
ps_partkey  >= 57142864 and ps_partkey < 64285722 in restind9,
ps_partkey  >= 64285722 and ps_partkey < 71428580 in restind10,
ps_partkey  >= 71428580 and ps_partkey < 78571438 in restind11,
ps_partkey  >= 78571438 and ps_partkey < 85714296 in restind12,
ps_partkey  >= 85714296 and ps_partkey < 92857154 in restind13,
ps_partkey  >= 92857154 and ps_partkey < 100000012 in restind14,
ps_partkey  >= 100000012 and ps_partkey < 107142870 in restind15,
ps_partkey  >= 107142870 and ps_partkey < 114285728 in restind16,
ps_partkey  >= 114285728 and ps_partkey < 121428586 in restind17,
ps_partkey  >= 121428586 and ps_partkey < 128571444 in restind18,
ps_partkey  >= 128571444 and ps_partkey < 135714302 in restind19,
ps_partkey  >= 135714302 and ps_partkey < 142857160 in restind20,
ps_partkey  >= 142857160 and ps_partkey < 150000018 in restind21,
ps_partkey  >= 150000018 and ps_partkey < 157142876 in restind22,
ps_partkey  >= 157142876 and ps_partkey < 164285734 in restind23,
ps_partkey  >= 164285734 and ps_partkey < 171428592 in restind24,
ps_partkey  >= 171428592 and ps_partkey < 178571450 in restind25,
ps_partkey  >= 178571450 and ps_partkey < 185714308 in restind26,
ps_partkey  >= 185714308 and ps_partkey < 192857166 in restind27,
ps_partkey  >= 192857166 in restind28 ;
EOF
echo done creating ps_x1 at `date`

xctl onmode -c

echo start creating ps_x2 at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100;
create index ps_i2 on partsupp (ps_suppkey,

ps_partkey,

ps_supplycost,

ps_availqty)
fragment by hybrid (ps_partkey) expression
ps_suppkey  < 357143 in restind1,
ps_suppkey  >= 357143 and ps_suppkey < 714286 in restind2,
ps_suppkey  >= 714286 and ps_suppkey < 1071429 in restind3,
ps_suppkey  >= 1071429 and ps_suppkey < 1428572 in restind4,
ps_suppkey  >= 1428572 and ps_suppkey < 1785715 in restind5,
ps_suppkey  >= 1785715 and ps_suppkey < 2142858 in restind6,
ps_suppkey  >= 2142858 and ps_suppkey < 2500001 in restind7,
ps_suppkey  >= 2500001 and ps_suppkey < 2857144 in restind8,
ps_suppkey  >= 2857144 and ps_suppkey < 3214287 in restind9,
ps_suppkey  >= 3214287 and ps_suppkey < 3571430 in restind10,
ps_suppkey  >= 3571430 and ps_suppkey < 3928573 in restind11,
ps_suppkey  >= 3928573 and ps_suppkey < 4285716 in restind12,
ps_suppkey  >= 4285716 and ps_suppkey < 4642859 in restind13,
ps_suppkey  >= 4642859 and ps_suppkey < 5000002 in restind14,
ps_suppkey  >= 5000002 and ps_suppkey < 5357145 in restind15,
ps_suppkey  >= 5357145 and ps_suppkey < 5714288 in restind16,
ps_suppkey  >= 5714288 and ps_suppkey < 6071431 in restind17,
ps_suppkey  >= 6071431 and ps_suppkey < 6428574 in restind18,
ps_suppkey  >= 6428574 and ps_suppkey < 6785717 in restind19,
ps_suppkey  >= 6785717 and ps_suppkey < 7142860 in restind20,
ps_suppkey  >= 7142860 and ps_suppkey < 7500003 in restind21,
ps_suppkey  >= 7500003 and ps_suppkey < 7857146 in restind22,
ps_suppkey  >= 7857146 and ps_suppkey < 8214289 in restind23,
ps_suppkey  >= 8214289 and ps_suppkey < 8571432 in restind24,
ps_suppkey  >= 8571432 and ps_suppkey < 8928575 in restind25,
ps_suppkey  >= 8928575 and ps_suppkey < 9285718 in restind26,
ps_suppkey  >= 9285718 and ps_suppkey < 9642861 in restind27,
ps_suppkey  >= 9642861 in restind28 ;
EOF
echo end creating ps_x2 at `date`

xctl onmode -c
```

```
echo start creating p_co_br_pk at `date`
dbaccess -e $DBNAME <<EOF
set pdqpriority 100;
create index p_co_br_pk on part (
                p_container,
                p_brand,
                p_partkey)
  fragment by hash(p_partkey) in o1ind;
EOF
echo end creating p_co_br_pk at `date`

xctl onmode -c
```

==========
update_stats
==========

```
#!/usr/bin/ksh


export DBNAME=tpcd

echo Start update stats for database and tables at `date`

for i in lineitem nation region part supplier customer partsupp order
do
dbaccess -e $DBNAME<<EOF
set pdqpriority 100;
begin work;
update statistics medium for table informix.$i resolution 0.1 0.95;
commit work;
EOF
done
dbaccess -e $DBNAME<<EOF
set pdqpriority 100;
begin work;
update statistics medium resolution 0.1 0.95;
commit work;
EOF

echo End update stats for all at `date`
```

==========
alter_table
==========

```
#!/bin/ksh

dbaccess -e tpcd <<EOF
alter table region lock mode(page);
alter table nation lock mode(page);
alter table part lock mode(page);
alter table supplier lock mode(page);
alter table partsupp lock mode(page);
alter table customer lock mode(page);
alter table order lock mode(page);
alter table lineitem lock mode(page);
EOF
```

==========
move_logs.sh
==========

```
#!/usr/bin/ksh

echo "moving logs to another disk..."

onutil<<EOF
create dbslice log_slice1 from
cogroup cogroup_all chunk "/nlinks/logdbs1.%c" size 750000 ;
create dbslice log_slice2 from
cogroup cogroup_all chunk "/nlinks/logdbs2.%c" size 750000 ;
create dbslice log_slice3 from
cogroup cogroup_all chunk "/nlinks/logdbs3.%c" size 750000 ;
EOF
sleep 30
xctl onmode -sy
sleep 30

onutil<<EOF
create logical logslice logslice1 in dbslice log_slice1
                    size 700 MBYTES;
create logical logslice logslice2 in dbslice log_slice2
                    size 700 MBYTES;
create logical logslice logslice3 in dbslice log_slice3
                    size 700 MBYTES;
EOF
sleep 30

onutil<<EOF
alter cogroup cogroup_all reset backup;
EOF
#
xctl onmode -l
xctl onmode -l
xctl onmode -l
xctl onmode -c

onutil <<EOF
drop logical log 1 coserver 1;
drop logical log 2 coserver 1;
drop logical log 3 coserver 1;
drop logical log 1 coserver 2;
drop logical log 2 coserver 2;
drop logical log 3 coserver 2;
drop logical log 1 coserver 3;
drop logical log 2 coserver 3;
drop logical log 3 coserver 3;
drop logical log 1 coserver 4;
drop logical log 2 coserver 4;
drop logical log 3 coserver 4;
drop logical log 1 coserver 5;
drop logical log 2 coserver 5;
drop logical log 3 coserver 5;
drop logical log 1 coserver 6;
drop logical log 2 coserver 6;
drop logical log 3 coserver 6;
drop logical log 1 coserver 7;
drop logical log 2 coserver 7;
drop logical log 3 coserver 7;
drop logical log 1 coserver 8;
drop logical log 2 coserver 8;
drop logical log 3 coserver 8;
drop logical log 1 coserver 9;
drop logical log 2 coserver 9;
drop logical log 3 coserver 9;
drop logical log 1 coserver 10;
drop logical log 2 coserver 10;
drop logical log 3 coserver 10;
drop logical log 1 coserver 11;
drop logical log 2 coserver 11;
drop logical log 3 coserver 11;
drop logical log 1 coserver 12;
drop logical log 2 coserver 12;
drop logical log 3 coserver 12;
drop logical log 1 coserver 13;
drop logical log 2 coserver 13;
drop logical log 3 coserver 13;
drop logical log 1 coserver 14;
drop logical log 2 coserver 14;
drop logical log 3 coserver 14;
drop logical log 1 coserver 15;
drop logical log 2 coserver 15;
drop logical log 3 coserver 15;
drop logical log 1 coserver 16;
drop logical log 2 coserver 16;
drop logical log 3 coserver 16;
EOF
sleep 30

xctl onmode -m
sleep 60
```

==========
create_slices
==========

```
#!/usr/bin/ksh

# script to create all the table and index slices.

echo "Creating dbslices for Lineitem table"
onutil -i ldbs

echo "Creating dbslices for Order table"
onutil -i odbs

echo "Creating dbslices for Partsupplier table"
onutil -i psdbs

echo "Creating dbslices for rest of the tables"
onutil -i restdbs

echo "Creating dbslices for l1 index"
onutil -i l1ind

echo "Creating dbslices for rest of the indexes"
onutil -i restind

echo "Creating dbslices for o1 index"
onutil -i o1ind

echo "Creating the tempdbslice"
onutil -i tdbs
```

```
echo "Creating dbslices for the physical logs"
onutil -i physdbs
```

```
========================================
ldbs
========================================
create dbslice ldbs1
from cogroup cogroup_all
chunk "/nlinks/linedbs1.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs2.%c"
offset 0 size 382000 ;

create dbslice ldbs2
from cogroup cogroup_all
chunk "/nlinks/linedbs3.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs4.%c"
offset 0 size 382000 ;

create dbslice ldbs3
from cogroup cogroup_all
chunk "/nlinks/linedbs5.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs6.%c"
offset 0 size 382000 ;

create dbslice ldbs4
from cogroup cogroup_all
chunk "/nlinks/linedbs7.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs8.%c"
offset 0 size 382000 ;

create dbslice ldbs5
from cogroup cogroup_all
chunk "/nlinks/linedbs9.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs10.%c"
offset 0 size 382000 ;

create dbslice ldbs6
from cogroup cogroup_all
chunk "/nlinks/linedbs11.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs12.%c"
offset 0 size 382000 ;

create dbslice ldbs7
from cogroup cogroup_all
chunk "/nlinks/linedbs13.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs14.%c"
offset 0 size 382000 ;

create dbslice ldbs8
from cogroup cogroup_all
chunk "/nlinks/linedbs15.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs16.%c"
offset 0 size 382000 ;

create dbslice ldbs9
from cogroup cogroup_all
chunk "/nlinks/linedbs17.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs18.%c"
offset 0 size 382000 ;

create dbslice ldbs10
from cogroup cogroup_all
chunk "/nlinks/linedbs19.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs20.%c"
offset 0 size 382000 ;

create dbslice ldbs11
from cogroup cogroup_all
chunk "/nlinks/linedbs21.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs22.%c"
offset 0 size 382000 ;

create dbslice ldbs12
from cogroup cogroup_all
chunk "/nlinks/linedbs23.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs24.%c"
offset 0 size 382000 ;

create dbslice ldbs13
from cogroup cogroup_all
chunk "/nlinks/linedbs25.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs26.%c"
offset 0 size 382000 ;

create dbslice ldbs14
from cogroup cogroup_all
chunk "/nlinks/linedbs27.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs28.%c"
offset 0 size 382000 ;

create dbslice ldbs15
from cogroup cogroup_all
chunk "/nlinks/linedbs1.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs2.%c"
offset 382000 size 382000 ;

create dbslice ldbs16
from cogroup cogroup_all
chunk "/nlinks/linedbs3.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs4.%c"
offset 382000 size 382000 ;

create dbslice ldbs17
from cogroup cogroup_all
chunk "/nlinks/linedbs5.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs6.%c"
offset 382000 size 382000 ;

create dbslice ldbs18
from cogroup cogroup_all
chunk "/nlinks/linedbs7.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs8.%c"
offset 382000 size 382000 ;

create dbslice ldbs19
from cogroup cogroup_all
chunk "/nlinks/linedbs9.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs10.%c"
offset 382000 size 382000 ;

create dbslice ldbs20
from cogroup cogroup_all
chunk "/nlinks/linedbs11.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs12.%c"
offset 382000 size 382000 ;

create dbslice ldbs21
from cogroup cogroup_all
chunk "/nlinks/linedbs13.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs14.%c"
offset 382000 size 382000 ;

create dbslice ldbs22
from cogroup cogroup_all
chunk "/nlinks/linedbs15.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs16.%c"
offset 382000 size 382000 ;

create dbslice ldbs23
from cogroup cogroup_all
chunk "/nlinks/linedbs17.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
```

```
chunk "/nlinks/linedbs18.%c"
offset 382000 size 382000 ;

create dbslice ldbs24
from cogroup cogroup_all
chunk "/nlinks/linedbs19.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs20.%c"
offset 382000 size 382000 ;

create dbslice ldbs25
from cogroup cogroup_all
chunk "/nlinks/linedbs21.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs22.%c"
offset 382000 size 382000 ;

create dbslice ldbs26
from cogroup cogroup_all
chunk "/nlinks/linedbs23.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs24.%c"
offset 382000 size 382000 ;

create dbslice ldbs27
from cogroup cogroup_all
chunk "/nlinks/linedbs25.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs26.%c"
offset 382000 size 382000 ;

create dbslice ldbs28
from cogroup cogroup_all
chunk "/nlinks/linedbs27.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs28.%c"
offset 382000 size 382000 ;

create dbslice ldbs29
from cogroup cogroup_all
chunk "/nlinks/linedbs1.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs2.%c"
offset 764000 size 382000 ;

create dbslice ldbs30
from cogroup cogroup_all
chunk "/nlinks/linedbs3.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs4.%c"
offset 764000 size 382000 ;

create dbslice ldbs31
from cogroup cogroup_all
chunk "/nlinks/linedbs5.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs6.%c"
offset 764000 size 382000 ;

create dbslice ldbs32
from cogroup cogroup_all
chunk "/nlinks/linedbs7.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs8.%c"
offset 764000 size 382000 ;

create dbslice ldbs33
from cogroup cogroup_all
chunk "/nlinks/linedbs9.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs10.%c"
offset 764000 size 382000 ;

create dbslice ldbs34
from cogroup cogroup_all
chunk "/nlinks/linedbs11.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs12.%c"
offset 764000 size 382000 ;

create dbslice ldbs35
from cogroup cogroup_all
chunk "/nlinks/linedbs13.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs14.%c"
offset 764000 size 382000 ;

create dbslice ldbs36
from cogroup cogroup_all
chunk "/nlinks/linedbs15.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs16.%c"
offset 764000 size 382000 ;

create dbslice ldbs37
from cogroup cogroup_all
chunk "/nlinks/linedbs17.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs18.%c"
offset 764000 size 382000 ;

create dbslice ldbs38
from cogroup cogroup_all
chunk "/nlinks/linedbs19.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs20.%c"
offset 764000 size 382000 ;

create dbslice ldbs39
from cogroup cogroup_all
chunk "/nlinks/linedbs21.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs22.%c"
offset 764000 size 382000 ;

create dbslice ldbs40
from cogroup cogroup_all
chunk "/nlinks/linedbs23.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs24.%c"
offset 764000 size 382000 ;

create dbslice ldbs41
from cogroup cogroup_all
chunk "/nlinks/linedbs25.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs26.%c"
offset 764000 size 382000 ;

create dbslice ldbs42
from cogroup cogroup_all
chunk "/nlinks/linedbs27.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs28.%c"
offset 764000 size 382000 ;

create dbslice ldbs43
from cogroup cogroup_all
chunk "/nlinks/linedbs29.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs30.%c"
offset 0 size 382000 ;

create dbslice ldbs44
from cogroup cogroup_all
chunk "/nlinks/linedbs31.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs32.%c"
offset 0 size 382000 ;

create dbslice ldbs45
from cogroup cogroup_all
chunk "/nlinks/linedbs33.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs34.%c"
offset 0 size 382000 ;

create dbslice ldbs46
from cogroup cogroup_all
chunk "/nlinks/linedbs35.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs36.%c"
offset 0 size 382000 ;

create dbslice ldbs47
from cogroup cogroup_all
chunk "/nlinks/linedbs37.%c"
```

```
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs38.%c"
offset 0 size 382000 ;

create dbslice ldbs48
from cogroup cogroup_all
chunk "/nlinks/linedbs39.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs40.%c"
offset 0 size 382000 ;

create dbslice ldbs49
from cogroup cogroup_all
chunk "/nlinks/linedbs41.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs42.%c"
offset 0 size 382000 ;

create dbslice ldbs50
from cogroup cogroup_all
chunk "/nlinks/linedbs43.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs44.%c"
offset 0 size 382000 ;

create dbslice ldbs51
from cogroup cogroup_all
chunk "/nlinks/linedbs45.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs46.%c"
offset 0 size 382000 ;

create dbslice ldbs52
from cogroup cogroup_all
chunk "/nlinks/linedbs47.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs48.%c"
offset 0 size 382000 ;

create dbslice ldbs53
from cogroup cogroup_all
chunk "/nlinks/linedbs49.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs50.%c"
offset 0 size 382000 ;

create dbslice ldbs54
from cogroup cogroup_all
chunk "/nlinks/linedbs51.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs52.%c"
offset 0 size 382000 ;

create dbslice ldbs55
from cogroup cogroup_all
chunk "/nlinks/linedbs53.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs54.%c"
offset 0 size 382000 ;

create dbslice ldbs56
from cogroup cogroup_all
chunk "/nlinks/linedbs55.%c"
offset 0 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs56.%c"
offset 0 size 382000 ;

create dbslice ldbs57
from cogroup cogroup_all
chunk "/nlinks/linedbs29.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs30.%c"
offset 382000 size 382000 ;

create dbslice ldbs58
from cogroup cogroup_all
chunk "/nlinks/linedbs31.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs32.%c"
offset 382000 size 382000 ;

create dbslice ldbs59
from cogroup cogroup_all
chunk "/nlinks/linedbs33.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs34.%c"
offset 382000 size 382000 ;

create dbslice ldbs60
from cogroup cogroup_all
chunk "/nlinks/linedbs35.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs36.%c"
offset 382000 size 382000 ;

create dbslice ldbs61
from cogroup cogroup_all
chunk "/nlinks/linedbs37.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs38.%c"
offset 382000 size 382000 ;

create dbslice ldbs62
from cogroup cogroup_all
chunk "/nlinks/linedbs39.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs40.%c"
offset 382000 size 382000 ;

create dbslice ldbs63
from cogroup cogroup_all
chunk "/nlinks/linedbs41.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs42.%c"
offset 382000 size 382000 ;

create dbslice ldbs64
from cogroup cogroup_all
chunk "/nlinks/linedbs43.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs44.%c"
offset 382000 size 382000 ;

create dbslice ldbs65
from cogroup cogroup_all
chunk "/nlinks/linedbs45.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs46.%c"
offset 382000 size 382000 ;

create dbslice ldbs66
from cogroup cogroup_all
chunk "/nlinks/linedbs47.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs48.%c"
offset 382000 size 382000 ;

create dbslice ldbs67
from cogroup cogroup_all
chunk "/nlinks/linedbs49.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs50.%c"
offset 382000 size 382000 ;

create dbslice ldbs68
from cogroup cogroup_all
chunk "/nlinks/linedbs51.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs52.%c"
offset 382000 size 382000 ;

create dbslice ldbs69
from cogroup cogroup_all
chunk "/nlinks/linedbs53.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs54.%c"
offset 382000 size 382000 ;

create dbslice ldbs70
from cogroup cogroup_all
chunk "/nlinks/linedbs55.%c"
offset 382000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs56.%c"
offset 382000 size 382000 ;

create dbslice ldbs71
```

```
from cogroup cogroup_all
chunk "/nlinks/linedbs29.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs30.%c"
offset 764000 size 382000 ;

create dbslice ldbs72
from cogroup cogroup_all
chunk "/nlinks/linedbs31.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs32.%c"
offset 764000 size 382000 ;

create dbslice ldbs73
from cogroup cogroup_all
chunk "/nlinks/linedbs33.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs34.%c"
offset 764000 size 382000 ;

create dbslice ldbs74
from cogroup cogroup_all
chunk "/nlinks/linedbs35.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs36.%c"
offset 764000 size 382000 ;

create dbslice ldbs75
from cogroup cogroup_all
chunk "/nlinks/linedbs37.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs38.%c"
offset 764000 size 382000 ;

create dbslice ldbs76
from cogroup cogroup_all
chunk "/nlinks/linedbs39.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs40.%c"
offset 764000 size 382000 ;

create dbslice ldbs77
from cogroup cogroup_all
chunk "/nlinks/linedbs41.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs42.%c"
offset 764000 size 382000 ;

create dbslice ldbs78
from cogroup cogroup_all
chunk "/nlinks/linedbs43.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs44.%c"
offset 764000 size 382000 ;

create dbslice ldbs79
from cogroup cogroup_all
chunk "/nlinks/linedbs45.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs46.%c"
offset 764000 size 382000 ;

create dbslice ldbs80
from cogroup cogroup_all
chunk "/nlinks/linedbs47.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs48.%c"
offset 764000 size 382000 ;

create dbslice ldbs81
from cogroup cogroup_all
chunk "/nlinks/linedbs49.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs50.%c"
offset 764000 size 382000 ;

create dbslice ldbs82
from cogroup cogroup_all
chunk "/nlinks/linedbs51.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs52.%c"
offset 764000 size 382000 ;

create dbslice ldbs83
from cogroup cogroup_all
chunk "/nlinks/linedbs53.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs54.%c"
offset 764000 size 382000 ;

create dbslice ldbs84
from cogroup cogroup_all
chunk "/nlinks/linedbs55.%c"
offset 764000 size 382000 ,
cogroup cogroup_all
chunk "/nlinks/linedbs56.%c"
offset 764000 size 382000 ;
```

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odbs

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```
create dbslice odbs1
from cogroup cogroup_all
chunk "/nlinks/orderdbs1.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs2.%c"
offset 0 size 100000 ;

create dbslice odbs2
from cogroup cogroup_all
chunk "/nlinks/orderdbs3.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs4.%c"
offset 0 size 100000 ;

create dbslice odbs3
from cogroup cogroup_all
chunk "/nlinks/orderdbs5.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs6.%c"
offset 0 size 100000 ;

create dbslice odbs4
from cogroup cogroup_all
chunk "/nlinks/orderdbs7.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs8.%c"
offset 0 size 100000 ;

create dbslice odbs5
from cogroup cogroup_all
chunk "/nlinks/orderdbs9.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs10.%c"
offset 0 size 100000 ;

create dbslice odbs6
from cogroup cogroup_all
chunk "/nlinks/orderdbs11.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs12.%c"
offset 0 size 100000 ;

create dbslice odbs7
from cogroup cogroup_all
chunk "/nlinks/orderdbs13.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs14.%c"
offset 0 size 100000 ;

create dbslice odbs8
from cogroup cogroup_all
chunk "/nlinks/orderdbs15.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs16.%c"
offset 0 size 100000 ;

create dbslice odbs9
from cogroup cogroup_all
chunk "/nlinks/orderdbs17.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs18.%c"
offset 0 size 100000 ;

create dbslice odbs10
```

```
from cogroup cogroup_all
chunk "/nlinks/orderdbs19.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs20.%c"
offset 0 size 100000 ;

create dbslice odbs11
from cogroup cogroup_all
chunk "/nlinks/orderdbs21.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs22.%c"
offset 0 size 100000 ;

create dbslice odbs12
from cogroup cogroup_all
chunk "/nlinks/orderdbs23.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs24.%c"
offset 0 size 100000 ;

create dbslice odbs13
from cogroup cogroup_all
chunk "/nlinks/orderdbs25.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs26.%c"
offset 0 size 100000 ;

create dbslice odbs14
from cogroup cogroup_all
chunk "/nlinks/orderdbs27.%c"
offset 0 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs28.%c"
offset 0 size 100000 ;

create dbslice odbs15
from cogroup cogroup_all
chunk "/nlinks/orderdbs1.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs2.%c"
offset 100000 size 100000 ;

create dbslice odbs16
from cogroup cogroup_all
chunk "/nlinks/orderdbs3.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs4.%c"
offset 100000 size 100000 ;

create dbslice odbs17
from cogroup cogroup_all
chunk "/nlinks/orderdbs5.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs6.%c"
offset 100000 size 100000 ;

create dbslice odbs18
from cogroup cogroup_all
chunk "/nlinks/orderdbs7.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs8.%c"
offset 100000 size 100000 ;

create dbslice odbs19
from cogroup cogroup_all
chunk "/nlinks/orderdbs9.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs10.%c"
offset 100000 size 100000 ;

create dbslice odbs20
from cogroup cogroup_all
chunk "/nlinks/orderdbs11.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs12.%c"
offset 100000 size 100000 ;

create dbslice odbs21
from cogroup cogroup_all
chunk "/nlinks/orderdbs13.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs14.%c"
offset 100000 size 100000 ;

create dbslice odbs22
from cogroup cogroup_all
chunk "/nlinks/orderdbs15.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs16.%c"
offset 100000 size 100000 ;

create dbslice odbs23
from cogroup cogroup_all
chunk "/nlinks/orderdbs17.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs18.%c"
offset 100000 size 100000 ;

create dbslice odbs24
from cogroup cogroup_all
chunk "/nlinks/orderdbs19.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs20.%c"
offset 100000 size 100000 ;

create dbslice odbs25
from cogroup cogroup_all
chunk "/nlinks/orderdbs21.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs22.%c"
offset 100000 size 100000 ;

create dbslice odbs26
from cogroup cogroup_all
chunk "/nlinks/orderdbs23.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs24.%c"
offset 100000 size 100000 ;

create dbslice odbs27
from cogroup cogroup_all
chunk "/nlinks/orderdbs25.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs26.%c"
offset 100000 size 100000 ;

create dbslice odbs28
from cogroup cogroup_all
chunk "/nlinks/orderdbs27.%c"
offset 100000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs28.%c"
offset 100000 size 100000 ;

create dbslice odbs29
from cogroup cogroup_all
chunk "/nlinks/orderdbs1.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs2.%c"
offset 200000 size 100000 ;

create dbslice odbs30
from cogroup cogroup_all
chunk "/nlinks/orderdbs3.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs4.%c"
offset 200000 size 100000 ;

create dbslice odbs31
from cogroup cogroup_all
chunk "/nlinks/orderdbs5.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs6.%c"
offset 200000 size 100000 ;

create dbslice odbs32
from cogroup cogroup_all
chunk "/nlinks/orderdbs7.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs8.%c"
offset 200000 size 100000 ;

create dbslice odbs33
from cogroup cogroup_all
chunk "/nlinks/orderdbs9.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs10.%c"
offset 200000 size 100000 ;
```

```
create dbslice odbs34
from cogroup cogroup_all
chunk "/nlinks/orderdbs11.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs12.%c"
offset 200000 size 100000 ;

create dbslice odbs35
from cogroup cogroup_all
chunk "/nlinks/orderdbs13.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs14.%c"
offset 200000 size 100000 ;

create dbslice odbs36
from cogroup cogroup_all
chunk "/nlinks/orderdbs15.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs16.%c"
offset 200000 size 100000 ;

create dbslice odbs37
from cogroup cogroup_all
chunk "/nlinks/orderdbs17.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs18.%c"
offset 200000 size 100000 ;

create dbslice odbs38
from cogroup cogroup_all
chunk "/nlinks/orderdbs19.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs20.%c"
offset 200000 size 100000 ;

create dbslice odbs39
from cogroup cogroup_all
chunk "/nlinks/orderdbs21.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs22.%c"
offset 200000 size 100000 ;

create dbslice odbs40
from cogroup cogroup_all
chunk "/nlinks/orderdbs23.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs24.%c"
offset 200000 size 100000 ;

create dbslice odbs41
from cogroup cogroup_all
chunk "/nlinks/orderdbs25.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs26.%c"
offset 200000 size 100000 ;

create dbslice odbs42
from cogroup cogroup_all
chunk "/nlinks/orderdbs27.%c"
offset 200000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs28.%c"
offset 200000 size 100000 ;

create dbslice odbs43
from cogroup cogroup_all
chunk "/nlinks/orderdbs1.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs2.%c"
offset 300000 size 100000 ;

create dbslice odbs44
from cogroup cogroup_all
chunk "/nlinks/orderdbs3.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs4.%c"
offset 300000 size 100000 ;

create dbslice odbs45
from cogroup cogroup_all
chunk "/nlinks/orderdbs5.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs6.%c"
offset 300000 size 100000 ;

create dbslice odbs46
from cogroup cogroup_all
chunk "/nlinks/orderdbs7.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs8.%c"
offset 300000 size 100000 ;

create dbslice odbs47
from cogroup cogroup_all
chunk "/nlinks/orderdbs9.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs10.%c"
offset 300000 size 100000 ;

create dbslice odbs48
from cogroup cogroup_all
chunk "/nlinks/orderdbs11.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs12.%c"
offset 300000 size 100000 ;

create dbslice odbs49
from cogroup cogroup_all
chunk "/nlinks/orderdbs13.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs14.%c"
offset 300000 size 100000 ;

create dbslice odbs50
from cogroup cogroup_all
chunk "/nlinks/orderdbs15.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs16.%c"
offset 300000 size 100000 ;

create dbslice odbs51
from cogroup cogroup_all
chunk "/nlinks/orderdbs17.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs18.%c"
offset 300000 size 100000 ;

create dbslice odbs52
from cogroup cogroup_all
chunk "/nlinks/orderdbs19.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs20.%c"
offset 300000 size 100000 ;

create dbslice odbs53
from cogroup cogroup_all
chunk "/nlinks/orderdbs21.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs22.%c"
offset 300000 size 100000 ;

create dbslice odbs54
from cogroup cogroup_all
chunk "/nlinks/orderdbs23.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs24.%c"
offset 300000 size 100000 ;

create dbslice odbs55
from cogroup cogroup_all
chunk "/nlinks/orderdbs25.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs26.%c"
offset 300000 size 100000 ;

create dbslice odbs56
from cogroup cogroup_all
chunk "/nlinks/orderdbs27.%c"
offset 300000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs28.%c"
offset 300000 size 100000 ;

create dbslice odbs57
from cogroup cogroup_all
chunk "/nlinks/orderdbs1.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
```

```
chunk "/nlinks/orderdbs2.%c"
offset 400000 size 100000 ;

create dbslice odbs58
from cogroup cogroup_all
chunk "/nlinks/orderdbs3.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs4.%c"
offset 400000 size 100000 ;

create dbslice odbs59
from cogroup cogroup_all
chunk "/nlinks/orderdbs5.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs6.%c"
offset 400000 size 100000 ;

create dbslice odbs60
from cogroup cogroup_all
chunk "/nlinks/orderdbs7.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs8.%c"
offset 400000 size 100000 ;

create dbslice odbs61
from cogroup cogroup_all
chunk "/nlinks/orderdbs9.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs10.%c"
offset 400000 size 100000 ;

create dbslice odbs62
from cogroup cogroup_all
chunk "/nlinks/orderdbs11.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs12.%c"
offset 400000 size 100000 ;

create dbslice odbs63
from cogroup cogroup_all
chunk "/nlinks/orderdbs13.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs14.%c"
offset 400000 size 100000 ;

create dbslice odbs64
from cogroup cogroup_all
chunk "/nlinks/orderdbs15.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs16.%c"
offset 400000 size 100000 ;

create dbslice odbs65
from cogroup cogroup_all
chunk "/nlinks/orderdbs17.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs18.%c"
offset 400000 size 100000 ;

create dbslice odbs66
from cogroup cogroup_all
chunk "/nlinks/orderdbs19.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs20.%c"
offset 400000 size 100000 ;

create dbslice odbs67
from cogroup cogroup_all
chunk "/nlinks/orderdbs21.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs22.%c"
offset 400000 size 100000 ;

create dbslice odbs68
from cogroup cogroup_all
chunk "/nlinks/orderdbs23.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs24.%c"
offset 400000 size 100000 ;

create dbslice odbs69
from cogroup cogroup_all
chunk "/nlinks/orderdbs25.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs26.%c"
offset 400000 size 100000 ;

create dbslice odbs70
from cogroup cogroup_all
chunk "/nlinks/orderdbs27.%c"
offset 400000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs28.%c"
offset 400000 size 100000 ;

create dbslice odbs71
from cogroup cogroup_all
chunk "/nlinks/orderdbs1.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs2.%c"
offset 500000 size 100000 ;

create dbslice odbs72
from cogroup cogroup_all
chunk "/nlinks/orderdbs3.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs4.%c"
offset 500000 size 100000 ;

create dbslice odbs73
from cogroup cogroup_all
chunk "/nlinks/orderdbs5.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs6.%c"
offset 500000 size 100000 ;

create dbslice odbs74
from cogroup cogroup_all
chunk "/nlinks/orderdbs7.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs8.%c"
offset 500000 size 100000 ;

create dbslice odbs75
from cogroup cogroup_all
chunk "/nlinks/orderdbs9.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs10.%c"
offset 500000 size 100000 ;

create dbslice odbs76
from cogroup cogroup_all
chunk "/nlinks/orderdbs11.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs12.%c"
offset 500000 size 100000 ;

create dbslice odbs77
from cogroup cogroup_all
chunk "/nlinks/orderdbs13.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs14.%c"
offset 500000 size 100000 ;

create dbslice odbs78
from cogroup cogroup_all
chunk "/nlinks/orderdbs15.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs16.%c"
offset 500000 size 100000 ;

create dbslice odbs79
from cogroup cogroup_all
chunk "/nlinks/orderdbs17.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs18.%c"
offset 500000 size 100000 ;

create dbslice odbs80
from cogroup cogroup_all
chunk "/nlinks/orderdbs19.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs20.%c"
offset 500000 size 100000 ;

create dbslice odbs81
from cogroup cogroup_all
chunk "/nlinks/orderdbs21.%c"
```

```
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs22.%c"
offset 500000 size 100000 ;

create dbslice odbs82
from cogroup cogroup_all
chunk "/nlinks/orderdbs23.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs24.%c"
offset 500000 size 100000 ;

create dbslice odbs83
from cogroup cogroup_all
chunk "/nlinks/orderdbs25.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs26.%c"
offset 500000 size 100000 ;

create dbslice odbs84
from cogroup cogroup_all
chunk "/nlinks/orderdbs27.%c"
offset 500000 size 100000 ,
cogroup cogroup_all
chunk "/nlinks/orderdbs28.%c"
offset 500000 size 100000 ;
```

==========

psdbs

==========

```
create dbslice psdbs from
cogroup cogroup_all chunk "/nlinks/restdbs1.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs2.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs3.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs4.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs5.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs6.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs7.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs8.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs9.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs10.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs11.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs12.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs13.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs14.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs15.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs16.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs17.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs18.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs19.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs20.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs21.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs22.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs23.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs24.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs25.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs26.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs27.%c" offset 0 size 475000,
cogroup cogroup_all chunk "/nlinks/restdbs28.%c" offset 0 size 475000
;
```

==========

restdbs

==========

```
create dbslice restdbs from
cogroup cogroup_all chunk "/nlinks/restdbs1.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs2.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs3.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs4.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs5.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs6.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs7.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs8.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs9.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs10.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs11.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs12.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs13.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs14.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs15.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs16.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs17.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs18.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs19.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs20.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs21.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs22.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs23.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs24.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs25.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs26.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs27.%c" offset 475000 size
225000,
cogroup cogroup_all chunk "/nlinks/restdbs28.%c" offset 475000 size
225000 ;
```

==========

l1ind

==========

```
create dbslice l1ind from
cogroup cogroup_all chunk "/nlinks/lx1dbs1.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs2.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs3.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs4.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs5.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs6.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs7.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs8.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs9.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs10.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs11.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs12.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs13.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs14.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs15.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs16.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs17.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs18.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs19.%c" offset 0 size 950000 ,
cogroup cogroup_all chunk "/nlinks/lx1dbs20.%c" offset 0 size 950000 ;
```

==========

o1ind

==========

```
create dbslice o1ind from
cogroup cogroup_all chunk "/nlinks/idbs1.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs2.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs3.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs4.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs5.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs6.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs7.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs8.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs9.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs10.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs11.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs12.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs13.%c" offset 990000 size
110000 ,
```

```
cogroup cogroup_all chunk "/nlinks/idbs14.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs15.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs16.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs17.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs18.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs19.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs20.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs21.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs22.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs23.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs24.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs25.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs26.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs27.%c" offset 990000 size
110000 ,
cogroup cogroup_all chunk "/nlinks/idbs28.%c" offset 990000 size
110000 ;
```

restind

```
create dbslice restind1 from
cogroup cogroup_all chunk "/nlinks/idbs1.%c" offset 0 size 990000 ;

create dbslice restind2 from
cogroup cogroup_all chunk "/nlinks/idbs2.%c" offset 0 size 990000 ;

create dbslice restind3 from
cogroup cogroup_all chunk "/nlinks/idbs3.%c" offset 0 size 990000 ;

create dbslice restind4 from
cogroup cogroup_all chunk "/nlinks/idbs4.%c" offset 0 size 990000 ;

create dbslice restind5 from
cogroup cogroup_all chunk "/nlinks/idbs5.%c" offset 0 size 990000 ;

create dbslice restind6 from
cogroup cogroup_all chunk "/nlinks/idbs6.%c" offset 0 size 990000 ;

create dbslice restind7 from
cogroup cogroup_all chunk "/nlinks/idbs7.%c" offset 0 size 990000 ;

create dbslice restind8 from
cogroup cogroup_all chunk "/nlinks/idbs8.%c" offset 0 size 990000 ;

create dbslice restind9 from
cogroup cogroup_all chunk "/nlinks/idbs9.%c" offset 0 size 990000 ;

create dbslice restind10 from
cogroup cogroup_all chunk "/nlinks/idbs10.%c" offset 0 size 990000 ;

create dbslice restind11 from
cogroup cogroup_all chunk "/nlinks/idbs11.%c" offset 0 size 990000 ;

create dbslice restind12 from
cogroup cogroup_all chunk "/nlinks/idbs12.%c" offset 0 size 990000 ;

create dbslice restind13 from
cogroup cogroup_all chunk "/nlinks/idbs13.%c" offset 0 size 990000 ;

create dbslice restind14 from
cogroup cogroup_all chunk "/nlinks/idbs14.%c" offset 0 size 990000 ;

create dbslice restind15 from
cogroup cogroup_all chunk "/nlinks/idbs15.%c" offset 0 size 990000 ;

create dbslice restind16 from
cogroup cogroup_all chunk "/nlinks/idbs16.%c" offset 0 size 990000 ;

create dbslice restind17 from
cogroup cogroup_all chunk "/nlinks/idbs17.%c" offset 0 size 990000 ;

create dbslice restind18 from
cogroup cogroup_all chunk "/nlinks/idbs18.%c" offset 0 size 990000 ;

create dbslice restind19 from
cogroup cogroup_all chunk "/nlinks/idbs19.%c" offset 0 size 990000 ;

create dbslice restind20 from
cogroup cogroup_all chunk "/nlinks/idbs20.%c" offset 0 size 990000 ;

create dbslice restind21 from
cogroup cogroup_all chunk "/nlinks/idbs21.%c" offset 0 size 990000 ;

create dbslice restind22 from
cogroup cogroup_all chunk "/nlinks/idbs22.%c" offset 0 size 990000 ;

create dbslice restind23 from
cogroup cogroup_all chunk "/nlinks/idbs23.%c" offset 0 size 990000 ;

create dbslice restind24 from
cogroup cogroup_all chunk "/nlinks/idbs24.%c" offset 0 size 990000 ;

create dbslice restind25 from
cogroup cogroup_all chunk "/nlinks/idbs25.%c" offset 0 size 990000 ;

create dbslice restind26 from
cogroup cogroup_all chunk "/nlinks/idbs26.%c" offset 0 size 990000 ;

create dbslice restind27 from
cogroup cogroup_all chunk "/nlinks/idbs27.%c" offset 0 size 990000 ;

create dbslice restind28 from
cogroup cogroup_all chunk "/nlinks/idbs28.%c" offset 0 size 990000 ;
```

tdbs

```
create temp dbslice tdbs from
cogroup cogroup_all chunk "/nlinks/tdbs1.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs2.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs3.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs4.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs5.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs6.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs7.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs8.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs9.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs10.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs11.%c" size 2000000,
cogroup cogroup_all chunk "/nlinks/tdbs12.%c" size 2000000;
```

physdbs

```
create dbslice physlice from
cogroup cogroup_all chunk "/nlinks/physdbs1.%c" size 2000000 ;
```

iyxps

```
#!/bin/ksh

#set -x
#
# set number of coservers here
#
if (( $# != 1 )); then
        echo "Usage:  $0 number_of_coservers"
        exit
fi

COSERVERS=$1
STARTUP_TIMEOUT=1200
GREP_ONLINE="On-Line"
GREP_ERRORS="PANIC error fail"

verbose=0
if [ "$1" = "-v" ]
then
verbose=1
fi
#
# Put XPS startup command here
#
xctl -C oninit -yi
fastStart=0
interval=10 # seconds
elapsed=0
servercount=0
serverUp=0
sysmaster=0

while [ $serverUp = 0 -a $elapsed -lt $STARTUP_TIMEOUT ]
do
sleep $interval
elapsed=`expr $elapsed + $interval`
```

```
servercount=`xctl onstat -  | fgrep -c "$GREP_ONLINE"`
if [ $servercount -ge $COSERVERS ]
then
serverUp=1;
fi
if [ $verbose = 1 ]
then
echo $0: $elapsed seconds, \
coserver=$servercount, sysmaster=$sysmaster
fi
done
if [ $serverUp != 1 ]
then
echo $0: server startup failed, check timeout
exit 1
fi

echo Waiting for sysmaster to build
master=0
elapsed=0
MASTER_TIMEOUT=1200
while [ $master = 0 -a $elapsed -lt $MASTER_TIMEOUT ]
do
                    sleep $interval
                    elapsed=`expr $elapsed + $interval`
                    master=`onstat -m | fgrep -c "'sysmaster'
database built successfully"`
                    if [ $master = 1 ]
                    then
                                        master=1;
                    fi
done

echo Sysmaster is built and the database is up

xctl onmode -a 1530000
```

==========

bringup_xps

==========

```
#!/bin/ksh

#set -x
#
# set number of coservers here
#
if (( $# != 1 )); then
        echo "Usage:  $0 number_of_coservers"
        exit
fi

COSERVERS=$1
STARTUP_TIMEOUT=1200
GREP_ONLINE="On-Line"
GREP_ERRORS="PANIC error fail"

verbose=0
if [ "$1" = "-v" ]
then
verbose=1
fi
#
# Put XPS startup command here
#
xctl -b -X= oninit -y -X= &
fastStart=0
interval=10 # seconds
elapsed=0
servercount=0
serverUp=0
sysmaster=0

while [ $serverUp = 0 -a $elapsed -lt $STARTUP_TIMEOUT ]
do
sleep $interval
elapsed=`expr $elapsed + $interval`
servercount=`xctl onstat -  | fgrep -c "$GREP_ONLINE"`
if [ $servercount -ge $COSERVERS ]
then
serverUp=1;
fi
if [ $verbose = 1 ]
then
echo $0: $elapsed seconds, \
coserver=$servercount, sysmaster=$sysmaster
fi
done
if [ $serverUp != 1 ]
then
echo $0: server startup failed, check timeout
exit 1
fi

sleep 20

xctl onmode -a 1130000
sleep 20
```

==========

bringdn_xps

==========

```
#!/bin/ksh

#
# set number of coservers here
#
if (( $# != 1 )); then
        echo "Usage:  $0 number_of_coservers"
        exit
fi

#set -x
COSERVERS=$1
STARTUP_TIMEOUT=1200
GREP_OFFLINE="not initialized"
GREP_ERRORS="PANIC error fail"

verbose=0
if [ "$1" = "-v" ]
then
verbose=1
fi
#
# Put XPS startup command here
#
xctl onmode -yuk
fastStart=0
interval=10 # seconds
elapsed=0
servercount=0
serverDN=0
sysmaster=0

while [ $serverDN = 0 -a $elapsed -lt $STARTUP_TIMEOUT ]
do
sleep $interval
elapsed=`expr $elapsed + $interval`
servercount=`xctl onstat -  | fgrep -c "$GREP_OFFLINE
"`
if [ $servercount -ge $COSERVERS ]
then
serverDN=1;
fi
if [ $verbose = 1 ]
then
echo $0: $elapsed seconds, \
coserver=$servercount, sysmaster=$sysmaster
fi
done
if [ $serverDN != 1 ]
then
echo $0: server shutdown failed, check timeout
exit 1
fi


sleep 20

#xctl onmode -a 1130000
#sleep 20
exit 0
```

Appendix C. Query Text and Query Output

Query Text and Query Output

==========

Query 1

==========

```
-- Start Query 1
begin work;
Started transaction.
```

```
-- using default substitutions
select
                    l_returnflag,
                    l_linestatus,
                    sum(l_quantity) as sum_qty,
                    sum(l_extendedprice) as sum_base_price,
                    sum(l_extendedprice * (1 - l_discount)) as
sum_disc_price,
                    sum(l_extendedprice * (1 - l_discount) * (1 +
l_tax)) as sum_charge,
                    avg(l_quantity) as avg_qty,
                    avg(l_extendedprice) as avg_price,
                    avg(l_discount) as avg_disc,
                    count(*) as count_order
from
                    lineitem
where
                    l_shipdate <= date('1998-12-01') - interval (90)
day (3) to day
group by l_returnflag,l_linestatus
order by l_returnflag,l_linestatus;


l_returnflag    A
l_linestatus    F
sum_qty         3773034.00
sum_base_price  5319329289.68
sum_disc_price  5053976845.7839
sum_charge      5256336547.67559
avg_qty         25.5095025928455
avg_price       35964.0131277086
avg_disc        0.04996403145219
count_order     147907

l_returnflag    N
l_linestatus    F
sum_qty         100245.00
sum_base_price  141459686.10
sum_disc_price  134380852.7691
sum_charge      139710306.872024
avg_qty         25.6250000000000
avg_price       36160.4514570552
avg_disc        0.05008946830265
count_order     3912

l_returnflag    N
l_linestatus    O
sum_qty         7464940.00
sum_base_price  10518546073.98
sum_disc_price  9992072944.4612
sum_charge      10392414192.0634
avg_qty         25.5419452409140
avg_price       35990.1255516625
avg_disc        0.05009676249392
count_order     292262

l_returnflag    R
l_linestatus    F
sum_qty         3779140.00
sum_base_price  5328886172.99
sum_disc_price  5062370635.9343
sum_charge      5265431221.82083
avg_qty         25.5485397512169
avg_price       36025.4608774337
avg_disc        0.05014223904813
count_order     147920

4 row(s) retrieved.


commit work;
Data committed.
```

==========

Query 2

==========

```
-- Start Query 2
begin work;
Started transaction.


-- using default substitutions
select
first 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  9828.21
s_name     Supplier#000000647
n_name     UNITED KINGDOM
p_partkey  13120
p_mfgr     Manufacturer#5
s_address  jB16PyPyB7Bl52jMjSPw3mS
s_phone    33-258-202-4782
s_comment  z1QhSiMj11Bm7COlLwh6Ql0B1R2Mg4CLn
LhiP0wiMzy72hlkP7l5in2y6RS6N130lz
           51nSRL5gOg5S26hPCCQN2L

s_acctbal  9508.37
s_name     Supplier#000000070
n_name     FRANCE
p_partkey  3563
p_mfgr     Manufacturer#1
s_address  M5C616R5h5SlMR3zzmLkSw24j2
s_phone    16-821-608-1166
s_comment  m7z0CPShmBkhlChBAi3LkQ2CLw
mhl6QP362RPS3044CB2y41yhOhjlBin0CL7yhxmhS
           4hBM07kQ1yyjOjz3C

s_acctbal  9508.37
s_name     Supplier#000000070
n_name     FRANCE
p_partkey  17268
p_mfgr     Manufacturer#4
s_address  M5C616R5h5SlMR3zzmLkSw24j2
s_phone    16-821-608-1166
s_comment  m7z0CPShmBkhlChBAi3LkQ2CLw
mhl6QP362RPS3044CB2y41yhOhjlBin0CL7yhxmhS
           4hBM07kQ1yyjOjz3C

s_acctbal  9453.01
s_name     Supplier#000000802
n_name     ROMANIA
p_partkey  10021
p_mfgr     Manufacturer#5
s_address  5yARQNSLNRAlOlBnkNQCik3SOlyClk7nmRhA2h0
s_phone    29-342-882-6463
s_comment  65y3RQ2i0OP6Nz7mS hC
PxwLy7L1jQy6Ol63xO3iBCz52Rm1zm0MziCMLij2n6wky51
           mBOwx Qh52iz QB1545Amxyj

s_acctbal  9453.01
s_name     Supplier#000000802
n_name     ROMANIA
p_partkey  13275
p_mfgr     Manufacturer#4
s_address  5yARQNSLNRAlOlBnkNQCik3SOlyClk7nmRhA2h0
s_phone    29-342-882-6463
s_comment  65y3RQ2i0OP6Nz7mS hC
PxwLy7L1jQy6Ol63xO3iBCz52Rm1zm0MziCMLij2n6wky51
           mBOwx Qh52iz QB1545Amxyj

s_acctbal  9192.10
s_name     Supplier#000000115
n_name     UNITED KINGDOM
p_partkey  13325
p_mfgr     Manufacturer#1
s_address  h0m3lzlSPMw2B0ny7LNyNCkjRRn7iyMlLBLA
s_phone    33-597-248-1220
s_comment  1QzQjhSyx
ixm2lgz2Ry7075RL3MS5z36x56hxmR0wLN0LBxm164LzCMmALzOAjn4kz7
           i4wjOlCONl1C51M7nCMx66SBRAQA

s_acctbal  9032.15
```

```
s_name     Supplier#000000959
n_name     GERMANY
p_partkey  4958
p_mfgr     Manufacturer#4
s_address  205LNCzxMCnQ5gnz4n S3ynP6Mhnw
s_phone    17-108-642-3106
s_comment  Px z7kOx56l7jQz NwBBQhky yM7kLgxRQw5zw6 426Bm55lC6
OkQ7hQPLixjM7y47B
           NP16CRi0kjk354lgxh

s_acctbal  8702.02
s_name     Supplier#000000333
n_name     RUSSIA
p_partkey  11810
p_mfgr     Manufacturer#3
s_address  5iwkgN5n2BN15OmQk2602h0N6NzxPyiPN5lnj
s_phone    32-508-202-6136
s_comment  SgimAjmn3wL7Rlxmh3LCwOPnhjyl 7xxzxAN 4ACx43y65NwQ7P

s_acctbal  8615.50
s_name     Supplier#000000812
n_name     FRANCE
p_partkey  10551
p_mfgr     Manufacturer#2
s_address  h4i2M2O0 ky1g2mlBOmxjzj0hA2h6nkSNhP
s_phone    16-585-724-6633
s_comment  57i0NAyR0RP2jOh54C6B22OlSL

s_acctbal  8615.50
s_name     Supplier#000000812
n_name     FRANCE
p_partkey  13811
p_mfgr     Manufacturer#4
s_address  h4i2M2O0 ky1g2mlBOmxjzj0hA2h6nkSNhP
s_phone    16-585-724-6633
s_comment  57i0NAyR0RP2jOh54C6B22OlSL

s_acctbal  8488.53
s_name     Supplier#000000367
n_name     RUSSIA
p_partkey  6854
p_mfgr     Manufacturer#4
s_address  nkmQ2Qzgh0wA 3x Sn2S7N5gmSOj xwC COSn6
s_phone    32-458-198-9557
s_comment  35C2RROP C  N1gi2N
SxAj0hQkn7kP5z4wSxSwgMxj6k4MRmh0S2Qm7R3z4jB OOQBM
           l

s_acctbal  8430.52
s_name     Supplier#000000646
n_name     FRANCE
p_partkey  11384
p_mfgr     Manufacturer#3
s_address  61SjP6S y B0 32l11
s_phone    16-601-220-5489
s_comment  kiw4NSNBNxy5kywzwyx0PMM21xiMOhxR423Akkm Q7CNwRzQS23Nzz22
mnm6P377Q3M
           j7n 56BLm6lxwllh kSmN

s_acctbal  8271.39
s_name     Supplier#000000146
n_name     RUSSIA
p_partkey  4637
p_mfgr     Manufacturer#5
s_address  wh yPSk6hNBlB4l33iQ0wS0 RhBhQ4zQ3lz
s_phone    32-792-619-3155
s_comment  jjwgwljRO63 n7OM2MP0hg3L1mlwBMLmMlS4Cgyn
LA5PwC2P0AS6g3C5mkOjO72NPig
           731m

s_acctbal  8096.98
s_name     Supplier#000000574
n_name     RUSSIA
p_partkey  323
p_mfgr     Manufacturer#4
s_address  hCOj4Cgx43xx jgP4QkL7gLN65
s_phone    32-866-246-8752
s_comment  OhxNj6SlB56315B3k5SCBzwQyLk76zlj4Ow2Q
BC2wACkxh3S0RCyx6nARzSQR2010k0
           BCPhOg6yQm

s_acctbal  7392.78
s_name     Supplier#000000170
n_name     UNITED KINGDOM
p_partkey  7655
p_mfgr     Manufacturer#2
s_address  PCxjjzNQihLNxgLw0SiMmQ
s_phone    33-803-340-5398
s_comment  M116S1xzg54iC3k7OPLQi3Cimhghz2BClQk g5Ag12QSBlhglANnw4MR
MBS 72A

s_acctbal  7205.20
s_name     Supplier#000000477
n_name     GERMANY
p_partkey  10956
p_mfgr     Manufacturer#5
s_address  Mimj6403h zmAzAgg Bjy05O 2z
s_phone    17-180-144-7991
s_comment  yRlyR SnMxmhPjAmBw S02AxQ6yOhBRlOwzmlxzO0A2Sx075kjlAknn7z2
O0S7hy0Bi
           knwOQm6Pmz3gL4gj2z7

s_acctbal  6820.35
s_name     Supplier#000000007
n_name     UNITED KINGDOM
p_partkey  13217
p_mfgr     Manufacturer#5
s_address  z45m2jBRzl5ilLNz4
s_phone    33-990-965-2201
s_comment  1PhngjmiSQl0RzRACP0l4S70xSL
QPSBM16072SkMLCgm4OOMjARLNQk3g1P3BB32AgB
           Ml462B0CP7Rh24

s_acctbal  6721.70
s_name     Supplier#000000954
n_name     FRANCE
p_partkey  4191
p_mfgr     Manufacturer#3
s_address  OM7xnNxNnkgQ mzh2g3RQmg1g
s_phone    16-537-341-8517
s_comment  5ni3yCkmz5ymx0kCg74zhLA B516Si1w152AkiByx1Nl
NgghAkkmNz1jASj4mxzxznO
           ySg7hAyM3MRRnBj

s_acctbal  6329.90
s_name     Supplier#000000996
n_name     GERMANY
p_partkey  10735
p_mfgr     Manufacturer#2
s_address  k6135gA3zPwNl7L3Rl45mlnACjngOQQBB300iyA
s_phone    17-447-811-3282
s_comment  PBO7wjlQMm1h3AAA 1NQAl0kkijnkRNgQ0 mh1z6QS0gC5lP1
ykmzNR20OlN506ARS0
           z3j

s_acctbal  6173.87
s_name     Supplier#000000408
n_name     RUSSIA
p_partkey  18139
p_mfgr     Manufacturer#1
s_address  Cni6 zR5C4lh104POx5h05 mg53CQ2Sw4SAM2M2x
s_phone    32-858-724-2950
s_comment  10SxMOwhjON3khzQ124gNnyw7B4nL7ml4L5llSR

s_acctbal  5364.99
s_name     Supplier#000000785
n_name     RUSSIA
p_partkey  13784
p_mfgr     Manufacturer#4
s_address  71OnPzQkC2P1hRNRgjyQP4n1
s_phone    32-297-653-2203
s_comment  kiiPQ3ik7R ykAhRx43Rw70L1Ok
7AMi3AjRw7lklwxwyiL6S2O1COyS4QB46m5M167m
           jMwCm0w

s_acctbal  5069.27
s_name     Supplier#000000328
n_name     GERMANY
p_partkey  16327
p_mfgr     Manufacturer#1
s_address  5O4033xSgml
s_phone    17-231-513-5721
s_comment   OMk3ALAPNmj6lBLMAS7M1nCAS
4xLj51iy2klix3nPi26gAxPgANmk6zSi6 3A7m l1
           1BOwiC6xLB4hBRiPM

s_acctbal  4941.88
s_name     Supplier#000000321
n_name     ROMANIA
p_partkey  7320
p_mfgr     Manufacturer#5
s_address  hyLQ mg42S2kAMlj M3BwMSjS
s_phone    29-573-279-1406
s_comment  y2644kMhOkPCm5P5y7Lmz7OR6mgSmBN631RggmC

s_acctbal  4672.25
s_name     Supplier#000000239
n_name     RUSSIA
p_partkey  12238
p_mfgr     Manufacturer#1
s_address  y4ymj7B5BN1nMSkwPPggAl
s_phone    32-396-654-6826
s_comment  Py3RA2gykmSCmj0z3ii7Rxzhz6OyR RxS C3S23LPQ

s_acctbal  4586.49
s_name     Supplier#000000680
n_name     RUSSIA
p_partkey  5679
p_mfgr     Manufacturer#3
s_address  BP1Nlw5nPMxRnOAwm
```

```
s_phone    32-522-382-1620
s_comment  kA0y25RNO1Al im7SyiPzSym3M5OS52l6S576kn0S2k
0mPBLlAzL6Ax7CM6iNi4CgCy
           6Bln7hlhxmlRng

s_acctbal  4518.31
s_name     Supplier#000000149
n_name     FRANCE
p_partkey  18344
p_mfgr     Manufacturer#5
s_address  4B QSy5Bl2
s_phone    16-660-553-2456
s_comment  hijkPhgL1g4L1Q27y0Q42wh0Qz3jPiL4NgkM4NNg1
llQ1yNNBk1C1QnlRO7 4ki

s_acctbal  4315.15
s_name     Supplier#000000509
n_name     FRANCE
p_partkey  18972
p_mfgr     Manufacturer#2
s_address  B5 iPRn7L4yMllgwCnRPMA
s_phone    16-298-154-3365
s_comment  ygiPh7ymP7jBznmR2lQLLgjmi1wik

s_acctbal  3526.53
s_name     Supplier#000000553
n_name     FRANCE
p_partkey  8036
p_mfgr     Manufacturer#4
s_address  ylLOx2gMw 5iBl6AiNL60Q
s_phone    16-599-552-3755
s_comment  L3ggShlRlyxmR4MNl7Rw7OQign6yO

s_acctbal  3526.53
s_name     Supplier#000000553
n_name     FRANCE
p_partkey  17018
p_mfgr     Manufacturer#3
s_address  ylLOx2gMw 5iBl6AiNL60Q
s_phone    16-599-552-3755
s_comment  L3ggShlRlyxmR4MNl7Rw7OQign6yO

s_acctbal  3294.68
s_name     Supplier#000000350
n_name     GERMANY
p_partkey  4841
p_mfgr     Manufacturer#4
s_address  x5kRL2z1BPg0 BO 2hiliOyh 30RRg0OPj
s_phone    17-113-181-4017
s_comment  BjQznni44OmQ7S16yl3zxk2M6nM4M 27yMPML

s_acctbal  2972.26
s_name     Supplier#000000016
n_name     RUSSIA
p_partkey  1015
p_mfgr     Manufacturer#4
s_address  B7wLkSLRjNS MS1C
s_phone    32-822-502-4215
s_comment  C7w6S6QzhAPQmMmNmMN1hA0llQOA 00mlNmC25wyQ461SA
jy03zmRh22MLM00zhmi

s_acctbal  2963.09
s_name     Supplier#000000840
n_name     ROMANIA
p_partkey  3080
p_mfgr     Manufacturer#2
s_address  lynwiQkNh0 CMRRCk4l306M2ij0jykg6QNgSCAzy
s_phone    29-781-337-5584
s_comment  S7NRMx43RmOjxML6hxLyN75LzxBwB0wjSLx3 S3Cwh52S6ilSOLhQm0
6C1 yzx3jPm6
           Sjg 5By0BCPwOR32i1CQgxR0gB43gh

s_acctbal  2221.25
s_name     Supplier#000000771
n_name     ROMANIA
p_partkey  13981
p_mfgr     Manufacturer#2
s_address  LAjCRjl3nAMzzhmw0Sx1Mg
s_phone    29-986-304-9006
s_comment  jhk0N7NlhS23iCngC52BBC
0jilM0wByx0LB5R070R2lCx113lQiS7xNhBRA0xknlNxL
           iA

s_acctbal  1381.97
s_name     Supplier#000000104
n_name     FRANCE
p_partkey  18103
p_mfgr     Manufacturer#3
s_address  i Qnl4 1 jiwM C2yxAylL5R4SBQh54N6
s_phone    16-434-972-6922
s_comment  MwnBw1g71Pig2Am7nz0Mm5SNl7OwQLAkN56ji

s_acctbal  906.07
s_name     Supplier#000000138
n_name     ROMANIA

p_partkey  8363
p_mfgr     Manufacturer#4
s_address  1iBxSxLl1Mh3 6LS6PlLPNlnlMjCQh22z6n5
s_phone    29-533-434-6776
s_comment  nLjQAmCw77R2jRMgz5LSyyx1QN l
4jMMO3RAkxOkzRmwQl3Qm5236k72RRPnim0 Bkz
           QnBMM6A  PMml2n

s_acctbal  765.69
s_name     Supplier#000000799
n_name     RUSSIA
p_partkey  11276
p_mfgr     Manufacturer#2
s_address  Am7yihz47mg NkgQL w By4
s_phone    32-579-339-1495
s_comment  MMRPNQ 4166mQQPNniAiiL0PQ2C4yyBRn1nRlxnxkj5Ak45Pw
mQk1ROhz66BRQiiL g
           PRQRy 56MyQ nS1N14R 7Ml6xhl2lOS3

s_acctbal  727.89
s_name     Supplier#000000470
n_name     ROMANIA
p_partkey  6213
p_mfgr     Manufacturer#3
s_address  gAySBM2N7 PgwP5kiP4n7BzOik0M
s_phone    29-165-289-1523
s_comment  zCkPgn 6wN5A3R47gljlQ3hNSLShP2RALxCiinkOy4wCwA1LCiBO5yiSC
yBAA lii
```

==========

Query 3

==========

```
-- Start Query 3
begin work;
Started transaction.


-- using default substitutions
select
first 10
                    l_orderkey,
                    sum(l_extendedprice * (1 - l_discount)) as
revenue,
                    o_orderdate,
                    o_shippriority
from
                    customer, order, lineitem
where
                    c_mktsegment = 'BUILDING' and
                    c_custkey = o_custkey and
                    l_orderkey = o_orderkey and
                    o_orderdate < date('1995-03-15') and
                    l_shipdate > date('1995-03-15')
group by l_orderkey,o_orderdate,o_shippriority
order by revenue desc,o_orderdate;

    l_orderkey          revenue o_orderdate o_shippriority

        260930      320547.2525 1995-03-12              0
        402497      298879.5320 1995-02-12              0
        457859      296490.6754 1995-01-17              0
        509889      294068.8736 1995-02-03              0
         58117      292632.8325 1995-02-21              0
        538311      279665.9960 1995-03-07              0
        588421      275477.1172 1995-03-03              0
        416167      273765.4530 1995-02-22              0
         97830      273227.0610 1995-03-04              0
         90276      272233.9174 1995-03-04              0

10 row(s) retrieved.


commit work;
Data committed.
```

==========

Query 4

==========

```
-- Start Query 4
begin work;
Started transaction.


-- using default substitutions
select
                    o_orderpriority,
                    count(*) as order_count
```

```
from
                    order
where
                    o_orderdate >= date('1993-07-01') and
                    o_orderdate < date('1993-07-01') + interval (3)
month to month 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                    999
2-HIGH                     1002
3-MEDIUM                   1021
4-NOT SPECIFIED             997
5-LOW                      1089

5 row(s) retrieved.


commit work;
Data committed.
```

Query 5

```
-- Start Query 5
begin work;
Started transaction.


-- using default substitutions
select
                    n_name,
                    sum(l_extendedprice * ( 1 - l_discount)) as
revenue
from
                    customer, order, lineitem, supplier, nation,
region
where
                    c_custkey = o_custkey and
                    o_orderkey = l_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 >= date('1994-01-01') and
                    o_orderdate < date('1994-01-01') + interval (1)
year to year
group by n_name
order by revenue desc;

n_name                              revenue

CHINA                         7349391.4710
INDONESIA                     6485853.4033
INDIA                         5505346.8197
JAPAN                         5388883.5941
VIETNAM                       4728846.6018

5 row(s) retrieved.


commit work;
Data committed.
```

Query 6

```
-- Start Query 6
begin work;
Started transaction.


-- using default substitutions
select
                    sum(l_extendedprice * l_discount) as revenue
from
                    lineitem
where
                    l_shipdate >= date('1994-01-01') and
                    l_shipdate < date('1994-01-01') + interval (1)
year to year and
                    l_discount between .06 - 0.01 and .06 + 0.01 and
                    l_quantity <  24;

         revenue

    11450588.0434

1 row(s) retrieved.


commit work;
Data committed.
```

Query 7

```
-- Start Query 7
begin work;
Started transaction.


-- using default substitutions
select
                    n1.n_name as supp_nation,
                    n2.n_name as cust_nation,
                    year(l_shipdate) as year,
                    sum(l_extendedprice * (1 - l_discount)) as revenue
from
                    supplier, lineitem, order, 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 date('1995-01-01') and date('1996-12-31')
group by n1.n_name,n2.n_name,3
order by n1.n_name,n2.n_name,3;

supp_nation               cust_nation                year
revenue

FRANCE                    GERMANY                    1995
4611421.4400
FRANCE                    GERMANY                    1996
4828420.3721
GERMANY                   FRANCE                     1995
6755766.8409
GERMANY                   FRANCE                     1996
5810951.3958

4 row(s) retrieved.


commit work;
Data committed.
```

Query 8

```
-- Start Query 8
begin work;
Started transaction.


-- using default substitutions
select
                    year(o_orderdate) as year,
                    round(sum(case when n2.n_name= 'BRAZIL'
                                        then (l_extendedprice * (1 -
l_discount))
```

```
                                    else 0
           end)/sum(l_extendedprice * (1 - l_discount)),2) as
mkt_share
from
                    part, supplier, lineitem, order, 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 date('1995-01-01') and
                    date('1996-12-31') and
                    p_type = 'ECONOMY ANODIZED STEEL'
group by 1
order by 1;

  year        mkt_share

  1995             0.05
  1996             0.09

2 row(s) retrieved.


commit work;
Data committed.
```

Query 9

```
-- Start Query 9
begin work;
Started transaction.


-- using default substitutions
select
                    n_name as nation,
                    year(o_orderdate) as year,
                    sum(l_extendedprice *
       (1 - l_discount) - ps_supplycost * l_quantity) as sum_profit
from
                    part, supplier, lineitem, partsupp, order, 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%'
group by n_name,2
order by n_name,2 desc;
```

nation	year	sum_profit
ALGERIA	1998	1946316.0053
ALGERIA	1997	2973825.6921
ALGERIA	1996	3308881.5165
ALGERIA	1995	3092227.2988
ALGERIA	1994	3406958.7104
ALGERIA	1993	3140744.0263
ALGERIA	1992	3330704.4066
ARGENTINA	1998	3045410.0081
ARGENTINA	1997	4255378.5927
ARGENTINA	1996	4651751.9367
ARGENTINA	1995	4897797.0030
ARGENTINA	1994	4823465.7691
ARGENTINA	1993	4499810.7131
ARGENTINA	1992	4764593.3861
BRAZIL	1998	2932051.3632
BRAZIL	1997	3784531.3499
BRAZIL	1996	3965665.6899
BRAZIL	1995	4063060.8607
BRAZIL	1994	4236277.3501
BRAZIL	1993	4363461.3131
BRAZIL	1992	4684749.2328
CANADA	1998	2217064.0383
CANADA	1997	2950110.6103
CANADA	1996	3184049.9686
CANADA	1995	3962540.1948
CANADA	1994	3365251.0225
CANADA	1993	3617013.3667
CANADA	1992	3407955.2491
CHINA	1998	3048192.0230
CHINA	1997	5001207.6910
CHINA	1996	4800958.3133
CHINA	1995	5154927.7284
CHINA	1994	5882634.5341
CHINA	1993	4733364.8206
CHINA	1992	5014704.0793
EGYPT	1998	1892538.7444
EGYPT	1997	3849220.0749
EGYPT	1996	3418656.5535
EGYPT	1995	3766170.6034
EGYPT	1994	3520025.5593
EGYPT	1993	4375424.7450
EGYPT	1992	4586034.3943
ETHIOPIA	1998	1860117.7283
ETHIOPIA	1997	3705722.3335
ETHIOPIA	1996	3577215.3925
ETHIOPIA	1995	3425219.5519
ETHIOPIA	1994	3428616.1848
ETHIOPIA	1993	3459815.4314
ETHIOPIA	1992	3280072.9080
FRANCE	1998	1592531.5484
FRANCE	1997	2746176.5385
FRANCE	1996	2505844.8797
FRANCE	1995	2902077.0045
FRANCE	1994	2532229.5603
FRANCE	1993	2305725.4424
FRANCE	1992	2955126.6886
GERMANY	1998	3538625.7338
GERMANY	1997	4425943.3995
GERMANY	1996	4266344.9555
GERMANY	1995	3952963.5162
GERMANY	1994	4462655.7983
GERMANY	1993	4435094.6575
GERMANY	1992	4521715.4116
INDIA	1998	3378369.3369
INDIA	1997	4186477.8481
INDIA	1996	5074383.9250
INDIA	1995	4487435.3793
INDIA	1994	4718312.6259
INDIA	1993	4499573.8099
INDIA	1992	4712930.3331
INDONESIA	1998	2902077.1015
INDONESIA	1997	4973644.2283
INDONESIA	1996	4977652.4887
INDONESIA	1995	5359380.1510
INDONESIA	1994	4854637.1996
INDONESIA	1993	4213131.4235
INDONESIA	1992	4999478.5062
IRAN	1998	2415763.1012
IRAN	1997	4227175.1094
IRAN	1996	4527365.0271
IRAN	1995	4139514.7174
IRAN	1994	4166316.3907
IRAN	1993	3366959.5882
IRAN	1992	3599399.7018
IRAQ	1998	2596922.6334
IRAQ	1997	3707054.1118
IRAQ	1996	3726138.3835
IRAQ	1995	4350503.8921
IRAQ	1994	4131512.7911
IRAQ	1993	3787196.4208
IRAQ	1992	4043738.1336
JAPAN	1998	2265666.9424
JAPAN	1997	3988819.2811
JAPAN	1996	4319004.5339
JAPAN	1995	4262698.6369
JAPAN	1994	3545212.6196
JAPAN	1993	4051565.9746
JAPAN	1992	3692137.4454
JORDAN	1998	1978591.7418
JORDAN	1997	3315454.2870
JORDAN	1996	3236531.9798
JORDAN	1995	2778207.9861
JORDAN	1994	2420301.0715
JORDAN	1993	3272130.9349
JORDAN	1992	2649126.0864
KENYA	1998	2265677.7268
KENYA	1997	3493019.3230
KENYA	1996	3346373.2964
KENYA	1995	3537360.3249
KENYA	1994	2800950.7159
KENYA	1993	3477468.3019
KENYA	1992	2719618.0405
MOROCCO	1998	2549499.9295
MOROCCO	1997	3891824.8983
MOROCCO	1996	3730777.7351
MOROCCO	1995	3469641.1344
MOROCCO	1994	3747593.2076
MOROCCO	1993	3620742.6983
MOROCCO	1992	4303609.2486
MOZAMBIQUE	1998	2024719.4607
MOZAMBIQUE	1997	3706003.0867
MOZAMBIQUE	1996	3376430.9303
MOZAMBIQUE	1995	2737631.6427
MOZAMBIQUE	1994	3373146.4811

```
MOZAMBIQUE                1993     3608300.3738
MOZAMBIQUE                1992     3551263.9502
PERU                      1998     2142791.9724
PERU                      1997     4664076.1540
PERU                      1996     3623628.9338
PERU                      1995     3908939.7912
PERU                      1994     3386204.1565
PERU                      1993     3877048.4889
PERU                      1992     3768394.2488
ROMANIA                   1998     1760625.7030
ROMANIA                   1997     2707685.3292
ROMANIA                   1996     2553345.4786
ROMANIA                   1995     2715901.5896
ROMANIA                   1994     3023644.0564
ROMANIA                   1993     2873247.3205
ROMANIA                   1992     2728060.7073
RUSSIA                    1998     2975973.2167
RUSSIA                    1997     3785806.4681
RUSSIA                    1996     4217625.5866
RUSSIA                    1995     3883445.5153
RUSSIA                    1994     4395855.0063
RUSSIA                    1993     3900944.1769
RUSSIA                    1992     4691358.6091
SAUDI ARABIA              1998     2931482.8334
SAUDI ARABIA              1997     5498943.1556
SAUDI ARABIA              1996     4473723.7384
SAUDI ARABIA              1995     5939212.9339
SAUDI ARABIA              1994     4527695.7092
SAUDI ARABIA              1993     4928702.0169
SAUDI ARABIA              1992     5527261.5215
UNITED KINGDOM            1998     3198731.3729
UNITED KINGDOM            1997     4363882.7444
UNITED KINGDOM            1996     4730956.6742
UNITED KINGDOM            1995     4842014.5464
UNITED KINGDOM            1994     4912706.5567
UNITED KINGDOM            1993     4415255.9632
UNITED KINGDOM            1992     4375524.2303
UNITED STATES             1998     1892045.1604
UNITED STATES             1997     3102027.8595
UNITED STATES             1996     3334320.2579
UNITED STATES             1995     3168244.6043
UNITED STATES             1994     3296960.1009
UNITED STATES             1993     3558109.0546
UNITED STATES             1992     2755129.3878
VIETNAM                   1998     2906627.0252
VIETNAM                   1997     4544560.4478
VIETNAM                   1996     4314258.9990
VIETNAM                   1995     4365340.8614
VIETNAM                   1994     3686987.7125
VIETNAM                   1993     3764237.1787
VIETNAM                   1992     3420922.0038

175 row(s) retrieved.


commit work;
Data committed.




Database closed.
```

==========

Query 10

==========

```
--- Start Query 10
begin work;
Started transaction.


-- using default substitutions
select
first 20
                    c_custkey,
                    c_name,
                    sum(l_extendedprice * (1 - l_discount)) as
revenue,
                    c_acctbal,
                    n_name,
                    c_address,
                    c_phone,
                    c_comment
from
                    customer, order, lineitem, nation
where
                    c_custkey = o_custkey and
                    l_orderkey = o_orderkey and
                    o_orderdate >= date('1993-10-01') and
                    o_orderdate < date('1993-10-01') + interval (3)
month to month 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  9722
c_name     Customer#000009722
revenue    464618.2584
c_acctbal  474.04
n_name     CANADA
c_address  l Mwzn4NAk6j
c_phone    13-518-602-8070
c_comment  5L 50Oy RSgBAzPxmOSi5wk6xxOR7kh2nnPlgy7LBng2hOw5B01
RmCM120L24Pkg7PS
           1zwC11BCnz4L6i15PkixP26l66

c_custkey  12800
c_name     Customer#000012800
revenue    444265.6422
c_acctbal  1900.84
n_name     PERU
c_address  57zjB3CQx4P4OB2R2MBi2mwhSllM4mn 4 nC6
c_phone    27-142-205-3552
c_comment  0hwglS77RB56Rx436lQ0N16CxhOPnmyhgwz
5z64wnj1kiC4jL350mM41y71hNxBllPj
           yA4hiN1wzjjM7SCxAN244mk2A

c_custkey  1025
c_name     Customer#000001025
revenue    442028.0224
c_acctbal  3363.46
n_name     INDIA
c_address  lkiSn154M5ROi
c_phone    18-588-456-4616
c_comment  0Bl45z233Rniw0OO064nPBgP16kimO0y74iLh73g1N4 m310 jQ
yQzPA50iC 3MA75g
           2Bj162Nw4P

c_custkey  13028
c_name     Customer#000013028
revenue    441692.2402
c_acctbal  -452.66
n_name     UNITED KINGDOM
c_address  yP714ORSNgNN2LA3L5B
c_phone    33-253-660-2127
c_comment  xPkmnhL2BkhkNyww4khlxwwAymN h11PSjBCNMi50LkyOhO6CC
5nzOQCALzliOk2R66
           w l05hRPO3iSP

c_custkey  3694
c_name     Customer#000003694
revenue    438180.0696
c_acctbal  2960.44
n_name     UNITED KINGDOM
c_address  2CCklmCBOCC
c_phone    33-421-331-3127
c_comment  MzLxQxLlLx3MPxlAwg1B5kg61zxkPnk xiAm6PhMMAAQ2nzN3S6zzgP
x70w0lhhPx4Q
           RzlMMy0204lAl3mBO7jh2jAP0N60wg367z

c_custkey  976
c_name     Customer#000000976
revenue    435897.6317
c_acctbal  7772.85
n_name     ROMANIA
c_address   QzR 56Px1kgS  wANnAz02RS 30n Pm
c_phone    29-436-660-4732
c_comment  kzn32776 gwzkMzzzO4yxOAnkR7hR4R4x2SMwilz3x6h nN7OnNLRMml3
kz5SLwilyk
           lOxiwS4g0wmA5A 4hmgBSwRRiQ1

c_custkey  8206
c_name     Customer#000008206
revenue    429905.1096
c_acctbal  6046.36
n_name     ARGENTINA
c_address  P yMg30BBBBx NMgC03AmzN2
c_phone    11-571-859-1370
c_comment  hLi122RMPmLC36Oy0kxO71zz2wCR0QQCl7z26hlQ3mM

c_custkey  13532
c_name     Customer#000013532
revenue    427731.8043
c_acctbal  -924.18
n_name     KENYA
c_address  6ij7M5PBMx2kwwyz62Oj4SL5S0mRCwl3m1Rmw
c_phone    24-525-332-7244
c_comment  7ih7yRz214zO67AiNPx64nO5l5k yj6i3jLA5PCL15Q4QlA3ll60iM1P
iBxCixg6 1h
           Ch2RCnjOzk5R OnO 1OhhC3m4631m5

c_custkey  12745
c_name     Customer#000012745
revenue    422327.6927
```

```
c_acctbal  9691.33
n_name     CHINA
c_address  SgS1LMC4gB2NM3wh
c_phone    28-985-189-6174
c_comment  jl72wjSw0 S6 7L4Cgxw PkyO5Nl2LL7LBR

c_custkey  2344
c_name     Customer#000002344
revenue    411240.1086
c_acctbal  5597.22
n_name     MOROCCO
c_address  O3PC7ikBgw OAzPAlm2P 426zm3BnBN6Q1O 6N
c_phone    25-593-745-7663
c_comment  5NBn0wRNngLw2z5kyn1AhL0ASyg6SMhM
i2kMOyxARAnlO0Q5j4CBNARix7ABlMAC

c_custkey  2656
c_name     Customer#000002656
revenue    401185.9523
c_acctbal  8115.55
n_name     ALGERIA
c_address  On55lAS3Rm5RxS m
c_phone    10-667-469-8092
c_comment  46ABx4jgni mlBMPCLxRhyPQM4RNS 5yO1L7zSOmk MhPxAxQQ6lQnLj
17LymOhi4l5
           innzOyB2Olxzmw3gmx0SxiyBN5CSMNgCkLCkMgO

c_custkey  59
c_name     Customer#000000059
revenue    400759.1501
c_acctbal  3458.60
n_name     ARGENTINA
c_address  wP6CMyClly0lS4CAM1mzm
c_phone    11-355-584-3112
c_comment  l1g7xBCxxC7SM 5AkmnmAk00677O1MzA2R7A0Cx0Njixj56jL2iN
PNkSNQiy55m6ki3
           OgnhM47mSR7B

c_custkey  7069
c_name     Customer#000007069
revenue    396217.5195
c_acctbal  8198.94
n_name     INDONESIA
c_address  55Cw7ChL4Bi5ONn2A4m2i2n4nSNQQMjml
c_phone    19-644-744-1798
c_comment  6jNS624175zlxNli4lxO5zyPykPS1xnilS0NhkgOAkSx7P

c_custkey  6553
c_name     Customer#000006553
revenue    385863.5946
c_acctbal  8985.90
n_name     MOZAMBIQUE
c_address  R3LnnxONBjCLC0MRkxy7
c_phone    26-166-724-4677
c_comment  S7CkNLwA3kh006j7llwAlC25Bw6AMQ6i 6C0OSS6O7ARNNny60Ogh
3642mRxyiAgy5
           yk 3nPO4473wkNg5R6gzO4lz3zmM2m7MiLAilCC

c_custkey  3095
c_name     Customer#000003095
revenue    384246.1083
c_acctbal  8829.21
n_name     IRAQ
c_address  S1gMCnBLwzi mCgB664 jl00Ll1Snh1iPMgCgR5
c_phone    21-847-218-8188
c_comment  3LSx7PxS A4A5Cl3gAy3mg4Qj2xQlyx7xM1kA664AM7zmMmzORh3C1h
MO3nw6Mymilj
           AMg65hOMB4Sn44kO w0lin7

c_custkey  3391
c_name     Customer#000003391
revenue    382541.7762
c_acctbal  7742.35
n_name     CANADA
c_address  m3 CORmQNLzkShymLS iMkCimRSl20 NB
c_phone    13-592-494-2668
c_comment  ynMlmhMBA5ikC1nCghlmAhQ0 675S3y2R33yjkNPQOS

c_custkey  13678
c_name     Customer#000013678
revenue    376280.5564
c_acctbal  9030.40
n_name     MOROCCO
c_address  BMk77lQm1lwNA0LghAkg3hCwNl4
c_phone    25-306-951-3937
c_comment  mOS55RASx1wP136nQ5xBLznLhgw1kQ6PO6imNxQ7kR0x71P0SzByMzh

c_custkey  6062
c_name     Customer#000006062
revenue    374512.6544
c_acctbal  1370.35
n_name     CANADA
c_address  n5zzil60zyxAlkzx7x1nihigPzR OBkR znMOMh
c_phone    13-756-700-4918
c_comment  4zAm4wNB
li4QRPgPz2wM541x043hmLj4O3LBkALCP16hj2RQBO1OMNly7ww1QP7w5i
           SSn0jNhAR yQmmz1hi5j3

c_custkey  554
c_name     Customer#000000554
revenue    373004.4702
c_acctbal  8395.57
n_name     BRAZIL
c_address  jC5zhQky4zQB27lB5Sm AQhQ  Px0
c_phone    12-938-503-7317
c_comment  0nxCl3 xSmiLQO 1M
2n0NCiRlnMMxP25j26x2igLhNOxjgMgmwwy7OkjzCACOg0z2LA
           jOm0RPRmOPiCAAQwLlQSg 1yS3 gLCM1M2BzjnSjPl3nwAkk

c_custkey  13126
c_name     Customer#000013126
revenue    371722.0011
c_acctbal  6172.91
n_name     INDIA
c_address   xPAS4MnPh40i5Q2h4NQ61zz4RkyAwANA
c_phone    18-288-190-4145
c_comment  nniMkAN6C0ClQ0mMmPz27liz4hk6L
2MlwPxh42N1l0R2hRwxxzlwMkxO4MAyz7RCj43
           NxLwQ3m6P27yAj

20 row(s) retrieved.


commit work;
Data committed.
```

Query 11

```
-- Start Query 11
begin work;
Started transaction.


-- using default substitutions
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) *
0.0010000000
                    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

      12098      16227681.21
       5134      15709338.52
      13334      15023662.41
      17052      14351644.20
       3452      14070870.14
      12552      13332469.18
       1084      13170428.29
       5797      13038622.72
      12633      12892561.61
        403      12856217.34
       1833      12024581.72
       2084      11502875.36
      17349      11354213.05
      18427      11282385.24
       2860      11262529.95
      17852      10934711.93
       9871      10889253.68
      12231      10841131.39
       6366      10759786.81
      12146      10257362.66
       5043      10226395.88
      12969      10125777.93

22 row(s) retrieved.


commit work;
```

```
Data committed.
```

Query 12

```
-- Start Query 12
begin work;
Started transaction.


-- using default substitutions
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
                    order, 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 >= date('1994-01-01') and
                    l_receiptdate < date('1994-01-01') + interval (1)
year to year
group by l_shipmode
order by l_shipmode;

l_shipmode  high_line_count   low_line_count

MAIL                    654              950
SHIP                    684             1004

2 row(s) retrieved.


commit work;
Data committed.
```

Query 13

```
-- Start Query 13
begin work;
Started transaction.


-- using default substitutions
select
                    year(o_orderdate) as year,
                    sum(l_extendedprice * (1 - l_discount)) as revenue
from
                    lineitem, order
where
                    o_orderkey = l_orderkey and
                    o_clerk = 'Clerk#000000088' and
                    l_returnflag = 'R'
group by 1
order by 1;

  year          revenue

  1992     1262855.7306
  1993      964121.0328
  1994     1750395.2936
  1995      198820.2992

4 row(s) retrieved.


commit work;
Data committed.
```

Query 14

```
-- Start Query 14
begin work;
Started transaction.


-- using default substitutions
select
      100.00 * sum(case when p_type like 'PROMO%'
                    then l_extendedprice*(1-l_discount)
                    else 0
                    end) / sum(l_extendedprice*(1-l_discount)) as
promo_revenue
from
                    lineitem, part
where
                    l_partkey = p_partkey and
                    l_shipdate >= date('1995-09-01') and
                    l_shipdate < date('1995-09-01') + interval (1)
month to month;

   promo_revenue

16.7294166482723

1 row(s) retrieved.


commit work;
Data committed.
```

Query 15b

```
-- Start Query 15b
begin work;
Started transaction.


-- using default substitutions
create table revenue0
(supplier_no integer,
total_revenue decimal(14,3)
) in llind ;
Table created.



insert into revenue0
select
                    l_suppkey,
                    sum(l_extendedprice * (1 - l_discount))
from
                    lineitem
where
                    l_shipdate >= date('1996-01-01') and
                    l_shipdate < date('1996-01-01') + interval (3)
month to month
group by l_suppkey;
1000 row(s) inserted.



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;
```

```
s_suppkey      389
s_name         Supplier#000000389
s_address      PB1Lx0xx6LMz3h7Rx63m6j3QmMx
s_phone        34-885-883-5717
total_revenue  1418538.214

1 row(s) retrieved.


drop table revenue0;
Table dropped.


commit work;
Data committed.
```

==========

Query 16

==========

```
-- Start Query 16
begin work;
Started transaction.


-- using default substitutions
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 '%Better
Business Bureau%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#14	SMALL ANODIZED NICKEL	45	12
Brand#22	SMALL BURNISHED BRASS	19	12
Brand#25	PROMO POLISHED COPPER	14	12
Brand#35	LARGE ANODIZED STEEL	45	12
Brand#35	PROMO BRUSHED COPPER	9	12
Brand#51	ECONOMY ANODIZED STEEL	9	12
Brand#53	LARGE BRUSHED NICKEL	45	12
Brand#11	ECONOMY POLISHED COPPER	14	8
Brand#11	LARGE PLATED STEEL	23	8
Brand#11	PROMO POLISHED STEEL	23	8
Brand#11	STANDARD ANODIZED COPPER	9	8
Brand#12	ECONOMY BURNISHED BRASS	9	8
Brand#12	LARGE ANODIZED BRASS	14	8
Brand#12	SMALL ANODIZED TIN	23	8
Brand#12	SMALL BRUSHED NICKEL	23	8
Brand#12	STANDARD ANODIZED BRASS	3	8
Brand#12	STANDARD BURNISHED TIN	23	8
Brand#13	ECONOMY POLISHED BRASS	9	8
Brand#13	LARGE BURNISHED COPPER	45	8
Brand#13	MEDIUM ANODIZED STEEL	23	8
Brand#13	MEDIUM PLATED NICKEL	3	8
Brand#13	PROMO BURNISHED BRASS	9	8
Brand#13	PROMO POLISHED BRASS	3	8
Brand#13	PROMO POLISHED TIN	36	8
Brand#13	SMALL BURNISHED STEEL	23	8
Brand#13	STANDARD BRUSHED STEEL	9	8
Brand#14	ECONOMY BRUSHED TIN	3	8
Brand#14	ECONOMY BURNISHED TIN	23	8
Brand#14	PROMO BRUSHED STEEL	9	8
Brand#14	PROMO PLATED TIN	45	8
Brand#15	ECONOMY PLATED TIN	9	8
Brand#15	STANDARD BRUSHED COPPER	14	8
Brand#15	STANDARD PLATED TIN	3	8
Brand#21	ECONOMY POLISHED TIN	3	8
Brand#21	PROMO POLISHED COPPER	9	8
Brand#21	PROMO POLISHED TIN	49	8
Brand#21	STANDARD PLATED BRASS	49	8
Brand#21	STANDARD PLATED NICKEL	49	8
Brand#22	ECONOMY ANODIZED TIN	49	8
Brand#22	ECONOMY BRUSHED BRASS	14	8
Brand#22	LARGE BURNISHED TIN	36	8
Brand#22	MEDIUM ANODIZED STEEL	36	8
Brand#22	MEDIUM PLATED STEEL	9	8
Brand#22	PROMO POLISHED NICKEL	9	8
Brand#22	SMALL ANODIZED STEEL	19	8
Brand#22	STANDARD ANODIZED COPPER	23	8
Brand#23	ECONOMY BRUSHED NICKEL	23	8
Brand#23	LARGE ANODIZED BRASS	9	8
Brand#23	LARGE ANODIZED STEEL	23	8
Brand#23	SMALL BRUSHED COPPER	23	8
Brand#23	STANDARD BRUSHED TIN	3	8
Brand#23	STANDARD BURNISHED NICKEL	49	8
Brand#23	STANDARD PLATED NICKEL	36	8
Brand#24	ECONOMY ANODIZED BRASS	19	8
Brand#24	ECONOMY POLISHED BRASS	36	8
Brand#24	LARGE BURNISHED STEEL	14	8
Brand#24	MEDIUM PLATED NICKEL	36	8
Brand#25	ECONOMY BRUSHED STEEL	49	8
Brand#25	MEDIUM BURNISHED TIN	3	8
Brand#25	PROMO ANODIZED TIN	36	8
Brand#25	PROMO PLATED NICKEL	3	8
Brand#25	SMALL BURNISHED BRASS	3	8
Brand#31	LARGE ANODIZED BRASS	3	8
Brand#31	SMALL ANODIZED COPPER	3	8
Brand#31	SMALL ANODIZED NICKEL	9	8
Brand#31	SMALL ANODIZED STEEL	14	8
Brand#32	MEDIUM ANODIZED STEEL	49	8
Brand#32	MEDIUM BURNISHED COPPER	19	8
Brand#32	SMALL BURNISHED STEEL	23	8
Brand#32	STANDARD BURNISHED STEEL	45	8
Brand#34	ECONOMY ANODIZED NICKEL	49	8
Brand#34	LARGE BURNISHED TIN	49	8
Brand#34	PROMO ANODIZED TIN	3	8
Brand#34	SMALL BRUSHED TIN	3	8
Brand#34	STANDARD BURNISHED TIN	23	8
Brand#35	MEDIUM BRUSHED STEEL	45	8
Brand#35	PROMO BURNISHED STEEL	14	8
Brand#35	SMALL BURNISHED STEEL	23	8
Brand#35	SMALL POLISHED COPPER	14	8
Brand#35	STANDARD PLATED COPPER	9	8
Brand#41	ECONOMY BRUSHED BRASS	23	8
Brand#41	LARGE BURNISHED STEEL	23	8
Brand#41	PROMO BURNISHED TIN	14	8
Brand#41	PROMO PLATED STEEL	36	8
Brand#41	PROMO POLISHED TIN	19	8
Brand#41	SMALL BURNISHED COPPER	23	8
Brand#42	LARGE POLISHED TIN	14	8
Brand#42	MEDIUM ANODIZED TIN	49	8
Brand#42	MEDIUM BRUSHED TIN	14	8
Brand#42	MEDIUM BURNISHED NICKEL	23	8
Brand#42	MEDIUM PLATED COPPER	45	8
Brand#42	MEDIUM PLATED TIN	45	8
Brand#42	SMALL PLATED COPPER	36	8
Brand#43	ECONOMY BRUSHED STEEL	45	8
Brand#43	LARGE BRUSHED COPPER	19	8
Brand#43	PROMO BRUSHED BRASS	36	8
Brand#43	SMALL BURNISHED TIN	45	8
Brand#43	SMALL PLATED COPPER	45	8
Brand#44	PROMO POLISHED TIN	23	8
Brand#44	SMALL POLISHED NICKEL	14	8
Brand#44	SMALL POLISHED TIN	45	8
Brand#44	STANDARD BURNISHED COPPER	3	8
Brand#51	LARGE ANODIZED BRASS	19	8
Brand#51	LARGE POLISHED COPPER	23	8
Brand#51	MEDIUM ANODIZED TIN	9	8
Brand#51	MEDIUM ANODIZED TIN	14	8
Brand#51	MEDIUM BURNISHED NICKEL	23	8
Brand#51	SMALL ANODIZED COPPER	45	8
Brand#51	SMALL ANODIZED COPPER	49	8
Brand#51	SMALL BRUSHED COPPER	45	8
Brand#51	SMALL BRUSHED TIN	36	8
Brand#51	STANDARD POLISHED TIN	3	8
Brand#52	ECONOMY ANODIZED STEEL	3	8
Brand#52	ECONOMY PLATED TIN	19	8
Brand#52	LARGE PLATED TIN	3	8
Brand#52	MEDIUM ANODIZED TIN	19	8
Brand#52	MEDIUM BURNISHED COPPER	3	8
Brand#52	PROMO POLISHED BRASS	23	8
Brand#52	SMALL PLATED COPPER	36	8
Brand#52	SMALL POLISHED NICKEL	9	8
Brand#52	STANDARD POLISHED NICKEL	45	8
Brand#53	ECONOMY POLISHED STEEL	45	8
Brand#53	LARGE POLISHED NICKEL	3	8
Brand#53	SMALL BRUSHED COPPER	14	8
Brand#53	STANDARD PLATED STEEL	45	8
Brand#54	ECONOMY POLISHED BRASS	49	8
Brand#54	ECONOMY POLISHED TIN	23	8
Brand#54	MEDIUM BRUSHED STEEL	9	8
Brand#54	SMALL BURNISHED NICKEL	14	8
Brand#54	SMALL PLATED TIN	14	8
Brand#54	STANDARD BURNISHED STEEL	14	8
Brand#54	STANDARD PLATED BRASS	23	8
Brand#55	MEDIUM BURNISHED TIN	36	8
Brand#55	PROMO ANODIZED BRASS	14	8
Brand#55	STANDARD BURNISHED COPPER	45	8

Brand#15	STANDARD PLATED TIN	36	7	Brand#11	STANDARD BRUSHED COPPER	23	4
Brand#21	SMALL POLISHED STEEL	3	7	Brand#11	STANDARD BRUSHED NICKEL	14	4
Brand#23	SMALL POLISHED BRASS	49	7	Brand#11	STANDARD BRUSHED TIN	14	4
Brand#34	MEDIUM BURNISHED NICKEL	3	7	Brand#11	STANDARD BURNISHED BRASS	3	4
Brand#42	STANDARD PLATED COPPER	19	7	Brand#11	STANDARD BURNISHED STEEL	23	4
Brand#51	LARGE POLISHED NICKEL	14	7	Brand#11	STANDARD PLATED BRASS	19	4
Brand#54	LARGE ANODIZED NICKEL	49	7	Brand#11	STANDARD PLATED TIN	19	4
Brand#11	ECONOMY ANODIZED BRASS	19	4	Brand#11	STANDARD POLISHED NICKEL	45	4
Brand#11	ECONOMY ANODIZED BRASS	45	4	Brand#11	STANDARD POLISHED TIN	14	4
Brand#11	ECONOMY ANODIZED NICKEL	36	4	Brand#11	STANDARD POLISHED TIN	45	4
Brand#11	ECONOMY BRUSHED COPPER	3	4	Brand#12	ECONOMY ANODIZED BRASS	23	4
Brand#11	ECONOMY BRUSHED COPPER	9	4	Brand#12	ECONOMY ANODIZED COPPER	14	4
Brand#11	ECONOMY BRUSHED STEEL	9	4	Brand#12	ECONOMY ANODIZED NICKEL	19	4
Brand#11	ECONOMY BRUSHED STEEL	36	4	Brand#12	ECONOMY ANODIZED NICKEL	45	4
Brand#11	ECONOMY BURNISHED BRASS	36	4	Brand#12	ECONOMY ANODIZED STEEL	9	4
Brand#11	ECONOMY BURNISHED COPPER	9	4	Brand#12	ECONOMY BRUSHED COPPER	36	4
Brand#11	ECONOMY BURNISHED COPPER	49	4	Brand#12	ECONOMY BRUSHED NICKEL	49	4
Brand#11	ECONOMY BURNISHED NICKEL	14	4	Brand#12	ECONOMY BRUSHED STEEL	49	4
Brand#11	ECONOMY BURNISHED NICKEL	49	4	Brand#12	ECONOMY BURNISHED COPPER	45	4
Brand#11	ECONOMY PLATED COPPER	19	4	Brand#12	ECONOMY PLATED COPPER	23	4
Brand#11	ECONOMY PLATED NICKEL	45	4	Brand#12	ECONOMY PLATED STEEL	23	4
Brand#11	ECONOMY PLATED TIN	9	4	Brand#12	ECONOMY PLATED TIN	36	4
Brand#11	ECONOMY POLISHED BRASS	3	4	Brand#12	ECONOMY POLISHED BRASS	14	4
Brand#11	ECONOMY POLISHED COPPER	3	4	Brand#12	ECONOMY POLISHED COPPER	45	4
Brand#11	ECONOMY POLISHED COPPER	45	4	Brand#12	ECONOMY POLISHED NICKEL	9	4
Brand#11	ECONOMY POLISHED NICKEL	36	4	Brand#12	LARGE ANODIZED NICKEL	9	4
Brand#11	ECONOMY POLISHED STEEL	23	4	Brand#12	LARGE ANODIZED NICKEL	49	4
Brand#11	ECONOMY POLISHED TIN	14	4	Brand#12	LARGE ANODIZED STEEL	49	4
Brand#11	LARGE ANODIZED COPPER	23	4	Brand#12	LARGE ANODIZED TIN	36	4
Brand#11	LARGE ANODIZED NICKEL	9	4	Brand#12	LARGE ANODIZED TIN	45	4
Brand#11	LARGE ANODIZED STEEL	9	4	Brand#12	LARGE BURNISHED BRASS	14	4
Brand#11	LARGE BRUSHED STEEL	19	4	Brand#12	LARGE BURNISHED BRASS	19	4
Brand#11	LARGE BRUSHED TIN	3	4	Brand#12	LARGE BURNISHED COPPER	9	4
Brand#11	LARGE BRUSHED TIN	14	4	Brand#12	LARGE BURNISHED NICKEL	45	4
Brand#11	LARGE BURNISHED COPPER	9	4	Brand#12	LARGE BURNISHED TIN	36	4
Brand#11	LARGE BURNISHED COPPER	19	4	Brand#12	LARGE PLATED BRASS	3	4
Brand#11	LARGE BURNISHED STEEL	23	4	Brand#12	LARGE PLATED STEEL	36	4
Brand#11	LARGE BURNISHED TIN	9	4	Brand#12	LARGE PLATED STEEL	45	4
Brand#11	LARGE PLATED COPPER	23	4	Brand#12	LARGE PLATED TIN	23	4
Brand#11	LARGE PLATED TIN	9	4	Brand#12	LARGE POLISHED COPPER	14	4
Brand#11	LARGE PLATED TIN	14	4	Brand#12	LARGE POLISHED COPPER	19	4
Brand#11	LARGE PLATED TIN	23	4	Brand#12	LARGE POLISHED COPPER	49	4
Brand#11	LARGE POLISHED NICKEL	49	4	Brand#12	LARGE POLISHED STEEL	3	4
Brand#11	MEDIUM ANODIZED BRASS	45	4	Brand#12	MEDIUM ANODIZED COPPER	9	4
Brand#11	MEDIUM ANODIZED TIN	14	4	Brand#12	MEDIUM ANODIZED COPPER	45	4
Brand#11	MEDIUM BRUSHED BRASS	14	4	Brand#12	MEDIUM ANODIZED NICKEL	45	4
Brand#11	MEDIUM BRUSHED BRASS	45	4	Brand#12	MEDIUM BRUSHED BRASS	19	4
Brand#11	MEDIUM BRUSHED NICKEL	14	4	Brand#12	MEDIUM BRUSHED COPPER	9	4
Brand#11	MEDIUM BRUSHED NICKEL	36	4	Brand#12	MEDIUM BRUSHED COPPER	36	4
Brand#11	MEDIUM BRUSHED STEEL	19	4	Brand#12	MEDIUM BRUSHED COPPER	49	4
Brand#11	MEDIUM BURNISHED COPPER	9	4	Brand#12	MEDIUM BRUSHED NICKEL	3	4
Brand#11	MEDIUM BURNISHED TIN	36	4	Brand#12	MEDIUM BRUSHED NICKEL	14	4
Brand#11	MEDIUM PLATED BRASS	3	4	Brand#12	MEDIUM BRUSHED NICKEL	23	4
Brand#11	MEDIUM PLATED TIN	19	4	Brand#12	MEDIUM BURNISHED BRASS	3	4
Brand#11	PROMO ANODIZED BRASS	3	4	Brand#12	MEDIUM BURNISHED COPPER	36	4
Brand#11	PROMO ANODIZED BRASS	19	4	Brand#12	MEDIUM BURNISHED NICKEL	19	4
Brand#11	PROMO ANODIZED BRASS	45	4	Brand#12	MEDIUM BURNISHED TIN	14	4
Brand#11	PROMO ANODIZED BRASS	49	4	Brand#12	MEDIUM PLATED BRASS	23	4
Brand#11	PROMO ANODIZED STEEL	23	4	Brand#12	MEDIUM PLATED TIN	19	4
Brand#11	PROMO ANODIZED TIN	45	4	Brand#12	MEDIUM PLATED TIN	23	4
Brand#11	PROMO BRUSHED BRASS	23	4	Brand#12	PROMO ANODIZED BRASS	9	4
Brand#11	PROMO BRUSHED STEEL	3	4	Brand#12	PROMO ANODIZED BRASS	45	4
Brand#11	PROMO BURNISHED BRASS	23	4	Brand#12	PROMO ANODIZED NICKEL	14	4
Brand#11	PROMO BURNISHED BRASS	36	4	Brand#12	PROMO ANODIZED STEEL	49	4
Brand#11	PROMO BURNISHED BRASS	49	4	Brand#12	PROMO ANODIZED TIN	3	4
Brand#11	PROMO BURNISHED TIN	9	4	Brand#12	PROMO ANODIZED TIN	19	4
Brand#11	PROMO PLATED BRASS	9	4	Brand#12	PROMO BRUSHED COPPER	14	4
Brand#11	PROMO PLATED BRASS	45	4	Brand#12	PROMO BRUSHED COPPER	19	4
Brand#11	PROMO PLATED NICKEL	19	4	Brand#12	PROMO BRUSHED NICKEL	23	4
Brand#11	PROMO POLISHED BRASS	3	4	Brand#12	PROMO BRUSHED STEEL	23	4
Brand#11	PROMO POLISHED BRASS	9	4	Brand#12	PROMO BRUSHED STEEL	36	4
Brand#11	PROMO POLISHED BRASS	19	4	Brand#12	PROMO BURNISHED BRASS	49	4
Brand#11	PROMO POLISHED COPPER	14	4	Brand#12	PROMO BURNISHED TIN	9	4
Brand#11	PROMO POLISHED COPPER	45	4	Brand#12	PROMO BURNISHED TIN	14	4
Brand#11	PROMO POLISHED TIN	49	4	Brand#12	PROMO PLATED BRASS	36	4
Brand#11	SMALL ANODIZED COPPER	36	4	Brand#12	PROMO POLISHED COPPER	23	4
Brand#11	SMALL ANODIZED NICKEL	3	4	Brand#12	PROMO POLISHED NICKEL	3	4
Brand#11	SMALL ANODIZED NICKEL	14	4	Brand#12	PROMO POLISHED NICKEL	9	4
Brand#11	SMALL ANODIZED TIN	14	4	Brand#12	PROMO POLISHED STEEL	14	4
Brand#11	SMALL ANODIZED TIN	19	4	Brand#12	PROMO POLISHED TIN	23	4
Brand#11	SMALL ANODIZED TIN	45	4	Brand#12	PROMO POLISHED TIN	36	4
Brand#11	SMALL BRUSHED TIN	14	4	Brand#12	SMALL ANODIZED BRASS	36	4
Brand#11	SMALL BRUSHED TIN	23	4	Brand#12	SMALL ANODIZED COPPER	23	4
Brand#11	SMALL BRUSHED TIN	45	4	Brand#12	SMALL ANODIZED STEEL	36	4
Brand#11	SMALL BURNISHED BRASS	49	4	Brand#12	SMALL ANODIZED TIN	14	4
Brand#11	SMALL BURNISHED COPPER	23	4	Brand#12	SMALL BRUSHED COPPER	19	4
Brand#11	SMALL PLATED COPPER	45	4	Brand#12	SMALL BRUSHED COPPER	36	4
Brand#11	SMALL PLATED NICKEL	3	4	Brand#12	SMALL BRUSHED TIN	36	4
Brand#11	SMALL PLATED STEEL	36	4	Brand#12	SMALL BURNISHED BRASS	14	4
Brand#11	SMALL PLATED TIN	19	4	Brand#12	SMALL BURNISHED COPPER	9	4
Brand#11	SMALL POLISHED BRASS	14	4	Brand#12	SMALL BURNISHED COPPER	36	4
Brand#11	SMALL POLISHED BRASS	23	4	Brand#12	SMALL PLATED BRASS	9	4
Brand#11	SMALL POLISHED COPPER	14	4	Brand#12	SMALL POLISHED BRASS	49	4
Brand#11	SMALL POLISHED COPPER	36	4	Brand#12	SMALL POLISHED NICKEL	19	4
Brand#11	SMALL POLISHED STEEL	9	4	Brand#12	SMALL POLISHED TIN	3	4

```
Brand#12   STANDARD ANODIZED BRASS           19              4
Brand#12   STANDARD ANODIZED NICKEL          19              4
Brand#12   STANDARD ANODIZED STEEL           19              4
Brand#12   STANDARD BRUSHED COPPER           36              4
Brand#12   STANDARD BRUSHED NICKEL           23              4
Brand#12   STANDARD BRUSHED STEEL            49              4
Brand#12   STANDARD BURNISHED BRASS          23              4
Brand#12   STANDARD BURNISHED COPPER         14              4
Brand#12   STANDARD BURNISHED NICKEL         45              4
Brand#12   STANDARD BURNISHED NICKEL         49              4
Brand#12   STANDARD BURNISHED TIN             3              4
Brand#12   STANDARD BURNISHED TIN            14              4
Brand#12   STANDARD PLATED BRASS             19              4
Brand#12   STANDARD PLATED NICKEL            45              4
Brand#12   STANDARD PLATED STEEL             36              4
Brand#12   STANDARD PLATED STEEL             45              4
Brand#12   STANDARD PLATED TIN                9              4
Brand#12   STANDARD POLISHED BRASS           49              4
Brand#12   STANDARD POLISHED COPPER           3              4
Brand#12   STANDARD POLISHED NICKEL          23              4
Brand#12   STANDARD POLISHED TIN             14              4
Brand#13   ECONOMY ANODIZED NICKEL           14              4
Brand#13   ECONOMY ANODIZED NICKEL           19              4
Brand#13   ECONOMY ANODIZED STEEL            45              4
Brand#13   ECONOMY ANODIZED STEEL            49              4
Brand#13   ECONOMY BRUSHED BRASS              3              4
Brand#13   ECONOMY BURNISHED STEEL           14              4
Brand#13   ECONOMY BURNISHED TIN             19              4
Brand#13   ECONOMY BURNISHED TIN             45              4
Brand#13   ECONOMY PLATED COPPER             19              4
Brand#13   ECONOMY PLATED NICKEL              3              4
Brand#13   ECONOMY PLATED STEEL              23              4
Brand#13   ECONOMY PLATED TIN                 3              4
Brand#13   ECONOMY POLISHED BRASS            3              4
Brand#13   ECONOMY POLISHED COPPER           9              4
Brand#13   ECONOMY POLISHED COPPER           49              4
Brand#13   ECONOMY POLISHED STEEL            23              4
Brand#13   ECONOMY POLISHED STEEL            49              4
Brand#13   LARGE ANODIZED BRASS              23              4
Brand#13   LARGE ANODIZED COPPER             19              4
Brand#13   LARGE ANODIZED NICKEL              9              4
Brand#13   LARGE ANODIZED STEEL              45              4
Brand#13   LARGE ANODIZED TIN                19              4
Brand#13   LARGE BRUSHED BRASS                3              4
Brand#13   LARGE BRUSHED BRASS                9              4
Brand#13   LARGE BRUSHED BRASS               19              4
```

==========

Query 17a

==========

```
-- Start Query 17a
begin work;
Started transaction.


-- using default substitutions
create table avg_quantity0
(partkey integer,
avgqty decimal(14,3)
) in llind ;
Table created.



insert into avg_quantity0
select
                    p_partkey,
                    0.2 * avg(l_quantity)
from
                    part, lineitem
where
                    p_partkey=l_partkey and
                    p_brand= 'Brand#23' and
                    p_container= 'MED BOX'
group by p_partkey;
18 row(s) inserted.



select
                    sum(l_extendedprice)/7.0 as avg_yearly
from
                    lineitem, avg_quantity0
where
                    partkey = l_partkey and
                    l_quantity < avgqty;

     avg_yearly

24436.8800000000

1 row(s) retrieved.

drop table avg_quantity0;
Table dropped.


commit work;
Data committed.
```

==========

ACID source code

==========

```
/*
 * Sccsid:     @(#)acid.ec9.1.2.5     8/16/95  20:56:46
 * ACID test implementation for TPC-D
 *
 *
 * this routine acutally does twice the required number of
transactions,
 * one set to alter the data and another to unroll the changes after
things
 * have completed. It relies on semop() for synchronization.
 */

#define DECLARER
/*#define _XOPEN_SOURCE*/
#include "config.h"
#include <stdio.h>
#include <signal.h>
#include <sys/wait.h>
#include <time.h>
#include <sys/sem.h>
#include <sys/types.h>
#include <sys/ipc.h>
#include <unistd.h>
#include "dss.h"
#include "acid.h"

/*
 * synchronization scheme:
 *    sem[0] -- number of children ready to go
 *    sem[1] -- number of children allowed to go
 * CHILDSYNC() -- this child registers as ready, then waits for
permission,
 *                to continue
 * ALLREADY()  -- parent will wait here until all children are ready
 * ALLGO()     -- parent allows all children to proceed
 * ONEGO()     -- parent allows *a* child to proceed
 */
union semun {
    int val;
    struct semid_ds *buf;
    ushort *array;
} semun1;

#define MAKESEMS      \
  if ((semid = semget(IPC_PRIVATE, 2, 0600+IPC_CREAT)) == -1) \
      fprintf(stderr, "semget FAILS\n");\
  if (semctl(semid, 0, SETVAL, semun1)) fprintf(stderr, "set 0
failed\n"); \
  if (semctl(semid, 1, SETVAL, semun1)) fprintf(stderr, "set 1
failed\n")

#define DROPSEMS      (semctl(semid, 0, IPC_RMID, semun1))
#define CHILDSYNC      do_semop(0,1); do_semop(1,-1)
#define ALLREADY       do_semop(0,-nprocs)
#define ALLGO          do_semop(1,nprocs)
#define ONEGO          do_semop(1,1)

int semid;              /* timing control semaphores    */
int nprocs;             /* number of active children */
pid_t pids[MAX_CHILDREN];
FILE *sfp = NULL;

/*
 * status file macros:
 *  SET_FILE(tgt)   -- redirect status messages to tgt, unless
overridden
 *                     on the command line
 *  TIMESTAMP       -- generate a timestamped status message
 *  DEC_DBL         -- convert a dec_t to a dbl; -1 == error
 *  NEW_SUCCESS     -- force the start of a new success file
 */
#include <sys/time.h>
struct timeval tp;
double secs;

#define TIMESTAMP(note) \
   {                                                    \
   gettimeofday(&tp, 0);   \
```

```
   secs = tp.tv_sec + (double )tp.tv_usec / 1000000 ; \
   fprintf(ofp, "%-40s TIME: %.2f\n", note, secs); \
   fflush(ofp); \
   }

#define NEW_SUCCESS sfp = NULL
#define SET_FILE(str)\
                    if ((flags & FL_DEBUG) == 0)\
                        {                   \
                        if (ofp != NULL) fclose(ofp);\
                        if ((ofp = fopen(str, "a")) == NULL) \
                                    {                   \
                                    fprintf(stderr, "open failed
for %s\n", str); \
                                    exit(1);            \
                                    }                   \
                        } \
                    else ofp=stdout
#define DEC_DBL(src, tgt) \
                    if (dectodbl(&src, &tgt)) \
                         tgt = -1


/*
 * general defines
 */
#define ORDER_PER_SF1500000L


$include sqlca;
$include sqlda;
$include decimal;
$include datetime;

$ typedef struct TRAN_T {
                    long o;
                    int l;
                    int d;
                    dec_t rprice;
                    dec_t qty;
                    dec_t tax;
                    dec_t disc;
                    dec_t eprice;
                    dec_t tprice;
                    } tran_t;

int c_cnt, t_cnt;
char keyfile[80] = "";
char logfile[80] = "";
$ char dbname[80];
FILE *ofp = NULL;
int phase2 = 0;
double flt_scale;
time_t t_tmp;
int flags = 0;
$ tran_t work[1000];
long seed;
extern long Seed[];

static void process_options(int ac, char **av);
void c_check();
void pick_keys(void);
void parallel_tran(int, int*, int);
void usage(char *);
void post_proc(int);
void do_testa(void);
void do_testc(void);
void do_testi(void);
void do_testd(void);
void do_semop(int, int);
void build_tran(int);
void init(int);
void wrapup(void);
void do_tran(int, int);
void prt_history(int);/* print the history records */
void dump_row(int, char *);/* print the named rows for o/l */
long UnifInt PROTO((long, long, long));

main(int ac, char **av)
{
    process_options(ac, av);

    MAKESEMS;

    if (flags & FL_TESTC)
                    do_testc();
    if (flags & FL_TESTI)
                    do_testi();
    if (flags & FL_TESTA)
                    do_testa();
    if (flags & FL_TESTD)
                    do_testd();

    ALLGO;          /* to clear anyone who's left */
    DROPSEMS;
    exit(0);
}

void
c_check(int tnum)
{
    double t1, t2;
    $int okey;
    int i = 0;
    $decimal otot,
                        res;

    $begin work;
    $ whenever not found continue;
    $ whenever error call do_error;
    okey = work[tnum].o;
    $execute o_stmt into $otot using $okey;
    if (SQLCODE == SQLNOTFOUND)
                    {
                    fprintf(ofp, "%ld is not a valid orderkey\n",
okey);
                    return;;
                    }
    $execute l_stmt into $res using $okey;
    if (SQLCODE == SQLNOTFOUND)
                    {
                    fprintf(ofp, "%ld has no lines!\n", okey);
                    return;
                    }
    dectodbl(&otot, &t1);
    dectodbl(&res, &t2);
    fprintf(ofp, "%s orderkey #%ld: wanted %8.2f, got %8.2f\n",
                    (deccmp(&otot, &res))?"ERROR: Bad":"success for",
okey, t1, t2);

    $commit work;
    return;
}

static void
process_options(int cnt, char **vector)
{
   extern int optind, opterr;
   extern char *optarg;
   int flg,
       i;

   flags |= FL_TESTALL;
   seed = Seed[0];
   while ((flg = getopt(cnt, vector, "C:uDd:hk:l:n:r:s:t:T:")) != -1)
                    {
                    switch (flg)
                        {
                        case 'd':
                                        strcpy(dbname, optarg);
                                        flags |= FL_DBNAME;
                                        break;
                        case 'D':
                                        flags |= FL_DEBUG;
                                        break;
                        case 'C':
                                        children = atoi(optarg);
                                        flags |= FL_STREAMS;
                                        break;
                        case 'h':
                                        usage(vector[0]);
                                        exit(0);
                                        break;
                        case 'k':
                                        if (strlen(optarg) > 79)
                                            {
                                            printf("pathname '%s'
exceeds 80 character limit\n", optarg);
                                            exit(1);
                                            }
                                        strcpy(keyfile, optarg);
                                        flags |= FL_KEY;
                                        break;
                        case 'l':
                                        if (strlen(optarg) > 79)
                                            {
                                            printf("pathname '%s'
exceeds 80 character limit\n", optarg);
                                            exit(1);
                                            }
                                        strcpy(logfile, optarg);
                                        flags |= FL_LOG;
                                        break;
                        case 'n':
                                        c_cnt = atoi(optarg);
                                        flags |= FL_COUNT;
                                        break;
                        case 'r':
                                        seed = atol(optarg);
```

```
                                        flags |= FL_SEED;
                                        break;
                        case 's':
                                        flt_scale = atof(optarg);
                                        flags |= FL_SCALE;
                                        break;
                        case 't':
                                        t_cnt = atoi(optarg);
                                        if (t_cnt >= 1000)
                                            {
                                            printf("-t upper bound is
1000\n");
                                            t_cnt = 999;
                                            }
                                        flags |= FL_TRANS;
                                        break;
                        case 'T':
                                        flags &= ~FL_TESTALL;
                                        if (*optarg == 'A' || *optarg
== 'a')
                                            flags |= FL_TESTA;
                                        if (*optarg == 'C' || *optarg
== 'c')
                                            flags |= FL_TESTC;
                                        if (*optarg == 'I' || *optarg
== 'i')
                                            flags |= FL_TESTI;
                                        if (*optarg == 'D' || *optarg
== 'd')
                                            flags |= FL_TESTD;
                                        break;
                        }
                    }
    if ((flags & FL_SCALE) == 0)
                    flt_scale = 0.1;
    if ((flags & FL_COUNT) == 0)
                    c_cnt = 10;
    if ((flags & FL_TRANS) == 0)
                    t_cnt = 100;
    if ((flags & FL_STREAMS) == 0)
                    children = 1;
    if ((flags & FL_DBNAME) == 0)
                    if (flt_scale < 0) sprintf(dbname, "dssfq");
                    else sprintf(dbname, "dssf%3.0f", flt_scale);
    if ((flags & FL_SEED) == 0)
                    for (i=0; i < DSS_PROC; i++)
                        UnifInt(1L, 100L, 0);
    return;
}

void
pick_keys(void)
{
    int *res, i, j;
    FILE *kfp;

    if (strlen(keyfile) != 0)
                    {
                    if ((kfp = fopen(keyfile, "r")) == (FILE *)NULL)
                        {
                        printf("Unable to open key file '%s'\n",
keyfile);
                        exit(1);
                        }
                    fscanf(kfp, "%d\n", &c_cnt);
                    for (i=0; i < c_cnt; i++)
                        fscanf(kfp, "%d\n", work[i].o);
                    fclose(kfp);
                    }
    else
                    {
                    res = (int *)malloc(sizeof(int) * (c_cnt + 1));
                    MALLOC_CHECK(res);
                    for (i=0; i < c_cnt; i++)
                        work[i].o =
                                        MK_SPARSE(UnifInt(1L,
(long)(ORDER_PER_SF * flt_scale), 0L), 0);
                    }

    return;
}

void
usage(char *prog)
{
   printf("USAGE: %s [options]\n\n\tOptions\n\t=======\n", prog);
   printf("\t-d <name>\t-- run against database <name>\n");
   printf("\t-h\t\t-- generate this usage message\n");
   printf("\t-C <procs>\t-- run <procs> transaction streams\n");
   printf("\t-k <file>\t-- read keys from <file>\n");
   printf("\t-l <file>\t-- use <file> as the OnLine log file\n");
   printf("\t-n <keycount>\t-- use <keycount> random keys for
verification\n");
   printf("\t-s <SF>\t\t-- assume scale factor SF\n");
   printf("\t-t <trans>\t-- issues <trans> transactions per
stream\n");
   printf("\t-D\t\t-- output resuts to stdout\n");

   return;
}

void
post_proc(c)
$parameter int c;
{
    char n[80];
    int i;
    $int pkey, skey, okey, lkey, delta, child;
    $dtime_t d_time;

    sprintf(n, "Transactions from stream #%d\n", c);
    TIMESTAMP(n);
    fprintf(ofp, "%-10s|%-2s|%-3s|%-8s|%-6s|%s\n",
                    "order", "l", "dlt", "part", "supp", "time");
    begin_tran();
    $open h_crsr using :c;
    $fetch h_crsr
                    into :pkey, :skey, :okey, :lkey, :delta, :d_time,
:child;
    while (!SQLCODE)
                    {
                    dttoasc(&d_time, n);
                    fprintf(ofp, "%-10d|%-2d|%-3d|%-8d|%-6d|%s\n",
                        okey, lkey, delta, pkey, skey, n);
                    $fetch h_crsr
                        into :pkey, :skey, :okey, :lkey, :delta,
:d_time, :child;
                    }
    $close h_crsr;
    $commit work;
    fflush(ofp);

    return;
}

void
do_testa(void)
{
    int i;

    init(0);

    $delete from history;
    SET_FILE("stdout");
    fprintf(ofp, "ATOMICITY TEST ONE\n");
    dump_row(0, "Initial State:");
    TIMESTAMP("Committed Transaction (History Table)");
    prt_history(0);
    begin_tran();
    do_tran(0, 0);
    commit_tran(0, 0, "asuccess");
    dump_row(0, "Final State:");
    TIMESTAMP("Committed Transaction (History Table)");
    prt_history(0);
    NEW_SUCCESS;

    $delete from history;
    fprintf(ofp, "ATOMICITY TEST TWO\n");
    dump_row(1, "Initial State:");
    TIMESTAMP("Committed Transaction (History Table)");
    prt_history(1);
    begin_tran();
    do_tran(1, 1);
    fprintf(ofp, "\n");
    TIMESTAMP("Requesting Rollback");
    $rollback work;
    TIMESTAMP("Rollback Complete");
    fprintf(ofp, "\n");
    dump_row(1, "Final State:");
    TIMESTAMP("Committed Transaction (History Table)");
    prt_history(1);

    wrapup();

    return;
}

void
do_testc(void)
{
    int *p, i, c_pid, j, status;
    tran_t *damage;
    char cmd[80];

    nprocs = children;
    for (i = 0; i < children; i++)
                    {
                    switch (c_pid = SPAWN())
                        {
                        case -1:
```

```
                                        fprintf(ofp, "Fork failed for
child #%d\n", i);
                                        for (j=0; j < i; j++)
                                            kill(pids[j], SIGKILL);
                                        exit(1);
                                        break;
                        case 0:         /* CHILD */
                                        SET_FILE("");
                                        init(0);

                                        NEW_SUCCESS;
                                        $set isolation to repeatable
read;
                                        CHILDSYNC;
                                        for (j=0; j < t_cnt; j++)
                                            if (((j + 1) % children)
== i)
                                                {

begin_tran();
                                                $set lock
mode to wait;

do_tran(j, i);

commit_tran(j, i, "csuccess");
                                                }
                                        CHILDSYNC;
                                        SET_FILE("consrte");
                                        post_proc(i);
                                        CHILDSYNC;
                                        exit(0);
                                        break;
                        default:        /* PARENT */
                                        pids[i] = c_pid;
                                        break;
                        }
                    }

                    init(0);
                    if (children != 0 )
                $delete from history;
                    SET_FILE("consb");
                    $set isolation to repeatable read;
                    TIMESTAMP("Initial State");
                    for (i=0; i < c_cnt; i++) {
                        c_check(i);
                    }

            if (children == 0)
              exit(0);

                    SET_FILE("consckpt");
                    TIMESTAMP("Allow Transactions");
                    ALLREADY;           /* everyone is ready */
                    ALLGO;
                    sleep(CKPT_WAIT);
                    system("INFORMIXSERVER=acid.1 onmode -c ;
INFORMIXSERVER=acid.1  onstat -m >> consckpt");
                    ALLREADY;           /* everyone is done */

                    SET_FILE("consa");
                    TIMESTAMP("Final State");
                    for (i=0; i < c_cnt; i++)
                        c_check(i);

                    for (i=0; i < children; i++)
                        {
                        ONEGO; /* allow them to post process in turn
*/
                        sleep(5);
                        }
                    ALLGO; /* allow them to terminate */
                    sleep(5);
                    wrapup();

                    /* system("mv success.0 csuccess.0; mv success.1
csuccess.1"); */
    return;
}

void
do_testi(void)
{

    double   cost;
    int      delta1, delta2, hold;
    pid_t    child;

    $char    comment[199];
    $char    stmt_buf1[1000];
    $char    stmt_buf2[1000];
    $decimal supplycost;
    $int     availqty;
    $long    max_partkey, max_suppkey, partkey, suppkey;

    char     buf[1024];

    nprocs = 1; /* these are all 1 parent / 1 child tests */
    hold = c_cnt;
    c_cnt = 1;
    child = SPAWN();
    switch(child)
                    {
                    case -1:
                        TIMESTAMP("Process creation failed!");
                        exit(1);
                        break;
                    case 0:                                 /* CHILD
*/

                        init(0);
                        $delete from history;

                        /*
                         * iso1: read-only isolation in the face of a
commit
                         */
                        SET_FILE("iso1");
                        fprintf(ofp, "ISOLATION TEST ONE\n");
                        $set isolation to repeatable read;
                        dump_row(0, "Initial State:");
                        TIMESTAMP("History table Contents:");
                        prt_history(2);

                        sprintf(buf, "T1: Initiate Update (%d,%d)",
work[0].o, work[0].l);
                        TIMESTAMP(buf);

                        begin_tran();
                        do_tran(0, 2);
                        TIMESTAMP("T1: Suspending");
                        fprintf(ofp, "\n");
                        CHILDSYNC;
                        sleep(10); /* sleep to be *sure* there is
overlap */
                TIMESTAMP("T1: Requesting Commit");
                        commit_tran(0, 1, "isuccess");
                TIMESTAMP("T1: Commit Done");
                        fprintf(ofp, "\n");
                        sleep(20); /* sleep to be *sure* trace file
is obvious */

                        dump_row(0, "Final State:");
                        TIMESTAMP("Committed Transaction (History
Table)");
                        prt_history(2);
                        CHILDSYNC;
                        fflush(ofp);

                        /*
                         * iso2: read-only isolation in the face of a
rollback
                         */
                        $delete from history;
                        NEW_SUCCESS;
                        SET_FILE("iso2");
                fprintf(ofp, "
ISOLATION TEST TWO\n");
                        $set isolation to repeatable read;
                        dump_row(1, "Initial State:");
                        TIMESTAMP("Committed Transaction (History
Table)");
                        prt_history(3);
                        sprintf(buf, "T1: Initiate Update (%d,%d)",
work[1].o, work[1].l);
                        TIMESTAMP(buf);
                        begin_tran();
                        do_tran(1, 3);
                        TIMESTAMP("T1: Suspending");
                        CHILDSYNC;
                        sleep(10); /* sleep to be *sure* there is
overlap */
                TIMESTAMP("T1: Requesting Rollback");
                        $rollback work;
                TIMESTAMP("T1: Rollback Complete");
                        sleep(10); /* sleep to be *sure* trace file
is obvious */
                        dump_row(1, "Final State:");
                        TIMESTAMP("Committed Transaction (History
Table)");
                        prt_history(3);
                        CHILDSYNC;
                        fflush(ofp);

                        /*
                         * iso3: update isolation in the face of a
commit
                         */
                        $delete from history;
                        NEW_SUCCESS;
```

```
                        SET_FILE("iso3");
                        fprintf(ofp, "
ISOLATION TEST THREE\n");
                        $set isolation to repeatable read;
                        dump_row(2, "Initial State");
                        TIMESTAMP("Committed Transaction (History
Table)");
                        prt_history(4);
                        sprintf(buf, "T1: Initiate Update (%d,%d)",
work[2].o, work[2].l);
                        TIMESTAMP(buf);
                        begin_tran();
                        do_tran(2, 4);
                        TIMESTAMP("T1: Suspending");
                        CHILDSYNC;
                        sleep(10); /* sleep to be *sure* there is
overlap */
            TIMESTAMP("T1: Requesting Commit");
                        commit_tran(2, 3, "isuccess");
            TIMESTAMP("T1: Commit Complete");
                        fprintf(ofp, "\n");
                        /* sleep(10);  sleep to be *sure* trace file
is obvious */
                        dump_row(2, "T1: Final State:");
                        TIMESTAMP("T1: Committed Transaction (History
Table)");
                        prt_history(4);
            CHILDSYNC;
                        fflush(ofp);

                        /*
                         * iso4: update isolation in the face of a
rollback
                         */
                        $delete from history;
                        NEW_SUCCESS;
                        SET_FILE("iso4");
                        fprintf(ofp, "
ISOLATION TEST FOUR\n");
                        $set isolation to repeatable read;
                        dump_row(3, "Initial State");
                        TIMESTAMP("Committed Transaction (History
Table)");
                        prt_history(5);
                        sprintf(buf, "T1: Initiate Update (%d,%d)",
work[3].o, work[3].l);
                        TIMESTAMP(buf);
                        begin_tran();
                        do_tran(3, 5);
                        TIMESTAMP("T1: Suspending");
                        CHILDSYNC;
                        sleep(10); /* sleep to be *sure* there is
overlap */
            TIMESTAMP("T1: Requesting Rollback");
                        $rollback work;
            TIMESTAMP("T1: Rollback Complete");
                        /* sleep(10);  sleep to be *sure* trace file
is obvious */
                        dump_row(3, "T1: Final State:");
                        TIMESTAMP("T1: Committed Transaction (History
Table)");
                        prt_history(5);
                        fflush(ofp);
                        CHILDSYNC;

            /*
             * iso5: concurrent read/write transactions against
             *       different tables
             */
            $delete from history;
            NEW_SUCCESS;
            SET_FILE("iso5");
                        fprintf(ofp, "
ISOLATION TEST FIVE\n");
            $set isolation to repeatable read;
            dump_row(6, "Initial State");
                        TIMESTAMP("Committed Transaction (History
Table)");
            prt_history(8);
                        sprintf(buf, "T1: Initiate Update (%d,%d)",
work[6].o, work[6].l);
                        TIMESTAMP(buf);
                        begin_tran();
            do_tran(6,8);
            TIMESTAMP("T1: waiting to commit");
            CHILDSYNC;
            TIMESTAMP("T1: Requesting Commit");
                        commit_tran(6, 5, "isuccess");
            TIMESTAMP("T1: Commit Complete");
            dump_row(6, "Final State:");
                        TIMESTAMP("Committed Transaction (History
Table)");
            prt_history(8);
                        fflush(ofp);
            CHILDSYNC;
            /*
             * iso6: test to see that update transactions are
             *       not delayed indefinitely when run concurrently
             *       with arbitrary read-only queries
             */
            NEW_SUCCESS;
            SET_FILE("iso6");
                        fprintf(ofp, "
ISOLATION TEST SIX\n");
                        fflush(ofp);
            $set isolation to repeatable read;
            dump_row(7, "Initial State");
                        TIMESTAMP("Committed Transaction (History
Table)");
            prt_history(9);
            sleep(3);
                        sprintf(buf, "T2: Initiate Update (%d,%d)",
work[7].o, work[7].l);
                        TIMESTAMP(buf);
                        begin_tran();
            do_tran(7,9);
            CHILDSYNC;
            sleep(3);
            TIMESTAMP("T2: Requesting Commit");
                        commit_tran(7, 6, "isuccess");
            TIMESTAMP("T2: Commit Complete");
            /*dump_row(7, "Final State:");
                        TIMESTAMP("Committed Transaction (History
Table)");
            prt_history(9);*/
            CHILDSYNC;
                        fflush(ofp);

                        exit(0);
                        break;

                default:            /* PARENT */
                        init(0);

                        /*
                         * iso1: read-only isolation in the face of a
commit
                         */
                        SET_FILE("iso1");
                        $set isolation to committed read;
                        ALLREADY;   /* process one is waiting to
commit */
                        ALLGO;
                        sleep(5);
                        TIMESTAMP("T2: Initiate Read Query");
                        dump_row(0, "T2: Query Complete");

                        /*
                         * iso2: read-only isolation in the face of a
rollback
                         */
                        ALLREADY;       /* make sure child is ready
for test 2 */
                        ALLGO;          /* let him set up */
                        SET_FILE("iso2");
                        $set isolation to committed read;
                        ALLREADY;   /* process one is waiting to
commit */
                        ALLGO;
                        sleep(5);
                        TIMESTAMP("T2: Initiate Read Query");
                        dump_row(1, "T2: Query Complete");

                        /*
                         * iso3: update isolation in the face of a
commit
                         */
                        ALLREADY;       /* process 1 is ready for the
test */
                        ALLGO;          /* let him set up */
                        work[4].o = work[2].o;
                        work[4].l = work[2].l;
                        SET_FILE("iso3");
                        $set isolation to repeatable read;
                        ALLREADY;       /* process 1 is ready to
commit */
                        ALLGO;
                        fprintf(ofp, "\n");
                        sprintf(buf, "T2: Initiate Update (%d,%d)",
work[4].o, work[4].l);
                        TIMESTAMP(buf);
                        fprintf(ofp, "\n");
                        begin_tran();
                        do_tran(4, 6);
            TIMESTAMP("T2: Requesting Commit");
                        commit_tran(4, 3, "isuccess");
            TIMESTAMP("T2: Commit Complete");
                        dump_row(4, "T2: Final State:");
                        TIMESTAMP("T2: Committed Transaction (History
```

```
Table)");
                        prt_history(6);
                        fflush(ofp);

                        /*
                         * iso4: update isolation in the face of a
rollback
                         */
                        ALLREADY;       /* process 1 is ready for the
test */
                        ALLGO;          /* let him set up */
                        work[5].o = work[3].o;
                        work[5].l = work[3].l;
                        SET_FILE("iso4");
                        $set isolation to repeatable read;
                        sleep(5);
                        ALLREADY;       /* process 1 is ready to
commit */
                        ALLGO;
                        fprintf(ofp, "\n");
                        sprintf(buf, "T2: Initiate Update (%d,%d)",
work[5].o, work[5].l);
                        TIMESTAMP(buf);
                        fprintf(ofp, "\n");
                        begin_tran();
                        do_tran(5, 7);
            TIMESTAMP("T2: Requesting Commit");
                        commit_tran(5, 4, "isuccess");
            TIMESTAMP("T2: Commit Complete");
                        dump_row(5, "T2: Final State:");
                        TIMESTAMP("T2: Committed Transaction (History
Table)");
                        prt_history(7);
                        fflush(ofp);

            /*
             * : concurrent read/write transactions against
             *       different tables
             */
            ALLREADY;
            ALLGO;
            SET_FILE("iso5");
            $set isolation to repeatable read;
                        sleep(2);
            TIMESTAMP("T2: Initiate Query");

                        begin_tran();
            $select max(ps_partkey) into :max_partkey
               from partsupp where 1 = 1;
            $select max(ps_suppkey) into :max_suppkey
               from partsupp where 1 = 1;
            partkey = UnifInt(1L, max_partkey, 1L);
            suppkey = UnifInt(1L, max_suppkey, 1L);
            $open ps_crsr using :partkey, :suppkey;
            $fetch ps_crsr into
               :partkey, :suppkey, :availqty, :supplycost, :comment;
            while (SQLCODE)
              {
              $close ps_crsr;
              partkey = UnifInt(1L, max_partkey, 1L);
              suppkey = UnifInt(1L, max_suppkey, 1L);
              $open ps_crsr using :partkey, :suppkey;
              $fetch ps_crsr into
                :partkey, :suppkey, :availqty, :supplycost, :comment;
              }
            $close ps_crsr;

            if (dectodbl(&supplycost, &cost))
              cost = -999.99;
            TIMESTAMP("T2: Query Results:");
            fprintf(ofp,"\n%8s |%8s |%5s |%8s |%s\n",
                        "p_key", "s_key", "avqty", "cost", "comment");
            fprintf(ofp,"%8d |%8d |%5d |%8.2f |%s\n\n",
                        partkey, suppkey, availqty, cost, comment);
            $commit work;
                        fflush(ofp);

            ALLREADY; /* process 1 is ready to commit */
            ALLGO;
                        ALLREADY;       /* process 1 is complete */
            ALLGO;

            /*
             * iso6: test to see that update transactions are
             *       not delayed indefinitely when run concurrently
             *       with arbitrary read-only queries
             */

            SET_FILE("iso6");

            $set isolation to repeatable read;
                        sleep(3);

            delta1 = UnifInt((long) 0, (long) 2159, (long) 0);
                        sprintf(stmt_buf1,"select l_returnflag, \
l_linestatus, \
sum(l_quantity) as sum_qty, \
sum(l_extendedprice) as sum_base_price, \
sum(l_extendedprice * (1 - l_discount)) as sum_disc_price, \
sum(l_extendedprice * (1 - l_discount) * (1 + l_tax)) as sum_charge, \
avg(l_quantity) as avg_qty, \
avg(l_extendedprice) as avg_price, \
avg(l_discount) as avg_disc, \
count(*) as count_order \
from lineitem \
where l_shipdate <= date('1998-12-01') - interval (%d) day (4) to day
\
group by 1, 2 \
order by 1, 2 into temp temp%d;", delta1, delta1);

                        TIMESTAMP("T1: Initiating Q1");
                                begin_tran();
                        $execute immediate :stmt_buf1;
                        $commit work;
                        TIMESTAMP("T1: Q1 Complete");

                        ALLREADY;
                        ALLGO;

                        delta2 = UnifInt((long) 0, (long) 2159, (long) 0);
                        while (delta1 == delta2)
                          delta2 = UnifInt((long) 0, (long) 2159, (long) 0);

                        sprintf(stmt_buf2,"select l_returnflag, \
l_linestatus, \
sum(l_quantity) as sum_qty, \
sum(l_extendedprice) as sum_base_price, \
sum(l_extendedprice * (1 - l_discount)) as sum_disc_price, \
sum(l_extendedprice * (1 - l_discount) * (1 + l_tax)) as sum_charge, \
avg(l_quantity) as avg_qty, \
avg(l_extendedprice) as avg_price, \
avg(l_discount) as avg_disc, \
count(*) as count_order \
from lineitem \
where l_shipdate <= date('1998-12-01') - interval (%d) day (4) to day
\
group by 1, 2 \
order by 1, 2 into temp temp%d;", delta2, delta2);

                        TIMESTAMP("T1: Initiating Q1");
                                begin_tran();
                        $execute immediate :stmt_buf2;
                        $commit work;
                        TIMESTAMP("T1: Q1 Complete");
                        dump_row(7, "Final State:");
                                TIMESTAMP("Committed Transaction (History
Table)");
                        prt_history(9);

                        ALLREADY;
                                ALLGO;    /* allow him to cleanup */
                                sleep(10);

                                wrapup();
                                break;
                        }

    c_cnt = hold;
    return;
}

void
do_testd(void)
{
    int c_pid, pids[MAX_CHILDREN], o, l, d;
    int i, count = 0;

    nprocs = children;
    for (i=0; i < children; i++)
                    switch(c_pid = SPAWN())
                        {
                        case -1:
                           perror("fork error: durability");
                           exit(1);
                           break;
                        case 0:
                                        sleep(i);
                                        init(i);
                                        SET_FILE("durrate");
                CHILDSYNC;
                                        while(1)
                                            {
                                            TIMESTAMP("Begin
Transaction");
                                            begin_tran();
                                            do_tran(count % t_cnt, i);
                                            commit_tran(count %
t_cnt, i, "dsuccess");
                                            TIMESTAMP("End
```

```
Transaction");
                                        if (++count % 100 == 0)
                                                {
                                                char
msg[60];

sprintf(msg, "Stream %d: Batch of 100 transactions complete", i);

TIMESTAMP(msg);
                                                }
                                        if (count % t_cnt == 0)
                                                {
                                                char
msg[60];

sprintf(msg, "Stream %d: %d transactions complete",
                                                i, t_cnt);

TIMESTAMP(msg);

build_tran(t_cnt);
                                                }
                                        }
                                break;
                        default:
                                break;
                        }
    init(0);
    $delete from history;
    ALLREADY;
    ALLGO;
    exit(0);
}

void
do_semop(int s, int v)
{
    struct sembuf sop;

    sop.sem_num = s;
    sop.sem_op  = v;
    sop.sem_flg = 0;

    if (semop(semid, &sop, 1) == -1)
        {
        perror("tpcd: semop");
        exit(1);
        }
    return;
}

void
build_tran(int cnt)
{
    int i, good_key;
    static int init = 0;
    $int lnum;


    for (i = 0; i < cnt; i++)
        {
        good_key = 0;
        if (i >= c_cnt)
            work[i].o =
                MK_SPARSE(UnifInt(1L, (long)(ORDER_PER_SF *
flt_scale), 0L), 0);
        while (!good_key)
          {
          $execute get_lnum into :lnum using :work[i].o;
          if (lnum >= 0)
            good_key = 1;
          else
            work[i].o =
                MK_SPARSE(UnifInt(1L, (long)(ORDER_PER_SF *
flt_scale), 0L), 0);
          }
        work[i].l= UnifInt(O_LCNT_MIN, (long)lnum, 0L);
        work[i].d= UnifInt((long)1, (long)100, (long)0);
        }
    return;
}

void
wrapup(void)
{

    $delete from history;

    $close database;

    $free get_lnum;
    $free l_stmt;
    $free o_stmt;
    $free h_stmt;
    $free h_crsr;
    $free ps_stmt;
    $free ps_crsr;

    return;
}

void
init(childnum)
int childnum;
{

    $database $dbname;
    $set pdqpriority 0;
    $whenever error call do_error;
    $set lock mode to wait;
    $set isolation to repeatable read;
    $prepare get_lnum from
                        "select max(l_linenumber) from lineitem where
l_orderkey = ?";
/*
 * since the underlying calculation for DBGEN relies on integer math
and money
 * expressed in pennies, while the schema requires a more standard
dollars and
 * cents representation, it is necessary to apply the truncation that
integer
 * math enforces, rather than the rounding that is informix's default
behavior
 */
    $prepare l_stmt from
      "select sum( \
                                            trunc( \
                                                trunc(l_extendedprice *
(1 - l_discount),2)  \
                                                                        * (1 +
l_tax), 2)) \
                        from lineitem where l_orderkey = ?";
    $prepare o_stmt from
                        "select o_totalprice from order where o_orderkey
= ?";
    $prepare h_stmt from
                        "select * from history where h_child = ? order by
h_date";

    $declare h_crsr cursor for h_stmt;

    $prepare ps_stmt from
        "select * from partsupp where ps_partkey = ? and ps_suppkey =
?";

    $declare ps_crsr cursor for ps_stmt;

    /* Seed[0] = seed; */
    Seed[0] = seed + ( childnum * 201 );
    pick_keys();
    begin_tran();
    build_tran(t_cnt);
    $commit work;
    return;
}

void
do_transaction(work_unit, c)
$tran_t *work_unit;
$int c;

{

  $decimal cost, disc, e, new_ototal, ototal, ototal_delta, q, rprice,
tax;
  $decimal num1, result1, result2, result3;
  $datetime year to fraction cur_dt;
  $int     pkey, skey;

  $set isolation to repeatable read;
  /*$set explain on;*/

  $select o_totalprice into :ototal from order
     where o_orderkey = :work_unit->o;

  $select l_quantity, l_extendedprice, l_partkey, l_suppkey, l_tax,
l_discount
          into :q, :e, :pkey, :skey, :tax, :disc from lineitem
     where l_orderkey = :work_unit->o and l_linenumber = :work_unit-
>l;

  deccvint(1, &num1);

  /* 1 - disc */
  decsub(&num1, &disc, &result1);

  /* e times (1-disc) */
  decmul(&e, &result1, &result2);

  /* trunc (e times (1-disc)) */
```

```
  dectrunc(&result2, 2);

  /* 1 + tax */
  decadd(&num1, &tax, &result1);

  /* (e times (1-disc)) times (1+tax) */
  decmul(&result2, &result1, &result3);

  /* trunc (e times (1-disc)) times (1+tax) */
  dectrunc(&result3, 2);

  /* ototot - ((e times (1-disc)) times (1+tax)) */
  decsub(&ototot, &result3, &work_unit->tprice);

  /* e divided by q */
  decdiv(&e, &q, &work_unit->rprice);

  /* trunc (e divided by q) */
  dectrunc(&work_unit->rprice, 2);

  deccvint(work_unit->d, &num1);

  /* d times rprice */
  decmul(&num1, &work_unit->rprice, &cost);

  /* trunc (d times rprice) */
  dectrunc(&cost, 2);

  $update lineitem
     set (l_extendedprice, l_quantity) =
         (:e + :cost, :q + :work_unit->d)
         where l_orderkey = :work_unit->o and l_linenumber =
:work_unit->l;

  $update order
     set o_totalprice =
         :work_unit->tprice + trunc(trunc((:e+:cost)*(1-
:disc),2)*(1+:tax),2)
         where o_orderkey = :work_unit->o;

  $select o_totalprice into :new_ototal from order
     where o_orderkey = :work_unit->o;

  decsub(&new_ototal, &otot, &ototal_delta);

  dtcurrent(&cur_dt);
  if (work_unit->d > 0) {
    $insert into history values
      (:pkey, :skey, :work_unit->o, :work_unit->l, :work_unit->d,
       :cur_dt, :cost, :ototal_delta, :c);
                    }

}

begin_tran()
{

    $begin work;
    $whenever not found continue;
    $whenever error call do_error;

}

commit_tran(n, child, filename)
int n;
$parameter int child;
char *filename;
{
    char name[20];
    double r, q, t, d, e, x;

    $commit work;

   /*
    * Print record of committed transaction to success file
    */
    if (sfp == NULL)
                    {
                    sprintf(name, "%s.%d", filename, child);
                    sfp = fopen(name, "w");
                    fprintf(sfp,"%-10s|%-2s|%-3s|%-10s|%-4s|%-4s|%-
4s|%-10s|%-10s\n",
                        "order", "l", "dlt", "rprice", "qty", "tax",
                        "dsc", "eprice", "tprice");
                    fflush(sfp);
                    }
    DEC_DBL(work[n].rprice, r);
    DEC_DBL(work[n].qty, q);
    DEC_DBL(work[n].tax, t);
    DEC_DBL(work[n].disc, d);
    DEC_DBL(work[n].eprice, e);
    DEC_DBL(work[n].tprice, x);

fprintf(sfp,"%10ld|%2ld|%3ld|%10.2f|%4.0f|%4.2f|%4.2f|%10.2f|%10.2f\n"
,
                    work[n].o, work[n].l, work[n].d, r, q, t, d, e,
x);

    fflush(sfp);

}

/*
 * transaction specifics:
 *  do_tran(n, mode, child) -- execute (mode == 0) or undo (mode ==
1) the
 *                             n-th transaction
 */
void
do_tran(n, child)
int n;
$parameter int child;
{
    do_transaction(&work[n], child);
    sleep(1);

    return;
}

void
prt_history(h)
$parameter int h;
{
    $decimal cost, ototal_delta;
    $int p_key, s_key, o_key, l_key, delta, h_child;
    $dtime_t h_date;
    char dstr[40];

    $begin work;
    $open h_crsr using :h;
    $fetch h_crsr into
                    $p_key, $s_key, $o_key, $l_key, $delta, $h_date,
        $h_child;

    if (!SQLCODE) {
                    fprintf(ofp, "\n\t%8s |%8s |%9s |%2s |%3s |%s\n",
                                    "p_key", "s_key", "o_key",
"l", "d", " date");
    } else {
                    fprintf(ofp, "\n\tNo rows returned\n");
    }

    while (!SQLCODE)
                    {

                    if (dttoasc(&h_date, dstr))
                        strcpy(dstr, "error");

        fprintf(ofp, "\t%8d |%8d |%9d |%2d |%3d | %s\n",
            p_key, s_key, o_key, l_key, delta, dstr);

        $fetch h_crsr into
            $p_key, $s_key, $o_key, $l_key, $delta, $h_date,
            $h_child;
                    }

    $close h_crsr;
    $commit work;

    fprintf(ofp, "\n");
    fflush(ofp);

    return;
}

void
dump_row(tnum, which_tran)
                    int tnum;
                    char *which_tran;
{
    $int linenumber, okey;
    $dec_t qty, eprice, ototot;
    static int init = 0;
    double d;
    char msgbuf[40];

    if (init == 0)
                    {
                    $prepare d_stmt from
                    "select l_quantity, l_extendedprice, l_linenumber
from lineitem where l_orderkey = ? order by l_linenumber";
                    $declare d_crsr cursor for d_stmt;
                    init = 1;
                    }

    okey = work[tnum].o;
    /*fprintf(ofp, "\n\trandomly selected order key = %d\n\n",
okey);*/
    fprintf(ofp, "\n");
    $open d_crsr using $okey;
```

```
    $fetch d_crsr into $qty, $eprice, $linenumber;

    TIMESTAMP(which_tran);

    fprintf(ofp, "\n\t%8s |%10s |%11s |\n", "line", "quantity", "ext
price");

    while (!SQLCODE)
                    {
                    if (dectodbl(&qty, &d))
                        d = -1;

                    if (work[tnum].l == linenumber) {
                                        fprintf(ofp, "\t*%7d |%10.2f
|", linenumber, d);
                    } else {
                                        fprintf(ofp, "\t%8d |%10.2f
|", linenumber, d);
                    }
                    if (dectodbl(&eprice, &d))
                        d = -1;
                    fprintf(ofp, "%11.2f |\n", d);
                    $fetch d_crsr into $qty, $eprice, $linenumber;
                    }
    $execute o_stmt into $otot using $okey;
    if (dectodbl(&otot, &d))
                    d = -1;
    fprintf(ofp, "\n\t%8s %10.2f\n\n", "Total:", d);
    fflush(ofp);

    return;
}
```

Appendix D. Seed and Query Substitution Parameters

```
=========================================
Substitution Parameters
=========================================
1         66
2         5               TIN             AFRICA
3         AUTOMOBILE      1995-03-22
4         1993-07-01
5         AFRICA          1996-01-01
6         1993-01-01      0.07            24
7         BRAZIL          PERU
8         BRAZIL          AMERICA   ECONOMY BURNISHED TIN
9         blush
10        1993-04-01
11        BRAZIL          0.0000001000
12        REG AIR         MAIL            1993-01-01
13        Clerk#000000099
14        1993-07-01
15        1993-07-01
16        Brand#14  STANDARD POLISHED 19  48  40  33  50  39  6  21
17        Brand#14        SM PACK



=========================================
Seed
=========================================
2191998
```

Appendix E. Implementation - Specific Layer/Driver Code

```
=========================================
sun_drive
=========================================
#!/bin/ksh

if (( $# != 2 )); then
    echo "Usage:  $0 run_id seed"
    echo "          Use DDMMYYYY for seed"
    exit
fi

TOP="/tpcd/1t/audit/drive"
SCALE="1000"

export runid=$1
export DBGENDIR="dbgen.v1.2/appendix/dbgen"
export AUDIT_TAG="SUN"
export DBNAME="tpcd"
export DSS_QUERY="$TOP/templates"
export DSS_CONFIG="$TOP/${DBGENDIR}"
export QUERY_DIR="$TOP/queries"
export RES_DIR="$TOP/results/res_audit${1}"
export PATH="$TOP/bin:$TOP:$PATH"
export QGEN="$TOP/${DBGENDIR}/qgen"
export QUERIES="1 4 15b 10 11 6 2 16 14 8 12 17a 3 5 13 7 9"
export SEED=$2


if [[ ! -d $RES_DIR ]]
then
    mkdir $RES_DIR
fi

rm -f session_input
echo "set pdqpriority 100;" >> session_input
echo "set isolation repeatable read;" >> session_input

# generate new EQT
for q in $QUERIES
do
    echo "-- Start Query $q" >> session_input
    cat ${DSS_QUERY}/Start_query >> session_input
    $QGEN -c -s ${SCALE} -l ${RES_DIR}/params -r $SEED \
         $q > ${QUERY_DIR}/${AUDIT_TAG}_${q}.sql
    cat ${QUERY_DIR}/${AUDIT_TAG}_${q}.sql >> session_input
    cat ${DSS_QUERY}/End_query >> session_input
    printf "!echo Query %-4s   End - Timer: \`timer\` Date: \`date\`
" $q \
                        >> session_input
    printf ">> ${RES_DIR}/Timing \n" $q \
                        >> session_input
done

# execute performance tests runs
for run in 1
do
    echo "-- SF $SCALE"  >> ${RES_DIR}/Timing
    str_0_start=`timer`
    echo "Stream ST0 starts - Timer: $str_0_start Date: `date`" \
                >> ${RES_DIR}/Timing

    uf1_set${1}.sh >  ${RES_DIR}/${AUDIT_TAG}_uf1.out 2>&1
    UF1_end=`timer`
    echo "UF    UF1 end - Timer: $UF1_end Date: - `date`" \
                 >> ${RES_DIR}/Timing

    dbaccess -e ${DBNAME} - < session_input \
                              > ${RES_DIR}/session_out 2>&1

    uf2_set${1}.sh >  ${RES_DIR}/${AUDIT_TAG}_uf2.out 2>&1
    UF2_end=`timer`
    echo "UF    UF2 end - Timer: $UF2_end Date: - `date`" \
                 >> ${RES_DIR}/Timing

    str_0_end=$UF2_end
    echo "Stream ST0 end - Timer: $str_0_end Date: `date`" \
                       >> ${RES_DIR}/Timing
    str_0_elapse_time=`echo "$str_0_end - $str_0_start" | bc`
    echo "Stream 0 Elapse time: $str_0_elapse_time"  >>
${RES_DIR}/Timing

    cat ${RES_DIR}/Timing | \
              nawk '{ if ( $1 == "--" ) {print $0} else {print
$2,$6}  }'| \
               calc >  ${RES_DIR}/result

    cd ${RES_DIR}
    cat ${RES_DIR}/session_out | nawk ' BEGIN { output="/dev/null"} \
            $1 == "--" && $3 == "Query"  \
          { output = "SUN_" $4 ".out"} {print $0 >> output }'
    cd ${TOP}
    mv session_input ${RES_DIR}

for q in $QUERIES
    do
        head -400 ${RES_DIR}/SUN_${q}.out >
${RES_DIR}/mpaudit${runid}qry${q}
    done
done
```

```
=========================================
uf1_set1.sh
=========================================
#!/bin/ksh
```

```
dbaccess tpcd <<EOF
begin work;
set PDQPRIORITY 100;
set isolation repeatable read;

!echo CREATE ORDERUF1_EXT WITH ORDERS ROWS TO INSERT
create external table orderuf1_ext
    sameas order using
    ( format "delimited",
        datafiles
           ("disk:1:/ufs1/set1/orderaa",
            "disk:2:/ufs2/set1/orderab",
            "disk:3:/ufs3/set1/orderac",
            "disk:4:/ufs4/set1/orderad",
            "disk:5:/ufs1/set1/orderae",
            "disk:6:/ufs2/set1/orderaf",
            "disk:7:/ufs3/set1/orderag",
            "disk:8:/ufs4/set1/orderah",
            "disk:9:/ufs1/set1/orderai",
            "disk:10:/ufs2/set1/orderaj",
            "disk:11:/ufs3/set1/orderak",
            "disk:12:/ufs4/set1/orderal",
            "disk:13:/ufs1/set1/orderam",
            "disk:14:/ufs2/set1/orderan",
            "disk:15:/ufs3/set1/orderao",
            "disk:16:/ufs4/set1/orderap"),
        deluxe
    );


! echo CREATE LINEUF1_EXT FILE WITH RECORDS TO INSERT
 create external table lineuf1_ext
    sameas lineitem using
                    ( format "delimited",
        datafiles
           ("disk:1:/ufs1/set1/lineitemaa",
                        "disk:2:/ufs2/set1/lineitemab",
                        "disk:3:/ufs3/set1/lineitemac",
                        "disk:4:/ufs4/set1/lineitemad",
                        "disk:5:/ufs1/set1/lineitemae",
                        "disk:6:/ufs2/set1/lineitemaf",
                        "disk:7:/ufs3/set1/lineitemag",
                        "disk:8:/ufs4/set1/lineitemah",
                        "disk:9:/ufs1/set1/lineitemai",
                        "disk:10:/ufs2/set1/lineitemaj",
                        "disk:11:/ufs3/set1/lineitemak",
                        "disk:12:/ufs4/set1/lineitemal",
                        "disk:13:/ufs1/set1/lineitemam",
                        "disk:14:/ufs2/set1/lineitemman",
                        "disk:15:/ufs3/set1/lineitemao",
                        "disk:16:/ufs4/set1/lineitemap"),
        deluxe
    );

!echo INSERT INTO ORDER
insert into order select * from orderuf1_ext;

!echo INSERT INTO LINEITEM
insert into lineitem select * from lineuf1_ext;
commit work;

drop table orderuf1_ext;
drop table lineuf1_ext;

EOF
```

uf1_set2.sh

```
#!/bin/ksh

dbaccess tpcd <<EOF
begin work;
set PDQPRIORITY 100;
set isolation repeatable read;

!echo CREATE ORDERUF1_EXT WITH ORDERS ROWS TO INSERT
create external table orderuf1_ext
    sameas order using
    ( format "delimited",
        datafiles
           ("disk:1:/ufs1/set2/orderaa",
            "disk:2:/ufs2/set2/orderab",
            "disk:3:/ufs3/set2/orderac",
            "disk:4:/ufs4/set2/orderad",
            "disk:5:/ufs1/set2/orderae",
            "disk:6:/ufs2/set2/orderaf",
            "disk:7:/ufs3/set2/orderag",
            "disk:8:/ufs4/set2/orderah",
            "disk:9:/ufs1/set2/orderai",
            "disk:10:/ufs2/set2/orderaj",
            "disk:11:/ufs3/set2/orderak",
            "disk:12:/ufs4/set2/orderal",
            "disk:13:/ufs1/set2/orderam",
            "disk:14:/ufs2/set2/orderan",
            "disk:15:/ufs3/set2/orderao",
            "disk:16:/ufs4/set2/orderap"),
        deluxe
    );


! echo CREATE LINEUF1_EXT FILE WITH RECORDS TO INSERT
 create external table lineuf1_ext
    sameas lineitem using
                    ( format "delimited",
        datafiles
           ("disk:1:/ufs1/set2/lineitemaa",
                        "disk:2:/ufs2/set2/lineitemab",
                        "disk:3:/ufs3/set2/lineitemac",
                        "disk:4:/ufs4/set2/lineitemad",
                        "disk:5:/ufs1/set2/lineitemae",
                        "disk:6:/ufs2/set2/lineitemaf",
                        "disk:7:/ufs3/set2/lineitemag",
                        "disk:8:/ufs4/set2/lineitemah",
                        "disk:9:/ufs1/set2/lineitemai",
                        "disk:10:/ufs2/set2/lineitemaj",
                        "disk:11:/ufs3/set2/lineitemak",
                        "disk:12:/ufs4/set2/lineitemal",
                        "disk:13:/ufs1/set2/lineitemam",
                        "disk:14:/ufs2/set2/lineiteman",
                        "disk:15:/ufs3/set2/lineitemao",
                        "disk:16:/ufs4/set2/lineitemap"),
        deluxe
    );

!echo INSERT INTO ORDER
insert into order select * from orderuf1_ext;

!echo INSERT INTO LINEITEM
insert into lineitem select * from lineuf1_ext;
commit work;

drop table orderuf1_ext;
drop table lineuf1_ext;

EOF
```

uf2_set1.sh

```
#!/bin/ksh
DATADIR=/ufs1/set1
DELETEFILE=delete.0
#Delete from DELETEFILE using uf_delete.sh
ksh uf_delete.sh ${DATADIR}/${DELETEFILE}
```

uf2_set2.sh

```
#!/bin/ksh
DATADIR=/ufs1/set2
DELETEFILE=delete.0
#Delete from DELETEFILE using uf_delete.sh
ksh uf_delete.sh ${DATADIR}/${DELETEFILE}
```

uf_delete.sh

```
#!/bin/ksh
USAGE=" $0  <dbgen file>  orderkeys to delete from O and LI - use
entire path "

if [ $# -ne 1 ]; then
                    echo
                    echo USAGE:
        echo $USAGE
                    echo Check parameter list
        exit;
fi
DELETEFILE=$1
if [ ! -f $DELETEFILE ]; then
                    echo
                    echo USAGE:
                    echo $USAGE
                    echo check filename
                    exit;
fi

#Source for update function UF2
```

```
#================================

dbaccess tpcd <<EOF
  begin work;
  set pdqpriority 100;
  set isolation repeatable read;

!echo CREATE SCRATCH TABLE ORDERUFD_TMP
create scratch table orderufd_tmp
       (d_orderkey decimal (12,0) )
fragment by hash (d_orderkey) in tdbs;

!echo CREATE ORDER_DELETE_EXT
create external table order_delete_ext
sameas orderufd_tmp
using ( format "delimited",
        datafiles ("disk:1:$DELETEFILE"),
                   rejectfile "/tmp/deleter.%c");

insert into orderufd_tmp select * from order_delete_ext;

! echo DELETE FROM ORDER
delete from order where o_orderkey in
                (select d_orderkey from orderufd_tmp);

! echo DELETE FROM LINEITEM
delete from lineitem where l_orderkey in (select d_orderkey from
orderufd_tmp);

commit work;

drop table orderufd_tmp;
drop table order_delete_ext;

EOF
```

timer.c

```
#include <sys/time.h>

main()
{

                   struct timeval tp;
                   double secs;


                   gettimeofday(&tp,  NULL);
       secs = tp.tv_sec + (double )tp.tv_usec / 1000000 ;
                   printf("%.2f", secs);
}
```

End_query

```
commit work;
```

Start_query

```
begin work;
```

Appendix F. Initial Ten Rows of Tables

Region

```
select first 10 * from region order by r_regionkey;


r_regionkey  0
r_name       AFRICA
r_comment
xSx31zz31Cl1z4OAnmm05AjiOxC3AMMNOgC0kACgwngg3glP7LLLywlQy7R

r_regionkey  1
r_name       AMERICA
r_comment
kgyh3LSnC72k6zlAz0LP3k2L4QB1QL1O673OjO1SPj0ngQ7CO100SBgmgRQ4lgPCMk
             21A425iklyAR4yBRAwR4Cm5miNw 4jl13mMnxw17B

r_regionkey  2
r_name       ASIA
r_comment    NSg6xlMlA1lzm6mOR0Ajx nhRA77NgRxBwL1M6Py
RjySB3RLwkyPkwMM2R1BQ xAz
             kOgkjml10gAghinP5inmNmR76MlijMS3S2zxONR15

r_regionkey  3
r_name       EUROPE
r_comment
zlSL7Qwg12hMBL5lhlz0M45QkjShwSyiO04MLOh7wn1ARLQPyPAyAiil576l1Li7Al
             nR1S RQ4SLny7B2Ryj5P66MLhn NxhwB4C3ig0SO

r_regionkey  4
r_name       MIDDLE EAST
r_comment    RllxmhPLz3Cy2mNlg4QMBnNASM ACki MPki7Oi
```

Nation

```
select first 10 * from nation order by n_nationkey;


n_nationkey  0
n_name       ALGERIA
n_regionkey  0
n_comment    2Cxhl7 L1iwk6hMh300izngN32CPwCikyLk6khMzSRA

n_nationkey  1
n_name       ARGENTINA
n_regionkey  1
n_comment    zQn3Okwz1wLn7PLS3OhCgn56kP5PyRikgi1B7lL

n_nationkey  2
n_name       BRAZIL
n_regionkey  1
n_comment    gLmS0nACAmnBCj2klki7RCPNgPxnCOjNg4k
OiAg57COSOm1NwCnOyLx40R SC y20
             gPPAkNk5hxRhR5OmgS1iPQQzNAxPL30n67OgyC l617Sh4LS

n_nationkey  3
n_name       CANADA
n_regionkey  1
n_comment     4yMO AhnQ5Lh wzQAM662Aw1ByCl7CxmzRwNR5nAlO4 x

n_nationkey  4
n_name       EGYPT
n_regionkey  4
n_comment    l1im5126  Cxj NMQmLxOikni02j2m3Ah4yNR1QQiL507j2QSlyN

n_nationkey  5
n_name       ETHIOPIA
n_regionkey  0
n_comment    NS7n LSOP Oz5n1AlB2S02nN0lMh4SBxP iRhBO 047R26 2BlM

n_nationkey  6
n_name       FRANCE
n_regionkey  3
n_comment    3mjmizl S 3L3k2hNNhNlP4w370xRxyN15wn

n_nationkey  7
n_name       GERMANY
n_regionkey  3
n_comment    z nOP4RkwO CmzBB 516mAg lByw4OM3QyNPA

n_nationkey  8
n_name       INDIA
n_regionkey  2
n_comment    MNlR5RCiRMj1l11wjN7Myn M1lylNlMmBQl7PL4C
kkxQkgPQ7i3w6B67R2QkOO40
             xl4Q2iw76jRL7ilhR5Q 0xC7RRm5iQ2NAx2LiBm3QiO27j

n_nationkey  9
n_name       INDONESIA
n_regionkey  2
n_comment    SjPmQO71Lj 7ABj6MxlAQk3nLwi73BPxzCwjzMn4zlLzgg6nnz0j0w
zxC66gP6ykR
             PMg
```

Customer

```
select first 10 * from customer order by c_custkey;


c_custkey     1
c_name        Customer#000000001
```

```
c_address     ANhzAAh6R3 glS4Sx
c_nationkey   15
c_phone       25-989-741-2988
c_acctbal     711.56
c_mktsegment  BUILDING
c_comment     j5S37kk6zkOzkM5NOz6jwwimkN66CmOhM5ySy
w6PAj2xjOAmhkw6ChSR 21BMRkL
              0kLM5zxg654CRlB3 1Lxm3S

c_custkey     2
c_name        Customer#000000002
c_address     MN0L3OzNgylx2
c_nationkey   13
c_phone       23-768-687-3665
c_acctbal     121.65
c_mktsegment  AUTOMOBILE
c_comment     M4QB23ixkg0yk6m3gwim6zi32PS7lj2

c_custkey     3
c_name        Customer#000000003
c_address     PSL74SNCwwN2ON66lxgnw7mR4hLP2k
c_nationkey   1
c_phone       11-719-748-3364
c_acctbal     7498.12
c_mktsegment  AUTOMOBILE
c_comment     mSC13MBj4n0P6Mgh0ml02zOBlyjw3NzB1

c_custkey     4
c_name        Customer#000000004
c_address     mknn1Sh0NPMz1k5Lw2OB mO
c_nationkey   4
c_phone       14-128-190-5944
c_acctbal     2866.83
c_mktsegment  MACHINERY
c_comment
MN6ChhSMwPwzOkyww7C5ROlhMS0C4iR2nC6kQmywx3yim62QNySOmQRQnwizihMOg

c_custkey     5
c_name        Customer#000000005
c_address     yOww5znhPNi5OlQNPChkLx2BLPxNSB
c_nationkey   3
c_phone       13-750-942-6364
c_acctbal     794.47
c_mktsegment  HOUSEHOLD
c_comment     24BOSzg 03m710wll   iNxnwQ0OmzzgO7A3ykBj2
g755hhCyMO7QnARx5Pg3kyA
              QA35 i0CS1MSLg0xN2iyg0liwnMwnOx52nj5iQkNQPP

c_custkey     6
c_name        Customer#000000006
c_address     nS70ykL4n k51ik3R5wlNzjnjBL2N51ki
c_nationkey   20
c_phone       30-114-968-4951
c_acctbal     7638.57
c_mktsegment  AUTOMOBILE
c_comment     hPMLmxPw05R1mz126jjRAj1kOP7xLC6
yS3ALCRBR5B3im650BLm4O3SwBP7xlwOk
              lmPRS31RNN0gMkkPm4COigCRMlniz27jwg63yz

c_custkey     7
c_name        Customer#000000007
c_address      ChljB04OgAizN6kQhRi7LjjNiCM0A AS
c_nationkey   18
c_phone       28-190-982-9759
c_acctbal     9561.95
c_mktsegment  AUTOMOBILE
c_comment     QM63L2miSw3hy34iQ11235
011mkgk0SkCRC73L1CgiLROzNwjO4PQSBx2n2iQg5h

c_custkey     8
c_name        Customer#000000008
c_address     kCRz0CknMw7mh4P50QjBnxSLRxQCMOAh yNn
c_nationkey   17
c_phone       27-147-574-9335
c_acctbal     6819.74
c_mktsegment  BUILDING
c_comment     x1Rh1P5M73Lix xyM
Lmng0RO4MBQyLll7wzwgyOLCxi2yCLgL1zO4yOiAPj

c_custkey     9
c_name        Customer#000000009
c_address     L4z65g2RNgN6PxM5kRjnPB7k2kwL62
c_nationkey   8
c_phone       18-338-906-3675
c_acctbal     8324.07
c_mktsegment  FURNITURE
c_comment     7zRiSzmj4Ak7L6N7RljhM5437B6CPmP54RC1x1x7C6hziN6l

c_custkey     10
c_name        Customer#000000010
c_address     L3jg3xAwi6A0B103B0Aymm
c_nationkey   5
c_phone       15-741-346-9870
c_acctbal     2753.54
c_mktsegment  HOUSEHOLD
c_comment     7Lm
LiCwwxQMykgNOR6kzCyP1B21QyA57hBlSOPnx6m53iSOP6w44M3CP MnP7Alk
              y4OwkOwSh20341
```

==========

supplier

==========

```
select first 10 * from supplier order by s_suppkey;


s_suppkey     1
s_name        Supplier#000000001
s_address      N kw4gn1OM Ahw3Sg70BBgQw57lgjzj55R
s_nationkey   17
s_phone       27-918-335-1736
s_acctbal     5755.94
s_comment     lLniMi51QPmO1 C2hy27wkN21mmg53 BhQBB1O2x4OmiR4kO5kN1BS
4PwMhk Pk2n
              RnA2 k

s_suppkey     2
s_name        Supplier#000000002
s_address     ji3yh016B5
s_nationkey   5
s_phone       15-679-861-2259
s_acctbal     4032.68
s_comment     B32z0yzh2lPyOwQkAjA704yM2R7llRlk2
xCliy41QNmQn0RNl0OQ4jgMy3kSRBLzy
              w25CB5 lk0A 54

s_suppkey     3
s_name        Supplier#000000003
s_address     mxBQBnxO3CSwl7
s_nationkey   1
s_phone       11-383-516-1199
s_acctbal     4192.40
s_comment     BS0OzjiO1yM6Rgl4mxLNhjSMPB37Sw7ym3R7ll2n4SSCilz6nlL5SBOig

s_suppkey     4
s_name        Supplier#000000004
s_address     7zR323R73NMB77wi1
s_nationkey   15
s_phone       25-843-787-7479
s_acctbal     4641.08
s_comment     w lQn6QyOSSxhw10C6gz2BngiLRAMmgnRxiLiO3

s_suppkey     5
s_name        Supplier#000000005
s_address     AmMQ7Mg 10ByLCP52M13xN31jh5hzOgnm00B
s_nationkey   11
s_phone       21-151-690-3663
s_acctbal     -283.84
s_comment     PAziBQQixjwS7P4lQhn10i74050M
AzkxACnOAyjnSm3CQ26SOx5kynSR0nlLSzi3y
              3nzPPNikNl3P3 kLwwOP7AM30CO0ymAh

s_suppkey     6
s_name        Supplier#000000006
s_address     QQL6hxmnMkkgMwgm7CB5B 30Llz
s_nationkey   14
s_phone       24-696-997-4969
s_acctbal     1365.79
s_comment     giSki24 gRNAmB 1yOzPR6Q2kiNCQ0h3LLyxmROA5O7OOi5zlzy

s_suppkey     7
s_name        Supplier#000000007
s_address     z45m2jBRzl5ilLNz4
s_nationkey   23
s_phone       33-990-965-2201
s_acctbal     6820.35
s_comment     1PhngjmiSQl0RzRACP0l4S70xSL
QPSBM16072SkMLCgm4OOMjARLNQk3g1P3BB32A
              gBMl462B0CP7Rh24

s_suppkey     8
s_name        Supplier#000000008
s_address     xz5m4C  A4AAj0kANQ
s_nationkey   17
s_phone       27-498-742-3860
s_acctbal     7627.85
s_comment     lz57Mw6RNwCSCzmAShwN7S45w20C5zS6zi
5Al1ORMwnQmjS5SgBnRhQ1lCkyBlhN
              6MP7 kAzNw3gSjyyLMiNzhCmPn0 g5x23Q

s_suppkey     9
s_name        Supplier#000000009
s_address     m7k7CnC3wiP
s_nationkey   10
s_phone       20-403-398-8662
s_acctbal     5302.37
s_comment     xPLzNgk5nzA jm3PLmySlm PS  zANRjSgh2njAg
```

```
s_suppkey     10
s_name        Supplier#000000010
s_address     wN1S4mQ0g7Px5Lj34xw6kS4Li4NzB4mO
s_nationkey   24
s_phone       34-852-489-8585
s_acctbal     3891.91
s_comment     5xwg6AOz0NzhONL6kC43zR3AhzO6njCiwPg7k6MxwP1mN2 Rg 5Q426
```

==========

Part

==========

```
select first 10 * from part order by p_partkey;


p_partkey      1
p_name         goldenrod lace spring chartreuse ivory
p_mfgr         Manufacturer#1
p_brand        Brand#13
p_type         PROMO BURNISHED COPPER
p_size         7
p_container    JUMBO PKG
p_retailprice  901.00
p_comment      zMg1PACmQ 7RCCC7

p_partkey      2
p_name         snow ghost azure burnished lemon
p_mfgr         Manufacturer#1
p_brand        Brand#13
p_type         LARGE BRUSHED BRASS
p_size         1
p_container    LG CASE
p_retailprice  902.00
p_comment      Bxg4RlO6051n7NjN zn

p_partkey      3
p_name         cornflower navajo salmon lemon orchid
p_mfgr         Manufacturer#4
p_brand        Brand#42
p_type         STANDARD POLISHED BRASS
p_size         21
p_container    WRAP CASE
p_retailprice  903.00
p_comment      4241RR3By

p_partkey      4
p_name         olive dim lemon light khaki
p_mfgr         Manufacturer#3
p_brand        Brand#34
p_type         SMALL PLATED BRASS
p_size         14
p_container    MED DRUM
p_retailprice  904.00
p_comment      z1n7znz6

p_partkey      5
p_name         lavender cornsilk linen seashell lemon
p_mfgr         Manufacturer#3
p_brand        Brand#32
p_type         STANDARD POLISHED TIN
p_size         15
p_container    SM PKG
p_retailprice  905.00
p_comment      gj4Lg5BhBk12iS

p_partkey      6
p_name         cornsilk beige chartreuse medium blue
p_mfgr         Manufacturer#2
p_brand        Brand#24
p_type         PROMO PLATED STEEL
p_size         4
p_container    MED BAG
p_retailprice  906.00
p_comment      yNjzS Njyh4mgLx Om

p_partkey      7
p_name         honeydew purple cream mint coral
p_mfgr         Manufacturer#1
p_brand        Brand#11
p_type         SMALL PLATED COPPER
p_size         45
p_container    SM BAG
p_retailprice  907.00
p_comment      PSNg0L

p_partkey      8
p_name         puff blush tomato papaya navy
p_mfgr         Manufacturer#4
p_brand        Brand#44
p_type         PROMO BURNISHED TIN
p_size         41
p_container    LG DRUM
p_retailprice  908.00
p_comment      k042AL4y21N1yNPC77

p_partkey      9
p_name         burnished violet pink rose drab
p_mfgr         Manufacturer#4
p_brand        Brand#43
p_type         SMALL BURNISHED STEEL
p_size         12
p_container    WRAP CASE
p_retailprice  909.00
p_comment      37PLkwhgiAP0xCkxO

p_partkey      10
p_name         slate dark white lavender purple
p_mfgr         Manufacturer#5
p_brand        Brand#54
p_type         LARGE BURNISHED STEEL
p_size         44
p_container    LG CAN
p_retailprice  910.01
p_comment      wPP74M1Lwj1
```

==========

Partsupp

==========

```
select first 10 * from partsupp order by ps_partkey;


ps_partkey     1
ps_suppkey     2
ps_availqty    3325
ps_supplycost  771.64
ps_comment     00PL56QkQRSkg2z7MANNj4i1h2zLQQLiQnAlML1S6
k4hg3hP5hk3ywMLwy 7gjR
               3 4Q7S1Qmzx2jOS37Mk61n
yCg4Q7k522P0055wg23B0Mw3BOwSy6z5Q6xljABx3
               LAj6R6CmM
l4jjMzQ02LkiiyCCwBk7w465kLBz7QlCk26ARLOxk7z2hC0jw7

ps_partkey     1
ps_suppkey     2500002
ps_availqty    8076
ps_supplycost  993.49
ps_comment     nSO7Mln4N7LlxgAyM2MzNnO7k0NlhjyShgCy30A
27QML0SQ77CPPgkCQAQCwz5M
               3MmSSAQ LxMLMC0Bj4CNN276SmQRSljPxz5z3
L2mLMQSBghjLnCOR4Nl 156OMP
                C76QL
xiyw0kSQy1w6ygAxOA4hx7Ngihi5NAPNl2LQ4SRnNhn7mygOB0z

ps_partkey     1
ps_suppkey     7500002
ps_availqty    4069
ps_supplycost  357.84
ps_comment     234OCA5ghw0P0gS3n2jCS35yAm 3L5C7iB k7 w1
R52LLOACQ6i606OB 2MP1x0

wC23ik2Omk4NnxzmS6z5z5il661l2l2g0P3OLk66jzQxjSSAnwSnQ3xz QBQR2j1
               0hNmmyQ14hl45l4x5C B5Qz Lk26yhQNmS54A2O7wlC P0C57CyxSL3

ps_partkey     1
ps_suppkey     5000002
ps_availqty    3956
ps_supplycost  337.09
ps_comment     6215k
jLCizNlOBl62nP4lLQy431kOzyzn2M6L3h73lCljhlx3x5ghjlOyL76A0h
               zPk2CS2jkxN gAN3gnk652 Cj4k4

ps_partkey     2
ps_suppkey     3
ps_availqty    8895
ps_supplycost  378.49
ps_comment     MMNOM3BnMM6NBzjB 2mg i jALB
nQhBM5ROi5N7A5w4B4S2k1506OzMgh6SRB7n
               P1hQCjgjR17SBA77g6niCwi0L6Pghh1S0O4mlSL1OShRkyxQS7NNQj

ps_partkey     2
ps_suppkey     2500003
ps_availqty    4969
ps_supplycost  915.27
ps_comment     6S66zNlykhii26wwAxz1PRMxggAy446yylPBS5wP
Rl6ggNkyikkyhxymMShNgQm
               Bim1N60 00NSjwPw02lhPPSmn3yRSCn105llnPBk2MlRlxxQAmR
mO2kxiRh5Pk4
               x2OnS40nnQRm
16L6NC2RSAkL36g6w64L5w4w74Lnz5wROSOQNingx4imSnPwz5N
                hSxNg

ps_partkey     2
ps_suppkey     7500003
ps_availqty    3025
ps_supplycost  306.39
ps_comment     y5BNy3Aw02nxyMxgzP5BS14gg7MCnLlSkih56gOMOy4QyNj5P3iM
jOmkRQhRR3h
```

```
              ylCn4jN LlgSxyPigjRLgBygM
RR4CL3Pjx6CRMNlliA7w2ALwkzn06khOOzyQNB
              63wP4BLSk wPNk4My

ps_partkey     2
ps_suppkey     5000003
ps_availqty    8539
ps_supplycost  438.37
ps_comment     BPOgj3k MgQR2
x6kn3BR6lkmhMzjQk6S343LmN6lz2Qh512MSi4nQ5Bghxlh401

yyn463mxOh7Bxgx1PR60jwSMQ661OCA6mPO33R05R2S6N330in0Qx0AC4QhBnOkz
              4NlQkMR2gh3 k1xk SjN40C77hm2Qlh01jAkSP

ps_partkey     3
ps_suppkey     4
ps_availqty    4651
ps_supplycost  920.92
ps_comment     P7 437MmnM0Pik
lAwBj0gSnm1z1zAMA6417zgS154nLCC0Q6BC1lgxyB6BkOj6Q
              CC6n4mw2w7jgCNP zz5AMw37 z

ps_partkey     3
ps_suppkey     2500004
ps_availqty    4093
ps_supplycost  498.13
ps_comment
PyRmlwO76kO3igxhS64h5x6PBLM2PxkO0j3NMRgzP6S1ghhw4Nnn04my03lzCyQQ
              4M3gS2kO2iOmxPzlCM330zN1yPnzml1ixgB
```

==========

Order

==========

```
select first 10 * from order order by o_orderkey;


o_orderkey       9
o_custkey        21733009
o_orderstatus    F
o_totalprice     85677.92
o_orderdate      1993-01-04
o_orderpriority  3-MEDIUM
o_clerk          Clerk#000840466
o_shippriority   0
o_comment        wk205jz16y47NBMS2ixP7ihnBgxQh2z2AQhAjPRy1m0im
j1MSm7h33gAl37Nh
                 R5mwL3SCyC2l

o_orderkey       10
o_custkey        16675004
o_orderstatus    F
o_totalprice     255119.99
o_orderdate      1994-05-17
o_orderpriority  2-HIGH
o_clerk          Clerk#000695495
o_shippriority   0
o_comment        76k41AnO6AL3nxz557jjB2kl5NlmnML
2x3SMPnN776ROAw0gL5Mwyhjyl3RRn
                 mAjN23SQz3703n

o_orderkey       11
o_custkey        56779286
o_orderstatus    F
o_totalprice     317120.84
o_orderdate      1993-07-14
o_orderpriority  5-LOW
o_clerk          Clerk#000179018
o_shippriority   0
o_comment        z6PBA40LilQNjkC27ONOMMAx2kB1x3niNy

o_orderkey       12
o_custkey        139457272
o_orderstatus    O
o_totalprice     253312.85
o_orderdate      1998-06-21
o_orderpriority  3-MEDIUM
o_clerk          Clerk#000743712
o_shippriority   0
o_comment        RihmNCL1540kgNPSR27ixPz

o_orderkey       13
o_custkey        108361307
o_orderstatus    O
o_totalprice     52444.40
o_orderdate      1998-05-08
o_orderpriority  3-MEDIUM
o_clerk          Clerk#000566739
o_shippriority   0
o_comment        z070z5BO1nzCj40injPniiB1wOLn6M6PASwLggzj

o_orderkey       14
o_custkey        78473444
o_orderstatus    F
o_totalprice     354120.82
o_orderdate      1992-04-12
o_orderpriority  3-MEDIUM
o_clerk          Clerk#000167992
o_shippriority   0
o_comment        L4lCl3CBL3y6 41jiAhzmQhSmkw6xCyzAOASS40CymRlm

o_orderkey       15
o_custkey        103170070
o_orderstatus    F
o_totalprice     27565.75
o_orderdate      1994-09-22
o_orderpriority  1-URGENT
o_clerk          Clerk#000426918
o_shippriority   0
o_comment        kA5LAnmmg5COjRQQBB0y

o_orderkey       40
o_custkey        72514396
o_orderstatus    F
o_totalprice     20368.89
o_orderdate      1993-11-07
o_orderpriority  5-LOW
o_clerk          Clerk#000208662
o_shippriority   0
o_comment        ynSzn17LM03mLQmxj3g4NR3A0kS7Aijg5xz
L74N7mN6MAzy46AS0LiBLRkSm

o_orderkey       41
o_custkey        149442364
o_orderstatus    O
o_totalprice     107402.95
o_orderdate      1998-05-26
o_orderpriority  1-URGENT
o_clerk          Clerk#000967922
o_shippriority   0
o_comment        gLlimzxzCn4gL2lMzC56LjR7y6ikPgSP6jjn47O4SSwN

o_orderkey       42
o_custkey        47075873
o_orderstatus    O
o_totalprice     263770.64
o_orderdate      1997-05-19
o_orderpriority  3-MEDIUM
o_clerk          Clerk#000857067
o_shippriority   0
o_comment        P7C4y0l7nm
nM50gP5Q4khgSCzxBNn0xjzxiQmiRBO7Lk7LPRRmwLC
```

==========

Lineitem

==========

```
select first 10 * from lineitem order by l_orderkey;


l_orderkey       9
l_partkey        104160736
l_suppkey        6660747
l_linenumber     3
l_quantity       19.00
l_extendedprice  34039.07
l_discount       0.09
l_tax            0.03
l_returnflag     A
l_linestatus     F
l_shipdate       1993-03-04
l_commitdate     1993-02-05
l_receiptdate    1993-03-19
l_shipinstruct   TAKE BACK RETURN
l_shipmode       FOB
l_comment        6MAgNnSnz3AM6

l_orderkey       9
l_partkey        45899513
l_suppkey        899522
l_linenumber     1
l_quantity       3.00
l_extendedprice  4530.66
l_discount       0.09
l_tax            0.06
l_returnflag     A
l_linestatus     F
l_shipdate       1993-01-14
l_commitdate     1993-03-15
l_receiptdate    1993-01-25
l_shipinstruct   COLLECT COD
l_shipmode       RAIL
l_comment        AnLh0MCL5 i4ijh0w3OPSNjyxR76PAn56x L SMPy

l_orderkey       9
l_partkey        129830126
l_suppkey        4830151
l_linenumber     5
l_quantity       34.00
l_extendedprice  35687.42
```

```
l_discount       0.03
l_tax            0.03
l_returnflag     R
l_linestatus     F
l_shipdate       1993-01-27
l_commitdate     1993-02-23
l_receiptdate    1993-02-26
l_shipinstruct   COLLECT COD
l_shipmode       MAIL
l_comment        PCNxP2M xROAwz03C4Px27xmBCmlRL7NMNM

l_orderkey       9
l_partkey        33099552
l_suppkey        5599556
l_linenumber     2
l_quantity       6.00
l_extendedprice  9299.40
l_discount       0.03
l_tax            0.02
l_returnflag     A
l_linestatus     F
l_shipdate       1993-02-04
l_commitdate     1993-03-20
l_receiptdate    1993-02-27
l_shipinstruct   TAKE BACK RETURN
l_shipmode       REG AIR
l_comment        LOjz5m2MBO631Ay gS3QC41Ny6i55j5RO3QB

l_orderkey       9
l_partkey        29483539
l_suppkey        9483540
l_linenumber     4
l_quantity       3.00
l_extendedprice  4563.18
l_discount       0.06
l_tax            0.06
l_returnflag     A
l_linestatus     F
l_shipdate       1993-02-21
l_commitdate     1993-03-17
l_receiptdate    1993-02-22
l_shipinstruct   COLLECT COD
l_shipmode       MAIL
l_comment        lC21242Q2A0O

l_orderkey       10
l_partkey        176378151
l_suppkey        3878203
l_linenumber     3
l_quantity       50.00
l_extendedprice  61017.00
l_discount       0.01
l_tax            0.00
l_returnflag     A
l_linestatus     F
l_shipdate       1994-08-18
l_commitdate     1994-07-25
l_receiptdate    1994-08-30
l_shipinstruct   COLLECT COD
l_shipmode       SHIP
l_comment        0OiOCNz62w0zj00R1SiBk4i2g23n3l0nxC6

l_orderkey       10
l_partkey        100760065
l_suppkey        5760086
l_linenumber     5
l_quantity       12.00
l_extendedprice  13440.36
l_discount       0.06
l_tax            0.08
l_returnflag     R
l_linestatus     F
l_shipdate       1994-08-14
l_commitdate     1994-07-02
l_receiptdate    1994-09-01
l_shipinstruct   NONE
l_shipmode       RAIL
l_comment        myRN6wOhgklwQkS0mC4iMQk

l_orderkey       10
l_partkey        187582601
l_suppkey        2582638
l_linenumber     4
l_quantity       30.00
l_extendedprice  50226.90
l_discount       0.08
l_tax            0.04
l_returnflag     R
l_linestatus     F
l_shipdate       1994-07-23
l_commitdate     1994-07-06
l_receiptdate    1994-07-28
l_shipinstruct   COLLECT COD
l_shipmode       AIR
l_comment        5AlMA43BNPlA6jOA0CRiL1jn

l_orderkey       10
l_partkey        54927112
l_suppkey        7427118
l_linenumber     1
l_quantity       35.00
l_extendedprice  39772.95
l_discount       0.02
l_tax            0.08
l_returnflag     R
l_linestatus     F
l_shipdate       1994-06-30
l_commitdate     1994-06-24
l_receiptdate    1994-07-13
l_shipinstruct   DELIVER IN PERSON
l_shipmode       FOB
l_comment        hgA3jl1yxykCl3Al6O10zRR6Mn 1g0O5  L

l_orderkey       10
l_partkey        159955756
l_suppkey        7455802
l_linenumber     2
l_quantity       12.00
l_extendedprice  21645.12
l_discount       0.01
l_tax            0.02
l_returnflag     A
l_linestatus     F
l_shipdate       1994-06-21
l_commitdate     1994-06-18
l_receiptdate    1994-07-19
l_shipinstruct   COLLECT COD
l_shipmode       TRUCK
l_comment        726lBR1ygO4NRAjm2
```

Appendix G. Pricing

See next page

Sales Quotation
Quote Number: MMR02-20-98: 52
Date: February 22, 1998
Valid for 30 Days
FOB: Warehouse
Terms: Net 30, 1.5% per month after 30days

Sun Micro Systems
901 San Antonio Rd.
Palo Alto, CA, USA 94303

Mark Ransler
1900 Camden Ave
San Jose, CA 95124
408-369-7879

Item	Part Number	Description	List Price	Qty	Total
	Server Hardware				
1	E6002	SERVER UE6000 BASE 2*PS	$112,500.00	4	$450,000.
2	2601A	OPT INT CPU/MEM BD FOR EX000	6,750.00	48	324,000.
3	2560A	336MHz/4MB UltraSPARC II	14,250.00	96	1,368,000.
4	7023A	OPT MEMORY 1GB (8*128MB)	12,000.00	64	768,000.
5	954A	OPT INT PS/300W FOR EX000	1,350.00	24	32,400.
6	2610A	OPT INT I/O BD FOR EX000	5,625.00	16	90,000.
7	6730A	FCAL 100MB/S SBUS HOST ADAPT	2,025.00	32	64,800.
8	6731AR4	FCAL GBIC MODULE 100MB/S	450.00	32	14,400.
9	X1073A	SC 2.0 SCI/SBUS BOARD	3,375.00	16	54,000.
10	X3825A	SC 2.0 SCI CABLE (10M)	188.00	16	3,000.
11	X3876A	SCI SWITCH (4-PORT) W/BRACKET	13,125.00	4	52,500.
		Total			$3,221,100.
	Storage				
1	SG-ARY-011A-127G	127GB StorEdge A5000 Array	47,250.00	64	3,024,000.
2	X5516A	DISK 50.4GB/7200(12*4.2)FWSCSI	12,450.00	8	99,600.
3	X5515A	DISK 25.2GB/7200(6*4.2)FWSCSI	6,600.00	4	26,400.
		Total			$3,150,000.

1900 Camden Avenue, Suite 201•San Jose, CA 95124
TEL: (408) 369-7878•FAX: (408) 369-7870
WWW.CATTECHNOLOGY.COM