Retek POS Upload Benchmark
on
IBM RS/6000 S80

Table of Contents

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Executive Summary

Retek and IBM sponsored the benchmark to establish whether the RS/6000 S80 is capable of running Retek's sales upload application at a rate of 16 million transactions in less than 90 minutes. It was estimated that 16 million sales upload transactions in 90 minutes would establish a competitive position for the IBM S80. The target of 16 million transactions in 90 minutes was exceeded during the benchmark exercise with 202,745 transactions per minute or 16 million sales upload transactions in 79 minutes. Also a peak average of 237,000 per minutes was achieved. These numbers were accomplished using 200 stores, 80,000 sales transactions per store with 80 weeks of data.

Hardware and Software

The POS Upload benchmark utilized the following resources of a R/S6000 S80.

Tests were run using three different processor configurations: 24 CPUs, 18 CPUs, and 12 CPUs.
The CPUs were disabled logically

CPUs were IBM 450 Megahertz processors.

Test only utilized 3.1 max. gigabytes of 64 gigabytes of memory available on the S80.

8 SSA Adapters with 32 MB with fast write cache were used.
Each adapter supported (2) loops, (12) disks per loop.

48 – 18.2 gigabyte disk drives were used for the setup although the S80 contained 192 hard drives.
The database setup used 750 gigabytes of disk space approximately only one-fourth (48) of the 18.2 gigabyte drives. The database was mirrored using one-fourth (48) of the 18.2 gigabyte drives. The 96 drives for database and mirroring were backed up on the remaining 96 drives.

AIX 4.3.3 Operating System

Oracle 8.0.5 for AIX, 32 bit version

Retek RMS 8.0.3, posupld.pc Pro*C program complied and linked with AIX C compiler.

Database Installation and Configuration

The benchmark setup consisted of AIX 4.3.3 for the operating system, Oracle 8.0.5 / 32 bit, for the database on an IBM S80. The database setup used 750 gigabytes of disk space approximately only one-fourth (48) of the 18.2 gigabyte drives. The database was mirrored using one-fourth (48) of the 18.2 gigabytes drives. The 96 drives for database and mirroring were backed up on the remaining 96 drives. See attachment "A" for disk layout.

The POS upload program was multi-threaded, in that multiple copies of the program were run concurrently, each with a different store sales transaction file.

The Oracle instance was configured to fully utilize the 10,256Mb, shared memory segments available and to minimize internal Oracle contention with the following init.ora parameter settings*:

```
cpu_count                    = 24
optimizer_mode                 = choose
db_block_size                = 8192
db_block_buffers               = 294144
log_buffer                   = 62914560
log_checkpoint_interval          = 9999999
log_checkpoint_timeout           = 0
log_simultaneous_copies          = 36
log_small_entry_max_size         = 0
shared_pool_size               = 104857600
db_block_lru_latches             = 18
_db_block_write_batch            = 512
db_file_multiblock_read_count    = 8
db_file_simultaneous_writes      = 32
db_writer_processes              = 1
dbwr_io_slaves               = 16
lgwr_io_slaves               = 8
disk_asynch_io                 = true
enqueue_resources                = 6000
db_block_checkpoint_batch        = 256
sort_area_size               = 52428800
sort_direct_writes             = true
spin_count                   = 5000
```

*Note: Where applicable, values of some parameters were reduced when running with fewer than 24 CPU's.

Given the intense I/O nature of the sales upload processing, special care was given to the physical layout of the large POS tables accessed by the upload program. The Oracle8 partitioning feature was utilized to minimize I/O contention during concurrent store/sales processing. The primary posupld database tables were partitioned as follows:

- TRAN_DATA – 40 partitions across 8 distinct hdisks, 5 stores per partition, 2 global non-partitioned indexes.
- PRICE_HIST – 40 partitions across 8 distinct hdisks, 5 stores per partition, 1 local nonprefixed partitioned index across 16 distinct hdisks.
- WIN_STORE – 40 partitions across 8 distinct hdisks, 5 stores per partition, 3 global non-partitioned indexes and 1 local nonprefixed partitioned index across 16 distinct hdisks.
- WIN_STORE_HIST – 40 partitions across 8 distinct hdisks, 5 stores per partition, 2 local nonprefixed partitioned indexes across 16 distinct hdisks.

Additionally, appropriate freelist and initrans values were used when creating all database tables requiring concurrent access.

Test Results

This section presents the results of the 24, 18, and 12 CPU tests. Throughout all testing, the operating system and Oracle instance parameters remained constant to capture the scalability aspects of different CPU configurations. Additionally, the same test suite was run for all CPU tests. The test suite consisted of the following, chosen to minimize I/O contention among concurrent Retek POS upload threads and reduce the overall elapsed time:

Run01 – 30 concurrent threads (store files)
Run02 – 30 concurrent threads (store files)
Run03 – 30 concurrent threads (store files)
Run04 – 30 concurrent threads (store files)
Run05 – 30 concurrent threads (store files)
Run06 – 20 concurrent threads (store files)
Run07 – 20 concurrent threads (store files)
Run08 – 10 concurrent threads (store files)

Each run was executed consecutively via a UNIX script file, resulting in the load of all 200-store files. Each store file consisted of 80000 sales transaction records, for a total of 16000000 records. The optimal commit point was set to 15000 for all threads.

Table 1, below, summarizes the final test results for each CPU configuration.

Number of CPU's	This column shows the number of CPUs in the configuration.
Elapsed Time	This column shows the number of minutes it took to run of 16,000,000 POS Upload transactions.
Transaction Rate	The transaction rate per minute was arrived at by dividing the 16,000,000 transactions run by the number of minutes required for the run.
Rate %	This column shows the scalability of running 16,000,000 transactions with a different number of CPUs. The 24 CPU run with a result of 202,745 transactions per minute is set at 100% for the base. Reviewing the table, notice that when the "Number of Processors" are reduced to 12 CPUs which is 50% of the 24 CPUs but the transaction rate only drops off 13% or to 87% from the 100% base.
CPU Utilization	This data shows the utilization of the CPUs in the different CPU configurations.

	Elapsed Time	Transaction Rate	Rate Percentage	CPU Utilization
Number of CPUs	**(Minutes)**	**(transaction/min)**	**(% of 24 CPUs)**	**Percentage**
24	**78.9**	**202,745**	**100**	**67**
18	**84.1**	**190,250**	**94**	**86**
12	**91.2**	**175,438**	**87**	**95**

Observations of Results

As the results in Table 1 show, the transaction rate does not fall off by the same factor as the number of CPU's. This is primarily because the processes are limited more by I/O than by CPU. In order to remove the bottlenecks, initial tuning runs were made to determine the internal Oracle instance and session contention. The tuning approach was based primarily on Oracle's wait event statistics, and tuning efforts were focused on minimizing the contention causing the highest waits. Utlestat reports and session tracing with wait event statistics generation revealed valuable results.

Using the utlestat reports, instance contention was minimized such that:

Observed hit-ratios were nominal (buffer cache, library cache, and dictionary cache).

- Latch contention was minimal.
- Redo contention was minimal and online log operations were optimal.
- DBWR performance was optimal.
- Rollback segment contention was negligible.
- Data block contention was negligible.
- I/O was distributed as evenly as possible, given the disk configuration.

Upon completion of tuning the Oracle instance, the utlestat report showed that almost 95% of the total wait time for non-idle wait events were attributed to the 'db file sequential read' event. This is a wait for I/O completion while Oracle performs a sequential read (indexed access single block reads). Based on this information, further analyses were performed using Oracle's session tracing capabilities.

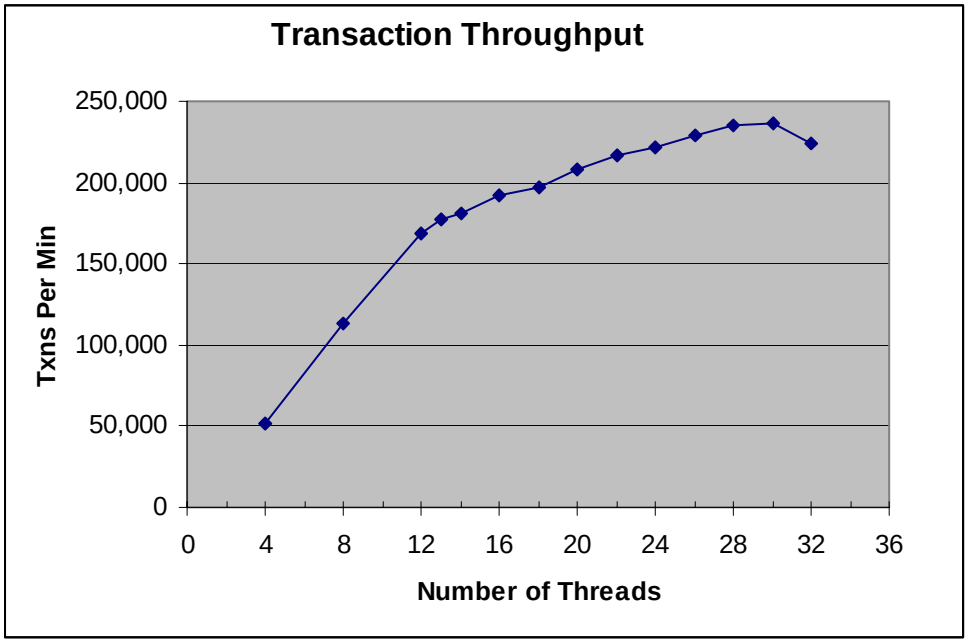
Session trace levels were set to collect wait event statistics (session event 10046, level 8) and the wait statistics were summarized from the resulting trace file. Additionally, Oracle's tkprof tool was utilized to summarize the SQL statement timings from the trace. The results showed, uniformly across all sessions traced, that over 97% of the total timed waited for a session was due to 'db file sequential read' waits. Of which, over 87% were for waits on the WIN_STORE_HIST primary key index, PK_WIN_STORE_HIST. The other frequently accessed tables accounted for the remaining waits. All other wait events ('buffer busy', 'latch free', 'enqueue', etc) were insignificant.

Since the WIN_STORE_HIST table contained over 1 billion history records for this test and disk I/O was the most significant factor in the speed of the POS upload processing, reducing disk contention is essential for concurrent thread processing and better CPU utilization.

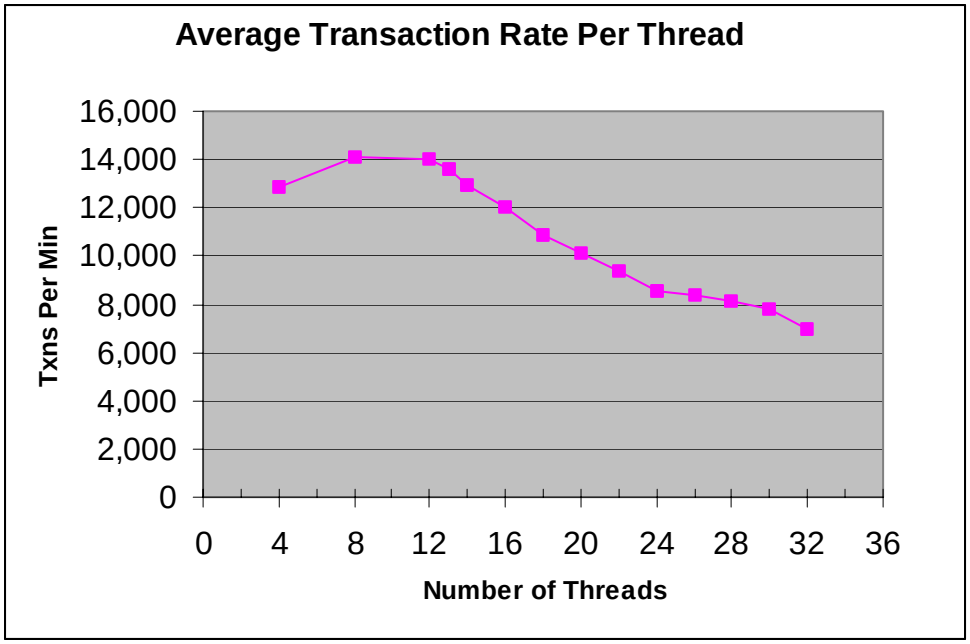
Plots 1 and 2 below show that the overall effect of disk contention as the number of concurrent store/sales processing threads are increased. As the number of threads increase, the transaction rate per thread decreases. The overall transaction throughput (sum of transactions processed for all threads) increases to the point of diminishing returns at around 32 threads. At this point contention for concurrent access to the same disks increases and limits the effectiveness of running a greater number of threads. O/S statistics collected during processing reflected this situation as well. CPU was available, but processing was limited by disk I/O.

This situation can be alleviated by placing table and index partitions for concurrently accessed objects onto as many distinct disks as possible. Carefully choosing which store/sale threads to run concurrently, in regards to physical placement of the table and index partitions, can also reduce the I/O contention.

Plot 1 shows a peak throughput of around 237000 records per minute for 30 threads. This translates into processing 16000000 records in less than 68 minutes. This was achieved by considerations in the proceeding paragraph and the limitations imposed by the physical configuration used for the benchmark. Further elimination of these limitations could potentially yield better results. The final benchmark runs yielded slightly lower rates due to considerations for optimizing the elapsed time for processing all store/sales files and the physical disk configuration. That is, physical configuration prevented peak transaction rates for every run.



Plot 1.
Total Transaction Throughput Rate for All Threads



Plot 2.
Average Transaction Rate Per Thread

Conclusion

The deliverable for the benchmark test was to see how fast we could process 16 million POS upload transactions from 200 stores using Retek's sales upload application. Also, we wanted to see the performance results from the S80 configuration with a different number of processors 24, 18, and 12. Factors to take in consideration while reviewing the results are that only a maximum of 3.1 gigabytes of memory was utilized and 750 gigabytes of the available disk space was used for the three CPU configurations. The benchmark test for the Retek POS upload application exceeded our expectations. Only a small portion of the fully loaded S80 was utilized or required for the POS upload test. The physical database configuration did not push the S80's full potential with the configuration of 24 CPUs.

The 12 CPU configuration yielded the best price/performance and would outperform IBM's most popular competitors in price and performance.

What we have learned is that with an S80, you have more than plenty of horsepower to drive the POS upload application for 16M transactions (which is a very high-end load for a retailer). How you set up and spread your data across disk and how many disks you have is very important in getting the most performance out of Retek (just like any other Oracle application). Oracle tuning is also important. If we had better data layout on the disk and/or more disk, we could have achieved significantly better results on 18 and 24 processors, and that's the recommendation if you were configuring a system in real life. According to the Supersolution expert, we think we could have yielded 10 to 20% better results with the 18 and 24 way processors just with more focus on the data layout without adding more disks. If we add more disk and spread data more, we could improve even more... perhaps as much as much as 40% with a 24 processor configuration. But you have to balance the cost of the disk with the returns you need.

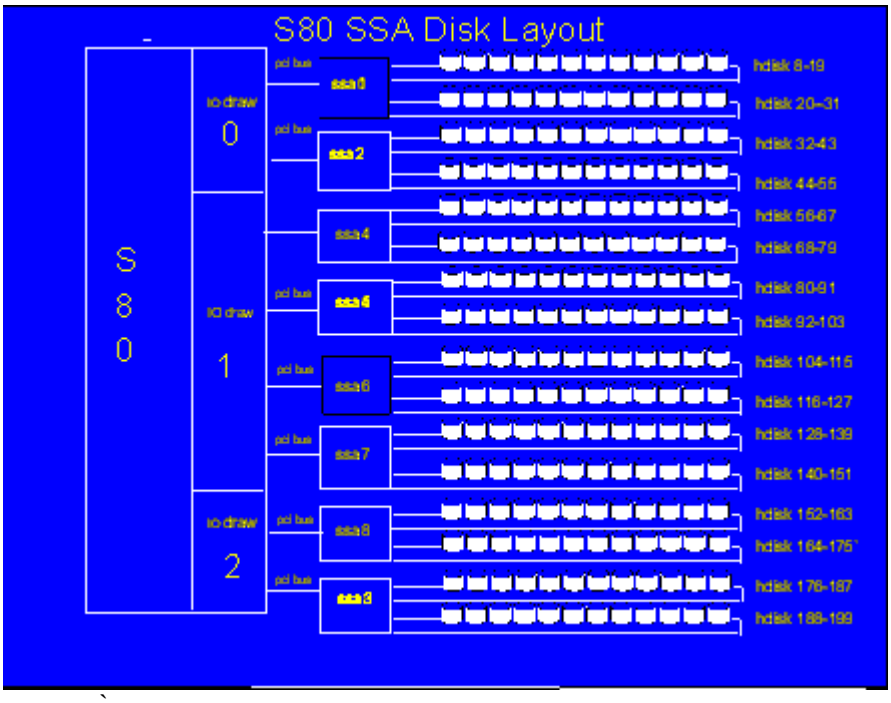
In the case where a customer has more stores, but the same number of POS upload overall (ie 16M), the processor configuration would not change significantly; however, the disk layout and configuration needs to be more robust (more disk, and to some degree, more adapters would be needed).

The scalability of the S80 makes it a good choice for companies with minimum requirements up to the greatest demands. The S80 can be configured from 6 to 24 processors. Memory configurations range from 2 gigabytes up to 64 gigabytes in 16 available slots. Both price and performance are possible with the scalability of the S80.

Data Compiled by: Mike Quist, Supersolution

Project Manager: Bill B. Osborne, IBM
12/14/1999

SSA Disk Layout



Tablespace	Data_file	Meg	Disk	Mirror	SSA	SSA	BK_Disk	BK_Mirror
	/dev/rCTL1N1	32	hdisk43	hdisk139	ssa2	ssa7	hdisk32	hdisk128
	/dev/rCTL2N1	32	hdisk67	hdisk163	ssa4	ssa8	hdisk56	hdisk152
D_1_1P	/dev/rD_1_1P1N1	2047	hdisk10	hdisk106	ssa0	ssa6	hdisk22	hdisk118
D_1_1P	/dev/rD_1_1P2N1	2047	hdisk10	hdisk106	ssa0	ssa6	hdisk22	hdisk118
D_1_1P	/dev/rD_1_1P3N1	2047	hdisk10	hdisk106	ssa0	ssa6	hdisk22	hdisk118
D_1_1P	/dev/rD_1_1P4N1	2047	hdisk10	hdisk106	ssa0	ssa6	hdisk22	hdisk118
D_1_2P	/dev/rD_1_2P1N1	2047	hdisk11	hdisk107	ssa0	ssa6	hdisk23	hdisk119
D_1_2P	/dev/rD_1_2P2N1	2047	hdisk11	hdisk107	ssa0	ssa6	hdisk23	hdisk119
D_1_2P	/dev/rD_1_2P3N1	2047	hdisk11	hdisk107	ssa0	ssa6	hdisk23	hdisk119
D_1_2P	/dev/rD_1_2P4N1	2047	hdisk11	hdisk107	ssa0	ssa6	hdisk23	hdisk119
D_1_3P	/dev/rD_1_3P1N1	2047	hdisk12	hdisk108	ssa0	ssa6	hdisk24	hdisk120
D_1_3P	/dev/rD_1_3P2N1	2047	hdisk12	hdisk108	ssa0	ssa6	hdisk24	hdisk120
D_1_3P	/dev/rD_1_3P3N1	2047	hdisk12	hdisk108	ssa0	ssa6	hdisk24	hdisk120
D_1_3P	/dev/rD_1_3P4N1	2047	hdisk12	hdisk108	ssa0	ssa6	hdisk24	hdisk120
D_1_4P	/dev/rD_1_4P1N1	2047	hdisk13	hdisk109	ssa0	ssa6	hdisk25	hdisk121
D_1_4P	/dev/rD_1_4P2N1	2047	hdisk13	hdisk109	ssa0	ssa6	hdisk25	hdisk121
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D_1_5P	/dev/rD_1_5P1N1	2047	hdisk14	hdisk110	ssa0	ssa6	hdisk26	hdisk122
D_1_5P	/dev/rD_1_5P2N1	2047	hdisk14	hdisk110	ssa0	ssa6	hdisk26	hdisk122
D_1_5P	/dev/rD_1_5P3N1	2047	hdisk14	hdisk110	ssa0	ssa6	hdisk26	hdisk122
D_1_5P	/dev/rD_1_5P4N1	2047	hdisk14	hdisk110	ssa0	ssa6	hdisk26	hdisk122
D_1_6P	/dev/rD_1_6P1N1	2047	hdisk15	hdisk111	ssa0	ssa6	hdisk27	hdisk123
D_1_6P	/dev/rD_1_6P2N1	2047	hdisk15	hdisk111	ssa0	ssa6	hdisk27	hdisk123
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D_3_7P	/dev/rD_3_7P2N1	2047	hdisk64	hdisk160	ssa4	ssa8	hdisk76	hdisk172
D_3_7P	/dev/rD_3_7P3N1	2047	hdisk64	hdisk160	ssa4	ssa8	hdisk76	hdisk172
D_3_7P	/dev/rD_3_7P4N1	2047	hdisk64	hdisk160	ssa4	ssa8	hdisk76	hdisk172
D_3_8P	/dev/rD_3_8P1N1	2047	hdisk65	hdisk161	ssa4	ssa8	hdisk77	hdisk173
D_3_8P	/dev/rD_3_8P2N1	2047	hdisk65	hdisk161	ssa4	ssa8	hdisk77	hdisk173
D_3_8P	/dev/rD_3_8P3N1	2047	hdisk65	hdisk161	ssa4	ssa8	hdisk77	hdisk173
D_3_8P	/dev/rD_3_8P4N1	2047	hdisk65	hdisk161	ssa4	ssa8	hdisk77	hdisk173
D_4_1P	/dev/rD_4_1P1N1	1535	hdisk82	hdisk178	ssa5	ssa9	hdisk94	hdisk190
D_4_1P	/dev/rD_4_1P2N1	1535	hdisk82	hdisk178	ssa5	ssa9	hdisk94	hdisk190
D_4_1P	/dev/rD_4_1P3N1	1535	hdisk82	hdisk178	ssa5	ssa9	hdisk94	hdisk190
D_4_1P	/dev/rD_4_1P4N1	1535	hdisk82	hdisk178	ssa5	ssa9	hdisk94	hdisk190
D_4_2P	/dev/rD_4_2P1N1	1535	hdisk83	hdisk179	ssa5	ssa9	hdisk95	hdisk191
D_4_2P	/dev/rD_4_2P2N1	1535	hdisk83	hdisk179	ssa5	ssa9	hdisk95	hdisk191
D_4_2P	/dev/rD_4_2P3N1	1535	hdisk83	hdisk179	ssa5	ssa9	hdisk95	hdisk191
D_4_2P	/dev/rD_4_2P4N1	1535	hdisk83	hdisk179	ssa5	ssa9	hdisk95	hdisk191
D_4_3P	/dev/rD_4_3P1N1	1535	hdisk84	hdisk180	ssa5	ssa9	hdisk96	hdisk192
D_4_3P	/dev/rD_4_3P2N1	1535	hdisk84	hdisk180	ssa5	ssa9	hdisk96	hdisk192
D_4_3P	/dev/rD_4_3P3N1	1535	hdisk84	hdisk180	ssa5	ssa9	hdisk96	hdisk192
D_4_3P	/dev/rD_4_3P4N1	1535	hdisk84	hdisk180	ssa5	ssa9	hdisk96	hdisk192
D_4_4P	/dev/rD_4_4P1N1	1535	hdisk85	hdisk181	ssa5	ssa9	hdisk97	hdisk193
D_4_4P	/dev/rD_4_4P2N1	1535	hdisk85	hdisk181	ssa5	ssa9	hdisk97	hdisk193
D_4_4P	/dev/rD_4_4P3N1	1535	hdisk85	hdisk181	ssa5	ssa9	hdisk97	hdisk193
D_4_4P	/dev/rD_4_4P4N1	1535	hdisk85	hdisk181	ssa5	ssa9	hdisk97	hdisk193
D_4_5P	/dev/rD_4_5P1N1	1535	hdisk86	hdisk182	ssa5	ssa9	hdisk98	hdisk194

D_4_5P /dev/rD_4_5P2N1 1535 hdisk86 hdisk182 ssa5 ssa9 hdisk98 hdisk194
D_4_5P /dev/rD_4_5P3N1 1535 hdisk86 hdisk182 ssa5 ssa9 hdisk98 hdisk194
D_4_5P /dev/rD_4_5P4N1 1535 hdisk86 hdisk182 ssa5 ssa9 hdisk98 hdisk194
D_4_6P /dev/rD_4_6P1N1 1535 hdisk87 hdisk183 ssa5 ssa9 hdisk99 hdisk195
D_4_6P /dev/rD_4_6P2N1 1535 hdisk87 hdisk183 ssa5 ssa9 hdisk99 hdisk195
D_4_6P /dev/rD_4_6P3N1 1535 hdisk87 hdisk183 ssa5 ssa9 hdisk99 hdisk195
D_4_6P /dev/rD_4_6P4N1 1535 hdisk87 hdisk183 ssa5 ssa9 hdisk99 hdisk195
D_4_7P /dev/rD_4_7P1N1 1535 hdisk88 hdisk184 ssa5 ssa9 hdisk100 hdisk196
D_4_7P /dev/rD_4_7P2N1 1535 hdisk88 hdisk184 ssa5 ssa9 hdisk100 hdisk196
D_4_7P /dev/rD_4_7P3N1 1535 hdisk88 hdisk184 ssa5 ssa9 hdisk100 hdisk196
D_4_7P /dev/rD_4_7P4N1 1535 hdisk88 hdisk184 ssa5 ssa9 hdisk100 hdisk196
D_4_8P /dev/rD_4_8P1N1 1535 hdisk89 hdisk185 ssa5 ssa9 hdisk101 hdisk197
D_4_8P /dev/rD_4_8P2N1 1535 hdisk89 hdisk185 ssa5 ssa9 hdisk101 hdisk197
D_4_8P /dev/rD_4_8P3N1 1535 hdisk89 hdisk185 ssa5 ssa9 hdisk101 hdisk197
D_4_8P /dev/rD_4_8P4N1 1535 hdisk89 hdisk185 ssa5 ssa9 hdisk101 hdisk197
RETEK_DATA /dev/rD_R_P1N1 250 hdisk10 hdisk106 ssa0 ssa6 hdisk22 hdisk118
RETEK_DATA /dev/rD_R_P2N1 250 hdisk17 hdisk113 ssa0 ssa6 hdisk29 hdisk125
RETEK_DATA /dev/rD_R_P3N1 250 hdisk34 hdisk130 ssa2 ssa7 hdisk46 hdisk142
RETEK_DATA /dev/rD_R_P4N1 250 hdisk41 hdisk137 ssa2 ssa7 hdisk53 hdisk149
RETEK_DATA /dev/rD_R_P5N1 250 hdisk58 hdisk154 ssa4 ssa8 hdisk70 hdisk166
RETEK_DATA /dev/rD_R_P6N1 250 hdisk65 hdisk161 ssa4 ssa8 hdisk77 hdisk173
RETEK_DATA /dev/rD_R_P7N1 250 hdisk82 hdisk178 ssa5 ssa9 hdisk94 hdisk190
RETEK_DATA /dev/rD_R_P8N1 250 hdisk89 hdisk185 ssa5 ssa9 hdisk101 hdisk197
I_1_1P /dev/rI_1_1P1N1 2047 hdisk22 hdisk118 ssa0 ssa6 hdisk10 hdisk106
I_1_1P /dev/rI_1_1P2N1 2047 hdisk22 hdisk118 ssa0 ssa6 hdisk10 hdisk106
I_1_1P /dev/rI_1_1P3N1 2047 hdisk22 hdisk118 ssa0 ssa6 hdisk10 hdisk106
I_1_1P /dev/rI_1_1P4N1 2047 hdisk22 hdisk118 ssa0 ssa6 hdisk10 hdisk106
I_1_2P /dev/rI_1_2P1N1 2047 hdisk23 hdisk119 ssa0 ssa6 hdisk11 hdisk107
I_1_2P /dev/rI_1_2P2N1 2047 hdisk23 hdisk119 ssa0 ssa6 hdisk11 hdisk107
I_1_2P /dev/rI_1_2P3N1 2047 hdisk23 hdisk119 ssa0 ssa6 hdisk11 hdisk107
I_1_2P /dev/rI_1_2P4N1 2047 hdisk23 hdisk119 ssa0 ssa6 hdisk11 hdisk107
I_1_3P /dev/rI_1_3P1N1 2047 hdisk24 hdisk120 ssa0 ssa6 hdisk12 hdisk108
I_1_3P /dev/rI_1_3P2N1 2047 hdisk24 hdisk120 ssa0 ssa6 hdisk12 hdisk108
I_1_3P /dev/rI_1_3P3N1 2047 hdisk24 hdisk120 ssa0 ssa6 hdisk12 hdisk108
I_1_3P /dev/rI_1_3P4N1 2047 hdisk24 hdisk120 ssa0 ssa6 hdisk12 hdisk108
I_1_4P /dev/rI_1_4P1N1 2047 hdisk25 hdisk121 ssa0 ssa6 hdisk13 hdisk109
I_1_4P /dev/rI_1_4P2N1 2047 hdisk25 hdisk121 ssa0 ssa6 hdisk13 hdisk109
I_1_4P /dev/rI_1_4P3N1 2047 hdisk25 hdisk121 ssa0 ssa6 hdisk13 hdisk109
I_1_4P /dev/rI_1_4P4N1 2047 hdisk25 hdisk121 ssa0 ssa6 hdisk13 hdisk109
I_1_5P /dev/rI_1_5P1N1 2047 hdisk26 hdisk122 ssa0 ssa6 hdisk14 hdisk110
I_1_5P /dev/rI_1_5P2N1 2047 hdisk26 hdisk122 ssa0 ssa6 hdisk14 hdisk110
I_1_5P /dev/rI_1_5P3N1 2047 hdisk26 hdisk122 ssa0 ssa6 hdisk14 hdisk110
I_1_5P /dev/rI_1_5P4N1 2047 hdisk26 hdisk122 ssa0 ssa6 hdisk14 hdisk110
I_1_6P /dev/rI_1_6P1N1 2047 hdisk27 hdisk123 ssa0 ssa6 hdisk15 hdisk111
I_1_6P /dev/rI_1_6P2N1 2047 hdisk27 hdisk123 ssa0 ssa6 hdisk15 hdisk111
I_1_6P /dev/rI_1_6P3N1 2047 hdisk27 hdisk123 ssa0 ssa6 hdisk15 hdisk111
I_1_6P /dev/rI_1_6P4N1 2047 hdisk27 hdisk123 ssa0 ssa6 hdisk15 hdisk111
I_1_7P /dev/rI_1_7P1N1 2047 hdisk28 hdisk124 ssa0 ssa6 hdisk16 hdisk112
I_1_7P /dev/rI_1_7P2N1 2047 hdisk28 hdisk124 ssa0 ssa6 hdisk16 hdisk112
I_1_7P /dev/rI_1_7P3N1 2047 hdisk28 hdisk124 ssa0 ssa6 hdisk16 hdisk112
I_1_7P /dev/rI_1_7P4N1 2047 hdisk28 hdisk124 ssa0 ssa6 hdisk16 hdisk112
I_1_8P /dev/rI_1_8P1N1 2047 hdisk29 hdisk125 ssa0 ssa6 hdisk17 hdisk113
I_1_8P /dev/rI_1_8P2N1 2047 hdisk29 hdisk125 ssa0 ssa6 hdisk17 hdisk113
I_1_8P /dev/rI_1_8P3N1 2047 hdisk29 hdisk125 ssa0 ssa6 hdisk17 hdisk113
I_1_8P /dev/rI_1_8P4N1 2047 hdisk29 hdisk125 ssa0 ssa6 hdisk17 hdisk113
I_2_1P /dev/rI_2_1P1N1 2047 hdisk46 hdisk142 ssa2 ssa7 hdisk34 hdisk130
I_2_1P /dev/rI_2_1P2N1 2047 hdisk46 hdisk142 ssa2 ssa7 hdisk34 hdisk130
I_2_1P /dev/rI_2_1P3N1 2047 hdisk46 hdisk142 ssa2 ssa7 hdisk34 hdisk130
I_2_1P /dev/rI_2_1P4N1 2047 hdisk46 hdisk142 ssa2 ssa7 hdisk34 hdisk130
I_2_2P /dev/rI_2_2P1N1 2047 hdisk47 hdisk143 ssa2 ssa7 hdisk35 hdisk131

l_2_2P	/dev/rl_2_2P2N1	2047	hdisk47	hdisk143	ssa2	ssa7	hdisk35	hdisk131
l_2_2P	/dev/rl_2_2P3N1	2047	hdisk47	hdisk143	ssa2	ssa7	hdisk35	hdisk131
l_2_2P	/dev/rl_2_2P4N1	2047	hdisk47	hdisk143	ssa2	ssa7	hdisk35	hdisk131
l_2_3P	/dev/rl_2_3P1N1	2047	hdisk48	hdisk144	ssa2	ssa7	hdisk36	hdisk132
l_2_3P	/dev/rl_2_3P2N1	2047	hdisk48	hdisk144	ssa2	ssa7	hdisk36	hdisk132
l_2_3P	/dev/rl_2_3P3N1	2047	hdisk48	hdisk144	ssa2	ssa7	hdisk36	hdisk132
l_2_3P	/dev/rl_2_3P4N1	2047	hdisk48	hdisk144	ssa2	ssa7	hdisk36	hdisk132
l_2_4P	/dev/rl_2_4P1N1	2047	hdisk49	hdisk145	ssa2	ssa7	hdisk37	hdisk133
l_2_4P	/dev/rl_2_4P2N1	2047	hdisk49	hdisk145	ssa2	ssa7	hdisk37	hdisk133
l_2_4P	/dev/rl_2_4P3N1	2047	hdisk49	hdisk145	ssa2	ssa7	hdisk37	hdisk133
l_2_4P	/dev/rl_2_4P4N1	2047	hdisk49	hdisk145	ssa2	ssa7	hdisk37	hdisk133
l_2_5P	/dev/rl_2_5P1N1	2047	hdisk50	hdisk146	ssa2	ssa7	hdisk38	hdisk134
l_2_5P	/dev/rl_2_5P2N1	2047	hdisk50	hdisk146	ssa2	ssa7	hdisk38	hdisk134
l_2_5P	/dev/rl_2_5P3N1	2047	hdisk50	hdisk146	ssa2	ssa7	hdisk38	hdisk134
l_2_5P	/dev/rl_2_5P4N1	2047	hdisk50	hdisk146	ssa2	ssa7	hdisk38	hdisk134
l_2_6P	/dev/rl_2_6P1N1	2047	hdisk51	hdisk147	ssa2	ssa7	hdisk39	hdisk135
l_2_6P	/dev/rl_2_6P2N1	2047	hdisk51	hdisk147	ssa2	ssa7	hdisk39	hdisk135
l_2_6P	/dev/rl_2_6P3N1	2047	hdisk51	hdisk147	ssa2	ssa7	hdisk39	hdisk135
l_2_6P	/dev/rl_2_6P4N1	2047	hdisk51	hdisk147	ssa2	ssa7	hdisk39	hdisk135
l_2_7P	/dev/rl_2_7P1N1	2047	hdisk52	hdisk148	ssa2	ssa7	hdisk40	hdisk136
l_2_7P	/dev/rl_2_7P2N1	2047	hdisk52	hdisk148	ssa2	ssa7	hdisk40	hdisk136
l_2_7P	/dev/rl_2_7P3N1	2047	hdisk52	hdisk148	ssa2	ssa7	hdisk40	hdisk136
l_2_7P	/dev/rl_2_7P4N1	2047	hdisk52	hdisk148	ssa2	ssa7	hdisk40	hdisk136
l_2_8P	/dev/rl_2_8P1N1	2047	hdisk53	hdisk149	ssa2	ssa7	hdisk41	hdisk137
l_2_8P	/dev/rl_2_8P2N1	2047	hdisk53	hdisk149	ssa2	ssa7	hdisk41	hdisk137
l_2_8P	/dev/rl_2_8P3N1	2047	hdisk53	hdisk149	ssa2	ssa7	hdisk41	hdisk137
l_2_8P	/dev/rl_2_8P4N1	2047	hdisk53	hdisk149	ssa2	ssa7	hdisk41	hdisk137
l_3_1P	/dev/rl_3_1P1N1	1535	hdisk70	hdisk166	ssa4	ssa8	hdisk58	hdisk154
l_3_1P	/dev/rl_3_1P2N1	1535	hdisk70	hdisk166	ssa4	ssa8	hdisk58	hdisk154
l_3_1P	/dev/rl_3_1P3N1	1535	hdisk70	hdisk166	ssa4	ssa8	hdisk58	hdisk154
l_3_1P	/dev/rl_3_1P4N1	1535	hdisk70	hdisk166	ssa4	ssa8	hdisk58	hdisk154
l_3_2P	/dev/rl_3_2P1N1	1023	hdisk71	hdisk167	ssa4	ssa8	hdisk59	hdisk155
l_3_2P	/dev/rl_3_2P2N1	1023	hdisk71	hdisk167	ssa4	ssa8	hdisk59	hdisk155
l_3_2P	/dev/rl_3_2P3N1	1023	hdisk71	hdisk167	ssa4	ssa8	hdisk59	hdisk155
l_3_2P	/dev/rl_3_2P4N1	1023	hdisk71	hdisk167	ssa4	ssa8	hdisk59	hdisk155
l_3_3P	/dev/rl_3_3P1N1	2047	hdisk72	hdisk168	ssa4	ssa8	hdisk60	hdisk156
l_3_3P	/dev/rl_3_3P2N1	2047	hdisk72	hdisk168	ssa4	ssa8	hdisk60	hdisk156
l_3_3P	/dev/rl_3_3P3N1	2047	hdisk72	hdisk168	ssa4	ssa8	hdisk60	hdisk156
l_3_3P	/dev/rl_3_3P4N1	2047	hdisk72	hdisk168	ssa4	ssa8	hdisk60	hdisk156
l_3_4P	/dev/rl_3_4P1N1	1023	hdisk73	hdisk169	ssa4	ssa8	hdisk61	hdisk157
l_3_4P	/dev/rl_3_4P2N1	1023	hdisk73	hdisk169	ssa4	ssa8	hdisk61	hdisk157
l_3_4P	/dev/rl_3_4P3N1	1023	hdisk73	hdisk169	ssa4	ssa8	hdisk61	hdisk157
l_3_4P	/dev/rl_3_4P4N1	1023	hdisk73	hdisk169	ssa4	ssa8	hdisk61	hdisk157
l_3_5P	/dev/rl_3_5P1N1	1023	hdisk74	hdisk170	ssa4	ssa8	hdisk62	hdisk158
l_3_5P	/dev/rl_3_5P2N1	1023	hdisk74	hdisk170	ssa4	ssa8	hdisk62	hdisk158
l_3_5P	/dev/rl_3_5P3N1	1023	hdisk74	hdisk170	ssa4	ssa8	hdisk62	hdisk158
l_3_5P	/dev/rl_3_5P4N1	1023	hdisk74	hdisk170	ssa4	ssa8	hdisk62	hdisk158
l_3_6P	/dev/rl_3_6P1N1	1023	hdisk75	hdisk171	ssa4	ssa8	hdisk63	hdisk159
l_3_6P	/dev/rl_3_6P2N1	1023	hdisk75	hdisk171	ssa4	ssa8	hdisk63	hdisk159
l_3_6P	/dev/rl_3_6P3N1	1023	hdisk75	hdisk171	ssa4	ssa8	hdisk63	hdisk159
l_3_6P	/dev/rl_3_6P4N1	1023	hdisk75	hdisk171	ssa4	ssa8	hdisk63	hdisk159
l_3_7P	/dev/rl_3_7P1N1	1023	hdisk76	hdisk172	ssa4	ssa8	hdisk64	hdisk160
l_3_7P	/dev/rl_3_7P2N1	1023	hdisk76	hdisk172	ssa4	ssa8	hdisk64	hdisk160
l_3_7P	/dev/rl_3_7P3N1	1023	hdisk76	hdisk172	ssa4	ssa8	hdisk64	hdisk160
l_3_7P	/dev/rl_3_7P4N1	1023	hdisk76	hdisk172	ssa4	ssa8	hdisk64	hdisk160
l_3_8P	/dev/rl_3_8P1N1	1023	hdisk77	hdisk173	ssa4	ssa8	hdisk65	hdisk161
l_3_8P	/dev/rl_3_8P2N1	1023	hdisk77	hdisk173	ssa4	ssa8	hdisk65	hdisk161
l_3_8P	/dev/rl_3_8P3N1	1023	hdisk77	hdisk173	ssa4	ssa8	hdisk65	hdisk161
l_3_8P	/dev/rl_3_8P4N1	1023	hdisk77	hdisk173	ssa4	ssa8	hdisk65	hdisk161
l_4_1P	/dev/rl_4_1P1N1	2047	hdisk94	hdisk190	ssa5	ssa9	hdisk82	hdisk178

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I_4_1P      /dev/rI_4_1P2N1 2047 hdisk94   hdisk190  ssa5  ssa9  hdisk82   hdisk178
I_4_1P      /dev/rI_4_1P3N1 2047 hdisk94   hdisk190  ssa5  ssa9  hdisk82   hdisk178
I_4_1P      /dev/rI_4_1P4N1 2047 hdisk94   hdisk190  ssa5  ssa9  hdisk82   hdisk178
I_4_2P      /dev/rI_4_2P1N1 2047 hdisk95   hdisk191  ssa5  ssa9  hdisk83   hdisk179
I_4_2P      /dev/rI_4_2P2N1 2047 hdisk95   hdisk191  ssa5  ssa9  hdisk83   hdisk179
I_4_2P      /dev/rI_4_2P3N1 2047 hdisk95   hdisk191  ssa5  ssa9  hdisk83   hdisk179
I_4_2P      /dev/rI_4_2P4N1 2047 hdisk95   hdisk191  ssa5  ssa9  hdisk83   hdisk179
I_4_3P      /dev/rI_4_3P1N1 2047 hdisk96   hdisk192  ssa5  ssa9  hdisk84   hdisk180
I_4_3P      /dev/rI_4_3P2N1 2047 hdisk96   hdisk192  ssa5  ssa9  hdisk84   hdisk180
I_4_3P      /dev/rI_4_3P3N1 2047 hdisk96   hdisk192  ssa5  ssa9  hdisk84   hdisk180
I_4_3P      /dev/rI_4_3P4N1 2047 hdisk96   hdisk192  ssa5  ssa9  hdisk84   hdisk180
I_4_4P      /dev/rI_4_4P1N1 2047 hdisk97   hdisk193  ssa5  ssa9  hdisk85   hdisk181
I_4_4P      /dev/rI_4_4P2N1 2047 hdisk97   hdisk193  ssa5  ssa9  hdisk85   hdisk181
I_4_4P      /dev/rI_4_4P3N1 2047 hdisk97   hdisk193  ssa5  ssa9  hdisk85   hdisk181
I_4_4P      /dev/rI_4_4P4N1 2047 hdisk97   hdisk193  ssa5  ssa9  hdisk85   hdisk181
I_4_5P      /dev/rI_4_5P1N1 2047 hdisk98   hdisk194  ssa5  ssa9  hdisk86   hdisk182
I_4_5P      /dev/rI_4_5P2N1 2047 hdisk98   hdisk194  ssa5  ssa9  hdisk86   hdisk182
I_4_5P      /dev/rI_4_5P3N1 2047 hdisk98   hdisk194  ssa5  ssa9  hdisk86   hdisk182
I_4_5P      /dev/rI_4_5P4N1 2047 hdisk98   hdisk194  ssa5  ssa9  hdisk86   hdisk182
I_4_6P      /dev/rI_4_6P1N1 2047 hdisk99   hdisk195  ssa5  ssa9  hdisk87   hdisk183
I_4_6P      /dev/rI_4_6P2N1 2047 hdisk99   hdisk195  ssa5  ssa9  hdisk87   hdisk183
I_4_6P      /dev/rI_4_6P3N1 2047 hdisk99   hdisk195  ssa5  ssa9  hdisk87   hdisk183
I_4_6P      /dev/rI_4_6P4N1 2047 hdisk99   hdisk195  ssa5  ssa9  hdisk87   hdisk183
I_4_7P      /dev/rI_4_7P1N1 2047 hdisk100  hdisk196  ssa5  ssa9  hdisk88   hdisk184
I_4_7P      /dev/rI_4_7P2N1 2047 hdisk100  hdisk196  ssa5  ssa9  hdisk88   hdisk184
I_4_7P      /dev/rI_4_7P3N1 2047 hdisk100  hdisk196  ssa5  ssa9  hdisk88   hdisk184
I_4_7P      /dev/rI_4_7P4N1 2047 hdisk100  hdisk196  ssa5  ssa9  hdisk88   hdisk184
I_4_8P      /dev/rI_4_8P1N1 2047 hdisk101  hdisk197  ssa5  ssa9  hdisk89   hdisk185
I_4_8P      /dev/rI_4_8P2N1 2047 hdisk101  hdisk197  ssa5  ssa9  hdisk89   hdisk185
I_4_8P      /dev/rI_4_8P3N1 2047 hdisk101  hdisk197  ssa5  ssa9  hdisk89   hdisk185
I_4_8P      /dev/rI_4_8P4N1 2047 hdisk101  hdisk197  ssa5  ssa9  hdisk89   hdisk185
RETEK_INDEX  /dev/rI_R_P1N1  250  hdisk22   hdisk118  ssa0  ssa6  hdisk10   hdisk106
RETEK_INDEX  /dev/rI_R_P2N1  250  hdisk29   hdisk125  ssa0  ssa6  hdisk17   hdisk113
RETEK_INDEX  /dev/rI_R_P3N1  250  hdisk46   hdisk142  ssa2  ssa7  hdisk34   hdisk130
RETEK_INDEX  /dev/rI_R_P4N1  250  hdisk53   hdisk149  ssa2  ssa7  hdisk41   hdisk137
RETEK_INDEX  /dev/rI_R_P5N1  250  hdisk70   hdisk166  ssa4  ssa8  hdisk58   hdisk154
RETEK_INDEX  /dev/rI_R_P6N1  250  hdisk77   hdisk173  ssa4  ssa8  hdisk65   hdisk161
RETEK_INDEX  /dev/rI_R_P7N1  250  hdisk94   hdisk190  ssa5  ssa9  hdisk82   hdisk178
RETEK_INDEX  /dev/rI_R_P8N1  250  hdisk101  hdisk197  ssa5  ssa9  hdisk89   hdisk185
RB1         /dev/rRB1N1     2047 hdisk19   hdisk115  ssa0  ssa6  hdisk8    hdisk104
RB2         /dev/rRB2N1     2047 hdisk31   hdisk127  ssa0  ssa6  hdisk20   hdisk116
RB3         /dev/rRB3N1     2047 hdisk55   hdisk151  ssa2  ssa7  hdisk44   hdisk140
RB4         /dev/rRB4N1     2047 hdisk79   hdisk175  ssa4  ssa8  hdisk68   hdisk164
RB5         /dev/rRB5N1     2047 hdisk103  hdisk199  ssa5  ssa9  hdisk92   hdisk188
SYSTEM      /dev/rSYS1N1    223  hdisk91   hdisk187  ssa5  ssa9  hdisk80   hdisk176
TMP         /dev/rTMP10N1   2047 hdisk21   hdisk117  ssa0  ssa6
TMP         /dev/rTMP11N1   2047 hdisk33   hdisk129  ssa2  ssa7
TMP         /dev/rTMP12N1   2047 hdisk45   hdisk141  ssa2  ssa7
TMP         /dev/rTMP13N1   2047 hdisk57   hdisk153  ssa4  ssa8
TMP         /dev/rTMP14N1   2047 hdisk69   hdisk165  ssa4  ssa8
TMP         /dev/rTMP15N1   2047 hdisk81   hdisk177  ssa5  ssa9
TMP         /dev/rTMP16N1   2047 hdisk93   hdisk189  ssa5  ssa9
TMP         /dev/rTMP1N1    2047 hdisk9    hdisk105  ssa0  ssa6
TMP         /dev/rTMP2N1    2047 hdisk21   hdisk117  ssa0  ssa6
TMP         /dev/rTMP3N1    2047 hdisk33   hdisk129  ssa2  ssa7
TMP         /dev/rTMP4N1    2047 hdisk45   hdisk141  ssa2  ssa7
TMP         /dev/rTMP5N1    2047 hdisk57   hdisk153  ssa4  ssa8
TMP         /dev/rTMP6N1    2047 hdisk69   hdisk165  ssa4  ssa8
TMP         /dev/rTMP7N1    2047 hdisk81   hdisk177  ssa5  ssa9
TMP         /dev/rTMP8N1    2047 hdisk93   hdisk189  ssa5  ssa9
```

TMP /dev/rTMP9N1 2047 hdisk9 hdisk105 ssa0 ssa6
USR /dev/rUSR1N1 223 hdisk43 hdisk139 ssa2 ssa7 hdisk32 hdisk128

LOG Datafile Meg Raid DISKS/SSA - 64K stripe
=== ======== === ==========

LOG1AN1 /dev/rLOG1AN1 2047 hdisk104 hdisk116 hdisk128 hdisk140 hdisk152 hdisk164 hdisk176 hdisk188
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
LOG1N1 /dev/rLOG1N1 2047 hdisk8 hdisk20 hdisk32 hdisk44 hdisk56 hdisk68 hdisk80 hdisk92
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5
LOG2AN1 /dev/rLOG2AN1 2047 hdisk104 hdisk116 hdisk128 hdisk140 hdisk152 hdisk164 hdisk176 hdisk188
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
LOG2N1 /dev/rLOG2N1 2047 hdisk8 hdisk20 hdisk32 hdisk44 hdisk56 hdisk68 hdisk80 hdisk92
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5
LOG3AN1 /dev/rLOG3AN1 2047 hdisk104 hdisk116 hdisk128 hdisk140 hdisk152 hdisk164 hdisk176 hdisk188
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
LOG3N1 /dev/rLOG3N1 2047 hdisk8 hdisk20 hdisk32 hdisk44 hdisk56 hdisk68 hdisk80 hdisk92
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5

BK_LOG Datafile Meg Raid DISKS/SSA - 64K stripe
===== ======== === ==========

bk2_LOG1AN1 /dev/rbk2_LOG1AN1 2047 hdisk115 hdisk127 hdisk139 hdisk151 hdisk163 hdisk175 hdisk187 hdisk199
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
bk2_LOG1N1 /dev/rbk2_LOG1N1 2047 hdisk19 hdisk31 hdisk43 hdisk55 hdisk67 hdisk79 hdisk91 hdisk103
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5
bk2_LOG2AN1 /dev/rbk2_LOG2AN1 2047 hdisk115 hdisk127 hdisk139 hdisk151 hdisk163 hdisk175 hdisk187 hdisk199
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
bk2_LOG2N1 /dev/rbk2_LOG2N1 2047 hdisk19 hdisk31 hdisk43 hdisk55 hdisk67 hdisk79 hdisk91 hdisk103
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5
bk2_LOG3AN1 /dev/rbk2_LOG3AN1 2047 hdisk115 hdisk127 hdisk139 hdisk151 hdisk163 hdisk175 hdisk187 hdisk199
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
bk2_LOG3N1 /dev/rbk2_LOG3N1 2047 hdisk19 hdisk31 hdisk43 hdisk55 hdisk67 hdisk79 hdisk91 hdisk103
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5
bk_LOG1AN1 /dev/rbk_LOG1AN1 2047 hdisk105 hdisk117 hdisk129 hdisk141 hdisk153 hdisk165 hdisk177 hdisk189
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
bk_LOG1N1 /dev/rbk_LOG1N1 2047 hdisk9 hdisk21 hdisk33 hdisk45 hdisk57 hdisk69 hdisk81 hdisk93
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5
bk_LOG2AN1 /dev/rbk_LOG2AN1 2047 hdisk105 hdisk117 hdisk129 hdisk141 hdisk153 hdisk165 hdisk177 hdisk189
ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9
bk_LOG2N1 /dev/rbk_LOG2N1 2047 hdisk9 hdisk21 hdisk33 hdisk45 hdisk57 hdisk69 hdisk81 hdisk93
ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5

bk_LOG3AN1 /dev/rbk_LOG3AN1 2047 hdisk105 hdisk117 hdisk129 hdisk141 hdisk153 hdisk165 hdisk177 hdisk189

ssa6 ssa6 ssa7 ssa7 ssa8 ssa8 ssa9 ssa9

bk_LOG3N1 /dev/rbk_LOG3N1 2047 hdisk9 hdisk21 hdisk33 hdisk45 hdisk57 hdisk69 hdisk81 hdisk93

ssa0 ssa0 ssa2 ssa2 ssa4 ssa4 ssa5 ssa5

==========
Tablespace/Datafile Listing
==========

Tablespace	Location	Size(M)
D_1_1P	/dev/rD_1_1P1N1	2,048
	/dev/rD_1_1P2N1	2,048
	/dev/rD_1_1P3N1	2,048
	/dev/rD_1_1P4N1	2,048
D_1_2P	/dev/rD_1_2P1N1	2,048
	/dev/rD_1_2P2N1	2,048
	/dev/rD_1_2P3N1	2,048
	/dev/rD_1_2P4N1	2,048
D_1_3P	/dev/rD_1_3P1N1	2,048
	/dev/rD_1_3P4N1	2,048
	/dev/rD_1_3P3N1	2,048
	/dev/rD_1_3P2N1	2,048
D_1_4P	/dev/rD_1_4P1N1	2,048
	/dev/rD_1_4P2N1	2,048
	/dev/rD_1_4P3N1	2,048
	/dev/rD_1_4P4N1	2,048
D_1_5P	/dev/rD_1_5P1N1	2,048
	/dev/rD_1_5P4N1	2,048
	/dev/rD_1_5P3N1	2,048
	/dev/rD_1_5P2N1	2,048
D_1_6P	/dev/rD_1_6P1N1	2,048
	/dev/rD_1_6P2N1	2,048
	/dev/rD_1_6P3N1	2,048
	/dev/rD_1_6P4N1	2,048
D_1_7P	/dev/rD_1_7P1N1	2,048
	/dev/rD_1_7P4N1	2,048
	/dev/rD_1_7P3N1	2,048
	/dev/rD_1_7P2N1	2,048
D_1_8P	/dev/rD_1_8P1N1	2,048
	/dev/rD_1_8P2N1	2,048
	/dev/rD_1_8P3N1	2,048
	/dev/rD_1_8P4N1	2,048
D_2_1P	/dev/rD_2_1P1N1	2,048
	/dev/rD_2_1P4N1	2,048
	/dev/rD_2_1P3N1	2,048
	/dev/rD_2_1P2N1	2,048
D_2_2P	/dev/rD_2_2P1N1	2,048
	/dev/rD_2_2P2N1	2,048
	/dev/rD_2_2P3N1	2,048
	/dev/rD_2_2P4N1	2,048

D_2_3P	/dev/rD_2_3P1N1	2,048
	/dev/rD_2_3P4N1	2,048
	/dev/rD_2_3P3N1	2,048
	/dev/rD_2_3P2N1	2,048
D_2_4P	/dev/rD_2_4P1N1	2,048
	/dev/rD_2_4P2N1	2,048
	/dev/rD_2_4P3N1	2,048
	/dev/rD_2_4P4N1	2,048
D_2_5P	/dev/rD_2_5P1N1	2,048
	/dev/rD_2_5P4N1	2,048
	/dev/rD_2_5P3N1	2,048
	/dev/rD_2_5P2N1	2,048
D_2_6P	/dev/rD_2_6P1N1	2,048
	/dev/rD_2_6P2N1	2,048
	/dev/rD_2_6P3N1	2,048
	/dev/rD_2_6P4N1	2,048
D_2_7P	/dev/rD_2_7P1N1	2,048
	/dev/rD_2_7P4N1	2,048
	/dev/rD_2_7P3N1	2,048
	/dev/rD_2_7P2N1	2,048
D_2_8P	/dev/rD_2_8P1N1	2,048
	/dev/rD_2_8P2N1	2,048
	/dev/rD_2_8P3N1	2,048
	/dev/rD_2_8P4N1	2,048
D_3_1P	/dev/rD_3_1P1N1	2,048
	/dev/rD_3_1P4N1	2,048
	/dev/rD_3_1P3N1	2,048
	/dev/rD_3_1P2N1	2,048
D_3_2P	/dev/rD_3_2P1N1	2,048
	/dev/rD_3_2P2N1	2,048
	/dev/rD_3_2P3N1	2,048
	/dev/rD_3_2P4N1	2,048
D_3_3P	/dev/rD_3_3P1N1	2,048
	/dev/rD_3_3P4N1	2,048
	/dev/rD_3_3P3N1	2,048
	/dev/rD_3_3P2N1	2,048
D_3_4P	/dev/rD_3_4P1N1	2,048
	/dev/rD_3_4P2N1	2,048
	/dev/rD_3_4P3N1	2,048
	/dev/rD_3_4P4N1	2,048
D_3_5P	/dev/rD_3_5P1N1	2,048
	/dev/rD_3_5P4N1	2,048
	/dev/rD_3_5P3N1	2,048
	/dev/rD_3_5P2N1	2,048
D_3_6P	/dev/rD_3_6P1N1	2,048
	/dev/rD_3_6P2N1	2,048
	/dev/rD_3_6P3N1	2,048
	/dev/rD_3_6P4N1	2,048

D_3_7P	/dev/rD_3_7P1N1	2,048
	/dev/rD_3_7P4N1	2,048
	/dev/rD_3_7P3N1	2,048
	/dev/rD_3_7P2N1	2,048
D_3_8P	/dev/rD_3_8P1N1	2,048
	/dev/rD_3_8P2N1	2,048
	/dev/rD_3_8P3N1	2,048
	/dev/rD_3_8P4N1	2,048
D_4_1P	/dev/rD_4_1P1N1	1,536
	/dev/rD_4_1P5N1	2,048
	/dev/rD_4_1P4N1	1,536
	/dev/rD_4_1P3N1	1,536
	/dev/rD_4_1P2N1	1,536
D_4_2P	/dev/rD_4_2P1N1	1,536
	/dev/rD_4_2P2N1	1,536
	/dev/rD_4_2P3N1	1,536
	/dev/rD_4_2P5N1	2,048
	/dev/rD_4_2P4N1	1,536
D_4_3P	/dev/rD_4_3P1N1	1,536
	/dev/rD_4_3P5N1	2,048
	/dev/rD_4_3P4N1	1,536
	/dev/rD_4_3P3N1	1,536
	/dev/rD_4_3P2N1	1,536
D_4_4P	/dev/rD_4_4P1N1	1,536
	/dev/rD_4_4P2N1	1,536
	/dev/rD_4_4P3N1	1,536
	/dev/rD_4_4P5N1	2,048
	/dev/rD_4_4P4N1	1,536
D_4_5P	/dev/rD_4_5P1N1	1,536
	/dev/rD_4_5P5N1	2,048
	/dev/rD_4_5P4N1	1,536
	/dev/rD_4_5P3N1	1,536
	/dev/rD_4_5P2N1	1,536
D_4_6P	/dev/rD_4_6P1N1	1,536
	/dev/rD_4_6P2N1	1,536
	/dev/rD_4_6P3N1	1,536
	/dev/rD_4_6P5N1	2,048
	/dev/rD_4_6P4N1	1,536
D_4_7P	/dev/rD_4_7P1N1	1,536
	/dev/rD_4_7P5N1	2,048
	/dev/rD_4_7P4N1	1,536
	/dev/rD_4_7P3N1	1,536
	/dev/rD_4_7P2N1	1,536
D_4_8P	/dev/rD_4_8P1N1	1,536
	/dev/rD_4_8P2N1	1,536
	/dev/rD_4_8P3N1	1,536
	/dev/rD_4_8P5N1	2,048
	/dev/rD_4_8P4N1	1,536
I_1_1P	/dev/rI_1_1P1N1	2,048
	/dev/rI_1_1P4N1	2,048

	/dev/rl_1_1P3N1	2,048
	/dev/rl_1_1P2N1	2,048
l_1_2P	/dev/rl_1_2P1N1	2,048
	/dev/rl_1_2P2N1	2,048
	/dev/rl_1_2P3N1	2,048
	/dev/rl_1_2P4N1	2,048
l_1_3P	/dev/rl_1_3P1N1	2,048
	/dev/rl_1_3P4N1	2,048
	/dev/rl_1_3P3N1	2,048
	/dev/rl_1_3P2N1	2,048
l_1_4P	/dev/rl_1_4P1N1	2,048
	/dev/rl_1_4P2N1	2,048
	/dev/rl_1_4P3N1	2,048
	/dev/rl_1_4P4N1	2,048
l_1_5P	/dev/rl_1_5P1N1	2,048
	/dev/rl_1_5P4N1	2,048
	/dev/rl_1_5P3N1	2,048
	/dev/rl_1_5P2N1	2,048
l_1_6P	/dev/rl_1_6P1N1	2,048
	/dev/rl_1_6P2N1	2,048
	/dev/rl_1_6P3N1	2,048
	/dev/rl_1_6P4N1	2,048

Tablespace	Location	Size(M)
l_1_7P	/dev/rl_1_7P1N1	2,048
	/dev/rl_1_7P4N1	2,048
	/dev/rl_1_7P3N1	2,048
	/dev/rl_1_7P2N1	2,048
l_1_8P	/dev/rl_1_8P1N1	2,048
	/dev/rl_1_8P2N1	2,048
	/dev/rl_1_8P3N1	2,048
	/dev/rl_1_8P4N1	2,048
l_2_1P	/dev/rl_2_1P1N1	2,048
	/dev/rl_2_1P4N1	2,048
	/dev/rl_2_1P3N1	2,048
	/dev/rl_2_1P2N1	2,048
l_2_2P	/dev/rl_2_2P1N1	2,048
	/dev/rl_2_2P2N1	2,048
	/dev/rl_2_2P3N1	2,048
	/dev/rl_2_2P4N1	2,048
l_2_3P	/dev/rl_2_3P1N1	2,048
	/dev/rl_2_3P4N1	2,048
	/dev/rl_2_3P3N1	2,048
	/dev/rl_2_3P2N1	2,048
l_2_4P	/dev/rl_2_4P1N1	2,048
	/dev/rl_2_4P2N1	2,048
	/dev/rl_2_4P3N1	2,048
	/dev/rl_2_4P4N1	2,048

l_2_5P	/dev/rl_2_5P1N1	2,048
	/dev/rl_2_5P4N1	2,048
	/dev/rl_2_5P3N1	2,048
	/dev/rl_2_5P2N1	2,048
l_2_6P	/dev/rl_2_6P1N1	2,048
	/dev/rl_2_6P2N1	2,048
	/dev/rl_2_6P3N1	2,048
	/dev/rl_2_6P4N1	2,048
l_2_7P	/dev/rl_2_7P1N1	2,048
	/dev/rl_2_7P4N1	2,048
	/dev/rl_2_7P3N1	2,048
	/dev/rl_2_7P2N1	2,048
l_2_8P	/dev/rl_2_8P1N1	2,048
	/dev/rl_2_8P2N1	2,048
	/dev/rl_2_8P3N1	2,048
	/dev/rl_2_8P4N1	2,048
l_3_1P	/dev/rl_3_1P1N1	1,536
	/dev/rl_3_1P4N1	1,536
	/dev/rl_3_1P3N1	1,536
	/dev/rl_3_1P2N1	1,536
l_3_2P	/dev/rl_3_2P1N1	1,024
	/dev/rl_3_2P2N1	1,024
	/dev/rl_3_2P3N1	1,024
	/dev/rl_3_2P4N1	1,024
l_3_3P	/dev/rl_3_3P1N1	2,048
	/dev/rl_3_3P4N1	2,048
	/dev/rl_3_3P3N1	2,048
	/dev/rl_3_3P2N1	2,048
l_3_4P	/dev/rl_3_4P1N1	1,024
	/dev/rl_3_4P2N1	1,024
	/dev/rl_3_4P3N1	1,024
	/dev/rl_3_4P4N1	1,024
l_3_5P	/dev/rl_3_5P1N1	1,024
	/dev/rl_3_5P4N1	1,024
	/dev/rl_3_5P3N1	1,024
	/dev/rl_3_5P2N1	1,024
l_3_6P	/dev/rl_3_6P1N1	1,024
	/dev/rl_3_6P2N1	1,024
	/dev/rl_3_6P3N1	1,024
	/dev/rl_3_6P4N1	1,024
l_3_7P	/dev/rl_3_7P1N1	1,024
	/dev/rl_3_7P4N1	1,024
	/dev/rl_3_7P3N1	1,024
	/dev/rl_3_7P2N1	1,024
l_3_8P	/dev/rl_3_8P1N1	1,024
	/dev/rl_3_8P2N1	1,024
	/dev/rl_3_8P3N1	1,024
	/dev/rl_3_8P4N1	1,024

l_4_1P	/dev/rl_4_1P1N1	2,048
	/dev/rl_4_1P4N1	2,048
	/dev/rl_4_1P3N1	2,048
	/dev/rl_4_1P2N1	2,048
l_4_2P	/dev/rl_4_2P1N1	2,048
	/dev/rl_4_2P2N1	2,048
	/dev/rl_4_2P3N1	2,048
	/dev/rl_4_2P4N1	2,048
l_4_3P	/dev/rl_4_3P1N1	2,048
	/dev/rl_4_3P4N1	2,048
	/dev/rl_4_3P3N1	2,048
	/dev/rl_4_3P2N1	2,048
l_4_4P	/dev/rl_4_4P1N1	2,048
	/dev/rl_4_4P2N1	2,048
	/dev/rl_4_4P3N1	2,048
	/dev/rl_4_4P4N1	2,048
l_4_5P	/dev/rl_4_5P1N1	2,048
	/dev/rl_4_5P4N1	2,048
	/dev/rl_4_5P3N1	2,048
	/dev/rl_4_5P2N1	2,048
l_4_6P	/dev/rl_4_6P1N1	2,048
	/dev/rl_4_6P2N1	2,048
	/dev/rl_4_6P3N1	2,048
	/dev/rl_4_6P4N1	2,048
l_4_7P	/dev/rl_4_7P1N1	2,048
	/dev/rl_4_7P4N1	2,048
	/dev/rl_4_7P3N1	2,048
	/dev/rl_4_7P2N1	2,048
l_4_8P	/dev/rl_4_8P1N1	2,048
	/dev/rl_4_8P2N1	2,048
	/dev/rl_4_8P3N1	2,048
	/dev/rl_4_8P4N1	2,048
l_5_1P	/dev/rl_5_1P1N1	1,024
l_5_2P	/dev/rl_5_2P1N1	1,024
l_5_3P	/dev/rl_5_3P1N1	1,024
l_5_4P	/dev/rl_5_4P1N1	1,024
l_5_5P	/dev/rl_5_5P1N1	1,024
l_5_6P	/dev/rl_5_6P1N1	1,024
l_5_7P	/dev/rl_5_7P1N1	1,024
l_5_8P	/dev/rl_5_8P1N1	1,024
l_6_1P	/dev/rl_6_1P1N1	1,024
l_6_2P	/dev/rl_6_2P1N1	1,024

I_6_3P	/dev/rI_6_3P1N1	1,024
I_6_4P	/dev/rI_6_4P1N1	1,024
I_6_5P	/dev/rI_6_5P1N1	1,024
I_6_6P	/dev/rI_6_6P1N1	1,024
I_6_7P	/dev/rI_6_7P1N1	1,024
I_6_8P	/dev/rI_6_8P1N1	1,024
RB1	/dev/rRB1N1	2,048
RB2	/dev/rRB2N1	2,048
RB3	/dev/rRB3N1	2,048
RB4	/dev/rRB4N1	2,048
RB5	/dev/rRB5N1	2,048
RETEK_DATA	/dev/rD_R_P1N1	250
	/dev/rD_R_P6N1	250
	/dev/rD_R_P8N1	250
	/dev/rD_R_P7N1	250
	/dev/rD_R_P5N1	250
	/dev/rD_R_P2N1	250
	/dev/rD_R_P3N1	250
	/dev/rD_R_P4N1	250
RETEK_INDEX	/dev/rI_R_P1N1	250
	/dev/rI_R_P6N1	250
	/dev/rI_R_P8N1	250
	/dev/rI_R_P7N1	250
	/dev/rI_R_P5N1	250
	/dev/rI_R_P2N1	250
	/dev/rI_R_P3N1	250
	/dev/rI_R_P4N1	250
SYSTEM	/dev/rSYS1N1	224
TMP	/dev/rTMP1N1	2,048
	/dev/rTMP2N1	2,048
	/dev/rTMP3N1	2,048
	/dev/rTMP4N1	2,048

Tablespace	Location	Size(M)
TMP	/dev/rTMP5N1	2,048
	/dev/rTMP6N1	2,048
	/dev/rTMP7N1	2,048
	/dev/rTMP8N1	2,048
	/dev/rTMP9N1	2,048
	/dev/rTMP10N1	2,048
	/dev/rTMP11N1	2,048
	/dev/rTMP12N1	2,048
	/dev/rTMP13N1	2,048
	/dev/rTMP14N1	2,048

	/dev/rTMP15N1	2,048
	/dev/rTMP16N1	2,048
USR	/dev/rUSR1N1	224

==========
Redo Log Listing
==========

Log Buffer Size (Bytes)

62914560

Group	File Location	Bytes (K)
1	/dev/rLOG1AN1	2,097,136
	/dev/rLOG1N1	2,097,136
2	/dev/rLOG2AN1	2,097,136
	/dev/rLOG2N1	2,097,136
3	/dev/rLOG3AN1	2,097,136
	/dev/rLOG3N1	2,097,136

==========
Rollback Listing
==========

Segment Name	Tablespace	Initial (K)	Next (K)	Min Ext.	Max Ext.	Status
RB1_RBS1	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS2	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS3	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS31	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS36	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS4	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS41	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS5	RB1	20,480	20,480	5	#######	ONLINE
RB1_RBS6	RB1	20,480	20,480	5	#######	ONLINE
RB2_RBS10	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS11	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS12	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS32	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS37	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS42	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS7	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS8	RB2	20,480	20,480	5	#######	ONLINE
RB2_RBS9	RB2	20,480	20,480	5	#######	ONLINE
RB3_RBS13	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS14	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS15	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS16	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS17	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS18	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS33	RB3	20,480	20,480	5	#######	ONLINE
RB3_RBS38	RB3	20,480	20,480	5	#######	ONLINE

RB3_RBS43	RB3	20,480	20,480	5	#######	ONLINE
RB4_RBS19	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS20	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS21	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS22	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS23	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS24	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS34	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS39	RB4	20,480	20,480	5	#######	ONLINE
RB4_RBS44	RB4	20,480	20,480	5	#######	ONLINE
RB5_RBS25	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS26	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS27	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS28	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS29	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS30	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS35	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS40	RB5	20,480	20,480	5	#######	ONLINE
RB5_RBS45	RB5	20,480	20,480	5	#######	ONLINE
SYSTEM	SYSTEM	56	56	2	505	ONLINE

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Control File Listing
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Control File Name

/dev/rCTL1N1
/dev/rCTL2N1

==========
Archive, Trace, Dump Destinations
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Parameter	Destination
log_archive_dest	?/dbs/arch
log_archive_duplex_dest	
log_archive_min_succeed_dest	1
background_dump_dest	?/rdbms/log
user_dump_dest	?/rdbms/log
core_dump_dest	?/rdbms/log
audit_file_dest	?/rdbms/audit

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Product Versions
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BANNER

Oracle8 Enterprise Edition Release 8.0.5.0.0 - Production
PL/SQL Release 8.0.5.0.0 - Production
CORE Version 4.0.5.0.0 - Production
TNS for IBM/AIX RISC System/6000: Version 8.0.5.0.0 - Production
NLSRTL Version 3.3.2.0.0 – Production