# An HP StorageWorks Disk Array XP solution with Oracle 9*i* Real Application Clusters (RAC)

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# executive summary

The following detail is documentation of a lab exercise performed by HP in response to a number of customer requests for sample configurations and validation of Oracle 9*i* Real Application Clusters (9iRAC) running Red Hat Linux leveraging HP StorageWorks XP SAN technology. This activity has satisfied the three target objectives:

1. Define and document a representative, jointly supported, (both HP and Oracle) RAC on Linux configuration utilizing HP StorageWorks XP SAN technology.
2. Validated compatibility and document implementation issues encountered.
3. Validated a Linux Oracle 9iRAC multipath solution.

This document does not address XP or RAC performance as true performance metrics can only be achieved in conjunction with a specific application and the intention of this exercise is purely generic.

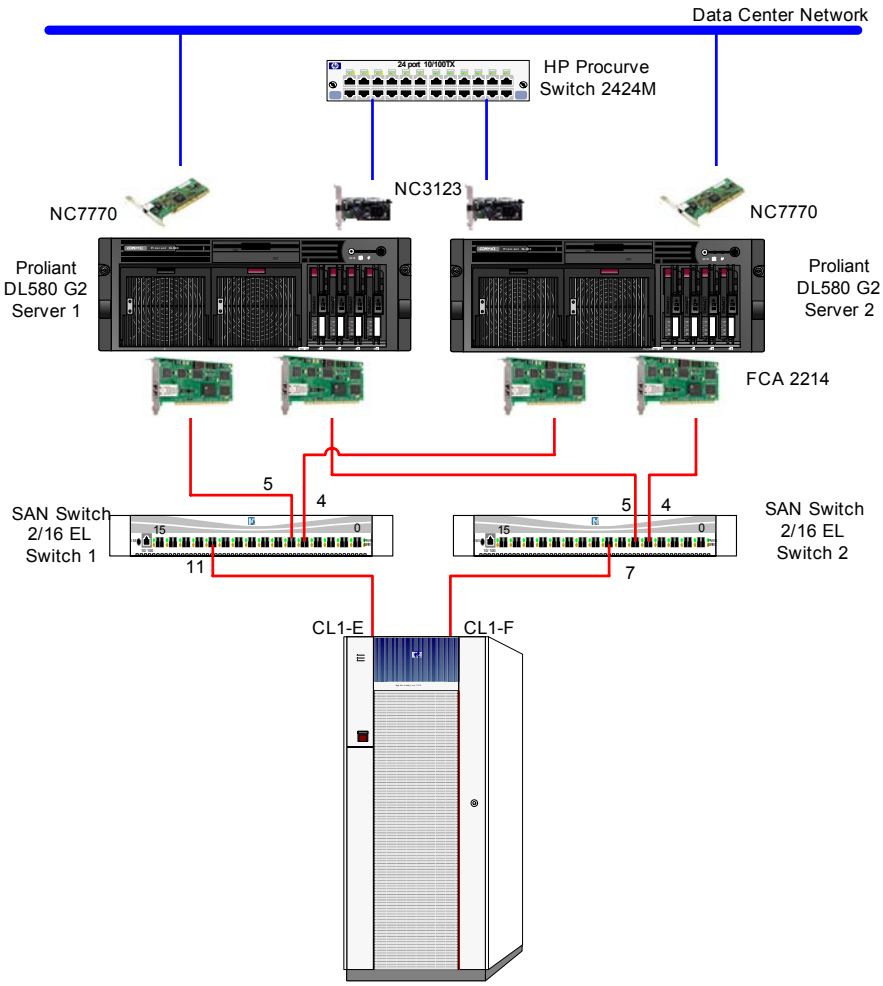
The following detail then is a specific point in time validation of RAC and xp. For assistance in implementing a custom RAC solution to fit specific application requirements contact HP Consulting and Integration.

# overview

This technical white paper documents the configuration of the HP StorageWorks XP128 Disk Array with an Oracle 9*i* Real Application Clusters (RAC) 9.2.0.3.0 environment. This solution was staged on Red Hat Linux Advanced Server 2.1 using the HP Parallel Database Cluster (PDC) for Oracle 9iRAC on Linux. The PDC is intended for use with the MSA1000 array, but with the minor, documented, changes outlined in this paper, can be applied to XP arrays. The next version of the PDC, due to release soon, will support EVA storage as well. It details the hardware, software, array, switch and Oracle setup and documents problems found and how they were resolved.

# hp solution overview

The configuration used for this activity was the StorageWorks xp128 disk array in a fibre channel (FC) storage area network (SAN) configuration with a two ProLiant DL580 G2 servers as cluster nodes.




## Proliant Configuration

Two HP Proliant DL580 G2 servers were used in this RAC configuration. The server software installation was performed using HP SmartStart version 6.10. Using the Parallel Database Cluster (PDC) kit, Red Hat Linux Advanced Server 2.1 was installed. Server details:

- ROM BIOS – P27 (10/7/2002)
- Processors – (2) 1.4 GHz
    - 256 KB L2, 512 KB L3 cache
- Memory– 5120 MB
- (2) 36.4 GB 15k RPM, Ultra3 SCSI drives
- Smart Array 5i v1.82, slot 0 (Direct Attached Storage – Internal drives)
    - Logical Drive 1 – RAID 1+0 – Simplex slots 2, 3
        - Total of 33 GB (avail. to Linux)
        - SCSI Port 1, ID 0
        - SCSI Port 1, ID 1
- Same Advanced Memory Protection Mode
- Cluster interconnect achieved with NC2123 fast Ethernet NIC PCI 10/100 with an HP Proliant 2424M Switch
- Public network connection is achieved using the NC7770 pci-x gigabit server adapter

- HP FCA 2214 HBAs were used with version 6.06.50 failover driver for the SAN connection. Multipathing achieved using this HP qualified driver.

## xp array Configuration

The xp128 array was used as the shared storage. Firmware level 21-06-22-00/00 was used. One new host group was created on each port, CL1-E and CL1-F, which requires LUN security. The host group was named "lnx_orcl". The Fabric-ON, Point-to-Point topology was used. The following LUNs were configured for each of the four host groups:

| LUN | CU:LDEV | Emulation | Size (MB) | CMD DEV |
|---|---|---|---|---|
| 00 | 00:54, 00:55, 00:56, 00:57 | OPEN-9*4 | 29538 | NO |
| 01 | 00:58, 00:59, 00:5A, 00:5B | OPEN-9*4 | 29538 | NO |
| 02 | 00:5C, 00:5D, 00:6B | OPEN-9*3 | 22154 | NO |
| 03 | 00:69 | OPEN-9 | 7385 | NO |
| 04 | 00:6A | OPEN-9 | 7385 | NO |

See appendix a for xp128 configuration detail. See appendix b for fibre channel (FC) host bus adapter (HBA) driver level multipathing detail.

## Switch Configuration

Two HP StorageWorks SAN switch 2/16-el switches were used in this configuration. Firmware level 3.0.2f was used. Ports CL1-E and CL1-F on the XP array are 1Gbps ports. The switch auto negotiated to 1 Gbps speed for the array connection and the server HBA connections. The switch Ports 2, 5 and 11 on switch 1 are in a zone. Ports 4, 5 and 11 on switch 2 are in a zone. See appendix c for details.

## Operating System and Oracle Configuration

HP's PDC kit version 1.0 for Linux was used for this installation. The PDC installs Red Hat Linux AS2.1 (2.4.9-e.24enterprise kernel), Oracle 9iRAC, and configures a small sample database. Alternatively, the operating system and Oracle software could be installed, configured and licenses could be applied independently. The PDC simplifies the install and hides some of the configuration complexity. The installation of the 9iRAC cluster in this paper took four hours using the PDC. See appendix d for details of the installation.

This PDC is designed to be used with the HP MSA1000 storage array. It can be used with the XP storage array as well. The PDC outlines three LUNs that must be presented to the cluster servers. To present appropriately sized LUNs, Logical Unit Size Extension (LUSE) was used to group identical volumes to produce larger volumes. Groupings are not required to be contiguous and are recommended to be spread across different array groups to optimize performance. In this case, OPEN-9 emulation was used. In the case of the /dev/sda device, four OPEN-9 volumes were grouped using LUSE.

It is recommended that prior to creating the LUSE volumes, any existing volume partitions be removed, so, for example, /dev/sda1 or subsequent partitions are not presented to the servers. The PDC assumes that there are no partitions on the presented volumes. One method to insure that there are no partitions prior to LUSE is to present the individual volumes to a Linux server and use the fdisk utility to delete and insure partitions are not there. An alternative to LUSE is the OPEN-V emulation, which allows custom volumes sizes to be created. LUSE usage requires a product license. OPEN-V emulation usage requires both a LUSE and Custom Volume Size (CVS) license.

It is important that the fibre channel (FC) driver be changed to the 6.06.50 driver so that the PDC installs. Follow the documentation steps in the chapter 3 "Environmental Variables" section of the

Administrator's Guide. Once the driver is loaded and functioning on one path, the second fibre channel (FC) path is introduced and multipathing could be verified using the SANSurfer tool. Verify that the correct driver is loaded. See appendix b for SANSurfer tool details. For details of the Oracle database configuration, refer to appendix e.

The FC HBA driver gives the ability to rescan storage devices while the Operating System (OS) is running. This enables the user to scan the HBA driver level and then the OS level to allow mounting of the newly discovered device. This feature enables solution level capabilities such as Zero Downtime Backup, when used with the RaidManager XP product. The Zero Downtime Backup solution was not available at the time this paper was written, however. Refer to the README file included with the driver for details. Also, see appendix g for details pertaining to this configuration.

## Oracle Validation

Benchmark Factory for Oracle (v 3.3) was run to validate the 9*i*RAC configuration. This included automated creation of tables, loading the tables, creating indices and running a mix of transactions. A total of 269MB was used for the validation database. A separate 1 GB tablespace (BFTEST) was created for this, also on the XP shared storage (/dev/sda).

Basic validation steps included pinging both private SAN and public LAN from all nodes and validation that all automatic services are running properly on all nodes.

Multipathing validation included introducing faults while the RAC was under load from the Benchmark Factory for Oracle software clients. For all tests, the Qlogic failover driver was enabled with the Round Robin load balancing policy disabled. A cable fault between the switch and storage was injected. A cable fault between an active path between the HBA to the switch was injected. Both tests passed. Disconnecting one FC link from a server, restarting that server and returning it's FC link resulted in a restored path as expected. Power down of one of the two switches resulted in a single path loss on each RAC server. Upon power up, that path returned to each RAC server as expected. In all cases, the client workload continued as expected without error.

A number of tests were performed to show high availability (HA) functionality. The first test was to shutdown one instance and verify that instance was removed from the cluster. That was successful. The next test was to remove all paths to the shared storage and verify that node was removed from the cluster. That was successful. The next test was to power one of the nodes down and verify that node was removed from the cluster. That was successful.

A multipathing test was performed where, while both paths were active and Oracle was running, one of the cables was pulled from one of the two RAC servers. Oracle was immediately shutdown and the server was rebooted. Still with only a single path available, Oracle failed to start, giving errors. The ORACM process failed to start. This test was repeated with the secondary path restored upon reboot. In this case, Oracle started without problem.

The final validation step was to run a TPC-C OLTP benchmark with a 100 user load. The load was accomplished using Benchmark Factory for Oracle software and was spread between two client nodes (50 users on each node). The test was successful and the log files can be found in appendix f.

# problems, challenges, and constraints

The PDC for Linux is written for use with the MSA1000 storage array. Integrating the XP storage into the procedure should be done with caution. At this time, it is not planned to write a separate PDC for XP storage. Again, an alternative is to manually load the Operating System, Oracle and Patches.

Originally, the logical devices used to create the LUSE volumes had partitions on them. This created a /dev/sda1 device, which created a problem with the PDC. The solution to this was to unpresent the LUSE volumes from the servers, remove the LUSE relationship, present the individual logical devices to one of the servers, run fdisk and delete each of the partitions, unpresent the volumes from the servers again, recreate the LUSE relationship and represent the LUSE LUNs to the servers, and restart the PDC installation.

Insure that the proper FC HBA driver is loaded in the environmental variables list before proceeding.

If there is a break in one of the FC cables connecting the servers to the storage, the remaining path will become or remain active. It is important to note that restoring the second cable during the next reboot is critical, as Oracle would not start without this during test cases.

## other solution options

Additional Oracle patchsets could be applied as needed. Use of a PDC kit later than v1.0 is recommended. A later version is being created and will likely be available near this paper's completion.

A 2 Gbps CHIP board could be used in the XP array which would also increase throughput and use the performance potential of the 2/16-el switch.

For the HA benefits of the XP, connect one fibre channel path to a port on cluster 1 and the other path to another port on cluster 2. For this paper, ports on the xp128 array were not available in both clusters, so both ports were connected to cluster 1.

For LUSE LUNs, insure that the volumes selected are spread between different array groups to improve performance. LUNs do not have to be contiguous to make create a LUSE volume.

A supported non-blocking Ethernet switch should be used for the cluster interconnect. Where possible, connect gigabit Ethernet NICs to the cluster interconnect.

The XP array configuration can be tailored to the specific database configuration that is desired. LUSE or CVS can be used to make smaller or larger LUN sizes based on requirements. Extended partitions can be created and the Oracle Object Manager can be used to create the symbolic links. As mentioned above, OPEN-V devices can be created at any size.

## for more information

For more information, refer to the following web sites:

http://www.hp.com/products1/storage/products/disk_arrays/highend/xp128/index.html

http://h18004.www1.hp.com/solutions/enterprise/highavailability/oracle9i/pdcO2000/win2000/index-msa1000.html

http://h18006.www1.hp.com/products/storageworks/sanswitch216el/index.html

http://h18004.www1.hp.com/products/servers/platforms/index-dl-ml.html

http://h18004.www1.hp.com/solutions/enterprise/highavailability/oracle/index.html

http://h30046.www3.hp.com/solutions/pdf/Oracleblueprint.pdf

http://metalink.oracle.com

http://h20000.www2.hp.com/bizsupport/TechSupport/DriverDownload.jsp?pnameOID=315741&locale=en_US&taskId=135&prodTypeId=12169&prodSeriesId=315739

http://www.hp.com/solutions/highavailability/oracle

## Conclusions and comments:

HP supports all of the HP hardware and software components used in conjunction with the Operating System version utilized. All components meet the Oracle RAC minimum support requirements detailed on Oracle MetaLink. HP and Oracle jointly support this solution in production.

No incompatibilities where identified during this testing. During all of the research necessary to complete this effort we found no indication of any support issues pending with either HP or Oracle support on the combination of XP and RAC on Red Hat Linux AS 2.1.

# appendices

Appendix a: XP128 Configuration

Appendix b:  FC HBA Configuration

Appendix c:  Switch Configuration

Appendix d:  PDC Installation Log

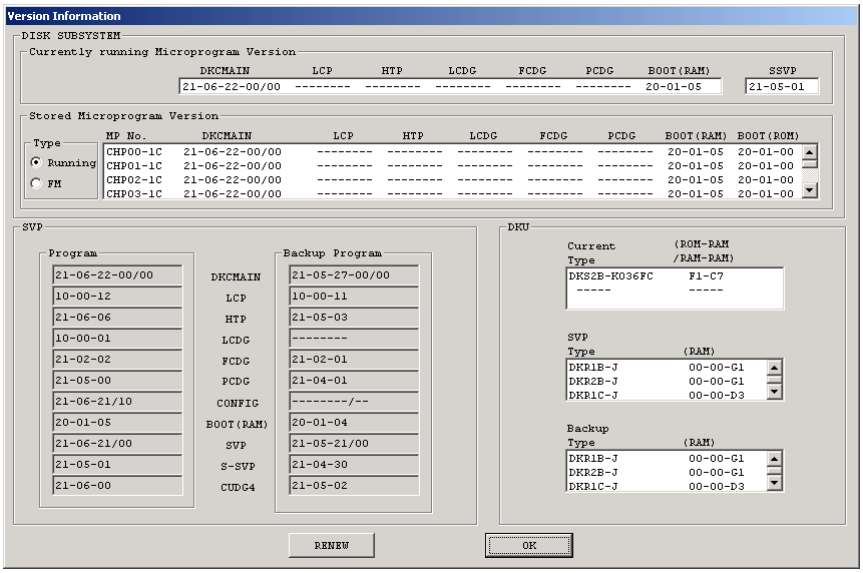
Appendix e:  Oracle:  Database Configuration

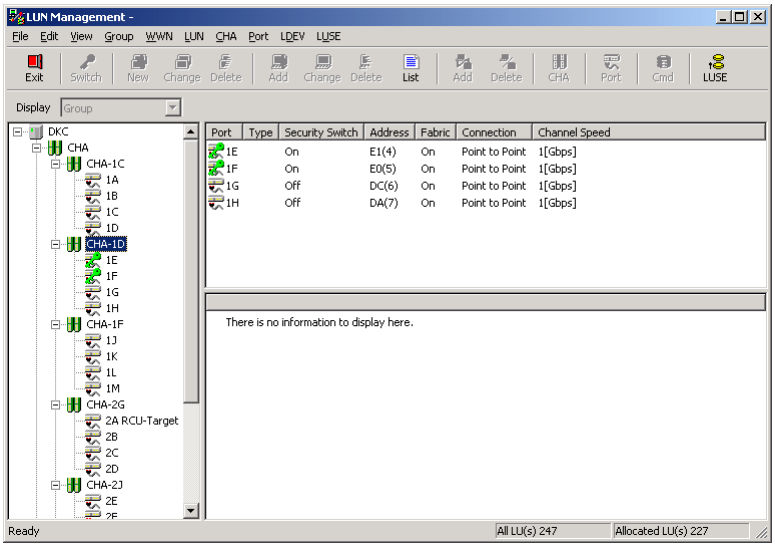
Appendix f:  Oracle Validation

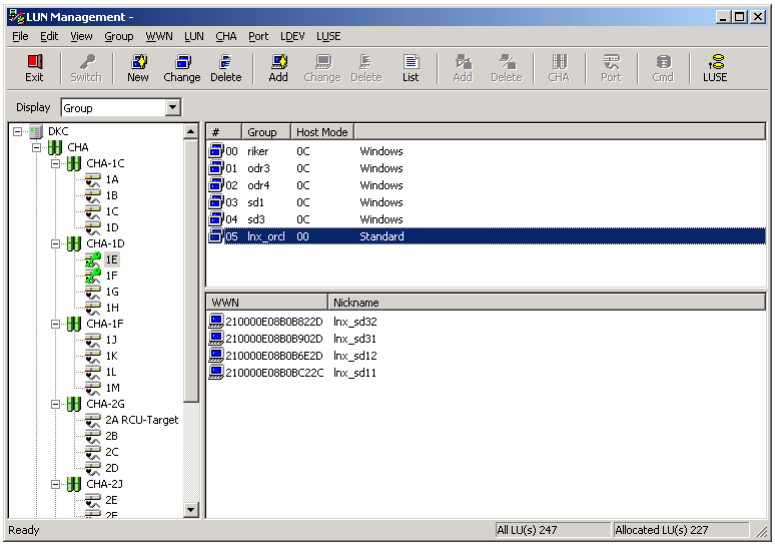
Appendix g:  Forced Rescan of Devices

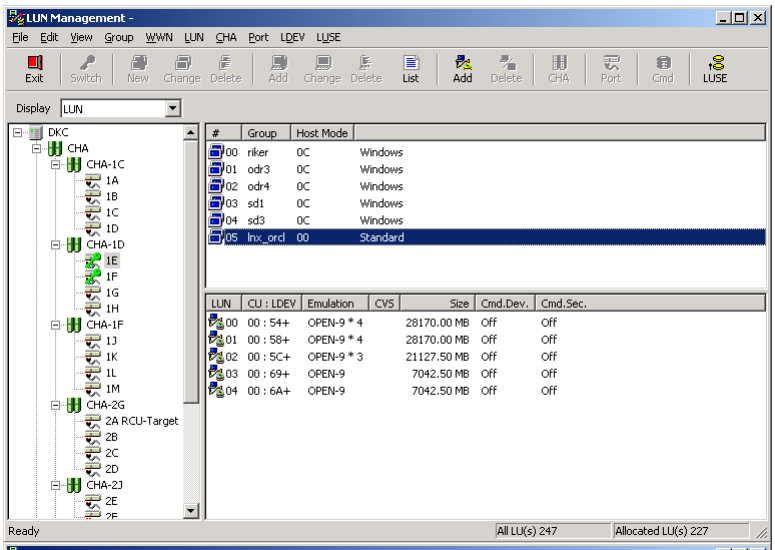
# appendix a: xp128 configuration

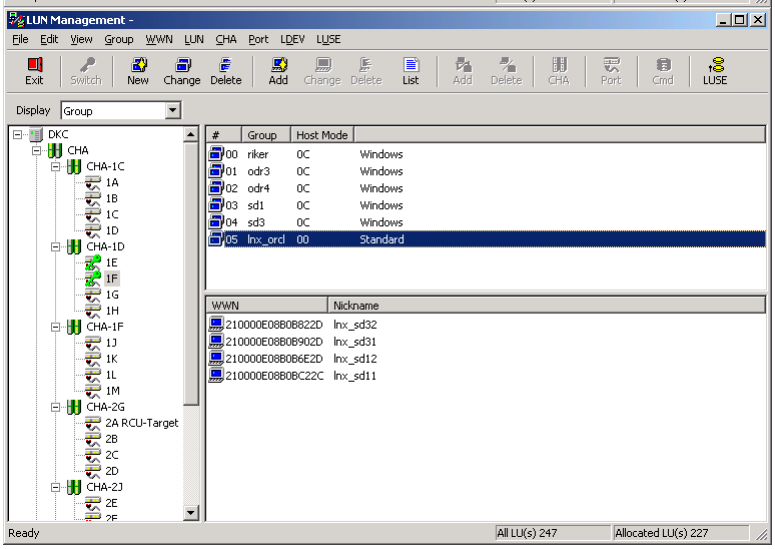
Ports 1E and 1F are used.

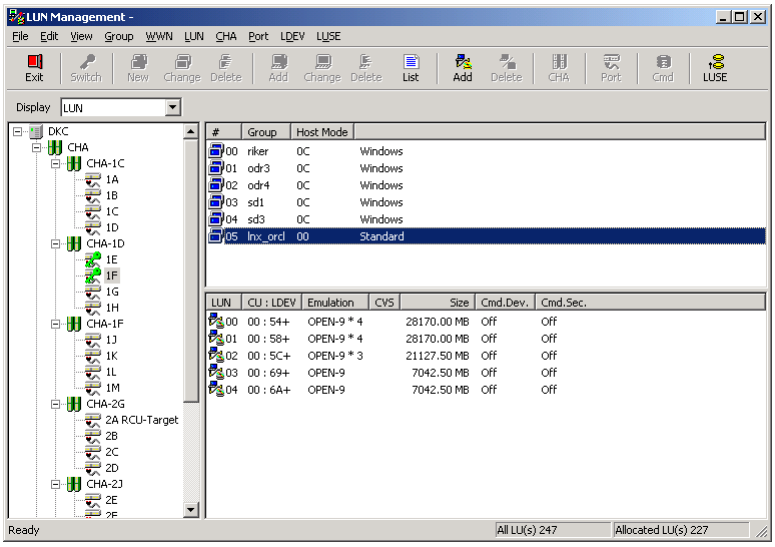


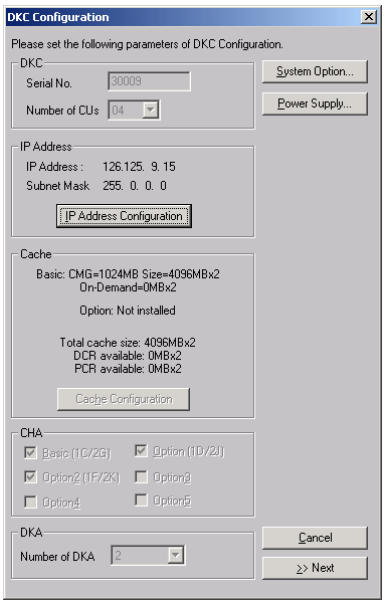




LUN Management -
File Edit View Group WWN LUN CHA Port LDEV LUSE
Exit Switch New Change Delete Add Change Delete List Add Delete CHA Port Cmd LUSE
Display Group
DKC
CHA
CHA-1C
1A
1B
1C
1D
CHA-1D
1E
1F
1G
1H
CHA-1F
1J
1K
1L
1M
CHA-2G
2A RCU-Target
2B
2C
2D
CHA-2J
2E
# Group Host Mode
00 riker 0C Windows
01 odr3 0C Windows
02 odr4 0C Windows
03 sd1 0C Windows
04 sd3 0C Windows
05 lnx_orcl 00 Standard
WWN Nickname
210000E08B0B822D lnx_sd32
210000E08B0B902D lnx_sd31
210000E08B0B6E2D lnx_sd12
210000E08B0BC22C lnx_sd11
Ready
All LU(s) 247
Allocated LU(s) 227

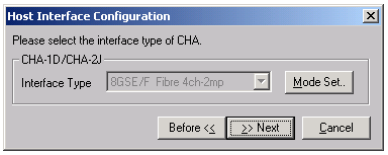

LUN Management -
File Edit View Group WWN LUN CHA Port LDEV LUSE
Exit Switch New Change Delete Add Change Delete List Add Delete CHA Port Cmd LUSE
Display LUN
DKC
CHA
CHA-1C
1A
1B
1C
1D
CHA-1D
1E
1F
1G
1H
CHA-1F
1J
1K
1L
1M
CHA-2G
2A RCU-Target
2B
2C
2D
CHA-2J
2E
# Group Host Mode
00 riker 0C Windows
01 odr3 0C Windows
02 odr4 0C Windows
03 sd1 0C Windows
04 sd3 0C Windows
05 lnx_orcl 00 Standard
LUN CU : LDEV Emulation CVS Size Cmd.Dev. Cmd.Sec.
00 00 : 54+ OPEN-9 * 4 28170.00 MB Off Off
01 00 : 58+ OPEN-9 * 4 28170.00 MB Off Off
02 00 : 5C+ OPEN-9 * 3 21127.50 MB Off Off
03 00 : 69+ OPEN-9 7042.50 MB Off Off
04 00 : 6A+ OPEN-9 7042.50 MB Off Off
Ready
All LU(s) 247
Allocated LU(s) 227

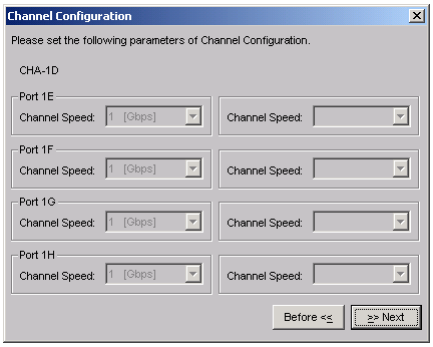

LUN Management -
File Edit View Group WWN LUN CHA Port LDEV LUSE
Exit Switch New Change Delete Add Change Delete List Add Delete CHA Port Cmd LUSE
Display Group
DKC
CHA
CHA-1C
1A
1B
1C
1D
CHA-1D
1E
1F
1G
1H
CHA-1F
1J
1K
1L
1M
CHA-2G
2A RCU-Target
2B
2C
2D
CHA-2J
2E
# Group Host Mode
00 riker 0C Windows
01 odr3 0C Windows
02 odr4 0C Windows
03 sd1 0C Windows
04 sd3 0C Windows
05 lnx_orcl 00 Standard
WWN Nickname
210000E08B0B822D lnx_sd32
210000E08B0B902D lnx_sd31
210000E08B0B6E2D lnx_sd12
210000E08B0BC22C lnx_sd11
Ready
All LU(s) 247
Allocated LU(s) 227

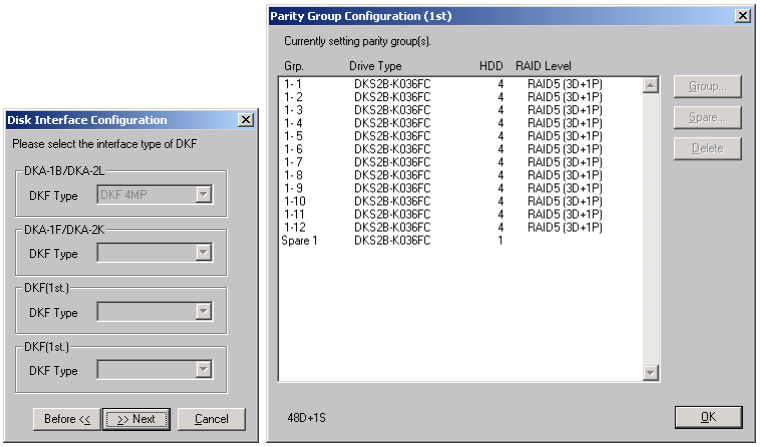


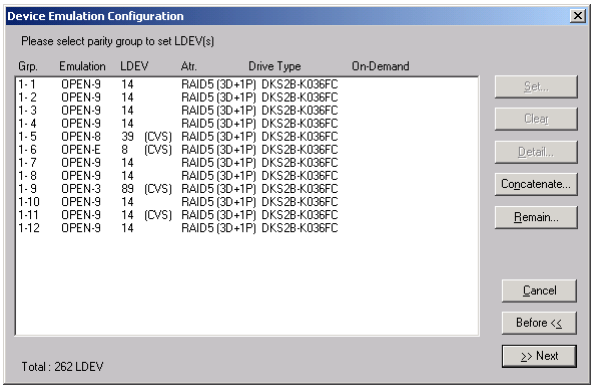



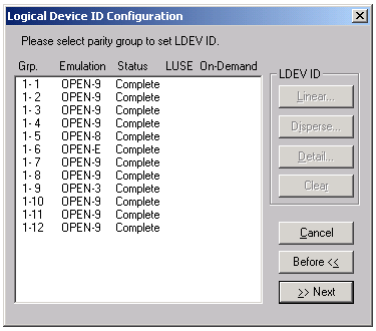

Ports CL1-E and CL1-F are on CHA-1D

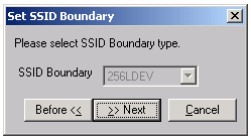


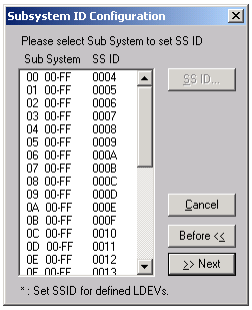



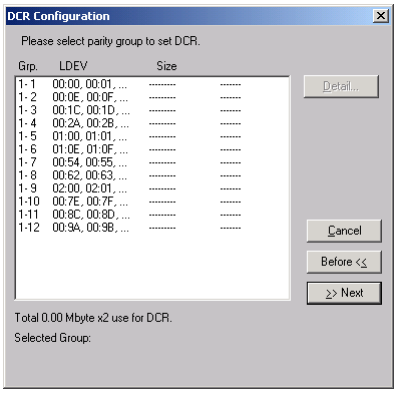

Disk Interface Configuration
Please select the interface type of DKF
DKA-1B/DKA-2L
DKF Type
DKF 4MP
DKA-1F/DKA-2K
DKF Type
DKF(1st.)
DKF Type
DKF(1st.)
DKF Type
Before <<
>> Next
Cancel
Parity Group Configuration (1st)
Currently setting parity group(s).
Grp. Drive Type HDD RAID Level
1-1 DKS2B-K036FC 4 RAID5 (3D+1P)
1-2 DKS2B-K036FC 4 RAID5 (3D+1P)
1-3 DKS2B-K036FC 4 RAID5 (3D+1P)
1-4 DKS2B-K036FC 4 RAID5 (3D+1P)
1-5 DKS2B-K036FC 4 RAID5 (3D+1P)
1-6 DKS2B-K036FC 4 RAID5 (3D+1P)
1-7 DKS2B-K036FC 4 RAID5 (3D+1P)
1-8 DKS2B-K036FC 4 RAID5 (3D+1P)
1-9 DKS2B-K036FC 4 RAID5 (3D+1P)
1-10 DKS2B-K036FC 4 RAID5 (3D+1P)
1-11 DKS2B-K036FC 4 RAID5 (3D+1P)
1-12 DKS2B-K036FC 4 RAID5 (3D+1P)
Spare 1 DKS2B-K036FC 1
Group...
Spare...
Delete
48D+1S
OK

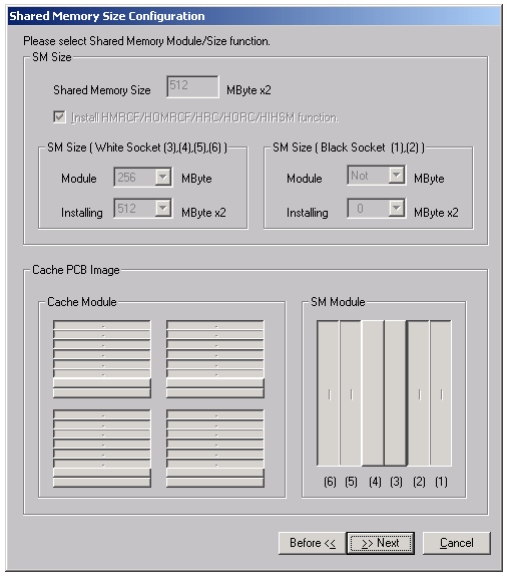

Device Emulation Configuration
Please select parity group to set LDEV(s)
Grp. Emulation LDEV Atr. Drive Type On-Demand
1-1 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-2 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-3 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-4 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-5 OPEN-8 39 (CVS) RAID5 (3D+1P) DKS2B-K036FC
1-6 OPEN-E 8 (CVS) RAID5 (3D+1P) DKS2B-K036FC
1-7 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-8 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-9 OPEN-3 89 (CVS) RAID5 (3D+1P) DKS2B-K036FC
1-10 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
1-11 OPEN-9 14 (CVS) RAID5 (3D+1P) DKS2B-K036FC
1-12 OPEN-9 14 RAID5 (3D+1P) DKS2B-K036FC
Set...
Clear
Detail...
Concatenate...
Remain...
Cancel
Before <<
>> Next
Total : 262 LDEV

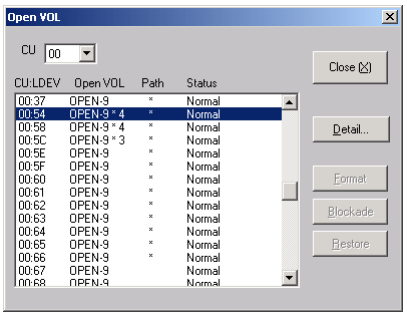

Logical Device ID Configuration
Please select parity group to set LDEV ID.
Grp. Emulation Status LUSE On-Demand
1-1 OPEN-9 Complete
1-2 OPEN-9 Complete
1-3 OPEN-9 Complete
1-4 OPEN-9 Complete
1-5 OPEN-8 Complete
1-6 OPEN-E Complete
1-7 OPEN-9 Complete
1-8 OPEN-9 Complete
1-9 OPEN-3 Complete
1-10 OPEN-9 Complete
1-11 OPEN-9 Complete
1-12 OPEN-9 Complete
LDEV ID
Linear...
Disperse...
Detail...
Clear
Cancel
Before <<
>> Next

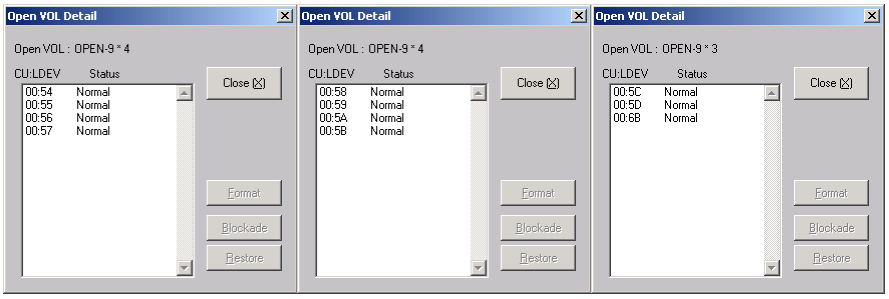

Set SSID Boundary
Please select SSID Boundary type.
SSID Boundary
256LDEV
Before <<
>> Next
Cancel


Subsystem ID Configuration
Please select Sub System to set SS ID
Sub System SS ID
00 00-FF 0004
01 00-FF 0005
02 00-FF 0006
03 00-FF 0007
04 00-FF 0008
05 00-FF 0009
06 00-FF 000A
07 00-FF 000B
08 00-FF 000C
09 00-FF 000D
0A 00-FF 000E
0B 00-FF 000F
0C 00-FF 0010
0D 00-FF 0011
0E 00-FF 0012
SS ID...
Cancel
Before <<
>> Next
*: Set SSID for defined LDEVs.


DCR Configuration
Please select parity group to set DCR.
Grp. LDEV Size
1-1 00:00, 00:01, ... ---------- -------
1-2 00:0E, 00:0F, ... ---------- -------
1-3 00:1C, 00:1D, ... ---------- -------
1-4 00:2A, 00:2B, ... ---------- -------
1-5 01:00, 01:01, ... ---------- -------
1-6 01:0E, 01:0F, ... ---------- -------
1-7 00:54, 00:55, ... ---------- -------
1-8 00:62, 00:63, ... ---------- -------
1-9 02:00, 02:01, ... ---------- -------
1-10 00:7E, 00:7F, ... ---------- -------
1-11 00:8C, 00:8D, ... ---------- -------
1-12 00:9A, 00:9B, ... ---------- -------
Detail...
Cancel
Before <<
>> Next
Total 0.00 Mbyte x2 use for DCR.
Selected Group:


Shared Memory Size Configuration
Please select Shared Memory Module/Size function.
SM Size
Shared Memory Size
512
MByte x2
Install HMRCF/HOMRCF/HRC/HORC/RIHSM function.
SM Size ( White Socket (3),(4),(5),(6) )
Module
256
MByte
Installing
512
MByte x2
SM Size ( Black Socket (1),(2) )
Module
Not
MByte
Installing
0
MByte x2
Cache PCB Image
Cache Module
SM Module
(6) (5) (4) (3) (2) (1)
Before <<
>> Next
Cancel


Open VOL
CU 00
Close (X)
CU:LDEV Open VOL Path Status
00:37 OPEN-9 * Normal
00:54 OPEN-9 * 4 * Normal
00:58 OPEN-9 * 4 * Normal
00:5C OPEN-9 * 3 * Normal
00:5E OPEN-9 * Normal
00:5F OPEN-9 * Normal
00:60 OPEN-9 * Normal
00:61 OPEN-9 * Normal
00:62 OPEN-9 * Normal
00:63 OPEN-9 * Normal
00:64 OPEN-9 * Normal
00:65 OPEN-9 * Normal
00:66 OPEN-9 * Normal
00:67 OPEN-9 Normal
Detail...
Format
Blockade
Restore


Open VOL Detail
Open VOL : OPEN-9 * 4
CU:LDEV Status
00:54 Normal
00:55 Normal
00:56 Normal
00:57 Normal
Close (X)
Format
Blockade
Restore
Open VOL Detail
Open VOL : OPEN-9 * 4
CU:LDEV Status
00:58 Normal
00:59 Normal
00:5A Normal
00:5B Normal
Close (X)
Format
Blockade
Restore
Open VOL Detail
Open VOL : OPEN-9 * 3
CU:LDEV Status
00:5C Normal
00:5D Normal
00:6B Normal
Close (X)
Format
Blockade
Restore

# appendix b: FC HBA Configuration

/var/log/messages entries:

```
Oct 15 13:54:58 racnode1 kernel: scsi2 : QLogic QLA2312 PCI to Fibre Channel Host
Adapter: bus 10 device 1 irq 10
Oct 15 13:54:58 racnode1 kernel:         Firmware version:  3.02.16, Driver version
6.06.50b4-fo
Oct 15 13:54:58 racnode1 kernel:
Oct 15 13:54:58 racnode1 kernel: scsi3 : QLogic QLA2312 PCI to Fibre Channel Host
Adapter: bus 10 device 2 irq 10
Oct 15 13:54:58 racnode1 kernel:         Firmware version:  3.02.16, Driver version
6.06.50b4-fo
```

QLA2300 HBA information

```
[root@racnode1 root]# cd /proc/scsi/qla2300/
[root@racnode1 qla2300]# ls
2  3  HbaApiNode
[root@racnode1 qla2300]# cat 2
QLogic PCI to Fibre Channel Host Adapter for QLA2340:
        Firmware version:  3.02.16, Driver version 6.06.50b4-fo
Entry address = f885b060
HBA: QLA2312 , Serial# H32560
Request Queue = 0x366a4000, Response Queue = 0x36690000
Request Queue count= 128, Response Queue count= 512
Total number of active commands = 2
Total number of interrupts = 54006486
Total number of IOCBs (used/max) = (8/600)
Total number of queued commands = 2
    Device queue depth = 0x20
Number of free request entries = 104
Number of mailbox timeouts = 0
Number of ISP aborts = 0
Number of loop resyncs = 17
Number of retries for empty slots = 0
Number of reqs in pending_q= 0, retry_q= 0, done_q= 0, scsi_retry_q= 0
Number of reqs in failover_q= 0
Host adapter:loop state= <READY>, flags= 0x8e0833
Dpc flags = 0x40
MBX flags = 0x0
SRB Free Count = 4094
Link down Timeout = 008
Port down retry = 016
Login retry count = 016
Commands retried with dropped frame(s) = 0


SCSI Device Information:
scsi-qla0-adapter-node=200000e08b0b902d;
scsi-qla0-adapter-port=210000e08b0b902d;
scsi-qla0-port-0=50060e8003753905:50060e8003753905;

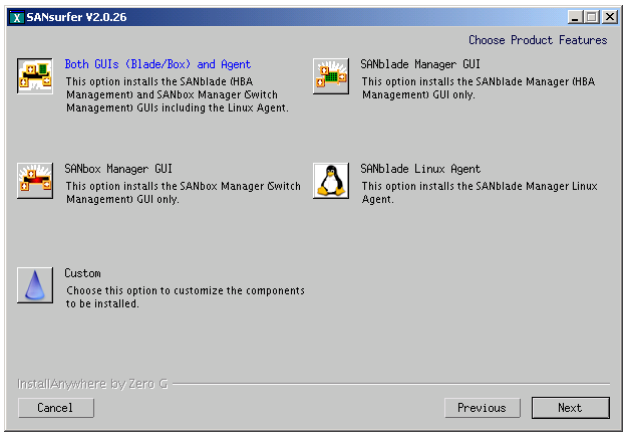
SCSI LUN Information:
(Id:Lun)  * - indicates lun is not registered with the OS.
( 0: 0): Total reqs 54279142, Pending reqs 2, flags 0x0, 0:0:81,
( 0: 1): Total reqs 91, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 2): Total reqs 91, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 3): Total reqs 8, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 4): Total reqs 9, Pending reqs 0, flags 0x0, 0:0:81,
[root@racnode1 qla2300]# cat 3
QLogic PCI to Fibre Channel Host Adapter for QLA2340:
        Firmware version:  3.02.16, Driver version 6.06.50b4-fo
Entry address = f885b060
HBA: QLA2312 , Serial# H32354
Request Queue = 0x36570000, Response Queue = 0x36560000
Request Queue count= 128, Response Queue count= 512
Total number of active commands = 0
Total number of interrupts = 253753
Total number of IOCBs (used/max) = (0/600)
Total number of queued commands = 0
```

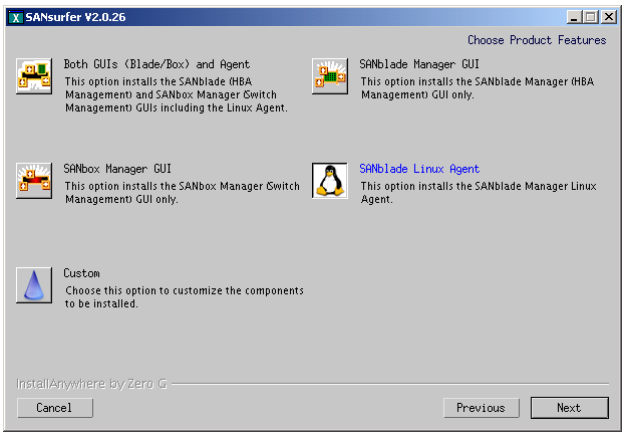
```
    Device queue depth = 0x20
Number of free request entries = 31
Number of mailbox timeouts = 0
Number of ISP aborts = 0
Number of loop resyncs = 12
Number of retries for empty slots = 0
Number of reqs in pending_q= 0, retry_q= 0, done_q= 0, scsi_retry_q= 0
Number of reqs in failover_q= 0
Host adapter:loop state= <READY>, flags= 0x8e0833
Dpc flags = 0x40
MBX flags = 0x0
SRB Free Count = 4096
Link down Timeout = 008
Port down retry = 016
Login retry count = 016
Commands retried with dropped frame(s) = 0


SCSI Device Information:
scsi-qla1-adapter-node=200000e08b0bc22c;
scsi-qla1-adapter-port=210000e08b0bc22c;
scsi-qla1-port-0=50060e8003753904:50060e8003753904;

SCSI LUN Information:
(Id:Lun)  * - indicates lun is not registered with the OS.
```

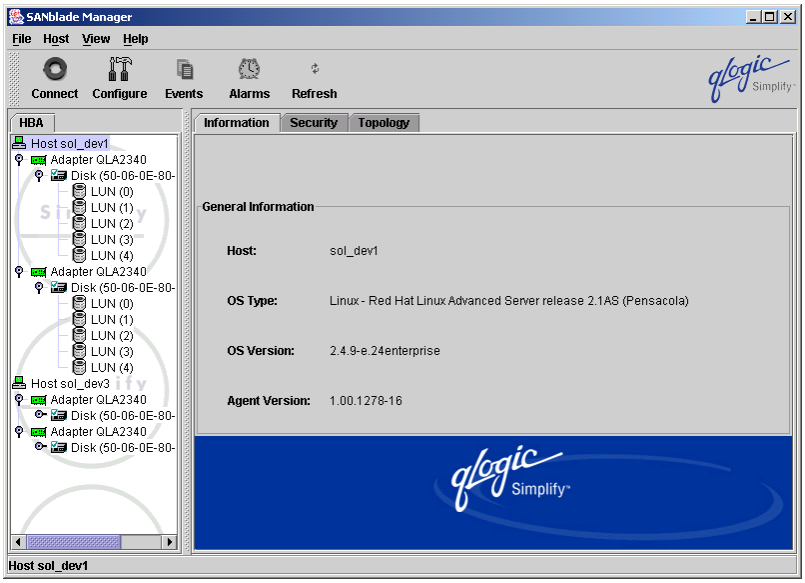
SANSurfer (HBA Configuration GUI) information

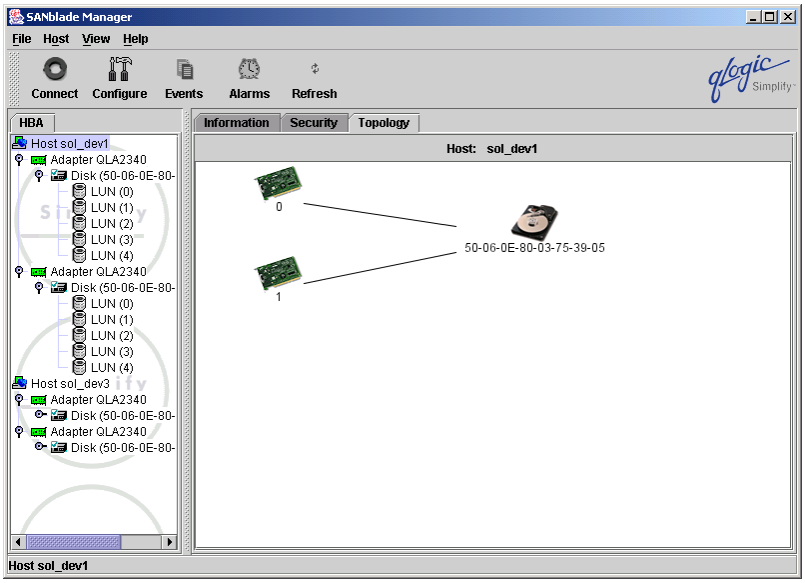


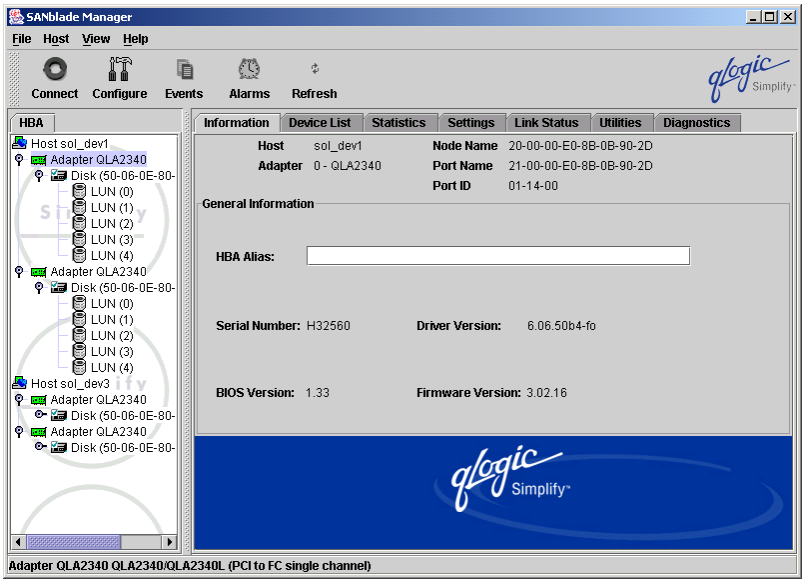


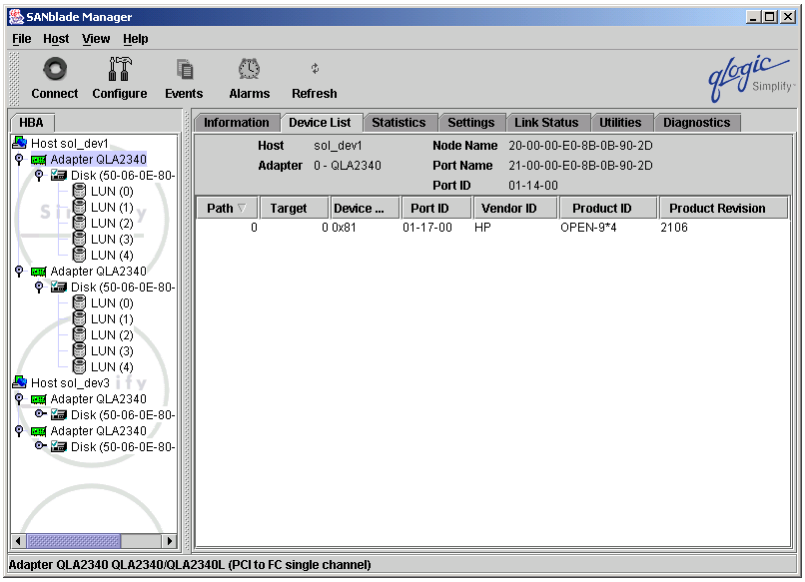

Running processes for SANSurfer:

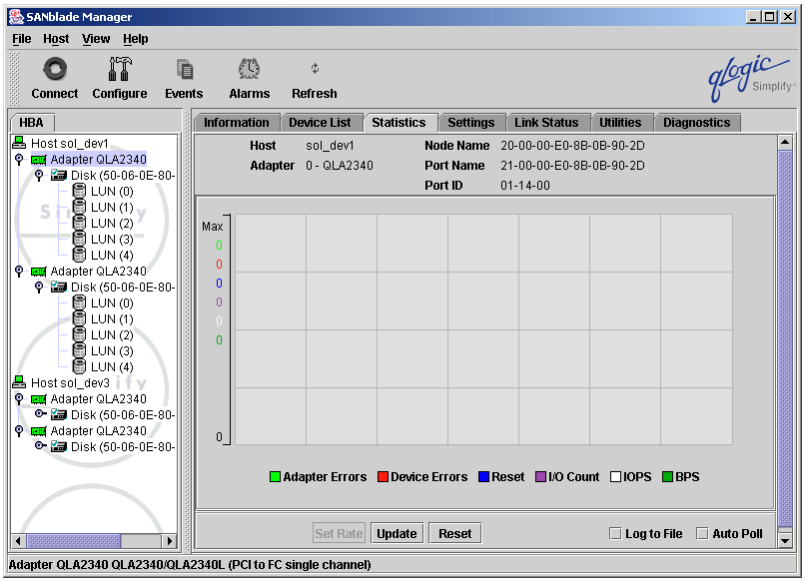
```
[root@racnode1 gui]# ps -ef|grep ql
root      4482     1  0 10:15 pts/4    00:00:00 /usr/local/bin/qlremote
root      4483  4482  0 10:15 pts/4    00:00:00 /usr/local/bin/qlremote
root      4484  4483  1 10:15 pts/4    00:00:00 /usr/local/bin/qlremote
```

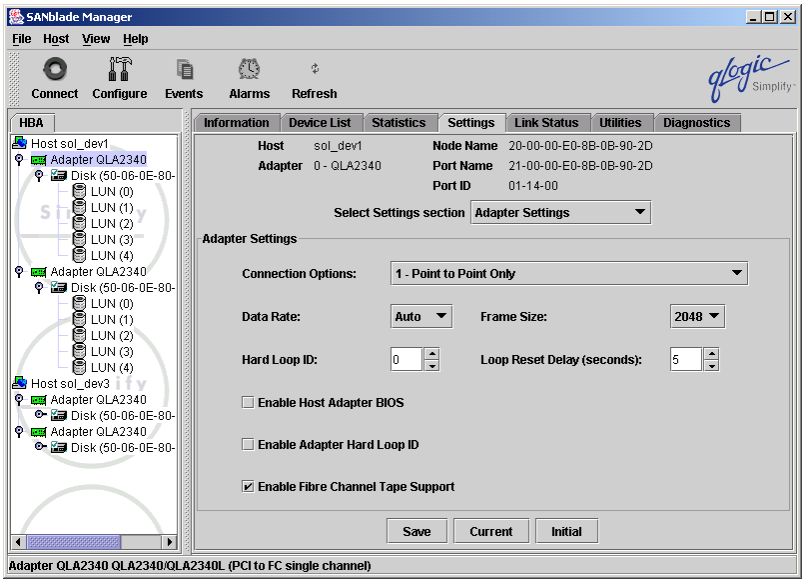


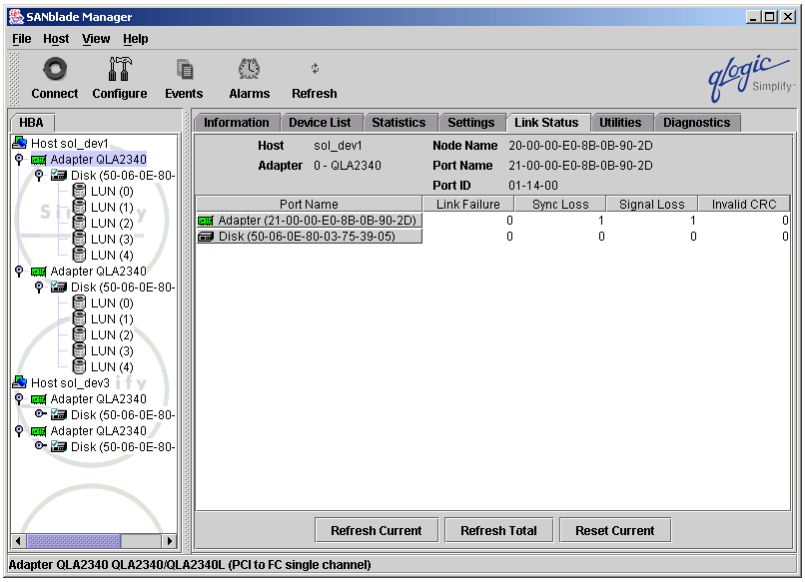



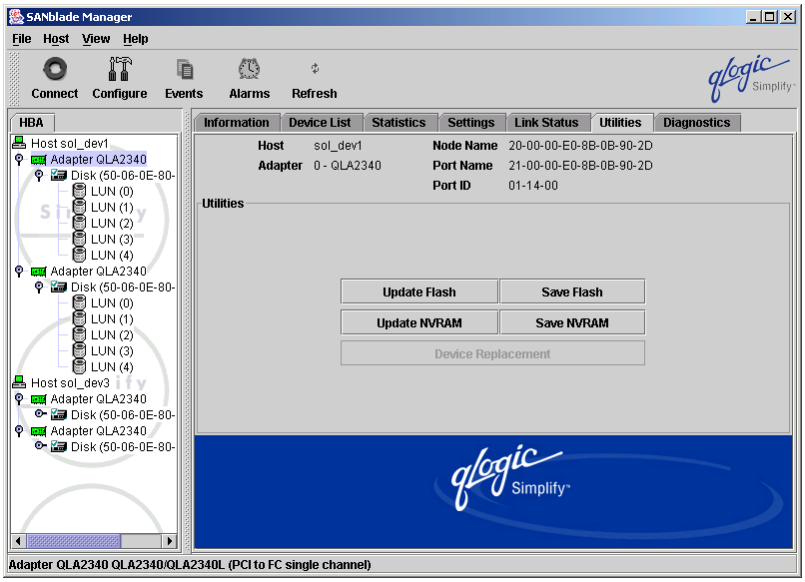

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Adapter 0 - QLA2340
Node Name 20-00-00-E0-8B-0B-90-2D
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
General Information
HBA Alias:
Serial Number: H32560
Driver Version: 6.06.50b4-fo
BIOS Version: 1.33
Firmware Version: 3.02.16
Simplify
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

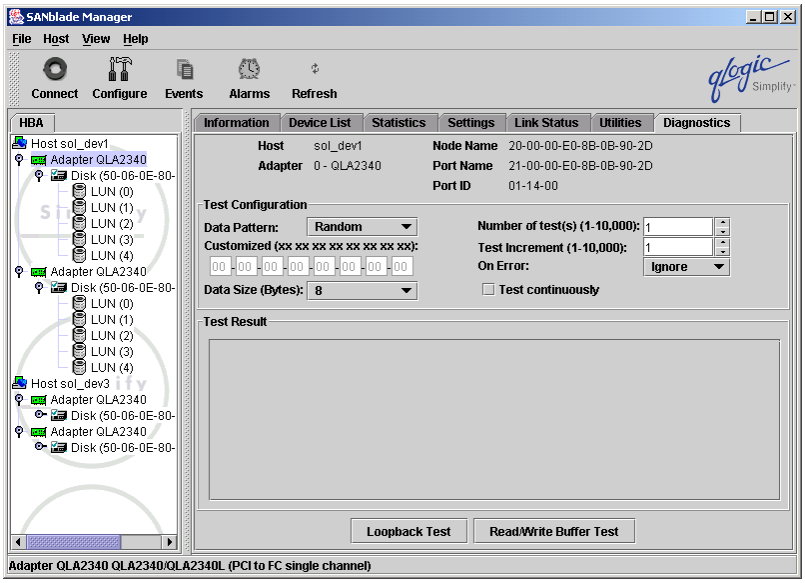

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Adapter 0 - QLA2340
Node Name 20-00-00-E0-8B-0B-90-2D
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
Path Target Device ... Port ID Vendor ID Product ID Product Revision
0 0 0x81 01-17-00 HP OPEN-9*4 2106
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

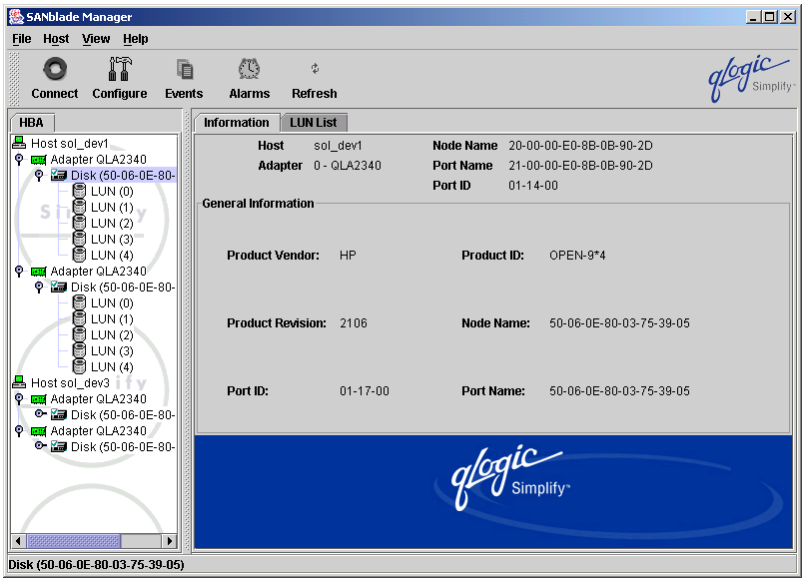

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Adapter 0 - QLA2340
Node Name 20-00-00-E0-8B-0B-90-2D
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
Max
0
0
0
0
0
0
0
Adapter Errors Device Errors Reset I/O Count IOPS BPS
Set Rate Update Reset Log to File Auto Poll
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

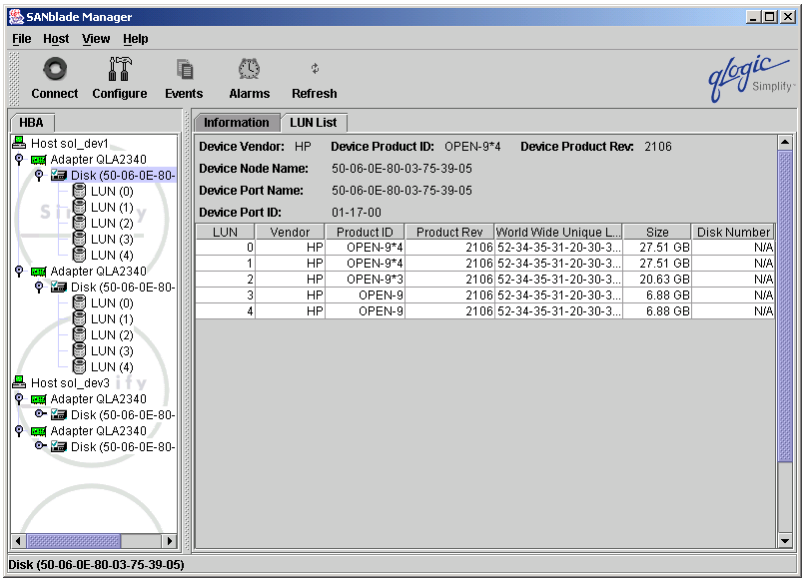

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Node Name 20-00-00-E0-8B-0B-90-2D
Adapter 0 - QLA2340
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
Select Settings section Adapter Settings
Adapter Settings
Connection Options: 1 - Point to Point Only
Data Rate: Auto
Frame Size: 2048
Hard Loop ID: 0
Loop Reset Delay (seconds): 5
Enable Host Adapter BIOS
Enable Adapter Hard Loop ID
Enable Fibre Channel Tape Support
Save Current Initial
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

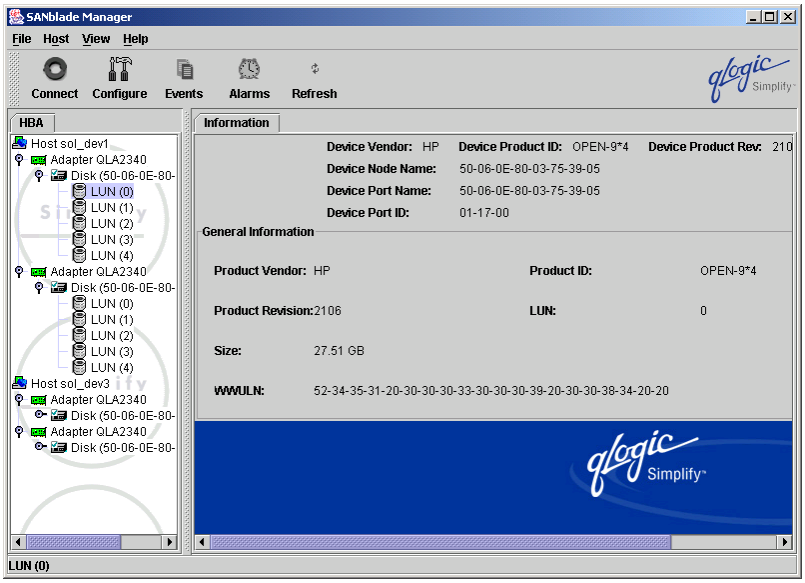

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Node Name 20-00-00-E0-8B-0B-90-2D
Adapter 0 - QLA2340
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
Port Name Link Failure Sync Loss Signal Loss Invalid CRC
Adapter (21-00-00-E0-8B-0B-90-2D) 0 1 1 0
Disk (50-06-0E-80-03-75-39-05) 0 0 0 0
Refresh Current Refresh Total Reset Current
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

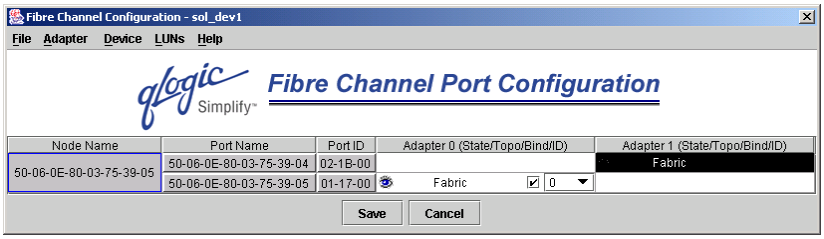

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Node Name 20-00-00-E0-8B-0B-90-2D
Adapter 0 - QLA2340
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
Utilities
Update Flash Save Flash
Update NVRAM Save NVRAM
Device Replacement
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

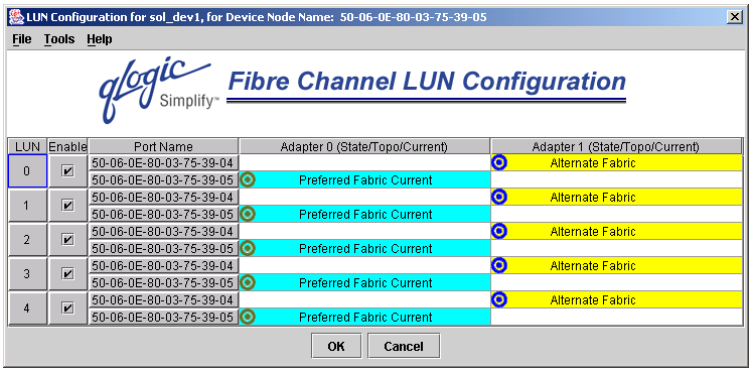

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Adapter 0 - QLA2340
Node Name 20-00-00-E0-8B-0B-90-2D
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
Test Configuration
Data Pattern: Random
Customized (xx xx xx xx xx xx xx xx):
00 00 00 00 00 00 00 00
Data Size (Bytes): 8
Number of test(s) (1-10,000): 1
Test Increment (1-10,000): 1
On Error: Ignore
Test continuously
Test Result
Loopback Test
Read/Write Buffer Test
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)

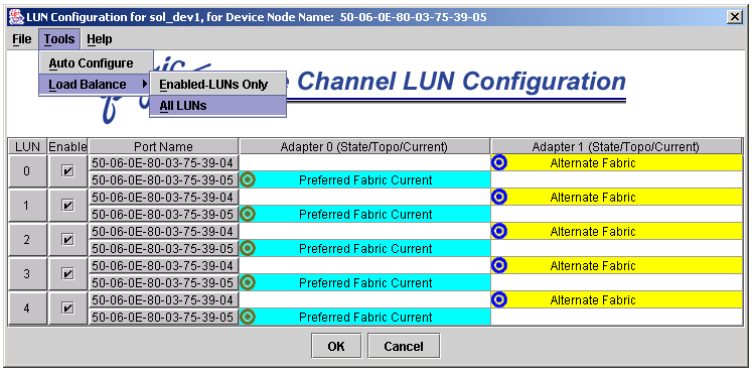

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information LUN List
Host sol_dev1
Adapter 0 - QLA2340
Node Name 20-00-00-E0-8B-0B-90-2D
Port Name 21-00-00-E0-8B-0B-90-2D
Port ID 01-14-00
General Information
Product Vendor: HP
Product ID: OPEN-9*4
Product Revision: 2106
Node Name: 50-06-0E-80-03-75-39-05
Port ID: 01-17-00
Port Name: 50-06-0E-80-03-75-39-05
Disk (50-06-0E-80-03-75-39-05)

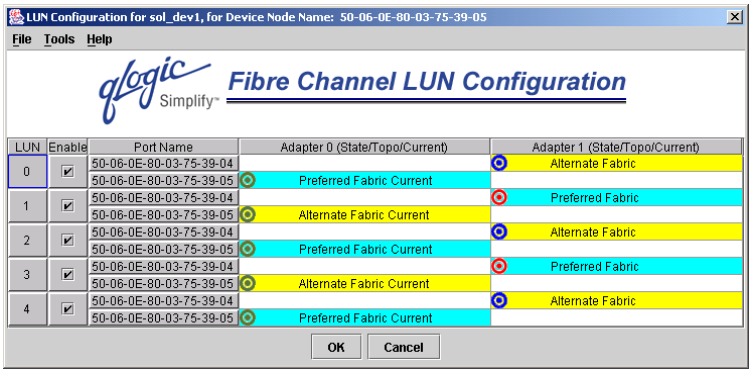

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information LUN List
Device Vendor: HP
Device Product ID: OPEN-9*4
Device Product Rev: 2106
Device Node Name: 50-06-0E-80-03-75-39-05
Device Port Name: 50-06-0E-80-03-75-39-05
Device Port ID: 01-17-00
LUN Vendor Product ID Product Rev World Wide Unique L... Size Disk Number
0 HP OPEN-9*4 2106 52-34-35-31-20-30-3... 27.51 GB N/A
1 HP OPEN-9*4 2106 52-34-35-31-20-30-3... 27.51 GB N/A
2 HP OPEN-9*3 2106 52-34-35-31-20-30-3... 20.63 GB N/A
3 HP OPEN-9 2106 52-34-35-31-20-30-3... 6.88 GB N/A
4 HP OPEN-9 2106 52-34-35-31-20-30-3... 6.88 GB N/A
Disk (50-06-0E-80-03-75-39-05)

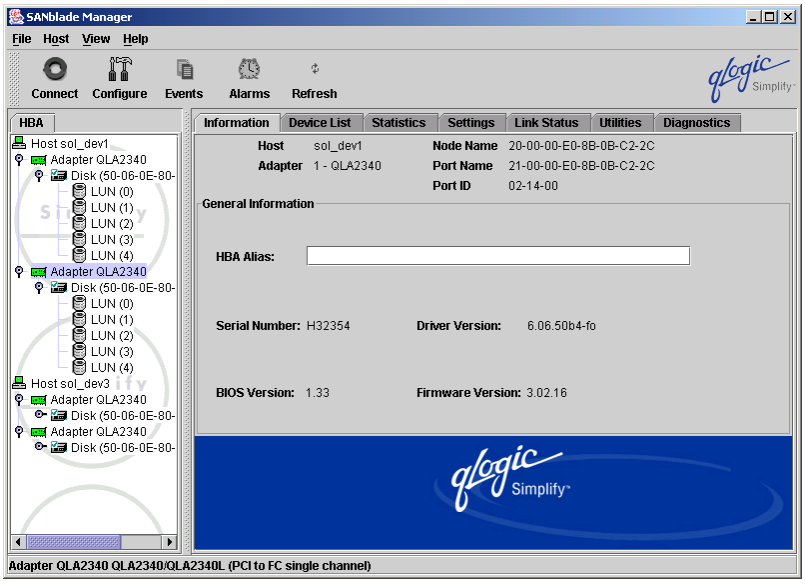

SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information
Device Vendor: HP
Device Product ID: OPEN-9*4
Device Product Rev: 210
Device Node Name: 50-06-0E-80-03-75-39-05
Device Port Name: 50-06-0E-80-03-75-39-05
Device Port ID: 01-17-00
General Information
Product Vendor: HP
Product ID: OPEN-9*4
Product Revision: 2106
LUN: 0
Size: 27.51 GB
WWULN: 52-34-35-31-20-30-30-30-33-30-30-30-39-20-30-30-38-34-20-20
LUN (0)

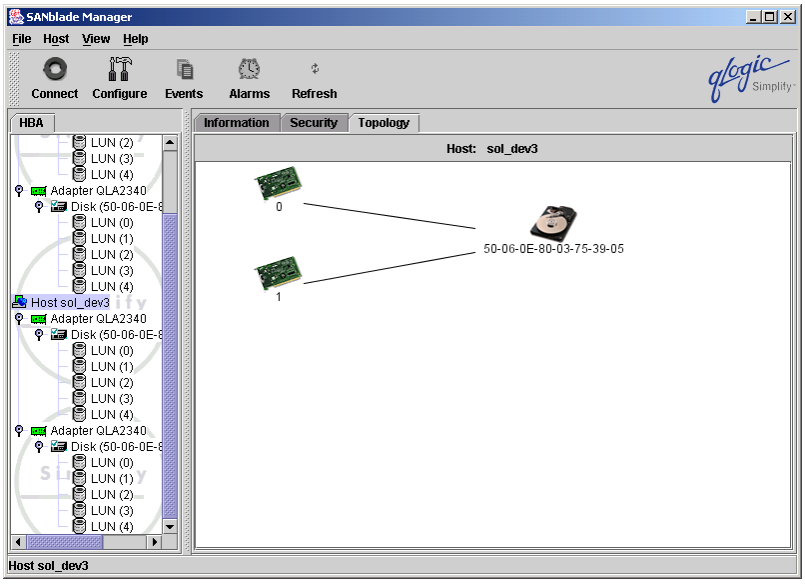

Fibre Channel Configuration - sol_dev1
File Adapter Device LUNs Help
Fibre Channel Port Configuration
Node Name
Port Name
Port ID
Adapter 0 (State/Topo/Bind/ID)
Adapter 1 (State/Topo/Bind/ID)
50-06-0E-80-03-75-39-05
50-06-0E-80-03-75-39-04
02-1B-00
Fabric
50-06-0E-80-03-75-39-05
01-17-00
Fabric
0
Save
Cancel

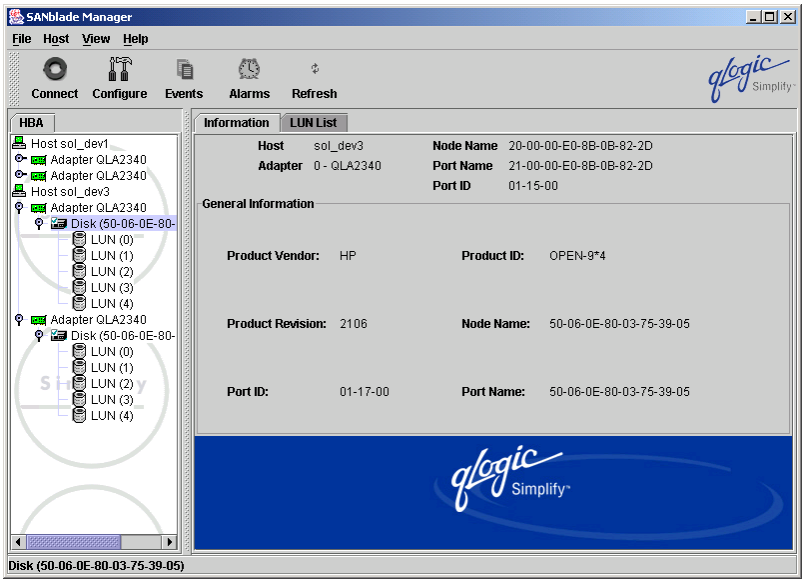

LUN Configuration for sol_dev1, for Device Node Name: 50-06-0E-80-03-75-39-05
File Tools Help
Fibre Channel LUN Configuration
LUN
Enable
Port Name
Adapter 0 (State/Topo/Current)
Adapter 1 (State/Topo/Current)
0
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
1
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
2
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
3
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
4
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
OK
Cancel


LUN Configuration for sol_dev1, for Device Node Name: 50-06-0E-80-03-75-39-05
File Tools Help
Auto Configure
Load Balance
Enabled-LUNs Only
All LUNs
Channel LUN Configuration
LUN
Enable
Port Name
Adapter 0 (State/Topo/Current)
Adapter 1 (State/Topo/Current)
0
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
1
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
2
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
3
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
4
50-06-0E-80-03-75-39-04
Alternate Fabric
50-06-0E-80-03-75-39-05
Preferred Fabric Current
OK
Cancel


LUN Configuration for sol_dev1, for Device Node Name: 50-06-0E-80-03-75-39-05
File Tools Help
Fibre Channel LUN Configuration
LUN Enable Port Name Adapter 0 (State/Topo/Current) Adapter 1 (State/Topo/Current)
0 50-06-0E-80-03-75-39-04 Alternate Fabric
50-06-0E-80-03-75-39-05 Preferred Fabric Current
1 50-06-0E-80-03-75-39-04 Preferred Fabric
50-06-0E-80-03-75-39-05 Alternate Fabric Current
2 50-06-0E-80-03-75-39-04 Alternate Fabric
50-06-0E-80-03-75-39-05 Preferred Fabric Current
3 50-06-0E-80-03-75-39-04 Preferred Fabric
50-06-0E-80-03-75-39-05 Alternate Fabric Current
4 50-06-0E-80-03-75-39-04 Alternate Fabric
50-06-0E-80-03-75-39-05 Preferred Fabric Current
OK Cancel


SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
Adapter QLA2340
Disk (50-06-0E-80-
Information Device List Statistics Settings Link Status Utilities Diagnostics
Host sol_dev1
Adapter 1 - QLA2340
Node Name 20-00-00-E0-8B-0B-C2-2C
Port Name 21-00-00-E0-8B-0B-C2-2C
Port ID 02-14-00
General Information
HBA Alias:
Serial Number: H32354
Driver Version: 6.06.50b4-fo
BIOS Version: 1.33
Firmware Version: 3.02.16
Adapter QLA2340 QLA2340/QLA2340L (PCI to FC single channel)


SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Information Security Topology
Host: sol_dev3
0
1
50-06-0E-80-03-75-39-05
Host sol_dev3


SANblade Manager
File Host View Help
Connect Configure Events Alarms Refresh
HBA
Host sol_dev1
Adapter QLA2340
Adapter QLA2340
Host sol_dev3
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Adapter QLA2340
Disk (50-06-0E-80-
LUN (0)
LUN (1)
LUN (2)
LUN (3)
LUN (4)
Information
LUN List
Host sol_dev3
Adapter 0 - QLA2340
Node Name 20-00-00-E0-8B-0B-82-2D
Port Name 21-00-00-E0-8B-0B-82-2D
Port ID 01-15-00
General Information
Product Vendor: HP
Product ID: OPEN-9*4
Product Revision: 2106
Node Name: 50-06-0E-80-03-75-39-05
Port ID: 01-17-00
Port Name: 50-06-0E-80-03-75-39-05
Disk (50-06-0E-80-03-75-39-05)

# appendix c: Switch configuration

### Switch 1

```
Fabric OS (tm)  Release v3.0.2f

login: admin
Password:

casasw8:admin> switchshow
switchName:     casasw8
switchType:     17.2
switchState:    Online
switchMode:     Native
switchRole:     Subordinate
switchDomain:   2
switchId:       fffc02
switchWwn:      10:00:00:60:69:5a:09:54
switchBeacon:   OFF
Zoning:         ON (sv3k_cam)
port  0: id N2 Online       F-Port 50:00:1f:e1:50:00:a1:dd
port  1: id N2 Online       F-Port 50:00:1f:e1:50:00:a1:d9
port  2: id N1 Online       F-Port 10:00:00:00:c9:2d:ea:1e
port  3: id N2 No_Light
port  4: id N1 Online       F-Port 10:00:00:00:c9:21:90:55
port  5: id N1 Online       F-Port 10:00:00:00:c9:21:97:25
port  6: id N2 No_Light
port  7: id N2 No_Light
port  8: id N1 Online       F-Port 10:00:00:e0:02:21:d2:7e
port  9: id N2 Online       F-Port 50:06:0b:00:00:12:dc:82
port 10: id N2 Online       F-Port 50:06:0b:00:00:12:dc:7e
port 11: id N1 Online       F-Port 50:06:0e:80:03:75:39:04
port 12: id N2 No_Light
port 13: id N1 Online       E-Port 10:00:00:60:69:15:02:90 "casasw1" (upstream)
port 14: id N2 Online       F-Port 21:00:00:e0:8b:06:d7:85
port 15: id N2 Online       F-Port 21:00:00:e0:8b:06:d6:85
casasw8:admin> zoneshow
Defined configuration:
 cfg:   sv3k_cam
                cam; non_cam_odr3_sz; non_cam_odr4_sz; non_cam_kirk_hz;
                non_cam_soldev3_hz; non_cam_tuvok_hz; perf1zone; adm_zone;
                riker_zone; oracle_bones_zone; oracle_kirk_zone; oracle_9irac
 zone:  adm_zone
                2,0; 2,1; 2,2
 zone:  cam     1,4; 2,13; 1,6; 2,14
 zone:  non_cam_kirk_hz
                1,0; 1,6; 1,9; 1,10; 1,11; 1,12
 zone:  non_cam_odr3_sz
                2,0; 2,1; 2,14; 2,11
 zone:  non_cam_odr4_sz
                2,0; 2,1; 2,15; 2,11
 zone:  non_cam_perf1_sz
                2,0; 2,1; 2,6
 zone:  non_cam_soldev3_hz
                1,2; 1,6; 1,9; 1,10; 1,11; 1,12
 zone:  non_cam_tuvok_hz
                1,6; 1,8; 1,9; 1,10; 1,11; 1,12
 zone:  oracle_9irac
                2,11; 2,5; 2,4
 zone:  oracle_bones_zone
                2,0; 2,1; 2,9; 2,8
 zone:  oracle_kirk_zone
                2,0; 2,1; 2,10
 zone:  perf1zone
                2,0; 2,1; 3,0; 3,1
 zone:  riker_zone
                2,12; 2,0; 2,1; 2,11

Effective configuration:
 cfg:   sv3k_cam
 zone:  adm_zone
                2,0
                2,1
```

```
                2,2
 zone:  cam     1,4
                2,13
                1,6
                2,14
 zone:  non_cam_kirk_hz
                1,0
                1,6
                1,9
                1,10
                1,11
                1,12
 zone:  non_cam_odr3_sz
                2,0
                2,1
                2,14
                2,11
 zone:  non_cam_odr4_sz
                2,0
                2,1
                2,15
                2,11
 zone:  non_cam_soldev3_hz
                1,2
                1,6
                1,9
                1,10
                1,11
                1,12
 zone:  non_cam_tuvok_hz
                1,6
                1,8
                1,9
                1,10
                1,11
                1,12
 zone:  oracle_9irac
                2,11
                2,5
                2,4
 zone:  oracle_bones_zone
                2,0
                2,1
                2,9
                2,8
 zone:  oracle_kirk_zone
                2,0
                2,1
                2,10
 zone:  perf1zone
                2,0
                2,1
                3,0
                3,1
 zone:  riker_zone
                2,12
                2,0
                2,1
                2,11
```

### Switch 2

```
Fabric OS (tm)  Release v3.0.2f

login: admin
Password:

casasw9:admin> switchshow
switchName:     casasw9
switchType:     17.2
switchState:    Online
switchMode:     Native
switchRole:     Subordinate
switchDomain:   1
```

```
switchId:       fffc01
switchWwn:      10:00:00:60:69:5a:09:46
switchBeacon:   OFF
Zoning:         ON (sv3k_cam)
port  0: id N2 Online       F-Port 50:00:1f:e1:50:00:a1:dc
port  1: id N2 Online       F-Port 50:00:1f:e1:50:00:a1:d8
port  2: id N2 No_Light
port  3: id N2 No_Light
port  4: id N1 Online       F-Port 10:00:00:00:c9:24:67:69
port  5: id N1 Online       F-Port 10:00:00:00:c9:21:97:af
port  6: id N2 No_Light
port  7: id N1 Online       F-Port 50:06:0e:80:03:75:39:05
port  8: id N2 No_Light
port  9: id N2 Online       F-Port 50:06:0b:00:00:12:dc:78
port 10: id N2 Online       F-Port 50:06:0b:00:00:12:dc:70
port 11: -- 1G Diag_Flt     Disabled
port 12: id N2 No_Light
port 13: id N1 Online       E-Port 10:00:00:60:69:15:03:b0 "casasw2" (upstream)
port 14: id N2 Online       F-Port 21:00:00:e0:8b:06:cc:85
port 15: id N2 Online       F-Port 21:00:00:e0:8b:06:cd:85
casasw9:admin> zoneshow
Defined configuration:
 cfg:   sv3k_cam
                cam; non_cam_kirk_hz; non_cam_odr3_sz; non_cam_odr4_sz;
                non_cam_soldev3_hz; non_cam_tuvok_hz; perf2zone; riker_zone;
                oracle_kirk_zone; oracle_bones_zone; oracle_9irac
 zone:  cam     1,13; 2,6; 2,4; 1,14
 zone:  non_cam_kirk_hz
                2,0; 2,6; 2,9; 2,10; 2,11; 2,12
 zone:  non_cam_odr3_sz
                1,0; 1,1; 1,15; 1,11; 1,7
 zone:  non_cam_odr4_sz
                1,0; 1,1; 1,14; 1,11; 1,7
 zone:  non_cam_perf1_sz
                1,0; 1,1; 1,6
 zone:  non_cam_soldev3_hz
                2,2; 2,6; 2,9; 2,10; 2,11; 2,12
 zone:  non_cam_tuvok_hz
                2,6; 2,8; 2,9; 2,10; 2,11; 2,12
 zone:  oracle_9irac
                1,11; 1,4; 1,5
 zone:  oracle_bones_zone
                1,0; 1,1; 1,9
 zone:  oracle_kirk_zone
                1,0; 1,1; 1,10
 zone:  perf2zone
                1,0; 1,1; 3,0; 3,1
 zone:  riker_zone
                1,0; 1,1; 1,12; 1,11

Effective configuration:
 cfg:   sv3k_cam
 zone:  cam     1,13
                2,6
                2,4
                1,14
 zone:  non_cam_kirk_hz
                2,0
                2,6
                2,9
                2,10
                2,11
                2,12
 zone:  non_cam_odr3_sz
                1,0
                1,1
                1,15
                1,11
                1,7
 zone:  non_cam_odr4_sz
                1,0
                1,1
                1,14
                1,11
                1,7
 zone:  non_cam_soldev3_hz
                2,2
```

```
                2,6
                2,9
                2,10
                2,11
                2,12
zone:   non_cam_tuvok_hz
                2,6
                2,8
                2,9
                2,10
                2,11
                2,12
zone:   oracle_9irac
                1,11
                1,4
                1,5
zone:   oracle_bones_zone
                1,0
                1,1
                1,9
zone:   oracle_kirk_zone
                1,0
                1,1
                1,10
zone:   perf2zone
                1,0
                1,1
                3,0
                3,1
zone:   riker_zone
                1,0
                1,1
                1,12
                1,11
```

# appendix d: PDC Installation Log

```
[root@racnode1 Log]# cat Install.log
Wed Oct 15 10:40:57 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 10:40:57 PDT 2003 - STARTED HPPostos.sh - Wed Oct 15 10:40:57 PDT 2003
Wed Oct 15 10:40:57 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 10:40:57 PDT 2003 - GETTING THE NUMBER OF NODES IN THE CLUSTER......
Wed Oct 15 10:40:59 PDT 2003 -     User Input for Number of Nodes in the cluster was
2......
Wed Oct 15 10:40:59 PDT 2003 - GETTING THE NUMBER OF NODES IN THE CLUSTER......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - CREATING THE HOST FILE......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /etc/hosts file.......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /etc/hosts file.......Done
Wed Oct 15 10:40:59 PDT 2003 - CREATING THE HOST FILE......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - CREATING THE RHOSTS FILE......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /etc/.rhosts file.......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /etc/.rhosts file.......Done
Wed Oct 15 10:40:59 PDT 2003 - CREATING THE RHOSTS FILE......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - CREATING RHOSTS FOR ROOT AND ORACLE ACCOUNT......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /etc/hosts.equiv file.......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /etc/hosts.equiv file.......Done
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /root/.rhosts file.......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /root/.rhosts file.......Done
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /home/oracle/.rhosts file.......
Wed Oct 15 10:40:59 PDT 2003 -     Creating the /home/oracle/.rhosts file.......Done
Wed Oct 15 10:40:59 PDT 2003 -     Setting permissions for the /home/oracle/.rhosts
file.......
Wed Oct 15 10:40:59 PDT 2003 -     Setting permissions for the /home/oracle/.rhosts
file.......Done
Wed Oct 15 10:40:59 PDT 2003 - CREATING RHOSTS FOR ROOT AND ORACLE ACCOUNT......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - CREATING PROFILE FILES FOR ROOT AND ORACLE......
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .profile file for root
account.......
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .profile file for root
account.......Done
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .bash_profile file for root
account.......
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .bash_profile file for root
account.......Done
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .profile file for oracle
account.......
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .profile file for oracle
account.......Done
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .bash_profile file for oracle
account.......
Wed Oct 15 10:40:59 PDT 2003 -     Updating the .bash_profile file for oracle
account.......Done
Wed Oct 15 10:40:59 PDT 2003 - CREATING PROFILE FILES FOR ROOT AND ORACLE......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - UPDATING THE NUMBER OF NODES FOR CLUSTER CHECK
UTILITY......
Wed Oct 15 10:40:59 PDT 2003 -     Updating the Number of nodes in the cluster in
/users/HPScripts/CVU/clcheck.conf.....
Wed Oct 15 10:40:59 PDT 2003 -     Updating the Number of nodes in the cluster in
/users/HPScripts/CVU/clcheck.conf.....
Wed Oct 15 10:40:59 PDT 2003 - UPDATING THE NUMBER OF NODES FOR CLUSTER CHECK
UTILITY......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - INSERTING THE MISSING NICS IN THE MODULES.CONF......
Wed Oct 15 10:40:59 PDT 2003 -     Inserting the missing NICs in the modules.conf
file.....
Wed Oct 15 10:40:59 PDT 2003 -     Inserting the missing NICs in the modules.conf
file.....Done
Wed Oct 15 10:40:59 PDT 2003 - INSERTING THE MISSING NICS IN THE
MODULES.CONF......DONE
Wed Oct 15 10:40:59 PDT 2003 -
Wed Oct 15 10:40:59 PDT 2003 - CONFIGURING NIC TEAMING......
Wed Oct 15 10:41:02 PDT 2003 -     Updating the NIC Teaming Environment Variable in
/users/HPScripts/CVU/clcheck.conf...
```

```
Wed Oct 15 10:41:02 PDT 2003 -     Updating the NIC Teaming Environment Variable in
/users/HPScripts/CVU/clcheck.conf...
Wed Oct 15 10:41:02 PDT 2003 - CONFIGURING NIC TEAMING......DONE
Wed Oct 15 10:41:02 PDT 2003 -
Wed Oct 15 10:41:02 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 10:41:02 PDT 2003 - COMPLETED HPPostos.sh - Wed Oct 15 10:41:02 PDT 2003
Wed Oct 15 10:41:02 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 13:28:11 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 13:28:11 PDT 2003 - STARTED HPInstall.sh - Wed Oct 15 13:28:11 PDT 2003
Wed Oct 15 13:28:11 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 13:28:11 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED E100 NIC
DRIVERS......
Wed Oct 15 13:28:11 PDT 2003 -     Copying the HP Tested and Approved e100 Linux NIC
Driver Sources to /tmp on racnode2.
Wed Oct 15 13:28:11 PDT 2003 -     Copying the HP Tested and Approved e100 Linux NIC
Driver Sources to /tmp on racnode2.
Wed Oct 15 13:28:11 PDT 2003 -     Installing the HP Tested and Approved e100 Linux
NIC Driver on racnode1.....
Wed Oct 15 13:28:50 PDT 2003 -     Installing the HP Tested and Approved e100 Linux
NIC Driver on racnode1.....Done
Wed Oct 15 13:28:50 PDT 2003 -     Installing the HP Tested and Approved e100 Linux
NIC Driver on racnode2.....
Wed Oct 15 13:29:18 PDT 2003 -     Installing the HP Tested and Approved e100 Linux
NIC Driver on racnode2.....Done
Wed Oct 15 13:29:18 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED E100 NIC
DRIVERS......DONE
Wed Oct 15 13:29:18 PDT 2003 -
Wed Oct 15 13:29:18 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED E1000 NIC
DRIVERS......
Wed Oct 15 13:29:18 PDT 2003 -     Copying the HP Tested and Approved e1000 Linux
NIC Driver Sources to /tmp on racnode2
Wed Oct 15 13:29:18 PDT 2003 -     Copying the HP Tested and Approved e1000 Linux
NIC Driver Sources to /tmp on racnode2
Wed Oct 15 13:29:18 PDT 2003 -     Installing the HP Tested and Approved e1000 Linux
NIC Driver on racnode1.....
Wed Oct 15 13:29:41 PDT 2003 -     Installing the HP Tested and Approved e1000 Linux
NIC NIC Driver on racnode1.....Done
Wed Oct 15 13:29:41 PDT 2003 -     Installing the HP Tested and Approved e1000 Linux
NIC Driver on racnode2.....
Wed Oct 15 13:30:06 PDT 2003 -     Installing the HP Tested and Approved e1000 Linux
NIC NIC Driver on racnode2.....Done
Wed Oct 15 13:30:06 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED E1000 NIC
DRIVERS......DONE
Wed Oct 15 13:30:06 PDT 2003 -
Wed Oct 15 13:30:06 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED BCM5700 NIC
DRIVERS......
Wed Oct 15 13:30:06 PDT 2003 -     Copying the HP Tested and Approved bcm5700 Linux
NIC Driver Sources to /tmp on racnod
Wed Oct 15 13:30:06 PDT 2003 -     Copying the HP Tested and Approved bcm5700 Linux
NIC Driver Sources to /tmp on racnod
Wed Oct 15 13:30:06 PDT 2003 -     Installing the HP Tested and Approved bcm5700
Linux NIC Driver on racnode1.....
Wed Oct 15 13:30:23 PDT 2003 -     Installing the HP Tested and Approved bcm5700
Linux NIC Driver on racnode1.....Done
Wed Oct 15 13:30:23 PDT 2003 -     Installing the HP Tested and Approved bcm5700
Linux NIC Driver on racnode2.....
Wed Oct 15 13:30:40 PDT 2003 -     Installing the HP Tested and Approved bcm5700
Linux NIC Driver on racnode2.....Done
Wed Oct 15 13:30:40 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED BCM5700 NIC
DRIVERS......DONE
Wed Oct 15 13:30:40 PDT 2003 -
Wed Oct 15 13:30:40 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED BONDING
DRIVERS......
Wed Oct 15 13:30:40 PDT 2003 -     Copying the HP Tested and Approved bonding Driver
Sources to /tmp on racnode2.....
Wed Oct 15 13:30:40 PDT 2003 -     Copying the HP Tested and Approved bonding Driver
Sources to /tmp on racnode2.....Don
Wed Oct 15 13:30:40 PDT 2003 -     Installing the HP Tested and Approved bonding
Driver on racnode1.....
Wed Oct 15 13:30:49 PDT 2003 -     Installing the HP Tested and Approved bonding
Driver on racnode1.....Done
Wed Oct 15 13:30:49 PDT 2003 -     Installing the HP Tested and Approved bonding
Driver on racnode2.....
```

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Wed Oct 15 13:30:58 PDT 2003 -     Installing the HP Tested and Approved bonding
Driver on racnode2.....Done
Wed Oct 15 13:30:58 PDT 2003 - INSTALLING THE HP APPROVED AND TESTED BONDING
DRIVERS......DONE
Wed Oct 15 13:30:58 PDT 2003 -
Wed Oct 15 13:30:58 PDT 2003 - UPDATING THE CONFIGURATION FILES TO LOAD ALL THE
DRIVERS......
Wed Oct 15 13:30:58 PDT 2003 -     Updating the configuration files to load all the
drivers on racnode1......
Wed Oct 15 13:30:59 PDT 2003 -     Updating the configuration files to load all the
drivers on racnode1......Done
Wed Oct 15 13:30:59 PDT 2003 -     Updating the configuration files to load all the
drivers on racnode2......
Wed Oct 15 13:30:59 PDT 2003 -     Updating the configuration files to load all the
drivers on racnode2......Done
Wed Oct 15 13:30:59 PDT 2003 - UPDATING THE CONFIGURATION FILES TO LOAD ALL THE
DRIVERS......DONE
Wed Oct 15 13:30:59 PDT 2003 -
Wed Oct 15 13:30:59 PDT 2003 - GETTING THE SECURE PATH OPTION FROM THE USER......
Wed Oct 15 13:31:02 PDT 2003 -     User Inputed 'No' for Secure Path Software......
Wed Oct 15 13:31:02 PDT 2003 - GETTING THE SECURE PATH OPTION FROM THE
USER......DONE
Wed Oct 15 13:31:02 PDT 2003 -
Wed Oct 15 13:31:02 PDT 2003 - GETTING THE CFS OPTION FROM THE USER......
Wed Oct 15 13:31:07 PDT 2003 - User Inputed 'Yes' for OCFS Option......
Wed Oct 15 13:31:07 PDT 2003 -     Required Oracle CFS files are available in the
/tmp directory.......
Wed Oct 15 13:31:07 PDT 2003 -     Copying the Oracle CFS Enterprise for Errata 24
kernel to racnode2.....
Wed Oct 15 13:31:07 PDT 2003 -     Copying the Oracle CFS Enterprise for Errata 24
kernel to racnode2.....Done
Wed Oct 15 13:31:07 PDT 2003 -     Copying the Oracle CFS Tools for Errata 24 kernel
to racnode2.....
Wed Oct 15 13:31:07 PDT 2003 -     Copying the Oracle CFS Tools for Errata 24 kernel
to racnode2.....Done
Wed Oct 15 13:31:07 PDT 2003 -     Copying the Oracle CFS Support for Errata 24
kernel to racnode2.....
Wed Oct 15 13:31:08 PDT 2003 -     Copying the Oracle CFS Support for Errata 24
kernel to racnode2.....Done
Wed Oct 15 13:31:08 PDT 2003 -     Installing the Oracle CFS Enterprise, Tools and
Support RPMs on racnode1.....
Wed Oct 15 13:31:14 PDT 2003 -     Installing the Oracle CFS Enterprise, Tools and
Support RPMs on racnode1.....Done
Wed Oct 15 13:31:14 PDT 2003 -     Installing the Oracle CFS Enterprise, Tools and
Support RPMs on racnode2.....
Wed Oct 15 13:31:20 PDT 2003 -     Installing the Oracle CFS Enterprise, Tools and
Support RPMs on racnode2.....Done
Wed Oct 15 13:31:20 PDT 2003 - GETTING THE CFS OPTION FROM THE USER......DONE
Wed Oct 15 13:31:20 PDT 2003 -
Wed Oct 15 13:31:37 PDT 2003 - REBOOTING ALL THE NODES IN THE CLUSTER SERVER TO LOAD
ALL THE DRIVERS......
Wed Oct 15 13:31:37 PDT 2003 -     Rebooting racnode2......
Wed Oct 15 13:31:37 PDT 2003 -     Rebooting racnode1......
Wed Oct 15 14:08:15 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 14:08:15 PDT 2003 - STARTED HPInstall.sh - Wed Oct 15 14:08:15 PDT 2003
Wed Oct 15 14:08:15 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 14:08:15 PDT 2003 - UPDATING THE SYSTEM FOR CFS OPTION......
Wed Oct 15 14:08:15 PDT 2003 -     Updating the System for Oracle CFS on
racnode1.....
Wed Oct 15 14:08:15 PDT 2003 -     Updating the System for Oracle CFS on
racnode2.....
Wed Oct 15 14:08:16 PDT 2003 -     Formating the /dev/sda filesystem.....
Wed Oct 15 14:16:09 PDT 2003 -     Formating the /dev/sda filesystem.....Done
Wed Oct 15 14:16:09 PDT 2003 -     Executing the /usr/bin/ocfstool.....
Wed Oct 15 14:16:53 PDT 2003 -     Executing the /usr/bin/ocfstool.....Done
Wed Oct 15 14:16:54 PDT 2003 -     Updating the System for Oracle CFS on
racnode1.....Done
Wed Oct 15 14:16:56 PDT 2003 -     Updating the System for Oracle CFS on
racnode2.....Done
Wed Oct 15 14:16:56 PDT 2003 - UPDATING THE SYSTEM FOR CFS OPTION......DONE
Wed Oct 15 14:16:56 PDT 2003 -
Wed Oct 15 14:16:56 PDT 2003 - STAGING ORACLE INSTALLATION SCRIPTS......
Wed Oct 15 14:17:36 PDT 2003 -     Copying the HP Installation Scripts for Oracle9i
RAC to the tmp directory......
```

```
Wed Oct 15 14:17:50 PDT 2003 -     Copying the HP Installation Scripts for Oracle9i
RAC to the tmp directory......Done
Wed Oct 15 14:17:50 PDT 2003 - STAGING ORACLE INSTALLATION SCRIPTS......DONE
Wed Oct 15 14:17:50 PDT 2003 -
Wed Oct 15 14:17:50 PDT 2003 - INSTALLING ORACLE 9i RAC......
Wed Oct 15 14:35:37 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 14:35:37 PDT 2003 - STARTED HPInstall.sh - Wed Oct 15 14:35:37 PDT 2003
Wed Oct 15 14:35:37 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 14:35:38 PDT 2003 - INSTALLING ORACLE 9i RAC......
Wed Oct 15 14:53:07 PDT 2003 - INSTALLING ORACLE 9i RAC......DONE
Wed Oct 15 14:53:07 PDT 2003 -
Wed Oct 15 14:53:07 PDT 2003 - REMOVING THE WATCHDOG MODULE......
Wed Oct 15 14:53:07 PDT 2003 -     Removing the Watchdog modules on racnode1......
Wed Oct 15 14:53:08 PDT 2003 -     Removing the Watchdog modules on
racnode1......Done
Wed Oct 15 14:53:08 PDT 2003 - REMOVING THE WATCHDOG MODULE......DONE
Wed Oct 15 14:53:08 PDT 2003 -
Wed Oct 15 14:53:08 PDT 2003 - EXTRACTING THE ORACLE 9.2.0.3 PATCHSET......
Wed Oct 15 14:53:08 PDT 2003 -     Creating a temporary directory for the Oracle
9.2.0.3 PatchSet......
Wed Oct 15 14:53:08 PDT 2003 -     Creating a temporary directory for the Oracle
9.2.0.3 PatchSet......Done
Wed Oct 15 14:53:08 PDT 2003 -     Extracting the Oracle 9.2.0.3 Patch Set.......
Wed Oct 15 14:53:23 PDT 2003 -     Extracting the Oracle 9.2.0.3 Patch
Set.......Done
Wed Oct 15 14:53:31 PDT 2003 - EXTRACTING THE ORACLE 9.2.0.3 PATCHSET......DONE
Wed Oct 15 14:53:31 PDT 2003 -
Wed Oct 15 14:53:31 PDT 2003 - INSTALLING THE CLUSTER MANAGER PATCH......
Wed Oct 15 14:53:31 PDT 2003 -     Installing Oracle 9.2.0.3 Cluster Manager
Patch......
Wed Oct 15 14:56:09 PDT 2003 -     Installing Oracle 9.2.0.3 Cluster Manager
Patch......Done
Wed Oct 15 14:56:09 PDT 2003 - INSTALLING THE CLUSTER MANAGER PATCH......DONE
Wed Oct 15 14:56:09 PDT 2003 -
Wed Oct 15 14:56:09 PDT 2003 - INSTALLING THE ORACLE 9.2.0.3 DATABASE PATCHSET......
Wed Oct 15 14:56:44 PDT 2003 -     Installing Oracle Database 9.2.0.3 Patchset......
Wed Oct 15 15:05:52 PDT 2003 - INSTALLING THE ORACLE 9.2.0.3 DATABASE
PATCHSET......DONE
Wed Oct 15 15:05:52 PDT 2003 -
Wed Oct 15 15:05:52 PDT 2003 - INSTALLING THE GSD PATCH FOR ORACLE 9.2.0.3......
Wed Oct 15 15:06:01 PDT 2003 - INSTALLING THE GSD PATCH FOR ORACLE 9.2.0.3......DONE
Wed Oct 15 15:06:01 PDT 2003 -
Wed Oct 15 15:06:01 PDT 2003 - COPYING ORACLE TO REMOTE NODES......
Wed Oct 15 15:55:46 PDT 2003 - COPYING ORACLE TO REMOTE NODES......DONE
Wed Oct 15 15:55:46 PDT 2003 - CREATING ORACLE 9i RAC SAMPLE DATABASE......
Wed Oct 15 16:20:27 PDT 2003 - CREATING ORACLE 9i RAC SAMPLE DATABASE......DONE
Wed Oct 15 16:20:27 PDT 2003 -
Wed Oct 15 16:20:27 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Wed Oct 15 16:20:27 PDT 2003 - COMPLETED HPInstall.sh - Wed Oct 15 16:20:27 PDT 2003
Wed Oct 15 16:20:27 PDT 2003 -
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
[root@racnode1 Log]#
```

```
Oracle9i Enterprise Edition Release 9.2.0.3.0 - Production
With the Partitioning, Real Application Clusters, Oracle Label Security, OLAP
and Oracle Data Mining options
JServer Release 9.2.0.3.0 - Production

[root@racnode1 qla2300]# su - oracle
[oracle@racnode1 oracle]$ sqlplus /nolog

SQL*Plus: Release 9.2.0.3.0 - Production on Thu Oct 23 14:45:27 2003

Copyright (c) 1982, 2002, Oracle Corporation.  All rights reserved.

SQL> connect / as sysdba
Connected.
SQL> select * from v$active_instances;

INST_NUMBER
-----------
INST_NAME
------------------------------------------------------------------------------
          1
racnode1:ORCL1

          2
racnode2:ORCL2


SQL> select * from v$thread;

   THREAD# STATUS ENABLED      GROUPS INSTANCE         OPEN_TIME CURRENT_GROUP#
---------- ------ -------- ---------- ---------------- --------- --------------
 SEQUENCE# CHECKPOINT_CHANGE# CHECKPOIN ENABLE_CHANGE# ENABLE_TI DISABLE_CHANGE#
---------- ------------------ --------- -------------- --------- ---------------
DISABLE_T
---------
         1 OPEN   PUBLIC            2 ORCL1            16-OCT-03              1
        61            9247978 23-OCT-03              1 15-OCT-03               0


         2 OPEN   PUBLIC            2 ORCL2            23-OCT-03              4
        30            9041776 23-OCT-03         115242 15-OCT-03               0


   THREAD# STATUS ENABLED      GROUPS INSTANCE         OPEN_TIME CURRENT_GROUP#
---------- ------ -------- ---------- ---------------- --------- --------------
 SEQUENCE# CHECKPOINT_CHANGE# CHECKPOIN ENABLE_CHANGE# ENABLE_TI DISABLE_CHANGE#
---------- ------------------ --------- -------------- --------- ---------------
DISABLE_T
---------


SQL> select count(*) from v$session;

  COUNT(*)
----------
       118

[oracle@racnode1 admin]$ cat tnsnames.ora
#Generated tnsnames.ora from /opt/oracle/util/tnsnames.sh script.

#Localnode service connectivity
ORCL1 =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = racnode1 )(PORT = 1521))
    )
    (CONNECT_DATA =
      (INSTANCE_NAME = ORCL1)
      (SERVICE_NAME = ORCL)
    )
  )
```

```
EXTPROC_CONNECTION_DATA =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC))
    )
    (CONNECT_DATA =
      (SID = PLSExtProc)
      (PRESENTATION = RO)
    )
  )

#REMOTE_LISTENER configuration (assuming REMOTE_LISTENERS = LISTENERS_ORCL)
LISTENERS_ORCL =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = racnode1)(PORT = 1521))
      (ADDRESS = (PROTOCOL = TCP)(HOST = racnode2)(PORT = 1521))
    )
  )

#Configure a single clusterwide service with load-balance, failover and TAF enabled.
ORCL =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (LOAD_BALANCE = yes)
      (FAILOVER = on)
      (ADDRESS = (PROTOCOL = TCP)(HOST = racnode1)(PORT = 1521))
      (ADDRESS = (PROTOCOL = TCP)(HOST = racnode2)(PORT = 1521))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = ORCL)
      (FAILOVER_MODE = (TYPE = SELECT)(METHOD = BASIC)(RETRIES = 20)(DELAY = 20))
    )
  )

[oracle@racnode1 admin]$ cat listener.ora
#Generated listener.ora from /opt/oracle/util/listener.sh script.

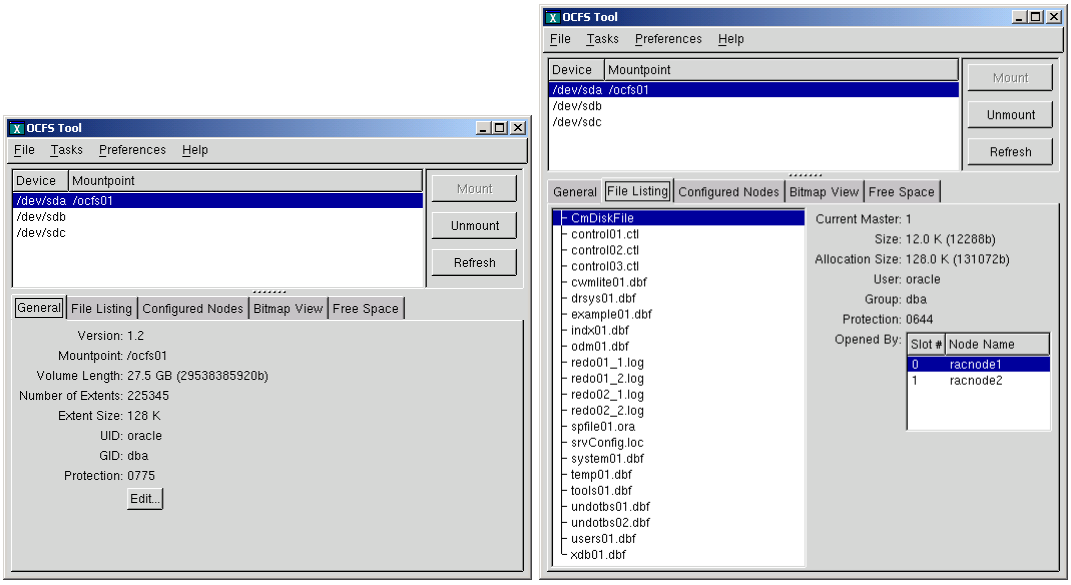
LISTENER =
  (DESCRIPTION_LIST =
          (DESCRIPTION =
                  (ADDRESS_LIST =
                          (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC))
                  )
                  (ADDRESS_LIST =
                          (ADDRESS = (PROTOCOL = TCP)(HOST = racnode1 )(PORT =
1521))
                  )
          )
  )

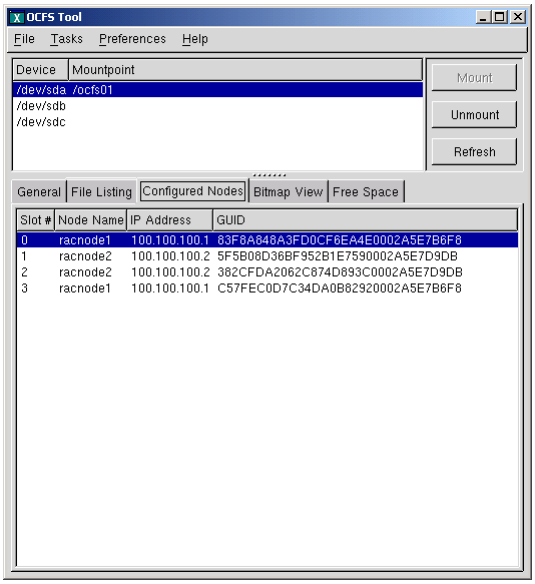
SID_LIST_LISTENER =
        (SID_LIST =
                (SID_DESC =
                        (SID_NAME = PLSExtProc)
                        (ORACLE_HOME = /opt/oracle/product/server32/9.2.0)
                        (PROGRAM = extproc)
                )
                (SID_DESC =
                        (ORACLE_HOME = /opt/oracle/product/server32/9.2.0)
                        (SID_NAME = ORCL1)
                )
        )
[oracle@racnode1 admin]$

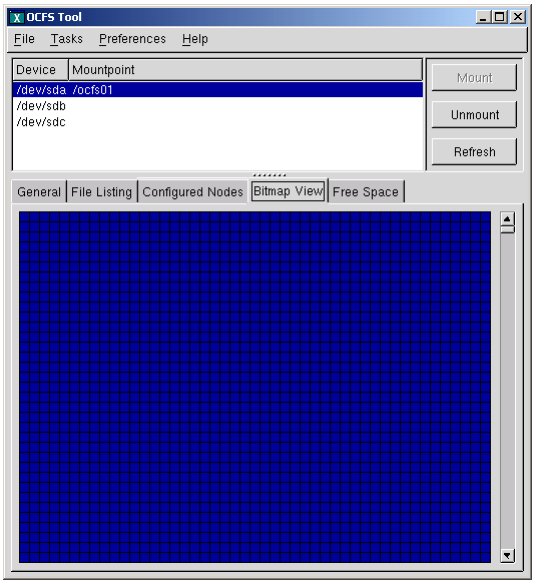

[oracle@racnode1 admin]$ df
Filesystem           1k-blocks      Used Available Use% Mounted on
/dev/cciss/c0d0p1      5260752   1601896   3391620  33% /
/dev/cciss/c0d0p5      4068064     35196   3826220   1% /home
/dev/cciss/c0d0p2      9051976   4968952   3623208  58% /opt
none                   2444980         0   2444980   0% /dev/shm
/dev/cciss/c0d0p11     1060144    654372    351920  66% /tmp
/dev/cciss/c0d0p3      5160496     33600   4864756   1% /users
/dev/cciss/c0d0p6      2112288     73224   1931764   4% /var
/dev/sda              28844160   2696320  26147840  10% /ocfs01
```

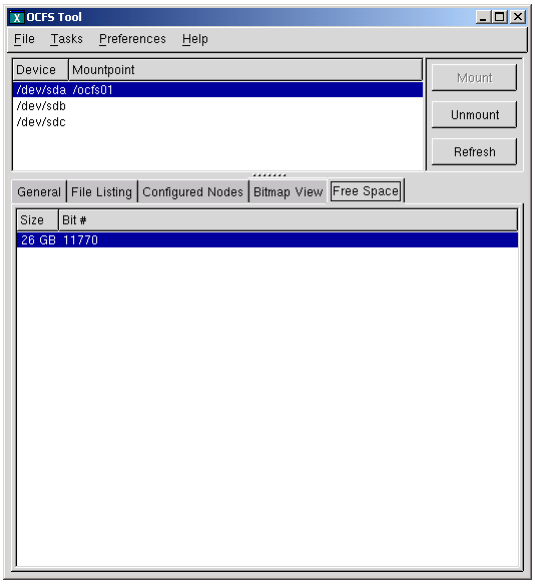
```
[oracle@racnode1 admin]$ ls -al /ocfs01
total 2644271
drwxrwxr-x    1 oracle   dba        131072 Oct 15 16:33 .
drwxr-xr-x   23 root     root         4096 Oct 15 16:33 ..
-rw-r-----    1 oracle   dba      1048584192 Oct 17 10:35 BFTEST.dbf
-rw-r--r--    1 oracle   dba         12288 Oct 15 16:07 CmDiskFile
-rw-r-----    1 oracle   dba      12247040 Oct 15 15:59 control01.ctl
-rw-r-----    1 oracle   dba      12247040 Oct 15 15:59 control02.ctl
-rw-r-----    1 oracle   dba      12247040 Oct 15 15:59 control03.ctl
-rw-r-----    1 oracle   dba      20979712 Oct 15 15:59 cwmlite01.dbf
-rw-r-----    1 oracle   dba      20979712 Oct 15 15:59 drsys01.dbf
-rw-r-----    1 oracle   dba      125837312 Oct 15 15:59 example01.dbf
-rw-r-----    1 oracle   dba      26222592 Oct 15 15:59 indx01.dbf
-rw-r-----    1 oracle   dba      20979712 Oct 15 15:59 odm01.dbf
-rw-r-----    1 oracle   dba      104858112 Oct 15 15:59 redo01_1.log
-rw-r-----    1 oracle   dba      104858112 Oct 15 15:59 redo01_2.log
-rw-r-----    1 oracle   dba      104858112 Oct 15 16:17 redo02_1.log
-rw-r-----    1 oracle   dba      104858112 Oct 15 16:17 redo02_2.log
-rw-r-----    1 oracle   dba          3584 Oct 15 16:17 spfile01.ora
-rwxr-xr-x    1 oracle   dba      10614784 Oct 15 16:18 srvConfig.loc
-rw-r-----    1 oracle   dba      293609472 Oct 17 10:38 system01.dbf
-rw-r-----    1 oracle   dba      71311360 Oct 17 16:09 temp01.dbf
-rw-r-----    1 oracle   dba      10493952 Oct 15 15:59 tools01.dbf
-rw-r-----    1 oracle   dba      277880832 Oct 23 02:06 undotbs01.dbf
-rw-r-----    1 oracle   dba      209723392 Oct 15 15:59 undotbs02.dbf
-rw-r-----    1 oracle   dba      26222592 Oct 15 15:59 users01.dbf
-rw-r-----    1 oracle   dba      20979712 Oct 15 15:59 xdb01.dbf
```

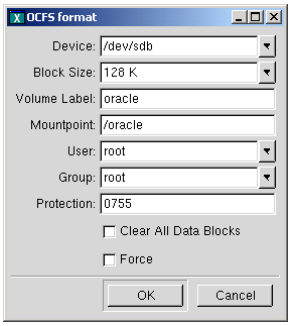
## OCFS Information

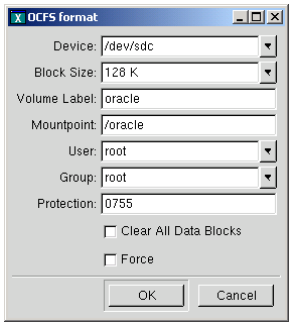




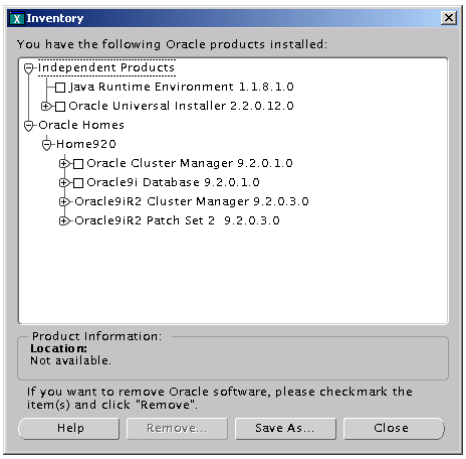



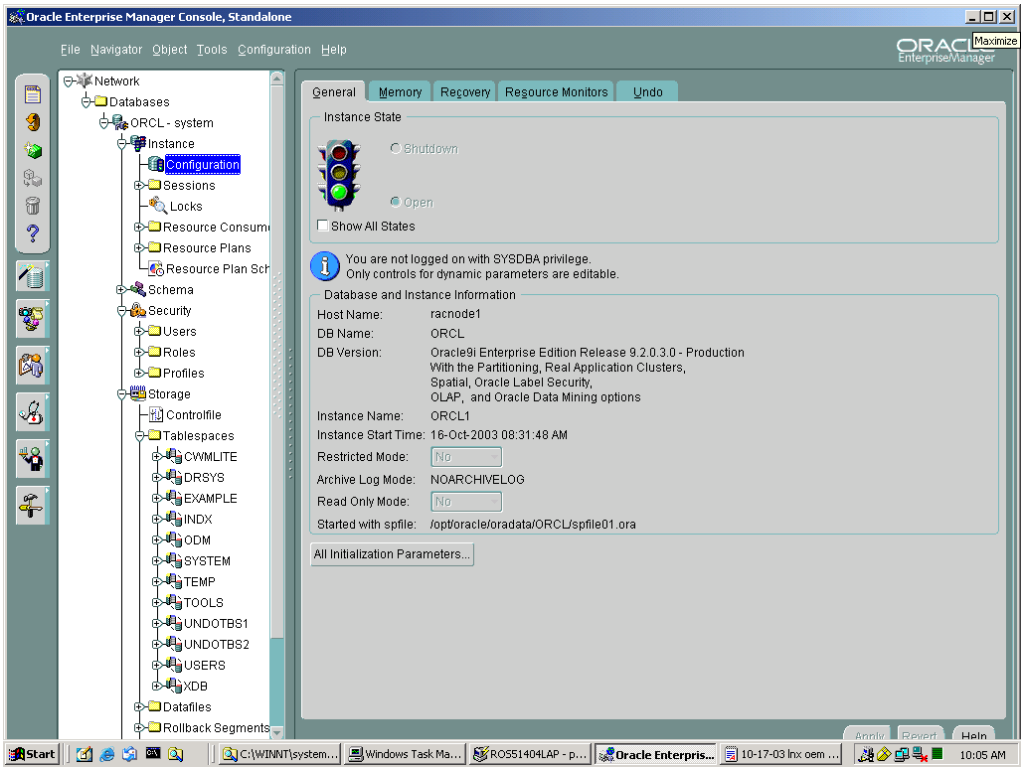



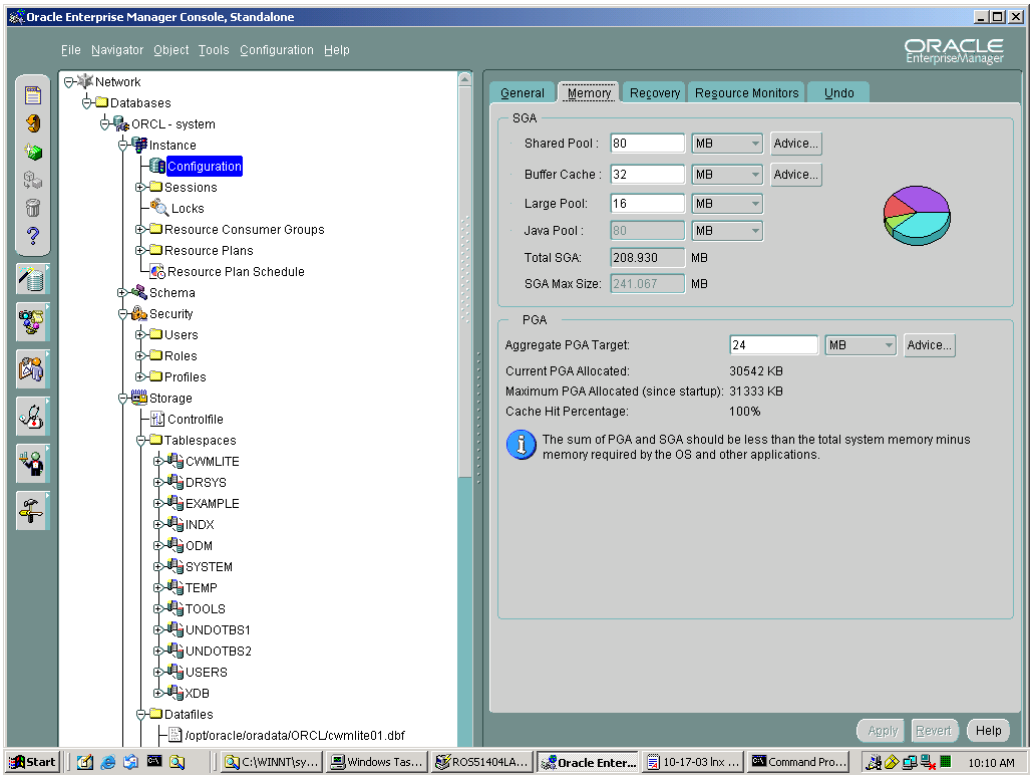


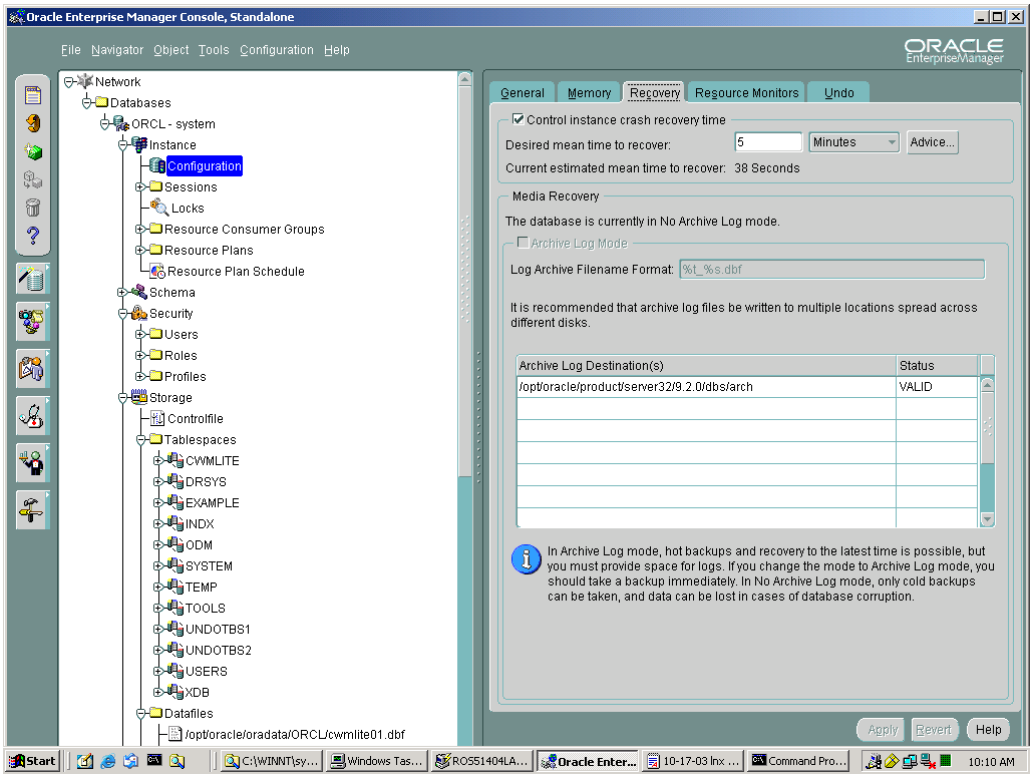



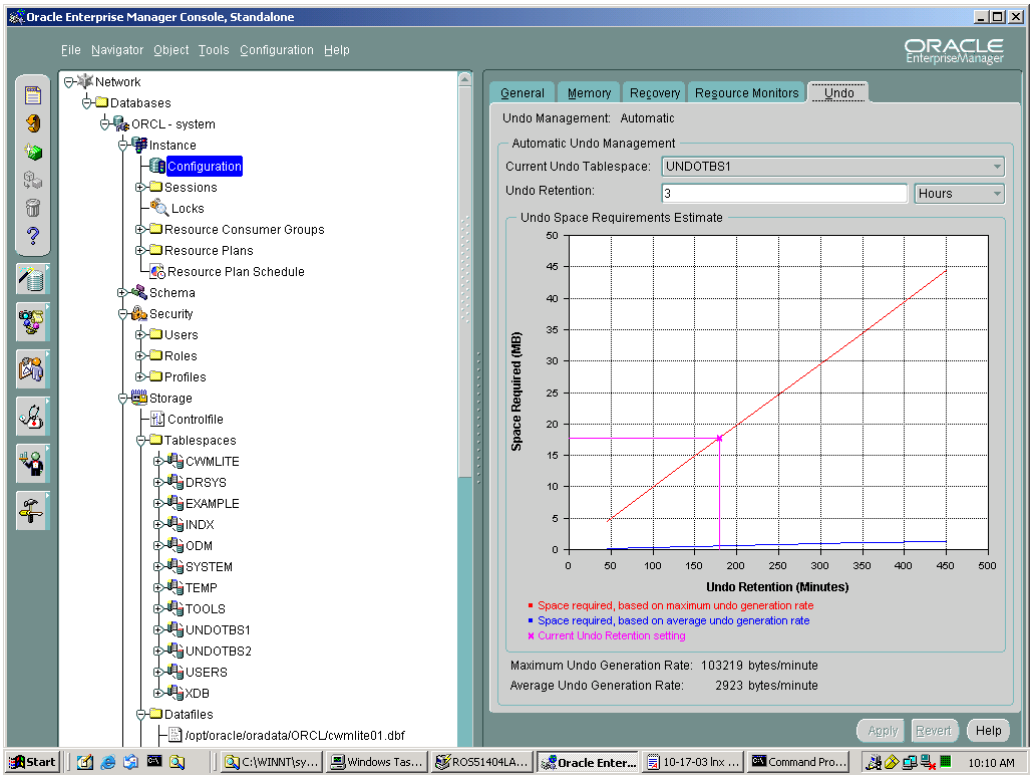

Oracle Inventory


Inventory
You have the following Oracle products installed:
Independent Products
Java Runtime Environment 1.1.8.1.0
Oracle Universal Installer 2.2.0.12.0
Oracle Homes
Home920
Oracle Cluster Manager 9.2.0.1.0
Oracle9i Database 9.2.0.1.0
Oracle9iR2 Cluster Manager 9.2.0.3.0
Oracle9iR2 Patch Set 2 9.2.0.3.0
Product Information:
Location:
Not available.
If you want to remove Oracle software, please checkmark the item(s) and click "Remove".
Help
Remove...
Save As...
Close


Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
Network
Databases
ORCL - system
Instance
Configuration
Sessions
Locks
Resource Plans
Schema
Security
Users
Roles
Profiles
Storage
Controlfile
Tablespaces
CWMLITE
DRSYS
EXAMPLE
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
Rollback Segments
General
Memory
Recovery
Resource Monitors
Undo
Instance State
Shutdown
Open
Show All States
You are not logged on with SYSDBA privilege.
Only controls for dynamic parameters are editable.
Database and Instance Information
Host Name: racnode1
DB Name: ORCL
DB Version: Oracle9i Enterprise Edition Release 9.2.0.3.0 - Production
With the Partitioning, Real Application Clusters,
Spatial, Oracle Label Security,
OLAP, and Oracle Data Mining options
Instance Name: ORCL1
Instance Start Time: 16-Oct-2003 08:31:48 AM
Restricted Mode: No
Archive Log Mode: NOARCHIVELOG
Read Only Mode: No
Started with spfile: /opt/oracle/oradata/ORCL/spfile01.ora
All Initialization Parameters...
Apply
Revert
Help
Start
10:05 AM


Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
Network
Databases
ORCL - system
Instance
Configuration
Sessions
Locks
Resource Consumer Groups
Resource Plans
Resource Plan Schedule
Schema
Security
Users
Roles
Profiles
Storage
Controlfile
Tablespaces
CWMLITE
DRSYS
EXAMPLE
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
General Memory Recovery Resource Monitors Undo
SGA
Shared Pool : 80 MB Advice...
Buffer Cache : 32 MB Advice...
Large Pool: 16 MB
Java Pool : 80 MB
Total SGA: 208.930 MB
SGA Max Size: 241.067 MB
PGA
Aggregate PGA Target: 24 MB Advice...
Current PGA Allocated: 30542 KB
Maximum PGA Allocated (since startup): 31333 KB
Cache Hit Percentage: 100%
The sum of PGA and SGA should be less than the total system memory minus memory required by the OS and other applications.
Apply Revert Help
Start
10:10 AM


Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
Network
Databases
ORCL - system
Instance
Configuration
Sessions
Locks
Resource Consumer Groups
Resource Plans
Resource Plan Schedule
Schema
Security
Users
Roles
Profiles
Storage
Controlfile
Tablespaces
CWMLITE
DRSYS
EXAMPLE
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
General Memory Recovery Resource Monitors Undo
Control instance crash recovery time
Desired mean time to recover: 5 Minutes Advice...
Current estimated mean time to recover: 38 Seconds
Media Recovery
The database is currently in No Archive Log mode.
Archive Log Mode
Log Archive Filename Format: %t_%s.dbf
It is recommended that archive log files be written to multiple locations spread across different disks.
Archive Log Destination(s)
Status
/opt/oracle/product/server32/9.2.0/dbs/arch
VALID
In Archive Log mode, hot backups and recovery to the latest time is possible, but you must provide space for logs. If you change the mode to Archive Log mode, you should take a backup immediately. In No Archive Log mode, only cold backups can be taken, and data can be lost in cases of database corruption.
Apply Revert Help
Start
10:10 AM


Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
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ORCL - system
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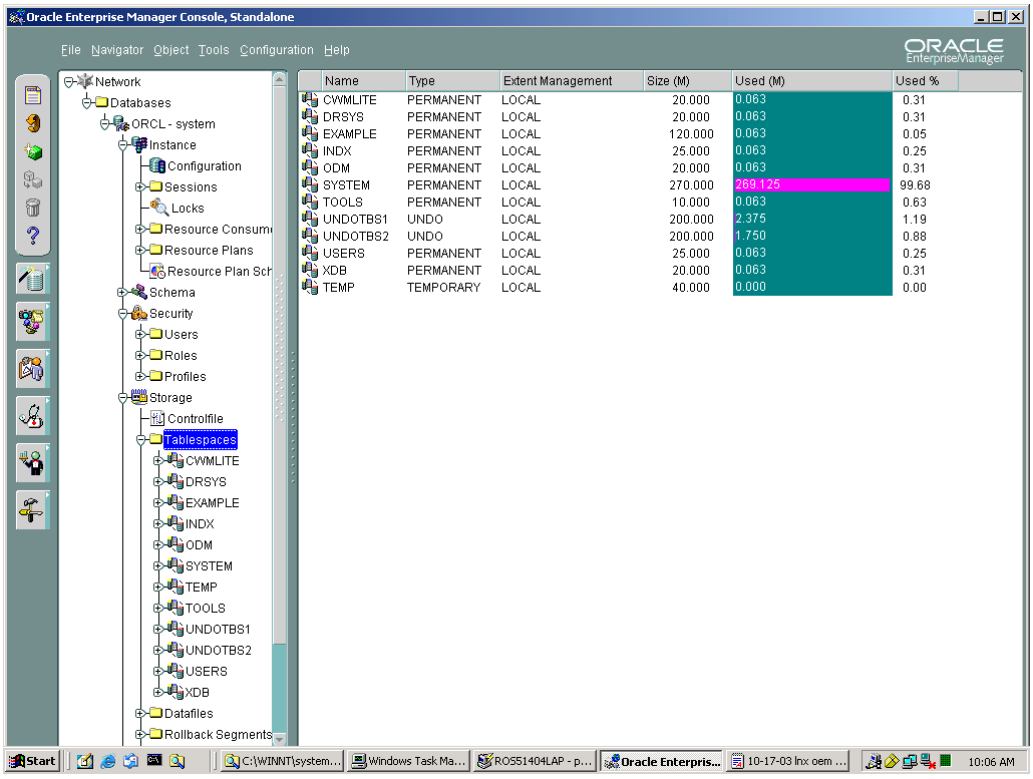
CWMLITE
DRSYS
EXAMPLE
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
General Memory Recovery Resource Monitors Undo
Undo Management: Automatic
Automatic Undo Management
Current Undo Tablespace: UNDOTBS1
Undo Retention: 3 Hours
Undo Space Requirements Estimate
Space Required (MB)
Undo Retention (Minutes)
Space required, based on maximum undo generation rate
Space required, based on average undo generation rate
Current Undo Retention setting
Maximum Undo Generation Rate: 103219 bytes/minute
Average Undo Generation Rate: 2923 bytes/minute
Apply Revert Help
Start
10:10 AM


Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
Network
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ORCL - system
Instance
Configuration
Sessions
Locks
Resource Plans
Schema
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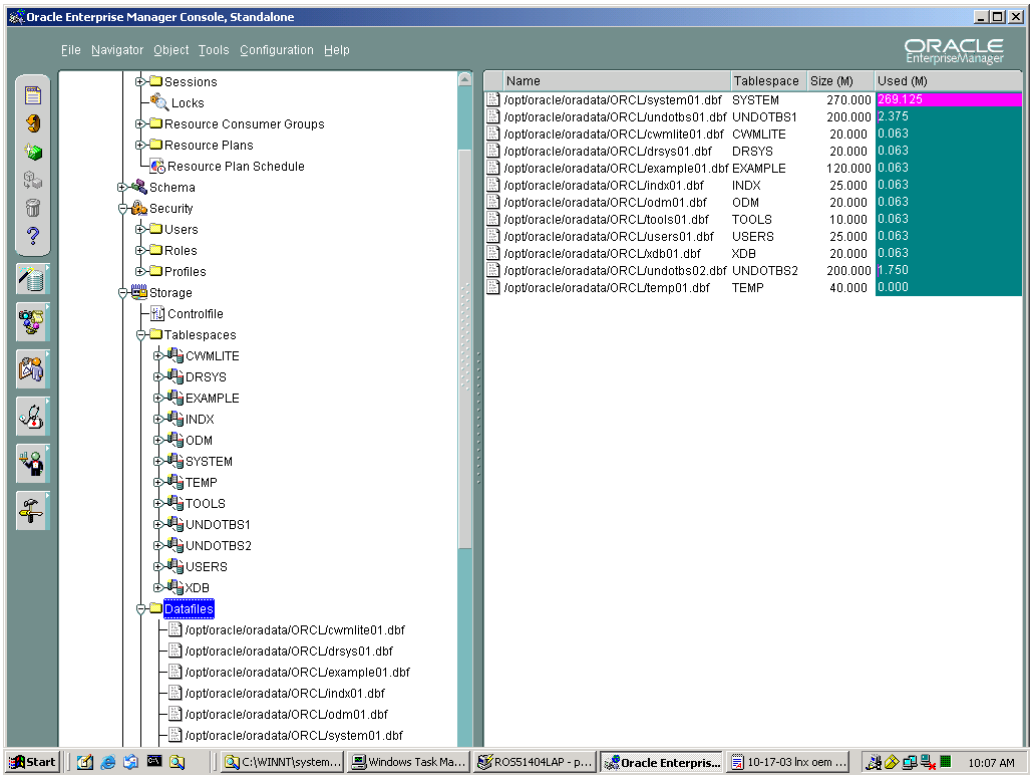
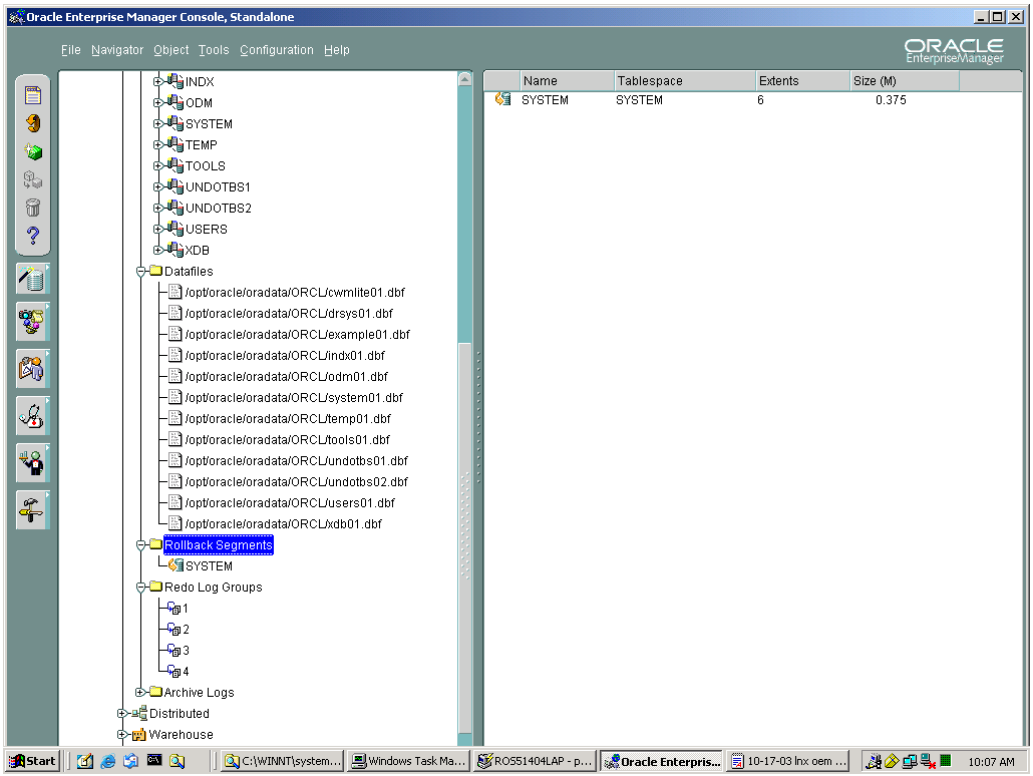
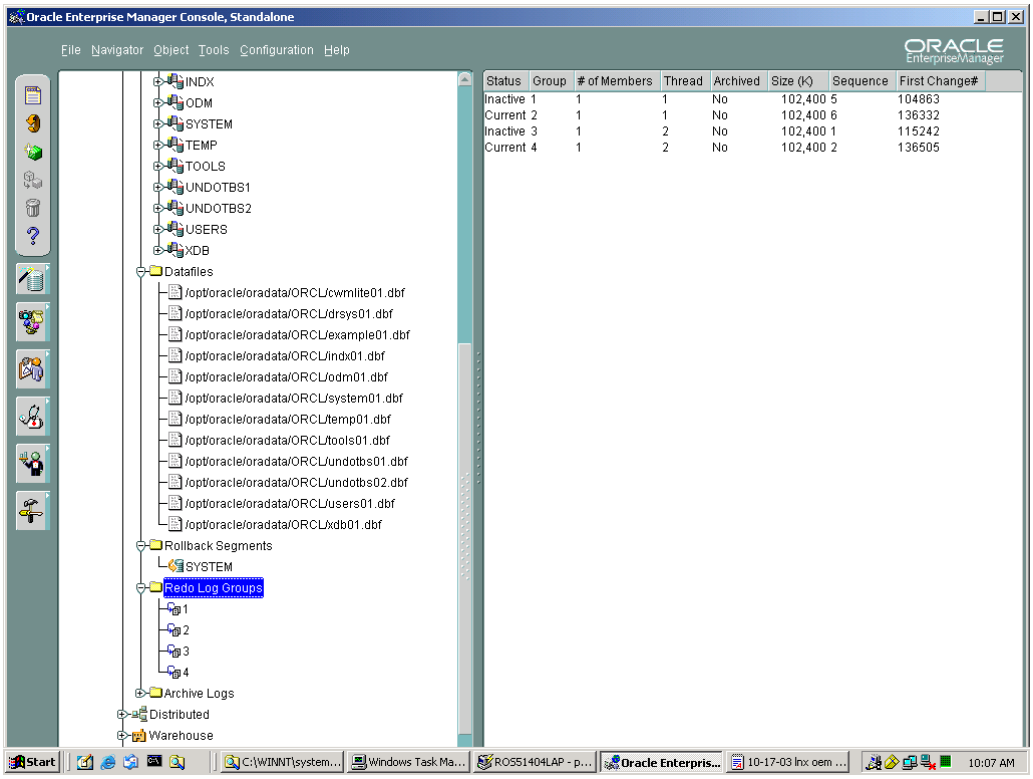
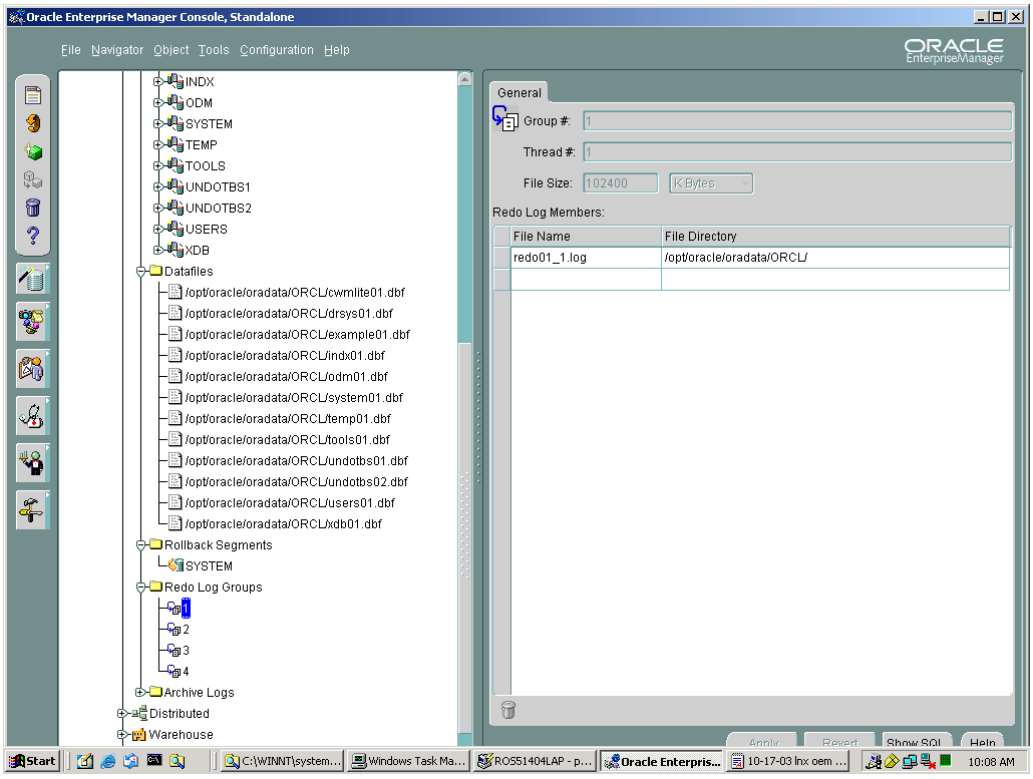
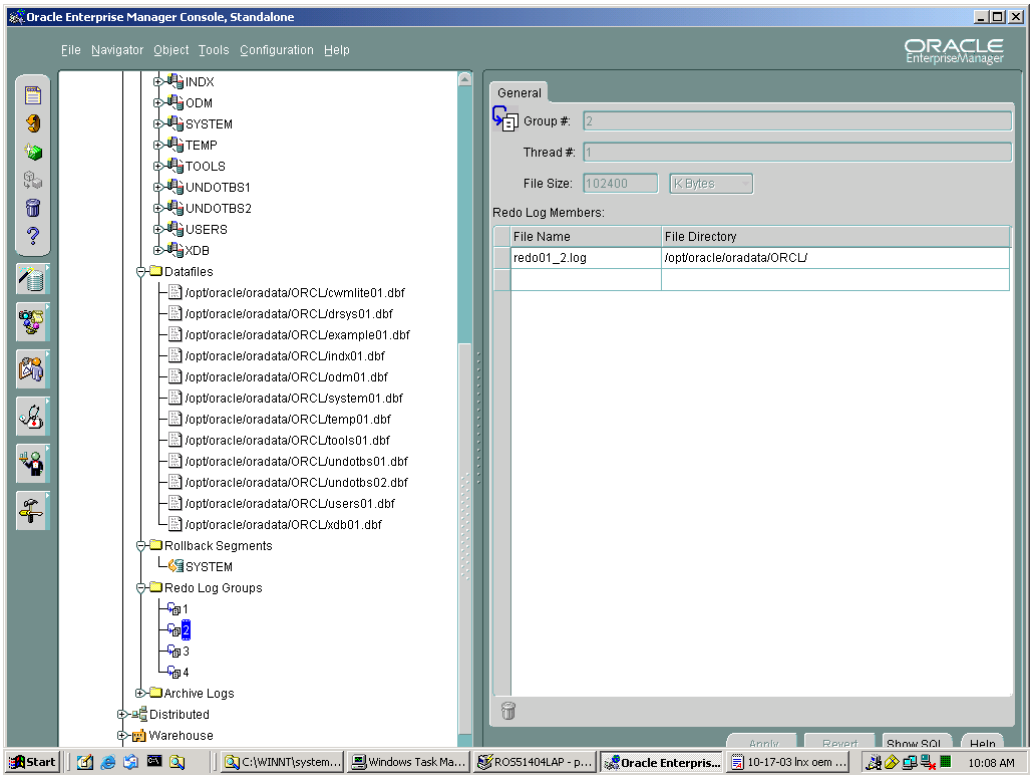
Profiles
Storage
Controlfile
Tablespaces
CWMLITE
DRSYS
EXAMPLE
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
Rollback Segments
Name Type Extent Management Size (M) Used (M) Used %
CWMLITE PERMANENT LOCAL 20.000 0.063 0.31
DRSYS PERMANENT LOCAL 20.000 0.063 0.31
EXAMPLE PERMANENT LOCAL 120.000 0.063 0.05
INDX PERMANENT LOCAL 25.000 0.063 0.25
ODM PERMANENT LOCAL 20.000 0.063 0.31
SYSTEM PERMANENT LOCAL 270.000 269.125 99.68
TOOLS PERMANENT LOCAL 10.000 0.063 0.63
UNDOTBS1 UNDO LOCAL 200.000 2.375 1.19
UNDOTBS2 UNDO LOCAL 200.000 1.750 0.88
USERS PERMANENT LOCAL 25.000 0.063 0.25
XDB PERMANENT LOCAL 20.000 0.063 0.31
TEMP TEMPORARY LOCAL 40.000 0.000 0.00
Start
10:06 AM

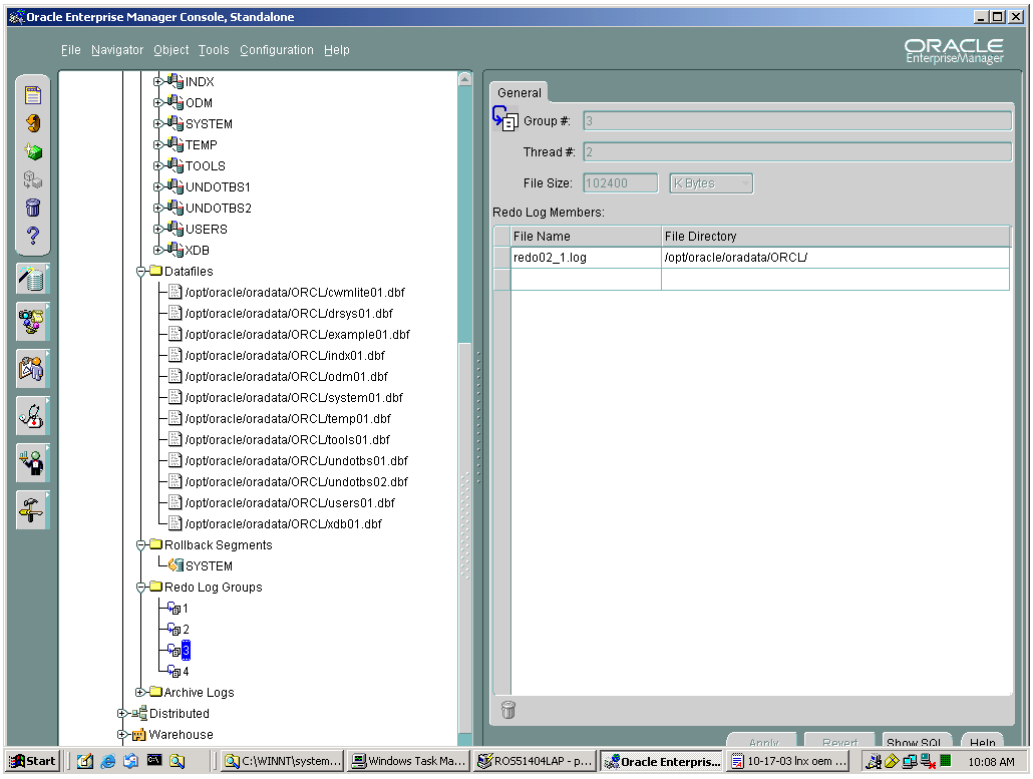

Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
Sessions
Locks
Resource Consumer Groups
Resource Plans
Resource Plan Schedule
Schema
Security
Users
Roles
Profiles
Storage
Controlfile
Tablespaces
CWMLITE
DRSYS
EXAMPLE
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
/opt/oracle/oradata/ORCL/drsys01.dbf
/opt/oracle/oradata/ORCL/example01.dbf
/opt/oracle/oradata/ORCL/indx01.dbf
/opt/oracle/oradata/ORCL/odm01.dbf
/opt/oracle/oradata/ORCL/system01.dbf
Name Tablespace Size (M) Used (M)
/opt/oracle/oradata/ORCL/system01.dbf SYSTEM 270.000 269.125
/opt/oracle/oradata/ORCL/undotbs01.dbf UNDOTBS1 200.000 2.375
/opt/oracle/oradata/ORCL/cwmlite01.dbf CWMLITE 20.000 0.063
/opt/oracle/oradata/ORCL/drsys01.dbf DRSYS 20.000 0.063
/opt/oracle/oradata/ORCL/example01.dbf EXAMPLE 120.000 0.063
/opt/oracle/oradata/ORCL/indx01.dbf INDX 25.000 0.063
/opt/oracle/oradata/ORCL/odm01.dbf ODM 20.000 0.063
/opt/oracle/oradata/ORCL/tools01.dbf TOOLS 10.000 0.063
/opt/oracle/oradata/ORCL/users01.dbf USERS 25.000 0.063
/opt/oracle/oradata/ORCL/xdb01.dbf XDB 20.000 0.063
/opt/oracle/oradata/ORCL/undotbs02.dbf UNDOTBS2 200.000 1.750
/opt/oracle/oradata/ORCL/temp01.dbf TEMP 40.000 0.000
Start
C:\WINNT\system...
Windows Task Ma...
RO551404LAP - p...
Oracle Enterpris...
10-17-03 lnx oem ...
10:07 AM

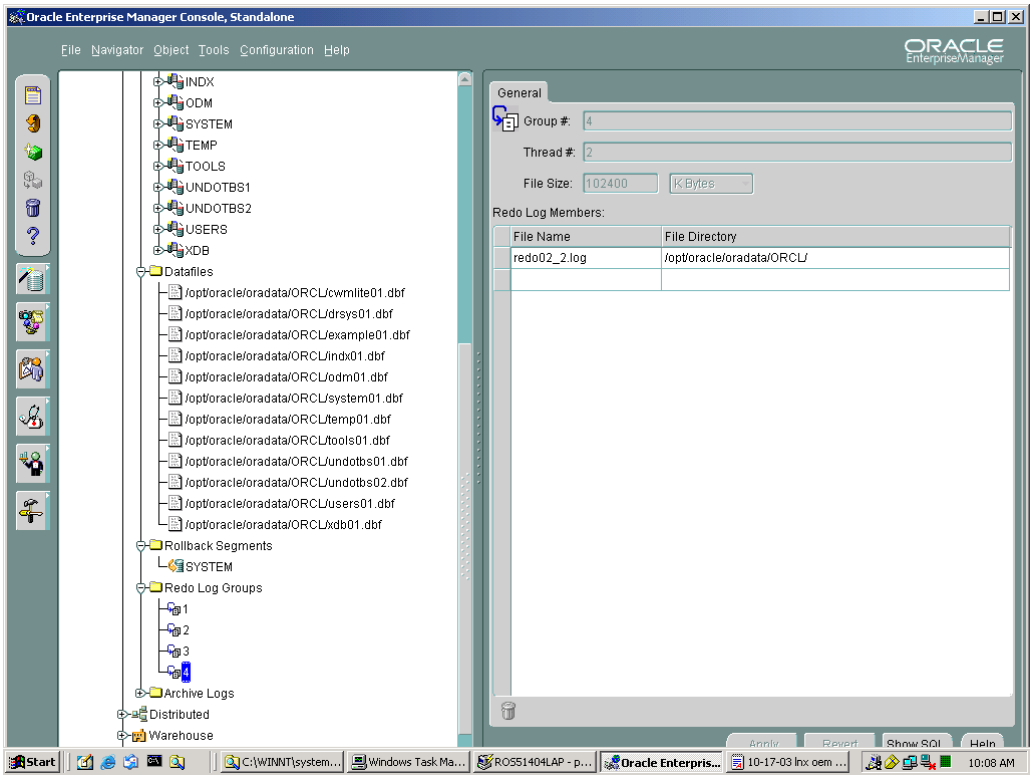

Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
/opt/oracle/oradata/ORCL/drsys01.dbf
/opt/oracle/oradata/ORCL/example01.dbf
/opt/oracle/oradata/ORCL/indx01.dbf
/opt/oracle/oradata/ORCL/odm01.dbf
/opt/oracle/oradata/ORCL/system01.dbf
/opt/oracle/oradata/ORCL/temp01.dbf
/opt/oracle/oradata/ORCL/tools01.dbf
/opt/oracle/oradata/ORCL/undotbs01.dbf
/opt/oracle/oradata/ORCL/undotbs02.dbf
/opt/oracle/oradata/ORCL/users01.dbf
/opt/oracle/oradata/ORCL/xdb01.dbf
Rollback Segments
SYSTEM
Redo Log Groups
1
2
3
4
Archive Logs
Distributed
Warehouse
Name Tablespace Extents Size (M)
SYSTEM SYSTEM 6 0.375
Start
C:\WINNT\system...
Windows Task Ma...
RO551404LAP - p...
Oracle Enterpris...
10-17-03 lnx oem ...
10:07 AM


Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
/opt/oracle/oradata/ORCL/drsys01.dbf
/opt/oracle/oradata/ORCL/example01.dbf
/opt/oracle/oradata/ORCL/indx01.dbf
/opt/oracle/oradata/ORCL/odm01.dbf
/opt/oracle/oradata/ORCL/system01.dbf
/opt/oracle/oradata/ORCL/temp01.dbf
/opt/oracle/oradata/ORCL/tools01.dbf
/opt/oracle/oradata/ORCL/undotbs01.dbf
/opt/oracle/oradata/ORCL/undotbs02.dbf
/opt/oracle/oradata/ORCL/users01.dbf
/opt/oracle/oradata/ORCL/xdb01.dbf
Rollback Segments
SYSTEM
Redo Log Groups
1
2
3
4
Archive Logs
Distributed
Warehouse
Status Group # of Members Thread Archived Size (K) Sequence First Change#
Inactive 1 1 1 No 102,400 5 104863
Current 2 1 1 No 102,400 6 136332
Inactive 3 1 2 No 102,400 1 115242
Current 4 1 2 No 102,400 2 136505
Start
C:\WINNT\system...
Windows Task Ma...
RO551404LAP - p...
Oracle Enterpris...
10-17-03 lnx oem ...
10:07 AM

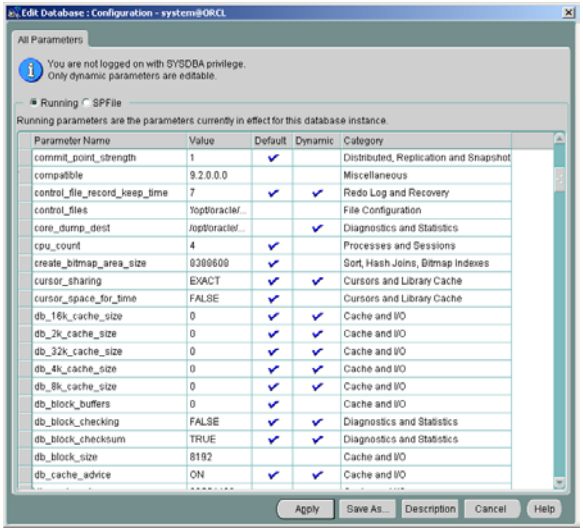

Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
/opt/oracle/oradata/ORCL/drsys01.dbf
/opt/oracle/oradata/ORCL/example01.dbf
/opt/oracle/oradata/ORCL/indx01.dbf
/opt/oracle/oradata/ORCL/odm01.dbf
/opt/oracle/oradata/ORCL/system01.dbf
/opt/oracle/oradata/ORCL/temp01.dbf
/opt/oracle/oradata/ORCL/tools01.dbf
/opt/oracle/oradata/ORCL/undotbs01.dbf
/opt/oracle/oradata/ORCL/undotbs02.dbf
/opt/oracle/oradata/ORCL/users01.dbf
/opt/oracle/oradata/ORCL/xdb01.dbf
Rollback Segments
SYSTEM
Redo Log Groups
1
2
3
4
Archive Logs
Distributed
Warehouse
General
Group #: 1
Thread #: 1
File Size: 102400 K Bytes
Redo Log Members:
File Name File Directory
redo01_1.log /opt/oracle/oradata/ORCL/
Apply Revert Show SQL Help
Start
C:\WINNT\system...
Windows Task Ma...
RO551404LAP - p...
Oracle Enterpris...
10-17-03 lnx oem ...
10:08 AM

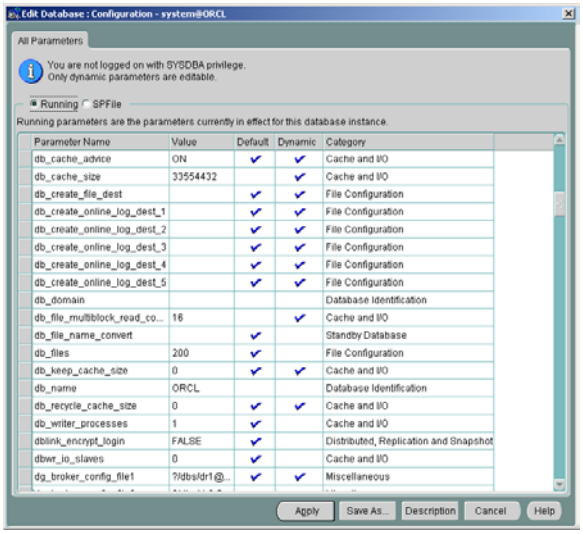

Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
/opt/oracle/oradata/ORCL/drsys01.dbf
/opt/oracle/oradata/ORCL/example01.dbf
/opt/oracle/oradata/ORCL/indx01.dbf
/opt/oracle/oradata/ORCL/odm01.dbf
/opt/oracle/oradata/ORCL/system01.dbf
/opt/oracle/oradata/ORCL/temp01.dbf
/opt/oracle/oradata/ORCL/tools01.dbf
/opt/oracle/oradata/ORCL/undotbs01.dbf
/opt/oracle/oradata/ORCL/undotbs02.dbf
/opt/oracle/oradata/ORCL/users01.dbf
/opt/oracle/oradata/ORCL/xdb01.dbf
Rollback Segments
SYSTEM
Redo Log Groups
1
2
3
4
Archive Logs
Distributed
Warehouse
General
Group #: 2
Thread #: 1
File Size: 102400 K Bytes
Redo Log Members:
File Name
File Directory
redo01_2.log
/opt/oracle/oradata/ORCL/
Apply
Revert
Show SQL
Help
Start
C:\WINNT\system...
Windows Task Ma...
ROS51404LAP - p...
Oracle Enterpris...
10-17-03 lnx oem ...
10:08 AM

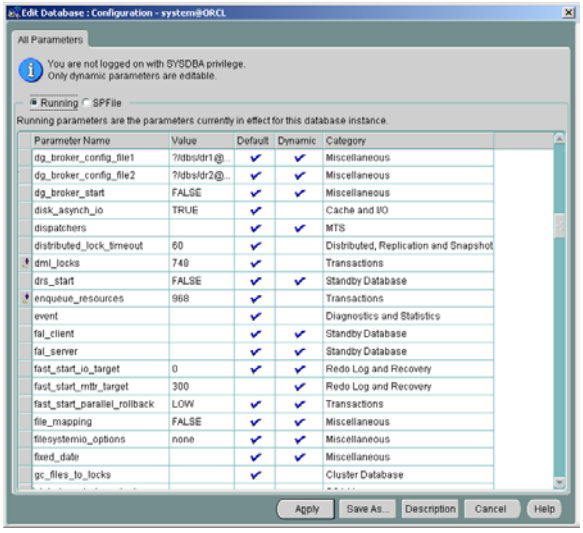

Oracle Enterprise Manager Console, Standalone
File Navigator Object Tools Configuration Help
ORACLE EnterpriseManager
INDX
ODM
SYSTEM
TEMP
TOOLS
UNDOTBS1
UNDOTBS2
USERS
XDB
Datafiles
/opt/oracle/oradata/ORCL/cwmlite01.dbf
/opt/oracle/oradata/ORCL/drsys01.dbf
/opt/oracle/oradata/ORCL/example01.dbf
/opt/oracle/oradata/ORCL/indx01.dbf
/opt/oracle/oradata/ORCL/odm01.dbf
/opt/oracle/oradata/ORCL/system01.dbf
/opt/oracle/oradata/ORCL/temp01.dbf
/opt/oracle/oradata/ORCL/tools01.dbf
/opt/oracle/oradata/ORCL/undotbs01.dbf
/opt/oracle/oradata/ORCL/undotbs02.dbf
/opt/oracle/oradata/ORCL/users01.dbf
/opt/oracle/oradata/ORCL/xdb01.dbf
Rollback Segments
SYSTEM
Redo Log Groups
1
2
3
4
Archive Logs
Distributed
Warehouse
General
Group #: 3
Thread #: 2
File Size: 102400 K Bytes
Redo Log Members:
File Name
File Directory
redo02_1.log
/opt/oracle/oradata/ORCL/
Apply
Revert
Show SQL
Help
Start
C:\WINNT\system...
Windows Task Ma...
ROS51404LAP - p...
Oracle Enterpris...
10-17-03 lnx oem ...
10:08 AM

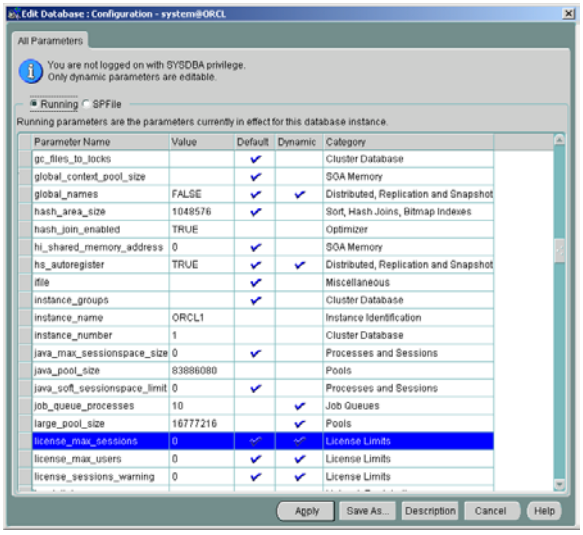


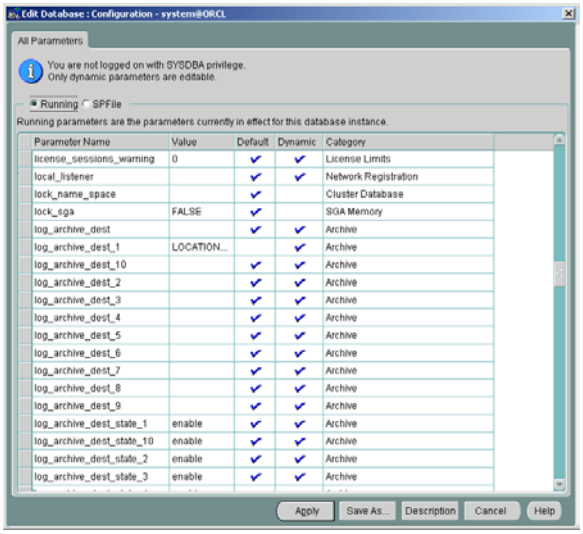

## Running Parameters:

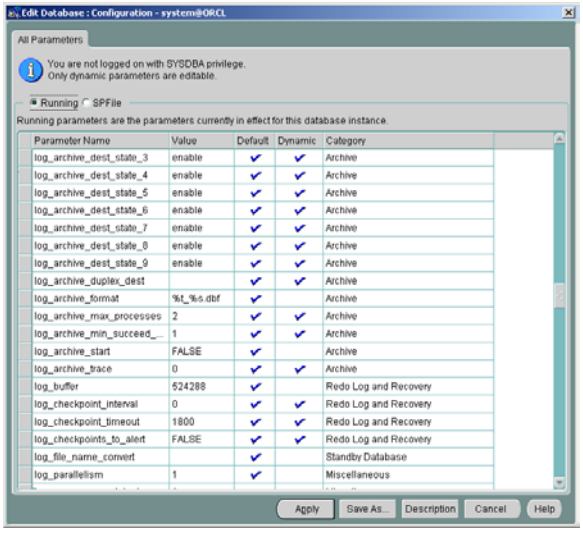


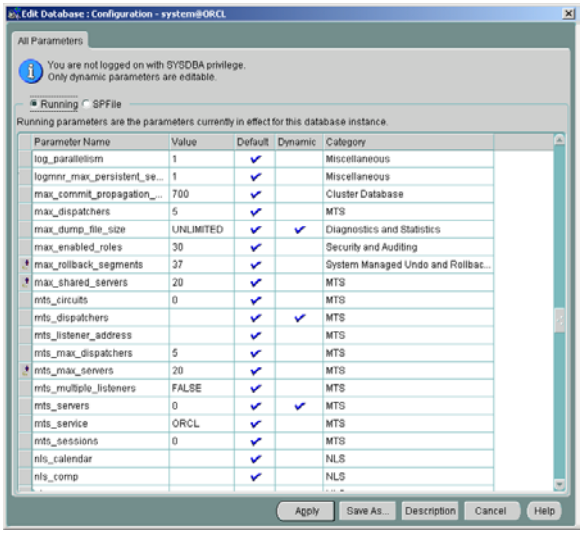

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
db_cache_advice
ON
Cache and I/O
db_cache_size
33554432
Cache and I/O
db_create_file_dest
File Configuration
db_create_online_log_dest_1
File Configuration
db_create_online_log_dest_2
File Configuration
db_create_online_log_dest_3
File Configuration
db_create_online_log_dest_4
File Configuration
db_create_online_log_dest_5
File Configuration
db_domain
Database Identification
db_file_multiblock_read_co...
16
Cache and I/O
db_file_name_convert
Standby Database
db_files
200
File Configuration
db_keep_cache_size
0
Cache and I/O
db_name
ORCL
Database Identification
db_recycle_cache_size
0
Cache and I/O
db_writer_processes
1
Cache and I/O
dblink_encrypt_login
FALSE
Distributed, Replication and Snapshot
dbwr_io_slaves
0
Cache and I/O
dg_broker_config_file1
?/dbs/dr1@...
Miscellaneous
Apply
Save As...
Description
Cancel
Help

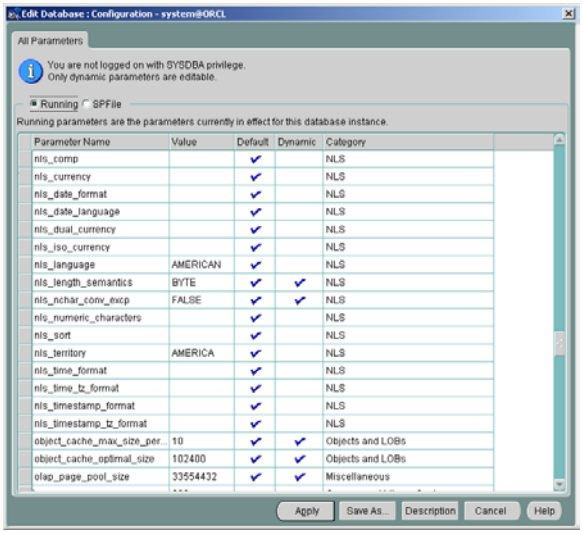

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
dg_broker_config_file1
?/dbs/dr1@...
Miscellaneous
dg_broker_config_file2
?/dbs/dr2@...
Miscellaneous
dg_broker_start
FALSE
Miscellaneous
disk_asynch_io
TRUE
Cache and I/O
dispatchers
MTS
distributed_lock_timeout
60
Distributed, Replication and Snapshot
dml_locks
748
Transactions
drs_start
FALSE
Standby Database
enqueue_resources
968
Transactions
event
Diagnostics and Statistics
fal_client
Standby Database
fal_server
Standby Database
fast_start_io_target
0
Redo Log and Recovery
fast_start_mttr_target
300
Redo Log and Recovery
fast_start_parallel_rollback
LOW
Transactions
file_mapping
FALSE
Miscellaneous
filesystemio_options
none
Miscellaneous
fixed_date
Miscellaneous
gc_files_to_locks
Cluster Database
Apply
Save As...
Description
Cancel
Help

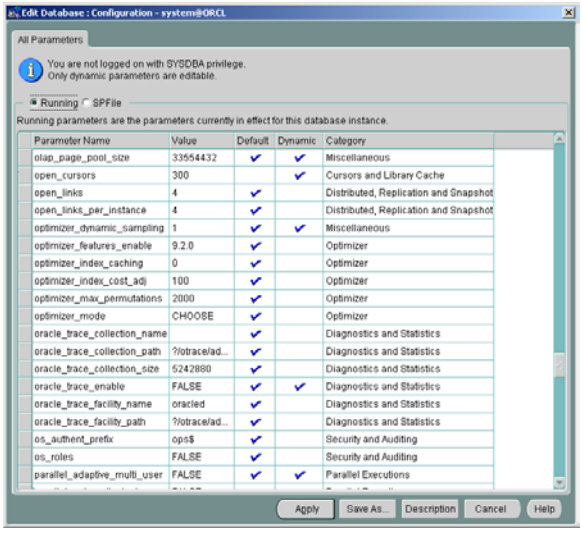

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
gc_files_to_locks
Cluster Database
global_context_pool_size
SGA Memory
global_names
FALSE
Distributed, Replication and Snapshot
hash_area_size
1048576
Sort, Hash Joins, Bitmap Indexes
hash_join_enabled
TRUE
Optimizer
hi_shared_memory_address
0
SGA Memory
hs_autoregister
TRUE
Distributed, Replication and Snapshot
ifile
Miscellaneous
instance_groups
Cluster Database
instance_name
ORCL1
Instance Identification
instance_number
1
Cluster Database
java_max_sessionspace_size
0
Processes and Sessions
java_pool_size
83886080
Pools
java_soft_sessionspace_limit
0
Processes and Sessions
job_queue_processes
10
Job Queues
large_pool_size
16777216
Pools
license_max_sessions
0
License Limits
license_max_users
0
License Limits
license_sessions_warning
0
License Limits
Apply
Save As...
Description
Cancel
Help

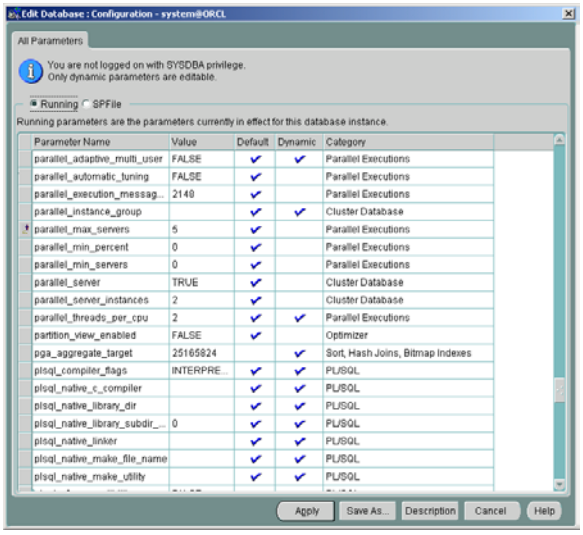

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
license_sessions_warning
0
License Limits
local_listener
Network Registration
lock_name_space
Cluster Database
lock_sga
FALSE
SGA Memory
log_archive_dest
Archive
log_archive_dest_1
LOCATION...
log_archive_dest_10
log_archive_dest_2
log_archive_dest_3
log_archive_dest_4
log_archive_dest_5
log_archive_dest_6
log_archive_dest_7
log_archive_dest_8
log_archive_dest_9
log_archive_dest_state_1
enable
log_archive_dest_state_10
log_archive_dest_state_2
log_archive_dest_state_3
Apply
Save As...
Description
Cancel
Help

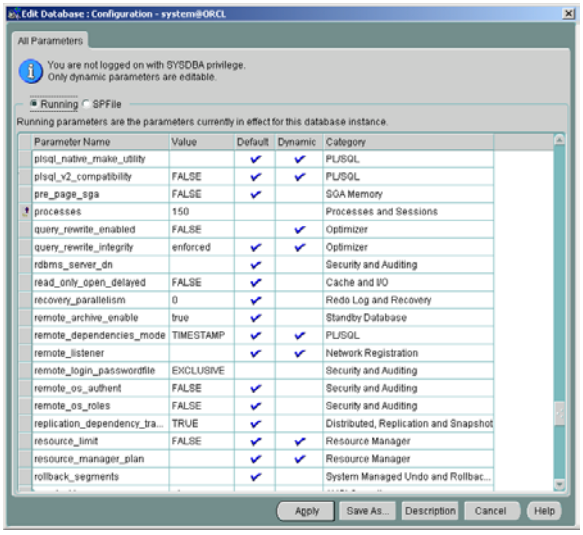

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
log_archive_dest_state_3
enable
log_archive_dest_state_4
log_archive_dest_state_5
log_archive_dest_state_6
log_archive_dest_state_7
log_archive_dest_state_8
log_archive_dest_state_9
log_archive_duplex_dest
Archive
log_archive_format
%t_%s.dbf
log_archive_max_processes
2
log_archive_min_succeed_...
1
log_archive_start
FALSE
log_archive_trace
0
log_buffer
524288
Redo Log and Recovery
log_checkpoint_interval
log_checkpoint_timeout
1800
log_checkpoints_to_alert
FALSE
log_file_name_convert
Standby Database
log_parallelism
Miscellaneous
Apply
Save As...
Description
Cancel
Help

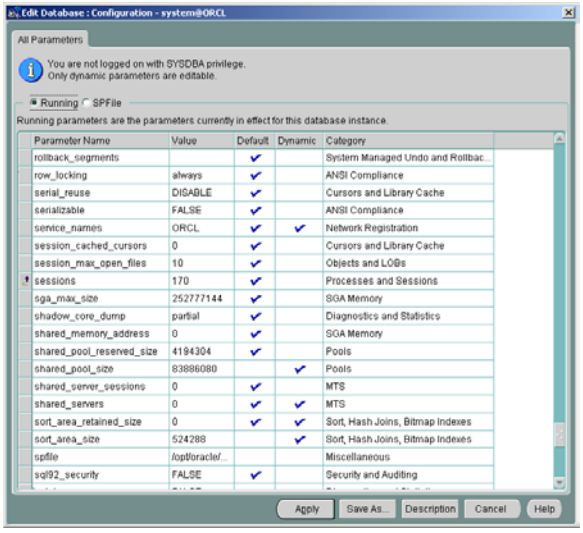

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
log_parallelism
1
Miscellaneous
logmnr_max_persistent_se...
1
max_commit_propagation_...
700
Cluster Database
max_dispatchers
5
MTS
max_dump_file_size
UNLIMITED
Diagnostics and Statistics
max_enabled_roles
30
Security and Auditing
max_rollback_segments
37
System Managed Undo and Rollbac...
max_shared_servers
20
mts_circuits
0
mts_dispatchers
mts_listener_address
mts_max_dispatchers
5
mts_max_servers
20
mts_multiple_listeners
FALSE
mts_servers
0
mts_service
ORCL
mts_sessions
0
nls_calendar
NLS
nls_comp
Apply
Save As...
Description
Cancel
Help

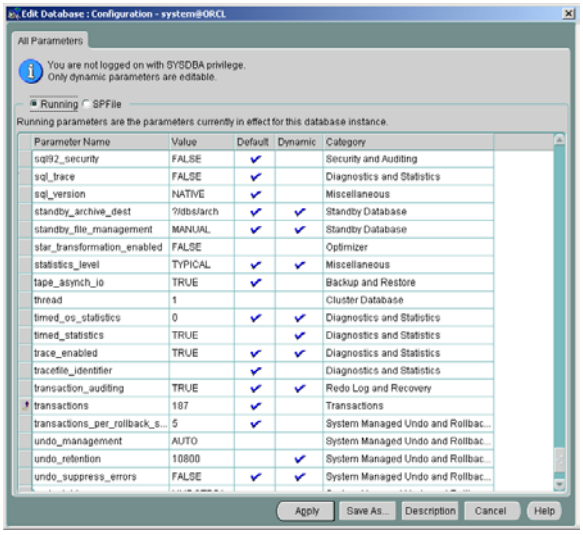

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
nls_comp
nls_currency
nls_date_format
nls_date_language
nls_dual_currency
nls_iso_currency
nls_language
AMERICAN
nls_length_semantics
BYTE
nls_nchar_conv_excp
FALSE
nls_numeric_characters
nls_sort
nls_territory
AMERICA
nls_time_format
nls_time_tz_format
nls_timestamp_format
nls_timestamp_tz_format
object_cache_max_size_per...
10
object_cache_optimal_size
102400
olap_page_pool_size
33554432
NLS
Objects and LOBs
Miscellaneous
Apply
Save As...
Description
Cancel
Help

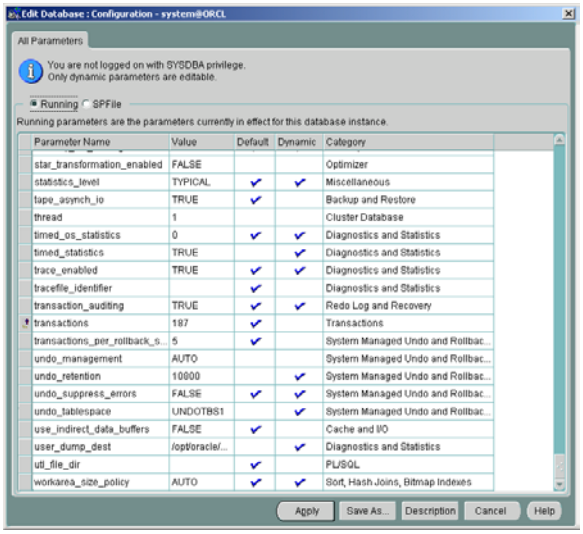

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
olap_page_pool_size
33554432
open_cursors
300
open_links
4
open_links_per_instance
4
optimizer_dynamic_sampling
1
optimizer_features_enable
9.2.0
optimizer_index_caching
0
optimizer_index_cost_adj
100
optimizer_max_permutations
2000
optimizer_mode
CHOOSE
oracle_trace_collection_name
oracle_trace_collection_path
?/otrace/ad...
oracle_trace_collection_size
5242880
oracle_trace_enable
FALSE
oracle_trace_facility_name
oracled
oracle_trace_facility_path
os_authent_prefix
ops$
os_roles
FALSE
parallel_adaptive_multi_user
Miscellaneous
Cursors and Library Cache
Distributed, Replication and Snapshot
Optimizer
Diagnostics and Statistics
Security and Auditing
Parallel Executions
Apply
Save As...
Description
Cancel
Help


Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
parallel_adaptive_multi_user
FALSE
parallel_automatic_tuning
FALSE
parallel_execution_messag...
2148
parallel_instance_group
parallel_max_servers
5
parallel_min_percent
0
parallel_min_servers
0
parallel_server
TRUE
parallel_server_instances
2
parallel_threads_per_cpu
2
partition_view_enabled
FALSE
pga_aggregate_target
25165824
plsql_compiler_flags
INTERPRE...
plsql_native_c_compiler
plsql_native_library_dir
plsql_native_library_subdir_...
plsql_native_linker
plsql_native_make_file_name
plsql_native_make_utility
Parallel Executions
Cluster Database
Optimizer
Sort, Hash Joins, Bitmap Indexes
PL/SQL
Apply
Save As...
Description
Cancel
Help


Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
plsql_native_make_utility
plsql_v2_compatibility FALSE PL/SQL
pre_page_sga FALSE SGA Memory
processes 150 Processes and Sessions
query_rewrite_enabled FALSE Optimizer
query_rewrite_integrity enforced Optimizer
rdbms_server_dn Security and Auditing
read_only_open_delayed FALSE Cache and I/O
recovery_parallelism 0 Redo Log and Recovery
remote_archive_enable true Standby Database
remote_dependencies_mode TIMESTAMP PL/SQL
remote_listener Network Registration
remote_login_passwordfile EXCLUSIVE Security and Auditing
remote_os_authent FALSE Security and Auditing
remote_os_roles FALSE Security and Auditing
replication_dependency_tra... TRUE Distributed, Replication and Snapshot
resource_limit FALSE Resource Manager
resource_manager_plan Resource Manager
rollback_segments System Managed Undo and Rollbac...
Apply
Save As...
Description
Cancel
Help

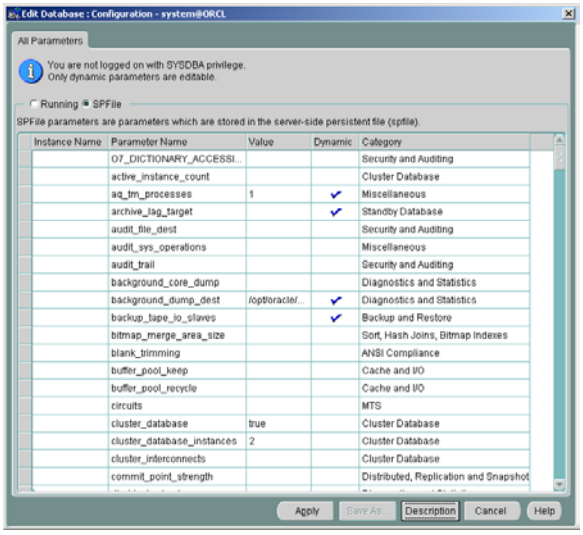

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
rollback_segments System Managed Undo and Rollbac...
row_locking always ANSI Compliance
serial_reuse DISABLE Cursors and Library Cache
serializable FALSE ANSI Compliance
service_names ORCL Network Registration
session_cached_cursors 0 Cursors and Library Cache
session_max_open_files 10 Objects and LOBs
sessions 170 Processes and Sessions
sga_max_size 252777144 SGA Memory
shadow_core_dump partial Diagnostics and Statistics
shared_memory_address 0 SGA Memory
shared_pool_reserved_size 4194304 Pools
shared_pool_size 83886080 Pools
shared_server_sessions 0 MTS
shared_servers 0 MTS
sort_area_retained_size 0 Sort, Hash Joins, Bitmap Indexes
sort_area_size 524288 Sort, Hash Joins, Bitmap Indexes
spfile /opt/oracle/... Miscellaneous
sql92_security FALSE Security and Auditing
Apply
Save As...
Description
Cancel
Help

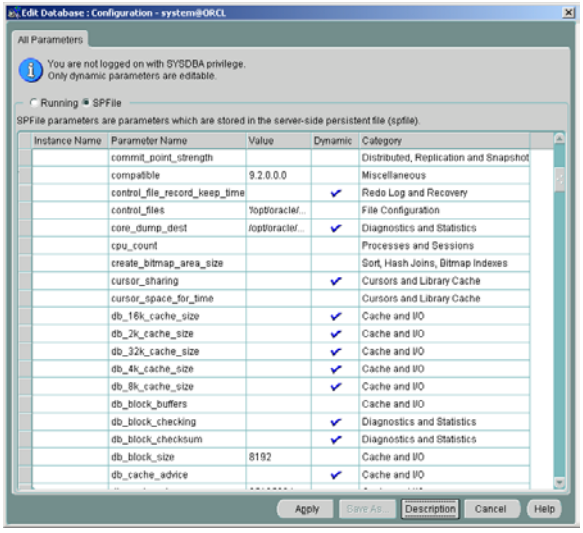

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running
SPFile
Running parameters are the parameters currently in effect for this database instance.
Parameter Name
Value
Default
Dynamic
Category
sql92_security FALSE Security and Auditing
sql_trace FALSE Diagnostics and Statistics
sql_version NATIVE Miscellaneous
standby_archive_dest ?/dbs/arch Standby Database
standby_file_management MANUAL Standby Database
star_transformation_enabled FALSE Optimizer
statistics_level TYPICAL Miscellaneous
tape_asynch_io TRUE Backup and Restore
thread 1 Cluster Database
timed_os_statistics 0 Diagnostics and Statistics
timed_statistics TRUE Diagnostics and Statistics
trace_enabled TRUE Diagnostics and Statistics
tracefile_identifier Diagnostics and Statistics
transaction_auditing TRUE Redo Log and Recovery
transactions 187 Transactions
transactions_per_rollback_s... 5 System Managed Undo and Rollbac...
undo_management AUTO System Managed Undo and Rollbac...
undo_retention 10800 System Managed Undo and Rollbac...
undo_suppress_errors FALSE System Managed Undo and Rollbac...
Apply
Save As...
Description
Cancel
Help

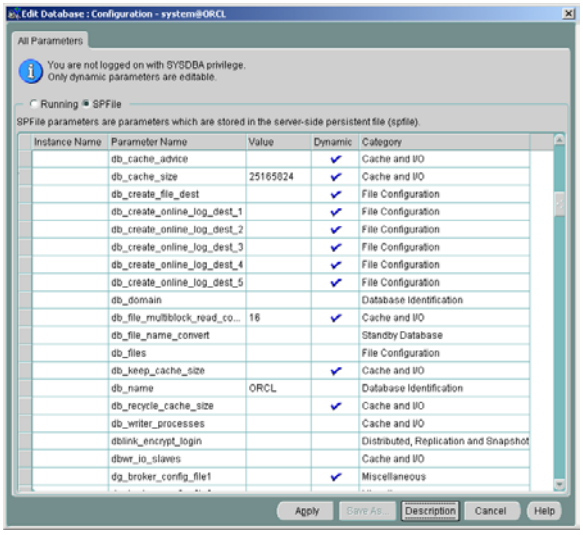


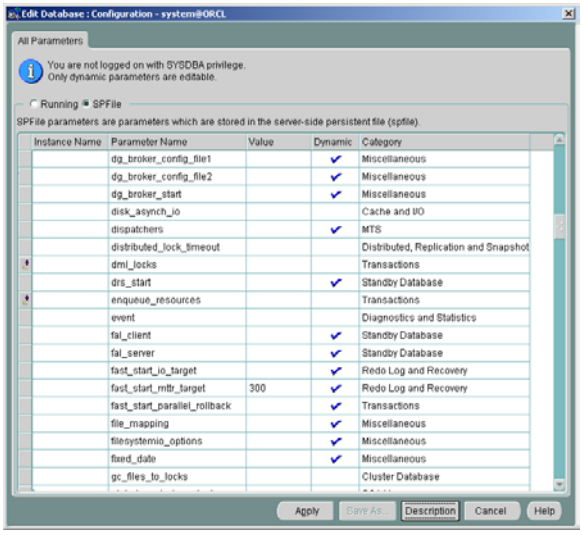

aq_tm_processes = 1
background_dump_dest = /opt/oracle/admin/ORCL/bdump
cluster_database = TRUE
cluster_database_instances = 2
compatible = 9.2.0.0.0
control_files = ('/opt/oracle/oradata/ORCL/control01.ctl',
'/opt/oracle/oradata/ORCL/control02.ctl', '/opt/oracle/oradata/ORCL/control03.ctl')
core_dump_dest = /opt/oracle/admin/ORCL/cdump
db_block_size = 8192
db_cache_size = 33554432
db_domain = ''
db_file_multiblock_read_count = 16
db_name = ORCL
fast_start_mttr_target = 300
hash_join_enabled = TRUE
instance_name = ORCL1
instance_number = 1
java_pool_size = 83886080
job_queue_processes = 10
large_pool_size = 16777216
log_archive_dest_1 = 'LOCATION=/opt/oracle/product/server32/9.2.0/dbs/arch'
open_cursors = 300
pga_aggregate_target = 25165824
processes = 150
query_rewrite_enabled = FALSE
remote_login_passwordfile = EXCLUSIVE
shared_pool_size = 83886080
sort_area_size = 524288
spfile = /opt/oracle/oradata/ORCL/spfile01.ora
star_transformation_enabled = FALSE
thread = 1
timed_statistics = TRUE
undo_management = AUTO
undo_retention = 10800
undo_tablespace = UNDOTBS1
user_dump_dest = /opt/oracle/admin/ORCL/udump

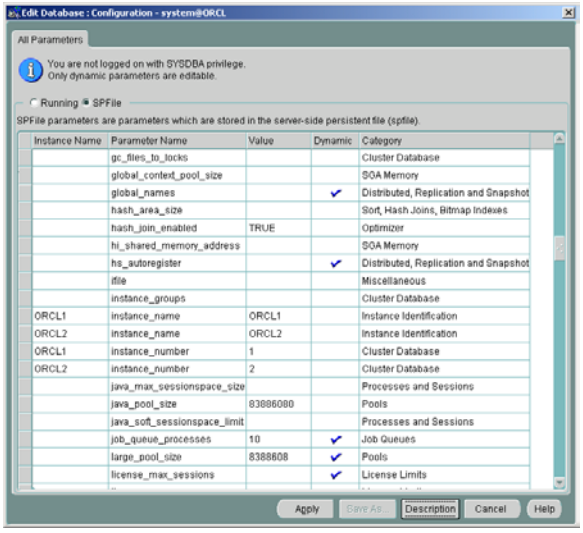
**SPFILE parameters:**

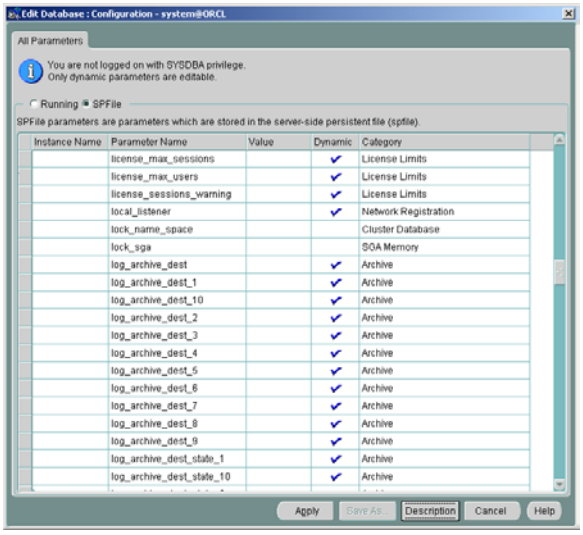

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
O7_DICTIONARY_ACCESSI... | Security and Auditing
active_instance_count | Cluster Database
aq_tm_processes | 1 | ✔ | Miscellaneous
archive_lag_target | ✔ | Standby Database
audit_file_dest | Security and Auditing
audit_sys_operations | Miscellaneous
audit_trail | Security and Auditing
background_core_dump | Diagnostics and Statistics
background_dump_dest | /opt/oracle/... | ✔ | Diagnostics and Statistics
backup_tape_io_slaves | ✔ | Backup and Restore
bitmap_merge_area_size | Sort, Hash Joins, Bitmap Indexes
blank_trimming | ANSI Compliance
buffer_pool_keep | Cache and I/O
buffer_pool_recycle | Cache and I/O
circuits | MTS
cluster_database | true | Cluster Database
cluster_database_instances | 2 | Cluster Database
cluster_interconnects | Cluster Database
commit_point_strength | Distributed, Replication and Snapshot
Apply
Save As...
Description
Cancel
Help

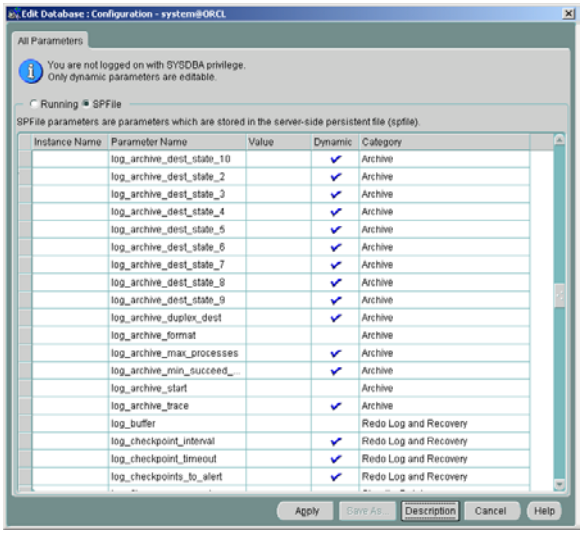

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
commit_point_strength | Distributed, Replication and Snapshot
compatible | 9.2.0.0.0 | Miscellaneous
control_file_record_keep_time | ✔ | Redo Log and Recovery
control_files | '/opt/oracle/... | File Configuration
core_dump_dest | /opt/oracle/... | ✔ | Diagnostics and Statistics
cpu_count | Processes and Sessions
create_bitmap_area_size | Sort, Hash Joins, Bitmap Indexes
cursor_sharing | ✔ | Cursors and Library Cache
cursor_space_for_time | Cursors and Library Cache
db_16k_cache_size | ✔ | Cache and I/O
db_2k_cache_size | ✔ | Cache and I/O
db_32k_cache_size | ✔ | Cache and I/O
db_4k_cache_size | ✔ | Cache and I/O
db_8k_cache_size | ✔ | Cache and I/O
db_block_buffers | Cache and I/O
db_block_checking | ✔ | Diagnostics and Statistics
db_block_checksum | ✔ | Diagnostics and Statistics
db_block_size | 8192 | Cache and I/O
db_cache_advice | ✔ | Cache and I/O
Apply
Save As...
Description
Cancel
Help

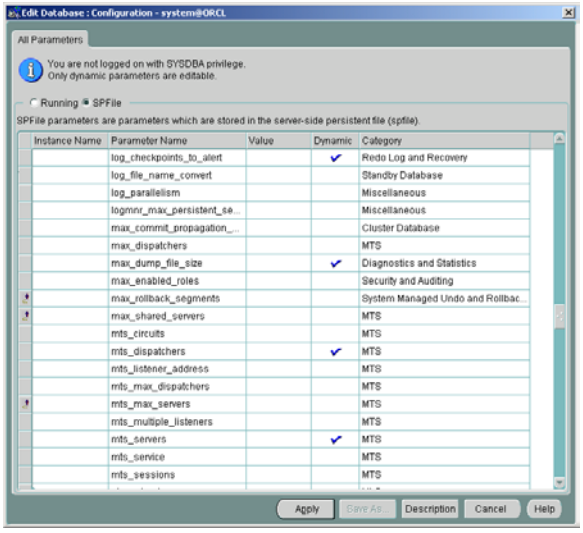

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
db_cache_advice | ✔ | Cache and I/O
db_cache_size | 25165824 | ✔ | Cache and I/O
db_create_file_dest | ✔ | File Configuration
db_create_online_log_dest_1 | ✔ | File Configuration
db_create_online_log_dest_2 | ✔ | File Configuration
db_create_online_log_dest_3 | ✔ | File Configuration
db_create_online_log_dest_4 | ✔ | File Configuration
db_create_online_log_dest_5 | ✔ | File Configuration
db_domain | Database Identification
db_file_multiblock_read_co... | 16 | ✔ | Cache and I/O
db_file_name_convert | Standby Database
db_files | File Configuration
db_keep_cache_size | ✔ | Cache and I/O
db_name | ORCL | Database Identification
db_recycle_cache_size | ✔ | Cache and I/O
db_writer_processes | Cache and I/O
dblink_encrypt_login | Distributed, Replication and Snapshot
dbwr_io_slaves | Cache and I/O
dg_broker_config_file1 | ✔ | Miscellaneous
Apply
Save As...
Description
Cancel
Help

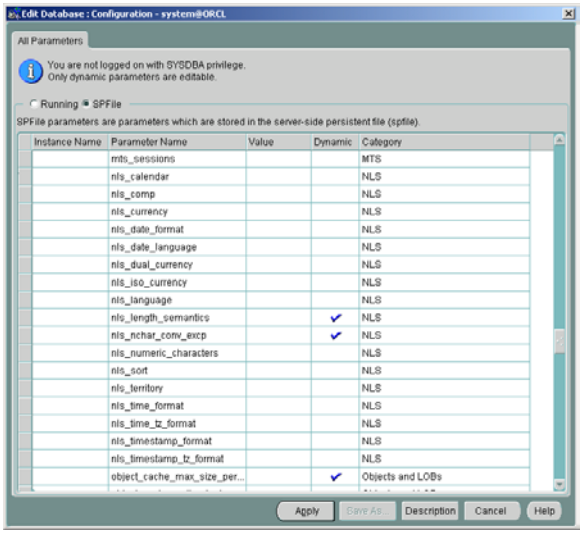

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
dg_broker_config_file1 | ✔ | Miscellaneous
dg_broker_config_file2 | ✔ | Miscellaneous
dg_broker_start | ✔ | Miscellaneous
disk_asynch_io | | Cache and I/O
dispatchers | ✔ | MTS
distributed_lock_timeout | | Distributed, Replication and Snapshot
dml_locks | | Transactions
drs_start | ✔ | Standby Database
enqueue_resources | | Transactions
event | | Diagnostics and Statistics
fal_client | ✔ | Standby Database
fal_server | ✔ | Standby Database
fast_start_io_target | ✔ | Redo Log and Recovery
fast_start_mttr_target | 300 | ✔ | Redo Log and Recovery
fast_start_parallel_rollback | ✔ | Transactions
file_mapping | ✔ | Miscellaneous
filesystemio_options | ✔ | Miscellaneous
fixed_date | ✔ | Miscellaneous
gc_files_to_locks | | Cluster Database
Apply
Save As...
Description
Cancel
Help

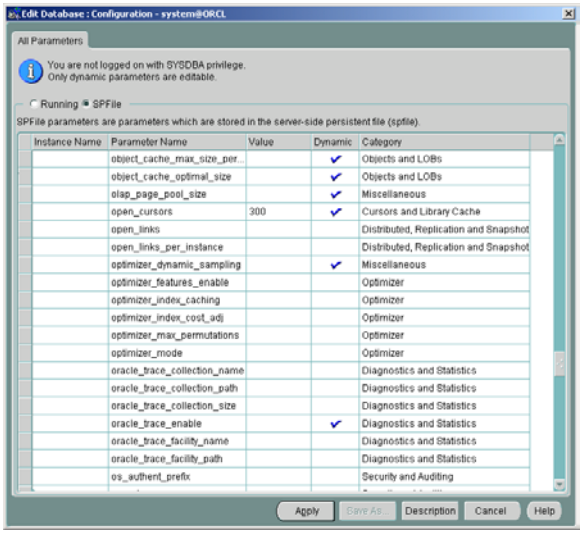

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
gc_files_to_locks | | Cluster Database
global_context_pool_size | | SGA Memory
global_names | ✔ | Distributed, Replication and Snapshot
hash_area_size | | Sort, Hash Joins, Bitmap Indexes
hash_join_enabled | TRUE | Optimizer
hi_shared_memory_address | | SGA Memory
hs_autoregister | ✔ | Distributed, Replication and Snapshot
ifile | | Miscellaneous
instance_groups | | Cluster Database
ORCL1 | instance_name | ORCL1 | Instance Identification
ORCL2 | instance_name | ORCL2 | Instance Identification
ORCL1 | instance_number | 1 | Cluster Database
ORCL2 | instance_number | 2 | Cluster Database
java_max_sessionspace_size | | Processes and Sessions
java_pool_size | 83886080 | Pools
java_soft_sessionspace_limit | | Processes and Sessions
job_queue_processes | 10 | ✔ | Job Queues
large_pool_size | 8388608 | ✔ | Pools
license_max_sessions | ✔ | License Limits
Apply
Save As...
Description
Cancel
Help

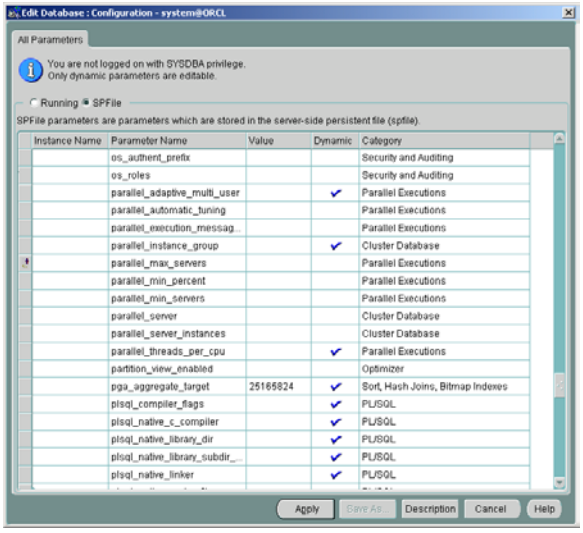

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
license_max_sessions | ✔ | License Limits
license_max_users | ✔ | License Limits
license_sessions_warning | ✔ | License Limits
local_listener | ✔ | Network Registration
lock_name_space | | Cluster Database
lock_sga | | SGA Memory
log_archive_dest | ✔ | Archive
log_archive_dest_1 | ✔ | Archive
log_archive_dest_10 | ✔ | Archive
log_archive_dest_2 | ✔ | Archive
log_archive_dest_3 | ✔ | Archive
log_archive_dest_4 | ✔ | Archive
log_archive_dest_5 | ✔ | Archive
log_archive_dest_6 | ✔ | Archive
log_archive_dest_7 | ✔ | Archive
log_archive_dest_8 | ✔ | Archive
log_archive_dest_9 | ✔ | Archive
log_archive_dest_state_1 | ✔ | Archive
log_archive_dest_state_10 | ✔ | Archive
Apply
Save As...
Description
Cancel
Help

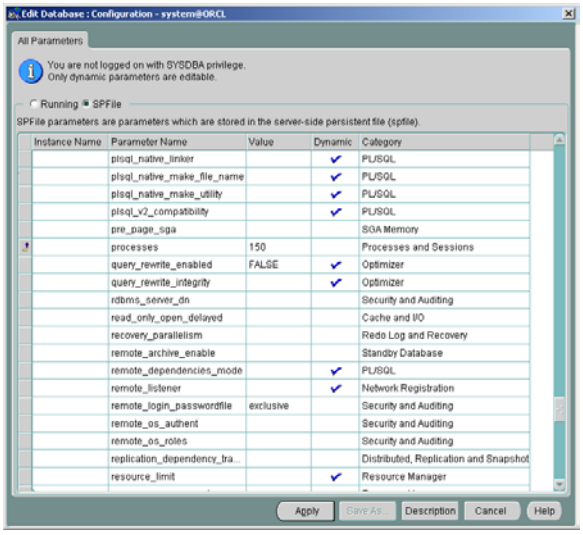

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name
Parameter Name
Value
Dynamic
Category
log_archive_dest_state_10
log_archive_dest_state_2
log_archive_dest_state_3
log_archive_dest_state_4
log_archive_dest_state_5
log_archive_dest_state_6
log_archive_dest_state_7
log_archive_dest_state_8
log_archive_dest_state_9
log_archive_duplex_dest
log_archive_format
log_archive_max_processes
log_archive_min_succeed_...
log_archive_start
log_archive_trace
log_buffer
log_checkpoint_interval
log_checkpoint_timeout
log_checkpoints_to_alert
Archive
Redo Log and Recovery
Apply
Save As...
Description
Cancel
Help

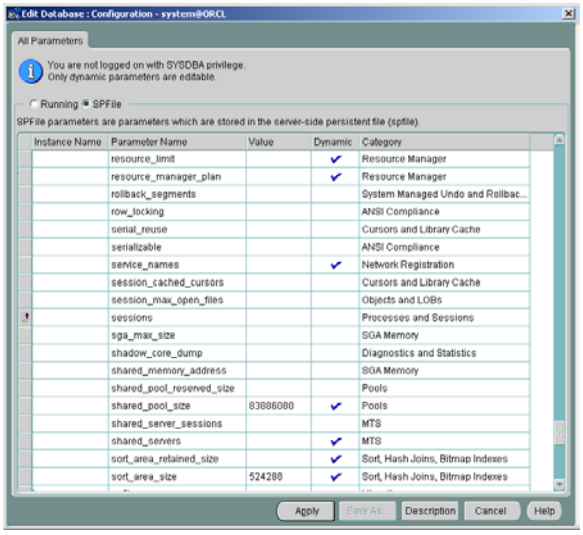

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name
Parameter Name
Value
Dynamic
Category
log_checkpoints_to_alert
log_file_name_convert
log_parallelism
logmnr_max_persistent_se...
max_commit_propagation_...
max_dispatchers
max_dump_file_size
max_enabled_roles
max_rollback_segments
max_shared_servers
mts_circuits
mts_dispatchers
mts_listener_address
mts_max_dispatchers
mts_max_servers
mts_multiple_listeners
mts_servers
mts_service
mts_sessions
Redo Log and Recovery
Standby Database
Miscellaneous
Cluster Database
MTS
Diagnostics and Statistics
Security and Auditing
System Managed Undo and Rollbac...
Apply
Save As...
Description
Cancel
Help

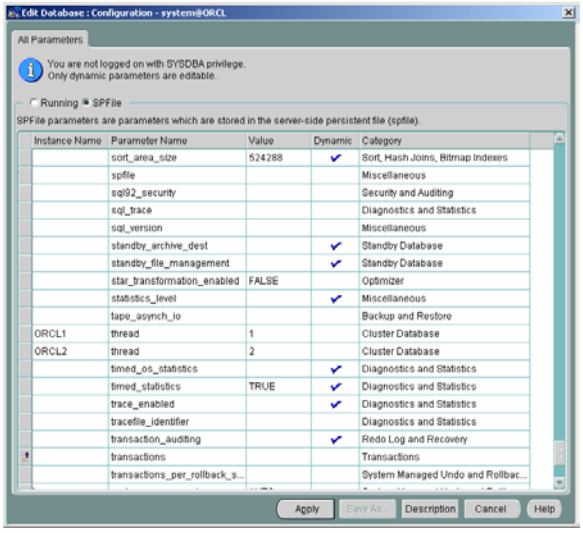

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name
Parameter Name
Value
Dynamic
Category
mts_sessions
nls_calendar
nls_comp
nls_currency
nls_date_format
nls_date_language
nls_dual_currency
nls_iso_currency
nls_language
nls_length_semantics
nls_nchar_conv_excp
nls_numeric_characters
nls_sort
nls_territory
nls_time_format
nls_time_tz_format
nls_timestamp_format
nls_timestamp_tz_format
object_cache_max_size_per...
MTS
NLS
Objects and LOBs
Apply
Save As...
Description
Cancel
Help

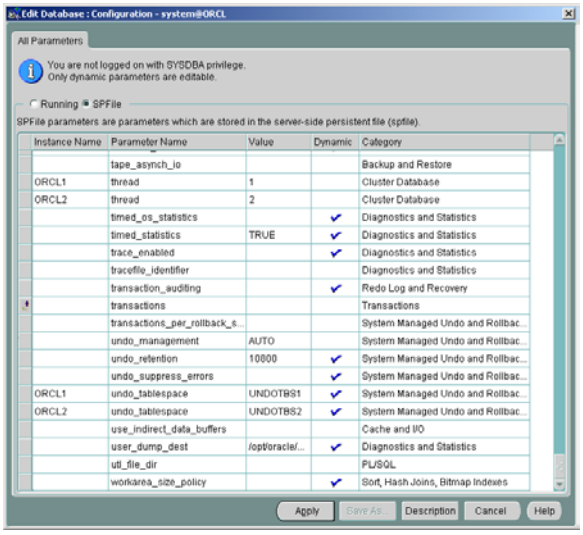

Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
object_cache_max_size_per... | | ✔ | Objects and LOBs
object_cache_optimal_size | | ✔ | Objects and LOBs
olap_page_pool_size | | ✔ | Miscellaneous
open_cursors | 300 | ✔ | Cursors and Library Cache
open_links | | | Distributed, Replication and Snapshot
open_links_per_instance | | | Distributed, Replication and Snapshot
optimizer_dynamic_sampling | | ✔ | Miscellaneous
optimizer_features_enable | | | Optimizer
optimizer_index_caching | | | Optimizer
optimizer_index_cost_adj | | | Optimizer
optimizer_max_permutations | | | Optimizer
optimizer_mode | | | Optimizer
oracle_trace_collection_name | | | Diagnostics and Statistics
oracle_trace_collection_path | | | Diagnostics and Statistics
oracle_trace_collection_size | | | Diagnostics and Statistics
oracle_trace_enable | | ✔ | Diagnostics and Statistics
oracle_trace_facility_name | | | Diagnostics and Statistics
oracle_trace_facility_path | | | Diagnostics and Statistics
os_authent_prefix | | | Security and Auditing
Apply
Save As...
Description
Cancel
Help


Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
os_authent_prefix | | | Security and Auditing
os_roles | | | Security and Auditing
parallel_adaptive_multi_user | | ✔ | Parallel Executions
parallel_automatic_tuning | | | Parallel Executions
parallel_execution_messag... | | | Parallel Executions
parallel_instance_group | | ✔ | Cluster Database
parallel_max_servers | | | Parallel Executions
parallel_min_percent | | | Parallel Executions
parallel_min_servers | | | Parallel Executions
parallel_server | | | Cluster Database
parallel_server_instances | | | Cluster Database
parallel_threads_per_cpu | | ✔ | Parallel Executions
partition_view_enabled | | | Optimizer
pga_aggregate_target | 25165824 | ✔ | Sort, Hash Joins, Bitmap Indexes
plsql_compiler_flags | | ✔ | PL/SQL
plsql_native_c_compiler | | ✔ | PL/SQL
plsql_native_library_dir | | ✔ | PL/SQL
plsql_native_library_subdir_... | | ✔ | PL/SQL
plsql_native_linker | | ✔ | PL/SQL
Apply
Save As...
Description
Cancel
Help


Edit Database : Configuration - system@ORCL
All Parameters
You are not logged on with SYSDBA privilege.
Only dynamic parameters are editable.
Running SPFile
SPFile parameters are parameters which are stored in the server-side persistent file (spfile).
Instance Name | Parameter Name | Value | Dynamic | Category
plsql_native_linker | | ✔ | PL/SQL
plsql_native_make_file_name | | ✔ | PL/SQL
plsql_native_make_utility | | ✔ | PL/SQL
plsql_v2_compatibility | | ✔ | PL/SQL
pre_page_sga | | | SGA Memory
processes | 150 | | Processes and Sessions
query_rewrite_enabled | FALSE | ✔ | Optimizer
query_rewrite_integrity | | ✔ | Optimizer
rdbms_server_dn | | | Security and Auditing
read_only_open_delayed | | | Cache and I/O
recovery_parallelism | | | Redo Log and Recovery
remote_archive_enable | | | Standby Database
remote_dependencies_mode | | ✔ | PL/SQL
remote_listener | | ✔ | Network Registration
remote_login_passwordfile | exclusive | | Security and Auditing
remote_os_authent | | | Security and Auditing
remote_os_roles | | | Security and Auditing
replication_dependency_tra... | | | Distributed, Replication and Snapshot
resource_limit | | ✔ | Resource Manager
Apply
Save As...
Description
Cancel
Help



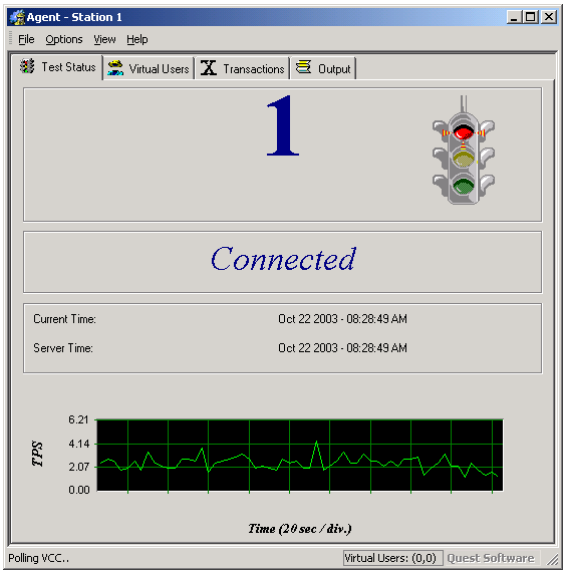




```
[root@racnode1 ORCL]# cat spfile01.ora
*.aq_tm_processes=1
*.background_dump_dest='/opt/oracle/admin/ORCL/bdump'
*.cluster_database=true
*.cluster_database_instances=2
*.compatible='9.2.0.0.0'
```

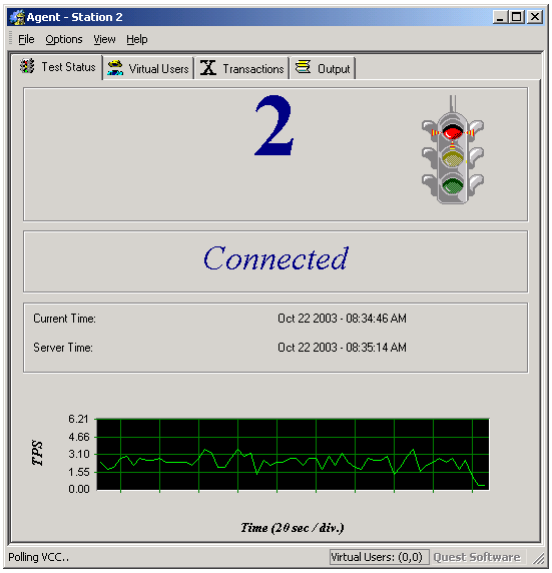
```
*.control_files='/opt/oracle/oradata/ORCL/control01.ctl','/opt/oracle/oradata/OR
CL/control02.ctl','/opt/oracle/oradata/ORCL/control03.ctl'
*.core_dump_dest='/opt/oracle/admin/ORCL/cdump'
*.db_block_size=8192
*.db_cache_size=25165824
*.db_domain=''
*.db_file_multiblock_read_count=16
*.db_name='ORCL'
*.fast_start_mttr_target=300
*.hash_join_enabled=TRUE
ORCL1.instance_name='ORCL1'
ORCL2.instance_name='ORCL2'
ORCL1.instance_number=1
ORCL2.instance_number=2
*.java_pool_size=83886080
*.job_queue_processes=10
*.large_pool_size=8388608
*.open_cursors=300
*.pga_aggregate_target=25165824
*.processes=150
*.query_rewrite_enabled='FALSE'
*.remote_login_passwordfile='exclusive'
*.shared_pool_size=83886080
*.sort_area_size=524288
*.star_transformation_enabled='FALSE'
ORCL1.thread=1
ORCL2.thread=2
*.timed_statistics=TRUE
*.undo_management='AUTO'
*.undo_retention=10800
ORCL1.undo_tablespace='UNDOTBS1'
ORCL2.undo_tablespace='UNDOTBS2'
*.user_dump_dest='/opt/oracle/admin/ORCL/udump'
```

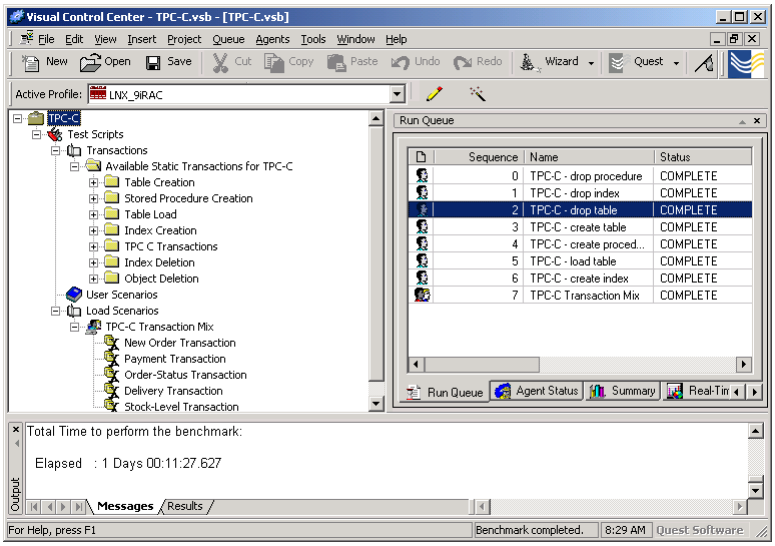
# appendix f: Oracle Validation

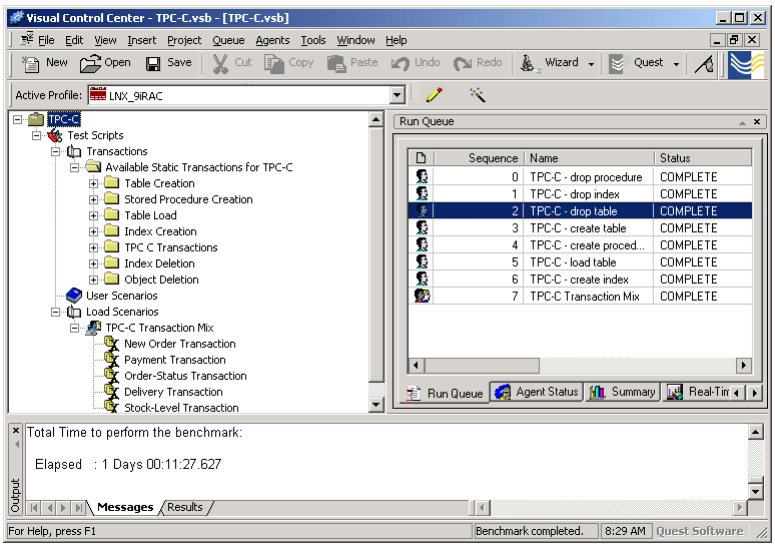
Station 1 Agent:

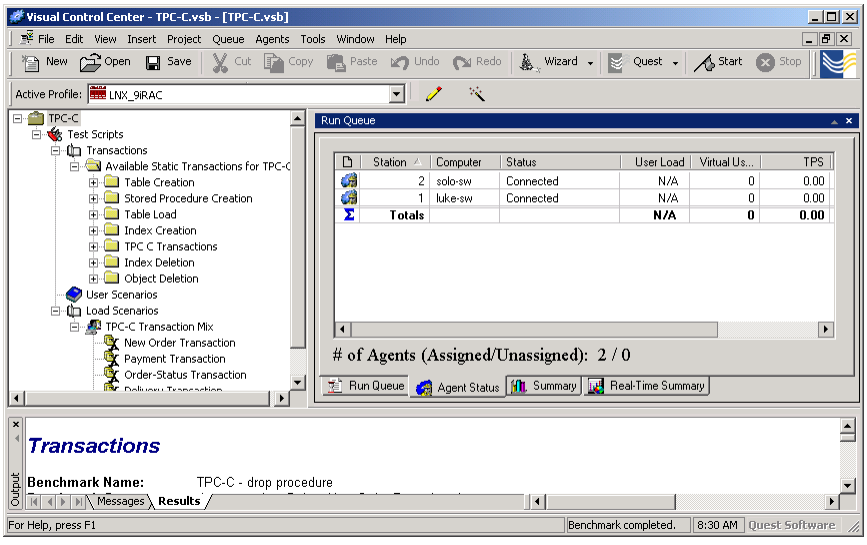


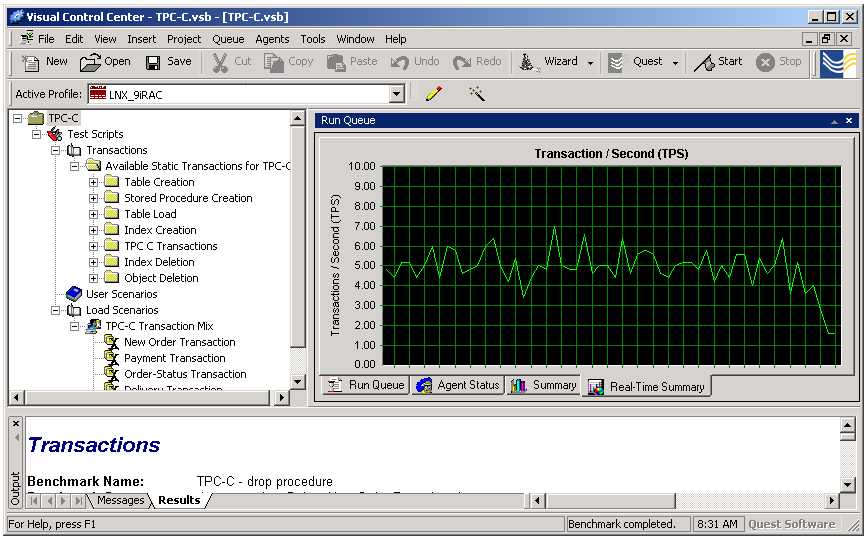

Station 2 Agent:

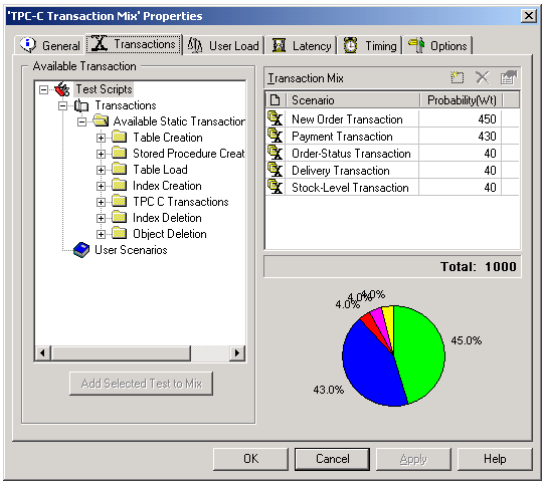


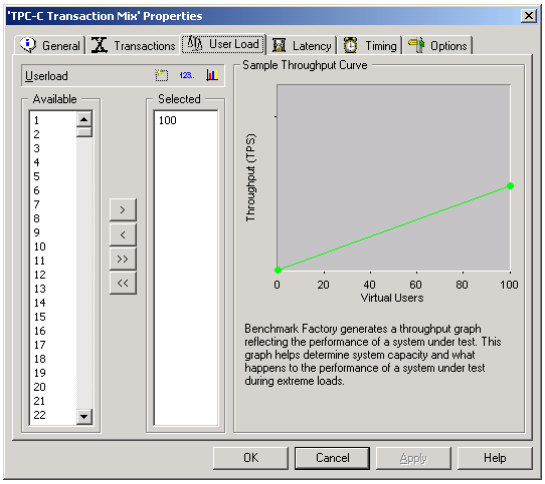

Visual Control Center - TPC-C.vsb - [TPC-C.vsb]
File Edit View Insert Project Queue Agents Tools Window Help
New Open Save Cut Copy Paste Undo Redo Wizard Quest
Active Profile: LNX_9IRAC
TPC-C
Test Scripts
Transactions
Available Static Transactions for TPC-C
Table Creation
Stored Procedure Creation
Table Load
Index Creation
TPC C Transactions
Index Deletion
Object Deletion
User Scenarios
Load Scenarios
TPC-C Transaction Mix
New Order Transaction
Payment Transaction
Order-Status Transaction
Delivery Transaction
Stock-Level Transaction
Run Queue
Sequence Name Status
0 TPC-C - drop procedure COMPLETE
1 TPC-C - drop index COMPLETE
2 TPC-C - drop table COMPLETE
3 TPC-C - create table COMPLETE
4 TPC-C - create proced... COMPLETE
5 TPC-C - load table COMPLETE
6 TPC-C - create index COMPLETE
7 TPC-C Transaction Mix COMPLETE
Run Queue Agent Status Summary Real-Tim
Total Time to perform the benchmark:
Elapsed : 1 Days 00:11:27.627
Output
Messages Results
For Help, press F1
Benchmark completed. 8:29 AM Quest Software

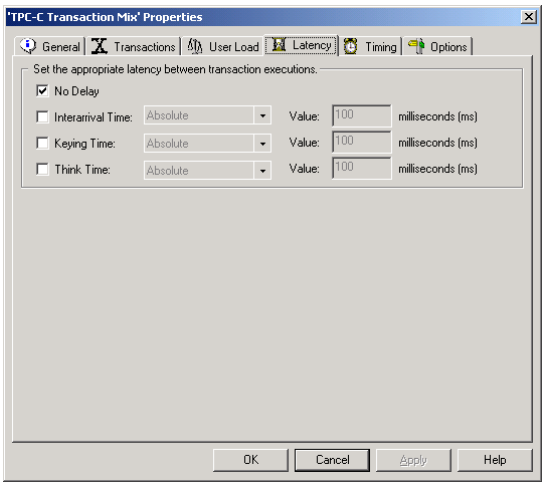

Visual Control Center - TPC-C.vsb - [TPC-C.vsb]
File Edit View Insert Project Queue Agents Tools Window Help
New Open Save Cut Copy Paste Undo Redo Wizard Quest
Active Profile: LNX_9IRAC
TPC-C
Test Scripts
Transactions
Available Static Transactions for TPC-C
Table Creation
Stored Procedure Creation
Table Load
Index Creation
TPC C Transactions
Index Deletion
Object Deletion
User Scenarios
Load Scenarios
TPC-C Transaction Mix
New Order Transaction
Payment Transaction
Order-Status Transaction
Delivery Transaction
Stock-Level Transaction
Run Queue
Sequence Name Status
0 TPC-C - drop procedure COMPLETE
1 TPC-C - drop index COMPLETE
2 TPC-C - drop table COMPLETE
3 TPC-C - create table COMPLETE
4 TPC-C - create proced... COMPLETE
5 TPC-C - load table COMPLETE
6 TPC-C - create index COMPLETE
7 TPC-C Transaction Mix COMPLETE
Run Queue Agent Status Summary Real-Tim
Total Time to perform the benchmark:
Elapsed : 1 Days 00:11:27.627
Output
Messages Results
For Help, press F1
Benchmark completed. 8:29 AM Quest Software

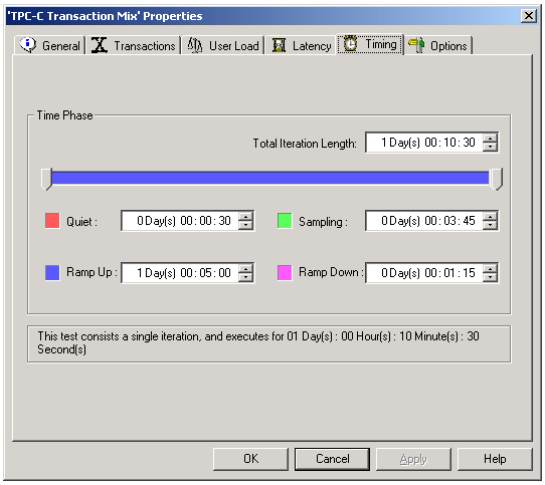

Visual Control Center - TPC-C.vsb - [TPC-C.vsb]
File Edit View Insert Project Queue Agents Tools Window Help
New Open Save Cut Copy Paste Undo Redo Wizard Quest Start Stop
Active Profile: LNX_9IRAC
TPC-C
Test Scripts
Transactions
Available Static Transactions for TPC-C
Table Creation
Stored Procedure Creation
Table Load
Index Creation
TPC C Transactions
Index Deletion
Object Deletion
User Scenarios
Load Scenarios
TPC-C Transaction Mix
New Order Transaction
Payment Transaction
Order-Status Transaction
Run Queue
Station Computer Status User Load Virtual Us... TPS
2 solo-sw Connected N/A 0 0.00
1 luke-sw Connected N/A 0 0.00
Totals N/A 0 0.00
# of Agents (Assigned/Unassigned): 2 / 0
Run Queue Agent Status Summary Real-Time Summary
Transactions
Benchmark Name: TPC-C - drop procedure
Output
Messages Results
For Help, press F1
Benchmark completed. 8:30 AM Quest Software

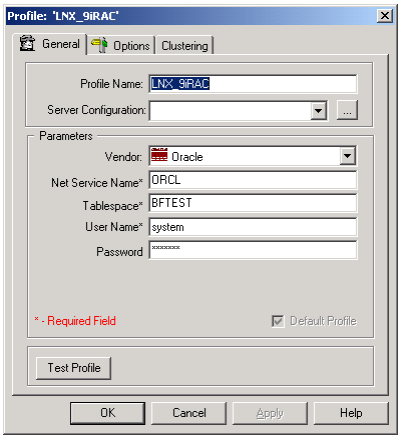

Visual Control Center - TPC-C.vsb - [TPC-C.vsb]
File Edit View Insert Project Queue Agents Tools Window Help
New Open Save Cut Copy Paste Undo Redo Wizard Quest Start Stop
Active Profile: LNX_9iRAC
TPC-C
Test Scripts
Transactions
Available Static Transactions for TPC-C
Table Creation
Stored Procedure Creation
Table Load
Index Creation
TPC C Transactions
Index Deletion
Object Deletion
User Scenarios
Load Scenarios
TPC-C Transaction Mix
New Order Transaction
Payment Transaction
Order-Status Transaction
Run Queue
Transaction / Second (TPS)
Transactions / Second (TPS)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Run Queue
Agent Status
Summary
Real-Time Summary
Output
Transactions
Benchmark Name:
TPC-C - drop procedure
Messages
Results
For Help, press F1
Benchmark completed.
8:31 AM
Quest Software

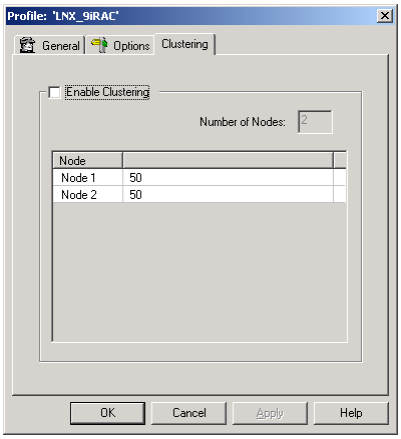

'TPC-C Transaction Mix' Properties
General
Transactions
User Load
Latency
Timing
Options
Available Transaction
Test Scripts
Transactions
Available Static Transaction
Table Creation
Stored Procedure Creat
Table Load
Index Creation
TPC C Transactions
Index Deletion
Object Deletion
User Scenarios
Add Selected Test to Mix
Transaction Mix
Scenario
Probability(Wt)
New Order Transaction 450
Payment Transaction 430
Order-Status Transaction 40
Delivery Transaction 40
Stock-Level Transaction 40
Total: 1000
4.0%
4.0%
45.0%
43.0%
OK
Cancel
Apply
Help


'TPC-C Transaction Mix' Properties
General
Transactions
User Load
Latency
Timing
Options
Userload
Available
Selected
100
Sample Throughput Curve
Throughput (TPS)
0
20
40
60
80
100
Virtual Users
Benchmark Factory generates a throughput graph reflecting the performance of a system under test. This graph helps determine system capacity and what happens to the performance of a system under test during extreme loads.
OK
Cancel
Apply
Help


'TPC-C Transaction Mix' Properties
General
Transactions
User Load
Latency
Timing
Options
Set the appropriate latency between transaction executions.
No Delay
Interarrival Time:
Absolute
Value:
100
milliseconds (ms)
Keying Time:
Absolute
Value:
100
milliseconds (ms)
Think Time:
Absolute
Value:
100
milliseconds (ms)
OK
Cancel
Apply
Help


'TPC-C Transaction Mix' Properties
General
Transactions
User Load
Latency
Timing
Options
Time Phase
Total Iteration Length:
1 Day(s) 00:10:30
Quiet :
0 Day(s) 00:00:30
Sampling :
0 Day(s) 00:03:45
Ramp Up :
1 Day(s) 00:05:00
Ramp Down :
0 Day(s) 00:01:15
This test consists a single iteration, and executes for 01 Day(s) : 00 Hour(s) : 10 Minute(s) : 30 Second(s)
OK
Cancel
Apply
Help


Profile: 'LNX_9iRAC'
General
Options
Clustering
Profile Name:
LNX_9iRAC
Server Configuration:
Parameters
Vendor:
Oracle
Net Service Name*
ORCL
Tablespace*
BFTEST
User Name*
system
Password
* - Required Field
Default Profile
Test Profile
OK
Cancel
Apply
Help


Profile: 'LNX_9iRAC'
General
Options
Clustering
Enable Clustering
Number of Nodes:
2
Node
Node 1
50
Node 2
50
OK
Cancel
Apply
Help

## Benchmark Factory Output Log

**Benchmark Factory(TM)**
**Copyright (c) Quest Software 1990-2002. All rights reserved.**

Performing Static Database Test - 'Delete New Order Procedure 1'...
** Static Database Test 'Delete New Order Procedure 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete Payment Procedure 1'...
** Static Database Test 'Delete Payment Procedure 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete Payment Procedure 2'...
** Static Database Test 'Delete Payment Procedure 2' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete Order Status Procedure 1'...
** Static Database Test 'Delete Order Status Procedure 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete Order Status Procedure 2'...
** Static Database Test 'Delete Order Status Procedure 2' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete Delivery Procedure'...
** Static Database Test 'Delete Delivery Procedure' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete Stock Level Procedure'...
** Static Database Test 'Delete Stock Level Procedure' has executed 1 Times, returning 0 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:00:02.072

**Benchmark Factory(TM)**
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Performing Static Database Test - 'Drop C_Warehouse Index 1'...
** Static Database Test 'Drop C_Warehouse Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_District Index 1'...
** Static Database Test 'Drop C_District Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_Customer Index 1'...
** Static Database Test 'Drop C_Customer Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_Customer Index 2'...
** Static Database Test 'Drop C_Customer Index 2' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_New_Order Index 1'...
** Static Database Test 'Drop C_New_Order Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_Order Index 1'...
** Static Database Test 'Drop C_Order Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_Order_Line Index 1'...
** Static Database Test 'Drop C_Order_Line Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_Item Index 1'...
** Static Database Test 'Drop C_Item Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Drop C_Stock Index 1'...
** Static Database Test 'Drop C_Stock Index 1' has executed 1 Times, returning 0 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:00:05.766

**Benchmark Factory(TM)**
**Copyright (c) Quest Software 1990-2002. All rights reserved.**

Performing Static Database Test - 'Delete C_Warehouse Table'...
** Static Database Test 'Delete C_Warehouse Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_District Table'...
** Static Database Test 'Delete C_District Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_Customer Table'...
** Static Database Test 'Delete C_Customer Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_History Table'...
** Static Database Test 'Delete C_History Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_New_Order Table'...
** Static Database Test 'Delete C_New_Order Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_Order Table'...
** Static Database Test 'Delete C_Order Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_Order_Line Table'...
** Static Database Test 'Delete C_Order_Line Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_Item Table'...
** Static Database Test 'Delete C_Item Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Delete C_Stock Table'...
** Static Database Test 'Delete C_Stock Table' has executed 1 Times, returning 0 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:00:07.057

**Benchmark Factory(TM)**
**Copyright (c) Quest Software 1990-2002. All rights reserved.**

Performing Static Database Test - 'Create C_Warehouse Table'...
** Static Database Test 'Create C_Warehouse Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_District Table'...
** Static Database Test 'Create C_District Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Customer Table'...
** Static Database Test 'Create C_Customer Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_History Table'...
** Static Database Test 'Create C_History Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_New_Order Table'...
** Static Database Test 'Create C_New_Order Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Order Table'...
** Static Database Test 'Create C_Order Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Order_Line Table'...
** Static Database Test 'Create C_Order_Line Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Item Table'...
** Static Database Test 'Create C_Item Table' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Stock Table'...
** Static Database Test 'Create C_Stock Table' has executed 1 Times, returning 0 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:00:02.873

**Benchmark Factory(TM)**
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Performing Static Database Test - 'Create New Order Procedure 1'...
** Static Database Test 'Create New Order Procedure 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create Payment Procedure 1'...
** Static Database Test 'Create Payment Procedure 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create Payment Procedure 2'...
** Static Database Test 'Create Payment Procedure 2' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create Order Status Procedure 1'...
** Static Database Test 'Create Order Status Procedure 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create Order Status Procedure 2'...
** Static Database Test 'Create Order Status Procedure 2' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create Delivery Procedure'...
** Static Database Test 'Create Delivery Procedure' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create Stock Level Procedure'...
** Static Database Test 'Create Stock Level Procedure' has executed 1 Times, returning 0 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:00:02.042

**Benchmark Factory(TM)**
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Performing Static Database Test - 'Load C_Warehouse Table '...
** Static Database Test 'Load C_Warehouse Table ' has executed 1 Times, returning 4 row(s).

Performing Static Database Test - 'Load C_District Table '...
** Static Database Test 'Load C_District Table ' has executed 1 Times, returning 40 row(s).

Performing Static Database Test - 'Load C_Customer Table '...
** Static Database Test 'Load C_Customer Table ' has executed 1 Times, returning 120000 row(s).

Performing Static Database Test - 'Load C_History Table '...
** Static Database Test 'Load C_History Table ' has executed 1 Times, returning 120000 row(s).

Performing Static Database Test - 'Load C_New_Order Table '...
** Static Database Test 'Load C_New_Order Table ' has executed 1 Times, returning 36000 row(s).

Performing Static Database Test - 'Load C_Order Table '...
** Static Database Test 'Load C_Order Table ' has executed 1 Times, returning 120000 row(s).

Performing Static Database Test - 'Load C_Order_Line Table '...
** Static Database Test 'Load C_Order_Line Table ' has executed 1 Times, returning 1201509 row(s).

Performing Static Database Test - 'Load C_Item Table '...
** Static Database Test 'Load C_Item Table ' has executed 1 Times, returning 100000 row(s).

Performing Static Database Test - 'Load C_Stock Table '...
** Static Database Test 'Load C_Stock Table ' has executed 1 Times, returning 400000 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:04:16.626

**Benchmark Factory(TM)**
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Performing Static Database Test - 'Create C_Warehouse Index 1'...
** Static Database Test 'Create C_Warehouse Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_District Index 1'...
** Static Database Test 'Create C_District Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Customer Index 1'...
** Static Database Test 'Create C_Customer Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Customer Index 2'...
** Static Database Test 'Create C_Customer Index 2' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_New_Order Index 1'...
** Static Database Test 'Create C_New_Order Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Order Index 1'...
** Static Database Test 'Create C_Order Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Order_Line Index 1'...
** Static Database Test 'Create C_Order_Line Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Item Index 1'...
** Static Database Test 'Create C_Item Index 1' has executed 1 Times, returning 0 row(s).

Performing Static Database Test - 'Create C_Stock Index 1'...
** Static Database Test 'Create C_Stock Index 1' has executed 1 Times, returning 0 row(s).

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 0 Days 00:16:21.488

**Benchmark Factory(TM)**
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Executing Test 'TPC-C Transaction Mix'...

** Benchmark complete.

Total Time to perform the benchmark:

Elapsed : 1 Days 00:11:27.627

## Benchmark Factory Transaction Log

### *Transactions*

**Benchmark Name:** TPC-C - drop procedure
**Benchmark Comment:** drop procedure Delete New Order Procedure 1 drop procedure Delete Payment Procedure 1 drop procedure Delete Payment Procedure 2 drop procedure Delete Order Status Procedure 1 drop procedure Delete Order Status Procedure 2 drop procedure Delete Delivery Procedure drop procedure Delete Stock Level Procedure

**Test Parameters:**

**Save Results:** NO
**Save Timings:** NO
**Kill Transaction:** NO

**Profile Information:**

**Driver:** Oracle
**Profile Name:** LNX_9iRAC
**Net Service Name:** ORCL
**Tablespace:** BFTEST
**User Name:** system
**Password:** ******

### *Transactions*

**Benchmark Name:** TPC-C - drop index
**Benchmark Comment:** drop index Drop C_Warehouse Index 1 drop index Drop C_District Index 1 drop index Drop C_Customer Index 1 drop index Drop C_Customer Index 2 drop index Drop C_New_Order Index 1 drop index Drop C_Order Index 1 drop index Drop C_Order_Line Index 1 drop index Drop C_Item Index 1 drop index Drop C_Stock Index 1

**Test Parameters:**

**Save Results:** NO
**Save Timings:** NO
**Kill Transaction:** NO

**Profile Information:**

**Driver:** Oracle
**Profile Name:** LNX_9iRAC
**Net Service Name:** ORCL
**Tablespace:** BFTEST
**User Name:** system
**Password:** ******

| Test Name | Type | Total Time | Rows | |
|---|---|---|---|---|
| | Rows/Sec | TPS | Start Time | Stop |
| Time | Response Time | Retrieval Time | Avg. Time | Min. |
| Time | Max. Time | Status | | |
| Drop C_Warehouse Index 1 | Iteration by Loop | 00:00:00.346 | 0 | N/A |
| | 2.890 | 16:28:15.906 | 16:28:16.252 | 0.246 |
| | N/A | 0.246 | 0.246 | 0.246 |
| | COMPLETED. | | | |
| Drop C_District Index 1 | Iteration by Loop | 00:00:00.212 | 0 | N/A |
| | 4.717 | 16:28:16.306 | 16:28:16.518 | 0.111 |
| | N/A | 0.111 | 0.111 | 0.111 |
| | COMPLETED. | | | |
| Drop C_Customer Index 1 | Iteration by Loop | 00:00:00.721 | 0 | N/A |
| | 1.387 | 16:28:16.570 | 16:28:17.291 | 0.621 |
| | N/A | 0.621 | 0.621 | 0.621 |
| | COMPLETED. | | | |
| Drop C_Customer Index 2 | Iteration by Loop | 00:00:00.699 | 0 | N/A |
| | 1.431 | 16:28:17.324 | 16:28:18.023 | 0.598 |
| | N/A | 0.598 | 0.598 | 0.598 |
| | COMPLETED. | | | |
| Drop C_New_Order Index 1 | Iteration by Loop | 00:00:00.603 | 0 | N/A |
| | 1.658 | 16:28:18.054 | 16:28:18.657 | 0.502 |
| | N/A | 0.502 | 0.502 | 0.502 |
| | COMPLETED. | | | |
| Drop C_Order Index 1 | Iteration by Loop | 00:00:00.621 | 0 | N/A |
| | 1.610 | 16:28:18.694 | 16:28:19.315 | 0.520 |

| | | | | |
|---|---|---|---|---|
| | N/A | 0.520 | 0.520 | 0.520 |
| | COMPLETED. | | | |
| Drop C_Order_Line Index 1 | Iteration by Loop | 00:00:00.893 | 0 | N/A |
| | 1.120 | 16:28:19.346 | 16:28:20.239 | 0.792 |
| | N/A | 0.792 | 0.792 | 0.792 |
| | COMPLETED. | | | |
| Drop C_Item Index 1 | Iteration by Loop | 00:00:00.615 | 0 | N/A |
| | 1.626 | 16:28:21.268 | 16:28:21.883 | 0.515 |
| | N/A | 0.515 | 0.515 | 0.515 |
| | COMPLETED. | | | |
| Drop C_Stock Index 1 | Iteration by Loop | 00:00:00.575 | 0 | N/A |
| | 1.739 | 16:28:20.925 | 16:28:21.500 | 0.475 |
| | N/A | 0.475 | 0.475 | 0.475 |
| | COMPLETED. | | | |

** Benchmark complete.

**Total Time to perform the benchmark:**

| | |
|---|---|
| **Start Time:** | 10/20/03 16:28:15.746 |
| **End Time :** | 10/20/03 16:28:21.512 |
| **Elapsed :** | 0 Days 00:00:05.766 |

***Transactions***

**Benchmark Name:** TPC-C - drop table
**Benchmark Comment:** drop table Delete C_Warehouse Table drop table Delete C_District Table drop table Delete C_Customer Table drop table Delete C_History Table drop table Delete C_New_Order Table drop table Delete C_Order Table drop table Delete C_Order_Line Table drop table Delete C_Item Table drop table Delete C_Stock Table

**Test Parameters:**

| | |
|---|---|
| **Save Results:** | NO |
| **Save Timings:** | NO |
| **Kill Transaction:** | NO |

**Profile Information:**

| | |
|---|---|
| **Driver:** | Oracle |
| **Profile Name:** | LNX_9iRAC |
| **Net Service Name:** | ORCL |
| **Tablespace:** | BFTEST |
| **User Name:** | system |
| **Password:** | ****** |

| Test Name | Type | Total Time | Rows | |
|---|---|---|---|---|
| | Rows/Sec | TPS | Start Time | Stop |
| Time | Response Time | Retrieval Time | Avg. Time | Min. |
| Time | Max. Time | Status | | |
| Delete C_Warehouse Table | Iteration by Loop | 00:00:00.657 | 0 | N/A |
| | 1.522 | 16:28:21.905 | 16:28:22.562 | 0.555 |
| | N/A | 0.555 | 0.555 | 0.555 |
| | COMPLETED. | | | |
| Delete C_District Table | Iteration by Loop | 00:00:00.624 | 0 | N/A |
| | 1.603 | 16:28:22.596 | 16:28:23.220 | 0.523 |
| | N/A | 0.523 | 0.523 | 0.523 |
| | COMPLETED. | | | |
| Delete C_Customer Table | Iteration by Loop | 00:00:00.981 | 0 | N/A |
| | 1.019 | 16:28:23.254 | 16:28:24.235 | 0.880 |
| | N/A | 0.880 | 0.880 | 0.880 |
| | COMPLETED. | | | |
| Delete C_History Table | Iteration by Loop | 00:00:00.306 | 0 | N/A |
| | 3.268 | 16:28:24.266 | 16:28:24.572 | 0.205 |
| | N/A | 0.205 | 0.205 | 0.205 |
| | COMPLETED. | | | |
| Delete C_New_Order Table | Iteration by Loop | 00:00:00.646 | 0 | N/A |
| | 1.548 | 16:28:24.619 | 16:28:25.265 | 0.545 |
| | N/A | 0.545 | 0.545 | 0.545 |
| | COMPLETED. | | | |
| Delete C_Order Table | Iteration by Loop | 00:00:00.709 | 0 | N/A |
| | 1.410 | 16:28:25.289 | 16:28:25.998 | 0.609 |
| | N/A | 0.609 | 0.609 | 0.609 |
| | COMPLETED. | | | |
| Delete C_Order_Line Table | Iteration by Loop | 00:00:01.015 | 0 | N/A |

| | | | | |
|---|---|---|---|---|
| | 0.985 | 16:28:26.036 | 16:28:27.051 | 0.915 |
| | N/A | 0.915 | 0.915 | 0.915 |
| | COMPLETED. | | | |
| Delete C_Item Table | Iteration by Loop | 00:00:00.737 | 0 | N/A |
| | 1.357 | 16:28:28.103 | 16:28:28.840 | 0.637 |
| | N/A | 0.637 | 0.637 | 0.637 |
| | COMPLETED. | | | |
| Delete C_Stock Table | Iteration by Loop | 00:00:00.911 | 0 | N/A |
| | 1.098 | 16:28:28.874 | 16:28:29.785 | 0.810 |
| | N/A | 0.810 | 0.810 | 0.810 |
| | COMPLETED. | | | |

** Benchmark complete.

**Total Time to perform the benchmark:**

| | |
|---|---|
| **Start Time:** | 10/20/03 16:28:22.744 |
| **End Time :** | 10/20/03 16:28:29.801 |
| **Elapsed :** | 0 Days 00:00:07.057 |

***Transactions***

**Benchmark Name:** TPC-C - create table
**Benchmark Comment:** create table Create C_Warehouse Table create table Create C_District Table create table Create C_Customer Table create table Create C_History Table create table Create C_New_Order Table create table Create C_Order Table create table Create C_Order_Line Table create table Create C_Item Table create table Create C_Stock Table

**Test Parameters:**

| | |
|---|---|
| **Save Results:** | NO |
| **Save Timings:** | NO |
| **Kill Transaction:** | NO |

**Profile Information:**

| | |
|---|---|
| **Driver:** | Oracle |
| **Profile Name:** | LNX_9iRAC |
| **Net Service Name:** | ORCL |
| **Tablespace:** | BFTEST |
| **User Name:** | system |
| **Password:** | ****** |

| Test Name | Type | Total Time | Rows | Stop |
|---|---|---|---|---|
| | Rows/Sec | TPS | Start Time | Min. |
| Time | Response Time | Retrieval Time | Avg. Time | |
| Time | Max. Time | Status | | |
| Create C_Warehouse Table | Iteration by Loop | 00:00:00.178 | 0 | N/A |
| | 5.618 | 16:28:29.951 | 16:28:30.129 | 0.078 |
| | N/A | 0.078 | 0.078 | 0.078 |
| | COMPLETED. | | | |
| Create C_District Table | Iteration by Loop | 00:00:00.151 | 0 | N/A |
| | 6.623 | 16:28:30.155 | 16:28:30.306 | 0.050 |
| | N/A | 0.050 | 0.050 | 0.050 |
| | COMPLETED. | | | |
| Create C_Customer Table | Iteration by Loop | 00:00:00.157 | 0 | N/A |
| | 6.369 | 16:28:30.343 | 16:28:30.500 | 0.057 |
| | N/A | 0.057 | 0.057 | 0.057 |
| | COMPLETED. | | | |
| Create C_History Table | Iteration by Loop | 00:00:00.146 | 0 | N/A |
| | 6.849 | 16:28:30.532 | 16:28:30.678 | 0.046 |
| | N/A | 0.046 | 0.046 | 0.046 |
| | COMPLETED. | | | |
| Create C_New_Order Table | Iteration by Loop | 00:00:00.139 | 0 | N/A |
| | 7.194 | 16:28:31.711 | 16:28:31.850 | 0.038 |
| | N/A | 0.038 | 0.038 | 0.038 |
| | COMPLETED. | | | |
| Create C_Order Table | Iteration by Loop | 00:00:00.143 | 0 | N/A |
| | 6.993 | 16:28:30.884 | 16:28:31.027 | 0.042 |
| | N/A | 0.042 | 0.042 | 0.042 |
| | COMPLETED. | | | |
| Create C_Order_Line Table | Iteration by Loop | 00:00:01.168 | 0 | N/A |
| | 0.856 | 16:28:31.052 | 16:28:32.220 | 1.067 |
| | N/A | 1.067 | 1.067 | 1.067 |

| | | | | |
|---|---|---|---|---|
| | COMPLETED. | | | |
| Create C_Item Table | Iteration by Loop | 00:00:00.146 | 0 | N/A |
| | 6.849 | 16:28:32.255 | 16:28:32.401 | 0.045 |
| | N/A | 0.045 | 0.045 | 0.045 |
| | COMPLETED. | | | |
| Create C_Stock Table | Iteration by Loop | 00:00:00.163 | 0 | N/A |
| | 6.135 | 16:28:32.441 | 16:28:32.604 | 0.062 |
| | N/A | 0.062 | 0.062 | 0.062 |
| | COMPLETED. | | | |

** Benchmark complete.

**Total Time to perform the benchmark:**

| | |
|---|---|
| **Start Time:** | 10/20/03 16:28:29.746 |
| **End Time :** | 10/20/03 16:28:32.619 |
| **Elapsed :** | 0 Days 00:00:02.873 |

***Transactions***

**Benchmark Name:** TPC-C - create procedure
**Benchmark Comment:** create procedure Create New Order Procedure 1 create procedure Create Payment Procedure 1 create procedure Create Payment Procedure 2 create procedure Create Order Status Procedure 1 create procedure Create Order Status Procedure 2 create procedure Create Delivery Procedure create procedure Create Stock Level Procedure

**Test Parameters:**

**Save Results:** NO
**Save Timings:** NO
**Kill Transaction:** NO

**Profile Information:**

**Driver:** Oracle
**Profile Name:** LNX_9iRAC
**Net Service Name:** ORCL
**Tablespace:** BFTEST
**User Name:** system
**Password:** ******

**Total Time to perform the benchmark:**

| | |
|---|---|
| **Start Time:** | 10/20/03 16:28:33.744 |
| **End Time :** | 10/20/03 16:28:35.786 |
| **Elapsed :** | 0 Days 00:00:02.042 |

***Transactions***

**Benchmark Name:** TPC-C - load table
**Benchmark Comment:** load table Load C_Warehouse Table load table Load C_District Table load table Load C_Customer Table load table Load C_History Table load table Load C_New_Order Table load table Load C_Order Table load table Load C_Order_Line Table load table Load C_Item Table load table Load C_Stock Table

**Test Parameters:**

**Save Results:** NO
**Save Timings:** NO
**Kill Transaction:** NO

**Profile Information:**

**Driver:** Oracle
**Profile Name:** LNX_9iRAC
**Net Service Name:** ORCL
**Tablespace:** BFTEST
**User Name:** system
**Password:** ******

| Test Name | Type | Total Time | Rows | |
|---|---|---|---|---|
| | Rows/Sec | TPS | Start Time | Stop |
| Time | Response Time | Retrieval Time | Avg. Time | Min. |
| Time | Max. Time | Status | | |

| | | | | |
|---|---|---|---|---|
| Load C_Warehouse Table | Iteration by Loop | 00:00:00.154 | 4 | N/A |
| | 6.494 | 16:28:35.900 | 16:28:36.054 | 0.053 |
| | N/A | 0.053 | 0.053 | 0.053 |
| | COMPLETED. | | | |
| Load C_District Table | Iteration by Loop | 00:00:00.130 | 40 | N/A |
| | 7.692 | 16:28:36.091 | 16:28:36.221 | 0.029 |
| | N/A | 0.029 | 0.029 | 0.029 |
| | COMPLETED. | | | |
| Load C_Customer Table | Iteration by Loop | 00:00:51.605 | 120000 | N/A |
| | 0.019 | 16:28:37.246 | 16:29:28.851 | 51.503 |
| | N/A | 51.503 | 51.503 | 51.503 |
| | COMPLETED. | | | |
| Load C_History Table | Iteration by Loop | 00:00:09.075 | 120000 | N/A |
| | 0.110 | 16:29:28.905 | 16:29:37.980 | 8.974 |
| | N/A | 8.974 | 8.974 | 8.974 |
| | COMPLETED. | | | |
| Load C_New_Order Table | Iteration by Loop | 00:00:02.019 | 36000 | N/A |
| | 0.495 | 16:29:37.018 | 16:29:39.037 | 1.919 |
| | N/A | 1.919 | 1.919 | 1.919 |
| | COMPLETED. | | | |
| Load C_Order Table | Iteration by Loop | 00:00:14.919 | 120000 | N/A |
| | 0.067 | 16:29:39.071 | 16:29:53.990 | 14.818 |
| | N/A | 14.818 | 14.818 | 14.818 |
| | COMPLETED. | | | |
| Load C_Order_Line Table | Iteration by Loop | 00:01:30.604 | 1201509 | N/A |
| | 0.011 | 16:29:54.032 | 16:31:24.636 | 90.504 |
| | N/A | 90.504 | 90.504 | 90.504 |
| | COMPLETED. | | | |
| Load C_Item Table | Iteration by Loop | 00:00:08.968 | 100000 | N/A |
| | 0.112 | 16:31:24.665 | 16:31:33.633 | 8.868 |
| | N/A | 8.868 | 8.868 | 8.868 |
| | COMPLETED. | | | |
| Load C_Stock Table | Iteration by Loop | 00:01:18.685 | 400000 | N/A |
| | 0.013 | 16:31:33.672 | 16:32:52.357 | 78.584 |
| | N/A | 78.584 | 78.584 | 78.584 |
| | COMPLETED. | | | |

** Benchmark complete.

**Total Time to perform the benchmark:**

| | |
|---|---|
| **Start Time:** | 10/20/03 16:28:35.745 |
| **End Time :** | 10/20/03 16:32:52.371 |
| **Elapsed :** | 0 Days 00:04:16.626 |

***Transactions***

**Benchmark Name:** TPC-C - create index
**Benchmark Comment:** create index Create C_Warehouse Index 1 create index Create C_District Index 1 create index Create C_Customer Index 1 create index Create C_Customer Index 2 create index Create C_New_Order Index 1 create index Create C_Order Index 1 create index Create C_Order_Line Index 1 create index Create C_Item Index 1 create index Create C_Stock Index 1

**Test Parameters:**

**Save Results:** NO
**Save Timings:** NO
**Kill Transaction:** NO

**Profile Information:**

**Driver:** Oracle
**Profile Name:** LNX_9iRAC
**Net Service Name:** ORCL
**Tablespace:** BFTEST
**User Name:** system
**Password:** ******

| Test Name | Type | Total Time | Rows | |
|---|---|---|---|---|
| | Rows/Sec | TPS | Start Time | Stop |
| Time | Response Time | Retrieval Time | Avg. Time | Min. |
| Time | Max. Time | Status | | |
| Create C_Warehouse Index 1 | Iteration by Loop | 00:00:00.256 | 0 | N/A |
| | 3.906 | 16:32:52.946 | 16:32:53.202 | 0.155 |

| | | | | |
|---|---|---|---|---|
| | N/A | 0.155 | 0.155 | 0.155 |
| | COMPLETED. | | | |
| Create C_District Index 1 | Iteration by Loop | 00:00:00.157 | 0 | N/A |
| | 6.369 | 16:32:53.228 | 16:32:53.385 | 0.057 |
| | N/A | 0.057 | 0.057 | 0.057 |
| | COMPLETED. | | | |
| Create C_Customer Index 1 | Iteration by Loop | 00:00:07.759 | 0 | N/A |
| | 0.129 | 16:32:53.414 | 16:33:01.173 | 7.659 |
| | N/A | 7.659 | 7.659 | 7.659 |
| | COMPLETED. | | | |
| Create C_Customer Index 2 | Iteration by Loop | 00:00:07.604 | 0 | N/A |
| | 0.132 | 16:33:02.217 | 16:33:09.821 | 7.502 |
| | N/A | 7.502 | 7.502 | 7.502 |
| | COMPLETED. | | | |
| Create C_New_Order Index 1 | Iteration by Loop | 00:00:00.609 | 0 | N/A |
| | 1.642 | 16:33:08.860 | 16:33:09.469 | 0.508 |
| | N/A | 0.508 | 0.508 | 0.508 |
| | COMPLETED. | | | |
| Create C_Order Index 1 | Iteration by Loop | 00:00:01.761 | 0 | N/A |
| | 0.568 | 16:33:09.500 | 16:33:11.261 | 1.661 |
| | N/A | 1.661 | 1.661 | 1.661 |
| | COMPLETED. | | | |
| Create C_Order_Line Index 1 | Iteration by Loop | 00:00:20.426 | 0 | N/A |
| | 0.049 | 16:33:12.295 | 16:33:32.721 | 20.324 |
| | N/A | 20.324 | 20.324 | 20.324 |
| | COMPLETED. | | | |
| Create C_Item Index 1 | Iteration by Loop | 00:00:01.657 | 0 | N/A |
| | 0.604 | 16:33:31.762 | 16:33:33.419 | 1.557 |
| | N/A | 1.557 | 1.557 | 1.557 |
| | COMPLETED. | | | |
| Create C_Stock Index 1 | Iteration by Loop | 00:15:40.741 | 0 | N/A |
| | 0.001 | 16:33:33.474 | 16:49:14.215 | 940.641 |
| | N/A | 940.641 | 940.641 | 940.641 |
| | COMPLETED. | | | |

** Benchmark complete.

**Total Time to perform the benchmark:**

| | |
|---|---|
| **Start Time:** | 10/20/03 16:32:52.745 |
| **End Time :** | 10/20/03 16:49:14.233 |
| **Elapsed :** | 0 Days 00:16:21.488 |

***Mixed Workload Database Benchmark***

| | |
|---|---|
| **Benchmark ID:** | 72 |
| **Benchmark Name:** | TPC-C Transaction Mix |
| **Benchmark Comment:** | |
| **Timing File:** | .tim |

**Profile Information:**

| | |
|---|---|
| **Driver:** | Oracle |
| **Profile Name:** | LNX_9iRAC |
| **Net Service Name:** | ORCL |
| **Tablespace:** | BFTEST |
| **User Name:** | system |
| **Password:** | ****** |

**Test Options:**

| | |
|---|---|
| **Stop Benchmark after First Error:** | NO |
| **Agents Log Transaction Results to disk:** | NO |
| **Agents Log Transaction Times to disk:** | NO |
| | |
| **Save Real-Time Counter Information:** | YES |
| **Save User Statistics:** | YES |
| **Save Transaction Statistics Summary to Repository:** | YES |
| **Save Response Distribution:** | YES |
| **Save Transaction Time Distribution to Repository:** | YES |
| **Save Statistics during Rampup & Rampdown:** | NO |
| **Save Transaction Timings to Repository:** | NO |

**Test Parameters:**

**Iterations:** ( 100 )

**Latency** No Delay specified

**Execution Time:** 00:03:45
**Rampup Time:** 00:05:00
**Rampdown Time:** 00:01:15
**Quiet Time:** 00:00:30

**Transaction Mix:**

| Name | Weight | Probability |
|---|---|---|
| New Order Transaction | 450 | 45.00 % |
| Payment Transaction | 430 | 43.00 % |
| Order-Status Transaction | 40 | 4.00 % |
| Delivery Transaction | 40 | 4.00 % |
| Stock-Level Transaction | 40 | 4.00 % |

**Benchmark Summary Statistics:**

| Userload | TPS | Rows | Bytes | Avg Time | Min Time | Max Time | Errors |
|---|---|---|---|---|---|---|---|
| 100 | 5.152 | 1543 | 495434 | 0.351 | 0.005 | 32.668 | 0 |

** Benchmark complete.

**Total Time to perform the benchmark:**

**Start Time:** 10/20/03 16:49:14.745
**End Time :** 10/21/03 17:00:42.372
**Elapsed :** 1 Days 00:11:27.627

# appendix g: Forced Rescan of Devices

Prior to adding LUN #5 at the storage level and rescanning:

```
cat /proc/scsi/scsi
Attached devices:
Host: scsi2 Channel: 00 Id: 00 Lun: 00
  Vendor: HP       Model: OPEN-9*4         Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 01
  Vendor: HP       Model: OPEN-9*4         Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 02
  Vendor: HP       Model: OPEN-9*3         Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 03
  Vendor: HP       Model: OPEN-9           Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 04
  Vendor: HP       Model: OPEN-9           Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
```

LUN #5 was added to the XP ports (CL1-E, CL1-F) that the servers connected to. Then the HBA and OS levels were rescanned:

```
[root@racnode1 root]# echo "scsi-qlascan" > /proc/scsi/qla2300/2
[root@racnode1 root]# echo "scsi-qlascan" > /proc/scsi/qla2300/3
[root@racnode1 root]# echo "scsi-add-singledevice 2 0 0 5" > /proc/scsi/scsi
[root@racnode1 root]# echo "scsi-add-singledevice 3 0 0 5" > /proc/scsi/scsi
```

Then, LUN #5 appeared at the OS level:

```
[root@racnode1 root]# cat /proc/scsi/scsi
Attached devices:
Host: scsi2 Channel: 00 Id: 00 Lun: 00
  Vendor: HP       Model: OPEN-9*4         Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 01
  Vendor: HP       Model: OPEN-9*4         Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 02
  Vendor: HP       Model: OPEN-9*3         Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 03
  Vendor: HP       Model: OPEN-9           Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 04
  Vendor: HP       Model: OPEN-9           Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02
Host: scsi2 Channel: 00 Id: 00 Lun: 05
  Vendor: HP       Model: OPEN-9           Rev: 2106
  Type:   Direct-Access                    ANSI SCSI revision: 02


[root@racnode1 root]# cat /proc/scsi/qala2300/2
QLogic PCI to Fibre Channel Host Adapter for QLA2340:
        Firmware version:  3.02.16, Driver version 6.06.50b4-fo
Entry address = f885b060
HBA: QLA2312 , Serial# H32560
Request Queue = 0x366a4000, Response Queue = 0x36690000
Request Queue count= 128, Response Queue count= 512
Total number of active commands = 0
Total number of interrupts = 106539826
Total number of IOCBs (used/max) = (0/600)
Total number of queued commands = 0
    Device queue depth = 0x20
Number of free request entries = 31
```

```
Number of mailbox timeouts = 0
Number of ISP aborts = 0
Number of loop resyncs = 17
Number of retries for empty slots = 0
Number of reqs in pending_q= 0, retry_q= 0, done_q= 0, scsi_retry_q= 0
Number of reqs in failover_q= 0
Host adapter:loop state= <READY>, flags= 0x8e0833
Dpc flags = 0x40
MBX flags = 0x0
SRB Free Count = 4096
Link down Timeout = 008
Port down retry = 016
Login retry count = 016
Commands retried with dropped frame(s) = 0


SCSI Device Information:
scsi-qla0-adapter-node=200000e08b0b902d;
scsi-qla0-adapter-port=210000e08b0b902d;
scsi-qla0-port-0=50060e8003753905:50060e8003753905;

SCSI LUN Information:
(Id:Lun)  * - indicates lun is not registered with the OS.
( 0: 0): Total reqs 106818175, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 1): Total reqs 95, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 2): Total reqs 95, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 3): Total reqs 12, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 4): Total reqs 13, Pending reqs 0, flags 0x0, 0:0:81,
( 0: 5): Total reqs 16, Pending reqs 0, flags 0x0, 0:0:81,

[root@racnode1 root]# cat /proc/scsi/qla2300/3
QLogic PCI to Fibre Channel Host Adapter for QLA2340:
        Firmware version:  3.02.16, Driver version 6.06.50b4-fo
Entry address = f885b060
HBA: QLA2312 , Serial# H32354
Request Queue = 0x36570000, Response Queue = 0x36560000
Request Queue count= 128, Response Queue count= 512
Total number of active commands = 0
Total number of interrupts = 253761
Total number of IOCBs (used/max) = (0/600)
Total number of queued commands = 0
    Device queue depth = 0x20
Number of free request entries = 31
Number of mailbox timeouts = 0
Number of ISP aborts = 0
Number of loop resyncs = 12
Number of retries for empty slots = 0
Number of reqs in pending_q= 0, retry_q= 0, done_q= 0, scsi_retry_q= 0
Number of reqs in failover_q= 0
Host adapter:loop state= <READY>, flags= 0x8e0833
Dpc flags = 0x40
MBX flags = 0x0
SRB Free Count = 4096
Link down Timeout = 008
Port down retry = 016
Login retry count = 016
Commands retried with dropped frame(s) = 0


SCSI Device Information:
scsi-qla1-adapter-node=200000e08b0bc22c;
scsi-qla1-adapter-port=210000e08b0bc22c;
scsi-qla1-port-0=50060e8003753904:50060e8003753904;

SCSI LUN Information:
(Id:Lun)  * - indicates lun is not registered with the OS.
```

## For more information

**www.hp.com/go/somewhere**
HP Partitioning Continuum, HP, 2002
HP ENSAextended technical overview, HP, 2003
HP Utility Data Center Overview, HP, 2002

For information specific to the PDC kits, please email rac_contact@hp.com.

## Call to action

**www.hp.com/go/somewhere**
HP Partitioning Continuum, HP, 2002
HP ENSAextended technical overview, HP, 2003
HP Utility Data Center Overview, HP, 2002

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