

# HP OpenView Storage Data Protector 6.0 HP-UX Oracle 10g Real Application Clusters (RAC) R2 with HP StorageWorks XP Disk Array Zero Downtime Backup (ZDB) white paper



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## Introduction

This white paper provides complementary information for installation and configuring HP OpenView Storage Data Protector with Oracle® Real Application Clusters 10g Release 2 running HP-UX operating system for Zero Downtime Backup (ZDB) in HP StorageWorks Disk Array XP environments.

There are variety of choices with regard to the installation and setup of Oracle Real Application Clusters 10g on the HP-UX platform. Customers have the possibility to deploy their RAC cluster only with Oracle Clusterware. Alternatively, customers may continue to use HP Serviceguard (SG) and HP Serviceguard Extension for RAC (SGeRAC) for the cluster management. In this case, Oracle interacts with HP SG/SGeRAC to coordinate cluster membership information. For storage management, customers can use Oracle ASM, HP Cluster File Systems, or RAW Devices.

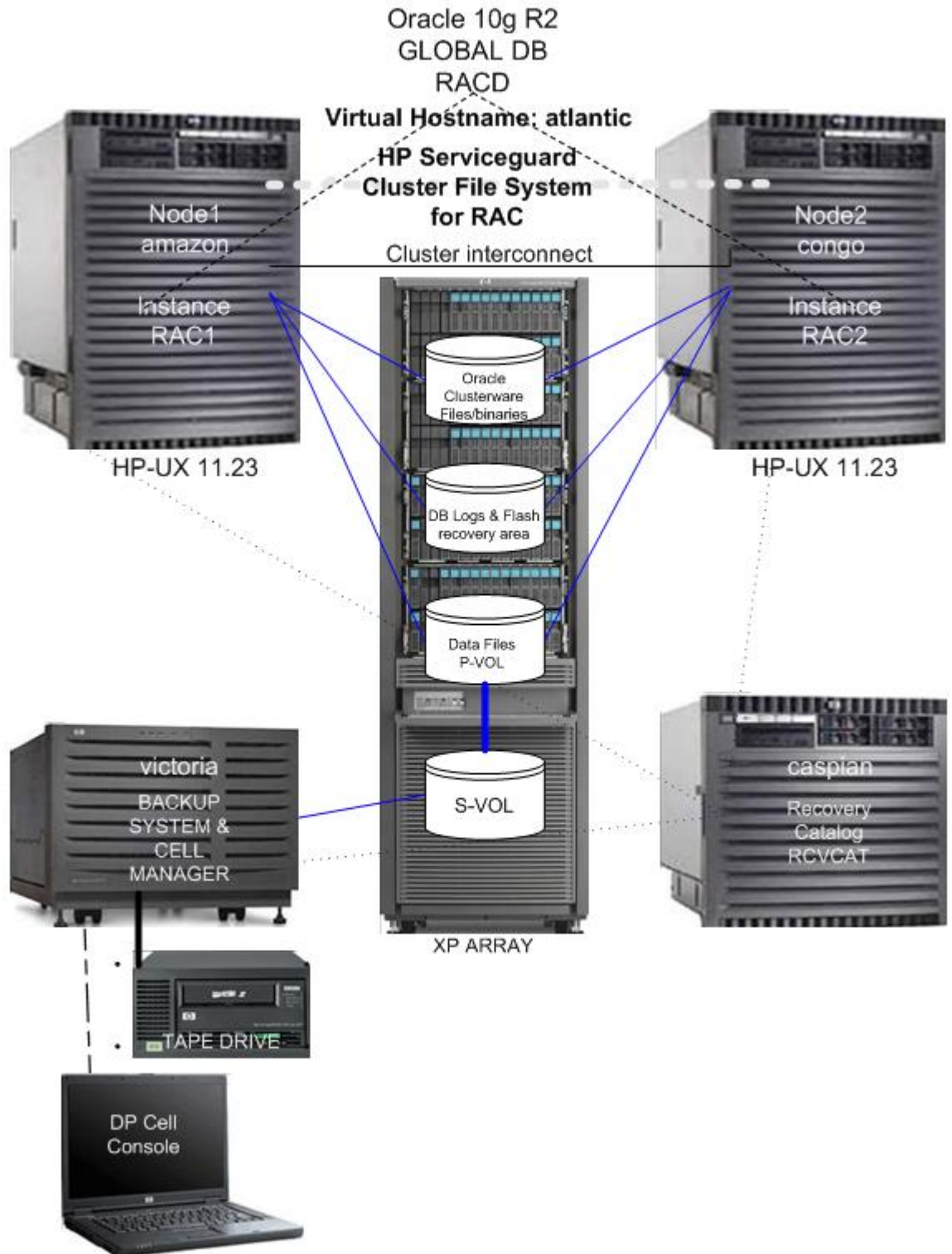
In this white paper, RAC 10g with HP Serviceguard Cluster File System for RAC is used.

## Overview of Oracle 10g RAC R2 example environment

The following section explains the environment setup and the hardware and software components used for this integration. This section is based on the HP Serviceguard Cluster File System for RAC with Oracle10g Real Application Clusters R2.

The example environment is based on a 2-node cluster—node1 referred to as “amazon” with local database instance “RAC1” and node2 as “congo” with local database instance “RAC2.” The virtual host name is “atlantic” and global database name is “RACD.”

Figure 1. Overview of Oracle 10g RAC R2 example environment



The “victoria” Data Protector Server is responsible for backing up the split-mirror data from disk array volume “S-Vol” to tape and is also the Data Protector Cell manager.

The Oracle database configuration, archive, and data files are all on shared disks and are accessed by each database server instance.

The “RCVCAT” Oracle recovery catalog database instance is installed on the “caspian” server.

## Preparing the HP Storage Works Disk Array XP environment

All RAC servers and the single Backup Server should be connected to the same HP StorageWorks XP Disk Array.

The disks from XP are shared by nodes in the Serviceguard cluster. The primary LDEVs (P-Vols) should be connected to the RAC servers and should have paired disks assigned. The mirrored LDEVs (S-Vols) should be connected to the Backup Server. In this example, mirror disk, which is used for storing Oracle data files, is used.

For further information on HP StorageWorks XP Disk Array configuration procedures, refer to:

- HP OpenView Storage Data Protector Zero Downtime Backup Administrator’s Guide
- HP OpenView Storage Data Protector Zero Downtime Backup Concepts Guide
- HP OpenView Storage Data Protector Zero Downtime Backup Integration Guide

## Preparing the HP-UX and Oracle 10g RAC R2 environment

This section gives complementary information for the following documentation:

- Managing Serviceguard Twelfth Edition
- Using Serviceguard Extension for RAC
- VERITAS Storage Foundation Cluster File System 4.1 HP Serviceguard Storage Management Suite Extracts Installation and Administration Guide HP-UX
- VERITAS Storage Foundation 4.1 for Oracle RAC HP Serviceguard Storage Management Suite Extracts Installation and Configuration Guide HP-UX

A detailed listing of HP high-availability documentation is available at <http://docs.hp.com/en/ha.html>. The following is a list of available documents:

- Oracle Database Administrator’s Guide 10g Release 2 (10.2)
- Oracle Database Installation Guide 10g Release 2 (10.2) for hp-ux Itanium
- Oracle Database Installation Guide 10g Release 2 (10.2) for hp-ux PA-RISC (64-Bit)
- Oracle Clusterware and Oracle Real Application Clusters Installation Guide version 10g Release 2 (10.2) for HP-UX
- Oracle Database 10g Real Application Clusters R2 (RAC10g R2) on HP-UX Installation Cookbook (available at the HP/Oracle Cooperative Technology Center)

## Requirements

Before installing and configuring the Oracle 10g R2 RAC environment, verify the following requirements:

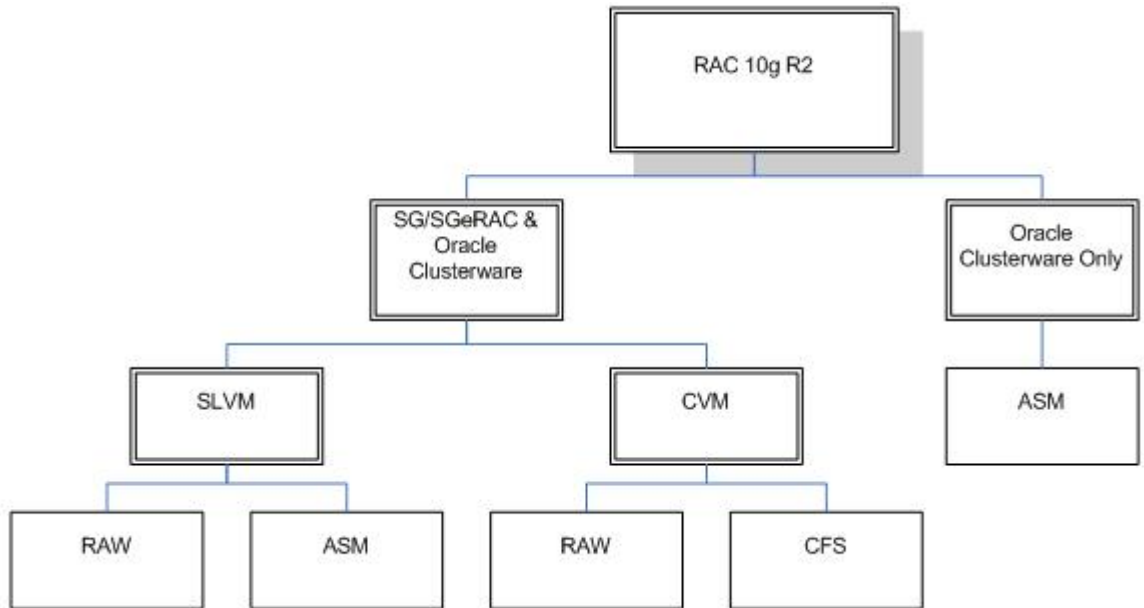
- System requirements
- Network requirements
- HP-UX patches
- Kernel parameters

For HP-UX Itanium® document, refer to Chapter 2, Preinstallation Tasks, in the Oracle Database Installation Guide 10g Release 2 (10.2).

## Storage management

For storage management, use Oracle ASM, HP Cluster File Systems, or RAW Devices. The following figure illustrates the supported configurations with Oracle RAC10gR2 on HP-UX.

**Figure 2.** RAC configurations types



The following table illustrates the storage options supported for storing Oracle Clusterware files, Oracle database files, and Oracle database recovery files. Oracle database files include data files, control files, redo log files, server parameter file, and the password file. Oracle Clusterware files include Oracle Cluster Registry (OCR) and voting disk. Oracle Recovery files includes archive log files.

Storage Option	Clusterware	Database	Recovery
Automatic Storage Management	No	Yes	Yes
Shared raw logical volumes (requires SGeRAC)	Yes	Yes	No
Shared raw disk devices as presented to hosts	Yes	Yes	No
Shared raw partitions (only HP Integrity, no PA-Risc)	Yes	Yes	No
CFS	Yes	Yes	Yes

The HP Serviceguard Cluster File System for Oracle RAC Suite was used. In this example, four cluster file systems for RAC were created:

- /cfs/oraclu: Oracle Clusterware Files
- /cfs/orabin Oracle binaries
- /cfs/orafic Oracle Logs and flash recovery area
- /cfs/oradata: Oracle database files

For the cluster lock, use either the lock disk or a quorum server. In this example, lock disk was used. The following steps are used to create "dgrac" one disk group.

1. Create disk group:

```
#/etc/vx/bin/vxdisksetup -i c5t0d2
#/usr/sbin/vxdg -s init dgrac c5t0d2
```

2. Generate the SG-CFS-DG package:

```
# /usr/sbin/cfsdgadm add dgrac all=sw
Package name "SG-CFS-DG-1" is generated to control the resource
Shared disk group "dgrac" is associated with the cluster
```

3. Activate SG-CFS-DG package:

```
#cfsdgadm activate dgrac
```

4. Create volumes, file systems, and mount point for CFS from VxVM master node:

```
# vxassist -g dgrac make vol1 300M
# vxassist -g dgrac make vol2 6144M
# newfs -F vxfs /dev/vx/rdisk/dgrac/vol1
version 6 layout
307200 sectors, 307200 blocks of size 1024, log size 1024 blocks
largefiles supported
```

```
# newfs -F vxfs /dev/vx/rdisk/dgrac/vol2
  version 6 layout
  6291456 sectors, 6291456 blocks of size 1024, log size 16384 blocks
  largefiles supported
# cfsmntadm add dgrac vol1 /cfs/oraclu all=rw
Package name "SG-CFS-MP-1" is generated to control the resource
Mount point "/cfs/oraclu" is associated with the cluster
# cfsmntadm add dgrac vol2 /cfs/orabin all=rw
Package name "SG-CFS-MP-2" is generated to control the resource
Mount point "/cfs/orabin" is associated with the cluster
```

Mounting Cluster File systems:

```
cfsmount /cfs/oraclu
cfsmount /cfs/orabin
```

Similarly, other disk groups dgdat and dgflc are created and mounted.

```
cfsmount /cfs/oradata
cfsmount /cfs/oraflc
```

Creating Shared CFS directory (commands only from one node):

For Oracle Clusterware:

```
# mkdir -p /cfs/orabin/product/CRS
```

Oracle RAC:

```
# mkdir -p /cfs/orabin/product/RAC10g
# chown -R oracle:oinstall /cfs/orabin
# chmod -R 775 /cfs/orabin
```

Oracle Cluster Files:

```
# mkdir -p /cfs/oraclu/OCR
# mkdir -p /cfs/oraclu/VOTE
# chown -R oracle:oinstall /cfs/oraclu
# chmod -R 775 /cfs/oraclu
```

Oracle Database Files:

```
# chown -R oracle:oinstall /cfs/oradata
# chmod -R 755 /cfs/oradata
```

Oracle Logs and flash recovery area:

```
# chown -R oracle:oinstall /cfs/oraflc
# chmod -R 775 /cfs/oraflc
```

From each node:

```
# chmod -R 755 /cfs
```

## Installing Data Protector Agents on RAC Cluster Nodes

To back up a RAC Cluster, install Data Protector Integration software on all nodes in the RAC environment.

Install the HP StorageWorks XP Agent on:

- RAC server "amazon" with database instance RAC1
- RAC server "congo" with database instance RAC2
- Backup Server "victoria" with access to split-mirror S-Vol disks and tape drives

Install the Oracle8 Integration Agent on:

- RAC server "amazon" with database instance RAC1
- RAC server "congo" with database instance RAC2
- RMAN catalog server "caspiant" with recovery catalog database instance RCVCAT

As virtual host name for configuring backups is used, a Serviceguard package containing only the virtual IP and the virtual host name (atlantic.somedomain.com) parameters is created and distributed among the RAC nodes. For more information, refer to Chapter 6, Configuring Packages and Their Services, in the Managing Serviceguard Twelfth Edition document.

Import the virtual host name "atlantic.somedomain.com" into the Data Protector Cell.

**Figure 3.** Importing virtual hosts page

**Import Client**

Type or select the client that you want to import. Check the Virtual Host box to indicate a second hostname for an already existing host. Check the NDMP Server box to import the NDMP client.

Name

Virtual Host  NDMP Server

**Virtual server:** A network IP name and a network IP address are resources that define a virtual server of a cluster-aware application. Its IP name and address are cached by the cluster software and mapped to the cluster node on which the specific package or group is currently running. Since the group or package can switch from one node to another, the virtual server can reside on different machines in different time frames.

For further information on installation procedures, refer to the HP OpenView Storage Data Protector Installation and Licensing Guide.



# Oracle 10g RAC R2 integration and configuration

After installing the Oracle Clusterware and RAC Oracle 10g software and creating the database, perform the following steps. Using the database configuration assistant, create the database RAC on CFS.

This section gives complementary information on the following documentation:

- HP OpenView Storage Data Protector Integration Guide for Oracle SAP
- HP OpenView Storage Data Protector Zero Downtime Backup Integration Guide
- HP OpenView Storage Data Protector Zero Downtime Backup Administrator's Guide

## Configuring the Oracle server

The following example describes the integration using the Data Protector GUI.

When creating the first backup specification for the database, configure an Oracle database. For more information, refer to [Creating backup specifications](#).

Select the virtual host name and global database name **RACD**.

### Note

The atlantic virtual host must be previously imported as a DP client.

**Figure 4.** Virtual host name and database name page

Specify the application that you want to back up.

Application

Client atlantic.somedomain.com

Application database RACD

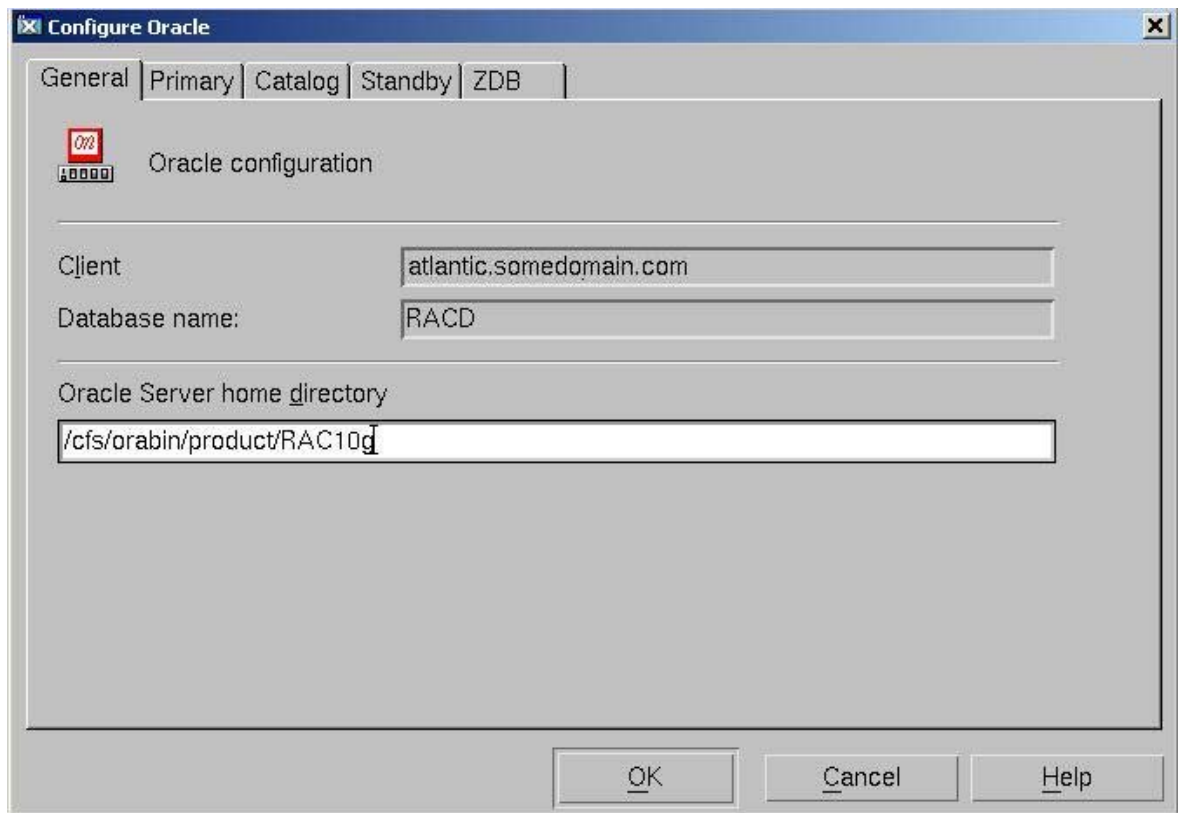
User and group

Username oracle

Group name oinstall

From the Configure Oracle General page, in the Oracle Server home directory field, specify the pathname of the Oracle Server home directory.

**Figure 5.** Configure Oracle General page



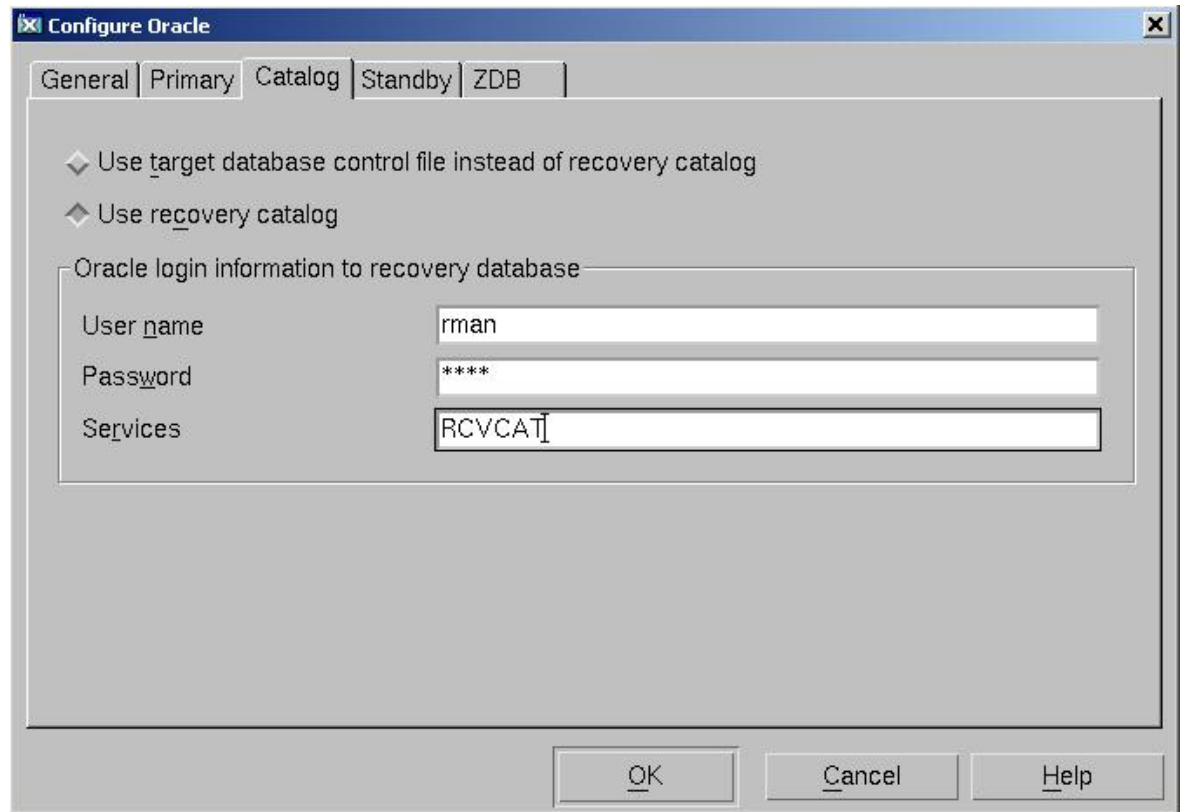
From the Configure Oracle Primary page, in the Services field, list RAC1 and RAC2 as net services names for the primary database. Be sure to separate each name with a comma. Note that each net service name resolves into a specific database instance.

**Figure 6.** Configure Oracle Primary page

The image shows a screenshot of the 'Configure Oracle' dialog box, specifically the 'Primary' tab. The dialog has a title bar with a close button and a tabbed interface with 'General', 'Primary', 'Catalog', 'Standby', and 'ZDB' tabs. The 'Primary' tab is active. Inside the dialog, there is a section titled 'Oracle login information to primary database' which contains three input fields: 'User name' with the value 'system', 'Password' with the value '\*\*\*\*\*', and 'Services' with the value 'RAC1, RAC2'. At the bottom of the dialog, there are three buttons: 'OK', 'Cancel', and 'Help'.

From the Configure Oracle Catalog page, use the recovery database catalog as an RMAN repository for backup history, and specify the login information to the recovery catalog. Note for ZDB, you must use the recovery catalog.

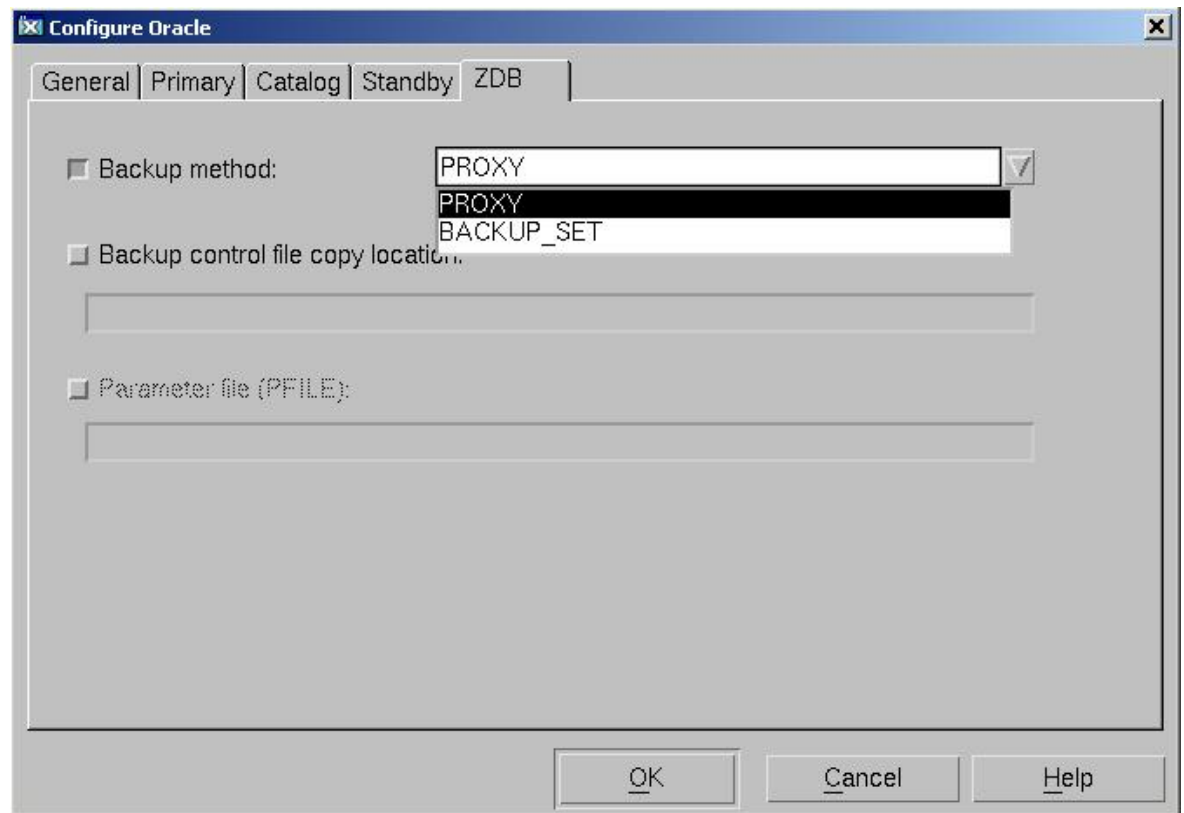
**Figure 7.** Configure Oracle Catalog page



If you intend to back up a standby database, also configure the standby database. From the Configure Oracle ZDB page, select **Backup method**, and then from the dropdown list select **PROXY**.

In Backup control file copy location field, you can specify the location on the source volumes where a backup copy of the current control file will be made during ZDB to disk. If you do not specify the location, o2rman.pl copies the copy of the control file from the application system to the backup system, when needed. Thus, you do not need to create an additional disk for this location if you do not need the control file copy on a replica.

**Figure 8.** Configure Oracle ZDB page



You can also perform the configuration using CLI. The following is a configuration example using CLI.

Set the Data Protector Environment variable OB2BARHOSTNAME to the virtual server name on the Oracle Server system:

```
#export OB2BARHOSTNAME=atlantic.somedomain.com
```

Then run "util\_oracle8.pl" CLI:

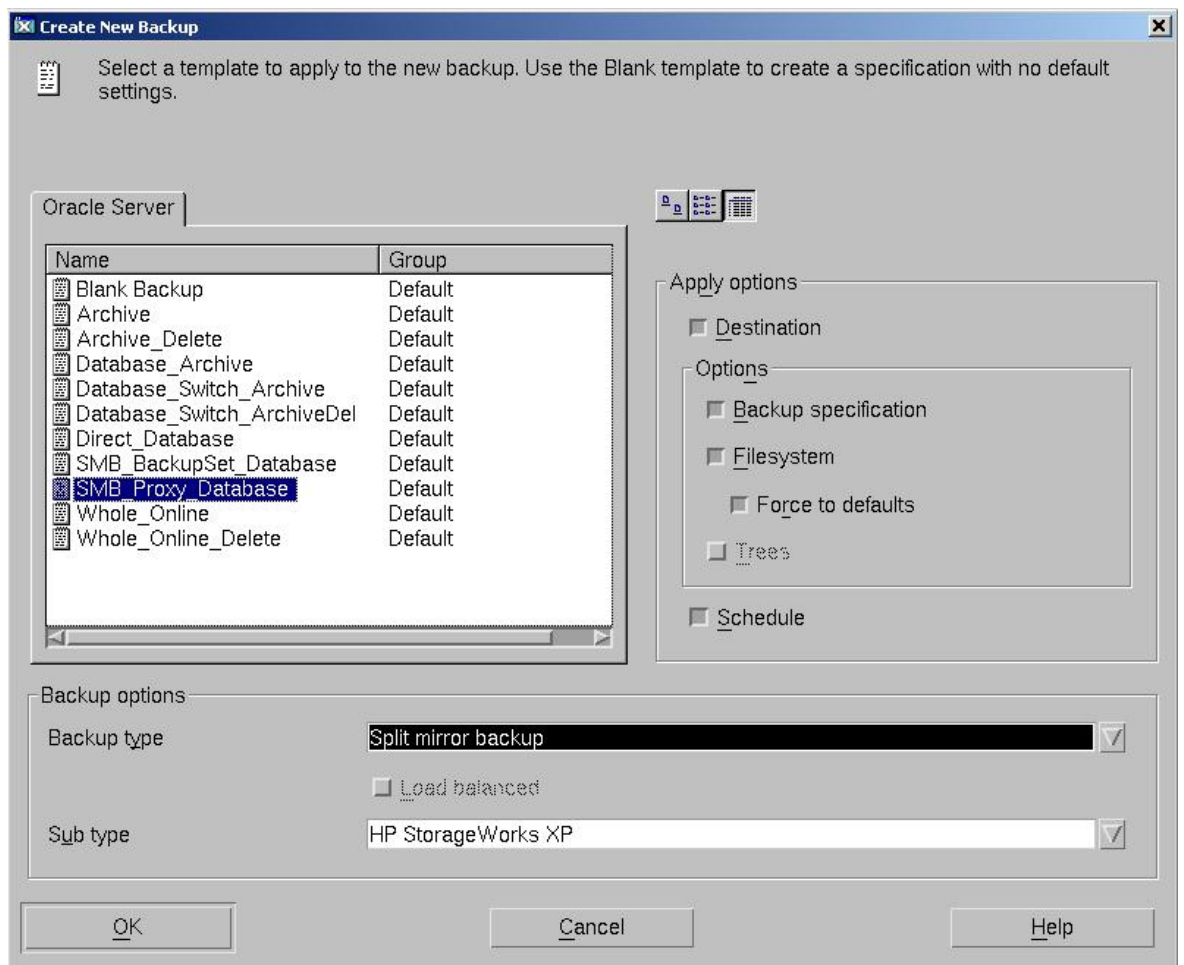
```
#!/opt/omni/sbin/util_oracle8.pl -CONFIG -dbname RACD -orahome /cfs/orabin/product/RAC10g -  
prmuser system -eprmpasswd dplab -prmservice RAC1, RAC2 -rcuser rman -ercpasswd rman -rcservice  
RCVCAT -zdb_method PROXY
```

## Creating backup specifications

Create an Oracle ZDB backup specification:

1. In the Context List, click **Backup**.
2. In the Scoping Pane, expand Backup Specifications, right-click **Oracle Server**, and click **Add Backup**.
3. In the Create New Backup dialog box, select the following:
  - a. To perform a ZDB of the entire database using the proxy-copy method, select the **SMB\_Proxy\_Database** template.
  - b. From the Create New Backup page, in the Backup type dropdown list, select **Split mirror backup**. In the Sub type dropdown list, select **HP StorageWorks XP**.

Figure 9. Create New Backup page



- c. From the Backup page, in the Application system dropdown list, select **smocl03** as the virtual server. In the Backup system dropdown list, select **victoria** as the backup system.
- d. Set the number of replicas in the replica set. Enter an integer number from 0 to 2, or any range/combination of integer numbers from 0 to 2, separated by a comma.

For example:

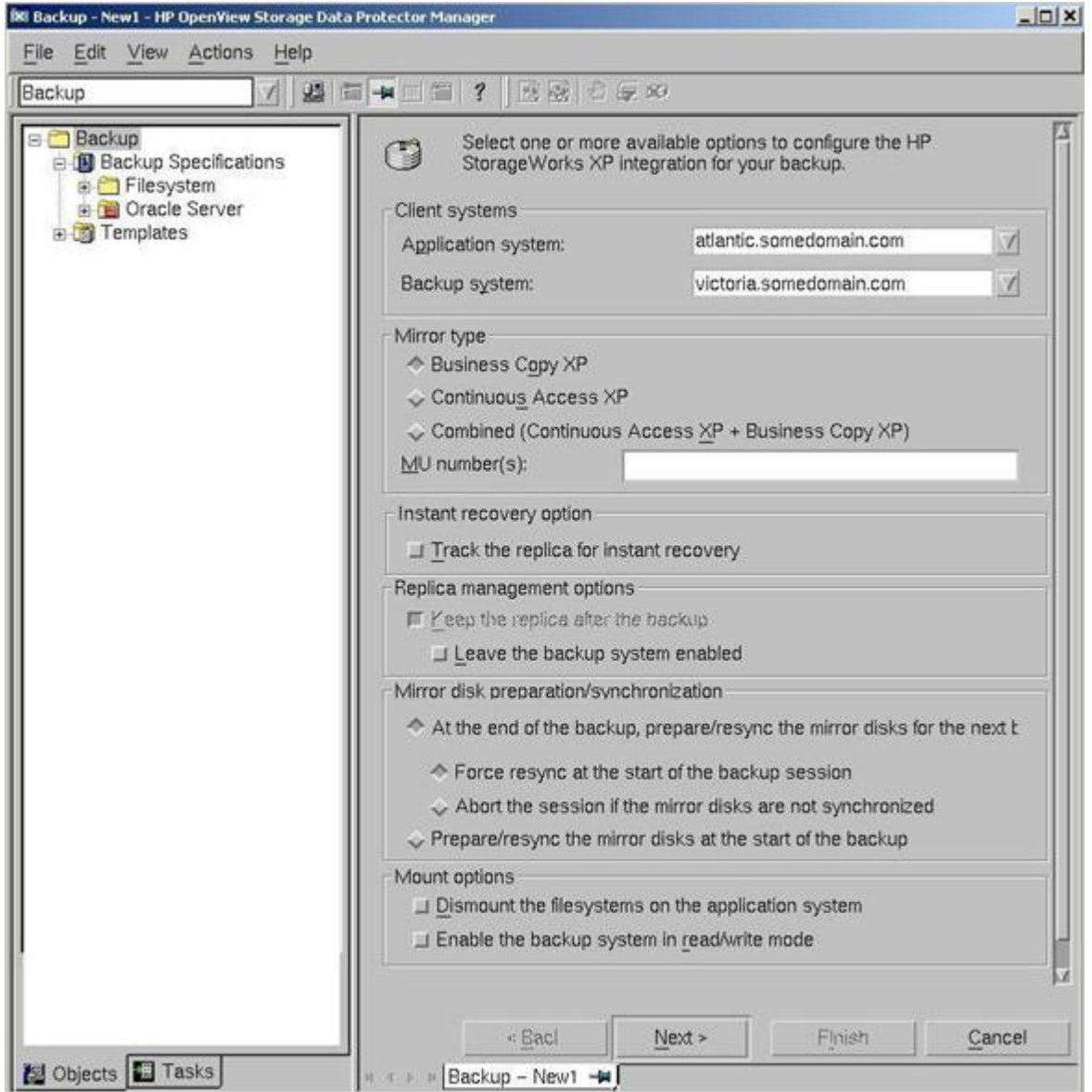
- 1
- 1-2
- 2, 0,1

A sequence does not set the order in which the replicas are used. The algorithm of using replicas is described in the HP OpenView Storage Data Protector Zero Downtime Backup Concepts Guide. Specify the range in ascending order. If you do not specify the order, MU# 0 defaults.

By default, **At the end of the backup, prepare/resync the mirror disks for the next backup** is selected. The next replica is prepared according to replica set rotation (resynchronized with P-Vols) for the next backup at the end of the current backup. If you do not select this option, the next two options are disabled.

A resync initiates before backup, if you select **Force resync at the start of the backup session**.

Figure 10. Backup page





By default, the full database is selected for backup.

This is the backup specification "FullProxy" created:

```
BARLIST "FullProxy"
```

```
OWNER "oracle" "oinstall" "atlantic.somedomain.com"
```

```
DESCRIPTION "Backs up the database instance and control file in the ZDB (split mirror or snapshot) mode using the proxy-copy method."
```

```
DYNAMIC 1 5
```

```
BACKUP_TYPE SplitMirror SureStoreEXP
```

```
{  
  MIRROR local  
  APPLICATION_SYSTEM atlantic.somedomain.com  
  BACKUP_SYSTEM victoria.somedomain.com  
  -establish  
  -keep_version  
  -start_on_app  
}
```

```
DEVICE "fllib_victoria_Writer0"
```

```
{  
  -sync  
}
```

```
CLIENT "RACD" atlantic.somedomain.com
```

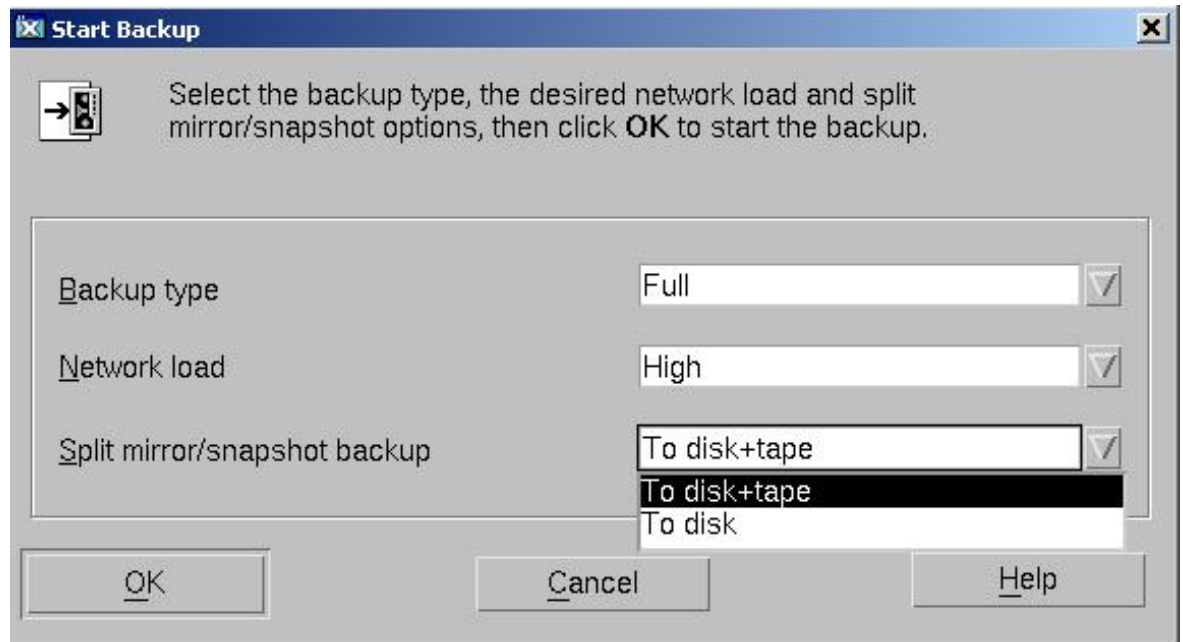
```
{  
  -exec ob2rman.exe  
  -args {  
    "-backup"  
  }  
  -input {  
    "run {"  
    "allocate channel 'dev_0' type 'sbt_tape'"  
    " parms
```

```
'ENV=(OB2BARTYPE=Oracle8,OB2APPNAME=RACD,OB2BARLIST=FullProxy,OB2DMAP=1,OB2SMB=1)';"  
    "backup incremental level <incr_level>"  
    " format 'FullProxy<RACD_%s:%t:%p>.dbf'"  
    " proxy only"  
    " database;"  
    "backup"  
    " format 'FullProxy<RACD_%s:%t:%p>.dbf'"  
    " current controlfile;"  
    "}"  
}  
}
```

## Oracle 10g RAC R2 ZDB backup example

The backup flow depends on the configuration of the backup configuration and the status of the mirror units. The following figure illustrates the beginning of the RAC ZDB backup example.

Figure 11. Start Backup page



The following session report is an example of a ZDB backup session to disk and tape:

```
[Normal] From: BSM@victoria.somedomain.com "FullProxy" Time: 12/24/2006 3:16:26 PM
```

```
OB2BAR application on "atlantic.somedomain.com" successfully started.
```

```
[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:18:41
```

```
Starting backup of target database.
```

```
Net service name: RAC1.
```

```
Instance status: OPEN.
```

```
Instance name: RAC1.
```

```
Database DBID = 1464798936.
```

```
Database control file type: CURRENT.
```

```
Database log mode: ARCHIVELOG.
```

```
Net service name: RAC2.
```

```
Instance status: OPEN.
```

```
Instance name: RAC2.
```

```
Database DBID = 1464798936.
```

```
Database control file type: CURRENT.
```

```
Database log mode: ARCHIVELOG.
```

```

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:19:11
Checking configuration: /opt/omni/lbin/util_oracle8.pl -chkconf_ir RACD.
[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:20:23
Checking configuration completed.
[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:20:24
Starting Oracle Recovery Manager.
Recovery Manager: Release 10.2.0.1.0 - Production on Sun Dec 24 15:20:28 2006
Copyright (c) 1982, 2005, Oracle. All rights reserved.
RMAN> CONNECT TARGET *
2> CONNECT CATALOG *
3> run {
4> allocate channel 'dev_0' type 'sbt_tape'
5> parms
'ENV=(OB2BARTYPE=Oracle8,OB2APPNAME=RACD,OB2BARLIST=FullProxy,OB2DMAP=1,OB2SMB=1,
OB2BARHOSTNAME=atlantic.somedomain.com)';
6> backup incremental level 0
7> format 'FullProxy<RACD_%s:%t:%p>.dbf'
8> proxy only
9> database;
10> backup
11> format 'FullProxy<RACD_%s:%t:%p>.dbf'
12> current controlfile;
13> }
14> EXIT
connected to target database: RACD (DBID=1464798936)
connected to recovery catalog database
allocated channel: dev_0
channel dev_0: sid=147 instance=RAC1 devtype=SBT_TAPE
channel dev_0: Data Protector A.06.00/331
Starting backup at 24-DEC-06
current control file cannot be backed up by proxy.
SPFILE cannot be backed up by proxy.
channel dev_0: starting incremental level 0 proxy datafile backup at 24-DEC-06
channel dev_0: specifying datafile(s) for proxy backup
input datafile fno=00001 name=/cfs/oradata/RACD/system01.dbf
proxy file handle=FullProxy<RACD_37:610039262:1>.dbf
input datafile fno=00003 name=/cfs/oradata/RACD/sysaux01.dbf
proxy file handle=FullProxy<RACD_37:610039262:2>.dbf
input datafile fno=00002 name=/cfs/oradata/RACD/undotbs01.dbf
proxy file handle=FullProxy<RACD_37:610039262:3>.dbf
input datafile fno=00005 name=/cfs/oradata/RACD/undotbs02.dbf
proxy file handle=FullProxy<RACD_37:610039262:4>.dbf
input datafile fno=00004 name=/cfs/oradata/RACD/users01.dbf
proxy file handle=FullProxy<RACD_37:610039262:5>.dbf

```

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:16 PM  
Starting agent on amazon.somedomain.com.

[Normal] From: SSEA@victoria.somedomain.com "" Time: 12/24/2006 3:19:15 PM  
Starting agent on victoria.somedomain.com.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:16 PM  
Resolving backup objects on the application system.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:17 PM  
Resolving backup objects on the application system.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:28 PM  
Resolving of backup objects on the application system completed.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:28 PM  
The following disks were successfully mapped from  
character device path names to LDEVs:

Disk	Target	Lun	SEQ#	Port	LDEV
c5t0d1		0	1 10600	CL1-B	0203h ( 515)

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:28 PM  
Successfully attached to the command device /dev/rdisk/c5t0d3  
with instance number 301.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:29 PM  
The following BC pairs will be used in current session:

SEQ#	LDEV	Port	TID	LUN	MU#	Status	SEQ#	LDEV
10600	0203h ( 515)	CL1-B	0	36	0	STAT_PSUS	10600	0210h ( 528)

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:29 PM  
Resolving of backup objects on the application system completed.

[Normal] From: SSEA@victoria.somedomain.com "" Time: 12/24/2006 3:19:30 PM  
Successfully attached to the command device /dev/rdisk/c4t0d3  
with instance number 302.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:31 PM  
Synchronizing disks! 99 % completed!

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:49 PM  
Preparing the application system for splitting of disks.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:49 PM  
Disabling the application system.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:49 PM  
The application system was successfully disabled.

[Normal] From: SSEA@amazon.somedomain.com "" Time: 12/24/2006 3:21:50 PM  
The application system is prepared for splitting of disks.

[Normal] From: SSEA@victoria.somedomain.com "" Time: 12/24/2006 3:19:49 PM  
Splitting disks.

```

[Normal] From: SSEA@amazon.somedomain.com " " Time: 12/24/2006 3:21:50 PM
Resuming the application system.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:49 PM
Splitting of disks completed.
[Normal] From: SSEA@amazon.somedomain.com " " Time: 12/24/2006 3:21:50 PM
The application system was successfully resumed.
[Normal] From: SSEA@amazon.somedomain.com " " Time: 12/24/2006 3:21:50 PM
Splitting of LDEV 515 is in progress, 99 % completed.
[Normal] From: SSEA@amazon.somedomain.com " " Time: 12/24/2006 3:21:52 PM
Splitting of LDEV 515 is in progress, 99 % completed.
[Normal] From: SSEA@amazon.somedomain.com " " Time: 12/24/2006 3:21:54 PM
Splitting of disks completed.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:53 PM
Preparing the backup system:
1) Creating volume groups
2) Activating volume groups
3) Mounting filesystems
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:53 PM
The following disks were successfully mapped from
LDEVs to character device path names of disks:
SEQ#      Port   LDEV      Target Lun Disk
-----
10600     CL1-B  0210h ( 528)    15 33 c4t0d0
-----
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:54 PM
Resolving backup objects on the backup system.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:54 PM
Resolving of backup objects on the backup system completed.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:54 PM
Disabling the backup system.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:55 PM
The backup system was successfully disabled.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:19:55 PM
Preparing the backup system.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:20:08 PM
Disk group dgdat_0_atlantic.somedomain.com has been successfully imported.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:20:08 PM
Filesystem /dev/vx/dsk/dgdat_0_atlantic.somedomain.com/voll
has been successfully mounted
to /var/opt/omni/tmp/atlantic.somedomain.com/cfs/oradata_0.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:20:08 PM
The backup system was successfully prepared.

```

[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:20:08 PM  
Preparation of the backup system completed.

[Normal] From: BMA@victoria.somedomain.com "fllib\_victoria\_Writer0" Time: 12/24/2006 3:20:14 PM  
STARTING Media Agent "fllib\_victoria\_Writer0"

[Normal] From: BMA@victoria.somedomain.com "fllib\_victoria\_Writer0" Time: 12/24/2006 3:20:14 PM  
Deleting expired file depots from file library "fllib\_victoria".

[Normal] From: BMA@victoria.somedomain.com "fllib\_victoria\_Writer0" Time: 12/24/2006 3:20:14 PM  
Loading medium from slot /home/ns/fllib/10394de55458e8c9e5076850004.fd to device fllib\_victoria\_Writer0

[Normal] From: BMA@victoria.somedomain.com "fllib\_victoria\_Writer0" Time: 12/24/2006 3:20:15 PM  
/home/ns/fllib/10394de55458e8c9e5076850004.fd  
Initializing new medium: "fllib\_victoria\_MediaPool\_3"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:15 PM  
Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:1>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:25 PM  
Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:2>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:28 PM  
Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:1>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:33 PM  
Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:3>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:34 PM  
Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:2>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:35 PM  
Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:4>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:36 PM  
Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:5>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:37 PM  
Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:3>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:37 PM  
Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:4>.dbf "Oracle8"

[Normal] From: OB2BAR\_DMA@victoria.somedomain.com "RACD" Time: 12/24/2006 3:20:37 PM

Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_37:610039262:5>.dbf "Oracle8"  
channel dev\_0: proxy copy complete, elapsed time: 00:01:38  
channel dev\_0: starting incremental level 0 datafile backupset  
channel dev\_0: specifying datafile(s) in backupset  
including current control file in backupset  
including current SPFILE in backupset  
channel dev\_0: starting piece 1 at 24-DEC-06

[Normal] From: OB2BAR\_Oracle8@amazon.somedomain.com "RACD" Time: 12/24/2006 3:22:50 PM

Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_38:610039367:1>.dbf "Oracle8"

[Normal] From: OB2BAR\_Oracle8@amazon.somedomain.com "RACD" Time: 12/24/2006 3:22:56 PM

Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_38:610039367:1>.dbf "Oracle8"  
channel dev\_0: finished piece 1 at 24-DEC-06  
piece handle=FullProxy<RACD\_38:610039367:1>.dbf tag=TAG20061224T152058  
comment=API Version 2.0,MMS Version 65.6.0.75

channel dev\_0: backup set complete, elapsed time: 00:00:18

Finished backup at 24-DEC-06

Starting backup at 24-DEC-06

starting full resync of recovery catalog

full resync complete

channel dev\_0: starting full datafile backupset

channel dev\_0: specifying datafile(s) in backupset

including current control file in backupset

channel dev\_0: starting piece 1 at 24-DEC-06

[Normal] From: OB2BAR\_Oracle8@amazon.somedomain.com "RACD" Time: 12/24/2006 3:24:01 PM

Starting OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_39:610039431:1>.dbf "Oracle8"

[Normal] From: OB2BAR\_Oracle8@amazon.somedomain.com "RACD" Time: 12/24/2006 3:24:06 PM

Completed OB2BAR Backup:  
atlantic.somedomain.com:FullProxy<RACD\_39:610039431:1>.dbf "Oracle8"

channel dev\_0: finished piece 1 at 24-DEC-06

piece handle=FullProxy<RACD\_39:610039431:1>.dbf tag=TAG20061224T152342  
comment=API Version 2.0,MMS Version 65.6.0.75

channel dev\_0: backup set complete, elapsed time: 00:00:20

Finished backup at 24-DEC-06

starting full resync of recovery catalog

full resync complete

released channel: dev\_0

Recovery Manager complete.



[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:24:58  
Oracle Recovery Manager completed.

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:25:00  
Starting backup of Data Protector managed control file backup.

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:25:13  
Backing up current control file completed.  
Location: /var/opt/omni/tmp/ctrl\_RACD.dbf.

[Normal] From: OB2BAR\_DMA@amazon.somedomain.com "RACD" Time: 12/24/2006 3:25:15 PM  
Starting OB2BAR Backup: atlantic.somedomain.com:RACD DP Managed Control File Backup "Oracle8"

[Normal] From: OB2BAR\_DMA@amazon.somedomain.com "RACD" Time: 12/24/2006 3:25:19 PM  
Completed OB2BAR Backup: atlantic.somedomain.com:RACD DP Managed Control File Backup "Oracle8"

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:25:21  
Backup of Data Protector managed control file backup completed.

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:25:23  
Starting backup of recovery catalog.

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:25:24  
Starting Oracle Export utility.

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:25:59  
Oracle Export utility completed.

[Normal] From: OB2BAR\_DMA@amazon.somedomain.com "RACD" Time: 12/24/2006 3:26:00 PM  
Starting OB2BAR Backup: atlantic.somedomain.com:Oracle Recovery Backup Catalog "Oracle8"

[Normal] From: OB2BAR\_DMA@amazon.somedomain.com "RACD" Time: 12/24/2006 3:26:02 PM  
Completed OB2BAR Backup: atlantic.somedomain.com:Oracle Recovery Backup Catalog "Oracle8"

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:26:03  
Backup of recovery catalog completed.

[Normal] From: ob2rman@amazon.somedomain.com "RACD" Time: 12/24/06 15:26:04  
Backup of target database completed.

[Normal] From: BSM@victoria.somedomain.com "FullProxy" Time: 12/24/2006 3:24:05 PM  
OB2BAR application on "atlantic.somedomain.com" disconnected.

[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:06 PM  
Resuming the backup system.

[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:06 PM  
Disabling the backup system:  
1) Dismounting filesystems,  
2) Deactivating volume groups.

```

[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:06 PM
Filesystem /dev/vx/dsk/dgdat_0_atlantic.somedomain.com/voll
has been successfully dismounted
from /var/opt/omni/tmp/atlantic.somedomain.com/cfs/oradata_0.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:07 PM
Disk group dgdat_0_atlantic.somedomain.com has been successfully deported.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:07 PM
Disabling of the backup system completed.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:07 PM
The backup system was successfully resumed.
[Normal] From: SSEA@victoria.somedomain.com " " Time: 12/24/2006 3:24:07 PM
COMPLETED SSEA-Backup Agent on victoria.somedomain.com.
[Normal] From: SSEA@amazon.somedomain.com " " Time: 12/24/2006 3:26:08 PM
COMPLETED SSEA-Application Agent on amazon.somedomain.com.
[Normal] From: BMA@victoria.somedomain.com "fllib_victoria_Writer0" Time:
12/24/2006 3:24:07 PM
Unloading medium to slot /home/ns/fllib/10394de55458e8c9e5076850004.fd from
device fllib_victoria_Writer0
[Normal] From: BMA@victoria.somedomain.com "fllib_victoria_Writer0" Time:
12/24/2006 3:24:07 PM
COMPLETED Media Agent "fllib_victoria_Writer0"
[Normal] From: BSM@victoria.somedomain.com "FullProxy" Time: 12/24/2006 3:24:07
PM

```

Backup Statistics:

```

Session Queuing Time (hours)          0.06
-----
Completed Disk Agents .....           9
Failed Disk Agents .....              0
Aborted Disk Agents .....             0
-----
Disk Agents Total .....                9
=====
Completed Media Agents .....           1
Failed Media Agents .....              0
Aborted Media Agents .....             0
-----
Media Agents Total .....                1
=====
Mbytes Total .....                    978 MB
Used Media Total .....                  1
Disk Agent Errors Total .....           0

```

## For more information

The following is a list of available documents:

- HP OpenView Storage Data Protector Integration Guide for Oracle SAP
- HP OpenView Storage Data Protector Installation and Licensing Guide
- HP OpenView Storage Data Protector Zero Downtime Backup Administrator's Guide
- HP OpenView Storage Data Protector Zero Downtime Backup Concepts Guide
- HP OpenView Storage Data Protector Zero Downtime Backup Integration Guide
- Managing Serviceguard Twelfth Edition
- Using Serviceguard Extension for RAC
- VERITAS Storage Foundation Cluster File System 4.1 HP Serviceguard Storage Management Suite Extracts Installation and Administration Guide HP-UX
- VERITAS Storage Foundation 4.1 for Oracle RAC HP Serviceguard Storage Management Suite Extracts Installation and Configuration Guide HP-UX

A detailed listing of HP high-availability documentation is available at <http://docs.hp.com/en/ha.html>. The following is a list of available documents:

- Oracle Database Administrator's Guide 10g Release 2 (10.2)
- Oracle Database Installation Guide 10g Release 2 (10.2) for hp-ux Itanium Part Number
- Oracle Database Installation Guide 10g Release 2 (10.2) for hp-ux PA-RISC (64-Bit)
- Oracle Clusterware and Oracle Real Application Clusters Installation Guide version 10g Release 2 (10.2) for HP-UX
- Oracle Database 10g Real Application Clusters R2 (RAC10g R2) on HP-UX Installation Cookbook (available at the HP/Oracle Cooperative Technology Center)
- Note: 296874.1 Configuring the HP-UX Operating System for the Oracle 10g VIP at <https://metalink.oracle.com/> (Oracle MetaLink account required)

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