Best Practices White Paper

Using Oracle Database 11g R2 Automatic Storage Management with FUJITSU Storage (Linux version)

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1. Introduction

This document describes the most efficient database environment that provides the combined benefits and advantages of the new Oracle Database 11g Release 2 feature, Automatic Storage Management (ASM), and Fujitsu ETERNUS DX storage systems.

Automatic Storage Management is a new feature in Oracle Database 11g Release 2 that provides data management features within the database that simplifies the management of database systems and storage environments. ASM is the combination of a clustered file system and logical volume manager that is tightly integrated and embedded within the Oracle database 11g Release 2.

ASM was specifically designed to operate with Oracle database files. ASM is a standard Oracle Database 11g Release 2 feature that is included at no additional cost with the database system. ASM is designed to optimize the operation of Oracle databases and simplify storage management by virtualizing storage hardware, automating tasks, and optimizing performance and thereby reducing operational overhead, administrator intervention – and human error – and overall management costs.

ASM is Oracle's collection of intelligence and best practices learned over many years. The ASM disk group virtualization interface allows DBAs to easily and dynamically add or remove disks for a particular disk group without interrupting the database operation. ASM will automatically begin to use a new disk as soon as it is added to the disk group, and will automatically rebalance data between old and new disks to continuously optimize I/O performance. ASM also eliminates disk fragmentation and hotspots thereby reducing management overhead.

ASM provides up to 3-way mirroring for higher availability and is an alternative to mirroring provided by the hardware RAID in storage arrays. The Oracle DBA simply defines a failure group within a disk group and ASM will automatically mirror the data across two or more failure groups, which can help to avoid downtime in the event of component failures, such as a disk controller or even entire disk array. This powerful redundancy feature increases availability without any additional management overhead. Since failure groups are automatically managed by failover or failback activities are fully managed - without the intervention of an operator - by ASM when the failed component is replaced.

Fujitsu's ETERNUS storage systems meet the requirements of a mission-critical-environment. ETERNUS DX8000 S2 series is a highly scalable, large capacity disk array, ETERNUS DX400 S2 series is a mid range disk array; and DX60 S2/DX80 S2/DX90 S2 are entry-level disk arrays. In any ETERNUS model, all major components are redundantly equipped and are hot-swappable to ensure business continuity with high reliability and high availability. ETERNUS storage systems provide an online volume-replication feature that enables non-disruptive database backup operations.

This white paper describes the most efficient method to configure a high-performance, high-availability Oracle database environment by the combination of ASM and ETERNUS.

* In this verification, the PRIMERGY RX350 S7 was used as the industry standard server. Database operations require not only high reliability and management features but also scalability. The PRIMERGY RX350 S7 is a dual CPU rack mount server with both high performance and high scalability, and therefore suitable for this task.

For details of this server, see the following web site. http://www.fujitsu.com/fts/products/computing/servers/primergy/rack/rx350/

2. Fujitsu's ETERNUS DX Storage Systems

2-1. High Availability

The Fujitsu ETERNUS DX storage system provides high availability that guarantees secure operation in mission critical environments.

All major components are redundantly equipped. In the event of a component failure, the ETERNUS DX storage system automatically reallocates the remaining active components for non-disruptive operation. Plus, all major components are hot-swappable.

Disk drives are configured in RAID groups. In the event of a disk-drive failure, the data is quickly rebuilt in a hot-spare disk to maintain the data redundancy. Plus, the ETERNUS DX storage system constantly monitors each disk drive for pre-failure detection. If one of the disk drives is likely to fail, the ETERNUS proactively copies the data to the hot-spare disk. This enables disk-drive replacement while maintaining the data redundancy.

The interfaces between servers and ETERNUS DX storage systems also deliver a high availability mechanism. This mechanism is provided by the ETERNUS Multipath Driver or GR Multipath Driver that manages multiple Fibre Channel paths. Even if one path fails, operations of a database and/or other applications can continue by automatically rerouting data through the remaining active paths. Such a highly available mechanism guarantees continuous operations even in the event of a server-side HBA failure or switch failure.

Cache in a storage system is a temporary storage of the data written from servers, dependant on a power source – typically a battery – to preserve the data in case of a power failure at the customer site. However, the ETERNUS DX storage system reliably protects the cached data by backing up the data into non-volatile memory in the event of a power failure.

2-2. Performance Tuning

The Fujitsu ETERNUS DX storage system provides features to replace drives or to change RAID configurations without disrupting accesses to the volumes. With these features, it is possible to optimize access performance without stopping operations.

RAID Migration provides two features to reorganize disk drives. One is a feature to include the currently-used RAID drives into the destination RAID group. This feature is useful when reconfiguring the same-specification drives into a different RAID-level group. The other feature is useful when moving the data from the source RAID drives to a different type of target RAID drives, for example, from a 15K rpm-drive RAID group to a 7.2K rpm-drive RAID group. Both features can be used without interrupting accesses to the RAID group, and the switching from the source to destination is automatically performed by the ETERNUS DX storage system.

The QoS(Quality of Service) feature enables storage systems to maintain stable performance without any influence of load change on other applications. This feature can set priority on processing requests from servers and set upper limits on the performance required for each process. Even if processing operations occur simultaneously in each server, storage performance is applied to high-priority processing operations to maintain stable storage performance.

The Automated Storage Tiering feature enables reduction in data management man-hour and management costs by use with the ETERNUS SF Storage Cruiser software. This feature controls data placement in the environment where different types of drives are installed, and optimizes performance and costs. In particular, this feature detects data access frequency and then automatically relocates data between drives according to the set policy.

2-3. Point-in-time Copy Feature

The Fujitsu ETERNUS DX storage system provides a point-in-time copy feature that creates a copy of the source volume data at a certain point in time within the storage system without stopping the operations of a database or other applications.

Demand for system requirements supporting 24 x 365 continuous operations is growing. System administrators must make backups without disrupting business operations, such as database operation, and without putting heavy loads on the servers. ETERNUS DX storage systems provide four types of replication features: Equivalent Copy (EC), One Point Copy (OPC), QuickOPC and SnapOPC+. With EC, a copy volume is created always in synchronization with the update of a business volume. With OPC, all data in a business volume can be copied on demand. With QuickOPC, all data in a business volume is copied once, and then only updated data is copied to a replicated volume. With SnapOPC+, only the data before update is copied at the time of update, enabling generation managements. These features can be used according to the business requirements.

3. Fujitsu Storage Management software

3-1. ETERNUS SF AdvancedCopy Manager

Fujitsu offers the ETERNUS SF AdvancedCopy Manager, an application to control the EC, OPC, Quick OPC and SnapOPC+ features of the ETERNUS DX storage system. The ETERNUS SF AdvancedCopy Manager enables users to perform backup operations using a uniform operation even in a wide variety of OS environments. It is possible to manage replicated spaces, and to non-disruptively create a consistent database copy synchronizing with the original database operation. It also provides the following features.

• Backup operation without impact to normal operations

The AdvancedCopy features of the ETERNUS DX Disk storage system can perform backup operations without impacting running business applications. Thanks to the high-speed backup, and independent of the size, business data and system volumes can be backed up without the need to interrupt operations. System volumes can be backed up easily before or after applying a patch or changing an application.



• Backup operation without interrupting the database system

In combination with Oracle's backup feature, this enables backup without interrupting database operations, thereby achieving 24 x 365 continuous operation.

Power-saving backup

This reduces storage power consumption by spinning drives at the backup site only at the time of backup.



Implement a disaster recovery solution

Remote copy is available by connecting the ETERNUS DX Disk storage systems via a WAN. For example, a disaster recovery solution can be implemented by installing our disk storage system for storing backup data into a facility where earthquake-resistant measures are taken.



4. Oracle Technologies

4-1. Integration of Grid Infrastructure and Automatic Storage Management

With Oracle Database11g Release2, ASM is integrated with Grid Infrastructure. Whereas ASM was a component of Oracle Database in previous releases, it now is a component of Grid Infrastructure in the Oracle Database11g Release 2. Therefore, it is necessary to install Grid Infrastructure when configuring an ASM instance.

4-2. Automatic Storage Management

ASM enables a disk group to be designated as storage for Oracle database files^{*1}, OCR, Voting disk, SPFILE for ASM instance and backup files. A disk group consists of multiple disk drives and is managed as a unit by ASM. Any file stored in a disk group is automatically striped over all the disk drives in the group. ASM provides clustering capabilities and is available not only for single SMP machine but across multiple nodes of Oracle Real Application Clusters.

Control file, data file, SPFILE for database instance, online redo log, archive log, flashback log, changed tracking bitmap, data pump dump set, etc.

4-3. ASM Architecture

The ASM feature is activated by using the 'ASM instance' which is different from the 'DB instance'. The ASM instance manages data mapping information in a disk group by using metadata describing the layout of ASM files.



The DB instance provides for access to data files by using the data mapping information from the ASM instance.

4-4. I/O Distribution

A file (an ASM file) created on a disk group is divided evenly and stored among all the disk drives in the disk group. This prevents I/O concentration on a single disk drive. There are two stripe widths: COARSE (1MB chunks) and FINE (128KB chunks). The default setting for the control file is FINE and for all others the default setting is COARSE.

4-5. Dynamic Reconfiguration of a Disk Group

When a disk drive is added to or removed from a disk group or if a disk drive fails, ASM automatically redistributes data among all the disk drives. This operation can be performed without interrupting database operations.

4-6. Rebalancing

When a disk group is reconfigured, the data is reallocated so that the load on each disk in the disk group is balanced. This operation is called 'rebalancing'. Rebalancing has some performance impacts on online transactions because it generates internal accesses for moving data. Rebalancing does not relocate data based on I/O statistics nor is it started as a result of statistics. It is completely driven by the size of the disks in the disk group and is automatically started when the storage configuration changes.

4-7. ASM Mirroring

ASM has three disk group types that support different types of mirroring: (1) normal redundancy, (2) high redundancy, and (3) external redundancy. Normal redundancy disk groups support two-way mirroring. High redundancy disk groups support three-way mirroring. External redundancy disk groups do not provide mirroring. When RAID storage is used, we recommend using the external redundancy disk group.

4-8. ASM Recovery

If the ASM instance shuts down or ends abnormally, the DB instance depending on the ASM instance also ends abnormally. This, however, will not crash the operating system and therefore can be recovered and restarted quickly and efficiently.

With an RAC configuration database, an ASM instance is distributed to each node. This ensures that even if an ASM instance on a certain node ends abnormally, the ASM instances on the other nodes automatically recover and maintain their operations.

4-9. Backup and Restoration of Metadata

With Oracle Database 11g, a feature to back up and restore the metadata of ASM disk groups was added. In the event of a ASM disk group failure, this enables the ASM disk group to be recovered (It can be restored with the same disk path, disk name, failure group, attribution, template and arias directory structure as those at the time of backup).

Both the backup and restoration features are executed with the ASMCMD utility.

5. Best Practices

5-1. High Reliability and High Availability

The ASM in Oracle Database11g provides a mirroring feature that further enhances Oracle database availability. However, to further enhance availability, ETERNUS DX storage system's high-availability features including its RAID mechanism can be used to provide the optimum solution. The ETERNUS DX storage system can perform maintenance operations including failure detection, retry by switching and replacement of failed parts concurrently when database operations are running.

5-2. Database Acceleration

Database performance can be enhanced by the combination of the ASM striping feature and the RAID mechanism. The ASM striping feature allocates data across all the disks in the disk group to enhance the entire throughput. Moreover, with the disk group volume configured as RAID0+1 or RAID5, the performance is enhanced by striping within the ETERNUS DX.

Database operations sometimes require performance tuning after the operations have started. ASM optimizes file accesses by distributing file extents to all the disks in a disk group. This means manual tuning is not required.

Moreover, the ETERNUS DX storage system provides RAID migration feature that enables performance tuning from another aspect. With RAID migration, it is possible to change disk drives comprising the RAID group, for example, from 10K rpm drives to 15K rpm drives and to change RAID levels, for example, from RAID5 to RAID0+1, without stopping operations..

5-3. ASM Disk Group Configuration Guideline

The datafile is huge in size, and does require concurrent backup and rapid recovery - so it is best to use Advanced Copy for the backup of the datafile. It is also best to allocate each file in separate disk group for ease of operation at the time of restoration If Advanced Copy is used for the datafile backup, then the redo log file should never be placed in the same disk group as the datafile. Otherwise, Advanced Copy will overwrite all the data of the disk group at the time of restore.

In order to maximize the benefits of the ETERNUS DX Advanced Copy feature, we recommend configuring ASM disk groups as described in the figure below.

- (1) Create five disk groups.
 - ① For OCR, Voting disk and SPFILE for ASM(DG_CRS)
 - ② For data file (DG_DATA)
 - ③ For redo log file (DG_REDO)
 - ④ For mirror of control file (DG_REDO_M)
 - 5 For archive log file (DG_ARCH)
- (2) Set 11.2.0.0.0 as compatible.asm attribute and compatible.rdbms attribute of all disk groups
- * Unless the above setting is performed when metadata is backed up with the ASMCMD utility, the metadata cannot be restored properly due to the failure of 11.2.0.1.0.
- (3) Allocate only data files to DG_DATA. Data files are backed up with the ETERNUS DX Advanced Copy features (OPC/EC). For details of the backup for other files, see "7-2. Backup/Recovery Procedures and Usage Example".
- (4) Allocate all redo log files and control files to DG_REDO
- (5) Allocate all mirrors of control files to DG_REDO_M
- (6) Allocate archive log files to DG_ARCH
- (7) Allocate OCR, Voting disk, SPFILE for ASM instance to DG_CRS

* Note: If you want to maximize the availability of redo log files, then you can place a mirror of all redo log file logs in the mirror disk group (DG_REDO_M).



Regarding RAID configurations for the ETERNUS DX storage system, RAID0+1 is recommended for online volumes to provide performance and reliability, and RAID5 is recommended for backup volumes for cost-effectiveness. To maximize performance, it is recommended that each disk group is placed in different RAID groups. However, because of advancements in disk capacities, it is unrealistic that all the disk groups can be placed in different RAID groups. Therefore, it is necessary to place a small number of disk groups per RAID group, e.g., placing infrequently accessed disk groups to the same RAID group.



RAID placement of disk group (Example)

5-4. Backup of AdvancedCopy Manager Operational Information

The ETERNUS SF Manager and AdvancedCopy Manager contain various repositories and management information as operational information. The operational information is important information that is required to operate the ETERNUS SF Manager and AdvancedCopy Manager. In the event of an unexpected accident and a shortage of repository capacity due to a long-term operation, a significant change in operational status may occur. Therefore it is recommended to back up the operational information periodically.

For details of the backup methods of the ETERNUS SF Manager and AdvancedCopy Manager operational information, see "9.1 Maintenance of Database" and "Maintenance method of ETERNUS SF Manager Database" in "ETERNUS SF Advanced Copy Manager Operator's Guide (Linux)".

6. Conclusion

To configure a high-performance, high-availability and high-operability database environment with a combination of the Oracle 11g ASM feature and the Fujitsu ETERNUS DX storage system, the following points must be considered.

- (1) For disk groups where OCR, Voting disk or SPFILE for ASM instance is stored, configure disk groups with high redundancy or normal redundancy. For the others, configure disk groups with external redundancy.
- Set 11.2.0.0.0 as compatible.asm attribute and compatible.rdbms attribute of all disk groups
 *Unless the above setting is made when metadata is backed up with the ASMCMD utility, the metadata cannot be restored properly due to a failure of 11.2.0.1.0.
- (3) Employ RAID0+1 or RAID5 for volumes to be registered in a disk group.
- (4) Create five disk groups: DG_CRS, DG_DATA, DG_REDO, DG_REDO_M and DG_ARCH. Allocate OCR, Voting disk and ASM SPFILE to DG_CRS. Allocate only data files to DG_DATA. Allocate redo log files and control files to DG_REDO. Allocate mirrors of control files to DG_REDO_M. Allocate archive log files to DG_ARCH.
- (5) For maximum availability of redo log files, it is recommended to place mirrors of redo log files in control file mirror disk group (DG_REDO_M).
- (6) RAID Migration feature enables performance tuning by changing the rotational speed of disk drive and/or the RAID levels concurrently with online operations.
- (7) For data files, execute backup and recovery of the ASM file system using the Advanced Copy feature of ETERNUS DX storage system
- (8) Back up and recover archive logs, control files and SPFILE for database instance using RMAN
- (9) Back up and recover metadata of disk groups with the ASMCMD utility
- $(10)\,$ Back up and recover SPFILE for ASM instance using SQL*Plus
- (11) Back up and recover OLR, OCR and Voting disk using ocrconfig

7. Appendix

As described above, this Best Practices document explains the basic features available through the combination of Oracle 11g ASM, ETERNUS DX and ETERNUS SF AdvancedCopy Manager.

[Note]

Screen shots of Oracle Enterprise Manager used in this chapter are that of Oracle Database Product (11gR2). Oracle Corporation has the proprietary rights of them.

7-1. Cluster System by the Combination of Oracle RAC and Oracle Clusterware

Oracle Clusterware enables simple application control. This section describes a procedure for building a cluster environment to operate ETERNUS SF AdvancedCopy Manager in Oracle Clusterware (cluster system).



7-1-1. Hardware and software requirements

Here is a listing of the equipment and components you will need:

- ETERNUS SF AdvancedCopy Manager 15.1 or later
- Red Hat Enterprise Linux 6 (64bit)
- Oracle Database 11g Release 2
- Oracle Real Application Clusters 11g Release 2
- Oracle Grid Infrastructure 11g Release 2

Prerequisites: Before starting this procedure, it is required that you have a storage management server available, with agent installed.

7-1-2. Required Resources

For cluster operations using AdvancedCopy Manager in Oracle Clusterware, the following resources are needed. The following resources are needed for each HA flame work where AdvancedCopy Manager is installed.

- Handover virtual IP (VIP) for AdvancedCopy Manager
 Allocate a new IP address that is unique in the network for use in clustered system operations.
 IP address is required for each AdvancedCopy Manager transaction.
 When a new VIP is assigned, confirm that there is no problem with transaction even if it is added.
 When an existing VIP is used, confirm that there is no problem (limit) with the existing products (especially where the VIP is used) even if the VIP is shared with AdvancedCopy Manager.
- Shared disk for shared data for AdvancedCopy Manager Prepare a partition to store shared data for AdvancedCopy Manager on a shared disk. The required number of partitions is one. IP address is required for each AdvancedCopy Manager transaction.
 For the shared disk capacity for shared data for AdvancedCopy Manager, see in "3.2 Capacity of a shared disk" in ETERNUS SF Advanced Copy Manager 14.2 Operator's Guide for Cluster Environment. Note)
 - Allocate disks where backup and replication are not executed with AdvancedCopy Manager to the shared disk for shared data for AdvancedCopy Manager.
 - Shared disk for shared data for AdvancedCopy Manager is used for a file system. Mount the shared disk for shared data for AdvancedCopy Manager with ActionScript of Oracle Clusterware.
- ✓ Logical node name

It is the name of logical server in a cluster system. It can be set optionally using only a 8-byte alphameric character. Commands of AdvancedCopy Manager in cluster operations operate using this logical name as a key.

- E.g.: When a command is executed, if this node name is set for the environmental variable SWSTGNODE, the command operates as a cluster operation.
- Port number of the communication service for transaction Prepare the port number assigned to the communication service for transaction. It should be an integral value between 5001 and 65535 which is not used as another port number. In addition, it is necessary to use the same port number for primary and secondary since it is a cluster operation. Note)
 - The port number of the communication service for transaction should be different from that of local the communication service for transaction. To use the port number of local the communication service for transaction for that of the communication service for transaction, register a new port number for the port number for local the communication service for transaction.
- ActionScript of AdvancedCopy Manager Prepare an ActionsScript for transaction that starts and stops the AdvancedCopy Manager service. Specify the prepared ActionScript in the application profile of Oracle Clusterware.

7-1-3. Procedures to Create a Cluster Environment

[Procedure flow]

To create a cluster environment, the following operations are required.

- 1. Edit the configuration file of AdvancedCopy Manager for each node
- 2. Create a directory on a shared disk for shared data
- 3. Create a configuration file of AdvancedCopy Manager on the shared disk for shared data
- 4. Execute the command to create a cluster environment of AdvancedCopy Manager
- 5. Register to the HA framework (Command/ Oracle Enterprise Manager)

[Procedures to set AdvancedCopy Manager]

Execute the following operation as root user.

In the setting examples described in setting procedures, the following conditions are used. For the actual setting, set them according to the environment.

Setting example:

AdvancedCopy Manager version		15.1
Cluster	Logical node name	linux
	Business name	acmagt
	Mount point of shared disk for shared data	/acmdata
for AdvancedCopy Manager		
	Disk device of shared disk for shared data	/dev/disk/by-id/scsi-3600000e00d10000000
	for AdvancedCopy Manager	1001a200150000-part1
	Primary node name	node1
	Port number of the communication service	1227
	for transaction	

<Operations in a primary node>

1. Make a setting so that a shared disk for shared data for AdvancedCopy Manager can be used **Setting example**

```
[root@nodel]# /bin/mount /dev/disk/by-id/scsi-3600000e00d100000001001a200150000-part1 /acmdata
```

2. Edit /etc/services to register the port number of the communication service for transaction **File settings**

The mark " \star " indicates the item that should be added according to the environment.

```
# /etc/services:
# $Id: services,v 1.48 2009/11/11 14:32:31 ovasik Exp $
#
# Network services, Internet style
# IANA services version: last updated 2009-11-10
#
# Note that it is presently the policy of IANA to assign a single well-known
# port number for both TCP and UDP; hence, most entries here have two entries
# even if the protocol doesn't support UDP operations.
# Updated from RFC 1700, ``Assigned Numbers'' (October 1994). Not all ports
# are included, only the more common ones.
#
# The latest IANA port assignments can be gotten from
      http://www.iana.org/assignments/port-numbers
#
# The Well Known Ports are those from 0 through 1023.
# The Registered Ports are those from 1024 through 49151
 The Dynamic and/or Private Ports are those from 49152 through 65535
#
#
# Each line describes one service, and is of the form:
#
# service-name port/protocol [aliases ...] [# comment]
tcpmux
              1/tcp
                                     # TCP port service multiplexer
tcpmux
              1/udp
                                     # TCP port service multiplexer
(snip)
```

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	stgxfws	1226/tcp	
*	stgxfws_	_ <logical name="" node=""></logical>	<port communication="" for="" number="" of="" service="" th="" the="" transaction<=""></port>
	>/tcp		

Setting example

```
/etc/services:
# $Id: services,v 1.48 2009/11/11 14:32:31 ovasik Exp $
#
# Network services, Internet style
 IANA services version: last updated 2009-11-10
#
# Note that it is presently the policy of IANA to assign a single well-known
# port number for both TCP and UDP; hence, most entries here have two entries
# even if the protocol doesn't support UDP operations.
# Updated from RFC 1700, ``Assigned Numbers'' (October 1994). Not all ports
# are included, only the more common ones.
#
# The latest IANA port assignments can be gotten from
#
      http://www.iana.org/assignments/port-numbers
# The Well Known Ports are those from 0 through 1023.
 The Registered Ports are those from 1024 through 49151
# The Dynamic and/or Private Ports are those from 49152 through 65535
# Each line describes one service, and is of the form:
#
# service-name port/protocol [aliases ...]
                                             [# comment]
                                          # TCP port service multiplexer
              1/tcp
tcpmux
                                          # TCP port service multiplexer
tcpmux
              1/udp
(snip)
              1226/tcp
stqxfws
stgxfws_linux
                    1227/tcp
```

3. Edit the configuration file (swcluster.ini) of AdvancedCopy Manager

File name	swcluster.ini
Storage	/opt/FJSVswstf/cluster
location	

File settings

The mark " \star " indicates the item that should be added according to the environment.

```
[ClusterCommon]
     Cluster=ON
     Max=20
     StartTimeOut=300
     StopTimeOut=300
     System=SAFE
     Env_1=<Logical node name>
     [<Logical node name>]
★
     Type=Primary
     BusiType=2
     Business=<Business name>
★
     ShareEtc=<Mount point of shared disk for shared data>/etc/opt
★
     ShareVar=<Mount point of shared disk for shared data>/var/opt
★
     MountPoint=<Mount point of shared disk for shared data>
     IPAddr=
     IPUseType=0
     IPRscName=
     Hostname=
     NodeName=<Primary node name (Host name of primary node)>
★
     ClusterName=
     DiskName=
     GroupName=
     SubNetMask=
     MSCSNetName=
     Date=00/00/00 00:00:00
     Setup=YES
     ResourceType=Procedure
```

Setting example

[ClusterCommon] Cluster=ON Max=20 StartTimeOut=300 StopTimeOut=300 System=SAFE Env_1=linux [linux] Type=Primary BusiType=2 Business=acmagt ShareEtc=/acmdata/etc/opt ShareVar=/acmdata/var/opt MountPoint=/acmdata IPAddr= IPUseType=0 IPRscName= Hostname= NodeName=node1 ClusterName= DiskName= GroupName= SubNetMask= MSCSNetName= Date=00/00/00 00:00:00 Setup=YES ResourceType=Procedure

4. Create a directory on a shared disk for shared data for AdvancedCopy Manager

```
Mount point of shared disk for shared data for AdvancedCopy Manager
+---/etc
| ---/opt
| ---/swstorage
+---/var
    ---/opt
    ---/swstorage
```

Setting example

```
[root@nodel]# /bin/mkdir -p /acmdata/etc/opt/swstorage
[root@nodel]# /bin/chmod -R 755 /acmdata/etc
[root@nodel]# /bin/chown -R root:root /acmdata/etc
[root@nodel]# /bin/mkdir -p /acmdata/var/opt/swstorage
[root@nodel]# /bin/chmod -R 755 /acmdata/var
[root@nodel]# /bin/chown -R root:root /acmdata/var
```

5. Create a configuration file (clsetup.ini) of AdvancedCopy Manager

File name	clsetup.ini							
Storage location	<mount advancedcopy<="" data="" disk="" for="" of="" point="" shared="" td=""></mount>							
	Manager>/etc/opt/swstorage							
Storage location	/acmdata/etc/opt/swstorage							
example								
Language used in	Set the following value							
AdvancedCopy	- Japan version: JAPANESE							
Manager	- International version: ENGLISH							

File settings

The mark " \star " indicates the item that should be added according to the environment.

	[Cluster]
	System=SAFE
\star	Swstgnode= <logical name="" node=""></logical>
*	Business= <business name=""></business>
Ŷ	ShareEtc= <mount data="" disk="" for="" of="" point="" shared="">/etc/opt</mount>
$\hat{}$	ShareVar= <mount data="" disk="" for="" of="" point="" shared="">/var/opt</mount>
×	MountPoint= <mount data="" disk="" for="" of="" point="" shared=""></mount>
★	IPAddr=
	IPUseType=0

	IPRSChalle=
	Hostname=
	NodeName= <primary (host="" name="" node="" node)="" of="" primary=""></primary>
\star	ClusterName=
	DiskName=
	GroupName=
	SubNetMask=
	MSCSNetName=
	BusiType=2
	ResourceType=Procedure
	[StorageMGR]
	Version= <advancedcopy manager="" version=""></advancedcopy>
*	Edition=EE
	Type=2
	AFSType=1
	Language= <language advancedcopy="" in="" manager="" used=""></language>
*	Code=
	[Secondary]
	Setup=YES
	Date=00/00/00 00:00:00
	[Primary]
	Date=00/00/00 00:00:00
	Setup=YES

Setting example

[Cluster] System=SAFE Swstgnode=linux Business=acmagt ShareEtc=/acmdata/etc/opt ShareVar=/acmdata/var/opt MountPoint=/acmdata IPAddr= IPUseType=0 IPRscName= Hostname= NodeName=node1 ClusterName= DiskName= GroupName= SubNetMask= MSCSNetName= BusiType=2 ResourceType=Procedure [StorageMGR] Version=V15.1 Edition=EE Type=2 AFSType=1 Language=ENGLISH Code= [Secondary] Setup=YES Date=00/00/00 00:00:00 [Primary] Date=00/00/00 00:00:00 Setup=YES

6. Copy the configuration file (swstg.ini) of AdvancedCopy Manager

Copy source file name	/etc/opt/s	wstorag	je/sv	/stg.ini						
Copy destination	<mount< td=""><td>point</td><td>of</td><td>shared</td><td>disk</td><td>for</td><td>shared</td><td>data</td><td>for</td><td>AdvancedCopy</td></mount<>	point	of	shared	disk	for	shared	data	for	AdvancedCopy
	Manager>/etc/opt/swstorage									

Setting example

[root@nodel]# /bin/cp -p /etc/opt/swstorage/swstg.ini /acmdata/etc/opt/swstorage

7. Execute the following commands from the command prompt.

1	clset_FJSVswstf	/opt/FJSVswstf/bin/clset_FJSVswstf -f <mount disk="" for="" of="" point="" shared="" shared<="" th=""></mount>
		data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Primary
2	clset_FJSVswsts	/opt/FJSVswsts/bin/clset_FJSVswsts -f <mount disk="" for="" of="" point="" shared="" shared<="" th=""></mount>
		data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Primary
3	clset_FJSVswsrp	/opt/FJSVswsrp/bin/clset_FJSVswsrp -f <mount disk="" for="" of="" point="" shared="" shared<="" th=""></mount>
		data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Primary

Setting example

[root@node1]# /opt/FJSVswstf/bin/clset_FJSVswstf -f /acmdata/etc/opt/swstorage/clsetup.ini -t Primary clset_FJSVswstf completed [root@node1]# /opt/FJSVswsts/bin/clset_FJSVswsts -f /acmdata/etc/opt/swstorage/clsetup.ini -t Primary clset_FJSVswsts completed [root@node1]# /opt/FJSVswsrp/bin/clset_FJSVswsrp -f /acmdata/etc/opt/swstorage/clsetup.ini -t Primary clset_FJSVswsrp completed

8. Create a symbolic link to the shared disk for shared data for AdvancedCopy Manager

1	Data in etc area	Link source	/etc/opt/swstorage/ <logical name="" node=""></logical>
		Link destination	<mount data="" disk="" dvancedcopy<="" for="" of="" point="" shared="" th=""></mount>
			Manager>/etc/opt/swstorage
2	Data in var area	Link source	/var/opt/swstorage/ <logical name="" node=""></logical>
		Link destination	<mount data="" disk="" dvancedcopy<="" for="" of="" point="" shared="" th=""></mount>
			Manager>/var/opt/swstorage

Setting example

```
[root@node1]# /bin/ln -s /acmdata/etc/opt/swstorage /etc/opt/swstorage/linux
[root@node1]# /bin/ln -s /acmdata/var/opt/swstorage /var/opt/swstorage/linux
```

9. Unmount the shared disk for shared data for AdvancedCopy Manager

Setting example [root@nodel]# cd / [root@nodel]# /bin/umount /acmdata

<Operations in a secondary node>

10. Make a setting so that a shared disk for shared data for AdvancedCopy Manager can be used

Setting example

```
[root@node2]# /bin/mount /dev/disk/by-id/scsi-3600000e00d100000001001a200150000-part1 /acmdata
```

11. Edit /etc/services to register the port number of the communication service for transaction **File settings**

The mark " \star " indicates the items that should be added according to the environment.

```
# /etc/services:
# $Id: services,v 1.48 2009/11/11 14:32:31 ovasik Exp $
#
# Network services, Internet style
# IANA services version: last updated 2009-11-10
#
# Note that it is presently the policy of IANA to assign a single well-known
# port number for both TCP and UDP; hence, most entries here have two entries
# even if the protocol doesn't support UDP operations.
# Updated from RFC 1700, ``Assigned Numbers'' (October 1994). Not all ports
# are included, only the more common ones.
#
# The latest IANA port assignments can be gotten from
#
      http://www.iana.org/assignments/port-numbers
# The Well Known Ports are those from 0 through 1023.
# The Registered Ports are those from 1024 through 49151
# The Dynamic and/or Private Ports are those from 49152 through 65535
#
# Each line describes one service, and is of the form:
#
# service-name port/protocol [aliases ...] [# comment]
```

tcpmux 1/tcp # TCP port service multiplexer
tcpmux 1/udp # TCP port service multiplexer
(snip)
stgxfws 1226/tcp
stgxfws_<Logical node name> <Port number of the communication service for transaction
>/tcp

Setting example

```
/etc/services:
# $Id: services,v 1.48 2009/11/11 14:32:31 ovasik Exp $
# Network services, Internet style
# IANA services version: last updated 2009-11-10
# Note that it is presently the policy of IANA to assign a single well-known
# port number for both TCP and UDP; hence, most entries here have two entries
# even if the protocol doesn't support UDP operations.
# Updated from RFC 1700, ``Assigned Numbers'' (October 1994). Not all ports
# are included, only the more common ones.
# The latest IANA port assignments can be gotten from
      http://www.iana.org/assignments/port-numbers
#
# The Well Known Ports are those from 0 through 1023.
# The Registered Ports are those from 1024 through 49151
# The Dynamic and/or Private Ports are those from 49152 through 65535
#
# Each line describes one service, and is of the form:
# service-name port/protocol [aliases ...] [# comment]
tcpmux
              1/tcp
                                          # TCP port service multiplexer
tcpmux
              1/udp
                                          # TCP port service multiplexer
(snip)
stgxfws
              1226/tcp
stgxfws_linux
                   1227/tcp
```

12. Edit the configuration file (swcluster.ini) of AdvancedCopy Manager

File name	swcluster.ini
Storage	/opt/FJSVswstf/cluster
location	

File settings

The mark " \star " indicates the item that should be added according to the environment.

```
[ClusterCommon]
     Cluster=ON
     Max=20
     StartTimeOut=300
     StopTimeOut=300
     System=SAFE
     Env_1=<Logical node name>
*
     [<Logical node name>]
*
     Type=Secondary
     BusiType=2
     Business=<Business name>
★
     ShareEtc=<Mount point of shared disk for shared data>/etc/opt
*
     ShareVar=<Mount point of shared disk for shared data>/var/opt
★
     MountPoint=<Mount point of shared disk for shared data>
+
     IPAddr=
     IPUseType=0
     IPRscName=
     Hostname=
     NodeName=<Primary node name (Host name of primary node)>
*
     ClusterName=
     DiskName=
     GroupName=
     SubNetMask=
     MSCSNetName=
     Date=00/00/00 00:00:00
```

Setup=YES ResourceType=Procedure

Setting example

[ClusterCommon]
Cluster=ON
Max=20
StartTimeOut=300
StopTimeOut=300
System=SAFE
Env_1=linux
[linux]
Type=Secondary
BusiType=2
Business=acmagt
ShareEtc=/acmdata/etc/opt
ShareVar=/acmdata/var/opt
MountPoint=/acmdata
IPAddr=
IPUseType=0
IPRscName=
Hostname=
NodeName=node1
ClusterName=
DiskName=
GroupName=
SubNetMask=
MSCSNetName=
Date=00/00/00 00:00:00
Setup=YES
ResourceType=Procedure

13. Execute the following commands from the command prompt.

1	clset_FJSVswstf	/opt/FJSVswstf/bin/clset_FJSVswstf -f <mount disk="" for="" of="" point="" shared="" shared<="" td=""></mount>
		data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Secondary
2	clset_FJSVswsts	/opt/FJSVswsts/bin/clset_FJSVswsts -f <mount disk="" for="" of="" point="" shared="" shared<="" td=""></mount>
		data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Secondary
3	clset_FJSVswsrp	/opt/FJSVswsrp/bin/clset_FJSVswsrp -f < Mount point of shared disk for shared
		data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Secondary

Execution example

[root@node2]#	/opt/FJSVswstf/bin/clset_FJSVswstf	-f
/acmdata/etc/opt/swstorage/clse	etup.ini -t Secondary	
clset_FJSVswstf completed		
[root@node2]#	/opt/FJSVswsts/bin/clset_FJSVswsts	-f
/acmdata/etc/opt/swstorage/clse	etup.ini -t Secondary	
clset_FJSVswsts completed		
[root@node2]#	/opt/FJSVswsrp/bin/clset_FJSVswsrp	-f
/acmdata/etc/opt/swstorage/clse	etup.ini -t Secondary	
clset_FJSVswsrp completed		

14. Create a symbolic link to the shared disk for AdvancedCopy Manager data

1	Data in etc area	Link source	/etc/opt/swstorage/ <logical name="" node=""></logical>
		Link	<mount advancedcopy<="" data="" disk="" for="" of="" point="" shared="" td=""></mount>
		destination	Manager>/etc/opt/swstorage
2	Data in var area	Link source	/var/opt/swstorage/ <logical name="" node=""></logical>
		Link	<mount advancedcopy<="" data="" disk="" for="" of="" point="" shared="" td=""></mount>
		destination	Manager>/var/opt/swstorage

Setting example

```
[root@node2]# /bin/ln -s /acmdata/etc/opt/swstorage /etc/opt/swstorage/linux
[root@node2]# /bin/ln -s /acmdata/var/opt/swstorage /var/opt/swstorage/linux
```

15. Unmount the shared disk for shared data for AdvancedCopy Manager

Setting example

[root@node2]# cd /
[root@node2]# /bin/umount /acmdata

[Setting procedure of Oracle Clusterware]

Register resources to HA frame work using Oracle Clusterware. The following registration method of HA frame work is described by reference to the Oracle Database manual "Oracle® Clusterware Administration and Deployment Guide 11g Release 2 (11.2)". For the procedures and setting method, see each version of the Oracle Database manuals.

Grid Infrastructur	e(GI) installation destination	/u01/app/11.2.0/grid
Grid user name		grid
Oracle installation	n destination	/u01/app/oracle/11.2.0/dbhome_1
Oracle user name	9	oracle
Server pool name	e (for policy management)	acmpool
Storage directory	of ActionScript	/u01/app/11.2.0/grid/crs/public
File name of Action	onScript	acmagt.scr
Cluster	VIP name	acmvip
operation (VIP)	VIP interface name	eth1
	VIP IP address	192.168.100.100
	VIP netmask	255.255.255.0
Cluster	ACM application name	acmagent
operation (ACM	The number of seconds for	60
application)	interval to check ACM	
	application	
	The number of restarts of	0
	ACM application	

<Resource registration using a command>

Start Oracle Clusterware in all nodes.

Execute it as root user.

1.

{GI installation destination}/bin/crsctl start crs

Setting example

[root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs
CRS-4123: Oracle High Availability Services have been started

 Create ActionScript for AdvancedCopy Manager in all nodes Create ActionScript in a primary node, and then transfer the ActionScript created in the primary node to other nodes.

For details of ActionScript, see "7-2-5. ActionScript". Set the executable access right with the chmod command for the created ActionScript.

3. Create a VIP resource in the primary node Execute it as root user.

*When a VIP resource is created with the {GI installation destination}/bin/appvipcfg command, The error "usage: tail-" may be displayed. To avoid this error, see KROWN#140076.

{GI installation destination}/bin/appvipcfg create -network={Network number} -ip={VIP IP address} -vipname={VIP name} -user={User name}

Setting example

```
[root@node1]# /u01/app/11.2.0/grid/bin/appvipcfg create -network=1 -ip =192.168.100.100
-vipname=ac mvip -user =root
Production Copyright 2007, 2008, Oracle.All rights reserved
2012-11-20 17:39:29: Creating Resource Type
2012-11-20 17:39:29: Executing /u01/app/11.2.0/grid/bin/crsctl add type
app.appvip_net1.type -basetype ora.cluster_vip_net1.type -file
/u01/app/11.2.0/grid/crs/template/appvip.type
2012-11-20 17:39:29: Executing cmd: /u01/app/11.2.0/grid/bin/crsctl add type
app.appvip_net1.type -basetype ora.cluster_vip_net1.type -file
/u01/app/11.2.0/grid/crs/template/appvip.type
2012-11-20 17:39:30: Create the Resource
2012-11-20 17:39:30: Executing /u01/app/11.2.0/grid/bin/crsctl add resource acmvip -type
app.appvip_net1.type -attr
"USR_ORA_VIP=192.168.100.100,START_DEPENDENCIES=hard(ora.net1.network)
pullup(ora.net1.network),STOP_DEPENDENCIES=hard(ora.net1.network),ACL='owner:root:rwx,p
grp:root:
r-x,other::r--,user:root:r-x',HOSTING_MEMBERS=node1.localdomain,APPSVIP_FAILBACK="
```

4. Change the authority of the VIP resource in the primary node Execute it as root user.

```
# {GI installation destination}/bin/crsctl setperm resource {VIP name} -o root
# {GI installation destination}/bin/crsctl setperm resource {VIP name} -u user:{Grid user
name}:r-x
```

Setting example

```
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmvip -o root
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmvip -u user:grid:r-x
```

5. Start the VIP resource in the primary node

Execute it as grid user.

\$ {GI installation destination}/bin/crsctl start resource {VIP name}

Setting example

```
[grid@node1]$ /u01/app/11.2.0/grid/bin/crsctl start resource acmvip
CRS-2672: Attempting to start `acmvip'(on `node1')
CRS-2676: Start of `acmvip' (on `node1') succeeded
```

6. Create an action profile for AdvancedCopy Manager in the primary node Execute it as grid user.

[Administrator management]

\$ {GI installation destination}/bin/crsctl add resource {ACM application name} ¥
 -type cluster_resource -attr "ACTION_SCRIPT={ActionScript of ACM},¥
 CHECK_INTERVAL={No. of seconds for check interval},RESTART_ATTEMPTS={No. of restarts},¥
 START_DEPENDENCIES=hard({VIP name}) pullup(VIP name),¥
 STOP_DEPENDENCIES=hard({VIP name})"

Setting example

```
[grid@nodel]$ /u01/app/11.2.0/grid/bin/crsctl add resource acmagent -type cluster_resource
-attr "ACTION_SCRIPT=/u01/app/11.2.0/grid/crs/public/acmagt.scr,
CHECK_INTERVAL=60,RESTART_ATTEMPTS=0,START_DEPENDENCIES=hard(acmvip)
pullup(acmvip),STOP_DEPENDENCIES=hard(acmvip)"
```

[Policy management]

\$ {GI installation destination}/bin/crsctl add resource {ACM application name} -type ¥
 cluster_resource -attr "ACTION_SCRIPT={ActionScript of ACM},¥
 CHECK_INTERVAL={No. of seconds for check interval},RESTART_ATTEMPTS={No. of restarts},¥
 START_DEPENDENCIES=hard({VIP name}) pullup(VIP name),¥
 STOP_DEPENDENCIES=hard({VIP name}),PLACEMENT=restricted,SERVER_POOLS={Server pool
 name}"

*Set "restricted" for PLACEMENT, and specify SERVER_POOLS

Setting example

```
[grid@node1]$ /u01/app/11.2.0/grid/bin/crsctl add resource acmagent -type cluster_resource
-attr "ACTION_SCRIPT=/u01/app/11.2.0/grid/crs/public/acmagt.scr,
CHECK_INTERVAL=60,RESTART_ATTEMPTS=0,START_DEPENDENCIES=hard(acmvip)
pullup(acmvip),STOP_DEPENDENCIES=hard(acmvip),PLACEMENT=restricted,SERVER_POOLS=ora.acm
pool"
```

7. Change the authority of AdvancedCopy Manager in the primary node

Execute it as root user

{GI installation destination}/bin/crsctl setperm resource {ACM application name} -o root
{GI installation destination}/bin/crsctl setperm resource {ACM application name} ¥
-u user:{Grid user name}:r-x

Setting example

```
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmagent -o root
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmagent -u user:grid:r-x
```

8. Start the AdvancedCopy Manager resource in the primary node

Execute it as grid user

\$ {GI installation destination}/bin/crsctl start resource {ACM application name}

Setting example

```
[grid@node1]$ /u01/app/11.2.0/grid/bin/crsctl start resource acmagent
CRS-2672: Attempting to start 'acmagent' (on 'node1')
CRS-2676: Start of 'acmagent' (on 'node1') succeeded
```

<Resource registration using Oracle Enterprise Manager>
To register resources to Oracle Clusterware using Oracle Enterprise Manager, execute the following procedures.

1. Log in to Oracle Enterprise Manager Database Control as sys user

Ver Name Sys Suggested Sites * Web Site Gallery * Connect As SYSDBA Cogin	Savorites Savorites Suggested Sites • Web Site Gallery • Tracle Enterprise Manager Savorites Savorites Savorites Savorites Suggested Sites • Web Site Gallery • Tracle Enterprise Manager Savorites Savorites Savorites Savorites Suggested Sites • Savorites Login Savorites Savorites Savorites Savorites Login Savorites Savorites Login Savorites Savorites Login	V jej nodes i novem Consolezi jedn/ Jocon V i Certificate Error V Certificate Error V i Ding V i Di Ding V i Ding V i Ding V i Ding <			
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	viabt @ 1996_2011_Orable_All rights reserved	© 1996, 2011, Oracle. All rights reserved.			
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3. Click "Manage Resources" on the "Administration" tab

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Specify Cluster Host Credentials to view resources registered with Oracle Clusterware.	
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* Password	
Save as Preferred Credential	
	(Cancel) (Li
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5. Click "Add Application VIP"

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Oracle Clusterware provides high availability framework to protect any appl monitor the Clusterware resources using this interface.	lication that is	Page s registered wit	Refreshed I h the Cluster	<i>l</i> lar 29, 2013 10: ware. You can c	51:07 AM JS reate, adminis	Refresh	
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Show Oracle Resources							
				Add Resource	Add Appl	lication VIP	
Select Details Name	Cardinality	Current State	Target State	Running Hosts	Resource Type	Owner	
Only Oracle resources are registered with Oracle Clusterware.							
						Return	
Cluster Database Set	up Prefere	nces Help	Logout				
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 Set each item and click "Continue" The details of each item are described below.

Item name	Descriptions
Name	Specify a name of the application VIP to be created
Network number	Specify the number of <integer> shown in the ora.vip</integer>
	network resource(ora.net <integer>.network)(Default</integer>
	value: 1)
Internet Protocol Address	Specify an IP address used for the application VIP to be created
Primary user	Specify root as the user because root authority is required for VIP-related operations

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ORACLE Enterprise Manager 11g	Setup Preferences Help Logout Cluster Database	
Add Application VIP Resource		
The Application Virtual IP resource enables users to connect to the application (resourc resource dependent on the application VIP resource the two would fail over as a combin an Application VIP Resource you need an IP address that is on the same subnet as a p in the Domain Name Service, but is unused and cannot be pinged in the network.	Cancel Continu ce) irrespective of the physical node it is actually running on. By making your applicatio ned resource, during failures, minimizing downtime of your application. In order to create public IP address of the cluster nodes; it should be an address that is assigned a name	P n 3
* Name acmvip		
* Network Number 1		
* Internet Protocol Address 192.168.100.100		
* Primary User root		
Start the resource after creation		
	Cancel) (Continu	e
Cluster Database Setup	Preferences Help Logout	
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Confirmation: Add	VIP Resource				
Enterprise Manager will exe appvipcfg create -network=	cute the following command 1 -ip=192.169.100.100 -vipnam	e=acmvip -user=root		Cancel	Continue
For adding an Application ' privileges you could overrid operation?	'irtual Internet Protocol Resourd e the credentials below. Are yo	e you need to be have sup u sure you want to proceed	er user privileges. If you do with the add Application VI	not have sufficient Presource	
Specify Cluster Cre	dentials				
	* Username root				
	* Password				
	Save as	Preferred Credential			
				Cancel	Continue
	Cluster	Database Setup Prefe	rences Help Logout		
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{GI installation destination}/bin/crsctl setperm resource {VIP name} -o root
{GI installation destination}/bin/crsctl setperm resource {VIP name} -u user:{Grid
user name}:r-x

Setting example

```
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmvip -o root
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmvip -u
user:grid:r-x
```

ORACLE Enterprise Database Control	Manager 11 g					
					Setup Preferences Cluster	<u>Help Loqout</u> Database
Cluster: crs>						
(i) Information						
-basetype ora.cluster 12:11:55: Executing / "USR_ORA_VIP=192 (ora.net1.network).A(12:11:55: Executing o "USR_ORA_VIP=192 (ora.net1.network).A(_vip_net1.type -file u01/app/11.2.0/grid .168.100.100,STAR CL='owner:root:nvx,j :md: /u01/app/11.2. .168.100.100,STAR CL='owner:root:nvx.j	/u01/app/11.2.0/grid/cr //bin/crsctl add resource T_DEPENDENCIES=ha ogrp:root:r-x,other::r,u 0/grid/bin/crsctl add res T_DEPENDENCIES=ha ogro:root:r-x,other::r,u	s/template/appvip.ty e node1_vip -type ap rd(ora.net1.network) ser:root:r-x',HOSTIN ource node1_vip -ty rd(ora.net1.network) ser:root:r-x'.HOSTIN	pe 2013-03-29 12:11:5 pp.appvip_net1.type -at pullup(ora.net1.netwoi G_MEMBERS=node1,/ pe app.appvip_net1.ty pullup(ora.net1.netwoi G_MEMBERS=node1./	5: Create the Resource 2013 tr tk)STOP_DEPENDENCIES=t APPSVIP_FAILBACK=" 2013-0 pe -attr k)STOP_DEPENDENCIES=th APPSVIP_FAILBACK="	-03-29 lard)3-29 ard
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	Start Resource: Confirmation
	Are you sure you want to start the selected resource(s)?
	Force Start Use force option to relocate a resource running on another server on which the resource you want to start has a hard start dependency.
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13. Set an applicable value for each item and click "Submit"
(1) The items in the "General" tab are as follows

Item name	Descriptions			
Name	Specify the application resource name to be created			
Resource type	Select a resource template			
	Confirm that "cluster_resource" is selected			
Placement	For Administrator-Managed, select "Balanced (this resource can be			
	placed anywhere in the cluster)"			
	For Policy-Managed, "Favor the placement to some Server Pools			
	and/or Servers" or "Restrict the placement to some Server Pools or			
	specific Servers." and enter a server pool name			
Cardinality	Specify the number of nodes where the application resource runs			
Action Program	Select a program that is used for resource management			
	Select "Use Action Script"			
Action Script Name	Specify a node name and a script path			
	When the application resource is added, ActionScript is also placed			
	on other nodes. If it is placed on all nodes, check "Overwrite if			
	already exists (on any node of the cluster)"			

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Add Resource	
Cancel) (Submit)	
General Attributes Advanced Settings Dependencies	
* Nama appropriate	
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* Resource Type cluster_resource View (Add)	
Resource Type is a template for the Resource. The Resource derives default attribute values and dependencies from the specified Resource Type. The user can override these default attributes and dependencies during Resource creation.	
Description	
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The following attributes define where the resource would be placed.	
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Action Program Action Program Action Program Action Program Could be an executable (Arent File) and / or a scrint (Action Scrint) that	
the Oracle Clusterware can invoke. Action Program should accept 'start', 'stop', 'check' or 'clean' as argument to perform respective operations. User can implement all these operations using Agent File alone or Action Script alone or using a combination of both (some operations in Agent File and some in Action Script). If both implement the same operation, Agent File operation would override the Action Script operation.	
Action Program Use Action Script	
Action Script Name node1 V /u01/app/11.2.0/grid/crs/public/acmagt_src V Create New Action Script	
□ Overwrite if already exists (on any node of the cluster)	
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2	In the "Dependencies" tab, specify "hard" or	"pullup" fo	or "Start	Dependencies",	and	"hard"	for	"Stop
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14. After clicking "Submit", check the execution command and click "Continue"

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Are you sure you want to proceed with the add resource operation?		
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15. Change the authority of the resource.

Execute it as root user

{GI installation destination}/bin/crsctl setperm resource {ACM application name} -o
root
{GI installation destination}/bin/crsctl setperm resource {ACM application name}
 -u user:{Grid user name}:r-x

Setting example

[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmagent -o root

[root@node1]# /u01/app/11.2.0/grid/bin/crsctl setperm resource acmagent -u
user:grid:r-x

16. Select the ACM application resource (acmagent) and click "Start"

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17. Click "Continue"

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Force Start Use force option to relocate a resource running on another server on which the resource you want to start has a hard start dependency.	
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After setting, check the following items to confirm that the settings are correct.

- · Resource can be displayed correctly by {GI installation destination}/bin/crsctl status resource
- Shared disk for shared data for AdvancedCopy Manager is mounted
- The daemon configuring AdvancedCopy Manager is activated

For the daemon configuring AdvancedCopy Manager, see "ETERNUS SF AdvancedCopy Manager V15.1 - Operation Guide (Linux)"

After that, execute settings required for AdvancedCopy features (OPC/EC)

7-1-4. Procedures to Delete a Cluster Environment

[Procedure flow]

To delete a cluster environment, the following operations are required.

- 1. Delete the registration information on AdvancedCopy Manager
- 2. Delete the resource registered to the HA framework (Command / Oracle Enterprise Manager)
- 3. Delete the cluster operation

[Procedures to delete Oracle Clusterware]

In the setting examples described in deletion procedures, the following conditions are used. For the actual setting, set them according to the environment.

Setting example:

Logical node name	linux
Mount point of shared disk for shared data	/acmdata
for AdvancedCopy Manager	
Port number of the communication service	1227
for transaction	
VIP name	acmvip
ACM application name	acmagent
	Logical node name Mount point of shared disk for shared data for AdvancedCopy Manager Port number of the communication service for transaction VIP name ACM application name
- 1. Delete the device information registered for backup management and replication management For the deletion method, see "ETERNUS SF AdvancedCopy Manager V15.1 - Operation Guide (Linux)"
- 2. Delete the registration information on the storage server registered to the storage management server For the deletion method, see "ETERNUS SF AdvancedCopy Manager V15.1 – Operation Guide (Linux)"

<Resource deletion using a command>

1. Delete the resource registered to the HA framework

Stop the VIP resource. This procedure should be executed as grid user.

\$ {GI installation destination}/bin/crsctl stop resource {ACM application name} \$ {GI installation destination}/bin/crsctl stop resource {VIP name} Setting example

[grid@nodel]\$ /u01/app/11.2.0/grid/bin/crsctl stop resource acmagent CRS-2673: Attempting to stop 'acmagent' (on `nodel') CRS-2677: Stop of 'acmagent' (on `nodel') succeeded [grid@nodel]\$ /u01/app/11.2.0/grid/bin/crsctl stop resource acmvip CRS-2673: Attempting to stop 'acmvip' (on `nodel') CRS-2677: Stop of 'acmvip' (on `nodel') succeeded

2. Delete the resource. Execute this procedure as root user

```
# {GI installation destination}/bin/crsctl delete resource {ACM application name}
# {GI installation destination}/bin/appvipcfg delete -vipname={VIP name}
```

Setting example

[root@nodel]# /u01/app/11.2.0/grid/bin/crsctl delete resource acmagent [root@nodel]# /u01/app/11.2.0/grid/bin/appvipcfg delete -vipname=acmvip Production Copyright 2007, 2008, Oracle.All rights reserved 2012-12-01 13:19:42: Deleting the resource 2012-12-01 13:19:42: Executing cmd: /u01/app/11.2.0/grid/bin/crsctl delete res acmvip 2012-12-01 13:19:42: Removing the type 2012-12-01 13:19:42: Executing cmd: /u01/app/11.2.0/grid/bin/crsctl delete type app.appvip.type

<Resource deletion using Oracle Enterprise Manager>

Select the ACM application resource and VIP resource, and click "Remove"

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For details of the procedures, see the Oracle Database manual, "Oracle® Clusterware Administration and Deployment Guide 11g Release 2 (11.2)"

Execute the following procedures as root user.

[Procedures to delete AdvancedCopy Manager]

<Operations in a secondary node>

Make a setting so that a shared disk for shared data for AdvancedCopy Manager can be used

Setting example

1.

```
[root@node2]# /bin/mount /dev/disk/by-id/scsi-3600000e00d100000001001a200150000-part1
/acmdata
```

2. Execute the following commands from the command prompt.

1	clset_FJSVswstf	/opt/FJSVswstf/bin/clset_FJSVswstf -u -f < Mount point of shared disk for shared data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Secondary
2	clset_FJSVswsts	/opt/FJSVswsts/bin/clset_FJSVswsts -u -f < Mount point of shared disk for shared data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Secondary
3	clset_FJSVswsrp	/opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f < Mount point of shared disk for shared data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t Secondary

Setting example

```
[root@node2]# /opt/FJSVswstf/bin/clset_FJSVswstf -u -f
/acmdata/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswstf completed
[root@node2]# /opt/FJSVswsts/bin/clset_FJSVswsts -u -f
/acmdata/etc/opt/swstorage/clsetup.ini -t Secondary
clset_FJSVswsts completed
[root@node2]# /opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f
/acmdata/etc/opt/swstorage/clsetup.ini -t Secondary
```

clset_FJSVswsrp completed

3. Delete the symbolic link to the shared disk for the shared data for AdvancedCopy Manager

1	Data in etc area	Link	/etc/opt/swstorage/ <logical name="" node=""></logical>
2	Data in var area	Link source	/var/opt/swstorage/ <logical name="" node=""></logical>

Setting example

[root@node2]#	/bin/rm	/etc/opt/swstorage/linux
[root@node2]#	/bin/rm	/var/opt/swstorage/linux

4. Restore the edited configuration file (swcluster.ini) settings of AdvancedCopy Manager

File name	swcluster.ini
Storage location	/opt/FJSVswstf/cluster

File settings [ClusterCommon] Cluster=OFF Max=20 StartTimeOut=300 StopTimeOut=300

- 5. Edit /etc/services to delete the port number of the communication service for transaction
- 6. Unmount the shared disk for AdvancedCopy Manager shared disk **Setting example**

```
[root@node2]# cd /
[root@node2]# /bin/umount /acmdata
```

<Operations in a primary node>

7. Make a setting so that a shared disk for shared data for AdvancedCopy Manager can be used **Setting example**

[root@node1]# /bin/mount /dev/disk/by-id/scsi-3600000e00d100000001001a200150000-part1
/acmdata

8. Execute the following commands from the command prompt.

1	clset_FJSVswstf	/opt/FJSVswstf/bin/clset_FJSVswstf -u -f < Mount point of shared disk for				
		shared data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t				
		Primary				
2	clset_FJSVswsts	/opt/FJSVswsts/bin/clset_FJSVswsts -u -f < Mount point of shared disk for				
		shared data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t				
		Primary				
3	clset_FJSVswsrp	/opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f < Mount point of shared disk for				
		shared data for AdvancedCopy Manager>/etc/opt/swstorage/clsetup.ini -t				
		Primary				

Execution example

[root@node1]# /opt/FJSVswstf/bin/clset_FJSVswstf -u -f
/acmdata/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswstf completed
[root@node1]# /opt/FJSVswsts/bin/clset_FJSVswsts -u -f
/acmdata/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsts completed
[root@node1]# /opt/FJSVswsrp/bin/clset_FJSVswsrp -u -f
/acmdata/etc/opt/swstorage/clsetup.ini -t Primary
clset_FJSVswsrp completed

9. Delete the symbolic link to the shared disk for the shared data for AdvancedCopy Manager

1	Data in etc area	Link	/etc/opt/swstorage/ <logical name="" node=""></logical>
2	Data in var area	Link source	/var/opt/swstorage/ <logical name="" node=""></logical>

Setting example

root@node1]#	/bin/rm	<pre>/etc/opt/swstorage/linux</pre>
root@node1]#	/bin/rm	/var/opt/swstorage/linux

10. Restore the edited configuration file (swcluster.ini) of AdvancedCopy Manager

	<u> </u>	/	,	
File name	swcluster.ini			
Storage location	/opt/FJSVswstf/cl	uster		

File settings

[ClusterCommon] Cluster=OFF Max=20 StartTimeOut=300 StopTimeOut=300

11. Delete the directory created on the shared disk for shared data for AdvancedCopy Manager

```
Mount point of shared disk for shared data for AdvancedCopy Manager
+---/etc
| ---/opt
| ---/swstorage
+---/var
_---/opt
_---/swstorage
```

Setting example

```
[root@node1]# cd /acmdata
[root@node1]# /bin/rm -r /acmdata/etc
[root@node1]# /bin/rm -r /acmdata/var
```

12. Edit /etc/services to delete the port number of the communication service for transaction

13. Unmount the shared disk for AdvancedCopy Manager shared disk

Setting example

```
[root@node1]# cd /
[root@node1]# /bin/umount /acmdata
```

7-1-5. ActionScript

This section describes a sample of ActionScript. Create an ActionScript according to the environment by reference to this sample.

* From 11g R2, the behavior of check action processing changed as follows:

- The resource status is normal: Return 0
- The resource status is abnormal: Return 1

For details, see the Oracle Database manual, "Oracle® Clusterware Administration and Deployment Guide 11g Release 2 (11.2)".

Sample

#!/bin/sh # Action Script for AdvancedCopy Manager Agent ± SCRIPT=\$0 ACTION=\$1 # Action (start, stop or check) # ACM Logical Node Name SWSTGNODE=linux export SWSTGNODE # Mount Point for ACM Data SWSMOUNTPOINT=/acmdata; export SWSMOUNTPOINT BACKUPMOUNTPOINT=/backup; export BACKUPMOUNTPOINT # Disk Slice for ACM Data SWSDATADISK=/dev/disk/by-id/scsi-3600000e00d100000001001a200150000-part1; export SWSDATADISK BACKUPDISK=/dev/disk/by-id/scsi-3600000e00d10000001001a2001b0000-part1; export BACKUPDISK TOOLDIR=/u01/app/11.2.0/grid/crs/public LOGFILE=\$TOOLDIR/acmagt.log TEMPFILE=\$TOOLDIR/acmagt.tmp # # Main section of Action Script - starts, stops, checks or clean an application # # This script is invoked by CRS when managing the application associated # with this script. # # Argument: \$1 - start | stop | check | clean # # Returns: 0 - successful start, stop, check or # 1 - error # # # Start section - start the process and report results # case \$ACTION in 'start') SWSMOUNTCHECK="^\$SWSMOUNTPOINT on \$SWSDATADISK " /bin/mount | /bin/grep "\$SWSMOUNTCHECK" > /dev/null if [\$? != 0]; then /bin/mount \$SWSDATADISK \$SWSMOUNTPOINT if [\$? != 0]; then echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent COULD NOT START, BECAUSE MOUNT ERROR(\$SWSMOUNTPOINT)" | tee -a \$LOGFILE exit 1 fi fi BACKUPMOUNTCHECK="^\$BACKUPMOUNTPOINT on \$BACKUPDATADISK " /bin/mount | /bin/grep "\$BACKUPMOUNTCHECK" > /dev/null if [\$? != 0]; then /bin/mount \$BACKUPDISK \$BACKUPMOUNTPOINT if [\$? != 0]; then echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent COULD NOT START, BECAUSE MOUNT ERROR(\$BACKUPMOUNTPOINT)" | tee -a \$LOGFILE exit 1 fi fi /opt/FJSVswstf/cluster/AgtStart if [\$? != 0]; then

```
echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent COULD NOT START:1" | tee -a $LOGFILE
   exit 1
 fi
 echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent STARTED:0" | tee -a $LOGFILE
 exit 0
 ;;
#
# Stop section - stop the process and report results
#
'stop')
 /opt/FJSVswstf/cluster/AgtStop
 /bin/umount $SWSMOUNTPOINT
 if [ $? != 0 ]; then
   /bin/umount -f $SWSMOUNTPOINT
 fi
 /bin/umount $BACKUPMOUNTPOINT
 if [ $? != 0 ]; then
   /bin/umount -f $BACKUPMOUNTPOINT
 fi
 echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent STOPPED:0" | tee -a $LOGFILE
 exit O
 ;;
# Check section - check the process and report results
#
'check')
 /bin/ps -ef > $TEMPFILE
 CNT=`cat $TEMPFILE | grep stgxfws | grep $SWSTGNODE | wc -1`
 if [ $CNT -eq 0 ]; then
   echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent CHECKED:1" | tee -a $LOGFILE
   /bin/umount $SWSMOUNTPOINT
   if [ $? != 0 ]; then
    /bin/umount -f $SWSMOUNTPOINT
   fi
   exit 1
 fi
 CNT=`/bin/mount | grep $SWSMOUNTPOINT | wc -1`
 if [ $CNT -eq 0 ]; then
   echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent CHECKED:1" | tee -a $LOGFILE
   exit 1
 fi
 CNT=`/bin/mount | grep $BACKUPMOUNTPOINT | wc -l`
 if [ $CNT -eq 0 ]; then
   echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent CHECKED:1" | tee -a $LOGFILE
   exit 1
 fi
 echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent CHECKED:$RET" | tee -a $LOGFILE
 exit $RET
 ;;
#
# Clean section - clean the process and report results
#
'clean')
 /opt/FJSVswstf/cluster/AgtStop
 /bin/umount $SWSMOUNTPOINT
 if [ $? != 0 ]; then
   /bin/umount -f $SWSMOUNTPOINT
 fi
 /bin/umount $BACKUPMOUNTPOINT
 if [ $? != 0 ]; then
  /bin/umount -f $BACKUPMOUNTPOINT
 fi
 echo "`date '+%y/%m/%d_%H:%M:%S'` - ACM Agent CLEANED:0" | tee -a $LOGFILE
 exit 0
 ;;
```

```
*)
  echo "usage: $SCRIPT {start stop check}"
  ;;
esac
exit 0
```

7-2. Backup/Recovery Procedures and Usage Example

This section describes the step-by-step procedure to back up and recover the ASM file system using AdvancedCopy Manager.



7-2-1. Backup/Recovery Procedures and Usage Example

Backup of database

- Archive the current redo log file
 Execute it on the database instance in node1
 SQL> alter system archive log current;
- Srart the backup mode for the database Execute it on the database instance in node1
 SQL> alter database begin backup;
- 3. Confirm that rebalance of ASM is not in execution Execute it on the ASM instance in node1 SQL> select * from v\$asm_operation;

There is no problem when 0 rows returned. If the other rows returned, stop rebalance as follows SQL> alter diskgroup DG_DATA rebalance power 0;

Check v\$asm_operation again SQL> select * from v\$asm_operation;

- 4. With the AdvancedCopy feature, back up all the partitions that belong to the disk group of the data file Reference: <7-2-3 Usage Example of Backup Procedure>
- 5. Release the backup mode for the database Execute it on the database instance in node1 SQL> alter database end backup;
- Back up the archive log. The current control file and SPFILE of database instance are backed up by the automatic backup feature. Execute it on the recovery manager in node1

RMAN> backup archivelog all;

- 7. With the ASMCMD utility, back up the metadata of all disk groups
 Execute it on the ASM instance in node1
 *Before backup, confirm that 11.2.0.0.0 is set for compatible.asm attribute and compatible.rdbms attibute of all disk groups. Unless the above setting is made when metadata is backed up with the ASMCMD utility, the metadata cannot be restored properly due to a failure of 11.2.0.1.0.

 ASMCMD> md_backup /backup/meta/md_bk
- 8. Back up SPFILE of database instance and ASM instance as a text-based file Execute it on the database instance and the ASM instance in node1, respectively

<Database instance> SQL> create pfile='/backup/pfile_db/initrac.ora' from spfile; <ASM instance> SQL> create pfile='/backup/pfile_asm/initasm.ora' from spfile;

*When adding a data file to the database, it is necessary to back up the entire database immediately

Backup of OCR, Voting disk

- 1. With ocrconfig, back up OCR
 - Execute it as root user in node1
 - * When using Oracle Clusterware 11g Release 2(11.2), Voting disk is backed up in OCR. Therefore, it is ok to back up only OCR.

[root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -manualbackup

Backup of Oracle Local Registry (OLR)

1. With ocrconfig, back up OLR in all nodes Execute it as root user in node1 and node2, respectively [root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -local -manualbackup

7-2-2. Recovery Procedure

In case of a disk group failure of a data file

- 1. Stop the database instance with the ABORT option Execute it as orable user in node1 [oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl stop database -d rac -o abort
- Delete the disk group of a data file. In the case of RAC, it is necessary to dismount the disk group in all the nodes (node2) other than the node of RAC (node1) where the deletion command is executed before deletion. Execute it on the ASM instance in node1

*If the target disk group in the node where the deletion command is executed is dismounted, use the force option to delete it.

SQL> drop diskgroup DG_DATA [force] including contents;

- With the AdvancedCopy feature, restore all the partitions that belong to the disk group of the data file. Execute it as root user in node1 Reference: <7-2-4 Usage Example of Recovery Procedure>
- 4. Mount the disk group of the data file
 Execute it on the ASM instance in node1
 SQL> alter diskgroup DG_DATA mount;
- 5. Start the database instance with the Mount option Execute it on the database instance in node1 RMAN> startup mount;
- 6. Execute complete recovery Execute it on the recovery manager in node1 RMAN> recover database;
- 7. Open the database Execute it on the recovery manager in node1 RMAN> alter database open;
- In the case of RAC, mount the disk group of the data file in all the nodes (node2) other than the node (node1) where the step 4 is executed Execute it on the ASM instance in node2

SQL> alter diskgroup DG_DATA mount;

9. In the case of RAC, start the database instance in all the nodes (node2) other than the node (node1) where the step 7 is executed

Execute it as orable user in node1

[oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl start instance
-d rac -n node2

In case of a failure of all the disk groups other than DG_CRS

- 1. Stop the database instance with the ABORT option Execute it as orable user in node1 [oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl stop database -d rac -o abort
- Delete all the disk groups other than DG_CRS. In the case of RAC, it is necessary to dismount the disk group in all the nodes (node2) other than the node of RAC (node1) where the deletion command is executed before deleting the disk group

Execute it on the ASM instance in node1

*If the target disk group in the node where the deletion command is executed is dismounted, use the force option to delete it.

SQL> drop diskgroup DG_DATA [force] including contents; SQL> drop diskgroup DG_REDO [force] including contents; SQL> drop diskgroup DG_REDO_M [force] including contents; SQL> drop diskgroup DG_ARCH [force] including contents;

3. Restore the metadata of DG_REDO, DG_REDO_M, DG_ARCH disk groups form the backup metadata Execute it on the ASMCMD utility in node1

ASMCMD	>	md_restore	/backup/meta/md_bk	full	-G	'DG_REDO'
ASMCMD	>	md_restore	/backup/meta/md_bk	full	-G	'DG_REDO_M'
ASMCMD	>	md restore	/backup/meta/md bk	full	-G	'DG ARCH'

- 4. With the AdvancedCopy feature, restore all the partitions that belong to the disk group of the data file. Execute it as root user in node1 Reference: <7-2-4 Usage Example of Recovery Procedure>
- 5. Mount the disk group of the data file Execute it on the ASM instance in node1 SQL> alter diskgroup DG_DATA mount;
- Specify the initialization parameter for backup, and start the database instance in nomount mode Execute it on the recovery manager in node1
 RMAN> startup nomount pfile='/backup/pfile_db/initrac.ora';
- Restore the control file that is automatically backed up Execute it on the recovery manager in node1
 RMAN> restore controlfile from autobackup;
- Mount the database Execute it on the recovery manager in node1
 RMAN> alter database mount;
- 9. Restore the backed up server parameter file Execute it on the recovery manager in node1 RMAN> restore spfile;
- 10. Execute incomplete recovery Execute it on the recovery manager in node1 RMAN> recover database until sequence 28 thread 1;
- 11. Open the database with the RESETLOGS option Execute it on the recovery manager in node1 RMAN> alter database open resetlogs;
- 12. In the case of RAC, mount all the disk groups other than DG_CRS in all the nodes (node2) other than the node (node1) where the step 5 is executed

Execute it on the database instance in node2 SQL> alter diskgroup DG_DATA, DG_REDO, DG_REDO_M, DG_ARCH mount;

13. To restart the database instace from the server parameter file, stop the database instance

Execute it as orable user in node1 [oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl stop database -d rac

- 14. Start all the database instances
 - Execute it as orable user in node1

[oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl start database
-d rac

15. Delete the invalid entry of archive log files

Execute it on the recovery manager in node1 RMAN> crosscheck archivelog all;

RMAN> delete expired archivelog all;

In case of a disk group failure of DG_CRS

- 1. Stop CRS in all nodes Execute it as root user in node1 and node2, respectively [root@node1]# /u01/app/11.2.0/grid/bin/crsctl stop crs -f
- 2. Clear all disk headers of DG_CRS with the dd command

Execute it as grid user in node1 [grid@node1]\$ dd if=/dev/zero of=/dev/sde1 bs=1024k count=10 [grid@node1]\$ dd if=/dev/zero of=/dev/sdf1 bs=1024k count=10 [grid@node1]\$ dd if=/dev/zero of=/dev/sdj1 bs=1024k count=10

- 3. Start CRS in exclusive mode Execute it as root user in node1 [root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs -excl
- 4. Stop crsd Execute it as root user in node1 [root@node1]# /u01/app/11.2.0/grid/bin/crsctl stop resource ora.crsd -init
- 5. Restore the metadata in DG_CRS disk group Execute it on the ASMCMD utility in node1 ASMCMD> md_restore /backup/meta/md_bk --full -G 'DG_CRS'
- 6. Shut down the ASM instance Execute it on the ASM instance in node1 SQL> shutdown immediate
- 7. Start the ASM instance using the backed up pfile Execute it on the ASM instance in node1 SQL> startup pfile='/backup/pfile_asm/initasm.ora';
- 8. Recreate the server parameter file of the ASM instance Execute it on the ASM instance in node1
 SQL> create spfile='+DG_CRS' from pfile='/backup/pfile_asm/initasm.ora';
- 9. Restore OCR

Execute it as root user in node1 [root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -restore ¥ /backup/ocr/backup_20121130_151838.ocr

- 10. Recreate Voting disk into DG_CRS disk group Execute it as root user in node1 [root@node1]# /u01/app/11.2.0/grid/bin/crsctl replace votedisk +DG_CRS
- 11. Stop the CRS running in exclusive mode Execute it as root user in node1

[root@node1]# /u01/app/11.2.0/grid/bin/crsctl stop crs -f

12. Start CRS in all nodes

Execute it as root user in node1 and node2, respectively

[root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs

In case of an OLR failure

- 1. Stop CRS in the target node (node1)
 Execute it as root user in node1
 [root@node1]# /u01/app/11.2.0/grid/bin/crsctl stop crs
- 2. Restore OLR from backup Execute it as root user in node1 *If there is no <host name.olr> file under {GI installation destination}/cdata, it is necessary to create an empty file with the same name [root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -local -restore ¥ /backup/olr/node1/backup_20121130_130937.olr
- 3. Start CRS in the target node (node1) Execute it as root user in node1 [root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs

7-2-3. Usage Example of Backup Procedure

Backup of database

Archive the current redo log file Execute this command on the database instance in node1
SQL> alter system archive log current;
The system has changed
Srart the backup mode for the database Execute this command on the database instance in node1
SQL> alter database begin backup;
The database has changed
Confirm if rebalance of ASM is in execution Execute this command on the ASM instance in node1
SQL> select * from v\$asm_operation;
No record has been selected
With the AdvancedCopy feature, back up all the partitions that belong to the disk group of the data file Execute this command on the OS command line in node1
<pre>[root@nodel ~]# /opt/FJSVswsts/bin/swstbackup -T /dev/disk/by-id/scsi-3600000e00d100000001001a200010000-part1 -Xdevmap /acmdata/map/map-data /dev/disk/by-id/scsi-3600000e00d100000001001a200010000-part1 swstbacku</pre>
<pre>completed [root@node1 ~]# /opt/FJSVswsts/bin/swstbackup -T /dev/disk/by-id/scsi-3600000e00d100000001001a200020000-part1 -Xdevmap</pre>

/acmdata/map/map-data /dev/disk/by-id/scsi-3600000e00d100000001001a200020000-part1 swstbackup completed [root@node1 ~]# /opt/FJSVswsts/bin/swstbackup -T /dev/disk/by-id/scsi-3600000e00d100000001001a200080000-part1 -Xdevmap /acmdata/map/map-data /dev/disk/by-id/scsi-3600000e00d100000001001a200080000-part1 swstbackup completed [root@node1 ~]# /opt/FJSVswsts/bin/swstbackup -T /dev/disk/by-id/scsi-3600000e00d100000001001a200090000-part1 -Xdevmap /acmdata/map/map-data /dev/disk/by-id/scsi-3600000e00d100000001001a200090000-part1 swstbackup completed Release the backup mode for the database Execute this command on the database instance in node1 SOL> alter database end backup; The database has changed Back up all the archive log files. It is backed up with the current control file and SPFILE automatic backup feature of database instance Execute this command on RMAN in node1 RMAN> backup archivelog all; Backup has started (Start time: 2012/12/01 15:03:33) The current log has been archived Channel: ORA_DISK_1 has been assigned Channel ORA_DISK_1: SID=180 Instance=rac1 Device type=DISK Channel ORA_DISK_1: Starting archive log backup set Channel ORA_DISK_1: Specifying archive log for the backup set Input archive log thread=2 Order=13 Record ID=25 Stamp=800751678 Input archive log thread=1 Order=30 Record ID=24 Stamp=800751676 Channel ORA_DISK_1: Start piece1(2012/12/01 15:03:38) Channel ORA_DISK_1: Piece1(2012/12/01 15:03:41) has been completed Piece handle=/backup/rman/0hnrpcqa_1_1 Tag=TAG20121201T150337 Comment=NONE Channel ORA_DISK_1: Backup set has been completed. Elapsed time: 00:00:03 Channel ORA_DISK_1: Starting archive log backup set Channel ORA_DISK_1: Specifying archive log for the backup set Input archive log thread=1 Order=1 Record ID=27 Stamp=800892464 Input archive log thread=2 Order=1 Record ID=26 Stamp=800752291 Input archive log thread=2 Order=2 Record ID=28 Stamp=800892467 Input archive log thread=1 Order=2 Record ID=29 Stamp=800892712 Input archive log thread=2 Order=3 Record ID=31 Stamp=800892994 Input archive log thread=1 Order=3 Record ID=30 Stamp=800892937 Input archive log thread=1 Order=4 Record ID=32 Stamp=800892996 Channel ORA_DISK_1: Start piece1(2012/12/01 15:03:41) Channel ORA_DISK_1: Piece1(2012/12/01 15:03:56) has been completed Piece handle=/backup/rman/0inrpcqd_1_1 Tag=TAG20121201T150337 Comment=NONE Channel ORA_DISK_1: Backup set has been completed. Elapsed time: 00:00:15 Channel ORA DISK 1: Starting archive log backup set Channel ORA_DISK_1: Specifying archive log for the backup set Input archive log thread=1 Order=1 Record ID=34 Stamp=800894088 Input archive log thread=2 Order=1 Record ID=33 Stamp=800893909 Input archive log thread=2 Order=2 Record ID=37 Stamp=800895579 Input archive log thread=1 Order=2 Record ID=35 Stamp=800894090 Input archive log thread=1 Order=3 Record ID=36 Stamp=800895579 Input archive log thread=1 Order=4 Record ID=38 Stamp=800895813 Input archive log thread=2 Order=3 Record ID=39 Stamp=800895814 Channel ORA_DISK_1: Start piece1(2012/12/01 15:03:56)

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Channel ORA D	ISK 1: Piece1(2012/12/01 15:03:59) has been completed
Piece handle=	/backup/rman/0jnrpcgs 1 1 Tag=TAG20121201T150337 Comment=NONE
Channel ORA D	ISK 1: Backup set has been completed. Elapsed time: 00:00:03
Backup hag he	
backup nas be	
Control File a	Ind SPFILE Autobackup nave started (Start time: 2012/12/01 15:03:59)
Piece handle=	/backup/rman/c-2388723407-20121201-02
Control File a	nd SPFILE Autobackup has been completed (Completion time: 2012/12/01
15:04:01)	
Back up the me	atadata of all disk groups with the ASMCMD utility
*Before back	up confirm that 11,2,0,0,0 is set for compatible asm attribute and
compatible r	above attribute of all disk groups. Unless the above setting is made
when meted	is a backed on an disk groups. Oness the above setting is made
when metada	ta is backed up with the ASMCMD utility, the metadata cannot be
restored prop	Seriy due to a failure of 11.2.0.1.0.
Execute this c	ommand on the ASMCMD utility and the ASM instance in node1
SOL> SELECT d	g.name AS diskgroup, SUBSTR(a.name,1,24) AS name,
2 GIIBGTD(a	$(r_1)_{r_2} = 1$
2 WUEDE d	a group number - 2 group number
J WHERE Q	g.group_number = a.group_number
4 and a.na	me in ('compatible.rdbms','compatible.asm');
DISKGROUP	NAME VALUE
DG_CRS	compatible.asm 11.2.0.0.0
DG CRS	compatible.rdbms 11.2.0.0.0
DG REDO	compatible asm 11200
DC REDO	compatible rdbms 11.2.0.0.0
DG_DATA	
DG_DATA	compatible.rdbms 11.2.0.0.0
DG_REDO_M	compatible.asm 11.2.0.0.0
DG_REDO_M	compatible.rdbms 11.2.0.0.0
DG_ARCH	compatible.asm 11.2.0.0.0
DG_ARCH	compatible.rdbms 11.2.0.0.0
ASMCMD [+] >	md backup /backup/meta/md bk
Disk group me	tadata to be backed up: DG ACM
Disk group me	tradata to be backed up: DC_ION
Disk group me	tadata to be backed up: D_CDC
DISK group me	Ladata to be backed up. De DES
Disk group me	tadata to be backed up: DG_REDU_M
Disk group me	tadata to be backed up: DG_ARCH
Disk group me	tadata to be backed up: DG_DATA
Current alias	directory path: RAC
Current alias	directory path: RAC/PARAMETERFILE
Current alias	directory path: RAC/CONTROLFILE
Current alias	directory path: RAC/ONLINELOG
Current alias	directory path: crs/ASMPARAMETERFILE
Current alias	directory path: crs
Current alian	directory path: crs/OCRETLE
Current alias	directory path. BAC
Current alids	directory path. DAC/CONTROLETLE
Current allas	directory path. RAC/CONTROLFILE
current alias	airectory path: RAC/UNLINELOG
Current alias	directory path: RAC/ARCHIVELOG/2012_11_30
Current alias	directory path: RAC/ARCHIVELOG
Current alias	directory path: RAC/arch
Current alias	directory path: RAC/snapcf
Current alias	directory path: RAC
Current aliag	directory path: RAC/CONTROLFILE
Current alian	directory path: RAC/ARCHIVELOG/2012 12 01
Current alids	directory path: DAC
Current arias	directory path. DAC (DATABLE
current allas	directory path. RAC/DATAFILE
C	
Current alias	directory path: RAC/TEMPFILE

```
Back up the server parameter files of database instance and ASM instance as a
text-based file
Execute this command on the database instance and the ASM instance in
node1, respectively

<p
```

Backup of OCR, Voting disk

```
With the ocrconfig command, back up OCR
Execute this command on the OS command line in node1
[root@nodel]# /u01/app/11.2.0/grid/bin/ocrconfig -manualbackup
node1 2012/11/30 22:06:14
/u01/app/11.2.0/grid/cdata/crs/backup_20121130_220614.ocr
```

Backup of Oracle Local Registry(OLR)

With the ocrconfig command, back up OLR Execute this command on the OS command lines in all nodes (node1, node2)
[root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -local -manualbackup
node1 2012/11/30 22:06:24 /u01/app/11.2.0/grid/cdata/node1/backup_20121130_220624.olr
node1 2012/11/19 09:35:05 /u01/app/11.2.0/grid/cdata/node1/backup_20121119_093505.olr

7-2-4. Usage Example of Recovery Procedure

In case of a disk group failure of a data file

With the AB	OPT option	stop the de	tabaca instance					
Execute t	his comman	d on the OS	command line in	node1				
	110 (01 (-							
[grid@node		app/11.2.0	/gr1d/b1n/crs	status res -t				
NAME	TARGET	STATE	SERVER	STATE_DETAILS				
Local Reso	Local Resources							
ora.DG_ARC	H.dg							
	ONLINE	ONLINE	node1					
	ONLINE	ONLINE	node2					
ora.DG_CRS	.dg							
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.DG_DAT	'A.dg							
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.DG_RED	0.dg							
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.DG_RED	0_M.dg							
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.LISTEN	ER.lsnr		1 1					
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.asm		ONT THE						
	ONLINE ONLINE	ONLINE	nodel	Started				
ana and	ONLINE	ONLINE	nodez	Started				
ora.gsu	OPPT TNP	OPPT TNP	nodol					
	OFFLINE OFFLINE	OFFLINE	node2					
ora noti n	orruine	OLLTNE	HOUEZ					
ora.netr.n	ONLINE	ONLINE	node1					
	ONLINE	ONLINE	node2					
ora ons	OUTTINE	01401140	110002					
010.010	ONTITNE	ONLINE	node1					
	ONLINE	ONLINE	node?					
ora.regist	rv.acfs	C1101110	110402					
	ONLINE	ONLINE	node1					
	ONLINE	OFFLINE	node2					

Cluster Res	ources			
acmagent				
1	ONLINE (ONLINE	node1	
acmvip				
1	ONLINE (ONLINE	nodel	
ora.LISTENE	R_SCAN1.ls	snr		
1	ONLINE (ONLINE	node2	
ora.LISTENE	R_SCAN2.ls	snr		
1	ONLINE (ONLINE	nodel	
ora.LISTENE	R_SCAN3.ls	snr		
1	ONLINE (ONLINE	nodel	
ora.cvu				
1	OFFLINE	OFFLINE		
ora.nodel.v	.1b Oliver the contraction of th			
L ora nodol u	UNLINE (ONLINE	nodel	
ora.nouez.v	TD ONT INE (ONT THE	nodol	
⊥ ora oc4i			110462	
1	ONT.TNF (ONLINE	node?	
ora.rac.db		~		
1	ONLINE (ONLINE	nodel	Open
2	ONLINE (ONLINE	node2	Open
ora.scan1.v	ip			-
1	ONLINE (ONLINE	node2	
ora.scan2.v	ip			
1	ONLINE (ONLINE	nodel	
ora.scan3.v	ip			
1	ONLINE (ONLINE	nodel	
[oracle@nod abort [grid@node1	el]\$ /u01/]\$ /u01/ar	app/oracle/	11.2.0/dbhome_1/bin/si	rvctl stop database -d rac -o res -t
[oracle@nod abort [grid@node1	el]\$ /u01/]\$ /u01/ag	app/oracle/	11.2.0/dbhome_1/bin/s	res -t
[oracle@nod abort [grid@node1 NAME	el]\$ /u01/]\$ /u01/ag TARGET	app/oracle/ pp/11.2.0/gr STATE	11.2.0/dbhome_1/bin/si	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou	el]\$ /u01/]\$ /u01/ag 	app/oracle/ pp/11.2.0/gr STATE	11.2.0/dbhome_1/bin/si	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH	el]\$ /u01/ag]\$ /u01/ag TARGET rces 	app/oracle/ pp/11.2.0/gr STATE	11.2.0/dbhome_1/bin/si	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH	el]\$ /u01/ag]\$ /u01/ag TARGET rces dg ONLINE (0	app/oracle/ pp/11.2.0/gr STATE 	11.2.0/dbhome_1/bin/si	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH	el]\$ /u01/ag]\$ /u01/ag TARGET 	app/oracle/ pp/11.2.0/gr STATE STATE ONLINE DNLINE	11.2.0/dbhome_1/bin/si rid/bin/crsctl status SERVER node1 node2	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH ora.DG_CRS.	el]\$ /u01/ag]\$ /u01/ag TARGET 	app/oracle/ pp/11.2.0/gr STATE ONLINE DNLINE	11.2.0/dbhome_1/bin/si	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH ora.DG_CRS.	el]\$ /u01/ap]\$ /u01/ap TARGET rces 	app/oracle/ pp/11.2.0/gr STATE ONLINE ONLINE	11.2.0/dbhome_1/bin/si	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH ora.DG_CRS.	el]\$ /u01/ag]\$ /u01/ag TARGET rces 	app/oracle/ pp/11.2.0/gr STATE ONLINE ONLINE ONLINE ONLINE	11.2.0/dbhome_1/bin/sr rid/bin/crsctl status SERVER node1 node2 node1 node2	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH ora.DG_CRS. ora.DG_DATA	el]\$ /u01/ag]\$ /u01/ag TARGET TARGET rces dg ONLINE (ONLINE (O	app/oracle/ pp/11.2.0/gr STATE STATE ONLINE ONLINE ONLINE	11.2.0/dbhome_1/bin/si rid/bin/crsctl status SERVER node1 node2 node1 node2	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH ora.DG_CRS. ora.DG_DATA	el]\$ /u01/ap]\$ /u01/ap TARGET TARGET 	app/oracle/ pp/11.2.0/gr STATE STATE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	<pre>11.2.0/dbhome_1/bin/si rid/bin/crsctl status SERVER node1 node2 node1 node2 node1 node2 node1 node2</pre>	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 NAME Local Resou ora.DG_ARCH ora.DG_CRS. ora.DG_DATA	el]\$ /u01/ap]\$ /u01/ap TARGET TARGET 	app/oracle/ pp/11.2.0/gr STATE STATE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	11.2.0/dbhome_1/bin/si rid/bin/crsctl status SERVER node1 node2 node1 node2 node1 node2	res -t STATE_DETAILS
[oracle@nod abort [grid@node1 	el]\$ /u01/ap]\$ /u01/ap TARGET TARGET rces dg ONLINE (ONLINE (app/oracle/ pp/11.2.0/gr STATE STATE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	11.2.0/dbhome_1/bin/si rid/bin/crsctl status SERVER node1 node2 node1 node2 node1 node2 node1 node2 node1 node2	res -t STATE_DETAILS
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1	ONLINE (ONLINE	node	21
ora.node2.v:	ip			
1	ONLINE (ONLINE	node	2
ora.oc4j				
1	ONLINE (ONLINE	node	2
ora.rac.db				
1	OFFLINE	OFFLINE		Instance Shutdown
2	OFFLINE	OFFLINE		Instance Shutdown
ora.scan1.v:	ip			
1	ONLINE (ONLINE	node	2
ora.scan2.v:	ip			
1	ONLINE (ONLINE	node	21
ora.scan3.v:	ip			
1	ONLINE (ONLINE	node	21
Dismount the	disk group	of a data file		
Execute th	is command	on the ASM i	nstan	ce in node2
			notan	
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2 from w	dy.name	ad usage	, au dieko	roup ag
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DG_CRS	CACHED	MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000
				1001a200030000-part1
DG_CRS	CACHED	MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000
				1001a200040000-part1
DG_CRS	CACHED	MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000
				1001a2000a0000-part1
DG_DATA	CACHED	CANDIDATE	C	/dev/disk/by-id/scsi-3600000e00d10000000
				1001a200010000-part1
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DG DATTA	СЪСНЕЛ	<u>מייעט ד</u> טאט)	7	/dev/disk/bv-id/scsi-3600000e00d1000000
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רשעם אם	רערעדיט	ᢉᡃ᠕ᡙ᠋᠋᠇᠇᠕ᡎᢧ	7	/dev/disk/bv-id/gasi_36000000001000000
ATAL_DU	CACIED	CANDIDAIE	<u>ت</u>	$1001_{2}00000000$ port1
				TUNTAZUUUAUUUN-Parci

DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3800000e00d10000000 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRED MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN 3 DG_DATA MOUNTED EXTERN 3 DG_DATA MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN SQL> alter diskgroup DG_DATA dismount; Diskgroup altered. SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRED MOUNTED EXTERN 3 OG_REDO_M MOUNTED EXTERN 3 OG_REDO_M MOUNTED EXTERN 3 OG_REDO_M MOUNTED EXTERN SQL> select gr.name "GROUP NAME", ad.mount status, ad.header_status, ad.path 2 2 from v\$asm_disk ad, v\$asm_diskgroup at 3 adata group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH DG_CARCH CACHED MEMBER /dev/disk/by-id/scsi-360000e0dol0000000 1001a20050000-part1 CAC	DG_REDO	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
PS_RED_M CACHED MEMBER //dev/dis//py-ld/Scsi-360000e00d10000000 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED EXTERN 3 DG_ARCH MOUNTED EXTERN 4 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 5 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 6 DG_REDO_M MOUNTED EXTERN 7 DG_REDO_M MOUNTED EXTERN 6 DG_REDO_M MOUNTED EXTERN 7 Modeadistoropactin PACARED Adougoooonpactin				1001a20000000-part1
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SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 D3_CRS MOUNTED NORMAL 2 D3_ARCH MOUNTED EXTERN 3 D3_CRDAT MOUNTED EXTERN 3 D3_CRDAT MOUNTED EXTERN 3 D3_CRDAT MOUNTED EXTERN SQL> alter diskgroup D6_DATA dismount; Diskgroup altered. SQL> select group number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 D3_CRS MOUNTED EXTERN SQL> select group number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 D3_CRS MOUNTED EXTERN SQL> select ag.name "GROUP NAME", ad.mount status, ad.header_status, ad.path 2 fm dysam_disk ad. v\$asm_diskgroup ag 3 where ad.group_number 1= 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT S HEADER_STATU PATH D3_ARCH CACHED MEMBER //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 D6_CRS CACHED MEMBER //dev/disk/by-id/scci-3600000e0d10000000 100120000000-part1 D6_CRS CACHED MEMBER //dev/disk/by-id/scci-3600000e0d10000000 100120000000-part1 CACHED CANDERE //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 CACHED NEMBER //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 CACHED NEMBER //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 CACHED NEMBER //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 CACHED NEMBER //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 CACHED NEMBER //dev/disk/by-id/scci-3600000e0d10000000 1001220000000-part1 CACHED NEMBER //dev/disk/by-id/scci				1001a200070000-part1
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5 DG_REDO_M MOUNTED EXTERN SQL> alter diskgroup DG_DATA dismount; Diskgroup altered. SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN 4 DG_REDO_M MOUNTED EXTERN 5 Dg_REDO_M MOUNTED EXTERN 2 from v\$asm_disk ad, v\$asm_diskgroup ag a.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag awhere ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU DG_ARCH NEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 D01a20001000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CACHED /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CACHED /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CACHED /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CACHED <td>4</td> <td>DG_REDO</td> <td>MOUNTED</td> <td>EXTERN</td>	4	DG_REDO	MOUNTED	EXTERN
<pre>SQL> alter diskgroup DG_DATA dismount; Diskgroup altered. SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE </pre>	5	DG_REDO_	M MOUNTED	EXTERN
SQL> alter diskgroup DG_DATA dismount; Diskgroup altered. SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 				
Diskgroup altered. SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED EXTERN 4 DG_REDO MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a2000b000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a20000000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a20000000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e0dl0000000 1001a20000000-part1 CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a20000000-part1 CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a200000000-part1 CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a200000000-part1 CACHED MEMBER /dev/disk/by-id/scsi-3600000e0dl0000000 1001a200000000-part1 CACHED MEMBER /Jew/disk/by-id/scsi-3600000e0dl0000000 1001a200000000-part1 CACHED MEMBER /Jew/disk/by-id/scsi-3600000e0dl00000000 1001a200000000-part1 CACHED MEMBER /Jew/disk/by-id/scsi-3600000e0dl0000000000000000 1001a200000000-part1 CACHED MEMBER /Jew/disk/by-id/scsi-	SQL> alter d	iskgroup l	DG_DATA dismou	nt;
SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN 4 DG_REDO MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 9 Norman SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S DG_ARCH CACHED MOUNT_S HEADER_STATU DG_ARCH CACHED MOUNT_S HEADER_STATU DG_CRS CACHED GROUP_NAME MOUNT_S HEADER_STATU PATH	Diskgroup al	tered.		
GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN 4 DG_REDO MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	SQL> select	group_numl	ber, name, sta	te, type from v\$asm_diskgroup;
INDE_NOMBER INME DIALS ITE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN 4 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN 9 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	CROID NUMBER	NAME	ሮሞአጥፑ	TYDE
1 DG_CRS MOUNTED NORMAL 2 DG_REDO MOUNTED EXTERN 4 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 1001a20001000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e0d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e0d10000000 1001a200020000-part1 CACHED CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e0d100000000			51AIE	
2 DG_ARCH MOUNTED EXTERN 4 DG_REDO_M MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 1001a2000b000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 DOLa200010000-part1 CACHED CACHED CACHED CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e0d10000000 1001a200020000-part1 CACHED CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 1001a200020000-part1 CACHED CACHED MEMBER /dev/disk/by-id/scsi-3600000e0d10000000 1001a200000000-part1	1	DG_CRS	MOUNTED	NORMAL
4 DG_REDO_M MOUNTED EXTERN SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	2	DG_ARCH	MOUNTED	EXTERN
5 DG_REDO_M MOUNTED EXTERN SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	4	DG_REDO	MOUNTED	EXTERN
SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_CRS CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1	5	DG_REDO_	M MOUNTED	EXTERN
SQL> Select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, y\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S DG_ARCH CACHED DG_CRS CACHED DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a2000b0000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1 CACHED CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-36000000e00d100000000 1001a200000000				a meret states of harden states of soll
3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_CRS CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20002000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEM	SQL> Select	ag.name "(GROUP_NAME", a	d.mount_status, ad.neader_status, ad.path
GROUP_NAME MOUNT_S HEADER_STATU PATH DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_CRS CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/di	2 irom v_{s}	asm_disk	ad, vşasm_disk umber l= 0 and	group ag
GROUP_NAME MOUNT_S HEADER_STATU PATH DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-36000000000000000000000000000000000000	5 WILET E A	a.group_n		ad.group_number = ag.group_number;
DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 1001a2000b0000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 	GROUP_NAME	MOUNT_S	HEADER_STATU	PATH
DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20002000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20002000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 				
DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100000000 SQL> select	DG_ARCH	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 		CACUED	МЕМДЕД	$d_{00}/d_{1} d_{1} d_{2}/d_{1} d_{2}/d_{2} d_{1} d_{2}/d_{1} d_{2}/d_{1} d_{2}/d_{1} d_{2}/d_{1} d_{2}/d_{1} d_{2}/d_{1} d_{2}/d_{1} d_{2}/d_{1}/d_{$
DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d1000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 	DG_CR5	CACILLD	мемвек	1001a200030000-part1
IO01a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 IO01a2000a0000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200080000-part1 CACHED CACHED /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200090000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200090000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200070000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200070000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 IO01a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GRO	DG CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 1001a2000a000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-360000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-360000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-360000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-360000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-360000e00d10000000 1001a200090000-part1 CACHED CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 Delete the disk group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE				1001a200040000-part1
I001a2000a0000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 I001a200010000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 DSQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE	DG_CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20001000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20002000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 				1001a2000a0000-part1
I001a200010000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 I001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 I001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 I001a200090000-part1 CACHED CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 DSQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE		CACHED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000
CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 SQL> select group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE				1001a200010000-part1
I001a200020000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 I001a200080000-part1 CACHED CACHED CACHED /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 SQL> select group of the data file Execute this command on the ASM instance in node1 SQL> SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE		CACHED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000
CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20009000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 				1001a200020000-part1
CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 D01a200070000-part1 D01a200070000-part1 DSQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE		CACHED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000
DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-360000e00d10000000 Dola200070000-part1 Dola200070000-part1 Delete the disk group of the data file		СУСИЕР	CANDIDATE	IUUIAZUUU8UUUU-PARTI /dev/disk/bv-id/scsi-3600000e00d1000000
DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 Dola200070000-part1 Dola200070000-part1 Delete the disk group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN		CACHED	CANDIDAIE	1001a200090000-part1
DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 Delete the disk group of the data file	DG REDO	CACHED	MEMBER	/dev/disk/bv-id/scsi-3600000e00d1000000
DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 Delete the disk group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 		00		1001a20000000-part1
1001a200070000-part1 Delete the disk group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN	DG_REDO_M	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
Delete the disk group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH				1001a200070000-part1
Delete the disk group of the data file Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE 1 DG_CRS MOUNTED 2 DG_ARCH MOUNTED				
Delete the disk group of the data life Execute this command on the ASM instance in node1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH	Doloto the diel	arous of t	a data fila	
SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH	Execute this	s command	on the ASM instar	nce in node1
SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN				
GROUP_NUMBER NAME STATE TYPE 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN	SQL> select	group_numl	ber, name, sta	te, type from v\$asm_diskgroup;
1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN	GROUP NUMBER	NAME	STATE	TYPE
1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN				
2 DG_ARCH MOUNTED EXTERN	1	DG_CRS	MOUNTED	NORMAL
	2	DG_ARCH	MOUNTED	EXTERN

		-	
3	B DG_DATA	MOUNTED	EXTERN
4	DG_REDO	MOUNTED	EXTERN
5	5 DG_REDO_	M MOUNTED	EXTERN
SQL> drop d i	iskgroup D	G_DATA includi	ng contents;
iskgroup dı	copped.		
QL> select	group_num	ber, name, stat	ce, type from v\$asm_diskgroup;
GROUP_NUMBER	R NAME	STATE	TYPE
1	DG CRS	MOUNTED	NORMAL
2	2 DG_ARCH	MOUNTED	EXTERN
4	DG_REDO	MOUNTED	EXTERN
5	5 DG_REDO_	M MOUNTED	EXTERN
QL> select	ag.name "(GROUP_NAME", ad	d.mount_status, ad.header_status, ad.path
2 from v 3 where	\$asm_disk	ad, v\$asm_diskg	group ag
3 MILET G	au.group_II	ander :- 0 and	ad.group_number - ag.group_number;
ROUP_NAME	MOUNT_S	HEADER_STATU 	РАТН
DG_ARCH	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000b0000-part1
OG_CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1
DG_CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1
DG_CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1 /dev/disk/by_id/scsi-2600000-00d10000000
	CLOSED	CANDIDATE	/dev/dlsk/by-ld/scs1-3600000e00d10000000 1001a200020000-part1 /dov/digk/by-id/gagi 260000c00d10000000
	CLOSED	CANDIDAIE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 /dev/disk/by-id/scsi-3600000e00d10000000
OG REDO	CACHED	MEMBER	1001a200090000-part1 /dev/disk/by-id/scsi-3600000e00d10000000
		-	1001a20000000-part1
DG_REDO_M	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1
With the Adv	ancedCopv f	eature, restore all	the partitions that belong to the disk
group of the	data file.		
Execute thi	s command	on the OS comma	nd line in node1
[root@node1]]# /opt/FJ	SVswsts/bin/sws	strestore
/dev/disk/by	-id/scsi-	3600000e00d1000	000001001a200010000-part1
/dev/disk/by	/-id/scsi-	3600000e00d1000	000001001a200010000-part1 swstrestore
completed			
[root@node1	~]# /opt/1	FJSVswsts/bin/s	swstrestore
/dev/disk/by	/-id/scsi-	3600000e00d1000	00001001a200020000-part1
/dev/disk/by completed	y-id/scsi-	3600000e00d1000	000001001a200020000-part1 swstrestore
[root@node1	~]# /opt/1	FJSVswsts/bin/s	swstrestore
/dev/disk/by	/-id/scsi-	3600000e00d1000	00001001a200080000-part1
/dev/disk/by completed	y-id/scsi-	3600000e00d1000	000001001a200080000-part1 swstrestore
[root@node1	~]# /opt/1	FJSVswsts/bin/s	swstrestore
/dev/disk/by	/scsi-	3600000e00d1000)00001001a200090000-part1

Mount the dis Execute th	sk group of th is command (ne data file on the ASM instan	ce in node1
GQL> select	ag.name "(GROUP_NAME", ad	l.mount_status, ad.header_status, ad.path
2 from v 3 where	\$asm_disk a ad.group_n	ad, v\$asm_diskg umber != 0 and	<pre>group ag ad.group_number = ag.group_number;</pre>
ROUP_NAME	MOUNT_S	HEADER_STATU	PATH
DG_ARCH	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_CRS	CACHED	MEMBER	1001a2000b0000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1
DG_CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_CRS	CACHED	MEMBER	1001a200040000-part1 /dev/disk/by-id/scsi-3600000e00d10000000
	CLOSED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_REDO	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000
	a		1001a200000000-part1
	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1
GQL> select GROUP_NUMBE	CACHED group_numl R NAME	MEMBER Der, name, stat STATE	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
G_KEDO_M SQL> select GROUP_NUMBE	CACHED group_numl R NAME 1 DG_CRS	MEMBER Der, name, stat STATE MOUNTED	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
SQL> select GROUP_NUMBE	Group_numl group_numl R NAME 1 DG_CRS 2 DG_ARCH	MEMBER Der, name, stat STATE MOUNTED MOUNTED	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup;</pre>
G_KEDO_M GQL> select GROUP_NUMBE	CACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA	MEMBER Der, name, stat STATE MOUNTED MOUNTED DISMOUNT	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
G_KEDO_M QL> select ROUP_NUMBE	GACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_1	MEMBER STATE STATE MOUNTED MOUNTED DISMOUNTED MOUNTED MOUNTED	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup;</pre>
SQL> select SQL> select SROUP_NUMBE SQL> alter Diskgroup a	GACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_J diskgroup I ltered.	MEMBER STATE STATE MOUNTED MOUNTED DISMOUNTED MOUNTED MOUNTED MOUNTED MOUNTED MOUNTED MOUNTED MOUNTED	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
SQL> select GROUP_NUMBE SQL> alter of SQL> alter of Diskgroup a SQL> select 2 from v 3 where	GACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_J diskgroup I ltered. ag.name "(\$asm_disk a ad.group_m	MEMBER Der, name, stat STATE MOUNTED MOUNTED DISMOUNTED MOUNTED MOUNTED MOUNTED MOUNTED SROUP_NAME", ad ad, v\$asm_diskout umber != 0 and	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
SQL> select GROUP_NUMBE SQL> alter SQL> alter Diskgroup a SQL> select 2 from v 3 where GROUP_NAME	GACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_J diskgroup I ltered. ag.name "(\$asm_disk ; ad.group_n MOUNT_S	MEMBER STATE STATE MOUNTED MOUNTED DISMOUNTED MOUNTED MOUNTED MOUNTED MOUNTED SROUP_NAME", ad ad, v\$asm_diskg umber != 0 and HEADER_STATU	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
SQL> select SQL> select SROUP_NUMBE SQL> alter Diskgroup a SQL> select 2 from v 3 where SROUP_NAME OG_ARCH	CACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_1 diskgroup I ltered. ag.name "C ad.group_n MOUNT_S CACHED	MEMBER STATE STATE MOUNTED MOUNTED DISMOUNTED MOUNTED MOUNTED MOUNTED SROUP_NAME", ad ad, v\$asm_diskg umber != 0 and HEADER_STATU MEMBER	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 te, type from v\$asm_diskgroup; TYPE</pre>
SQL> select SQL> select SROUP_NUMBE SQL> alter SQL> select 2 from v 3 where SROUP_NAME SQLP_NAME SROUP_NAME SROUP_NAME SROUP_NAME	CACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_1 diskgroup I ltered. ag.name "(\$asm_disk a ad.group_n MOUNT_S CACHED CACHED	MEMBER STATE STATE MOUNTED MOUNTED DISMOUNTED MOUNTED M MOUNTED MOUNTED M MOUNTED SROUP_NAME", ad ad, v\$asm_diskg umber != 0 and HEADER_STATU MEMBER MEMBER	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup; TYPE</pre>
SQL> select SQL> select SROUP_NUMBE SQL> alter SQL> select 2 from v 3 where SROUP_NAME SQL> SELCT CALS SQL> SELCT 2 from v 3 where SROUP_NAME SROUP_NAME SROUP_NAME SROUP_NAME SROUP_NAME SROUP_NAME SROUP_NAME	GACHED group_numl R NAME I DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_J diskgroup I ltered. ag.name "C \$asm_disk a ad.group_nt MOUNT_S CACHED CACHED CACHED	MEMBER STATE STATE MOUNTED MOUNTED DISMOUNTED MOUNTED	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 ce, type from v\$asm_diskgroup;</pre>
SQL> select SQL> select SQL> alter of SQL> alter of SQL> select 2 from v 3 where SROUP_NAME SQL> CRS DG_CRS DG_CRS	GACHED group_numl R NAME 1 DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_J diskgroup I ltered. ag.name "(\$asm_disk a ad.group_n MOUNT_S CACHED CACHED CACHED CACHED	MEMBER STATE MOUNTED MOUNTED DISMOUNTED MOUNTED M MOUNTED M MOUNTED MOUNTED M MOUNTED M M MOUNTED M M MOUNTED M M MOUNTED M M MOUNTED M M MOUNTED M M M M M M M M M M M M M M M M M M M	<pre>/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 te, type from v\$asm_diskgroup;</pre>
SQL> select GROUP_NUMBE SQL> alter of SQL> alter of Diskgroup a SQL> select 2 from v 3 where GROUP_NAME DG_CRS DG_CRS DG_CRS DG_CRS DG_DATA	GACHED group_numl R NAME I DG_CRS 2 DG_ARCH 0 DG_DATA 4 DG_REDO 5 DG_REDO_J diskgroup I ltered. ag.name "(\$asm_disk a ad.group_name) MOUNT_S 	MEMBER STATE MOUNTED MOUNTED DISMOUNTED MOUNTE	<pre>/dev/disk/by-id/scsi-360000e00d10000000 1001a200070000-part1 te, type from v\$asm_diskgroup;</pre>

DG DATA /dev/disk/by-id/scsi-3600000e00d10000000 CACHED MEMBER 1001a200080000-part1 CACHED /dev/disk/by-id/scsi-3600000e00d10000000 DG_DATA MEMBER 1001a200090000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO CACHED MEMBER 1001a20000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE _____ ____ 1 DG_CRS MOUNTED NORMAL MOUNTED MOUNTED 2 DG_ARCH EXTERN 3 DG_DATA EXTERN 4 DG REDO MOUNTED EXTERN 5 DG REDO M MOUNTED EXTERN Start the database instance with the Mount option Execute this command on the recovery manager in node1 RMAN> startup mount The Oracle instance has started The database has been mounted The total size of the system global area is 5027385344 bytes Fixed Size 2237008 bytes Variable Size 1006636464 bytes Database Buffers 4009754624 bytes Redo Buffers 8757248 bytes Execute complete recovery Execute this command on the recovery manager in node1 RMAN> recover database; Recovery has started Start time: 12-11-30) Channel: ORA_DISK_1 has been assigned Channel ORA_DISK_1: SID=146 Instance=rac1 Device type=DISK Starting media recovery The archive log of the thread 1 (Order 27) exists in the disk as the file +DG_ARCH/rac/arch/1_27_800741391.dbf The archive log of the thread 2 (Order 8) exists in the disk as the file +DG_ARCH/rac/arch/2_8_800741391.dbf The archive log of the thread 2 (Order 9) exists in the disk as the file +DG_ARCH/rac/arch/2_9_800741391.dbf Archive log file name=+DG_ARCH/rac/arch/2_8_800741391.dbf Thread=2 Order=8 Media recovery has been completed. Elapsed time: 00:00:35 Recovery has been completed (Completion time:12-11-30) **Open the database** Execute this command on the recovery manager in node1 RMAN> alter database open; The database has opened Starting a full resynchronization of the recovery catalog The full resynchronization has been completed

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For all the AS Execute thi	M instance s comman	es, moun d on the	t the disk gr ASM instand	oup of the data file ce in node2
SQL> alter o	liskgrou	DG_DAI	'A mount;	
Diskgroup al	ltered.			
SQL> select 2 from v: 3 where a	ag.name \$asm_dis ad.group	"GROUP_ c ad, vs number	NAME", ad asm_diskg != 0 and	.mount_status, ad.header_status, ad.path roup ag ad.group number = ag.group number;
GROUP_NAME	MOUNT_S	S HEAD	ER_STATU	PATH
DG_ARCH	CACHED	MEMB	 ER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_CRS	CACHED	MEMB	ER	1001a2000b0000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1
DG_CRS	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_CRS	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1
DG_DATA	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1
DG_DATA	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_DATA	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_DATA	CACHED	MEMB	ER	1001a200080000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1
DG_REDO	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000
DG_REDO_M	CACHED	MEMB	ER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1
SQL> select	group_nu	mber, n	name, stat	e, type from v\$asm_diskgroup;
GROUP_NUMBER	R NAME		STATE	TYPE
1	DG_CRS		MOUNTED	NORMAL
2	B DG_ARCI	H A	MOUNTED	EXTERN EXTERN
4	DG_RED	С	MOUNTED	EXTERN
5	5 DG_RED	M_C	MOUNTED	EXTERN
Start all the d	atabase in	stances		ad line in node1
	<u>s comman</u>	$\frac{100111}{11}$	0.0/grid/b	
NAME	TARGET	STATE	SERV	VER STATE DETAILS
Local Regour				_ "
ora.DG_ARCH.	.ag ONLINE ONLINE	ONLINE ONLINE	node node	1 2
ora.DG_CRS.c	lg	ONT TATT		1
	ONLINE	ONLINE	node node	2
ora.DG_DATA.	.dg ONLINE	ONLINE	node	1
ora.DG_REDO	ONLINE .dg	ONLINE	node	2

ONL	INE	ONLINE	nodel	
ONL	INE	ONLINE	node2	
ora.DG_REDO_M.do	3			
ONL	INE	ONLINE	nodel	
ONL	INE	ONLINE	node2	
ora.LISTENER.lsr	ır			
ONL	INE	ONLINE	nodel	
ONL	INE	ONLINE	node2	
ora.asm				
ONL	INE	ONLINE	nodel	Started
ONL	INE	ONLINE	node2	Started
ora.gsd				
OFF	LINE	OFFLINE	nodel	
OFF	LINE	OFFLINE	node2	
ora.net1.network	2			
ONL	INE	ONLINE	nodel	
ONL	INE	ONLINE	node2	
ora.ons				
ONL	INE	ONLINE	nodel	
ONL	INE	ONLINE	node2	
ora.registry.acf	S			
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Cluster Resource	S			
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ora.node2.vip		01122112		
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ora.oc4i				
1 ONT	INE	ONLINE	node2	
ora.rac.db				
1 ONL	INE	ONLINE	nodel	Open
2 OFF	LINE	OFFLINE		Instance Shutdown
ora.scan1.vip				
1 ONL	INE	ONLINE	node2	
ora.scan2.vip				
1 ONL	INE	ONLINE	nodel	
ora.scan3.vip				
1 ONL	INE	ONLINE	nodel	
[oracle@node1]\$ node2	/u01/	/app/oracle/	11.2.0/dbhome_1/bin/sr	votl start instance -d rac -n
[grid@nodel]\$ /u	101/aj	pp/11.2.0/gr	id/bin/crsctl status	res -t
NAME TAI	RGET	STATE	SERVER	STATE DETAILS
LOCAL RESOURCES				
ora DC APCH da				
ONT.	TNE	ONLINE	nodel	
		~		

	C ONLINE	noaez	
ora.DG_CRS.dg			
ONLINE	E ONLINE	nodel	
ONLINE	E ONLINE	node2	
ora.DG_DATA.dg			
ONLINE	E ONLINE	nodel	
ONLINE	E ONLINE	node2	
ora.DG_REDO.dg			
ONLINE	E ONLINE	nodel	
ONLINE	E ONLINE	node2	
ora.DG_REDO_M.dg			
ONLINE	E ONLINE	node1	
ONLINE	E ONLINE	node2	
ora.LISTENER.lsnr			
ONLINE	E ONLINE	node1	
ONLINE	E ONLINE	node2	
ora.asm			
ONLINE	E ONLINE	node1	Started
ONLINE	E ONLINE	node2	Started
ora.gsd			
OFFLIN	JE OFFLINE	node1	
OFFLIN	JE OFFLINE	node2	
ora net1 network		noucl	
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ONLINE	E ONLINE	node2	
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Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE	nodel nodel node2	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2	E ONLINE E ONLINE .lsnr E ONLINE .lsnr	nodel nodel node2	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE	nodel nodel node2 node1	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr	nodel nodel node2 node1	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE	nodel nodel node2 node1 node1	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE	nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE NE OFFLINE	nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.nodel.vip	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE NE OFFLINE	nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.nodel.vip 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE NE OFFLINE E ONLINE	nodel nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE NE OFFLINE E ONLINE	nodel nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE NE OFFLINE E ONLINE	nodel nodel nodel nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE NE OFFLINE E ONLINE E ONLINE	nodel nodel nodel nodel nodel nodel nodel	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE E OFFLINE E ONLINE E ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j 1 ONLINI ora.rac.db	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE E OFFLINE E ONLINE E ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2	
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j 1 ONLINI ora.rac.db 1 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1	Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j 1 ONLINI ora.rac.db 1 ONLINI 2 ONLINI	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node2	Open Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.nodel.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j 1 ONLINI ora.rac.db 1 ONLINI 2 ONLINI ora.scan1.vip	E ONLINE E ONLINE .lsnr E ONLINE .lsnr E ONLINE .lsnr E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE E ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node1 node1	Open Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.cdb 1 ONLINI ora.rac.db 1 ONLINI 2 ONLINI ora.scan1.vip 1 ONLINI	E ONLINE ONLINE Isnr ONLINE Isnr ONLINE Isnr ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node2 node1 node2 node1 node2	Open Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.cdb 1 ONLINI ora.cdb 1 ONLINI ora.scan1.vip 1 ONLINI ora.scan2.vip	E ONLINE S ONLINE lsnr ONLINE lsnr ONLINE lsnr ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node2 node1 node2	Open Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.nodel.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.cdb 1 ONLINI ora.scan1.vip 1 ONLINI ora.scan2.vip 1 ONLINI	E ONLINE S ONLINE lsnr ONLINE lsnr ONLINE lsnr ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node2 node1 node2 node1 node2	Open Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.oc4j 1 ONLINI ora.scan1.vip 1 ONLINI ora.scan2.vip 1 ONLINI ora.scan3.vip	E ONLINE ONLINE Isnr ONLINE Isnr ONLINE Isnr ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node2 node1 node2 node1	Open Open
Cluster Resources acmagent 1 ONLINI acmvip 1 ONLINI ora.LISTENER_SCAN1 1 ONLINI ora.LISTENER_SCAN2 1 ONLINI ora.LISTENER_SCAN3 1 ONLINI ora.cvu 1 OFFLIN ora.cvu 1 OFFLIN ora.node1.vip 1 ONLINI ora.node2.vip 1 ONLINI ora.cdb 1 ONLINI ora.scan1.vip 1 ONLINI ora.scan2.vip 1 ONLINI ora.scan3.vip 1 ONLINI	E ONLINE ONLINE Isnr ONLINE Isnr ONLINE Isnr ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE ONLINE	nodel nodel nodel nodel nodel nodel node2 node2 node2 node1 node2 node1 node2 node1 node2 node1 node1	Open Open

In case of a failure of a disk group other than DG_CRS

With the AB	ORT option	<mark>ı , shut down</mark>	the database insta	nce
Execute t	his commai	nd on the OS	command line in n	
NAME	1]\$ / UU1 / TARGET	app/11.2.0 STATE	/grid/bin/crsct SERVER	STATE DETAILS
ora.DG_ARC	H.dg			
	ONLINE	ONLINE	nodel	
ora.DG CRS	.da	ONLINE	nouez	
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_DAT	A.dg			
	ONLINE ONLINE	ONLINE ONLINE	nodel	
ora DG RED	0 da	ONLINE	nodez	
	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.DG_RED	0_M.dg			
	ONLINE	ONLINE	node1	
OND ITOTEN	ONLINE ED lanr	ONLINE	node2	
OIA, DISIEN.	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.asm				
	ONLINE	ONLINE	nodel	Started
	ONLINE	ONLINE	node2	Started
ora.gsd	OPET TNE		nodo1	
	OFFLINE	COFFLINE COFFLINE	node2	
ora.net1.n	etwork		nouch	
	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.ons				
	ONLINE	ONLINE ONLINE	nodel	
ora regist	UNLINE rv acfs	ONLINE	nodez	
ora.regibe	ONLINE	ONLINE	node1	
	ONLINE	OFFLINE	node2	
Cluster Re	sources			
acmagent				
1	ONLINE	ONLINE	nodel	
acmvip				
1	ONLINE	ONLINE	nodel	
ora.LISTEN.	ER_SCANI.	1snr ONLINE	nodol	
ora LISTEN	ER SCAN2	lsnr	HOUEZ	
1	ONLINE	ONLINE	node1	
ora.LISTEN	ER_SCAN3.	lsnr		
1	ONLINE	ONLINE	node1	
ora.cvu	0000000000			
\perp	OFFLINE	S OFFLINE		
1	NT'1NL UNI'1NL	ONLINE	node1	
ora.node2.	vip		model	
1	ONLINE	ONLINE	node2	
ora.oc4j				

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1	ONLINE	ONLINE	node2					
ora.rac.db		-	<u> </u>					
1	ONLINE	ONLINE	nodel	Open				
2	ONLINE	ONLINE	node2	Open				
ora.scani.v	О₩Т.ТМЕ	ONIT	node?					
\perp	UNLINE	ONLINE	nodez					
1	ONLINE	ONLINE	node1					
ora.scan3.y	vip	ONDINE	nouci					
1	ONLINE	ONLINE	node1					
[oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl stop database -d rac -c								
abort								
[grid@nodel]\$ /u01/app/11.2.0/grid/bin/crsctl status res -t								
NAME	TARGET	STATE	SERVER	STATE_DETAILS				
Local Reso	urces							
ora.DG_ARCI	H.dg							
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.DG_CRS	.dg		1 1					
	ONLINE	ONLINE	nodel					
	ONLINE A da	ONLINE	nodez					
Ofa.DG_DAI	ONLINF	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora DG RED) da	ONDINE	noucz					
	ONLINE	ONLINE	node1					
	ONLINE	ONLINE	node2					
ora.DG RED	0 M.dq	ONDING	noucz					
010.00_1000	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.LISTEN	ER.lsnr	01122112	1100.01					
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.asm								
	ONLINE	ONLINE	nodel	Started				
	ONLINE	ONLINE	node2	Started				
ora.gsd								
	OFFLINE	OFFLINE	nodel					
	OFFLINE	OFFLINE	node2					
ora.net1.ne	etwork							
	ONLINE	ONLINE	nodel					
	ONLINE	ONLINE	node2					
ora.ons								
	ONLINE	ONLINE	nodel					
	UNLINE	ONLINE	nodez					
ora.registi	LY. ACIS		nodol					
	ONLINE	ONLINE	node2					
Cluster Resources								
acmagent								
1	ONLINE	ONLINE	nodel					
acmvip								
1	ONLINE	ONLINE	nodel					
ora.LISTEN	ER_SCAN1.	lsnr						
1	ONLINE	ONLINE	node2					
ora.LISTEN	ER_SCAN2.	lsnr						
1	ONLINE	ONLINE	nodel					
ora.LISTEN	ER_SCAN3.	lsnr						

1 ONLINE ONLINE node1 ora.cvu OFFLINE OFFLINE 1 ora.node1.vip 1 ONLINE ONLINE node1 ora.node2.vip ONLINE ONLINE node2 1 ora.oc4j ONLINE ONLINE node2 1 ora.rac.db OFFLINE OFFLINE Instance Shutdown 1 OFFLINE OFFLINE Instance Shutdown 2 ora.scan1.vip ONLINE ONLINE node2 1 ora.scan2.vip ONLINE ONLINE node1 1 ora.scan3.vip 1 ONLINE ONLINE node1 Dismount all the disk groups other than DG CRS Execute this command on the ASM instance in node2 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH ------DG_ARCH CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d1000000 1001a2000b0000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1 DG_DATA CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1 DG DATA CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 DG DATA CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1 DG DATA CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1 DG REDO CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 CACHED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 DG REDO M 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE _____ ____ 1 DG_CRS MOUNTED NORMAL 2 DG_ARCH MOUNTED EXTERN 3 DG_DATA 4 DG_REDO MOUNTED EXTERN 4DG_REDOMOUNTED5DG_REDO_MMOUNTED EXTERN EXTERN SQL> alter diskgroup DG_DATA, DG_REDO, DG_REDO_M, DG_ARCH dismount; Diskgroup altered. SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag

3 where ad.group_number != 0 and ad.group_number = ag.group_number;						
GROUP_NAME	MOUNT_S HEADER_STATU		РАТН			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000b0000-part1			
DG_CRS	CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1			
DG_CRS	_CRS CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1			
DG_CRS CACHED MEMBE CLOSED CANDI		MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1			
		CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1			
SQL> select	group_num	ber, name, stat	e, type from v\$asm_diskgroup;			
GROUP_NUMBER	NAME	STATE	TYPE			
	1 DG CRS	 MOUNTED	NORMAI.			
Delete all the Execute this	disk groups s command	other than DG_CR on the ASM instan	ce in node1			
SQL> drop di	skgroup D	G_DATA includin	ng contents;			
Diskgroup dr	opped.					
SQL> drop di	skgroup De	G_REDO includir	ng contents;			
Diskgroup dr	opped.					
SQL> drop di	skgroup De	G_REDO_M includ	ling contents;			
Diskgroup dr	opped.					
SQL> drop di	skgroup De	G_ARCH includin	ng contents;			
Diskgroup dr	opped.					
SQL> select	ag.name "(GROUP_NAME", ad	l.mount_status, ad.header_status, ad.path			
2 from v\$ 3 where a	asm_disk d.group_n	ad, v\$asm_diskg umber != 0 and	group ag ad.group_number = ag.group_number;			
GROUP_NAME	MOUNT_S	HEADER_STATU	РАТН			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000			
DG_CRS CACHED MEM		MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000			
DG_CRS CACHED MEMBER		MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000			
DG_CRS	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000			
	CLOSED	CANDIDATE	/dev/disk/by-id/scsi-3600000e00d10000000			

[Best Practices] Oracle Database 11g R2 Automatic Storage Management with FUJITSU Storage 1001a200010000-part1 CLOSED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1 CLOSED /dev/disk/by-id/scsi-3600000e00d10000000 CANDIDATE 1001a200080000-part1 CLOSED /dev/disk/by-id/scsi-3600000e00d10000000 CANDIDATE 1001a200090000-part1 CLOSED CANDIDATE /dev/disk/by-id/scsi-3600000e00d10000000 1001a20000000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 CLOSED CANDIDATE 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP_NUMBER NAME STATE TYPE _____ ____ 1 DG CRS MOUNTED NORMAL From the backup of the metadata acquiured with the ASMCMD utility, restore the metadata of DG REDO, DG REDO M and DG ARCH Execute this command on the ASMCMD utility in node1 ASMCMD > md_restore /backup/meta/md_bk --full -G 'DG_REDO' Current Diskgroup metadata being restored: DG_REDO Diskgroup DG_REDO created! System template PARAMETERFILE modified! System template CHANGETRACKING modified! System template CONTROLFILE modified! System template DATAFILE modified! System template DATAGUARDCONFIG modified! System template FLASHFILE modified! System template XTRANSPORT modified! System template TEMPFILE modified! System template BACKUPSET modified! System template OCRFILE modified! System template ARCHIVELOG modified! System template DUMPSET modified! System template ONLINELOG modified! System template AUTOBACKUP modified! System template FLASHBACK modified! System template ASMPARAMETERFILE modified! Directory +DG_REDO/RAC re-created! Directory +DG_REDO/RAC/CONTROLFILE re-created! Directory +DG_REDO/RAC/ONLINELOG re-created! Directory +DG_REDO/RAC/PARAMETERFILE re-created! ASMCMD > md_restore /backup/meta/md_bk --full -G 'DG_REDO_M' Current Diskgroup metadata being restored: DG_REDO_M Diskgroup DG_REDO_M created! System template ONLINELOG modified! System template XTRANSPORT modified! System template CONTROLFILE modified! System template DATAFILE modified! System template BACKUPSET modified! System template DUMPSET modified! System template CHANGETRACKING modified! System template OCRFILE modified! System template DATAGUARDCONFIG modified! System template TEMPFILE modified! System template ASMPARAMETERFILE modified! System template FLASHFILE modified! System template PARAMETERFILE modified! System template FLASHBACK modified! System template AUTOBACKUP modified! System template ARCHIVELOG modified!

```
Directory +DG_REDO_M/RAC re-created!
Directory +DG_REDO_M/RAC/CONTROLFILE re-created!
Directory +DG_REDO_M/RAC/ONLINELOG re-created!
ASMCMD > md_restore /backup/meta/md_bk --full -G 'DG_ARCH'
Current Diskgroup metadata being restored: DG_ARCH
Diskgroup DG_ARCH created!
System template XTRANSPORT modified!
System template ONLINELOG modified!
System template DATAGUARDCONFIG modified!
System template AUTOBACKUP modified!
System template TEMPFILE modified!
System template OCRFILE modified!
System template ARCHIVELOG modified!
System template DUMPSET modified!
System template CONTROLFILE modified!
System template BACKUPSET modified!
System template ASMPARAMETERFILE modified!
System template FLASHBACK modified!
System template PARAMETERFILE modified!
System template FLASHFILE modified!
System template DATAFILE modified!
System template CHANGETRACKING modified!
Directory +DG_ARCH/RAC re-created!
Directory +DG_ARCH/RAC/arch re-created!
Directory +DG ARCH/RAC/CONTROLFILE re-created!
Directory +DG ARCH/RAC/snapcf re-created!
Directory +DG ARCH/RAC/ARCHIVELOG re-created!
Directory +DG ARCH/RAC/ARCHIVELOG/2012 12 01 re-created!
Directory +DG_ARCH/RAC/ARCHIVELOG/2012_11_30 re-created!
SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path
  2 from v$asm_disk ad, v$asm_diskgroup ag
  3 where ad.group_number != 0 and ad.group_number = ag.group_number;
GROUP_NAME MOUNT_S HEADER_STATU PATH
_____ ____
DG_ARCH
         CACHED MEMBER
                                   /dev/disk/by-id/scsi-3600000e00d10000000
                                   1001a2000b0000-part1
DG_CRS CACHED MEMBER
                                   /dev/disk/by-id/scsi-3600000e00d10000000
                                   1001a200030000-part1
DG_CRS CACHED MEMBER
                                   /dev/disk/by-id/scsi-3600000e00d10000000
                                   1001a200040000-part1
DG CRS
            CACHED MEMBER
                                    /dev/disk/by-id/scsi-3600000e00d10000000
                                   1001a2000a0000-part1
            CLOSED CANDIDATE
                                    /dev/disk/by-id/scsi-3600000e00d10000000
                                   1001a200010000-part1
            CLOSED
                                    /dev/disk/by-id/scsi-3600000e00d10000000
                     CANDIDATE
                                   1001a200020000-part1
            CLOSED
                                    /dev/disk/by-id/scsi-3600000e00d10000000
                     CANDIDATE
                                    1001a200080000-part1
            CLOSED
                                   /dev/disk/by-id/scsi-3600000e00d10000000
                     CANDIDATE
                                   1001a200090000-part1
                                    /dev/disk/by-id/scsi-3600000e00d10000000
DG REDO
            CACHED
                    MEMBER
                                   1001a20000000-part1
DG REDO M CACHED MEMBER
                                  /dev/disk/by-id/scsi-3600000e00d10000000
                                 1001a200070000-part1
SQL> select group_number, name, state, type from v$asm_diskgroup;
GROUP_NUMBER NAME
                          STATE
                                      TYPE
_____ ____
          1DG_CRSMOUNTEDNORMAL2DG_REDOMOUNTEDEXTERN3DG_REDO_MMOUNTEDEXTERN
```

With the AdvancedCopy feature, restore all the partitions that belong to the disk group of the data file. Execute this command on the OS command line in node1 [root@node1]# /opt/FJSVswsts/bin/swstrestore								
[root@node1]# /opt/FJSVswsts/bin/swstrestore	With the AdvancedCopy feature, restore all the partitions that belong to the disk group of the data file. Execute this command on the OS command line in node1							
<pre>[root@node1]# /opt/FJSVswsts/bin/swstrestore /dev/disk/by-id/scsi-3600000e00d10000001001a200010000-part1 /dev/disk/by-id/scsi-3600000e00d100000001001a200010000-part1 swstrestore completed</pre>								
<pre>[root@node1 ~]# /opt/FJSVswsts/bin/swstrestore /dev/disk/by-id/scsi-3600000e00d10000001001a200020000-part1 /dev/disk/by-id/scsi-3600000e00d100000001001a200020000-part1 swstrestore completed</pre>								
<pre>[root@node1 ~]# /opt/FJSVswsts/bin/swstrestore /dev/disk/by-id/scsi-3600000e00d10000001001a200080000-part1 /dev/disk/by-id/scsi-3600000e00d10000001001a200080000-part1 swstrestore completed</pre>								
<pre>[root@nodel ~]# /opt/FJSVswsts/bin/swstrestore /dev/disk/by-id/scsi-3600000e00d10000001001a200090000-part1 /dev/disk/by-id/scsi-3600000e00d100000001001a200090000-part1 swstrestore completed</pre>								
Mount the disk group of the data file Execute this command on the ASM instance in node1								
Mount the disk group of the data file Execute this command on the ASM instance in node1								
<pre>Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number;</pre>	.path							
<pre>Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH</pre>	.path							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a2000b0000-part1	. path							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S DG_ARCH CACHED DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a2000b0000-part1 DG_2RS CACHED	000000 000000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S DG_ARCH CACHED DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a2000b0000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 1001a200030000-part1 DG_CRS CACHED	000000 000000 000000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	000000 000000 000000 000000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	000000 000000 000000 000000 000000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S DG_ARCH CACHED DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a2000b0000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a2000040000-part1 1001a2000000000-part1 CLOSED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200010000-part1 1001a2000200000-part1 CLOSED MEMBER /dev/disk/by-id/scsi-3600000e00d100	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number;GROUP_NAME DG_ARCHMOUNT_S HEADER_STATU HEADER_STATU DG_ARCHHEADER_STATU CACHED MEMBERPATHDG_CRSCACHED HEMBER/dev/disk/by-id/scsi-3600000e00d100 1001a2000b000-part1DG_CRSCACHED MEMBER/dev/disk/by-id/scsi-3600000e00d100 1001a20003000-part1DG_CRSCACHED CACHEDMEMBER MEMBER/dev/disk/by-id/scsi-3600000e00d100 1001a200000000000-part1DG_CRSCACHED CACHEDMEMBER CLOSED MEMBER/dev/disk/by-id/scsi-3600000e00d100 1001a200010000-part1CLOSED CLOSED MEMBER MEMBER DIG1a200020000-part1CLOSED CLOSED MEMBER MEMBER MeWdisk/by-id/scsi-3600000e00d100 1001a200020000-part1DG_REDO CACHEDMEMBER MEMBER MEMBER MEMBER MeWJI/dev/disk/by-id/scsi-3600000e00d100 1001a200020000-part1DG_REDO CACHEDMEMBER MEMBER MEMBER MEMBER MeWJI/dev/disk/by-id/scsi-3600000e00d100 1001a200020000-part1DG_REDO CACHEDMEMBER MEMBER MEMBER MEMBER MeWJI/dev/disk/by-id/scsi-3600000e00d100 1001a200020000-part1	1.path 000000 000000 000000 000000 000000 0000							
Mount the disk group of the data file Execute this command on the ASM instance in node1SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number;GROUP_NAME GROUP_NAMEMOUNT_S HEADER_STATU DG_ARCHHEADER_STATU (dev/disk/by-id/scsi-3600000e00d100) 1001a2000b0000-part1DG_CCRS DG_CRSCACHED CACHEDMEMBER (dev/disk/by-id/scsi-3600000e00d100) 1001a200030000-part1DG_CRS DG_CRSCACHED CACHEDMEMBER (dev/disk/by-id/scsi-3600000e00d100) 1001a200040000-part1DG_CRS CLOSEDCACHED MEMBER (dev/disk/by-id/scsi-3600000e00d100) 1001a200010000-part1CLOSED CLOSEDMEMBER (dev/disk/by-id/scsi-3600000e00d100) 1001a2000000000000000000000000000000000	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number;GROUP_NAME DG_ARCHMOUNT_S HEADER_STATU IDG_CRSHEADER_STATU (dev/disk/by-id/scsi-3600000e00d10) 1001a2000b0000-part1 DG_CRSDG_CRSCACHED MEMBER (dev/disk/by-id/scsi-3600000e00d10) 1001a200030000-part1DG_CRSCACHED MEMBER (dev/disk/by-id/scsi-3600000e00d10) 1001a200040000-part1DG_CRSCACHED 	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH DG_ARCH CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200030000-part1 CLOSED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200020000-part1 CLOSED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200090000-part1 CLOSED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200090000-part1 DG_REDO CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200000000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d100 1001a200070000-part1 DG_REDO_M CACHED MEMBER /dev/disk/by-i	000000 000000 000000 000000 000000 00000							
Mount the disk group of the data file Execute this command on the ASM instance in node1 SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH	000000 000000 000000 000000 000000 00000							

	-							
0	DG_DATA	DISMOUNTE	ED					
SQL> alter diskgroup DG_DATA mount;								
Diskgroup altered.								
SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path								
2 from v\$asm_disk ad, v\$asm_diskgroup ag								
<pre>3 where ad.group_number != 0 and ad.group_number = ag.group_number;</pre>								
GROUP_NAME	MOUNT_S	HEADER_STATU	PATH					
DG_ARCH	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000b0000-part1					
DG_CRS	CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1					
DG_CRS	CRS CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1					
DG_CRS	CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1					
DG_DATA	CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1					
DG_DATA	CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200020000-part1					
DG_DATA	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200080000-part1					
DG_DATA	CACHED MEMBER		/dev/disk/by-id/scsi-3600000e00d10000000 1001a200090000-part1					
DG_REDO	CACHED	MEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200000000-part1					
DG_REDO_M	CACHED M	IEMBER	/dev/disk/by-id/scsi-3600000e00d10000000 1001a200070000-part1					
SQL> select	SQL> select group_number, name, state, type from v\$asm_diskgroup;							
GROUP_NUMBER	NAME	STATE	TYPE					
1	DG_CRS	MOUNTED	NORMAL					
2	DG_REDO	MOUNTED	EXTERN					
3	DG_REDO_N	M MOUNTED	EXTERN					
4	DG_ARCH	MOUNTED	EXTERN					
C	DG_DAIA	MOONIED	EXIERN					
Specify the initialization parameter of backup and start the database instance in NOMOUNT mode								
		on the recovery ma						
RMAN> startu	p nomount	pfile='/backup	/pfile_db/initrac.ora';					
The Oracle i	nstance ha	as started						
The total size of the system global area is 5027385344 bytes								
Fixed Size 2237008		2237008 k	bytes					
Variable Size 1040190896		1040190896	bytes					
Database Buffers 3976200192			bytes					
Redo Butters 8757248 bytes								
Execute this command on the recovery manager in node1								
RMAN> restore controlfile from autobackup;								
Restoration has started (Start time: 2012/12/01 16:12:31)								
Channel: ORA_DISK_1 has been assigned								

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Channel ORA DISK 1: SID=146 Instance=rac1 Device type=DISK Channel ORA_DISK_1: Looking for automatic backup of a day of the week: 20121201 Channel ORA_DISK_1: The automatic backup has been found: /backup/rman/c-2388723407-20121201-05 Channel ORA_DISK_1: Restoring the control file form automatic backup/backup/rman/c-2388723407-20121201-05 Channel ORA_DISK_1: Restoration of the control file from automatic backup has been completed Output fine name=+DG_REDO/rac/control01.ctl Output fine name=+DG_REDO_M/rac/control02.ctl Restoration has been completed (Completion time: 2012/12/01 16:12:33) Mount the database Execute this command on the recovery manager in nodel RMAN> alter database mount; The database has been mounted Channel: ORA DISK 1 has been released Restore the backed up server parameter file Execute this command on the recovery manager in node1 RMAN > restore spfile; Restoration has started (Start time: 2012/12/01 16:12:47) Channel: ORA_DISK_1 has been assigned Channel ORA_DISK_1: SID=123 Instance=rac1 Device type=DISK Channel ORA_DISK_1: Starting restoration of the data file backup set Channel ORA_DISK_1: SPFILE is being restored Output fine name=+DG_REDO/rac/spfilerac.ora Channel ORA_DISK_1: Reading from backup piece/backup/rman/c-2388723407-20121201-05 Channel ORA_DISK_1: Piece handle=/backup/rman/c-2388723407-20121201-05 Tag=TAG20121201T160402 Channel ORA_DISK_1: The backup piece 1 has been restored Channel ORA_DISK_1: The restoration has been completed. Elapsed time: 00:00:01 Restoration has been completed (Completion time: 2012/12/01 16:12:49) **Execute incomplete recovery** Execute this command on the recovery manager in node1 RMAN> recover database until sequence 17 thread 1; Recover has started (Start time: 2012/12/01 16:19:56) Using channel ORA_DISK_1 Starting media recovery Channel ORA_DISK_1: Starting restoration of archive log to the default destination Channel ORA_DISK_1: Restoring archive log Archive log thread=1 Order=15 Channel ORA_DISK_1: Restoring archive log Archive log thread=2 Order=12 Channel ORA_DISK_1: Restoring archive log Archive log thread=2 Order=13 Channel ORA_DISK_1: Restoring archive log Archive log thread=2 Order=14 Channel ORA DISK 1: Restoring archive log Archive log thread=1 Order=16 Channel ORA_DISK_1: Reading from backup piece/backup/rman/0vnrpga4_1_1 Channel ORA_DISK_1: Piece handle=/backup/rman/0vnrpga4_1_1 Tag=TAG20121201T160256 Channel ORA_DISK_1: The backup piece 1 has been restored

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Channel ORA_DISK_1: The restoration has been completed. Elapsed time: 00:00:07 Archive log file name=+DG_ARCH/rac/arch/1_15_800893891.dbf Thread=1 Order=15 Archive log file name=+DG_ARCH/rac/arch/2_12_800893891.dbf Thread=2 Order=12 Archive log file name=+DG_ARCH/rac/arch/2_13_800893891.dbf Thread=2 Order=13 Archive log file name=+DG_ARCH/rac/arch/2_14_800893891.dbf Thread=2 Order=14 Archive log file name=+DG_ARCH/rac/arch/1_16_800893891.dbf Thread=1 Order=16 Media recovery has been completed. Elapsed time: 00:00:34 Recovery has been completed (Completion time:2012/12/01 16:20:39) Open the database with the RESETLOGS option Execute this command on the recovery manager in node1 RMAN> alter database open resetlogs; The database has opened New incarnation of database has been registered in recovery catalog Starting a full resynchronization of the recovery catalog The full resynchronization has been completed For all the ASM instances, mount all the disk groups other than DG_CRS **Execute this command on the ASM instance in node2** SQL> alter diskgroup DG_DATA, DG_REDO, DG_REDO_M, DG_ARCH mount; Diskgroup altered. SQL> select ag.name "GROUP_NAME", ad.mount_status, ad.header_status, ad.path 2 from v\$asm_disk ad, v\$asm_diskgroup ag 3 where ad.group_number != 0 and ad.group_number = ag.group_number; GROUP_NAME MOUNT_S HEADER_STATU PATH _____ _ ____ CACHED DG_ARCH MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a2000b0000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200030000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200040000-part1 DG_CRS CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a2000a0000-part1 DG_DATA CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 1001a200010000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 DG_DATA CACHED MEMBER 1001a200020000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 DG_DATA CACHED MEMBER 1001a200080000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 DG_DATA CACHED MEMBER 1001a200090000-part1 CACHED MEMBER /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO 1001a200000000-part1 /dev/disk/by-id/scsi-3600000e00d10000000 DG_REDO_M CACHED MEMBER 1001a200070000-part1 SQL> select group_number, name, state, type from v\$asm_diskgroup; GROUP NUMBER NAME STATE TYPE _____ ____ 1 DG_CRS MOUNTED NORMAL MOUNTED 2 DG_ARCH EXTERN 3 DG_DATA MOUNTED EXTERN 4 DG_REDO MOUNTED EXTERN 5 DG_REDO_M MOUNTED EXTERN To restart the database instace from the server parameter file, stop the database
instance Execute this command on the OS command line in node1							
[grid@node1]\$ /u01/app/11.2.0/grid/bin/crsctl status res -t							
NAME TARGET	STATE	SERVER	STATE_DETAILS				
Local Resources							
ora.DG_ARCH.dg							
ONLINE	ONLINE	nodel					
ONLINE	ONLINE	node2					
OTA.DG_CRS.dg	ONT THE	nodol					
ONLINE	ONLINE	node2					
ora.DG_DATA.dg	-						
ONLINE	ONLINE	nodel					
ONLINE	ONLINE	node2					
ora.DG_REDO.dg							
ONL INE	ONLINE	nodel					
ora.DG REDO M.da	OINTING	HUUCZ					
ONLINE	ONLINE	nodel					
ONLINE	ONLINE	node2					
ora.LISTENER.lsnr							
ONLINE	ONLINE	nodel					
ONLINE	ONLINE	node2					
ONLINE	ONLINE	nodel	Started				
ONLINE	ONLINE	node2	Started				
ora.gsd	01122112						
OFFLIN	E OFFLINE	nodel					
OFFLIN	E OFFLINE	node2					
ora.net1.network							
ONLINE	ONLINE	nodel					
ONLINE	ONLINE	nodez					
ONLINE	ONLINE	nodel					
ONLINE	ONLINE	node2					
ora.registry.acfs							
ONLINE	ONLINE	nodel					
ONLINE	OFFLINE	node2					
Cluster Recourded							
acmagent							
ONLINE	ONLINE	nodel					
acmvip							
1 ONLINE	ONLINE	nodel					
ora.LISTENER_SCAN1.	1snr	nodel					
L UNLINE	UNLINE	nodez					
1 ONTITUER_OCANZ.	ONLINE	node1					
ora.LISTENER_SCAN3.	lsnr						
1 ONLINE	ONLINE	node1					
ora.cvu							
1 OFFLIN	E OFFLINE						
ora.nodel.vip	ONT THE	nodol					
ora node? vin	ONTTINE	HUGET					
1 ONLINE	ONLINE	node2					
ora.oc4j							
1 ONLINE	ONLINE	node2					
ora.rac.db	-						
1 ONLINE	ONLINE	nodel	Open				

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2	OFFLINE	OFFLINE		Instance Shutdown
ora.scan1.v:	ip	ANT TYP		
	UNLINE	ONLINE	nodez	
1	ONLINE	ONLINE	nodel	
ora.scan3.v:	ip			
1	ONLINE	ONLINE	nodel	
[oracle@node	e1]\$ / u01	/app/oracle/	/11.2.0/dbhome 1/bin/s	rvctl stop instance -d rac -n
nodel -o im	nediate			
[grid@nodel]\$ / u01/a	pp/11.2.0/g	rid/bin/crsctl status	res -t
NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resour	rces			
ora.DG ARCH	.dq			
_	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.DG_CRS.	DI ONILINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_DATA	.dg			
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_REDO	.dg			
	ONLINE	ONLINE ONI INF	nodel	
ora.DG REDO	M.da	ONLINE	nouez	
	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.LISTENE	R.lsnr			
	ONLINE	ONLINE	nodel	
0.740 0.5m	ONLINE	ONLINE	node2	
Ora.asiii	ONLINE	ONLINE	nodel	Started
	ONLINE	ONLINE	node2	Started
ora.gsd				
	OFFLINE	OFFLINE	nodel	
	OFFLINE	OFFLINE	node2	
ora.netl.net	ONITNE	ONI TNE	nodol	
	ONT T NE	ONLINE	node?	
ora.ons	01111110	~1111111111		
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.registry	y.acfs	o		
	ONLINE	ONLINE	nodel	
		ОБЪТТИЕ.	1100ez	
Cluster Reso	ources			
acmagent			· 	_
1	ONLINE	ONLINE	nodel	
acmvip	0NT T	011 115		
	UNLINE	ONLINE	nodel	
UIA.LISTENEI	NI, TNF	ONLINE	node?	
ora.LISTENE	R SCAN2.1	.snr	110402	
1	ONLINE	ONLINE	nodel	
ora.LISTENE	R_SCAN3.1	snr		
1	ONLINE	ONLINE	nodel	
ora.cvu				
1	OF'F'LINE	OFFLINE		

ora.node1.v	ip			
1	ONLINE	ONLINE	nodel	
ora.node2.vi	ONLINE	ONLINE	node2	
ora.oc4j 1	ONLINE	ONLINE	node2	
ora.rac.db	OPPT TNP	OPEL INF		Instance Chutdown
2	OFFLINE	OFFLINE		Instance Shutdown
ora.scan1.vi	lp	0112202		
1	ONLINE	ONLINE	node2	
ora.scan2.vi	ONLINE	ONLINE	nodel	
1	ONLINE	ONLINE	nodel	
Start all the d	atabase in	stances		
Execute thi	<mark>s comman</mark>	<mark>d on the OS co</mark>	ommand line in node1	
[oracle@node	el]\$ /u01	/app/oracle	/11.2.0/dbhome_1/bin/s	rvctl start database -d rac
[grid@nodel]]\$ / u01/a	app/11.2.0/g	rid/bin/crsctl status	res -t
NAME	TARGET	STATE	SERVER	STATE_DETAILS
Local Resour	rces			
ora.DG_ARCH	.dg			
	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.DG_CRS.c	lg			
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_DATA	.dg	ONI THE	nodol	
	ONLINE	ONLINE	node2	
ora.DG REDO	.dq	ONLINE	110402	
—	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_REDO_	_M.dg			
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ULA.LISIENER	ONT TNF	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.asm				
	ONLINE	ONLINE	nodel	Started
	ONLINE	ONLINE	node2	Started
ora.gsd				
	OFFLINE	OFFLINE	nodel	
	OFFLINE	OFFLINE	node2	
ora.net1.net	ONTINT	ONI TNE	nodo1	
	ONT TINE	ONLINE	node2	
ora.ons		~1411111	IIIIII IIIIII	
223.010	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.registry	/.acfs			
	ONLINE	ONLINE	nodel	
	ONLINE	OFFLINE	node2	
Cluster Reso	ources			
aciiiageiit 1	ONLINE	ONLINE	node1	
-		~1111111		

acmvip 1	ONLINE	ONLINE	node1			
ora.LISTENER	SCAN1.	lsnr	moder			
1	ONLINE	ONLINE	node2			
ora.LISTENER	_SCAN2.	lsnr				
1	ONLINE	ONLINE	nodel			
1	ONLINE	ONLINE	node1			
ora.cvu	01122112	01122112	110401			
1	OFFLINE	OFFLINE				
ora.nodel.vi	р					
l	ONLINE	ONLINE	nodel			
1	ONLINE	ONLINE	node2			
ora.oc4j	01122112	01122112				
1	ONLINE	ONLINE	node2			
ora.rac.db				_		
1	ONLINE	ONLINE	nodel node2	Open		
ora.scanl.vi	DNLINE	ONLINE	nodez	Open		
1	ONLINE	ONLINE	node2			
ora.scan2.vi	р					
1	ONLINE	ONLINE	nodel			
ora.scan3.vi	DIT THE	ONI THE	nodo1			
T	ONLINE	ONLINE	nodel			
Delete the inv	alid entry	of archive lo	a files			
Execute this	s comman	nd on the reco	overy manager	in node1		
RMAN> crossc	heck aro	chivelog al	11;			
Starting a f	ull roci	mehronizat	ion of the r	recovery catalog		
The full res	vnchroni	ization has	s been comple	ecovery catalog		
Channel: ORA	DISK 1	has been a	assigned			
Channel ORA	DISK_1:	SID=135 Ir	nstance=racl	Device type=DISK		
Verification	of arch	nive log ha	as failed			
Archive log	file nar	ne=+DG_ARCH	H/rac/arch/1_	_30_800741391.dbf Record ID=24		
Stamp=800751	676		c ' i i			
Verification	of arch	nive log ha	as failed	12 2007/1201 dbf Bogord ID-25		
Stamp=800751	111e IIai 678	IIE-+DG_ARCI	1/Iac/arcii/2_	_13_800741391.db1 Record 1D=25		
Verification	of arch	nive log ha	as failed			
Archive log	file nar	ne=+DG_ARCH	H/rac/arch/1_	_1_800752274.dbf Record ID=27		
Stamp=800892	464					
:						
Verification	of arch	nive log ha	a heen succe	assfully completed		
Archive log	file nar	ne=+DG ARCH	/rac/arch/2	1 800900597 dbf Record ID=68		
Stamp=800900613						
40 objects have been cross-checked						
RMAN> list archivelog all;						
The list of archive log copies of the database dhunique name DAC						
INE IIST OF ARCHIVE LOG COPIES OF THE GATADASE, GD_UNIQUE_NAME RAC						
Key Thrd Seq S Low time						
445 1 3	30 X	2012/11/3	0 22:28:27	201 dbf		
Name:	+DG_ARC	н/rac/arch	1/1_30_800741	JJD. LVG		
446 2 1	L3 X	2012/11/3	0 22:28:27			
Name: +DG_ARCH/rac/arch/2_13_800741391.dbf						

: 1315 2 14 A 2012/12/01 16:01:46 Name: +DG_ARCH/rac/arch/2_14_800893891.dbf 1441 1 A 2012/12/01 16:23:17 2 Name: +DG_ARCH/rac/arch/2_1_800900597.dbf RMAN> delete expired archivelog all; Channel: ORA DISK 1 has been released Channel: ORA DISK 1 has been assigned Channel ORA_DISK_1: SID=135 Instance=rac1 Device type=DISK The list of archive log copies of the database, db unique name RAC _____ Thrd Seq S Low time Kev _____ - -----1 30 X 2012/11/30 22:28:27 445 Name: +DG_ARCH/rac/arch/1_30_800741391.dbf 446 13 X 2012/11/30 22:28:27 2 Name: +DG_ARCH/rac/arch/2_13_800741391.dbf : 1120 2 X 2012/12/01 15:33:47 10 Name: +DG_ARCH/rac/arch/2_10_800893891.dbf 1156 2 11 X 2012/12/01 15:42:19 Name: +DG_ARCH/rac/arch/2_11_800893891.dbf Do you want to delete this object (enter YES or NO)? yes The archive log has been deleted Archive log file name=+DG_ARCH/rac/arch/1_30_800741391.dbf Record ID=24 Stamp=800751676 The archive log has been deleted The archive log has been deleted Archive log file name=+DG_ARCH/rac/arch/2_10_800893891.dbf Record ID=53 Stamp=800898139 The archive log has been deleted Archive log file name=+DG_ARCH/rac/arch/2_11_800893891.dbf Record ID=57 Stamp=800898817 34EXPIRED objects have been deleted RMAN> list archivelog all; The list of archive log copies of the database, db_unique_name RAC Thrd Seq S Low time Key A 2012/12/01 15:53:34 1316 1 15 Name: +DG ARCH/rac/arch/1 15 800893891.dbf 1317 A 2012/12/01 16:01:48 1 16 Name: +DG_ARCH/rac/arch/1_16_800893891.dbf 1319 2 12 A 2012/12/01 15:53:37

	Name: +DG_ARCH/rac/arch/2_12_800893891.dbf
1318	2 13 A 2012/12/01 15:57:55 Name: +DG_ARCH/rac/arch/2_13_800893891.dbf
1315	2 14 A 2012/12/01 16:01:46 Name: +DG_ARCH/rac/arch/2_14_800893891.dbf
1441	2 1 A 2012/12/01 16:23:17 Name: +DG_ARCH/rac/arch/2_1_800900597.dbf

In case of a disk group failure of DG_CRS

Stop CRS in node1						
Execute this commar	nd on the OS	command line in n	ode1			
[grid@node1]\$ / u01 /a	app/11.2.0,	/grid/bin/crsct	l status resource -t			
NAME TARGET	STATE	SERVER	STATE_DETAILS			
Local Resources						
ora.DG ARCH.dq						
ONLINE	ONLINE	nodel				
ONLINE	ONLINE	node2				
ora.DG_CRS.dg						
ONLINE	ONLINE	nodel				
ONLINE	ONLINE	node2				
ora.DG_DATA.dg						
ONLINE	ONLINE	nodel				
ONLINE	ONLINE	node2				
ora.DG_REDU.dg	ONT THE	mada 1				
ONLINE ONLINE	ONLINE	nodel				
ora DC REDO M da	ONLINE	nouez				
ONLINE	ONLINE	node1				
ONLINE	ONLINE	node2				
ora.LISTENER.lsnr	ONLINE	nouch				
ONLINE	ONLINE	nodel				
ONLINE	ONLINE	node2				
ora.asm						
ONLINE	ONLINE	nodel	Started			
ONLINE	ONLINE	node2	Started			
ora.gsd						
OFFLINE	C OFFLINE	nodel				
OFFLINE	COFFLINE	node2				
ora.netl.network						
ONLINE	ONLINE ONLINE	node2				
UNLINE Ora ong	ONTINE	nouez				
ONT.TNF	ONLINE	node1				
ONLINE	ONLINE	node2				
pra.registry.acfs	JIIIII	110402				
ONLINE	ONLINE	nodel				
ONLINE	OFFLINE	node2				
Cluster Resources						
·						
acmagent	0111 11	1 1				
L ONLINE	ONLINE	noaei				
	ONT THE	nodo1				
I ONLINE	ONLINE	noaei				

ora.LISTENER SCAN1.lsnr ONLINE ONLINE node2 1 ora.LISTENER_SCAN2.lsnr ONLINE ONLINE node1 1 ora.LISTENER_SCAN3.lsnr 1 ONLINE ONLINE node1 ora.cvu OFFLINE OFFLINE 1 ora.node1.vip ONLINE ONLINE node1 1 ora.node2.vip node2 1 ONLINE ONLINE ora.oc4j node2 1 ONLINE ONLINE ora.rac.db node1 ONLINE ONLINE Open 1 2 ONLINE ONLINE node2 Open ora.scan1.vip 1 ONLINE ONLINE node2 ora.scan2.vip 1 ONLINE ONLINE node1 ora.scan3.vip ONLINE ONLINE node1 1 [grid@node1]\$ /u01/app/11.2.0/grid/bin/crsctl stop resource acmagent CRS-2673: Attempting to stop 'acmagent' on 'nodel' CRS-2677: Stop of 'acmagent' on 'nodel' succeeded [grid@node1]\$ /u01/app/11.2.0/grid/bin/crsctl stop resource acmvip CRS-2673: Attempting to stop 'acmvip' on 'nodel' CRS-2677: Stop of 'acmvip' on 'nodel' succeeded [oracle@node1]\$ /u01/app/oracle/11.2.0/dbhome_1/bin/srvctl stop database -d rac [grid@node1]\$ /u01/app/11.2.0/grid/bin/srvctl stop listener [grid@node1]\$ /u01/app/11.2.0/grid/bin/srvctl stop scan_listener [grid@node1]\$ /u01/app/11.2.0/grid/bin/srvctl stop scan [grid@node1]\$ /u01/app/11.2.0/grid/bin/srvctl stop nodeapps [root@node1]# /u01/app/11.2.0/grid/bin/crsctl stop crs -f CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on `nodel' CRS-2673: Attempting to stop 'ora.crsd' on 'nodel' CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'nodel' CRS-2673: Attempting to stop 'ora.DG_CRS.dg' on 'nodel' CRS-2673: Attempting to stop 'ora.DG_ARCH.dg' on `nodel' CRS-2673: Attempting to stop 'ora.DG_DATA.dg' on `node1' CRS-2673: Attempting to stop 'ora.DG_REDO.dg' on `node1' CRS-2673: Attempting to stop 'ora.DG_REDO_M.dg' on `node1' CRS-2677: Stop of 'ora.DG_CRS.dg' on `node1' succeeded CRS-2677: Stop of 'ora.DG_ARCH.dg' on `node1' succeeded CRS-2677: Stop of 'ora.DG_DATA.dg' on `node1' succeeded CRS-2677: Stop of 'ora.DG_REDO.dg' on `node1' succeeded CRS-2677: Stop of 'ora.DG_REDO_M.dg' on `node1' succeeded CRS-2673: Attempting to stop 'ora.asm' on `nodel' CRS-2677: Stop of 'ora.asm' on `node1' succeeded CRS-2792: Shutdown of Cluster Ready Services-managed resources on `node1' has been completed CRS-2677: Stop of 'ora.crsd' on `node1' succeeded CRS-2673: Attempting to stop 'ora.gpnpd' on `nodel' CRS-2673: 'ora.cssdmonitor' on `node1' CRS-2673: Attempting to stop 'ora.ctssd' on `nodel' CRS-2673: Attempting to stop 'ora.evmd' on 'nodel' CRS-2673: Attempting to stop 'ora.asm' on 'nodel' CRS-2673: Attempting to stop 'ora.mdnsd' on `nodel'

```
CRS-2677: Stop of 'ora.cssdmonitor' on 'nodel' succeeded
CRS-2677: Stop of 'ora.gpnpd' on `nodel' succeeded
CRS-2677: Stop of 'ora.mdnsd' on `nodel' succeeded
CRS-2677: Stop of 'ora.evmd' on 'nodel' succeeded
CRS-2677: Stop of 'ora.ctssd' on `nodel' succeeded
Stop CRS in node2
 Execute this command on the OS command line in node2
[root@node2]# /u01/app/11.2.0/grid/bin/crsctl stop crs -f
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources
on 'node2'
CRS-2673: Attempting to stop 'ora.cssdmonitor' on 'node2'
CRS-2673: Attempting to stop 'ora.ctssd' on 'node2'
CRS-2673: Attempting to stop 'ora.evmd' on 'node2'
CRS-2673: Attempting to stop 'ora.asm' on 'node2'
CRS-2673: Attempting to stop 'ora.mdnsd' on 'node2'
CRS-2677: Stop of 'ora.cssdmonitor' on 'node2' succeeded
CRS-2677: Stop of 'ora.mdnsd' on 'node2' succeeded
CRS-2677: Stop of 'ora.evmd' on 'node2' succeeded
CRS-2677: Stop of 'ora.ctssd' on 'node2' succeeded
 Start CRS in exclusive mode
  Execute this command on the OS command line in node1
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs -excl
CRS-4123: Oracle High Availability Services has been started.
CRS-2672: Attempting to start 'ora.gipcd' on 'node1'
CRS-2672: Attempting to start 'ora.mdnsd' on 'nodel'
CRS-2676: Start of 'ora.gipcd' on 'nodel' succeeded
CRS-2676: Start of 'ora.mdnsd' on `nodel'succeeded
CRS-2672: Attempting to start 'ora.gpnpd' on 'nodel'
CRS-2676: Start of 'ora.gpnpd' on `nodel' succeeded
CRS-2672: Attempting to start 'ora.cssdmonitor' on 'nodel'
CRS-2676: Start of 'ora.cssdmonitor' on 'nodel' succeeded
CRS-2672: Attempting to start 'ora.cssd' on 'nodel'
CRS-2679: Attempting to clean 'ora.diskmon' on 'nodel'
CRS-2681: Clean of 'ora.diskmon' on 'nodel' succeeded
CRS-2672: Attempting to start 'ora.diskmon' on 'nodel'
CRS-2676: Start of 'ora.diskmon' on 'nodel' succeeded
CRS-2676: Start of 'ora.cssd' on 'nodel' succeeded
CRS-2672: Attempting to start 'ora.ctssd' on 'nodel'
CRS-2676: Start of 'ora.ctssd' on `nodel' succeeded
CRS-2672: Attempting to start 'ora.asm' on 'nodel'
CRS-2676: Start of 'ora.asm' on 'nodel' succeeded
CRS-2672: Attempting to start 'ora.crsd' on 'nodel'
CRS-2676: Start of 'ora.crsd' on 'nodel' succeeded
Stop crsd
 Execute this command on the OS command line in node1
[root@node1]# /u01/app/11.2.0/grid/bin/crsctl stop resource ora.crsd -init
With the dd command, clear the disk header of DG_CRS
 Execute this command on the OS command line in node1
[grid@node1]$ dd if=/dev/zero of=/dev/sde1 bs=1024k count=10
10+0 records in
10+0 records out
[grid@node1]$ dd if=/dev/zero of=/dev/sdf1 bs=1024k count=10
10+0 records in
10+0 records out
```

[grid@nodel]\$ dd if=/dev/zero of=/dev/sdj1 bs=1024k count=10								
10+0 records in 10+0 records out								
Protone the motodate of DO, ODO			1					
Execute this command on the ASM instance and the ASMCMD utility in node1								
Sol > solest group number n	amo stato	tupe from usage diskaroup.	-					
SQL Select group_number, n	ame, state,	cype from vsasm_arskgroup;						
GROUP_NUMBER NAME	STATE	TYPE						
0 DG_ARCH	DISMOUNTED							
0 DG_DATA	DISMOUNTED							
0 DG_REDO 0 DG_REDO_M	DISMOUNTED							
ASMCMDS md restore (backup/	mota/md bk	full -C IDC CBSI						
Current Diskgroup metadata	being restor	red: DG_CRS						
Diskgroup DG_CRS created!	dified							
System template CHANGETRACK	ING modified	d !						
System template DUMPSET mod	ified!							
System template ASM_STALE m System template ASMPARAMETE	oalliea: RFILE modif:	ied!						
System template ASMPARAMETE	RBAKFILE mod	dified!						
System template PARAMETERFI System template CONTROLFILE	LE modified!	1						
System template ONLINELOG m	odified!							
System template FLASHBACK m	odified!							
System template AUTOBACKUP	modified!							
System template DATAFILE mo	dified!							
System template FLASHFILE m	odified!							
System template XTRANSPORT	modified!							
System template BACKUPSET m	odified!							
System template DATAGUARDCO	NFIG modifie	ed!						
Directory +DG_CRS/crs re-cr Directory +DG CRS/crs/ASMPA	eated! RAMETERFILE	re-created!						
Directory +DG_CRS/crs/OCRFI	LE re-create	ed!						
SQL> select group_number, n	ame, state,	type from v\$asm_diskgroup;						
GROUP_NUMBER NAME	STATE	TYPE						
	 סדפאַמויסאַדת							
0 DG_ARCH 0 DG_DATA	DISMOUNTED							
0 DG_REDO	DISMOUNTED							
1 DG_CRS	MOUNTED	NORMAL						
Execute this command on the /	ASM instance i	in node1						
SOLS shutdown immediate								
ASM diskgroups dismounted								
ASM instance shutdown								
Specify the initialization parameter	er of backup a	nd start the ASM instance						
Execute this command on the A	ASM instance i	in node1]					
SQL> startup pfile='/backup	/pfile_asm/:	initasm.ora'						
ASM instance started								

Total System Global Area 284008448 bytes Fixed Size 2147392 bytes Variable Size 256695232 bytes ASM Cache 25165824 bytes ASM diskgroups mounted Recreate the server parameter file of the ASM instance Execute this command on the ASM instance in node1 SOL> create spfile='+DG CRS' from pfile' ='/backup/pfile asm/initasm.ora'; File created. Restore OCR Execute this command on the OS command line in node1 [root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -restore /backup/ocr/backup_20121130_151838.ocr Verify the integrity of OCR Execute this command on the OS command line in node1 [root@node1]# /u01/app/11.2.0/grid/bin/ocrcheck Status of Oracle Cluster Registry is as follows : Version Version Total space (kbytes) : : 3 262120 2856 Available space (kbytes) : 259264 : 1114258316 ID Device/File Name +DG_CRS : Device/File integrity check succeeded Device/File not configured Device/File not configured Device/File not configured Device/File not configured Cluster registry integrity check succeeded Logical corruption check succeeded Execute restoration of Voting disk Execute this command on the OS command line in node1 [root@node1]# /u01/app/11.2.0/grid/bin/crsctl replace votedisk +DG_CRS Successful addition of voting disk 9c6593fbe6dc4f27bflace7317f3c2d6. Successful addition of voting disk a544bbc4b6ef4ff4bf826fa196f2f505. Successful addition of voting disk 6f52872289464f9cbf96355735a89b2d. Successfully replaced voting disk group with +DG_CRS. CRS-4266: Voting file(s) successfully replaced Stop the CRS running in exclusive mode Execute this command on the OS command line in node1 [root@node1]# /u01/app/11.2.0/grid/bin /crsctl stop crs -f CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'nodel' CRS-2673: Attempting to stop 'ora.crsd' on 'nodel' CRS-2677: Stop of 'ora.crsd' on 'nodel' succeeded CRS-2673: Attempting to stop 'ora.gpnpd' on 'nodel' CRS-2673: Attempting to stop 'ora.cssdmonitor' on `nodel'

CRS-2673: Attempting to stop 'ora.ctssd' on 'nodel' CRS-2673: Attempting to stop 'ora.asm' on 'nodel' CRS-2673: Attempting to stop 'ora.mdnsd' on `nodel' CRS-2677: Stop of 'ora.cssdmonitor' on `node1' succeeded CRS-2677: Stop of 'ora.gpnpd' on `nodel' succeeded CRS-2677: Stop of 'ora.mdnsd' on 'nodel' succeeded CRS-2677: Stop of 'ora.ctssd' on `node1' succeeded CRS-2677: Stop of 'ora.asm' on 'nodel' succeeded CRS-2673: Attempting to stop 'ora.cssd' on 'nodel' CRS-2677: Stop of 'ora.cssd' on 'nodel' succeeded CRS-2673: Attempting to stop 'ora.diskmon' on 'nodel' CRS-2673: Attempting to stop 'ora.gipcd' on 'nodel' CRS-2677: Stop of 'ora.gipcd' on 'nodel' succeeded CRS-2677: Stop of 'ora.diskmon' on 'nodel' succeeded CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'nodel' has been completed CRS-4133: Oracle High Availability Services has been stopped. Start CRS Execute this command on the OS command lines in all nodes (node1, node2) [root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs CRS-4123: Oracle High Availability Services has been started. [grid@nodel]\$ /u01/app/11.2.0/grid/bin/crsctl status resource -t _____ TARGET STATE SERVER NAME STATE_DETAILS _____ Local Resources _____ ora.DG_ARCH.dg ONLINE ONLINE nodel ONLINE ONLINE node2 ora.DG_CRS.dg ONLINE ONLINE nodel ONLINE ONLINE node2 ora.DG_DATA.dg ONLINE ONLINE nodel ONLINE ONLINE node2 ora.DG REDO.dq ONLINE ONLINE nodel ONLINE ONLINE node2 ora.DG_REDO_M.dg ONLINE ONLINE node1 ONLINE ONLINE node2 ora.LISTENER.lsnr ONLINE ONLINE node1 ONLINE ONLINE node2 ora.asm node1 ONLINE ONLINE Started node2 ONLINE ONLINE Started ora.gsd OFFLINE OFFLINE nodel OFFLINE OFFLINE node2 ora.net1.network ONLINE ONLINE node1 ONLINE ONLINE node2 ora.ons ONLINE ONLINE node1 ONLINE ONLINE node2 ora.registry.acfs nodel ONLINE ONLINE ONLINE OFFLINE node2 _____ Cluster Resources

acmagent					
1	ONLINE	ONLINE	nodel		
acmvip					
1	ONLINE	ONLINE	nodel		
ora.LISTENER	R_SCAN1.	lsnr			
1	ONLINE	ONLINE	node2		
ora.LISTENER	R_SCAN2.	lsnr			
1	ONLINE	ONLINE	nodel		
ora.LISTENER	R_SCAN3.	lsnr			
1	ONLINE	ONLINE	nodel		
ora.cvu					
1	OFFLINE	OFFLINE			
ora.node1.vi	-p				
1	ONLINE	ONLINE	nodel		
ora.node2.vi	р				
1	ONLINE	ONLINE	node2		
ora.oc4j					
1	ONLINE	ONLINE	node2		
ora.rac.db					
1	ONLINE	ONLINE	nodel	Open	
2	ONLINE	ONLINE	node2	Open	
ora.scan1.vi	-p				
1	ONLINE	ONLINE	node2		
ora.scan2.vi	-p				
1	ONLINE	ONLINE	nodel		
ora.scan3.vi	р				
1	ONLINE	ONLINE	nodel		

In case of an OLR failure

*For the recovery of OLR, it is only necessary to recover the node where the OLR failed. However, below explains the procedure for OLR failures in all nodes.

Stop CRS in node1 Execute this command on the OS command line in node1								
[grid@node1]\$ /u01/app/11.2.0/grid/bin/crsctl status resource -t								
NAME TARGET	STATE	SERVER	STATE_DETAILS					
Local Resources								
ora.DG_ARCH.dg								
ONLINE	ONLINE	nodel						
ONLINE	ONLINE	node2						
ora.DG_CRS.dg								
ONLINE	ONLINE	nodel						
ONLINE	ONLINE	node2						
ora.DG_DATA.dg								
ONLINE	ONLINE	nodel						
ONLINE	ONLINE	node2						
ora.DG_REDO.dg								
ONLINE	ONLINE	nodel						
ONLINE	ONLINE	node2						
ora.DG_REDO_M.dg								
ONLINE	ONLINE	nodel						
ONLINE	ONLINE	node2						
ora.LISTENER.lsnr								
ONLINE	ONLINE	nodel						
ONLINE	ONLINE	node2						
ora.asm								
ONLINE	ONLINE	nodel	Started					

[Best	Practices	Oracle	Database	11a	R2	Automatic	Storage	Management	with	FUJITSU	Storage
[Desi	riactices	Oracle	Dalabase	тıу	112	Automatic	Sillaye	manayement	VVILII	1031130	Sillaye

	ONLINE	ONLINE	node2	Started
ora.gsd				
	OFFLINE	OFFLINE	node1	
	OFFLINE	OFFLINE	node2	
ora.net1.net	twork			
	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.ons				
	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.registry	y.acfs			
	ONLINE	ONLINE	nodel	
	ONLINE	OFFLINE	node2	
Cluster Reso	ources			
acmagent				
1	ONLINE	ONLINE	nodel	
acmvip				
1	ONLINE	ONLINE	nodel	
ora.LISTENE	R_SCAN1.	lsnr		
1	ONLINE	ONLINE	node2	
ora.LISTENE	R_SCAN2.	lsnr		
1	ONLINE	ONLINE	nodel	
ora.LISTENE	R_SCAN3.	lsnr		
1	ONLINE	ONLINE	node1	
ora.cvu				
1	OFFLINE	C OFFLINE		
ora.node1.v:	ip			
1	ONLINE	ONLINE	node1	
ora.node2.v:	ip			
1	ONLINE	ONLINE	node2	
ora.oc4j				
1	ONLINE	ONLINE	node2	
ora.rac.db				
1	ONLINE	ONLINE	node1	Open
2	ONLINE	ONLINE	node2	Open
ora.scan1.v	ip			
1	ONLINE	ONLINE	node2	
ora.scan2.v:	ip			
1	ONLINE	ONLINE	nodel	
ora.scan3.v:	ip			
1	ONLINE	ONLINE	nodel	
[grid@node1]\$ /u01/a	app/11.2.0/g	rid/bin/crsctl stop	resource acmagent
CRS-2673: At	ttempting	g to stop 'a	cmagent' on `nodel'	
CRS-2677: St	top of 'a	acmagent' on	'nodel' succeeded	
[grid@node1]\$ /u01/a	app/11.2.0/g	rid/bin/crsctl stop	resource acmvip
CRS-2673: At	ttempting	g to stop 'a	cmvip' on `nodel'	
CRS-2677: St	top of 'a	acmvip' on `	nodel' succeeded	
[oracle@node	e1]\$ /u0	1/app/oracle	/11.2.0/dbhome_1/bin	/srvctl stop database -d rac
[grid@node1]\$ /u01/a	app/11.2.0/g	rid/bin/srvctl stop	listener
[grid@node1]\$ / u01/ a	app/11.2.0/g	rid/bin/srvctl stop	scan_listener
[grid@node1]\$ /u01/a	app/11.2.0/g	rid/bin/srvctl stop	scan
[grid@node1]\$ /u01/a	app/11.2.0/g	rid/bin/srvctl stop	nodeapps
[root@node1]# /u01/a	app/11.2.0/g	rid/bin/crsctl stop	crs
CRS-2791: St	arting s	hutdown of O	racle High Availabil	ity Services-managed resources
on `node1'				
CRS-2673: A	ttempting	g to stop 'o	ra.crsd' on `nodel'	
CRS-2790: St	arting s	hutdown of C	luster Ready Service	s-managed resources on `nodel'
CRS-2673: At	ttempting	g to stop 'o	ra.DG_CRS.dg′ on `no	del'

```
CRS-2673: Attempting to stop 'ora.DG_ARCH.dg' on 'nodel'
CRS-2673: Attempting to stop 'ora.DG_DATA.dg' on `nodel'
CRS-2673: Attempting to stop 'ora.DG_REDO.dg' on `nodel'
CRS-2673: Attempting to stop 'ora.DG_REDO_M.dg' on `nodel'
CRS-2677: Stop of 'ora.DG_CRS.dg' on `nodel' succeeded
CRS-2677: Stop of 'ora.DG_ARCH.dg' on `node1' succeeded
CRS-2677: Stop of 'ora.DG_DATA.dg' on `node1' succeeded
CRS-2677: Stop of 'ora.DG_REDO.dg' on `node1' succeeded
CRS-2677: Stop of 'ora.DG_REDO_M.dg' on `node1' succeeded
CRS-2673: Attempting to stop 'ora.asm' on `nodel'
CRS-2677: Stop of 'ora.asm' on 'nodel' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'nodel' has been
completed
CRS-2677: Stop of 'ora.crsd' on `node1' succeeded
CRS-2673: Attempting to stop 'ora.mdnsd' on 'nodel'
CRS-2673: Attempting to stop 'ora.gpnpd' on 'nodel'
CRS-2673: Attempting to stop 'ora.cssdmonitor' on 'nodel'
CRS-2673: Attempting to stop 'ora.ctssd' on 'nodel'
CRS-2673: Attempting to stop 'ora.evmd' on 'nodel'
CRS-2673: Attempting to stop 'ora.asm' on `nodel'
CRS-2677: Stop of 'ora.cssdmonitor' on 'nodel' succeeded
CRS-2677: Stop of 'ora.mdnsd' on 'nodel' succeeded
CRS-2677: Stop of 'ora.gpnpd' on 'nodel' succeeded
CRS-2677: Stop of 'ora.evmd' on 'nodel' succeeded
CRS-2677: Stop of 'ora.ctssd' on 'nodel' succeeded
CRS-2677: Stop of 'ora.asm' on 'nodel' succeeded
CRS-2673: Attempting to stop 'ora.cssd' on 'nodel'
CRS-2677: Stop of 'ora.cssd' on 'nodel' succeeded
CRS-2673: Attempting to stop 'ora.diskmon' on 'nodel'
CRS-2673: Attempting to stop 'ora.gipcd' on 'nodel'
CRS-2677: Stop of 'ora.gipcd' on 'nodel' succeeded
CRS-2677: Stop of 'ora.diskmon' on 'nodel' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'nodel'
has been completed
CRS-4133: Oracle High Availability Services has been stopped.
 Stop CRS in node2
  Execute this command on the OS command line in node2
[root@node2]# /u01/app/11.2.0/grid/bin/crsctl stop crs
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources
on `node2'
CRS-2673: Attempting to stop 'ora.crsd' on 'node2'
CRS-2790: Starting shutdown of Cluster Ready Services-managed resources on 'node2'
CRS-2673: Attempting to stop 'ora.DG_CRS.dg' on 'node2'
CRS-2673: Attempting to stop 'ora.DG_ARCH.dg' on 'node2'
CRS-2673: Attempting to stop 'ora.DG_DATA.dg' on 'node2'
CRS-2673: Attempting to stop 'ora.DG_REDO.dg' on 'node2'
CRS-2673: Attempting to stop 'ora.DG_REDO_M.dg' on 'node2'
CRS-2677: Stop of 'ora.DG_CRS.dg' on 'node2' succeeded
CRS-2677: Stop of 'ora.DG_ARCH.dg' on 'node2' succeeded
CRS-2677: Stop of 'ora.DG_DATA.dg' on 'node2' succeeded
CRS-2677: Stop of 'ora.DG_REDO.dg' on 'node2' succeeded
CRS-2677: Stop of 'ora.DG_REDO_M.dg' on 'node2' succeeded
CRS-2673: Attempting to stop 'ora.asm' on 'node2'
CRS-2677: Stop of 'ora.asm' on 'node2' succeeded
CRS-2792: Shutdown of Cluster Ready Services-managed resources on 'node2' has been
completed
CRS-2677: Stop of 'ora.crsd' on 'node2' succeeded
CRS-2673: Attempting to stop 'ora.mdnsd' on 'node2'
CRS-2673: Attempting to stop 'ora.gpnpd' on 'node2'
CRS-2673: Attempting to stop 'ora.cssdmonitor' on 'node2'
CRS-2673: Attempting to stop 'ora.ctssd' on 'node2'
CRS-2673: Attempting to stop 'ora.evmd' on 'node2'
```

[Best Practices] Oracle Database 11g R2 Automatic Storage Management with FUJITSU Storage

CRS-2673: Attempting to stop 'ora.asm' on 'node2' CRS-2677: Stop of 'ora.cssdmonitor' on 'node2' succeeded CRS-2677: Stop of 'ora.mdnsd' on 'node2' succeeded CRS-2677: Stop of 'ora.gpnpd' on 'node2' succeeded CRS-2677: Stop of 'ora.evmd' on 'node2' succeeded CRS-2677: Stop of 'ora.ctssd' on 'node2' succeeded CRS-2677: Stop of 'ora.asm' on 'node2' succeeded CRS-2673: Attempting to stop 'ora.cssd' on 'node2' CRS-2677: Stop of 'ora.cssd' on 'node2' succeeded CRS-2673: Attempting to stop 'ora.diskmon' on 'node2' CRS-2673: Attempting to stop 'ora.gipcd' on 'node2' CRS-2677: Stop of 'ora.gipcd' on 'node2' succeeded CRS-2677: Stop of 'ora.diskmon' on 'node2' succeeded CRS-2793: Shutdown of Cluster Ready Services-managed resources on 'node2' has been completed CRS-4133: Oracle High Availability Services has been stopped. With the ocrconfig command, restore OLR *When OLR is removed, it is necessary to create an empty file in ({GI installation destination}/cdata/host name.olr) Execute this command on the OS command lines in all nodes (node1, node2) [root@node1]# ls -l /u01/app/11.2.0/grid/cdata total 12822 drwxr-xr-x 2 grid oinstall 512 Feb 23 19:24 localhost drwxrwxr-x 2 grid oinstall 512 Mar 3 15:18 crs drwxr-xr-x 2 grid oinstall 512 Mar 3 13:09 node1 [root@node1]# touch /u01/app/11.2.0/grid/cdata/node1.olr [root@node1]# chown root:oinstall /u01/app/11.2.0/grid/cdata/node1.olr [root@node1]# chmod 600 /u01/app/11.2.0/grid/cdata/node1.olr [root@node1]# ls -l /u01/app/11.2.0/grid/cdata total 12822 512 Feb 23 19:24 localhost drwxr-xr-x 2 grid oinstall drwxrwxr-x 2 grid oinstall 512 Mar 3 15:18 crs 512 Mar 3 13:09 node1 drwxr-xr-x 2 grid oinstall oinstall 0 Mar 3 17:41 node1.olr -rw----- 1 root [root@node1]# /u01/app/11.2.0/grid/bin/ocrconfig -local -restore /backup/olr/node1/backup_20121130_130937.olr [root@node1]# /u01/app/11.2.0/grid/bin /ocrcheck -local Status of Oracle Local Registry is as follows : Version Total space (kbytes) : : 3 : 262120 Used space (kbytes) 2212 Available space (kbytes) : 259908 ΤD : 1828220526 Device/File Name : /u01/app/11.2.0/grid/cdata/node1.olr Device/File integrity check succeeded Local registry integrity check succeeded Logical corruption check succeeded Start CRS Execute this command on the OS command lines in all nodes (node1, node2) [root@node1]# /u01/app/11.2.0/grid/bin/crsctl start crs CRS-4123: Oracle High Availability Services has been started. [grid@node1]\$ /u01/app/11.2.0/grid/bin/crsctl status resource -t _____

NAME	TARGET	STATE	SERVER	STATE_DETAILS
LOCAL RESOU	rces 			
ora.DG_ARCH	.dg			
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_CRS.	dg	ONL THE	nodo1	
	ONLINE ONLINE	ONLINE	node2	
ora.DG DATA	.da	ONDINE	HOUCZ	
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.DG_REDO	.dg			
	ONLINE	ONLINE	nodel	
OTA DG REDO	омптиг М Чч	ONLINE	noue∠	
ULA.DG_KEDO	ONLINE	ONLINE	node1	
	ONLINE	ONLINE	node2	
ora.LISTENE	R.lsnr			
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.asm	ONT THE	ONT THE		
	ONLINE	ONLINE	noael	Started
oralasd			IIUUEZ	Statteu
014.954	OFFLINE	OFFLINE	node1	
	OFFLINE	OFFLINE	node2	
ora.net1.ne	twork			
	ONLINE	ONLINE	nodel	
	ONLINE	ONLINE	node2	
ora.ons	ONT THE	ONT THE		
	ONLINE ONLINE	ONLINE	node2	
ora registr	v acfs	ONDINE	nouez	
010110912001	ONLINE	ONLINE	node1	
	ONLINE	OFFLINE	node2	
Cluster Res	ources 			
acmagent				
1	ONLINE	ONLINE	nodel	
acmvip				
1	ONLINE	ONLINE	nodel	
ora.LISTENE	R_SCAN1.	lsnr		
L ONS LISTENE	UNLINE CAN2 -	UNLINE lanr	noaez	
1	NNLINE	ONLINE	node1	
ora.LISTENE	R SCAN3.	lsnr		
1	ONLINE	ONLINE	nodel	
ora.cvu				
1	OFFLINE	OFFLINE		
ora.nodel.v	ip ONTINE	ANT TIT	-7 - 1	
L ana nade2 w	ONLINE	ONLINE	noaei	
1	ONLINE	ONLINE	node2	
ora.oc4j	01,221.2	0111111	110402	
1	ONLINE	ONLINE	node2	
ora.rac.db				
1	ONLINE	ONLINE	nodel	Open
2	ONLINE	ONLINE	node2	Open
ora.scanl.v	ip			
\downarrow	UNLINE	ONLINE	noaez	
1	-r ONLINE	ONLINE	nodel	

ora.scan3.vip				
	1	ONLINE	ONLINE	nodel

7-3. Additional Technical References

Oracle web site

(1) Oracle Real Application Clusters http://www.oracle.com/technology/products/database/clustering/index.html

Fujitsu's storage management software web site

(1) ETERNUS SF AdvancedCopy Manager http://www.fujitsu.com/global/services/computing/storage/eternus/products/eternus-sf/advance/

Fujitsu's ETERNUS storage system web site

- FUJITSU Disk Storage Systems <u>http://www.fujitsu.com/global/services/computing/storage/eternus/products/diskstorage/</u>
- (2) FUJITSU ETERNUS DX series Enterprise disk array http://www.fujitsu.com/global/services/computing/storage/eternus/products/diskstorage/dx-enterprise/
- (3) FUJITSU ETERNUS DX series Midrange disk array <u>http://www.fujitsu.com/global/services/computing/storage/eternus/products/diskstorage/dx-mid/</u>
- (4) FUJITSU ETERNUS DX series Entry disk array http://www.fujitsu.com/global/services/computing/storage/eternus/products/diskstorage/dx-entry/
- (5) White Paper: MAID for Green Energy Conservation with Fujitsu ETERNUS Storage Systems http://www.fujitsu.com/downloads/STRSYS/system/eternus_MAID_whitepaper.pdf

About This White Paper

This white paper is intended to provide technical information and an overview of Oracle Database 11g R2 Automatic Storage Management feature and Fujitsu ETERNUS DX storage systems.

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