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| Corps Grand Ducal  Incendies & Secours  Data Guard Systems Operator’s Guide  **images**  **Revision History**   |  |  |  | | --- | --- | --- | | **Revision date** | **Version** | **Summary of Changes** | | 22/07/2019 | 0.1 | Initial version | |  |  | Reviewed by technical writer | |  |  | Backup changes | |  | 1 | Approved version |   **Approvals:**   |  |  |  |  | | --- | --- | --- | --- | | Creation Date: | 22/07/2019 | Approved by: |  | | Created By: | Philippe Briens | Approval Date: |  | | Official | Dominique Thiry | Project Manager | Christophe Depecker | | Technical leader | Philippe Briens |  |  | |

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# Environment description

CGDIS Oracle Data Guard systems run on 2 physical servers.

* Operating system : Oracle Enterprise Linux 7.5
* Oracle Server : versions 12.2.0.1, 11.1.0.2, 11.2.0.4

Each server hosts databases for COSWARE, COSWARETEST, SIASELAN and SECUR.

COSWARE and SIASELAN are using Data Guard therefore having primary and standby databases. Primary and standby databases may run on Site 1 or 2.

A switchover occurs when a standby becomes a primary. CGDIS Data Guard systems are configured for manual switchovers, typically for Linux updates (yum update) , Oracle patches or any situation involving to shutdown data bases or Linux servers.

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# Operations

Usual tasks are performed thorugh a Korn shell bases menu invoked by “mnu”.

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| --- |
| Select database |
|  |
| Operations menu is displayed |
|  |

# Checking Data Guard system health

EM is invoked through a url such as <https://hostname:port/em/console> (ex: <https://belbru-orap401:5501/em/console>).

EM is configured at database creation. Databases located on the same host are allocated different EM ports.

**Note**: EM can be used to maintain a primary database. On a standby database, it is read only.

Oracle account “emdba” can be used for most tasks.

## EM startup

The commands below are to be run on the host where databases are created.

“emctl status dbconsole” to find out about the EM status. Returns also the url to use.

“emctl start dbconsole” to start EM

“emctl stop dbconsole” to stop EM

## EM screens

Below a few EM screens

|  |
| --- |
| [oracle@belbru-orap401 ~]$ **emctl status dbconsole**  Oracle Enterprise Manager 11g Database Control Release 11.2.0.4.0  Copyright (c) 1996, 2013 Oracle Corporation. All rights reserved.  **https://belbru-orap401.eeas.europa.eu:5501/em/console/aboutApplication**  Oracle Enterprise Manager 11g is running.  ------------------------------------------------------------------  Logs are generated in directory /u01/app/oracle/product/11.2.0/dbhome\_1/belbru-orap401.eeas.europa.eu\_tstdb1/sysman/log  [oracle@belbru-orap401 ~]$ |
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# Scripts

User equivalence is setup for Oracle on belbru-orap401 and belbru-orap402. Scripts are found in /mnt/backup/scripts directory ($SCRIPTS)

## belbru-orap401 or belbru-orap402

### dblst

Databases on each host

|  |
| --- |
| $ dblst  list of databases defined on each host  belbru-orap401  db name tstdb : db unique name tstdb1  belbru-orap402  db name tstdb : db unique name tstdb2  list of databases running on each host  belbru-orap401  grid 2643 1 0 Aug25 ? 00:00:56 asm\_pmon\_+ASM  oracle 9624 1 0 Aug28 ? 00:00:34 ora\_pmon\_tstdb  belbru-orap402  grid 2712 1 0 Aug24 ? 00:01:02 asm\_pmon\_+ASM  oracle 24374 1 0 Aug28 ? 00:00:35 ora\_pmon\_tstdb  [oracle@belbru-orap401 ~]$ |

### dbstatus

Databases characteristics, in particular database role, observer and failover statuses.

|  |
| --- |
| dbstatus.sh  databases characteristics and statuses on Tue Sep 1 10:41:58 CEST 2015  belbru-orap401  NAME ARCH OPEN\_MODE PROTECTION\_MODE DATABASE\_ROLE FLASH SWITCHOVER BROKER FAILOVER OBSRV OBSRV HOST  --------- ---------- ---------- -------------------- ---------------- ----- ------------ -------- ------------ ----- ------------------  TSTDB ARCHIVELOG READ WRITE MAXIMUM PERFORMANCE PRIMARY YES SESSIONS ACT ENABLED TARGET UNDER YES belbru-orav403.eea  IVE LAG LIMIT s.europa.eu  belbru-orap402  NAME ARCH OPEN\_MODE PROTECTION\_MODE DATABASE\_ROLE FLASH SWITCHOVER BROKER FAILOVER OBSRV OBSRV HOST  --------- ---------- ---------- -------------------- ---------------- ----- ------------ -------- ------------ ----- ------------------  TSTDB ARCHIVELOG READ ONLY MAXIMUM PERFORMANCE PHYSICAL STANDBY YES NOT ALLOWED ENABLED TARGET UNDER YES belbru-orav403.eea  WITH APPLY LAG LIMIT s.europa.eu  [oracle@belbru-orap401 scripts]$ |

### dbstartup

On belbru-orap401 or belbru-orap402 depending where the database is running.

A useful script to run before to start a database is **dbstatus**

|  |
| --- |
| [oracle@belbru-orap401 scripts]$ dbstartup  Usage is /mnt/backup/scripts/dbstartup database\_unique\_name  [oracle@belbru-orap401 scripts]$ dbstartup tstdb1  Database unique name: tstdb1  Database name: tstdb  Oracle home: /u01/app/oracle/product/11.2.0/dbhome\_1  Oracle user: oracle  Spfile: +DATADG/tstdb1/spfiletstdb.ora  Domain:  Start options: open  Stop options: immediate  Database role: PRIMARY  Management policy: AUTOMATIC  Database instance: tstdb  Disk Groups: DATADG,FRADG  Services: tstdb\_pr  **Database is not running.**  Do you confirm tstdb1 startup (y/n)? y  answer is Y  **Database is running.**  [oracle@belbru-orap401 scripts]$ |

### dbshutdown

On belbru-orap401 or belbru-orap402 depending where the database should run.

**Note**: disable Fast Start Failover (**disable\_failover.sh**) before to shutdown a primary database.

A useful script to run before shutting down a database is **dbstatus**

|  |
| --- |
| [oracle@belbru-orap401 scripts]$ dbshutdown  Usage is /mnt/backup/scripts/dbshutdown.sh database\_unique\_name  [oracle@belbru-orap401 scripts]$ dbshutdown tstdb1  Database unique name: tstdb1  Database name: tstdb  Oracle home: /u01/app/oracle/product/11.2.0/dbhome\_1  Oracle user: oracle  Spfile: +DATADG/tstdb1/spfiletstdb.ora  Domain:  Start options: open  Stop options: immediate  Database role: PRIMARY  Management policy: AUTOMATIC  Database instance: tstdb  Disk Groups: DATADG,FRADG  Services: tstdb\_pr  **Database is running.**  /mnt/backup/scripts/dbshutdown.sh : Fast\_Start Failover is DISABLED  Do you confirm tstdb1 shutdown (y/n)? y  answer is Y  **Database is not running.**  [oracle@belbru-orap401 scripts]$ |

### dgrman

To take a full or incremental physical backup of a database, either primary or standby. Uses Oracle rman tool. Backups are found in /mnt/backup/rman.

|  |
| --- |
| [oracle@belbru-orap401 scripts]$ dgrman  Usage is ./dgrman.sh database\_unique\_name backup\_type (F/I)  [oracle@belbru-orap401 scripts]$ |

### dgexp

To take a full logical dump of a primary database. Uses Oracle Data Pump (expdp) tool. Dumps are found in /mnt/b backup/datapump.

|  |
| --- |
| [oracle@belbru-orap401 scripts]$ dgexpdp  Usage is ./dgexpdp.sh DB\_UNIQUE\_NAME  [oracle@belbru-orap401 scripts]$ |

### bkplst

For a summary of existing physical backups.

Backups sets are tagged for easier identification.

PR : backup for a primary database

ST : backup for a standby database

F : full backup

I : incremental cumulative backup

|  |
| --- |
| [oracle@belbru-orap401 ~]$ bkplst  Usage is /mnt/backup/scripts/bkplst.sh database\_unique\_name |
| [oracle@belbru-orap401 ~]$ bkplst tstdb1  Recovery Manager: Release 11.2.0.4.0 - Production on Fri Sep 4 08:34:58 2015  Copyright (c) 1982, 2011, Oracle and/or its affiliates. All rights reserved.  connected to target database: TSTDB (DBID=3422158182)  connected to recovery catalog database  RMAN>  List of Backups  ===============  Key TY LV S Device Type Completion Time #Pieces #Copies Compressed Tag  ------- -- -- - ----------- --------------- ------- ------- ---------- ---  21720 B 0 A DISK 30-AUG-15 1 1 YES PR\_F\_20150830T220001\_SUN  21721 B 0 A DISK 30-AUG-15 1 1 YES PR\_F\_20150830T220001\_SUN  21722 B 0 A DISK 30-AUG-15 1 1 YES PR\_F\_20150830T220001\_SUN  21740 B F A DISK 30-AUG-15 1 1 NO TAG20150830T220113  21787 B A A DISK 30-AUG-15 1 1 YES TAG20150830T220118  21788 B A A DISK 30-AUG-15 1 1 YES TAG20150830T220118  21804 B F A DISK 30-AUG-15 1 1 NO TAG20150830T220120  22075 B A A DISK 31-AUG-15 1 1 YES TAG20150831T080032  22076 B A A DISK 31-AUG-15 1 1 YES TAG20150831T080032  22077 B A A DISK 31-AUG-15 1 1 YES TAG20150831T080032  22078 B A A DISK 31-AUG-15 1 1 YES TAG20150831T080032  22098 B F A DISK 31-AUG-15 1 1 NO TAG20150831T080036  22122 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T080001\_MON  22123 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T080001\_MON  22124 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T080001\_MON  22142 B F A DISK 31-AUG-15 1 1 NO TAG20150831T080056  22190 B A A DISK 31-AUG-15 1 1 YES TAG20150831T080105  22191 B A A DISK 31-AUG-15 1 1 YES TAG20150831T080105  22207 B F A DISK 31-AUG-15 1 1 NO TAG20150831T080107  22380 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120041  22381 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120041  22382 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120041  22383 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120041  22399 B F A DISK 31-AUG-15 1 1 NO TAG20150831T120045  22422 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T120001\_MON  22423 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T120001\_MON  22424 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T120001\_MON  22442 B F A DISK 31-AUG-15 1 1 NO TAG20150831T120105  22490 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120110  22491 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120110  22492 B A A DISK 31-AUG-15 1 1 YES TAG20150831T120110  22512 B F A DISK 31-AUG-15 1 1 NO TAG20150831T120114  22765 B A A DISK 31-AUG-15 1 1 YES TAG20150831T160029  22766 B A A DISK 31-AUG-15 1 1 YES TAG20150831T160029  22767 B A A DISK 31-AUG-15 1 1 YES TAG20150831T160029  22768 B A A DISK 31-AUG-15 1 1 YES TAG20150831T160029  22795 B F A DISK 31-AUG-15 1 1 NO TAG20150831T160034  22820 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T160002\_MON  22821 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T160002\_MON  22822 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T160002\_MON  22840 B F A DISK 31-AUG-15 1 1 NO TAG20150831T160054  22888 B A A DISK 31-AUG-15 1 1 YES TAG20150831T160059  22889 B A A DISK 31-AUG-15 1 1 YES TAG20150831T160059  22905 B F A DISK 31-AUG-15 1 1 NO TAG20150831T160101  23157 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200031  23158 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200031  23159 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200031  23160 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200031  23176 B F A DISK 31-AUG-15 1 1 NO TAG20150831T200034  23199 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T200001\_MON  23200 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T200001\_MON  23201 B 1 A DISK 31-AUG-15 1 1 YES PR\_I\_20150831T200001\_MON  23219 B F A DISK 31-AUG-15 1 1 NO TAG20150831T200054  23310 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200102  23311 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200102  23312 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200102  23313 B A A DISK 31-AUG-15 1 1 YES TAG20150831T200102  23363 B F A DISK 31-AUG-15 1 1 NO TAG20150831T200105  RMAN>  Recovery Manager complete |

### rmanrep

This script is for quick health checks of database backups.

|  |
| --- |
| [oracle@belbru-orap401 scripts]$ rmanrep  Usage is ./rmanrep.sh database\_unique\_name  [oracle@belbru-orap401 scripts]$ ./rmanrep.sh tstdb1  Recovery Manager: Release 11.2.0.4.0 - Production on Tue Sep 1 16:30:25 2015  Copyright (c) 1982, 2011, Oracle and/or its affiliates. All rights reserved.  connected to target database: TSTDB (DBID=3422158182)  connected to recovery catalog database  RMAN>  specification does not match any backup in the repository  RMAN>  RMAN retention policy will be applied to the command  RMAN retention policy is set to recovery window of 7 days  Report of files that must be backed up to satisfy 7 days recovery window  File Days Name  ---- ----- -----------------------------------------------------  RMAN>  Report of files that need backup due to unrecoverable operations  File Type of Backup Required Name  ---- ----------------------- -----------------------------------  RMAN>  RMAN retention policy will be applied to the command  RMAN retention policy is set to recovery window of 7 days  Report of obsolete backups and copies  Type Key Completion Time Filename/Handle  -------------------- ------ ------------------ --------------------  Backup Set 415 25-AUG-15  Backup Piece 511 25-AUG-15 +FRADG/tstdb1/autobackup/2015\_08\_25/s\_888680897.400.888680923  RMAN>  Report of database schema for database with db\_unique\_name TSTDB1  List of Permanent Datafiles  ===========================  File Size(MB) Tablespace RB segs Datafile Name  ---- -------- -------------------- ------- ------------------------  1 830 SYSTEM YES +DATADG/tstdb1/datafile/system.287.888355753  2 780 SYSAUX NO +DATADG/tstdb1/datafile/sysaux.296.888355753  3 110 UNDOTBS1 YES +DATADG/tstdb1/datafile/undotbs1.297.888355753  4 212 USERS NO +DATADG/tstdb1/datafile/users.308.888355753  5 346 EXAMPLE NO +DATADG/tstdb1/datafile/example.293.888355825  List of Temporary Files  =======================  File Size(MB) Tablespace Maxsize(MB) Tempfile Name  ---- -------- -------------------- ----------- --------------------  1 43 TEMP 32767 +DATADG/tstdb1/tempfile/temp.290.888355823  RMAN>  Recovery Manager complete.  [oracle@belbru-orap401 scripts]$ |

## belbru-orav403

Scripts are found in /home/oracle/scripts ($SCRIPTS).

### start\_observer

To start Observer as a background process.

**Each primary database must have its observer process. i.e. Observers have to be started for bodbd1, cfdbd1 javadbd1, bodbt2, cfdbt2, javadbt2 etc ….**

**Note : one may have to run stop\_observer script before restarting observers in case belbru-orav403 was stopped brutally.**

|  |
| --- |
| [oracle@belbru-orav403 scripts]$ start\_observer  Usage is ./start\_observer.sh primary\_service sys\_password  [oracle@belbru-orav403 scripts]$ start\_observer tstdb\_pr xxxxxxxx  sleep 5  nohup: appending output to ‘nohup.out’  oracle 32573 32572 0 11:48 pts/1 00:00:00 /u01/app/oracle/product/11.2.0/dbhome\_1/bin/dgmgrl -logfile /tmp/dgmgrl.log start observer  [oracle@belbru-orav403 scripts]$ |

### stop\_observer

To stop Observer.

|  |
| --- |
| [oracle@belbru-orav403 scripts]$ stop\_observer  Usage is ./stop\_observer.sh primary\_service sys\_password  [oracle@belbru-orav403 scripts]$ stop\_observer tstdb\_pr xxxxxxxx  oracle 481 1 0 11:52 pts/1 00:00:00 /u01/app/oracle/product/11.2.0/dbhome\_1/bin/dgmgrl -logfile /tmp/dgmgrl.log start observer  sleep 5  [oracle@belbru-orav403 scripts]$ |

#### Observers

After starting several observers

|  |
| --- |
| oracle 19226 1 0 11:23 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_bodbd1.log start observer file='/tmp/bodbd1\_fsfo.dat'  oracle 21211 1 0 11:29 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_cfdbd1.log start observer file='/tmp/cfdbd1\_fsfo.dat'  oracle 23666 1 0 11:36 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_javadbd1.log start observer file='/tmp/javadbd1\_fsfo.dat'  oracle 24550 1 0 11:39 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_tstdb1.log start observer file='/tmp/tstdb1\_fsfo.dat'  oracle 25166 1 0 11:40 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_dgdbd1.log start observer file='/tmp/dgdbd1\_fsfo.dat'  oracle 25366 1 0 11:41 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_qadbd1.log start observer file='/tmp/qadbd1\_fsfo.dat'  oracle 26045 1 0 11:42 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_bodbt2.log start observer file='/tmp/bodbt2\_fsfo.dat'  oracle 26822 1 0 11:45 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_cfdbt2.log start observer file='/tmp/cfdbt2\_fsfo.dat'  oracle 26907 1 0 11:45 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_javadbt2.log start observer file='/tmp/javadbt2\_fsfo.dat'  oracle 27276 27275 0 11:46 pts/0 00:00:00 /u01/app/oracle/product/12.1.0/dbhome\_1/bin/dgmgrl -logfile /tmp/observer\_dgdbt2.log start observer file='/tmp/dgdbt2\_fsfo.dat' |

### show\_configuration

Displays detailed Broker configuration.

|  |
| --- |
| [oracle@belbru-orav403 scripts]$ show\_configuration  Usage is /home/oracle/scripts/show\_configuration.sh primary\_service sys\_password  [oracle@belbru-orav403 scripts]$ show\_configuration tstdb\_pr xxxxxxxx  Configuration - dgtstdb  Protection Mode: MaxPerformance  Databases:  tstdb1 - Primary database  tstdb2 - (\*) Physical standby database  (\*) Fast-Start Failover target  Properties:  FastStartFailoverThreshold = '45'  OperationTimeout = '30'  FastStartFailoverLagLimit = '45'  CommunicationTimeout = '180'  ObserverReconnect = '0'  FastStartFailoverAutoReinstate = 'TRUE'  FastStartFailoverPmyShutdown = 'TRUE'  BystandersFollowRoleChange = 'ALL'  ObserverOverride = 'FALSE'  ExternalDestination1 = ''  ExternalDestination2 = ''  PrimaryLostWriteAction = 'CONTINUE'  Fast-Start Failover: ENABLED  Threshold: 45 seconds  Target: tstdb2  Observer: belbru-orav403.eeas.europa.eu  Lag Limit: 45 seconds  Shutdown Primary: TRUE  Auto-reinstate: TRUE  Observer Reconnect: (none)  Observer Override: FALSE  Configuration Status:  SUCCESS |

### disable\_failover

To disable Fast Start Failover.

**Note**: This must be done before stopping a primary database or a switchover.

|  |
| --- |
| [oracle@belbru-orav403 scripts]$ disable\_failover  Usage is /home/oracle/scripts/disable\_failover.sh primary\_service sys\_password  [oracle@belbru-orav403 scripts]$ disable\_failover tstdb\_pr Xxxxxxxx  Configuration - dgtstdb  Protection Mode: MaxPerformance  Databases:  tstdb1 - Primary database  tstdb2 - (\*) Physical standby database  **Fast-Start Failover: ENABLED**  Configuration Status:  SUCCESS  Configuration - dgtstdb  Protection Mode: MaxPerformance  Databases:  tstdb1 - Primary database  tstdb2 - Physical standby database  **Fast-Start Failover: DISABLED**  Configuration Status:  SUCCESS |

### enable\_failover

To enable Fast Start Failover.

|  |
| --- |
| [oracle@belbru-orav403 scripts]$ enable\_failover  Usage is /home/oracle/scripts/enable\_failover.sh primary\_service sys\_password  [oracle@belbru-orav403 scripts]$ enable\_failover tstdb\_pr Xxxxxxxx  Configuration - dgtstdb  Protection Mode: MaxPerformance  Databases:  tstdb1 - Primary database  tstdb2 - Physical standby database  **Fast-Start Failover: DISABLED**  Configuration Status:  SUCCESS  sleep 5  Configuration - dgtstdb  Protection Mode: MaxPerformance  Databases:  tstdb1 - Primary database  tstdb2 - (\*) Physical standby database  **Fast-Start Failover: ENABLED**  Configuration Status:  SUCCESS |

### switchover

Performs a switchover, primary and standby roles are swapped.

**Note**: disable failover before doing a switchover.

|  |
| --- |
| [oracle@belbru-orav403 scripts]$ switchover  Usage is /home/oracle/scripts/switchover.sh db1 db2 syspwd(sysdba pwd)  [oracle@belbru-orav403 scripts]$ switchover tstdb1 tstdb2 Xxxxxxxx  Connectivy to tstdb1 ok  Connectivy to tstdb2 ok  tstdb1 is a PHYSICAL STANDBY database  tstdb2 is a PRIMARY database  connect string to primary is sys/Xxxxxxxx@tstdb2\_static  connect string to standby is sys/Xxxxxxxx@tstdb1\_static  Fast\_Start Failover is DISABLED  Switchover from tstdb2 to tstdb1 (y/n)? y  answer is Y  DGMGRL for Linux: Version 11.2.0.4.0 - 64bit Production  Copyright (c) 2000, 2009, Oracle. All rights reserved.  Welcome to DGMGRL, type "help" for information.  DGMGRL> Connected.  DGMGRL>  Configuration - dgtstdb  Protection Mode: MaxPerformance  Databases:  **tstdb2 - Primary database**  tstdb1 - Physical standby database  Fast-Start Failover: DISABLED  Configuration Status:  SUCCESS  DGMGRL>  Database - tstdb2  Role: PRIMARY  Intended State: TRANSPORT-ON  Instance(s):  tstdb  Database Status:  SUCCESS  DGMGRL>  Database - tstdb1  Role: PHYSICAL STANDBY  Intended State: APPLY-ON  Transport Lag: 0 seconds (computed 0 seconds ago)  Apply Lag: 0 seconds (computed 0 seconds ago)  Apply Rate: 0 Byte/s  Real Time Query: ON  Instance(s):  tstdb  Database Status:  SUCCESS  DGMGRL> Do you confirm switchover from tstdb2 to tstdb1 (y/n)? y  DGMGRL for Linux: Version 11.2.0.4.0 - 64bit Production  Copyright (c) 2000, 2009, Oracle. All rights reserved.  Welcome to DGMGRL, type "help" for information.  DGMGRL> Connected.  DGMGRL> Performing switchover NOW, please wait...  Operation requires a connection to instance "tstdb" on database "tstdb1"  Connecting to instance "tstdb"...  Connected.  New primary database "tstdb1" is opening...  Operation requires startup of instance "tstdb" on database "tstdb2"  Starting instance "tstdb"...  ORACLE instance started.  Database mounted.  Database opened.  **Switchover succeeded, new primary is "tstdb1"**  DGMGRL> |

# Database restore

Many errors which may happen on the primary database can be fixed before resorting to a switchover.

In most cases, Oracle is able to recover a database crash.

Block corruptions, which do not end up in a database crash, have to be handled manually. These blocks are identified and stored in the database when running by the “validate database” command while doing physical database backups. A list of corrupted blocks can be obtained by examining physical backup logs or querying view “v$database\_block\_corruption” .

## dgrecblk.sh

Script dgrecblk.sh uses “v$database\_block\_corruption” to attempt to recover these blocks.

|  |
| --- |
| $SCRIPTS/dgrecblk.sh |
| [oracle@belbru-orap401 scripts]$ ./dgrecblk.sh  usage is ./dgrecblk.sh database\_unique\_name  [oracle@belbru-orap401 scripts]$ ./dgrecblk.sh tstdb1  RMAN recovery of corrupted blocks on tstdb1  validate database;  **RECOVER CORRUPTION LIST;**  validate database;  RMAN> 2> 3> 4> 5> |

## dgrecdb.sh

The use of RAID 5 for database storage reduces significantly the odds to have to handle a tablespace loss.

When files are missing at startup, one may recover the database with rman. Script dgrecdb.sh wraps rman use to restore and recover.

|  |
| --- |
| $SCRIPTS/dgrecdb.sh |
| [oracle@belbru-orap401 scripts]$ ./dgrecdb.sh  usage is ./dgrecdb.sh database\_unique\_name  [oracle@belbru-orap401 scripts]$ ./dgrecdb.sh tstdb1  ./dgrecdb.sh : Restore and recovery of database tstdb1  startup force mount;  **restore database;**  **recover database;**  alter database open;  validate database; |

## RMAN recovery advisor

RMAN provides an advisor analyzing the database health and providing an automated way to recover a database. The scripts which follow illustrate the loss of a non system tablespace.

|  |
| --- |
| At startup a file can’t be found. |
|  |

|  |
| --- |
| RMAN “validate database” identifies the problem file. |
|  |
| RMAN “advise failure” suggests one way to fix the failure |
|  |

|  |
| --- |
| RMAN “repair failure preview;” simulates the fix |
|  |
| RMAN “repair failure” runs the fix in live mode |
|  |

|  |
| --- |
| Media recovery for the lost file id done and the database is open. |
|  |

Note : “non-system” files can be restored online if an error occurs while the database is open. Just put offline the tablespace depending on the list datafile.

# Flashback

A dropped table may be resuscitated with the “flashback table” feature within the length of time specified by the “undo\_retention” parameter. Here it is set to 259200 seconds (72h).

|  |
| --- |
| flashback table |
| SQL> drop table mytab2;  Table dropped.  SQL> **flashback table mytab2 to before drop;**  Flashback complete.  SQL> desc mytab2;  Name Null? Type  ----------------------------------------- -------- ----------------------------  OWNER NOT NULL VARCHAR2(30)  OBJECT\_NAME NOT NULL VARCHAR2(30)  SUBOBJECT\_NAME VARCHAR2(30)  OBJECT\_ID NOT NULL NUMBER  DATA\_OBJECT\_ID NUMBER  OBJECT\_TYPE VARCHAR2(19)  CREATED NOT NULL DATE  LAST\_DDL\_TIME NOT NULL DATE  TIMESTAMP VARCHAR2(19)  STATUS VARCHAR2(7)  TEMPORARY VARCHAR2(1)  GENERATED VARCHAR2(1)  SECONDARY VARCHAR2(1)  NAMESPACE NOT NULL NUMBER  EDITION\_NAME |

Detailed flashback table example.

|  |
| --- |
| $ sqlplus scott@javadbd1  SQL\*Plus: Release 11.2.0.4.0 Production on Tue Jul 19 17:34:21 2016  Copyright (c) 1982, 2013, Oracle. All rights reserved.  Connected to:  Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production  With the Partitioning, Automatic Storage Management, OLAP, Data Mining  and Real Application Testing options  SQL> create table trial as select \* from all\_objects;  Table created.  SQL> connect scott@javadbd2  Enter password:  Connected.  SQL> select count(1) from trial;  COUNT(1)  ----------  65047  SQL> connect scott@javadbd1  Enter password:  Connected.  SQL> desc trial  Name Null? Type  ----------------------------------------- -------- ----------------------------  OWNER NOT NULL VARCHAR2(30)  OBJECT\_NAME NOT NULL VARCHAR2(30)  SUBOBJECT\_NAME VARCHAR2(30)  OBJECT\_ID NOT NULL NUMBER  DATA\_OBJECT\_ID NUMBER  OBJECT\_TYPE VARCHAR2(19)  CREATED NOT NULL DATE  LAST\_DDL\_TIME NOT NULL DATE  TIMESTAMP VARCHAR2(19)  STATUS VARCHAR2(7)  TEMPORARY VARCHAR2(1)  GENERATED VARCHAR2(1)  SECONDARY VARCHAR2(1)  NAMESPACE NOT NULL NUMBER  EDITION\_NAME VARCHAR2(30)  SQL> select count(1) from trial;  COUNT(1)  ----------  65047  SQL> drop table trial;  Table dropped.  SQL> select to\_char(sysdate,'YYYY-MON-DD HH24:MI:SS') from dual;  TO\_CHAR(SYSDATE,'YYY  --------------------  2016-JUL-19 17:44:59  SQL> /  TO\_CHAR(SYSDATE,'YYY  --------------------  2016-JUL-19 18:00:26  SQL> **flashback table trial to before drop;**  Flashback complete.  SQL> select count(1) from trial;  COUNT(1)  ----------  65047  SQL> select to\_char(sysdate,'YYYY-MON-DD HH24:MI:SS') from dual;  TO\_CHAR(SYSDATE,'YYY  --------------------  2016-JUL-19 18:01:28  SQL> connect scott@javadbd2  Enter password:  Connected.  SQL> select to\_char(sysdate,'YYYY-MON-DD HH24:MI:SS') from dual;  TO\_CHAR(SYSDATE,'YYY  --------------------  2016-JUL-19 18:01:43  SQL> select count(1) from trial;  COUNT(1)  ----------  65047  SQL> |
| Flashback query example |
| SQL> select systimestamp from dual;  SYSTIMESTAMP  ---------------------------------------------------------------------------  19-JUL-16 06.07.07.027167 PM +02:00  SQL> select object\_type, count(1) from trial group by object\_type;  OBJECT\_TYPE COUNT(1)  ------------------- ----------  EDITION 1  CONSUMER GROUP 2  SEQUENCE 8  SCHEDULE 3  PROCEDURE 18  OPERATOR 49  DESTINATION 2  WINDOW 9  SCHEDULER GROUP 4  PACKAGE 308  PROGRAM 11  JAVA RESOURCE 865  XML SCHEMA 32  JOB CLASS 2  DIRECTORY 4  TABLE 121  **SYNONYM 33772**  VIEW 1488  FUNCTION 183  JAVA CLASS 27081  INDEXTYPE 5  INDEX 2  TYPE 1076  EVALUATION CONTEXT 1  24 rows selected.  SQL> delete from trial where object\_type = 'SYNONYM';  33772 rows deleted.  SQL> commit;  Commit complete.  SQL> select object\_type, count(1) from trial group by object\_type;  OBJECT\_TYPE COUNT(1)  ------------------- ----------  EDITION 1  CONSUMER GROUP 2  SEQUENCE 8  SCHEDULE 3  PROCEDURE 18  OPERATOR 49  DESTINATION 2  WINDOW 9  SCHEDULER GROUP 4  PACKAGE 308  PROGRAM 11  JAVA RESOURCE 865  XML SCHEMA 32  JOB CLASS 2  DIRECTORY 4  TABLE 121  VIEW 1488  FUNCTION 183  JAVA CLASS 27081  INDEXTYPE 5  INDEX 2  TYPE 1076  EVALUATION CONTEXT 1  23 rows selected.  SQL> create table trial\_before as select \* from trial as of timestamp to\_timestamp('19-JUL-16 18:08:00.000000','DD-MON-YY HH24:MI:SS.FF');  Table created.  SQL> select object\_type, count(1) from trial\_before group by object\_type;  OBJECT\_TYPE COUNT(1)  ------------------- ----------  EDITION 1  CONSUMER GROUP 2  SEQUENCE 8  SCHEDULE 3  PROCEDURE 18  OPERATOR 49  DESTINATION 2  WINDOW 9  SCHEDULER GROUP 4  PACKAGE 308  PROGRAM 11  JAVA RESOURCE 865  XML SCHEMA 32  JOB CLASS 2  DIRECTORY 4  TABLE 121  **SYNONYM 33772**  VIEW 1488  FUNCTION 183  JAVA CLASS 27081  INDEXTYPE 5  INDEX 2  TYPE 1076  EVALUATION CONTEXT 1  24 rows selected.  SQL> |

## Emergency Failover

|  |
| --- |
|  |
| $ [oracle@belbru-orav403:/home/oracle [rmancat]]  $ dgmgrl  DGMGRL for Linux: Version 12.1.0.2.0 - 64bit Production  Copyright (c) 2000, 2013, Oracle. All rights reserved.  Welcome to DGMGRL, type "help" for information.  DGMGRL> connect sys@tstdb2\_static  Password:  Connected as SYSDBA.  DGMGRL> failover to tstdb2;  Performing failover NOW, please wait...  Failover succeeded, new primary is "tstdb2"  DGMGRL> show configuration;  Configuration - dgtstdb  Protection Mode: MaxPerformance  Members:  tstdb2 - Primary database  tstdb1 - Physical standby database (disabled)  ORA-16661: the standby database needs to be reinstated  Fast-Start Failover: DISABLED  Configuration Status:  SUCCESS (status updated 0 seconds ago)  DGMGRL> show database tstdb2;  Database - tstdb2  Role: PRIMARY  Intended State: TRANSPORT-ON  Instance(s):  tstdb  Database Status:  SUCCESS  DGMGRL> |
|  |
| DGMGRL> **connect sys@tstdb2\_static**  Password:  Connected as SYSDBA.  DGMGRL> **reinstate database tstdb1;**  Reinstating database "tstdb1", please wait...  Operation requires shut down of instance "tstdb" on database "tstdb1"  Shutting down instance "tstdb"...  ORA-01109: database not open  Database dismounted.  ORACLE instance shut down.  Operation requires start up of instance "tstdb" on database "tstdb1"  Starting instance "tstdb"...  ORACLE instance started.  Database mounted.  Continuing to reinstate database "tstdb1" ...  Reinstatement of database "tstdb1" succeeded  DGMGRL>  DGMGRL> show configuration;  Configuration - dgtstdb  Protection Mode: MaxPerformance  Members:  tstdb2 - Primary database  tstdb1 - Physical standby database  Fast-Start Failover: DISABLED  Configuration Status:  SUCCESS (status updated 0 seconds ago)  DGMGRL> **show database tstdb1;**  Database - tstdb1  Role: **PHYSICAL STANDBY**  Intended State: APPLY-ON  Transport Lag: 0 seconds (computed 0 seconds ago)  Apply Lag: 0 seconds (computed 0 seconds ago)  Apply Rate: 8.00 KByte/s  Real Time Query: ON  Instance(s):  tstdb  Database Status:  SUCCESS  DGMGRL> |

# SQL\*Net maintenance

## tnsnames.ora aliases

Oracle “oracle” account owns tnsnames.ora.

Maintain /u01/app/oracle/product/11.2.0/dbhome\_1/network/admin/tnsnames.ora ($TNS\_ADMIN/tnsnames.ora) when databases or services are added, removed, updated.

$TNS\_ADMIN/tnsnames.ora must be identical on belbru-orap401, belbru-orap402, belbru-orav403.

|  |
| --- |
| Extract of tnsnames.ora for a database |
| Alias for dynamic database registration |
| **TSTDB1** =  (DESCRIPTION =  (ADDRESS = (PROTOCOL = TCP)(HOST = belbru-orap401.eeas.europa.eu)(PORT = 1521))  (CONNECT\_DATA =  (SERVER = DEDICATED)  (**SERVICE\_NAME = tstdb1**)  )  ) |
| Alias for static database registration (used for switchover) |
| **TSTDB1\_STATIC** =  (DESCRIPTION =  (ADDRESS = (PROTOCOL = TCP)(HOST = belbru-orap401.eeas.europa.eu)(PORT = 1521))  (CONNECT\_DATA =  (SERVER = DEDICATED)  (**SERVICE\_NAME = tstdb1\_static**)  )  ) |
| Alias for primary database transparent client failover when requiring connection to a primary database  “tstdb\_pr” service is registered with a separate “srvctl add service” command. Suffix “\_pr” is meaned for primary. |
| **tstdb\_pr** =  (DESCRIPTION =  (ADDRESS\_LIST =  (FAILOVER = ON)  (LOAD\_BALANCE = OFF)  (ADDRESS = (PROTOCOL = TCP)(HOST = belbru-orap401.eeas.europa.eu)(PORT = 1521))  (ADDRESS = (PROTOCOL = TCP)(HOST = belbru-orap402.eeas.europa.eu)(PORT = 1521))  )  (CONNECT\_DATA =  (**SERVICE\_NAME = tstdb\_pr**)  )  ) |
| Alias for standby database transparent client failover when requiring connection to a read only standby database  “tstdb\_st” service is registered with a separate “srvctl add service” command. Suffix “\_st” is meaned for standby. |
| **tstdb\_st** =  (DESCRIPTION =  (ADDRESS\_LIST =  (FAILOVER = ON)  (LOAD\_BALANCE = OFF)  (ADDRESS = (PROTOCOL = TCP)(HOST = belbru-orap401.eeas.europa.eu)(PORT = 1521))  (ADDRESS = (PROTOCOL = TCP)(HOST = belbru-orap402.eeas.europa.eu)(PORT = 1521))  )  (CONNECT\_DATA =  (**SERVICE\_NAME = tstdb\_st**)  )  ) |

## Database listeners

Listeners are defined in /u01/app/grid/product/11.2.0/grid/network/admin/listener.ora files.

UNIX account “grid” owns listener.ora.

On belbru-orap401 and belbru-orap402, specific listener.ora files are configured for static registration of databases. Static registration is mandatory for duplication and switchover operations.

The tnsnames.ora extracts below are for database “tstdb”, with database unique names of “tstdb1” and “tstdb2” on belbru-orap401 and belbru-orap402.

|  |
| --- |
| belbru-orap401 configuration for database unique name tstdb1 |
| LISTENER =  (DESCRIPTION\_LIST =  (DESCRIPTION =  (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))  (ADDRESS = (PROTOCOL = TCP)(HOST = 10.53.3.11)(PORT = 1521))  )  )  SID\_LIST\_LISTENER =  (SID\_LIST =  (SID\_DESC =  (SID\_NAME=tstdb)  (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  (GLOBAL\_DBNAME=**tstdb1\_static**)  )  (SID\_DESC =  (SID\_NAME=tstdb)  (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  (GLOBAL\_DBNAME=**tstdb1\_dgmgrl**)  )  )  ADR\_BASE\_LISTENER = /u01/app/grid  ENABLE\_GLOBAL\_DYNAMIC\_ENDPOINT\_LISTENER=ON # line added by Agent |
| belbru-orap402 configuration for database unique name tstdb2 |
| LISTENER =  (DESCRIPTION\_LIST =  (DESCRIPTION =  (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))  (ADDRESS = (PROTOCOL = TCP)(HOST = 10.53.3.12)(PORT = 1521))  )  )  SID\_LIST\_LISTENER =  (SID\_LIST =  (SID\_DESC =  (SID\_NAME=tstdb)  (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  (GLOBAL\_DBNAME=**tstdb2\_static**)  )  (SID\_DESC =  (SID\_NAME=tstdb)  (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  (GLOBAL\_DBNAME=**tstdb2\_dgmgrl**)  )  )  ADR\_BASE\_LISTENER = /u01/app/grid  ENABLE\_GLOBAL\_DYNAMIC\_ENDPOINT\_LISTENER=ON # line added by Agent |

# Usual work arounds

Standby database crash

|  |
| --- |
|  |
| $ [oracle@belbru-orap402:/home/oracle [cfdbd]]  $ sqlplus / as sysdba  SQL\*Plus: Release 11.2.0.4.0 Production on Wed Jul 20 13:19:09 2016  Copyright (c) 1982, 2013, Oracle. All rights reserved.  Connected to an idle instance.  SQL> startup mount;  ORACLE instance started.  Total System Global Area 451006464 bytes  Fixed Size 2254024 bytes  Variable Size 339741496 bytes  Database Buffers 100663296 bytes  Redo Buffers 8347648 bytes  Database mounted.  SQL> |
|  |
| Wed Jul 20 13:20:58 2016  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4608.23151.917702379  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4609.10832.917702381  Wed Jul 20 13:21:09 2016  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4610.26444.917702381  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4611.8998.917702381  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4612.9051.917702383  Wed Jul 20 13:21:20 2016  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4613.21768.917702385  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4614.22245.917702383  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4615.10187.917702385  Wed Jul 20 13:21:34 2016  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4616.22752.917702387  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4617.14463.917702385  Wed Jul 20 13:21:46 2016  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4618.9072.917702387  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4619.17502.917702387  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4620.26916.917702405  ….  Wed Jul 20 13:23:23 2016  Media Recovery Log +FRADG/cfdbd2/archivelog/2016\_07\_20/thread\_1\_seq\_4644.3812.917702455  Media Recovery Waiting for thread 1 sequence 4645 (in transit)  Recovery of Online Redo Log: Thread 1 Group 12 Seq 4645 Reading mem 0  Mem# 0: +DATADG/cfdbd2/onlinelog/group\_12.535.915216309  Mem# 1: +FRADG/cfdbd2/onlinelog/group\_12.17432.915216309 |
|  |
| SQL> alter database open;  Database altered.  SQL> |
| Wed Jul 20 13:24:47 2016  Physical standby database opened for read only access.  Completed: alter database open  Wed Jul 20 13:24:53 2016  db\_recovery\_file\_dest\_size of 51200 MB is 5.70% used. This is a  user-specified limit on the amount of space that will be used by this  database for recovery-related files, and does not reflect the amount of  space available in the underlying filesystem or ASM diskgroup.  Wed Jul 20 13:25:23 2016  Data Guard: Database open completed; restarting redo-apply ...  ALTER DATABASE RECOVER MANAGED STANDBY DATABASE THROUGH ALL SWITCHOVER DISCONNECT NOPARALLEL USING CURRENT LOGFILE  Attempt to start background Managed Standby Recovery process (cfdbd)  Wed Jul 20 13:25:23 2016  MRP0 started with pid=46, OS id=13782  MRP0: Background Managed Standby Recovery process started (cfdbd)  Serial Media Recovery started  Managed Standby Recovery starting Real Time Apply  Waiting for all non-current ORLs to be archived...  All non-current ORLs have been archived.  Media Recovery Waiting for thread 1 sequence 4645 (in transit)  Recovery of Online Redo Log: Thread 1 Group 12 Seq 4645 Reading mem 0  Mem# 0: +DATADG/cfdbd2/onlinelog/group\_12.535.915216309  Mem# 1: +FRADG/cfdbd2/onlinelog/group\_12.17432.915216309  Completed: ALTER DATABASE RECOVER MANAGED STANDBY DATABASE THROUGH ALL SWITCHOVER DISCONNECT NOPARALLEL USING CURRENT LOGFILE |

Database file rman restore case

A database file was created on a file system while performing a datapump import, it has to be moved to ASM storage.

|  |
| --- |
| RMAN is used to convert file from filesystem to ASM |
| $ rman target / catalog rman/rman@rmancat  Recovery Manager: Release 11.2.0.4.0 - Production on Tue Jul 26 13:34:04 2016  Copyright (c) 1982, 2011, Oracle and/or its affiliates. All rights reserved.  connected to target database: JAVADBD (DBID=1893325022)  connected to recovery catalog database  RMAN> **convert datafile '/home/dboper/PWGP\_DATA.dbf' format '+DATADG';**  Starting conversion at target at 26-JUL-16  starting full resync of recovery catalog  full resync complete  allocated channel: ORA\_DISK\_1  channel ORA\_DISK\_1: SID=164 device type=DISK  channel ORA\_DISK\_1: starting datafile conversion  input file name=/home/dboper/PWGP\_DATA.dbf  RMAN-00571: ===========================================================  RMAN-00569: =============== ERROR MESSAGE STACK FOLLOWS ===============  RMAN-00571: ===========================================================  RMAN-03009: failure of conversion at target command on ORA\_DISK\_1 channel at 07/26/2016 13:35:46  ORA-19699: cannot make copies with compression enabled |
| Desactivate RMAN compression |
| RMAN> show all;  RMAN configuration parameters for database with db\_unique\_name JAVADBD1 are:  ..  CONFIGURE DEVICE TYPE DISK PARALLELISM 8 BACKUP TYPE TO COMPRESSED BACKUPSET;  ..  RMAN> **CONFIGURE DEVICE TYPE DISK PARALLELISM 8 BACKUP TYPE TO BACKUPSET;** |
| Convert from filesystem to ASM |
| RMAN> convert datafile '/home/dboper/PWGP\_DATA.dbf' format '+DATADG';  Starting conversion at target at 26-JUL-16  allocated channel: ORA\_DISK\_1  channel ORA\_DISK\_1: SID=164 device type=DISK  channel ORA\_DISK\_1: starting datafile conversion  input file name=/home/dboper/PWGP\_DATA.dbf  converted datafile=+DATADG/javadbd1/datafile/pwgp\_data.316.918221931  channel ORA\_DISK\_1: datafile conversion complete, elapsed time: 00:00:35  Finished conversion at target at 26-JUL-16 |
|  |
| SQL> **alter database datafile '/home/dboper/PWGP\_DATA.dbf' offline;**  Database altered.  SQL> **alter database rename file '/home/dboper/PWGP\_DATA.dbf' to '+DATADG/javadbd1/datafile/pwgp\_data.316.918221931';**  Database altered.  SQL> **alter database datafile '+DATADG/javadbd1/datafile/pwgp\_data.316.918221931' online;**  alter database datafile '+DATADG/javadbd1/datafile/pwgp\_data.316.918221931' online  \*  ERROR at line 1:  ORA-01113: file 76 needs media recovery  ORA-01110: data file 76: '+DATADG/javadbd1/datafile/pwgp\_data.316.918221931' |
|  |
| $ rman target / catalog rman/rman@rmancat  Recovery Manager: Release 11.2.0.4.0 - Production on Tue Jul 26 13:43:07 2016  Copyright (c) 1982, 2011, Oracle and/or its affiliates. All rights reserved.  connected to target database: JAVADBD (DBID=1893325022)  connected to recovery catalog database  RMAN> list failure;  starting full resync of recovery catalog  full resync complete  List of Database Failures  =========================  Failure ID Priority Status Time Detected Summary  ---------- -------- --------- ------------- -------  108230 HIGH OPEN 26-JUL-16 One or more non-system datafiles need media recovery  RMAN> advise failure;  List of Database Failures  =========================  Failure ID Priority Status Time Detected Summary  ---------- -------- --------- ------------- -------  108230 HIGH OPEN 26-JUL-16 One or more non-system datafiles need media recovery  analyzing automatic repair options; this may take some time  analyzing automatic repair options complete  Mandatory Manual Actions  ========================  no manual actions available  Optional Manual Actions  =======================  1. If you restored the wrong version of data file +DATADG/javadbd1/datafile/pwgp\_data.316.918221931, then replace it with the correct one  2. Shut down, mount the database and try flush redo using ALTER SYSTEM FLUSH REDO TO 'standby name' command. Then perform a Data Guard role change (failover). Available standbys: javadbd2.  Automated Repair Options  ========================  Option Repair Description  ------ ------------------  1 Recover datafile 76  Strategy: The repair includes complete media recovery with no data loss  Repair script: /u01/app/oracle/diag/rdbms/javadbd1/javadbd/hm/reco\_1692385072.hm  RMAN> **repair failure;**  Strategy: The repair includes complete media recovery with no data loss  Repair script: /u01/app/oracle/diag/rdbms/javadbd1/javadbd/hm/reco\_1692385072.hm  contents of repair script:  # recover datafile  sql 'alter database datafile 76 offline';  recover datafile 76;  sql 'alter database datafile 76 online';  Do you really want to execute the above repair (enter YES or NO)? **yes**  executing repair script  sql statement: alter database datafile 76 offline  Starting recover at 26-JUL-16  starting media recovery  media recovery complete, elapsed time: 00:00:00  Finished recover at 26-JUL-16  sql statement: alter database datafile 76 online  repair failure complete  RMAN> exit  Recovery Manager complete. |
| Check databases files |
| SQL> @q\_data\_files  TABLESPACE\_NAME FILE\_NAME MB INC\_MB  -------------------- ------------------------------------------------------------ -------- --------  PWGP\_DATA +DATADG/javadbd1/datafile/pwgp\_data.316.918221931 25,369 32 |
| Re-activate RMAN compression |
| $ rman target / catalog rman/rman@rmancat  Recovery Manager: Release 11.2.0.4.0 - Production on Tue Jul 26 14:10:41 2016  Copyright (c) 1982, 2011, Oracle and/or its affiliates. All rights reserved.  connected to target database: JAVADBD (DBID=1893325022)  connected to recovery catalog database  RMAN> CONFIGURE DEVICE TYPE DISK PARALLELISM 8 BACKUP TYPE TO COMPRESSED BACKUPSET;  old RMAN configuration parameters:  CONFIGURE DEVICE TYPE DISK PARALLELISM 8 BACKUP TYPE TO BACKUPSET;  new RMAN configuration parameters:  CONFIGURE DEVICE TYPE DISK PARALLELISM 8 BACKUP TYPE TO COMPRESSED BACKUPSET;  new RMAN configuration parameters are successfully stored  starting full resync of recovery catalog  full resync complete  RMAN> |

# Servers linux patching

Servers belbru-orap401, belbru-orap402, belbru-orav403, belbru-orav403, belbru-orav404 are patched regularly.

Primary and standby instances are found on belbru-orap401, belbru-orap402

RMAN catalog (rmancat) and Enterprise Manager 12c (MTDB) instances are found on belbru-orav403

Weblogic is found on belbru-orav404

|  |  |  |  |
| --- | --- | --- | --- |
| belbru-orap401 | Belbru-orap402 | Belbru-orav403 | Belbru-orav404 |
| Bodbd1, cfdbd1, javadbd1, tstdb1 | Bodbd2, cfdbd2, javadbd2, tstdb2 | Rmancat, MTDB | weblogic |

## Stopping order to patch belbru-orav403 & belbru-orav404

### belbru-orav404

stop weblogic

* run /mnt/backup/scripts/oms\_stop.sh

### belbru-orav403

stop instances

* run /mnt/backup/scripts/rmancat\_stop.sh
* run /mnt/backup/scripts/mtdb\_stop.sh

Patch belbru-orav403, belbru-orav404

## Starting order after patching belbru-orav403 & belbru-orav404

### belbru-orav403

Start instances

* run /mnt/backup/scripts/rmancat\_start.sh
* run /mnt/backup/scripts/mtdb\_start.sh

### belbru-orav404

* run /mnt/backup/scripts/oms\_start.sh

## Patching belbru-orap401 & belbru-orap402

Each database has instances, primary and standby, on servers belbru-orap401 & belbru-orap402

Principle : patch servers with standby databases.

Gather primaries on same server by switching over when necessary.

### Example for step to gather primaries

Assuming bodbd1 and bodbd2 are respectively primary and standby databases on belbru-orap401 & belbru-orap402 and that belbru-orap401 is to be patched.

On belbru-orav403 as oracle, run switchover

* run /mnt/backup/scripts/switchover.sh bodbd1 bodbd2 xxxxxx

Bodbd2 becomes a primary database

On belbru-orap401 as oracle, stop new standby

* srvctl stop database –d bodbd1

Repeat switchover and “srvctl stop database –d xxx” for all primaries left.

On belbru-orap401 as grid, stop High Availability Services

* crsctl stop has

**Patch belbru-orap401**

Proceed in reverse order to return to original situation

On belbru-orap401 as grid, start High Availability Services

* crsctl start has

On belbru-orap401, as oracle, start standby instances

* srvctl start database –d bodbd1

Repeat for all standby databases

On belbru-orav403, as oracle, switchover to reactivate original primaries

* switchover bodbd1 bodbd2 xxxx

# Backup changes

The volume of data changes on development database led to a new backup strategy resumed below

* No backup of standby databases. Archived logs produced when applying primary databases changes are not saved. Standby databases still allow for switchover of failover.
* Archived logs produced on primary databases are backed up more often to avoid lengthy evening full backups

Blah …

Archived logs cleanup on standby databases

EM 12c RMAN job “RMAN ARCHIVE LOG” is run ½ h for standby databases.