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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”.

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

# Basic Data Guard system health check

Use options 1, 2 and 6 to quickly check the status of the Dataguard System.

|  |
| --- |
| 1 ) DG System summay  Returns databases unique names and their roles (primary or standby) |
|  |
| 2 ) DG System health  Check “Configuration Staus”, should be “SUCCESS” |
|  |
| 6 ) DG Archive gap  Check “LOG\_GAP”, should be “0” , no archived redo log missiong. |
|  |

# Detailed Data Guard system health check

Options 3, 4, 7 and 8 provide further configuration details and usage counters

|  |
| --- |
| 3 ) DG Configuration details  Lists Data Guard configuration details and status |
|  |
| 4 ) DG Database Health  Provides details for primary of standby databases |
|  |
|  |
| 7 ) DG Last Sequence Applied  Shows how synchronous primary and standby databases are. |
|  |
| 8 ) DG Logs rate  Displays by date and time the number of archived logs created |
|  |

# Scripts

# 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.