**RMAN DUPLICATE FROM… Active Standby**

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Recently I have published post about [issue with RMAN](https://odenysenko.wordpress.com/2012/03/26/rman-duplicate-from-active-database-from-standby-ends-with-ora-01671/) duplication of Oracle database when standby database was used as a target. Later in updates of mentioned post I have confirmed that with fix for BUG:[11715084](https://support.oracle.com/CSP/main/article?cmd=show&productFamily=Oracle&type=BUG&id=11715084) everything works as expected.

Today I have decided to make post with step-by-step procedure with which I have tested mentioned feature – making standby database from standby database.

I will **S**implify setup **A**s **M**uch **A**s **P**ossible(**SAMAP**):

1. single machine will be used as a host for all 3 databases
2. **OMF**([Oracle Managed Files](http://docs.oracle.com/cd/E11882_01/server.112/e17120/omf.htm)) will be used for managing files location and file names
3. **FRA**([Fast/Flash Recovery Area](http://docs.oracle.com/cd/E11882_01/server.112/e10897/backrest.htm#ADMQS09113)) will be used for archive logs

**1) Network Setup**

Because I use only single server – all modifications will be done locally.

I will configure two more databases: **orcl2** and **orcl3**

***1.1) Static instance registration:***

we have to configure static instance registration information to listener because at the duplicate stage RMAN have to be able to connect to idle instance:

**modify $ORACLE\_HOME/network/admin/listener.ora**

SID\_LIST\_LISTENER=  
  (SID\_LIST=  
    (SID\_DESC=  
      (SID\_NAME=**orcl**)  
      (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  
    )  
    (SID\_DESC=  
      (SID\_NAME=**orcl1**)  
      (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  
    )  
    (SID\_DESC=  
      (SID\_NAME=**orcl2**)  
      (ORACLE\_HOME=/u01/app/oracle/product/11.2.0/dbhome\_1)  
    )  
  )

We have to reload new configuration data  
**lsnrctl reload**  
**lsnrctl services**

LSNRCTL for Linux: Version 11.2.0.3.0 - Production on 24-JUL-2012 14:09:24  
Copyright (c) 1991, 2011, Oracle.  All rights reserved.  
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1521)))  
Services Summary...  
Service "**orcl**" has 1 instance(s).  
  Instance "**orcl**", status UNKNOWN, has 1 handler(s) for this service...  
    Handler(s):  
      "DEDICATED" established:0 refused:0  
         LOCAL SERVER  
Service "**orcl1**" has 1 instance(s).  
  Instance "**orcl1**", status UNKNOWN, has 1 handler(s) for this service...  
    Handler(s):  
      "DEDICATED" established:0 refused:0  
         LOCAL SERVER  
Service "**orcl2**" has 1 instance(s).  
  Instance "**orcl2**", status UNKNOWN, has 1 handler(s) for this service...  
    Handler(s):  
      "DEDICATED" established:0 refused:0  
         LOCAL SERVER  
The command completed successfully

***1.2) Lets add database names resolution with SID specified***

**modify $ORACLE\_HOME/network/admin/tnsnames.ora**

**ORCL** =

  (DESCRIPTION =

    (ADDRESS = (PROTOCOL = TCP)(HOST = demo10)(PORT = 1521))

    (CONNECT\_DATA =

**(SERVER = DEDICATED)**

**(SID=orcl)**

    )

  )

**ORCL1** =

  (DESCRIPTION =

    (ADDRESS = (PROTOCOL = TCP)(HOST = demo10)(PORT = 1521))

    (CONNECT\_DATA =

**(SERVER = DEDICATED)**

**(SID=orcl1)**

    )

  )

**ORCL2** =

  (DESCRIPTION =

    (ADDRESS = (PROTOCOL = TCP)(HOST = demo10)(PORT = 1521))

    (CONNECT\_DATA =

**(SERVER = DEDICATED)**

**(SID=orcl2)**

    )

  )

**2) Setup original database:**

I have fresh database **orcl**  created using DBCA

Archive log mode is enables and FRA is used as a target for archived logs.

SQL> archive log list

Database log mode              **Archive Mode**

Automatic archival             **Enabled**

Archive destination            **USE\_DB\_RECOVERY\_FILE\_DEST**

Oldest online log sequence     97

Next log sequence to archive   99

Current log sequence           99

I will make several modifications to support Data Guard in this environment – no extensive comments because it’s not an introduction to Oracle Data Guard:

ALTER DATABASE [**FORCE LOGGING**](http://docs.oracle.com/cd/E11882_01/server.112/e25608/create_ps.htm#i70011);  
ALTER SYSTEM SET [**log\_archive\_config**](http://docs.oracle.com/cd/E11882_01/server.112/e25513/initparams121.htm)=’DG\_CONFIG=(orcl,orcl1,orcl2)’;  
ALTER SYSTEM SET [**log\_archive\_dest\_1**](http://docs.oracle.com/cd/E11882_01/server.112/e25513/initparams123.htm)=’SERVICE=orcl1 VALID\_FOR=(ONLINE\_LOGFILES,PRIMARY\_ROLE) DB\_UNIQUE\_NAME=**orcl1**‘;  
ALTER SYSTEM SET [**standby\_file\_management**](http://docs.oracle.com/cd/E11882_01/server.112/e25513/initparams249.htm#REFRN10212)**=auto;**

**3) Password files in DataGuard**

because we must have the same SYS password in all DataGuard environment(actually, You may use [**REDO\_TRANSPORT\_USER**](http://docs.oracle.com/cd/E11882_01/server.112/e25513/initparams205.htm#REFRN10269) to specify another user that will be used for **Redo Transport**),

I’ll just copy original password file to all my databases in environment:

cp $ORACLE\_HOME/dbs/**orapworcl** $ORACLE\_HOME/dbs/**orapworcl1**

cp $ORACLE\_HOME/dbs/orapworcl $ORACLE\_HOME/dbs/**orapworcl2**

**4) Creating directories for Control Files**

because of control file that will be copied from primary may not be placed in FRA(because of FRA at that time will not exist yet) I will create directories for control files for both standby databases(I use capital letters because of OMF will later use the same directory for placing database files)

mkdir -p /u01/app/oracle/oradata/**ORCL1**

mkdir -p /u01/app/oracle/oradata/**ORCL2**

**5) Lets create first standby**

***5.1) using RMAN for starting first standby instance WITHOUT any PARAMETER FILE***

**rman target sys/oracle@ORCL1**

**startup force nomount**

startup failed: ORA-01078: failure in processing system parameters

LRM-00109: could not open parameter file '/u01/app/oracle/product/11.2.0/dbhome\_1/dbs/initorcl1.ora'

starting Oracle instance without parameter file for retrieval of spfile

Oracle instance started

Total System Global Area     158662656 bytes

Fixed Size                     2226456 bytes

Variable Size                 92276456 bytes

Database Buffers              58720256 bytes

Redo Buffers                   5439488 bytes

***5.2) Duplicating ACTIVE primary***

**rman TARGET sys/oracle@ORCL AUXILIARY sys/oracle@ORCL1**  
DUPLICATE DATABASE  
FOR STANDBY  
FROM ACTIVE DATABASE  
DORECOVER  
SPFILE  
SET “db\_unique\_name”=”**orcl1**”  
SET “DB\_CREATE\_FILE\_DEST”=”/u01/app/oracle/oradata”  
SET “control\_files”=”/u01/app/oracle/oradata/**ORCL1**/control01.ctl”  
SET FAL\_SERVER=”**orcl**”  
;  
At the end of this step You will have new standby database created from Active primary – without the need of any backups.

***5.3) starting managed recovery***

before starting managed recovery I’ll just add some standby log files to support LGWR(LNS) as a transport service – so we will be able use real-time apply feature:

**ORCL1 SQL>**

ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
RECOVER MANAGED STANDBY DATABASE **USING CURRENT LOGFILE** DISCONNECT;

**6) Lets create second standby using first standby as a source**

***6.1) using RMAN for starting first standby WITHOUT any PARAMETER FILE***

**rman target sys/oracle@ORCL2**

**startup force nomount**

startup failed: ORA-01078: failure in processing system parameters

LRM-00109: could not open parameter file '/u01/app/oracle/product/11.2.0/dbhome\_1/dbs/initorcl2.ora'

starting Oracle instance without parameter file for retrieval of spfile

Oracle instance started

Total System Global Area     158662656 bytes

Fixed Size                     2226456 bytes

Variable Size                 92276456 bytes

Database Buffers              58720256 bytes

Redo Buffers                   5439488 bytes

***6.2) Duplicating from ACTIVE standby – I use ORCL1 as a target***

**rman TARGET sys/oracle@ORCL1 AUXILIARY sys/oracle@ORCL2**  
DUPLICATE DATABASE  
FOR STANDBY  
FROM ACTIVE DATABASE  
DORECOVER  
SPFILE  
SET “db\_unique\_name”=”**orcl2**”  
SET “DB\_CREATE\_FILE\_DEST”=”/u01/app/oracle/oradata”  
SET “control\_files”=”/u01/app/oracle/oradata/**ORCL2**/control01.ctl”  
SET FAL\_SERVER=”**orcl1**”  
;  
At the end of this step You will have new **second** standby database created from **ACTIVE STANDBY DATABASE** – without the need of any backups and without **ANY LOAD ON PRIMARY DATABASE**!

***6.3) starting redo shipping from ORCL1 to ORCL2 –***[***Cascading Standby***](http://docs.oracle.com/cd/E11882_01/server.112/e25608/log_transport.htm#SBYDB5126)

**ORCL1 SQL>**

ALTER SYSTEM SET set log\_archive\_dest\_2=’SERVICE=**orcl2** VALID\_FOR=(ONLINE\_LOGFILES,PRIMARY\_ROLE) DB\_UNIQUE\_NAME=**orcl2**‘;

***6.4) starting managed recovery***

before starting managed recovery I’ll just add some standby log files to support LGWR(LNS) as a transport service – so we will be able use real-time apply feature:

**ORCL2 SQL>**

ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
ALTER DATABASE ADD STANDBY LOGFILE SIZE 52428800;  
RECOVER MANAGED STANDBY DATABASE **USING CURRENT LOGFILE** DISCONNECT;

**Conclusion:**

* really-really interesting and easy to implement feature, especially when used with **OMF** and **FRA**
* keep in mind that there is a bug mentioned in [**RMAN DUPLICATE FROM Active Database From Standby ends with ORA-01671**](https://odenysenko.wordpress.com/2012/03/26/rman-duplicate-from-active-database-from-standby-ends-with-ora-01671/) so I have fix for it installed in my environment
* **RMAN ARCHIVELOG DELETION POLICY** may be used for simplifying archive log maintenance in DataGuard environment, making it really self-managed – will make short post about it later.

**References:**

[1075908.1](https://support.oracle.com/CSP/main/article?cmd=show&type=NOT&id=1075908.1) Step by Step Guide on Creating Physical Standby Using RMAN DUPLICATE…FROM ACTIVE DATABASE