How to Roll Forward a standby database using RMAN incremental backup in 11g

By Adarsh

The steps in this post can used to resolve problems if a physical standby database has lost or corrupted archived redo data or has an unresolvable archive gap.

1. Make sure you stop the managed recovery process (MRP) before going ahead with further steps.

SQL> ALTER DATABASE RECOVER MANAGED STANDBY DATABASE CANCEL;

2. On the **STANDBY DATABASE**, find the SCN which will be used for the incremental backup at the primary database. You need to use the ‘lowest SCN’ from the the 3 queries below :

SQL> SELECT CURRENT\_SCN FROM V$DATABASE;

CURRENT\_SCN

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3164433

SQL> select min(fhscn) from x$kcvfh;

MIN(FHSCN)

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3162298

SQL> select min(f.fhscn) from x$kcvfh f, v$datafile d

 where f.hxfil =d.file#

 and d.enabled != 'READ ONLY' ;

MIN(F.FHSCN)

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3162298

3. You need to use the ‘**lowest SCN**‘ from the the 3 queries, which here is -> SCN: 3162298. In RMAN, connect to the **PRIMARY** database and create an incremental backup from the SCN derived in the previous step:

RMAN> BACKUP INCREMENTAL FROM SCN 3162298 DATABASE FORMAT '/tmp/ForStandby\_%U' tag 'FORSTANDBY';

4. Transfer all backup sets created on the primary system to the standby system.

primary $ scp /tmp/ForStandby\_\* standby:/tmp

On the **STANDBY** catalog the backuppieces:

RMAN> CATALOG START WITH '/tmp/ForStandby';

using target database control file instead of recovery catalog

searching for all files that match the pattern /tmp/ForStandby

List of Files Unknown to the Database

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File Name: /tmp/ForStandby\_2lkglss4\_1\_1

File Name: /tmp/ForStandby\_2mkglst8\_1\_1

Do you really want to catalog the above files (enter YES or NO)? YES

cataloging files...

cataloging done

List of Cataloged Files

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File Name: /tmp/ForStandby\_2lkglss4\_1\_1

File Name: /tmp/ForStandby\_2mkglst8\_1\_1

5. Recover the **STANDBY** database with the cataloged incremental backup:

RMAN> RECOVER DATABASE NOREDO;

starting recover at 03-JUN-09

allocated channel: ORA\_DISK\_1

channel ORA\_DISK\_1: sid=28 devtype=DISK

channel ORA\_DISK\_1: starting incremental datafile backupset restore

channel ORA\_DISK\_1: specifying datafile(s) to restore from backup set

destination for restore of datafile 00001: +DATA/mystd/datafile/system.297.688213333

destination for restore of datafile 00002: +DATA/mystd/datafile/undotbs1.268.688213335

destination for restore of datafile 00003: +DATA/mystd/datafile/sysaux.267.688213333

channel ORA\_DISK\_1: reading from backup piece /tmp/ForStandby\_2lkglss4\_1\_1

channel ORA\_DISK\_1: restored backup piece 1

piece handle=/tmp/ForStandby\_2lkglss4\_1\_1 tag=FORSTANDBY

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:02

Finished recover at 03-JUN-09

6. In RMAN, connect to the **PRIMARY** database and create a standby control file backup:

RMAN> BACKUP CURRENT CONTROLFILE FOR STANDBY FORMAT '/tmp/ForStandbyCTRL.bck';

7. Copy the standby control file backup to the **STANDBY** system.

primary $ scp /tmp/ForStandbyCTRL.bck standby:/tmp

8. Take a backup of location of datafile at **standby** in case the datafiles name/location are different than the primary.

SQL> spool datafile\_names\_step8.txt

set lines 200

col name format a60

select file#, name from v$datafile order by file# ;

spool off

9. From RMAN, connect to **STANDBY** database and restore the standby control file:

RMAN> SHUTDOWN IMMEDIATE ;

RMAN> STARTUP NOMOUNT;

RMAN> RESTORE STANDBY CONTROLFILE FROM '/tmp/ForStandbyCTRL.bck';

Starting restore at 03-JUN-09

using target database control file instead of recovery catalog

allocated channel: ORA\_DISK\_1

channel ORA\_DISK\_1: sid=36 devtype=DISK

channel ORA\_DISK\_1: restoring control file

channel ORA\_DISK\_1: restore complete, elapsed time: 00:00:07

output filename=+DATA/mystd/controlfile/current.257.688583989

Finished restore at 03-JUN-09

10. Shut down the **STANDBY** database and startup mount:

SQL> SHUTDOWN;

SQL> STARTUP MOUNT;

11. Since the controlfile is restored from PRIMARY, the datafile locations in STANDBY controlfile will be same as PRIMARY database, so catalog datafiles in STANDBY will do the necessary rename operations. Perform the below step in STANDBY for each diskgroup where the datafile directory structure between primary and standby are different.

RMAN> CATALOG START WITH '+DATA/mystd/datafile/'; 🡨 Careful here give full path Don’t register other databases

List of Files Unknown to the Database

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File Name: +data/mystd/DATAFILE/SYSTEM.309.685535773

File Name: +data/mystd/DATAFILE/SYSAUX.301.685535773

File Name: +data/mystd/DATAFILE/UNDOTBS1.302.685535775

File Name: +data/mystd/DATAFILE/SYSTEM.297.688213333

File Name: +data/mystd/DATAFILE/SYSAUX.267.688213333

File Name: +data/mystd/DATAFILE/UNDOTBS1.268.688213335

Do you really want to catalog the above files (enter YES or NO)? YES

cataloging files...

cataloging done

List of Cataloged Files

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File Name: +data/mystd/DATAFILE/SYSTEM.297.688213333

File Name: +data/mystd/DATAFILE/SYSAUX.267.688213333

File Name: +data/mystd/DATAFILE/UNDOTBS1.268.688213335

12. Switch the datafiles to its correct names at the **standby** site :

RMAN> SWITCH DATABASE TO COPY;

datafile 1 switched to datafile copy "+DATA/mystd/datafile/system.297.688213333"

datafile 2 switched to datafile copy "+DATA/mystd/datafile/undotbs1.268.688213335"

datafile 3 switched to datafile copy "+DATA/mystd/datafile/sysaux.267.688213333"

13. On standby database, clear all standby redo log groups:

SQL> ALTER DATABASE CLEAR LOGFILE GROUP [group number];

**Verify :**
Run the queries from step 2 again to confirm that the incremental apply has moved the datafiles forward. The SCN should now be bigger than its initial values.

14. Start the MRP process on **standby**

SQL> Alter database RECOVER MANAGED STANDBY DATABASE DISCONNECT FROM SESSION;

You may also take and incremental backup of the specific datafiles whose SCN number at standby is behind that in the primary database. In that way you can reduce the backup and restore time.