Manual Completion of a Failed RMAN Duplicate FROM ACTIVE DATABASE (Doc ID 1602916.1)

In this Document

APPLIES TO:

Oracle Database Cloud Schema Service - Version N/A and later
Oracle Database Exadata Express Cloud Service - Version N/A and later
Oracle Database Exadata Cloud Machine - Version N/A and later
Oracle Cloud Infrastructure - Database Service - Version N/A and later
Oracle Database Backup Service - Version N/A and later
Information in this document applies to any platform.

PURPOSE

The purpose of this note is to provide an explanation of incomplete duplication FROM ACTIVE DATABASE, its consequences, and how to resolve related problems.

Another document handling a look-a-like issue, for Backup based duplication, is :

Note 360962.1 Manual Completion of a Failed RMAN backup-based Duplicate

SCOPE

This article is meant for database administrators and backup and recovery specialists tasked with the ongoing creation and administration of clone databases.

All manual completion steps from failure in phase 1 and 2 have been tested at 11g R2. They are NOT applicable for Oracle 10g, 9i and 8i as the FROM ACTIVE DATABASE-clause is not available

DETAILS

Incomplete Duplication and its Consequences

Using RMAN's Duplication process to build clone databases and standby databases is an important feature for every production environment. This allows for testing new applications, upgrades, and performance tuning. It also provides a means for creating standby databases for disaster recovery.

However, an unfortunate but common possibility may arise: incomplete duplication. Any number of problems may occur before RMAN can open the restored database using resetlogs and reset the database id (dbid) of the clone. Without this last and crucial step, the clone may operate, but you will not be able to register it in your existing RMAN catalog. This is due

to the fact that the clone has the same dbid as the production.

If you are not going to back up your clone database using RMAN, then incomplete duplication should not be a problem and the clone database can be used after fixing the cause of failure and completing recovery and opening with resetlogs.

However, if RMAN is to be used on the cloned database then:

a. If you connect to the clone as the target, then connect to the recovery catalog, you will get the error:

> Error: RMAN 20011
> Text: target database incarnation is not current in recovery catalog

A 'reset database' command from within RMAN will allow you to backup the clone database, but it is doing so under the impression that you are backing up a NEW incarnation of your production database.

b. If you subsequently connect your production database to the recovery catalog, you will get the same error:

> Error: RMAN 20011
> Text: target database incarnation is not current in recovery catalog

If you reset the incarnation to the previous incarnation (reset database to incarnation <primary_key>) you can continue to make production database backups.

However you now have TWO databases sharing the same id but RMAN cannot differentiate between them: you may have to unregister the database from the catalog and then register it again (see Note 1058332.6 How to Unregister Oracle Release 8 and 9 Target Databases when Using RMAN).

Changing the DBID

If you are unable (or unwilling) to rerun the duplicate there is another option. You can regenerate the dbid of the clone database after which you can register the cloned database in the recovery catalog as a NEW database.
Change the dbid of the clone database using the Nid utility available from 9.2.
Refer to Note 224266.1 How to Change the DBID and the DBNAME by using NID.

Manual Completion of the Duplicate Process

If a duplicate fails you may wish to manually complete the process, particularly if the failure occurred after or towards the end of a lengthy restore; you need first to examine the duplicate log and determine the phase at which the failure occurred.

Duplicate Phases

1. Create SPFILE and restore password file and controlfile
2. Restore the datafiles and archived redologs
3. Point in time recovery of the restored datafiles
4. Recreation of the clone controlfile followed by the catalog of the newly recovered datafile copies.
5. Open of the clone with resetlogs

Options for Manual Completion

Your options vary depending on which phase the duplication failed.
Manual completion is documented per phase so you may need to follow only one or two steps or all of them, depending on where the failure occurred.

1. Manual Completion of Phase 1 : Create SPFILE and restore controlfile

Start the Auxliary manualy in NOMOUNT.

Start RMAN and ensure to connect to the TARGET and AUXILIARY via SQL*Net and that both instances can 'see' eachother, via SQL*Net.

```
$ export ORACLE_SID=<auxiliary>
$ rman target <username>/<password>@<target_db> auxiliary <username>/<password>@<aux_db>

RMAN> run {
   sql clone "create spfile from memory";
   shutdown clone immediate;
   startup clone nomount;

   sql clone "alter system set  db_name = ''<db_name of TARGET>''  scope=spfile";
   sql clone "alter system set  db_unique_name = ''<db_unique_name of AUX>'' scope=spfile";
   shutdown clone immediate;
   startup clone force nomount

   backup as copy current controlfile auxiliary format  '<path>/control01.ctl';
   alter clone database mount;
   }
```

The key thing is that the SPFILE parameter DB_NAME is temporary set to the DB_NAME of the TARGET... otherwise the instance will NOT MOUNT

When the controlfile is restored to ASM or using an DB_CREATE_FILE_DEST, than the parameter CONTROL_FILES needs to updated with the correct name, before mounting the instance

```
RMAN> sql clone "alter system set  control_files =  ''<path>/current.291.833904393''
comment= ''Set by RMAN'' scope=spfile";
      shutdown clone immediate;
      startup clone nomount;
      alter clone database mount;
```

2. Manual Completion of Phase 2: Restore datafiles and archives

Failure during restore of database.
Determine and fix the cause of failure.
If very few files have been restored rerun the duplicate in full. Alternatively, if the duplicate failed after many hours of restore time, it can be completed manually:

Restore the remaining datafiles into the auxiliary instance using a 'BACKUP AS COPY ... AUXILIARY FORMAT'. The exact commands to use are also dumped in the normal RMAN-output. So a Copy/Paste of that information would be the best option. Especially when OMF datafiles are being used (either on Filesystem or ASM), the Copy/Pate of the RMAN output will be required as the filenames are generated.

```
$ export ORACLE_SID=<auxiliary>
$ rman target <username>/<password>@<target_db> auxiliary <username>/<password>@<aux_db>

RMAN> run {
   set newname for datafile <f1> to '<newfilename_f1>';
   set newname for datafile <f2> to '<newfilename_f2>';
   ....<do this for ALL the datafile, so including the ones which are already restored>....
   set newname for datafile <fn> to '<newfilename_fn>';

   # Copy ONLY the missing files
   backup as copy reuse
   datafile <f1> auxiliary format "<newfilename_f1>"
   datafile <f2> auxiliary format "<newfilename_f2>"
   ...
   datafile <fn> auxiliary format "<newfilename_fn>";
   }
```

Notes

- you must use 'SET NEWNAME' for **each** datafile to be restored as DB_FILE_NAME_CONVERT will not work with this BACKUP AS COPY. It also needs to be done for **ALL** the datafiles otherwise the SWITCH DATAFILE will fail.

The archived redologs created during and just **BEFORE** the initial backup has **started** and the archive **AFTER** the remaining datafiles has **COMPLETED**, needs to be copied over to the Auxiliary. They ALTER SYSTEM ensure that another archive is created on the TARGET, just to be sure that all the redo is there

```
$ export ORACLE_SID=<auxiliary>
$ rman target <username>/<password>@<target_db> auxiliary <username>/<passwod>@<aux_db>

RMAN> run {
      sql 'alter system archive log current';
      backup as copy archivelog
       from sequence <seq#_at_start_backup> auxiliary format '/<archive_dir>/%d_%e_
%h_%u.arc';
    }
```

Next step is to catalog the restored files and switch the database to the restored files. You need to reconnect RMAN to the AUXILIARY instance ONLY and as target. This is to make it more convenient, especially with many datafiles, to be able to use SWITCH DATABASE TO COPY.

```
$ export ORACLE_SID=<auxiliary>
$ rman target /

RMAN> run {
        catalog start with '<datafile_dir>';
        catalog start with '<archive_dir>;
      }

      switch database to copy;
```

3. Manual Completion of Phase 3:Recovery

Failure during recovery of the restored datafiles.
Determine and fix the cause of the failure then use RMAN to do the recovery again:

```
$ rman target <username>/<password>@<target_db> auxiliary <username>/<password>@<aux_db>

RMAN> run {
   set until sequence <seq#>;
   recover clone database;
   alter clone database open resetlogs;
}
```

Notes :

- The <seq#> is the last copied over archived log + 1 !!! as its an UNTIL

When a RMAN fails it sometimes does not create the tempfile. So we need to ensure that tempfile exists before running NID otherwise we'll get the problem described in this note:
Note 552053.1 NID Fails if Tempfiles Do Not Exist

To check for tempfile:

```
SQL> select * from v$tempfile;
```

After completing recovery, change the dbid using the NID utility:

```
$ nid target=<username>/<password>  dbname=<newname>

DBNEWID: Release 11.2.0.3.0 - Production on Mon Nov 25 22:54:42 2013
Copyright (c) 1982, 2011, Oracle. All rights reserved.
Connected to database TEST (DBID=xxxxxx)
Connected to server version 11.2.0
Control Files in database:
D:\<path>\CONTROL01.CTL
D:\<path>\CONTROL02.CTL
D:\<path>\CONTROL03.CTL
Change database ID of database TEST? (Y/[N]) => Y
```

Change the DB_NAME to the new name and restart the auxiliary

```
$ export ORACLE_SID=<auxiliary>
$ rman target <username>/<password>@<target_db> auxiliary <username>/<password>@<aux_db>

RMAN> run {
   sql clone "alter system set  db_name = ''<new dbname>''  scope=spfile";
   shutdown clone immediate;
   startup clone force mount
  }
```

At this point manual duplication is now complete - go to Step 6. Final Actions.

4. Manual Completion of Phase 4: Controlfile Recovery

a) Failure during controlfile recreation.

Check the duplicate log and ensure that recovery did complete successfully – look for the words :

media recovery complete
Finished recover at <date/time>

Determine and fix the cause of the failure to create the clone controlfile before recreating the controlfile manually:

```
CREATE CONTROLFILE REUSE SET DATABASE ‘<dbname>’ RESETLOGS ARCHIVELOG
…etc.
```

Make sure you specify ALL the restored datafiles in the DATAFILE section.

b) Failure during adding the logfiles for other threads (instances)

```
sql statement: ALTER DATABASE ADD LOGFILE
INSTANCE 'i2'
GROUP 3 ( '<path>\redo06.log', '<path>\redo05.log' ) SIZE 1 G REUSE,
GROUP 4 ( '<path>\redo07.log', '<path>\redo08.log' ) SIZE 1 G REUSE,
GROUP 15 ( '<path>\group_15.2191.815581317', '<path>\group_15.276.815581325' ) SIZE 1 G REUSE,
GROUP 16 ( '<path>\group_16.2190.815581333', '<path>\group_16.277.815581339' ) SIZE 1 G REUSE
released channel: C2
released channel: C3
released channel: C4
released channel: C5
released channel: C1
RMAN-00571: ===========================================================
RMAN-00569: =============== ERROR MESSAGE STACK FOLLOWS ===============
```

RMAN-00571: ===
RMAN-03002: failure of Duplicate Db command at 12/25/2013 19:07:25
RMAN-05501: aborting duplication of target database
RMAN-06136: ORACLE error from auxiliary database: ORA-00301: error in adding log file '<path>\group_15.2191.815581317' - file cannot be created
ORA-27040: file create error, unable to create file
SVR4 Error: 2: No such file or directory

Determine and fix the cause of the failure to create the online redolog and execute the command again

5. Manual Completion of Phase 5: Open Resetlogs

Failure during open resetlogs.
Check the rman log and auxiliary alert log - was the resetlogs done? Look for:

```
Thread 1 closed at log sequence 1
```

If the resetlogs was done – just determine and fix the cause of failure and restart the auxiliary instance.
If resetlogs was not accomplished, determine and fix the cause of failure and then
open the clone database with resetlogs via RMAN (you cannot do this via SQLPlus and you must be connected to the target database also):

```
$ rman target <username>/<password>@<target_db> auxiliary <username>/<password>@<aux_db>

RMAN> alter clone database open resetlogs;
```

If the duplicate originally failed only in Phase 5 no further action is necessary - the dbid will have already been changed. Otherwise, use NID to change the dbid as in step 3 above.

6. Final Actions

```
$ rman target <username>/<passwod>@<target_db> auxiliary <username>/<password>@<aux_db>

RMAN> alter clone database open resetlogs;
```

a. Add any temp files to the new auxiliary as necessary:

b. Any files that were manually restored to the auxiliary instance will be cataloged as datafilecopies in the target database. Connect to original target and run:

```
RMAN> list copy of database;
RMAN> crosscheck copy of datafile <n>;
RMAN> delete expired copy of datafile <n>;
```

REFERENCES

NOTE:1058332.6 - How to Unregister Oracle Release 8 and 9 Target Databases when Using RMAN
NOTE:360962.1 - Manual Completion of a Failed RMAN Backup based Duplicate
NOTE:224266.1 - How to Change the DBID and the DBNAME by using NID
BUG:3202107 - RESTORE OPTIMIZATION IS NOT ACTIVE AFTER FAILED AND RETRIED DUPLICATE COMMAND