

Oracle8i RMAN Duplicate Database Feature

An AppsDBA Consulting White Paper

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Oracle8i RMAN Duplicate Database Feature

1. Overview

Some significant changes are introduced with the Oracle8i version of RMAN. One notable enhancement is the ability to create a "duplicate" database. This is significant for RMAN because in versions of RMAN prior to 8.1.5, databases that were copied could not be registered in the same recovery catalog. Other important aspects of the new "duplicate" command are:

- Can now manage the duplication of databases entirely through RMAN. There is no need to create ascii control files, issue CREATE CONTROLFILE commands, or worry about cancel based recovery of online backups.
- The duplicated database can be registered in the same recovery catalog as the target database. This option is possible because the duplicate database receives a new database identifier during duplication. If you copy the target database using O/S utilities, the database identifier of the copied database remains the same so you cannot register it in the same recovery catalog.
- Support for automatic creation and management of duplicate databases.
- Version 8.1.5 requires that the source database be in archive log mode. In version 8.1.6 there is a NOREDO option that will be invoked if the source database is in noarchive log mode.
- There is a bug in the 8.1.5 version that prevents duplication where recovery is required (e.g. only duplications from full offline backups work).

2. Configuration

Many environment variables are utilized by the RMAN and Legato products. The following partial list of variables should be set for the situations stipulated.

- **init.ora** – An init.ora must be created for the duplicate (e.g. auxiliary) database. In order to perform the duplication the auxiliary instance must be startable.
- **Password file** - The target database (source of the duplication) and the auxiliary instance (the target of the duplication) must have a password file to allow a remote internal connection. This will also require that a listener be running and a Net8 alias defined.
- **NSR_CLIENT** – Only if you are restoring to a different HOST than what was backed up (i.e. NSR_CLIENT=<src host>)
- **ORACLE_NLS** – Always Used (i.e. ORACLE_NLS=/oracle/product/8.1.5/ocommon/nls/admin/data)
- **ORA_NLS33** – Always Used (i.e. ORA_NLS33=/oracle/product/8.1.5/ocommon/nls/admin/data)
- **ORACLE_HOME** - Always Used
- **LD_LIBRARY_PATH** – Only if NOT using SHLIB_PATH. Make sure “/usr/lib” is always placed at the front of this path.
- **SHLIB_PATH** – Used in place of LD_LIBRARY_PATH for Oracle 8 on HP-UX. Make sure “/usr/lib” is always placed at the front of this path.
- **ORACLE_SID** - Always Used

3. Duplicate Database Command Script

The following is a sample duplicate database command script. This script was used in the sample session section.

```
run {
allocate auxiliary channel ch1 type 'sbt_tape';
  set limit channel ch1 readrate 5;
allocate auxiliary channel ch2 type 'sbt_tape';
  set limit channel ch2 readrate 5;
allocate auxiliary channel ch3 type 'sbt_tape';
  set limit channel ch3 readrate 5;
allocate auxiliary channel ch4 type 'sbt_tape';
  set limit channel ch4 readrate 5;
set newname for datafile 1 to '/u13/oradata/DUPDB/system01.dbf';
```

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```
set newname for datafile 2 to '/u13/oradata/DUPDB/oemrep01.dbf';
set newname for datafile 3 to '/u13/oradata/DUPDB/rbs01.dbf';
set newname for datafile 4 to '/u13/oradata/DUPDB/temp01.dbf';
set newname for datafile 5 to '/u13/oradata/DUPDB/users01.dbf';
set newname for datafile 6 to '/u13/oradata/DUPDB/indx01.dbf';
set newname for datafile 7 to '/u13/oradata/DUPDB/app01tab.dbf';
set newname for datafile 8 to '/u13/oradata/DUPDB/app02tab.dbf';
duplicate target database to DUPDB
  logfile
    '/u13/oradata/DUPDB/redo01.log' size 512k,
    '/u13/oradata/DUPDB/redo02.log' size 512k,
    '/u13/oradata/DUPDB/redo03.log' size 512k;
}
```

3.1 Parameters Used

- **allocate auxiliary channel** - allocates each device stream for the restore.
- **set newname** - used to restore each file to a new name and location.
- **duplicate target database** - specifies what to restore, database option restores all datafiles. The **to** option specifies the duplicate database name. The **logfile** option specifies the name, location and size for the duplicate database redo log files.
- **Additional Parameters** -
 - **set until** - restores to an earlier point in time.
 - **skip read_only** - skip read only tablespaces.

4. Duplicate Database Session Overview

In order to duplicate a database the duplicate, or auxiliary, database instance must be startable. Therefore an init.ora and a basic /oracle/admin/<sid> directory structure must exist to allocate background log files. In addition, one or more datafile, controlfile, and logfile directories must exist to allow the restore and creation of the duplicate database. If restoring from a tape management system, Legato is used in the sample session, then the appropriate environment setup and permissions must be made. The following is a brief list of the steps that will be performed in the sample session:

- Halt any current database access, including scheduled jobs, backups, etc. in the duplicate database if it exists.
- Prepare the duplicate database directories, if necessary.
- Verify a "startable" instance.
- Invoke the RMAN command and begin the duplication session. The command itself connects to the recovery catalog database, the target database (the original source database in this case), and the auxiliary instance (the duplicate database instance). The target database connection requires that a password file exist so that an internal connection can be made.
-

5. Sample Duplicate Database Session

5.1 Verify A Startable Instance

```
/oracle$ svrmgrl

Oracle Server Manager Release 3.1.5.0.0 - Production

(c) Copyright 1997, Oracle Corporation. All Rights Reserved.

Oracle8i Enterprise Edition Release 8.1.5.0.0 - Production
With the Partitioning and Java options
PL/SQL Release 8.1.5.0.0 - Production

SVRMGR> connect internal
Connected.
SVRMGR> startup nomount
ORACLE instance started.
```

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```
Total System Global Area          78626192 bytes
Fixed Size                        64912 bytes
Variable Size                     53805056 bytes
Database Buffers                  24576000 bytes
Redo Buffers                       180224 bytes
SVRMGR> exit
Server Manager complete.
```

5.2 Invoke The RMAN Duplication Session

```
/u01/app/oracle$ rman rcvcat rman_prd/<pswd>@catalogdb \  
> target internal/<pswd>@srcdb auxiliary sys/internal@dupdb
```

```
Recovery Manager: Release 8.1.5.0.0 - Production
```

```
RMAN-06005: connected to target database: SRCDB (DBID=1213803079)  
RMAN-06008: connected to recovery catalog database  
RMAN-06020: connected to auxiliary database
```

```
RMAN> @duprest.txt
```

```
RMAN> run {  
2> allocate auxiliary channel ch1 type 'sbt_tape';  
3> set limit channel ch1 readrate 5;  
4> allocate auxiliary channel ch2 type 'sbt_tape';  
5> set limit channel ch2 readrate 5;  
6> allocate auxiliary channel ch3 type 'sbt_tape';  
7> set limit channel ch3 readrate 5;  
8> allocate auxiliary channel ch4 type 'sbt_tape';  
9> set limit channel ch4 readrate 5;  
10> set newname for datafile 1 to '/u13/oradata/DUPDB/system01.dbf';  
11> set newname for datafile 2 to '/u13/oradata/DUPDB/oemrep01.dbf';  
12> set newname for datafile 3 to '/u13/oradata/DUPDB/rbs01.dbf';  
13> set newname for datafile 4 to '/u13/oradata/DUPDB/temp01.dbf';  
14> set newname for datafile 5 to '/u13/oradata/DUPDB/users01.dbf';  
15> set newname for datafile 6 to '/u13/oradata/DUPDB/indx01.dbf';  
16> set newname for datafile 7 to '/u13/oradata/DUPDB/app01tab.dbf';  
17> set newname for datafile 8 to '/u13/oradata/DUPDB/app02tab.dbf';  
18> duplicate target database to DUPDB  
19> logfile  
20> '/u13/oradata/DUPDB/redo01.log' size 512k,  
21> '/u13/oradata/DUPDB/redo02.log' size 512k,  
22> '/u13/oradata/DUPDB/redo03.log' size 512k;  
23> }
```

```
RMAN-03022: compiling command: allocate  
RMAN-03023: executing command: allocate  
RMAN-08030: allocated channel: ch1  
RMAN-08500: channel ch1: sid=9 devtype=SBT_TAPE  
RMAN-08526: channel ch1: MMS Version 2.1.2.0
```

```
RMAN-03022: compiling command: set limit  
RMAN-03023: executing command: set limit
```

```
RMAN-03022: compiling command: allocate  
RMAN-03023: executing command: allocate  
RMAN-08030: allocated channel: ch2  
RMAN-08500: channel ch2: sid=10 devtype=SBT_TAPE  
RMAN-08526: channel ch2: MMS Version 2.1.2.0
```

```
RMAN-03022: compiling command: set limit  
RMAN-03023: executing command: set limit
```

```
RMAN-03022: compiling command: allocate  
RMAN-03023: executing command: allocate  
RMAN-08030: allocated channel: ch3  
RMAN-08500: channel ch3: sid=11 devtype=SBT_TAPE  
RMAN-08526: channel ch3: MMS Version 2.1.2.0
```

```
RMAN-03022: compiling command: set limit
```

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```

RMAN-03023: executing command: set limit

RMAN-03022: compiling command: allocate
RMAN-03023: executing command: allocate
RMAN-08030: allocated channel: ch4
RMAN-08500: channel ch4: sid=12 devtype=SBT_TAPE
RMAN-08526: channel ch4: MMS Version 2.1.2.0

RMAN-03022: compiling command: set limit
RMAN-03023: executing command: set limit

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: Duplicate Db

RMAN-03027: printing stored script: Memory Script
{
  set newname for datafile 1 to
  '/u13/oradata/DUPDB/system01.dbf';
  set newname for datafile 2 to
  '/u13/oradata/DUPDB/oemrep01.dbf';
  set newname for datafile 3 to
  '/u13/oradata/DUPDB/rbs01.dbf';
  set newname for datafile 4 to
  '/u13/oradata/DUPDB/temp01.dbf';
  set newname for datafile 5 to
  '/u13/oradata/DUPDB/users01.dbf';
  set newname for datafile 6 to
  '/u13/oradata/DUPDB/indx01.dbf';
  set newname for datafile 7 to
  '/u13/oradata/DUPDB/app01tab.dbf';
  set newname for datafile 8 to
  '/u13/oradata/DUPDB/app02tab.dbf';
  restore check readonly clone database
  ;
  sql clone " CREATE CONTROLFILE REUSE SET DATABASE ^"DUPDB^" RESETLOGS ARCHIVELOG
  MAXLOGFILES 32
  MAXLOGMEMBERS 2
  MAXDATAFILES 254
  MAXINSTANCES 8
  MAXLOGHISTORY 1815
  LOGFILE
  GROUP 1 ''/u13/oradata/DUPDB/redo01.log'' SIZE 524288 ,
  GROUP 2 ''/u13/oradata/DUPDB/redo02.log'' SIZE 524288 ,
  GROUP 3 ''/u13/oradata/DUPDB/redo03.log'' SIZE 524288
  DATAFILE
  ''/u13/oradata/DUPDB/system01.dbf''
  CHARACTER SET US7ASCII
  ";
}
RMAN-03021: executing script: Memory Script

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set

RMAN-03022: compiling command: set
```

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```

RMAN-03022: compiling command: set
RMAN-03022: compiling command: set
RMAN-03022: compiling command: set
RMAN-03022: compiling command: set
RMAN-03022: compiling command: set
RMAN-03022: compiling command: restore

RMAN-03022: compiling command: IRESTORE
RMAN-03023: executing command: IRESTORE
RMAN-08016: channel ch2: starting datafile backupset restore
RMAN-08502: set_count=15 set_stamp=388109489 creation_time=29-JAN-00
RMAN-08089: channel ch2: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00004 to /u13/oradata/DUPDB/temp01.dbf
RMAN-08016: channel ch3: starting datafile backupset restore
RMAN-08502: set_count=16 set_stamp=388109489 creation_time=29-JAN-00
RMAN-08089: channel ch3: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00005 to /u13/oradata/DUPDB/users01.dbf
RMAN-08016: channel ch4: starting datafile backupset restore
RMAN-08502: set_count=17 set_stamp=388109489 creation_time=29-JAN-00
RMAN-08089: channel ch4: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00006 to /u13/oradata/DUPDB/indx01.dbf
RMAN-08016: channel ch1: starting datafile backupset restore
RMAN-08502: set_count=19 set_stamp=388109489 creation_time=29-JAN-00
RMAN-08089: channel ch1: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00002 to /u13/oradata/DUPDB/oemrep01.dbf
RMAN-08023: channel ch1: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0jbi455h params=NULL
RMAN-08024: channel ch1: restore complete
RMAN-08023: channel ch2: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0fbi455h params=NULL
RMAN-08024: channel ch2: restore complete
RMAN-08023: channel ch4: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0hbi455h params=NULL
RMAN-08024: channel ch4: restore complete
RMAN-08016: channel ch2: starting datafile backupset restore
RMAN-08502: set_count=20 set_stamp=388109489 creation_time=29-JAN-00
RMAN-08089: channel ch2: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00001 to /u13/oradata/DUPDB/system01.dbf
RMAN-08023: channel ch3: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0gbi455h params=NULL
RMAN-08024: channel ch3: restore complete
RMAN-08016: channel ch4: starting datafile backupset restore
RMAN-08502: set_count=21 set_stamp=388109491 creation_time=29-JAN-00
RMAN-08089: channel ch4: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00003 to /u13/oradata/DUPDB/rbs01.dbf
RMAN-08016: channel ch1: starting datafile backupset restore
RMAN-08502: set_count=18 set_stamp=388109489 creation_time=29-JAN-00
RMAN-08089: channel ch1: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00008 to /u13/oradata/DUPDB/app02tab.dbf
RMAN-08016: channel ch3: starting datafile backupset restore
RMAN-08502: set_count=22 set_stamp=388109491 creation_time=29-JAN-00
RMAN-08089: channel ch3: specifying datafile(s) to restore from backup set
RMAN-08523: restoring datafile 00007 to /u13/oradata/DUPDB/app01tab.dbf
RMAN-08023: channel ch1: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0ibi455h params=NULL
RMAN-08024: channel ch1: restore complete
RMAN-08023: channel ch3: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0mbi455j params=NULL
RMAN-08024: channel ch3: restore complete
RMAN-08023: channel ch4: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0lbi455j params=NULL
RMAN-08024: channel ch4: restore complete
RMAN-08023: channel ch2: restored backup piece 1
RMAN-08511: piece handle=df_SRCDB_0kbi455h params=NULL
RMAN-08024: channel ch2: restore complete

```

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```

RMAN-03022: compiling command: sql
RMAN-06162: sql statement: CREATE CONTROLFILE REUSE SET DATABASE "DUPDB" RESETLOGS
ARCHIVELOG MAXLOGFILES 32 MAXLOGMEMBERS 2 MAXDATAFILES 254 MAXINSTANCES 8
MAXLOGHISTORY 1815 LOGFILE GROUP 1 '/u13/oradata/DUPDB/redo01.log' SIZE 524288 ,
GROUP 2 '/u13/oradata/DUPDB/redo02.log' SIZE 524288 , GROUP 3
'/u13/oradata/DUPDB/redo03.log' SIZE 524288 DATAFILE
'/u13/oradata/DUPDB/system01.dbf' CHARACTER SET US7ASCII
RMAN-03023: executing command: sql

RMAN-03027: printing stored script: Memory Script
{
    switch clone datafile all;
}
RMAN-03021: executing script: Memory Script

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 2 switched to datafile copy
RMAN-08507: input datafilecopy recid=1 stamp=388148086
filename=/u13/oradata/DUPDB/oemrep01.dbf
RMAN-08015: datafile 3 switched to datafile copy
RMAN-08507: input datafilecopy recid=2 stamp=388148086
filename=/u13/oradata/DUPDB/rbs01.dbf
RMAN-08015: datafile 4 switched to datafile copy
RMAN-08507: input datafilecopy recid=3 stamp=388148086
filename=/u13/oradata/DUPDB/temp01.dbf
RMAN-08015: datafile 5 switched to datafile copy
RMAN-08507: input datafilecopy recid=4 stamp=388148086
filename=/u13/oradata/DUPDB/users01.dbf
RMAN-08015: datafile 6 switched to datafile copy
RMAN-08507: input datafilecopy recid=5 stamp=388148086
filename=/u13/oradata/DUPDB/indx01.dbf
RMAN-08015: datafile 7 switched to datafile copy
RMAN-08507: input datafilecopy recid=6 stamp=388148086
filename=/u13/oradata/DUPDB/app01tab.dbf
RMAN-08015: datafile 8 switched to datafile copy
RMAN-08507: input datafilecopy recid=7 stamp=388148086
filename=/u13/oradata/DUPDB/app02tab.dbf

RMAN-03027: printing stored script: Memory Script
{
    set until scn 1284824054;
    recover clone database check readonly;
}
RMAN-03021: executing script: Memory Script

RMAN-03022: compiling command: set

RMAN-03022: compiling command: recover

RMAN-03022: compiling command: recover(1)

RMAN-03022: compiling command: recover(2)

RMAN-03022: compiling command: recover(3)
RMAN-03023: executing command: recover(3)
RMAN-08054: starting media recovery
RMAN-08060: unable to find archivelog
RMAN-08510: archivelog thread=1 sequence=3315

RMAN-03022: compiling command: recover(4)
RMAN-03023: executing command: recover(4)
RMAN-08017: channel chl: starting archivelog restore to default destination
RMAN-08022: channel chl: restoring archivelog
RMAN-08510: archivelog thread=1 sequence=3315
RMAN-08023: channel chl: restored backup piece 1
RMAN-08511: piece handle=al_SRCDB_0pbi5a6d params=NULL
RMAN-08024: channel chl: restore complete
RMAN-08515: archivelog filename=/u01/app/oracle/admin/DUPDB/arch/arch1_3315.dbf thread=1
sequence=3315

```

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RMAN-08055: media recovery complete

RMAN-03027: printing stored script: Memory Script

```
{
  sql clone 'Alter database dismount';
  sql clone " CREATE CONTROLFILE REUSE SET DATABASE ^"DUPDB^" RESETLOGS ARCHIVELOG
  MAXLOGFILES 32
  MAXLOGMEMBERS 2
  MAXDATAFILES 254
  MAXINSTANCES 8
  MAXLOGHISTORY 1815
  LOGFILE
  GROUP 1 ''/u13/oradata/DUPDB/redo01.log'' SIZE 524288 ,
  GROUP 2 ''/u13/oradata/DUPDB/redo02.log'' SIZE 524288 ,
  GROUP 3 ''/u13/oradata/DUPDB/redo03.log'' SIZE 524288
  DATAFILE
  ''/u13/oradata/DUPDB/system01.dbf''
  CHARACTER SET US7ASCII
";
  catalog clone datafilecopy '/u13/oradata/DUPDB/system01.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/oemrep01.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/rbs01.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/temp01.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/users01.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/indx01.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/app01tab.dbf';
  catalog clone datafilecopy '/u13/oradata/DUPDB/app02tab.dbf';
  switch clone datafile 1 to datafilecopy
  '/u13/oradata/DUPDB/system01.dbf';
  switch clone datafile 2 to datafilecopy
  '/u13/oradata/DUPDB/oemrep01.dbf';
  switch clone datafile 3 to datafilecopy
  '/u13/oradata/DUPDB/rbs01.dbf';
  switch clone datafile 4 to datafilecopy
  '/u13/oradata/DUPDB/temp01.dbf';
  switch clone datafile 5 to datafilecopy
  '/u13/oradata/DUPDB/users01.dbf';
  switch clone datafile 6 to datafilecopy
  '/u13/oradata/DUPDB/indx01.dbf';
  switch clone datafile 7 to datafilecopy
  '/u13/oradata/DUPDB/app01tab.dbf';
  switch clone datafile 8 to datafilecopy
  '/u13/oradata/DUPDB/app02tab.dbf';
  sql clone 'Alter database open resetlogs';
}
```

RMAN-03021: executing script: Memory Script

RMAN-03022: compiling command: sql

RMAN-06162: sql statement: Alter database dismount

RMAN-03023: executing command: sql

RMAN-03022: compiling command: sql

```
RMAN-06162: sql statement: CREATE CONTROLFILE REUSE SET DATABASE "DUPDB" RESETLOGS
ARCHIVELOG MAXLOGFILES 32 MAXLOGMEMBERS 2 MAXDATAFILES 254 MAXINSTANCES 8
MAXLOGHISTORY 1815 LOGFILE GROUP 1 ''/u13/oradata/DUPDB/redo01.log'' SIZE 524288 ,
GROUP 2 ''/u13/oradata/DUPDB/redo02.log'' SIZE 524288 , GROUP 3
''/u13/oradata/DUPDB/redo03.log'' SIZE 524288 DATAFILE
''/u13/oradata/DUPDB/system01.dbf'' CHARACTER SET US7ASCII
```

RMAN-03023: executing command: sql

RMAN-03022: compiling command: catalog

RMAN-03023: executing command: catalog

RMAN-08050: cataloged datafile copy

RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/system01.dbf recid=1
stamp=388148125

RMAN-03022: compiling command: catalog

RMAN-03023: executing command: catalog

RMAN-08050: cataloged datafile copy

RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/oemrep01.dbf recid=2
stamp=388148126

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```
RMAN-03022: compiling command: catalog
RMAN-03023: executing command: catalog
RMAN-08050: cataloged datafile copy
RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/rbs01.dbf recid=3 stamp=388148127

RMAN-03022: compiling command: catalog
RMAN-03023: executing command: catalog
RMAN-08050: cataloged datafile copy
RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/temp01.dbf recid=4 stamp=388148128

RMAN-03022: compiling command: catalog
RMAN-03023: executing command: catalog
RMAN-08050: cataloged datafile copy
RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/users01.dbf recid=5 stamp=388148129

RMAN-03022: compiling command: catalog
RMAN-03023: executing command: catalog
RMAN-08050: cataloged datafile copy
RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/indx01.dbf recid=6 stamp=388148130

RMAN-03022: compiling command: catalog
RMAN-03023: executing command: catalog
RMAN-08050: cataloged datafile copy
RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/app01tab.dbf recid=7
stamp=388148131

RMAN-03022: compiling command: catalog
RMAN-03023: executing command: catalog
RMAN-08050: cataloged datafile copy
RMAN-08513: datafile copy filename=/u13/oradata/DUPDB/app02tab.dbf recid=8
stamp=388148132

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 1 switched to datafile copy
RMAN-08507: input datafilecopy recid=1 stamp=388148125
filename=/u13/oradata/DUPDB/system01.dbf

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 2 switched to datafile copy
RMAN-08507: input datafilecopy recid=2 stamp=388148126
filename=/u13/oradata/DUPDB/oemrep01.dbf

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 3 switched to datafile copy
RMAN-08507: input datafilecopy recid=3 stamp=388148127
filename=/u13/oradata/DUPDB/rbs01.dbf

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 4 switched to datafile copy
RMAN-08507: input datafilecopy recid=4 stamp=388148128
filename=/u13/oradata/DUPDB/temp01.dbf

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 5 switched to datafile copy
RMAN-08507: input datafilecopy recid=5 stamp=388148129
filename=/u13/oradata/DUPDB/users01.dbf

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 6 switched to datafile copy
RMAN-08507: input datafilecopy recid=6 stamp=388148130
filename=/u13/oradata/DUPDB/indx01.dbf

RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
```

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```
RMAN-08015: datafile 7 switched to datafile copy
RMAN-08507: input datafilecopy recid=7 stamp=388148131
filename=/u13/oradata/DUPDB/app01tab.dbf
```

```
RMAN-03022: compiling command: switch
RMAN-03023: executing command: switch
RMAN-08015: datafile 8 switched to datafile copy
RMAN-08507: input datafilecopy recid=8 stamp=388148132
filename=/u13/oradata/DUPDB/app02tab.dbf
```

```
RMAN-03022: compiling command: sql
RMAN-06162: sql statement: Alter database open resetlogs
RMAN-03023: executing command: sql
RMAN-08031: released channel: ch4
RMAN-08031: released channel: ch1
RMAN-08031: released channel: ch2
RMAN-08031: released channel: ch3
```

```
RMAN>
RMAN> **end-of-file**
```

```
RMAN> exit
```

5.3 DBID Changed

The following shows the source and duplicate databases and their different DBIDs.

5.3.1 Source Database DBID

```
/u01/app/oracle$ svrmgrl
```

```
Oracle Server Manager Release 3.1.5.0.0 - Production
```

```
(c) Copyright 1997, Oracle Corporation. All Rights Reserved.
```

```
Oracle8i Enterprise Edition Release 8.1.5.0.0 - Production
With the Partitioning and Java options
PL/SQL Release 8.1.5.0.0 - Production
```

```
SVRMGR> connect internal
Connected.
```

```
SVRMGR> select * from v$database;
```

```
DBID          NAME          CREATED      RESETLOGS_  RESETLOGS  PRIOR_RESE  PRIOR_RES  LOG_MODE
CHECKPOINT  ARCHIVE_CH  CONTROL  CONTROLFI  CONTROLFIL  CONTROLFIL  CONTROLFI  OPEN_RESETL
VERSION_T  OPEN_MODE
-----
```

```
-----
1213803079  SRCDB        09-AUG-99      1 09-AUG-99      0          ARCHIVELOG
1284824054 1284824052  CURRENT 09-AUG-99      10082 1284824055 29-JAN-00 NOT ALLOWED 09-
AUG-99 READ WRITE
1 row selected.
```

```
SVRMGR>
```

5.3.2 Duplicate Database DBID

```
/u01/app/oracle$ svrmgrl
```

```
Oracle Server Manager Release 3.1.5.0.0 - Production
```

```
(c) Copyright 1997, Oracle Corporation. All Rights Reserved.
```

```
Oracle8i Enterprise Edition Release 8.1.5.0.0 - Production
With the Partitioning and Java options
PL/SQL Release 8.1.5.0.0 - Production
```

```
SVRMGR> connect internal
```

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```
Connected.
SVRMGR> select * from v$database;
DBID      NAME      CREATED   RESETLOGS_ RESETLOGS PRIOR_RESE PRIOR_RES LOG_MODE
CHECKPOINT ARCHIVE_CH CONTROL   CONTROLFI CONTROLFIL CONTROLFIL CONTROLFI OPEN_RESETL
VERSION_T OPEN_MODE
-----
-----
-----
3411813660 DUPDB   29-JAN-00 1284824055 29-JAN-00          1 09-AUG-99 ARCHIVELOG
1284824056          0 CURRENT 29-JAN-00          10090 1284824081 29-JAN-00 NOT ALLOWED 29-
JAN-00 READ WRITE
1 row selected.
SVRMGR>
```

5.4 Duplicate Database Registration

Now that the database has been duplicated with a new DBID it can be registered in the same recovery catalog as the source database.

```
/u01/app/oracle/local/bkup$ export NSR_CLIENT=<dup host>
/u01/app/oracle/local/bkup$ rman rcvcat rman_prd/<pswd>@catalogdb target /
```

```
Recovery Manager: Release 8.1.5.0.0 - Production
```

```
RMAN-06005: connected to target database: DUPDB (DBID=3411813660)
RMAN-06008: connected to recovery catalog database
```

```
RMAN> register database;
```

```
RMAN-03022: compiling command: register
RMAN-03023: executing command: register
RMAN-08006: database registered in recovery catalog
RMAN-03023: executing command: full resync
RMAN-08029: snapshot controlfile name set to default value: ?/dbs/snapcf_@.f
RMAN-08002: starting full resync of recovery catalog
RMAN-08004: full resync complete
```

```
RMAN>
```

6. RMAN 8.1.5 Duplicate Limitations

There is a significant limitation (e.g. bug) in the 8.1.5 version of RMAN. The duplication will fail if actual recovery is required. In other words, only full offline backups are supported for duplication. This is the scenario presented in the sample session. An example of the error that occurs is shown below for duplication of a database from an online backup. The solution is to upgrade to 8.1.6. The Oracle bug number is 979956 and will not be backported to 8.1.5.

6.1 Sample Error From A Duplication Attempt

```
RMAN-03022: compiling command: recover(3)
RMAN-03023: executing command: recover(3)
RMAN-08054: starting media recovery
RMAN-08060: unable to find archivelog
RMAN-08510: archivelog thread=1 sequence=17502

RMAN-03022: compiling command: recover(4)
RMAN-03023: executing command: recover(4)
RMAN-08017: channel t1: starting archivelog restore to default destination
RMAN-08017: channel t2: starting archivelog restore to default destination
RMAN-08022: channel t1: restoring archivelog
RMAN-08510: archivelog thread=1 sequence=17502
RMAN-08022: channel t2: restoring archivelog
RMAN-08510: archivelog thread=1 sequence=17503
RMAN-08023: channel t1: restored backup piece 1
```

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```

RMAN-08511: piece handle=al_SRCDB_5oblopeu params=NULL
RMAN-08024: channel t1: restore complete
RMAN-08023: channel t2: restored backup piece 1
RMAN-08511: piece handle=al_SRCDB_5pblrdu params=NULL
RMAN-08024: channel t2: restore complete
RMAN-08515: archivelog filename=/u01/app/oracle/admin/DUPDB/arch/1_17502.dbf thread=1
sequence=17502
RMAN-00571: =====
RMAN-00569: ===== ERROR MESSAGE STACK FOLLOWS =====
RMAN-00571: =====
RMAN-00601: fatal error in recovery manager
RMAN-03012: fatal error during compilation of command
RMAN-03028: fatal error code: 3015
RMAN-03013: command type: Duplicate Db
RMAN-03015: error occurred in stored script Memory Script
RMAN-03002: failure during compilation of command
RMAN-03013: command type: recover
RMAN-03006: non-retryable error occurred during execution of command: recover(4)
RMAN-07004: unhandled exception during command execution on channel clone_default
RMAN-10032: unhandled exception during execution of job step 3: ORA-00283: recovery
session canceled due to errors
RMAN-11003: failure during parse/execution of SQL statement: alter database recover
logfile '/u01/app/oracle/admin/DUPDB/arch/1_17502.dbf'
RMAN-11001: Oracle Error: ORA-00283: recovery session canceled due to errors
ORA-00600: internal error code, arguments: [3024], [3], [160], [0], [1297608916], [0],
[1297608905], []

```

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7. References

Oracle8i Backup and Recovery Guide, Release 8.1.5, Oracle Corporation, Part No. A67773-01

Note 50875.1, *Getting started with Server-Managed Recovery (SMR) and RMAN*,
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Note: 73974.1, *RMAN: Restoring an RMAN Backup to Another Node*, Oracle Corporation, 22-DEC-1999

Note: 73912.1, *RMAN: Creating a Duplicate Database*, Oracle Corporation, 22-DEC-1999

Note: 1013259.102, *RMAN Change-Delete Command Does Not Delete Backup Pieces*,
Oracle Corporation, 22-DEC-1999

8. About The Author

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