Using RMAN to Clone New and Refresh Existing Databases

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It is difficulty if you do not know how

It is easy if you know how
Agenda

- Introduction
- Refresh existing database
  - Precheck tasks
  - Refresh script
  - Explanation of the script
  - Run the script
- Clone a new database
- HP OmniBack performance tip
General Database & Server Configuration
Simple Database & Server Configuration
Refresh Existing Database

Note: The PRD RMAN backup details will not be discussed here.
Refresh PRD to DEV: Precheck Tasks

- Run all of these prechecks on the server SDEV
- No need to go through all of these checks if your DEV database has already been backed up to tape using RMAN
Refresh PRD to DEV: Precheck Tasks– 1/6

Check DEV initialization parameter `remote_login_passwordfile`

$ sqlplus sys/devsyspwd@dev as sysdba (Oracle Version 10)
$ sqlplus “sys/devsyspwd@dev” as sysdba” (Oracle Version 9)

Change `devsyspwd` to your DEV SYS password

ORA-01017: invalid username/password; logon denied.

Change NONE to SHARED or EXCLUSIVE

Create `orapwDEV` using `orapwd` if it does not exist
Refresh PRD to DEV: Precheck Tasks– 2/6

Check the connection to production database PRD

$ sqlplus sys/prdsyspwd@PRD as sysdba

If it fails, you may need to add a PRD entry in TNSNAMES.ORA.

The remote_login_passwordfile for PRD should also be SHARED or EXCLUSIVE.
Install Media Management client software if it does not exist.

You may need to ask your system administrator to do it for you.
Check the media management API
(when tapes are involved in the refresh process)

Oracle diagnostic tool - stbtest

Use RMAN to backup a small file to tape
Refresh PRD to DEV: Precheck Tasks– 4b/6

RMAN backup a small datafile to tape

RMAN> RUN
{
    ALLOCATE CHANNEL c0 DEVICE TYPE 'sbt_tape';
    BACKUP DATAFILE 2;
    RELEASE CHANNEL c0;
}
Refresh PRD to DEV: Precheck Tasks– 5/6

Find a place to temporarily hold archivelogs

- Refresh = restore + recovery + db rename + ....
- may need some archive log files
- Log files will be restored into this temporary folder first and then be applied to the DEV database recovery
- Size of all archivelog files is dependent upon the PRD backups and DEV refresh time you specified.
- Will discuss the selection of refresh time later
Refresh PRD to DEV: Precheck Tasks – 6a/6

Add datafile path instruction in the initDEV.ora file

<table>
<thead>
<tr>
<th>Datafile Directories</th>
<th>PRD</th>
<th>DEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>/PRD/oradata1</td>
<td>/PRD/oradata2</td>
<td>/DEV/oradata</td>
</tr>
<tr>
<td>/PRD/redo1</td>
<td>/PRD/redo2</td>
<td></td>
</tr>
</tbody>
</table>

```
DB_FILE_NAME_CONVERT = (/PRD/oradata1/, /DEV/oradata/)
DB_FILE_NAME_CONVERT = (/PRD/oradata2/, /DEV/oradata/)
LOG_FILE_NAME_CONVERT= (/PRD/redo1/, /DEV/oradata/)
LOG_FILE_NAME_CONVERT= (/PRD/redo2/, /DEV/oradata/)  
```
This does not work

DB_FILE_NAME_CONVERT=......

DB_FILE_NAME_CONVERT=......

LOG_FILE_NAME_CONVERT=......

DB_FILE_NAME_CONVERT=......
# refreshdb.rman
# rman script to refresh a source database to a destination database

if [ $# != 3 ]
then
  echo "**** Usage: refreshdb.rman <sourcedbname> to <destinationdbname> \n"
  exit 1;
fi

Do you really want to refresh $1 to $3 ? (y/n) :

read choice

if [ $choice = y ]
Then
  SID=$1
  export SIB
  DID=$3
  export DID
  sqlplus "sys/devsyspwd@$DID as sysdba" <<EOF
    shutdown immediate
EOF
  shutdown immediate
20  startup nomount
21  exit
22  EOF
23
24  if [ $DID = DEV ]
25     then
26        SYSTEMPWD=devsystempwd
27        export SYSTEMPWD
28  elif [ $DID = TST ]
29     then
30        SYSTEMPWD=tstsystempwd
31        export SYSTEMPWD
32     fi
33
34  rman <<EOF
35  CONNECT CATALOG rman/rmanpwd@rep
36  CONNECT TARGET sys/prdsyspwd@$SID
37  CONNECT AUXILIARY sys/devsyspwd@$DID
38  RUN {
39    allocate AUXILIARY channel 'ach0' DEVICE type 'sbt_tape';
set until time "to_date('060607 14:30','mmddyy hh24:mi')";
SET ARCHIVELOG DESTINATION TO '/temp/arch';
DUPLICATE TARGET DATABASE TO $DID;
shutdown clone;
startup clone mount;
sql clone 'alter database noarchivelog';
sql clone 'alter database open';
sql clone "ALTER TABLESPACE TEMP ADD TEMPFILE
"/DEV/temp01_$DID.dbf" SIZE 60M REUSE AUTOEXTEND ON NEXT 655360 MAXSIZE 6000M";
sql clone 'alter database rename global_name to $DID';
sql clone 'alter user system identified by $SYSTEMPWD';
}
EOF
fi
if [ $# != 3 ]
then
    echo "\n**** Usage: refreshdb.rman
    <sourcedbname> to <destinationdbname> \n"
    exit 1;
fi

$ refreshdb.rman

**** Usage: refreshdb.rman <sourcedbname> to <destinationdbname>
10 echo "\nDo you really want to refresh $1 to $3 ? (y/n) : \n\c"
11 read choice

- Existing DEV database will be completely overwritten after running the script
- May need to backup the DEV database before you run the refresh
12 if [ $choice = y ]
13 then
14 SID=$1
15 export SIB
16 DID=$3
17 export DID
18 sqlplus "sys/devsyspwd@$DID as sysdba" <<EOF
19 shutdown immediate
20 startup nomount
21 exit
22 EOF
24 if [ $DID = DEV ]
25 then
26 SYSTEMPWD=devsystempwd
27 export SYSTEMPWD
28 elif [ $DID = TST ]
29 then
30 SYSTEMPWD=tstsystempwd
31 export SYSTEMPWD
32 fi
Line-35: If no RMAN catalog database, remove this line and make sure that the control_file_record_keep_time covers your refresh time.
38  RUN {
39   allocate AUXILIARY channel 'ach0' DEVICE type 'sbt_tape';
40   set until time "to_date('060607 03:22','mmddyy hh24:mi')";
41   SET ARCHIVELOG DESTINATION TO '/temp/ARCH';
42   DUPLICATE TARGET DATABASE TO $DID;
Run in Rman Catalog database

```
select to_char(max(completion_time), 'mmddyy hh24:mi')
from rc_backup_datafile where db_name = '$1'
and to_char(completion_time,'mmddyy') = '$2';
```
Explanation of the Script - 7/8

43 shutdown clone;
44 startup clone mount;
45 sql clone 'alter database noarchivelog';
46 sql clone 'alter database open';
47 sql clone "ALTER TABLESPACE TEMP ADD TEMPFILE "/DEV/temp01_$DID.dbf" SIZE 60M REUSE AUTOEXTEND ON NEXT 655360 MAXSIZE 6000M";

48 sql clone 'alter database rename global_name to $DID';

49 sql clone 'alter user system identified by $SYSTEMPWD';
Run the Script

$ refreshdb.rman PRD to DEV

Do you really want to refresh PRD to DEV ?
(y/n) :
Clone a new database TST
Clone a new database TST

- Do all the following on TST server:
  - Install Oracle binaries if they have not been installed or clone a Oracle home
  - Create empty folders in $ORACLE_BASE/admin/TST/bdump,.udump, etc
  - Create $ORACLE_HOME/dbs/initTST.ora and $ORACLE_HOME/dbs/orapwTST
  - Create TST datafile directories
- Perform all DEV refresh steps discussed before
allocate AUXILIARY channel 'ach0' DEVICE type 'sbt_tape';
allocate AUXILIARY channel 'ach0' DEVICE type 'sbt_tape';
allocate AUXILIARY channel 'ach1' DEVICE type 'sbt_tape';
allocate AUXILIARY channel 'ach2' DEVICE type 'sbt_tape';
allocate AUXILIARY channel 'ach3' DEVICE type 'sbt_tape';
set limit channel ach0 maxopenfiles=1;
set limit channel ach1 maxopenfiles=1;
set limit channel ach2 maxopenfiles=1;
set limit channel ach3 maxopenfiles=1;
Summary

- Check remote_login_passwordfile
- Check source db connection
- Check RMAN catalog db connection
- Install Media Management software
- Check the Media Management API
- Find a place for archivelogs
- Add datafile path instruction in init.ora
- Prepare the refresh script
- Run the script
Thank You

Q&A