



Using RMAN to Clone New and Refresh Existing Databases

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难者不会，会者不难

It is difficulty if you do not know how

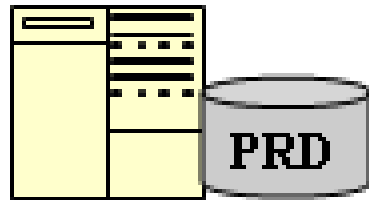
It is easy if you know how

Agenda

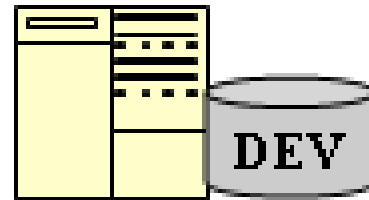
- Introduction
- Refresh existing database
 - Precheck tasks
 - Refresh script
 - Explanation of the script
 - Run the script
- Clone a new database
- HP OmniBack performance tip

General Database & Server Configuration

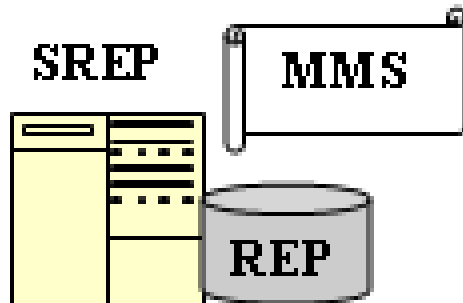
SPRD



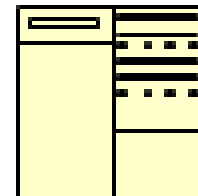
SDEV



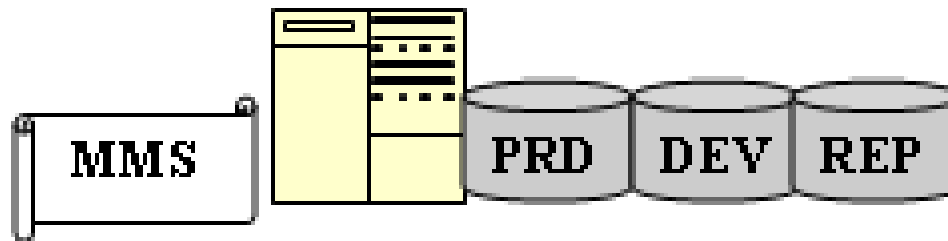
SREP



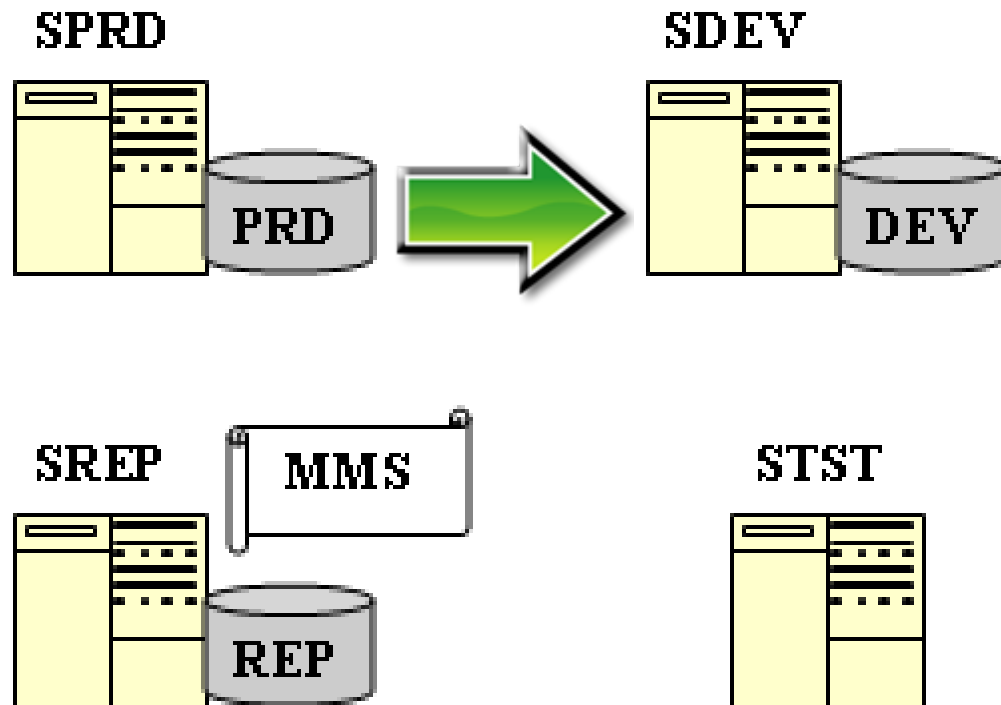
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Simple Database & Server Configuration



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**.

Refresh PRD to DEV: Precheck Tasks– 3/6

Install Media Management client software if it does not exist.

You may need to ask your system administrator to do it for you.

Refresh PRD to DEV: Precheck Tasks– 4a/6

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;
  REAEASE 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

	PRD	DEV
Datafile Directories	/PRD/oradata1 /PRD/oradata2 /PRD/redo1 /PRD/redo2	/DEV/oradata

```
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/)
```

Refresh PRD to DEV: Precheck Tasks– 6b/6

This does not work

DB_FILE_NAME_CONVERT=.....

DB_FILE_NAME_CONVERT=.....

LOG_FILE_NAME_CONVERT=.....

DB_FILE_NAME_CONVERT=.....

Refresh Script - 1/3

```
1 # refreshdb.rman
2 # rman script to refresh a source database to a destination database
3
4 if [ $# != 3 ]
5 then
6 echo "\n**** Usage: refreshdb.rman <sourcedbname> to <destinationdbname> \n"
7   exit 1;
8 fi
9
10 echo "\nDo you really want to refresh $1 to $3 ? (y/n) : \n\c"
11 read choice
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
```


Refresh Script - 2/3

```
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';
```

Refresh Script - 3/3

```
40 set until time "to_date('060607 14:30','mmddy hh24:mi)";
41 SET ARCHIVELOG DESTINATION TO '/temp/arch';
42 DUPLICATE TARGET DATABASE TO $DID;
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';
50 }
51 EOF
52
53 fi
```

Explanation of the Script - 1/8

```
4 if [ $# != 3 ]
5 then
6   echo "\n**** Usage: refreshdb.rman
      <sourcedbname> to <destinationdbname> \n"
7   exit 1;
8   Fi
```

```
$ refreshdb.rman
```

```
**** Usage: refreshdb.rman <sourcedbname> to
      <destinationdbname>
```

Explanation of the Script - 2/8

```
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

Explanation of the Script - 3/8

```
12 if [ $choice = y ]
13 then
14     SID=$1
15     export SIB
16     DID=$3
17     export DID
18     sqlplus "sys/devsyspwd@$DID as
19     sysdba" <<EOF
19 shutdown immediate
20 startup nomount
21 exit
22 EOF
```

Explanation of the Script - 4/8

```
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
```

Explanation of the Script - 5/8

```
34 rman <<EOF
35 CONNECT CATALOG rman/rmanpwd@rep
36 CONNECT TARGET sys/prdsyspwd@$SID
37 CONNECT AUXILIARY
   sys/devsyspwd@$DID
```

Line-35:

If no RMAN catalog database, remove this line and make sure that the control_file_record_keep_time covers your refresh time.

Explanation of the Script – 6a/8

```
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;
```


Explanation of the Script – 6b/8

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';
```

Explanation of the Script - 8/8

- ```
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

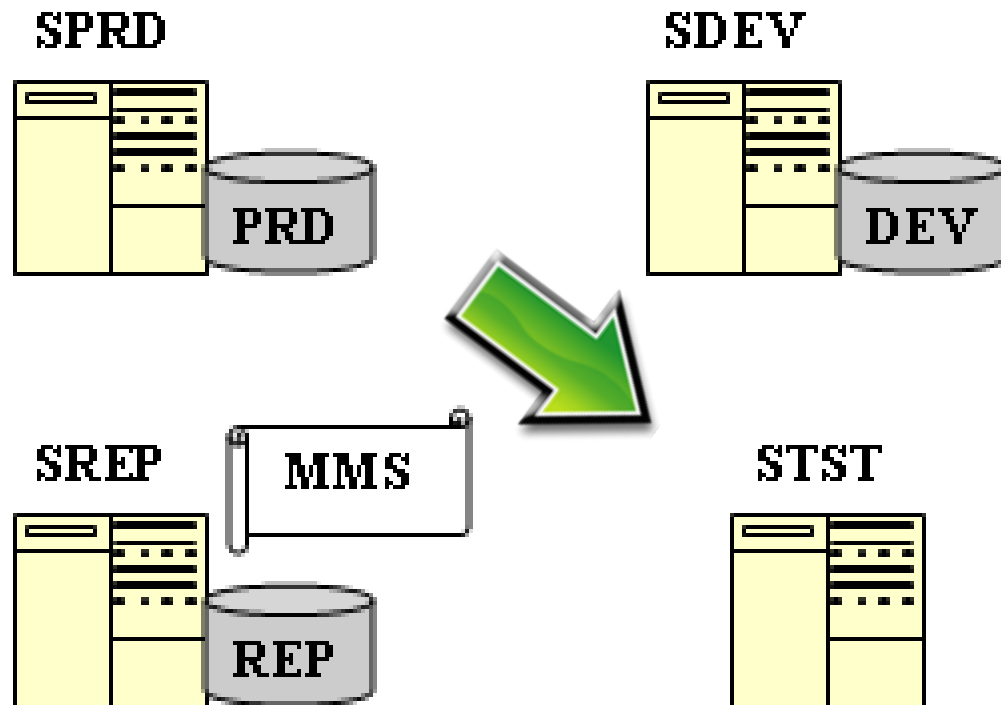
---

```
$ 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

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- 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

## HP OmniBack RMAN backup performance – 1/2

---

allocate AUXILIARY channel 'ach0' DEVICE type  
'sbt\_tape';

## HP OmniBack RMAN backup performance – 2/2

---

```
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

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- 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

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Q&A