RMAN Duplicate from Active Database

Clone databases directly with RMAN Active Duplication.

STEP 1: **Must source db in archive log mode**

```
SQL> show db_recovery_file_dest;
SP2-0735: unknown SHOW option beginning "db_recover..."
SQL> SHOW PARAMETER DB_RECOVERY_FILE_DEST;

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
db_recovery_file_dest                string      /u01/app/oracle/fast_recovery_
                                                 area
db_recovery_file_dest_size           big integer 8256M
SQL> ALTER SYSTEM SET DB_RECOVERY_FILE_DEST='/u01/app/oracle/fast_recovery_area' SCOPE=BOTH;

System altered.

SQL> ALTER SYSTEM SET DB_RECOVERY_FILE_DEST_SIZE=100G SCOPE=BOTH;

System altered.
```

```
SQL> shutdown;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup mount
ORACLE instance started.
```

```
SQL> ALTER DATABASE ARCHIVELOG;

Database altered.

SQL> archive log list;
Database log mode              Archive Mode
Automatic archival             Enabled
Archive destination            USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence     8
Next log sequence to archive   10
Current log sequence           10
```

STEP 2: **Configure Listener on both servers orcl and clone**

```
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = oracle.oracle.com)(PORT = 1521))
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
    )
  )

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (ORACLE_HOME = /u01/app/oracle/product/19c/dbhome)
      (SID_NAME = orcl)
    )
  )
```

Start the listener on orcl server

```
lsnrctl start listener
```

```
[oracle@oracle admin]$ cat listener.ora
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = oracle.oracle.com)(PORT = 1521))
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
    )
  )

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (ORACLE_HOME = /u01/app/oracle/product/19c/dbhome_1)
      (SID_NAME = clone)
    )
  )
```

Start the listener on clone server

```
lsnrctl start listener
```

STEP 3: Configure tns entries on the both servers source and clone servers

```
-bash-4.2$ cat tnsnames.ora
clone =
 (DESCRIPTION =
   (ADDRESS_LIST =
     (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.197)(PORT = 1521))
   )
 (CONNECT_DATA =
   (SERVICE_NAME = clone)
 )
)

orcl =
 (DESCRIPTION =
   (ADDRESS_LIST =
     (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.24)(PORT = 1521))
   )
 (CONNECT_DATA =
   (SERVICE_NAME = orcl)
 )
)
```

STEP 4: Make sure to test the tnsping is working from prod to clone server

```
-bash-4.2$ tnsping clone

TNS Ping Utility for Linux: Version 19.0.0.0.0 - Production on 28-MAR-2025 17:19:36

Copyright (c) 1997, 2019, Oracle.  All rights reserved.

Used parameter files:


Used TNSNAMES adapter to resolve the alias
Attempting to contact (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.197)(PORT = 1521))) (CONNECT_DATA =
(SERVICE_NAME = clone)))
OK (10 msec)
-bash-4.2$
```

```
[oracle@oracle admin]$ tnsping orcl

TNS Ping Utility for Linux: Version 19.0.0.0.0 - Production on 28-MAR-2025 17:19:56

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Used parameter files:


Used TNSNAMES adapter to resolve the alias
Attempting to contact (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.24)(PORT = 1521))) (CONNECT_DATA = (
SERVICE_NAME = orcl)))
OK (140 msec)
[oracle@oracle admin]$
```

STEP 5: On orcl server, create pfile from spfile and copy to clone server

```
SQL> create pfile from spfile;

File created.

SQL>
```

scp initorcl.ora root@192.168.29.197:/u01/app/oracle/product/19c/dbhome_1/dbs/initclone.ora

```
[oracle@oracle dbs]$ scp initocrl.ora root@192.168.29.119:/u01/app/oracle/product/19c/dbhome/dbs/
The authenticity of host '192.168.29.119 (192.168.29.119)' can't be established.
ECDSA key fingerprint is SHA256:+1xk7luuUWvwS81KDOkMKfsn/CYJQ4GoNXpm7677uz4.
ECDSA key fingerprint is MD5:9f:ef:b9:13:00:3d:63:63:6a:e6:a0:ad:c4:0e:76:33.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.29.119' (ECDSA) to the list of known hosts.
root@192.168.29.119's password:
initocrl.ora                                                  100% 1565   582.1KB/s   00:00
[oracle@oracle dbs]$
```

STEP 6: Also copy the password file from prod to clone server

```
-bash-4.2$ scp orapworcl root@192.168.29.197:/u01/app/oracle/product/19c/dbhome_1/dbs
The authenticity of host '192.168.29.197 (192.168.29.197)' can't be established.
ECDSA key fingerprint is SHA256:TjWtGmZiLMKQcXfrVyKFYId8dlZTM7TMQRSxdjuIt1w.
ECDSA key fingerprint is MD5:52:ad:9d:75:b0:39:20:a0:a3:f5:ff:77:b9:be:cd:ea.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.29.197' (ECDSA) to the list of known hosts.
root@192.168.29.197's password:
orapworcl                                     100% 6144     5.0MB/s   00:00
-bash-4.2$
```

If no password file exists, create one via below command and then copy

```
orapwd file=$ORACLE_HOME/dbs/orapwclone force=y

password for sys: orcldb$123
```

STEP 7: On the clone server, open the pfile that you copied from orcl server. Replace orcl **with** clone **SID**

vi $ORACLE_HOME/dbs/initclone.ora

:%s/orcl/clone --> replace orcl with clone

Add below two parameters to change data files and log files locations while cloning database

*.db_file_name_convert='/u01/app/oracle/oradata/orcl','/u01/app/oracle/oradata/clone'

*.log_file_name_convert='/u01/app/oracle/oradata/orcl','/oradb/app/oracle/oradata/clone'

```
[oracle@oracle dbs]$ cat initclone.ora
orcl.__data_transfer_cache_size=0
orcl.__db_cache_size=369098752
orcl.__inmemory_ext_roarea=0
orcl.__inmemory_ext_rwarea=0
orcl.__java_pool_size=16777216
orcl.__large_pool_size=16777216
orcl.__oracle_base='/u01/app/oracle'#ORACLE_BASE set from environment
orcl.__pga_aggregate_target=469762048
orcl.__sga_target=671088640
orcl.__shared_io_pool_size=33554432
orcl.__shared_pool_size=218103808
orcl.__streams_pool_size=0
orcl.__unified_pga_pool_size=0
*.audit_file_dest='/u01/app/oracle/admin/orcl/adump'
*.audit_trail='db'
*.compatible='19.0.0'
*.control_files='/u01/app/oracle/oradata/CLONE/controlfile/o1_mf_mwlth5yt_.ctl','/u01/app/oracle/fast_recovery_area/CLONE/controlfile/o
1_mf_mwlth62c_.ctl'
*.db_block_size=8192
*.db_create_file_dest='/u01/app/oracle/oradata'
*.db_name='clone'
*.db_recovery_file_dest='/u01/app/oracle/fast_recovery_area'
*.db_recovery_file_dest_size=8256m
*.diagnostic_dest='/u01/app/oracle'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=cloneXDB)'
*.memory_target=1081m
*.open_cursors=300
*.processes=300
*.remote_login_passwordfile='EXCLUSIVE'
*.undo_tablespace='UNDOTBS1'
*.db_file_name_convert='/oradb/app/oracle/oradata/orcl','/oradb/app/oracle/oradata/clone'
*.log_file_name_convert='/oradb/app/oracle/oradata/orcl','/oradb/app/oracle/oradata/clone'
[oracle@oracle dbs]$
```

STEP 8: Create respective directories from the clone pfile. In my case, I had to create below directories

mkdir -p /u01/app/oracle/admin/clone/adump

mkdir -p /u01/app/oracle/oradata/CLONE/controlfile/

mkdir -p /u01/app/oracle/fast_recovery_area

Also create data files and redo log files locations from source on clone server

mkdir -p /u01/app/oracle/oradata/CLONE/datafile/

mkdir -p /u01/app/oracle/oradata/CLONE/onlinelog/

STEP 9: Take clone server database to nomount stage

```
-bash-4.2$ sqlplus "sys/orcldb\$123" as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Fri Mar 28 18:56:04 2025
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.

Connected to an idle instance.
```

```
SQL> startup nomount pfile='$ORACLE_HOME/dbs/initclone.ora';
ORACLE instance started.

Total System Global Area 1140849904 bytes
Fixed Size                  8895728 bytes
Variable Size             721420288 bytes
Database Buffers          402653184 bytes
Redo Buffers                7880704 bytes
SQL>
```

STEP 10:

RMAN Active Duplication:

NOFILENAMECHECK: If you want the duplicate filenames to be the same as the target filenames, and if the databases are in different hosts, then you must specify **NOFILENAMECHECK**

db_file_name_convert: This parameter specifies from where to where the datafiles should be cloned.

log**_file_name_convert:**This parameter specifies from where to where the redo logfiles should be cloned

Connect as auxiliary database to create a new database in TARGET location

```
-bash-4.2$ rman target "sys/orcldb\$123@orcl" auxiliary "sys/orcldb\$123"

Recovery Manager: Release 19.0.0.0.0 - Production on Fri Mar 28 18:57:49 2025
Version 19.3.0.0.0

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connected to target database: ORCL (DBID=1722832829)
connected to auxiliary database: CLONE (not mounted)

RMAN>
```

STEP 11:

```
RMAN> DUPLICATE DATABASE TO 'CLONE' FROM ACTIVE DATABASE NOFILENAMECHECK;

Starting Duplicate Db at 28-MAR-25
using target database control file instead of recovery catalog
allocated channel: ORA_AUX_DISK_1
channel ORA_AUX_DISK_1: SID=38 device type=DISK
current log archived

contents of Memory Script:
{
   sql clone "alter system set  control_files =
  ''/u01/app/oracle/oradata/CLONE/controlfile/o1_mf_mwlth5yt_.ctl'', ''/u01/app/oracle/fast_recovery_area/CLONE/controlfile/o1_mf_mwlth
62c_.ctl'' comment=
 ''Set by RMAN'' scope=spfile";
   sql clone "alter system set  db_name =
 ''ORCL'' comment=
 ''Modified by RMAN duplicate'' scope=spfile";
   sql clone "alter system set  db_unique_name =
 ''CLONE'' comment=
 ''Modified by RMAN duplicate'' scope=spfile";
   shutdown clone immediate;
   startup clone force nomount
   restore clone from service  'orcl' primary controlfile;
   alter clone database mount;
}
executing Memory Script

sql statement: alter system set  control_files =   ''/u01/app/oracle/oradata/CLONE/controlfile/o1_mf_mwlth5yt_.ctl'', ''/u01/app/oracle
/fast_recovery_area/CLONE/controlfile/o1_mf_mwlth62c_.ctl'' comment= ''Set by RMAN'' scope=spfile

sql statement: alter system set  db_name =  ''ORCL'' comment= ''Modified by RMAN duplicate'' scope=spfile

sql statement: alter system set  db_unique_name =  ''CLONE'' comment= ''Modified by RMAN duplicate'' scope=spfile
```

```
   switch clone tempfile all;
   catalog clone datafilecopy  "/u01/app/oracle/oradata/CLONE/datafile/o1_mf_sysaux_myfc4q31_.dbf",
 "/u01/app/oracle/oradata/CLONE/datafile/o1_mf_undotbs1_myfc4y68_.dbf",
 "/u01/app/oracle/oradata/CLONE/datafile/o1_mf_users_myfc5170_.dbf";
   switch clone datafile all;
}
executing Memory Script

executing command: SET NEWNAME

renamed tempfile 1 to /u01/app/oracle/oradata/ORCL/datafile/o1_mf_temp_mwltj4hx_.tmp in control file

cataloged datafile copy
datafile copy file name=/u01/app/oracle/oradata/CLONE/datafile/o1_mf_sysaux_myfc4q31_.dbf RECID=1 STAMP=1196969748
cataloged datafile copy
datafile copy file name=/u01/app/oracle/oradata/CLONE/datafile/o1_mf_undotbs1_myfc4y68_.dbf RECID=2 STAMP=1196969748
cataloged datafile copy
datafile copy file name=/u01/app/oracle/oradata/CLONE/datafile/o1_mf_users_myfc5170_.dbf RECID=3 STAMP=1196969748

datafile 3 switched to datafile copy
input datafile copy RECID=1 STAMP=1196969748 file name=/u01/app/oracle/oradata/CLONE/datafile/o1_mf_sysaux_myfc4q31_.dbf
datafile 4 switched to datafile copy
input datafile copy RECID=2 STAMP=1196969748 file name=/u01/app/oracle/oradata/CLONE/datafile/o1_mf_undotbs1_myfc4y68_.dbf
datafile 7 switched to datafile copy
input datafile copy RECID=3 STAMP=1196969748 file name=/u01/app/oracle/oradata/CLONE/datafile/o1_mf_users_myfc5170_.dbf

contents of Memory Script:
{
   Alter clone database open resetlogs;
}
executing Memory Script

database opened
Finished Duplicate Db at 28-MAR-25

RMAN>
```

STEP 12: Verify the status of TARGET database status

```
-bash-4.2$ sqlplus "sys/orcldb\$123" as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Fri Mar 28 19:37:16 2025
Version 19.3.0.0.0

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Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> select name,open_mode from v$database;

NAME      OPEN_MODE
--------- --------------------
CLONE     READ WRITE
```

WE SUCCESSFULLY CLONE THE DB