ORACLE_DATA_GUARD SETUP / CONFIGURATION

NOTE : - 1) We Need Two Server for Configuring Oracle_data_guard

2) Install on both server oracle software in a one mount point .

3) Create database on primary server for taking backup of that database to restoe on secondary for data guard .

ON PRIMARY :-

1) Check database archive log list

```
SQL> archive log list;
Database log mode              Archive Mode
Automatic archival             Enabled
Archive destination            /home/ordb/app/19c/dbhome/dbs/archivelog
Oldest online log sequence     22
Next log sequence to archive   24
Current log sequence           24
SQL>
```

Note : - if Automatic archival not enable then first we enable it for below query

```
SQL> shutdown immediate
```

```
SQL> startup mount
```

```
SQL> alter database archivelog
```

```
SQL> alter database open
```

Enable Force Logging or not check

```
SQL> select force_logging from v$database;

FORCE_LOGGING
---------------------------------------
YES

SQL>
```

Note : if Force_Logging not enable then below command use to enable

```
SQL> alter database force logging
```

Create a listener & tnsnames.ora in dbhome/network/admin folder on both server

1. listener.ora

```
LISTENER_PRIMARY =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.149 )(PORT = 1621))
    )
  )
SID_LIST_LISTENER_PRIMARY =
   (SID_LIST =
     (SID_DESC =
      (GLOBAL_DBNAME =HDFC)
   (ORACLE_HOME = /home/ordb/app/19c/dbhome)
      (SID_NAME = HDFC)
     )
   )
```

2. tnsnames.ora (use to connection stablished with application)

```
FS_SERVER =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.156)(PORT = 1621))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = HDFC)
    )
  )

FC_CLIENT =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.29.149)(PORT = 1621))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = HDFC)
    )
  )
```

After this we need to changes to some parameter file in primary

Connect with the sql

```
[oracle@primary dbhome]$ sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Sat Oct 7 14:28:53 2023
Version 19.3.0.0.0

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


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

SQL>
```

set the log_archive_dest_1 or set the archive log location (below all the configuration create both server)

```
SQL> show parameter log_archive_dest_1

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
log_archive_dest_1                   string      location=/home/ordb/app/19c/db
                                                 home/dbs/archivelog
log_archive_dest_10                  string
log_archive_dest_11                  string
```

set the log_archive_dest_2

```
SQL> show parameter log_archive_dest_2

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
log_archive_dest_2                   string      service=FS_SERVER
log_archive_dest_20                  string
```

set the log_archive_dest_state_2

```
SQL> show parameter log_archive_dest_state_2

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
log_archive_dest_state_2             string      ENABLE
```

set the standby_file_management

```
SQL> show parameter standby_file_management

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
standby_file_management              string      AUTO
```

After done primary server configuration take a full backup & copy the parameter file on secondary server

1) Take a full backup of database using RMAN utility

```
[oracle@primary backup]$ rman target /

Recovery Manager: Release 19.0.0.0.0 - Production on Sat Oct 7 14:44:34 2023
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle and/or its affiliates.  All rights reserved.

connected to target database: HDFC (DBID=1242176063)

RMAN>
```

```
run
{
allocate channel c1 type disk;
allocate channel c2 type disk;
allocate channel c3 type disk;
allocate channel c4 type disk;


backup database format '/home/ordb/backup/hdfc_%u';
backup current controlfile format '/home/ordb/backup/controlfile_%u';
}
```

use this script with run.cmd to run in RMAN utility or

```
RMAN> backup database format '/home/ordb/backup/hdfc_%u';

Starting backup at 07-OCT-23
using target database control file instead of recovery catalog
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=77 device type=DISK
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00001 name=/home/ordb/app/oracle/oradata/HDFC/datafile/o1_mf_system_ldx1r6v2_.dbf
input datafile file number=00003 name=/home/ordb/app/oracle/oradata/HDFC/datafile/o1_mf_sysaux_ldx1v837_.dbf
input datafile file number=00004 name=/home/ordb/app/oracle/oradata/HDFC/datafile/o1_mf_undotbs1_ldx1wpbf_.dbf
input datafile file number=00009 name=/home/ordb/app/oracle/oradata/HDFC/datafile/mobileapp.dbf
input datafile file number=00002 name=/home/ordb/app/oracle/oradata/HDFC/datafile/bob_1.dbf
input datafile file number=00005 name=/home/ordb/app/oracle/oradata/HDFC/datafile/ubi.dbf
input datafile file number=00008 name=/home/ordb/app/oracle/oradata/HDFC/datafile/icici.dbf
input datafile file number=00007 name=/home/ordb/app/oracle/oradata/HDFC/datafile/o1_mf_users_ldx1wqk3_.dbf
input datafile file number=00010 name=/home/ordb/app/oracle/oradata/HDFC/datafile/loan.dbf
channel ORA_DISK_1: starting piece 1 at 07-OCT-23
```

```
RMAN> backup current controlfile format '/home/ordb/backup/controlfile_%u';

Starting backup at 07-OCT-23
using channel ORA_DISK_1
channel ORA_DISK_1: starting full datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
including current control file in backup set
channel ORA_DISK_1: starting piece 1 at 07-OCT-23
channel ORA_DISK_1: finished piece 1 at 07-OCT-23
piece handle=/home/ordb/backup/controlfile_0n28b5hp tag=TAG20231007T145033 comment=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 07-OCT-23

Starting Control File and SPFILE Autobackup at 07-OCT-23
piece handle=/home/ordb/app/oracle/fast_recovery_area/HDFC/autobackup/2023_10_07/o1_mf_s_1149605435_ll28q3g4_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 07-OCT-23
```

copy the backup on secondary server

```
[oracle@primary backup]$ scp -pr * root@192.168.29.156:/home/ordb/backup/
root@192.168.29.156's password:
controlfile_0n28b5hp                                          100%   10MB  39.5MB/s   00:00
hdfc_0l28b5e6                                                  3%   46MB  23.2MB/s   00:51 ETA
```

1. Install the oracle software on secondary server

2. Set the oracle_home path in vi .bash_profile & check

```
[oracle@node9 ~]$ env |grep ORA
ORACLE_SID=orcl
ORACLE_HOME=/oradata/app/oracle/product/19c/dbhome
```

check the file available or not in secondary if not available create it

```
[oracle@node9 backup]$ ls -ld /orab/TEST/datafiles/TEST
```

```
[oracle@node9 backup]$ mkdir -p /orab/TEST/datafiles/TEST
```

create archive log folder in secondary server also

```
[oracle@node9 backup]$ ls -ld /orab/app/12.2/dbhome/dbs/arch
ls: cannot access /orab/app/12.2/dbhome/dbs/arch: No such file or directory
[oracle@node9 backup]$
[oracle@node9 backup]$
[oracle@node9 backup]$ mkdir -p /orab/app/12.2/dbhome/dbs/arch
```

Standby Controlfile and pfile

SQL> ALTER DATABASE CREATE STANDBY CONTROLFILE AS ‘/u01/stdcontrol.ctl’;

SQL> CREATE PFILE=’/u01/initstd.ora’ from spfile;

Edit pfile for standby

NOTE: Edit backup pfile and make some changes for standby, after making changes the standby pfile look like this:

```
std.__db_cache_size=318767104
std.__java_pool_size=4194304
std.__large_pool_size=4194304
std.__oracle_base='/u01/app/oracle'#ORACLE_BASE set from environment
std.__pga_aggregate_target=335544320
std.__sga_target=503316480
std.__shared_io_pool_size=0
std.__shared_pool_size=159383552
std.__streams_pool_size=4194304
*.audit_file_dest='/u01/app/oracle/admin/std/adump'
*.audit_trail='db'
*.compatible='11.2.0.0.0'
*.control_files='/u01/app/oracle/oradata/std/control01.ctl','/u01/app/oracle/fast_recovery_area/std/control02.ctl'
*.db_block_size=8192
*.db_domain=''
*.db_file_name_convert='db11g','std'
*.db_name='db11g'
*.db_unique_name='std'
*.db_recovery_file_dest='/u01/app/oracle/fast_recovery_area'
*.db_recovery_file_dest_size=4322230272
*.diagnostic_dest='/u01/app/oracle'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=db11gXDB)'
*.fal_server='DB11G'
*.log_archive_config='DG_CONFIG=(db11g,std)'
*.log_archive_dest_2='SERVICE=db11g VALID_FOR=(ONLINE_LOGFILES,PRIMARY_ROLE) DB_UNIQUE_NAME=db11g'
*.log_archive_dest_state_2='ENABLE'
*.log_file_name_convert='db11g','std'
*.memory_target=836763648
*.open_cursors=300
*.processes=150
*.remote_login_passwordfile='EXCLUSIVE'
*.standby_file_management='AUTO'
*.undo_tablespace='UNDOTBS1'
```

Create required directories on standby

Create required directories on the standby side.

```
$mkdir -p /u01/app/oracle/admin/std/adump
$mkdir -p /u01/app/oracle/oradata/std
$mkdir -p /u01/app/oracle/fast_recovery_area/std
```

Restore RMAN backup on standby

Restore backup on standby machine:

Now exit from SQL prompt and login with RMAN then restore backup

```
$rman target=/
RMAN> startup mount
RMAN> restore database;
RMAN> recover database;
RMAN> exit
```

Start MRP process

Now start the redo apply process on standby

Note: before applying redo log files, open the alert log file on a different terminal for monitoring standby database activity.

On-standby machine:

```
QL> alter database recover managed standby database disconnect from session;
```

Run the below command and check the current redo sequence number on the primary side:

SQL> select sequence#,first_time,next_time from v$archived_log order by sequence#;

Now switch the log file using the below command and check it's applying on the standby server or not.

SQL> alter system switch logfile;

Then check your current sequence number on the PRIMARY machine:

SQL> select sequence#,first_time,next_time from v$archived_log order by sequence#;

Then switch on the STANDBY machine and check the redo is coming on the standby machine or not.

SQL> select sequence#,first_time,next_time,applied from v$archived_log order by sequence#;

Now go on the PRIMARY machine and run the switch logfile command one more time.

SQL> alter system switch logfile;

Now check DB mode and protection mode run below command on both machines:

SQL> desc v$database

SQL> select name,open_mode,database_role,db_unique_name,protection_mode from v$database;

Now your Oracle 11g R2 Dataguard configuration is completed.

Step 8 - Open physical standby in Read only mode

Steps to configure read-only STANDBY - Action On STANDBY machine

Now I'm going to convert the physical standby database into a read-only standby database. In this case, what happens to your database will be in read-only mode. Let me show you how to convert the physical standby server into read-only mode.

SQL>Shu immediate

SQL>startup mount;

SQL>alter database open read only;

After running the above commands your database will be open in read-only mode.

SQL> select name,open_mode,database_role,db_unique_name,protection_mode from v$database;

SQL> select * from scott.emp; (now you able to read your database)

Now login on the PRIMARY machine and run the switch logfile command.

SQL>alter system switch logfile;

On STANDBY check redo applying or not

SQL> select sequence#,first_time,next_time,applied from v$archived_log order by sequence#;

Note:-You can see redo files but it's not applied, So it is simple if you're a standby database in read-only mode then archives are not applying.

Let's bring back to physical standby using the below steps:

SQL> shu immediate

SQL> startup mount

SQL> alter database recover managed standby database disconnect from session;

Now the archive is applied on the standby side.

Steps to configure Active Data Guard

How to convert physical standby database into active data guard step by step.

Oracle 11g has a new feature called ACTIVE DATAGUARD.

In the ACTIVE DATAGUARD feature, we can open the standby database in read-only mode and also can apply log files. Steps are almost the same as a read-only standby database.

SQL>shu immediate

SQL>startup mount;

SQL>alter database open read only;

SQL>alter database recover managed standby database disconnect from session;

Now you can check open mode:

SQL> select name,open_mode,database_role,db_unique_name,protection_mode from v$database;

And check redo apply

SQL> select sequence#,first_time,next_time,applied from v$archived_log order by sequence#;

NOTE :- After configuring of dataguard we need to check it's working or not