

# Setting up DG in 11gR2 (Linux)

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## 1. PRE-SETUP AT PRIMARY DATABASE

### FORCE LOGGING

```
ALTER DATABASE FORCE LOGGING;
```

```
ALTER DATABASE FLASHBACK ON;  -- not mandatory
```

### PASSWORD FILE

Run orapwd

Copy password file orapworcl (from \$ORACLE\_HOME/dbs) to the Standby and rename it to orapwstby -- the password file name is based on the ORACLE\_SID

### Add Standby Redo Logs

```
ALTER DATABASE ADD STANDBY LOGFILE (as many times as : number of online redo logs + 1)
```

### INITORA on Primary

```
*.archive_lag_target=0
*.audit_file_dest='/u01/app/oracle/admin/orcl/adump'
*.audit_trail='db'
*.compatible='11.2.0'
*.control_files='/u01/app/oracle/oradata/ORCL/control.dbf'
*.db_block_size=8192
*.db_create_file_dest='/u01/app/oracle/oradata'
*.db_domain=''
*.db_name='ORCL'
*.db_recovery_file_dest_size=2G
*.db_recovery_file_dest='/u02/FRA'
*.db_unique_name='ORCL'
*.dg_broker_start=TRUE
*.diagnostic_dest='/u01/app/oracle'
*.enable_goldengate_replication=TRUE
*.log_archive_config='DG_CONFIG=(orcl,stby)'
*.log_archive_dest_1='location=USE_DB_RECOVERY_FILE_DEST','valid_for=(ALL_L
OGFILES, ALL_ROLES)'
*.log_archive_dest_2='SERVICE=stby SYNC
VALID_FOR=(ONLINE_LOGFILES,PRIMARY_ROLE) DB_UNIQUE_NAME=stby'
*.log_archive_dest_state_2='ENABLE'
orcl.log_archive_format='%t_%s_%r.dbf'
*.log_archive_max_processes=4
*.log_archive_min_succeed_dest=1
orcl.log_archive_trace=0
*.memory_target=1G
*.open_cursors=300
*.processes=150
*.remote_login_passwordfile='EXCLUSIVE'
*.standby_file_management='AUTO'
*.undo_tablespace='UNDOTBS1'
```

## Setting up DataGuard in 11gR2 (Linux)

### LISTENER.ORA on Primary

```
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
      (ADDRESS = (PROTOCOL = IPC) (KEY = EXTPROC1521)) - this is not required
    )
  )

DEFAULT_SERVICE_LISTENER = (ORCL)

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = orcl_DGMGRL)
      (ORACLE_HOME = /u01/app/oracle/product/11.2.0/orcl)
      (SID_NAME = orcl)
    )
    (SID_DESC =
      (GLOBAL_DBNAME = orcl)
      (ORACLE_HOME = /u01/app/oracle/product/11.2.0/orcl)
      (SID_NAME = orcl)
    )
  )
)
```

### TNSNAMES.ORA on Primary

```
STBY =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = stby) (UR=A) - this allows connection for the DUPLICATE
DATABASE command when the database is not open
    )
  )

#for DataGuard Broker Connection
STBY_DGB =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = stby_DGMGRL)
    )
  )
)
```

## 2. PRE-SETUP AT STANDBY DATABASE

### INIT.ORA on Standby

```
*.audit_file_dest='/u01/app/oracle/admin/stby/adump'
*.audit_trail='db'
*.compatible='11.2.0'
*.control_files='/u02/oradata/STBY/control.dbf'
*.db_block_size=8192
*.db_domain=''
*.db_name='ORCL'
*.db_unique_name='STBY'
*.db_recovery_file_dest_size=2G
*.db_recovery_file_dest='/u02/FRA'
*.db_create_file_dest='/u02/oradata'
*.db_file_name_convert='/u01/app/oracle/oradata/ORCL','/u02/oradata/STBY'
*.log_archive_config='DG_CONFIG=(stby,orcl)'
*.log_archive_dest_2='SERVICE=orcl SYNC
VALID_FOR=(ONLINE_LOGFILES,PRIMARY_ROLE) DB_UNIQUE_NAME=orcl'
*.standby_file_management=AUTO
*.diagnostic_dest='/u01/app/oracle'
#*.enable_goldengate_replication=TRUE
*.memory_target=1G
*.open_cursors=300
*.processes=150
*.remote_login_passwordfile='EXCLUSIVE'
*.undo_tablespace='UNDOTBS1'
```

### PreCreate all folders

Precreate folders specified in the parameter file.

## Setting up DataGuard in 11gR2 (Linux)

### LISTENER.ORA on Standby

```
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
      (ADDRESS = (PROTOCOL = IPC) (KEY = EXTPROC1521)) - this is not required
    )
  )

DEFAULT_SERVICE_LISTENER = (STBY)

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME=stby_DGMGRL)
      (ORACLE_HOME = /u01/app/oracle/product/11.2.0/orcl)
      (SID_NAME = stby)
    )
    (SID_DESC =
      (GLOBAL_DBNAME=stby)
      (ORACLE_HOME = /u01/app/oracle/product/11.2.0/orcl)
      (SID_NAME = stby)
    )
  )
)
```

### TNSNAMES.ORA on Standby

```
ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = orcl) (UR=A)
    )
  )

#for DataGuard Broker Connection
ORCL_DGB =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = orcl_DGMGRL)
    )
  )
)
```

### **3. RUN DUPLICATE DATABASE COMMAND**

#### **Startup Standby Instance**

STARTUP NOMOUNT

#### **Start RMAN Session**

##### **At Primary**

```
RMAN TARGET /      {or CONNECT TARGET SYS/ORACLE@
```

```
CONNECT AUXILIARY SYS/ORACLE@STBY
```

#### **Run DUPLICATE DATABASE Command**

```
DUPLICATE TARGET DATABASE FOR STANDBY FROM ACTIVE DATABASE ;
```

```
Starting Duplicate Db at 05-DEC-16
using target database control file instead of recovery catalog
allocated channel: ORA_AUX_DISK_1
channel ORA_AUX_DISK_1: SID=96 device type=DISK
```

contents of Memory Script:

```
{
  backup as copy reuse
    targetfile '/u01/app/oracle/product/11.2.0/orcl/dbs/orapworcl'
  auxiliary format
    '/u01/app/oracle/product/11.2.0/orcl/dbs/orapwstby'    ;
}
```

executing Memory Script

```
Starting backup at 05-DEC-16
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=27 device type=DISK
Finished backup at 05-DEC-16
```

contents of Memory Script:

```
{
  backup as copy current controlfile for standby auxiliary format
    '/u02/oradata/STBY/control.dbf';
}
```

executing Memory Script

```
Starting backup at 05-DEC-16
using channel ORA_DISK_1
channel ORA_DISK_1: starting datafile copy
copying standby control file
output file name=/u01/app/oracle/product/11.2.0/orcl/dbs/snapcf_orcl.f
tag=TAG20161205T111049 RECID=10 STAMP=929790650
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:01
Finished backup at 05-DEC-16
```

contents of Memory Script:

```
{
  sql clone 'alter database mount standby database';
}
```

## Setting up DataGuard in 11gR2 (Linux)

```
}
executing Memory Script

sql statement: alter database mount standby database

contents of Memory Script:
{
  set newname for tempfile 1 to
  "/u02/oradata/STBY/temp.dbf";
  switch clone tempfile all;
  set newname for datafile 1 to
  "/u02/oradata/STBY/system.dbf";
  set newname for datafile 2 to
  "/u02/oradata/STBY/sysaux.dbf";
  set newname for datafile 3 to
  "/u02/oradata/STBY/undotbs1.dbf";
  set newname for datafile 4 to
  "/u02/oradata/STBY/users.dbf";
  set newname for datafile 11 to
  "/u02/oradata/STBY/datafile/o1_mf_hemant_cdgb60g4_.dbf";
  set newname for datafile 12 to
  "/u02/oradata/STBY/datafile/o1_mf_users_c552qnsh_.dbf";
  set newname for datafile 13 to
  "/u02/oradata/STBY/datafile/o1_mf_intermed_c552qpc7_.dbf";
  backup as copy reuse
  datafile 1 auxiliary format
  "/u02/oradata/STBY/system.dbf" datafile
  2 auxiliary format
  "/u02/oradata/STBY/sysaux.dbf" datafile
  3 auxiliary format
  "/u02/oradata/STBY/undotbs1.dbf" datafile
  4 auxiliary format
  "/u02/oradata/STBY/users.dbf" datafile
  11 auxiliary format
  "/u02/oradata/STBY/datafile/o1_mf_hemant_cdgb60g4_.dbf" datafile
  12 auxiliary format
  "/u02/oradata/STBY/datafile/o1_mf_users_c552qnsh_.dbf" datafile
  13 auxiliary format
  "/u02/oradata/STBY/datafile/o1_mf_intermed_c552qpc7_.dbf" ;
  sql 'alter system archive log current';
}
executing Memory Script

executing command: SET NEWNAME

renamed tempfile 1 to /u02/oradata/STBY/temp.dbf in control file

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

Starting backup at 05-DEC-16
using channel ORA_DISK_1
```

## Setting up DataGuard in 11gR2 (Linux)

```
channel ORA_DISK_1: starting datafile copy
input datafile file number=00002
name=/u01/app/oracle/oradata/ORCL/sysaux.dbf
output file name=/u02/oradata/STBY/sysaux.dbf tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:25
channel ORA_DISK_1: starting datafile copy
input datafile file number=00001
name=/u01/app/oracle/oradata/ORCL/system.dbf
output file name=/u02/oradata/STBY/system.dbf tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:15
channel ORA_DISK_1: starting datafile copy
input datafile file number=00003
name=/u01/app/oracle/oradata/ORCL/undotbs1.dbf
output file name=/u02/oradata/STBY/undotbs1.dbf tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:15
channel ORA_DISK_1: starting datafile copy
input datafile file number=00004
name=/u01/app/oracle/oradata/ORCL/users.dbf
output file name=/u02/oradata/STBY/users.dbf tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:03
channel ORA_DISK_1: starting datafile copy
input datafile file number=00011
name=/u01/app/oracle/oradata/ORCL/datafile/o1_mf_hemant_cdgb60g4_.dbf
output file name=/u02/oradata/STBY/datafile/o1_mf_hemant_cdgb60g4_.dbf
tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:07
channel ORA_DISK_1: starting datafile copy
input datafile file number=00012
name=/u01/app/oracle/oradata/ORCL/datafile/o1_mf_users_c552qnsh_.dbf
output file name=/u02/oradata/STBY/datafile/o1_mf_users_c552qnsh_.dbf
tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:03
channel ORA_DISK_1: starting datafile copy
input datafile file number=00013
name=/u01/app/oracle/oradata/ORCL/datafile/o1_mf_intermed_c552qpc7_.dbf
output file name=/u02/oradata/STBY/datafile/o1_mf_intermed_c552qpc7_.dbf
tag=TAG20161205T111059
channel ORA_DISK_1: datafile copy complete, elapsed time: 00:00:03
Finished backup at 05-DEC-16
```

sql statement: alter system archive log current

contents of Memory Script:

```
{
    switch clone datafile all;
}
```

executing Memory Script

```
datafile 1 switched to datafile copy
input datafile copy RECID=10 STAMP=929790732 file
name=/u02/oradata/STBY/system.dbf
datafile 2 switched to datafile copy
input datafile copy RECID=11 STAMP=929790732 file
name=/u02/oradata/STBY/sysaux.dbf
datafile 3 switched to datafile copy
input datafile copy RECID=12 STAMP=929790732 file
name=/u02/oradata/STBY/undotbs1.dbf
datafile 4 switched to datafile copy
input datafile copy RECID=13 STAMP=929790732 file
name=/u02/oradata/STBY/users.dbf
datafile 11 switched to datafile copy
input datafile copy RECID=14 STAMP=929790732 file
name=/u02/oradata/STBY/datafile/o1_mf_hemant_cdgb60g4_.dbf
```



## Setting up DataGuard in 11gR2 (Linux)

```
datafile 12 switched to datafile copy
input datafile copy RECID=15 STAMP=929790732 file
name=/u02/oradata/STBY/datafile/o1_mf_users_c552qnsh_.dbf
datafile 13 switched to datafile copy
input datafile copy RECID=16 STAMP=929790732 file
name=/u02/oradata/STBY/datafile/o1_mf_intermed_c552qpc7_.dbf
Finished Duplicate Db at 05-DEC-16
```

RMAN>

## 4. POST-SETUP AT STANDBY DATABASE

### Add Standby Redo Logs

ALTER DATABASE ADD STANDBY LOGFILE (add at least 1)

### Start Managed Recovery

```
CREATE SPFILE FROM PFILE ;
SHUTDOWN IMMEDIATE;
STARTUP MOUNT;
SHOW PARAMETER SPFILE; -- to verify that using SPFILE
ALTER DATABASE FLASHBACK ON; -- not mandatory
ALTER DATABASE RECOVER MANAGED STANDBY DATABASE
USING CURRENT LOGFILE
DISCONNECT FROM SESSION ;
```

### (Optional) Configure FAL\_SERVER

ALTER SYSTEM SET FAL\_SERVER='ORCL' ; -- optional if running single Standby

## 5. POST-SETUP AT PRIMARY DATABASE

### Configure Protection Level

```
ALTER DATABASE SET STANDBY TO MAXIMIZE AVAILABILITY ;
```

### Enable Redo Shipping

```
ALTER SYSTEM SET LOG_ARCHIVE_DEST_STATE_2='ENABLE' ;
```

## 6. DATAGUARD BROKER SETUP

(also see Support Doc 1387859.1)

### Start DG Broker at both sites

```
ALTER SYSTEM SET DG_BROKER_START=TRUE;
```

### Add entry to listener

Add GLOBAL\_DBNAME to existing SID entry in the listener.ora at both sites:

```
(GLOBAL_NAME = orcl_DGMGRL)
```

```
(GLOBAL_NAME = stby_DGMGRL)
```

e.g.

```
SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (ORACLE_HOME = /u01/app/oracle/product/11.2.0/orcl)
      (SID_NAME = orcl)
    )
    (SID_DESC =
      (GLOBAL_NAME = orcl_DGMGRL)
      (ORACLE_HOME = /u01/app/oracle/product/11.2.0/orcl)
      (SID_NAME = orcl)
    )
  )
```

Restart Listener

### Add new entry to tnsnames

```
ORCL_DGB =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = orcl_DGMGRL)
    )
  )
```

```
STBY_DGB =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP) (HOST = ora11204) (PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = stby_DGMGRL)
    )
  )
```

## Setting up DataGuard in 11gR2 (Linux)

### Connect to Broker and Configure

**dgmgrl**

```
connect sys/oracle@orcl
```

```
create configuration orcl  
as primary database is orcl  
connect identifier is orcl;
```

```
add database stby ;  
as connect identifier is stby  
maintained as physical;
```

```
enable configuration;
```

```
show configuration;
```

### Test Switchover

```
switchover to stby;
```

(may need to manually STARTUP MOUNT the old primary ORCL after ORA-12514 error)

Verify Switchover at both sites

```
SQL : SELECT DATABASE_ROLE FROM V$DATABASE;
```

```
DGMGRL : SHOW CONFIGURATION;
```