The intent of this section is to illustrate the build of the physical standby (disaster recovery) database from a production database. For this scenario both databases will reside on the 1 physical server.

This section assumes that the Oracle Grid Infrasturcture, either Standalone or Cluster configuration is installed on both the primary host and standby host. Additionally, the primary and standby databases will reside in an ASM diskgroup. The primary database, VNA is currently in open mode. The db_unique_name of the physical standby database is VNADR

DATAGUARD CONFIGURATION

BUILDING THE PHYSICAL STANDBY DATABASE

1. Add entries to tnsnames.ora for the VNA database and the DR database VNADR to both the primary database host and the DR database host.

```
VNA=
  (DESCRIPTION=

(ADDRESS=(PROTOCOL=tcp)(HOST=dallas.viscosityna.com)(PORT=1532))
     (CONNECT_DATA=
       (SID=VNA)
     )
   )

VNADR = (DESCRIPTION = (ADDRESS = (PROTOCOL = TCP)(HOST =
10.10.9.168)(PORT = 1521)) (CONNECT_DATA = (SERVER = DEDICATED)
(SERVICE_NAME = VNADR ) ))
```

2. Add listener entry and reload the listener.

```
LISTENER=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=IPC)(KEY=L
ISTENER))))             # line added by Agent
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER=ON              # line
added by Agent

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = VNADR)
      (SID_NAME = VNADR)
      (ORACLE_HOME = /u001/app/oracle/product/11.2.0.4/db_2)
    )
  )

[oracle@dallas admin]$ lsnrctl reload listener

LSNRCTL for Linux: Version 11.2.0.4.0 - Production on 11-JUL-2014
15:39:16

Copyright (c) 1991, 2011, Oracle.  All rights reserved.
```

```
Connecting to (ADDRESS=(PROTOCOL=tcp)(HOST=)(PORT=1521))
The command completed successfully
```

3. An entry for for VNADR will need to added to /etc/oratab on the DR database host.

```
# This file is used by ORACLE utilities.  It is created by
root.sh
# and updated by either Database Configuration Assistant while
creating
# a database or ASM Configuration Assistant while creating ASM
instance.

# A colon, ':', is used as the field terminator.  A new line
terminates
# the entry.  Lines beginning with a pound sign, '#', are
comments.
#
# Entries are of the form:
#   $ORACLE_SID:$ORACLE_HOME:<N|Y>:
#
# The first and second fields are the system identifier and home
# directory of the database respectively.  The third filed
indicates
# to the dbstart utility that the database should , "Y", or
should not,
# "N", be brought up at system boot time.
#
# Multiple entries with the same $ORACLE_SID are not allowed.
#
+ASM:/u001/app/11.2.0.4/grid:N
VNADR:/u001/app/oracle/product/11.2.0.4/db_2:N
```

4. The Oracle password file should be copied from the primary database to the DR database server.

```
[oracle@dallas admin]$ scp
dallas.viscosityna.com:/u01/app/oracle/product/11.2.0/VNA/dbs/ora
pwVNA /u001/app/oracle/product/11.2.0/db_2/dbs/orapwVNADR
```

5. Startup nomount the DR database instance.

```
SQL*Plus: Release 11.2.0.4.0 Production on Fri Jul 11 15:41:39
2014


Copyright (c) 1982, 2011, Oracle.  All rights reserved.

Connected to an idle instance.

SQL> startup nomount
ORACLE instance started.

Total System Global Area 5344731136 bytes
Fixed Size                  2237776 bytes
Variable Size            2801797808 bytes
```

```
Database Buffers         2533359616 bytes
Redo Buffers                7335936 bytes
SQL>
```

6. The following RMAN cloning script will be used to instantiate the DR database using the RMAN Duplicate using Active Database feature. This method avoids the need for a complete a RMAN backup as well as uneccessary copying of backup pieces to the target server before being able to complete the database restore. Howewver, this feature does have any a minor impact on the primary database

```
[oracle@dallas ba]$ cat stby_crp.cmd

connect target sys/oracle123@VNA;
connect auxiliary sys/oracle123@VNADR;
run {
allocate channel prm1 type disk;
allocate channel prm2 type disk;
allocate channel prm3 type disk;
#allocate channel prm4 type disk;
allocate auxiliary channel stb1 type disk;
duplicate target database for standby from active database
dorecover
spfile
set 'db_unique_name'='VNADR'
set 'control_files'='+DATA','+FRA'
set diagnostic_dest='/u001/app/oracle'
set db_create_file_dest='+DATA'
##set db_file_name_convert='+DATA1','+DATA'
set db_create_online_log_dest_1='+DATA'
set db_recovery_file_dest='+FRA'
set db_recovery_file_dest_size='65G'
reset db_file_name_convert
reset log_file_name_convert
set audit_file_dest='/u001/app/oracle/admin/VNADR/adump'
SET FAL_CLIENT='VNADR'
SET FAL_SERVER='VNA'
SET service_names='VNADR'
SET log_archive_config='DG_CONFIG=(VNA,VNADR)'
SET standby_file_management='AUTO'
nofilenamecheck;
}
```

Now call the script above using nohup.

```
[oracle@dallas]$ nohup rman cmdfile stby_crp.cmd log stby_crp.log
&
```

The following is an excerpt stby_crap.log, which describes the flow of the RMAN channel allocation and co?????

```
[oracle@dallas ba]$ cat stby_crp.log

Recovery Manager: Release 11.2.0.4.0 - Production on Mon Jul 14
12:06:03 2014
```

```
Copyright (c) 1982, 2011, Oracle and/or its affiliates.  All
rights reserved.

RMAN> connect target *
2> connect auxiliary *
3> run {
4> allocate channel prm1 type disk;
5> allocate channel prm2 type disk;
6> allocate channel prm3 type disk;
7> #allocate channel prm4 type disk;
8> allocate auxiliary channel stb1 type disk;
9> duplicate target database for standby from active database
10> dorecover
11> spfile
12> set 'db_unique_name'='VNADR'
13> set 'control_files'='+DATA','+FRA'
14> set diagnostic_dest='/u001/app/oracle'
15> set db_create_file_dest='+DATA'
16> ##set db_file_name_convert='+DATA1','+DATA'
17> set db_create_online_log_dest_1='+DATA'
18> set db_recovery_file_dest='+FRA'
19> set db_recovery_file_dest_size='65G'
20> reset db_file_name_convert
21> reset log_file_name_convert
22> set audit_file_dest='/u001/app/oracle/admin/VNADR/adump'
23> SET FAL_CLIENT='VNADR'
24> SET FAL_SERVER='VNA'
25> SET service_names='VNADR'
26> SET log_archive_config='DG_CONFIG=(VNA,VNADR)'
27> SET standby_file_management='AUTO'
28> nofilenamecheck;
29> }
30>
connected to target database: VNA (DBID=1957204319)

connected to auxiliary database: VNADR (not mounted)

using target database control file instead of recovery catalog
allocated channel: prm1
channel prm1: SID=731 device type=DISK

allocated channel: prm2
channel prm2: SID=2072 device type=DISK

allocated channel: prm3
channel prm3: SID=82 device type=DISK

allocated channel: stb1
...
...
...

archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_346.501.85289
8709 thread=1 sequence=346
```

```
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_347.502.85289
8709 thread=1 sequence=347
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_348.503.85289
8709 thread=1 sequence=348
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_349.504.85289
8711 thread=1 sequence=349
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_350.505.85289
8711 thread=1 sequence=350
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_351.506.85289
8711 thread=1 sequence=351
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_352.507.85289
8711 thread=1 sequence=352
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_353.508.85289
8713 thread=1 sequence=353
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_354.509.85289
8713 thread=1 sequence=354
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_355.510.85289
8713 thread=1 sequence=355
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_356.511.85289
8713 thread=1 sequence=356
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_357.512.85289
8713 thread=1 sequence=357
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_358.513.85289
8713 thread=1 sequence=358
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_359.514.85289
8713 thread=1 sequence=359
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_360.515.85289
8713 thread=1 sequence=360
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_361.516.85289
8715 thread=1 sequence=361
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_362.517.85289
8715 thread=1 sequence=362
archived log file
name=+DATA/VNADR/archivelog/2014_07_14/thread_1_seq_363.518.85289
8715 thread=1 sequence=363
media recovery complete, elapsed time: 00:01:22
Finished recover at 14-JUL-14
Finished Duplicate Db at 14-JUL-14
released channel: prm1
released channel: prm2
released channel: prm3
```

```
released channel: stb1

Recovery Manager complete.
[oracle@dallas
```

7. Once the database restore completes, update the init parameters on the primary database to enable log shipping to complete the DataGuard configuration.

```
ALTER SYSTEM SET log_archive_config='DG_CONFIG=(VNA,VNADR)';
ALTER SYSTEM SET
log_archive_dest_2='SERVICE="(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)
(HOST=dallas.viscosityna.com)(PORT=1521))(CONNECT_DATA=(SERVICE_N
AME=VNADR (SERVER=DEDICATED)))"
valid_for=(online_logfiles,primary_role) DB_UNIQUE_NAME=VNADR';
ALTER SYSTEM SET fal_client='VNA';
ALTER SYSTEM SET fal_server='VNADR';
ALTER SYSTEM SET standby_file_management='AUTO';
ALTER SYSTEM SET LOG_ARCHIVE_DEST_STATE_2='enable';
```

8. Add standby redologs to the DR database.

```
SQL>  alter database add standby logfile group 111 size 1G;
SQL>
Database altered.

SQL>  alter database add standby logfile group 112 size 1G;
SQL>
Database altered.

SQL>  alter database add standby logfile group 113 size 1G;
SQL>
Database altered.

SQL>  alter database add standby logfile group 114 size 1G;
SQL>
Database altered.
```

9. Restart the standby database and enable active recovery on standby.

```
SQL> shutdown immediate
SQL> startup mount
SQL> ALTER DATABASE RECOVER MANAGED STANDBY DATABASE USING
CURRENT LOGFILE DISCONNECT;
```

10. Ensure the logs are being shipped and applied to the DR database. ?????

11. Configure archivelog deletion policy on both the primary and DR database to ensure that the archivelogs will be automatically deleted by oracle according to the db_recovery_file_dest_size limit being set. Db_recovery_file_dest_size may need to be adjusted to allow space for the amount of anticipated archivelogs being generated by the database.

    On primary:

```
RMAN> CONNECT TARGET /
```

```
RMAN> CONFIGURE ARCHIVELOG DELETION POLICY TO SHIPPED TO ALL
STANDBY;
```

On DR:

```
RMAN> CONNECT TARGET /
RMAN> CONFIGURE ARCHIVELOG DELETION POLICY TO APPLIED ON STANDBY;
```

DATABASE REGISTRATION TO GRID INFRASTRUCTURE – DR SITE

1. Check ASM configuration to ensure that it is configured properly.

```
      [oracle@dallas dbs]$ srvctl config asm
ASM home: /u001/app/11.2.0.4/grid
ASM listener: LISTENER
Spfile: +DATA/asm/asmparameterfile/registry.253.848926833
      ASM diskgroup discovery string: ORCL:*
```

2. Source your environment for the DR database and add database to the Grid Infrastrure (GI).

```
[oracle@dallas dbs]$ srvctl add database -d VNADR -o $ORACLE_HOME
```

3. Check configuration of database to ensure it was successfully added to the GI.

```
[oracle@dallas dbs]$ srvctl config database

      VNADR
```

ENABLE ACTIVE DATAGUARD

4. Modify the database configuration for it to be opened (upon server and/or database restart) and known as a physical standby.

```
[oracle@dallas dbs]$ srvctl modify database -d VNADR -r
physical_standby -s OPEN
```

5. Check the database configuration to ensure the changes took effect.

```
[oracle@dallas dbs]$ srvctl config database -d VNADR
Database unique name: VNADR
Database name:
Oracle home: /u001/app/oracle/product/11.2.0.4/db_2
Oracle user: oracle
Spfile:
Domain:
Start options: open
Stop options: immediate
Database role: PHYSICAL_STANDBY
Management policy: AUTOMATIC
Database instance: VNADR
Disk Groups: DATA,FRA
Services:
```

6. Shutdown the database via SQLPLUS and restart database under srvctl.

```
SQL*Plus: Release 11.2.0.4.0 Production on Fri Jul 18 13:19:29
2014

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```

```
Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit
Production
With the Partitioning, Real Application Clusters, Automatic
Storage Management, OLAP,
Data Mining and Real Application Testing options

SQL> shutdown immediate
exit
ORA-01109: database not open

Database dismounted.

ORACLE instance shut down.

srvctl start database –d VNADR
```

7. Restart the auto recovery process on the standby database.

```
SQL> alter database recover managed standby database using
current logfile disconnect;

Database altered.
```

8. Check the database to ensure that it is in active dataguard mode. Active Dataguard mode means that the DR database has been opened READ ONLY and still functioning as DG. This allows users to query production data for reporting purposes, etc to avoid affecting production database performance.

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

OPEN_MODE
--------------------
      READ ONLY WITH APPLY
```