

10g Data Guard, Physical Standby Creation, step by step

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Creating a Data Guard Physical Standby environment, General Review.

Manually setting up a Physical standby database is a simple task when all prerequisites and setup steps are carefully met and executed. In this example I did use 2 hosts, that host a RAC database. All RAC preinstall requisites are then in place and no additional configuration was necessary to implement Data Guard Physical Standby manually. Note that using Enterprise Manager Grid Control Data Guard Physical Standby can be implemented from the Grid Control Console easily. Still, this exercise provide a degree of familiarity with Data Guard.

The Enviroment

2 Linux servers, Oracle Distribution 2.6.9-55 EL i686 i386 GNU/Linux
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0
ssh is configured for user oracle on both nodes
Oracle Home is on identical path on both nodes

Implementation notes:

Once you have your primary database up and running these are the steps to follow:

1. Enable Forced Logging
2. Create a Password File
3. Configure a Standby Redo Log
4. Enable Archiving
5. Set Primary Database Initialization Parameters

Having followed these steps to implement the Physical Standby you need to follow these steps:

1. Create a Control File for the Standby Database
2. Backup the Primary Database and transfer a copy to the Standby node.
3. Prepare an Initialization Parameter File for the Standby Database
4. Configure the listener and tnsnames to support the database on both nodes
5. Set Up the Environment to Support the Standby Database on the standby node.
6. Start the Physical Standby Database
7. Verify the Physical Standby Database Is Performing Properly

Step by Step Implementation of a Physical Standby Environment

Primary Database Steps

Primary Database General View

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

```
NAME
```

```
-----
```

```
WHITEOWL
```

```
SQL> select file_name from dba_data_files;
```

```
FILE_NAME
```

```
-----
```

```
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_users_310mzml9_.dbf
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_sysaux_310mzm34_.dbf
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_undotbs1_310mzmk2_.dbf
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_system_310mzm27_.dbf
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test2_3117h15v_.dbf
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test3_3117h8nv_.dbf
/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test4_3117hk7d_.dbf
```

7 rows selected.

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

```
NAME
```

```
-----
```

```
WHITEOWL
```

```
SQL> show parameters unique
```

```
NAME                TYPE      VALUE
```

```
-----
```

```
db_unique_name      string    whiteowl
```

Enable Forced Logging

In order to implement Standby Database we enable 'Forced Logging'.

This option ensures that even in the event that a 'nologging' operation is done, force logging takes precedence and all operations are logged into the redo logs.

```
SQL> ALTER DATABASE FORCE LOGGING;
```

Database altered.

Create a Password File

A password file must be created on the Primary and copied over to the Standby site. The sys password must be identical on both sites. This is a key pre requisite in order to be able to ship and apply archived logs from Primary to Standby.

```
cd $ORACLE_HOME/dbs
```

```
[vmractest1] > orapwd file=orapwhiteowl password=oracle force=y
```

Configure a Standby Redo Log

A Standby Redo log is added to enable Data Guard Maximum Availability and Maximum Protection modes. It is important to configure the Standby Redo Logs (SRL) with the same size as the online redo logs.

In this example I'm using Oracle Managed Files, that's why I don't need to provide the SRL path and file name. If you are not using OMF's you then must pass the full qualified name.

```
SQL> select * from v$logfile;
```

GROUP#	STATUS	TYPE	MEMBER	IS_
3	ONLINE		/vmasmtest/od01/WHITEOWL/WHITEOWL/online/ol_mf_3_310n22jj_.log	NO
2	ONLINE		/vmasmtest/od01/WHITEOWL/WHITEOWL/online/ol_mf_2_310n21sx_.log	NO
1	ONLINE		/vmasmtest/od01/WHITEOWL/WHITEOWL/online/ol_mf_1_310n215q_.log	NO

```
SQL> select bytes from v$log;
```

BYTES
52428800
52428800
52428800

```
SQL> ALTER DATABASE ADD STANDBY LOGFILE GROUP 4 SIZE 50M;  
Database altered.
```

```
SQL> ALTER DATABASE ADD STANDBY LOGFILE GROUP 5 SIZE 50M;  
Database altered.
```

```
SQL> ALTER DATABASE ADD STANDBY LOGFILE GROUP 6 SIZE 50M;  
Database altered.
```

```
SQL> select * from v$logfile
2 /
```

GROUP#	STATUS	TYPE	MEMBER	IS_
3	ONLINE		/vmasmttest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_3_310n22jj_.log	NO
2	ONLINE		/vmasmttest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_2_310n21sx_.log	NO
1	ONLINE		/vmasmttest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_1_310n215q_.log	NO
4	STANDBY		/vmasmttest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_4_3gznjc9v_.log	NO
5	STANDBY		/vmasmttest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_5_3gznnrh0_.log	NO
6	STANDBY		/vmasmttest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_6_3gznrwd7_.log	NO

6 rows selected.

Enable Archiving

On 10g you can enable archive log mode by mounting the database and executing the archive log command:

```
SQL> startup mount;
ORACLE instance started.
```

```
Total System Global Area 285212672 bytes
Fixed Size 1218992 bytes
Variable Size 75499088 bytes
Database Buffers 205520896 bytes
Redo Buffers 2973696 bytes
Database mounted.
```

```
SQL> alter database archivelog;
```

Database altered.

```
SQL> alter database open;
```

Database altered.

```
SQL> archive log list
```

Database log mode	Archive Mode
Automatic archival	Enabled
Archive destination	/vmasmtest/whiteowl/archdest/arch
Oldest online log sequence	92
Next log sequence to archive	94
Current log sequence	94

Set Primary Database Initialization Parameters

Data Guard must use spfile, in order to configure it we create and configure the standby parameters on a regular pfile, and once it is ready we convert it to an spfile.

Several init.ora parameters control the behavior of a Data Guard environment. In this example the Primary database init.ora is configured so that it can hold both roles, as Primary or Standby.

```
SQL> create pfile='/oradisk/app01/oracle/product/10gDB/dbs/pfilewhiteowl.ora' from spfile;
```

File created.

Edit the pfile to add the standby parameters, here shown highlighted:

```
db_name='whiteowl'  
db_unique_name='whiteowl'  
LOG_ARCHIVE_CONFIG='DG_CONFIG=(whiteowl,blackowl)'  
control_files='/vmasmtest/od01/WHITEOWL/WHITEOWL/controlfile/o1_mf_310n1xf0_.ctl'
```



```
LOG_ARCHIVE_DEST_1=
'LOCATION=/vmasmtest/whiteowl/archdest/
VALID_FOR=(ALL_LOGFILES,ALL_ROLES)
DB_UNIQUE_NAME=whiteowl'
LOG_ARCHIVE_DEST_2=
'SERVICE=blackowl LGWR ASYNC
VALID_FOR=(ONLINE_LOGFILES,PRIMARY_ROLE)
DB_UNIQUE_NAME=blackowl'
LOG_ARCHIVE_DEST_STATE_1=ENABLE
LOG_ARCHIVE_DEST_STATE_2=ENABLE
REMOTE_LOGIN_PASSWORDFILE=EXCLUSIVE
LOG_ARCHIVE_FORMAT=%t_%s_%r.arc
LOG_ARCHIVE_MAX_PROCESSES=30
# Standby role parameters -----
*.fal_server=blackowl
*.fal_client=whiteowl
*.standby_file_management=auto
*.db_file_name_convert='BLACKOWL/BLACKOWL','WHITEOWL/WHITEOWL'
*.log_file_name_convert='/vmasmtest/od01/BLACKOWL/BLACKOWL/', '/vmasmtest/od01/WHITEOWL/WHITEOWL/'
# -----
audit_file_dest='/oradisk/app01/oracle/admin/whiteowl/adump'
background_dump_dest='/oradisk/app01/oracle/admin/whiteowl/bdump'
core_dump_dest='/oradisk/app01/oracle/admin/whiteowl/cdump'
user_dump_dest='/oradisk/app01/oracle/admin/whiteowl/udump'
compatible='10.2.0.1.0'
db_block_size=8192
db_create_file_dest='/vmasmtest/od01/WHITEOWL'
db_domain=''
db_file_multiblock_read_count=16
job_queue_processes=10
open_cursors=300
pga_aggregate_target=94371840
processes=150
```

```
remote_login_passwordfile='EXCLUSIVE'  
sga_target=283115520  
undo_management='AUTO'  
undo_tablespace='UNDOTBS1'
```

Once the new parameter file is ready we create from it the spfile:

```
SQL> shutdown immediate;  
Database closed.  
Database dismounted.  
ORACLE instance shut down.  
SQL> startup nomount pfile='/oradisk/app01/oracle/product/10gDB/dbs/pfilewhiteowl.ora';  
ORACLE instance started.  
  
Total System Global Area 285212672 bytes  
Fixed Size 1218992 bytes  
Variable Size 92276304 bytes  
Database Buffers 188743680 bytes  
Redo Buffers 2973696 bytes  
SQL> create spfile from pfile='/oradisk/app01/oracle/product/10gDB/dbs/pfilewhiteowl.ora';  
  
File created.  
  
SQL> shutdown immediate;  
ORA-01507: database not mounted  
  
ORACLE instance shut down.  
SQL> startup;  
ORACLE instance started.  
  
Total System Global Area 285212672 bytes  
Fixed Size 1218992 bytes
```

```
Variable Size          92276304 bytes
Database Buffers      188743680 bytes
Redo Buffers          2973696 bytes
Database mounted.
Database opened.
```

Standby Database Steps

Create a Control File for the Standby Database

The standby database will use a control file that is generated on the primary database

```
SQL> startup mount;
ORACLE instance started.
```

```
Total System Global Area  285212672 bytes
Fixed Size                  1218992 bytes
Variable Size               92276304 bytes
Database Buffers           188743680 bytes
Redo Buffers                2973696 bytes
Database mounted.
```

```
SQL> ALTER DATABASE CREATE STANDBY CONTROLFILE AS
'/oradisk/app01/oracle/product/10gDB/dbs/blackowl.ctl';
```

```
Database altered.
```

```
SQL> ALTER DATABASE OPEN;
```

```
Database altered.
```

Backup the Primary Database and transfer a copy to the Standby node.

Generate a script to copy datafiles

```
SQL> set pages 50000 lines 120 head off veri off flush off ti off
```

```
SQL> spool cpfiles
```

```
SQL> select 'scp -p '||file_name||' $v_dest' from dba_data_files;
```

```
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_users_310mzml9_.dbf $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_sysaux_310mzm34_.dbf $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_undotbs1_310mzmk2_.dbf $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_system_310mzm27_.dbf $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test2_3117h15v_.dbf $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test3_3117h8nv_.dbf $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test4_3117hk7d_.dbf $v_dest
```

```
7 rows selected.
```

```
SQL> select 'scp -p '||file_name||' $v_dest' from dba_temp_files;
```

```
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_temp_310n2bnj_.tmp $v_dest
```

```
SQL> select 'scp -p '||member||' $v_dest' from v$logfile;
```

```
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_3_310n22jj_.log $v_dest  
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_2_310n21sx_.log $v_dest
```

```
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_1_310n215q_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_4_3gznjc9v_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_5_3gznnrh0_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_6_3gznrwd7_.log $v_dest
```

6 rows selected.

```
SQL> spool off
```

Shutdown the database, edit the script to add the v_dest location, and execute it.

```
[vmractest1] > mv cpfiles.lst cpfiles
```

```
#!/bin/ksh
```

```
v_dest=vmractest2:/oradisk/od01/BLACKOWL/datafile/
```

```
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_users_310mzml9_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_sysaux_310mzm34_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_undotbs1_310mzm2_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_system_310mzm27_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test2_3117h15v_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test3_3117h8nv_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_test4_3117hk7d_.dbf $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/o1_mf_temp_310n2bnj_.tmp $v_dest
v_dest= vmractest2:/oradisk/od01/BLACKOWL/onlinelog/
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_3_310n22jj_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_2_310n21sx_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_1_310n215q_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_4_3gznjc9v_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_5_3gznnrh0_.log $v_dest
scp -p /vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_6_3gznrwd7_.log $v_dest
```

On the standby node create the required directories to get the datafiles

```
[root@vmractest2 root]# mkdir -p /oradisk/od01/BLACKOWL/datafile/  
[root@vmractest2 root]# mkdir -p /oradisk/od01/BLACKOWL/onlineolog/  
[root@vmractest2 root]# chown -R oracle:dba /oradisk/od01
```

On the primary node execute the script to copy the database while the main database is down (or in backup mode)

```
[vmractest1] > chmod 700 cpfiles  
[vmractest1] > ./cpfiles  
o1_mf_users_310mzml9_.dbf          100% 2801MB    7.0MB/s    06:37  
o1_mf_sysaux_310mzm34_.dbf        100%  340MB    7.4MB/s    00:45  
o1_mf_undotbs1_310mzmk2_.dbf      100%  100MB    8.0MB/s    00:12  
o1_mf_system_310mzm27_.dbf        100%  490MB    7.0MB/s    01:09  
o1_mf_test2_3117h15v_.dbf         100%  100MB    6.5MB/s    00:15  
o1_mf_test3_3117h8nv_.dbf         100%  100MB    6.0MB/s    00:16  
o1_mf_test4_3117hk7d_.dbf         100%  100MB    6.4MB/s    00:15  
o1_mf_temp_310n2bnj_.tmp          100%  433MB    5.8MB/s    01:14  
o1_mf_3_310n22jj_.log             100%   50MB    7.5MB/s    00:06  
o1_mf_2_310n21sx_.log             100%   50MB    8.4MB/s    00:05  
o1_mf_1_310n215q_.log             100%   50MB    8.8MB/s    00:05  
o1_mf_4_3gznjc9v_.log             100%   50MB    7.7MB/s    00:06  
o1_mf_5_3gznnrh0_.log            100%   50MB    8.2MB/s    00:06  
o1_mf_6_3gznrwd7_.log            100%   50MB    4.9MB/s    00:10
```

Prepare an Initialization Parameter File for the Standby Database

Copy and edit the primary init.ora to set it up for the standby role

```
*.db_name='whiteowl'  
*.db_unique_name='blackowl'  
*.audit_file_dest='/oradisk/app01/oracle/admin/blackowl/adump'  
*.background_dump_dest='/oradisk/app01/oracle/admin/blackowl/bdump'  
*.core_dump_dest='/oradisk/app01/oracle/admin/blackowl/cdump'  
*.user_dump_dest='/oradisk/app01/oracle/admin/blackowl/udump'  
*.compatible='10.2.0.1.0'  
*.control_files='/oradisk/od01/BLACKOWL/controlfile/blackowl_01.ctl','/oradisk/od01/BLACKOWL/controlfile/blackowl_02.ctl'  
*.db_block_size=8192  
*.db_create_file_dest='/oradisk/od01/BLACKOWL'  
*.db_domain=""  
*.db_file_multiblock_read_count=16  
*.db_file_name_convert='/oradisk/od01/BLACKOWL/datafile/', '/vmasmtest/od01/WHITEOWL/WHITEOWL/datafile/'  
*.log_file_name_convert='/oradisk/od01/BLACKOWL/onlinelog/', '/vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/'  
*.fal_server='whiteowl'  
*.fal_client='blackowl'  
*.job_queue_processes=10  
*.LOG_ARCHIVE_CONFIG='DG_CONFIG=(whiteowl,blackowl)'  
*.LOG_ARCHIVE_DEST_1='LOCATION=/oradisk/od01/BLACKOWL/archives/  
VALID_FOR=(ALL_LOGFILES,ALL_ROLES)  
DB_UNIQUE_NAME=blackowl'  
*.LOG_ARCHIVE_DEST_2='SERVICE=whiteowl LGWR ASYNC  
VALID_FOR=(ONLINE_LOGFILES,PRIMARY_ROLE)'
```

DB_UNIQUE_NAME=whiteowl'

```
*.LOG_ARCHIVE_DEST_STATE_1='ENABLE'  
*.LOG_ARCHIVE_DEST_STATE_2='ENABLE'  
*.LOG_ARCHIVE_FORMAT='%t_%s_%r.arc'  
*.LOG_ARCHIVE_MAX_PROCESSES=30  
*.open_cursors=300  
*.pga_aggregate_target=94371840  
*.processes=150  
*.remote_login_passwordfile='EXCLUSIVE'  
*.sga_target=283115520  
*.standby_file_management='auto'  
*.undo_management='AUTO'  
*.undo_tablespace='UNDOTBS1'
```

Create all required directories for dump directories and archived log destination

```
[vmractest2] > mkdir -p /oradisk/app01/oracle/admin/blackowl/adump  
{oracle} /oradisk/app01/oracle/product/10gDB/dbs [vmractest2] > mkdir -p /oradisk/app01/oracle/admin/blackowl/bdump  
{oracle} /oradisk/app01/oracle/product/10gDB/dbs [vmractest2] > mkdir -p /oradisk/app01/oracle/admin/blackowl/cdump  
{oracle} /oradisk/app01/oracle/product/10gDB/dbs [vmractest2] > mkdir -p /oradisk/app01/oracle/admin/blackowl/udump  
{oracle} /oradisk/app01/oracle/product/10gDB/dbs [vmractest2] > mkdir -p /oradisk/od01/BLACKOWL/archives/
```

Copy from the primary the standby controlfile to its destination

```
[vmractest1] > scp -p blackowl.ctl vmractest2:/oradisk/od01/BLACKOWL/controlfile/blackowl_02.ctl  
blackowl.ctl 100% 6992KB 7.2MB/s 00:00  
[vmractest1] > scp -p blackowl.ctl vmractest2:/oradisk/od01/BLACKOWL/controlfile/blackowl_01.ctl  
blackowl.ctl 100% 6992KB 6.9MB/s 00:00
```


Configure the listener and tnsnames to support the database on both nodes

Configure listener.ora on both servers to hold entries for both databases

```
# ON VMRACTEST1
LISTENER_VMRACTEST =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest1)(PORT = 1522)(IP = FIRST))
    )
  )

SID_LIST_LISTENER_VMRACTEST =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = whiteowl)
      (ORACLE_HOME = /oradisk/app01/oracle/product/10gDB )
      (SID_NAME = whiteowl)
    )
  )

# ON VMRACTEST2
LISTENER_VMRACTEST =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest2)(PORT = 1522)(IP = FIRST))
    )
  )

SID_LIST_LISTENER_VMRACTEST =
```

```
(SID_LIST =
  (SID_DESC =
    (GLOBAL_DBNAME = blackowl)
    (ORACLE_HOME = /oradisk/app01/oracle/product/10gDB )
    (SID_NAME = blackowl)
  )
)
```

Configure tnsnames.ora on both servers to hold entries for both databases

```
# ON VMRACTEST1
LISTENER_VMRACTEST =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest1)(PORT = 1522)(IP = FIRST))
    )
  )

WHITHEOWL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest1)(PORT = 1522))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = whiteowl)
    )
  )

BLACKOWL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest2)(PORT = 1522))
    (CONNECT_DATA =
```

```
        (SERVER = DEDICATED)
        (SERVICE_NAME = blackowl)
    )
)

# ON VMRACTEST2
LISTENER_VMRACTEST =
    (DESCRIPTION_LIST =
        (DESCRIPTION =
            (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest2)(PORT = 1522)(IP = FIRST))
        )
    )

BLACKOWL =
    (DESCRIPTION =
        (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest2)(PORT = 1522))
        (CONNECT_DATA =
            (SERVER = DEDICATED)
            (SERVICE_NAME = blackowl)
        )
    )

WHITHEOWL =
    (DESCRIPTION =
        (ADDRESS = (PROTOCOL = TCP)(HOST = vmractest1)(PORT = 1522))
        (CONNECT_DATA =
            (SERVER = DEDICATED)
            (SERVICE_NAME = whiteowl)
        )
    )
```

Start the listener and check tns ping on both nodes to both services

```
[vmrctest1.partnergsm.co.il] > tns ping whiteowl  
TNS Ping Utility for Linux: Version 10.2.0.1.0 - Production on 19-SEP-2007 15:10:00  
  
Copyright (c) 1997, 2005, Oracle. All rights reserved.
```

```
Used parameter files:  
/oradisk/app01/oracle/product/10gDB/network/admin/sqlnet.ora
```

```
Used TNSNAMES adapter to resolve the alias  
Attempting to contact (DESCRIPTION = (ADDRESS = (PROTOCOL = TCP)(HOST =  
vmrctest1)(PORT = 1522)) (CONNECT_DATA = (SERVER = DEDICATED) (SERVICE_NAME =  
whiteowl)))  
OK (10 msec)
```

```
{oracle} /oradisk/app01/oracle/product/10gDB/network/admin  
[vmrctest1.partnergsm.co.il] > tns ping blackowl  
TNS Ping Utility for Linux: Version 10.2.0.1.0 - Production on 19-SEP-2007 15:10:09  
  
Copyright (c) 1997, 2005, Oracle. All rights reserved.
```

```
Used parameter files:  
/oradisk/app01/oracle/product/10gDB/network/admin/sqlnet.ora
```

```
Used TNSNAMES adapter to resolve the alias  
Attempting to contact (DESCRIPTION = (ADDRESS = (PROTOCOL = TCP)(HOST =  
vmrctest2)(PORT = 1522)) (CONNECT_DATA = (SERVER = DEDICATED) (SERVICE_NAME =  
blackowl)))  
OK (10 msec)
```

Set Up the Environment to Support the Standby Database on the standby node.

Copy the password file from Primary to Standby, sys password must be identical

```
[vmrctest1]> scp orapwwhiteowl  
vmrctest2:/oradisk/app01/oracle/product/10gDB/dbs/orapwblackowl  
orapwwhiteowl          100% 1536      4.0MB/s   00:00
```

Setup the environment variables to point to the Standby database

```
ORACLE_HOME=/oradisk/app01/oracle/product/10gDB  
ORACLE_SID=blackowl
```

Startup nomount the Standby database and generate an spfile

```
{oracle} /oradisk/app01/oracle/product/10gDB/dbs [vmrctest2] > sqlplus / as sysdba
```

```
SQL*Plus: Release 10.2.0.1.0 - Production on Wed Sep 19 16:17:18 2007
```

```
Copyright (c) 1982, 2005, Oracle. All rights reserved.
```

```
Connected to an idle instance.
```

```
SQL> startup nomount pfile='/oradisk/app01/oracle/product/10gDB/dbs/initblackowl.ora'  
ORACLE instance started.
```

```
Total System Global Area 285212672 bytes  
Fixed Size          1218992 bytes  
Variable Size       92276304 bytes  
Database Buffers    188743680 bytes
```

```
Redo Buffers          2973696 bytes
SQL> create spfile from pfile='/oradisk/app01/oracle/product/10gDB/dbs/initblackowl.ora';
```

File created.

```
SQL> shutdown immediate;
ORA-01507: database not mounted
```

ORACLE instance shut down.

Startup mount the Standby database and perform recovery

```
SQL> startup mount
ORACLE instance started.
```

```
Total System Global Area  285212672 bytes
Fixed Size                  1218992 bytes
Variable Size               92276304 bytes
Database Buffers           188743680 bytes
Redo Buffers                 2973696 bytes
Database mounted.
```

```
SQL> ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT FROM SESSION;
```

Database altered.

The alert log of the standby will show the operations taking place

```
...
...
ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT FROM SESSION
```

Wed Sep 19 16:46:26 2007
Attempt to start background Managed Standby Recovery process (blackowl)
MRP0 started with pid=47, OS id=12498
Wed Sep 19 16:46:26 2007
MRP0: Background Managed Standby Recovery process started (blackowl)
Managed Standby Recovery not using Real Time Apply
Clearing online redo logfile 1 /oradisk/od01/BLACKOWL/onlinelog/o1_mf_1_310n215q_.log
Clearing online log 1 of thread 1 sequence number 95
Deleted Oracle managed file /oradisk/od01/BLACKOWL/onlinelog/o1_mf_1_310n215q_.log
Wed Sep 19 16:46:32 2007
Completed: ALTER DATABASE RECOVER MANAGED STANDBY DATABASE DISCONNECT FROM SESSION
Wed Sep 19 16:46:33 2007
Clearing online redo logfile 1 complete
Clearing online redo logfile 2 /oradisk/od01/BLACKOWL/onlinelog/o1_mf_2_310n21sx_.log
Clearing online log 2 of thread 1 sequence number 96
Deleted Oracle managed file /oradisk/od01/BLACKOWL/onlinelog/o1_mf_2_310n21sx_.log
Clearing online redo logfile 2 complete
Clearing online redo logfile 3 /oradisk/od01/BLACKOWL/onlinelog/o1_mf_3_310n22jj_.log
Clearing online log 3 of thread 1 sequence number 94
Deleted Oracle managed file /oradisk/od01/BLACKOWL/onlinelog/o1_mf_3_310n22jj_.log
Clearing online redo logfile 3 complete
Media Recovery Waiting for thread 1 sequence 96

Start the Primary Database

The alert log of the primary will show how it recognize the standby and start shipping archived logs

```
*****
LGWR: Setting 'active' archival for destination LOG_ARCHIVE_DEST_2
*****
Wed Sep 19 16:01:07 2007
LNS: Standby redo logfile selected for thread 1 sequence 100 for destination
LOG_ARCHIVE_DEST_2
Wed Sep 19 16:01:07 2007
Successfully onlined Undo Tablespace 1.
Wed Sep 19 16:01:07 2007
SMON: enabling tx recovery
Wed Sep 19 16:01:09 2007
Database Characterset is AL32UTF8
replication_dependency_tracking turned off (no async multimaster replication found)
Starting background process QMNC
QMNC started with pid=21, OS id=13864
Wed Sep 19 16:01:12 2007
Completed: ALTER DATABASE OPEN
Wed Sep 19 16:01:13 2007
ARCq: Standby redo logfile selected for thread 1 sequence 99 for destination
LOG_ARCHIVE_DEST_2
Wed Sep 19 16:05:05 2007
Thread 1 advanced to log sequence 101
  Current log# 1 seq# 101 mem# 0:
/vmasmtest/od01/WHITEOWL/WHITEOWL/onlinelog/o1_mf_1_310n215q_.log
Wed Sep 19 16:05:06 2007
LNS: Standby redo logfile selected for thread 1 sequence 101 for destination
LOG_ARCHIVE_DEST_2
```


Verify the Physical Standby Database Is Performing Properly

Check archived redo log on Standby

```
SQL> show parameters db_unique_name;
```

NAME	TYPE	VALUE
db_unique_name	string	blackowl

```
SQL> 1
```

```
1* SELECT NAME FROM V$DATABASE
```

```
SQL> SELECT SEQUENCE#, FIRST_TIME, NEXT_TIME FROM V$ARCHIVED_LOG ORDER BY SEQUENCE#;
```

SEQUENCE#	FIRST_TIM	NEXT_TIME
96	19-SEP-07	19-SEP-07
97	19-SEP-07	19-SEP-07
98	19-SEP-07	19-SEP-07
99	19-SEP-07	19-SEP-07
100	19-SEP-07	19-SEP-07

Switch logfiles on Primary

```
SQL> alter system switch logfile;
```

```
System altered.
```

```
SQL> archive log list
```

Database log mode	Archive Mode
Automatic archival	Enabled
Archive destination	/vmasmtest/whiteowl/archdest/
Oldest online log sequence	100

```
Next log sequence to archive 102
Current log sequence 102
```

```
SQL> alter system switch logfile;
```

```
System altered.
```

```
SQL> archive log list
```

```
Database log mode          Archive Mode
Automatic archival        Enabled
Archive destination       /vmasmtest/whiteowl/archdest/
Oldest online log sequence 101
Next log sequence to archive 103
Current log sequence      103
```

Check archived redo log on Standby

```
SQL> SELECT SEQUENCE#, FIRST_TIME, NEXT_TIME FROM V$ARCHIVED_LOG ORDER BY SEQUENCE#;
```

SEQUENCE#	FIRST_TIME	NEXT_TIME
96	19/09/07 09:35	19/09/07 09:45
97	19/09/07 09:45	19/09/07 15:20
98	19/09/07 15:20	19/09/07 15:48
99	19/09/07 15:48	19/09/07 16:00
100	19/09/07 16:00	19/09/07 16:05
101	19/09/07 16:05	19/09/07 16:08
102	19/09/07 16:08	19/09/07 16:08

```
7 rows selected.
```

Reference:

Oracle® Data Guard Concepts and Administration

10g Release 2 (10.2)

Part Number B14239-04

http://download.oracle.com/docs/cd/B19306_01/server.102/b14239/create_ps.htm#SBYDB00210