# MÔI TRƯỜNG

## Máy chủ PRIMARY:

* IP: 192.168.137.101
* File Host:

192.168.137.101 primary.localdomain primary

192.168.137.102 standby.localdomain standby

* DB: Đã cài phần mềm Oracle, đã tạo DB có SID: TEST.

## Máy chủ STANDBY:

* IP: 192.168.137.102
* File Host:

192.168.137.101 primary.localdomain primary

192.168.137.102 standby.localdomain standby

* DB: Đã cài phần mềm Oracle, chưa tạo DB.

# CÁC BƯỚC CÀI ĐẶT

## Chuẩn bị trên máy chủ PRIMARY

* Thực hiện show dung lượng của redolog (trên máy chủ PRI chế độ SQL)

**SQL>** select group#,bytes from v$log;

* Tạo “standby redolog logfile” (trên máy chủ PRI chế độ SQL)

**SQL>** alter database add standby logfile 'C:\app\Administrator\oradata\test\stb\_redo01.log' size 50M;

**SQL>** alter database add standby logfile 'C:\app\Administrator\oradata\test\stb\_redo02.log' size 50M;

**SQL>** alter database add standby logfile 'C:\app\Administrator\oradata\test\stb\_redo03.log' size 50M;

**SQL>** alter database add standby logfile 'C:\app\Administrator\oradata\test\stb\_redo04.log' size 50M;

#50M lấy từ thông số trong câu lệnh “select group#,bytes from v$log;” ở trên.

* Tạo thư mục C:\testdb\archive (trên máy chủ PRI chế độ HĐH)

mkdir C:\testdb\archive

* Tạo file pfile từ file spfile (trên máy chủ PRI chế độ SQL)

**SQL>** create pfile='C:\testdb\init.ora' from spfile;

* Sửa pfile vừa tạo (trên máy chủ PRI chế độ HĐH)

#Thêm vào cuối file init.ora nội dung sau:

\*.db\_unique\_name='PRIMARY'

\*.fal\_client='TO\_PRIMARY'

\*.fal\_server='TO\_STANDBY'

\*.log\_archive\_config='DG\_CONFIG=(PRIMARY,STANDBY)'

\*.LOG\_ARCHIVE\_DEST\_1='LOCATION=C:\testdb\archive VALID\_FOR=(ALL\_LOGFILES,ALL\_ROLES) DB\_UNIQUE\_NAME=PRIMARY'

\*.LOG\_ARCHIVE\_DEST\_2='SERVICE=TO\_STANDBY LGWR ASYNC VALID\_FOR=(ONLINE\_LOGFILES,PRIMARY\_ROLE) DB\_UNIQUE\_NAME=STANDBY'

\*.log\_archive\_dest\_state\_1='ENABLE'

\*.log\_archive\_dest\_state\_2='ENABLE'

\*.LOG\_ARCHIVE\_MAX\_PROCESSES=30

\*.STANDBY\_FILE\_MANAGEMENT='AUTO'

\*.service\_names='PRIMARY'

* Shutdown DB để chuẩn bị tạo spfile từ pfile mới sửa (trên máy chủ PRI chế độ SQL)

**SQL>** shutdown immediate;

* Tạo spfile từ pfile mới sửa (trên máy chủ PRI chế độ SQL)

**SQL>** create spfile from pfile='C:\testdb\init.ora';

* Bật DB (PRI)

**SQL>** startup mount;

* Sửa file listener.ora trong đường dẫn: $ORACLE\_HOME/network/admin (trên máy chủ PRI chế độ HĐH)

$ORACLE\_HOME\network\admin*\listener.ora*

SID\_LIST\_LISTENER =

(SID\_LIST =

(SID\_DESC =

(SID\_NAME = PLSExtProc)

(ORACLE\_HOME = C:\app\Administrator\product\11.2.0\dbhome\_1)

(PROGRAM = extproc)

)

(SID\_DESC =

(SID\_NAME = TEST)

(ORACLE\_HOME = C:\app\Administrator\product\11.2.0\dbhome\_1)

)

)

LISTENER =

(DESCRIPTION\_LIST =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = primary.localdomain)(PORT = 1521))

)

)

ADR\_BASE\_LISTENER = C:\app\Administrator

* Sửa file tnsnames.ora trong đường dẫn: $ORACLE\_HOME/network/admin (trên máy chủ PRI chế độ HĐH)

$O*RACLE\_HOME\network\admin/tnsnames.ora*

ORACLR\_CONNECTION\_DATA =

(DESCRIPTION =

(ADDRESS\_LIST =

(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))

)

(CONNECT\_DATA =

(SID = CLRExtProc)

(PRESENTATION = RO)

)

)

TEST =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = primary.localdomain)(PORT = 1521))

(CONNECT\_DATA =

(SERVER = SHARED)

(SERVICE\_NAME = TEST)

)

)

TO\_STANDBY =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.137.102)(PORT = 1521))

(CONNECT\_DATA =

(SERVICE\_NAME = TEST)

)

)

TO\_PRIMARY =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.137.101)(PORT = 1521))

(CONNECT\_DATA =

(SERVICE\_NAME = TEST)

)

)

* Restart listener (trên máy chủ PRI chế độ HĐH)

**C:\Users\Administrator>***lsnrctl stop*

**C:\Users\Administrator>***lsnrctl start*

* Tắt firewall trên node PRI
* Tắt firewall trên node STB
* Copy listener và tnsnames từ primary sang standby (trên máy chủ PRI chế độ HĐH)

## Sửa đổi file trên máy chủ STANDBY

* Sửa file listenner trên node STANDBY (trên máy chủ STB chế độ HĐH)

#Sửa:

LISTENER =

(DESCRIPTION\_LIST =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = primary.localdomain)(PORT = 1521))

)

)

#Thành:

LISTENER =

(DESCRIPTION\_LIST =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = standby.localdomain)(PORT = 1521))

)

)

* Thay đổi tnsnames trên node STANDBY (trên máy chủ STB chế độ HĐH)

#Sửa:

TEST =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = primary.localdomain)(PORT = 1521))

(CONNECT\_DATA =

(SERVER = SHARED)

(SERVICE\_NAME = TEST)

)

)

#Thành:

TEST =

(DESCRIPTION =

(ADDRESS = (PROTOCOL = TCP)(HOST = standby.localdomain)(PORT = 1521))

(CONNECT\_DATA =

(SERVER = SHARED)

(SERVICE\_NAME = TEST)

)

)

* Restart listener (trên máy chủ STB chế độ HĐH)

**C:\Users\Administrator>***lsnrctl stop*

**C:\Users\Administrator>***lsnrctl start*

* Tạo control file (PRI)

**SQL>** ALTER DATABASE CREATE STANDBY CONTROLFILE AS 'C:\app\Administrator\oradata\test\controlstb01.ctl';

* Xác định thư mục chứa controlfile của PRIMARY (PRI)

**SQL>** show parameter control

* Tạo thư mục giống với thư mục chứa controlfile của PRIMARY để copy controlfilestb từ primary sang standby (STB)

mkdir *C:\app\Administrator\oradata\test*

* Copy controlfilestb từ primary sang standby (PRI)

#Copy vào thư mục “C:\app\Administrator\oradata\test”

* Tạo thêm controlfilestb02 từ controlfilestb01 (STB)

#Trong cùng thư mục “C:\app\Administrator\oradata\test”

* Copy file pwd từ PRIMARY sang STANDBY (PRI)

#Trong thư mục C:\app\Administrator\product\11.2.0\dbhome\_1\database

* Tạo các thư mục: (STB)

*mkdir C:\app\Administrator\flash\_recovery\_area*

*mkdir C:\testdb\archive*

*mkdir C:\app\Administrator\admin\test\adump*

* Copy file init.ora từ PRIMARY sang STANBY (PRI)

#Trong thư mục “C:\testdb”

* Sửa file init.ora vừa copy sang STANDBY (STB)

#Từ

\*.db\_unique\_name='PRIMARY'

\*.fal\_client='TO\_PRIMARY'

\*.fal\_server='TO\_STANDBY'

\*.log\_archive\_config='DG\_CONFIG=(PRIMARY,STANDBY)'

\*.LOG\_ARCHIVE\_DEST\_1='LOCATION= C:\testdb\archive VALID\_FOR=(ALL\_LOGFILES,ALL\_ROLES) DB\_UNIQUE\_NAME= primary'

\*.LOG\_ARCHIVE\_DEST\_2='SERVICE=to\_standby LGWR ASYNC VALID\_FOR=(ONLINE\_LOGFILES,PRIMARY\_ROLE) DB\_UNIQUE\_NAME= STANDBY'

\*.log\_archive\_dest\_state\_1='ENABLE'

\*.log\_archive\_dest\_state\_2='ENABLE'

\*.LOG\_ARCHIVE\_MAX\_PROCESSES=30

\*.STANDBY\_FILE\_MANAGEMENT='AUTO'

\*.service\_names='PRIMARY'

#Thành

\*.db\_unique\_name='STANDBY'

\*.fal\_client='TO\_STANDBY'

\*.fal\_server='TO\_PRIMARY'

\*.log\_archive\_config='DG\_CONFIG=(PRIMARY,STANDBY)'

\*.LOG\_ARCHIVE\_DEST\_1='LOCATION=C:\testdb\archive VALID\_FOR=(ALL\_LOGFILES,ALL\_ROLES) DB\_UNIQUE\_NAME=STANDBY'

\*.LOG\_ARCHIVE\_DEST\_2='SERVICE=to\_primary LGWR ASYNC VALID\_FOR=(ONLINE\_LOGFILES,PRIMARY\_ROLE) DB\_UNIQUE\_NAME=primary'

\*.log\_archive\_dest\_state\_1='ENABLE'

\*.log\_archive\_dest\_state\_2='ENABLE'

\*.LOG\_ARCHIVE\_MAX\_PROCESSES=30

\*.STANDBY\_FILE\_MANAGEMENT='AUTO'

\*.service\_names='STANDBY'

#Từ

\*.control\_files=' C:\app\Administrator\oradata\test\control01.ctl,'\DB11G\control02.ctl'

#Thành

\*.control\_files='C:\app\Administrator\oradata\test\controlstb01.ctl ',' C:\app\Administrator\oradata\test\controlstb02.ctl'

* Tạo service TEST trên con STANDBY, sau đó gán cho oracle\_sid rồi bật lên: (STB)

C:> ORADIM -NEW -SID TEST

C:> set ORACLE\_SID = TEST

**C:> net start oracleservice**TEST

#Nếu không set dược ORACLE\_SID thì cần tạo thủ công trong HKEY\_LOCAL\_MACHINE\SOFTWARE\ORACLE\KEY\_Oracle

* Tạo spfile từ file initstb.ora copy sang (STB)

**SQL>** create spfile from pfile='C:\testdb\init.ora';

**SQL>** startup nomount

* check log:

**C:\app\Administrator\diag\rdbms\standby\test\trace\**alert\_TEST.log

* Kiểm tra thư mục chứa online\_log\_dest\_1: (STB)

**SQL>** show parameter create

* Tạo thư mục cho biến db\_create\_file\_dest (STB)

**SQL>** alter system set db\_create\_file\_dest='C:\app\Administrator\oradata\test';

* Vào chế độ RMAN de Copy datafile từ PRIMARY sang STANDBY (PRI)

**[oracle@primary ~]$** rman target sys@TO\_PRIMARY auxiliary sys@TO\_STANDBY

* Copy datafile từ PRIMARY sang STANDBY (PRI)

**RMAN>** run {

Duplicate target database for standby FROM ACTIVE DATABASE NOFILENAMECHECK dorecover;

}

* Cấu hình recover standby database, lấy log từ PRIMARY sang STANDBY (STB)

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

Hoac

**SQL>** alter database recover managed standby database using current logfile disconnect from session; (dung cho active dataguard)

* Thử xem đã nhận cấu hình chưa (PRI)

**SQL>** alter database open;

**SQL>** alter system switch logfile;

**SQL>** archive log list;

* Trên node STANDBY kiem tra log list có giống với trên PRIMARY không (STB)
* Tạm dừng lấy log từ Primary sang (STB)

**SQL>** recover managed standby database cancel;

* Open the database in read-only mode (STB)

**SQL>** alter database open read only;

* Restart the Redo apply (STB)

**SQL>** recover managed standby database disconnect using current logfile;

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* Tạo Tablespace (PRI)

**SQL>** CREATE TABLESPACE test\_T DATAFILE 'C:\app\Administrator\oracle\oradata\DB11G\test\_datafile.dbf' SIZE 100M;

* Tạo user (PRI)

**SQL>** CREATE USER test\_user IDENTIFIED by Viettel#2016 DEFAULT TABLESPACE test\_T TEMPORARY TABLESPACE TEMP;

* Phân quyền cho user (PRI)

**SQL>** grant connect, resource, imp\_full\_database, create session to test\_user;

# CÁC LỆNH KIỂM TRA TRẠNG THÁI CỦA DATAGUARD

* Trên Primary thực hiện:

SQL>select max(sequence#) from v$archived\_log;

SQL>alter system switch logfile;

SQL>archive log list;

SQL>select max(sequence#) from v$archived\_log;

* Trên Standby thực hiện:

SQL> select DATABASE\_ROLE,OPEN\_MODE from v$database;

SQL>archive log list;

SQL>select max(sequence#) from v$archived\_log;

SQL>select max(sequence#), applied from v$archived\_log group by applied;

* Kiểm tra trạng thái của các node:

SQL> select database\_role from v$database;

* Kiểm tra chế độ protection\_mode:

SQL> SELECT PROTECTION\_MODE FROM V$DATABASE;

* Kiểm tra trạng thái xem đã sãn sàng switchover hay chưa:

SQL> SELECT SWITCHOVER\_STATUS FROM V$DATABASE;

* Kiểm tra xem chế độ đọc ghi của các node

SQL> SELECT open\_mode FROM V$DATABASE;

# CÁC BƯỚC SWITCHOVER

The steps below outline what commands must be issued to perform a switchover operation. In this examble, boston is initially the primary database and la is initially the standby database. la will become the primary database and boston will become the standby database.

**Step 1: End Read or Update Activity on the Primary and Standby Databases.**

Exclusive database access is required by the DBA before beginning a switchover operation. Ask users to log off the primary and standby databases or query the V$SESSION view to identify users that are connected to the database and close all open sessions except the SQL\*Plus session from which you are going to issue the switchover command.

**Step 2: Prepare the Primary Database for Switchover**

On the primary database, boston, execute the following statement:

SQL> ALTER DATABASE COMMIT TO SWITCHOVER TO STANDBY;

This statement does the following:

Closes the primary database

Archives any unarchived log files and applies them to the standby database, la

Adds an end-of-redo marker to the header of the last log file being archived

Creates a backup of the current control file

Converst the current control file into a standby control file

**Step 3: Shut Down and Start Up the Former Primary Instance Without Mounting the Database**

Execute the following statement on boston:

SQL> SHUTDOWN NORMAL;

SQL> STARTUP NOMOUNT;

**Step 4: Mount the Former Primary Database in the Standby Database Role**

Execute the followint statement on boston:

SQL> ALTER DATABASE MOUNT STANDBY DATABASE;

**Step 5: Prepare the Former Standby Database to Switch to the Primary Database Role**

Execute the following statement on la:

SQL> ALTER DATABASE COMMIT TO SWITCHOVER TO PRIMARY;

This statement does the following:

Makes sure the last log file has been received and applied through the end-of-redo marker

Closes the database if it has been opened for read-only transactions

Converts the standby control file to the current control file

**Step 6: Shut Down the Database**

Execute the following statement on la:

SQL> SHUTDOWN;

**Step 7: Start Up the Database in the Primary Role**

Execute the following statement on la:

SQL> STARTUP;

**Step 8: Put the Standby Database in Managed Recovery Mode**

Execute the following statement on the standby database, boston, to place it in managed recovery mode:

SQL> ALTER DATABASE RECOVER MANAGED STANDBY DATABASE USING CURRENT LOGFILE DISCONNECT FROM SESSION;

**Step 9: Start Archiving Logs from the Primary Database to the Standby Database**

Execute the following statement on the primary database, la:

SQL> ALTER SYSTEM ARCHIVE LOG START;

SQL> ALTER SYSTEM SWITCH LOGFILE;

# [HOW TO QUERY DATAGUARD STATUS](http://emrebaransel.blogspot.com/2008/08/how-to-query-dataguard-status.html)

Issue the following query to show information about the protection mode, the protection level, the role of the database, and switchover status:

SELECT DATABASE\_ROLE, DB\_UNIQUE\_NAME INSTANCE, OPEN\_MODE, PROTECTION\_MODE, PROTECTION\_LEVEL, SWITCHOVER\_STATUS FROM V$DATABASE;

On the standby database, query the V$ARCHIVED\_LOG view to identify existing files in the archived redo log.

SELECT SEQUENCE#, FIRST\_TIME, NEXT\_TIME FROM V$ARCHIVED\_LOG ORDER BY SEQUENCE#;

Or

SELECT THREAD#, MAX(SEQUENCE#) AS "LAST\_APPLIED\_LOG" FROM V$LOG\_HISTORY GROUP BY THREAD#;

On the standby database, query the V$ARCHIVED\_LOG view to verify the archived redo log files were applied.

SELECT SEQUENCE#,APPLIED FROM V$ARCHIVED\_LOG ORDER BY SEQUENCE#;

Query the physical standby database to monitor Redo Apply and redo transport services activity at the standby site.

SELECT PROCESS, STATUS, THREAD#, SEQUENCE#, BLOCK#, BLOCKS FROM V$MANAGED\_STANDBY;

To determine if real-time apply is enabled, query the RECOVERY\_MODE column of the V$ARCHIVE\_DEST\_STATUS view.

SELECT RECOVERY\_MODE FROM V$ARCHIVE\_DEST\_STATUS;

The V$DATAGUARD\_STATUS fixed view displays events that would typically be triggered by any message to the alert log or server process trace files.

SELECT MESSAGE FROM V$DATAGUARD\_STATUS;

Determining Which Log Files Were Not Received by the Standby Site.

SELECT LOCAL.THREAD#, LOCAL.SEQUENCE# FROM (SELECT THREAD#, SEQUENCE# FROM V$ARCHIVED\_LOG WHERE DEST\_ID=1) LOCAL WHERE LOCAL.SEQUENCE# NOT IN (SELECT SEQUENCE# FROM V$ARCHIVED\_LOG WHERE DEST\_ID=2 AND THREAD# = LOCAL.THREAD#);

If a delayed apply has been specified or an archive log is missing then switchover may take longer than expected.  
Check v$managed\_standby

SELECT PROCESS, STATUS, SEQUENCE# FROM V$MANAGED\_STANDBY;

OR alternatively:

SELECT NAME, APPLIED FROM V$ARCHIVED\_LOG;