Duplicación de base de datos con archivos de backup con RMAN.

Preparado para
Sanatorio Migone
Por Excelsis.
Noviembre, 2012

Escenario:

Servidor actual: example.oracle.com
Nombre de la bd: anam

Servidor nuevo: backup.oracle.com
Nombre de la bd (una vez finalizada la duplicación): anam

Importante: Se asume que ambos servidores tienen instalado el software de Oracle con la misma estructura de directorios.

Se verifica que la base de datos esté configurada para trabajar en modo archivelog:

En el Servidor actual:

```
[oracle@example ~]$ sqlplus / as sysdba

SQL*Plus: Release 10.1.0.5.0 - Production on Tue Nov 13 15:42:11 2012

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


Connected to:
Oracle Database 10g Enterprise Edition Release 10.1.0.5.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> archive log list
Database log mode        Archive Mode
Automatic archival           Enabled
Archive destination          /backup/archives
Oldest online log sequence     5
Next log sequence to archive   7
Current log sequence           7
```

Para éste caso y como la nueva base de datos va ser la que quede en producción, deberiamos de bajar el listener de la base de datos actual para evitar cualquier nueva conexión. Si éste es un caso para pruebas NO BAJE EL LISTENER!

Se toma un backup full de la base de datos de producción con RMAN.

```
[oracle@example rman]$ rman target /

Recovery Manager: Release 10.1.0.5.0 - Production

Copyright (c) 1995, 2004, Oracle.  All rights reserved.

connected to target database: ANAM (DBID=1118659459)

RMAN> run {
2> allocate channel c1 device type disk format '/backup/rman/%U';
3> backup database;
4> backup current controlfile;
5> SQL 'alter system checkpoint';
6> SQL 'alter system switch logfile';
8> backup archivelog all;
7> }

using target database controlfile instead of recovery catalog
allocated channel: c1
channel c1: sid=312 devtype=DISK

Starting backup at 13-NOV-12
channel c1: starting full datafile backupset
channel c1: specifying datafile(s) in backupset
```

```
input datafile fno=00001 name=/oradata/anam/system01.dbf
input datafile fno=00003 name=/oradata/anam/sysaux01.dbf
input datafile fno=00005 name=/oradata/anam/example01.dbf
input datafile fno=00002 name=/oradata/anam/undotbs01.dbf
input datafile fno=00004 name=/oradata/anam/users01.dbf
channel c1: starting piece 1 at 13-NOV-12
channel c1: finished piece 1 at 13-NOV-12
piece handle=/backup/rman01nq7c98_1_1 comment=NONE
channel c1: backup set complete, elapsed time: 00:00:07
channel c1: starting full datafile backupset
channel c1: specifying datafile(s) in backupset
including current controlfile in backupset
including current SPFILE in backupset
channel c1: starting piece 1 at 13-NOV-12
channel c1: finished piece 1 at 13-NOV-12
piece handle=/backup/rman02nq7c9f_1_1 comment=NONE
channel c1: backup set complete, elapsed time: 00:00:02
Finished backup at 13-NOV-12

Starting backup at 13-NOV-12
channel c1: starting full datafile backupset
channel c1: specifying datafile(s) in backupset
including current controlfile in backupset
channel c1: starting piece 1 at 13-NOV-12
channel c1: finished piece 1 at 13-NOV-12
piece handle=/backup/rman03nq7c9h_1_1 comment=NONE
channel c1: backup set complete, elapsed time: 00:00:01
Finished backup at 13-NOV-12
released channel: c1
```

Copiar los archivos de backup al nuevo servidor en una ubicación igual a donde se encontraban en el de producción (Previamente tuvimos que crear dicho directorio y asignarle los permisos correctos).

Importante: No mover ni borrar los archivos de backup del servidor de producción actual hasta que se finalice la operación de duplicación

```
[oracle@example ~]$ cd /backup/rman/
[oracle@example rman]$ ll
total 531640
-rw-r-----  1 oracle oinstall 537993216 Nov 13 15:47 rman01nq7c98_1_1
-rw-r-----  1 oracle oinstall   2949120 Nov 13 15:48 rman02nq7c9f_1_1
-rw-r-----  1 oracle oinstall   2916352 Nov 13 15:48 rman03nq7c9h_1_1
[oracle@example rman]$ scp * oracle@backup.oracle.com:/backup/rman
oracle@backup.oracle.com's password:
rman01nq7c98_1_1                              100%  513MB  32.1MB/s   00:16
rman02nq7c9f_1_1                              100% 2880KB   2.8MB/s   00:00
rman03nq7c9h_1_1                              100% 2848KB   2.8MB/s   00:00
[oracle@example rman]$
```

Copiar el spfile y el password file al nuevo servidor a la ubicación: $ORACLE_HOME/dbs

```
[oracle@example ~]$ cd $ORACLE_HOME/dbs
[oracle@example dbs]$ scp spfileanam.ora orapwanam oracle@backup.oracle.com:
$ORACLE_HOME/dbs
oracle@backup.oracle.com's password:
spfileanam.ora                                100% 2560     2.5KB/s   00:00
orapwanam                                     100% 1536     1.5KB/s   00:00
[oracle@example dbs]$
```

En el Nuevo Servidor:

Crear la misma estructura de directorios que muestra el spfile.

```
[oracle@backup ~]$ cd $ORACLE_HOME/dbs
[oracle@backup dbs]$ cat spfileanam.ora
anam.__java_pool_size=4194304
anam.__large_pool_size=4194304
anam.__shared_pool_size=79691776
*.background_dump_dest='/oracle/app/oracle/admin/anam/bdump'
*.compatible='10.1.0.5.0'
*.control_files='/oradata/anam/control01.ctl','/oradata/anam/control02.ctl','/oradata/anam/
control03.ctl'
*.core_dump_dest='/oracle/app/oracle/admin/anam/cdump'
*.db_block_size=8192
*.db_domain=''
*.db_file_multiblock_read_count=16
*.db_name='anam'
*.dispatchers='(PROTOCOL=TCP) (SERVICE=anamXDB)'
*.job_queue_processes=10
*.log_archive_dest_1='LOCATION=/backup/archives'
*.open_cursors=300
*.pga_aggregate_target=94371840
*.processes=300
*.remote_login_passwordfile='EXCLUSIVE'
*.sessions=335
*.sga_target=285212672
*.undo_management='AUTO'
*.undo_tablespace='UNDOTBS1'
*.user_dump_dest='/oracle/app/oracle/admin/anam/udump'

[oracle@backup dbs]$ mkdir -p /oracle/app/oracle/admin/anam/bdump
[oracle@backup dbs]$ mkdir -p /oradata/anam/
[oracle@backup dbs]$ mkdir -p /oracle/app/oracle/admin/anam/cdump
[oracle@backup dbs]$ mkdir -p /backup/archives
[oracle@backup dbs]$ mkdir -p /oracle/app/oracle/admin/anam/udump
[oracle@backup dbs]$
```

En el Servidor actual:
Copiar los archivos de configuración del listener y tnsnames hacia el nuevo servidor.

```
[oracle@example admin]$ scp listener.ora tnsnames.ora
oracle@backup.oracle.com:/oracle/app/oracle/product/10.1/db_1/network/admin/
oracle@backup.oracle.com's password:
listener.ora                                  100%  543     0.5KB/s   00:00
tnsnames.ora                                  100%  911     0.9KB/s   00:00
```

En el Nuevo Servidor:

Editar los archivos de configuracion ajustando el nombre de host correspondiente:

```
[oracle@backup admin]$ vi listener.ora

LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = backup.oracle.com)(PORT = 1521))
    )
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
    )
  )
```

Tambien agregar un listener estático:

```
SID_LIST_LISTENER=
```

```
   (SID_LIST=
    (SID_DESC=
          (GLOBAL_DBNAME=anam)
          (SID_NAME=anam)
          (ORACLE_HOME=/oracle/app/oracle/product/10.1/db_1)
         )
       )
      )
```

```
[oracle@backup admin]$ vi tnsnames.ora

ANAM =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = backup.oracle.com)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = anam)
    )
  )
```

Agregar un nuevo alias para el servidor actual:

```
ANAM-ORIG =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = example.oracle.com)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = anam)
    )
  )
```

En el Servidor actual:

Editar el archivo tnsnames.ora:
Agregar un nuevo alias en el servidor actual para el nuevo (Fijarse en la opcion UR=A, para conectarse a una instancia que no está montada):

```
ANAM-NEW =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = backup.oracle.com)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = anam)
      (UR=A)
    )
  )
```

En el nuevo Servidor:

Iniciar el listener:

```
[oracle@backup ~]$ lsnrctl start

LSNRCTL for Linux: Version 10.1.0.5.0 - Production on 13-NOV-2012 17:05:11

Copyright (c) 1991, 2004, Oracle.  All rights reserved.

Starting /oracle/app/oracle/product/10.1/db_1/bin/tnslsnr: please wait...

TNSLSNR for Linux: Version 10.1.0.5.0 - Production
```

```
System parameter file is /oracle/app/oracle/product/10.1/db_1/network/admin/listener.ora
Log messages written to /oracle/app/oracle/product/10.1/db_1/network/log/listener.log
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=backup.oracle.com)(PORT=1521)))
Listening on: (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=backup.oracle.com)(PORT=1521)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 10.1.0.5.0 - Production
Start Date                13-NOV-2012 17:05:11
Uptime                    0 days 0 hr. 0 min. 0 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /oracle/app/oracle/product/10.1/db_1/network/admin/listener.ora
Listener Log File         /oracle/app/oracle/product/10.1/db_1/network/log/listener.log
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=backup.oracle.com)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
Services Summary...
Service "PLSExtProc" has 1 instance(s).
  Instance "PLSExtProc", status UNKNOWN, has 1 handler(s) for this service...
The command completed successfully
```

Iniciar la instancia en modo nomount:

```
[oracle@backup ~]$ sqlplus / as sysdba

SQL*Plus: Release 10.1.0.5.0 - Production on Tue Nov 13 17:06:10 2012

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

Connected to an idle instance.

SQL> startup nomount
ORACLE instance started.

Total System Global Area  285212672 bytes
Fixed Size                779020 bytes
Variable Size              91233524 bytes
Database Buffers    192937984 bytes
Redo Buffers                 262144 bytes
SQL>
```

En el Servidor actual:

```
[oracle@example ~]$ rman target / auxiliary sys/oracle@anam-new

Recovery Manager: Release 10.1.0.5.0 - Production

Copyright (c) 1995, 2004, Oracle.  All rights reserved.

connected to target database: ANAM (DBID=1118659459)
connected to auxiliary database: anam (not mounted)

RMAN> run {
2> duplicate target database to 'anam' nofilenamecheck;
3> }

Starting Duplicate Db at 13-NOV-12
using target database controlfile instead of recovery catalog
allocated channel: ORA_AUX_DISK_1
channel ORA_AUX_DISK_1: sid=325 devtype=DISK

contents of Memory Script:
{
```

```
   set until scn  594362;
   set newname for datafile  1 to
 "/oradata/anam/system01.dbf";
   set newname for datafile  2 to
 "/oradata/anam/undotbs01.dbf";
   set newname for datafile  3 to
 "/oradata/anam/sysaux01.dbf";
   set newname for datafile  4 to
 "/oradata/anam/users01.dbf";
   set newname for datafile  5 to
 "/oradata/anam/example01.dbf";
   restore
   check readonly
   clone database
   ;
}
executing Memory Script

executing command: SET until clause

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

executing command: SET NEWNAME

Starting restore at 13-NOV-12
using channel ORA_AUX_DISK_1

channel ORA_AUX_DISK_1: starting datafile backupset restore
channel ORA_AUX_DISK_1: specifying datafile(s) to restore from backup set
restoring datafile 00001 to /oradata/anam/system01.dbf
restoring datafile 00002 to /oradata/anam/undotbs01.dbf
restoring datafile 00003 to /oradata/anam/sysaux01.dbf
restoring datafile 00004 to /oradata/anam/users01.dbf
restoring datafile 00005 to /oradata/anam/example01.dbf
channel ORA_AUX_DISK_1: restored backup piece 1
piece handle=/backup/rman/rman01nq7c98_1_1 tag=TAG20121113T154752
channel ORA_AUX_DISK_1: restore complete
Finished restore at 13-NOV-12
sql statement: CREATE CONTROLFILE REUSE SET DATABASE "anam" RESETLOGS ARCHIVELOG
  MAXLOGFILES     16
  MAXLOGMEMBERS      3
  MAXDATAFILES      100
  MAXINSTANCES     8
  MAXLOGHISTORY      454
 LOGFILE
  GROUP  1 ( '/oradata/anam/redo01.log' ) SIZE 10 M  REUSE,
  GROUP  2 ( '/oradata/anam/redo02.log' ) SIZE 10 M  REUSE,
  GROUP  3 ( '/oradata/anam/redo03.log' ) SIZE 10 M  REUSE
 DATAFILE
  '/oradata/anam/system01.dbf'
 CHARACTER SET WE8ISO8859P1


contents of Memory Script:
{
   switch clone datafile all;
}
executing Memory Script

datafile 2 switched to datafile copy
input datafilecopy recid=1 stamp=799264844 filename=/oradata/anam/undotbs01.dbf
datafile 3 switched to datafile copy
```

```
input datafilecopy recid=2 stamp=799264844 filename=/oradata/anam/sysaux01.dbf
datafile 4 switched to datafile copy
input datafilecopy recid=3 stamp=799264844 filename=/oradata/anam/users01.dbf
datafile 5 switched to datafile copy
input datafilecopy recid=4 stamp=799264844 filename=/oradata/anam/example01.dbf

contents of Memory Script:
{
   set until scn  594362;
   recover
   clone database
    delete archivelog
   ;
}
executing Memory Script

executing command: SET until clause

Starting recover at 13-NOV-12
using channel ORA_AUX_DISK_1

starting media recovery

archive log thread 1 sequence 7 is already on disk as file
/backup/archives/1_7_799255619.dbf
archive log filename=/backup/archives/1_7_799255619.dbf thread=1 sequence=7
channel ORA_AUX_DISK_1: starting archive log restore to default destination
channel ORA_AUX_DISK_1: restoring archive log
archive log thread=1 sequence=8
channel ORA_AUX_DISK_1: restoring archive log
archive log thread=1 sequence=9
channel ORA_AUX_DISK_1: restored backup piece 1
piece handle=/backup/rman/ARC04nq7ilm_1_1 tag=TAG20121113T173654
channel ORA_AUX_DISK_1: restore complete
archive log filename=/backup/archives/1_8_799255619.dbf thread=1 sequence=8
channel clone_default: deleting archive log(s)
archive log filename=/backup/archives/1_8_799255619.dbf recid=1 stamp=799264844
archive log filename=/backup/archives/1_9_799255619.dbf thread=1 sequence=9
channel clone_default: deleting archive log(s)
archive log filename=/backup/archives/1_9_799255619.dbf recid=2 stamp=799264844
media recovery complete
Finished recover at 13-NOV-12

contents of Memory Script:
{
   shutdown clone;
   startup clone nomount ;
}
executing Memory Script

database dismounted
Oracle instance shut down

connected to auxiliary database (not started)
Oracle instance started

Total System Global Area     285212672 bytes

Fixed Size                     779020 bytes
Variable Size                91233524 bytes
Database Buffers            192937984 bytes
Redo Buffers                   262144 bytes
sql statement: CREATE CONTROLFILE REUSE SET DATABASE "anam" RESETLOGS ARCHIVELOG
  MAXLOGFILES     16
  MAXLOGMEMBERS      3
  MAXDATAFILES      100
  MAXINSTANCES     8
  MAXLOGHISTORY      454
```

```
 LOGFILE
  GROUP  1 ( '/oradata/anam/redo01.log' ) SIZE 10 M  REUSE,
  GROUP  2 ( '/oradata/anam/redo02.log' ) SIZE 10 M  REUSE,
  GROUP  3 ( '/oradata/anam/redo03.log' ) SIZE 10 M  REUSE
 DATAFILE
  '/oradata/anam/system01.dbf'
 CHARACTER SET WE8ISO8859P1


contents of Memory Script:
{
   catalog clone datafilecopy  "/oradata/anam/undotbs01.dbf";
   catalog clone datafilecopy  "/oradata/anam/sysaux01.dbf";
   catalog clone datafilecopy  "/oradata/anam/users01.dbf";
   catalog clone datafilecopy  "/oradata/anam/example01.dbf";
   switch clone datafile all;
}
executing Memory Script

cataloged datafile copy
datafile copy filename=/oradata/anam/undotbs01.dbf recid=1 stamp=799264851

cataloged datafile copy
datafile copy filename=/oradata/anam/sysaux01.dbf recid=2 stamp=799264851

cataloged datafile copy
datafile copy filename=/oradata/anam/users01.dbf recid=3 stamp=799264851

cataloged datafile copy
datafile copy filename=/oradata/anam/example01.dbf recid=4 stamp=799264851

datafile 2 switched to datafile copy
input datafilecopy recid=1 stamp=799264851 filename=/oradata/anam/undotbs01.dbf
datafile 3 switched to datafile copy
input datafilecopy recid=2 stamp=799264851 filename=/oradata/anam/sysaux01.dbf
datafile 4 switched to datafile copy
input datafilecopy recid=3 stamp=799264851 filename=/oradata/anam/users01.dbf
datafile 5 switched to datafile copy
input datafilecopy recid=4 stamp=799264851 filename=/oradata/anam/example01.dbf

contents of Memory Script:
{
   Alter clone database open resetlogs;
}
executing Memory Script

database opened
Finished Duplicate Db at 13-NOV-12
```

Si todo finaliza correctamente, la duplicación de la base de datos está completa.