Practices for Lesson 11: Overview

Practices Overview

In this practice, you will configure `ARCHIVELOG` mode for your RAC database, configureinstance-specific connect strings for RMAN, and configure persistent RMAN settings.

Practice 11-1: Configuring ARCHIVELOG Mode

Overview

In this practice, you adjust initialization parameters in the SPFILE, and stop and start the ASM instances on local and remote nodes.

1. Open a terminal session to `ol7-122-rac1` as the `oracle` user and set up the environment variables using the `oraenv` script for the database instance. Determine the instance running on `ol7-122-rac1` (the local machine). Change the value of the `ORACLE_SID` variable toallow local system authenticated connections.

```
[vncuser@classroom_pc ~] ssh oracle@ol7-122-rac1
Password:
[oracle@ol7-122-rac1 ~]$ . oraenv
ORACLE_SID = [oracle] ? cdbrac
The Oracle base has been set to /u01/app/oracle

[oracle@ol7-122-rac1 ~]$ srvctl status database -db cdbrac
Instance cdbrac1 is running on node ol7-
122-rac2 Instance cdbrac2 is running on
node host03Instance cdbrac3 is running on
node ol7-122-rac1

[oracle@ol7-122-rac1 ~]$ export ORACLE_SID=cdbrac3
[oracle@ol7-122-rac1 ~]$
```

2. Make a local connection using operating system authentication to the database instance, and then use the `archive log list` SQL command to determine whether the database is in `ARCHIVELOG` mode. Exit SQL*Plus when done.

```
[oracle@ol7-122-rac1 ~]$ sqlplus / as sysdba


SQL*Plus: Release 12.1.0.2.0 Production on Mon Jan 13 17:24:39
2014


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SQL> archive log list
Database log mode              No Archive Mode
```

```
Automatic archival              Disabled
Archive destination             USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence      80
Current log sequence            81
SQL> exit
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[oracle@ol7-122-rac1 ~]$
```

3. Stop the `cdbrac` database on each node of the cluster by using the `srvctl stopdatabase` command.

```
[oracle@ol7-122-rac1 ~]$ srvctl stop database -d cdbrac
[oracle@ol7-122-rac1 ~]$
```

4. Verify that the `cdbrac` database is not running on any node of the cluster by using the `srvctl status database` command.

```
[oracle@ol7-122-rac1 ~]$ srvctl status database -
d cdbrac

[oracle@ol7-122-rac1 ~]$
```

5. Make a local connection using operating system authentication to the local database instance, and then start up the database on only the first node with the `mount` option.

```
[oracle@ol7-122-rac1 ~]$ sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Thu Sep 12 06:52:26
2014

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Connected to an idle instance.

SQL> startup mount
ORACLE instance started.

Total System Global Area 1018830848 bytes
Fixed Size                  2295992 bytes
Variable Size             427820872 bytes
```

```
Database Buffers      583008256 bytesRedo
Buffers                 5705728 bytes
Database mounted.
SQL>
```

6. Issue the `alter database archivelog` SQL command to change the archive mode of the database, and then verify the results by using the `archive log list` SQL command.

```
SQL> alter database archivelog;

Database altered.

SQL> archive log list
Database log mode              Archive Mode
Automatic archival             Enabled
Archive destination            USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence     80
Next log sequence to archive   81
Current log sequence           81
SQL>
```

7. Shut down the database instance with the `immediate` option and exit SQL*Plus. Use the `srvctl` utility to restart the database instances on all nodes of the cluster.

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


Database dismounted.
ORACLE instance shut down.
SQL> exit
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[oracle@ol7-122-rac1 ~]$ srvctl start database -d cdbrac
[oracle@ol7-122-rac1 ~]$
```

8. Verify that the `cdbrac` database is running on all the nodes of your cluster by using the `srvctl status database` command.

```
[oracle@ol7-122-rac1 ~]$ srvctl status database -d cdbrac

```

Practice 11-2: Configuring RMAN and Performing Parallel Backups

Overview

In this practice, you will designate all instances (`cdbrac1`, `cdbrac2`) of yourpolicy-managed database responsible for performing parallel backups of the database. The database will be backed up to the +FRA ASM disk group by default.

1. Using the recovery manager utility (RMAN), connect to the `cdbrac` database as the targetdatabase.

```
[oracle@ol7-122-rac1 ~]$ rman target /

Recovery Manager: Release 12.1.0.2.0 - Production on Thu Sep 12
09:03:24 2014

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connected to target database: CDBRAC

(DBID=1352492209)RMAN>
```

2. Display all of the current RMAN settings.

```
RMAN> show all;

using target database control file instead of recovery catalog
RMAN configuration parameters for database with db_unique_name
CDBRAC are:
CONFIGURE RETENTION POLICY TO REDUNDANCY 1; # default
CONFIGURE BACKUP OPTIMIZATION OFF; # default
CONFIGURE DEFAULT DEVICE TYPE TO DISK; # default
CONFIGURE CONTROLFILE AUTOBACKUP OFF; # default
CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO
'%F'; # default
CONFIGURE DEVICE TYPE DISK PARALLELISM 1 BACKUP TYPE TO
BACKUPSET; # default
CONFIGURE DATAFILE BACKUP COPIES FOR DEVICE TYPE DISK TO 1; #
default
CONFIGURE ARCHIVELOG BACKUP COPIES FOR DEVICE TYPE DISK TO 1; #
default
CONFIGURE MAXSETSIZE TO UNLIMITED; # default
CONFIGURE ENCRYPTION FOR DATABASE OFF; # default
CONFIGURE ENCRYPTION ALGORITHM 'AES128'; # default
CONFIGURE COMPRESSION ALGORITHM 'BASIC' AS OF RELEASE 'DEFAULT'
OPTIMIZE FOR LOAD TRUE ; # default
```

```
CONFIGURE RMAN OUTPUT TO KEEP FOR 7 DAYS; # default
CONFIGURE ARCHIVELOG DELETION POLICY TO NONE; # default
CONFIGURE SNAPSHOT CONTROLFILE NAME TO
'/u01/app/oracle/product/12.1.0/dbhome_1/dbs/snapcf_cdbrac3.f';
#default

RMAN>
```

3. Configure RMAN to automatically back up the control file and server parameter file each time any backup operation is performed.

```
RMAN> configure controlfile autobackup on;

new RMAN configuration parameters:
CONFIGURE CONTROLFILE AUTOBACKUP ON;
new RMAN configuration parameters are successfully stored

RMAN>
```

4. Configure channels to use automatic load balancing. Set parallelism to 3, and then configure the connect string.

```
RMAN> CONFIGURE DEVICE TYPE disk PARALLELISM 3;

new RMAN configuration parameters:
CONFIGURE DEVICE TYPE DISK PARALLELISM 3 BACKUP TYPE TO
BACKUPSET;
new RMAN configuration parameters are successfully stored

RMAN> configure channel device type disk connect =
'sys/sys_password@cdbrac';

new RMAN configuration parameters:
CONFIGURE CHANNEL DEVICE TYPE DISK CONNECT '*';
new RMAN configuration parameters are successfully stored

RMAN>
```

5. Open a second terminal session as the `oracle` user and set up the environment variables for the `cdbrac` database. Invoke SQL*plus as the system user, and run the `/stage/RAC/labs/lab_11/monitor_rman.sql` script. Do not exit the first sessionwith the RMAN prompt or this second session with the SQL prompt.

```
[oracle@ol7-122-rac1 ~]$ . oraenv
ORACLE_SID = [oracle] ? cdbrac
The Oracle base has been set to /u01/app/oracle
```

```
[oracle@ol7-122-rac1 ~]$ export ORACLE_SID=cdbrac3
[oracle@ol7-122-rac1 ~]$ sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Thu Sep 12 09:16:51
2014

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SQL> @/stage/RAC/labs/lab_11/monitor_rman.sql

no rows selected

SQL>
```

6. In the first session with the RMAN prompt, perform a full database backup with archive logs. The backup should happen only on the designated nodes (your first and second nodes) as the backup nodes. **Do not wait for this step to finish before proceeding to the next step.**

```
RMAN> backup database plus archivelog;
```

1. While the backup is in progress, rerun the query in the second terminal window to monitor the RMAN backup session progress within the cluster. The backup should be done in parallel, with work distributed to all three nodes of the cluster. Enter the slash (/) symbol and press the Enter key to rerun the query. It may be necessary to do this multiple times until the output appears. When the backup finishes, exit SQL*Plus.

```
SQL> /
no rows selected

SQL> /

INST_ID  SID    SERIAL# CONTEXT      SOFAR  TOTALWORK %_COMPLETE
---------- ---------- ---------- ---------- ---------- ----------
      1  237      45393       1     106494     139004      76.61
      2   38      11464       1      53233      53369      99.75

SQL> /

INST_ID  SID    SERIAL# CONTEXT      SOFAR  TOTALWORK %_COMPLETE

      3   95      42956       1        126     135040        .09
```

```
      2   38       11464        1         634      169440         .37
      1  237       45393        1       25086      256000         9.8

SQL> /

INST_ID  SID    SERIAL# CONTEXT      SOFAR  TOTALWORK %_COMPLETE
---------- ---------- --------------- ---------- ---------- ---------------
      3   95       42956        1       25458      135040       18.85
      2   38       11464        1       14584      169440        8.61
      1  237       45393        1       32638      256000       12.75

SQL> exit

[oracle@ol7-122-rac1 ~]$
```

2. Shut down the database using `srvctl` so `ARCHIVELOG` mode can be disabled for your RAC database.

```
[oracle@ol7-122-rac1 ~]$ srvctl stop database -d cdbrac
[oracle@ol7-122-rac1 ~]$
```

3. Make a local connection using operating system authentication to the local database instance, and then start up the database on only the first node with the `mount` option. Disable `ARCHIVELOG` mode with the `alter database noarchivelog` statement. Confirm this operation with the `archive log list` statement. Shut down the database and exit SQL*Plus when finished.

```
[oracle@ol7-122-rac1 ~]$ sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Thu Sep 12 12:30:00
2014

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Connected to an idle instance.

SQL> startup mount
ORACLE instance started.

Total System Global Area 1018830848 bytes
Fixed Size                  2295992 bytes
Variable Size             427820872 bytes
Database Buffers          583008256 bytes
Redo Buffers                5705728 bytes
Database mounted.
```

```
SQL> alter database noarchivelog;

Database altered.

SQL> archive log list
Database log mode              No Archive Mode
Automatic archival             Disabled
Archive destination            USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence     87
Current log sequence           88

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



Database dismounted.
ORACLE instance shut down.
SQL> exit
Disconnected from Oracle Database 12c Enterprise Edition Release
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[oracle@ol7-122-rac1 ~]$
```

4. Use `srvctl` to restart your database. Ensure that all instances are up, and then exit all terminal windows.

```
[oracle@ol7-122-rac1 ~]$ srvctl start database -d cdbrac

[oracle@ol7-122-rac1 ~]$ srvctl status database -
d cdbrac

[oracle@ol7-122-rac1 ~]$
```

5. Close all terminal windows opened for this practice.