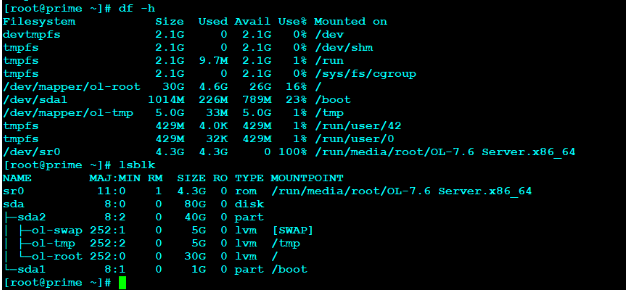
**26 Automatic Storage Mnagement**

**Prerequisites:-**

1. **Check the Disk space**



1. **Install the below packages.**

* yum -y install -y oracle-database-preinstall-19c
* yum -y install oracleasm\*
* yum -y install kmod-oracleasm\*

1. **Add below OS groups:**

* groupadd -g 54327 asmdba
* groupadd -g 54328 asmoper
* groupadd -g 54329 asmadmin

1. **Add asmdba as secondary group to Oracle user**

* usermod -a -G asmdba oracle

1. **Create Grid User**

* useradd -u 54331 -g oinstall -G dba,asmdba,asmoper,asmadmin,racdba grid

1. **Change the password for Oracle and Grid user**

|  |  |
| --- | --- |
|  | * Passwd oracle * Passwd grid |

1. **Create the Directories for ASM and Oracle Database installation**

* mkdir -p /u01/app/grid/product/19.3.0/grid\_home
* chown -R grid:oinstall /u01/app/grid
* chmod -R 775 /u01
* mkdir -p /u01/app/oracle
* mkdir -p /u01/app/oracle/product/19.3.0/db\_home
* chown -R oracle:oinstall /u01/app/oracle

**Configure Oracle ASM Disks**

1. **Fire the command: oracleasm configure –i**

* This will ask for user who can control ASM disks.
* Grid, Y, Y, done.

1. **Fire the command: oracleasm init**

* It essentially loads the **ASMLib** kernel module and prepares the system to work with ASM disks

1. **login as root user to format the disk**

* fdisk –l
* This will show all the disks added.
* **/dev/sdb, /dev/sdc, /dev/sdd**
* In the above output the /dev/sdb,c,d is not yet formatted.
* If the disk is partitioned it will show the partitions like:
* **Device Boot Start End Blocks Id System**

**/dev/sda1 \* 2048 1953791 975872 83 Linux**

**/dev/sda2 1953792 951171071 474608640 83 Linux**

1. **Partition the b,c,d disks.**

* **fdisk /dev/sdb**
* **m >** this will show the menu
* **n**
* **p**
* **partition number like 1,2,3**
* **w**
* **Do the partition on all the required disks and check fdisk -l**

1. **Create separate ASM Disk from partitioned disks.**

* oracleasm createdisk **CRS1** /dev/sdb1
* oracleasm createdisk **DATA1** /dev/sdc1
* oracleasm createdisk **FRA1** /dev/sdd1

1. **Check ASM Disks are Created or Not.**

* Oracleasm listdisks
* ls –lrth /dev/oracleasm/disks

**Install Grid Software**

1. **Edit Grid user Bash\_Profile but take .bash\_profile backup before editing it**

* export ORACLE\_BASE=/u01/app/grid

export ORACLE\_HOME=/u01/app/grid/product/19.3.0/grid\_home

export ORACLE\_SID=+ASM

export LD\_LIBRARY\_PATH=\$ORACLE\_HOME/lib:/lib:/usr/lib

export CLASSPATH=\$ORACLE\_HOME/jlib:\$ORACLE\_HOME/rdbms/jlib

PATH=$PATH:$HOME/.local/bin:$ORACLE\_HOME/bin

export PATH

1. **Source .bash\_profile or . .bash\_profile and check**

* env|grep ORA

1. **Copy the 19c grid software to grid\_home and unzip it.**
2. **Start the gridSetup.sh as a grid user which will install grid software**

* **./gridSetup.sh**

1. **Follow below screens to perform the grid software installation**

* Change Disk group name as CRS
* Select External
* Click on Change Discovery Path
* Give Disk Discovery Path as /dev/oracleasm/disks
* Click on OK

1. **Finish the ASM grid installation and check status.**

* Ps –ef|grep pmon

1. **Missing package cvu\*\*\*\*\*\***

* cd $ORACLE\_HOME/CV/RPM
* ls
* su – root
* rpm –ivh cvuqdisk-1.0.10.1.rpm

1. **Install database software and select Oracle Automatic Storage Management in database storage option.**

**ASM is providing 2 features:**

* Mirroring
* Striping

**Mirroring:**

* **How it works** Creates **exact copies** of data on two or more disks.
* **Benefit** If one disk fails, the system can continue operating using the mirrored copy.
* **Downside**: Requires **double the storage**—you lose 50% of usable capacity.

**Striping:**

* **Purpose**: Performance and speed
* **How it works** Splits data into chunks and writes them **across multiple disks** in parallel.
* **Benefit** Faster read/write performance due to simultaneous access.
* **Downside** **No redundancy**—if one disk fails, all data may be lost.

**Rebalance:**

* **Rebalance power** controls how ASM redistributes data when disks are added or removed from a disk group.
* ALTER DISKGROUP DATA REBALANCE POWER 5;
* ALTER SYSTEM SET ASM\_POWER\_LIMIT = 5 SCOPE = BOTH;

**To Check Disk Group Size:**

* SELECT name AS disk\_group\_name, ROUND(total\_mb / 1024, 2) AS size\_gb,ROUND(free\_mb / 1024, 2) AS free\_gb,ROUND((total\_mb - free\_mb) / total\_mb \* 100, 2) AS used\_percent FROM v$asm\_diskgroup;

**To Check Disks in Disk group:**

* SELECT dg.name AS disk\_group,d.name AS disk\_name,d.path,

d.mount\_status,d.header\_status FROM v$asm\_disk d JOIN

v$asm\_diskgroup dg ON d.group\_number = dg.group\_number ORDER BY

dg.name, d.name;

**To Add disk to disk group:**

* ALTER DISKGROUP DATA ADD DISK '/dev/oracleasm/disks/DATA02';

**To remove disk from disk group:**

* **Check the disks in disk group.**
* SELECT name, path, header\_status, mount\_status

FROM v$asm\_disk WHERE group\_number = (SELECT group\_number FROM v$asm\_diskgroup WHERE name = 'DATA');

* ALTER DISKGROUP DATA DROP DISK DATA\_0002 REBALANCE POWER 5;
* Select \* from v$asm\_operation;

**To add datafile in tablespace in ASM database:**

* ALTER TABLESPACE USERS ADD DATAFILE '+DATA' SIZE 100M

**To check how many databases are using the ASM:**

* Desc v$asm\_client
* Select instance\_name,db\_name,status from v$asm\_client;

**To** **Create the Disk Group:**

* CREATE DISKGROUP DATA EXTERNAL REDUNDANCY DISK 'ORCL:VOL1', 'ORCL:VOL2' ATTRIBUTE 'au\_size' = '4M';

**ASMB (ASM Bridge)**: Co-ordinates with the database instance and the ASM instance.

**RBAL (Rebalance)**: Co-ordinates with data rebalance between disks.

**ARBn (ASM Rebalance Slave)**: One or more processes (ARB0–ARB9) that perform the actual data movement during rebalancing.

**ASMAUS** (**Allocation Unit size):** It is the fundamental unit of space allocation within a disk group. Every ASM disk is divided into these AUs, and all data—whether it's a datafile, control file, or redo log—is stored in this size. The values can be 1,2,4,8,16,32,64 MB.

**Migrating Normal File-system to ASM File-system**

* Check the free space in ASM disk groups.
* Db must be enabled with archivelog mode.(non-asm)
* Check the database it should be in open mode.
* Check datafiles,logfiles,controlfiles,temp location.
* Shut down the database.
* Put the database in mount mode.
* Connect to rman target /

**Rman>Backup as copy database format ‘+DATA’;**

* This will create backup in +DATA

**Rman>report schema;**

**Rman>switch database to copy;**

* Check the datafiles status.

**Rman>backup current controlfile;**

* Shut down database.
* Edit pfile
* **Disable controlfiles parameter and add.**
* **db\_create\_file\_dest=’+DATA’**
* **log\_archive\_dest=’+ARCH’**
* Start db create spfile from pfile and start the database in **nomount**.

**Rman>restore controlfile from ‘/prod/baclup/mouli\_6.rman’;**

**Rman>alter database mount;**

Sql>alter database rename file ‘/prod/oradata/redo.01.log to ‘+DATA’;

Sql>alter database rename file ‘/prod/oradata/redo.02.log to ‘+DATA’;

Sql>alter database rename file ‘/prod/oradata/redo.03.log to ‘+DATA’;

* Alter database open resetlogs;
* Drop the existing tempfile and recreate.