ORACLE 19C-RAC GRID INSTALLATION

Environment Details:

No. of servers: 2 (node 1 ,node2).
Version : Oracle linux 7.9
Ssh and network configuration complted on both the node.

Follow the steps for configuring Network between two node RAC from below mentioned link:

https://www.linkedin.com/posts/umesh-shinde-989187209_oracle-linux-installation-activity-7141727733537046528-OGsK?utm_source=share&utm_medium=member_desktop

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1. Prerequisites:

Connect to OEL 7.9 server via putty and install the below packages

yum -y install oracleasm*
yum -y install kmod-oracleasm*

Add below OS groups

echo "password" | passwd --stdin grid
echo "password" | passwd --stdin oracle

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

usermod -u grid -g oinstall -G dba,asmdba,asmoper,asmadmin,racdba grid
usermod -u oracle -g oinstall -G dba,asmdba,asmoper,asmadmin,racdba grid

2. Configure Oracle ASM

```
oracleasm configure -i
```

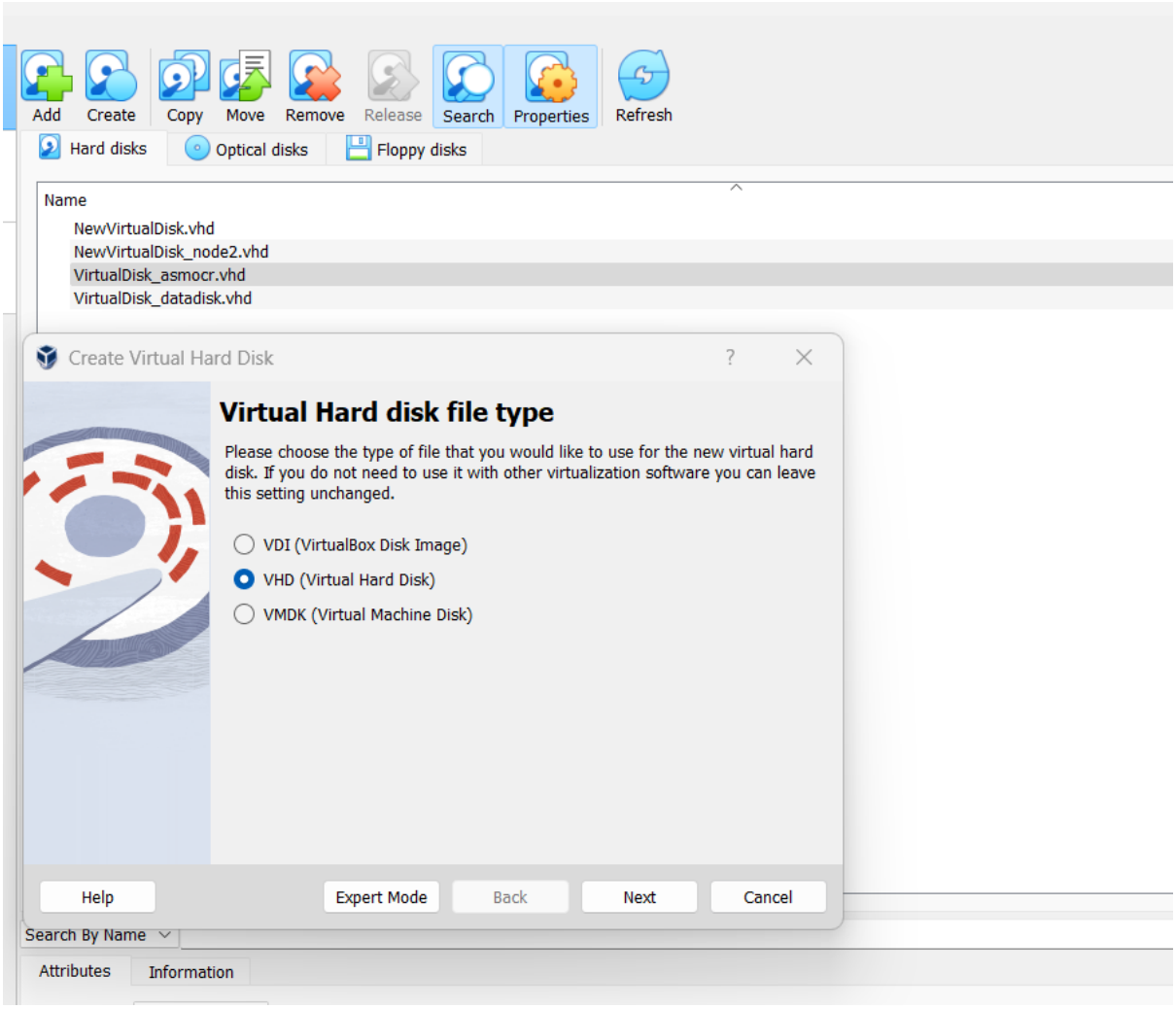
Load / initiate Oracle ASM

`oracleasm init`

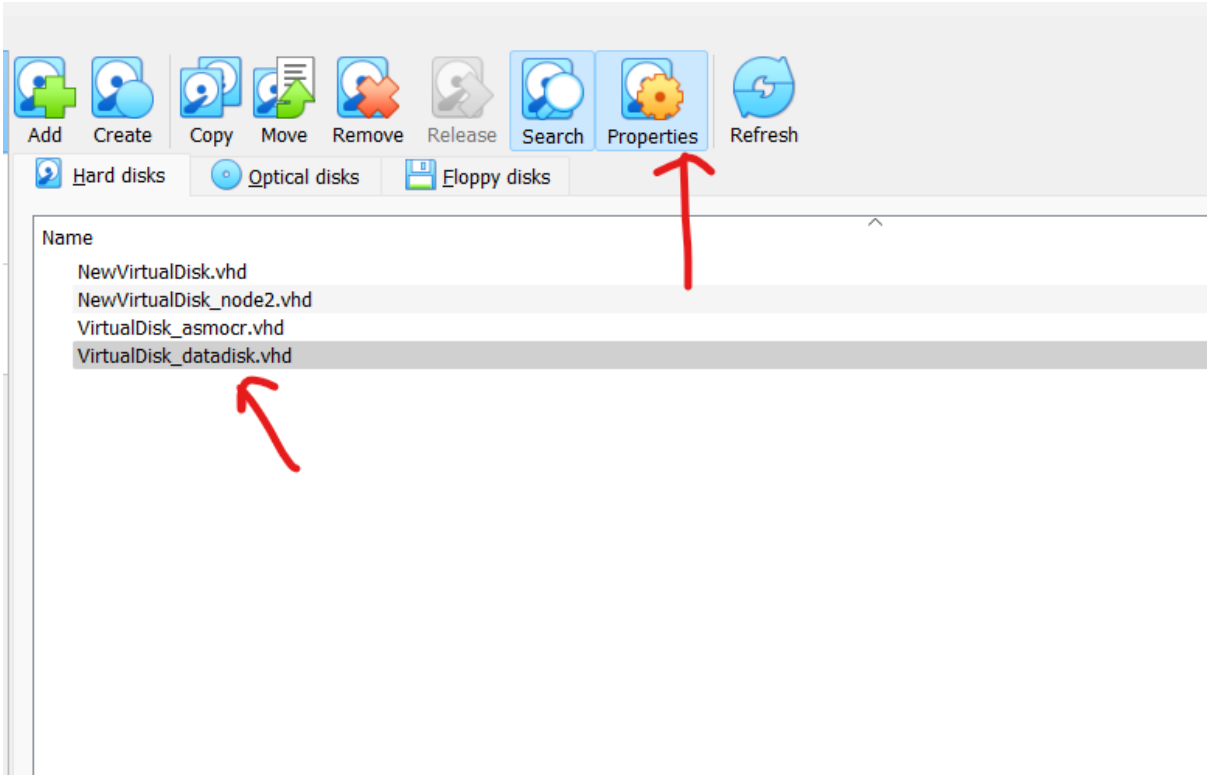
```
[root@node1 disks]# oracleasm configure -i
Configuring the Oracle ASM library driver.

This will configure the on-boot properties of the Oracle ASM library
driver.  The following questions will determine whether the driver is
loaded on boot and what permissions it will have.  The current values
will be shown in brackets ('[]').  Hitting <ENTER> without typing an
answer will keep that current value.  Ctrl-C will abort.

Default user to own the driver interface [grid]:
Default group to own the driver interface [dba]: asmadmin
Start Oracle ASM library driver on boot (y/n) [y]: y
Scan for Oracle ASM disks on boot (y/n) [y]: y
Writing Oracle ASM library driver configuration: done
```

3. Create new virtual disk for ASM.

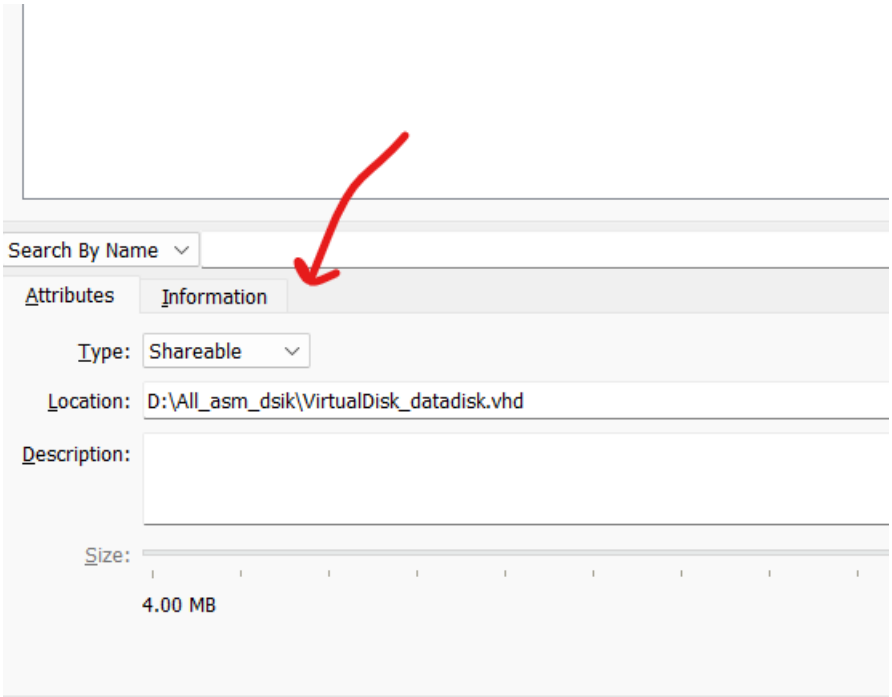
Click on virtual manager > create> select VHD> preallocate full size> give 20 gb size for asm data >finish.



Then click on disk and select property.



Make type =shared



Again, create one more disk for OCR data.

And follow same thing.

Run below commands to create partitions on newly added disk:

fdisk -l | grep /dev/sd

printf "o\nn\np\n1\n\n\nw\n" | sudo fdisk /dev/sdb

printf "o\nn\np\n1\n\n\nw\n" | sudo fdisk /dev/sdc

```
[root@node1 ~]# fdisk -l | grep /dev/sd
Disk /dev/sda: 64.4 GB, 64424509440 bytes, 125829120 sectors
/dev/sda1   *        2048     3907583     1952768   83  Linux
/dev/sda2         3907584   125829119    60960768   8e  Linux LVM
Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors
/dev/sdb1            2048    41943039    20970496   83  Linux
Disk /dev/sdc: 5368 MB, 5368709120 bytes, 10485760 sectors
/dev/sdc1            2048    10485759     5241856   83  Linux
```

4. Create separate ASM Disk for each partition

oracleasm createdisk ASMDATA1 /dev/sdb1

oracleasm createdisk ASMOCR /dev/sdc1

oracleasm scandisks

oracleasm listdisks

To check asm disks

```
ls -lrt /dev/oracleasm/disks
```

configuaring swap using /swap mount point.

umount /swap

vi /etc/fstab

Edit swap filesystem.

/dev/mapper/ol-swap /swap swap defaults 1 2

Now run below commands.

mkswap -L swap /dev/mapper/ol-swap

swapon -a

swapon -s

5. Install Grid Software

Edit Grid user Bash_Profile but take .bash_profile backup before editing it

```
su - grid
vi .bash_profile
```

Node 1:

.bash_profile

Get the aliases and functions

if [-f ~/.bashrc]; then

. ~/.bashrc

fi

User specific environment and startup programs

ORACLE_SID=+ASM1; export ORACLE_SID

ORACLE_BASE=/grid/app/grid1; export ORACLE_BASE

ORACLE_HOME=/grid/app/grid/product/19.0.0/grid_home; export ORACLE_HOME

ORACLE_TERM=xterm; export ORACLE_TERM

JAVA_HOME=/usr/bin/java; export JAVA_HOME

TNS_ADMIN=$ORACLE_HOME/network/admin; export TNS_ADMIN

PATH=.:${JAVA_HOME}/bin:${PATH}:$HOME/bin:$ORACLE_HOME/bin

PATH=${PATH}:/usr/bin:/bin:/usr/local/bin

export PATH

umask 022

```
PATH=$PATH:$HOME/.local/bin:$HOME/bin
export PATH
```

Node2:

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
        . ~/.bashrc
fi
# User specific environment and startup programs
ORACLE_SID=+ASM2; export ORACLE_SID
ORACLE_BASE=/grid/app/grid1; export ORACLE_BASE
ORACLE_HOME=/grid/app/grid/product/19.0.0/grid_home; export ORACLE_HOME
ORACLE_TERM=xterm; export ORACLE_TERM
JAVA_HOME=/usr/bin/java; export JAVA_HOME
TNS_ADMIN=$ORACLE_HOME/network/admin; export TNS_ADMIN
PATH=.:${JAVA_HOME}/bin:${PATH}:$HOME/bin:$ORACLE_HOME/bin
PATH=${PATH}:/usr/bin:/bin:/usr/local/bin
export PATH
umask 022
PATH=$PATH:$HOME/.local/bin:$HOME/bin
export PATH
```

Create the Directories for Oracle Grid installation

mkdir -p /grid/app/grid

mkdir -p /grid/app/grid/product/19.0.0/grid_home

chown -R grid:asmadmin /grid/app/grid

mkdir -p /grid/app/grid1

chown -R grid:asmadmin /grid/app/grid1

mkdir -p /grid/app/oraInventory

Copy the grid software under grid home and unzip it

Unzip grid zip file using grid user

```
[grid@node1 grid_home]$ pwd
/grid/app/grid/product/19.0.0/grid_home
[grid@node1 grid_home]$ ls -lrth
total 2.7G
-rwxrwxr-x. 1 grid oinstall 2.7G Dec  9 11:33 V982068-01.zip
[grid@node1 grid_home]$ unzip V982068-01.zip
```

Run below command for CVU utility on below location/

/grid/app/grid/product/19.0.0/grid_home/cv/rpm

Using root user

rpm -Uvh cvuqdisk*

scp ./cvuqdisk* root@node2:/tmp

on node 2 run below command from /tmp location

rpm -Uvh cvuqdisk*

```
[root@node1 grid_home]# cd cv/rpm/
[root@node1 rpm]# rpm -Uvh cvuqdisk*
Preparing...                          ################################# [100%]
Updating / installing...
   1:cvuqdisk-1.0.10-1                ################################# [100%]
[root@node1 rpm]#
[root@node1 rpm]#
[root@node1 rpm]# scp ./cvuqdisk* root@node2:/tmp
cvuqdisk-1.0.10-1.rpm
```

```
[root@node1 deinstall]#
[root@node1 deinstall]# ./sshUserSetup.sh -user grid -hosts "node1 node2" -noPromptPassphrase -confir m -advanced
The output of this script is also logged into /tmp/sshUserSetup_2023-12-10-15-48-00.log
Hosts are node1 node2
user is grid
Platform:- Linux
Checking if the remote hosts are reachable
PING node1.com (192.168.0.111) 56(84) bytes of data.
```

6. Pre-check for RAC Setup

Pre-check for CRS installation using Cluvfy

./runcluvfy.sh stage -pre crsinst -n node1,node2 -verbose

./sshUserSetup.sh -user oracle -hosts "node1 node2" -noPromptPassphrase -confirm -advanced

./runcluvfy.sh stage -pre crsinst -n node1,node2 -verbose -fixup

Start the gridSetup.sh which will install grid software.

Set display on your environment.

By root user:

Export display=:0.0

Xhost +

Then by grid user

Export display=:0.0

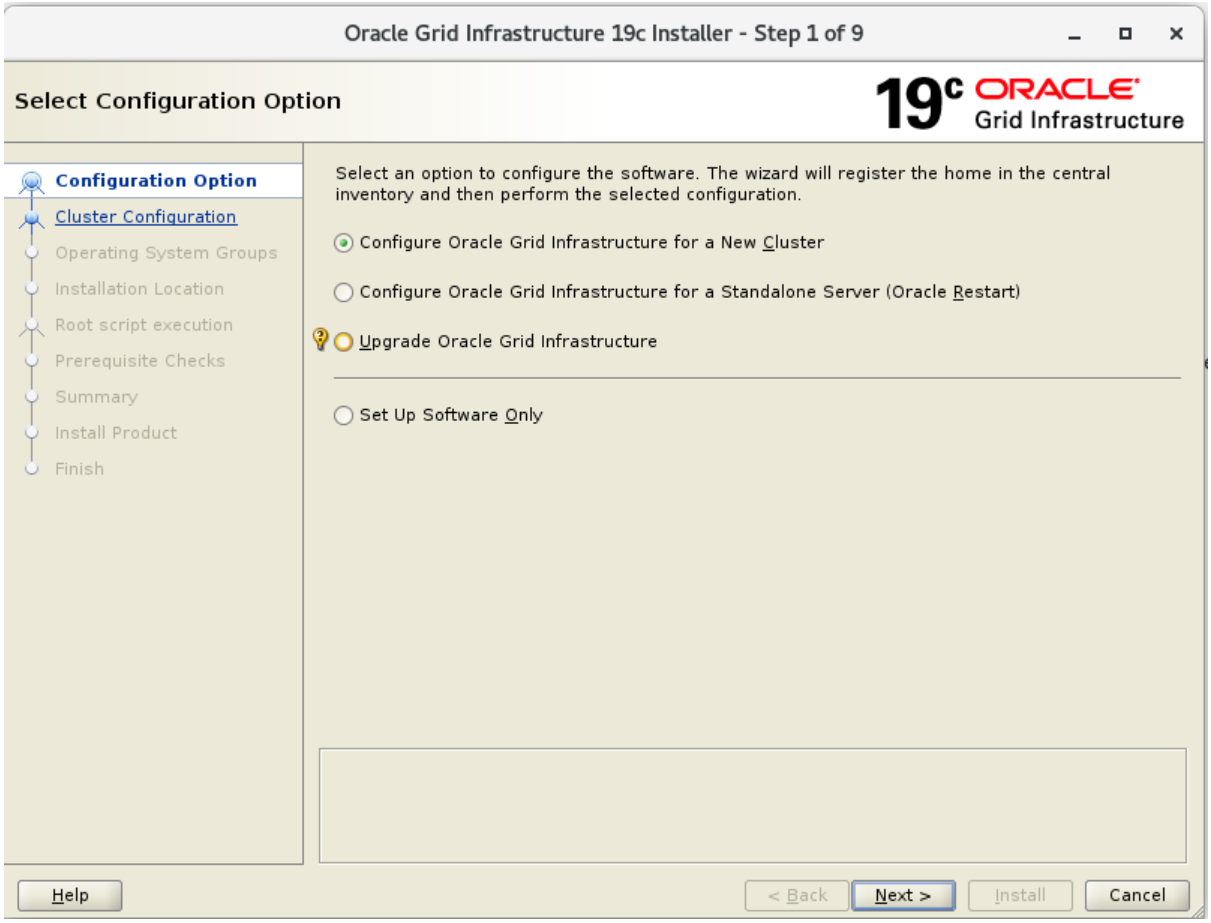
Xhost +

Cd $ORACLE_HOME

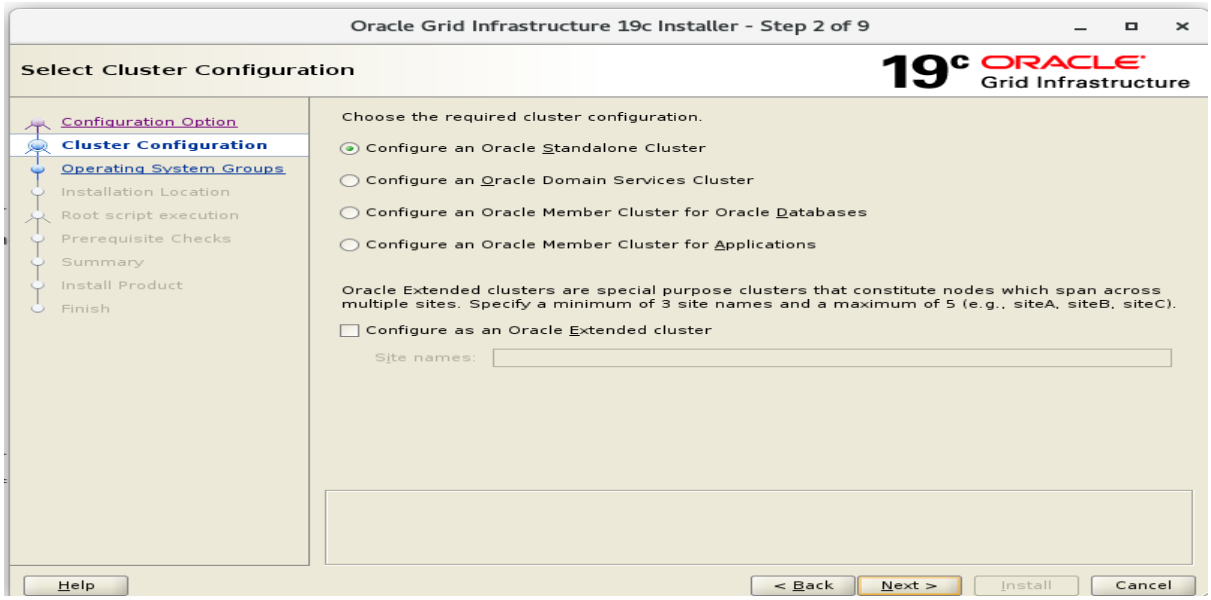
7. Start Installation

./gridSetup.sh

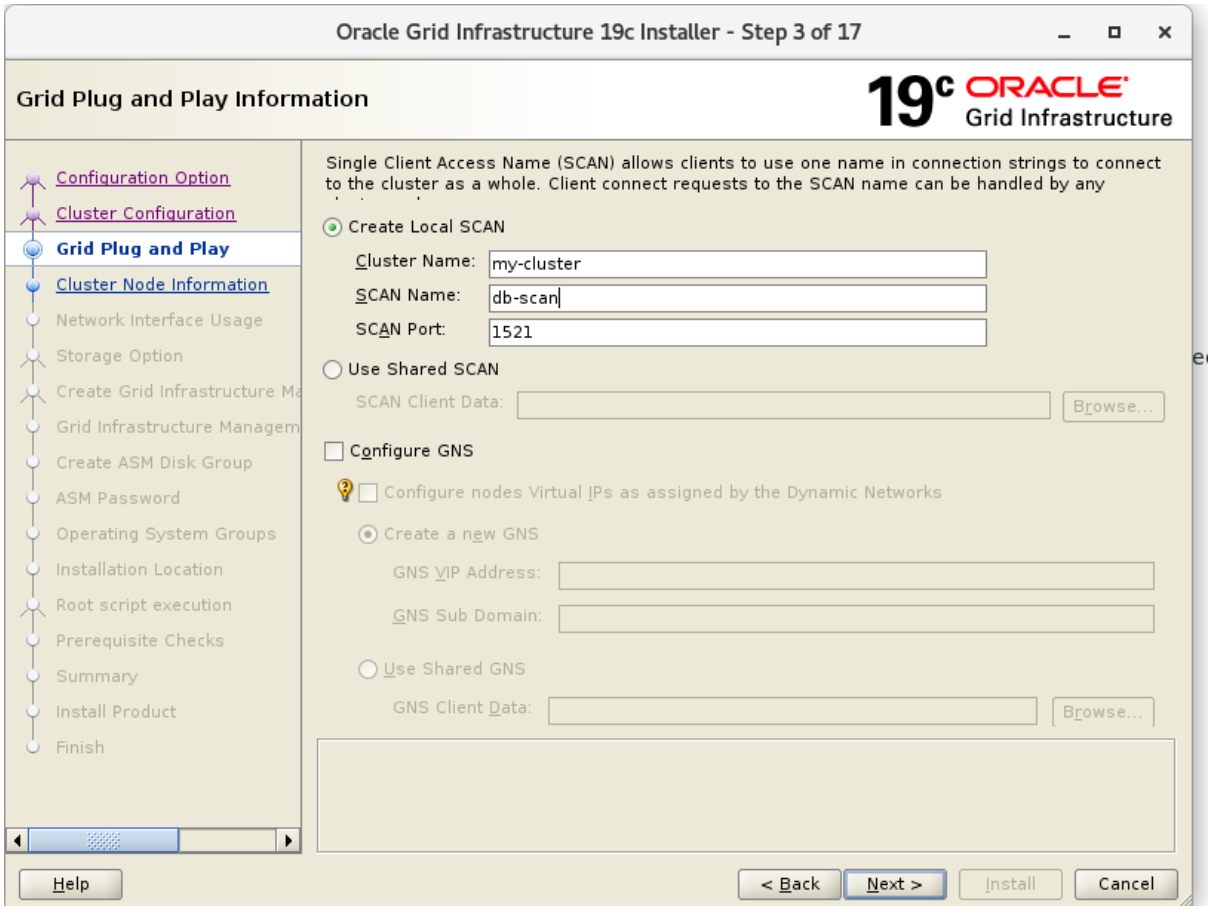
Select the Configure Oracle Grid Infrastructure for a New Cluster option, then click the Next button



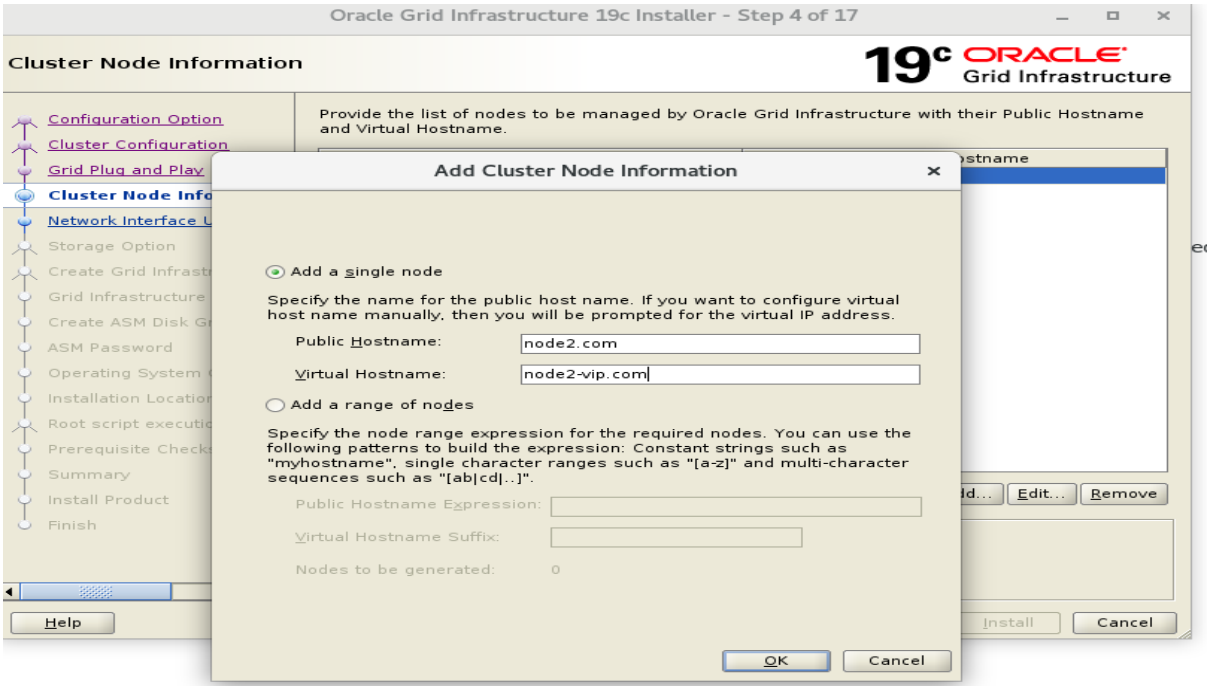
Accept the Configure an Oracle Standalone Cluster option by clicking the Next button.



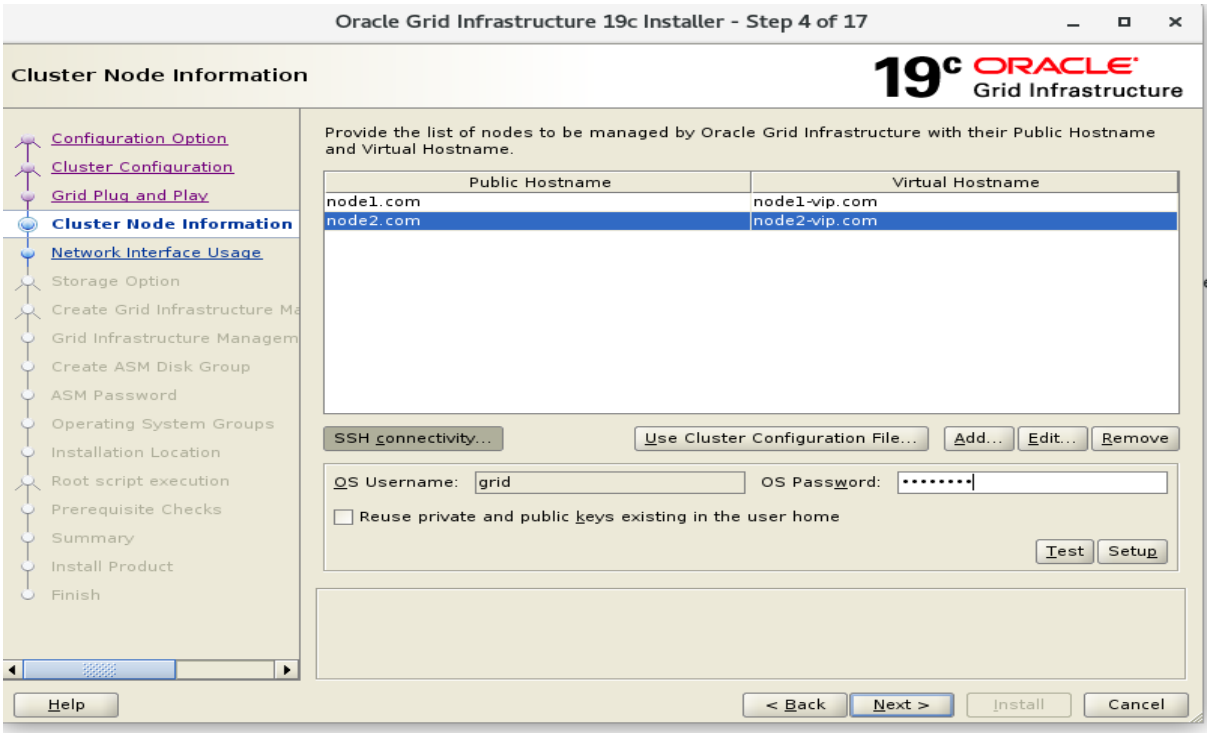
Enter the cluster name my-cluster, SCAN name db-scan and SCAN port 1521, then click the Next button.

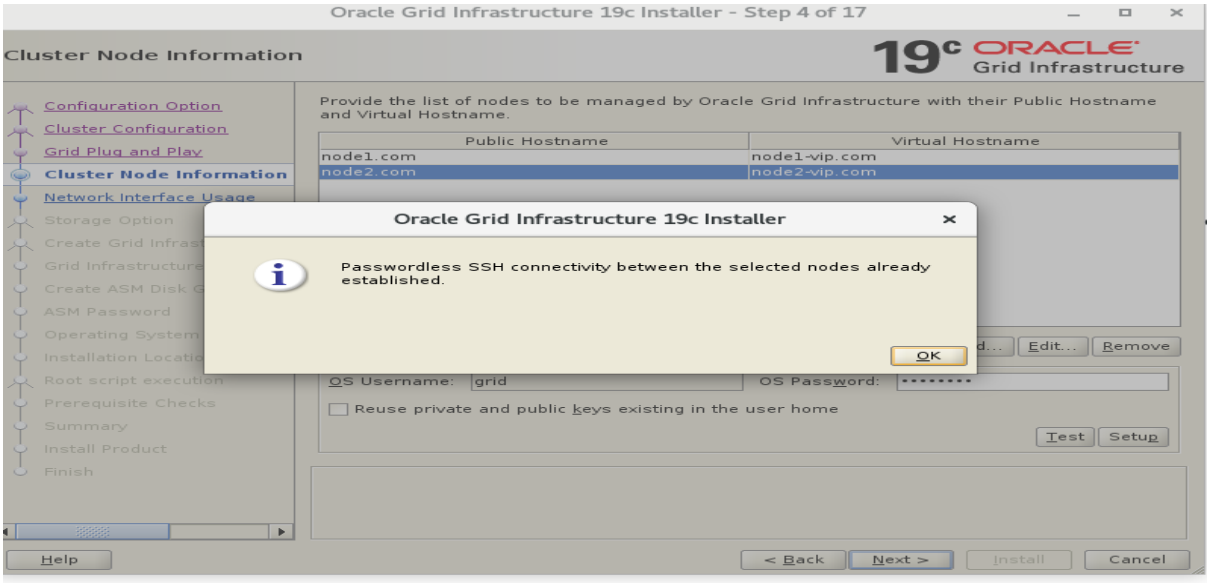


On the “Cluster Node Information” screen, click the Add button.
Enter the details of the second node in the cluster, then click the OK button.

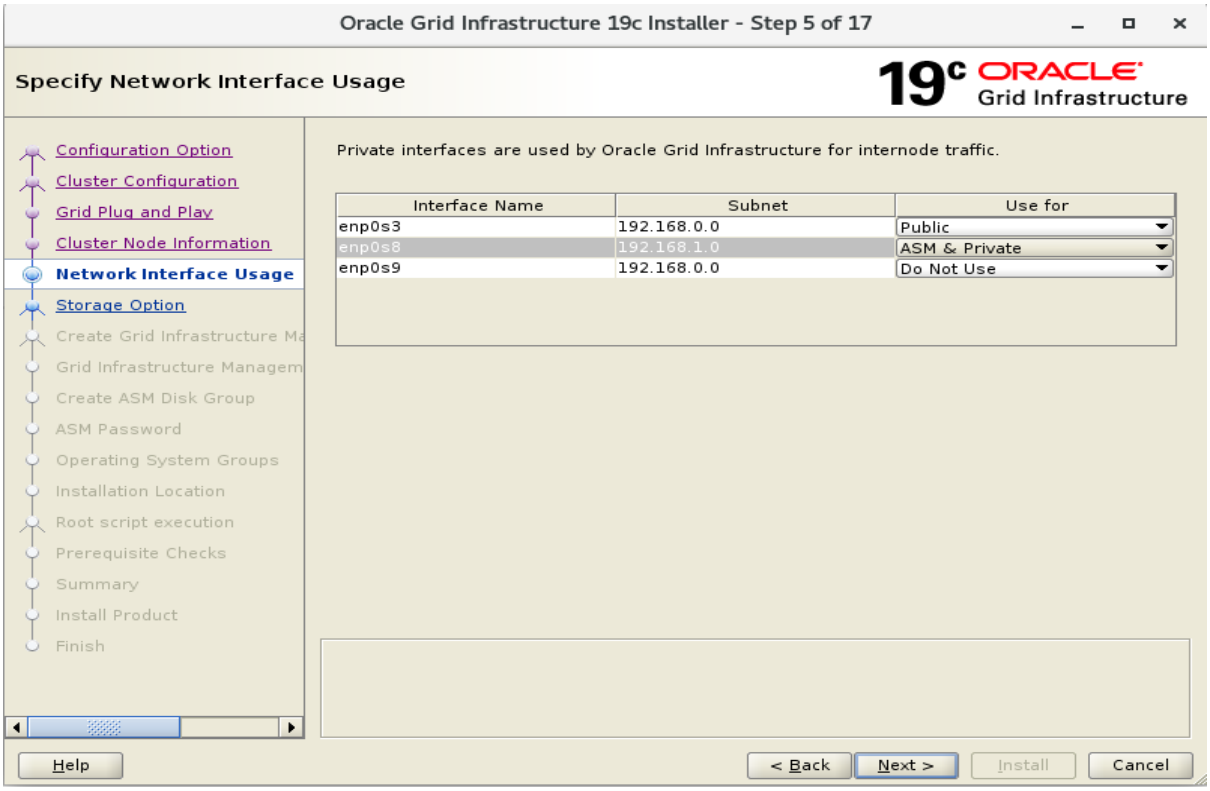


Click the SSH connectivity button and enter the password for the oracle user. Click the Setup button to configure SSH connectivity, and the Test button to test it once it is complete. Once the test is complete, click the Next button.

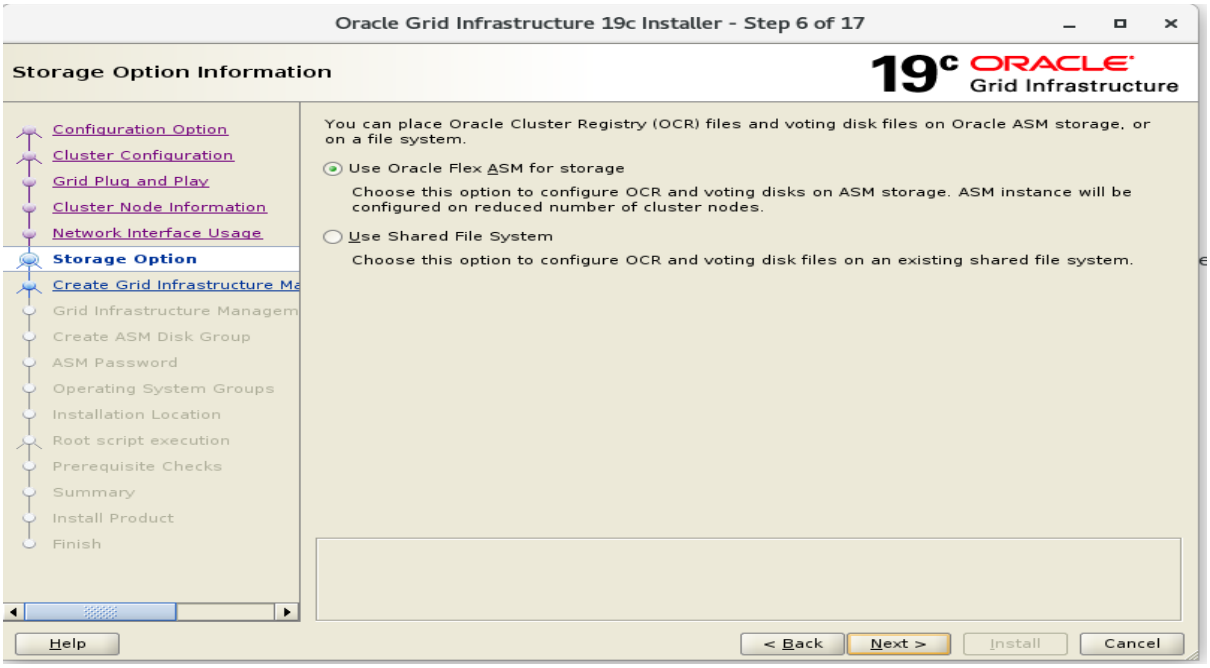




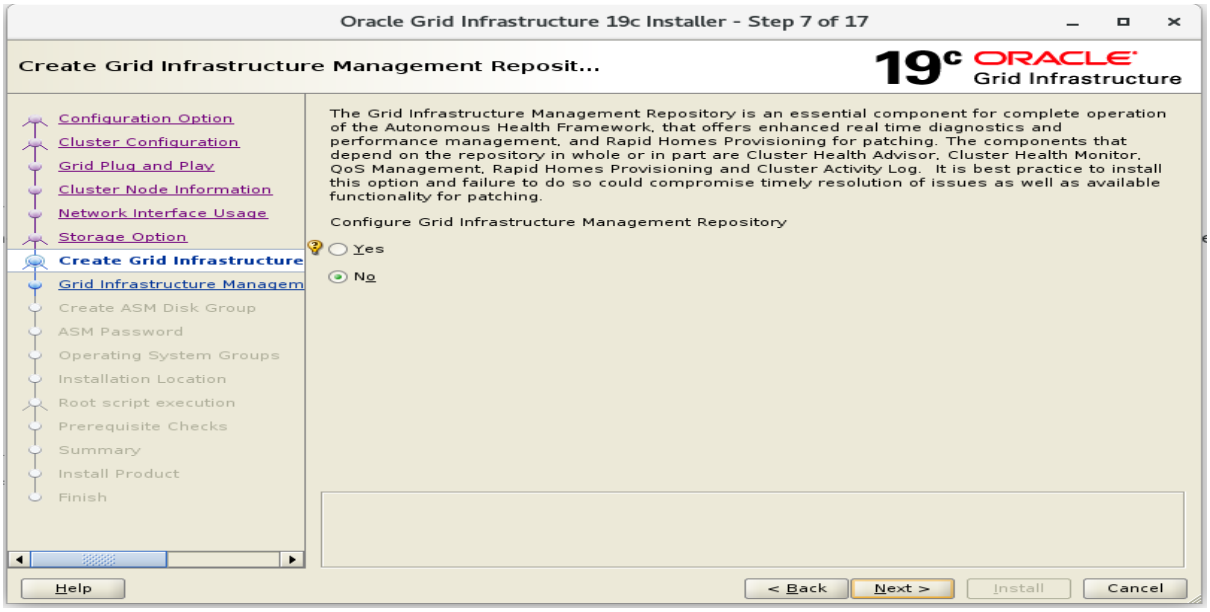
Check the public and private networks are specified correctly as ASM & Private. Click the Next button.



Accept the Use Oracle Flex ASM for Storage option by clicking the Next button.

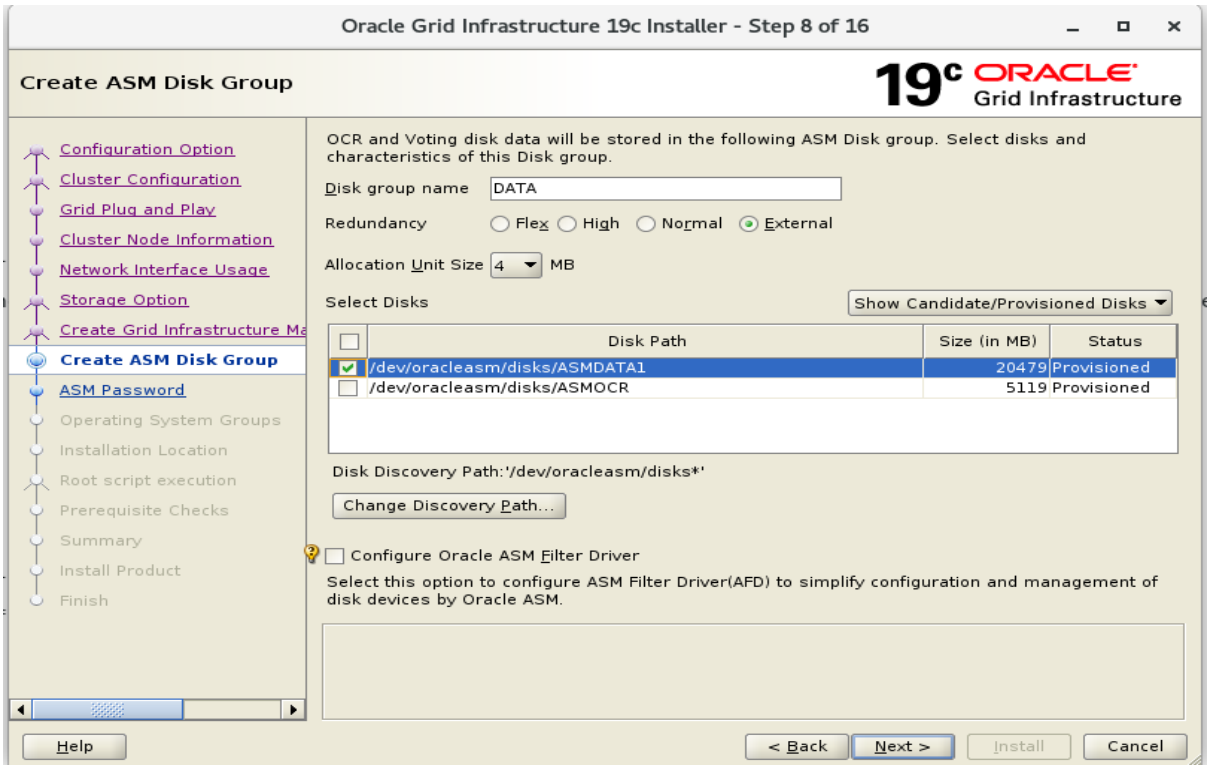


Select the No option, as we don't want to create a separate disk group for the GIMR in this case. Click the Next button.

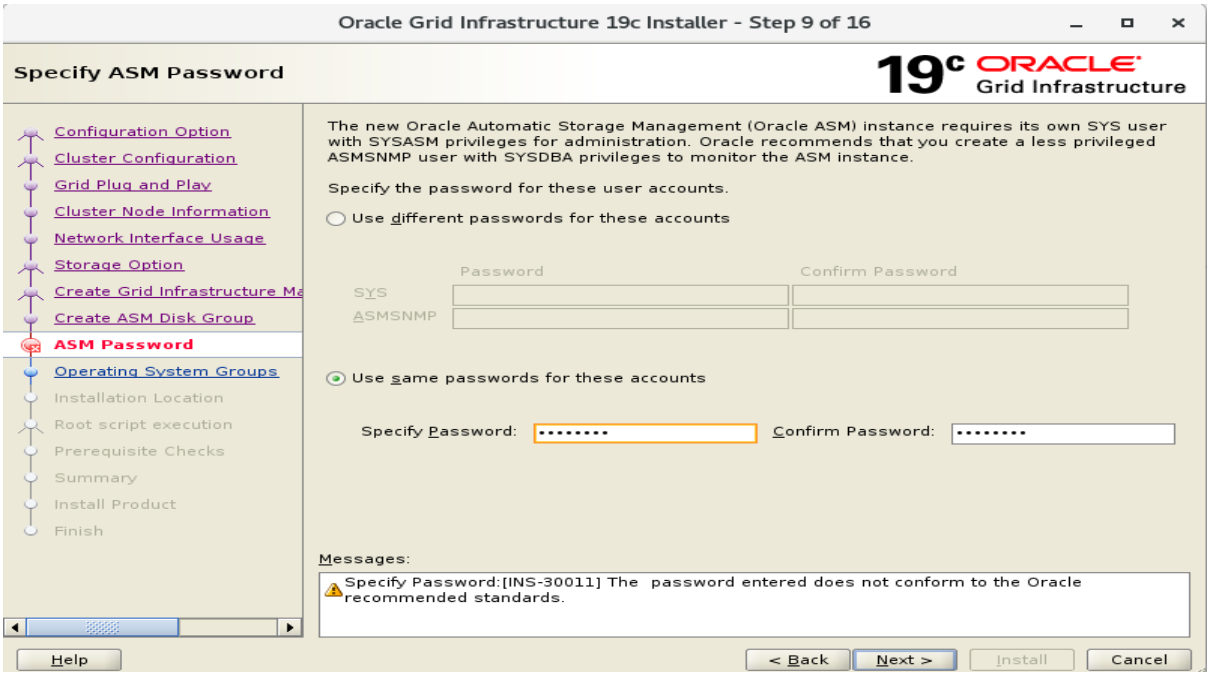


First Browse the path /dev/oracleasm/disks* using change discovery path

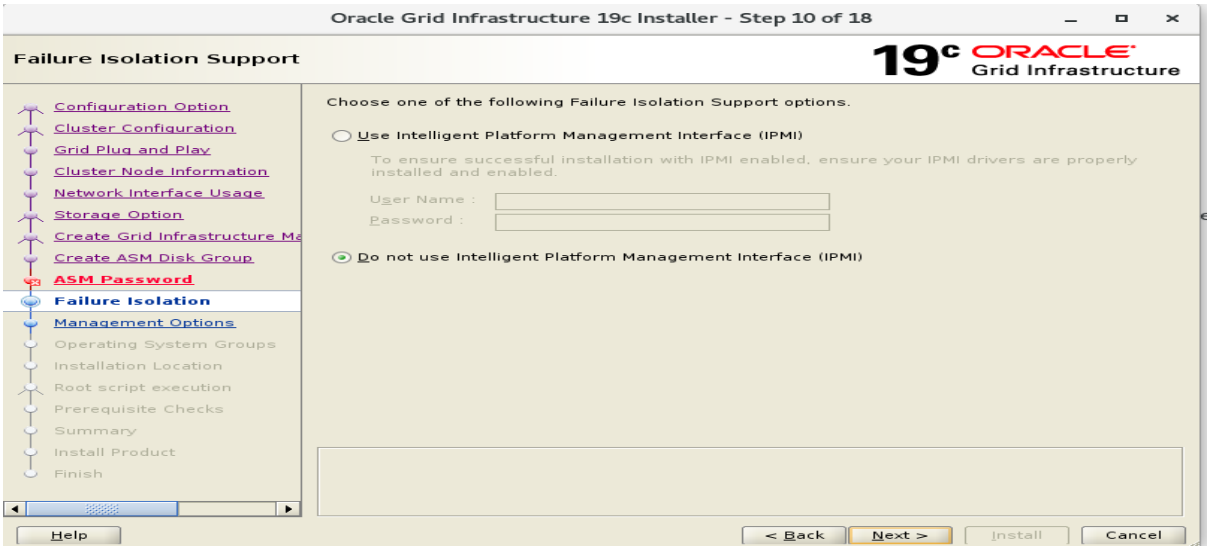
/dev/oracleasm/disks*



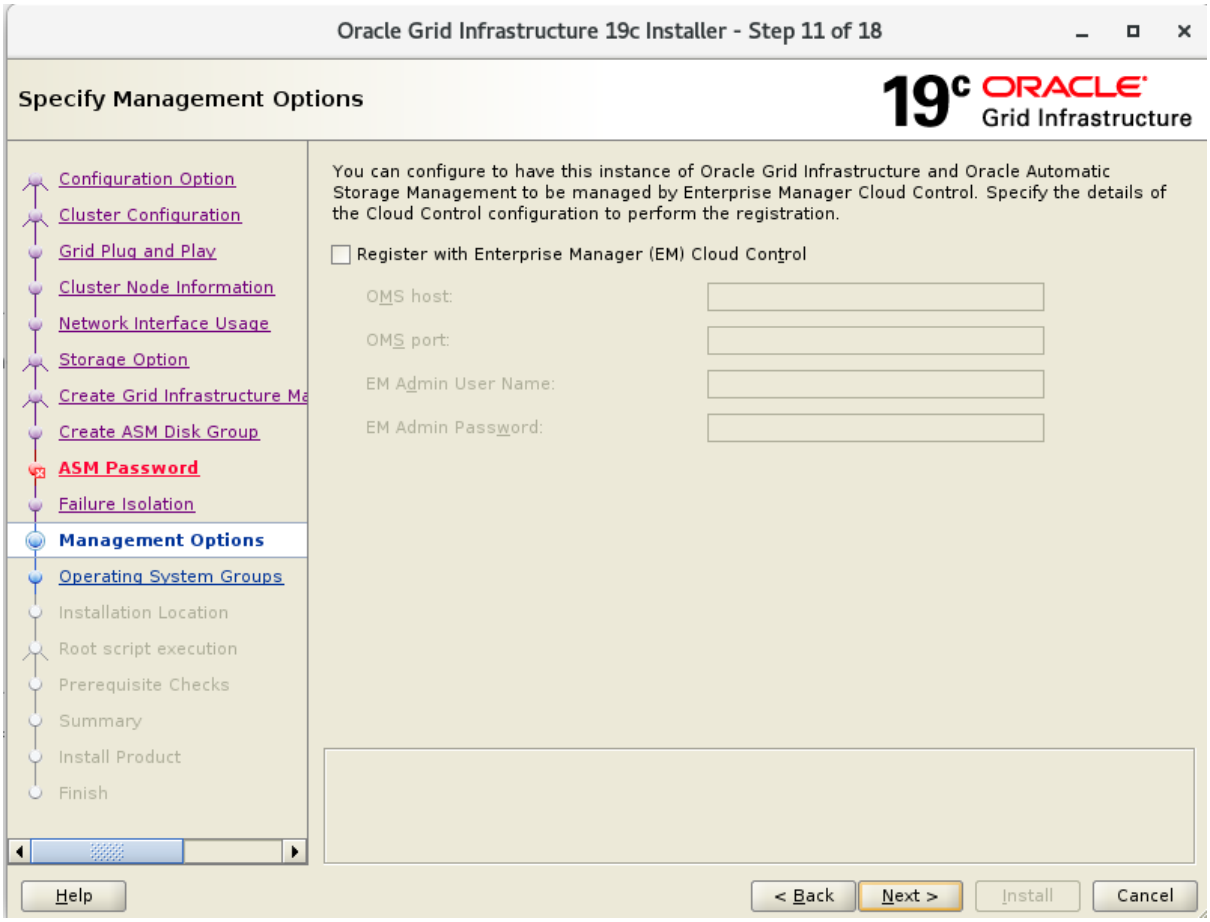
Enter the credentials and click the Next button.



Accept the default IPMI option by clicking the Next button.

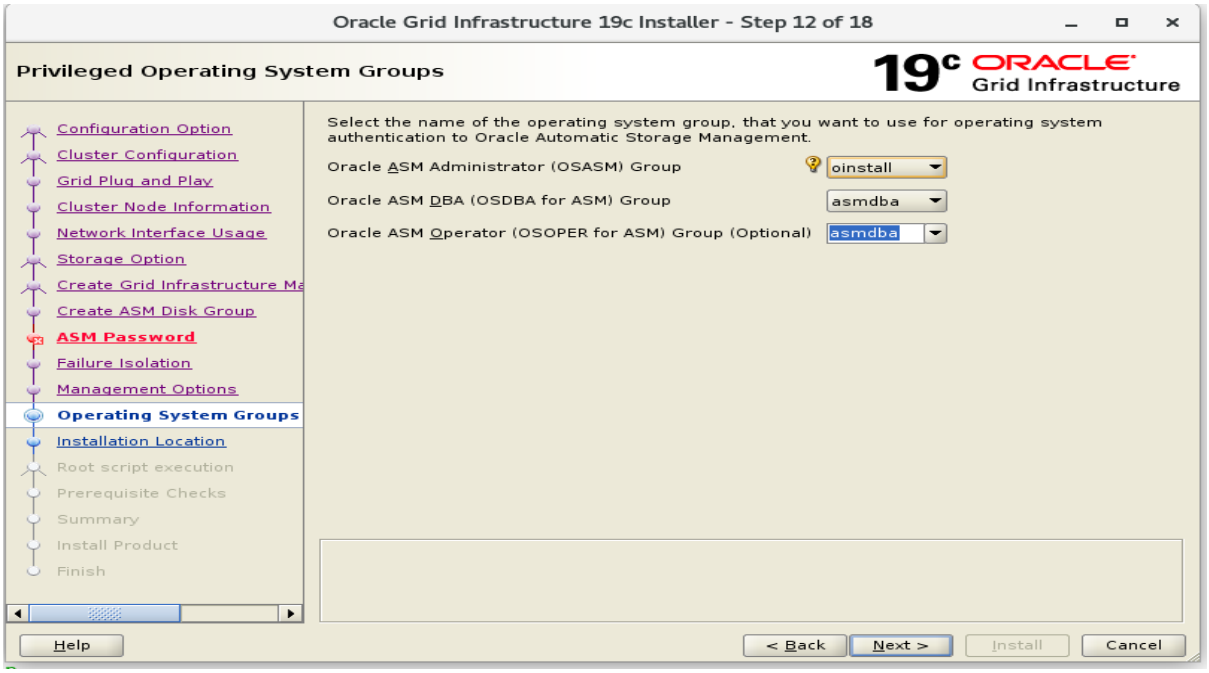


Deselect EM. Click the Next button



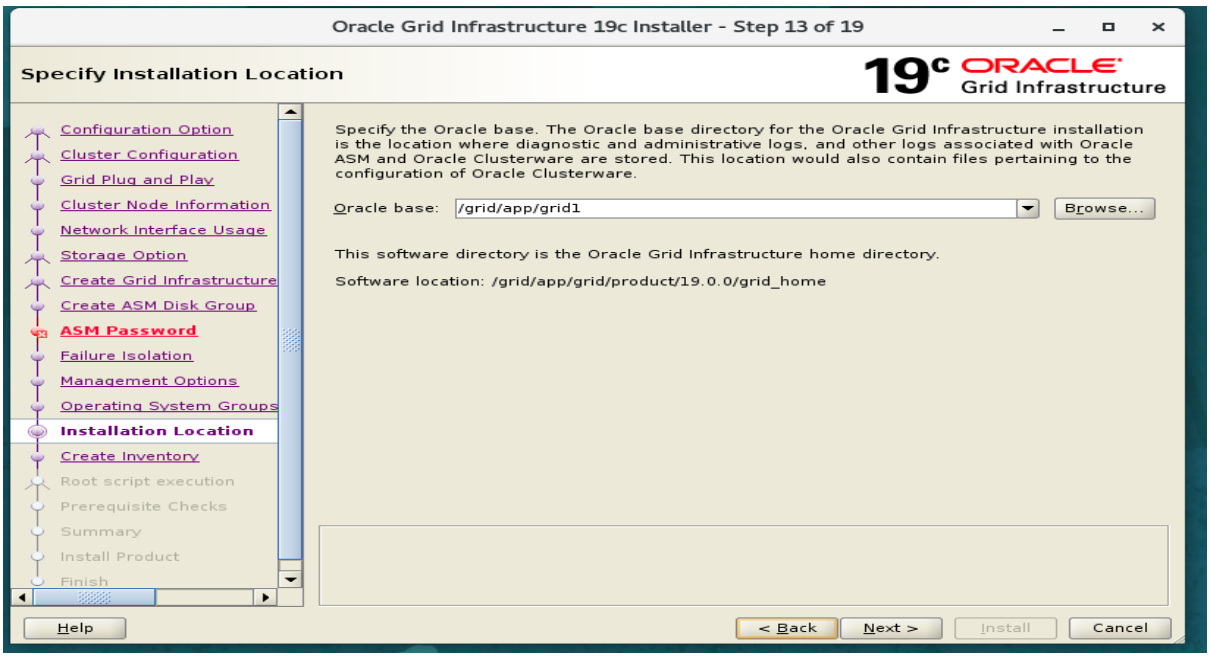
Set the groups to oinstall and click the Next button. Accept the warnings on the subsequent dialog by clicking the Yes button.

1. Asmadmin
2. Asmdba
3. asmdba

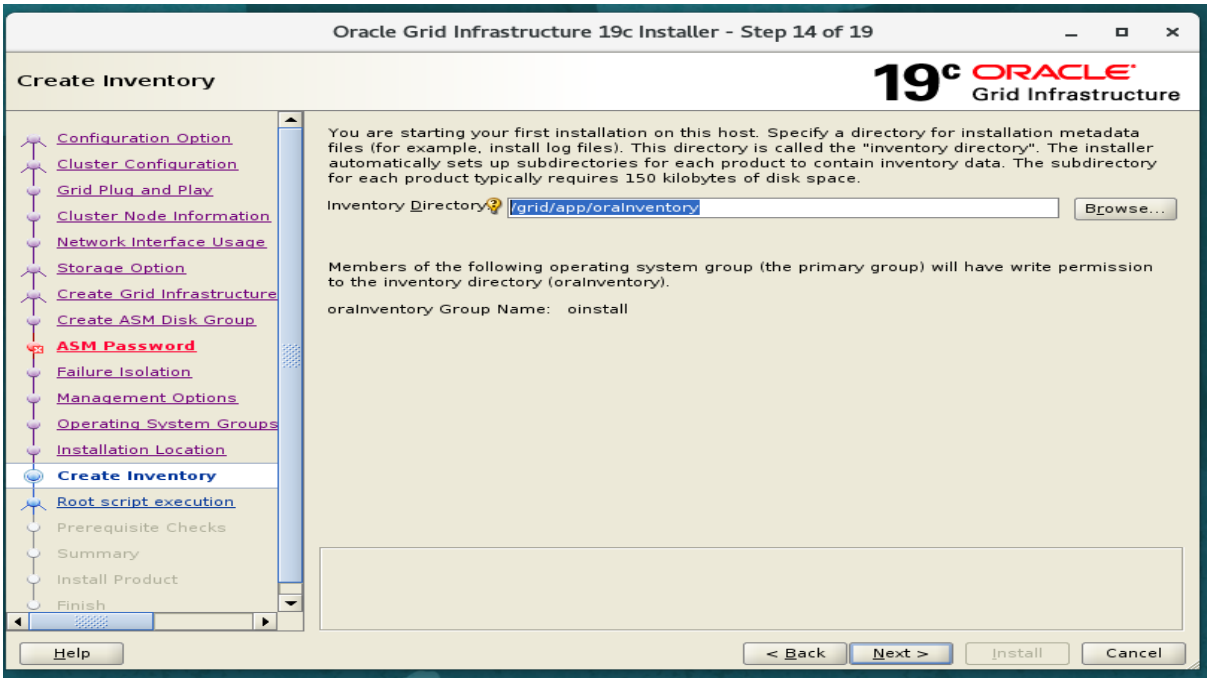


Click the Next button

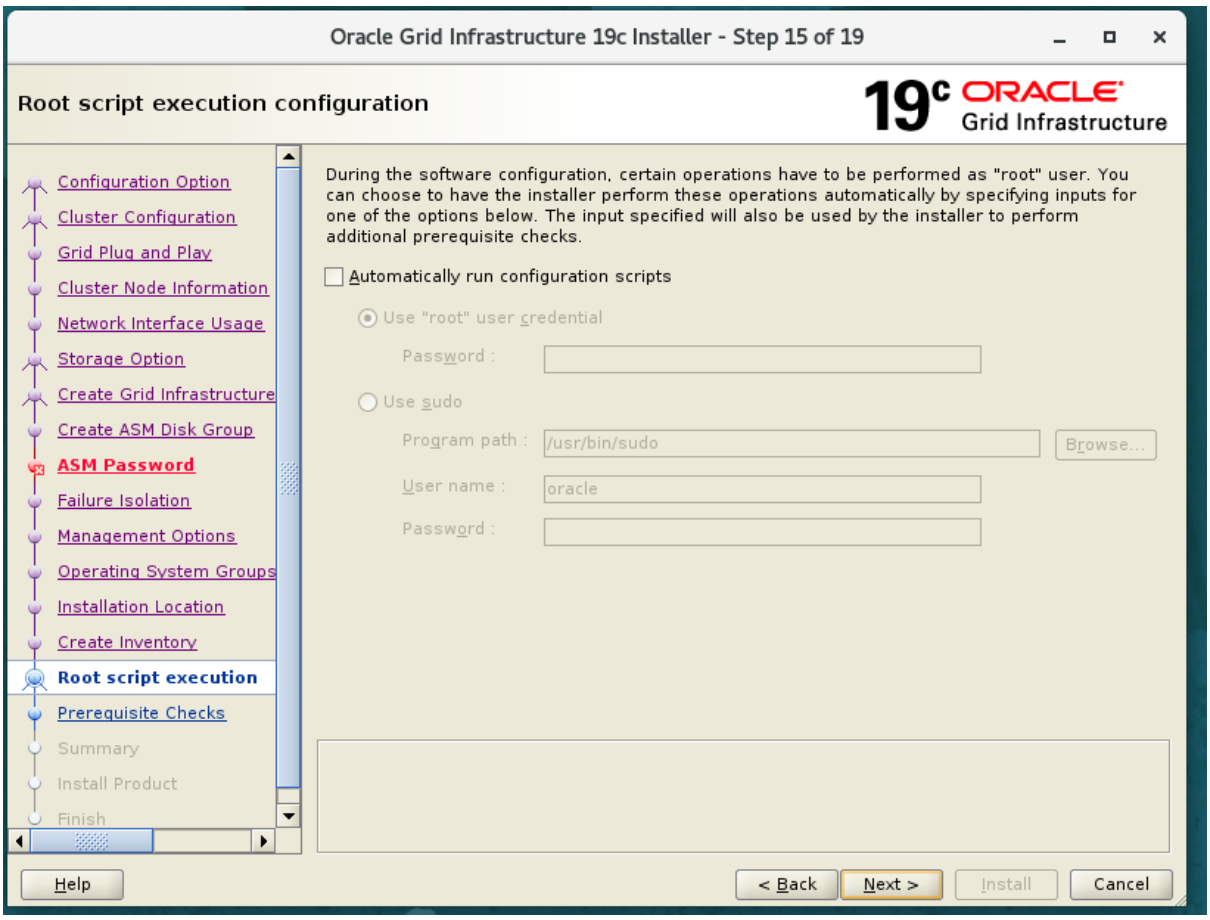
Select base location to grid1 not grid.



Accept the default inventory directory by click the Next button



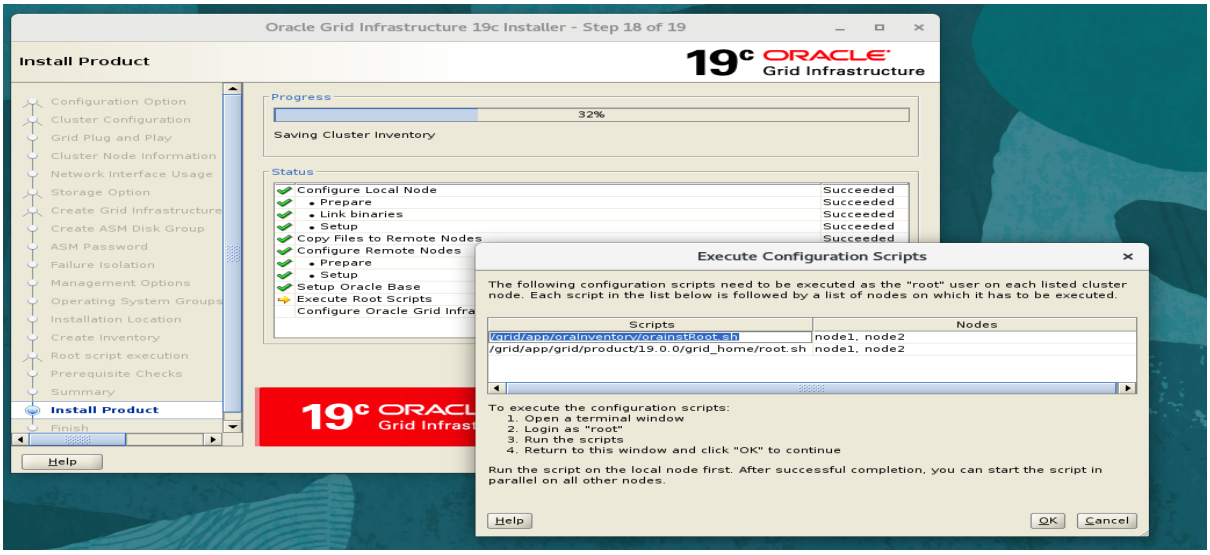
Click the Next button.



Check the Ignore All checkbox and click the Next button.

Double check and click the Install button

When prompted, run the configuration scripts on each node one by one

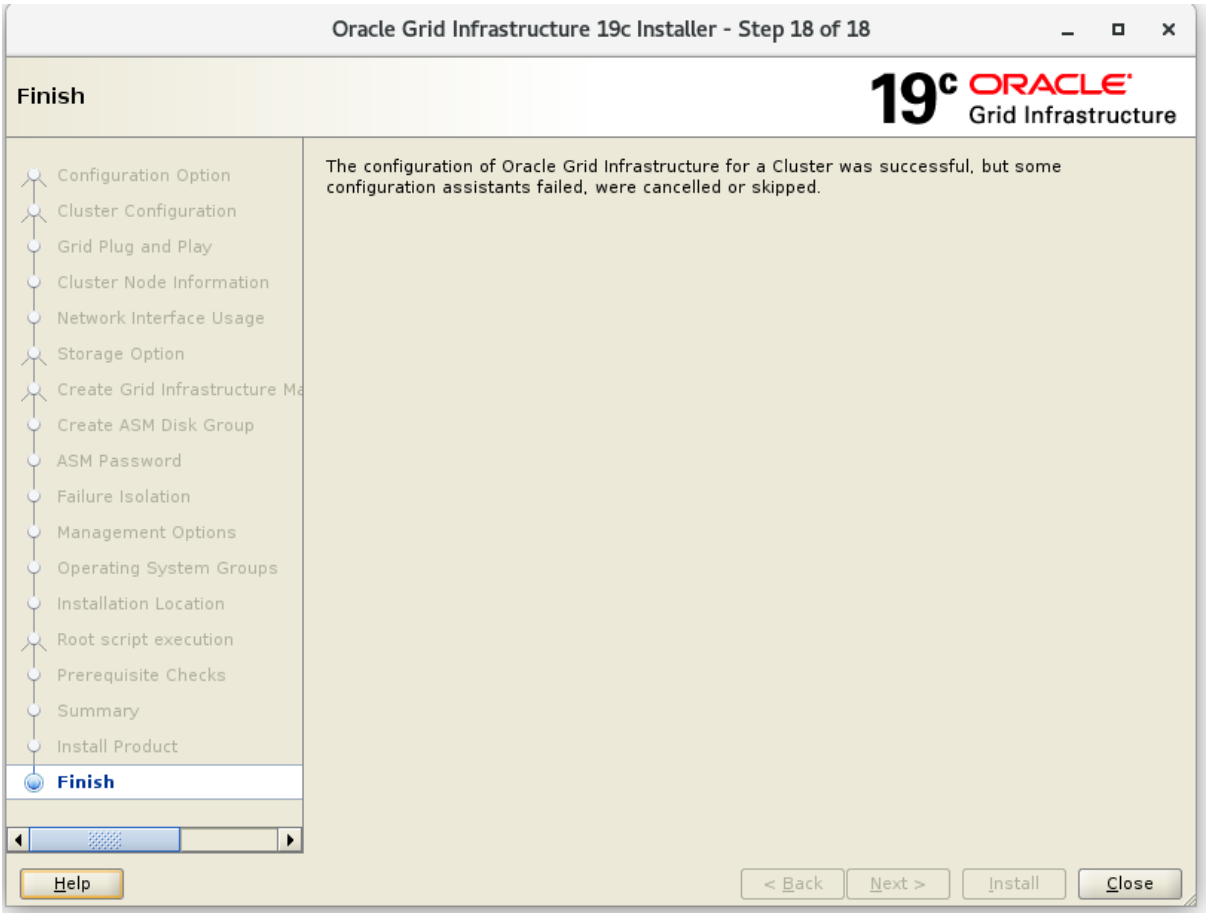


Root script ouput:

```
[root@node1 grid_home]# ./root.sh
Performing root user operation.

The following environment variables are set as:
    ORACLE_OWNER= grid
    ORACLE_HOME=  /grid/app/grid/product/19.0.0/grid_home

Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.


Creating /etc/oratab file...
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Relinking oracle with rac_on option
Using configuration parameter file: /grid/app/grid/product/19.0.0/grid_home/crs/install/crsconfig_params
The log of current session can be found at:
  /grid/app/grid1/crsdata/node1/crsconfig/rootcrs_node1_2023-12-10_05-04-03PM.log
 2023/12/10 17:04:52 CLSRSC-594: Executing installation step 1 of 19: 'SetupTFA'.
2023/12/10 17:04:52 CLSRSC-594: Executing installation step 2 of 19: 'ValidateEnv'.
2023/12/10 17:04:52 CLSRSC-363: User ignored prerequisites during installation
2023/12/10 17:04:52 CLSRSC-594: Executing installation step 3 of 19: 'CheckFirstNode'.
```

```
Relinking oracle with rac_on option
Using configuration parameter file: /grid/app/grid/product/19.0.0/grid_home/crs/install/crsconfig_params
The log of current session can be found at:
  /grid/app/grid1/crsdata/node1/crsconfig/rootcrs_node1_2023-12-10_05-04-03PM.log
 2023/12/10 17:04:52 CLSRSC-594: Executing installation step 1 of 19: 'SetupTFA'.
2023/12/10 17:04:52 CLSRSC-594: Executing installation step 2 of 19: 'ValidateEnv'.
2023/12/10 17:04:52 CLSRSC-363: User ignored prerequisites during installation
2023/12/10 17:04:52 CLSRSC-594: Executing installation step 3 of 19: 'CheckFirstNode'.
2023/12/10 17:04:54 CLSRSC-594: Executing installation step 4 of 19: 'GenSiteGUIDs'.
2023/12/10 17:04:55 CLSRSC-594: Executing installation step 5 of 19: 'SetupOSD'.
2023/12/10 17:04:55 CLSRSC-594: Executing installation step 6 of 19: 'CheckCRSConfig'.
2023/12/10 17:04:58 CLSRSC-594: Executing installation step 7 of 19: 'SetupLocalGPNP'.
2023/12/10 17:05:28 CLSRSC-594: Executing installation step 8 of 19: 'CreateRootCert'.
2023/12/10 17:05:34 CLSRSC-594: Executing installation step 9 of 19: 'ConfigOLR'.
2023/12/10 17:05:48 CLSRSC-594: Executing installation step 10 of 19: 'ConfigCHMOS'.
2023/12/10 17:05:48 CLSRSC-594: Executing installation step 11 of 19: 'CreateOHASD'.
2023/12/10 17:06:10 CLSRSC-594: Executing installation step 12 of 19: 'ConfigOHASD'.
2023/12/10 17:06:18 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'
2023/12/10 17:06:52 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.
2023/12/10 17:07:15 CLSRSC-594: Executing installation step 13 of 19: 'InstallAFD'.
2023/12/10 17:07:20 CLSRSC-594: Executing installation step 14 of 19: 'InstallACFS'.
2023/12/10 17:07:25 CLSRSC-594: Executing installation step 15 of 19: 'InstallKA'.
2023/12/10 17:07:29 CLSRSC-594: Executing installation step 16 of 19: 'InitConfig'.

ASM has been created and started successfully.

[DBT-30001] Disk groups created successfully. Check /grid/app/grid1/cfgtoollogs/asmca/asmca-231210PM050817.log for details.

2023/12/10 17:23:11 CLSRSC-482: Running command: '/grid/app/grid/product/19.0.0/grid_home/bin/ocrconfig -upgrade grid oinstall'
  CRS-4256: Updating the profile
Successful addition of voting disk 41cce048509d4f31bfe1a1cf38ff982e.
Successfully replaced voting disk group with +OCR_DATA.
CRS-4256: Updating the profile
CRS-4266: Voting file(s) successfully replaced
##  STATE    File Universal Id                File Name Disk group
--  -----    -----------------                --------- ---------
 1. ONLINE   41cce048509d4f31bfe1a1cf38ff982e (/dev/oracleasm/disks/ASMOCR) [OCR_DATA]
Located 1 voting disk(s).
  2023/12/10 17:27:50 CLSRSC-594: Executing installation step 17 of 19: 'StartCluster'.
  2023/12/10 17:30:15 CLSRSC-343: Successfully started Oracle Clusterware stack
2023/12/10 17:30:15 CLSRSC-594: Executing installation step 18 of 19: 'ConfigNode'.
          2023/12/10 17:43:43 CLSRSC-594: Executing installation step 19 of 19: 'PostConfig'.
        2023/12/10 17:51:44 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded
   [root@node1 grid_home]#
[root@node1 grid_home]#
[root@node1 grid_home]#
```

```
[root@node2 grid_home]# ./root.sh
Performing root user operation.

The following environment variables are set as:
    ORACLE_OWNER= grid
    ORACLE_HOME=  /grid/app/grid/product/19.0.0/grid_home

Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.

Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Relinking oracle with rac_on option
Using configuration parameter file: /grid/app/grid/product/19.0.0/grid_home/crs/install/crsconfig_params
The log of current session can be found at:
  /grid/app/grid1/crsdata/node2/crsconfig/rootcrs_node2_2023-12-10_05-53-44PM.log
2023/12/10 17:53:56 CLSRSC-594: Executing installation step 1 of 19: 'SetupTFA'.
2023/12/10 17:53:56 CLSRSC-594: Executing installation step 2 of 19: 'ValidateEnv'.
2023/12/10 17:53:56 CLSRSC-363: User ignored prerequisites during installation
2023/12/10 17:53:56 CLSRSC-594: Executing installation step 3 of 19: 'CheckFirstNode'.
2023/12/10 17:53:56 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.
2023/12/10 17:53:57 CLSRSC-594: Executing installation step 4 of 19: 'GenSiteGUIDs'.
2023/12/10 17:53:57 CLSRSC-594: Executing installation step 5 of 19: 'SetupOSD'.
2023/12/10 17:53:57 CLSRSC-594: Executing installation step 6 of 19: 'CheckCRSConfig'.
2023/12/10 17:53:59 CLSRSC-594: Executing installation step 7 of 19: 'SetupLocalGPNP'.
2023/12/10 17:54:00 CLSRSC-594: Executing installation step 8 of 19: 'CreateRootCert'.
2023/12/10 17:54:00 CLSRSC-594: Executing installation step 9 of 19: 'ConfigOLR'.
2023/12/10 17:54:09 CLSRSC-594: Executing installation step 10 of 19: 'ConfigCHMOS'.
2023/12/10 17:54:41 CLSRSC-594: Executing installation step 11 of 19: 'CreateOHASD'.
2023/12/10 17:54:58 CLSRSC-594: Executing installation step 12 of 19: 'ConfigOHASD'.
2023/12/10 17:55:06 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.service'
 2023/12/10 17:55:55 CLSRSC-594: Executing installation step 13 of 19: 'InstallAFD'.
2023/12/10 17:55:56 CLSRSC-594: Executing installation step 14 of 19: 'InstallACFS'.
2023/12/10 17:55:57 CLSRSC-594: Executing installation step 15 of 19: 'InstallKA'.
2023/12/10 17:55:58 CLSRSC-594: Executing installation step 16 of 19: 'InitConfig'.
2023/12/10 17:56:18 CLSRSC-594: Executing installation step 17 of 19: 'StartCluster'.
 2023/12/10 17:58:45 CLSRSC-343: Successfully started Oracle Clusterware stack
2023/12/10 17:58:46 CLSRSC-594: Executing installation step 18 of 19: 'ConfigNode'.
2023/12/10 17:59:52 CLSRSC-594: Executing installation step 19 of 19: 'PostConfig'.
          2023/12/10 18:04:17 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded
[root@node2 grid_home]#
```



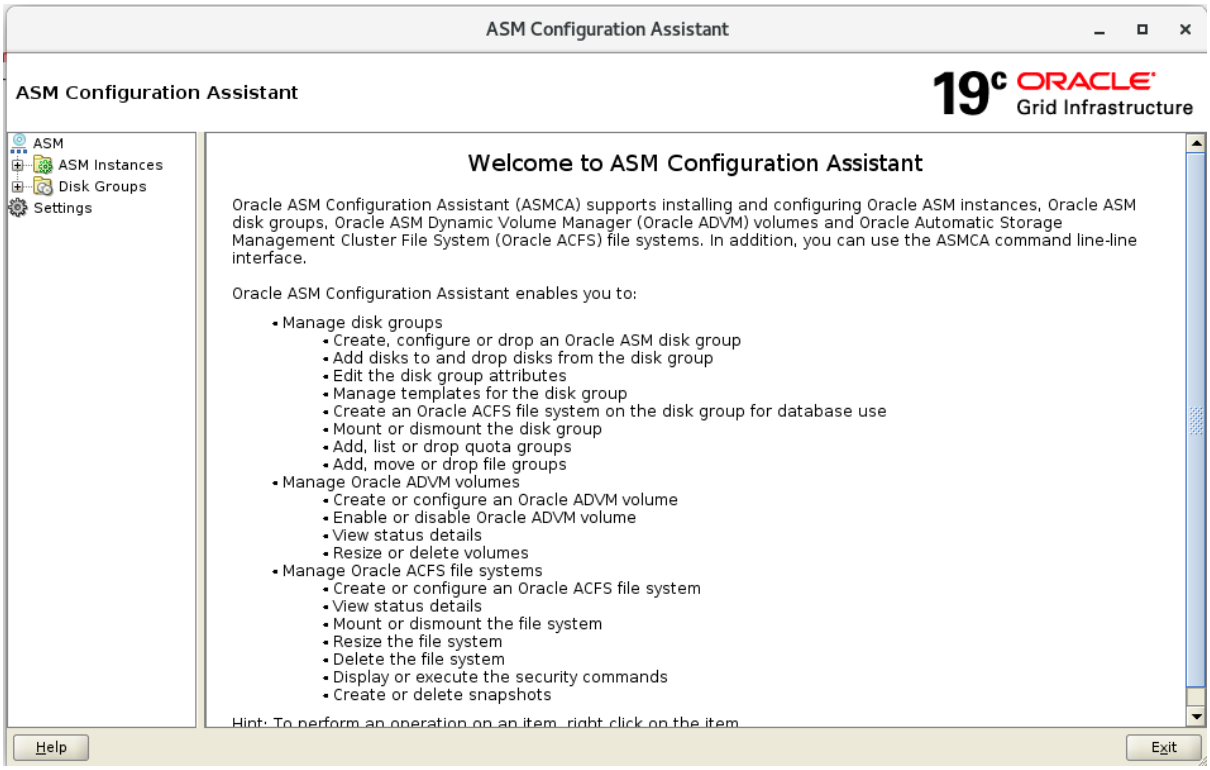

```
[root@node1 ~]# cd /grid/app/grid/product/19.0.0/grid_home/bin/
[root@node1 bin]# ./crsctl check crs
CRS-4638: Oracle High Availability Services is online
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
[root@node1 bin]#
[root@node1 bin]#
[root@node1 bin]#
```

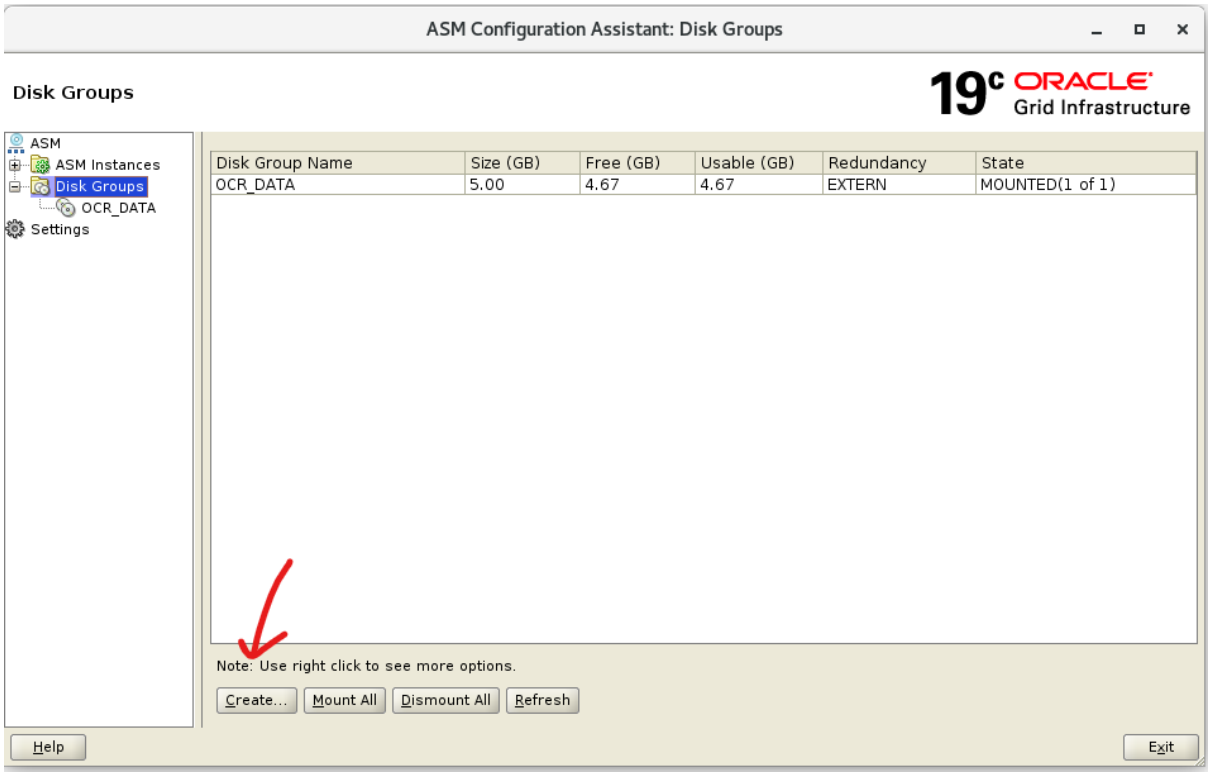
```
[root@node2 grid_home]# cd /grid/app/grid/product/19.0.0/grid_home/bin
[root@node2 bin]# ./crsctl check crs
CRS-4638: Oracle High Availability Services is online
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online
```

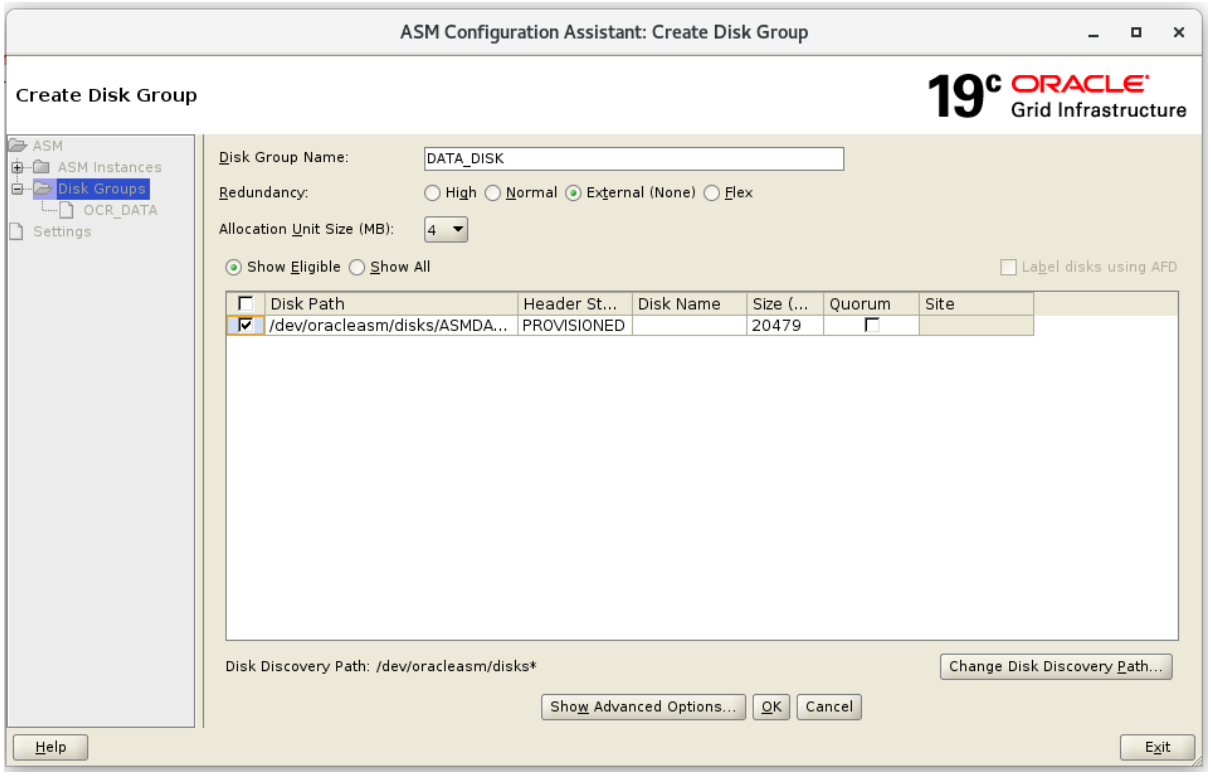
8. Configure ASM Diskgroups

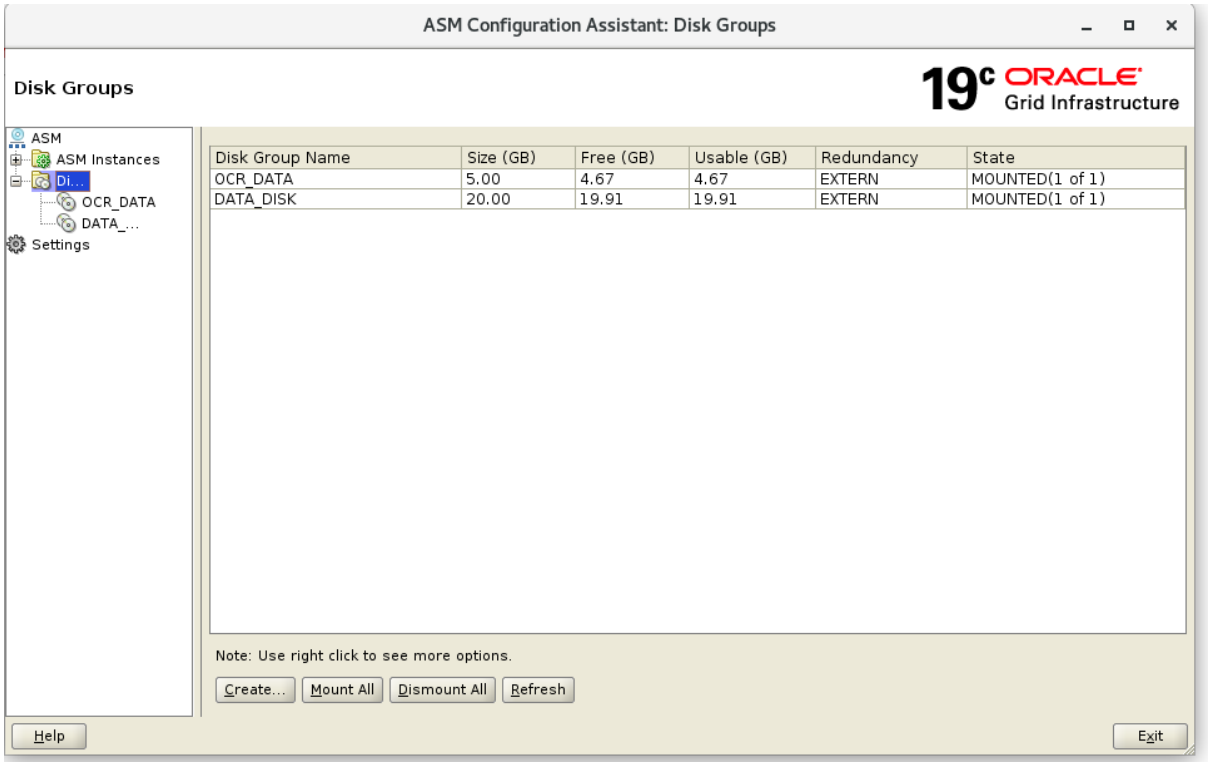
The grid installer allows you to only create one diskgroup (CRS). We need to start the **asmca** utility in order to create DATA and FRA diskgroup which are required for database installation. Click on **Create**

```
[root@node1 ~]# export DISPLAY=:0.0
[root@node1 ~]# xhost +
access control disabled, clients can connect from any host
[root@node1 ~]#
[root@node1 ~]#
[root@node1 ~]# ps -ef|grep pmon
grid      4758     1  0 11:03 ?        00:00:00 asm_pmon_+ASM1
root     30792 30534  0 11:39 pts/1    00:00:00 grep --color=auto pmon
[root@node1 ~]#
[root@node1 ~]#
[root@node1 ~]# su - grid
Last login: Tue Dec 12 11:37:28 IST 2023
[grid@node1 ~]$
[grid@node1 ~]$ export DISPLAY=:0.0
[grid@node1 ~]$ xhost +
access control disabled, clients can connect from any host
[grid@node1 ~]$ asmca
```




ASM Configuration Assistant: Disk Groups
Disk Groups
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Disk Groups
OCR_DATA
Settings
Disk Group Name | Size (GB) | Free (GB) | Usable (GB) | Redundancy | State
OCR_DATA | 5.00 | 4.67 | 4.67 | EXTERN | MOUNTED(1 of 1)
Note: Use right click to see more options.
Create... Mount All Dismount All Refresh
Help
Exit


ASM Configuration Assistant: Create Disk Group
Create Disk Group
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Disk Groups
OCR_DATA
Settings
Disk Group Name: DATA_DISK
Redundancy: High Normal External (None) Flex
Allocation Unit Size (MB): 4
Show Eligible Show All
Label disks using AFD
Disk Path | Header St... | Disk Name | Size (... | Quorum | Site
/dev/oracleasm/disks/ASMDA... | PROVISIONED | | 20479 | |
Disk Discovery Path: /dev/oracleasm/disks*
Change Disk Discovery Path...
Show Advanced Options... OK Cancel
Help
Exit


ASM Configuration Assistant: Disk Groups
Disk Groups
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Di...
OCR_DATA
DATA_...
Settings
Disk Group Name | Size (GB) | Free (GB) | Usable (GB) | Redundancy | State
OCR_DATA | 5.00 | 4.67 | 4.67 | EXTERN | MOUNTED(1 of 1)
DATA_DISK | 20.00 | 19.91 | 19.91 | EXTERN | MOUNTED(1 of 1)
Note: Use right click to see more options.
Create...
Mount All
Dismount All
Refresh
Help
Exit

========== END ==========