

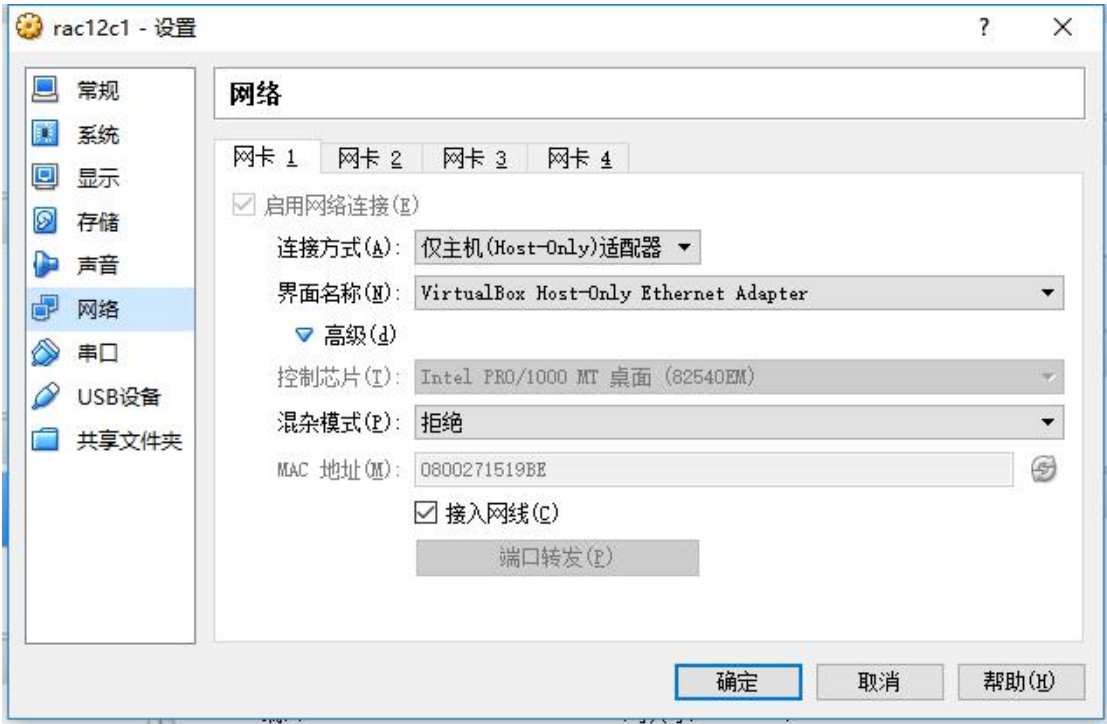
# 12C RAC 安装文档

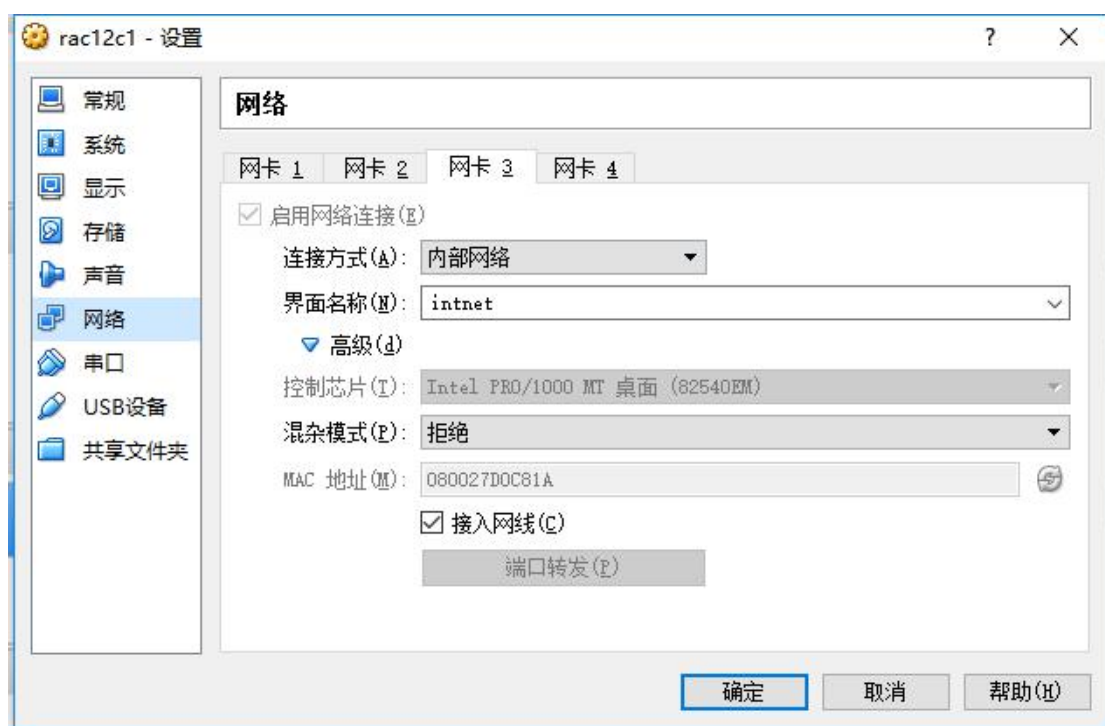
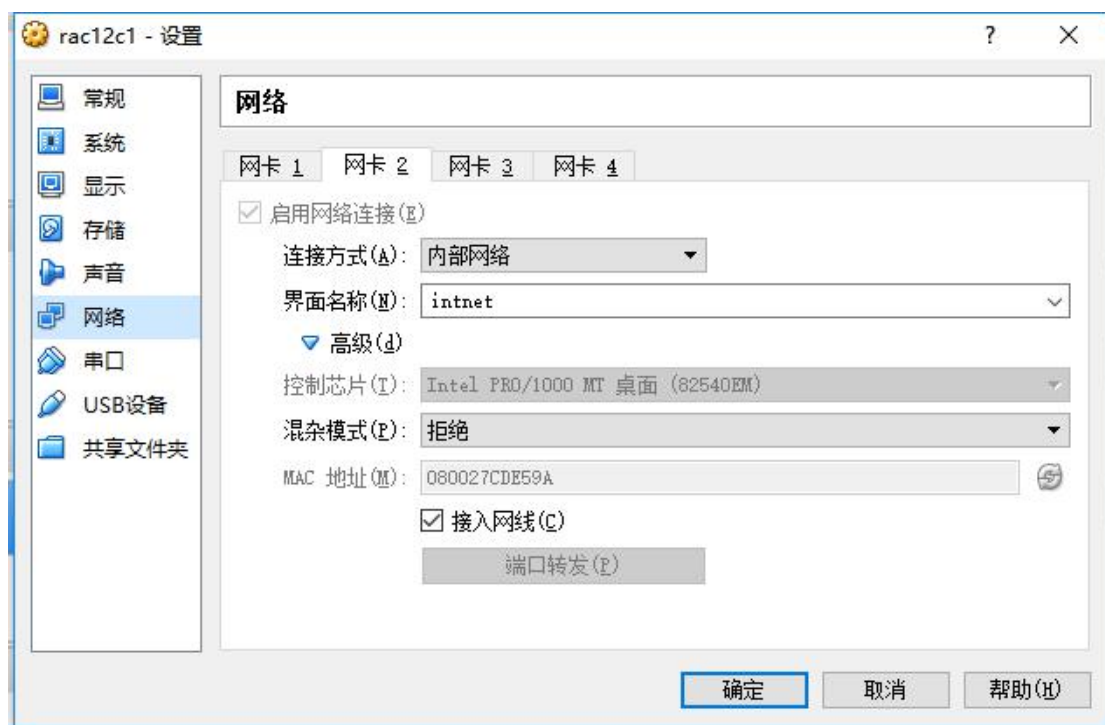
# 1. 准备虚拟机：

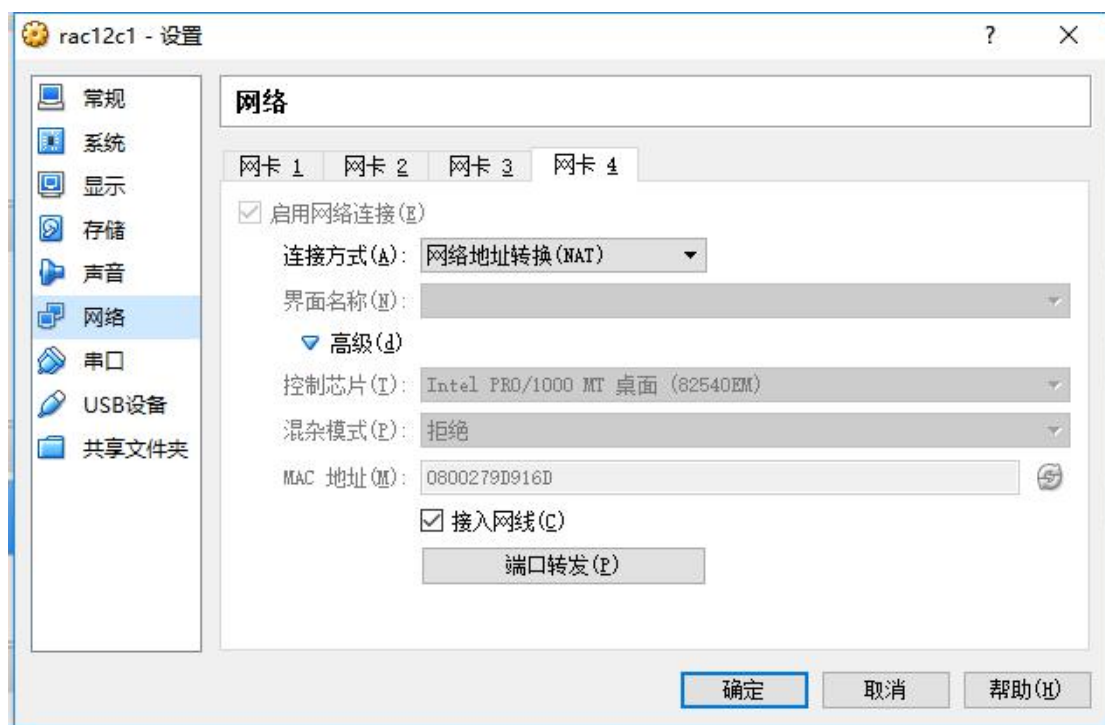
## 1. 存储规划

类型	大小	是否共享
操作系统	70G	NO
DATA DG	10G	YES
FRA DG	5G	YES
OCR + Voting Disk	8G	YES

## 2. 虚拟网卡







## 2. 安装 Linux:

### 1. 规划网卡

127.0.0.1	localhost
192.168.56.150	rac12c1
192.168.56.160	rac12c2
192.168.56.151	rac12c1-vip
192.168.56.161	rac12c2-vip
10.10.1.150	rac12c1-priv
10.10.1.160	rac12c2-priv
192.168.56.170	rac12c-scan

### 2. 关闭不必要的服务

```
chkconfig --level 2345 bluetooth off
chkconfig --level 2345 cups off
chkconfig --level 2345 ip6tables off
chkconfig --level 2345 iptables off
chkconfig --level 2345 irqbalance off
chkconfig --level 2345 pcsd off
chkconfig --level 2345 anacron off
chkconfig --level 2345 atd off
chkconfig --level 2345 auditd off
chkconfig --level 2345 avahi-daemon off
chkconfig --level 2345 avahi-dnssd off
chkconfig --level 2345 cpufreq off
chkconfig --level 2345 gpm off
chkconfig --level 2345 hidd off
chkconfig --level 2345 mcstrans off
chkconfig --level 2345 microcode_ctl off
chkconfig --level 2345 netfs off
chkconfig --level 2345 nfslock off
chkconfig --level 2345 portmap off
chkconfig --level 2345 readahead_early off
chkconfig --level 2345 readahead_later off
chkconfig --level 2345 restorecond off
```

```
chkconfig --level 2345 rpcgssd off
chkconfig --level 2345 rhnsd off
chkconfig --level 2345 rpcidmapd off
chkconfig --level 2345 sendmail off
chkconfig --level 2345 setroubleshoot off
chkconfig --level 2345 smartd off
chkconfig --level 2345 xinetd off
chkconfig --level 2345 ntpd off
```

### 3. 创建用户、组，创建安装目录

create\_user.sh

```
groupadd -g 5000 asmadmin
groupadd -g 5001 asmdba
groupadd -g 5002 asmoper
groupadd -g 6000 oinstall
groupadd -g 6001 dba
groupadd -g 6002 oper
useradd -g oinstall -G asmadmin,asmdba,asmoper grid
useradd -g oinstall -G dba,asmdba oracle
```

```
[root@rac1 ~]# groupadd -g 5000 asmadmin
[root@rac1 ~]# groupadd -g 5001 asmdba
[root@rac1 ~]# groupadd -g 5002 asmoper
[root@rac1 ~]# groupadd -g 6000 oinstall
[root@rac1 ~]# groupadd -g 6001 dba
[root@rac1 ~]# groupadd -g 6002 oper
[root@rac1 ~]# useradd -g oinstall -G asmadmin,asmdba,asmoper grid
[root@rac1 ~]# useradd -g oinstall -G dba,asmdba oracle
```

口令都设置为: oracle

```
[root@rac1 ~]# passwd oracle
[root@rac1 ~]# passwd grid
```

创建目录:

```
[root@rac1 ~]# mkdir /oracle
[root@rac1 ~]# mkdir /grid
```

```
[root@rac1 ~]# chown oracle:oinstall /oracle
[root@rac1 ~]# chown grid:oinstall /grid
```

## 4. Yum 安装 oracle-validated

```
[root@node1 ~]# mkdir /media/disk
[root@node1 ~]# mount /dev/cdrom /media/disk
mount: block device /dev/cdrom is write-protected, mounting read-only
```

```
[root@oel5 ~]# cd /etc/yum.repos.d/
[root@oel5 ~]# cp public-yum-el5.repo public-yum-el5.repo.bak
[root@node1 ~]# vi public-yum-el5.repo
```

```
[oel5]
name = Enterprise Linux 5.8 DVD
baseurl=file:///media/disk/Server/
gpgcheck=0
enabled=1
```

```
[root@rac1 ~]# yum install oracle-validated
```

## 5. 调整 grid 用户内核参数

```
[root@rac1 ~]# vi /etc/security/limits.conf
```

```
# Oracle-Validated setting for nofile soft limit is 131072
grid soft nofile 131072

# Oracle-Validated setting for nofile hard limit is 131072
grid hard nofile 131072

# Oracle-Validated setting for nproc soft limit is 131072
grid soft nproc 131072

# Oracle-Validated setting for nproc hard limit is 131072
grid hard nproc 131072

# Oracle-Validated setting for core soft limit is unlimited
grid soft core unlimited

# Oracle-Validated setting for core hard limit is unlimited
grid hard core unlimited

# Oracle-Validated setting for memlock soft limit is 50000000
```

```
grid    soft    memlock    50000000
```

```
# Oracle-Validated setting for memlock hard limit is 50000000
```

```
grid    hard    memlock    50000000
```

检查参数是否生效：

```
[root@rac1 ~]# su - oracle
```

```
[oracle@rac1 ~]$ ulimit -a
```

```
[root@rac1 ~]# su - grid
```

```
[grid@rac1 ~]$ ulimit -a
```

## 6. 关闭虚拟机

```
[root@node1 ~]# init 0
```



### 3. 克隆虚拟机：

#### 1. 修改 rac2 主机 ip 地址

```
127.0.0.1 localhost
#node1
192.168.56.151 rac1 rac1.oracle.com
192.168.56.152 rac1-vip

#node2
192.168.56.161 rac2 rac2.oracle.com
192.168.56.162 rac2-vip

#scan
192.168.56.170 sky-cluster sky-cluster-scan

#priv
10.10.10.11 rac1-priv
10.10.10.12 rac2-priv
```

#### 2. 修改主机默认界面为字符界面

```
[root@node2 ~]# vi /etc/inittab
id:3:initdefault:
```

#### 3. 重启主机验证信息

## 4. 配置共享存储:

### 1. 添加磁盘

### 2. 将磁盘修改为共享属性

### 3. 将共享磁盘挂载到 node2 主机

### 4. 使用 udev 绑定 scsi 设备

```
[root@rac12c1 software]# fdisk /dev/sdc
```

Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel

Building a new DOS disklabel with disk identifier 0x5860ff38.

Changes will remain in memory only, until you decide to write them.

After that, of course, the previous content won't be recoverable.

Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)

WARNING: DOS-compatible mode is deprecated. It's strongly recommended to  
switch off the mode (command 'c') and change display units to  
sectors (command 'u').

Command (m for help): n

Command action

e extended

p primary partition (1-4)

p

Partition number (1-4): 1

First cylinder (1-1044, default 1):

Using default value 1

Last cylinder, +cylinders or +size{K,M,G} (1-1044, default 1044):

Using default value 1044

Command (m for help): w

The partition table has been altered!

Calling ioctl() to re-read partition table.

Syncing disks.

```
[root@rac12c1 software]# partprobe /dev/sdc
```

```
[root@rac12c2 /]# partprobe /dev/sdc
```

```
[root@rac12c2 /]# ls -la /dev/sd*
```

```
brw-rw---- 1 root disk 8,  0 Feb 17 15:58 /dev/sda
```

```
brw-rw---- 1 root disk 8,  1 Feb 17 15:58 /dev/sda1
```

```
brw-rw---- 1 root disk 8,  2 Feb 17 15:58 /dev/sda2
```

```
brw-rw---- 1 root disk 8, 16 Feb 17 16:34 /dev/sdb
```

```
brw-rw---- 1 root disk 8, 17 Feb 17 16:35 /dev/sdb1
```

```
brw-rw---- 1 root disk 8, 32 Feb 17 16:48 /dev/sdc
```

```
brw-rw---- 1 root disk 8, 33 Feb 17 16:48 /dev/sdc1
```

```
brw-rw---- 1 root disk 8, 48 Feb 17 16:48 /dev/sdd
```

```
brw-rw---- 1 root disk 8, 49 Feb 17 16:48 /dev/sdd1
```

```
brw-rw---- 1 root disk 8, 64 Feb 17 16:48 /dev/sde
```

```
brw-rw---- 1 root disk 8, 65 Feb 17 16:48 /dev/sde1
```

```
[root@rac12c1 software]# cat disk.sh
```

```
for i in c d e
```

```
do
```

```
    diskinfo=`fdisk -l /dev/sd$i | grep "Disk /dev/sd$i"``
```

```
    echo 'scsi_id:' `scsi_id -g -u -d /dev/sd$i` $diskinfo | awk -F',' '{print $1}' >>
```

```
diskinfo.tmp
```

```
done
```

```
cat diskinfo.tmp
```

```
rm diskinfo.tmp
```

```
[root@rac12c1 software]# sh ./disk.sh
```

```
scsi_id: 1ATA_VBOX_HARDDISK_VBd5d88bf6-083eaae8 Disk /dev/sdc: 8589 MB
```

```
scsi_id: 1ATA_VBOX_HARDDISK_VB652f16bd-9463a4a5 Disk /dev/sdd: 10.7 GB
```

scsi\_id: 1ATA\_VBOX\_HARDDISK\_VBf8a83f66-2c9b1d80 Disk /dev/sde: 5368 MB

```
[root@rac12c2 /]# vi /etc/udev/rules.d/99-oracle-asmdevices.rules
```

```
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent",  
RESULT=="1ATA_VBOX_HARDDISK_VBd5d88bf6-083eaae8", NAME="asm-ocr",  
OWNER="grid", GROUP="asmadmin", MODE="0660"
```

```
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent",  
RESULT=="1ATA_VBOX_HARDDISK_VB652f16bd-9463a4a5", NAME="asm-data",  
OWNER="grid", GROUP="asmadmin", MODE="0660"
```

```
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent",  
RESULT=="1ATA_VBOX_HARDDISK_VBf8a83f66-2c9b1d80", NAME="asm-fra",  
OWNER="grid", GROUP="asmadmin", MODE="0660"
```

```
[root@rac1 ~]# ls -la /dev/sd*
```

```
brw-r----- 1 root disk 8,  0 Jan 16 21:35 /dev/sda  
brw-r----- 1 root disk 8,  1 Jan 16 21:36 /dev/sda1  
brw-r----- 1 root disk 8,  2 Jan 16 21:35 /dev/sda2  
brw-r----- 1 root disk 8, 16 Jan 16 21:35 /dev/sdb  
brw-r----- 1 root disk 8, 32 Jan 16 21:35 /dev/sdc
```

```
for i in b c;  
do  
    echo "KERNEL==\"sd*\", BUS==\"scsi\", PROGRAM==\"/sbin/scsi_id -g -u -s %p\",  
RESULT==\"`scsi_id -g -u -s /block/sd$i`\", NAME=\"asm-disk$i\", OWNER=\"grid\",  
GROUP=\"asmadmin\", MODE=\"0660\""  
done
```

```
[root@rac1 ~]# for i in b c;
```

```
> do
```

```
> echo "KERNEL==\"sd*\", BUS==\"scsi\", PROGRAM==\"/sbin/scsi_id -g -u -s %p\",  
RESULT==\"`scsi_id -g -u -s /block/sd$i`\", NAME=\"asm-disk$i\", OWNER=\"grid\",  
GROUP=\"asmadmin\", MODE=\"0660\""
```

```
> done
```

```
KERNEL=="sd*", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -s %p",  
RESULT=="SATA_VBOX_HARDDISK_VBc83e048f-32af0e7f_", NAME="asm-diskb",  
OWNER="grid", GROUP="asmadmin", MODE="0660"  
KERNEL=="sd*", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -s %p",  
RESULT=="SATA_VBOX_HARDDISK_VB53666ace-905881c3_", NAME="asm-diskc",  
OWNER="grid", GROUP="asmadmin", MODE="0660"
```

```
[root@rac1 ~]# cd /etc/udev/rules.d/
```

```
[root@rac1 rules.d]# vi 99-oracle-asmdevices.rules
```

```
KERNEL=="sd*",    BUS=="scsi",    PROGRAM=="sbin/scsi_id -g -u -s %p",  
RESULT=="SATA_VBOX_HARDDISK_VBc83e048f-32af0e7f_",    NAME="asm-diskb",  
OWNER="grid", GROUP="asmadmin", MODE="0660"  
KERNEL=="sd*",    BUS=="scsi",    PROGRAM=="sbin/scsi_id -g -u -s %p",  
RESULT=="SATA_VBOX_HARDDISK_VB53666ace-905881c3_",    NAME="asm-diskc",  
OWNER="grid", GROUP="asmadmin", MODE="0660"
```

```
[root@rac1 rules.d]# start_udev
```

```
Starting udev: [ OK ]
```

```
[root@rac1 rules.d]# ls -la /dev/asm*
```

```
brw-rw---- 1 grid asmadmin 8, 16 Jan 17 02:15 /dev/asm-diskb  
brw-rw---- 1 grid asmadmin 8, 32 Jan 17 02:15 /dev/asm-diskc
```

单个磁盘分区进行 udev 绑定

```
[root@rac11g1 rules.d]# vi 99-oracle-asmdevices.rules
```

```
KERNEL=="sd?1",  BUS=="scsi",  PROGRAM=="sbin/scsi_id -g -u -s /block/$parent",  
RESULT=="SATA_VBOX_HARDDISK_VBe7efc895-388c9867_",    NAME="ASM-OCR",  
OWNER="grid", GROUP="asmadmin", MODE="0660"  
  
KERNEL=="sd?2",  BUS=="scsi",  PROGRAM=="sbin/scsi_id -g -u -s /block/$parent",  
RESULT=="SATA_VBOX_HARDDISK_VBe7efc895-388c9867_",    NAME="ASM-DATA",  
OWNER="grid", GROUP="asmadmin", MODE="0660"  
  
KERNEL=="sd?3",  BUS=="scsi",  PROGRAM=="sbin/scsi_id -g -u -s /block/$parent",  
RESULT=="SATA_VBOX_HARDDISK_VBe7efc895-388c9867_",    NAME="ASM-FRA",  
OWNER="grid", GROUP="asmadmin", MODE="0660"
```

## 5. 将设备绑定文件复制到 rac2 主机，绑定设备

```
[root@rac1 ~]# cd /etc/udev/rules.d/
```

```
[root@rac1 rules.d]# scp 99-oracle-asmdevices.rules rac2:/etc/udev/rules.d/
```

```
[root@rac2 ~]# start_udev
```

```
Starting udev: [ OK ]
```

```
[root@rac2 ~]# ls -la /dev/asm*
```

```
brw-rw---- 1 grid asmadmin 8, 16 Jan 16 21:46 /dev/asm-diskb  
brw-rw---- 1 grid asmadmin 8, 32 Jan 16 21:46 /dev/asm-diskc
```

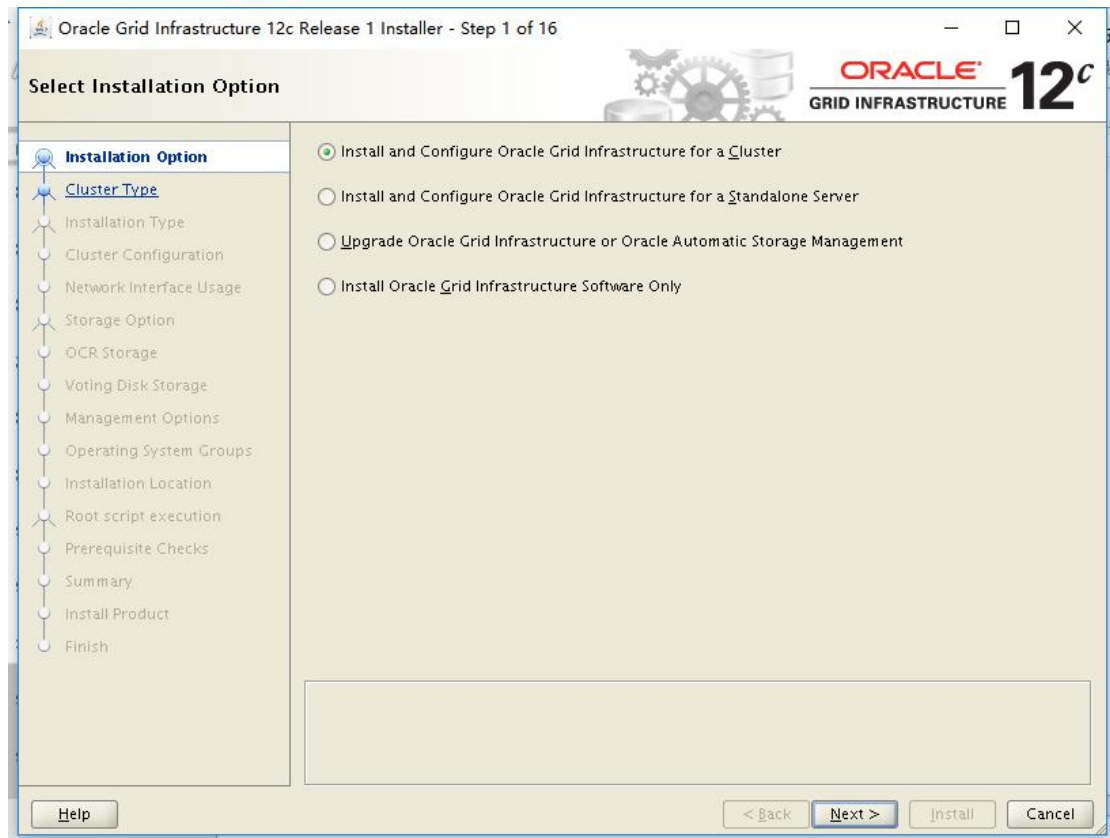


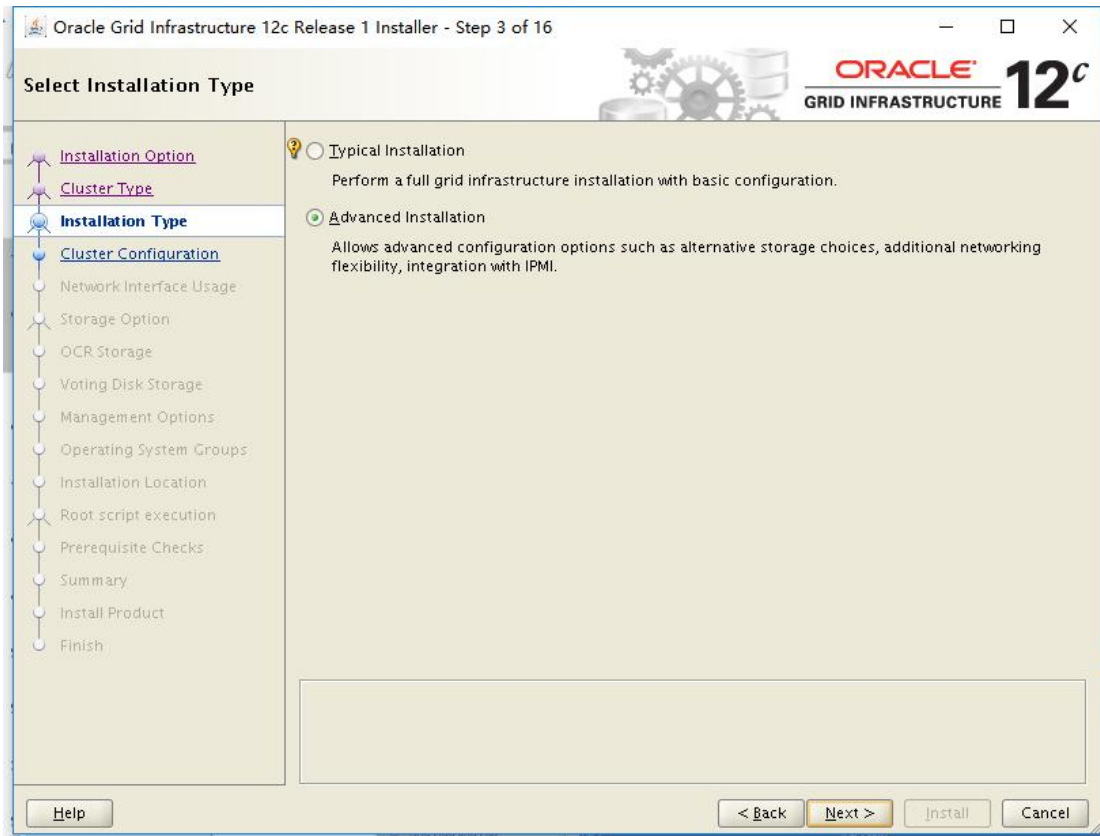
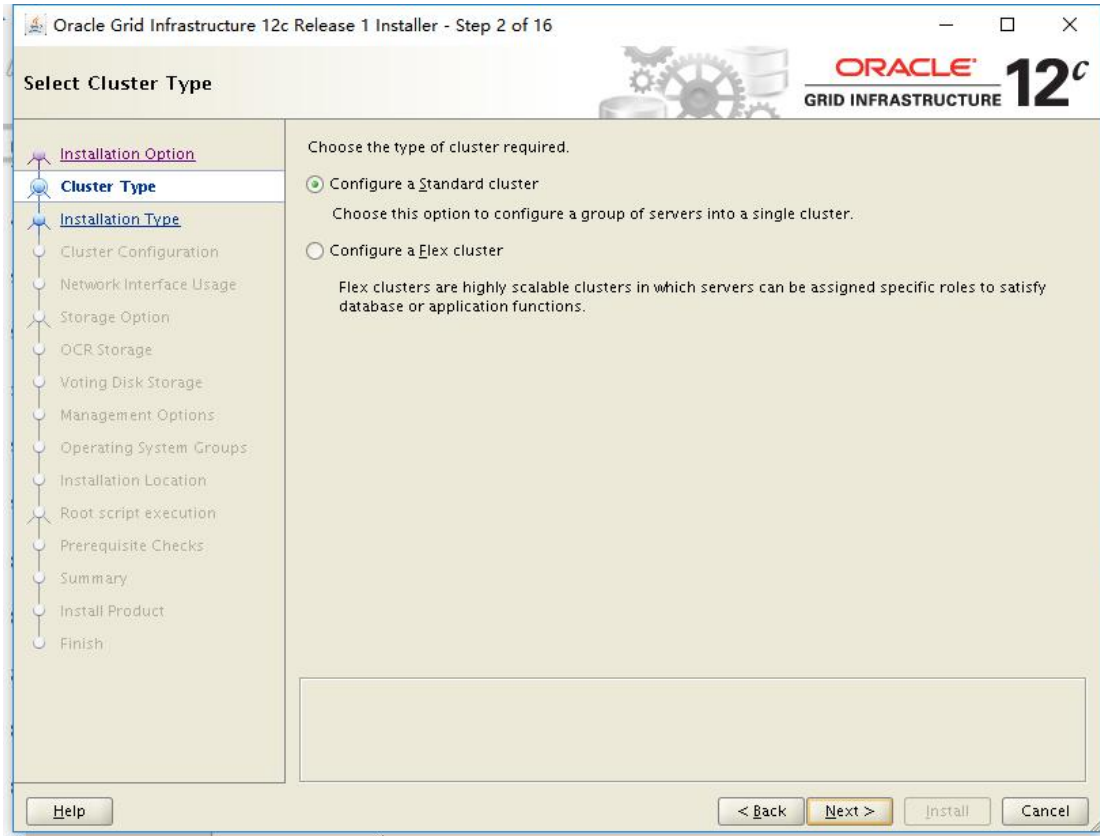
## 5. Grid Infrastructure 安装(使用 grid 用户):

### 1. 上传、解压安装介质

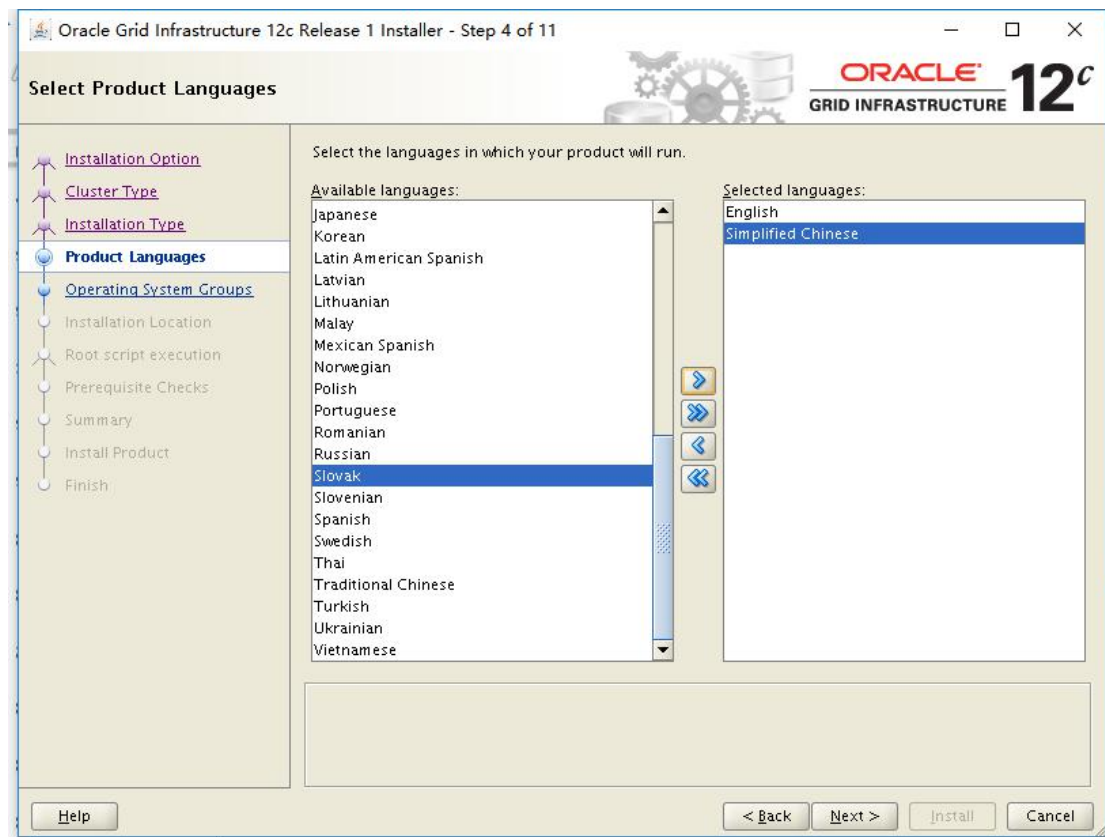
### 2. 开始安装 Grid Infrastructure(使用 grid 用户)

#### a. 使用 grid 用户执行安装程序









Oracle Grid Infrastructure 12c Release 1 Installer - Step 5 of 18

## Grid Plug and Play Information

Single Client Access Name (SCAN) allows clients to use one name in connection strings to connect to the cluster as a whole. Client connect requests to the SCAN name can be handled by any cluster node.

Cluster Name:

SCAN Name:

SCAN Port:

☐ **Configure GNS**

☒ Configure nodes Virtual IPs as assigned by the Dynamic Networks

☒ Create a new GNS

GNS VIP Address:

GNS Sub Domain:

☐ Use Shared GNS

GNS Client Data:

Oracle Grid Infrastructure 12c Release 1 Installer - Step 6 of 18

## Cluster Node Information

Provide the list of nodes to be managed by Oracle Grid Infrastructure with their Public Hostname and Virtual Hostname.

Public Hostname	Virtual Hostname
rac12c1	rac12c1-vip
rac12c2	rac12c2-vip

Oracle Grid Infrastructure 12c Release 1 Installer - Step 6 of 18

ORACLE

GRID INFRASTRUCTURE 12c

Cluster Node Information

Installation Option

Cluster Type

Installation Type

Product Languages

Grid Plug and Play

**Cluster Node Information**

Network Interface Usage

Storage Option

OCR Storage

Voting Disk Storage

Management Options

Operating System Groups

Installation Location

Root script execution

Prerequisite Checks

Summary

Install Product

Finish

Provide the list of nodes to be managed by Oracle Grid Infrastructure with their Public Hostname and Virtual Hostname.

Public Hostname	Virtual Hostname
rac12c1	rac12c1-vip
rac12c2	rac12c2-vip

SSH connectivity...

Use Cluster Configuration File...

Add...

Edit...

Remove

OS Username: grid

OS Password: .....

☐ User home is shared by the selected nodes

☐ Reuse private and public keys existing in the user home

Test

Setup

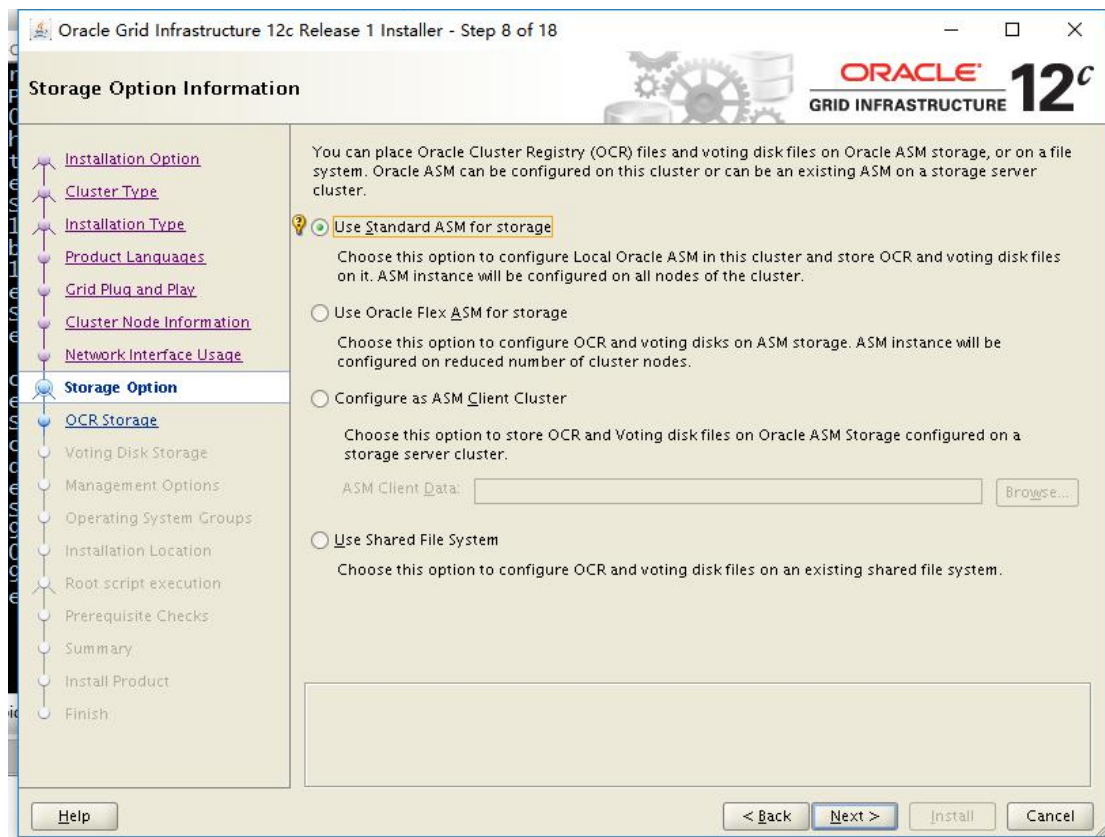
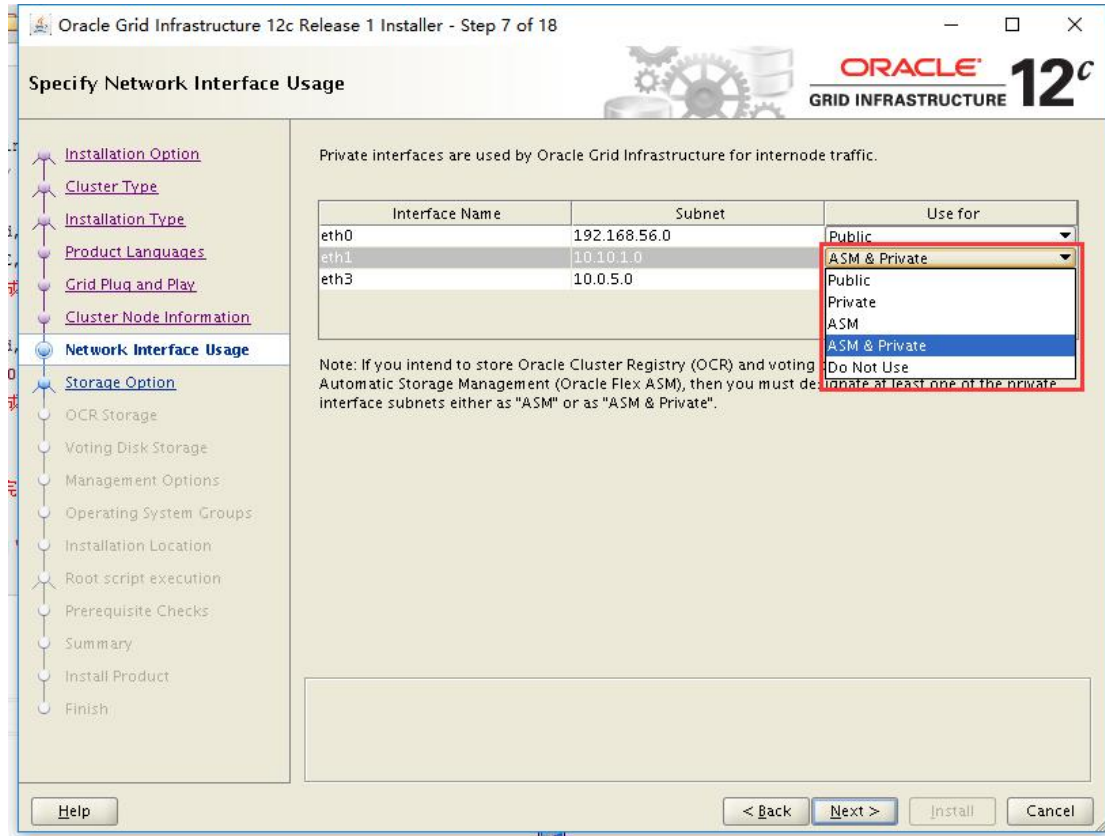
Help

< Back

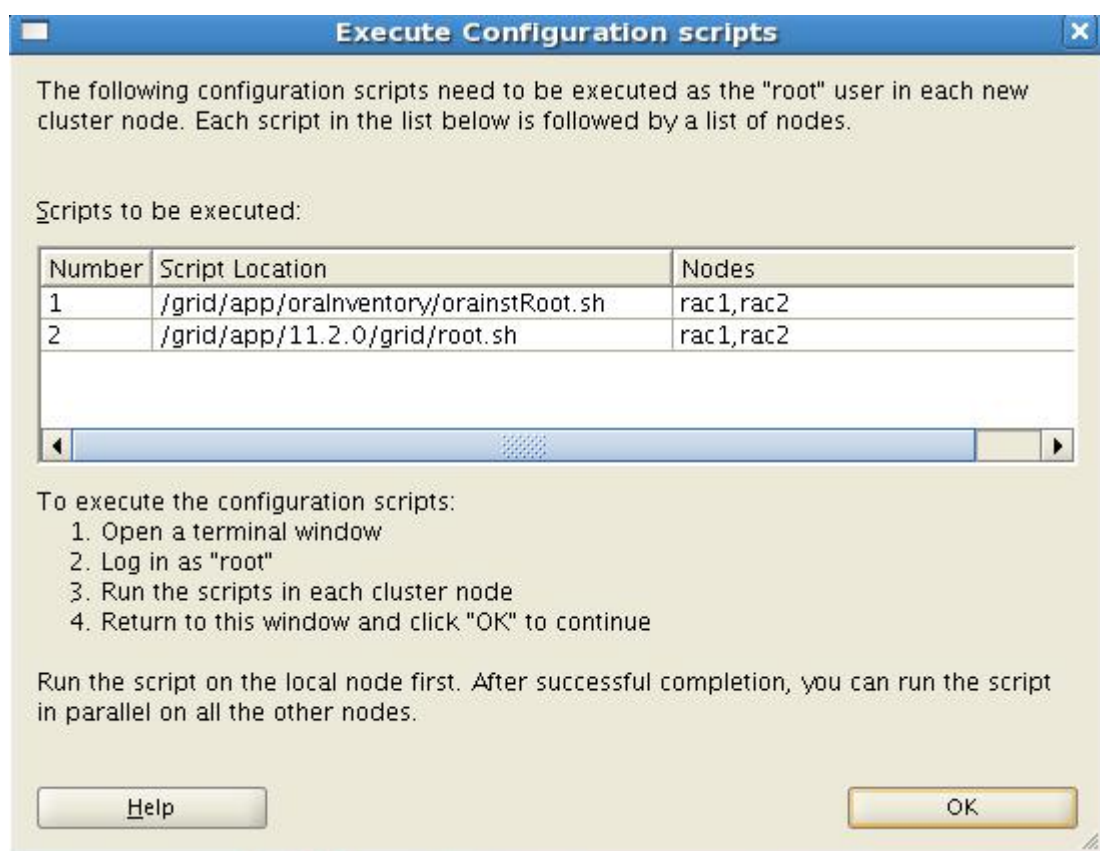
Next >

Install

Cancel



**b. 使用 root 用户执行配置脚本(2 个节点执行)**



```
[root@rac12c1 ~]# /grid/app/12.1/grid/root.sh
```

Performing root user operation.

The following environment variables are set as:

ORACLE\_OWNER= grid

ORACLE\_HOME= /grid/app/12.1/grid

Enter the full pathname of the local bin directory: [/usr/local/bin]:

Copying dbhome to /usr/local/bin ...

Copying oraenv to /usr/local/bin ...

Copying coraenv to /usr/local/bin ...

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.

Using configuration parameter file: /grid/app/12.1/grid/crs/install/crsconfig\_params

2016/02/17 18:27:53 CLSRSC-4001: Installing Oracle Trace File Analyzer (TFA) Collector.

2016/02/17 18:28:34 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.

2016/02/17 18:28:36 CLSRSC-363: User ignored prerequisites during installation

OLR initialization - successful

root wallet

root wallet cert

root cert export

peer wallet

profile reader wallet

pa wallet

peer wallet keys

pa wallet keys

peer cert request

pa cert request

peer cert

pa cert

peer root cert TP  
profile reader root cert TP  
pa root cert TP  
peer pa cert TP  
pa peer cert TP  
profile reader pa cert TP  
profile reader peer cert TP  
peer user cert  
pa user cert

2016/02/17 18:29:59 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.conf'

CRS-4133: Oracle High Availability Services has been stopped.

CRS-4123: Oracle High Availability Services has been started.

CRS-4133: Oracle High Availability Services has been stopped.

CRS-4123: Oracle High Availability Services has been started.

CRS-2672: Attempting to start 'ora.evmd' on 'rac12c1'

CRS-2672: Attempting to start 'ora.mdnsd' on 'rac12c1'

CRS-2676: Start of 'ora.evmd' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.mdnsd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.gpnpd' on 'rac12c1'

CRS-2676: Start of 'ora.gpnpd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.cssdmonitor' on 'rac12c1'

CRS-2672: Attempting to start 'ora.gipcd' on 'rac12c1'

CRS-2676: Start of 'ora.cssdmonitor' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.gipcd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.cssd' on 'rac12c1'

CRS-2672: Attempting to start 'ora.diskmon' on 'rac12c1'

CRS-2676: Start of 'ora.diskmon' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.cssd' on 'rac12c1' succeeded

ASM created and started successfully.

Disk Group DGOOCR created successfully.

CRS-2672: Attempting to start 'ora.crf' on 'rac12c1'

CRS-2672: Attempting to start 'ora.storage' on 'rac12c1'

CRS-2676: Start of 'ora.storage' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.crf' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.crsd' on 'rac12c1'

CRS-2676: Start of 'ora.crsd' on 'rac12c1' succeeded

CRS-4256: Updating the profile

Successful addition of voting disk 2d54b4bf28a04fb7bf42d9651dc6355f.

Successfully replaced voting disk group with +DGOOCR.

CRS-4256: Updating the profile

CRS-4266: Voting file(s) successfully replaced

##	STATE	File Universal Id	File Name	Disk group
----	-------	-------------------	-----------	------------

--	----	-----	-----	-----
----	------	-------	-------	-------

1.	ONLINE	2d54b4bf28a04fb7bf42d9651dc6355f	(/dev/asm-ocr)	[DGOOCR]
----	--------	----------------------------------	----------------	----------

Located 1 voting disk(s).

CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'rac12c1'

CRS-2673: Attempting to stop 'ora.crsd' on 'rac12c1'

CRS-2677: Stop of 'ora.crsd' on 'rac12c1' succeeded

CRS-2673: Attempting to stop 'ora.ctssd' on 'rac12c1'

CRS-2673: Attempting to stop 'ora.evmd' on 'rac12c1'

CRS-2673: Attempting to stop 'ora.storage' on 'rac12c1'

CRS-2673: Attempting to stop 'ora.mdnsd' on 'rac12c1'

CRS-2673: Attempting to stop 'ora.gpnpd' on 'rac12c1'

CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'rac12c1'

CRS-2677: Stop of 'ora.storage' on 'rac12c1' succeeded

CRS-2673: Attempting to stop 'ora.asm' on 'rac12c1'

CRS-2677: Stop of 'ora.drivers.acfs' on 'rac12c1' succeeded

CRS-2677: Stop of 'ora.ctssd' on 'rac12c1' succeeded

CRS-2677: Stop of 'ora.evmd' on 'rac12c1' succeeded



CRS-2677: Stop of 'ora.mdnsd' on 'rac12c1' succeeded

CRS-2677: Stop of 'ora.gpnpd' on 'rac12c1' succeeded

CRS-2677: Stop of 'ora.asm' on 'rac12c1' succeeded

CRS-2673: Attempting to stop 'ora.cluster\_interconnect.haip' on 'rac12c1'

CRS-2677: Stop of 'ora.cluster\_interconnect.haip' on 'rac12c1' succeeded

CRS-2673: Attempting to stop 'ora.cssd' on 'rac12c1'

CRS-2677: Stop of 'ora.cssd' on 'rac12c1' succeeded

CRS-2673: Attempting to stop 'ora.crf' on 'rac12c1'

CRS-2677: Stop of 'ora.crf' on 'rac12c1' succeeded

CRS-2673: Attempting to stop 'ora.gipcd' on 'rac12c1'

CRS-2677: Stop of 'ora.gipcd' on 'rac12c1' succeeded

CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'rac12c1' has completed

CRS-4133: Oracle High Availability Services has been stopped.

CRS-4123: Starting Oracle High Availability Services-managed resources

CRS-2672: Attempting to start 'ora.mdnsd' on 'rac12c1'

CRS-2672: Attempting to start 'ora.evmd' on 'rac12c1'

CRS-2676: Start of 'ora.mdnsd' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.evmd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.gpnpd' on 'rac12c1'

CRS-2676: Start of 'ora.gpnpd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.gipcd' on 'rac12c1'

CRS-2676: Start of 'ora.gipcd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.cssdmonitor' on 'rac12c1'

CRS-2676: Start of 'ora.cssdmonitor' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.cssd' on 'rac12c1'

CRS-2672: Attempting to start 'ora.diskmon' on 'rac12c1'

CRS-2676: Start of 'ora.diskmon' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.cssd' on 'rac12c1' succeeded

CRS-2672: Attempting to start 'ora.cluster\_interconnect.haip' on 'rac12c1'

CRS-2672: Attempting to start 'ora.ctssd' on 'rac12c1'

CRS-2676: Start of 'ora.ctssd' on 'rac12c1' succeeded

CRS-2676: Start of 'ora.cluster\_interconnect.haip' on 'rac12c1' succeeded  
CRS-2672: Attempting to start 'ora.asm' on 'rac12c1'  
CRS-2676: Start of 'ora.asm' on 'rac12c1' succeeded  
CRS-2672: Attempting to start 'ora.storage' on 'rac12c1'  
CRS-2676: Start of 'ora.storage' on 'rac12c1' succeeded  
CRS-2672: Attempting to start 'ora.crf' on 'rac12c1'  
CRS-2676: Start of 'ora.crf' on 'rac12c1' succeeded  
CRS-2672: Attempting to start 'ora.crsd' on 'rac12c1'  
CRS-2676: Start of 'ora.crsd' on 'rac12c1' succeeded  
CRS-6023: Starting Oracle Cluster Ready Services-managed resources  
CRS-6017: Processing resource auto-start for servers: rac12c1  
CRS-6016: Resource auto-start has completed for server rac12c1  
CRS-6024: Completed start of Oracle Cluster Ready Services-managed resources  
CRS-4123: Oracle High Availability Services has been started.  
2016/02/17 18:36:37 CLSRSC-343: Successfully started Oracle Clusterware stack

CRS-2672: Attempting to start 'ora.asm' on 'rac12c1'  
CRS-2676: Start of 'ora.asm' on 'rac12c1' succeeded  
CRS-2672: Attempting to start 'ora.DGOCR.dg' on 'rac12c1'  
CRS-2676: Start of 'ora.DGOCR.dg' on 'rac12c1' succeeded

**2016/02/17 18:38:10 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ...  
succeeded**

[root@rac12c2 ~]# /grid/app/12.1/grid/root.sh

Performing root user operation.

The following environment variables are set as:

ORACLE\_OWNER= grid

ORACLE\_HOME= /grid/app/12.1/grid

Enter the full pathname of the local bin directory: [/usr/local/bin]:

Copying dbhome to /usr/local/bin ...

Copying oraenv to /usr/local/bin ...

Copying coraenv to /usr/local/bin ...

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.

Using configuration parameter file: /grid/app/12.1/grid/crs/install/crsconfig\_params

2016/02/17 18:38:47 CLSRSC-4001: Installing Oracle Trace File Analyzer (TFA) Collector.

2016/02/17 18:39:29 CLSRSC-4002: Successfully installed Oracle Trace File Analyzer (TFA) Collector.

2016/02/17 18:39:31 CLSRSC-363: User ignored prerequisites during installation

OLR initialization - successful

2016/02/17 18:40:59 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.conf'

CRS-4133: Oracle High Availability Services has been stopped.

CRS-4123: Oracle High Availability Services has been started.

CRS-4133: Oracle High Availability Services has been stopped.

CRS-4123: Oracle High Availability Services has been started.

CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources on 'rac12c2'

CRS-2673: Attempting to stop 'ora.drivers.acfs' on 'rac12c2'

CRS-2677: Stop of 'ora.drivers.acfs' on 'rac12c2' succeeded

CRS-2793: Shutdown of Oracle High Availability Services-managed resources on 'rac12c2' has completed

CRS-4133: Oracle High Availability Services has been stopped.

CRS-4123: Starting Oracle High Availability Services-managed resources

CRS-2672: Attempting to start 'ora.mdnsd' on 'rac12c2'

CRS-2672: Attempting to start 'ora.evmd' on 'rac12c2'

CRS-2676: Start of 'ora.evmd' on 'rac12c2' succeeded

CRS-2676: Start of 'ora.mdnsd' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.gpnpd' on 'rac12c2'

CRS-2676: Start of 'ora.gpnpd' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.gipcd' on 'rac12c2'

CRS-2676: Start of 'ora.gipcd' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.cssdmonitor' on 'rac12c2'

CRS-2676: Start of 'ora.cssdmonitor' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.cssd' on 'rac12c2'

CRS-2672: Attempting to start 'ora.diskmon' on 'rac12c2'

CRS-2676: Start of 'ora.diskmon' on 'rac12c2' succeeded

CRS-2676: Start of 'ora.cssd' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.cluster\_interconnect.haip' on 'rac12c2'

CRS-2672: Attempting to start 'ora.ctssd' on 'rac12c2'

CRS-2676: Start of 'ora.ctssd' on 'rac12c2' succeeded

CRS-2676: Start of 'ora.cluster\_interconnect.haip' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.asm' on 'rac12c2'

CRS-2676: Start of 'ora.asm' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.storage' on 'rac12c2'

CRS-2676: Start of 'ora.storage' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.crf' on 'rac12c2'

CRS-2676: Start of 'ora.crf' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.crsd' on 'rac12c2'

CRS-2676: Start of 'ora.crsd' on 'rac12c2' succeeded

CRS-6017: Processing resource auto-start for servers: rac12c2

CRS-2672: Attempting to start 'ora.net1.network' on 'rac12c2'

CRS-2676: Start of 'ora.net1.network' on 'rac12c2' succeeded

CRS-2672: Attempting to start 'ora.ons' on 'rac12c2'

CRS-2676: Start of 'ora.ons' on 'rac12c2' succeeded

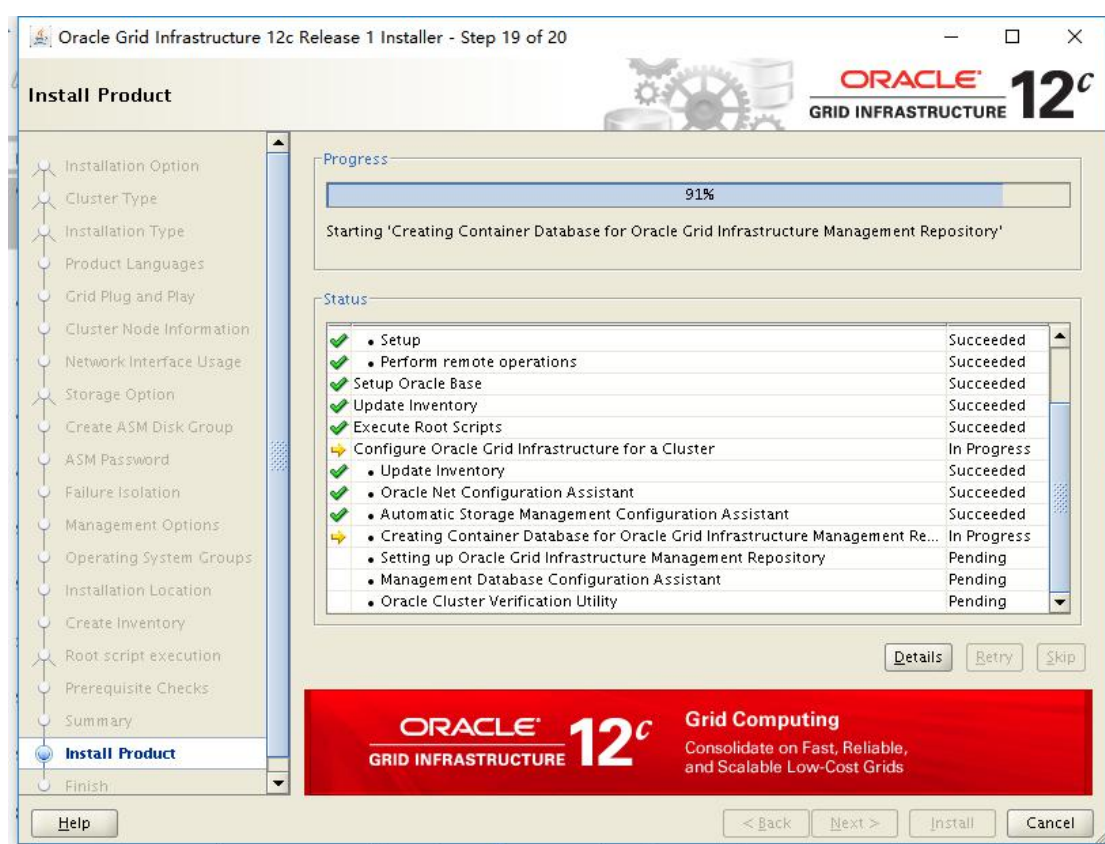
CRS-6016: Resource auto-start has completed for server rac12c2

CRS-6024: Completed start of Oracle Cluster Ready Services-managed resources

CRS-4123: Oracle High Availability Services has been started.

2016/02/17 18:46:22 CLSRSC-343: Successfully started Oracle Clusterware stack

**2016/02/17 18:46:54 CLSRSC-325: Configure Oracle Grid Infrastructure for a Cluster ... succeeded**



### c. 配置 grid 用户环境变量

```
[grid@rac12c1 ~]$ cat .bash_profile
```

```
# .bash_profile
```

```
# Get the aliases and functions
```

```
if [ -f ~/.bashrc ]; then
```

```
. ~/.bashrc
```

```
fi
```

```
# User specific environment and startup programs
```

```
export LANG=C
```

```
export ORACLE_BASE=/grid/app/grid
```

```
export ORACLE_HOME=/grid/app/12.1/grid
```

```
export ORACLE_SID=+ASM1
```

```
export NLS_LANG=AMERICAN_AMERICA.ZHS16GBK
```

```
export NLS_DATE_FORMAT="YYYY-MM-DD HH24:MI:SS"
```

```
export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch:/usr/sbin:/sbin:$PATH
```

```
export DISPLAY=192.168.56.1:0.0
```

```
umask 022
```

## d. 如何卸载 Grid Infrastructure

```
[grid@rac1 deinstall]$ cd $CRS_HOME/deinstall
```

```
[grid@rac1 deinstall]$ ./deinstall
```

```
Checking for required files and bootstrapping ...
```

```
Please wait ...
```

```
Location of logs /tmp/deinstall2013-01-17_01-38-32AM/logs/
```

```
##### ORACLE DEINSTALL & DECONFIG TOOL START #####
```

```
##### CHECK OPERATION START #####
```

```
## [START] Install check configuration ##
```

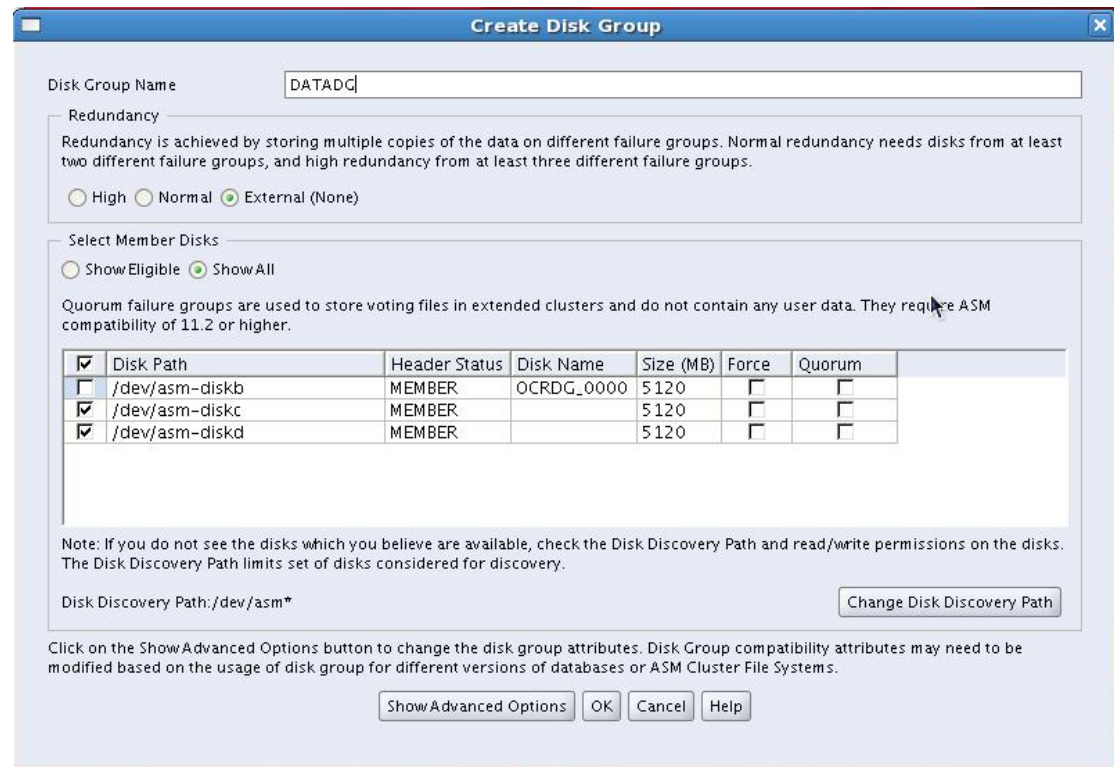
Run 'rm -rf /etc/oraInst.loc' as root on node(s) 'rac1,rac2' at the end of the session.

Run 'rm -rf /opt/ORCLfmap' as root on node(s) 'rac1,rac2' at the end of the session.

主要注意日志中的提示信息，手工在 2 个节点清理信息。

## 6. 配置 asm 磁盘组(使用 grid 用户)

```
[grid@rac1 ~]$ asmca
```



The image shows a 'Create Disk Group' dialog box. At the top, the title bar says 'Create Disk Group'. Below it, the 'Disk Group Name' field contains 'DATADG'. The 'Redundancy' section has three radio buttons: 'High', 'Normal', and 'External (None)', with 'External (None)' selected. Below this is the 'Select Member Disks' section, which has two radio buttons: 'Show Eligible' and 'Show All', with 'Show All' selected. A note explains that Quorum failure groups are used for voting files and require ASM compatibility of 11.2 or higher. A table lists three disks: '/dev/asm-diskb', '/dev/asm-diskc', and '/dev/asm-diskd', all with 'MEMBER' status and '5120' size. The 'Disk Discovery Path' is set to '/dev/asm\*'. At the bottom, there are buttons for 'Show Advanced Options', 'OK', 'Cancel', and 'Help'.

Disk Group Name: DATADG

Redundancy  
Redundancy is achieved by storing multiple copies of the data on different failure groups. Normal redundancy needs disks from at least two different failure groups, and high redundancy from at least three different failure groups.

☐ High ☐ Normal ☒ External (None)

Select Member Disks  
☐ Show Eligible ☒ Show All

Quorum failure groups are used to store voting files in extended clusters and do not contain any user data. They require ASM compatibility of 11.2 or higher.

<input checked="" type="checkbox"/>	Disk Path	Header Status	Disk Name	Size (MB)	Force	Quorum
<input type="checkbox"/>	/dev/asm-diskb	MEMBER	OCRDG_0000	5120	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	/dev/asm-diskc	MEMBER		5120	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	/dev/asm-diskd	MEMBER		5120	<input type="checkbox"/>	<input type="checkbox"/>

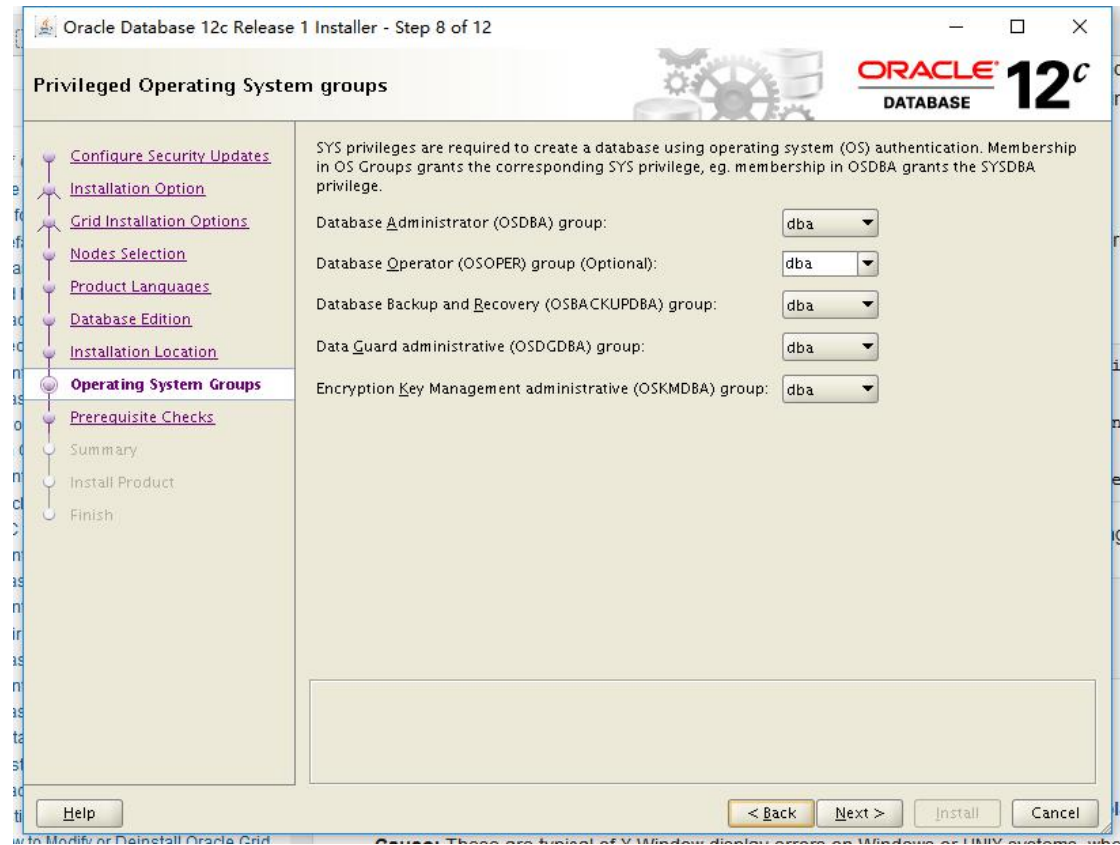
Note: If you do not see the disks which you believe are available, check the Disk Discovery Path and read/write permissions on the disks. The Disk Discovery Path limits set of disks considered for discovery.

Disk Discovery Path: /dev/asm\* [Change Disk Discovery Path](#)

Click on the Show Advanced Options button to change the disk group attributes. Disk Group compatibility attributes may need to be modified based on the usage of disk group for different versions of databases or ASM Cluster File Systems.

[Show Advanced Options](#) [OK](#) [Cancel](#) [Help](#)

## 7. 安装数据库软件(使用 oracle 用户)





## 8. 修改环境变量，dbca 建库

```
[oracle@node1 ~]$ more .bash_profile

ORACLE_HOME=/oracle
ORACLE_HOME=/oracle/product/11.2.0/dbhome_1
ORACLE_SID=acct1

PATH=$PATH:$HOME/bin:$ORACLE_HOME/bin:/sbin

export ORACLE_BASE ORACLE_HOME ORACLE_SID PATH
```

```
[oracle@rac1 ~]$ scp .bash_profile rac2:~
.bash_profile          100% 316    0.3KB/s   00:00
```

# 9. 日常维护命令

## 1. Asm 实例

```
[grid@rac1 ~]$ asmcmd
ASMCMD> ls
DATADG/
OCRDG/

[grid@rac1 ~]$ 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

[grid@rac1 ~]$ crsctl check cluster
CRS-4537: Cluster Ready Services is online
CRS-4529: Cluster Synchronization Services is online
CRS-4533: Event Manager is online

[grid@rac1 ~]$ crsctl check css
CRS-4529: Cluster Synchronization Services is online

[grid@rac1 ~]$ crsctl query crs activeversion
Oracle Clusterware active version on the cluster is [11.2.0.3.0]
```

```
[grid@rac1 ~]$ crsctl stat res -t
```

NAME	TARGET	STATE	SERVER
STATE_DETAILS			
Local Resources			
ora.DATADG.dg			
	ONLINE	ONLINE	rac1
	ONLINE	ONLINE	rac2
ora.LISTENER.lsnr			
	ONLINE	ONLINE	rac1
	ONLINE	ONLINE	rac2
ora.OCRDG.dg			
	ONLINE	ONLINE	rac1

	ONLINE	ONLINE	rac2	
ora.asm	ONLINE	ONLINE	rac1	Started
	ONLINE	ONLINE	rac2	Started
ora.gsd	OFFLINE	OFFLINE	rac1	
	OFFLINE	OFFLINE	rac2	
ora.net1.network	ONLINE	ONLINE	rac1	
	ONLINE	ONLINE	rac2	
ora.ons	ONLINE	ONLINE	rac1	
	ONLINE	ONLINE	rac2	

---

#### Cluster Resources

---

ora.LISTENER_SCAN1.lsnr			
1	ONLINE	ONLINE	rac1
ora.cvu			
1	ONLINE	ONLINE	rac1
ora.oc4j			
1	ONLINE	ONLINE	rac1
ora.rac1.vip			
1	ONLINE	ONLINE	rac1
ora.rac2.vip			
1	ONLINE	ONLINE	rac2
ora.scan1.vip			
1	ONLINE	ONLINE	rac1

```
[grid@rac1 ~]$ srvctl status scan
SCAN VIP scan1 is enabled
SCAN VIP scan1 is running on node rac1
```

```
[grid@rac1 ~]$ oifcfg getif
eth0 192.168.56.0 global public
eth1 10.10.10.0 global cluster_interconnect
[oracle@rac2 public]# oifcfg setif -global eth0/192.168.56.0:public
[oracle@rac2 public]# oifcfg setif -global eth1/10.10.10.0:cluster_interconnect
```