

Grid Infrastructure Installation Guide for Standalone Server

Mohamed Azar

Oracle DBA

<http://mohamedazar.wordpress.com>

Installation Steps:

Step 1: Download Oracle Software

Download Oracle 11gR2 software and also Grid Software

<http://www.oracle.com/technetwork/database/enterprise-edition/downloads/112010-linuxsoft-085393.html>

Step 2: Vmware Client Install Tools

I just installed Oracle Enterprise Linux 5 on Vmware workstation.

After installed OEL5 in Vmware, We need to install Vmware client Install tools...

Do like...

```
copy VMWareTools-8.1.4-227600.tar.gz --> tmp
```

```
[root@localhost tmp]# tar -zxvf VMWareTools-8.1.4-227600.tar.gz
```

```
[root@localhost tmp]# cd vmware-tools-distrib
```

```
[root@localhost vmware-tools-distrib]# ls
```

```
bin doc etc FILES INSTALL installer lib vmware-install.pl
```

```
[root@localhost vmware-tools-distrib]# ./vmware-install.pl
```

```
Creating a new VMWare Tools installer database using the tar4 format.
```

Installing VMWare Tools.

In which directory do you want to install the binary files?

```
[/usr/bin]
```

It's asked some steps to install, you just Enter and choose your screen Resolution also.

Reboot your machine.

Step 3: Memory, Swap & kernel

```
[root@localhost ~]# grep MemTotal /proc/meminfo
```

```
MemTotal:      2075468 kB
```

```
Memory Min : 1.5 GB need.
```

```
[root@localhost ~]# grep SwapTotal /proc/meminfo
```

```
SwapTotal:      4128760 kB
```

```
[root@localhost ~]# df -h /tmp
Filesystem              Size  Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                        21G  4.4G   15G   23% /
```

Kernel

```
[root@localhost ~]# gedit /etc/sysctl.conf
fs.aio-max-nr = 1048576
fs.file-max = 6815744
kernel.shmall = 2097152
kernel.shmmax = 2147483648
kernel.shmmni = 4096
# semaphores: semmsl, semmns, semopm, semmni
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default=4194304
net.core.rmem_max=4194304
net.core.wmem_default=1048576
net.core.wmem_max=1048576
```

```
[root@localhost ~]# /sbin/sysctl -p
```

Security limits

```
[root@localhost ~]# gedit /etc/security/limits.conf

oracle          soft    nproc    2047
oracle          hard    nproc    16384
oracle          soft    nofile   1024
oracle          hard    nofile   65536
```

```
[root@localhost ~]# gedit /etc/pam.d/login
```

```
session    required    /lib/security/pam_limits.so
session    required    pam_limits.so
```

Selinux =Disabled

```
[root@localhost ~]# gedit /etc/selinux/config
SELINUX=disabled
```

Step 4: Install RPM Package

Following RPM package need for Oracle software installation, you can get it from OEL5 CD/DVD.

```
[root@localhost rpm]# ls
```

```

compat-libstdc++-33-3.2.3-63.i386.rpm
elfutils-libelf-devel-0.137-3.el5.i386.rpm
elfutils-libelf-devel-static-0.137-3.el5.i386.rpm
gcc-4.1.2-48.el5.i386.rpm
gcc-c++-4.1.2-48.el5.i386.rpm
glibc-devel-2.5-49.i386.rpm
glibc-headers-2.5-49.i386.rpm
kernel-headers-2.6.18-194.el5.i386.rpm
libaio-devel-0.3.106-3.2.i386.rpm
libgomp-4.4.0-6.el5.i386.rpm
libstdc++-devel-4.1.2-48.el5.i386.rpm
sysstat-7.0.2-3.el5.i386.rpm
unixODBC-2.2.11-7.1.i386.rpm
unixODBC-devel-2.2.11-7.1.i386.rpm

```

Installed like below all rpm packages.

```

[root@localhost rpm]# rpm -Uvh unixODBC-2.2.11-7.1.i386.rpm
warning: unixODBC-2.2.11-7.1.i386.rpm: Header V3 DSA signature: NOKEY,
key ID 1e5e0159
Preparing...
##### [100%]
 1:unixODBC
##### [100%]
[root@localhost rpm]# rpm -Uvh unixODBC-devel-2.2.11-7.1.i386.rpm
warning: unixODBC-devel-2.2.11-7.1.i386.rpm: Header V3 DSA signature:
NOKEY, key ID 1e5e0159
Preparing...
##### [100%]
 1:unixODBC-devel
##### [100%]

```

Step 5: User, Group

```

[root@localhost ~]# groupadd oinstall
[root@localhost ~]# groupadd oper
[root@localhost ~]# groupadd dba
[root@localhost ~]# groupadd asmadmin
[root@localhost ~]# useradd -u 500 -g oinstall -G dba,oper,asmadmin
oracle
[root@localhost ~]# passwd oracle
Changing password for user oracle.
New UNIX password:
BAD PASSWORD: it is based on a dictionary word
Retype new UNIX password:
passwd: all authentication tokens updated successfully.

```

Make Directory

```

[root@localhost ~]# mkdir -p /u01/app/oracle/product/11.2.0/dbhome_1
[root@localhost ~]# mkdir -p /u01/app/oracle/product/11.2.0/grid
[root@localhost ~]# chown -R oracle:oinstall /u01

```

Step 6: .bash_profile - Login as Oracle user

```
[root@localhost ~]# su - oracle
[oracle@localhost ~]$ vi .bash_profile
```

```
# Oracle Settings
TMP=/tmp; export TMP
TEPDIR=$TMP; export TEPDIR

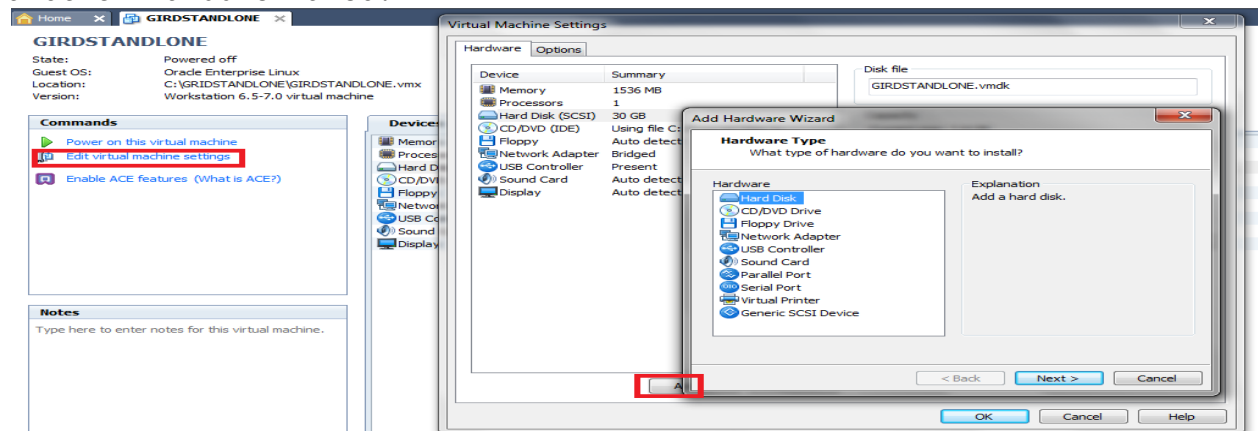
ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE
ORACLE_HOME=$ORACLE_BASE/product/11.2.0/dbhome_1; export ORACLE_HOME
GRID_HOME=$ORACLE_BASE/product/11.2.0/grid; export GRID_HOME
PATH=/usr/sbin:$PATH; export PATH
PATH=$ORACLE_HOME/bin:$PATH; export PATH
LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib;
export CLASSPATH
PATH=$GRID_HOME/bin:$PATH; export PATH
LD_LIBRARY_PATH=$GRID_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/JRE:$GRID_HOME/jlib:$GRID_HOME/rdbms/jlib;
export CLASSPATH

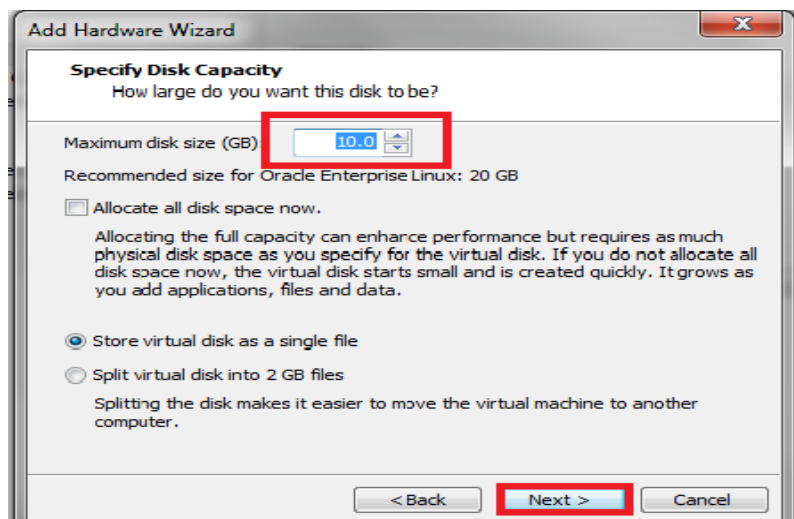
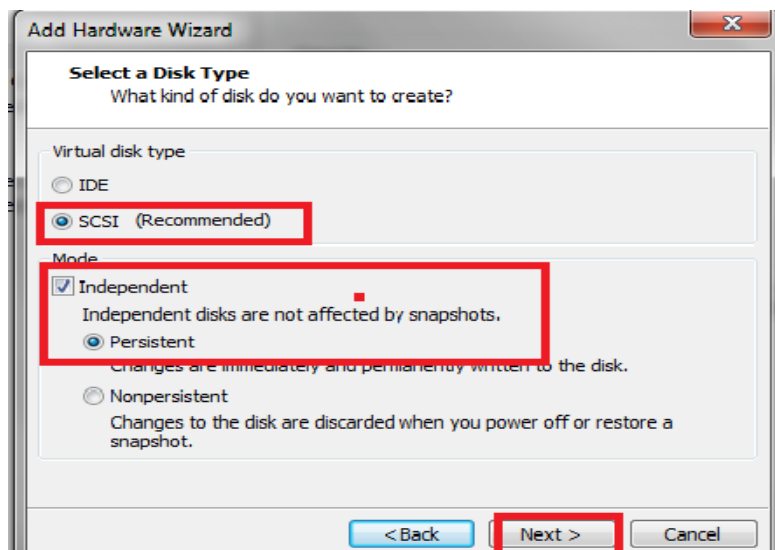
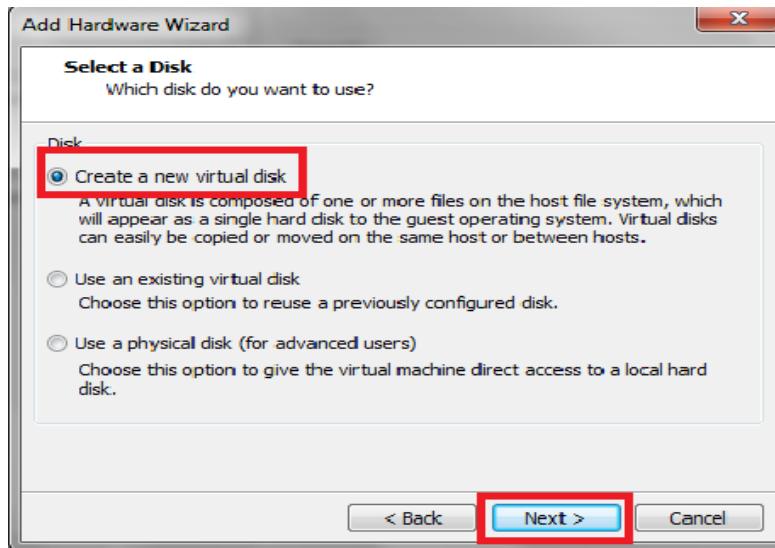
if [ $USER = "oracle" ]; then
    if [ $SHELL = "/bin/ksh" ]; then
        ulimit -p 16384
        ulimit -n 65536
    else
        ulimit -u 16384 -n 65536
    fi
fi
```

Step 7: Create New Harddisk

Shutdown your Host Operating System, OEL.

In Vmware Page, Edit virtual machine and add Two Hard Disks , I just showed here for a newly creating Harddisk, At same like you can create another Harddisk also.





Step 8: Format or partition your Disk using fdisk command

```
[root@localhost ~]# ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sdb /dev/sdc
[root@localhost ~]# cd dev
bash: cd: dev: No such file or directory
[root@localhost ~]# cd /dev
[root@localhost dev]# fdisk sdb
Device contains neither a valid DOS partition table, nor Sun, SGI or
OSF disklabel
Building a new DOS disklabel. Changes will remain in memory only,
until you decide to write them. After that, of course, the previous
content won't be recoverable.
```

The number of cylinders for this disk is set to 1305.
There is nothing wrong with that, but this is larger than 1024,
and could in certain setups cause problems with:

- 1) software that runs at boot time (e.g., old versions of LILO)
- 2) booting and partitioning software from other OSs
(e.g., DOS FDISK, OS/2 FDISK)

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

```
Command (m for help): n
Command action
  e   extended
  p   primary partition (1-4)
```

```
p
Partition number (1-4): 1
First cylinder (1-1305, default 1):
Using default value 1
Last cylinder or +size or +sizeM or +sizeK (1-1305, default 1305):
Using default value 1305
```

```
Command (m for help): p
```

```
Disk sdb: 10.7 GB, 10737418240 bytes
255 heads, 63 sectors/track, 1305 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
sdb1		1	1305	10482381	83	Linux

```
Command (m for help): w
The partition table has been altered!
```

```
Calling ioctl() to re-read partition table.
Syncing disks.
```

```
[root@localhost dev]# fdisk sdc
```

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

Building a new DOS disklabel. Changes will remain in memory only, until you decide to write them. After that, of course, the previous content won't be recoverable.

The number of cylinders for this disk is set to 1305.

There is nothing wrong with that, but this is larger than 1024, and could in certain setups cause problems with:

- 1) software that runs at boot time (e.g., old versions of LILO)
- 2) booting and partitioning software from other OSs (e.g., DOS FDISK, OS/2 FDISK)

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

Command (m for help): n

Command action

e extended

p primary partition (1-4)

p

Partition number (1-4): 1

First cylinder (1-1305, default 1):

Using default value 1

Last cylinder or +size or +sizeM or +sizeK (1-1305, default 1305):

Using default value 1305

Command (m for help): p

Disk sdc: 10.7 GB, 10737418240 bytes

255 heads, 63 sectors/track, 1305 cylinders

Units = cylinders of 16065 * 512 = 8225280 bytes

Device	Boot	Start	End	Blocks	Id	System
sdcl		1	1305	10482381	83	Linux

Command (m for help): w

The partition table has been altered!

Calling ioctl() to re-read partition table.

Syncing disks.

[root@localhost dev]#

Step 9: Permission for Disks

```
[root@localhost dev]# ls sd*
```

```
sda sda1 sda2 sdb sdb1 sdc sdcl sdd sdd1
```

```
[root@localhost dev]# gedit /etc/rc.local
```

```
chown -R oracle:oinstall /dev/sdb1
```

```
chown -R oracle:oinstall /dev/sdcl
```

```
chmod 600 /dev/sdb1
```

```
chmod 600 /dev/sdc1
```

```
[root@localhost dev]# gedit /etc/rc.local
[root@localhost dev]# chown -R oracle:oinstall /dev/sdb1
[root@localhost dev]# chown -R oracle:oinstall /dev/sdc1
[root@localhost dev]# chmod 600 /dev/sdb1
[root@localhost dev]# chmod 600 /dev/sdc1
```

```
[root@localhost dev]# ls -ld sd*
brw-r----- 1 root disk      8,  0 Nov 27 12:06 sda
brw-r----- 1 root disk      8,  1 Nov 27 12:06 sda1
brw-r----- 1 root disk      8,  2 Nov 27 12:06 sda2
brw-r----- 1 root disk      8, 16 Nov 27 12:34 sdb
brw----- 1 oracle oinstall 8, 17 Nov 27 12:34 sdb1
brw-r----- 1 root disk      8, 32 Nov 27 12:34 sdc
brw----- 1 oracle oinstall 8, 33 Nov 27 12:34 sdc1
```

Step 10: Unzip Grid Software

```
[root@localhost ~]# mkdir /install
```

Copy your Grid & Database software from USB to here

```
[root@localhost install]# ls
linux_11gR2_database_1of2.zip  linux_11gR2_database_2of2.zip
linux_11gR2_grid.zip
```

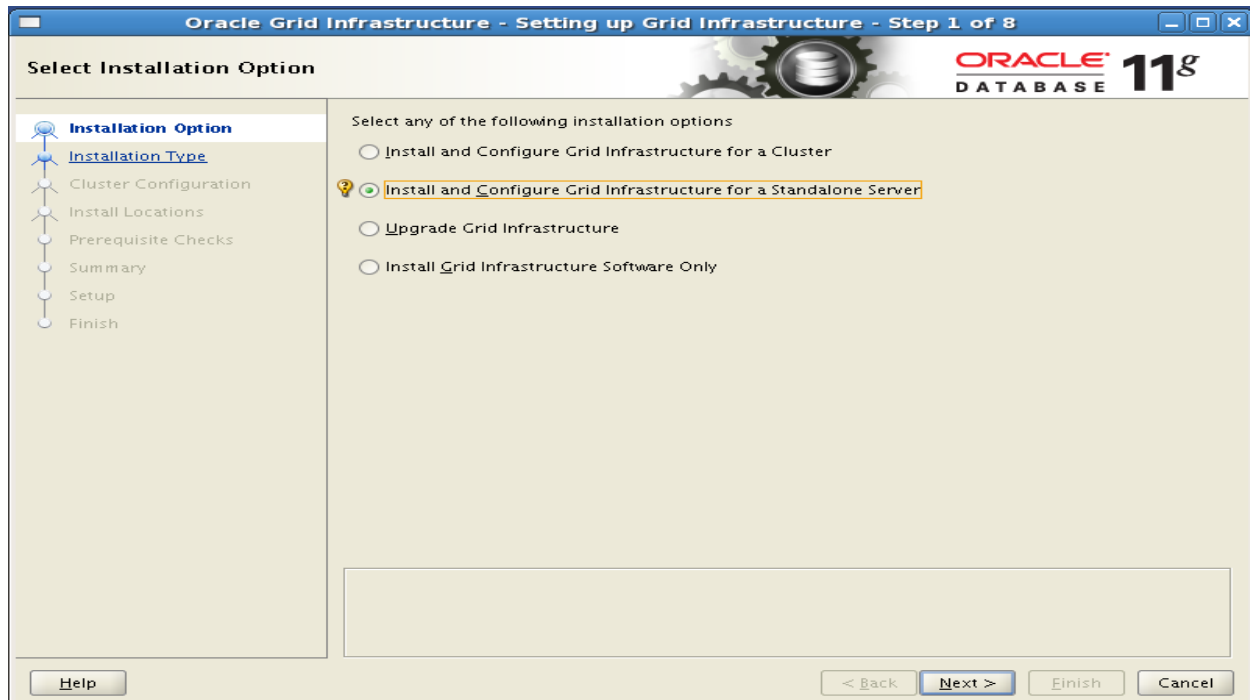
```
[root@localhost ~]# unzip linux_11gR2_grid.zip
```

Step 11: Install Grid Software

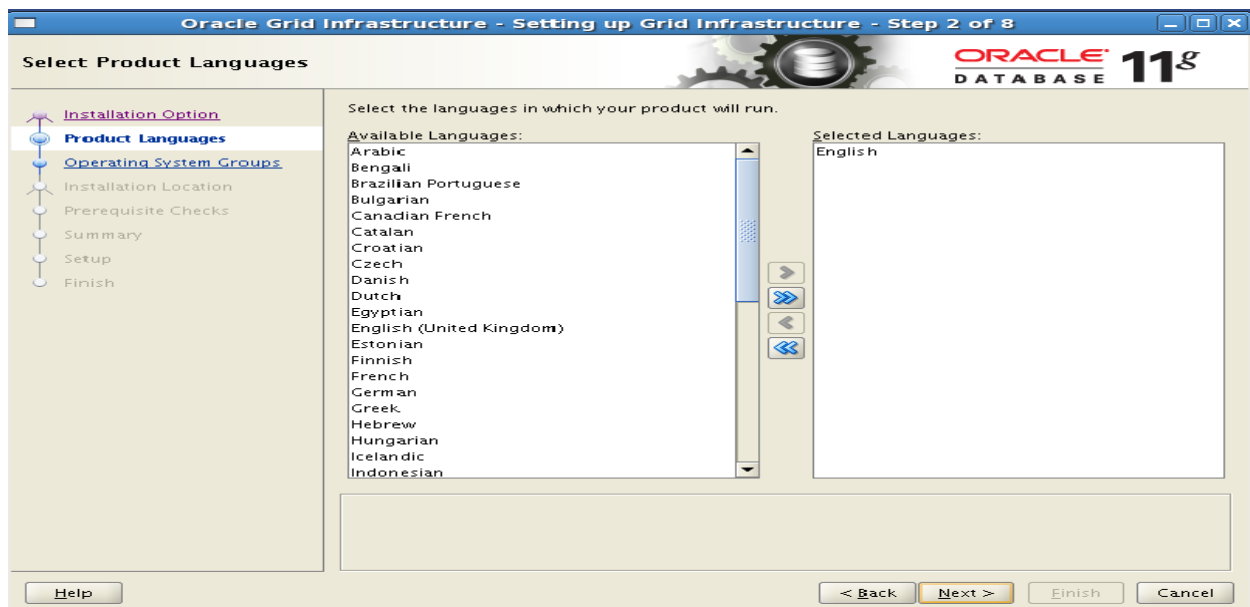
```
[root@localhost ~]# chown -R oracle:oinstall /install
[root@localhost install]# xhost +
access control disabled, clients can connect from any host
[root@localhost install]# su oracle
[oracle@localhost install]$ ls
grid  linux_11gR2_database_1of2.zip  linux_11gR2_database_2of2.zip
linux_11gR2_grid.zip  rpm
[oracle@localhost install]$ cd grid
[oracle@localhost grid]$ ls
doc  install  response  rpm  runcluvfy.sh  runInstaller  sshsetup
stage  welcome.html
[oracle@localhost grid]$ ./runInstaller
Starting Oracle Universal Installer...
```

Checking Temp space: must be greater than 80 MB. Actual 12805 MB
Passed
Checking swap space: must be greater than 150 MB. Actual 4031 MB
Passed
Checking monitor: must be configured to display at least 256 colors.
Actual 16777216 Passed

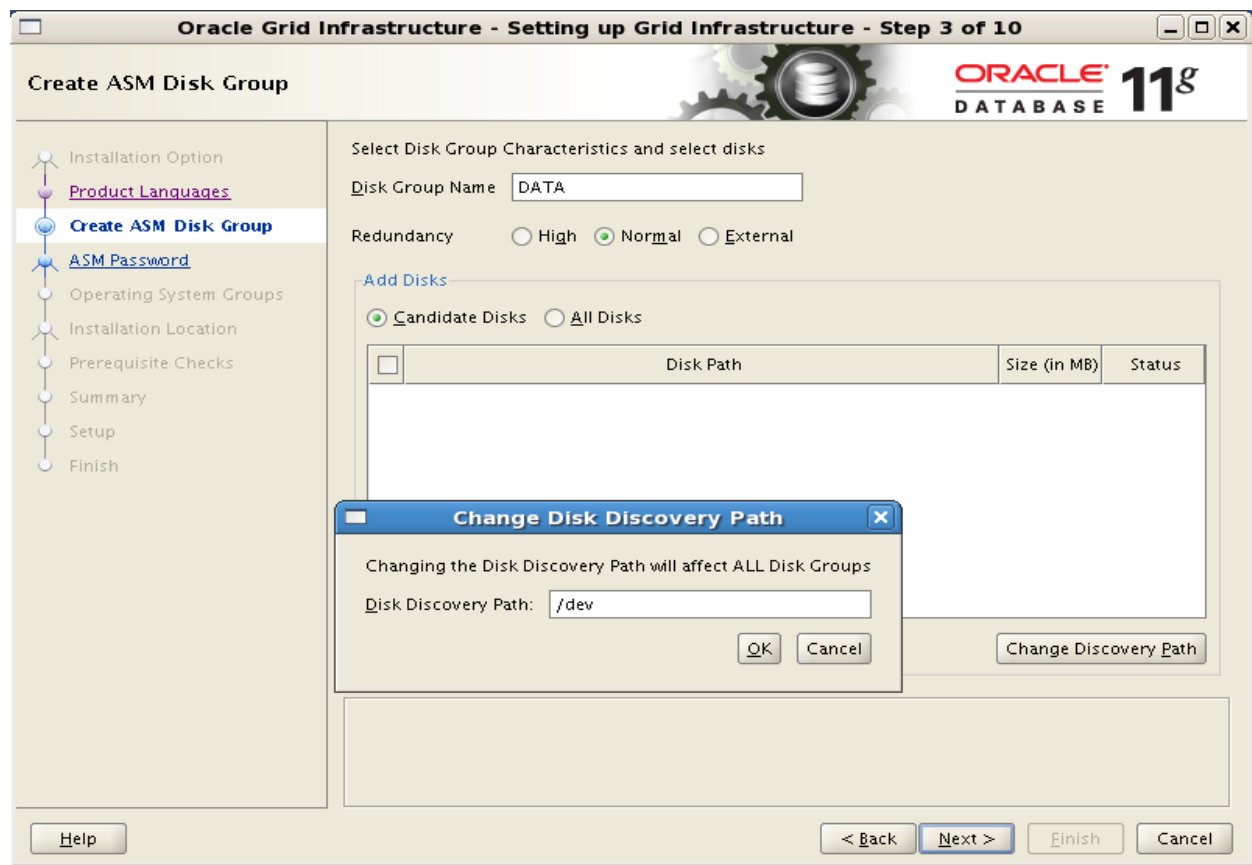
Install Grid for Standalone Server



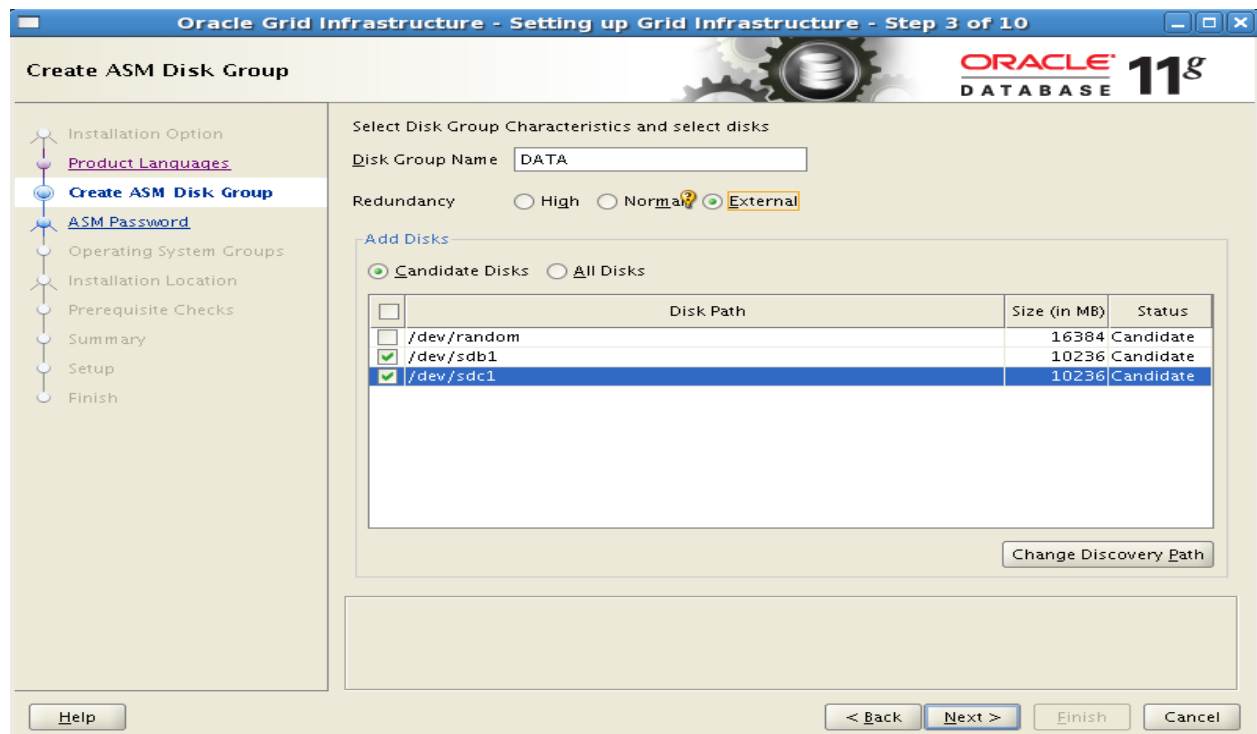
Choose your product language



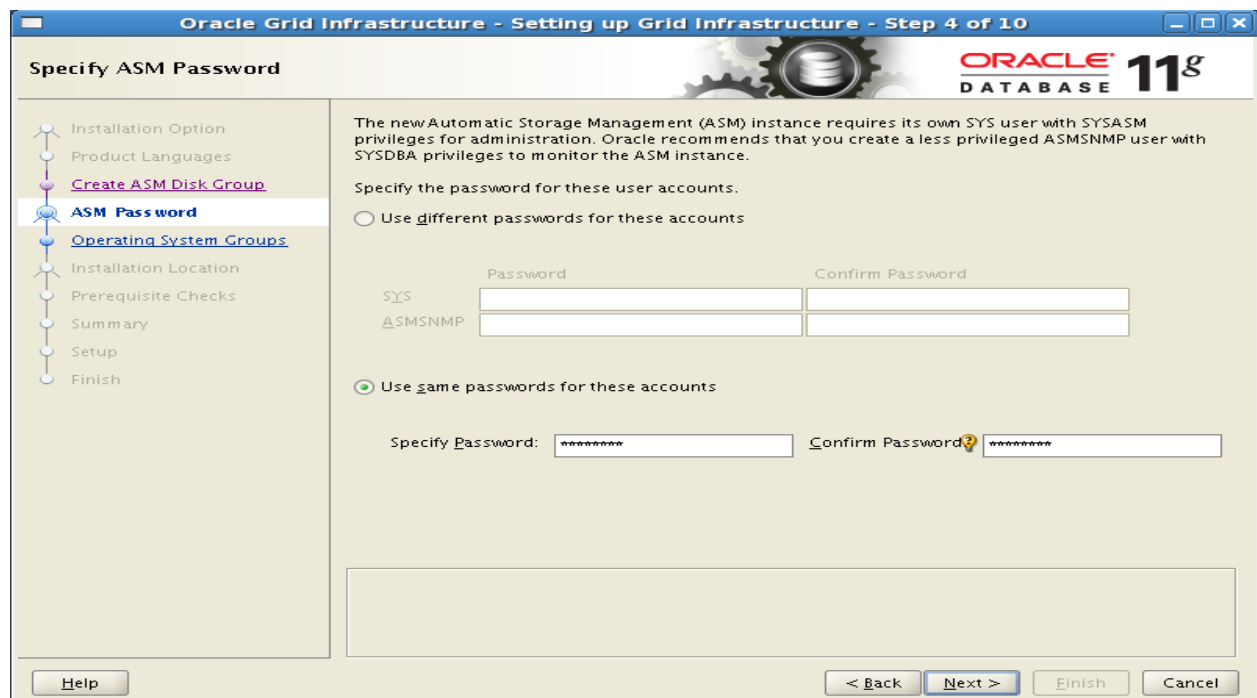
Choose Disk path, Click Change Discovery path & /dev -Enter



Select Disk & I choose External Redundancy



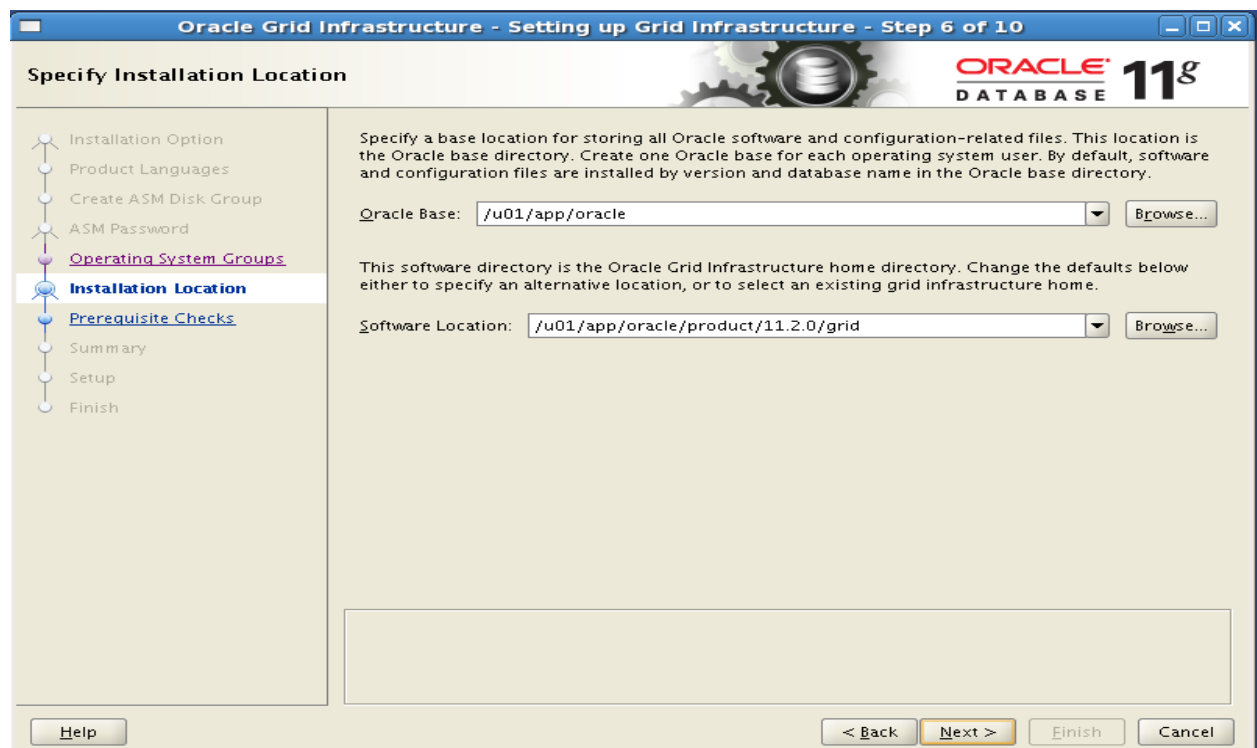
Put Password for ASM user.



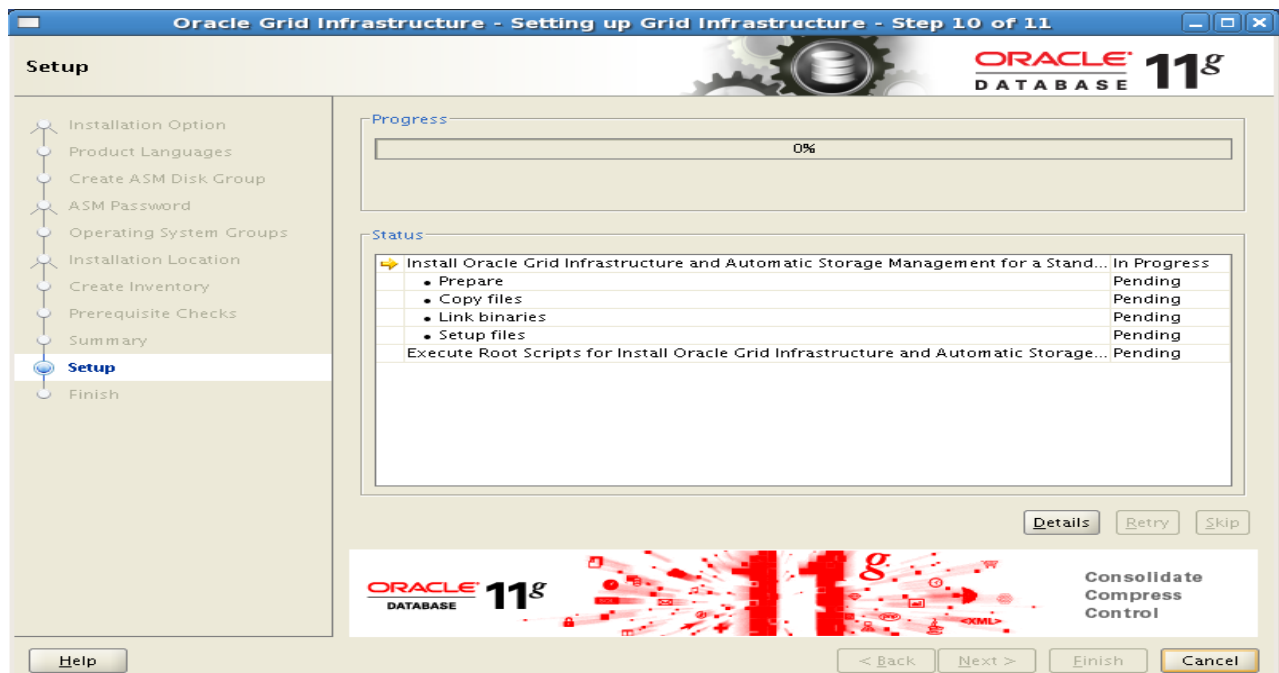
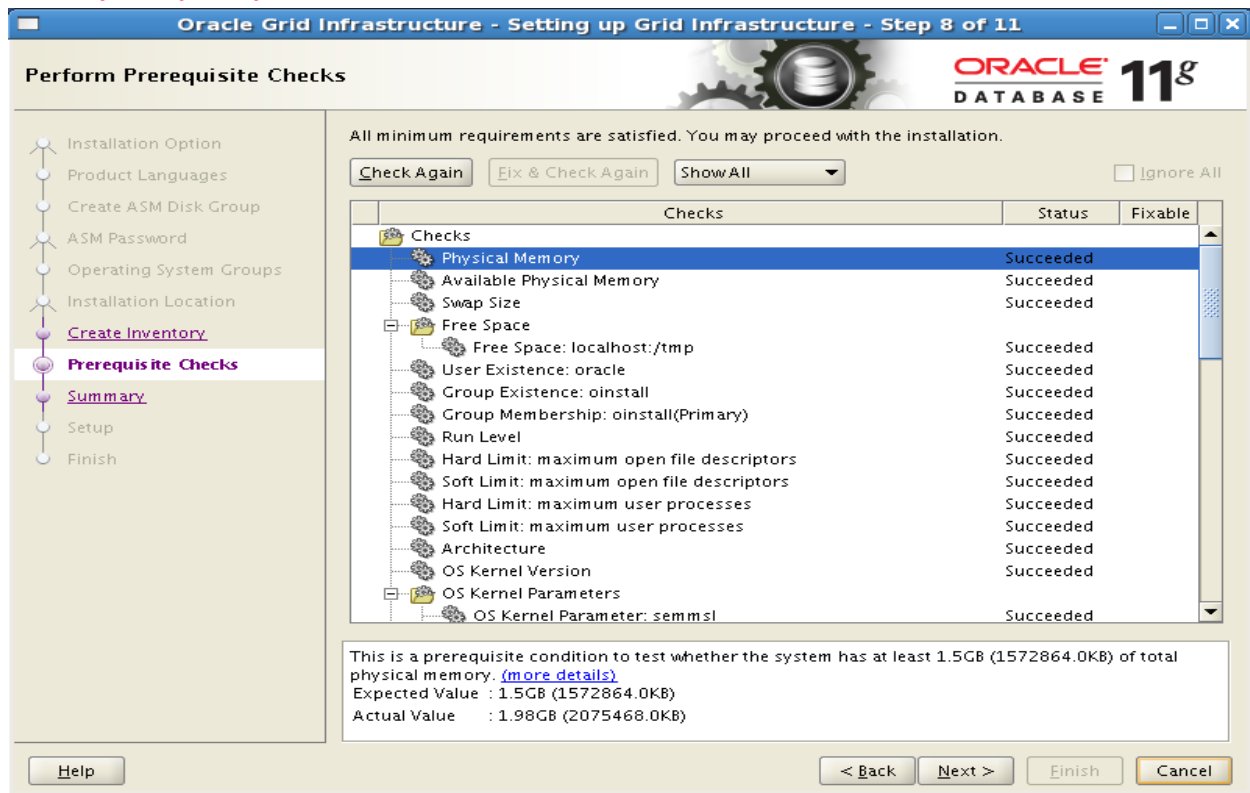
Ignore Warning message



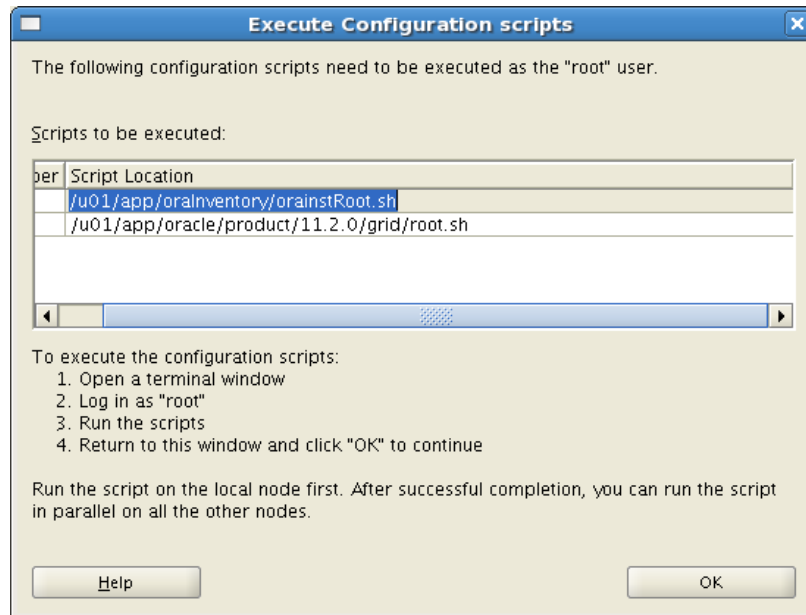
Specify path



Check System prerequisite



Run Root.sh as a root user



```
[root@localhost ~]# /u01/app/oraInventory/orainstRoot.sh
```

Changing permissions of /u01/app/oraInventory.

Adding read,write permissions for group.

Removing read,write,execute permissions for world.

Changing groupname of /u01/app/oraInventory to oinstall.

The execution of the script is complete.

You have mail in /var/spool/mail/root

```
[root@localhost ~]# /u01/app/oracle/product/11.2.0/grid/root.sh
```

Running Oracle 11g root.sh script...

The following environment variables are set as:

ORACLE_OWNER= oracle

ORACLE_HOME= /u01/app/oracle/product/11.2.0/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.sh script.

Now product-specific root actions will be performed.

2010-11-27 13:37:46: Checking for super user privileges

2010-11-27 13:37:46: User has super user privileges

2010-11-27 13:37:46: Parsing the host name

```
Using configuration parameter file:
/u01/app/oracle/product/11.2.0/grid/crs/install/crsconfig_params
Creating trace directory
LOCAL ADD MODE
Creating OCR keys for user 'oracle', privgrp 'oinstall'..
Operation successful.
CRS-4664: Node localhost successfully pinned.
Adding daemon to inittab
CRS-4123: Oracle High Availability Services has been started.
ohasd is starting

localhost      2010/11/27 13:38:29
/u01/app/oracle/product/11.2.0/grid/cdata/localhost/backup_20101127_13
3829.olr
Successfully configured Oracle Grid Infrastructure for a Standalone
Server
Updating inventory properties for clusterware
Starting Oracle Universal Installer...

Checking swap space: must be greater than 500 MB.   Actual 4031 MB
Passed
The inventory pointer is located at /etc/oraInst.loc
The inventory is located at /u01/app/oraInventory
'UpdateNodeList' was successful.
[root@localhost ~]#
```

Grid Installation successfully completed.



Step 12: Install Oracle 11g R2 Software

Unzip Both

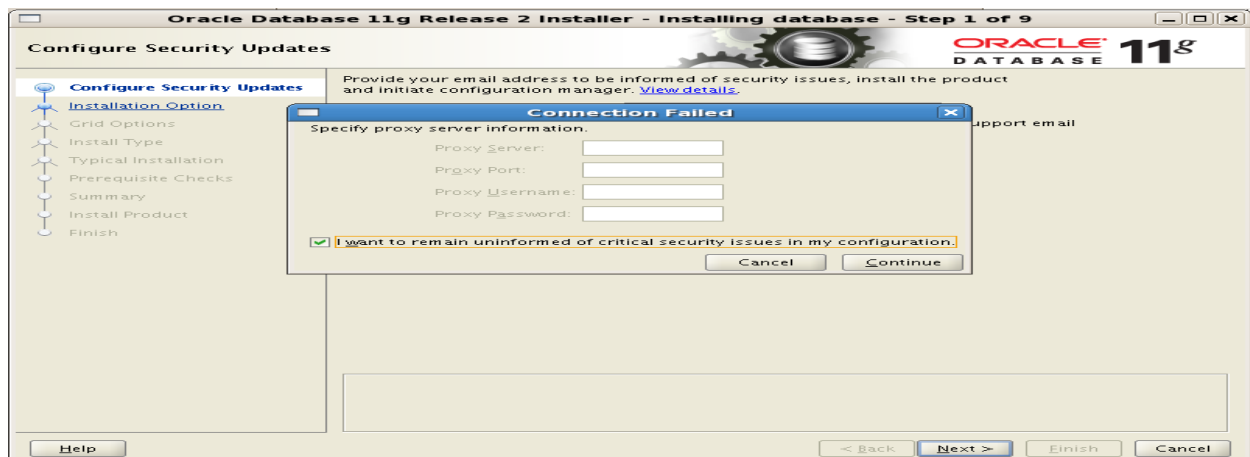
```
linux_11gR2_database_1of2.zip linux_11gR2_database_2of2.zip
```

```
[root@localhost install]#unzip linux_11gR2_database_1of2.zip
```

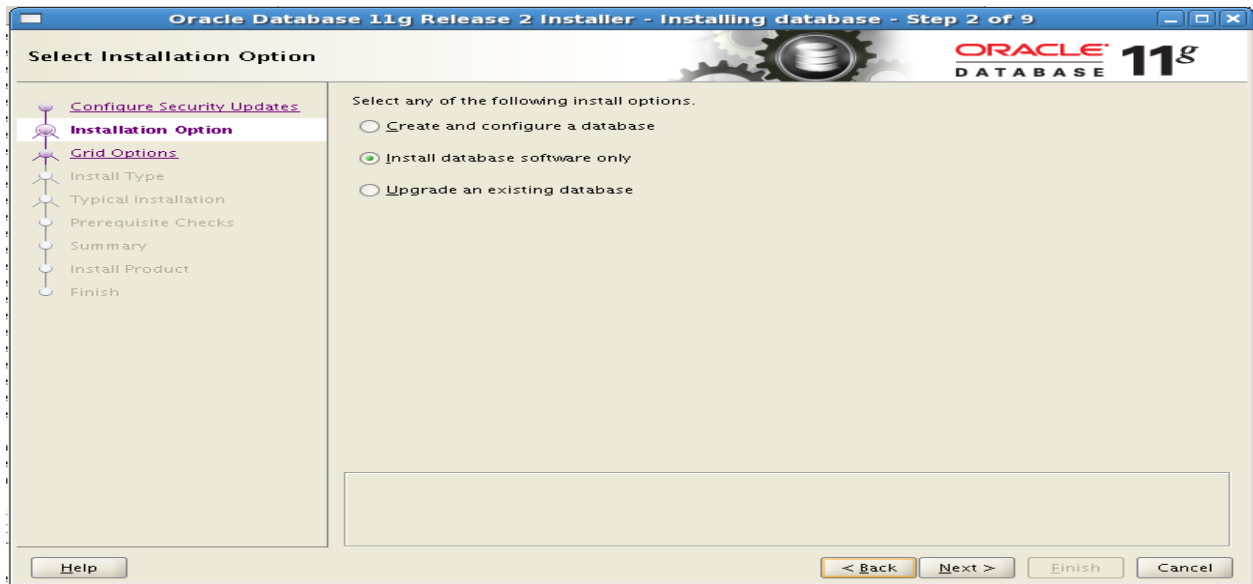
```
[root@localhost install]#unzip linux_11gR2_database_2of2.zip
```

```
[root@localhost ~]# chown -R oracle:oinstall /install
[root@localhost install]# xhost +
access control disabled, clients can connect from any host
[root@localhost install]# su oracle
[oracle@localhost install]$ cd database
[oracle@localhost database]$ ls
doc install response rpm runInstaller sshsetup stage
welcome.html
[oracle@localhost database]$ ./runInstaller
Starting Oracle Universal Installer...
```

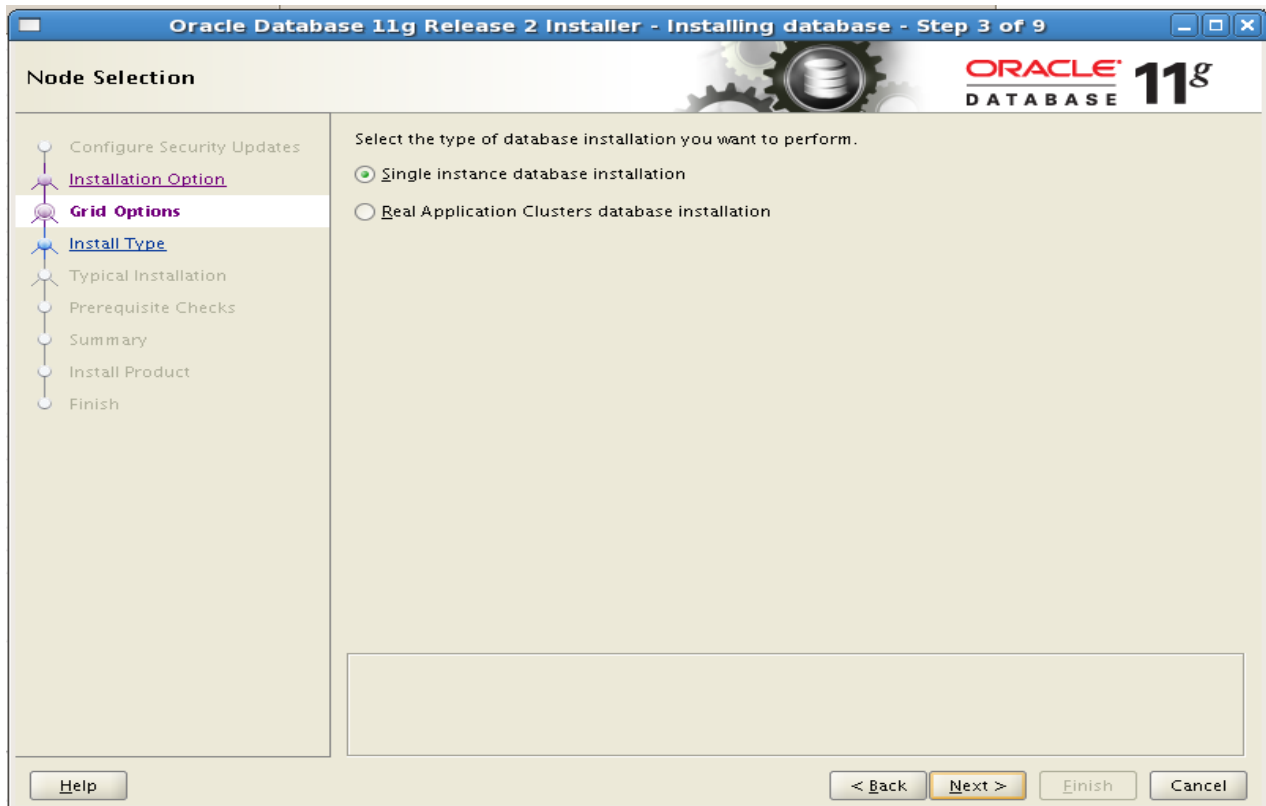
```
Checking Temp space: must be greater than 80 MB. Actual 7587 MB
Passed
Checking swap space: must be greater than 150 MB. Actual 3937 MB
Passed
Checking monitor: must be configured to display at least 256 colors.
Actual 16777216 Passed
Preparing to launch Oracle Universal Installer from
/tmp/OraInstall2010-11-27_01-52-52PM. Please wait ...
```

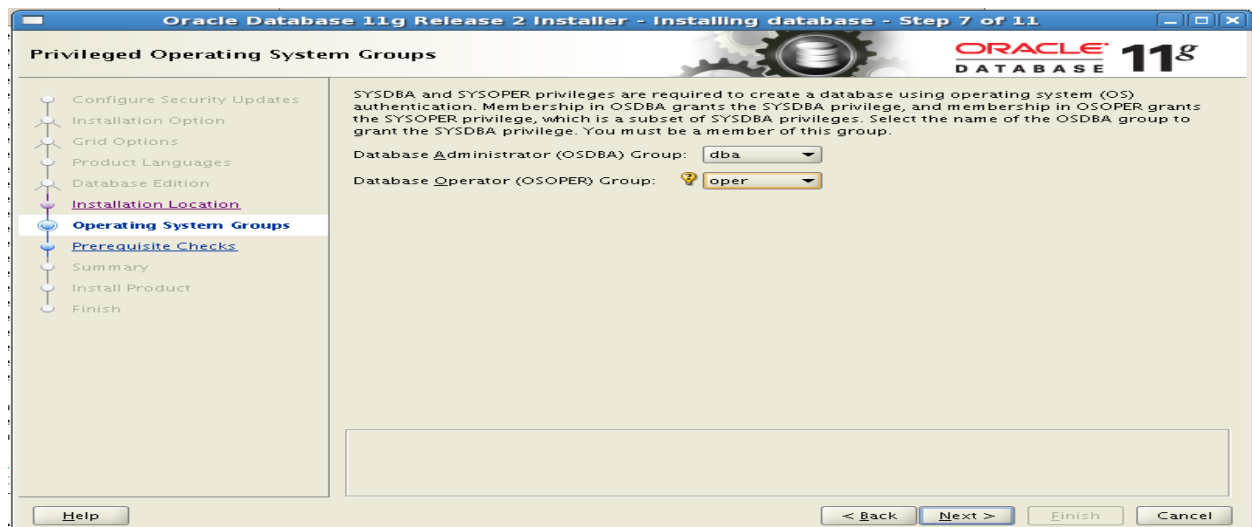
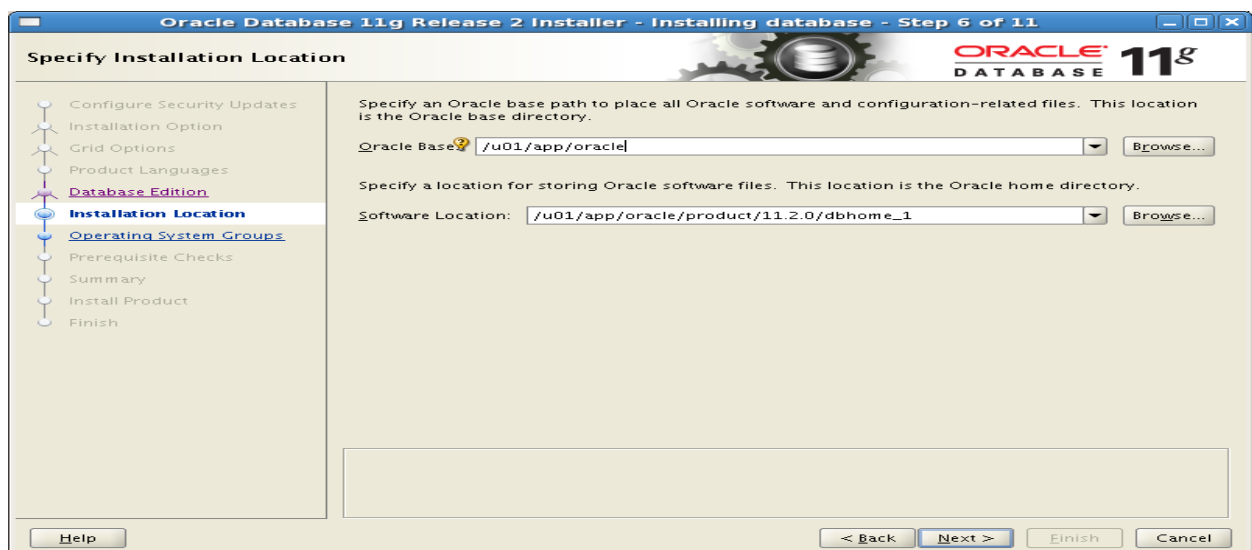


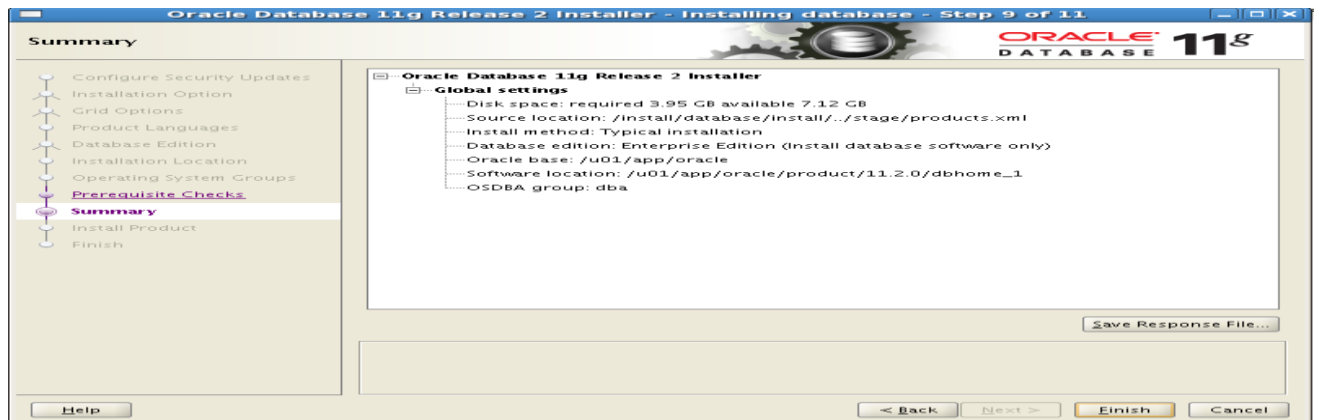
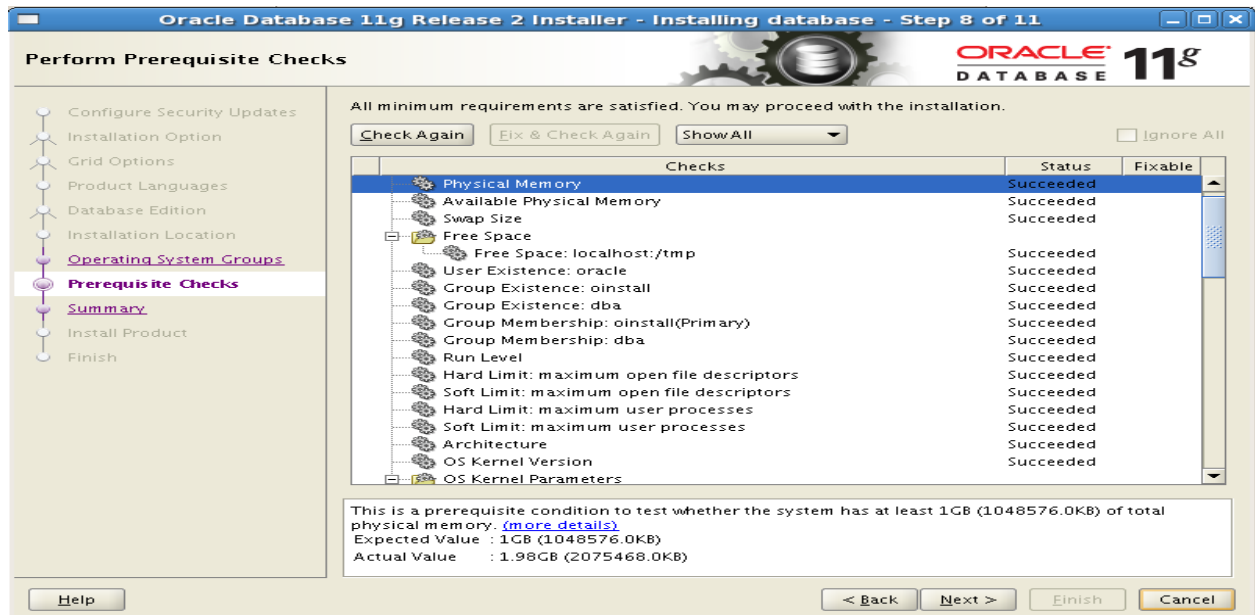
Install software only

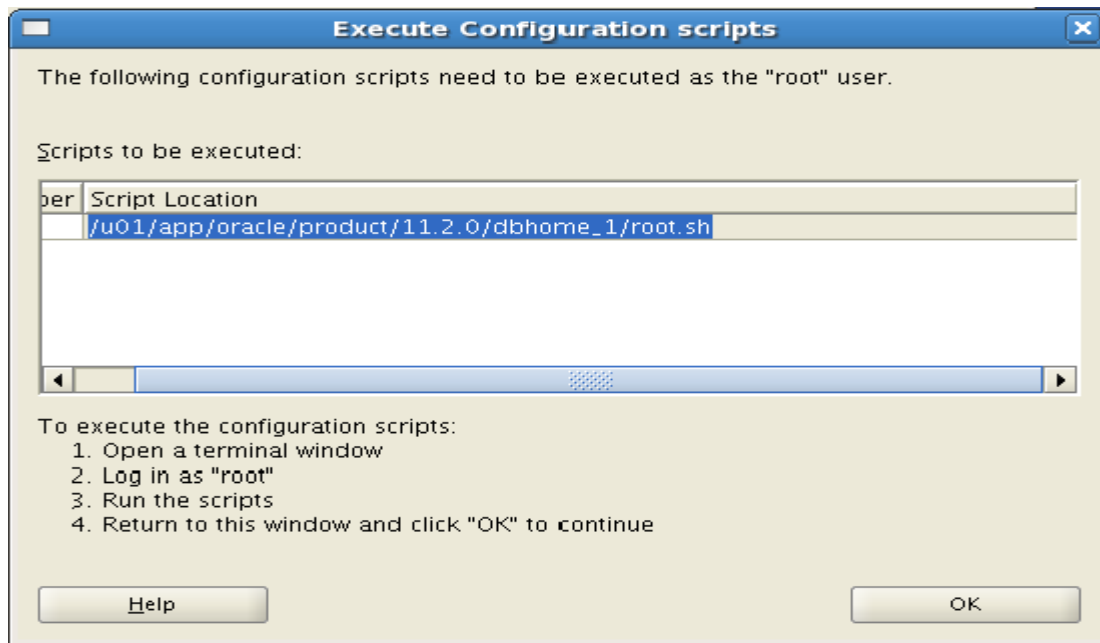


Choose Single Instance









```
[root@localhost ~]# /u01/app/oracle/product/11.2.0/dbhome_1/root.sh
Running Oracle 11g root.sh script...
```

The following environment variables are set as:

```
ORACLE_OWNER= oracle
ORACLE_HOME= /u01/app/oracle/product/11.2.0/dbhome_1
```

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

The file "dbhome" already exists in /usr/local/bin. Overwrite it?

(y/n)

[n]:

The file "oraenv" already exists in /usr/local/bin. Overwrite it?

(y/n)

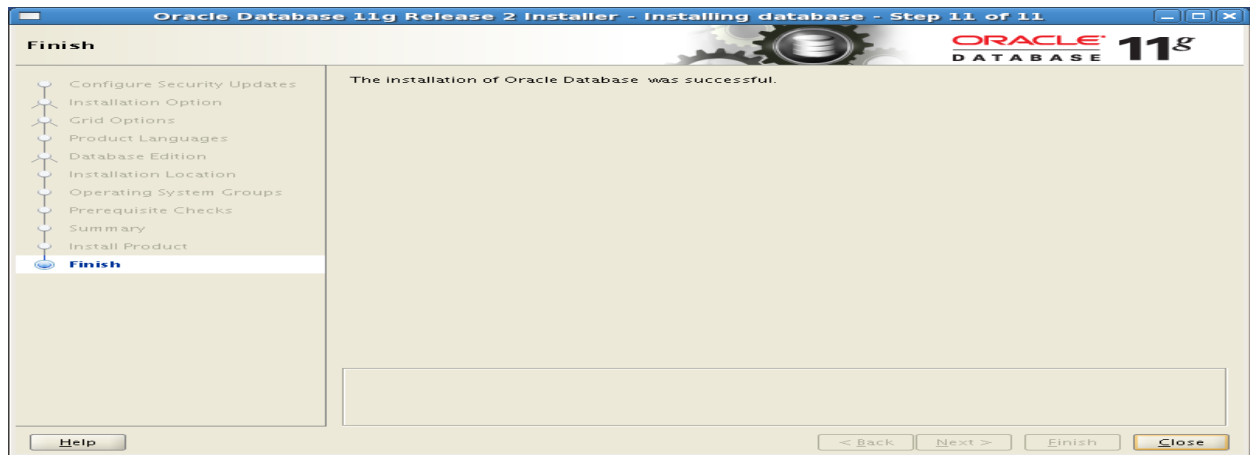
[n]:

The file "coraenv" already exists in /usr/local/bin. Overwrite it?

(y/n)

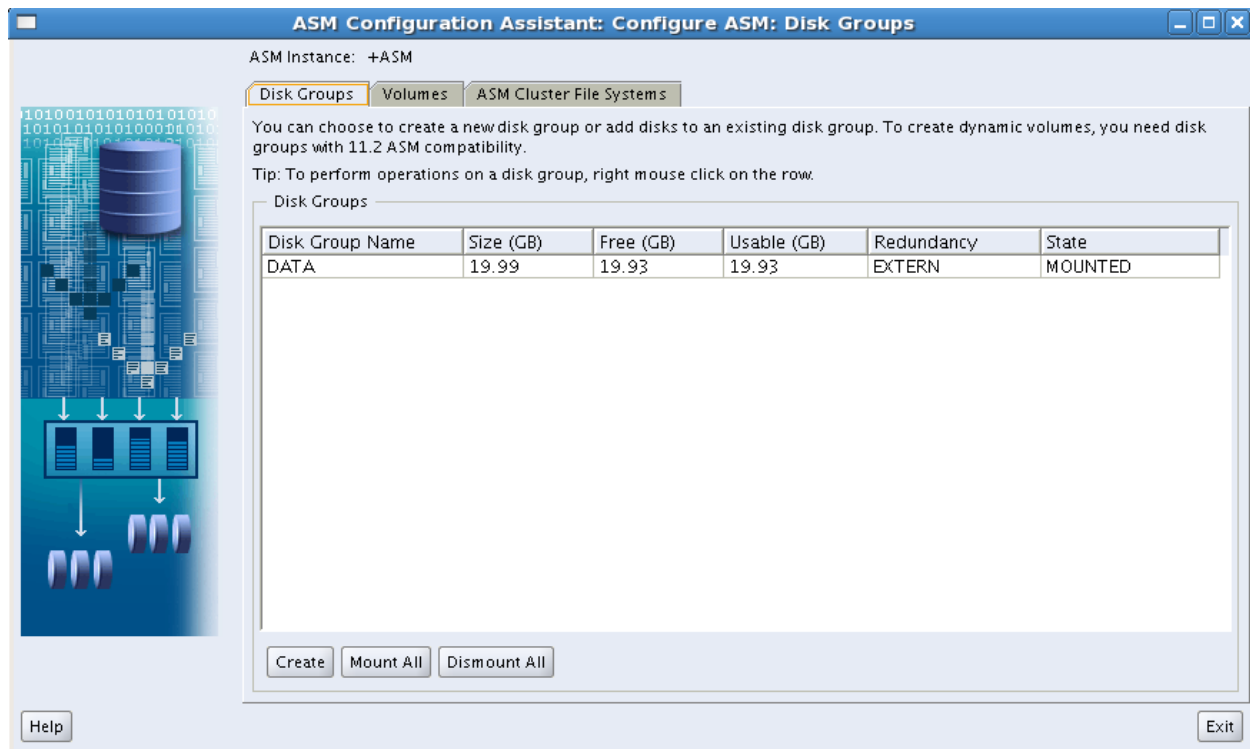
[n]:

```
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.sh script.
Now product-specific root actions will be performed.
Finished product-specific root actions.
[root@localhost ~]#
```



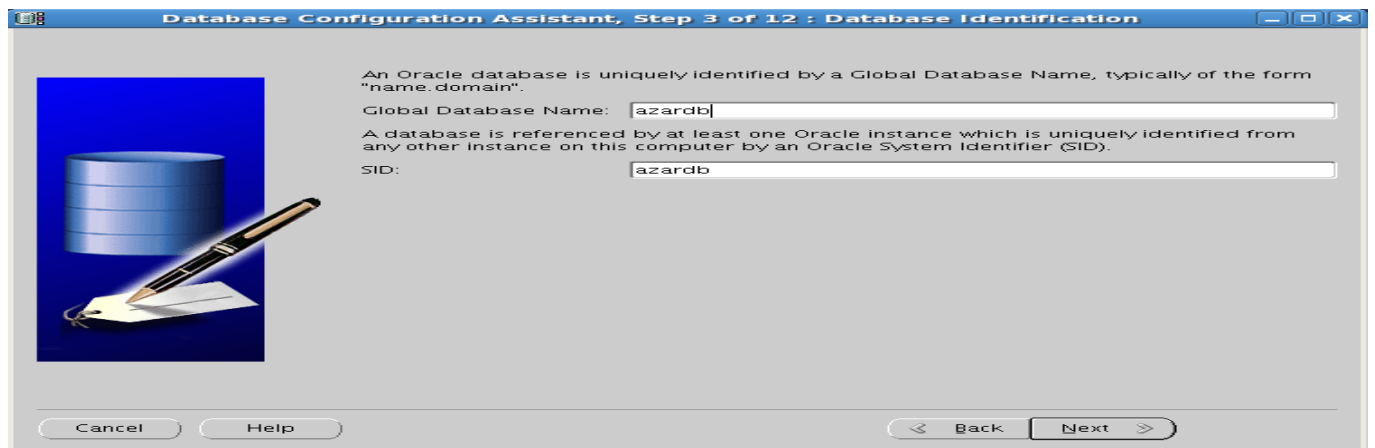
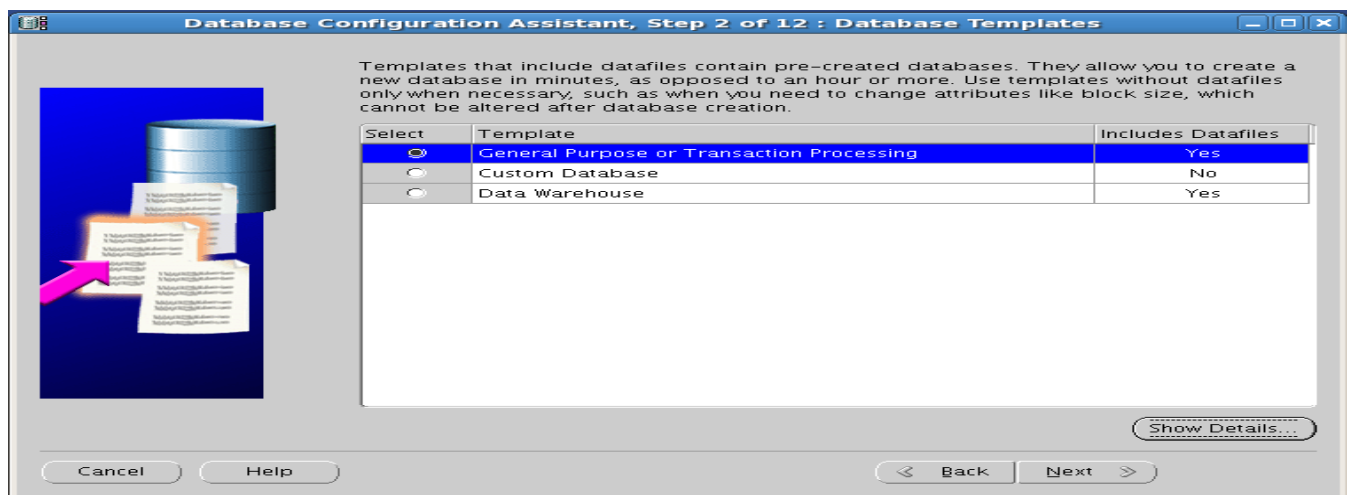
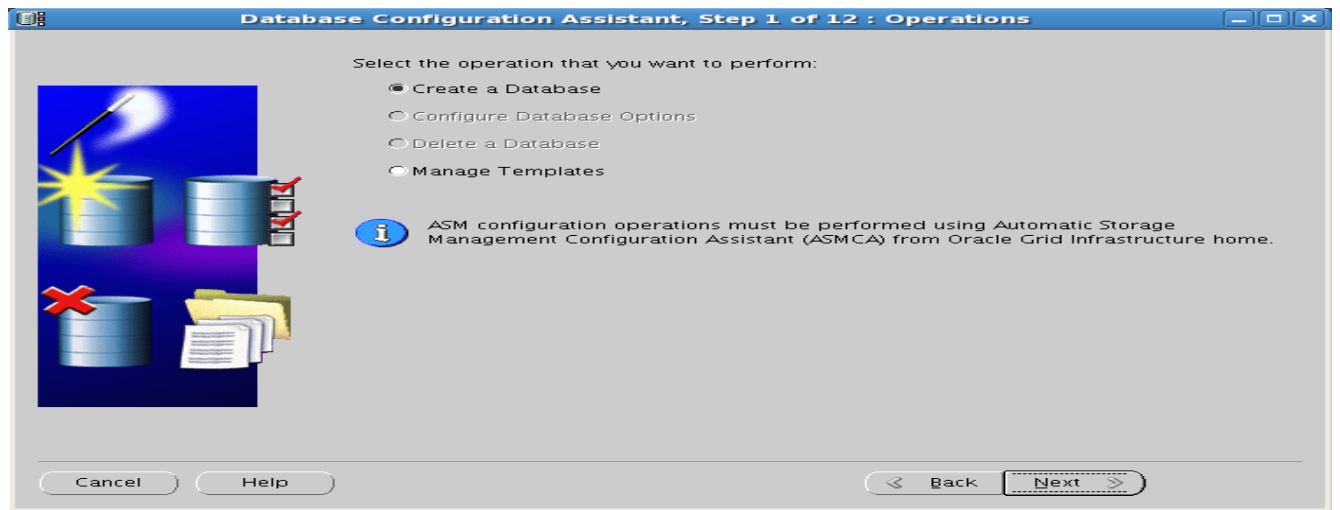
Step 13 : Just Check ASMCA

```
[oracle@localhost ~]$ asmca
```



Step 14 : Database Creation

```
[oracle@localhost ~]$ dbca
```



Database Configuration Assistant, Step 5 of 12 : Database Credentials

For security reasons, you must specify passwords for the following user accounts in the new database.

☐ Use Different Administrative Passwords

User Name	Password	Confirm Password
SYS		
SYSTEM		
DBSNMP		
SYSMAN		

☒ Use the Same Administrative Password for All Accounts

Password:

Confirm Password:

Cancel Help < Back Next >

Choose Automatic Storage Management

Database Configuration Assistant, Step 6 of 12 : Database File Locations

Specify storage type and locations for database files.

Storage Type:

Storage Locations:

☐ Use Database File Locations from Template

☐ Use Common Location for All Database Files

Database Files Location: Browse...

☒ Use Oracle-Managed Files

Database Area: Browse...

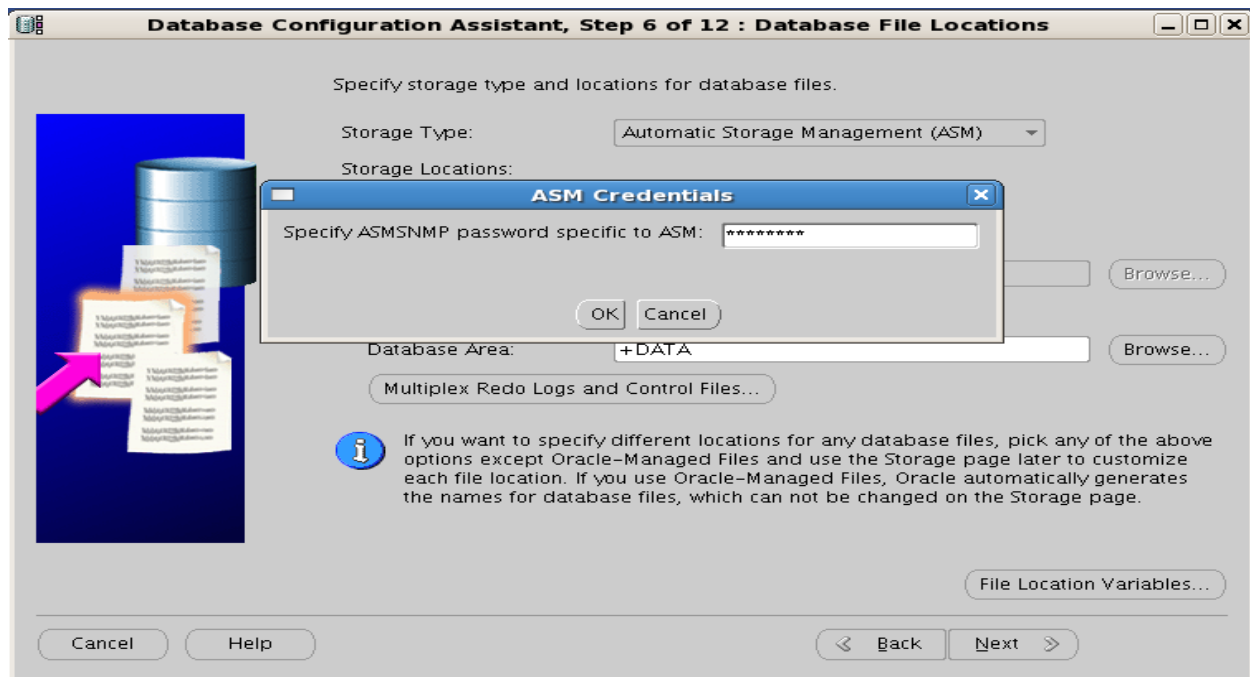
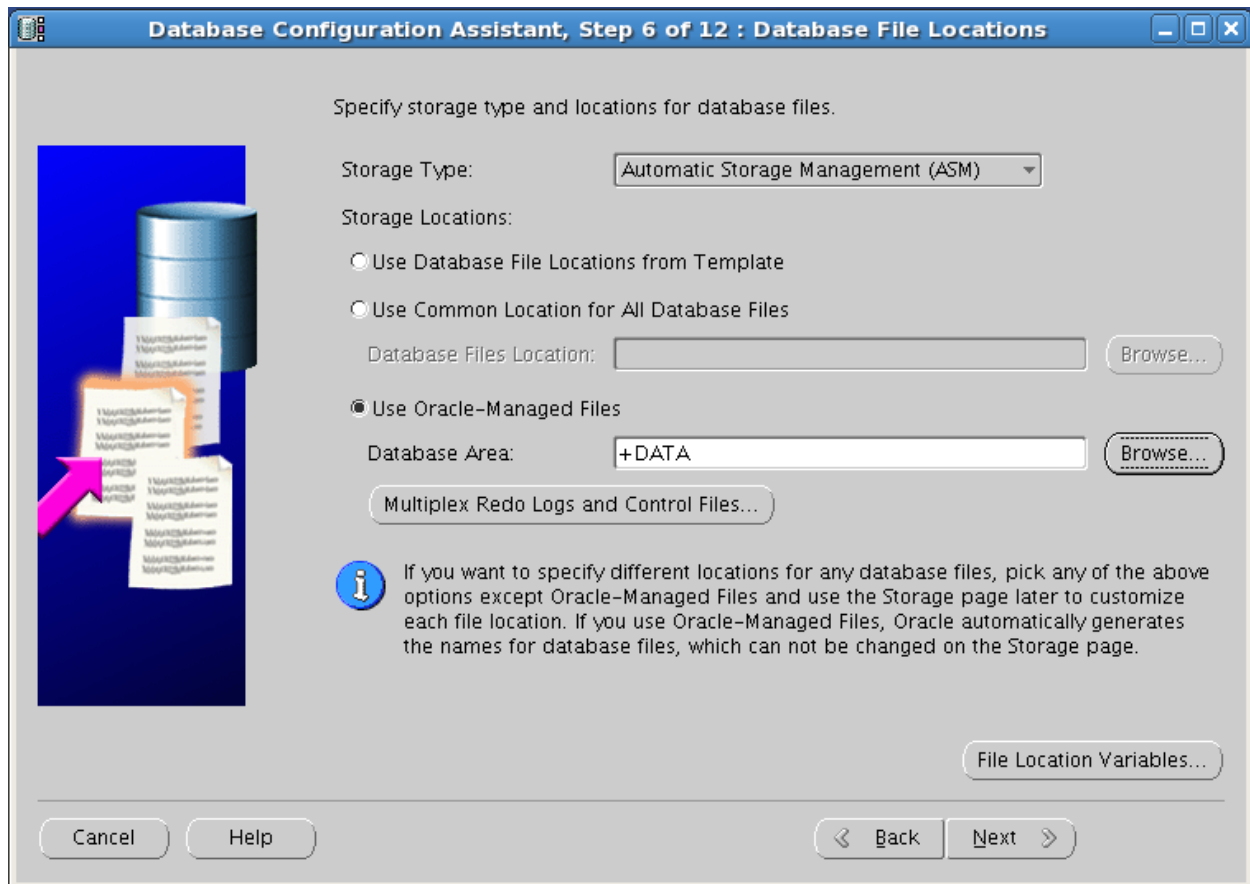
Multiplex Redo Logs and Control Files...

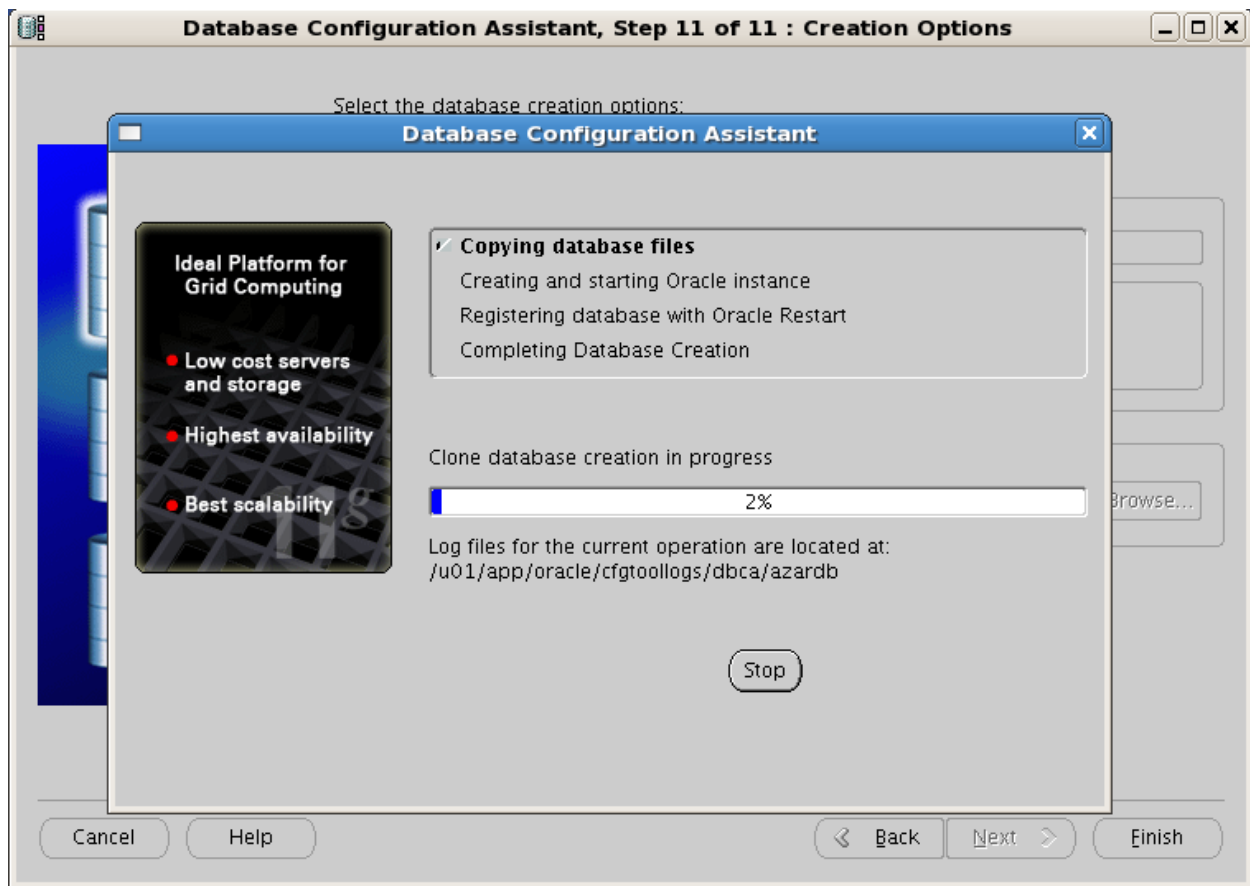
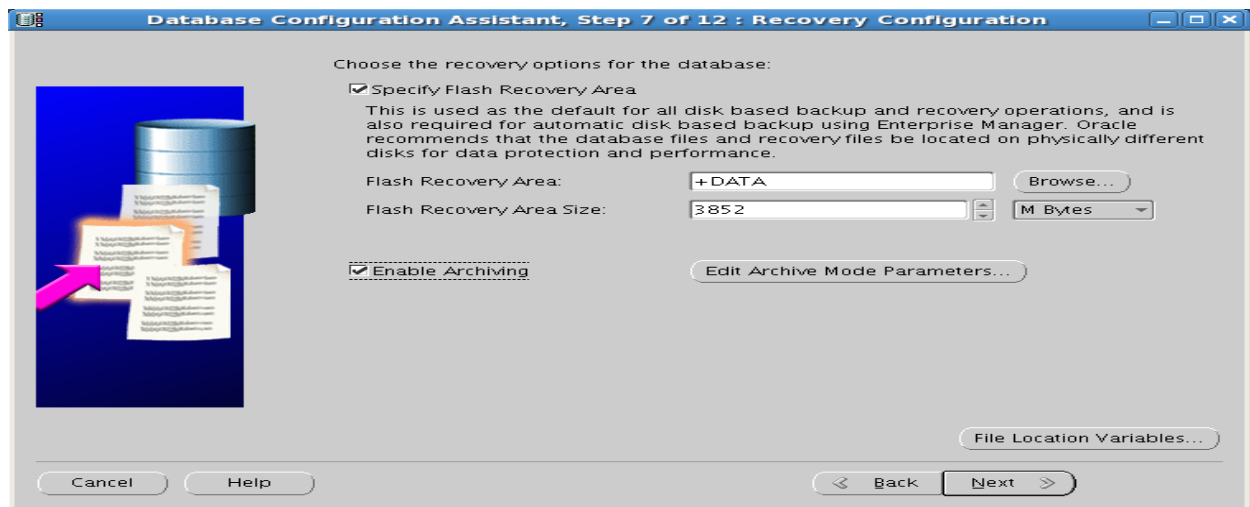
Select Disk Group

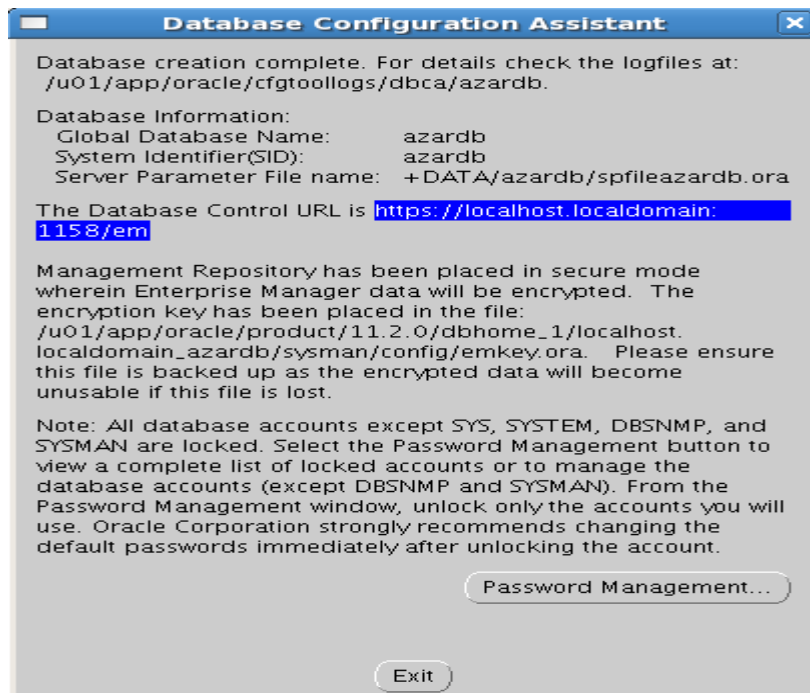
Available Disk Groups

Select	Disk Group Name	Size (MB)	Free (MB)	Redundancy	State
☒	DATA	20472	20411	External	Mounted

Note: Free (MB) reflects the usable free space available taking redundancy into account.







Now Database also successfully created.

```
[oracle@localhost ~]$ export ORACLE_SID=azardb
[oracle@localhost ~]$ sqlplus
```

SQL*Plus: Release 11.2.0.1.0 Production on Sat Nov 27 15:03:38 2010

Copyright (c) 1982, 2009, Oracle. All rights reserved.

Enter user-name: sys/Admin123 as sysdba

Connected to:

Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - Production
With the Partitioning, Automatic Storage Management, OLAP, Data Mining
and Real Application Testing options

SQL> select name from v\$database;

NAME

AZARDB

SQL> select name from v\$datafile;

NAME

+DATA/azardb/datafile/system.256.736179685

```
+DATA/azardb/datafile/sysaux.257.736179685
+DATA/azardb/datafile/undotbs1.258.736179685
+DATA/azardb/datafile/users.259.736179687
+DATA/azardb/datafile/example.269.736179971
```

```
SQL> select group_number,name,state,type from v$asm_diskgroup;
```

GROUP_NUMBER	NAME	STATE	TYPE
1	DATA	CONNECTED	EXTERN

```
SQL>
```