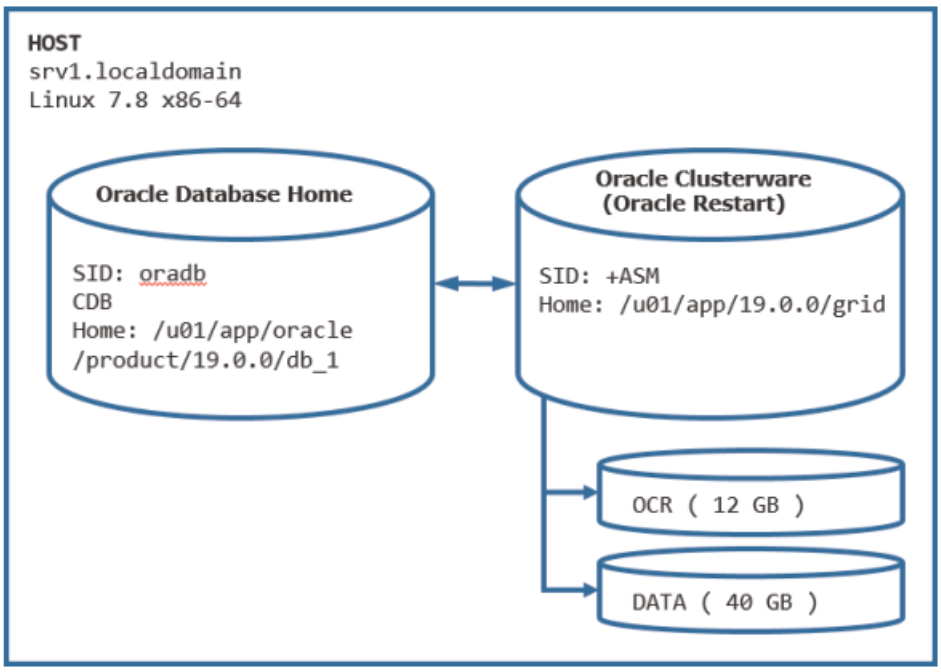
STEP BY STEP GUIDE TO INSTALLING ASM

Contents

Overview

In this example, we will use the instructions given here: Installing and Creating an Oracle Database 19c on Linux 7 with ASM (ahmedbaraka.com)

The related video is here: https://www.youtube.com/watch?v=0nmZUTvrj1s&t=5s

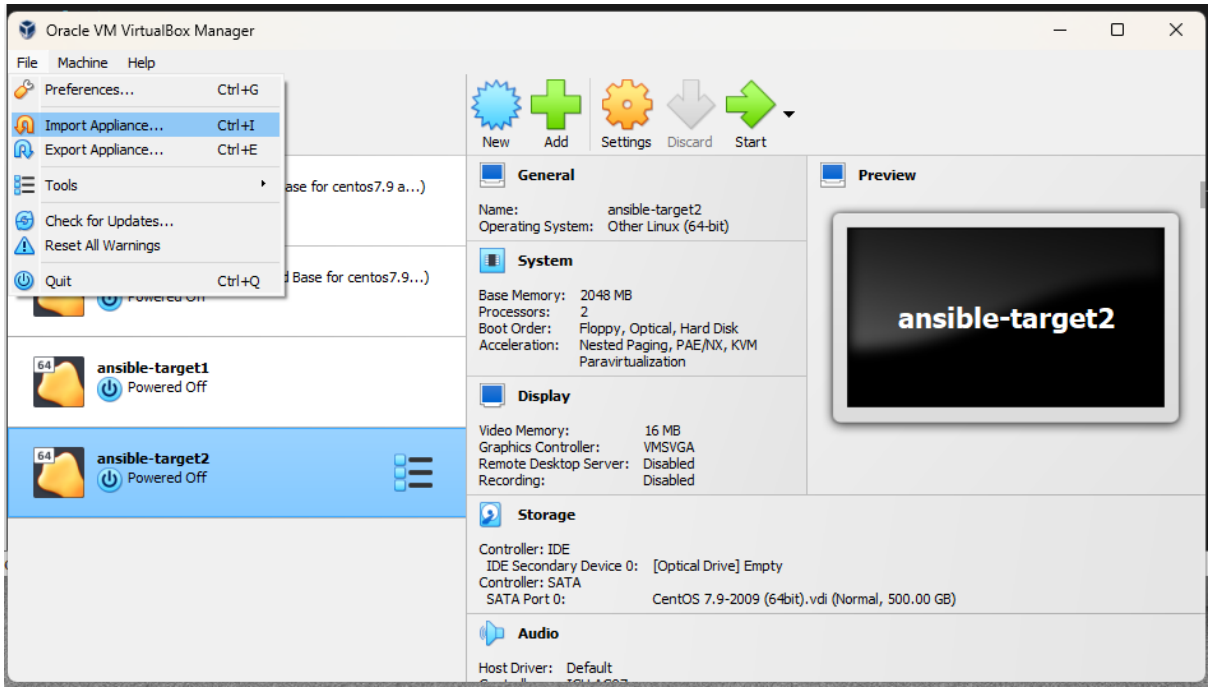


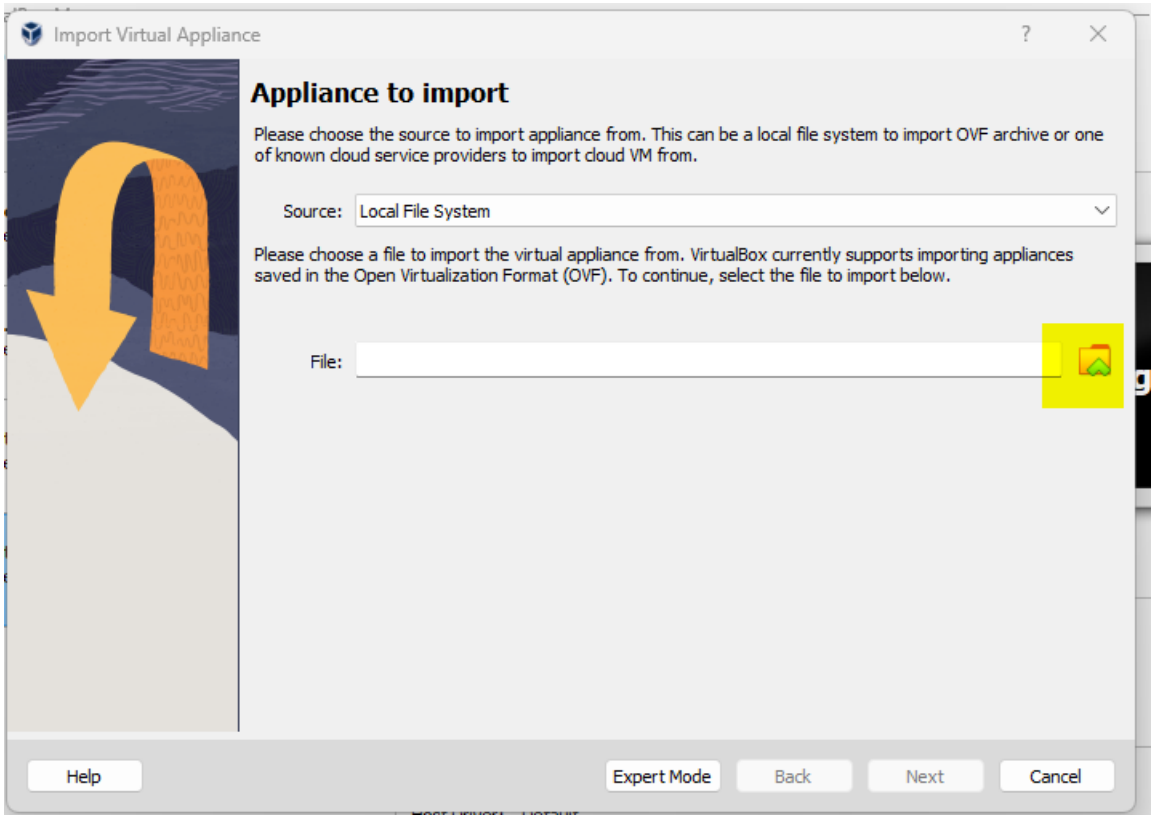
All the binaries are downloaded to "Downloads/staging/Linux" folder on the laptop.

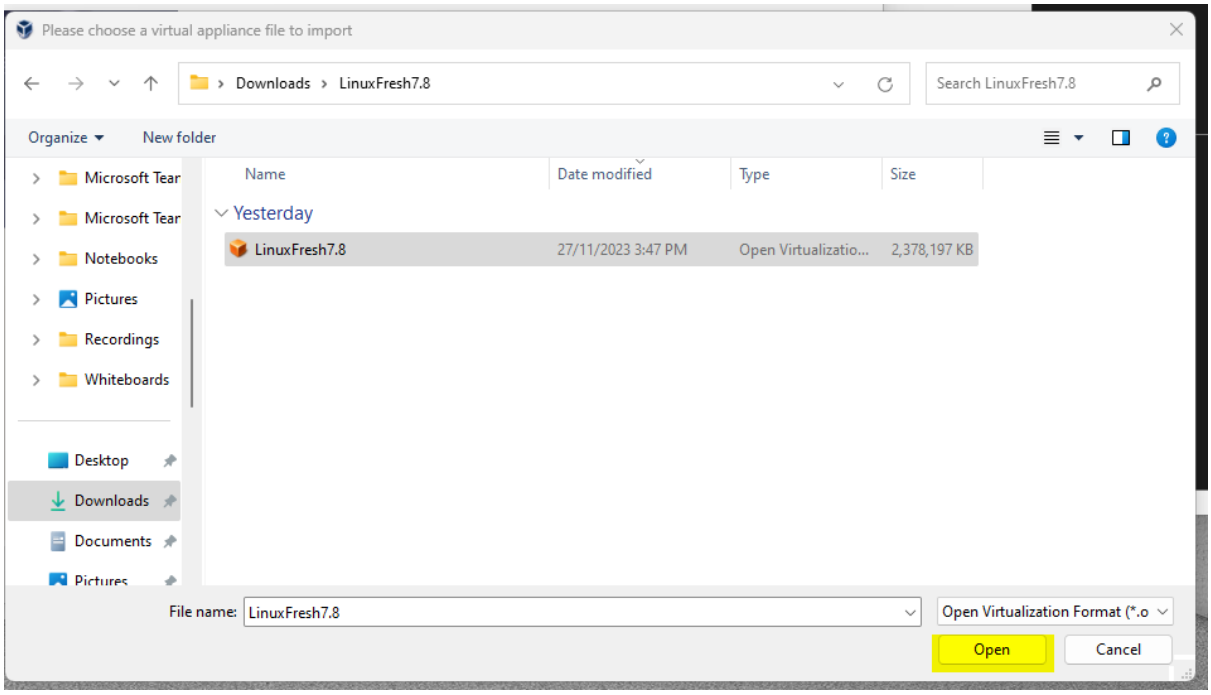
Configuration of the Oracle VM

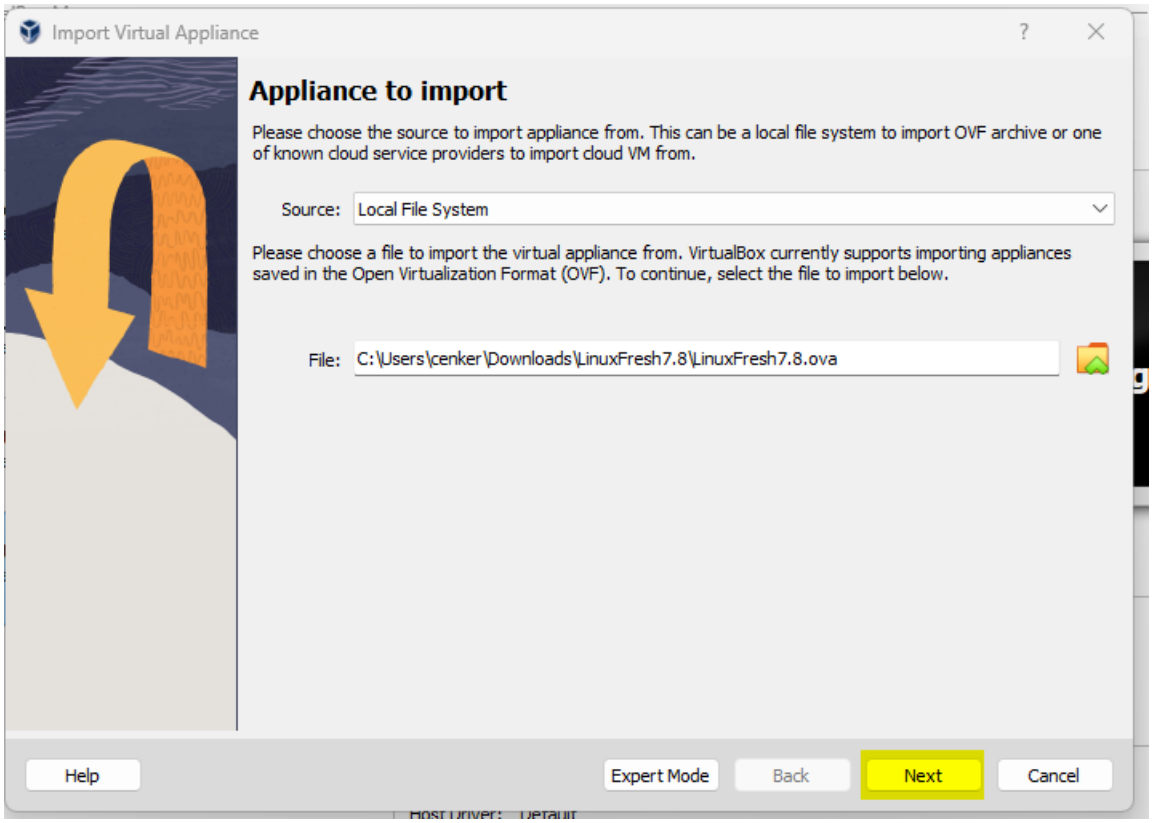
The Linux 7.8 OVA is downloaded from A010 – Oracle Linux 7.8 64-bit (Fresh Installation) - Ahmed Baraka DBA

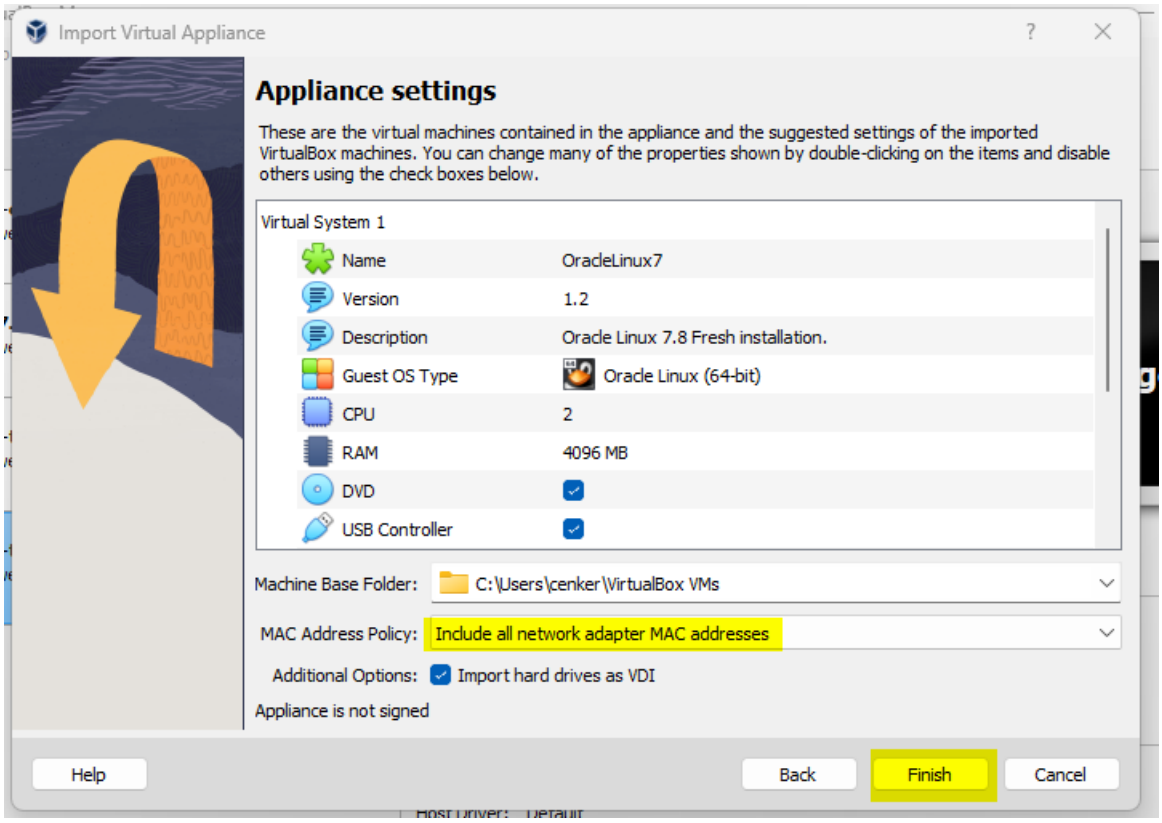
1 - Run "File" -> "Import Appliance" on Oracle Virtual Box to import the OVA file.

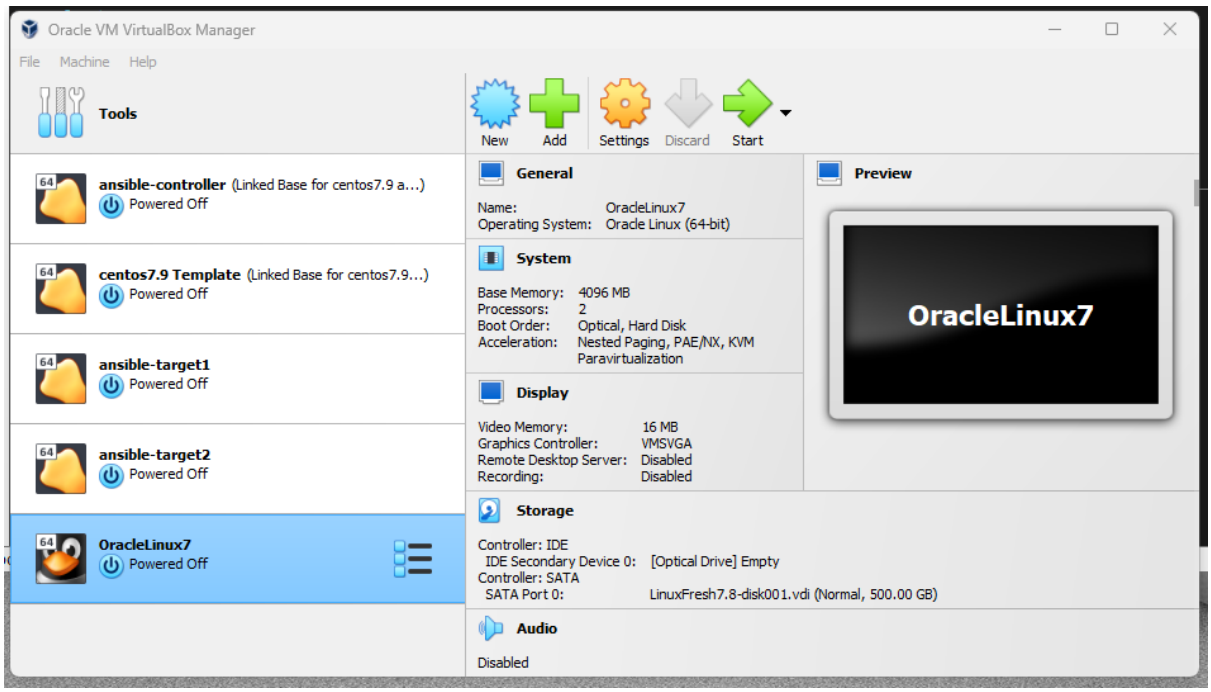

Oracle VM VirtualBox Manager
File Machine Help
Preferences... Ctrl+G
Import Appliance... Ctrl+I
Export Appliance... Ctrl+E
Tools
Check for Updates...
Reset All Warnings
Quit Ctrl+Q
New Add Settings Discard Start
ansible-target1
Powered Off
ansible-target2
Powered Off
General
Name: ansible-target2
Operating System: Other Linux (64-bit)
System
Base Memory: 2048 MB
Processors: 2
Boot Order: Floppy, Optical, Hard Disk
Acceleration: Nested Paging, PAE/NX, KVM
Paravirtualization
Display
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: CentOS 7.9-2009 (64bit).vdi (Normal, 500.00 GB)
Audio
Host Driver: Default
Preview
ansible-target2


Import Virtual Appliance
Appliance to import
Please choose the source to import appliance from. This can be a local file system to import OVF archive or one of known cloud service providers to import cloud VM from.
Source: Local File System
Please choose a file to import the virtual appliance from. VirtualBox currently supports importing appliances saved in the Open Virtualization Format (OVF). To continue, select the file to import below.
File:
Help
Expert Mode
Back
Next
Cancel


Please choose a virtual appliance file to import
Downloads › LinuxFresh7.8
Search LinuxFresh7.8
Organize
New folder
Name
Date modified
Type
Size
Yesterday
LinuxFresh7.8
27/11/2023 3:47 PM
Open Virtualizatio...
2,378,197 KB
Microsoft Tear
Microsoft Tear
Notebooks
Pictures
Recordings
Whiteboards
Desktop
Downloads
Documents
Pictures
File name:
LinuxFresh7.8
Open Virtualization Format (*.o
Open
Cancel


Import Virtual Appliance
Appliance to import
Please choose the source to import appliance from. This can be a local file system to import OVF archive or one of known cloud service providers to import cloud VM from.
Source:
Local File System
Please choose a file to import the virtual appliance from. VirtualBox currently supports importing appliances saved in the Open Virtualization Format (OVF). To continue, select the file to import below.
File:
C:\Users\cenker\Downloads\LinuxFresh7.8\LinuxFresh7.8.ova
Help
Expert Mode
Back
Next
Cancel


Import Virtual Appliance
Appliance settings
These are the virtual machines contained in the appliance and the suggested settings of the imported VirtualBox machines. You can change many of the properties shown by double-clicking on the items and disable others using the check boxes below.
Virtual System 1
Name
OracleLinux7
Version
1.2
Description
Oracle Linux 7.8 Fresh installation.
Guest OS Type
Oracle Linux (64-bit)
CPU
2
RAM
4096 MB
DVD
USB Controller
Machine Base Folder:
C:\Users\cenker\VirtualBox VMs
MAC Address Policy:
Include all network adapter MAC addresses
Additional Options:
Import hard drives as VDI
Appliance is not signed
Help
Back
Finish
Cancel

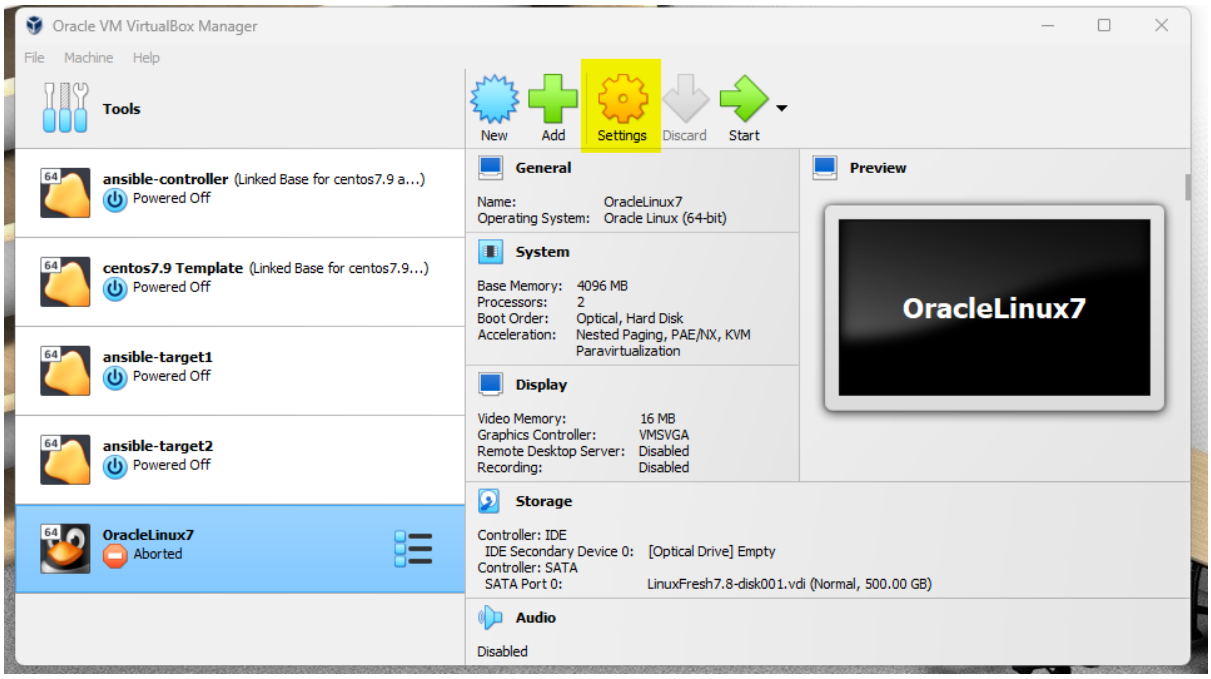

Oracle VM VirtualBox Manager
File
Machine
Help
Tools
New
Add
Settings
Discard
Start
ansible-controller (Linked Base for centos7.9 a...)
Powered Off
centos7.9 Template (Linked Base for centos7.9...)
Powered Off
ansible-target1
Powered Off
ansible-target2
Powered Off
OracleLinux7
Powered Off
General
Name: OracleLinux7
Operating System: Oracle Linux (64-bit)
System
Base Memory: 4096 MB
Processors: 2
Boot Order: Optical, Hard Disk
Acceleration: Nested Paging, PAE/NX, KVM
Paravirtualization
Display
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: LinuxFresh7.8-disk001.vdi (Normal, 500.00 GB)
Audio
Disabled
Preview
OracleLinux7

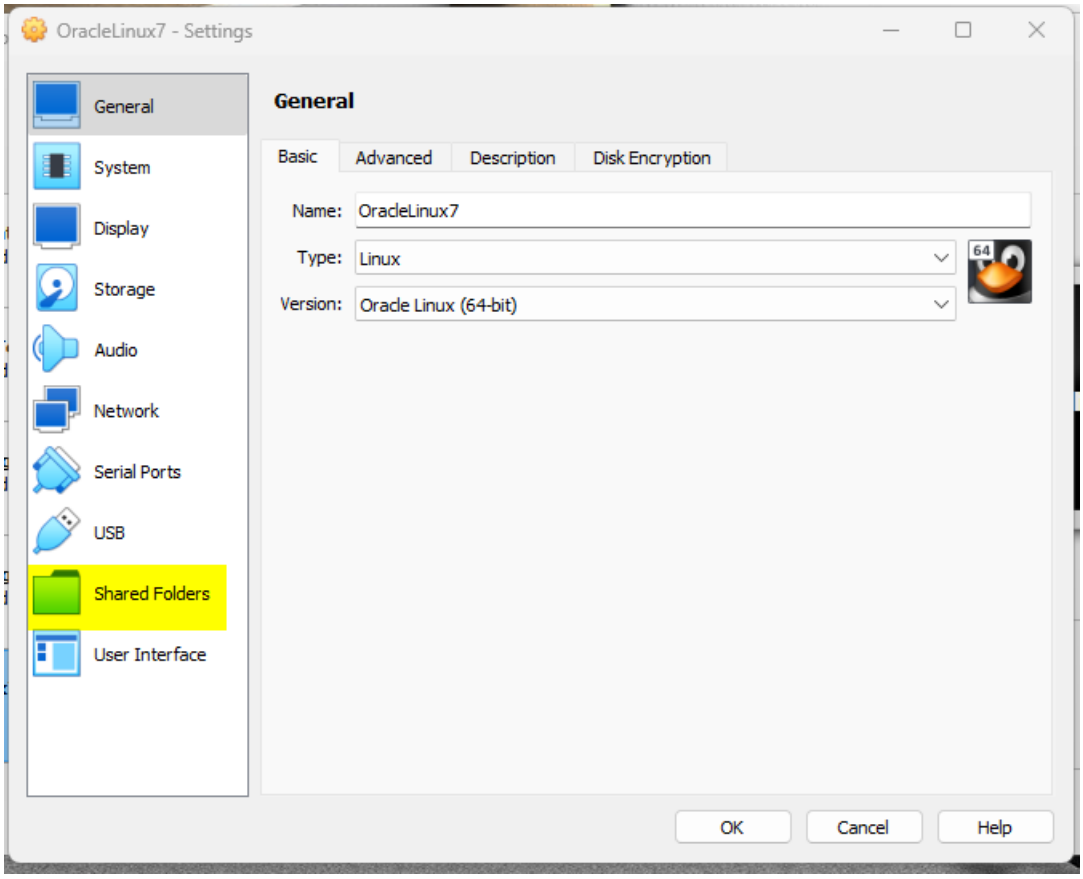
root password: baraka@2020

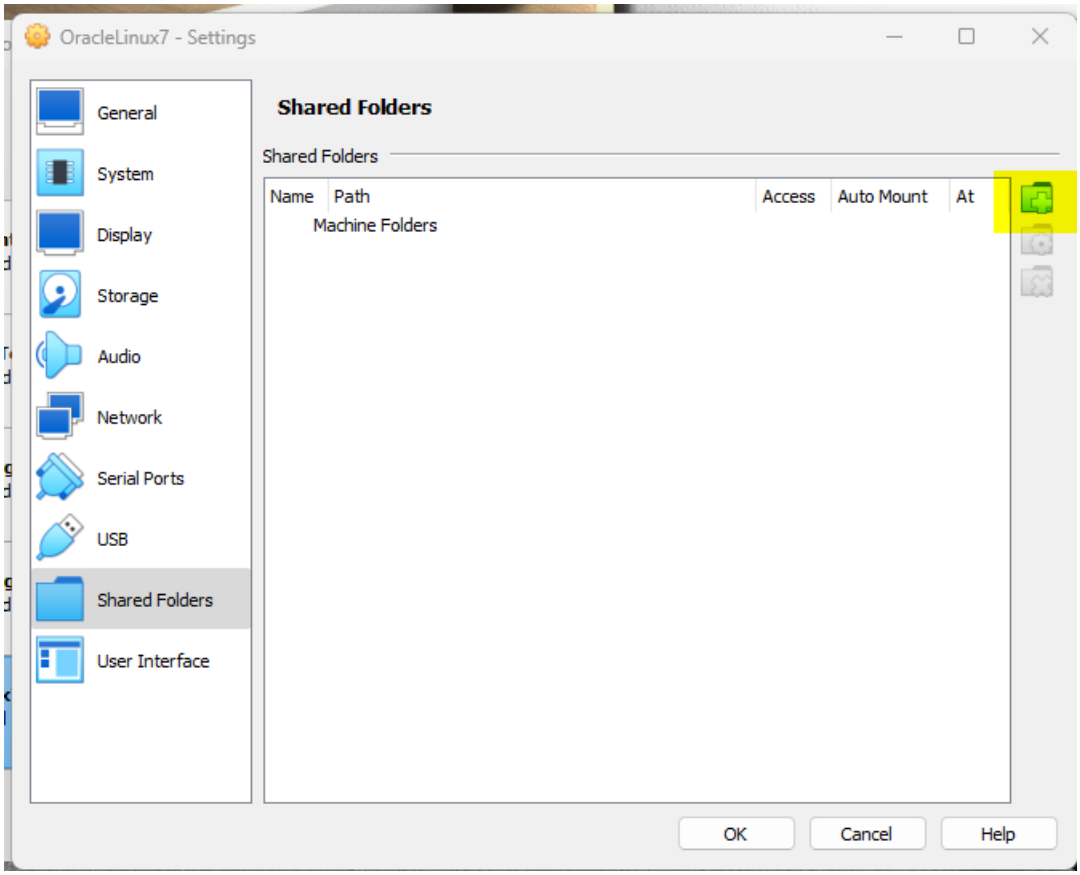
oracle password: baraka@2020

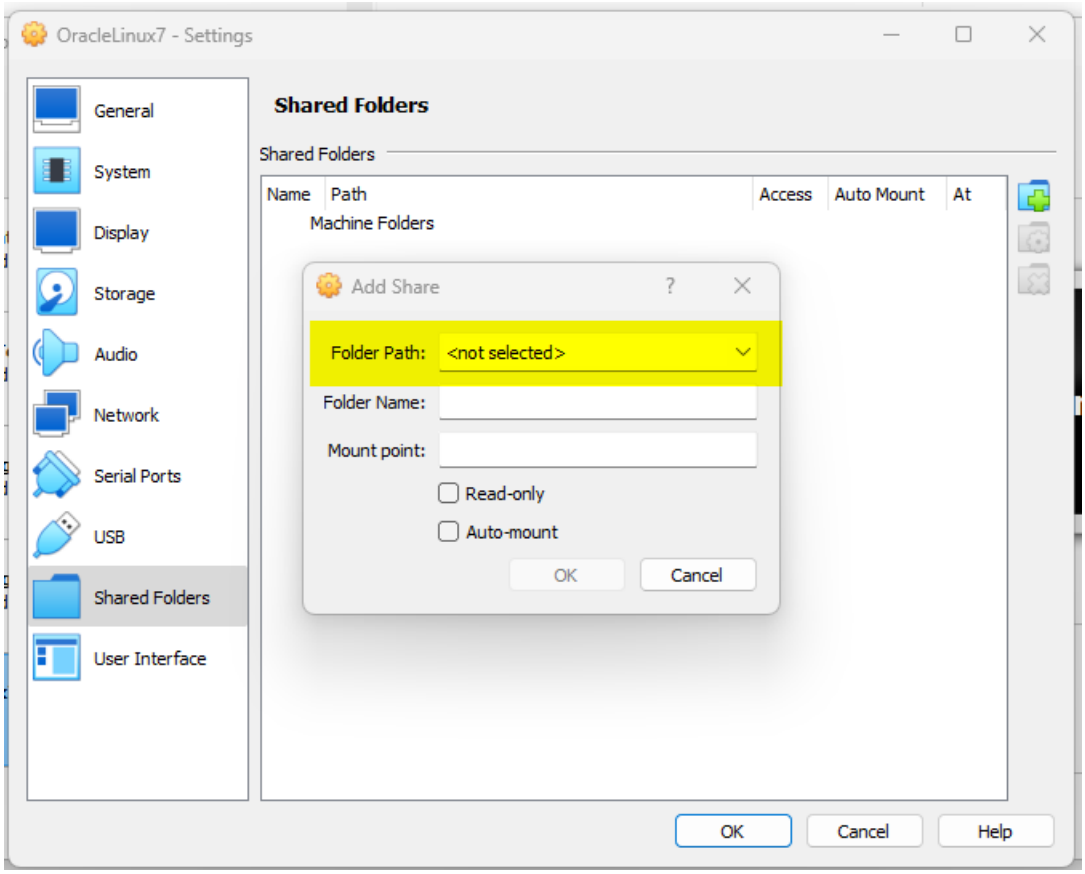
password for "grid" user: baraka@2020

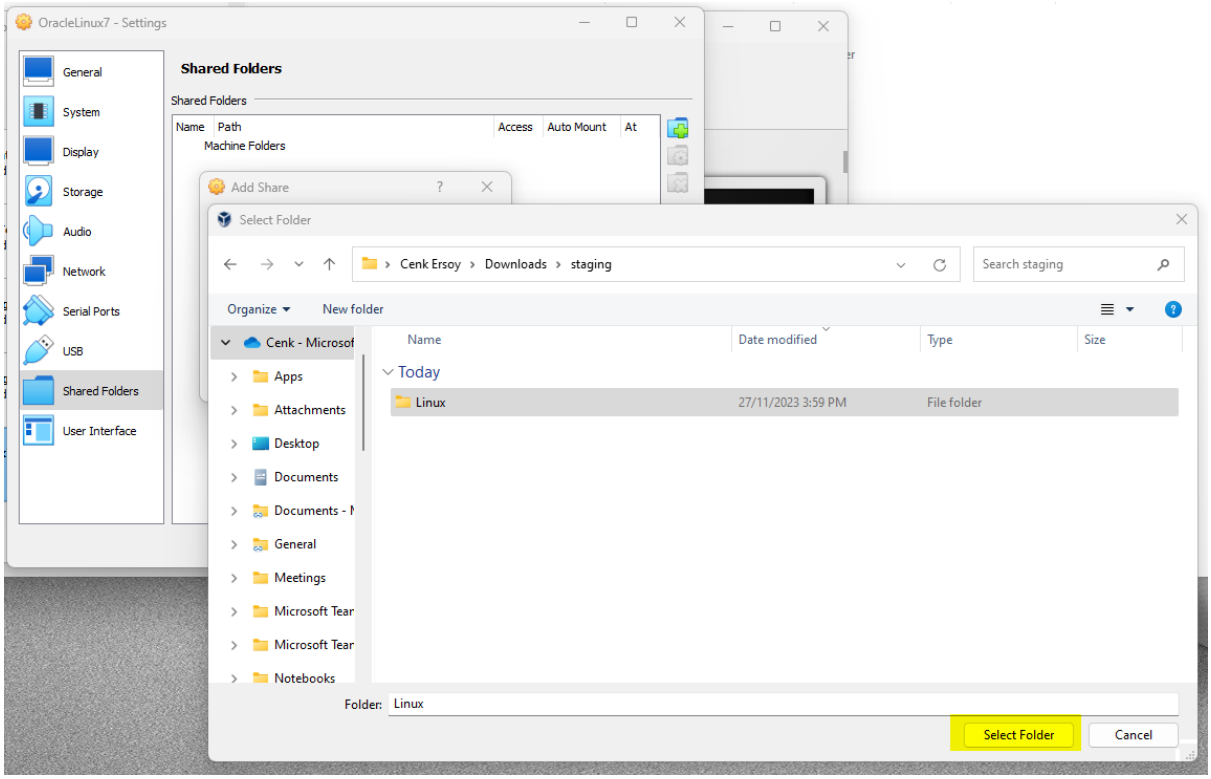
2 - Before starting the VM, we will create a shared folder for staging. This is how you can map a folder from laptop to the VM for file copy:

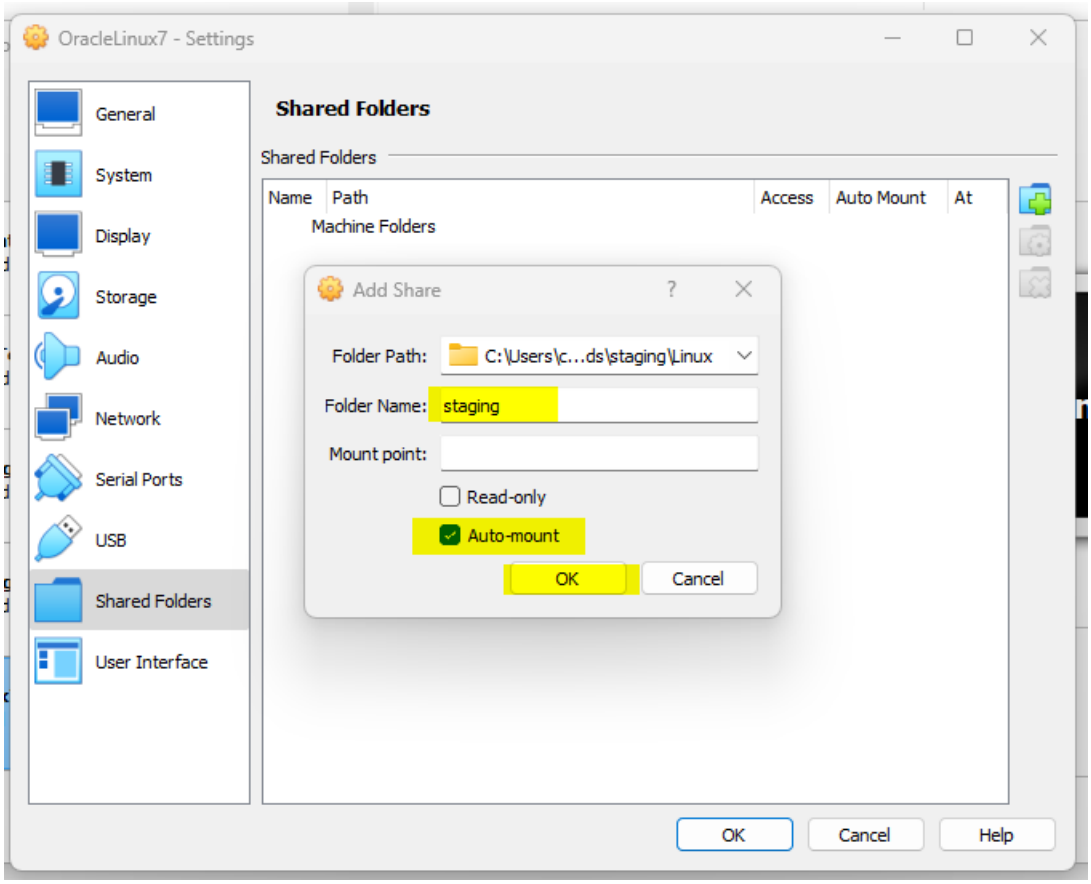


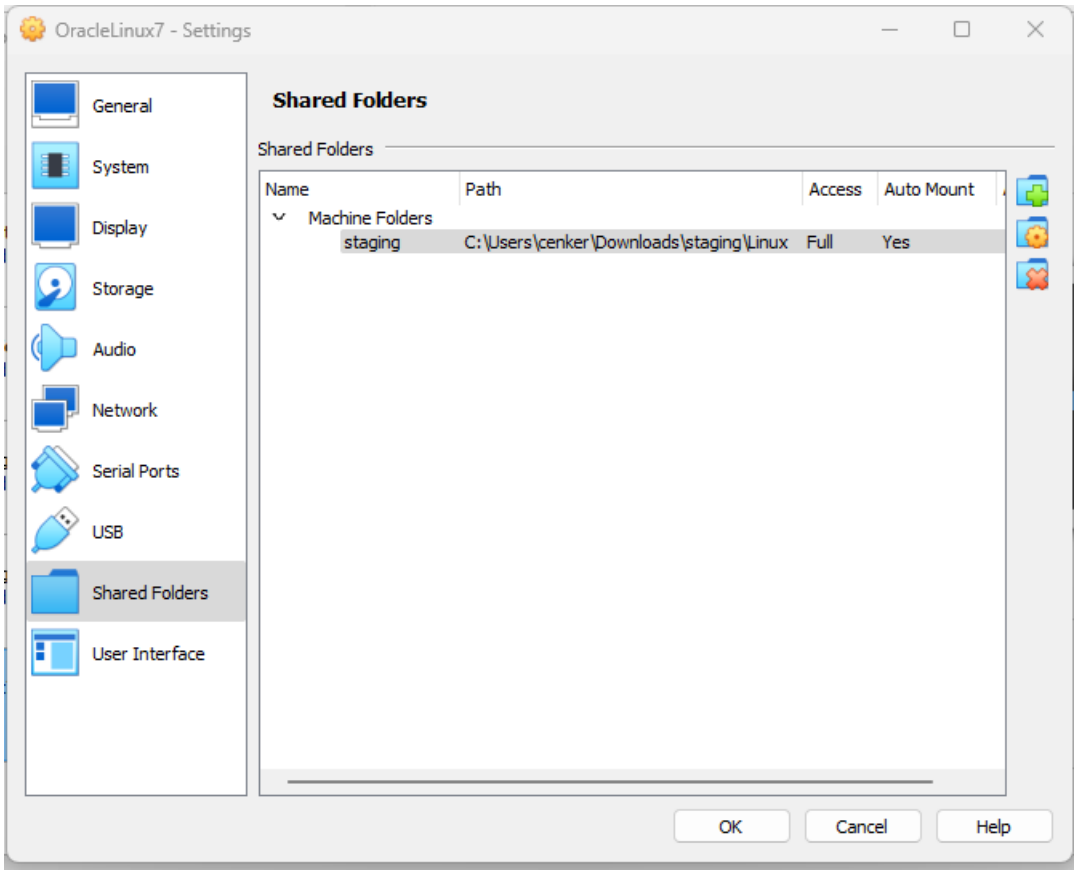

OracleLinux7 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
General
Basic
Advanced
Description
Disk Encryption
Name: OracleLinux7
Type: Linux
Version: Oracle Linux (64-bit)
OK
Cancel
Help


OracleLinux7 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Shared Folders
Shared Folders
Name
Path
Access
Auto Mount
At
Machine Folders
OK
Cancel
Help


OracleLinux7 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Shared Folders
Shared Folders
Name
Path
Access
Auto Mount
At
Machine Folders
Add Share
Folder Path:
<not selected>
Folder Name:
Mount point:
Read-only
Auto-mount
OK
Cancel
OK
Cancel
Help

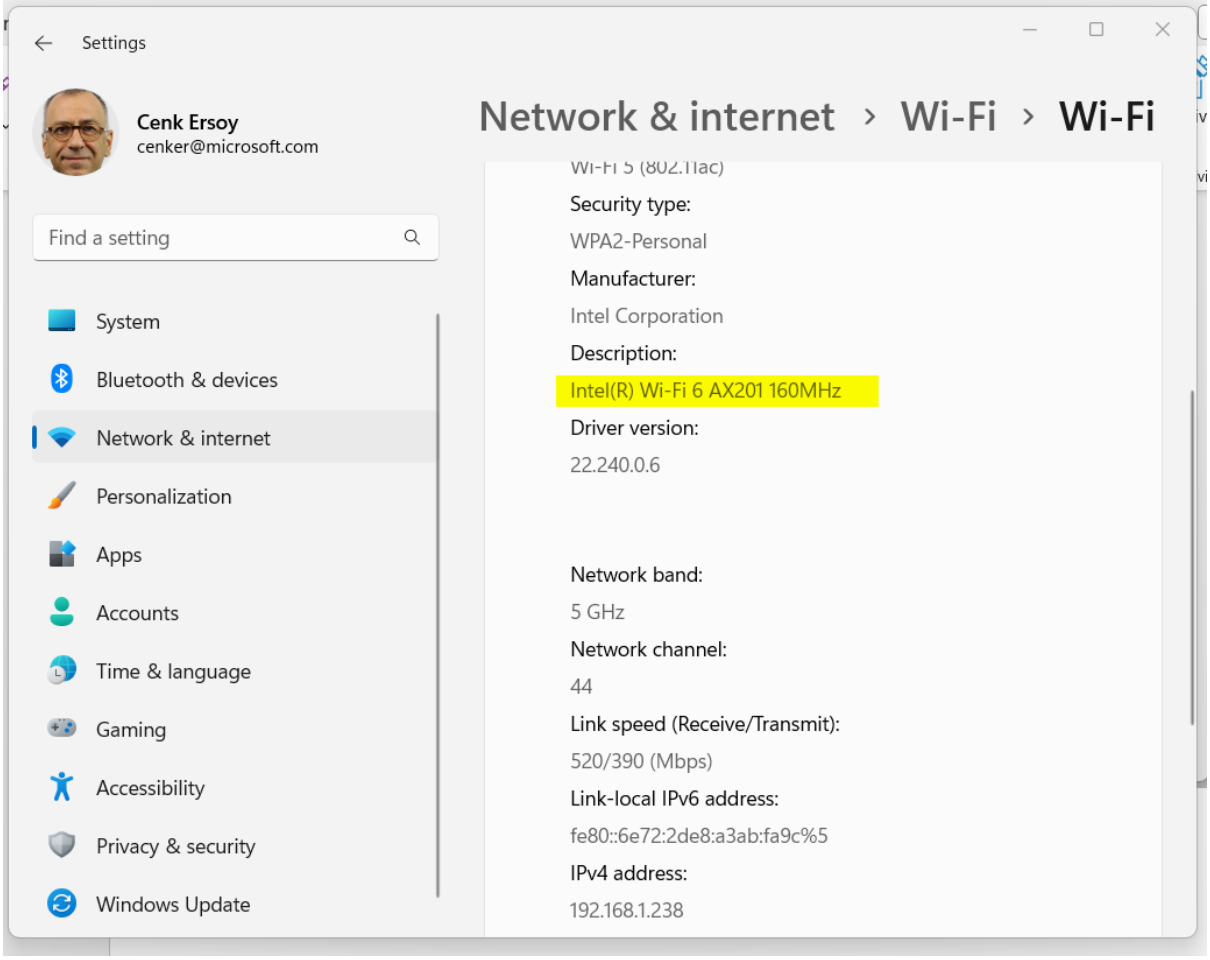

OracleLinux7 - Settings
Shared Folders
Add Share
Select Folder
Cenk Ersoy
Downloads
staging
Search staging
Organize
New folder
Name
Date modified
Type
Size
Today
Linux
27/11/2023 3:59 PM
File folder
Apps
Attachments
Desktop
Documents
General
Meetings
Notebooks
Folder:
Linux
Select Folder
Cancel


OracleLinux7 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Shared Folders
Shared Folders
Name
Path
Access
Auto Mount
At
Machine Folders
Add Share
Folder Path:
C:\Users\c...ds\staging\Linux
Folder Name:
staging
Mount point:
Read-only
Auto-mount
OK
Cancel
OK
Cancel
Help

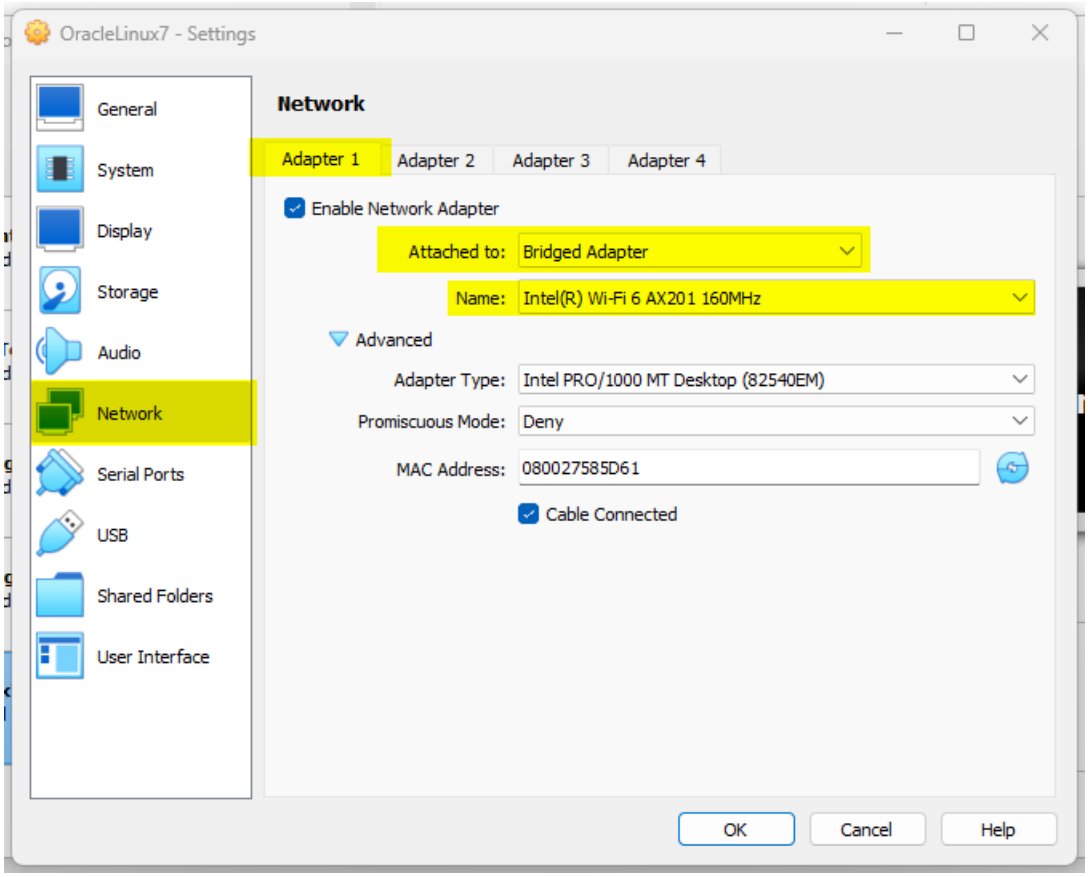

OracleLinux7 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Shared Folders
Shared Folders
Name
Path
Access
Auto Mount
Machine Folders
staging
C:\Users\cenker\Downloads\staging\Linux
Full
Yes
OK
Cancel
Help

3 - Next, we will check the network adapter of the VM.

Here is the network adapter of the laptop which is running Oracle Virtual Box:

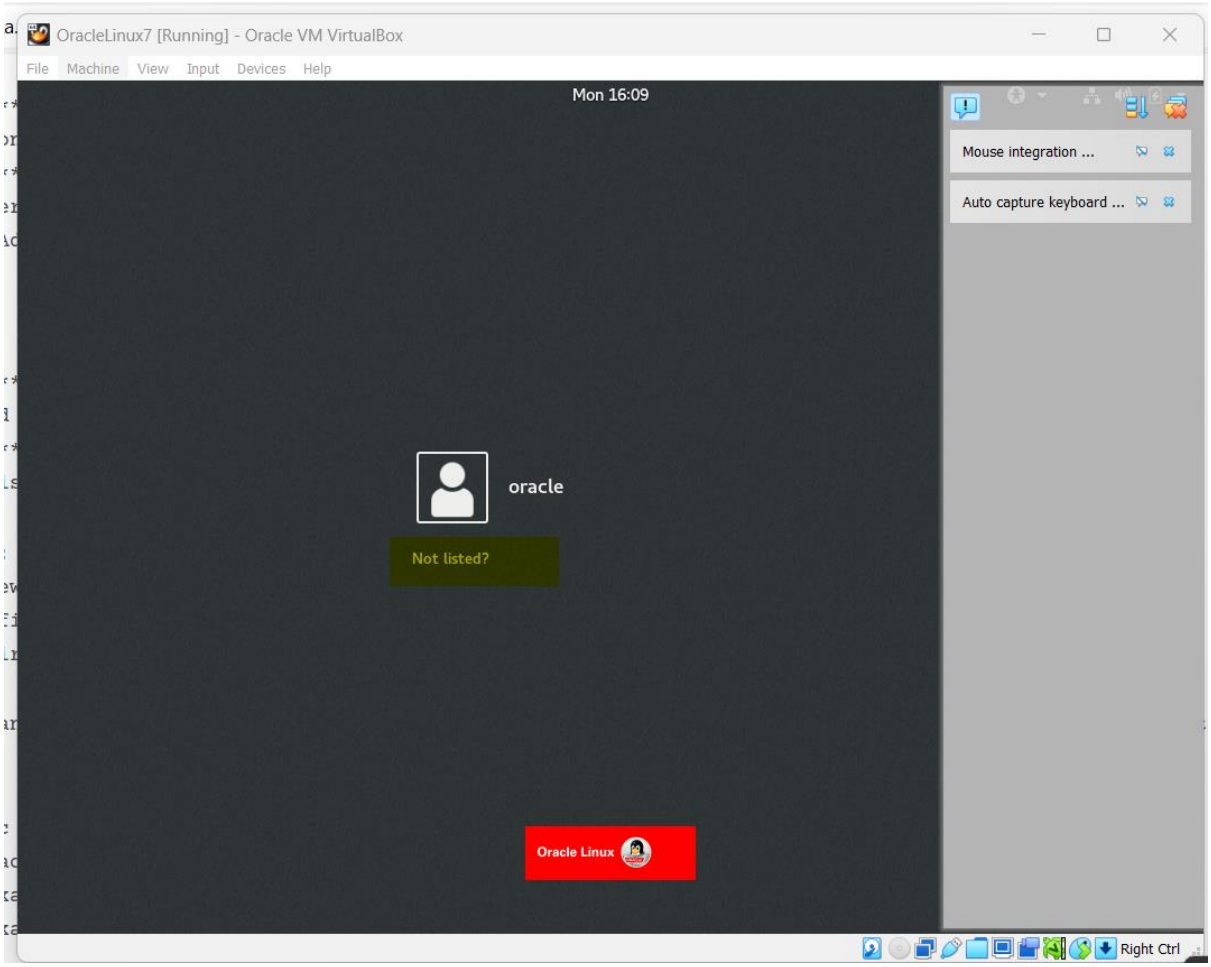


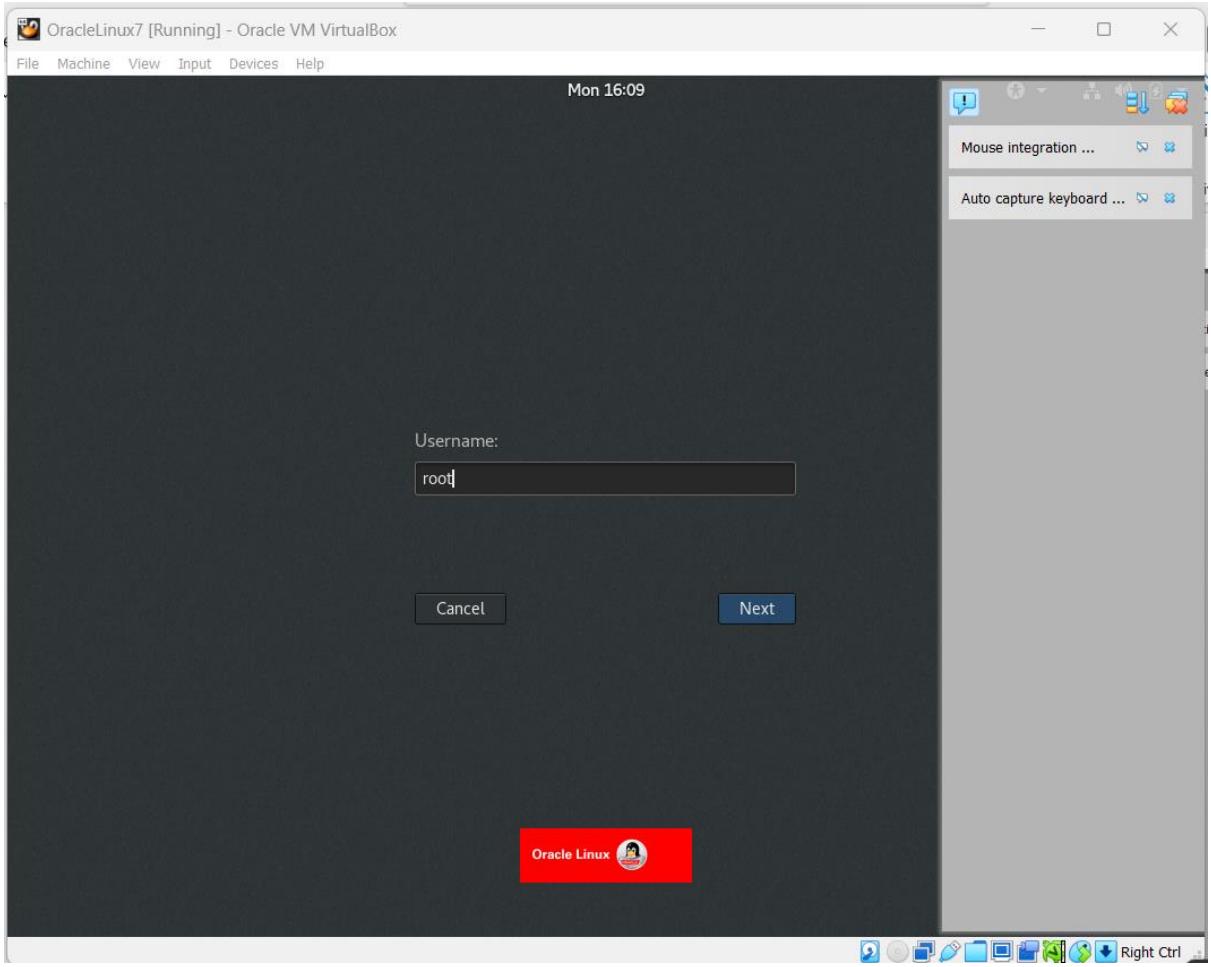
Ensure that the same device is set on the VM.

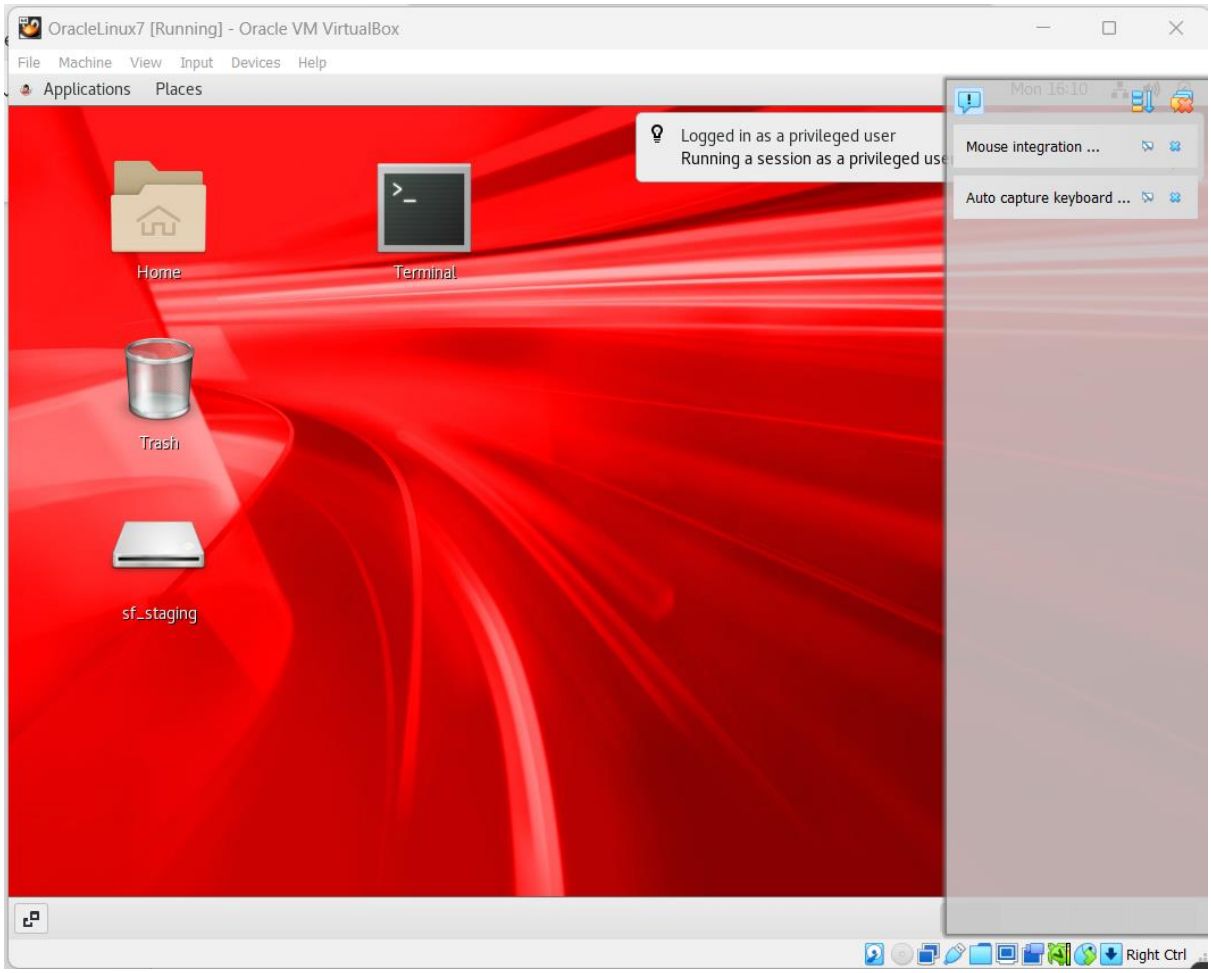


4 - Now, it is time to change firewall settings as recommended here: [A010 – Oracle Linux 7.8 64-bit (Fresh Installation) - Ahmed Baraka DBA]

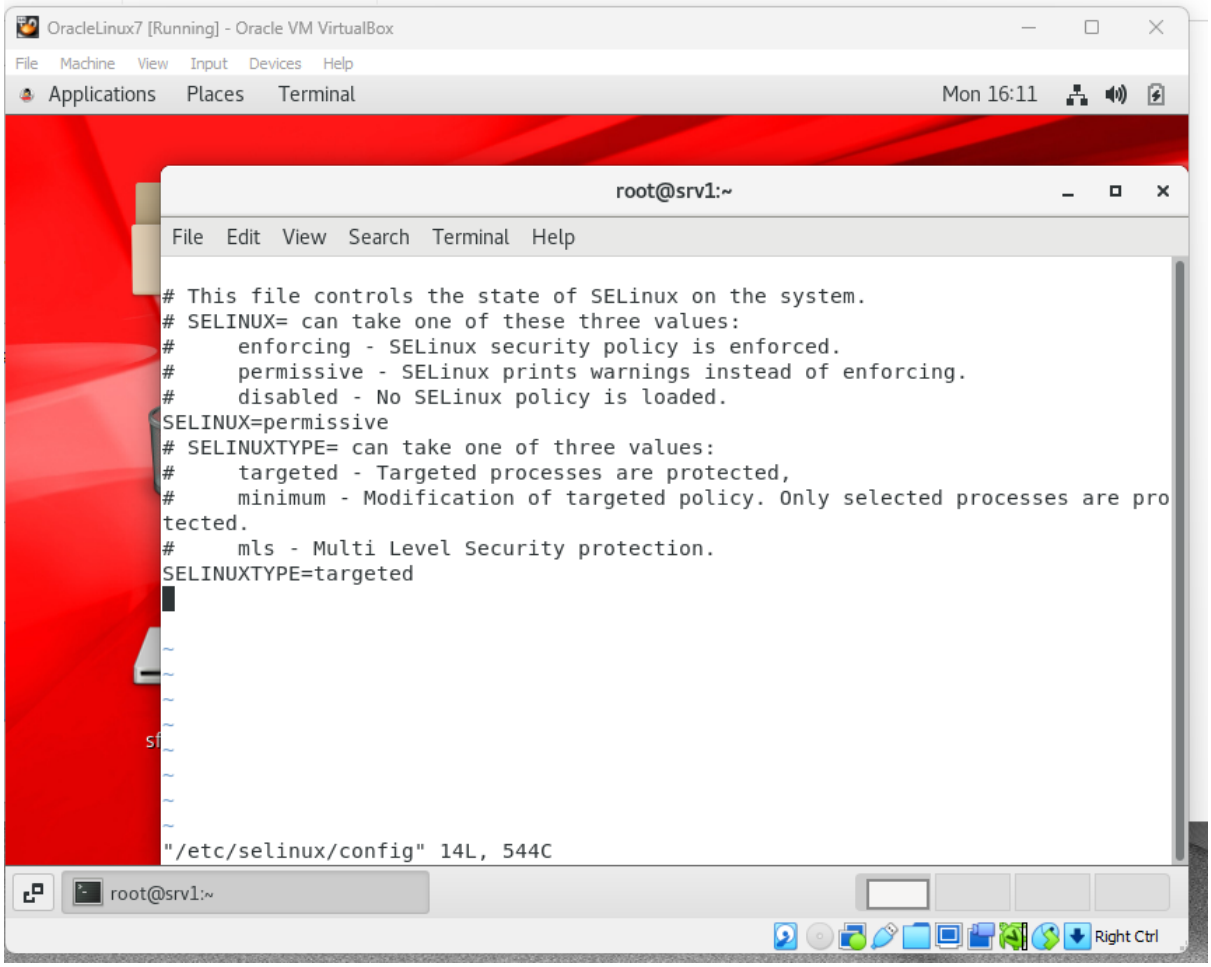
Start the VM. Login as root.


OracleLinux7 [Running] - Oracle VM VirtualBox
File
Machine
View
Input
Devices
Help
Mon 16:09
Mouse integration ...
Auto capture keyboard ...
oracle
Not listed?
Oracle Linux
Right Ctrl


OracleLinux7 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Mon 16:09
Mouse integration ...
Auto capture keyboard ...
Username:
root
Cancel
Next
Oracle Linux
Right Ctrl

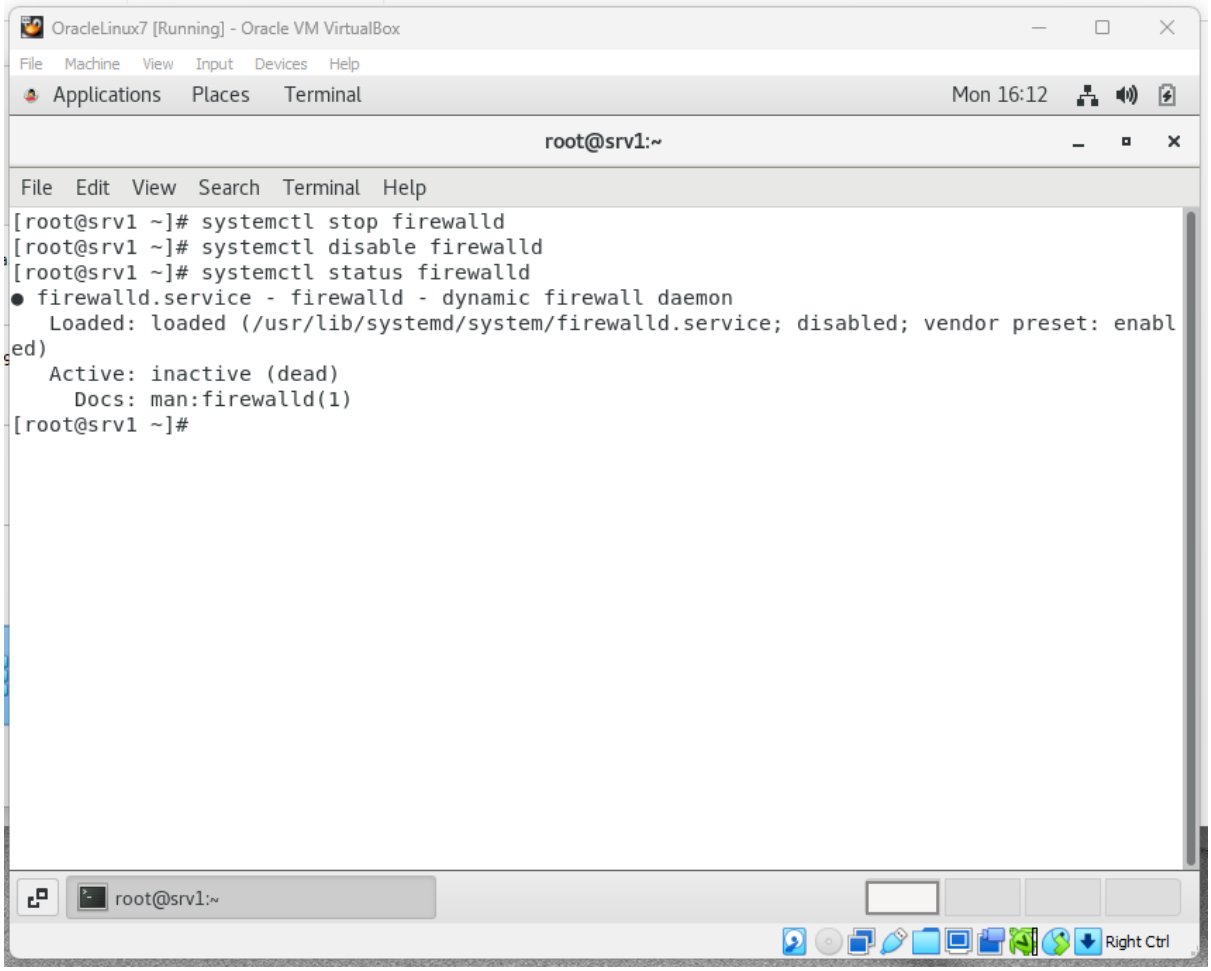


Set SELINUX=permissive in `/etc/selinux/config`:



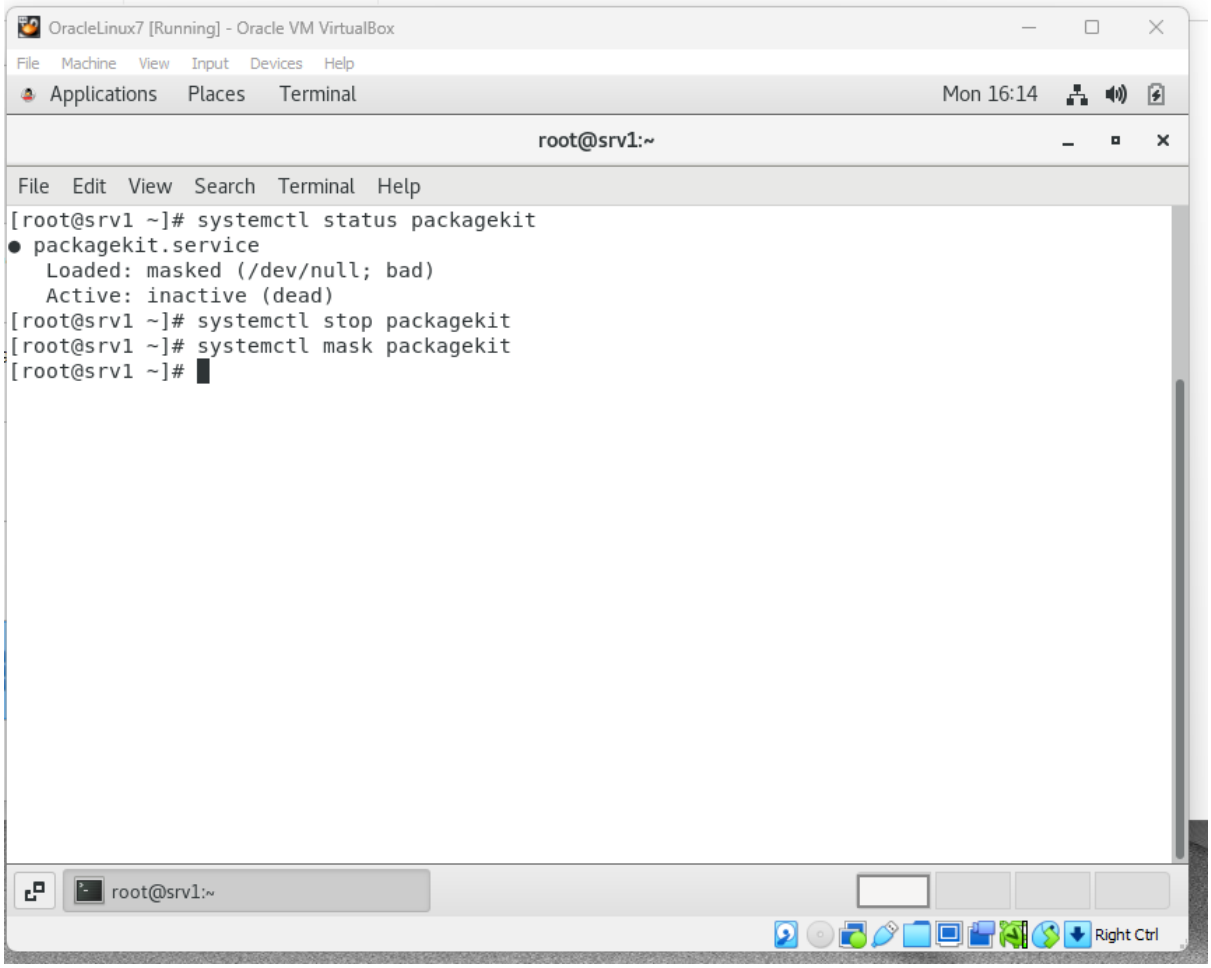
Disable the firewall:

```
$ systemctl stop firewalld
$ systemctl disable firewalld
$ systemctl status firewalld
```

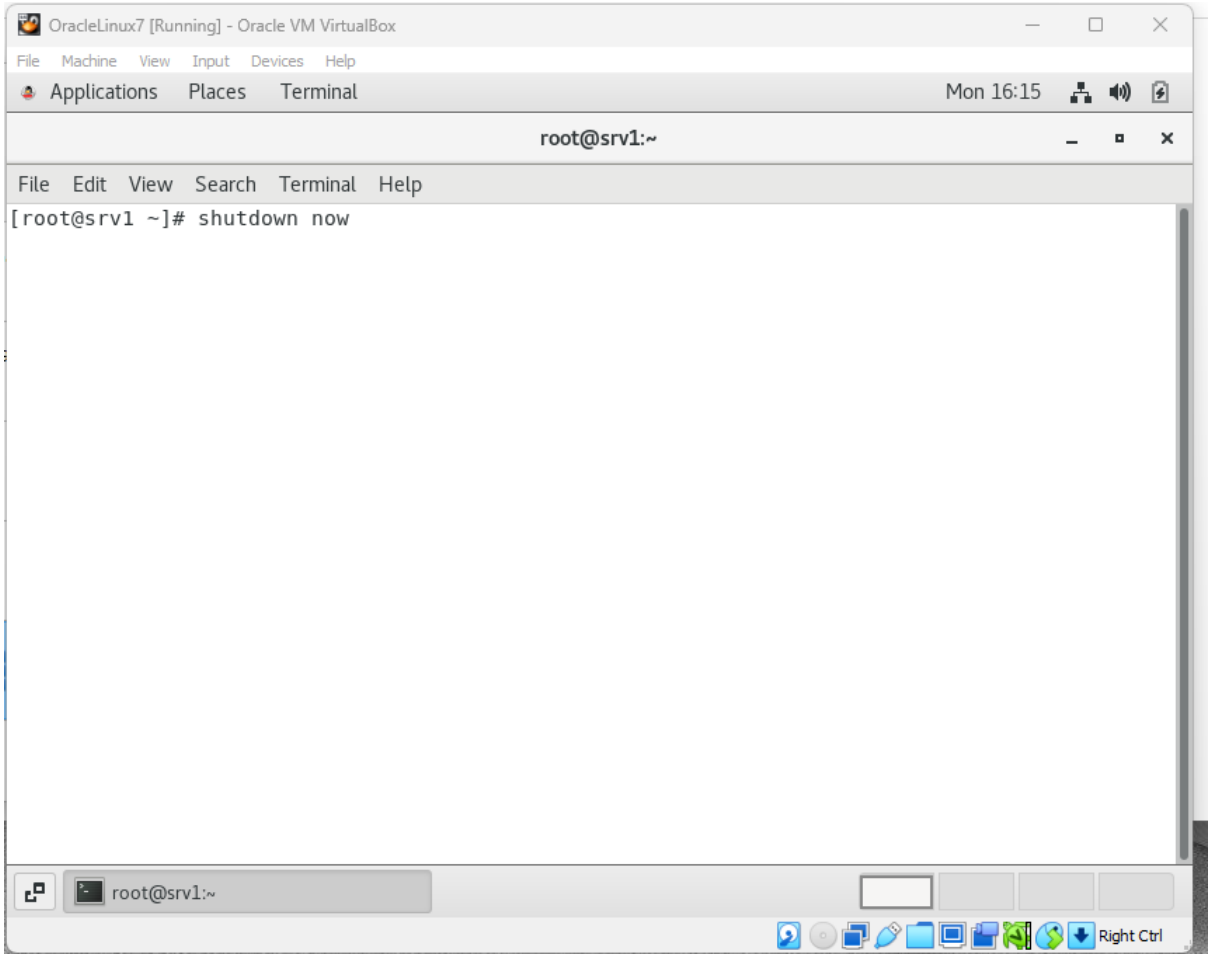


Disable automatic software updates:

```
$ systemctl status packagekit
$ systemctl stop packagekit
$ systemctl mask packagekit
```

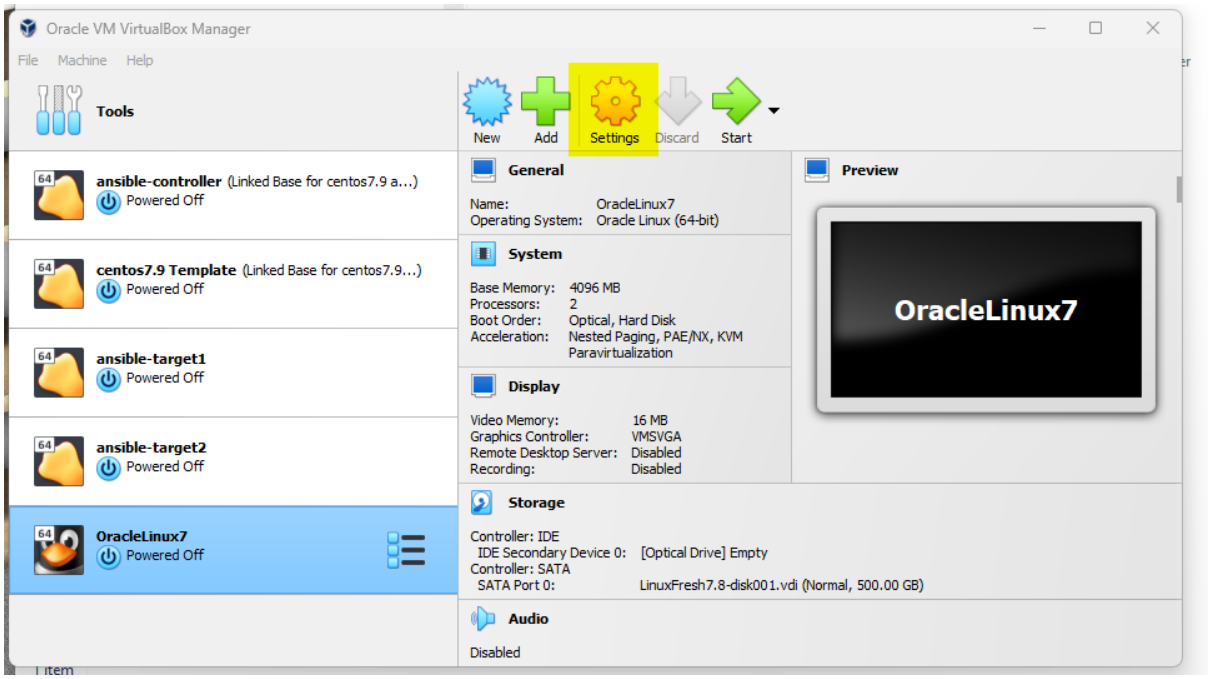


Now, stop the VM.

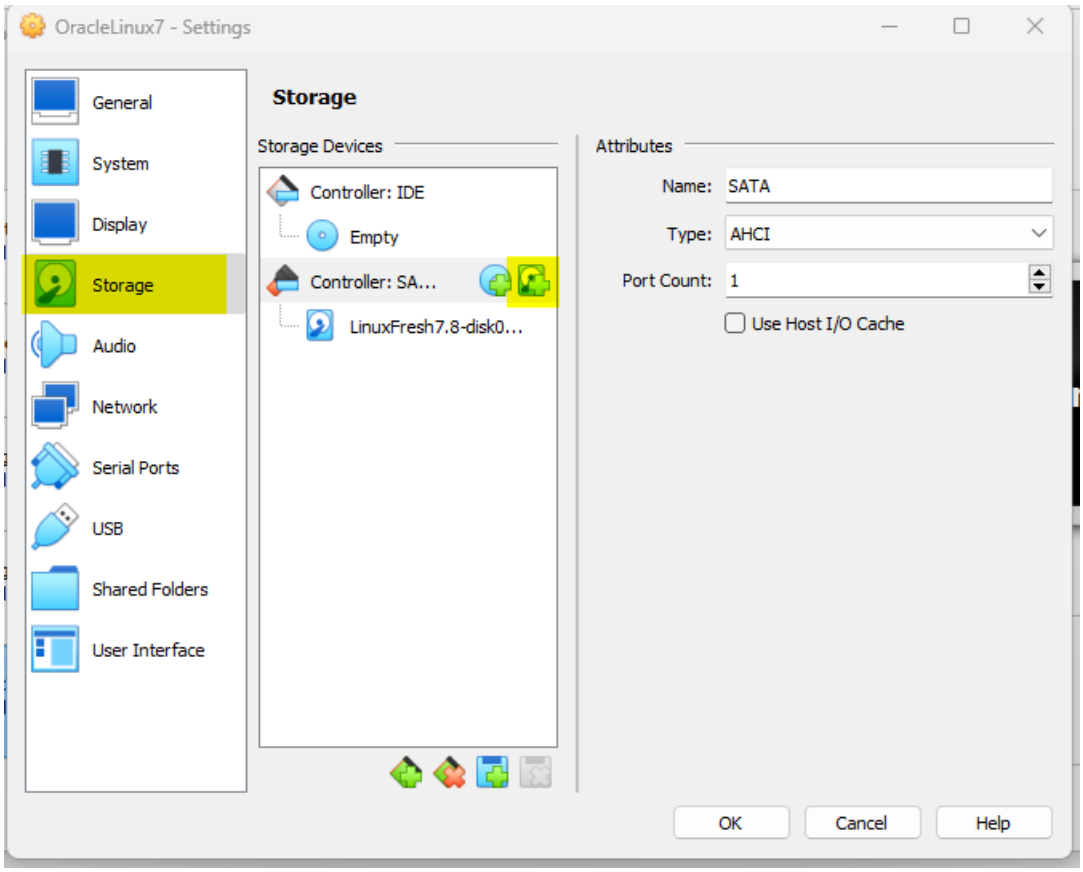


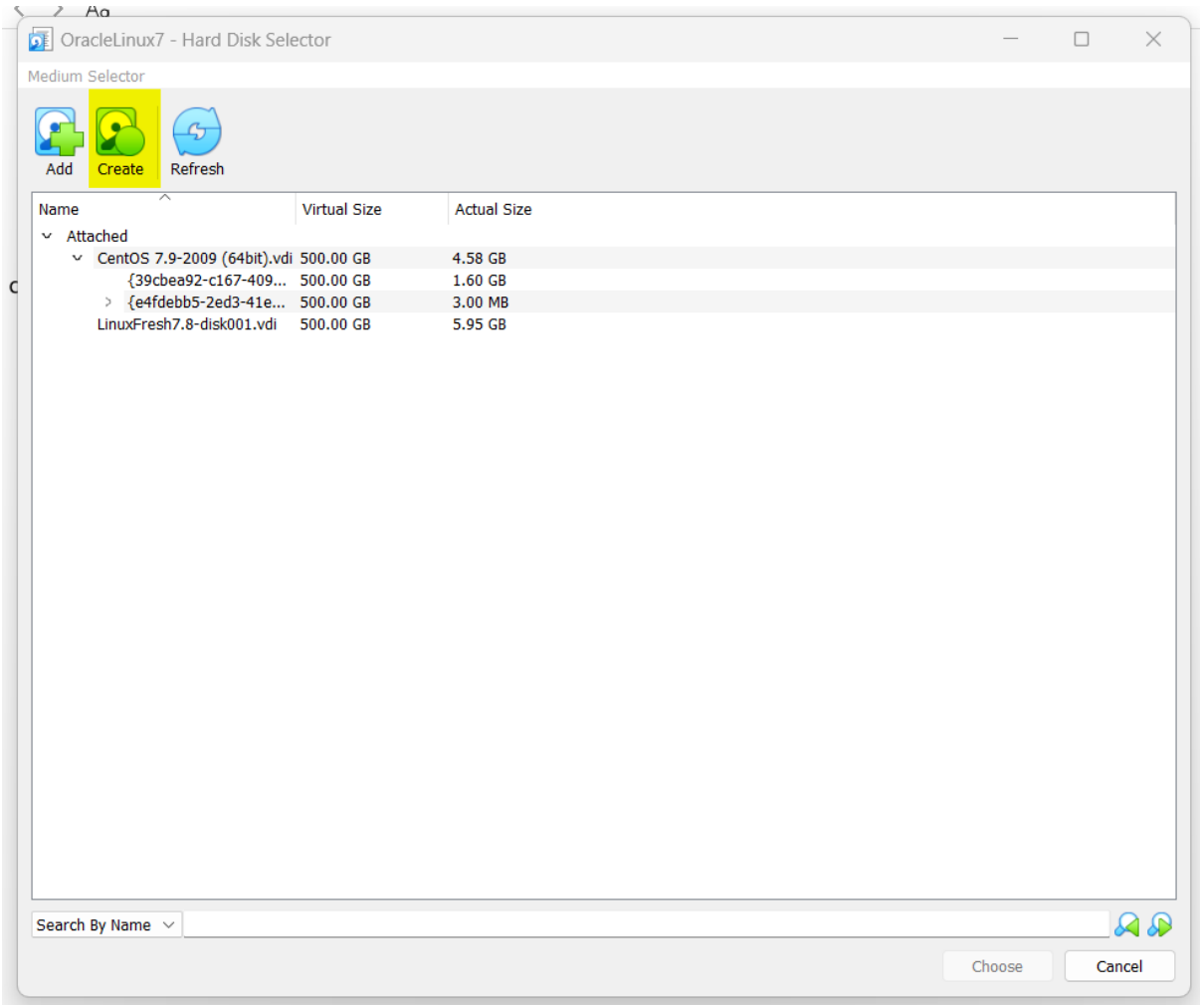
Adding Virtual Hard Disks

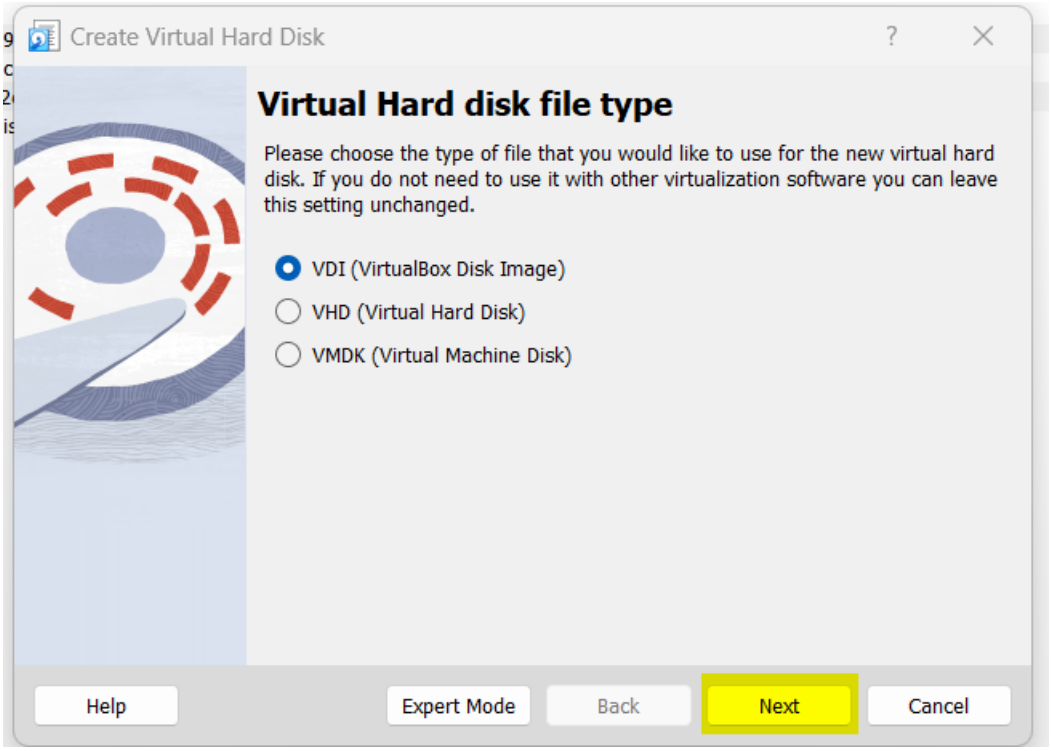
We will create two ASM disks: OCRDISK1 (12 GB) and DATADISK1 (40GB)

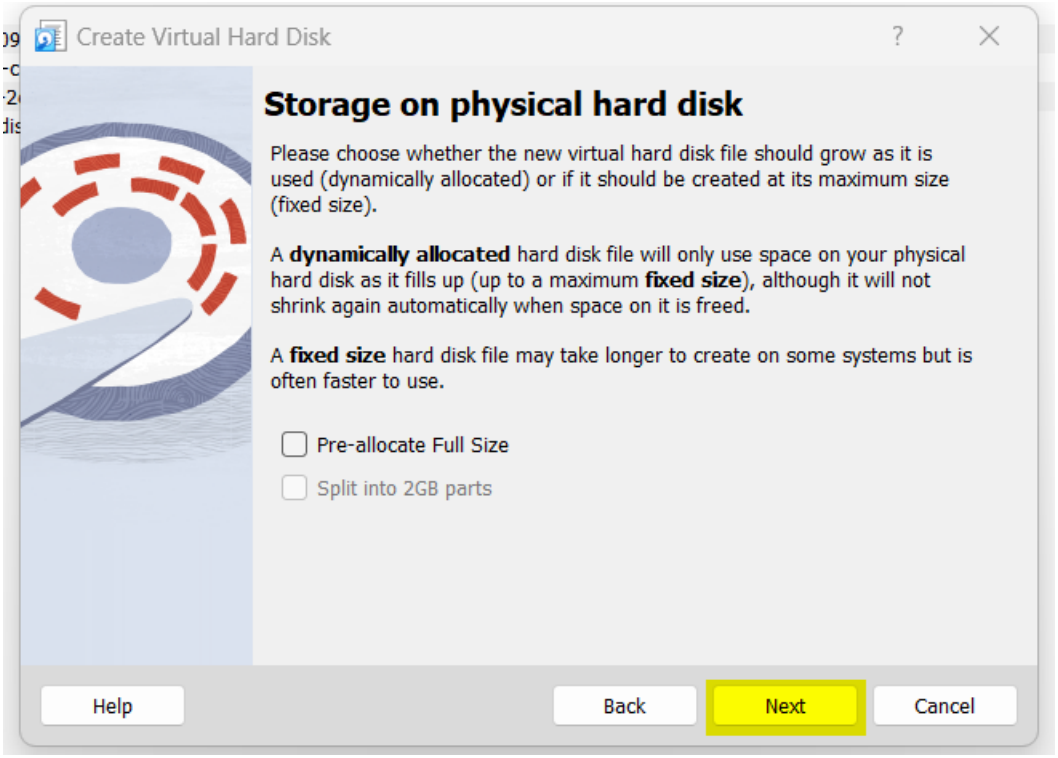


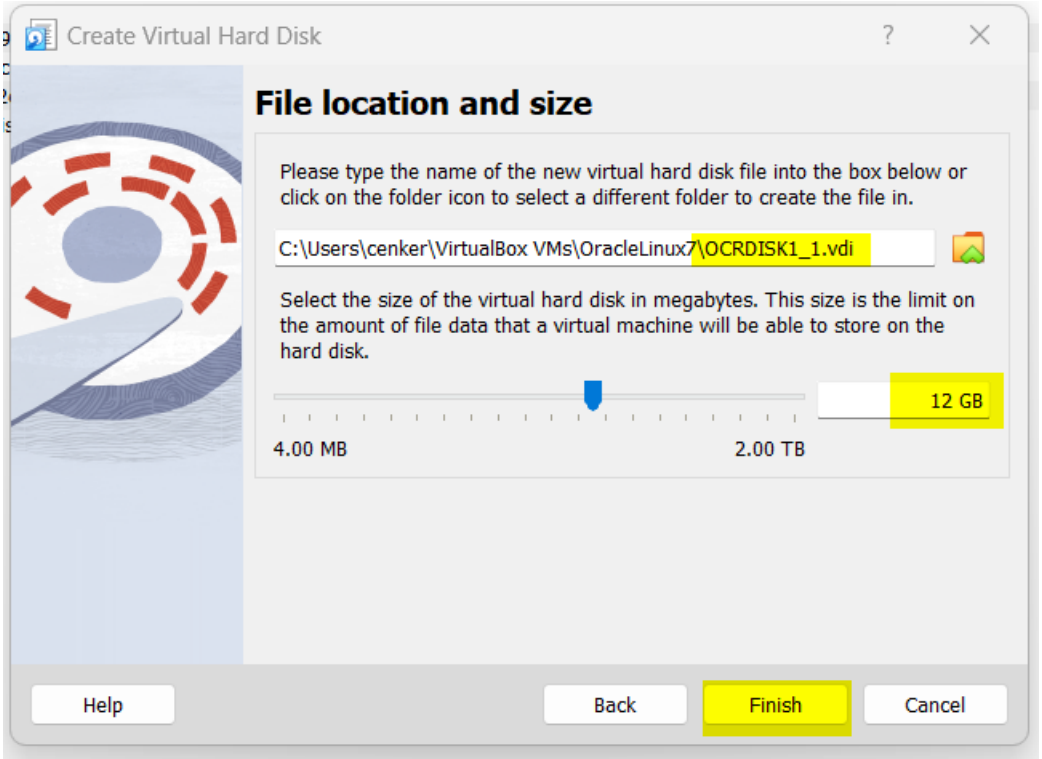
Add two disks to the existing SATA controller (optionally, we could also add a new controller)

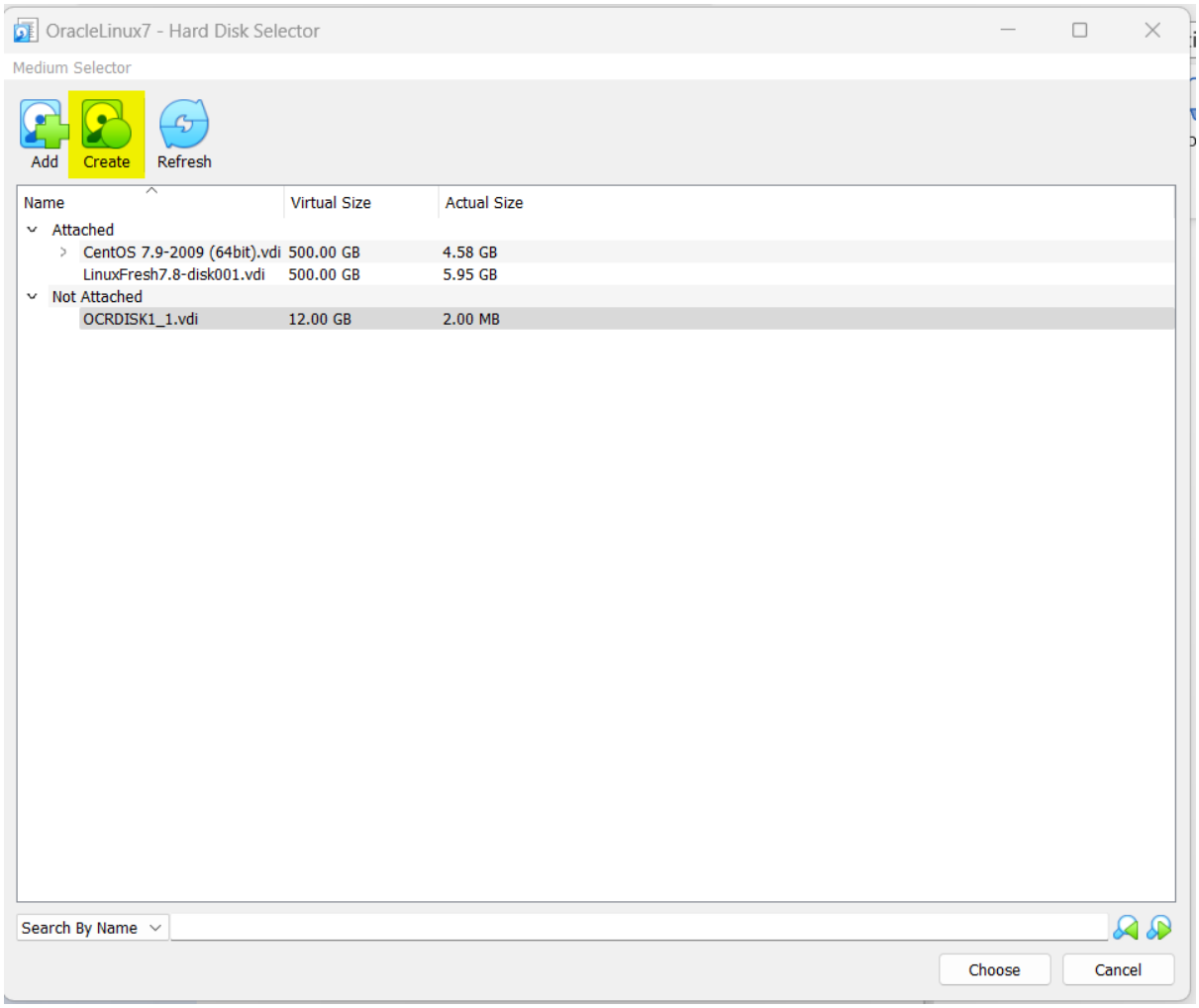


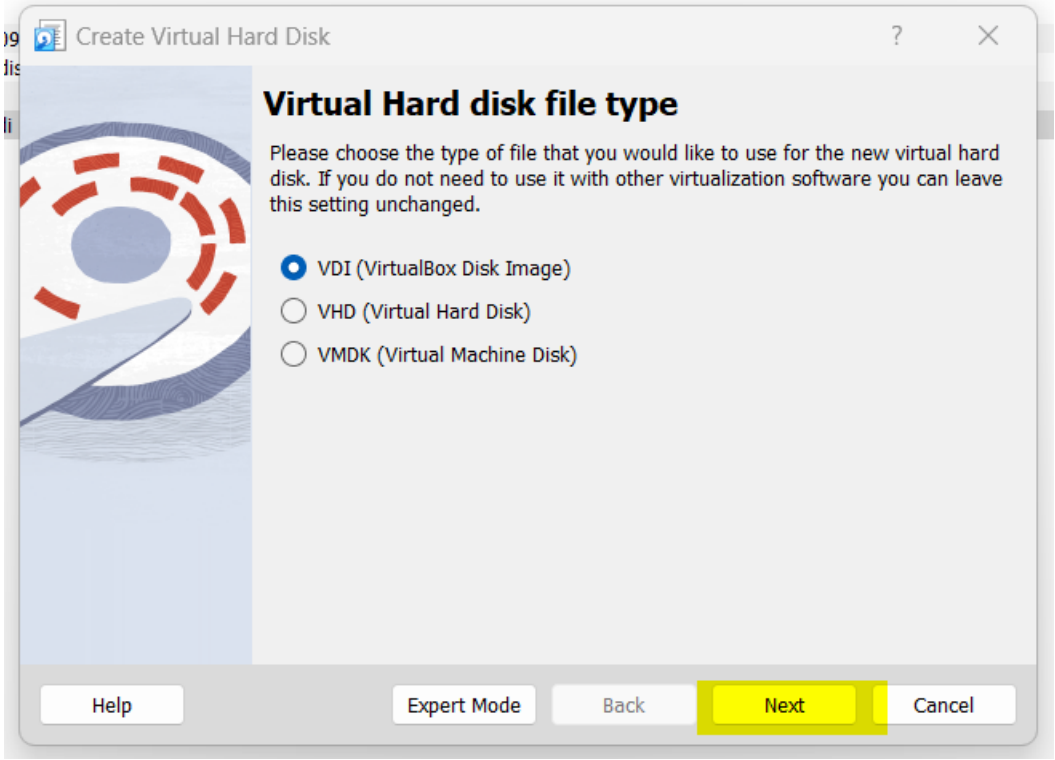

OracleLinux7 - Hard Disk Selector
Medium Selector
Add
Create
Refresh
Name
Virtual Size
Actual Size
Attached
CentOS 7.9-2009 (64bit).vdi 500.00 GB 4.58 GB
{39cbea92-c167-409... 500.00 GB 1.60 GB
{e4fdebb5-2ed3-41e... 500.00 GB 3.00 MB
LinuxFresh7.8-disk001.vdi 500.00 GB 5.95 GB
Search By Name
Choose
Cancel

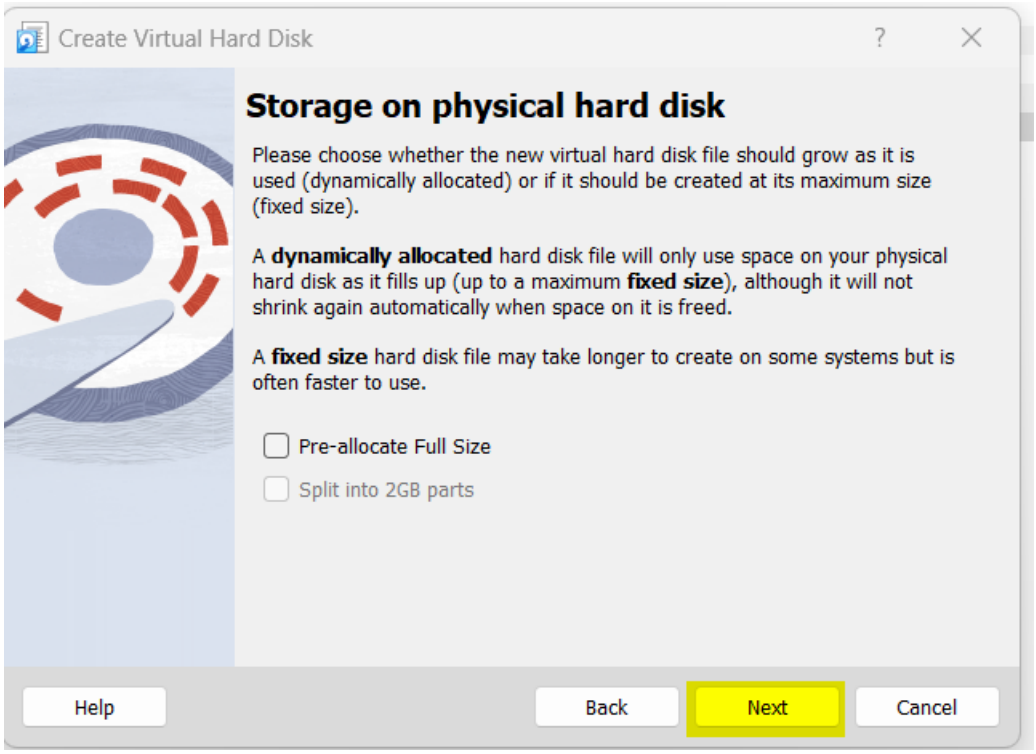

Create Virtual Hard Disk
Virtual Hard disk file type
Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.
VDI (VirtualBox Disk Image)
VHD (Virtual Hard Disk)
VMDK (Virtual Machine Disk)
Help
Expert Mode
Back
Next
Cancel

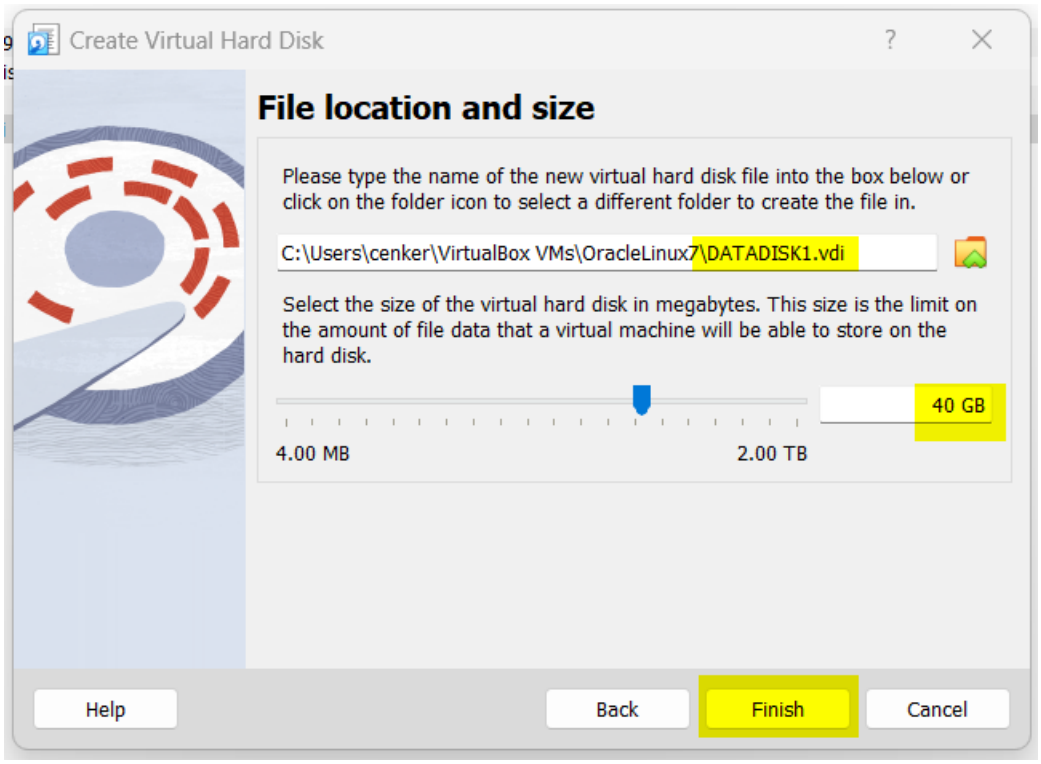

Create Virtual Hard Disk
Storage on physical hard disk
Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard disk file will only use space on your physical hard disk as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard disk file may take longer to create on some systems but is often faster to use.
Pre-allocate Full Size
Split into 2GB parts
Help
Back
Next
Cancel

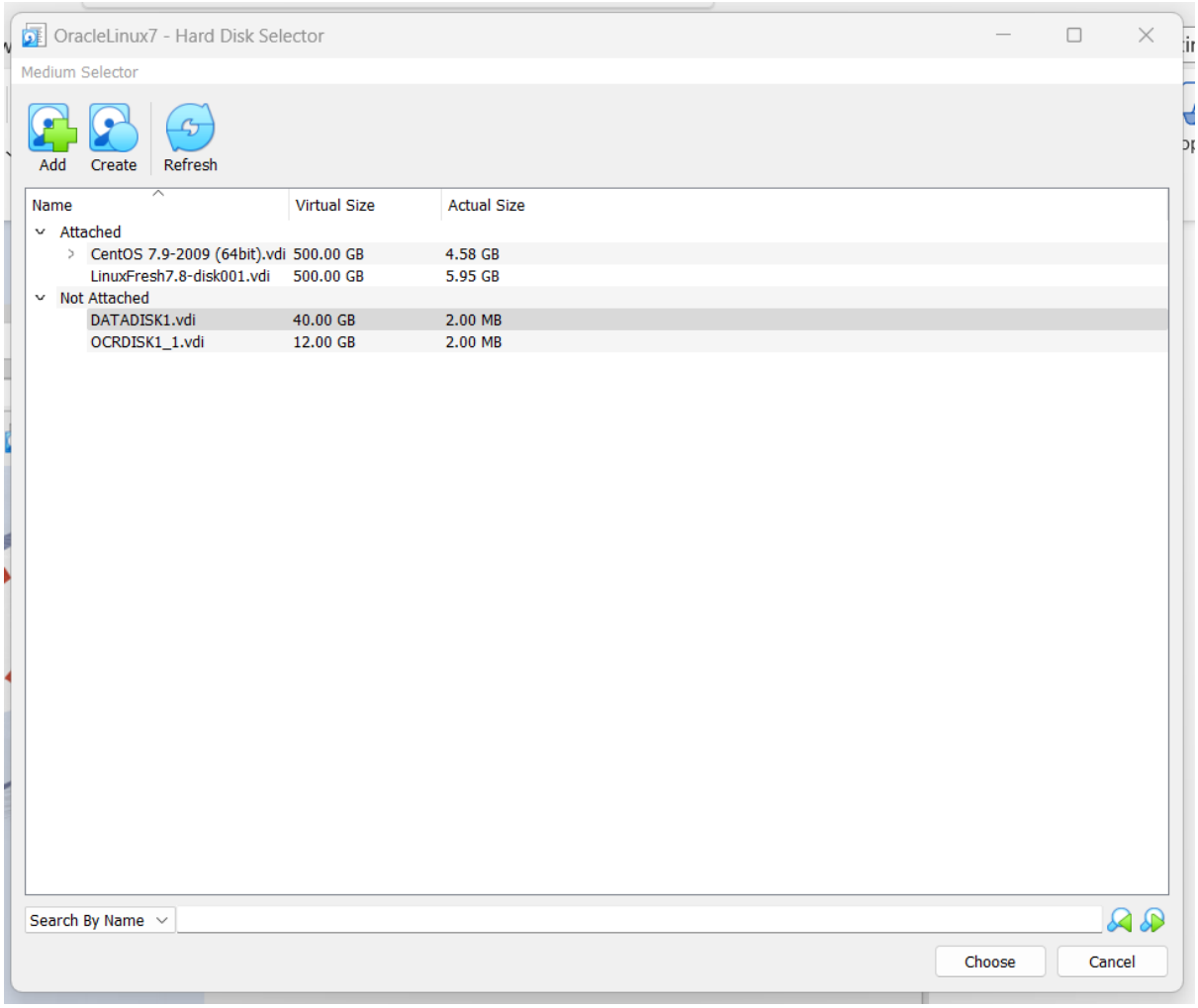

Create Virtual Hard Disk
File location and size
Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.
C:\Users\cenker\VirtualBox VMs\OracleLinux7\OCRDISK1_1.vdi
Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.
12 GB
4.00 MB
2.00 TB
Help
Back
Finish
Cancel


OracleLinux7 - Hard Disk Selector
Medium Selector
Add
Create
Refresh
Name
Virtual Size
Actual Size
Attached
CentOS 7.9-2009 (64bit).vdi
500.00 GB
4.58 GB
LinuxFresh7.8-disk001.vdi
500.00 GB
5.95 GB
Not Attached
OCRDISK1_1.vdi
12.00 GB
2.00 MB
Search By Name
Choose
Cancel

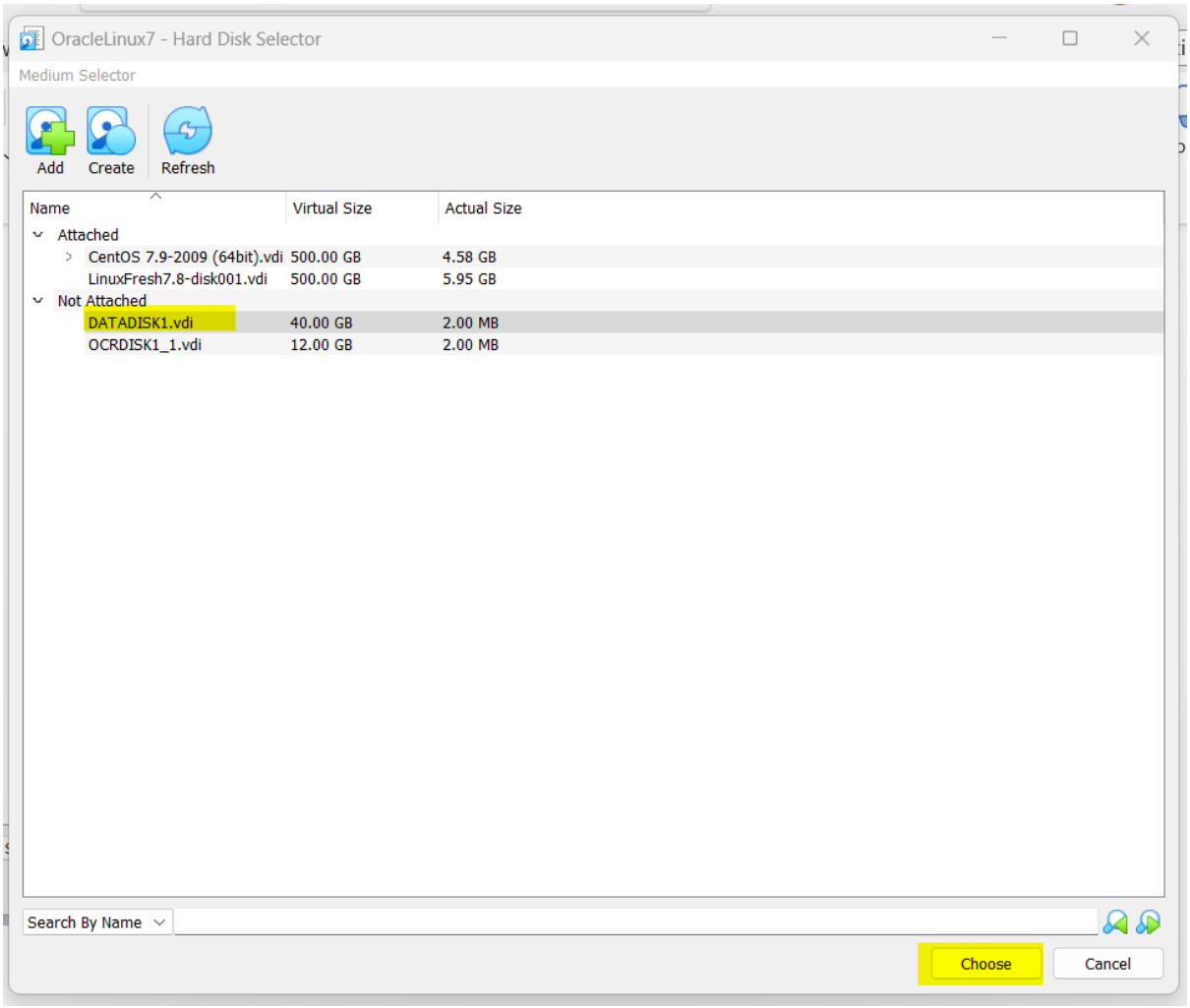

Create Virtual Hard Disk
Virtual Hard disk file type
Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.
VDI (VirtualBox Disk Image)
VHD (Virtual Hard Disk)
VMDK (Virtual Machine Disk)
Help
Expert Mode
Back
Next
Cancel

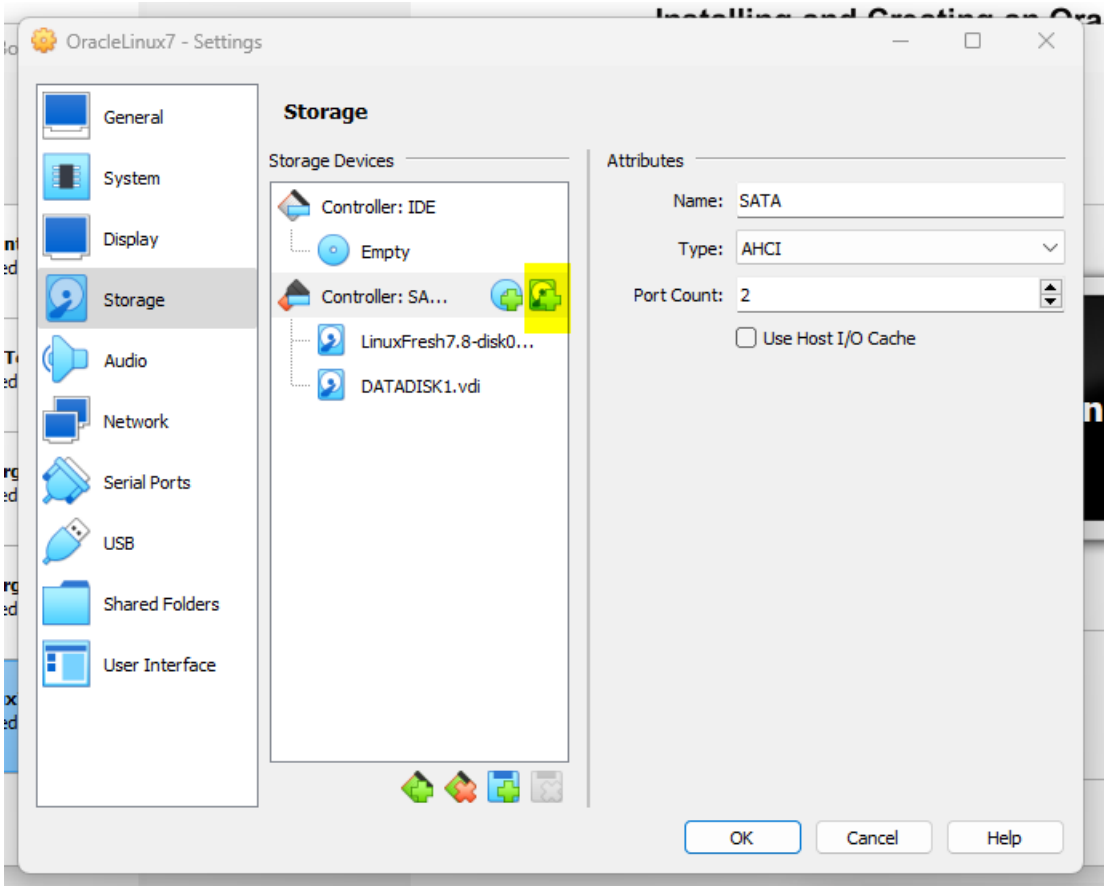

Create Virtual Hard Disk
Storage on physical hard disk
Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard disk file will only use space on your physical hard disk as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard disk file may take longer to create on some systems but is often faster to use.
Pre-allocate Full Size
Split into 2GB parts
Help
Back
Next
Cancel

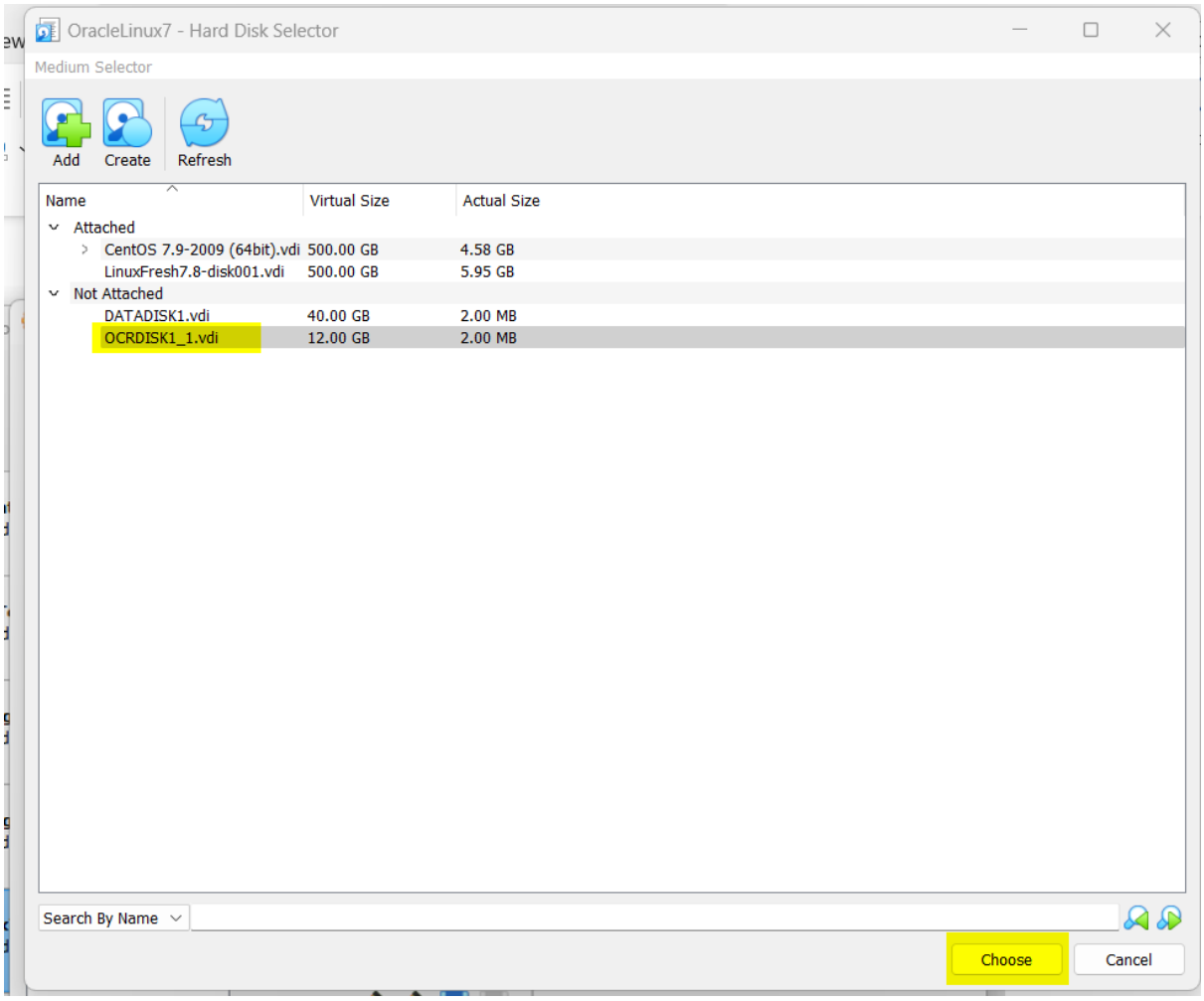

Create Virtual Hard Disk
File location and size
Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.
C:\Users\cenker\VirtualBox VMs\OracleLinux7\DATADISK1.vdi
Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.
40 GB
4.00 MB
2.00 TB
Help
Back
Finish
Cancel

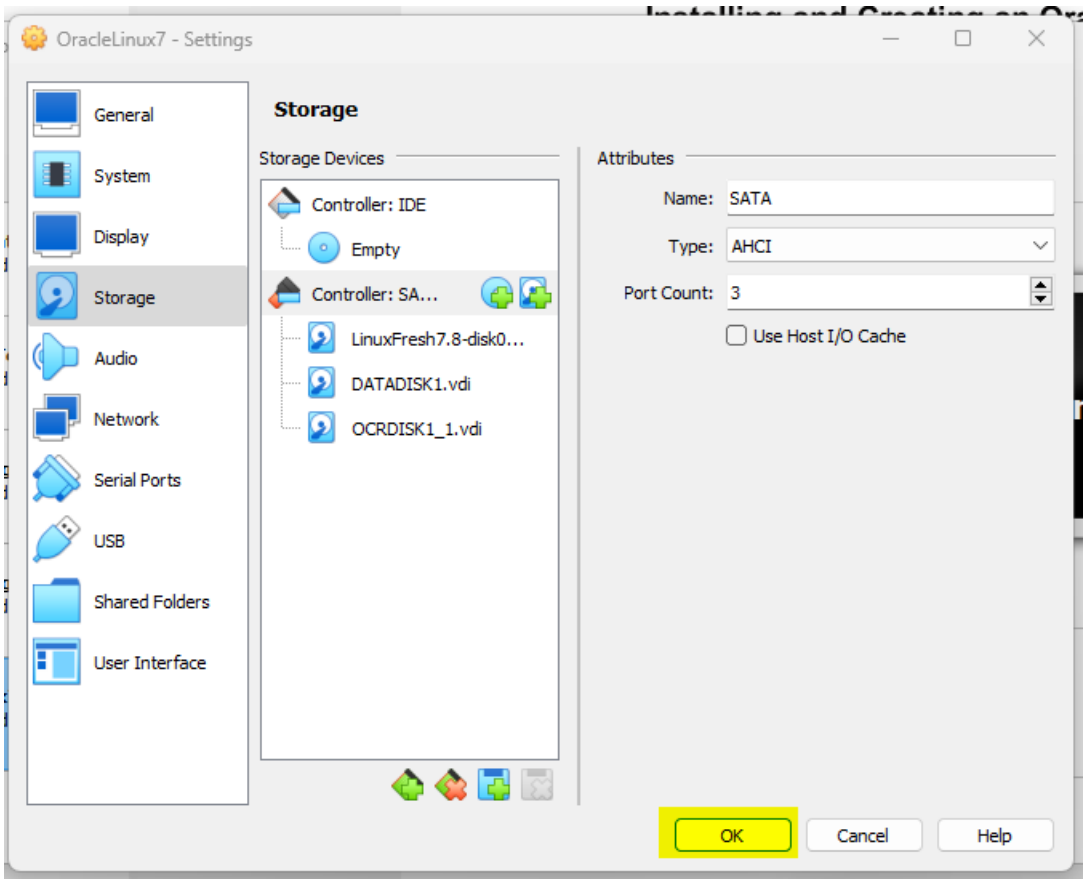


Now attach each disk.

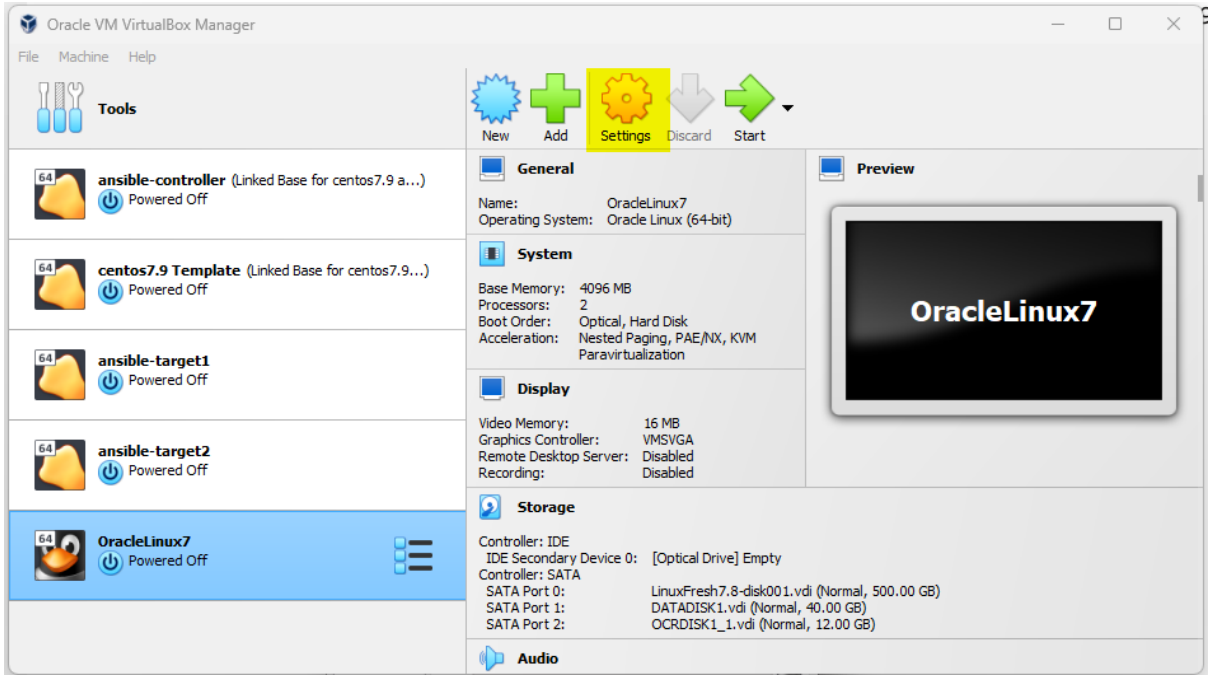

OracleLinux7 - Hard Disk Selector
Medium Selector
Add
Create
Refresh
Name
Virtual Size
Actual Size
Attached
CentOS 7.9-2009 (64bit).vdi
500.00 GB
4.58 GB
LinuxFresh7.8-disk001.vdi
500.00 GB
5.95 GB
Not Attached
DATADISK1.vdi
40.00 GB
2.00 MB
OCRDISK1_1.vdi
12.00 GB
2.00 MB
Search By Name
Choose
Cancel

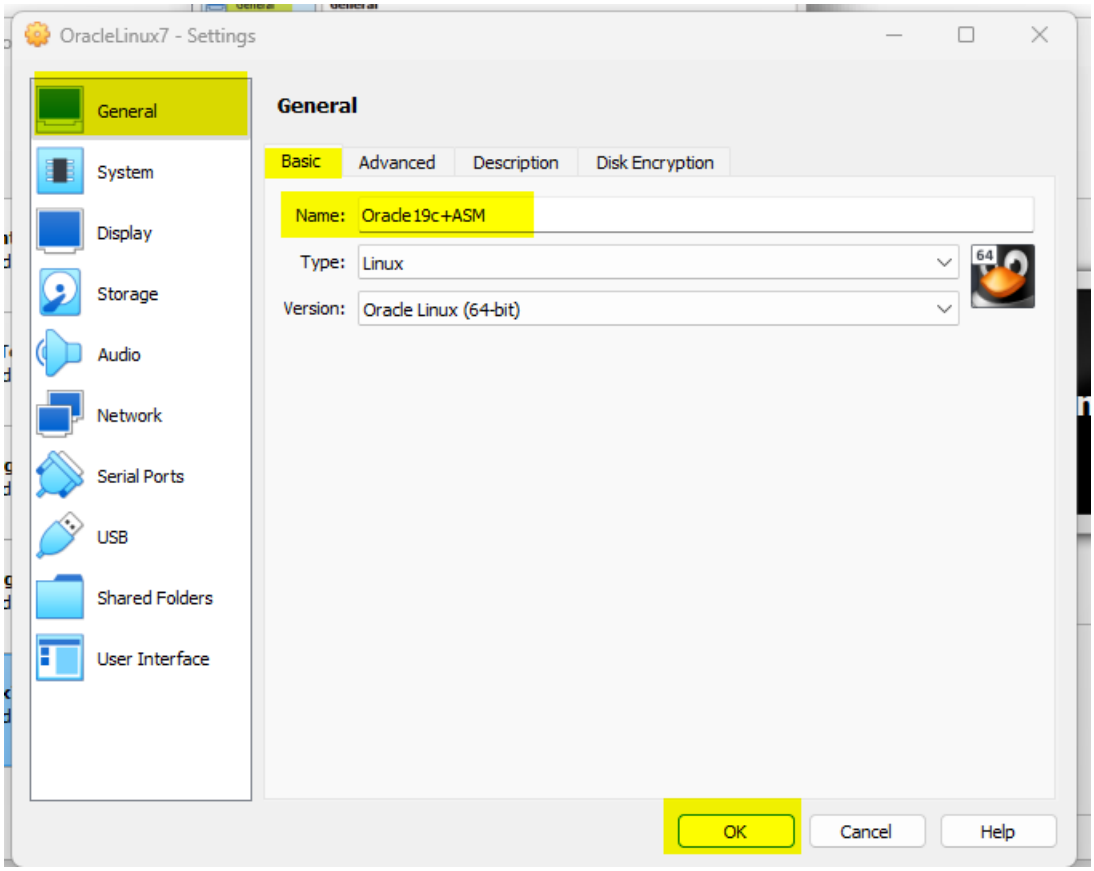

OracleLinux7 - Settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
Storage
Storage Devices
Controller: IDE
Empty
Controller: SA...
LinuxFresh7.8-disk0...
DATADISK1.vdi
Attributes
Name: SATA
Type: AHCI
Port Count: 2
Use Host I/O Cache
OK
Cancel
Help


OracleLinux7 - Hard Disk Selector
Medium Selector
Add
Create
Refresh
Name
Virtual Size
Actual Size
Attached
CentOS 7.9-2009 (64bit).vdi
500.00 GB
4.58 GB
LinuxFresh7.8-disk001.vdi
500.00 GB
5.95 GB
Not Attached
DATADISK1.vdi
40.00 GB
2.00 MB
OCRDISK1_1.vdi
12.00 GB
2.00 MB
Search By Name
Choose
Cancel



Optionally, you can rename the VM:



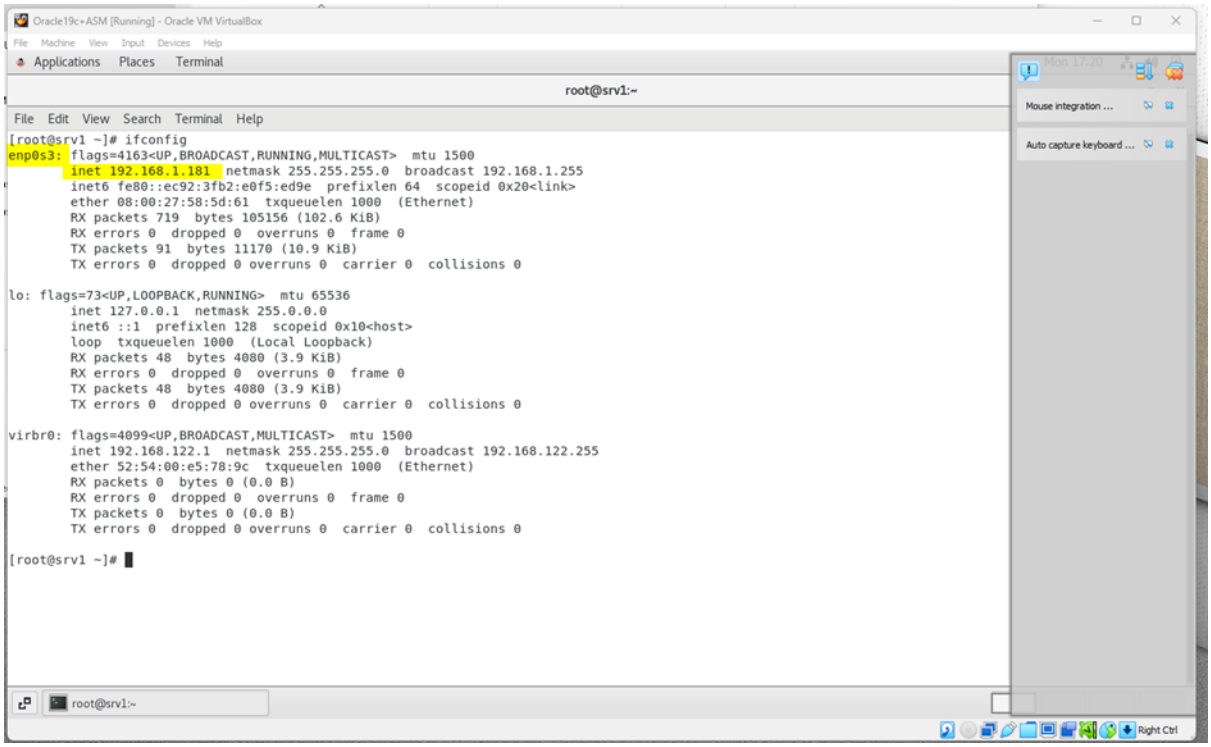


Enabling Static IP Address

1 - Start the VM. Login as root. Open "Terminal" window.

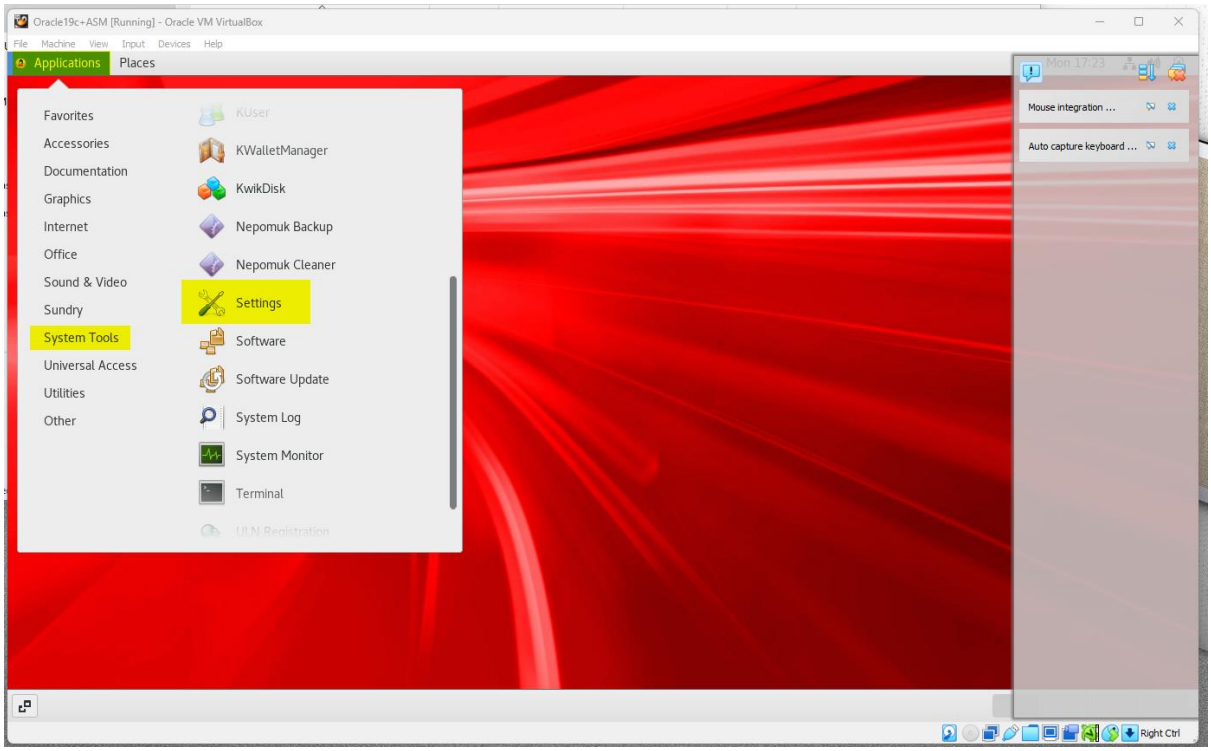
2 - Get the currently assigned IP address and the name of the network interface:

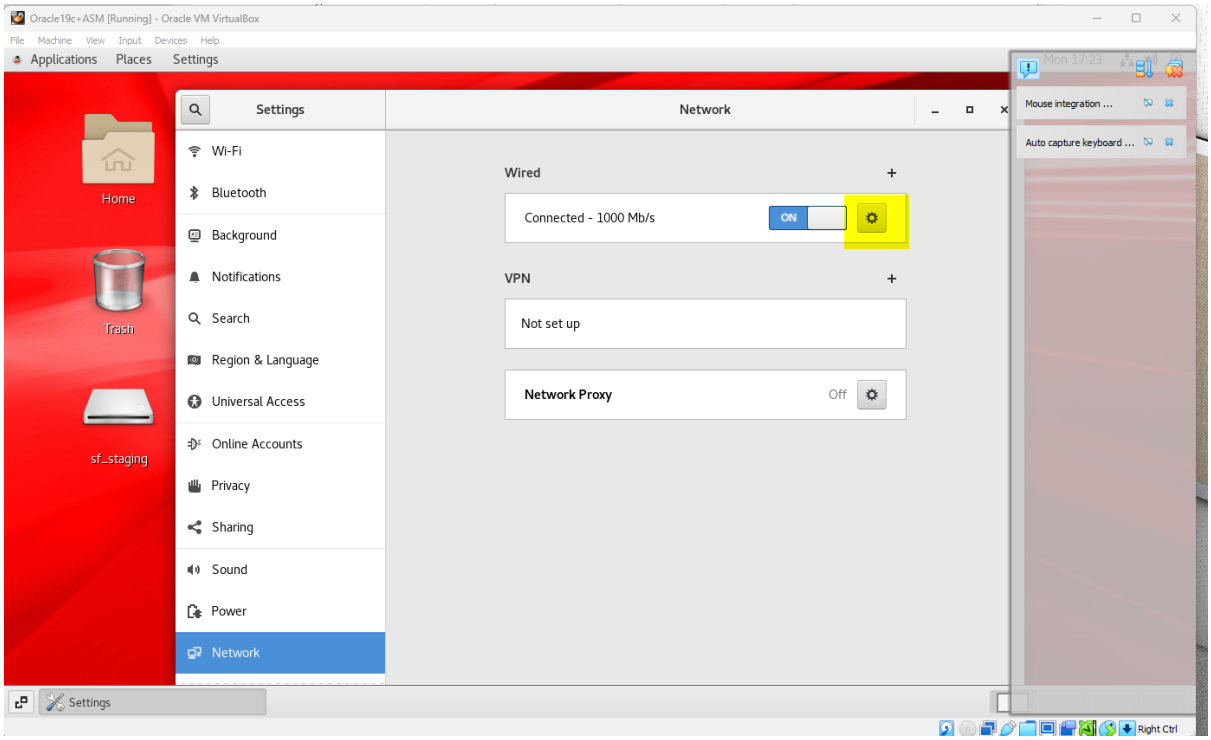
```
$ ifconfig
```

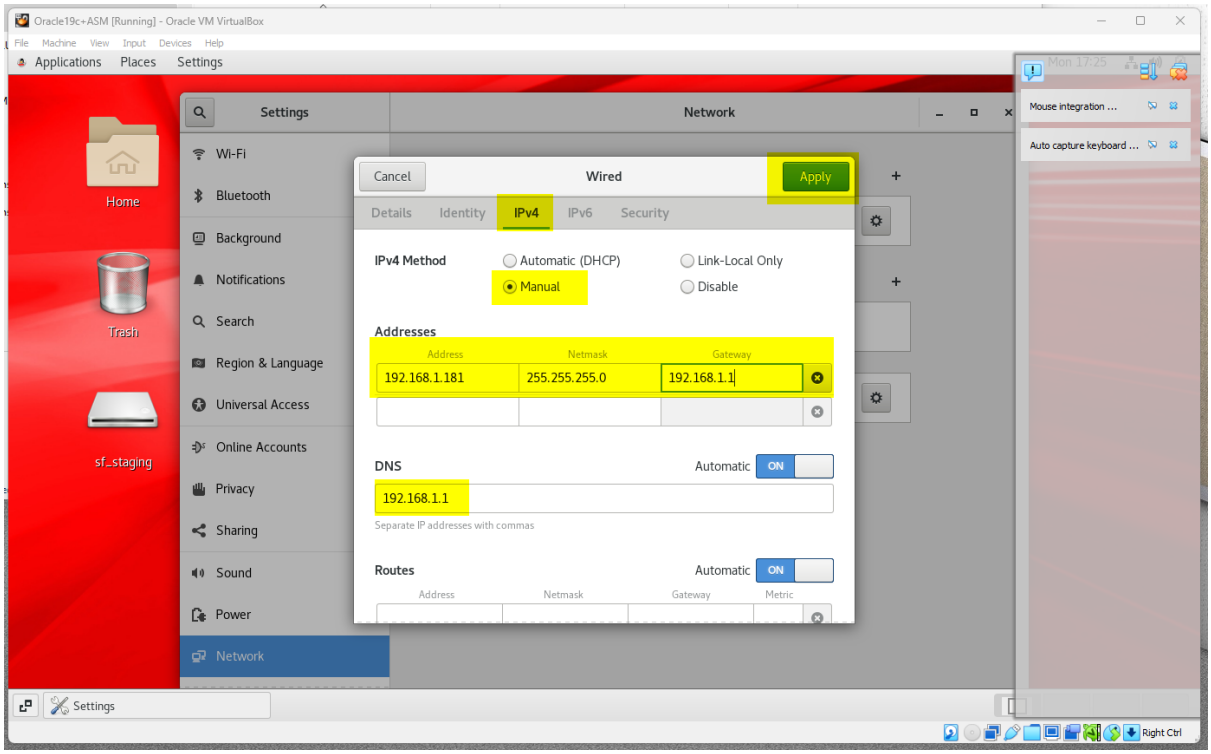


For this example, it is 192.168.1.181 and "enp0s3".

Use the UI of the VM to set the static IP by going to Applications -> System Tools -> Settings.



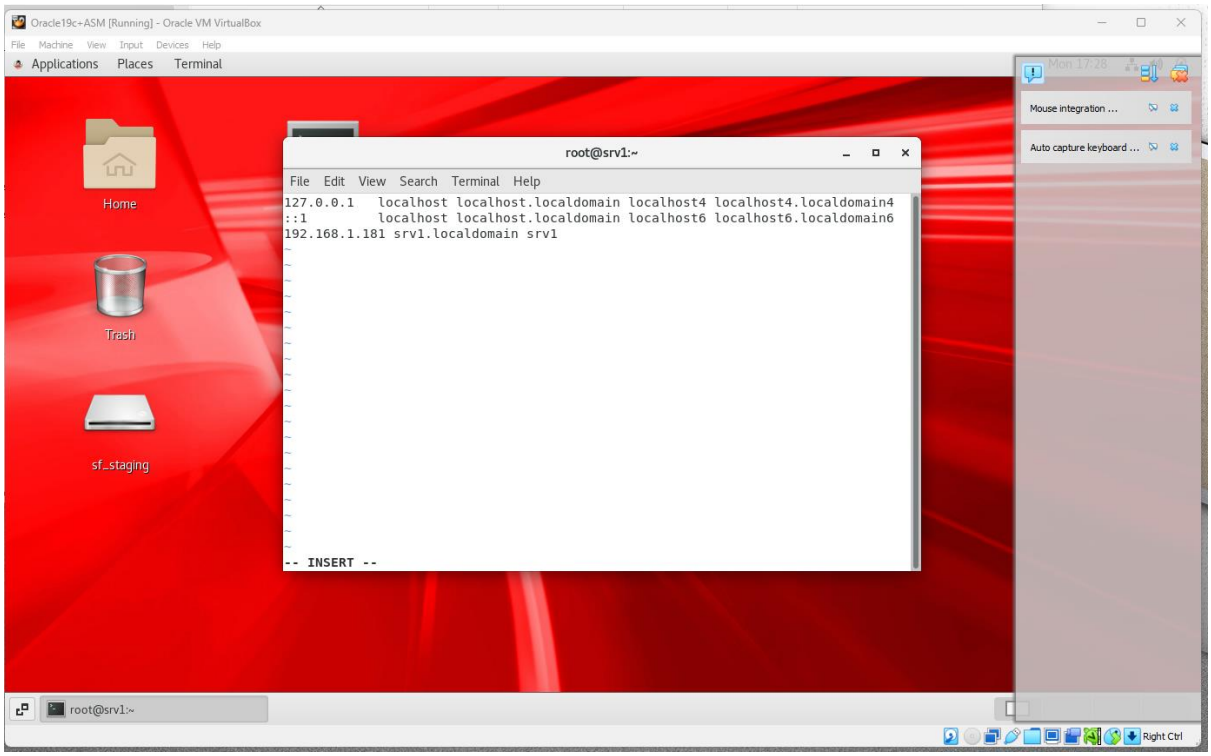




Edit the `/etc/hosts` file.

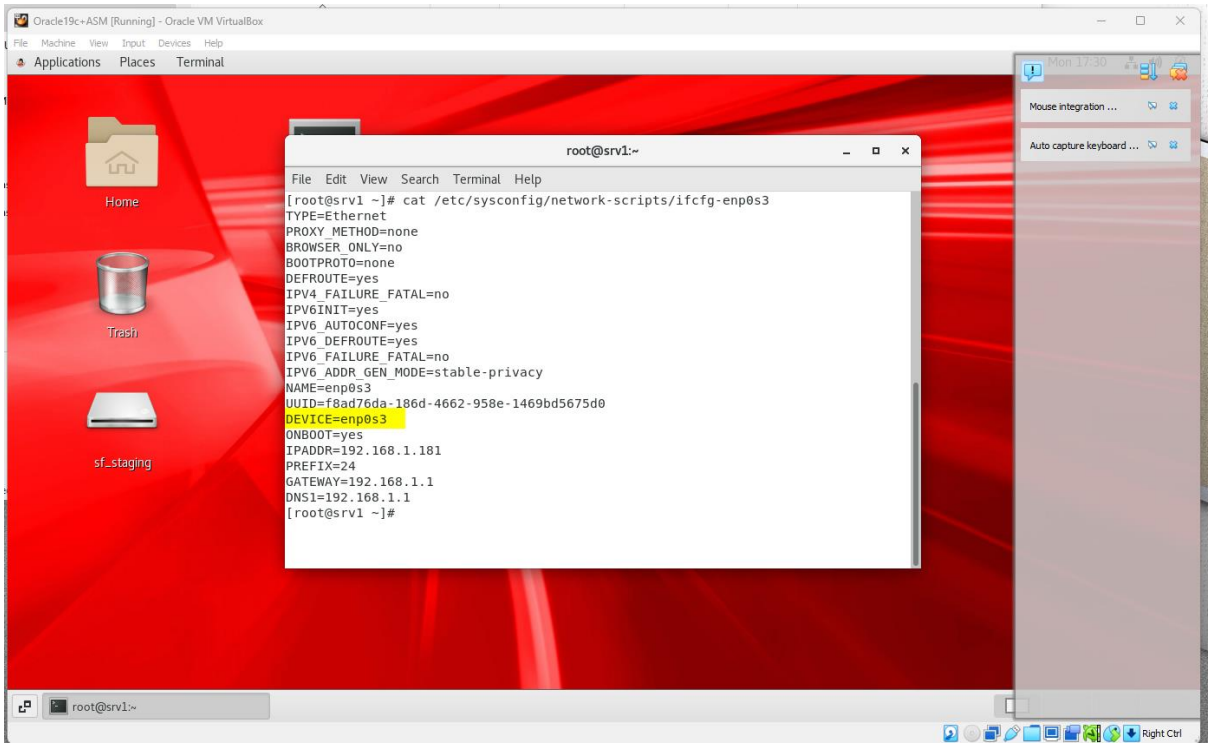
```
$ vi /etc/hosts
```

```
192.168.1.181 srv1.localdomain srv1
```



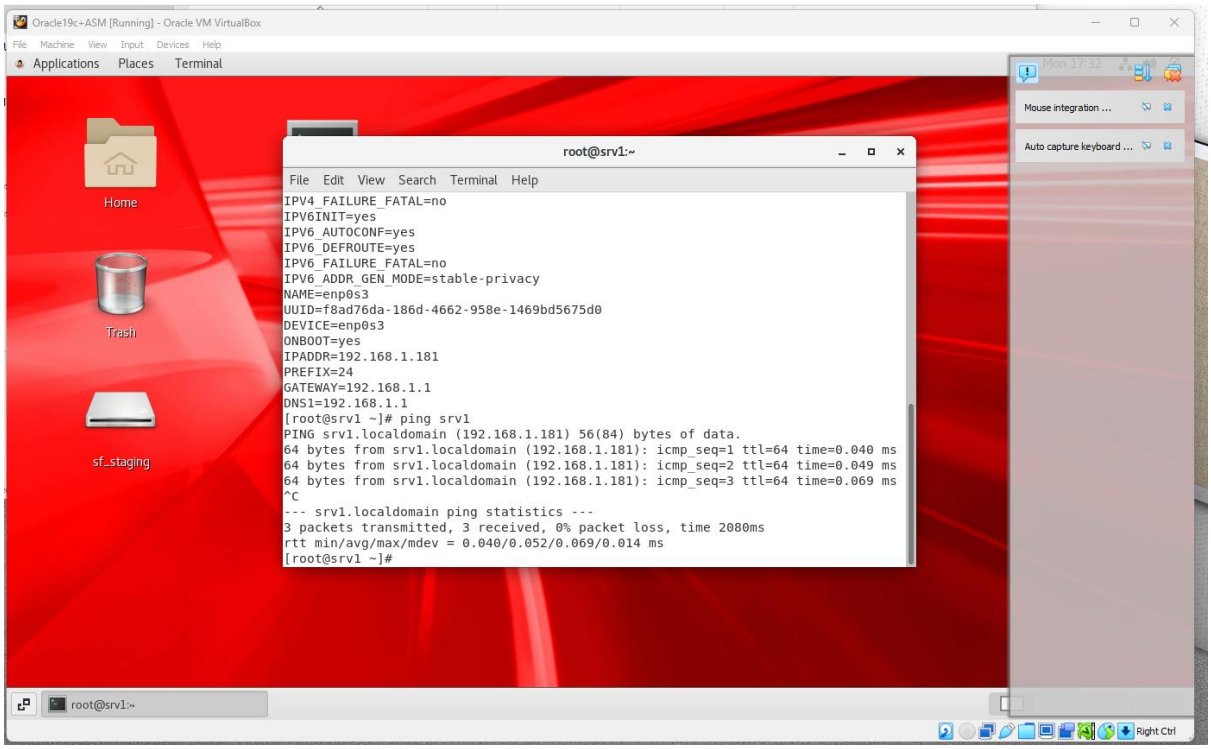
Verify that the changes are registered in the NIC configuration file.

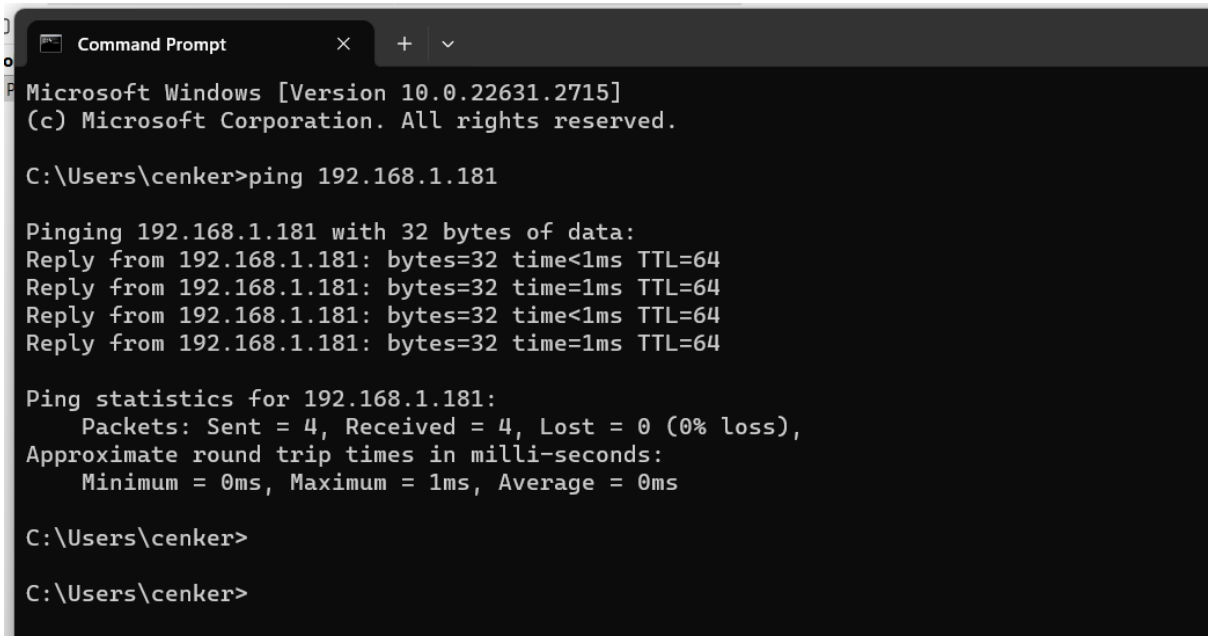
`$ cat /etc/sysconfig/network-scripts/ifcfg-enp0s3`



Test the network connectivity on the VM itself and from laptop.

```
$ ping srv1
```





Setting up Environment Variables for OS Accounts - grid and oracle

Now, you can switch to Mobaxterm session.

Login to the VM as root. Switch to "oracle" user and modify `~/bash_profile` file.

$ su - oracle

$ mv ~/.bash_profile ~/.bash_profile_bkp

```
[root@srv1 ~]# su - oracle
Last login: Wed Sep  2 23:07:25 +04 2020 on :0
[oracle@srv1 ~]$ mv ~/.bash_profile ~/.bash_profile_bkp
[oracle@srv1 ~]$
```

$ vi ~/.bash_profile

Add the following:

```
# .bash_profile
# OS User: oracle
# Application: Oracle Database Software Owner
# Version: Oracle 19c
# ------------------------------------------------
# Get the aliases and functions
if [ -f ~/.bashrc ]; then
. ~/.bashrc
fi
ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE
ORACLE_SID=oradb; export ORACLE_SID
ORACLE_HOME=$ORACLE_BASE/product/19.0.0/db_1; export ORACLE_HOME
NLS_DATE_FORMAT="DD-MON-YYYY HH24:MI:SS"; export NLS_DATE_FORMAT
TNS_ADMIN=$ORACLE_HOME/network/admin; export TNS_ADMIN
PATH=$PATH:$HOME/.local/bin:$HOME/bin
PATH=${PATH}:/usr/bin:/bin:/usr/local/bin
PATH=.:${PATH}:$ORACLE_HOME/bin
export PATH
LD_LIBRARY_PATH=$ORACLE_HOME/lib
LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:$ORACLE_HOME/oracm/lib
LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:/lib:/usr/lib:/usr/local/lib
export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/JRE
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/jlib
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/rdbms/jlib
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/network/jlib
export CLASSPATH
export TEMP=/tmp
export TMPDIR=/tmp
umask 022
```

```
# .bash_profile
# OS User: oracle
# Application: Oracle Database Software Owner
# Version: Oracle 19c
# ------------------------------------------------
# Get the aliases and functions
if [ -f ~/.bashrc ]; then
. ~/.bashrc
fi
ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE
ORACLE_SID=oradb; export ORACLE_SID
ORACLE_HOME=$ORACLE_BASE/product/19.0.0/db_1; export ORACLE_HOME
NLS_DATE_FORMAT="DD-MON-YYYY HH24:MI:SS"; export NLS_DATE_FORMAT
TNS_ADMIN=$ORACLE_HOME/network/admin; export TNS_ADMIN
PATH=$PATH:$HOME/.local/bin:$HOME/bin
PATH=${PATH}:/usr/bin:/bin:/usr/local/bin
PATH=.:${PATH}:$ORACLE_HOME/bin
export PATH
LD_LIBRARY_PATH=$ORACLE_HOME/lib
LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:$ORACLE_HOME/oracm/lib
LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:/lib:/usr/lib:/usr/local/lib
export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/JRE
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/jlib
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/rdbms/jlib
CLASSPATH=${CLASSPATH}:$ORACLE_HOME/network/jlib
export CLASSPATH
export TEMP=/tmp
export TMPDIR=/tmp
umask 022
```

Switch current user back to root then run the following code to create required groups, grid user and modify the accounts.

```
$ exit

# groupadd asmadmin

# groupadd oinstall

# groupadd asmdba

# usermod -g oinstall oracle

# usermod -a -G asmdba oracle

# useradd -u 54323 -g oinstall -G asmadmin,asmdba grid
```

```
[root@srv1 ~]# groupadd asmadmin
[root@srv1 ~]# groupadd oinstall
groupadd: group 'oinstall' already exists
[root@srv1 ~]# groupadd asmdba
[root@srv1 ~]# usermod -g oinstall oracle
usermod: no changes
[root@srv1 ~]# usermod -a -G asmdba oracle
[root@srv1 ~]# useradd -u 54323 -g oinstall -G asmadmin,asmdba grid
[root@srv1 ~]#
```

```
# passwd grid
```

```
[root@srv1 ~]# passwd grid
Changing password for user grid.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[root@srv1 ~]#
```

(The password is set to "baraka@2020")

Add oracle and grid accounts to vboxsf group. The vboxsf group was created by VirtualBox Guest Additions and it allows its members to access the shared folder (staging folder) in the hosting machine.

```
# usermod -a -G vboxsf oracle
```

```
# usermod -a -G vboxsf grid
```

```
[root@srv1 ~]# usermod -a -G vboxsf oracle
[root@srv1 ~]# usermod -a -G vboxsf grid
[root@srv1 ~]#
```

Create Oracle Clusterware home directories:

```
# mkdir -p /u01/app/oracle/product/19.0.0/db_1
```

```
# mkdir -p /u01/app/grid
```

```
# mkdir -p /u01/app/19.0.0/grid
```

```
# chown -R grid:oinstall /u01
```

```
# chown -R oracle:oinstall /u01/app/oracle
```

```
# chmod -R 775 /u01
```

```
[root@srv1 ~]# mkdir -p /u01/app/oracle/product/19.0.0/db_1
[root@srv1 ~]# mkdir -p /u01/app/grid
[root@srv1 ~]# mkdir -p /u01/app/19.0.0/grid
[root@srv1 ~]# chown -R grid:oinstall /u01
[root@srv1 ~]#  chown -R oracle:oinstall /u01/app/oracle
[root@srv1 ~]# chmod -R 775 /u01
[root@srv1 ~]#
```

Switch to grid user and modify its bash profile as follows:

```
# su - grid
```

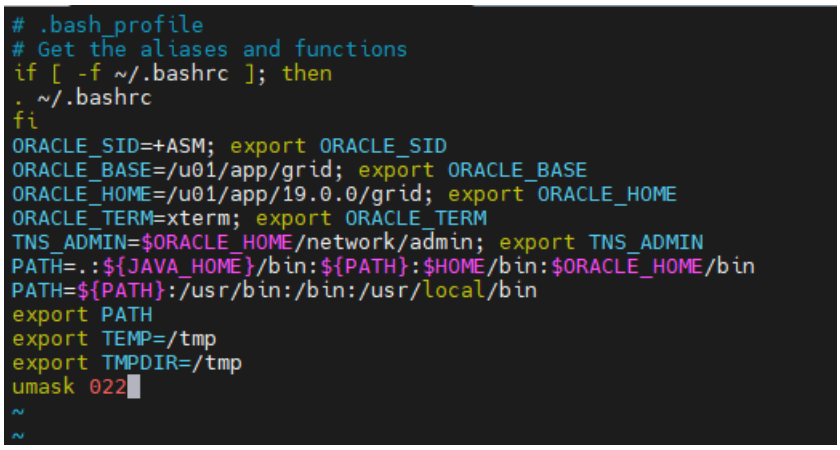
```
$ mv ~/.bash_profile ~/.bash_profile_bkp
```

```
$ vi ~/.bash_profile
```

Add the following:

```
# .bash_profile
# Get the aliases and functions
```

```
if [ -f ~/.bashrc ]; then
. ~/.bashrc
fi
ORACLE_SID=+ASM; export ORACLE_SID
ORACLE_BASE=/u01/app/grid; export ORACLE_BASE
ORACLE_HOME=/u01/app/19.0.0/grid; export ORACLE_HOME
ORACLE_TERM=xterm; export ORACLE_TERM
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
export TEMP=/tmp
export TMPDIR=/tmp
umask 022
```



$ exit

Installing ASM Packages and Creating ASM Disk Volumes

Switch back to "root" user and install Oracle ASMLib package:

 # yum install oracleasm-support

```
[root@srv1 ~]# yum install oracleasm-support
Loaded plugins: langpacks, ulninfo
ol7_UEKR5                                                                                                | 3.0 kB  00:00:00
ol7_latest                                                                                               | 3.6 kB  00:00:00
(1/5): ol7_UEKR5/x86_64/updateinfo                                                                       | 424 kB  00:00:00
(2/5): ol7_latest/x86_64/group_gz                                                                        | 136 kB  00:00:00
(3/5): ol7_latest/x86_64/updateinfo                                                                      | 3.6 MB  00:00:02
(4/5): ol7_latest/x86_64/primary_db                                                                      |  49 MB  00:00:09
(5/5): ol7_UEKR5/x86_64/primary_db                                                                       |  73 MB  00:00:11
Resolving Dependencies
--> Running transaction check
---> Package oracleasm-support.x86_64 0:2.1.11-2.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================================================
 Package                          Arch                   Version                        Repository                     Size
================================================================================================================================
Installing:
 oracleasm-support                x86_64                 2.1.11-2.el7                   ol7_latest                     85 k

Transaction Summary
================================================================================================================================
Install  1 Package

Total download size: 85 k
Installed size: 266 k
Is this ok [y/d/N]: y
Downloading packages:
warning: /var/cache/yum/x86_64/7Server/ol7_latest/packages/oracleasm-support-2.1.11-2.el7.x86_64.rpm: Header V3 RSA/SHA256 Signa
ture, key ID ec551f03: NOKEY
Public key for oracleasm-support-2.1.11-2.el7.x86_64.rpm is not installed
oracleasm-support-2.1.11-2.el7.x86_64.rpm                                                                | 85 kB  00:00:00
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
Importing GPG key 0xEC551F03:
 Userid     : "Oracle OSS group (Open Source Software group) <build@oss.oracle.com>"
 Fingerprint: 4214 4123 fecf c55b 9086 313d 72f9 7b74 ec55 1f03
 Package    : 7:oraclelinux-release-7.8-1.0.7.el7.x86_64 (@anaconda/7.8)
 From       : /etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
Is this ok [y/N]: y
```

 # yum install kmod-oracleasm

```
[root@srv1 ~]# yum install kmod-oracleasm
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package kmod-oracleasm.x86_64 0:2.0.8-28.0.1.el7 will be installed
--> Processing Dependency: kernel >= 3.10.0-1133.el7 for package: kmod-oracleasm-2.0.8-28.0.1.el7.x86_64
--> Running transaction check
---> Package kernel.x86_64 0:3.10.0-1160.105.1.0.1.el7 will be installed
--> Processing Conflict: kernel-3.10.0-1160.105.1.0.1.el7.x86_64 conflicts shim-x64 <= 15.3-1.0.7.el7
--> Restarting Dependency Resolution with new changes.
--> Running transaction check
---> Package shim-x64.x86_64 0:15-2.0.3.el7 will be updated
---> Package shim-x64.x86_64 0:15.6-1.0.7.el7 will be an update
--> Processing Dependency: mokutil = 15.6-1.0.7.el7 for package: shim-x64-15.6-1.0.7.el7.x86_64
--> Processing Dependency: oracle(grub2-sig-key) >= 202204 for package: shim-x64-15.6-1.0.7.el7.x86_64
--> Running transaction check
---> Package grub2-efi-x64.x86_64 1:2.02-0.87.0.25.el7.9.11 will be installed
--> Processing Dependency: grub2-common = 1:2.02-0.87.0.25.el7.9.11 for package: 1:grub2-efi-x64-2.02-0.87.0.25.el7.9.11.x86_64
--> Processing Dependency: grub2-tools = 1:2.02-0.87.0.25.el7.9.11 for package: 1:grub2-efi-x64-2.02-0.87.0.25.el7.9.11.x86_64
--> Processing Dependency: grub2-tools-extra = 1:2.02-0.87.0.25.el7.9.11 for package: 1:grub2-efi-x64-2.02-0.87.0.25.el7.9.11.x8
6_64
--> Processing Dependency: grub2-tools-minimal >= 1:2.02-0.87.0.25.el7.9.11 for package: 1:grub2-efi-x64-2.02-0.87.0.25.el7.9.11
.x86_64
---> Package mokutil.x86_64 0:15-2.0.3.el7 will be updated
---> Package mokutil.x86_64 0:15.6-1.0.7.el7 will be an update
--> Running transaction check
---> Package grub2-common.noarch 1:2.02-0.81.0.1.el7 will be updated
--> Processing Dependency: grub2-common = 1:2.02-0.81.0.1.el7 for package: 1:grub2-pc-2.02-0.81.0.1.el7.x86_64
--> Processing Dependency: grub2-common = 1:2.02-0.81.0.1.el7 for package: 1:grub2-pc-modules-2.02-0.81.0.1.el7.noarch
---> Package grub2-common.noarch 1:2.02-0.87.0.25.el7.9.11 will be an update
---> Package grub2-tools.x86_64 1:2.02-0.81.0.1.el7 will be updated
---> Package grub2-tools.x86_64 1:2.02-0.87.0.25.el7.9.11 will be an update
---> Package grub2-tools-extra.x86_64 1:2.02-0.81.0.1.el7 will be updated
---> Package grub2-tools-extra.x86_64 1:2.02-0.87.0.25.el7.9.11 will be an update
---> Package grub2-tools-minimal.x86_64 1:2.02-0.81.0.1.el7 will be updated
---> Package grub2-tools-minimal.x86_64 1:2.02-0.87.0.25.el7.9.11 will be an update
--> Running transaction check
---> Package grub2-pc.x86_64 1:2.02-0.81.0.1.el7 will be updated
--> Processing Dependency: grub2-pc = 1:2.02-0.81.0.1.el7 for package: 1:grub2-2.02-0.81.0.1.el7.x86_64
---> Package grub2-pc.x86_64 1:2.02-0.87.0.25.el7.9.11 will be an update
```

Configure and load the ASM kernel module.

 # oracleasm configure -i

```
[root@srv1 ~]# 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 []: oinstall
Start Oracle ASM library driver on boot (y/n) [n]: y
Scan for Oracle ASM disks on boot (y/n) [y]: y
Writing Oracle ASM library driver configuration: done
[root@srv1 ~]#
```

Load the oracleasm kernel module:

 # /usr/sbin/oracleasm init

```
[root@srv1 ~]# /usr/sbin/oracleasm init
Creating /dev/oracleasm mount point: /dev/oracleasm
Loading module "oracleasm": oracleasm
Configuring "oracleasm" to use device physical block size
Mounting ASMlib driver filesystem: /dev/oracleasm
[root@srv1 ~]#
```

List the disks as seen by the OS.

 # fdisk -l | grep "Disk /dev/sd"

```
[root@srv1 ~]# fdisk -l | grep "Disk /dev/sd"
Disk /dev/sda: 536.9 GB, 536870912000 bytes, 1048576000 sectors
Disk /dev/sdb: 42.9 GB, 42949672960 bytes, 83886080 sectors
Disk /dev/sdc: 12.9 GB, 12884901888 bytes, 25165824 sectors
[root@srv1 ~]#
```

We can see that "`/dev/sdb`" is DATADISK1 and "`/dev/sdc`" is OCRDISK1.

Now, we can use "`fdisk`" command to create partitions in the disk.

Do the following for the disks "`/dev/sdb`" and "`/dev/sdc`".

$ fdisk <device file>

then press: n, p, 1, ENTER, ENTER, w – to apply changes

$ fdisk /dev/sdb

```
[root@srv1 ~]# fdisk /dev/sdb
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x1bf220ef.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-83886079, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-83886079, default 83886079):
Using default value 83886079
Partition 1 of type Linux and of size 40 GiB is set

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

Calling ioctl() to re-read partition table.
Syncing disks.
[root@srv1 ~]#
```

$ fdisk /dev/sdc

```
[root@srv1 ~]# fdisk /dev/sdc
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0xf683590b.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-25165823, default 2048):
Using default value 2048
Last sector, +sectors or +size{K,M,G} (2048-25165823, default 25165823):
Using default value 25165823
Partition 1 of type Linux and of size 12 GiB is set

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

Calling ioctl() to re-read partition table.
Syncing disks.
[root@srv1 ~]#
```

Check the partitions that were created:

 # fdisk -l | grep "/dev/s"

```
[root@srv1 ~]# fdisk -l | grep "/dev/s"
Disk /dev/sda: 536.9 GB, 536870912000 bytes, 1048576000 sectors
/dev/sda1   *        2048      718847      358400   83  Linux
/dev/sda2          718848    34273279    16777216   82  Linux swap / Solaris
/dev/sda3        34273280  1048455167   507090944   83  Linux
Disk /dev/sdb: 12.9 GB, 12884901888 bytes, 25165824 sectors
/dev/sdb1            2048    25165823    12581888   83  Linux
Disk /dev/sdc: 42.9 GB, 42949672960 bytes, 83886080 sectors
/dev/sdc1            2048    83886079    41942016   83  Linux
[root@srv1 ~]#
```

Create the ASM disks.

```
# oracleasm createdisk OCRDISK1 /dev/sdb1

# oracleasm createdisk DATADISK1 /dev/sdc1

# oracleasm listdisks
```

```
[root@srv1 ~]# oracleasm createdisk OCRDISK1 /dev/sdb1
Writing disk header: done
Instantiating disk: done
[root@srv1 ~]# oracleasm createdisk DATADISK1 /dev/sdc1
Writing disk header: done
Instantiating disk: done
[root@srv1 ~]# oracleasm listdisks
DATADISK1
OCRDISK1
[root@srv1 ~]#
```

Changing Kernel Parameter Values

Create the following file then add the code that follows to it.

```
# vi /etc/sysctl.d/97-oracle-database-sysctl.conf
```

```
fs.aio-max-nr = 1048576
fs.file-max = 6815744
kernel.shmall = 2097152
kernel.shmmax = 4294967295
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default = 262144
net.core.rmem_max = 4194304
net.core.wmem_default = 262144
net.core.wmem_max = 1048576
```

```
fs.aio-max-nr = 1048576
fs.file-max = 6815744
kernel.shmall = 2097152
kernel.shmmax = 4294967295
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default = 262144
net.core.rmem_max = 4194304
net.core.wmem_default = 262144
net.core.wmem_max = 1048576
~
```

Change the current values of the kernel parameters:

```
# /sbin/sysctl --system
```

```
[root@srv1 ~]# /sbin/sysctl --system
* Applying /usr/lib/sysctl.d/00-system.conf ...
* Applying /usr/lib/sysctl.d/10-default-yama-scope.conf ...
kernel.yama.ptrace_scope = 0
* Applying /usr/lib/sysctl.d/50-default.conf ...
kernel.sysrq = 16
kernel.core_uses_pid = 1
net.ipv4.conf.default.rp_filter = 1
net.ipv4.conf.all.rp_filter = 1
net.ipv4.conf.default.accept_source_route = 0
net.ipv4.conf.all.accept_source_route = 0
net.ipv4.conf.default.promote_secondaries = 1
net.ipv4.conf.all.promote_secondaries = 1
fs.protected_hardlinks = 1
fs.protected_symlinks = 1
* Applying /usr/lib/sysctl.d/60-libvirtd.conf ...
fs.aio-max-nr = 1048576
* Applying /etc/sysctl.d/97-oracle-database-sysctl.conf ...
fs.aio-max-nr = 1048576
fs.file-max = 6815744
kernel.shmall = 2097152
kernel.shmmax = 4294967295
kernel.shmmni = 4096
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default = 262144
net.core.rmem_max = 4194304
net.core.wmem_default = 262144
net.core.wmem_max = 1048576
* Applying /etc/sysctl.d/99-sysctl.conf ...
* Applying /etc/sysctl.conf ...
[root@srv1 ~]#
```

Finally, reboot the server:

```
# systemctl reboot
```

Install Additional Packages

Login to the VM as root and install the following:

 # yum install ksh

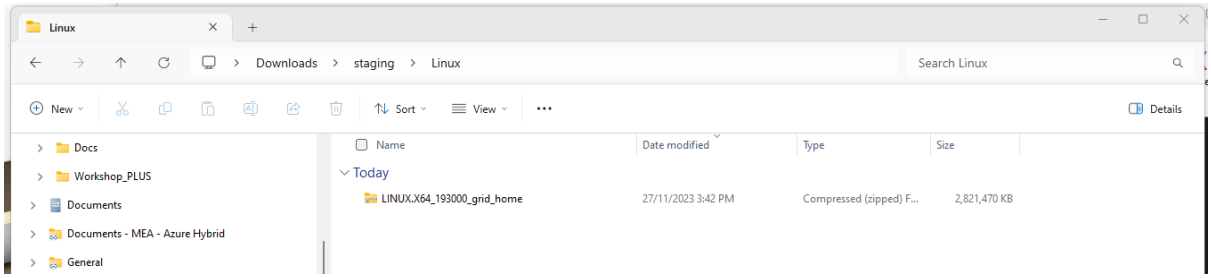
```
[root@srv1 ~]# yum install ksh
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package ksh.x86_64 0:20120801-144.0.1.el7_9 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================================================
 Package               Arch                   Version                                  Repository                      Size
================================================================================================================================
Installing:
 ksh                   x86_64                 20120801-144.0.1.el7_9                   ol7_latest                     882 k

Transaction Summary
================================================================================================================================
Install  1 Package

Total download size: 882 k
Installed size: 3.1 M
Is this ok [y/d/N]: y
Downloading packages:
ksh-20120801-144.0.1.el7_9.x86_64.rpm                                                    | 882 kB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : ksh-20120801-144.0.1.el7_9.x86_64                                                            1/1
  Verifying  : ksh-20120801-144.0.1.el7_9.x86_64                                                            1/1

Installed:
  ksh.x86_64 0:20120801-144.0.1.el7_9

Complete!
[root@srv1 ~]#
```

 # yum install libaio-devel.x86_64

```
[root@srv1 ~]# yum install libaio-devel.x86_64
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package libaio-devel.x86_64 0:0.3.109-13.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================================================
 Package                 Arch                   Version                        Repository                            Size
================================================================================================================================
Installing:
 libaio-devel            x86_64                 0.3.109-13.el7                 ol7_latest                            12 k

Transaction Summary
================================================================================================================================
Install  1 Package

Total download size: 12 k
Installed size: 7.8 k
Is this ok [y/d/N]: y
Downloading packages:
libaio-devel-0.3.109-13.el7.x86_64.rpm                                           |  12 kB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : libaio-devel-0.3.109-13.el7.x86_64                                                           1/1
  Verifying  : libaio-devel-0.3.109-13.el7.x86_64                                                           1/1

Installed:
  libaio-devel.x86_64 0:0.3.109-13.el7

Complete!
[root@srv1 ~]#
```

Installing Oracle Grid Infrastructure Software (Oracle Restart)

Copy the Oracle Grid Infrastructure software installation file (LINUX.X64_193000_grid_home.zip) to the staging folder on the laptop:



The staging folder on the laptop is mapped to `/media/sf_staging/` folder on the VM.

Login to the VM as the user "grid" and unzip the file staging to the $ORACLE_HOME directory (/u01/ap/19.0.0/grid):

```
# su - grid
```

```
$ unzip /media/sf_staging/LINUX.X64_193000_grid_home.zip -d $ORACLE_HOME
```

```
[root@srv1 ~]# su - grid
Last login: Mon Nov 27 17:50:32 +04 2023 on pts/0
[grid@srv1 ~]$ unzip /media/sf_staging/LINUX.X64_193000_grid_home.zip -d $ORACLE_HOME
Archive:  /media/sf_staging/LINUX.X64_193000_grid_home.zip
   creating: /u01/app/19.0.0/grid/instantclient/
  inflating: /u01/app/19.0.0/grid/instantclient/libsqlplusic.so
   creating: /u01/app/19.0.0/grid/opmn/
   creating: /u01/app/19.0.0/grid/opmn/logs/
   creating: /u01/app/19.0.0/grid/opmn/conf/
  inflating: /u01/app/19.0.0/grid/opmn/conf/ons.config
   creating: /u01/app/19.0.0/grid/opmn/admin/
  inflating: /u01/app/19.0.0/grid/opmn/admin/libons.def
  inflating: /u01/app/19.0.0/grid/opmn/admin/libonsx.def
   creating: /u01/app/19.0.0/grid/opmn/lib/
  inflating: /u01/app/19.0.0/grid/opmn/lib/ons.jar
   creating: /u01/app/19.0.0/grid/opmn/bin/
  inflating: /u01/app/19.0.0/grid/opmn/bin/ons
  inflating: /u01/app/19.0.0/grid/opmn/bin/onsctl
  inflating: /u01/app/19.0.0/grid/opmn/bin/onsctli
   creating: /u01/app/19.0.0/grid/opmn/mesg/
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensko.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensus.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensf.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/enszht.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/enszhs.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensi.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ense.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensja.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensptb.msb
  inflating: /u01/app/19.0.0/grid/opmn/mesg/ensd.msb
   creating: /u01/app/19.0.0/grid/xdk/
   creating: /u01/app/19.0.0/grid/xdk/admin/
  inflating: /u01/app/19.0.0/grid/xdk/admin/shrept.lst
   creating: /u01/app/19.0.0/grid/xdk/jlib/
  inflating: /u01/app/19.0.0/grid/xdk/jlib/fastinfoset.jar
  inflating: /u01/app/19.0.0/grid/xdk/jlib/version.txt
   creating: /u01/app/19.0.0/grid/xdk/mesg/
  inflating: /u01/app/19.0.0/grid/xdk/mesg/lsxhu.msb
  inflating: /u01/app/19.0.0/grid/xdk/mesg/lsxus.msg
  inflating: /u01/app/19.0.0/grid/xdk/mesg/lsxja.msb
```

Next, the package "cvuqdisk" must be installed as "root" before installing the Clusterware software.

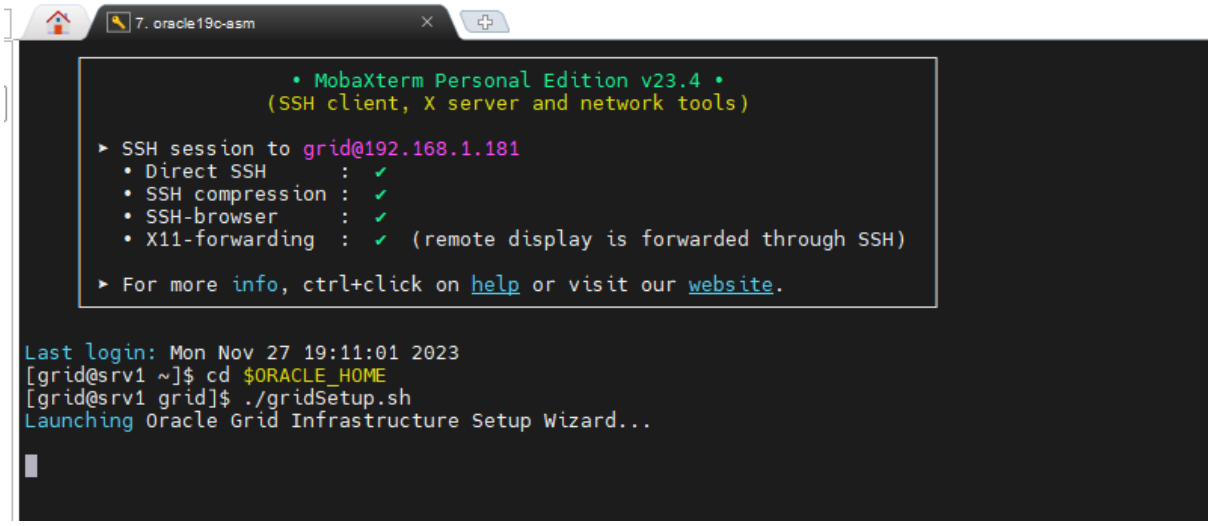
```
$ exit

# cd /u01/app/19.0.0/grid/cv/rpm/

# CVUQDISK_GRP=oinstall; export CVUQDISK_GRP

# rpm -iv cvuqdisk-1.0.10-1.rpm
```

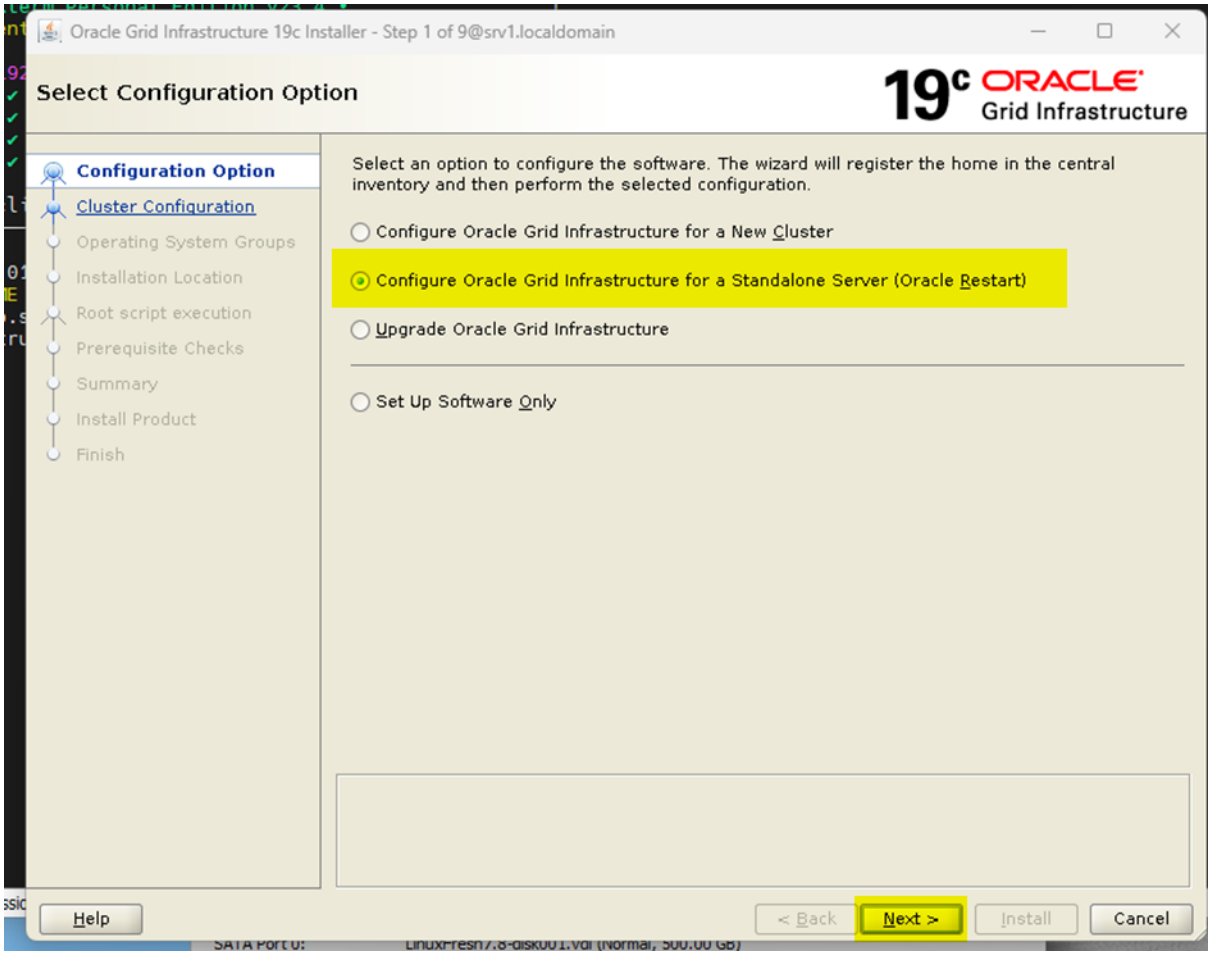
```
[grid@srv1 ~]$ exit
logout
[root@srv1 ~]# cd /u01/app/19.0.0/grid/cv/rpm/
[root@srv1 rpm]# CVUQDISK_GRP=oinstall; export CVUQDISK_GRP
[root@srv1 rpm]# rpm -iv cvuqdisk-1.0.10-1.rpm
Preparing packages...
cvuqdisk-1.0.10-1.x86_64
[root@srv1 rpm]#
```

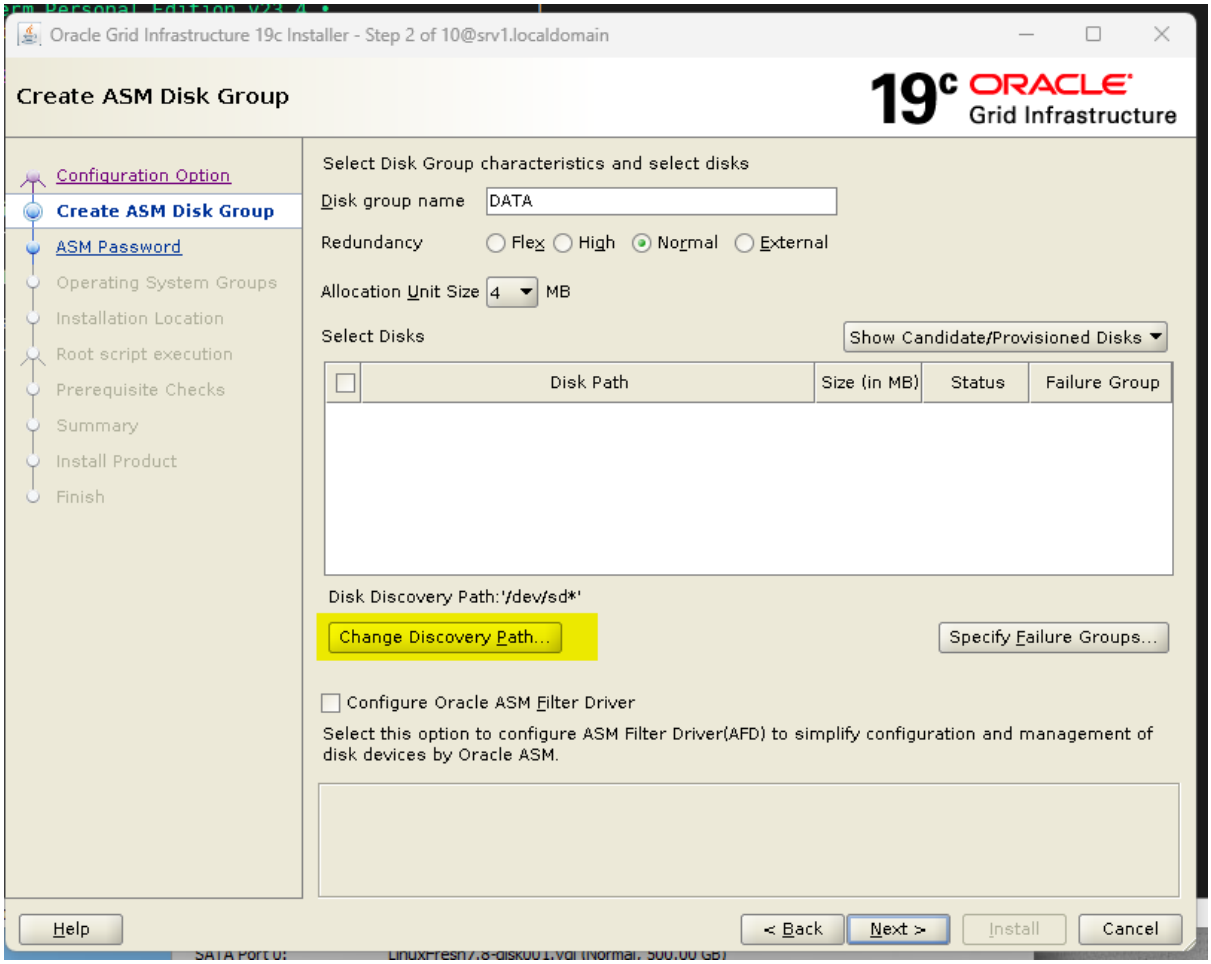
Now, use Mobaxterm and SSH to the VM as user "grid". (Do not login as "root" and use "su" because then X11 forwarding does not work - How to keep X11 display after su or sudo · Mobatek blog)

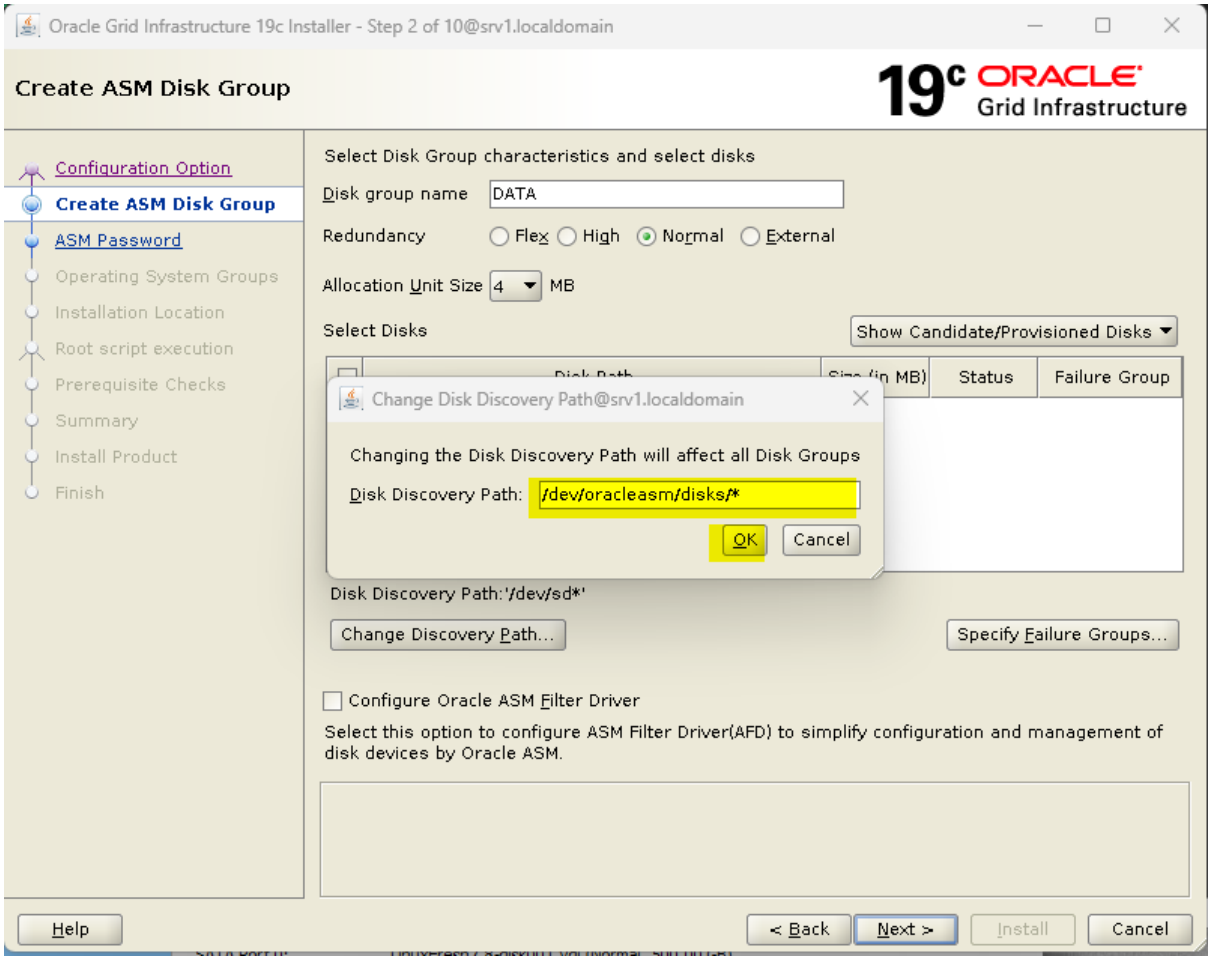
Change the current directory to the Grid Infrastructure software home directory and run the gridSetup.sh script.

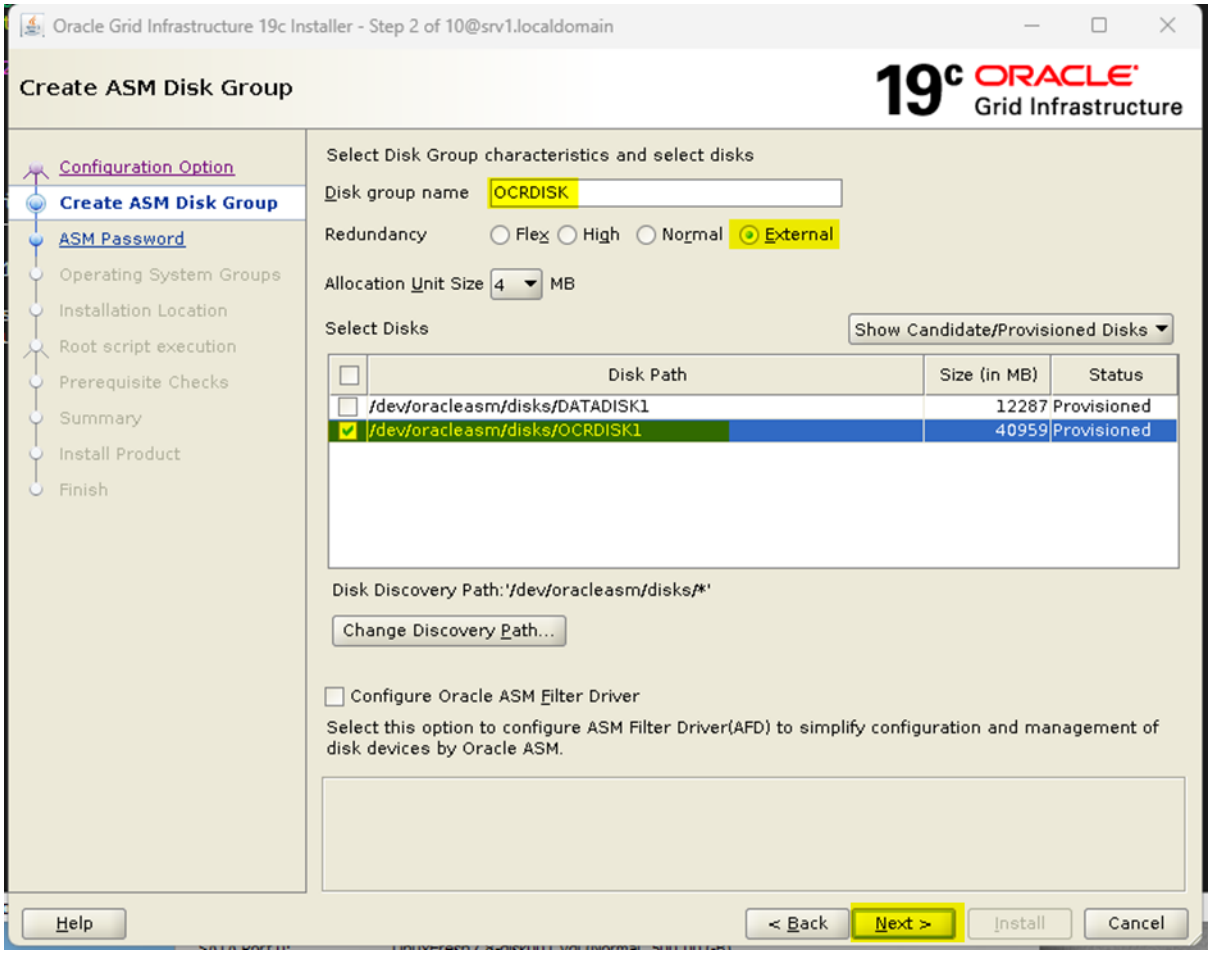
```
$ export DISPLAY=localhost:10.0
$ cd $ORACLE_HOME
$ ./gridSetup.sh
```

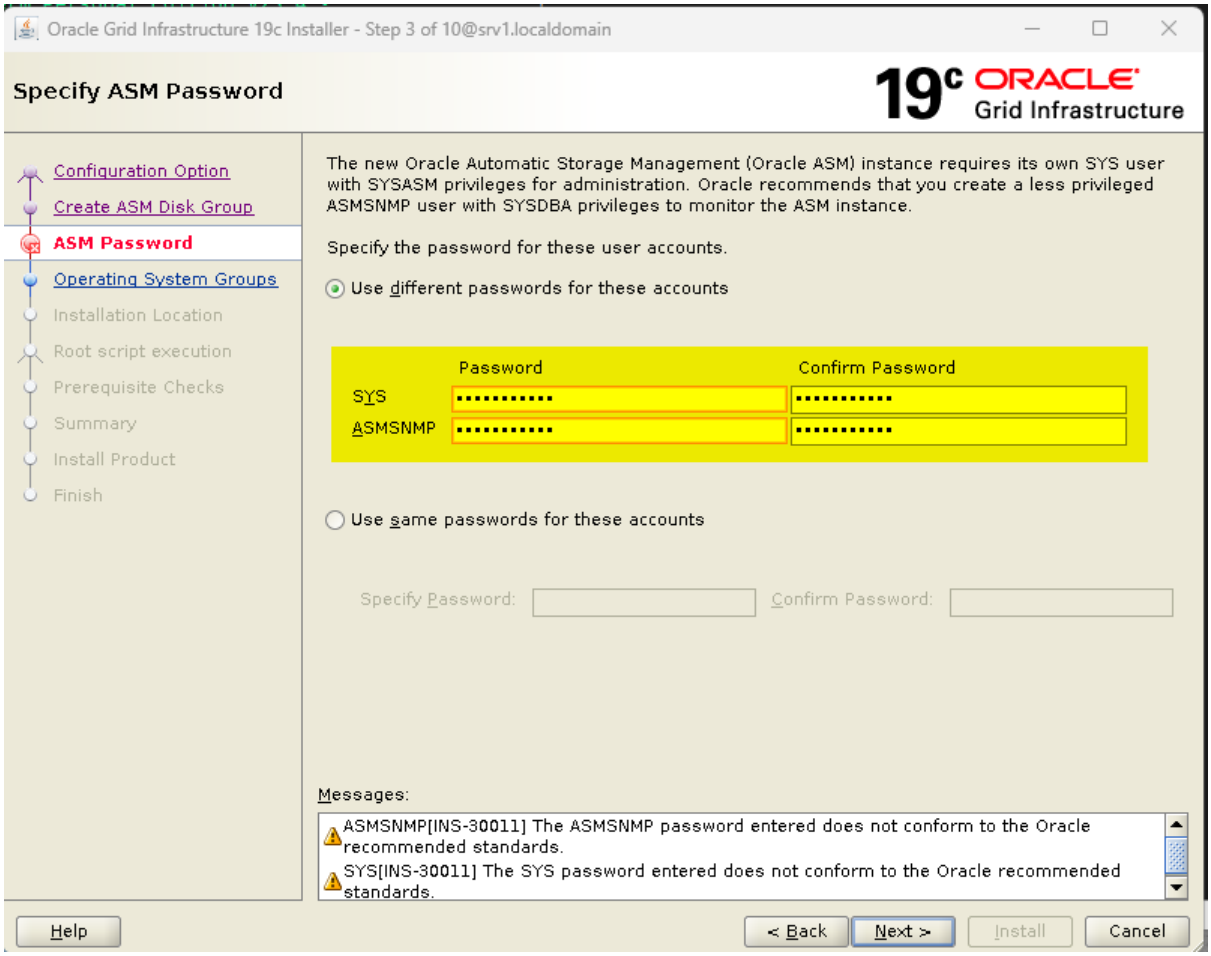




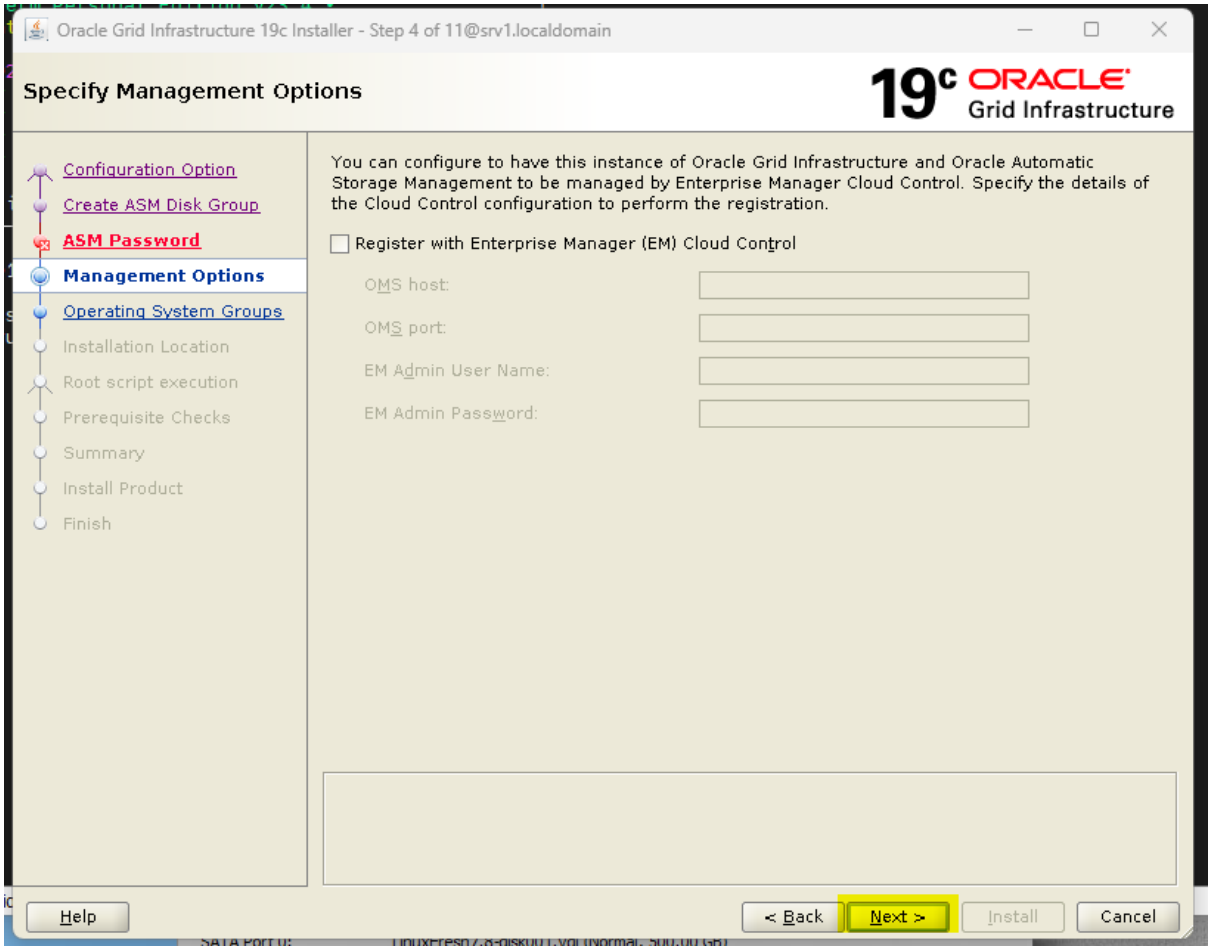

Oracle Grid Infrastructure 19c Installer - Step 2 of 10@srv1.localdomain
Create ASM Disk Group
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Operating System Groups
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select Disk Group characteristics and select disks
Disk group name
DATA
Redundancy
Flex
High
Normal
External
Allocation Unit Size
4
MB
Select Disks
Show Candidate/Provisioned Disks
Disk Path
Size (in MB)
Status
Failure Group
Disk Discovery Path:'/dev/sd*'
Change Discovery Path...
Specify Failure Groups...
Configure Oracle ASM Filter Driver
Select this option to configure ASM Filter Driver(AFD) to simplify configuration and management of disk devices by Oracle ASM.
Help
< Back
Next >
Install
Cancel


Oracle Grid Infrastructure 19c Installer - Step 2 of 10@srv1.localdomain
Create ASM Disk Group
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Operating System Groups
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select Disk Group characteristics and select disks
Disk group name DATA
Redundancy Flex High Normal External
Allocation Unit Size 4 MB
Select Disks
Show Candidate/Provisioned Disks
Status
Failure Group
Change Disk Discovery Path@srv1.localdomain
Changing the Disk Discovery Path will affect all Disk Groups
Disk Discovery Path: /dev/oracleasm/disks/*
OK
Cancel
Disk Discovery Path:'/dev/sd*'
Change Discovery Path...
Specify Failure Groups...
Configure Oracle ASM Filter Driver
Select this option to configure ASM Filter Driver(AFD) to simplify configuration and management of disk devices by Oracle ASM.
Help
< Back
Next >
Install
Cancel

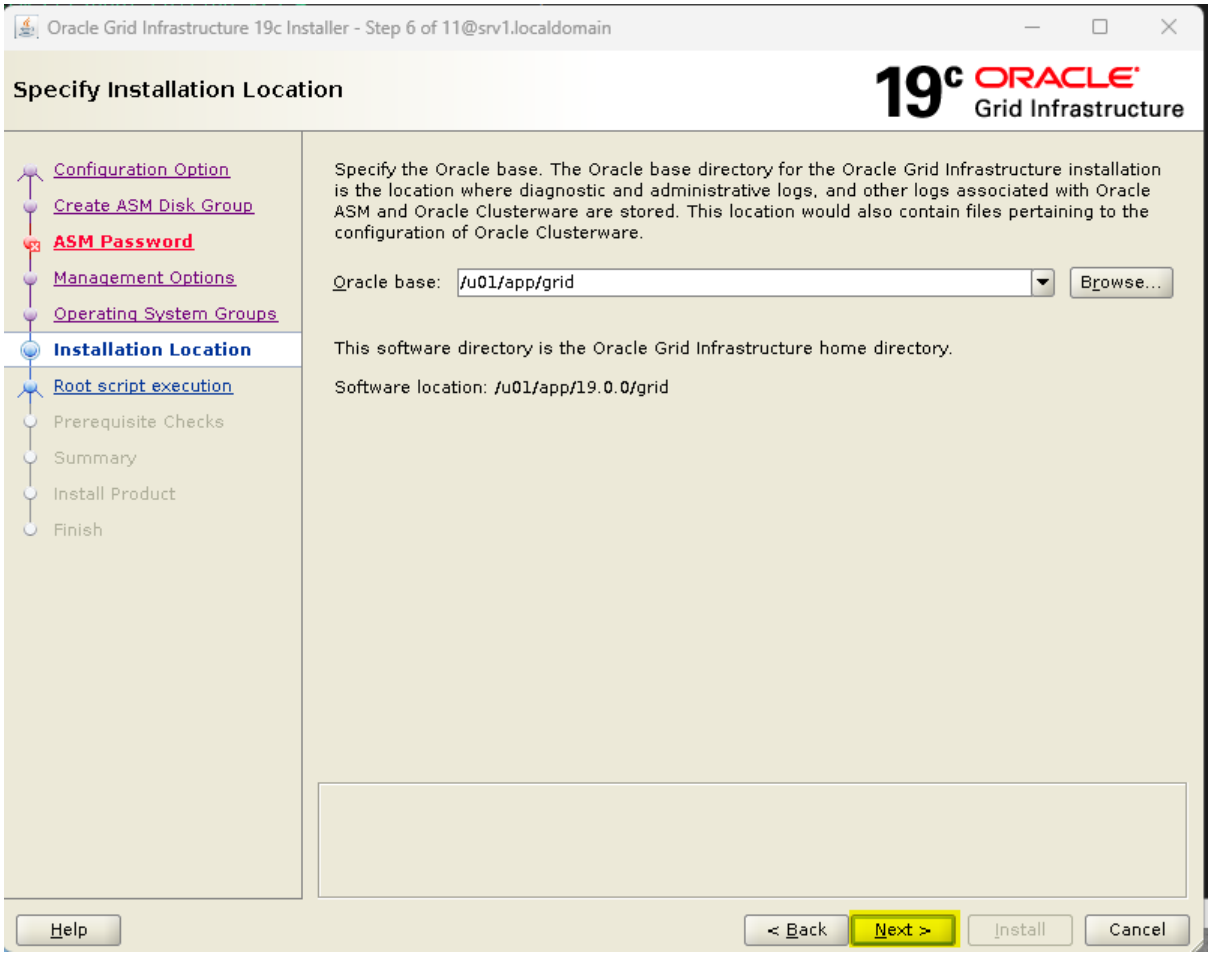

Oracle Grid Infrastructure 19c Installer - Step 2 of 10@srv1.localdomain
Create ASM Disk Group
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Operating System Groups
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select Disk Group characteristics and select disks
Disk group name OCRDISK
Redundancy Flex High Normal External
Allocation Unit Size 4 MB
Select Disks
Show Candidate/Provisioned Disks
Disk Path
Size (in MB)
Status
/dev/oracleasm/disks/DATADISK1 12287 Provisioned
/dev/oracleasm/disks/OCRDISK1 40959 Provisioned
Disk Discovery Path:'/dev/oracleasm/disks/*'
Change Discovery Path...
Configure Oracle ASM Filter Driver
Select this option to configure ASM Filter Driver(AFD) to simplify configuration and management of disk devices by Oracle ASM.
Help
< Back
Next >
Install
Cancel

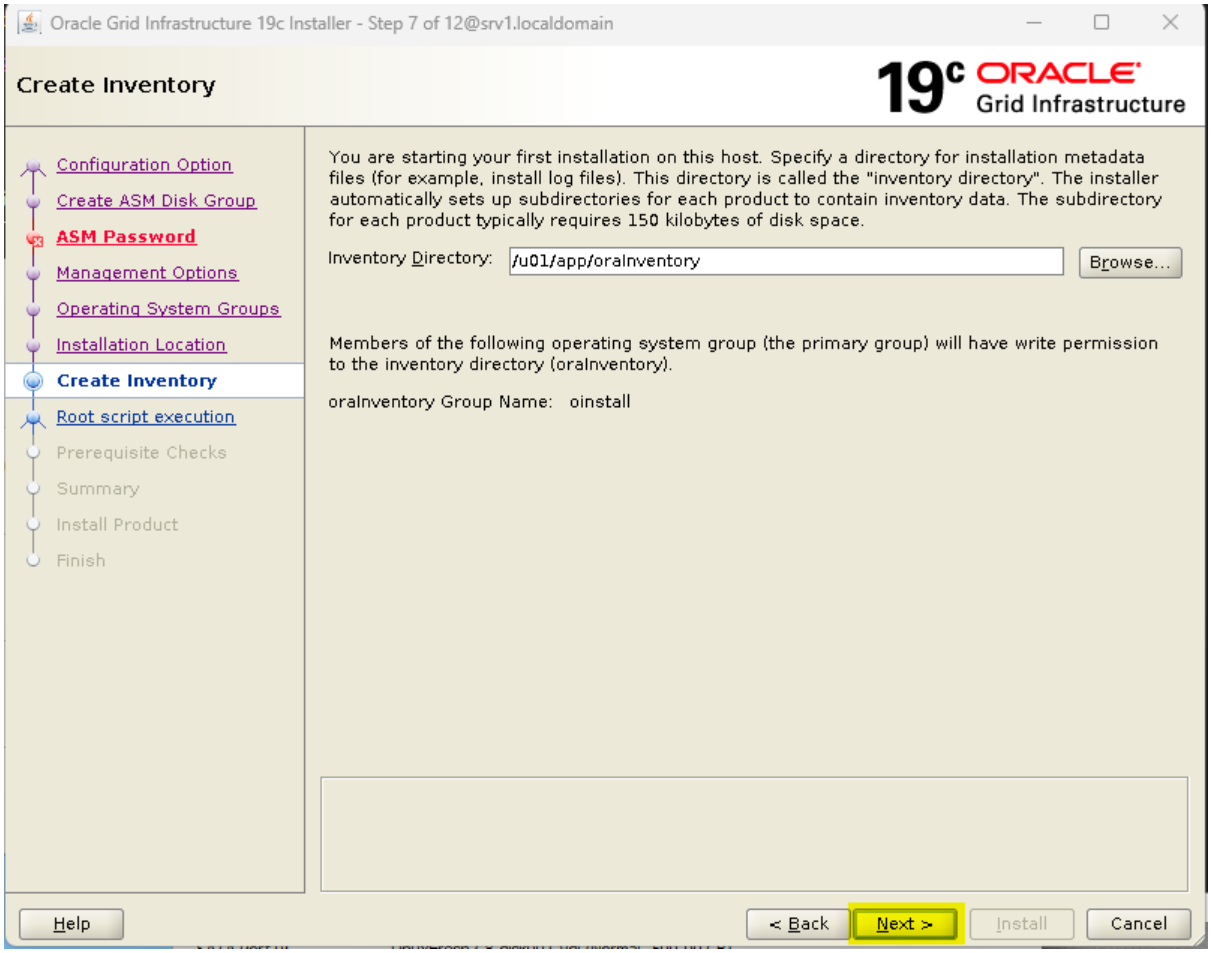


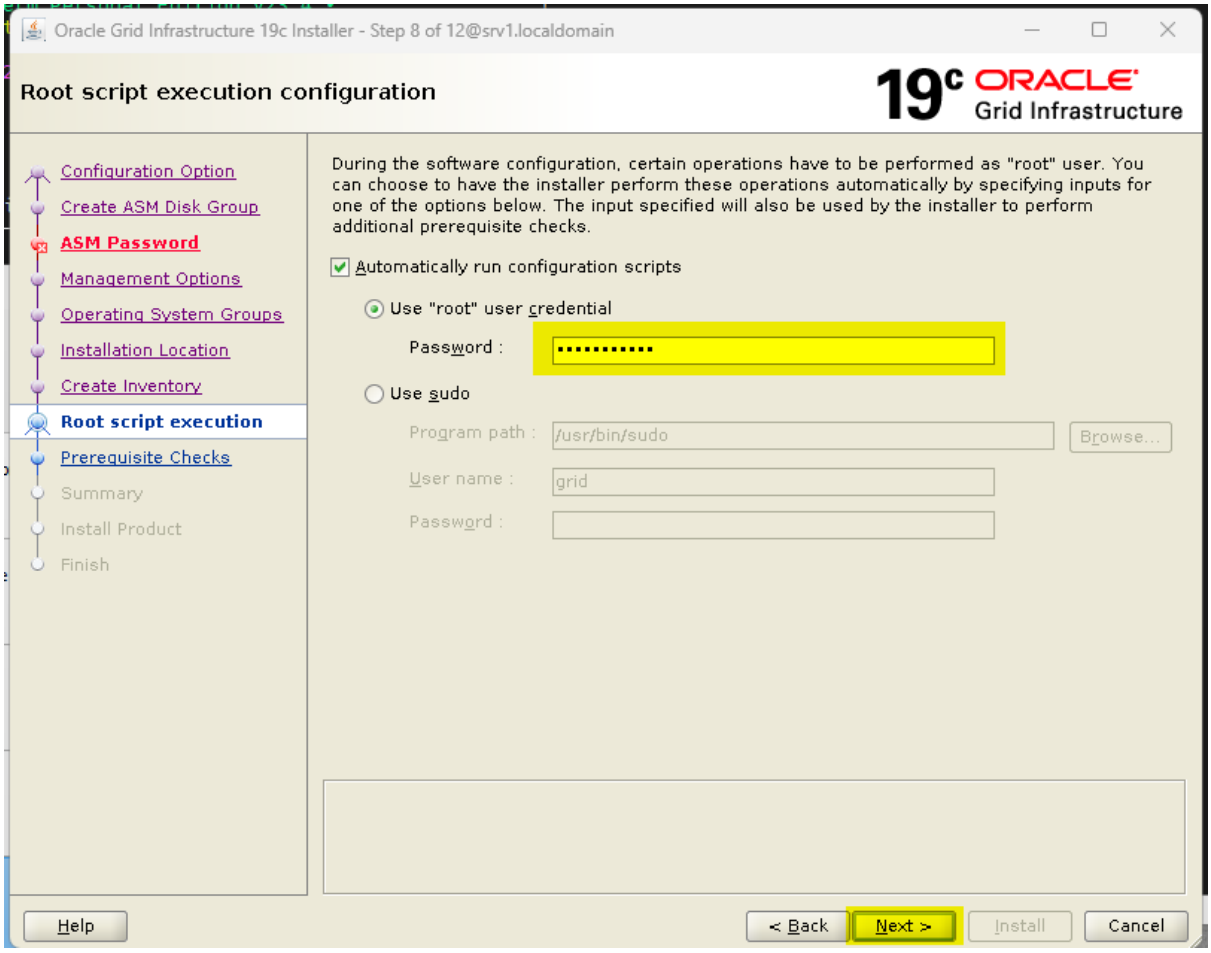
Passwords are defined as "OracleLab123".

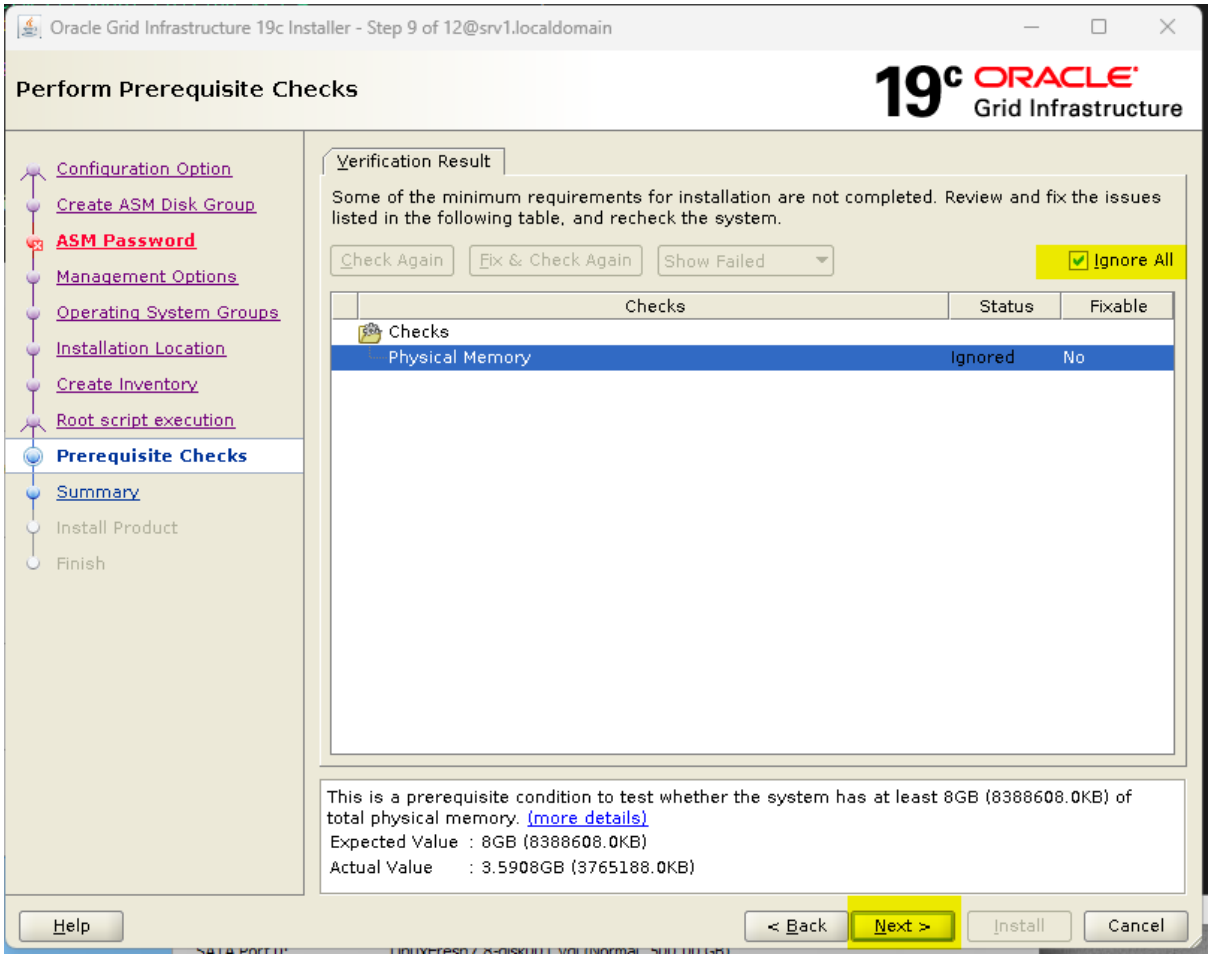

Oracle Grid Infrastructure 19c Installer - Step 4 of 11@srv1.localdomain
Specify Management Options
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
You can configure to have this instance of Oracle Grid Infrastructure and Oracle Automatic Storage Management to be managed by Enterprise Manager Cloud Control. Specify the details of the Cloud Control configuration to perform the registration.
Register with Enterprise Manager (EM) Cloud Control
OMS host:
OMS port:
EM Admin User Name:
EM Admin Password:
Help
< Back
Next >
Install
Cancel

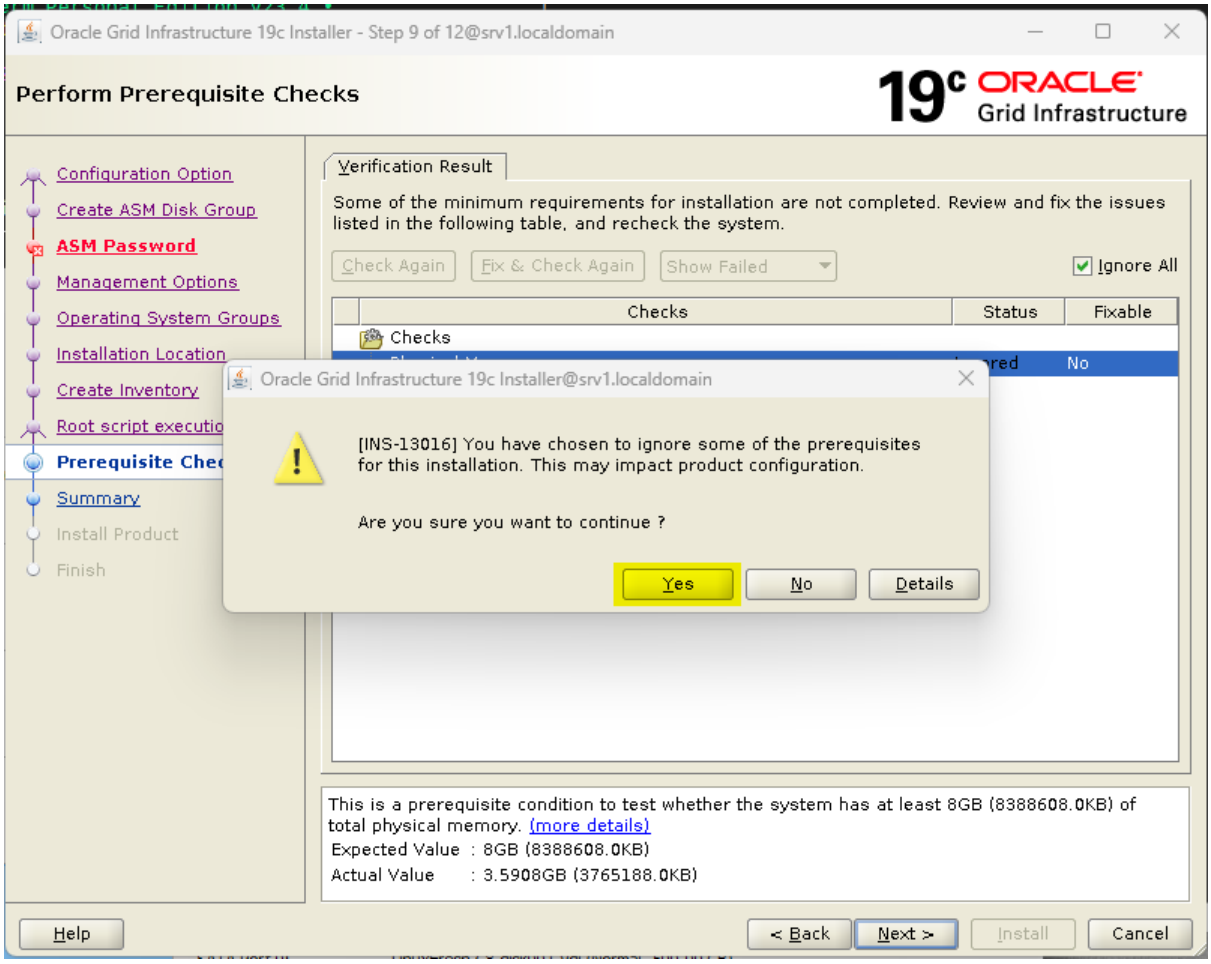

Oracle Grid Infrastructure 19c Installer - Step 5 of 11@srv1.localdomain
Privileged Operating System Groups
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select the name of the operating system group, that you want to use for operating system authentication to Oracle Automatic Storage Management.
Oracle ASM Administrator (OSASM) Group
asmadmin
Oracle ASM DBA (OSDBA for ASM) Group
asmdba
Oracle ASM Operator (OSOPER for ASM) Group (Optional)
Help
< Back
Next >
Install
Cancel

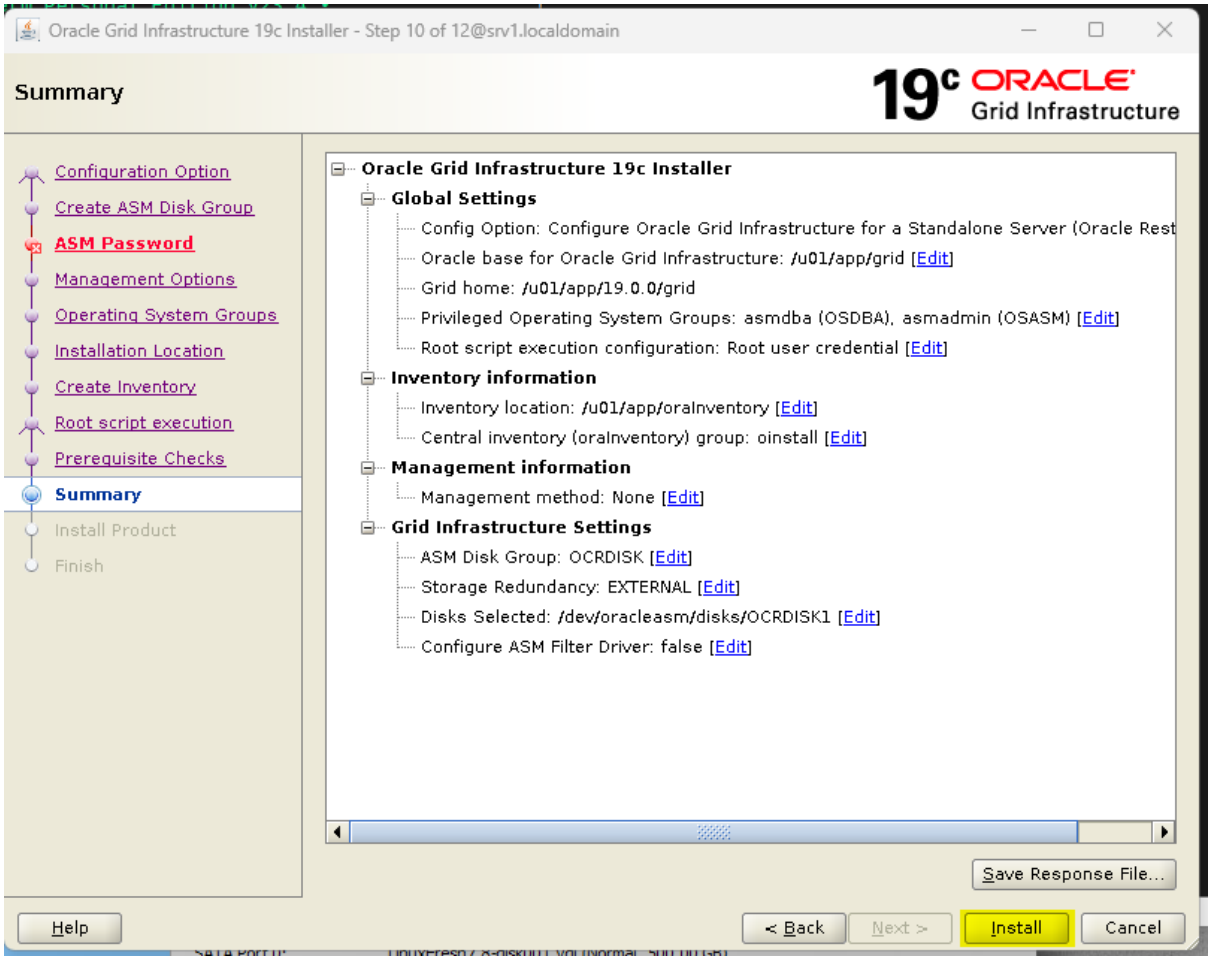

Oracle Grid Infrastructure 19c Installer - Step 6 of 11@srv1.localdomain
Specify Installation Location
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Specify the Oracle base. The Oracle base directory for the Oracle Grid Infrastructure installation is the location where diagnostic and administrative logs, and other logs associated with Oracle ASM and Oracle Clusterware are stored. This location would also contain files pertaining to the configuration of Oracle Clusterware.
Oracle base: /u01/app/grid
Browse...
This software directory is the Oracle Grid Infrastructure home directory.
Software location: /u01/app/19.0.0/grid
Help
< Back
Next >
Install
Cancel

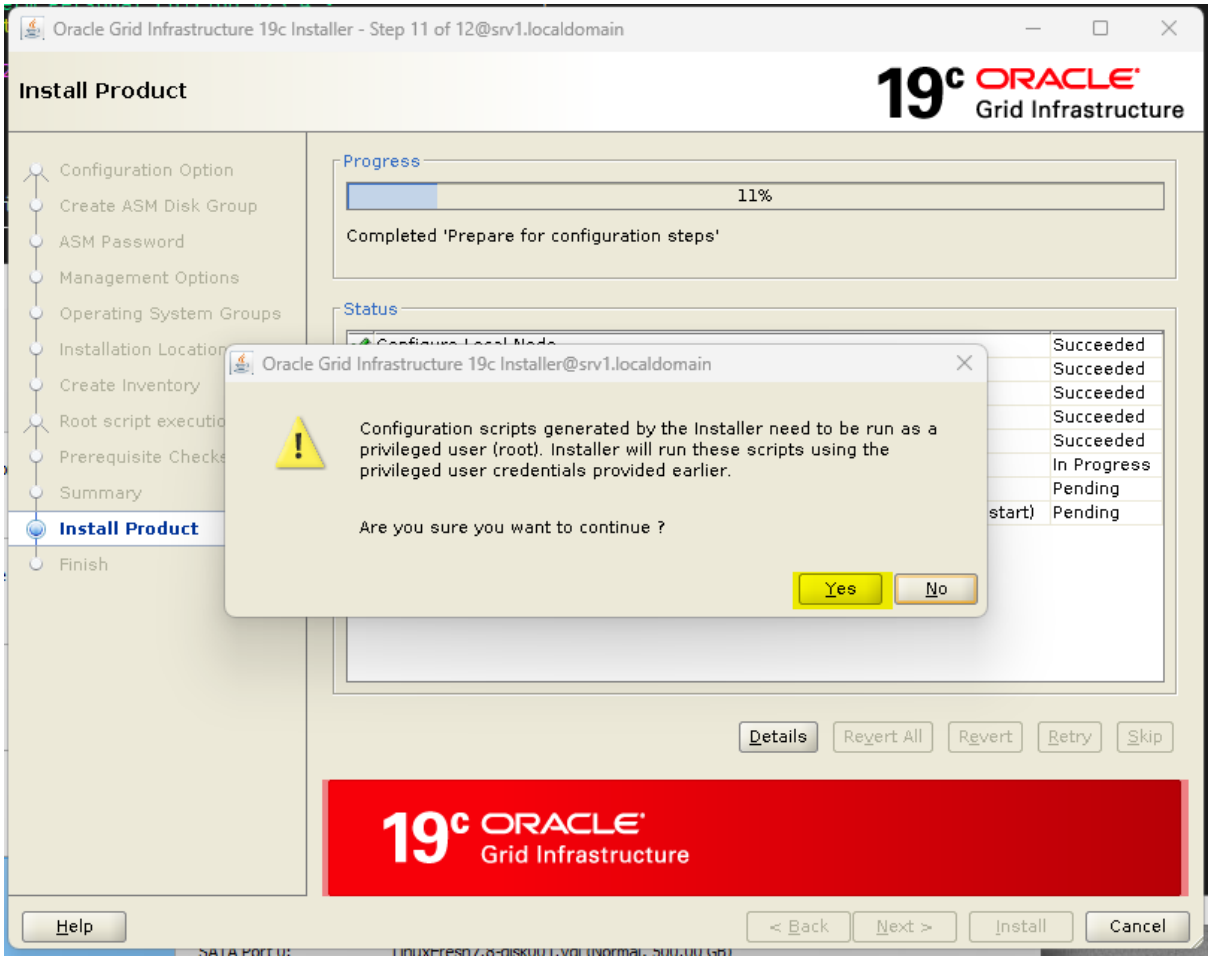

Oracle Grid Infrastructure 19c Installer - Step 7 of 12@srv1.localdomain
Create Inventory
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
You are starting your first installation on this host. Specify a directory for installation metadata files (for example, install log files). This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.
Inventory Directory: /u01/app/oraInventory
Browse...
Members of the following operating system group (the primary group) will have write permission to the inventory directory (oraInventory).
oraInventory Group Name: oinstall
Help
< Back
Next >
Install
Cancel

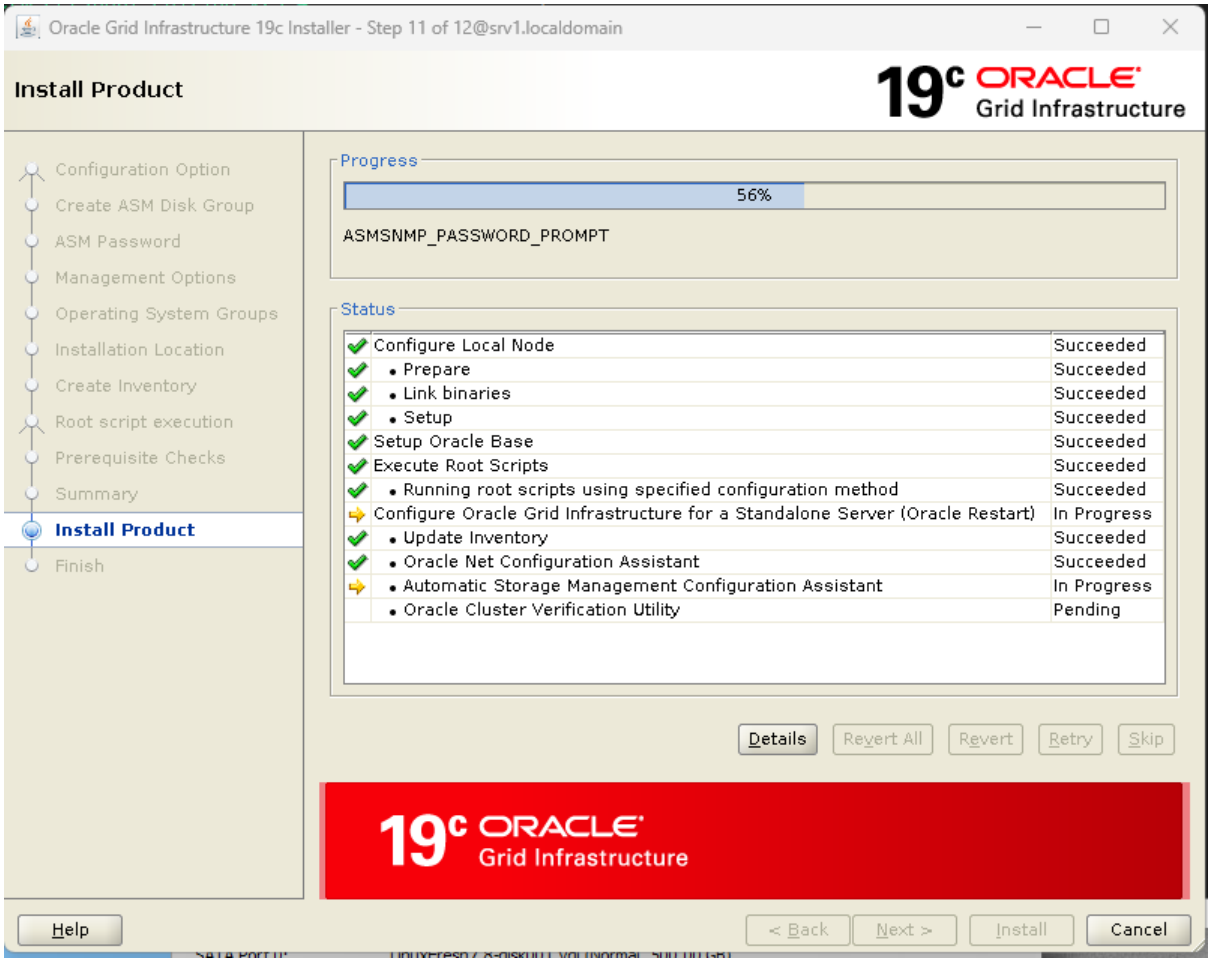

Oracle Grid Infrastructure 19c Installer - Step 8 of 12@srv1.localdomain
Root script execution configuration
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
During the software configuration, certain operations have to be performed as "root" user. You can choose to have the installer perform these operations automatically by specifying inputs for one of the options below. The input specified will also be used by the installer to perform additional prerequisite checks.
Automatically run configuration scripts
Use "root" user credential
Password :
Use sudo
Program path : /usr/bin/sudo
Browse...
User name : grid
Password :
Help
< Back
Next >
Install
Cancel

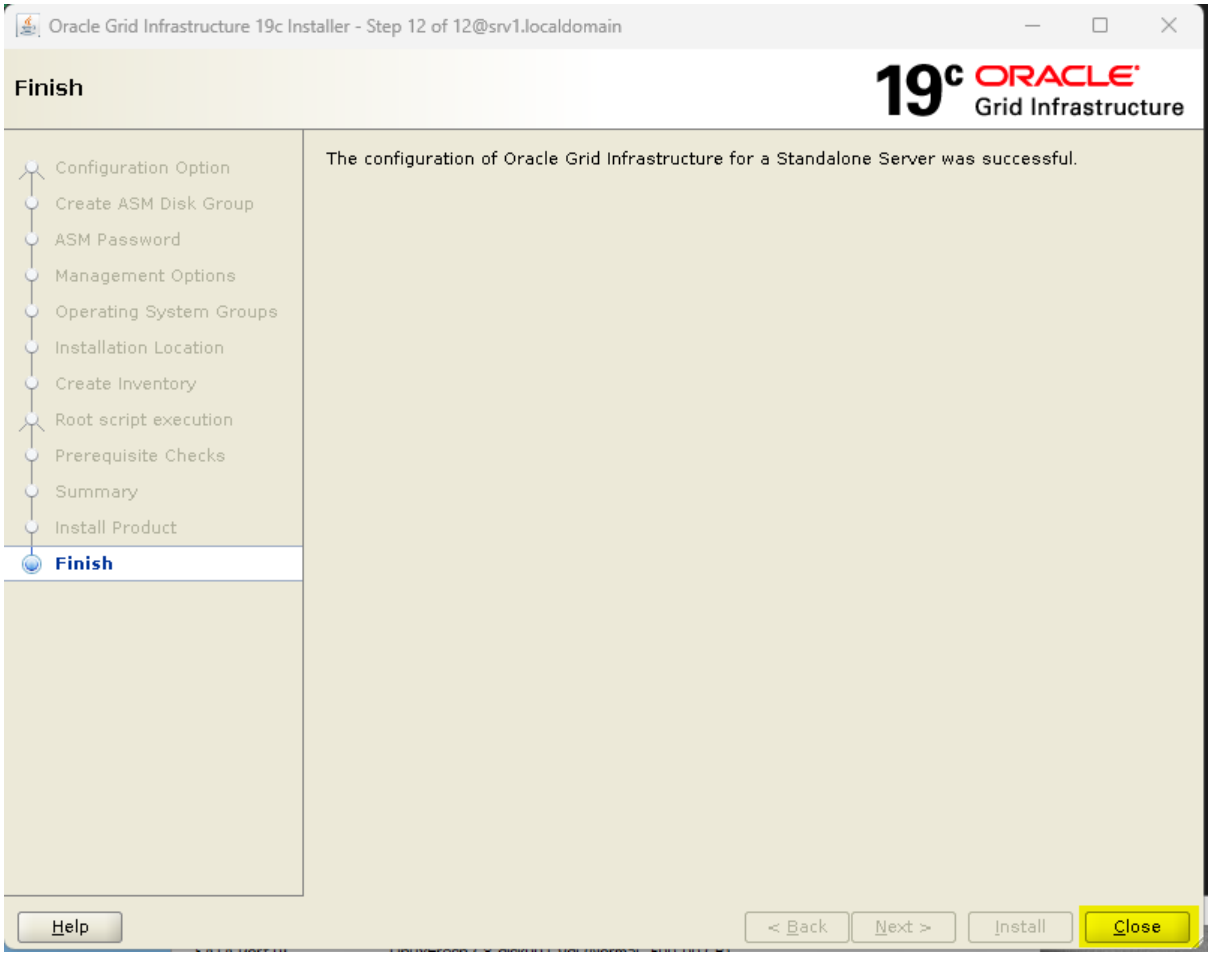

Oracle Grid Infrastructure 19c Installer - Step 9 of 12@srv1.localdomain
Perform Prerequisite Checks
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Verification Result
Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system.
Check Again
Fix & Check Again
Show Failed
Ignore All
Checks
Status
Fixable
Checks
Physical Memory
Ignored
No
This is a prerequisite condition to test whether the system has at least 8GB (8388608.0KB) of total physical memory. (more details)
Expected Value : 8GB (8388608.0KB)
Actual Value : 3.5908GB (3765188.0KB)
Help
< Back
Next >
Install
Cancel


Oracle Grid Infrastructure 19c Installer - Step 9 of 12@srv1.localdomain
Perform Prerequisite Checks
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script executio
Prerequisite Chec
Summary
Install Product
Finish
Verification Result
Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system.
Check Again
Fix & Check Again
Show Failed
Ignore All
Checks
Status
Fixable
Checks
No
Oracle Grid Infrastructure 19c Installer@srv1.localdomain
[INS-13016] You have chosen to ignore some of the prerequisites for this installation. This may impact product configuration.
Are you sure you want to continue ?
Yes
No
Details
This is a prerequisite condition to test whether the system has at least 8GB (8388608.0KB) of total physical memory. (more details)
Expected Value : 8GB (8388608.0KB)
Actual Value : 3.5908GB (3765188.0KB)
Help
< Back
Next >
Install
Cancel


Oracle Grid Infrastructure 19c Installer - Step 10 of 12@srv1.localdomain
Summary
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Oracle Grid Infrastructure 19c Installer
Global Settings
Config Option: Configure Oracle Grid Infrastructure for a Standalone Server (Oracle Rest
Oracle base for Oracle Grid Infrastructure: /u01/app/grid [Edit]
Grid home: /u01/app/19.0.0/grid
Privileged Operating System Groups: asmdba (OSDBA), asmadmin (OSASM) [Edit]
Root script execution configuration: Root user credential [Edit]
Inventory information
Inventory location: /u01/app/oraInventory [Edit]
Central inventory (oraInventory) group: oinstall [Edit]
Management information
Management method: None [Edit]
Grid Infrastructure Settings
ASM Disk Group: OCRDISK [Edit]
Storage Redundancy: EXTERNAL [Edit]
Disks Selected: /dev/oracleasm/disks/OCRDISK1 [Edit]
Configure ASM Filter Driver: false [Edit]
Save Response File...
Help
< Back
Next >
Install
Cancel


Oracle Grid Infrastructure 19c Installer - Step 11 of 12@srv1.localdomain
Install Product
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script executio
Prerequisite Checks
Summary
Install Product
Finish
Progress
11%
Completed 'Prepare for configuration steps'
Status
Succeeded
Succeeded
Succeeded
Succeeded
Succeeded
In Progress
Pending
start) Pending
Oracle Grid Infrastructure 19c Installer@srv1.localdomain
Configuration scripts generated by the Installer need to be run as a privileged user (root). Installer will run these scripts using the privileged user credentials provided earlier.
Are you sure you want to continue ?
Yes
No
Details
Revert All
Revert
Retry
Skip
19c ORACLE Grid Infrastructure
Help
< Back
Next >
Install
Cancel


Oracle Grid Infrastructure 19c Installer - Step 11 of 12@srv1.localdomain
Install Product
19c ORACLE Grid Infrastructure
Configuration Option
Create ASM Disk Group
ASM Password
Management Options
Operating System Groups
Installation Location
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Progress
56%
ASMSNMP_PASSWORD_PROMPT
Status
Configure Local Node Succeeded
• Prepare Succeeded
• Link binaries Succeeded
• Setup Succeeded
Setup Oracle Base Succeeded
Execute Root Scripts Succeeded
• Running root scripts using specified configuration method Succeeded
Configure Oracle Grid Infrastructure for a Standalone Server (Oracle Restart) In Progress
• Update Inventory Succeeded
• Oracle Net Configuration Assistant Succeeded
• Automatic Storage Management Configuration Assistant In Progress
• Oracle Cluster Verification Utility Pending
Details
Revert All
Revert
Retry
Skip
19c ORACLE Grid Infrastructure
Help
< Back
Next >
Install
Cancel



As the user "grid", check CRS services status:

```
$ crsctl status resource -t
```

```
[grid@srv1 grid]$ crsctl status resource -t
--------------------------------------------------------------------------------
Name           Target  State        Server                   State details
--------------------------------------------------------------------------------
Local Resources
--------------------------------------------------------------------------------
ora.LISTENER.lsnr
               ONLINE  ONLINE       srv1                     STABLE
ora.OCRDISK.dg
               ONLINE  ONLINE       srv1                     STABLE
ora.asm
               ONLINE  ONLINE       srv1                     Started,STABLE
ora.ons
               OFFLINE OFFLINE      srv1                     STABLE
--------------------------------------------------------------------------------
Cluster Resources
--------------------------------------------------------------------------------
ora.cssd
      1        ONLINE  ONLINE       srv1                     STABLE
ora.diskmon
      1        OFFLINE OFFLINE                               STABLE
ora.evmd
      1        ONLINE  ONLINE       srv1                     STABLE
--------------------------------------------------------------------------------
[grid@srv1 grid]$
```

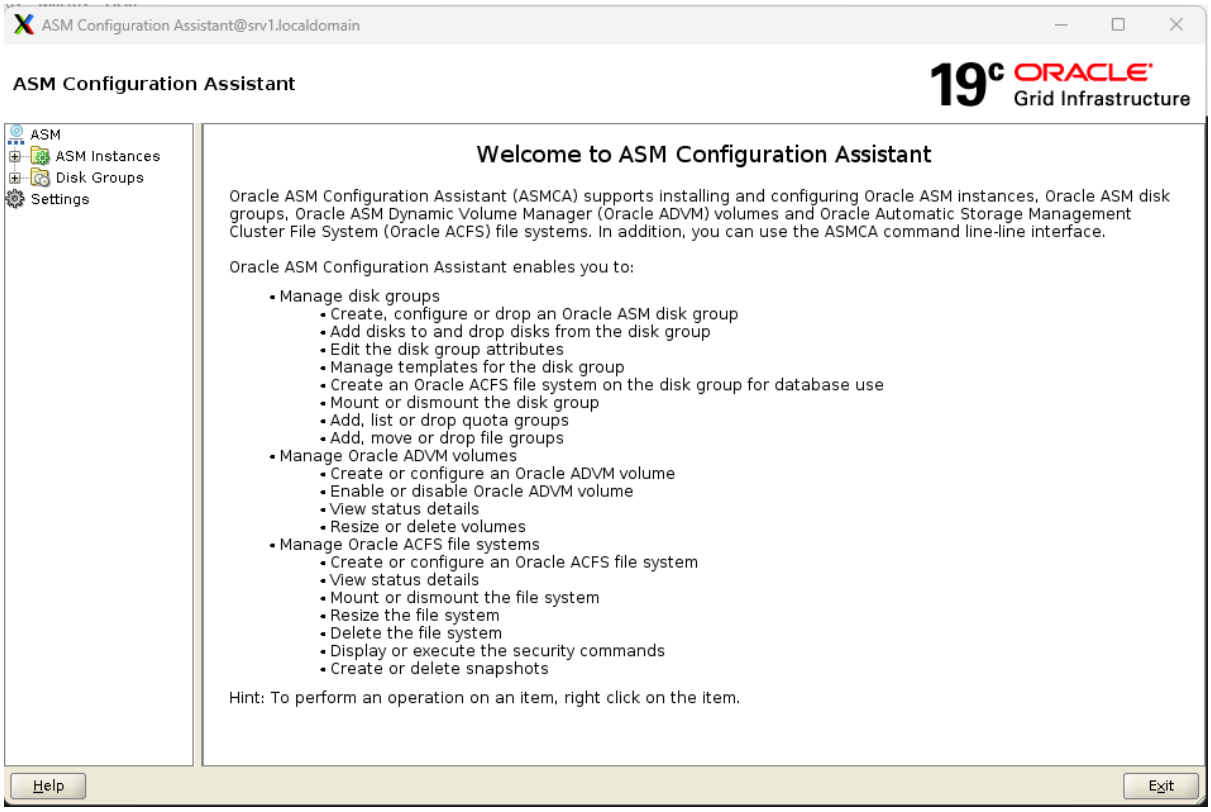
Creating ASM Disk Groups

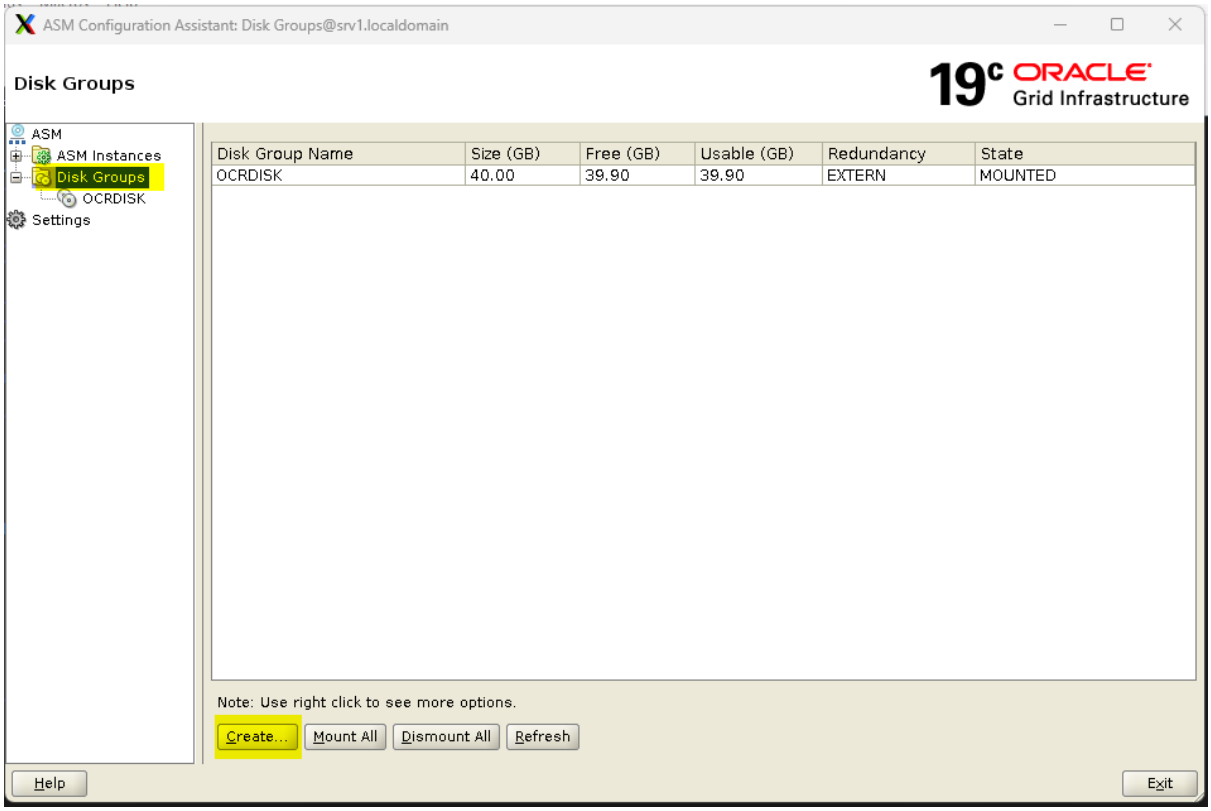
Now, we will create the Diskgroup that will be used by Oracle database to store its datafiles. Usually, we would have several disk groups (DATA, FRA, CONTROL).

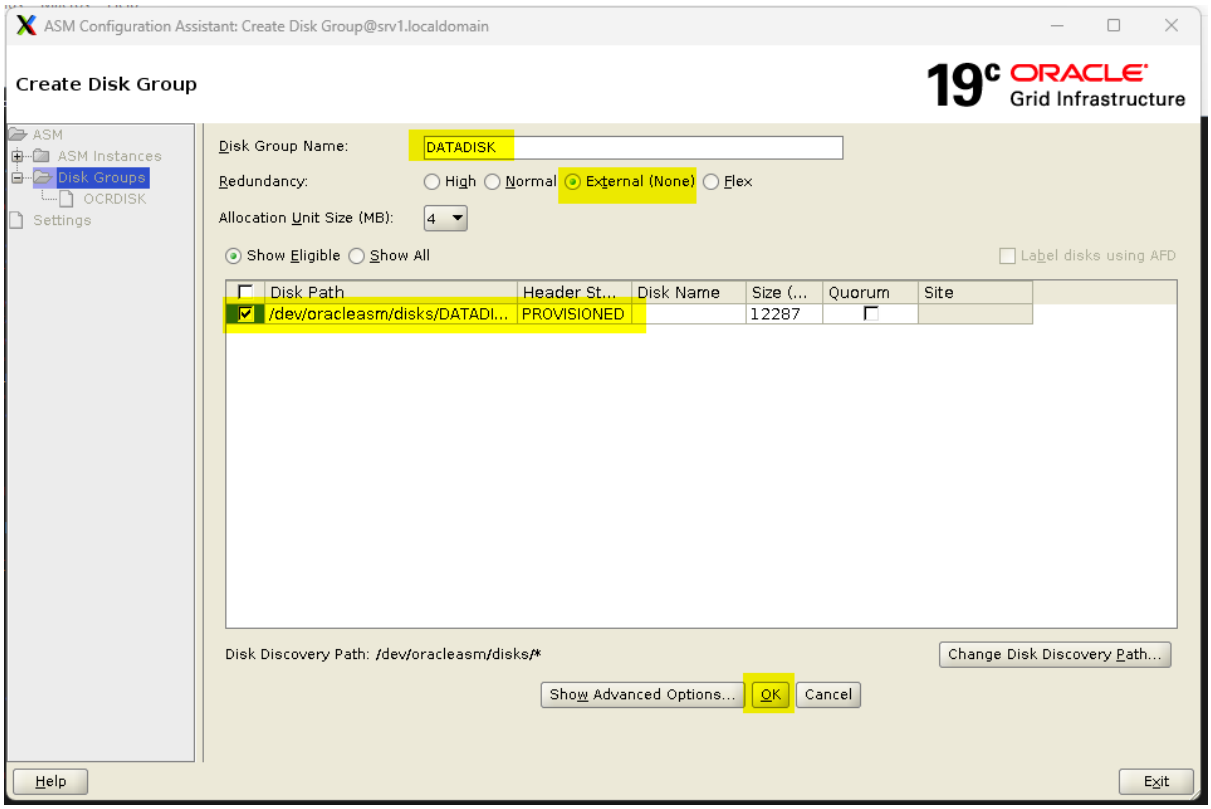
As a part of the installation a disk group called "OCRDISK" was already defined. We will create a new one called "DATADISK".

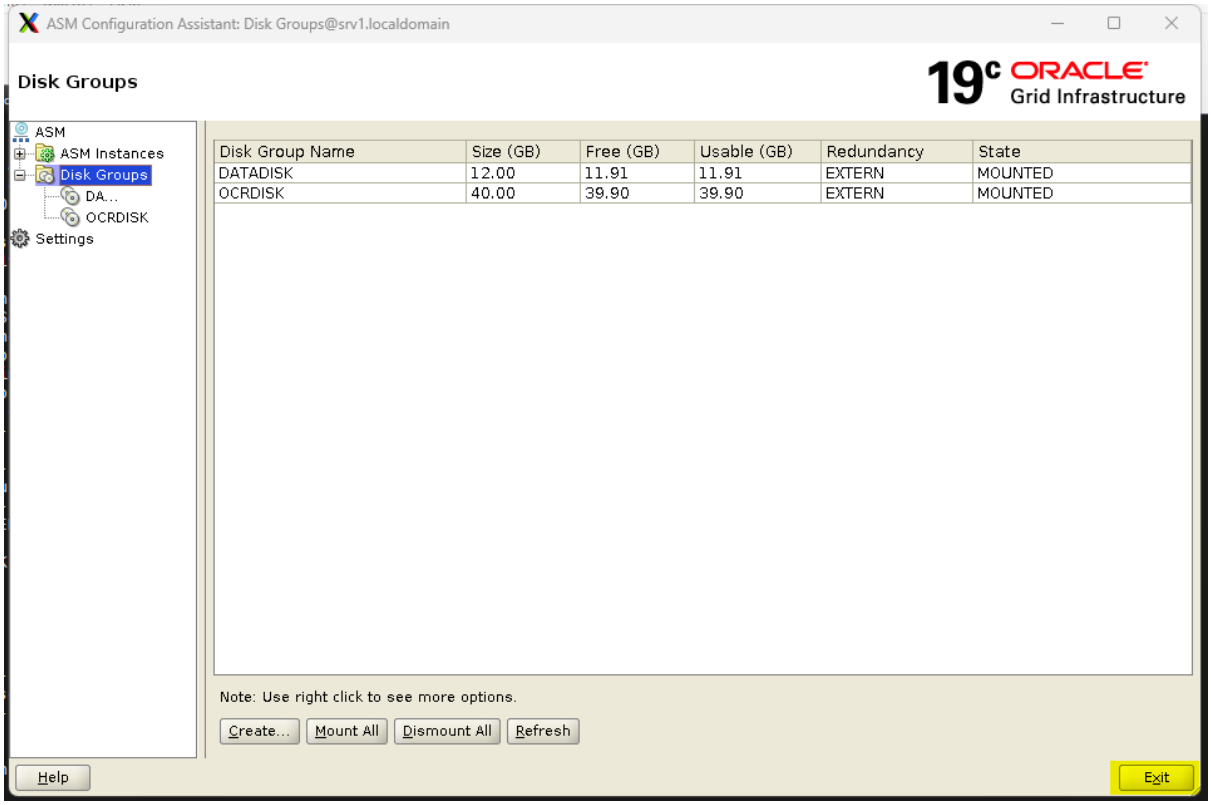
Use Mobaxterm, login as the user "grid" and then initiate ASM Configuration Assistant:

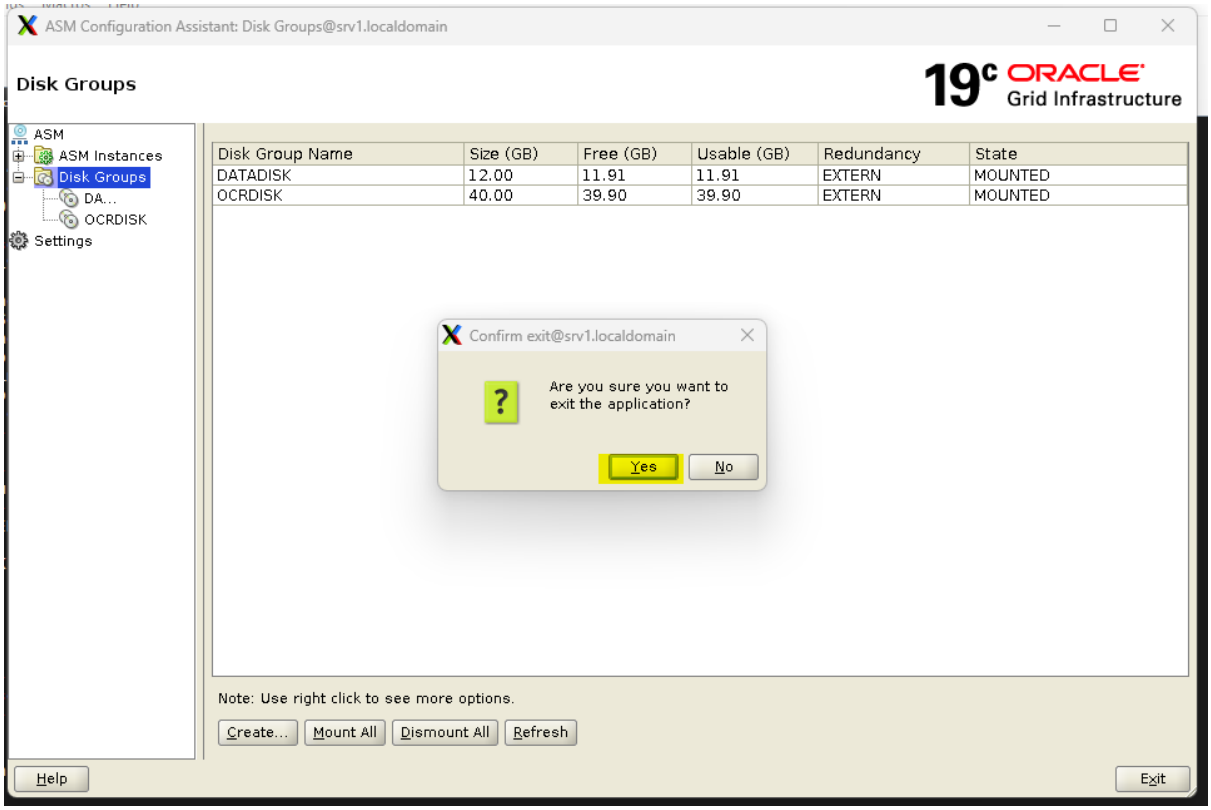
```
$ asmca
```




ASM Configuration Assistant: Disk Groups@srv1.localdomain
Disk Groups
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Disk Groups
OCRDISK
Settings
Disk Group Name | Size (GB) | Free (GB) | Usable (GB) | Redundancy | State
OCRDISK | 40.00 | 39.90 | 39.90 | EXTERN | MOUNTED
Note: Use right click to see more options.
Create... Mount All Dismount All Refresh
Help
Exit

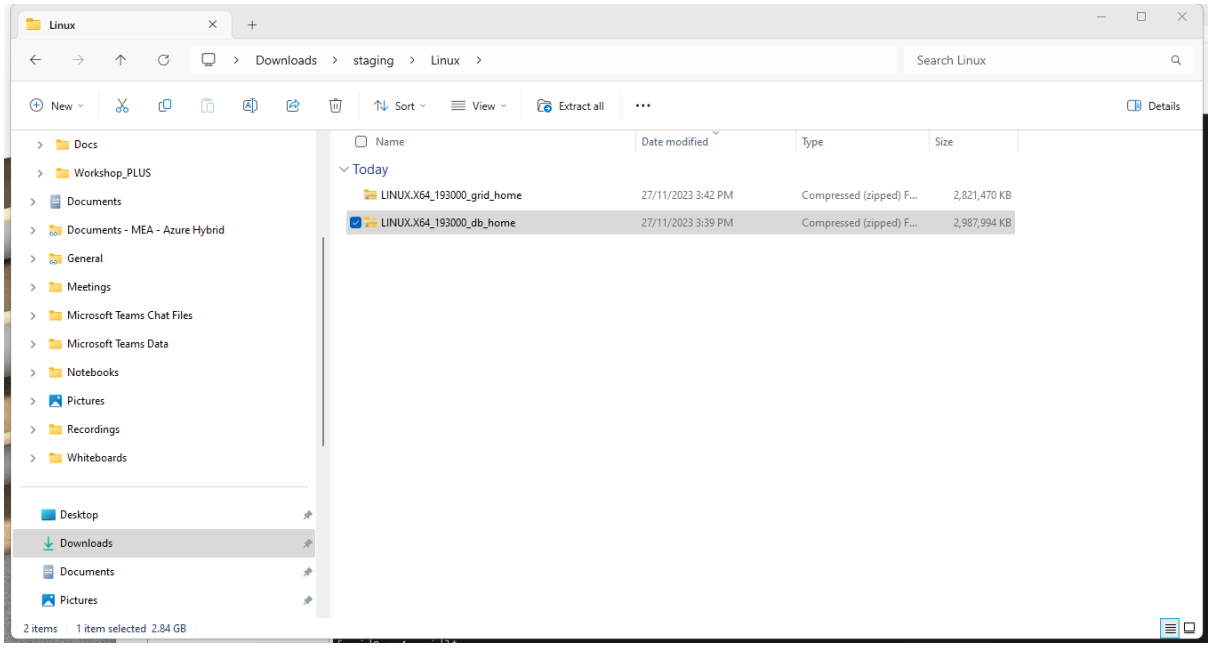

ASM Configuration Assistant: Create Disk Group@srv1.localdomain
Create Disk Group
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Disk Groups
OCRDISK
Settings
Disk Group Name: DATADISK
Redundancy: High Normal External (None) Flex
Allocation Unit Size (MB): 4
Show Eligible Show All
Label disks using AFD
Disk Path | Header St... | Disk Name | Size (... | Quorum | Site
/dev/oracleasm/disks/DATADI... | PROVISIONED | | 12287 | |
Disk Discovery Path: /dev/oracleasm/disks/*
Change Disk Discovery Path...
Show Advanced Options... OK Cancel
Help
Exit


ASM Configuration Assistant: Disk Groups@srv1.localdomain
Disk Groups
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Disk Groups
DA...
OCRDISK
Settings
Disk Group Name | Size (GB) | Free (GB) | Usable (GB) | Redundancy | State
DATADISK | 12.00 | 11.91 | 11.91 | EXTERN | MOUNTED
OCRDISK | 40.00 | 39.90 | 39.90 | EXTERN | MOUNTED
Note: Use right click to see more options.
Create... Mount All Dismount All Refresh
Help
Exit


ASM Configuration Assistant: Disk Groups@srv1.localdomain
Disk Groups
19c ORACLE Grid Infrastructure
ASM
ASM Instances
Disk Groups
DA...
OCRDISK
Settings
Disk Group Name | Size (GB) | Free (GB) | Usable (GB) | Redundancy | State
DATADISK | 12.00 | 11.91 | 11.91 | EXTERN | MOUNTED
OCRDISK | 40.00 | 39.90 | 39.90 | EXTERN | MOUNTED
Confirm exit@srv1.localdomain
Are you sure you want to exit the application?
Yes
No
Note: Use right click to see more options.
Create... Mount All Dismount All Refresh
Help
Exit

Installing Oracle Database Software and Creating the Database

Copy the Oracle database software installation file (LINUX.X64_193000_db_home.zip) to the staging folder on the laptop:



Unzip the file as the user "oracle". The $ORACLE_HOME is /u01/app/oracle/product/19.0.0/db_1.

```
# su - oracle
$ unzip /media/sf_staging/LINUX.X64_193000_db_home.zip -d $ORACLE_HOME
```

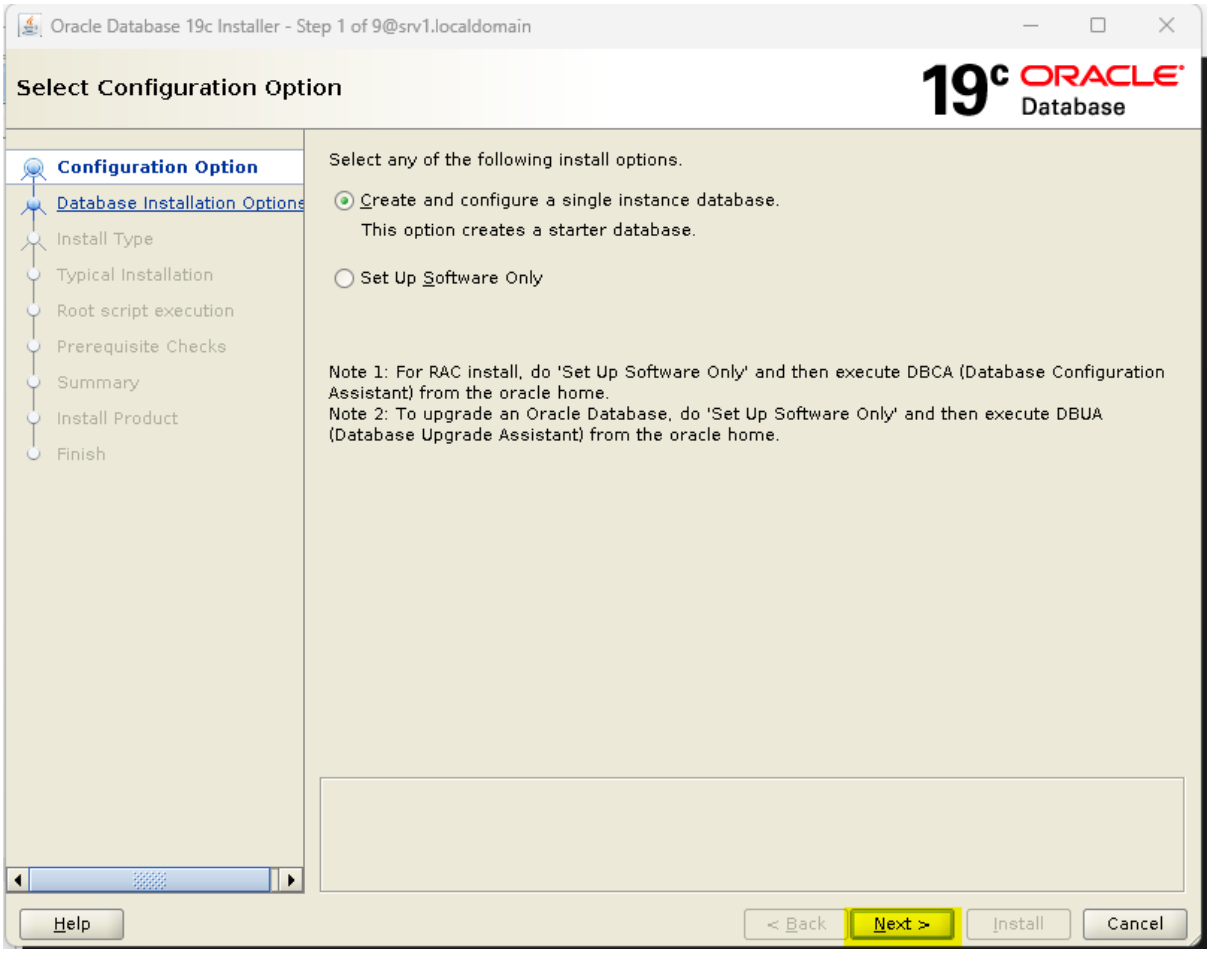
```
[oracle@srv1 ~]$ unzip /media/sf_staging/LINUX.X64_193000_db_home.zip -d $ORACLE_HOME
Archive:  /media/sf_staging/LINUX.X64_193000_db_home.zip
   creating: /u01/app/oracle/product/19.0.0/db_1/drdaas/
   creating: /u01/app/oracle/product/19.0.0/db_1/drdaas/admin/
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/admin/drdasqtt_translator_setup.sql
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/admin/drdapkg_db2.sql
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/admin/drdaas.ora
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/admin/drdasqt_set_profile_dd.sql
   creating: /u01/app/oracle/product/19.0.0/db_1/drdaas/lib/
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/lib/s0dpspmain.o
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/lib/s0dpscmain.o
  inflating: /u01/app/oracle/product/19.0.0/db_1/drdaas/lib/s0dpssmain.o
   creating: /u01/app/oracle/product/19.0.0/db_1/instantclient/
  inflating: /u01/app/oracle/product/19.0.0/db_1/instantclient/libsqlplusic.so
  inflating: /u01/app/oracle/product/19.0.0/db_1/schagent.conf
   creating: /u01/app/oracle/product/19.0.0/db_1/opmn/
   creating: /u01/app/oracle/product/19.0.0/db_1/opmn/conf/
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/conf/ons.config
   creating: /u01/app/oracle/product/19.0.0/db_1/opmn/admin/
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/admin/libons.def
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/admin/libonsx.def
   creating: /u01/app/oracle/product/19.0.0/db_1/opmn/lib/
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/lib/ons.jar
   creating: /u01/app/oracle/product/19.0.0/db_1/opmn/bin/
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/bin/ons
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/bin/onsctl
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/bin/onsctli
   creating: /u01/app/oracle/product/19.0.0/db_1/opmn/mesg/
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/mesg/ensko.msb
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/mesg/ensus.msb
  inflating: /u01/app/oracle/product/19.0.0/db_1/opmn/mesg/ensf.msb
```

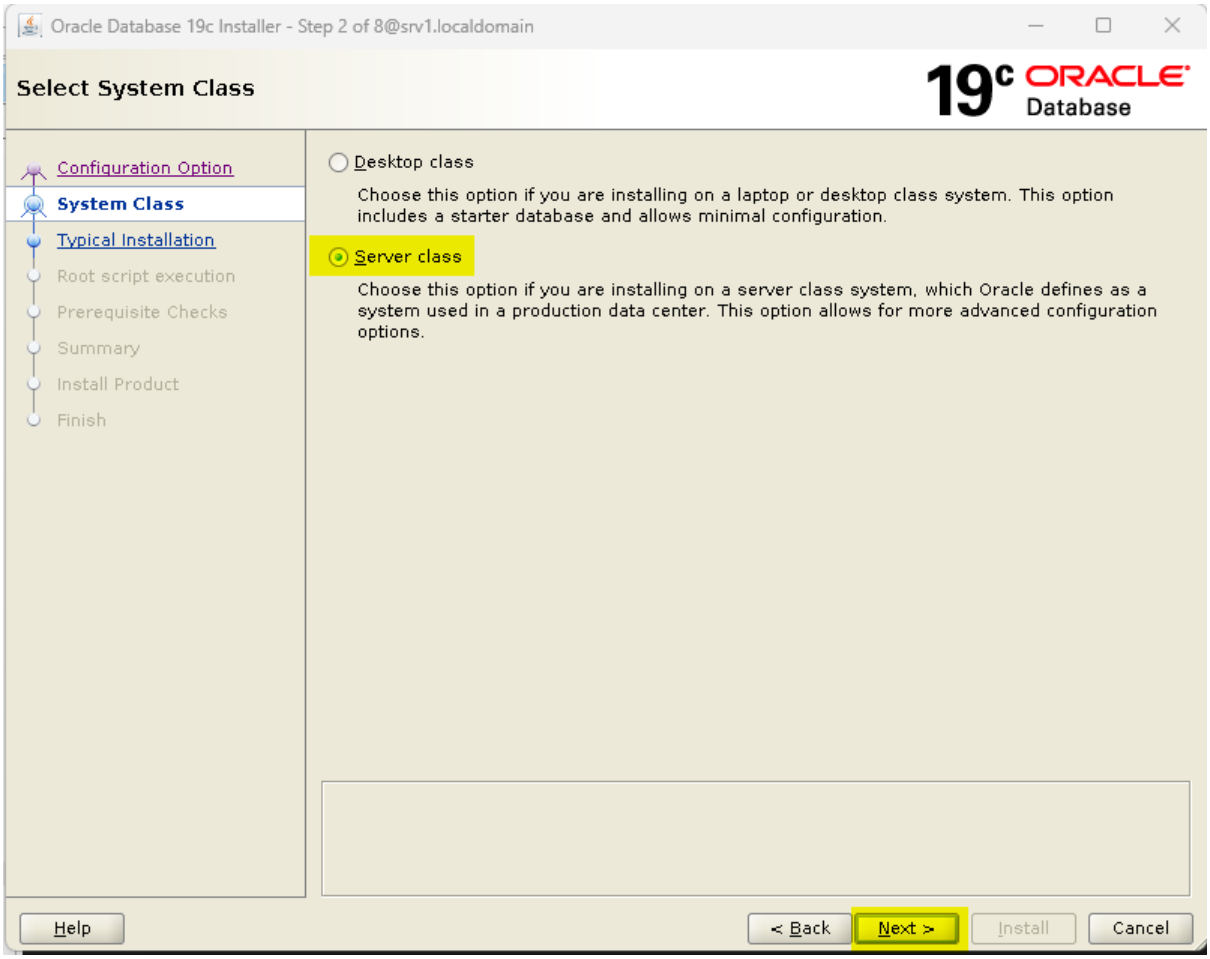
Now it is time to run an X11 based application. Use Mobaxterm and directly login to the VM as "oracle". If you login as "root" and use "su", then X11 does not work.

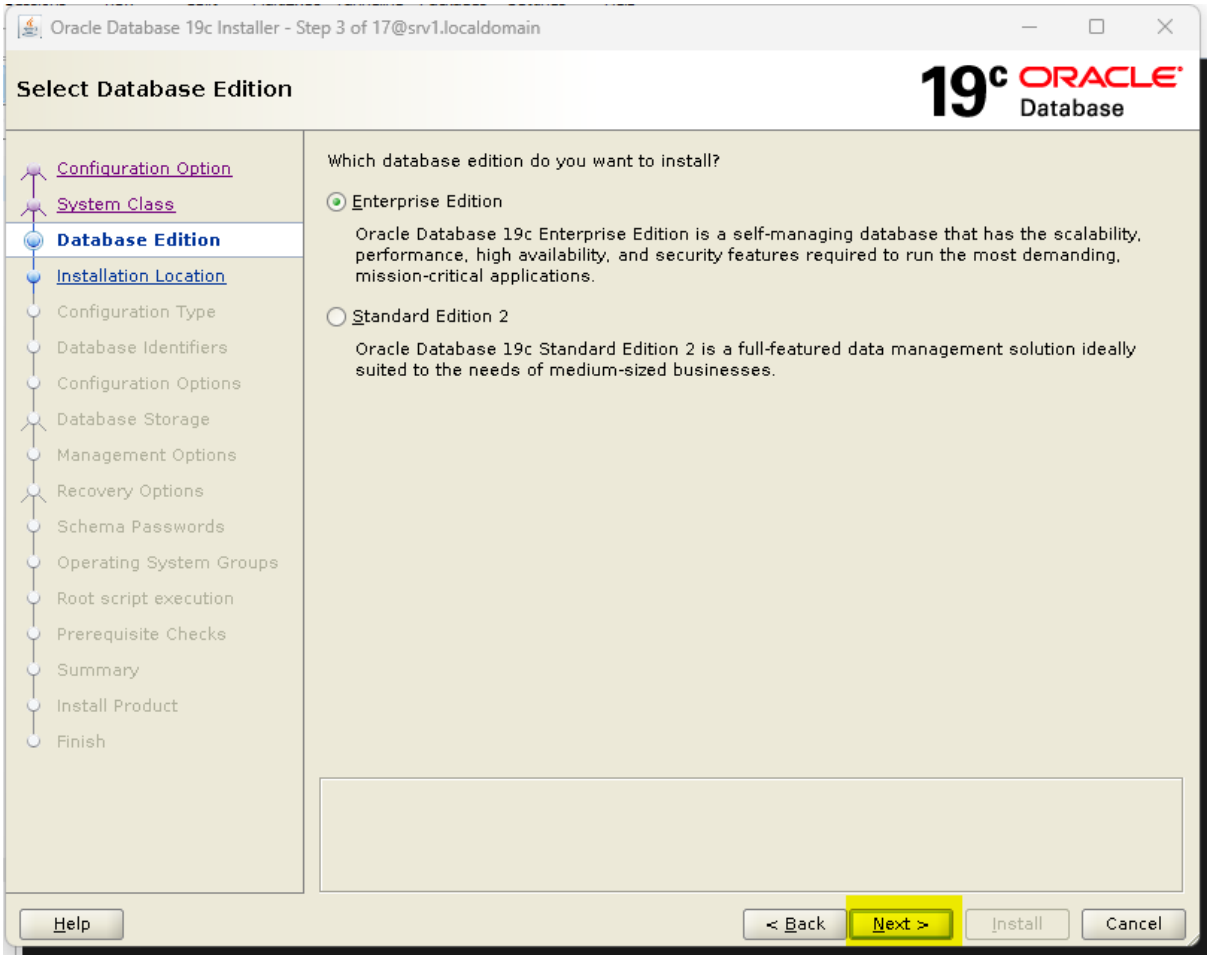
$ cd $ORACLE_HOME

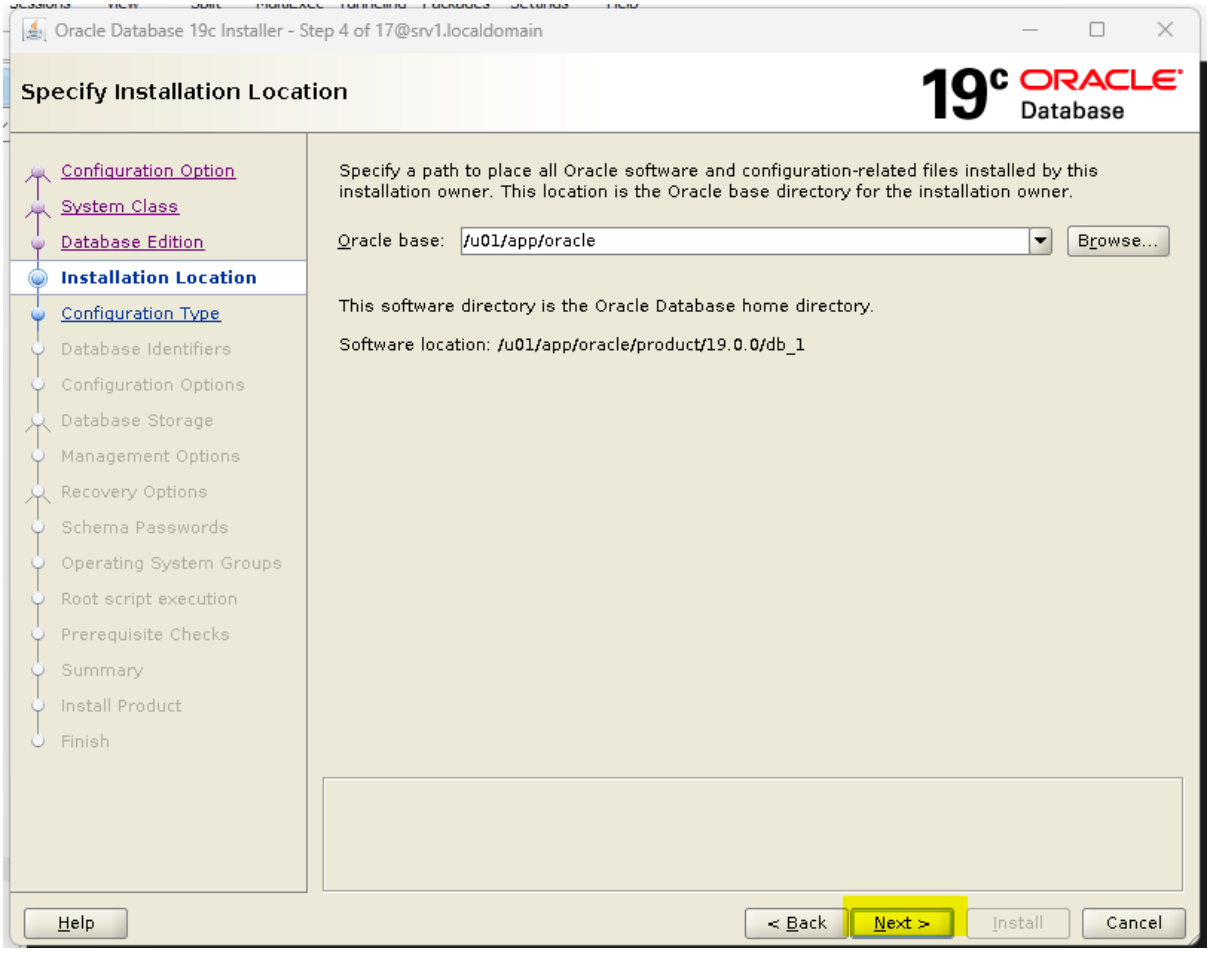
$ ./runInstaller

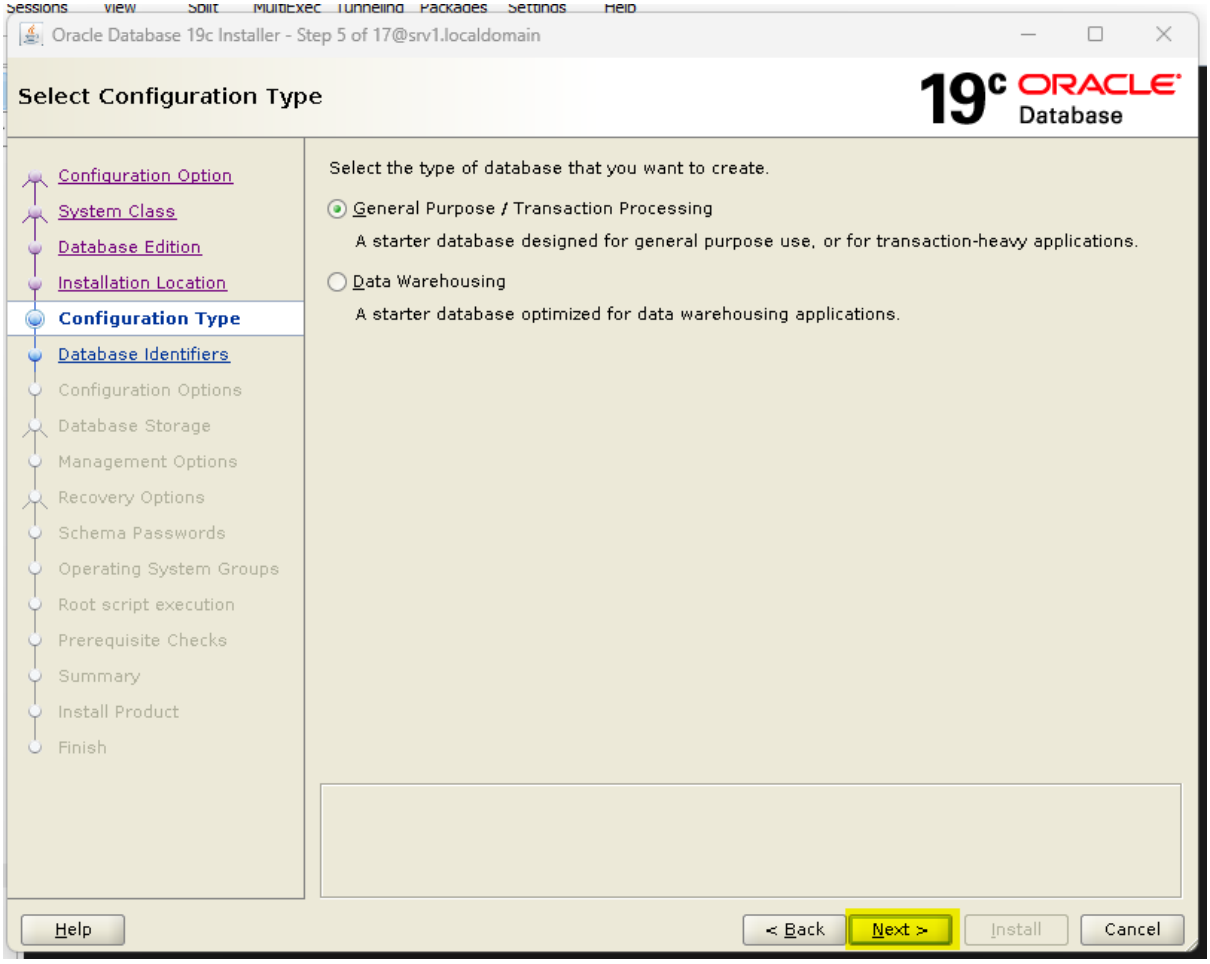
```
[oracle@srv1 ~]$ cd $ORACLE_HOME
[oracle@srv1 db_1]$ ./runInstaller
Launching Oracle Database Setup Wizard...
```

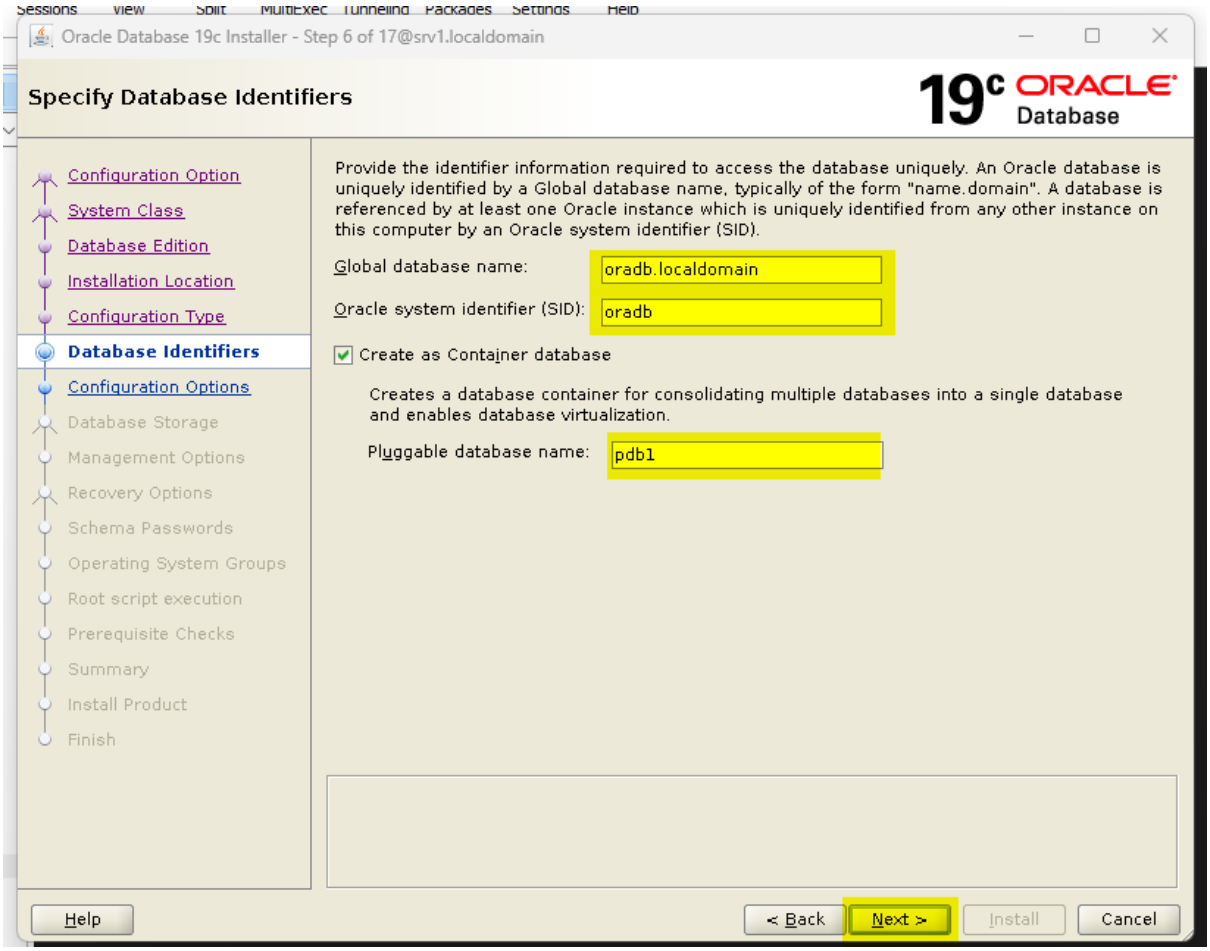

Oracle Database 19c Installer - Step 1 of 9@srv1.localdomain
Select Configuration Option
19c ORACLE Database
Configuration Option
Database Installation Options
Install Type
Typical Installation
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select any of the following install options.
Create and configure a single instance database.
This option creates a starter database.
Set Up Software Only
Note 1: For RAC install, do 'Set Up Software Only' and then execute DBCA (Database Configuration Assistant) from the oracle home.
Note 2: To upgrade an Oracle Database, do 'Set Up Software Only' and then execute DBUA (Database Upgrade Assistant) from the oracle home.
Help
< Back
Next >
Install
Cancel

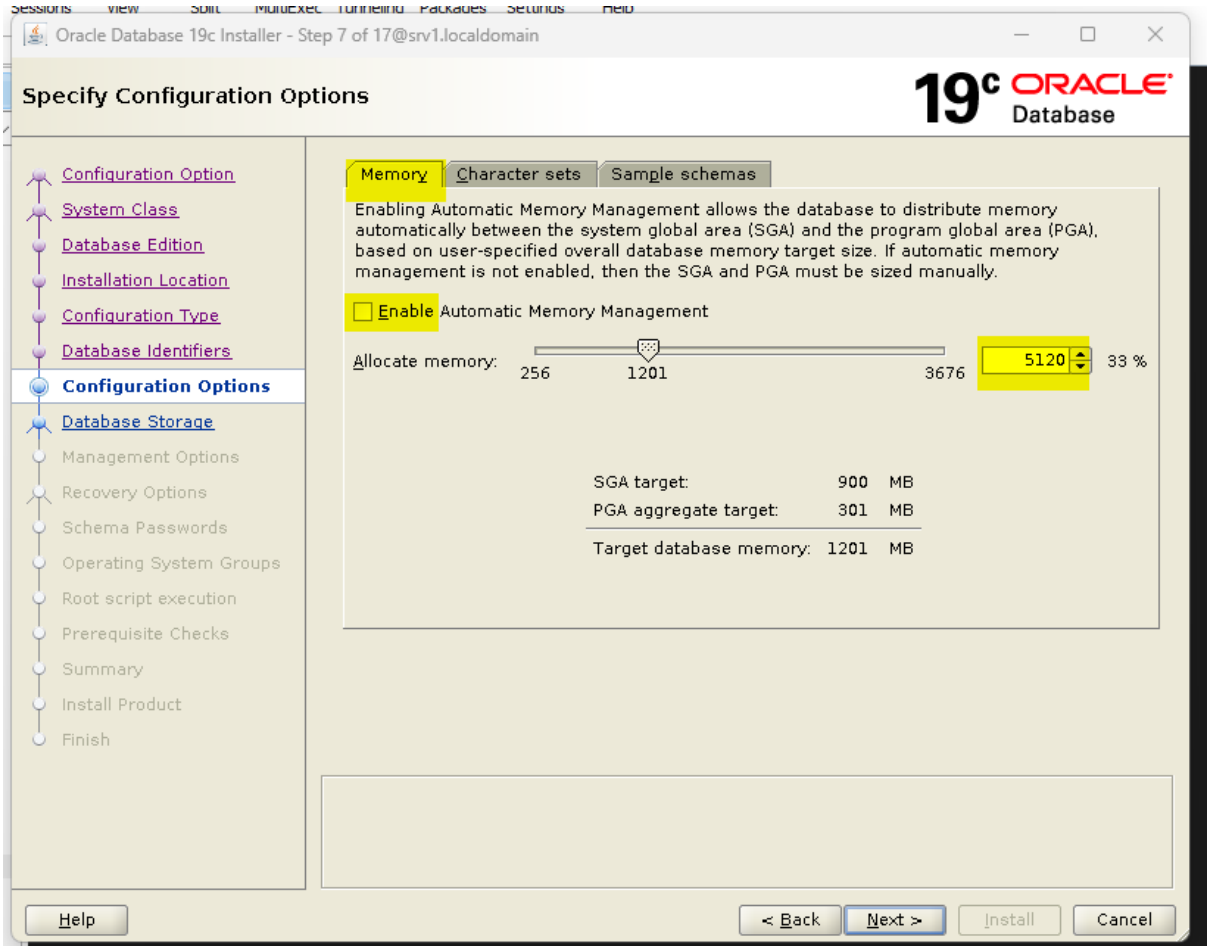

Oracle Database 19c Installer - Step 2 of 8@srv1.localdomain
Select System Class
19c ORACLE Database
Configuration Option
System Class
Typical Installation
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Desktop class
Choose this option if you are installing on a laptop or desktop class system. This option includes a starter database and allows minimal configuration.
Server class
Choose this option if you are installing on a server class system, which Oracle defines as a system used in a production data center. This option allows for more advanced configuration options.
Help
< Back
Next >
Install
Cancel

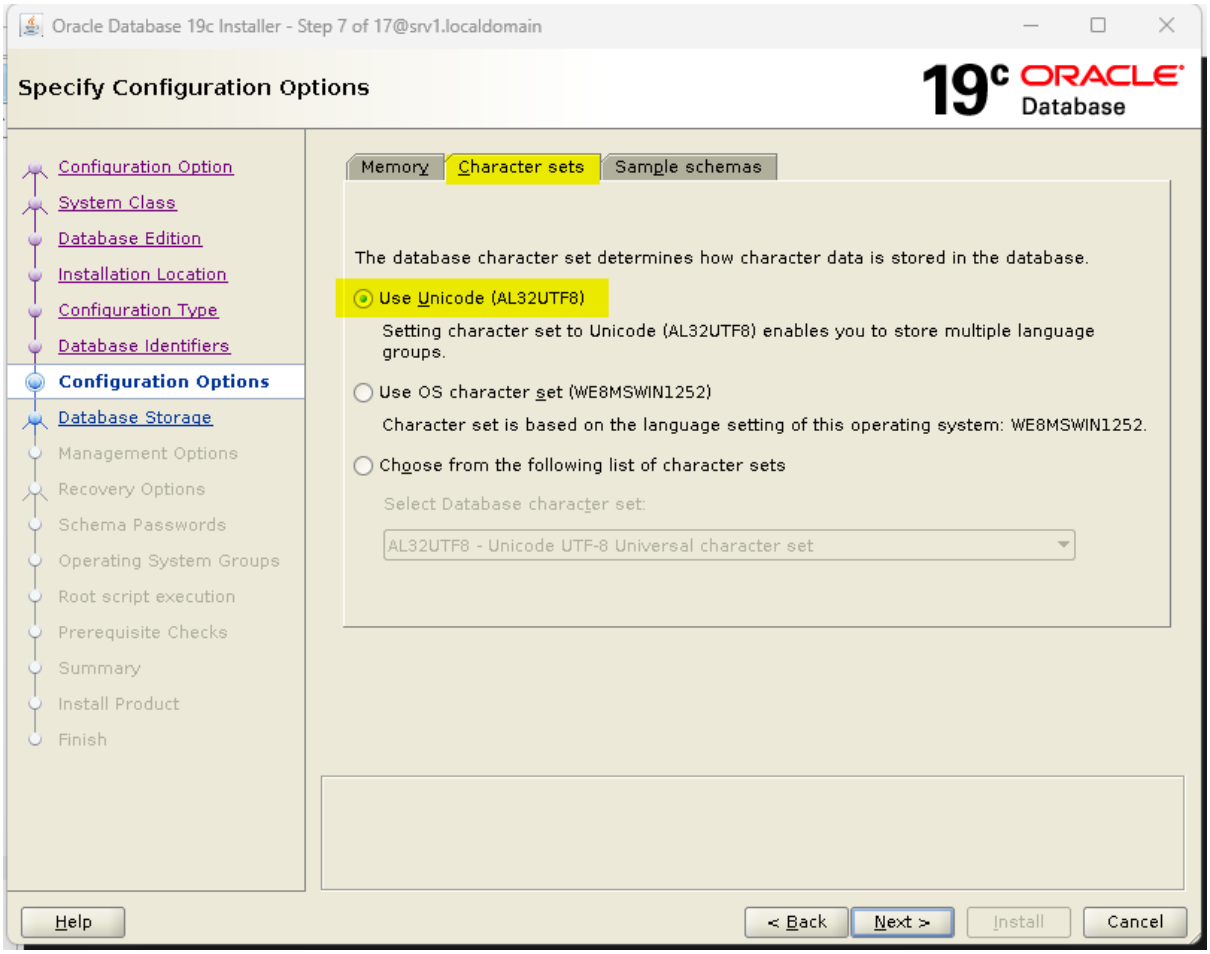

Oracle Database 19c Installer - Step 3 of 17@srv1.localdomain
Select Database Edition
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Which database edition do you want to install?
Enterprise Edition
Oracle Database 19c Enterprise Edition is a self-managing database that has the scalability, performance, high availability, and security features required to run the most demanding, mission-critical applications.
Standard Edition 2
Oracle Database 19c Standard Edition 2 is a full-featured data management solution ideally suited to the needs of medium-sized businesses.
Help
< Back
Next >
Install
Cancel

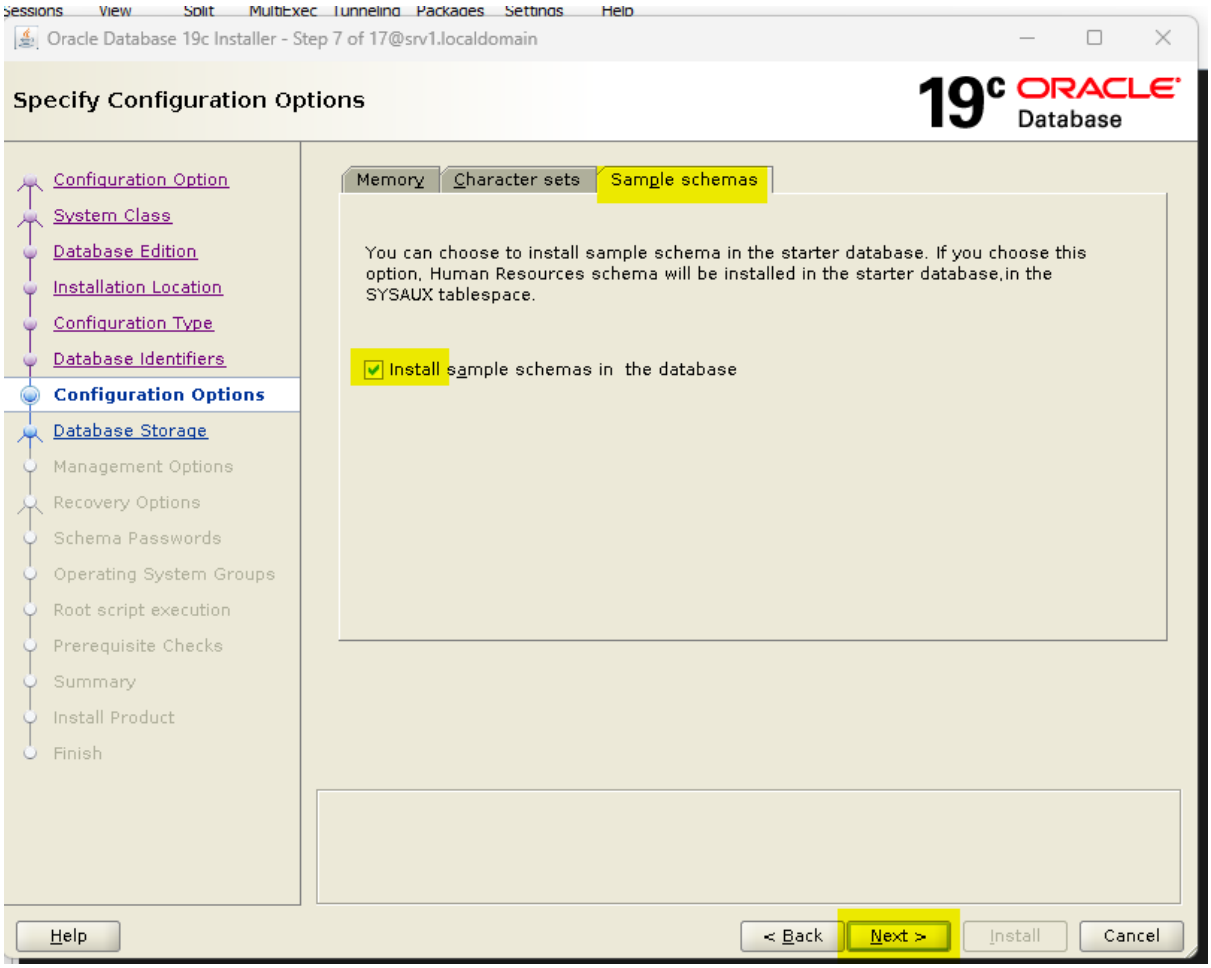

Oracle Database 19c Installer - Step 4 of 17@srv1.localdomain
Specify Installation Location
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Specify a path to place all Oracle software and configuration-related files installed by this installation owner. This location is the Oracle base directory for the installation owner.
Oracle base: /u01/app/oracle
Browse...
This software directory is the Oracle Database home directory.
Software location: /u01/app/oracle/product/19.0.0/db_1
Help
< Back
Next >
Install
Cancel

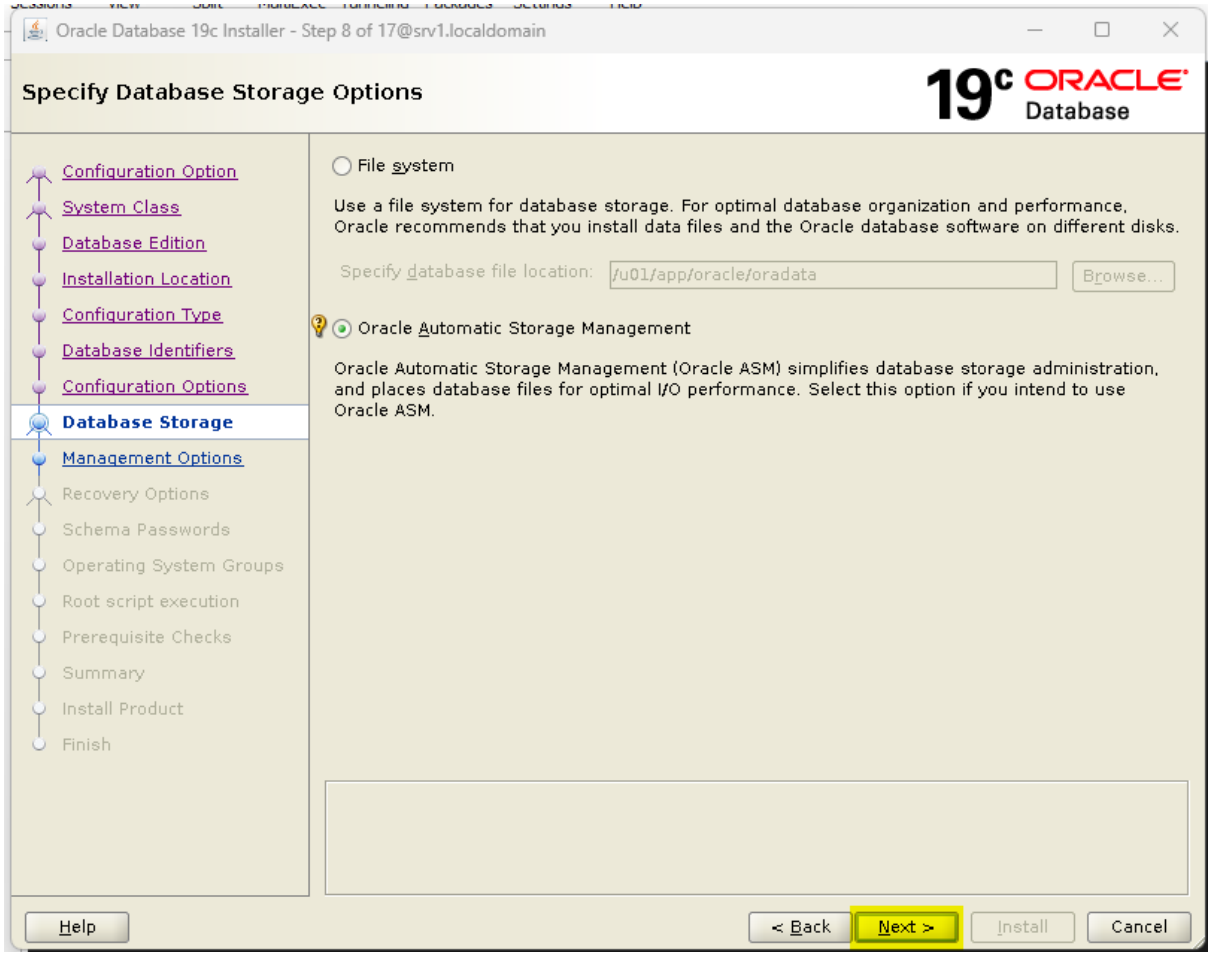

Sessions View Split MultiExec Tunneling Packages Settings Help
Oracle Database 19c Installer - Step 5 of 17@srv1.localdomain
Select Configuration Type
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select the type of database that you want to create.
General Purpose / Transaction Processing
A starter database designed for general purpose use, or for transaction-heavy applications.
Data Warehousing
A starter database optimized for data warehousing applications.
Help
< Back
Next >
Install
Cancel

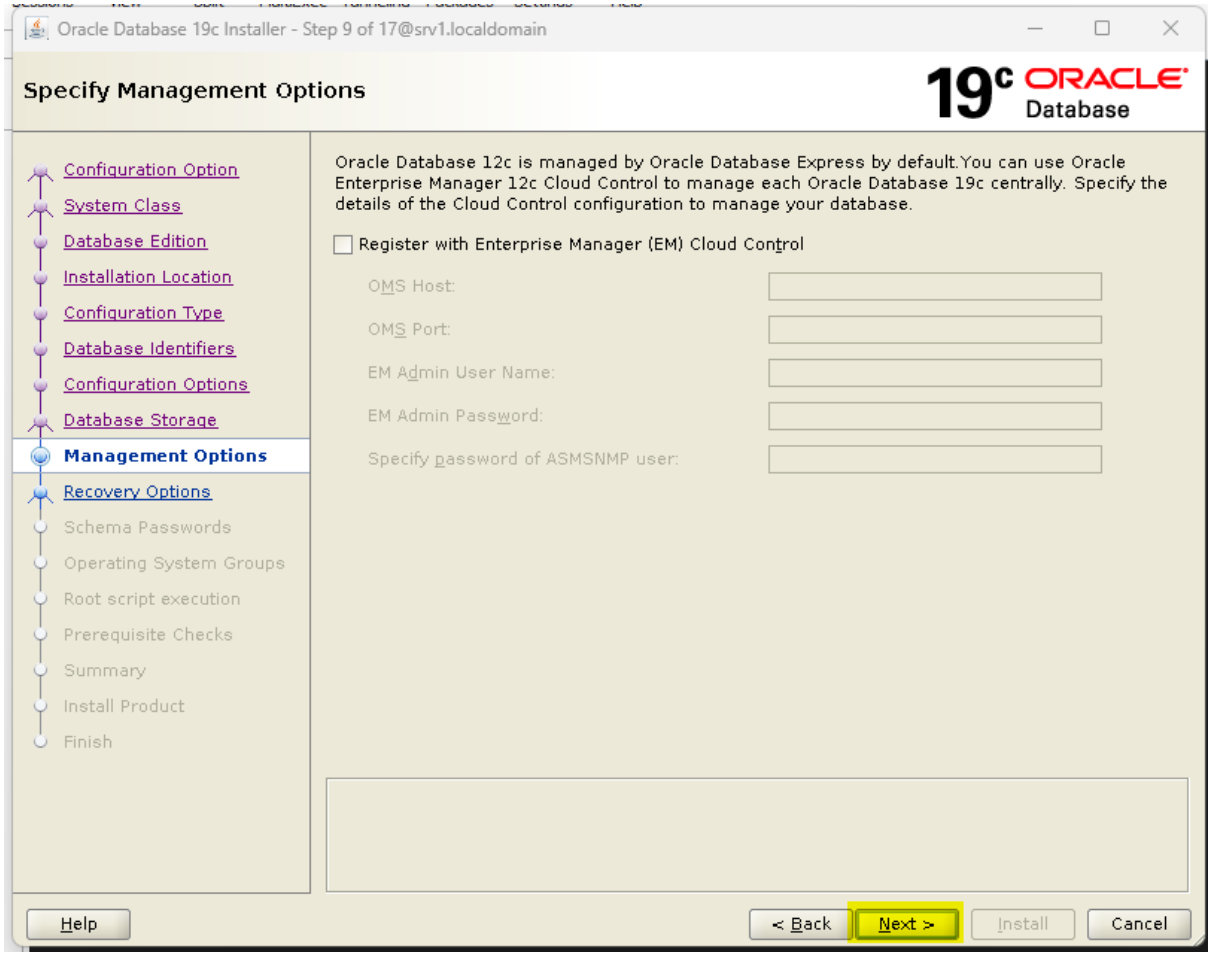

Sessions View Split MultiExec Tunneling Packages Settings Help
Oracle Database 19c Installer - Step 6 of 17@srv1.localdomain
Specify Database Identifiers
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Provide the identifier information required to access the database uniquely. An Oracle database is uniquely identified by a Global database name, typically of the form "name.domain". A database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this computer by an Oracle system identifier (SID).
Global database name:
oradb.localdomain
Oracle system identifier (SID):
oradb
Create as Container database
Creates a database container for consolidating multiple databases into a single database and enables database virtualization.
Pluggable database name:
pdb1
Help
< Back
Next >
Install
Cancel

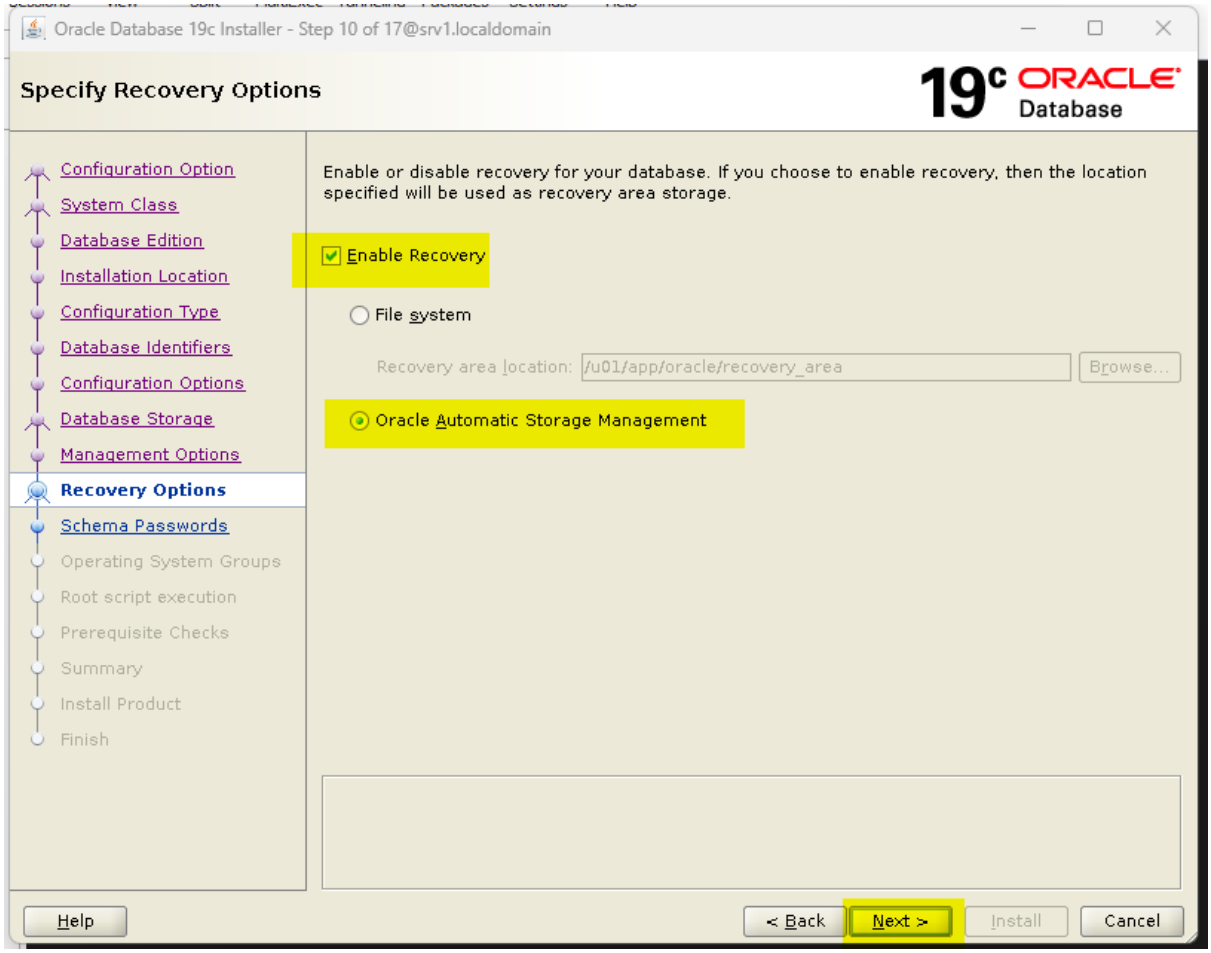

Oracle Database 19c Installer - Step 7 of 17@srv1.localdomain
Specify Configuration Options
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Memory
Character sets
Sample schemas
Enabling Automatic Memory Management allows the database to distribute memory automatically between the system global area (SGA) and the program global area (PGA), based on user-specified overall database memory target size. If automatic memory management is not enabled, then the SGA and PGA must be sized manually.
Enable Automatic Memory Management
Allocate memory:
256
1201
3676
5120
33 %
SGA target: 900 MB
PGA aggregate target: 301 MB
Target database memory: 1201 MB
Help
< Back
Next >
Install
Cancel

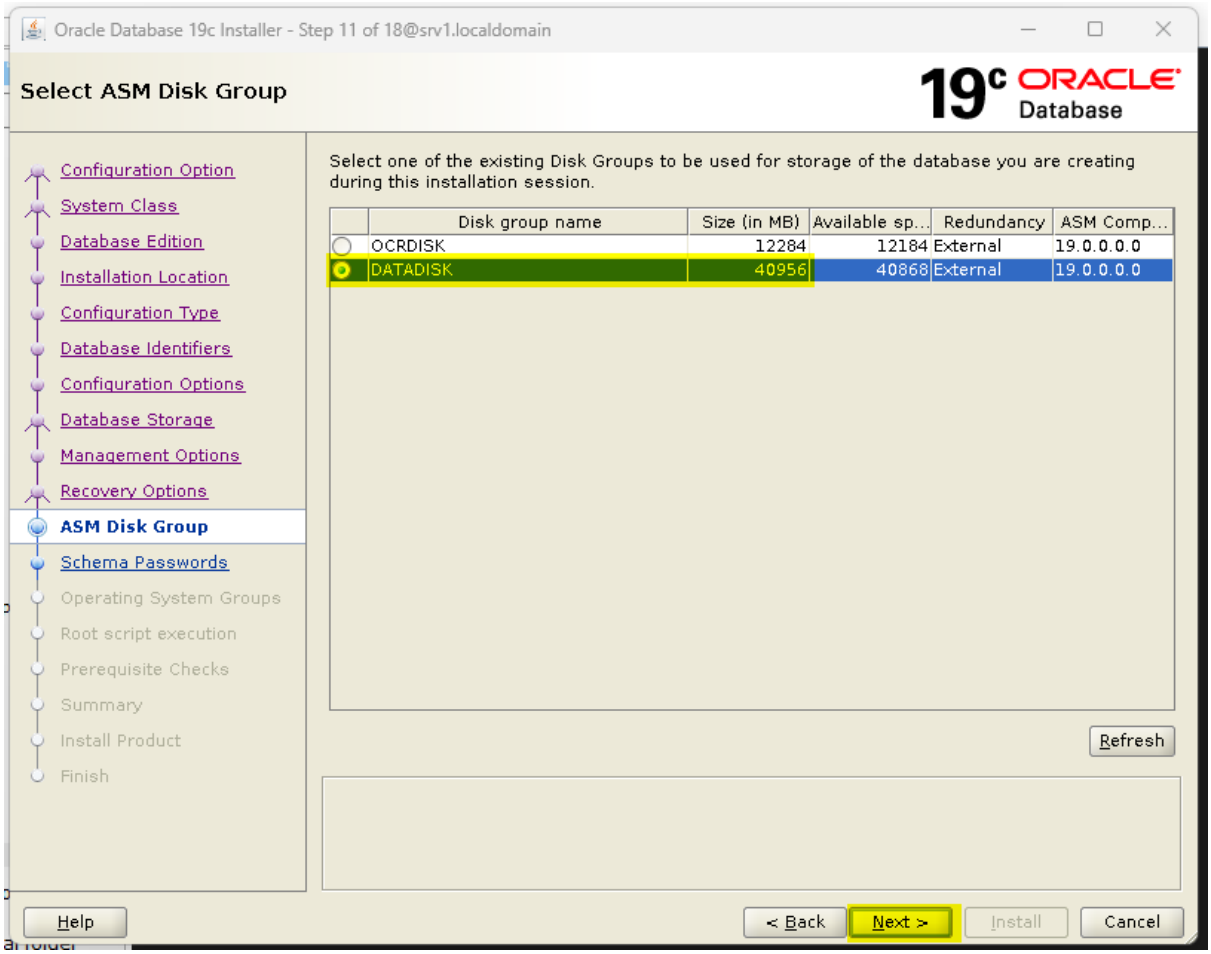

Oracle Database 19c Installer - Step 7 of 17@srv1.localdomain
Specify Configuration Options
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Memory
Character sets
Sample schemas
The database character set determines how character data is stored in the database.
Use Unicode (AL32UTF8)
Setting character set to Unicode (AL32UTF8) enables you to store multiple language groups.
Use OS character set (WE8MSWIN1252)
Character set is based on the language setting of this operating system: WE8MSWIN1252.
Choose from the following list of character sets
Select Database character set:
AL32UTF8 - Unicode UTF-8 Universal character set
Help
< Back
Next >
Install
Cancel

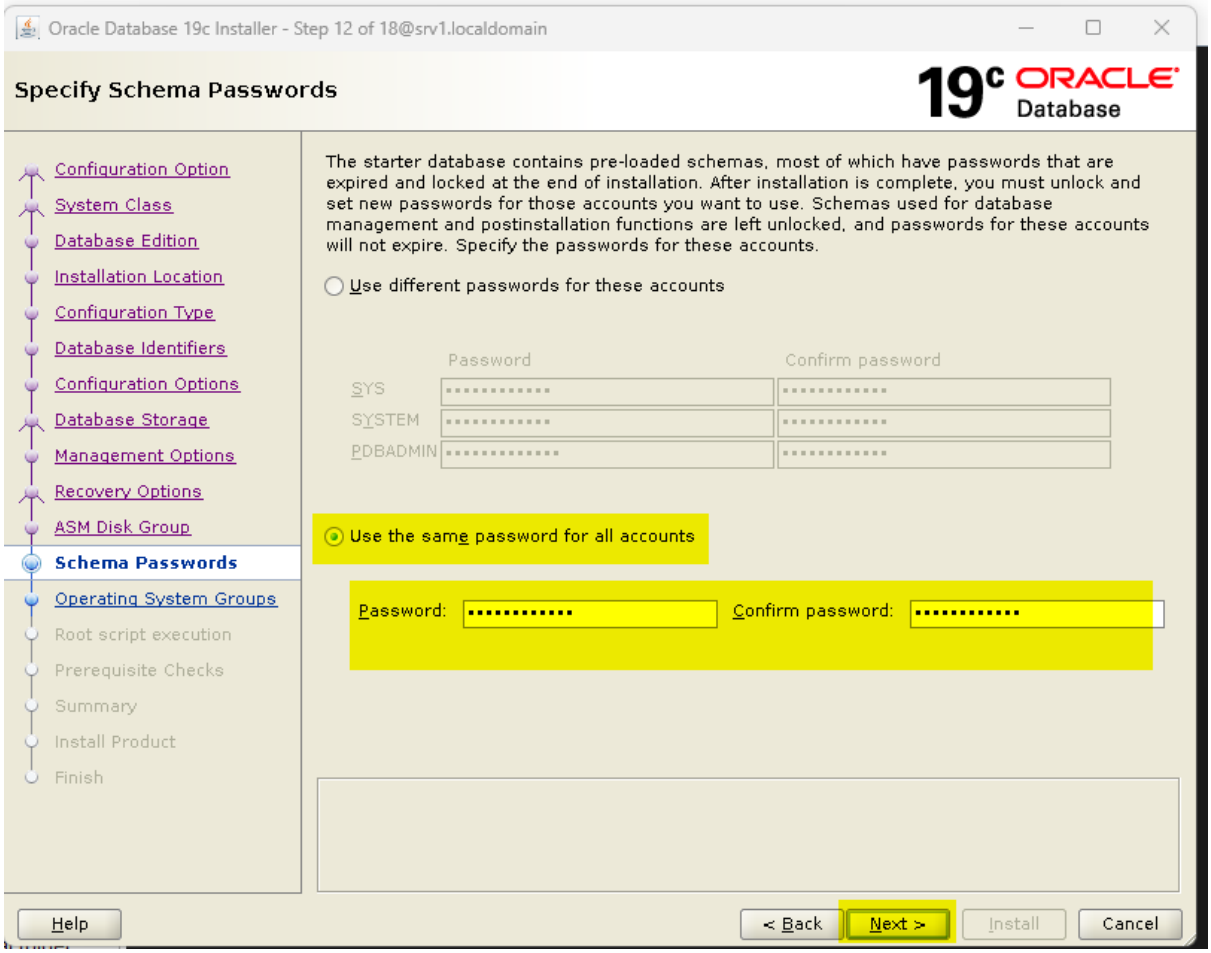

Sessions View Split MultiExec Tunneling Packages Settings Help
Oracle Database 19c Installer - Step 7 of 17@srv1.localdomain
Specify Configuration Options
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Memory
Character sets
Sample schemas
You can choose to install sample schema in the starter database. If you choose this option, Human Resources schema will be installed in the starter database,in the SYSAUX tablespace.
Install sample schemas in the database
Help
< Back
Next >
Install
Cancel


Oracle Database 19c Installer - Step 8 of 17@srv1.localdomain
Specify Database Storage Options
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
File system
Use a file system for database storage. For optimal database organization and performance, Oracle recommends that you install data files and the Oracle database software on different disks.
Specify database file location:
/u01/app/oracle/oradata
Browse...
Oracle Automatic Storage Management
Oracle Automatic Storage Management (Oracle ASM) simplifies database storage administration, and places database files for optimal I/O performance. Select this option if you intend to use Oracle ASM.
Help
< Back
Next >
Install
Cancel

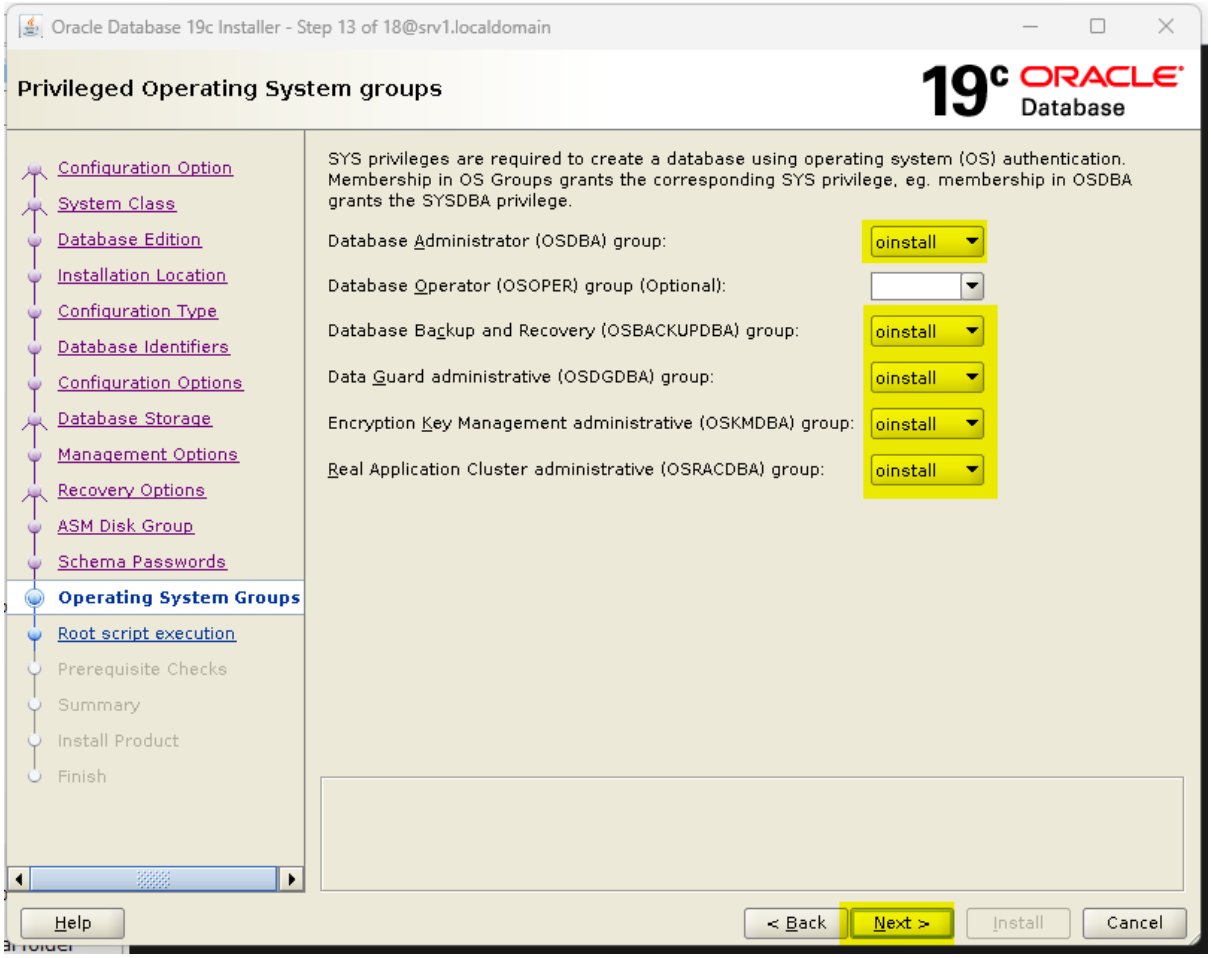

Oracle Database 19c Installer - Step 9 of 17@srv1.localdomain
Specify Management Options
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Oracle Database 12c is managed by Oracle Database Express by default.You can use Oracle Enterprise Manager 12c Cloud Control to manage each Oracle Database 19c centrally. Specify the details of the Cloud Control configuration to manage your database.
Register with Enterprise Manager (EM) Cloud Control
OMS Host:
OMS Port:
EM Admin User Name:
EM Admin Password:
Specify password of ASMSNMP user:
Help
< Back
Next >
Install
Cancel

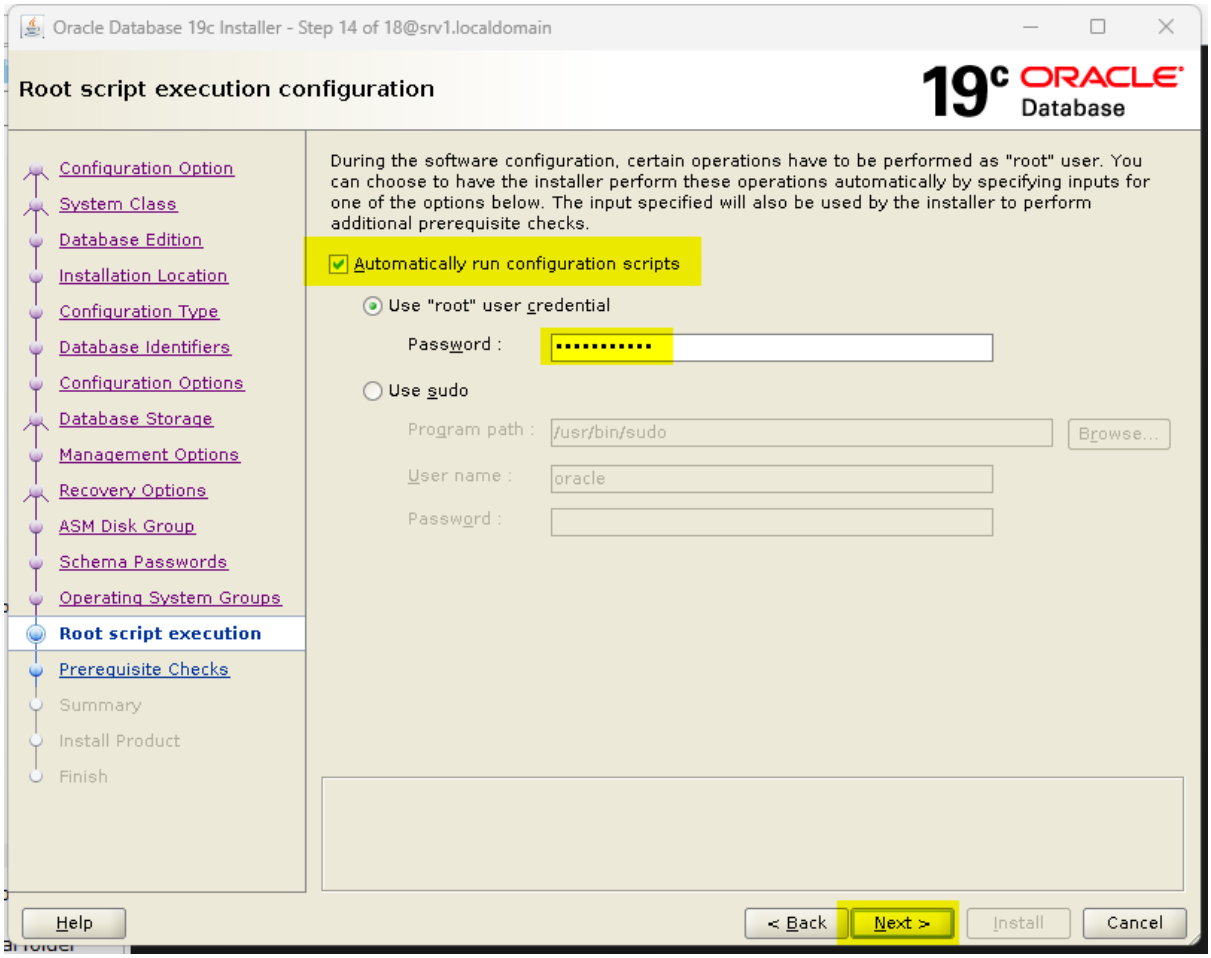

Oracle Database 19c Installer - Step 10 of 17@srv1.localdomain
Specify Recovery Options
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Enable or disable recovery for your database. If you choose to enable recovery, then the location specified will be used as recovery area storage.
Enable Recovery
File system
Recovery area location: /u01/app/oracle/recovery_area
Browse...
Oracle Automatic Storage Management
Help
< Back
Next >
Install
Cancel

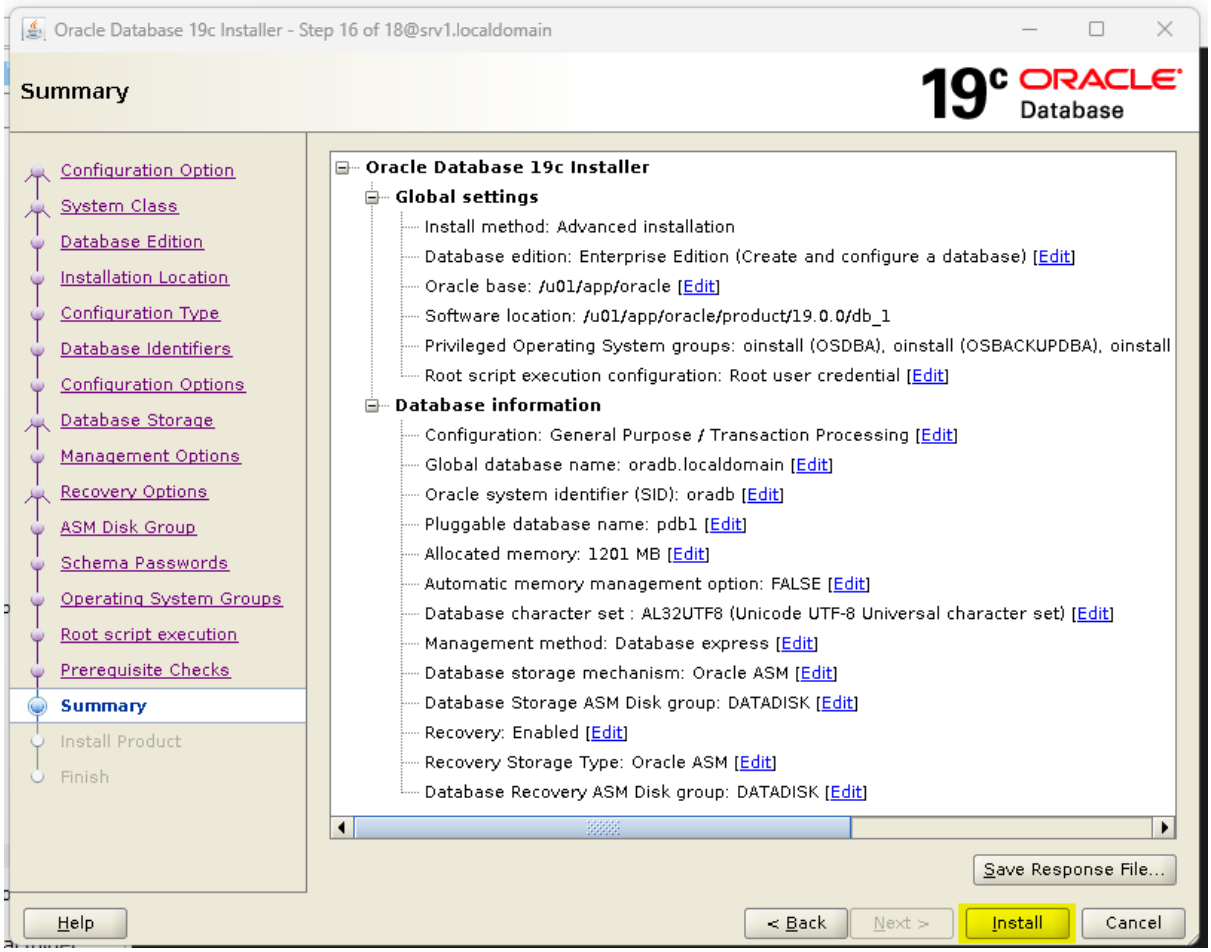

Oracle Database 19c Installer - Step 11 of 18@srv1.localdomain
Select ASM Disk Group
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
ASM Disk Group
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Select one of the existing Disk Groups to be used for storage of the database you are creating during this installation session.
Disk group name
Size (in MB)
Available sp...
Redundancy
ASM Comp...
OCRDISK
12284
12184
External
19.0.0.0.0
DATADISK
40956
40868
External
19.0.0.0.0
Refresh
Help
< Back
Next >
Install
Cancel

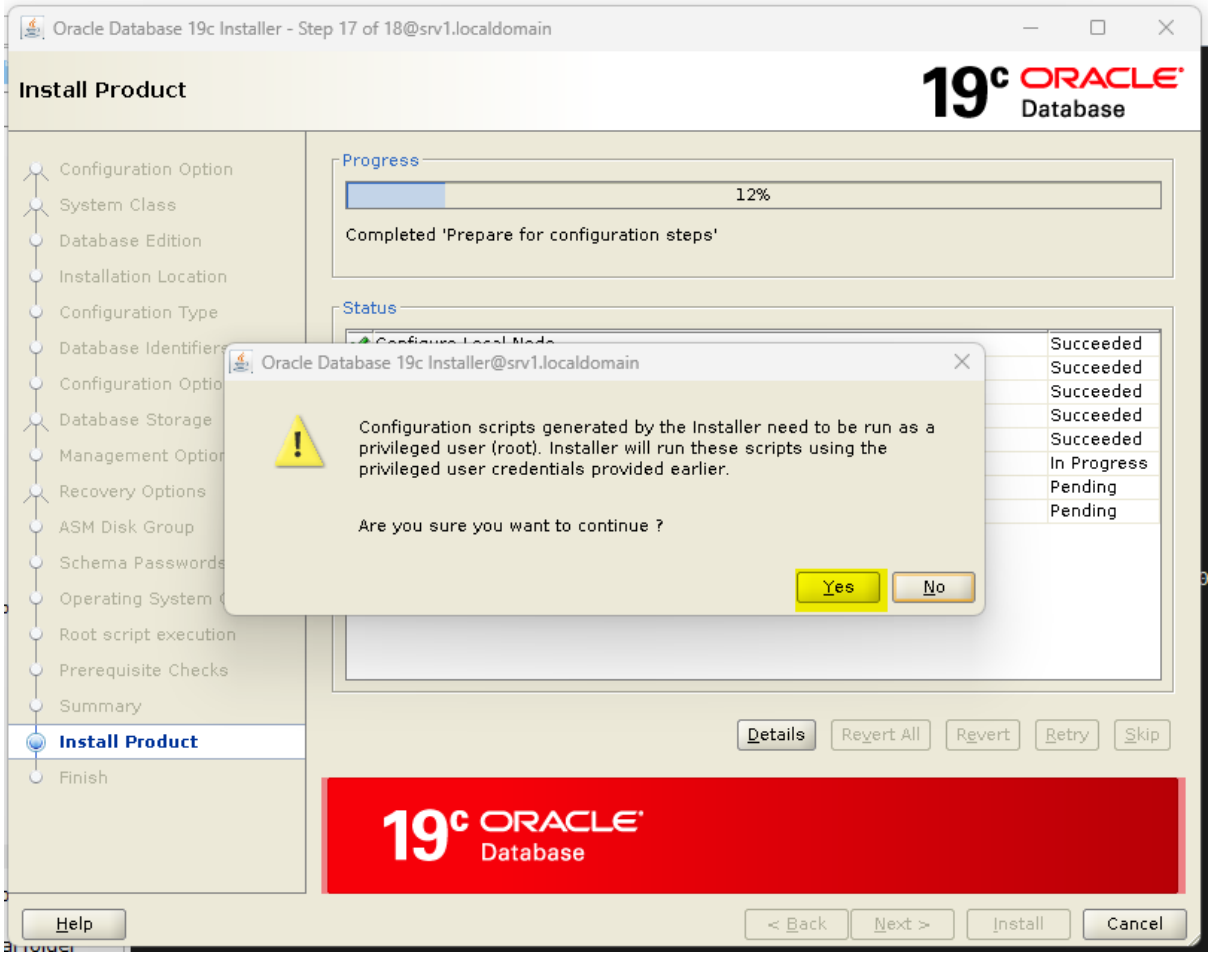


SYS, SYSTEM and PDBADMIN passwords are set to "OracleLab123".

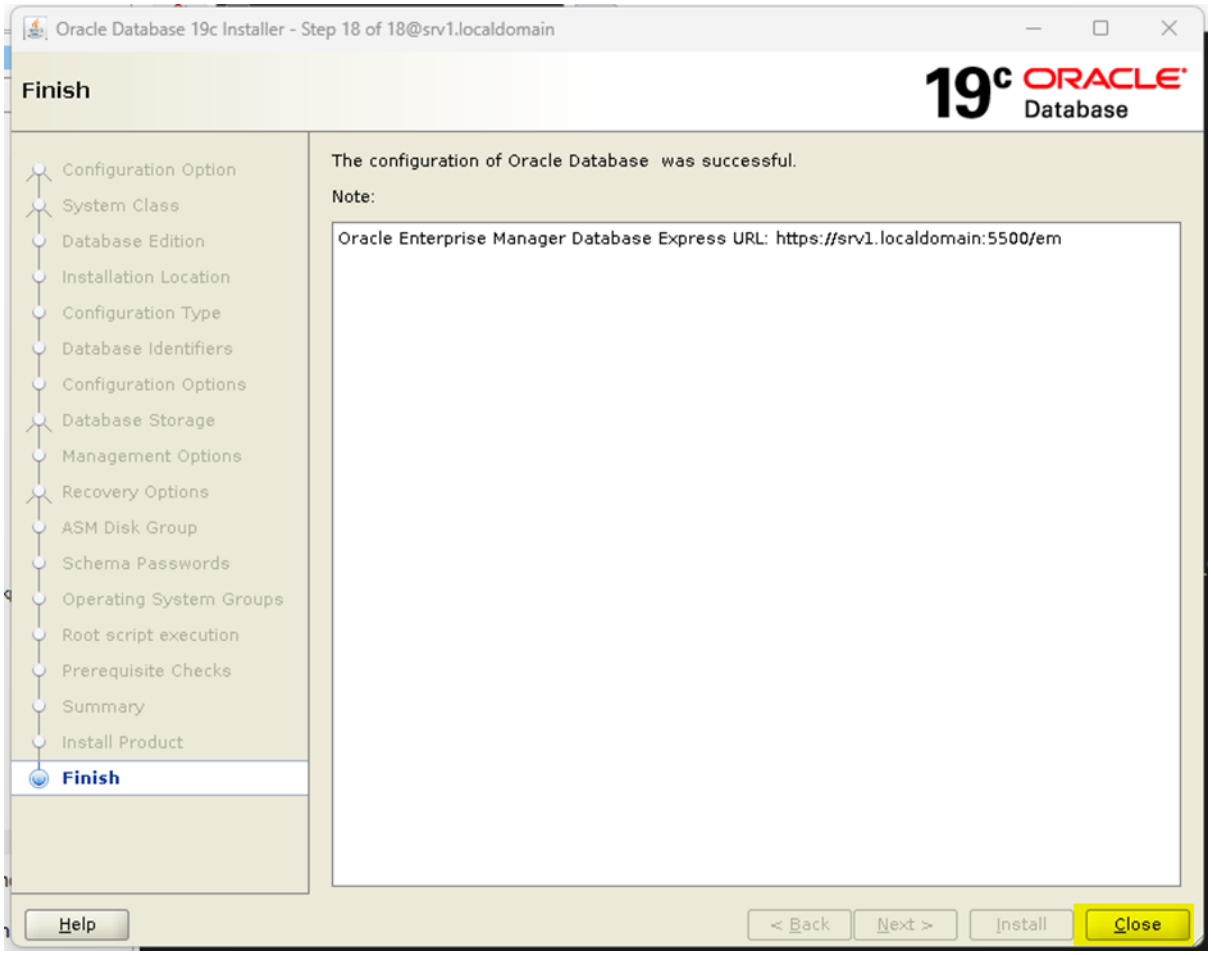

Oracle Database 19c Installer - Step 13 of 18@srv1.localdomain
Privileged Operating System groups
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
ASM Disk Group
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
SYS privileges are required to create a database using operating system (OS) authentication. Membership in OS Groups grants the corresponding SYS privilege, eg. membership in OSDBA grants the SYSDBA privilege.
Database Administrator (OSDBA) group: oinstall
Database Operator (OSOPER) group (Optional):
Database Backup and Recovery (OSBACKUPDBA) group: oinstall
Data Guard administrative (OSDGDBA) group: oinstall
Encryption Key Management administrative (OSKMDBA) group: oinstall
Real Application Cluster administrative (OSRACDBA) group: oinstall
Help
< Back
Next >
Install
Cancel


Oracle Database 19c Installer - Step 14 of 18@srv1.localdomain
Root script execution configuration
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
ASM Disk Group
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
During the software configuration, certain operations have to be performed as "root" user. You can choose to have the installer perform these operations automatically by specifying inputs for one of the options below. The input specified will also be used by the installer to perform additional prerequisite checks.
Automatically run configuration scripts
Use "root" user credential
Password :
Use sudo
Program path :
/usr/bin/sudo
Browse...
User name :
oracle
Password :
Help
< Back
Next >
Install
Cancel


Oracle Database 19c Installer - Step 16 of 18@srv1.localdomain
Summary
19c ORACLE Database
Configuration Option
System Class
Database Edition
Installation Location
Configuration Type
Database Identifiers
Configuration Options
Database Storage
Management Options
Recovery Options
ASM Disk Group
Schema Passwords
Operating System Groups
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Oracle Database 19c Installer
Global settings
Install method: Advanced installation
Database edition: Enterprise Edition (Create and configure a database) [Edit]
Oracle base: /u01/app/oracle [Edit]
Software location: /u01/app/oracle/product/19.0.0/db_1
Privileged Operating System groups: oinstall (OSDBA), oinstall (OSBACKUPDBA), oinstall
Root script execution configuration: Root user credential [Edit]
Database information
Configuration: General Purpose / Transaction Processing [Edit]
Global database name: oradb.localdomain [Edit]
Oracle system identifier (SID): oradb [Edit]
Pluggable database name: pdb1 [Edit]
Allocated memory: 1201 MB [Edit]
Automatic memory management option: FALSE [Edit]
Database character set : AL32UTF8 (Unicode UTF-8 Universal character set) [Edit]
Management method: Database express [Edit]
Database storage mechanism: Oracle ASM [Edit]
Database Storage ASM Disk group: DATADISK [Edit]
Recovery: Enabled [Edit]
Recovery Storage Type: Oracle ASM [Edit]
Database Recovery ASM Disk group: DATADISK [Edit]
Save Response File...
Help
< Back
Next >
Install
Cancel



The installation process takes more than 45 mins.



Testing the Configuration

Login to the VM as "oracle" and check the DB status:

```
$ srvctl status database -d oradb
```

```
[oracle@srv1 db_1]$ srvctl status database -d oradb
Database is running.
[oracle@srv1 db_1]$
```

Check the listeners:

```
$ lsnrctl status
```

```
[oracle@srv1 ~]$ lsnrctl status

LSNRCTL for Linux: Version 19.0.0.0.0 - Production on 28-NOV-2023 03:10:08

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (ADDRESS=(PROTOCOL=tcp)(HOST=)(PORT=1521))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 19.0.0.0.0 - Production
Start Date                28-NOV-2023 01:44:12
Uptime                    0 days 1 hr. 25 min. 55 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /u01/app/19.0.0/grid/network/admin/listener.ora
Listener Log File         /u01/app/grid/diag/tnslsnr/srv1/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=srv1.localdomain)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=srv1.localdomain)(PORT=5500))(Security=(my_wallet_directory=/u01/app/oracle/admin/oradb/xdb_wallet))(Pre
sentation=HTTP)(Session=RAW))
Services Summary...
Service "+ASM" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
Service "+ASM_DATADISK" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
Service "+ASM_OCRDISK" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
Service "0b2b202ae1af41dce063b501a8c06c80.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
Service "86b637b62fdf7a65e053f706e80a27ca.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
Service "oradb.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
Service "oradbXDB.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
Service "pdb1.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
The command completed successfully
[oracle@srv1 ~]$
```

$ lsnrctl services

```
[oracle@srv1 ~]$ lsnrctl services

LSNRCTL for Linux: Version 19.0.0.0.0 - Production on 28-NOV-2023 03:10:49

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (ADDRESS=(PROTOCOL=tcp)(HOST=)(PORT=1521))
Services Summary...
Service "+ASM" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "+ASM_DATADISK" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "+ASM_OCRDISK" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "0b2b202ae1af41dce063b501a8c06c80.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "86b637b62fdf7a65e053f706e80a27ca.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "oradb.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "oradbXDB.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "D000" established:0 refused:0 current:0 max:1022 state:ready
         DISPATCHER <machine: srv1.localdomain, pid: 16566>
         (ADDRESS=(PROTOCOL=tcp)(HOST=srv1.localdomain)(PORT=29073))
Service "pdb1.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
The command completed successfully
[oracle@srv1 ~]$
```

Then use SQLPlus:

```
$ sqlplus / as sysdba
```

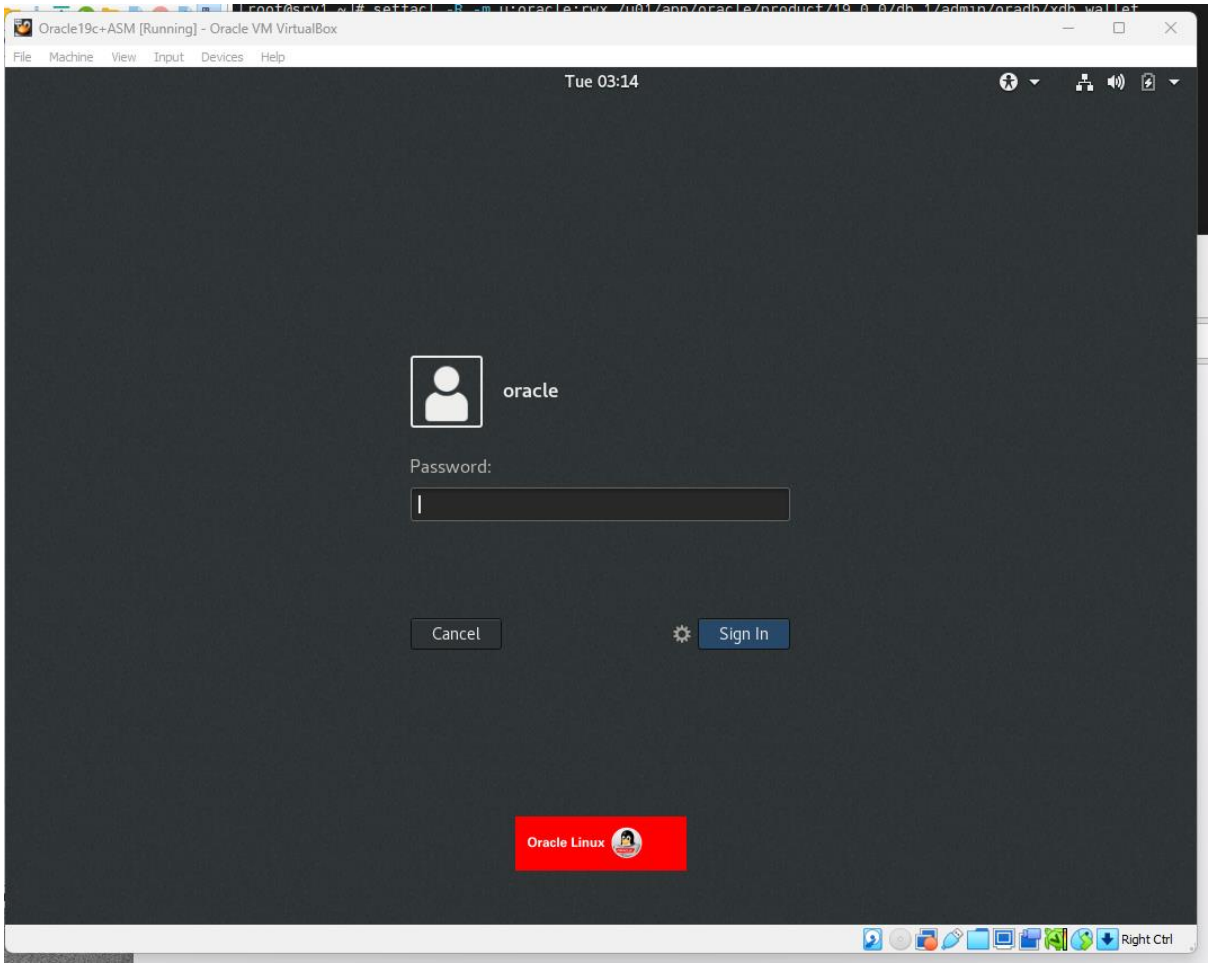
```
SQL> show user
```

```
[oracle@srv1 db_1]$ sqlplus / as sysdba

SQL*Plus: Release 19.0.0.0.0 - Production on Tue Nov 28 02:53:44 2023
Version 19.3.0.0.0

Copyright (c) 1982, 2019, Oracle.  All rights reserved.


Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.3.0.0.0

SQL> show user
USER is "SYS"
```

```
SQL > select db_unique_name, open_mode, database_role from v$database;
```

```
SQL> select db_unique_name, open_mode, database_role from v$database;

DB_UNIQUE_NAME                 OPEN_MODE            DATABASE_ROLE
------------------------------ -------------------- ----------------
oradb                          READ WRITE           PRIMARY

SQL>
```

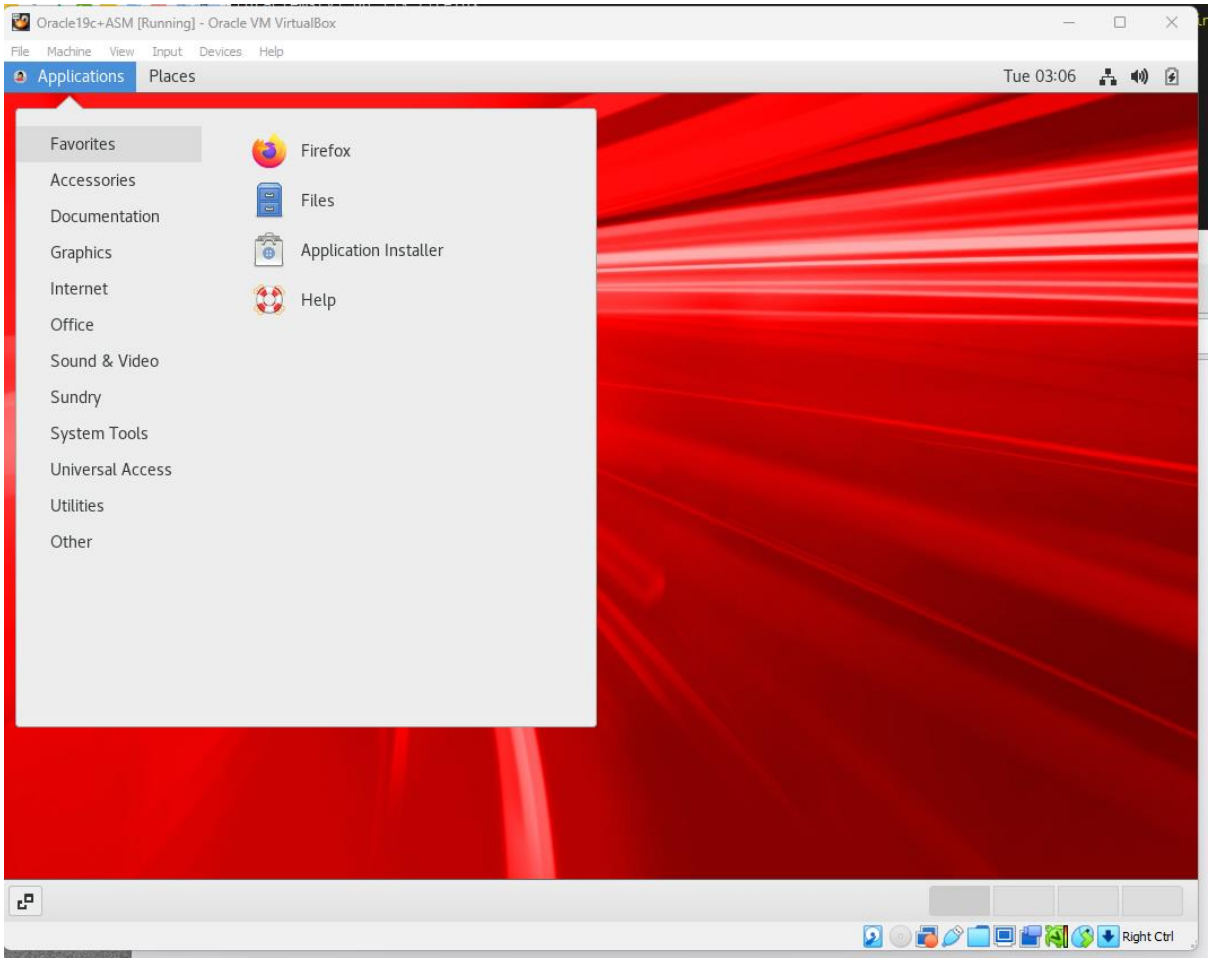
Using the VirtualBox screen, login to the VM as "oracle" and start Firefox:




```
$ lsnrctl services
```

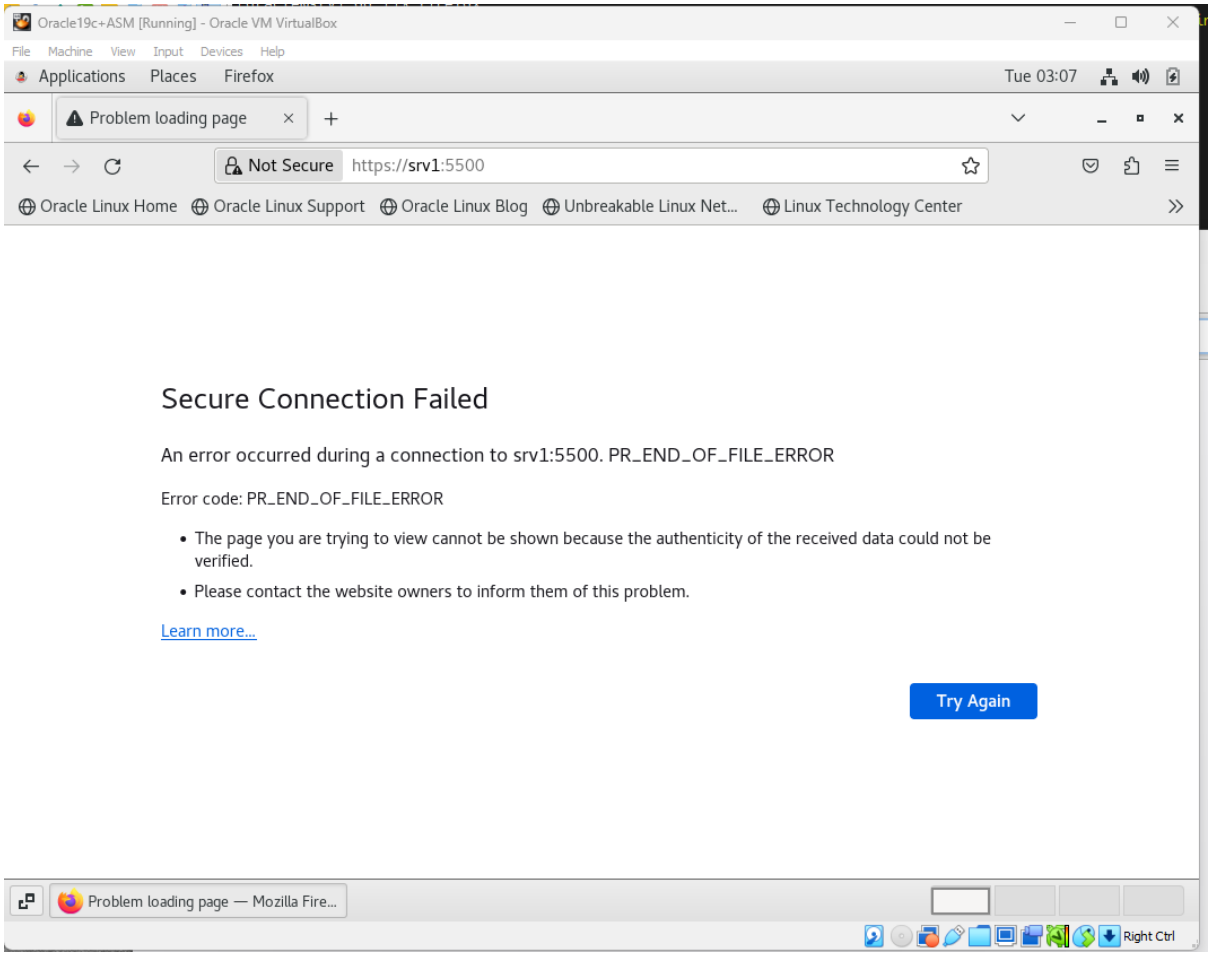
```
[oracle@srv1 ~]$ lsnrctl services

LSNRCTL for Linux: Version 19.0.0.0.0 - Production on 28-NOV-2023 11:47:42

Copyright (c) 1991, 2019, Oracle.  All rights reserved.

Connecting to (ADDRESS=(PROTOCOL=tcp)(HOST=)(PORT=1521))
Services Summary...
Service "+ASM" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "+ASM_DATADISK" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "+ASM_OCRDISK" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "0b2b202ae1af41dce063b501a8c06c80.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "86b637b62fdf7a65e053f706e80a27ca.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "oradb.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
Service "oradbXDB.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "D000" established:0 refused:0 current:0 max:1022 state:ready
         DISPATCHER <machine: srv1.localdomain, pid: 4401>
         (ADDRESS=(PROTOCOL=tcp)(HOST=srv1.localdomain)(PORT=9393))
Service "pdb1.localdomain" has 1 instance(s).
  Instance "oradb", status READY, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0 state:ready
         LOCAL SERVER
The command completed successfully
[oracle@srv1 ~]$
```

We see that XDB connection is named "srv1.localdomain".



When you try to login to Oracle Enterprise Manager Express, you will get an error:

https://srv1.localdomain:5500/em

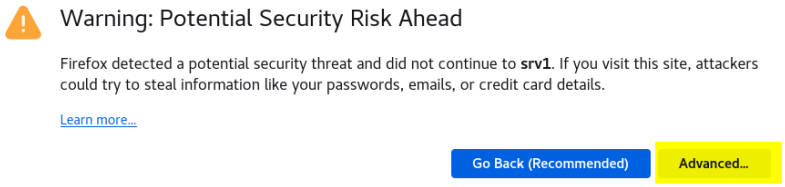


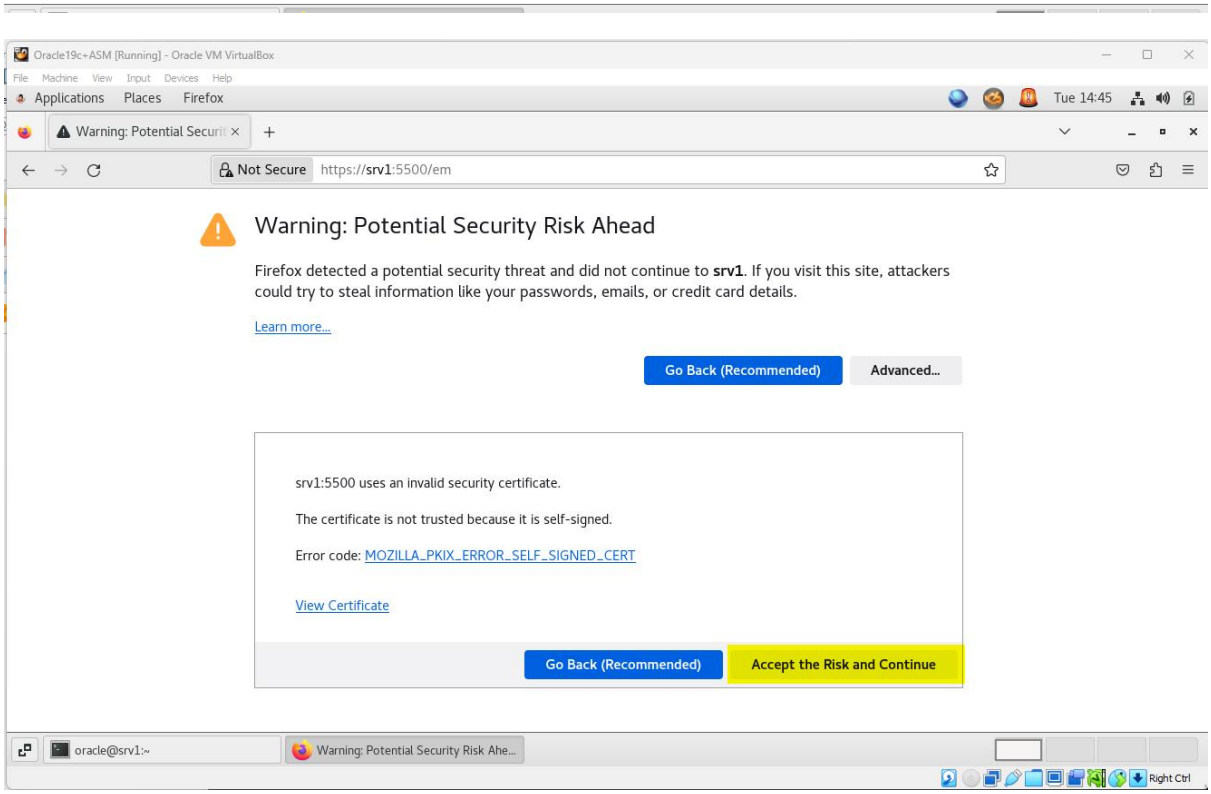
Then, login to the VM as "root" and run the following command to grant permission on the XDB wallet to the oracle user:

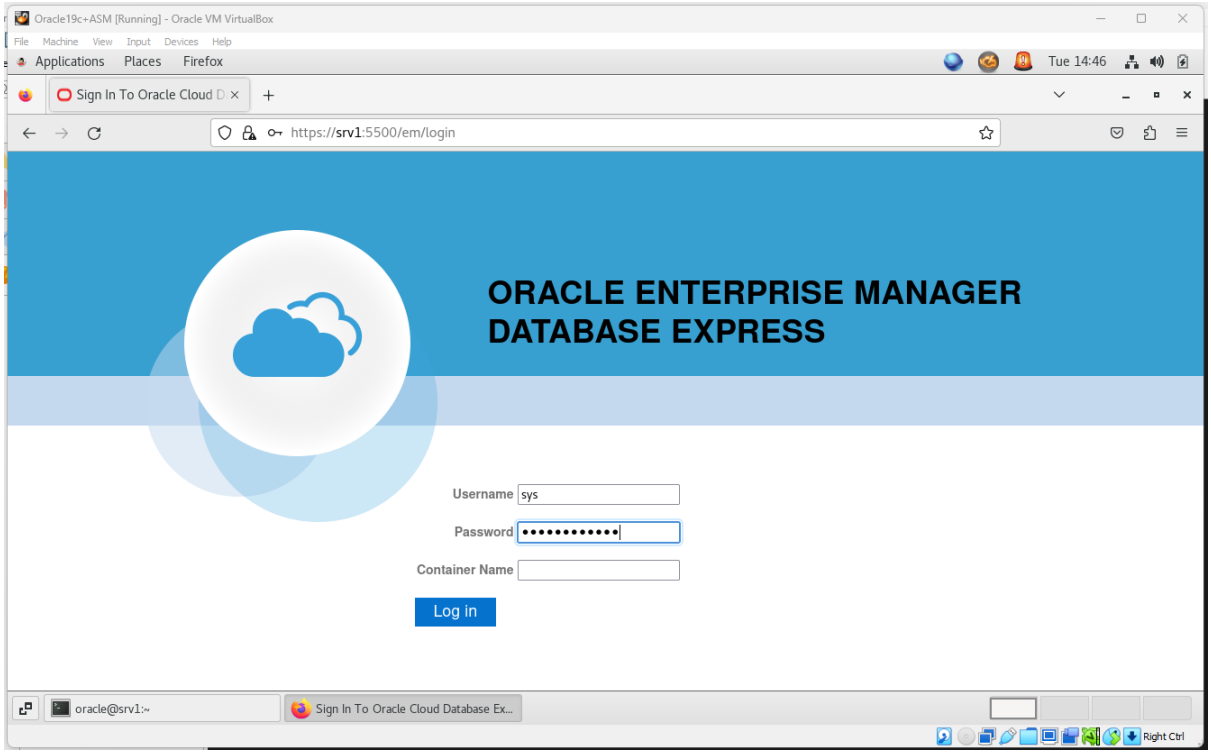
```
# setfacl -R -m u:oracle:rwx
/u01/app/oracle/product/19.0.0/db_1/admin/oradb/xdb_wallet
```

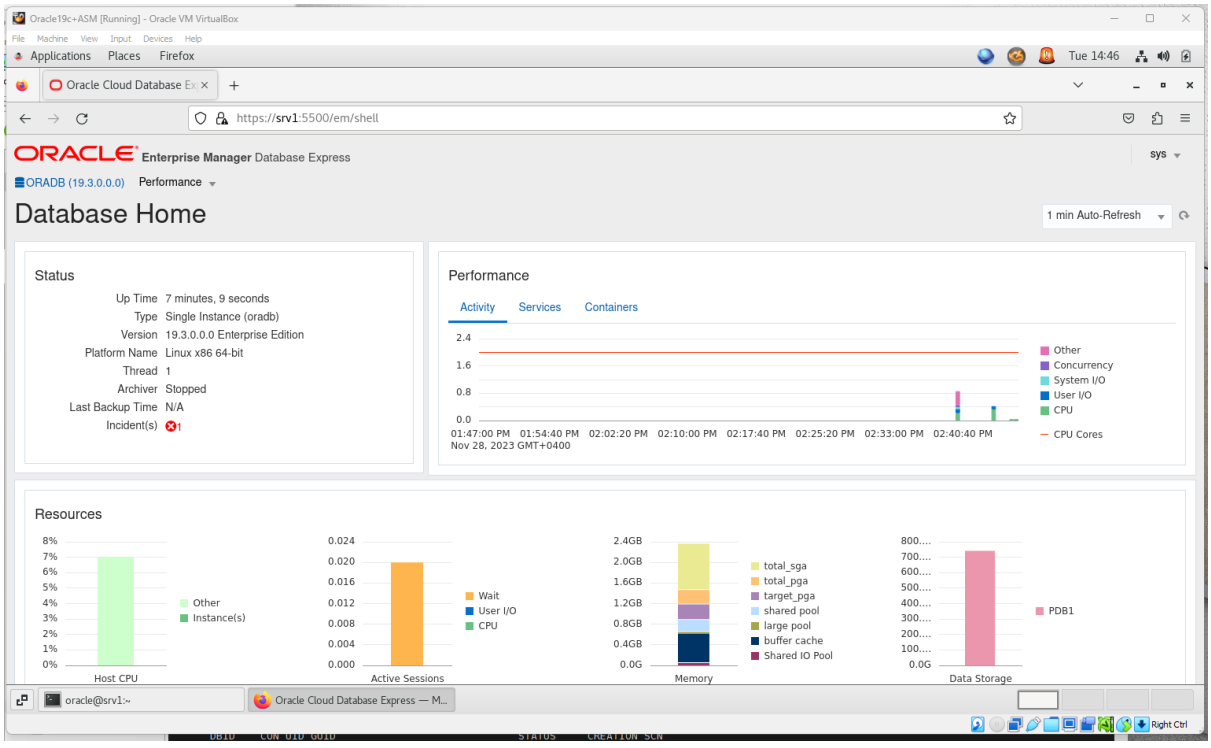
Try the browser again as "oracle" user:


Oracle19c+ASM [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Firefox
Tue 14:45
Warning: Potential Securit
Not Secure https://srv1:5500/em


Warning: Potential Security Risk Ahead
Firefox detected a potential security threat and did not continue to srv1. If you visit this site, attackers could try to steal information like your passwords, emails, or credit card details.
Learn more...
Go Back (Recommended)
Advanced...


Oracle19c+ASM [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places Firefox
Tue 14:45
Warning: Potential Securit
Not Secure https://srv1:5500/em
Warning: Potential Security Risk Ahead
Firefox detected a potential security threat and did not continue to srv1. If you visit this site, attackers could try to steal information like your passwords, emails, or credit card details.
Learn more...
Go Back (Recommended)
Advanced...
srv1:5500 uses an invalid security certificate.
The certificate is not trusted because it is self-signed.
Error code: MOZILLA_PKIX_ERROR_SELF_SIGNED_CERT
View Certificate
Go Back (Recommended)
Accept the Risk and Continue
oracle@srv1:~
Warning: Potential Security Risk Ahe...
Right Ctrl





https://docs.oracle.com/en/database/oracle/oracle-database/tutorial-access-cdb/index.html?opt-release-19c

Optionally, you can install Firefox browser as "root":

```
# yum install firefox
```

```
[root@srv1 ~]# yum install firefox
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package firefox.x86_64 0:68.5.0-2.0.1.el7_7 will be updated
---> Package firefox.x86_64 0:115.4.0-1.0.1.el7_9 will be an update
--> Processing Dependency: nspr >= 4.35 for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: nss >= 3.90 for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libnss3.so(NSS_3.45)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libnss3.so(NSS_3.47)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libnss3.so(NSS_3.52)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libnss3.so(NSS_3.55)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libnss3.so(NSS_3.58)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libnss3.so(NSS_3.79)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Processing Dependency: libssl3.so(NSS_3.80)(64bit) for package: firefox-115.4.0-1.0.1.el7_9.x86_64
--> Running transaction check
---> Package nspr.x86_64 0:4.21.0-1.el7 will be updated
---> Package nspr.x86_64 0:4.35.0-1.el7_9 will be an update
---> Package nss.x86_64 0:3.44.0-7.el7_7 will be updated
--> Processing Dependency: nss = 3.44.0-7.el7_7 for package: nss-sysinit-3.44.0-7.el7_7.x86_64
--> Processing Dependency: nss(x86-64) = 3.44.0-7.el7_7 for package: nss-tools-3.44.0-7.el7_7.x86_64
---> Package nss.x86_64 0:3.90.0-2.el7_9 will be an update
--> Processing Dependency: nss-softokn(x86-64) >= 3.90.0-1 for package: nss-3.90.0-2.el7_9.x86_64
--> Processing Dependency: nss-util >= 3.90.0-1 for package: nss-3.90.0-2.el7_9.x86_64
--> Processing Dependency: libnssutil3.so(NSSUTIL_3.59)(64bit) for package: nss-3.90.0-2.el7_9.x86_64
--> Processing Dependency: libnssutil3.so(NSSUTIL_3.82)(64bit) for package: nss-3.90.0-2.el7_9.x86_64
--> Running transaction check
---> Package nss-softokn.x86_64 0:3.44.0-8.0.1.el7_7 will be updated
```

Then, using Mobaxterm, login as "oracle" and launch the Firefox browser:

```
$ firefox
```