Oracle Database 11gR2 Installation

Single Instance Oracle Database 11gR2 (11.2.0.4) Installation on RedHat 6.9 using File System.
These installations are for testing purposes only.

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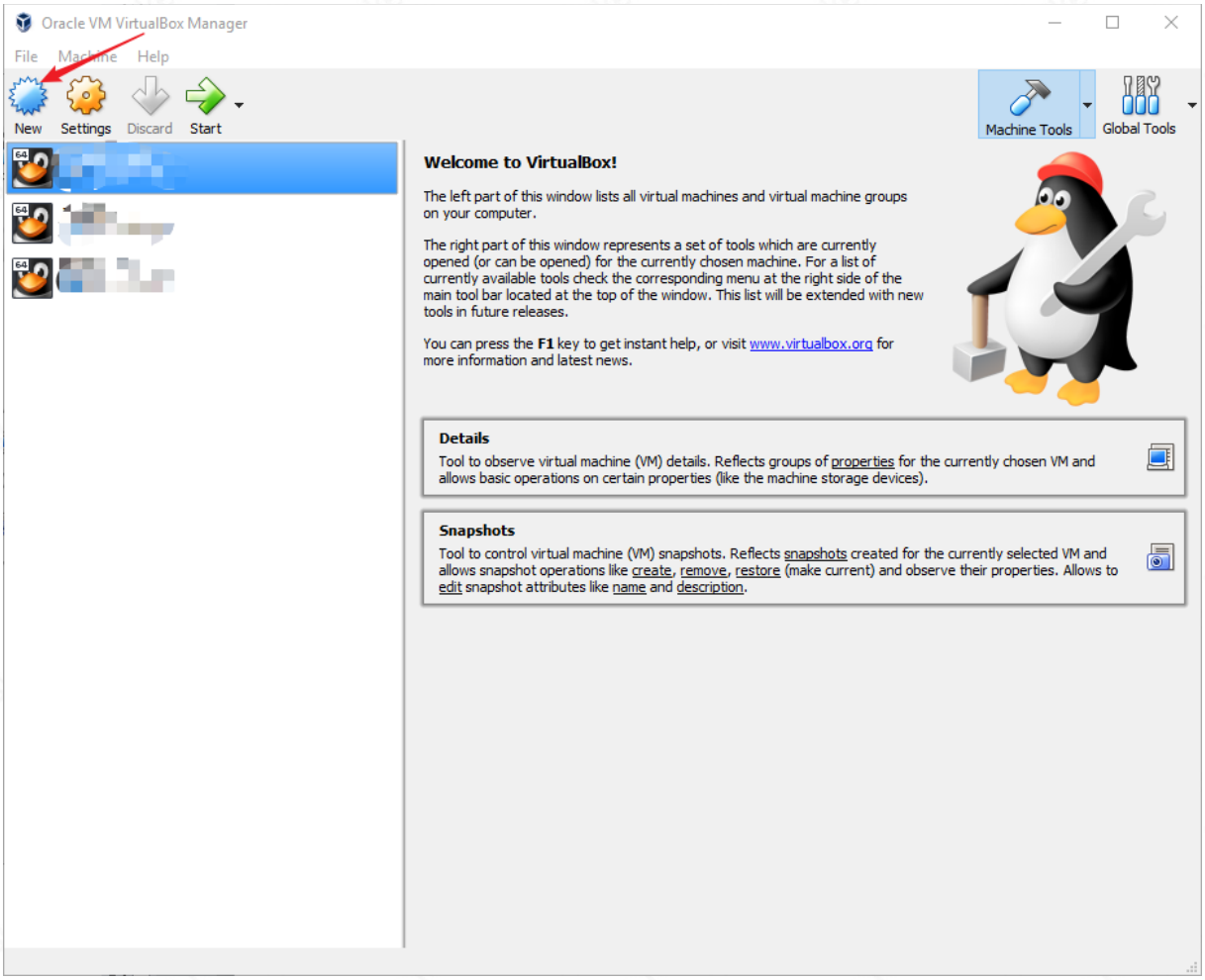
1. REQUIRED SOFTWARE

Hypervisor	Oracle VirtualBox 5.2.6
Terminal Emulator	Putty v0.63
X11 Display Server	Xming 6.9.0.31
Linux Image	rhel-server-6.9-x86_64-dvd.iso
Oracle Software	p13390677_112040_Linux-x86-64_1of7.zip p13390677_112040_Linux-x86-64_2of7.zip

2. CREATING A NEW VIRTUAL MACHINE

Run VirtualBox software and click "New"



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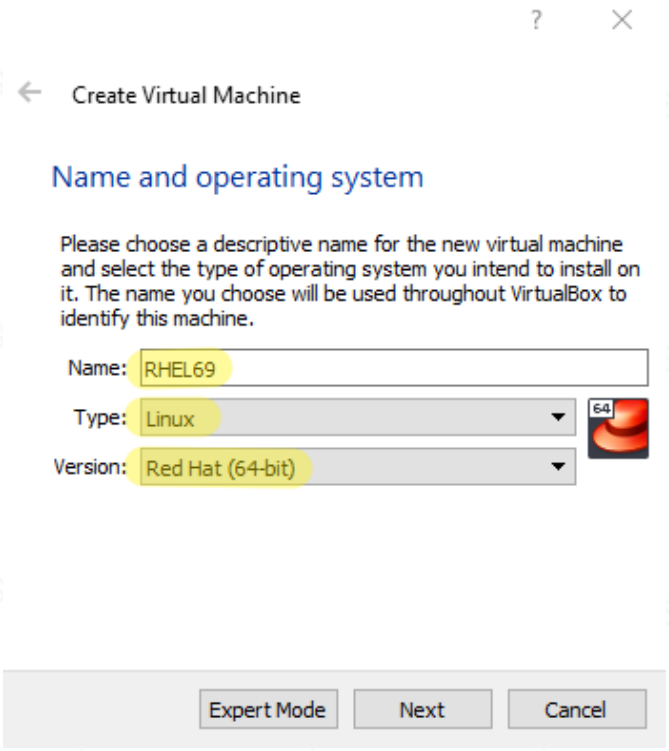
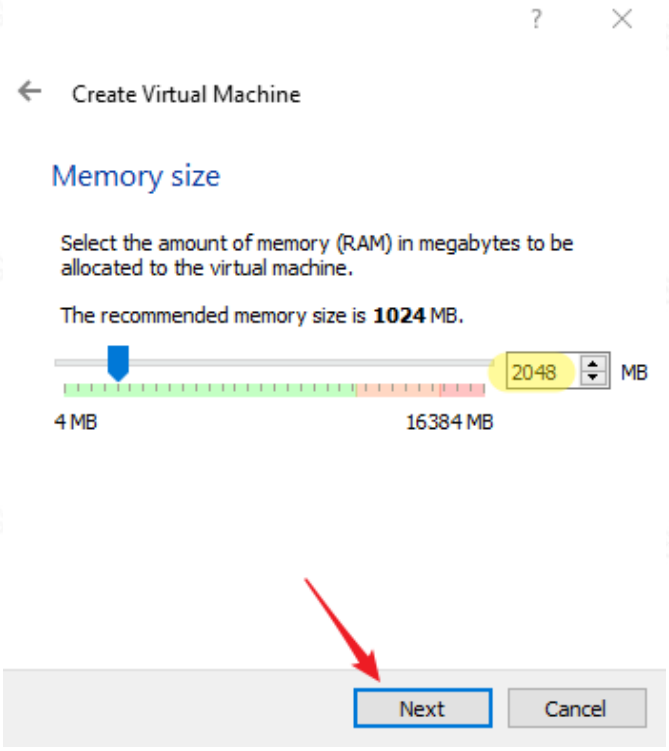
Give some name, select as follows and click "Next"



Arrange the total memory and click "Next"



Select "Create a virtual hard disk now" and click "Create"

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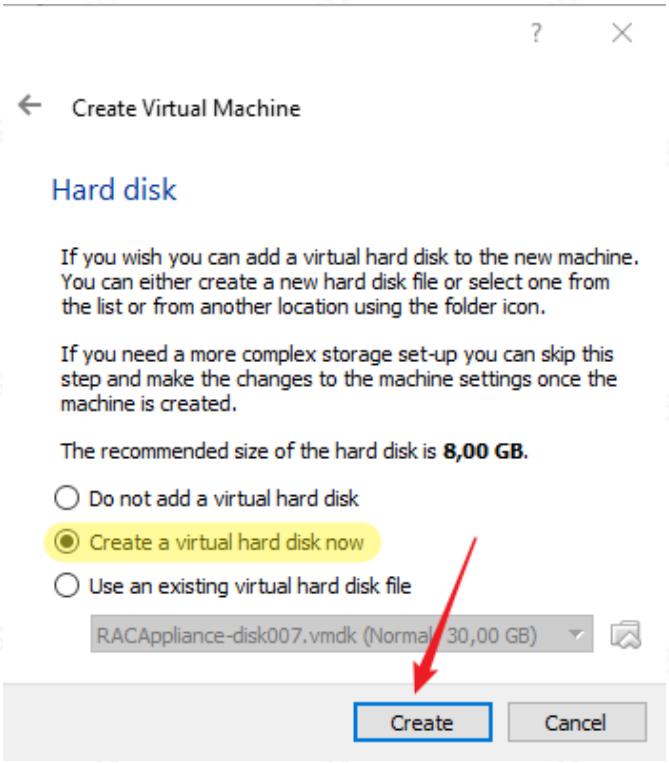
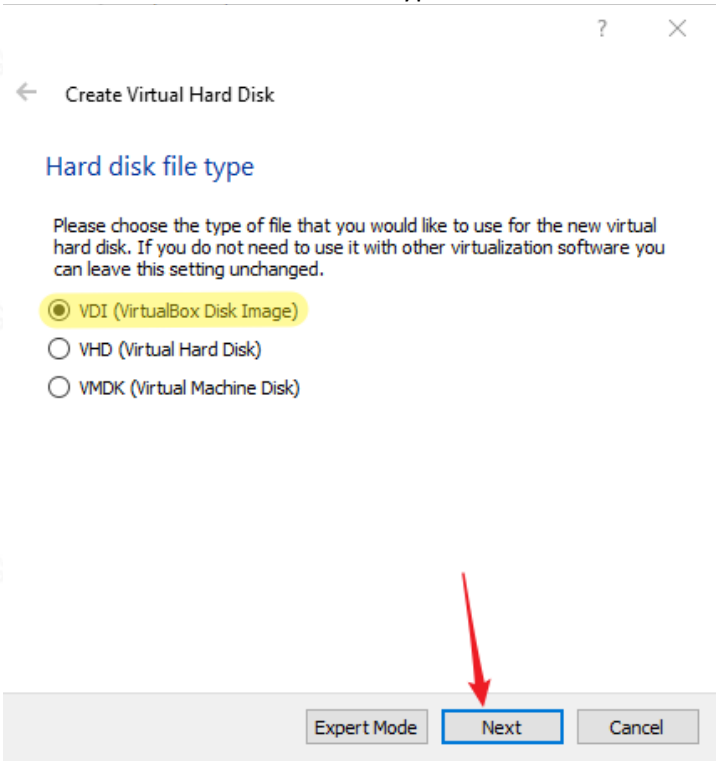


Select "VDI" as the hard disk file type and click "Next"



Select "Dynamically allocated" not to waste space on the host server

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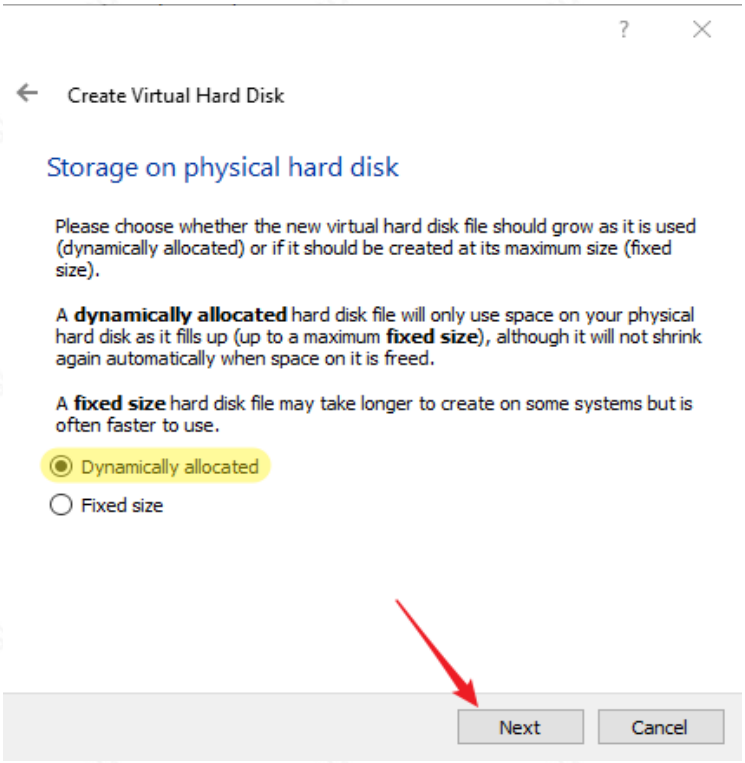
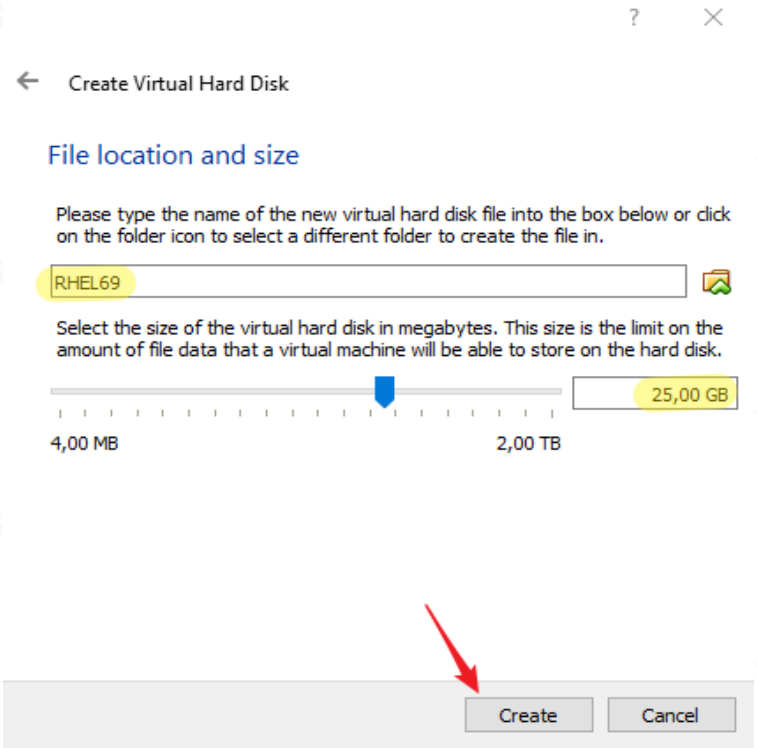


For a single instance Oracle database test server, 25GB of disk space is more than enough even if we are planning to use "File System" for datafiles instead of ASM.



Start the server

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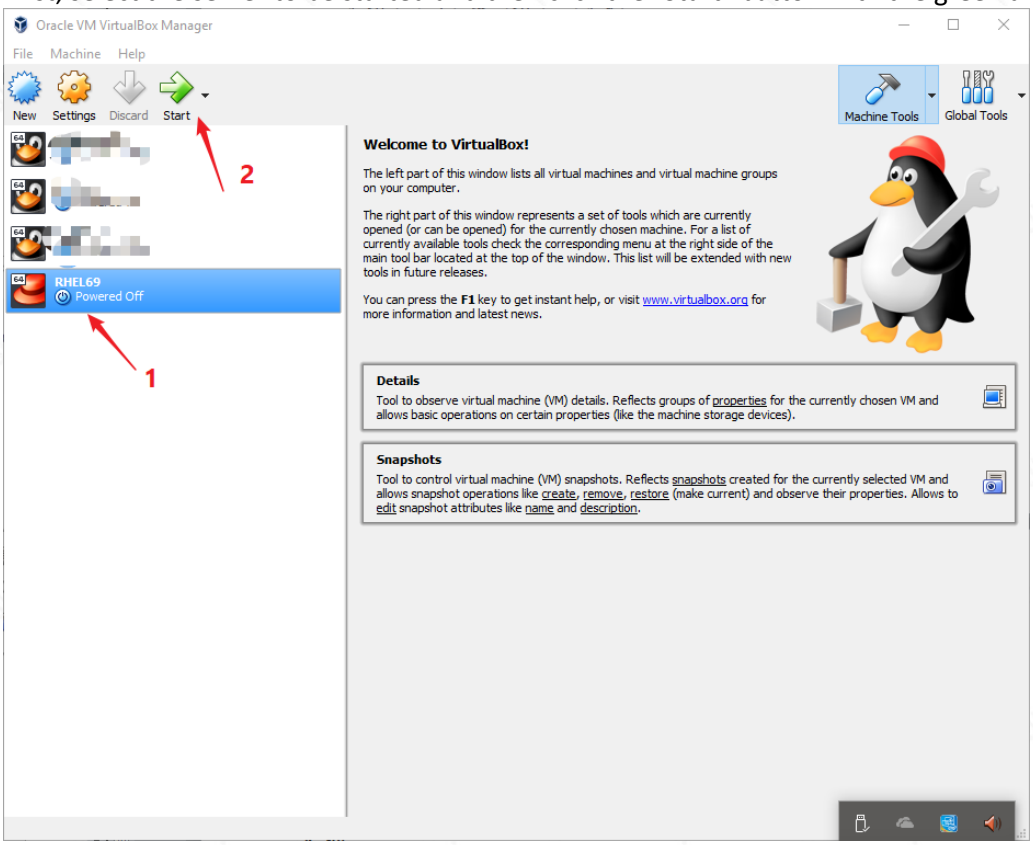
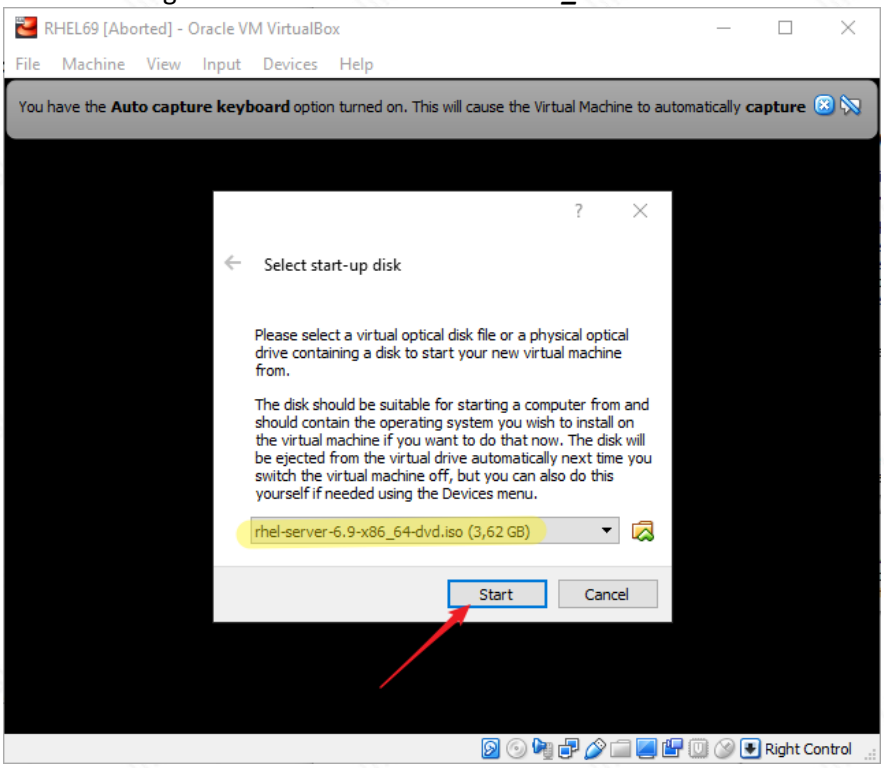
First, select the server to be started and then click the "Start" button with the green arrow.



A dialog box will popup asking for the location of the iso file.
After selecting the iso file ***" rhel-server-6.9-x86_64-dvd.iso"*** click "Start"



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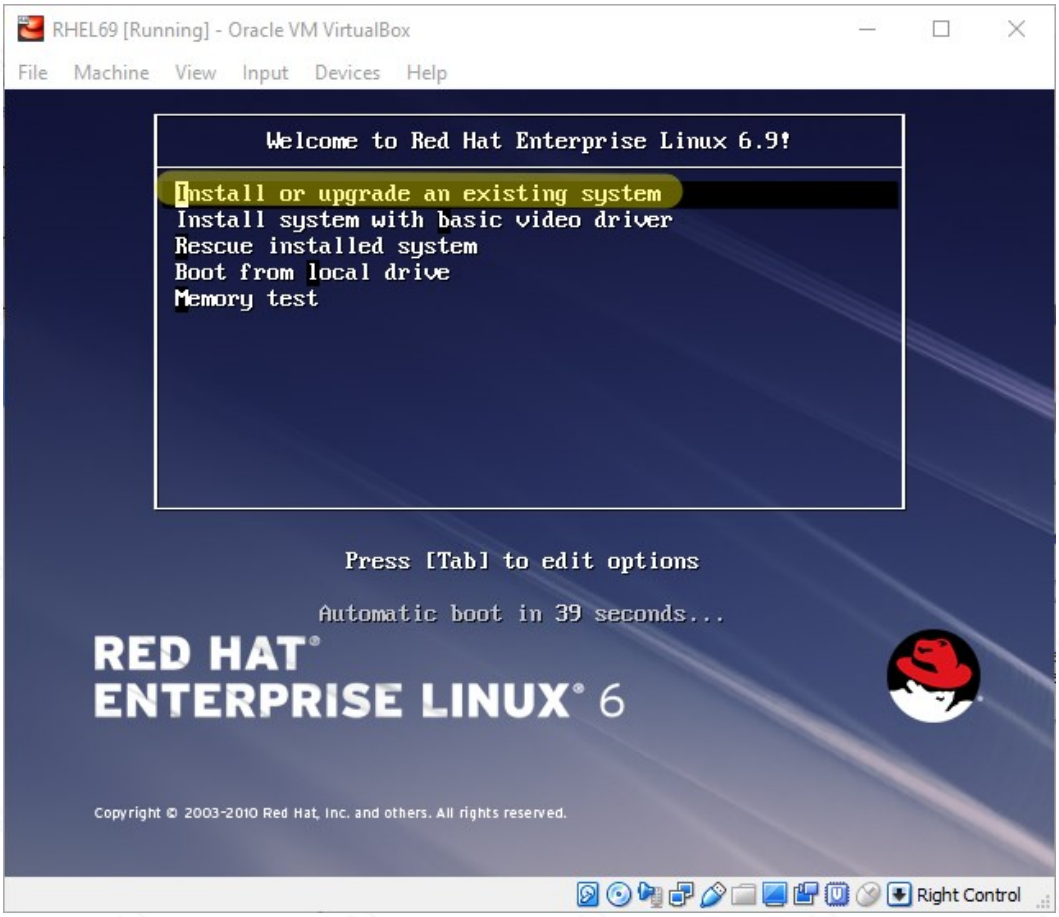
3. LINUX INSTALLATION



Select "Skip" and press the "Enter" key to continue.

Click "Next"

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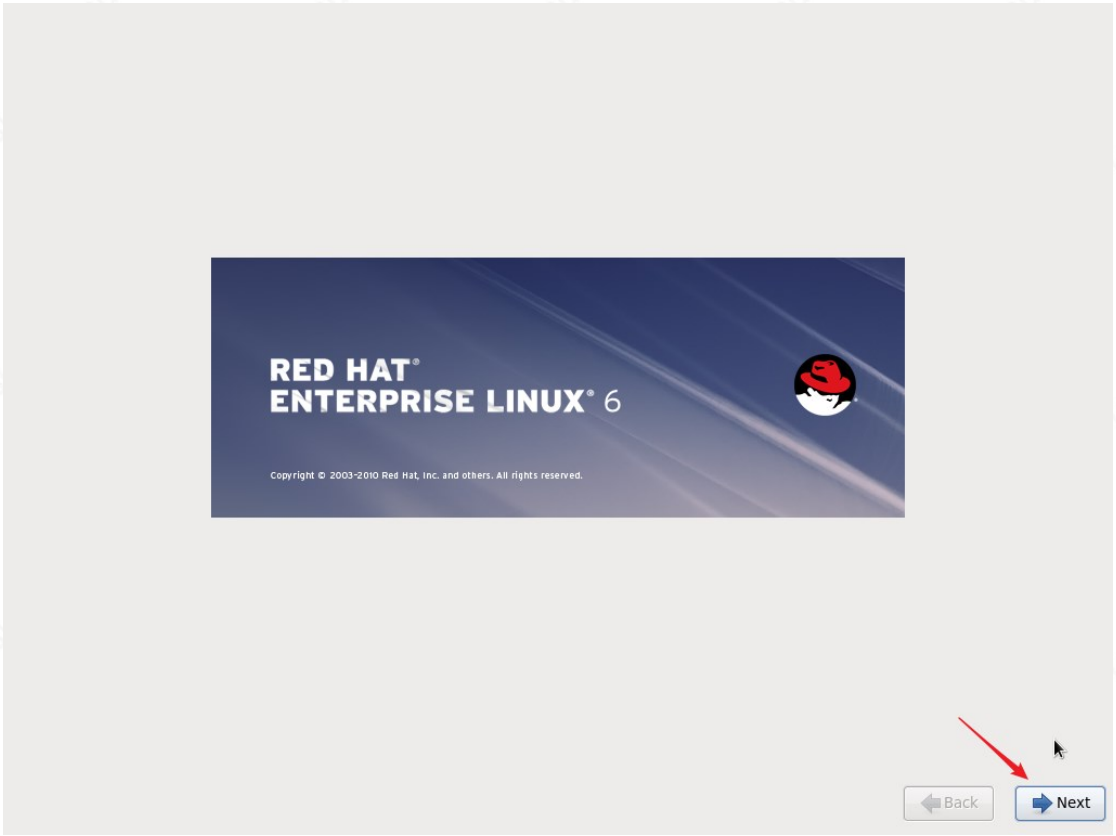
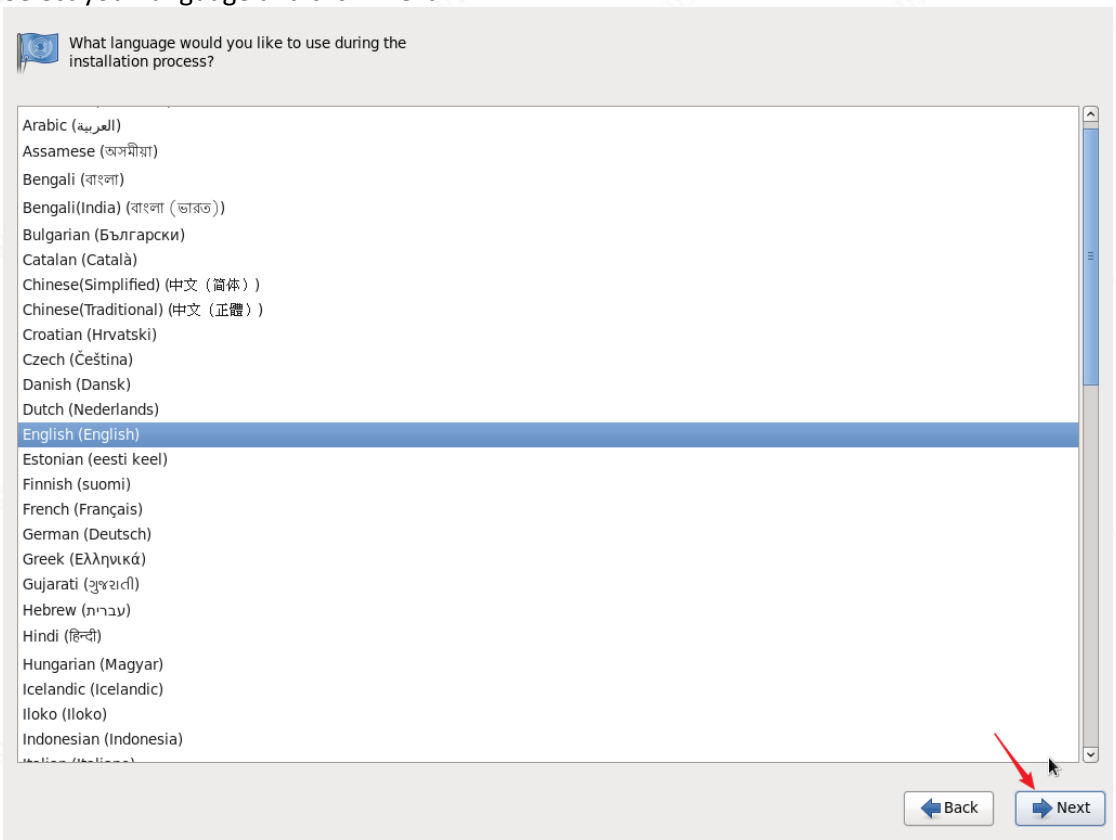


Select your language and click "Next"



Select the proper keyboard and click "Next"

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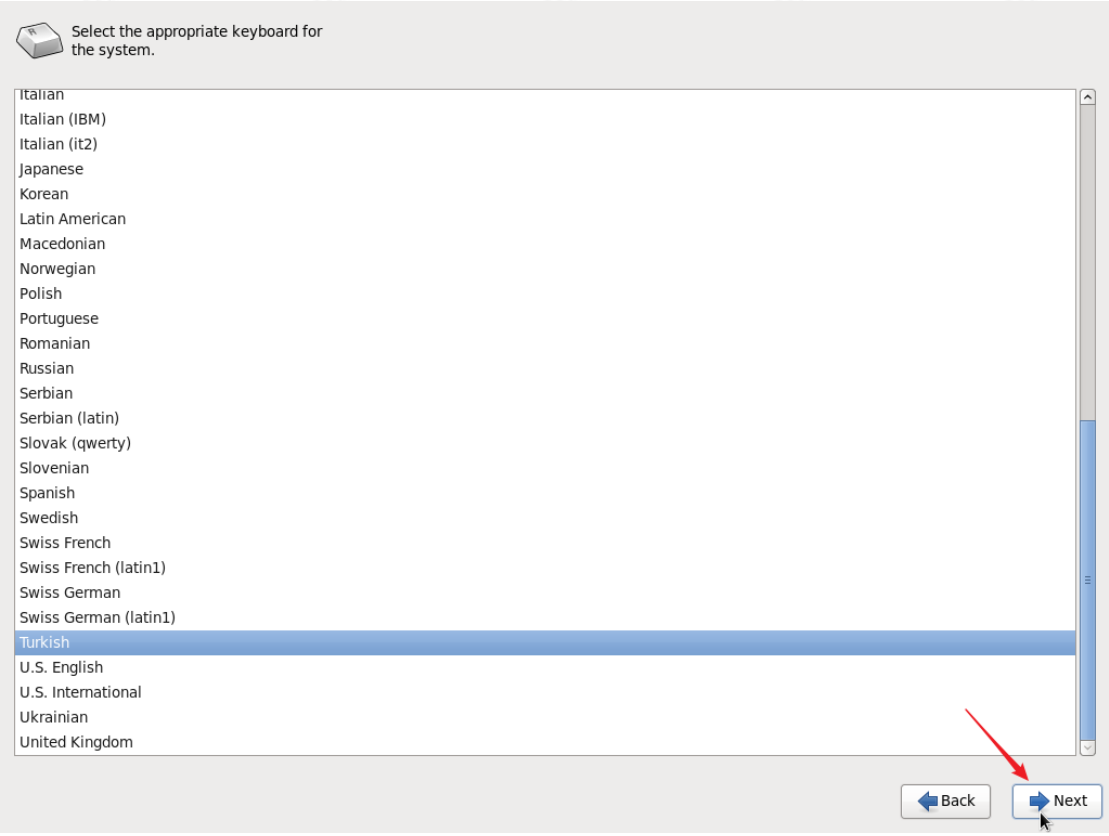
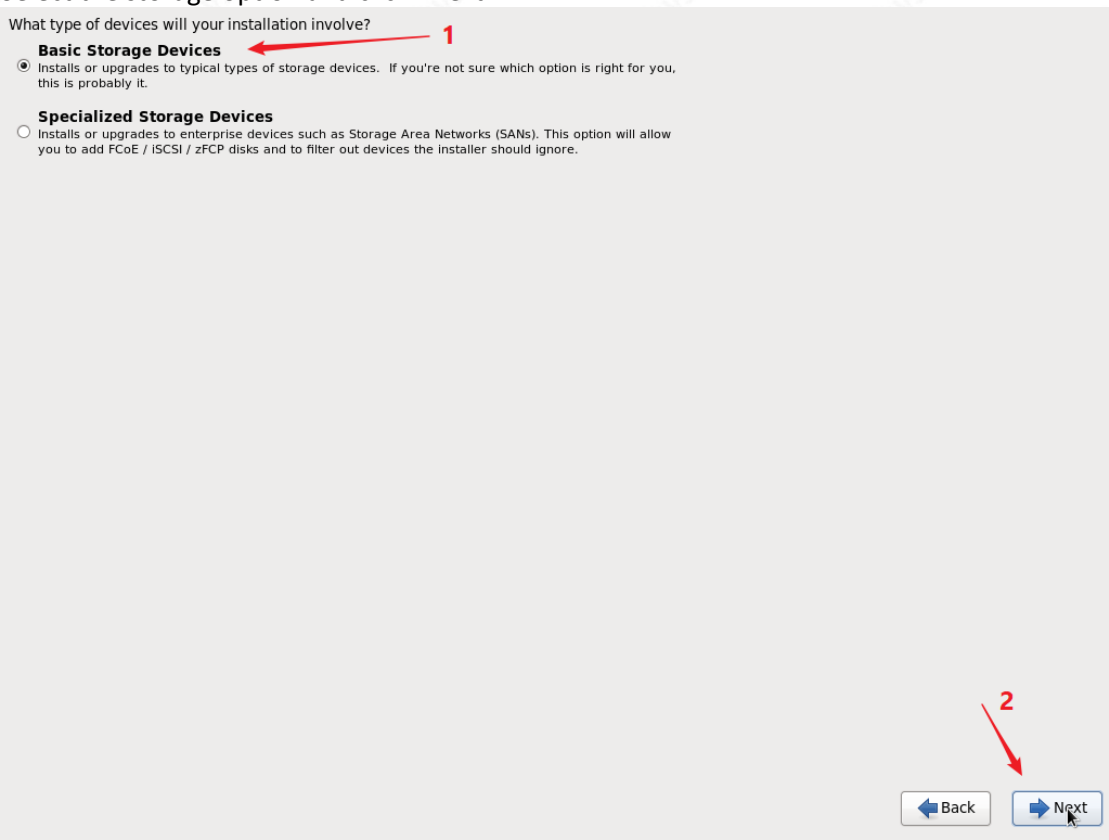


Select the storage option and click "Next"



Select "Yes, discard any data" and click "Next"

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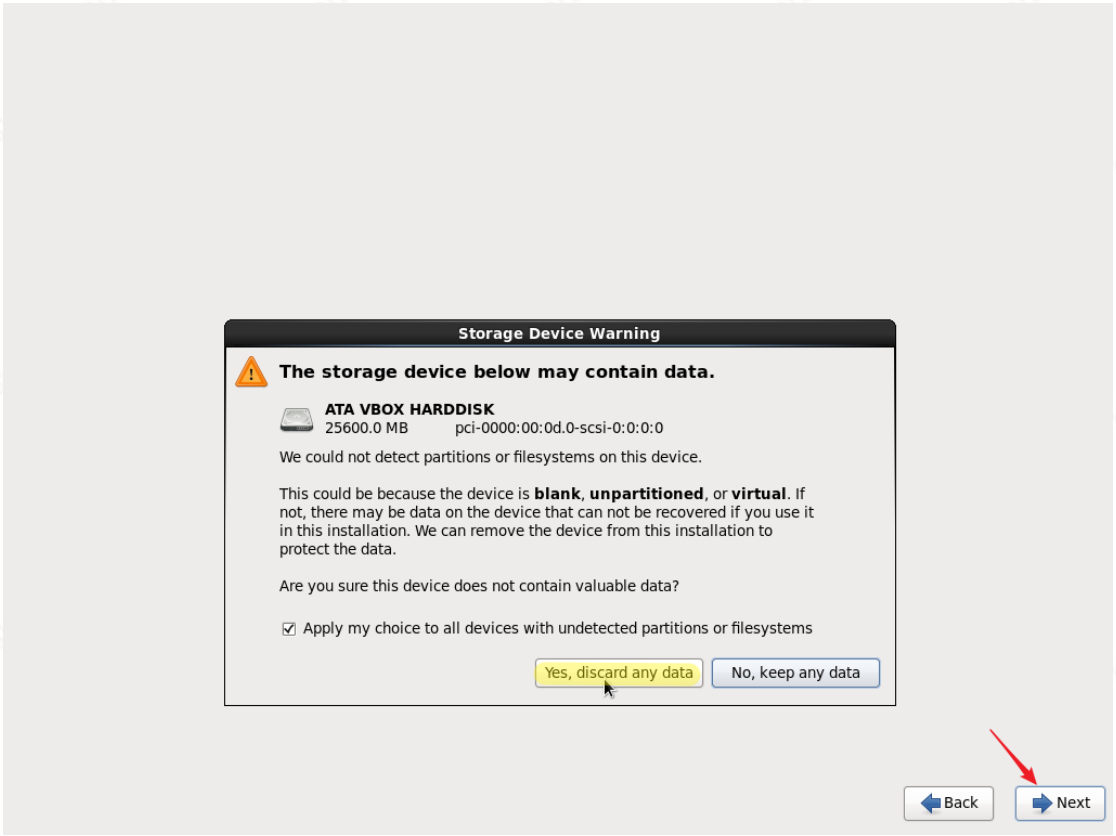

Enter a hostname and then click "Next"
Network configuration will be done later in the documentation.

Select the time-zone and then click "Next"

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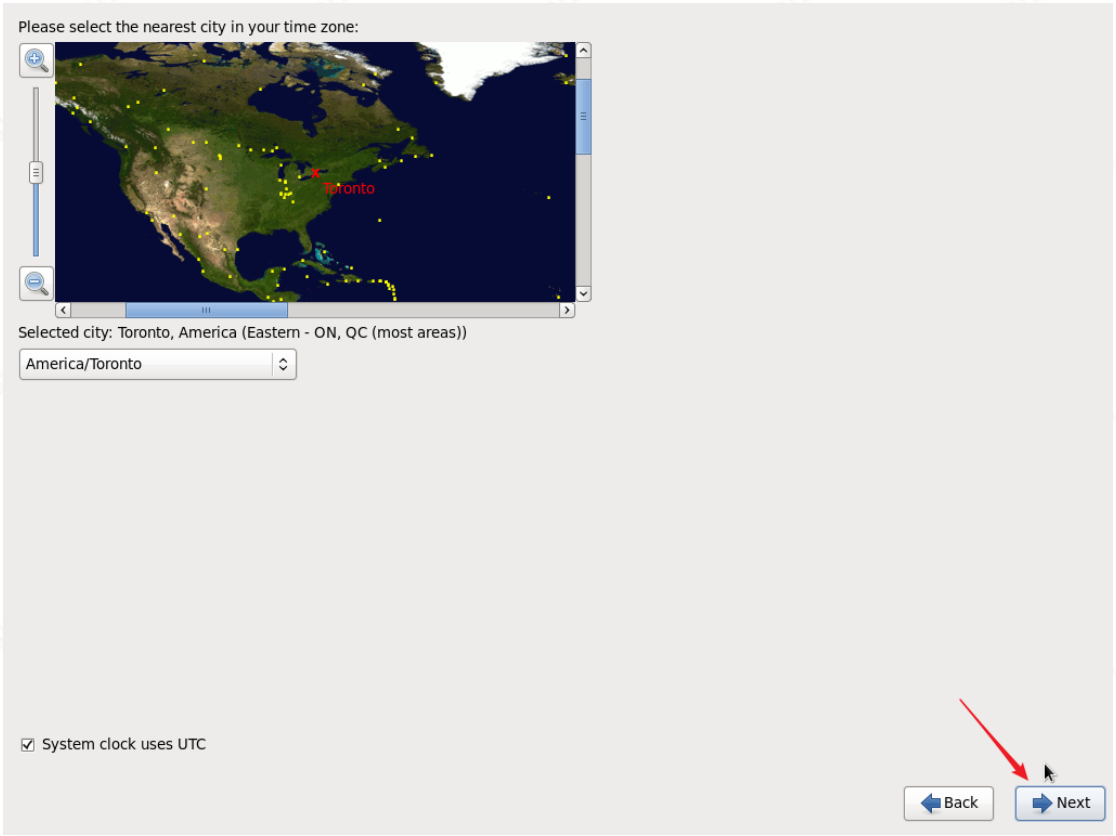
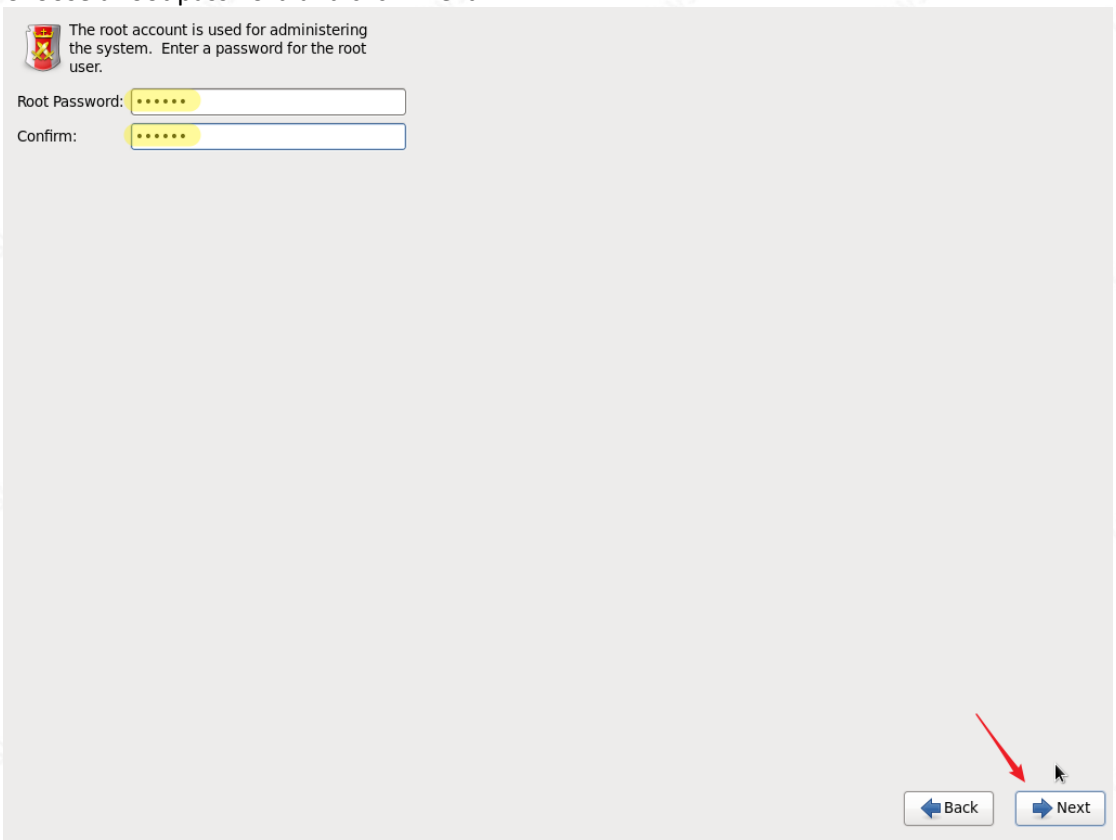


Choose a root password and click "Next"



Select "Use All Space", check the "Review and modify partitioning layout" option, and click "Next".

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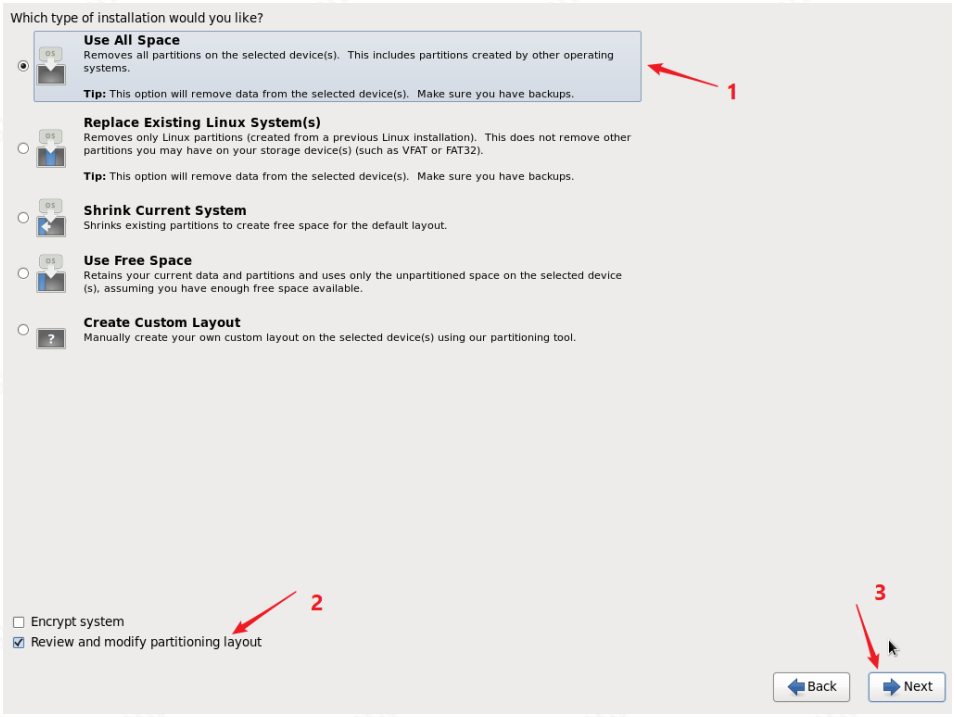
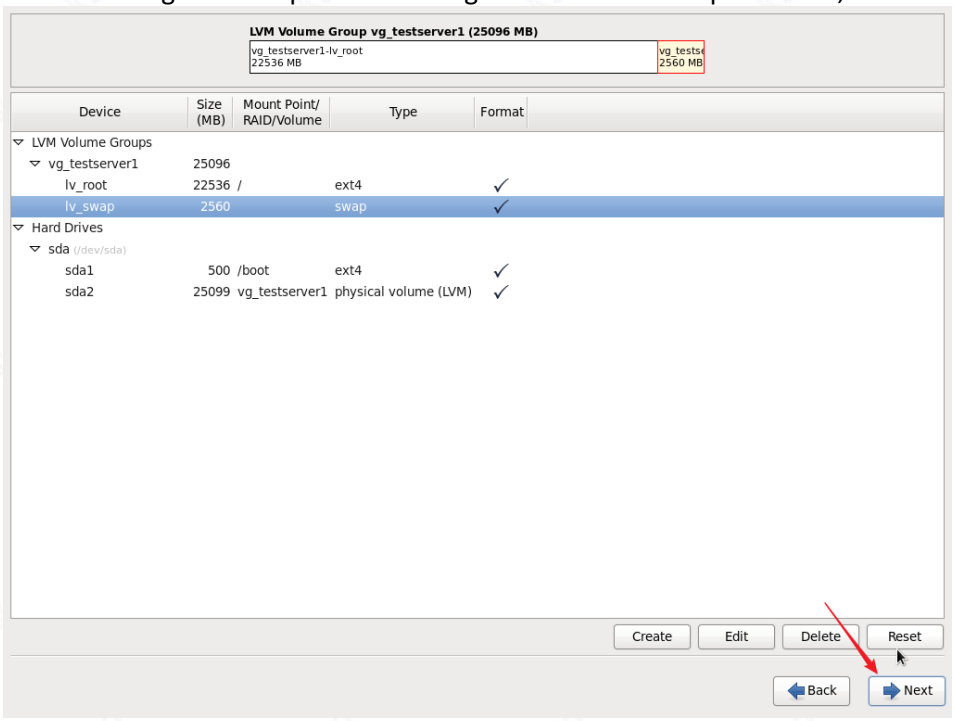


You can change the swap size according to the software requirements, and click "Next".



Oracle 11g requires the following swap spaces. For other versions you can check preinstallation tasks in database installation guide. You can also ignore any swap space warnings since this is a test installation.

RAM	Swap Space
Between 1 GB and 2 GB	1.5 times the size of the RAM
Between 2 GB and 16 GB	Equal to the size of the RAM
More than 16 GB	16 GB

Click "Format"

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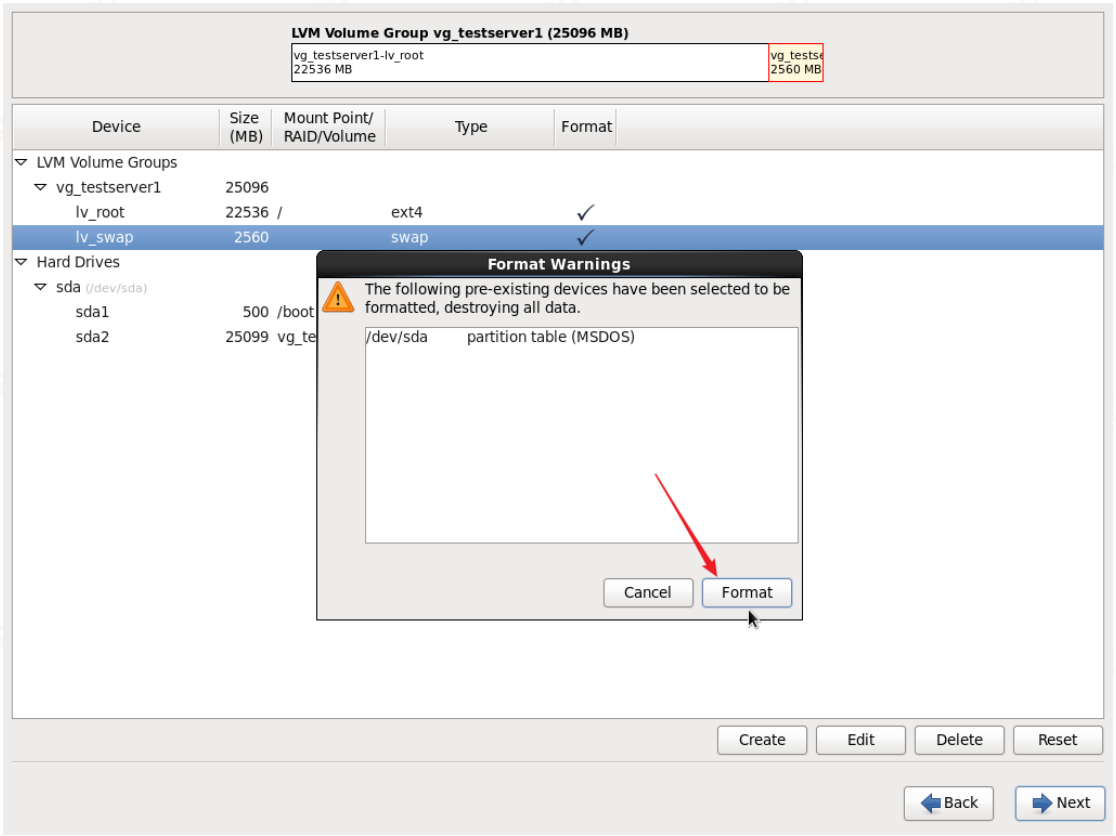
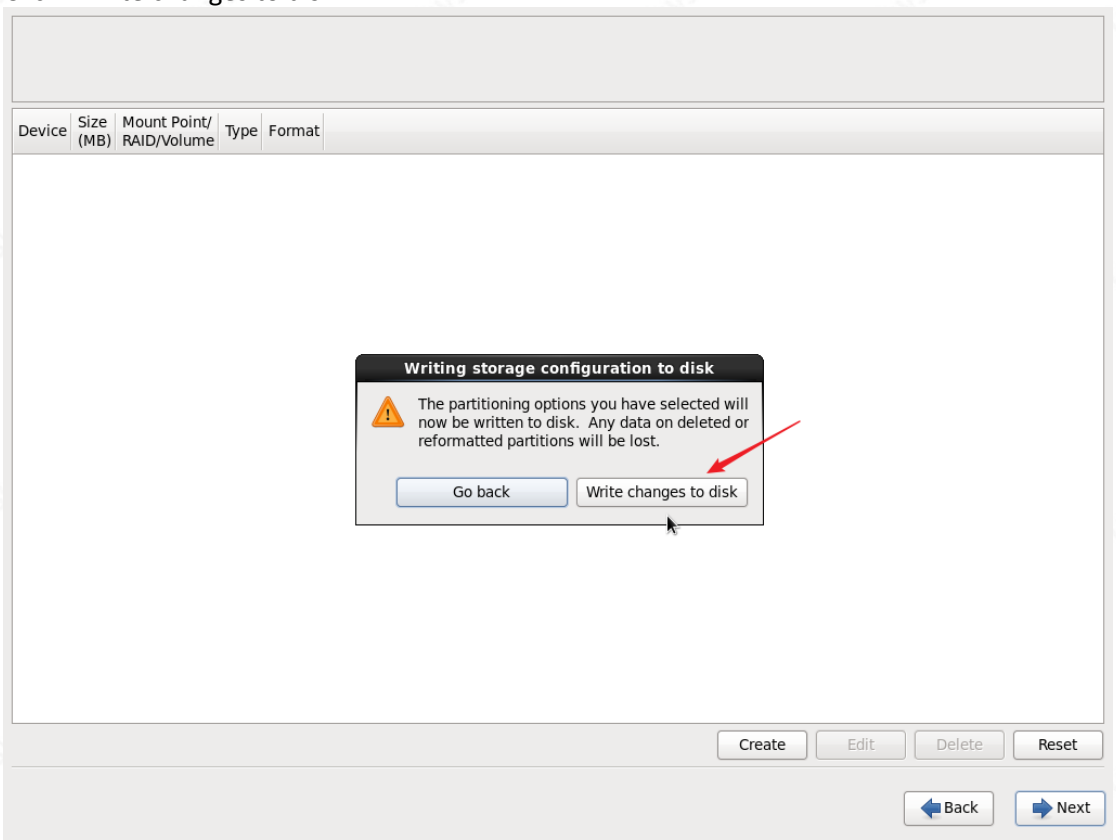


Click "Write changes to disk"



Click "Next"

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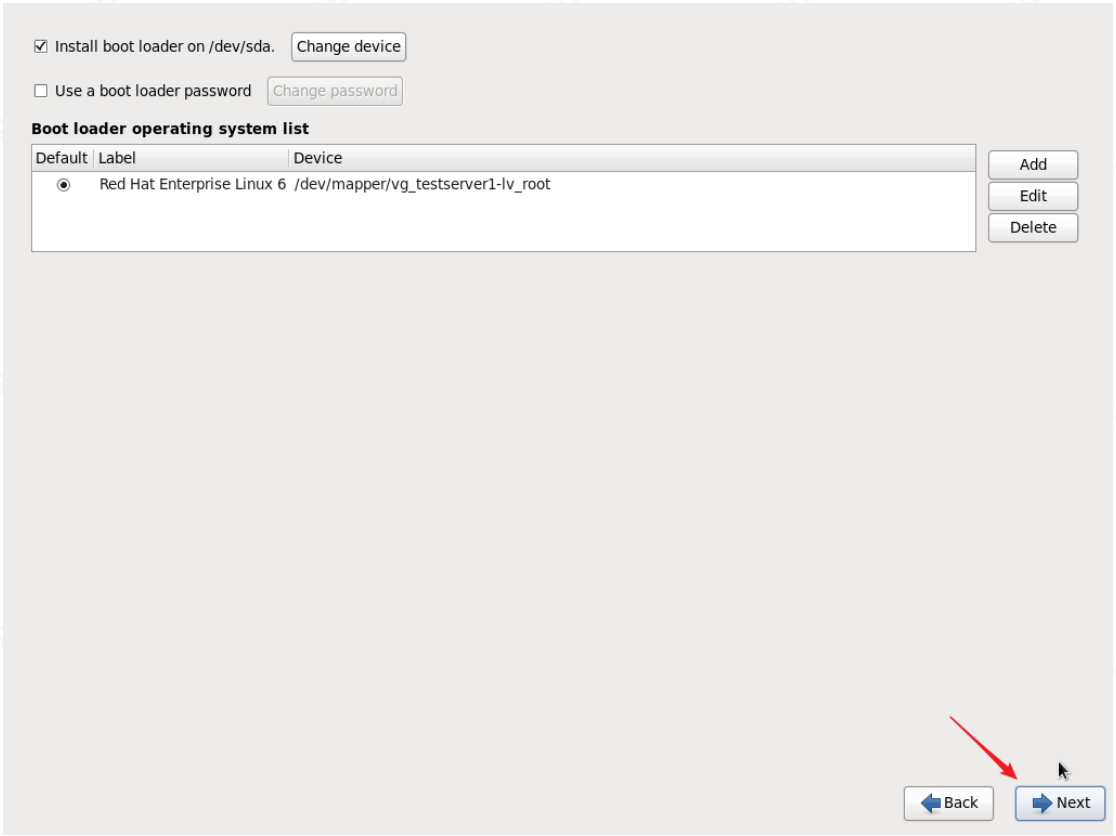
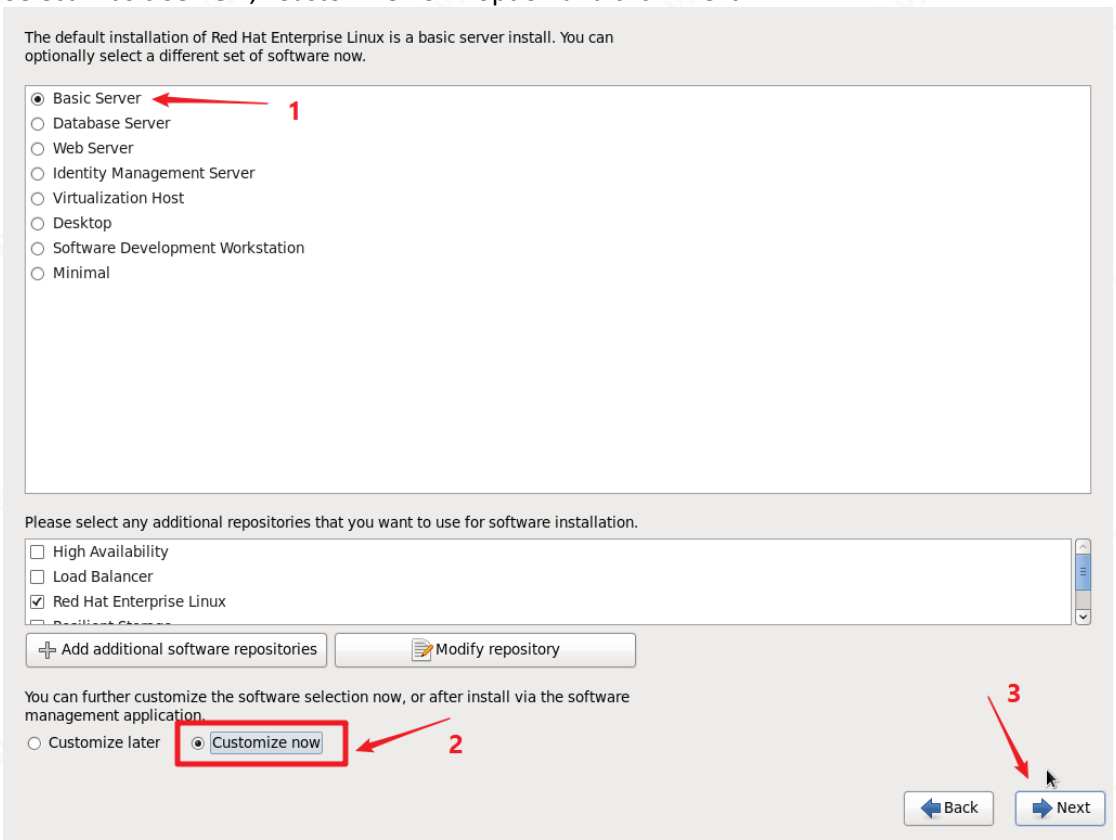


Select "Basic Server", "Customize now" option and click "Next"



- Base System > Base

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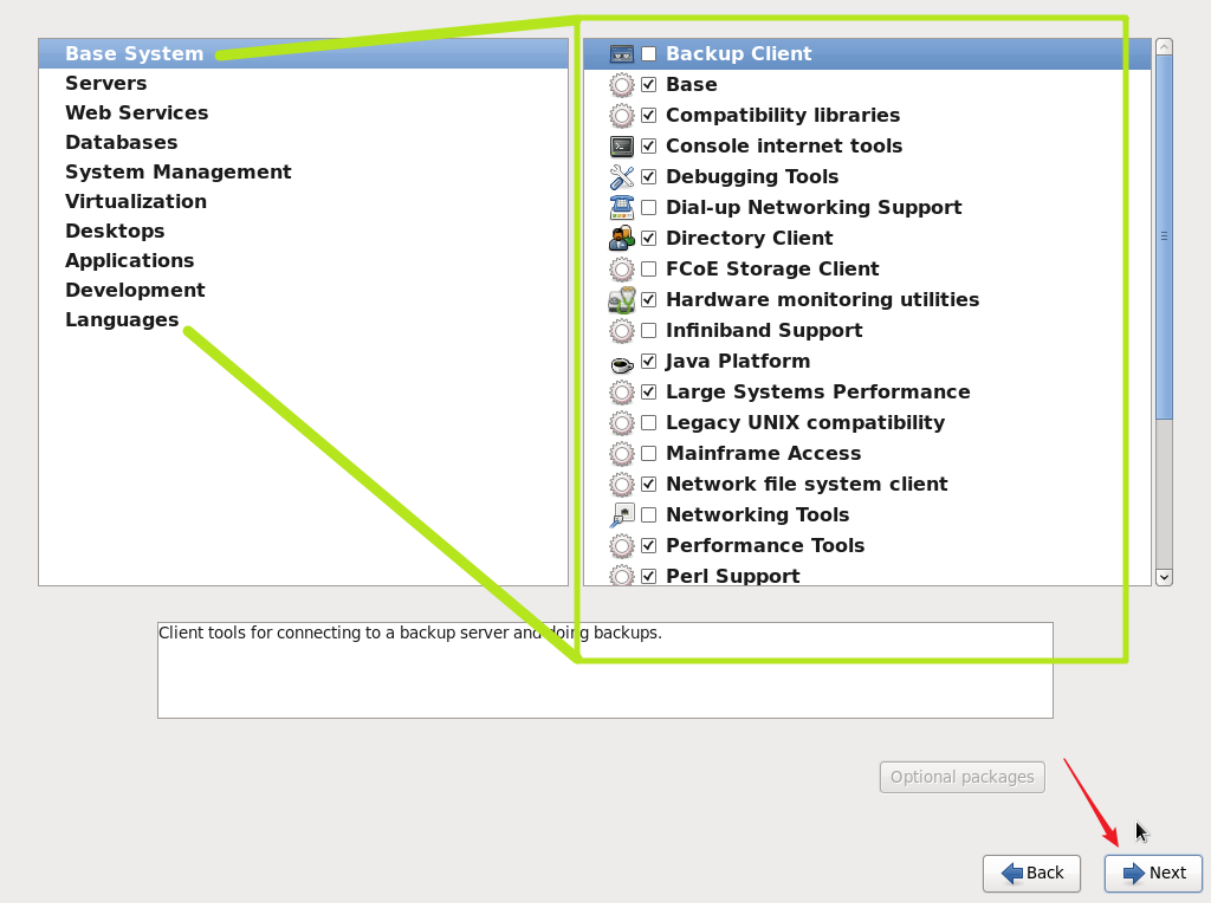
- Base System > Compatibility libraries
- Base System > Hardware monitoring utilities
- Base System > Large Systems Performance
- Base System > Network file system client
- Base System > Performance Tools
- Base System > Perl Support
- Servers > Server Platform
- Servers > System administration tools
- Desktops > Desktop
- Desktops > Desktop Platform
- Desktops > Fonts
- Desktops > General Purpose Desktop
- Desktops > Graphical Administration Tools
- Desktops > Input Methods
- Desktops > X Window System
- Applications > Internet Browser
- Development > Additional Development
- Development > Development Tools

In terms of customization, select the above packages, and click "Next"



Installation begins...

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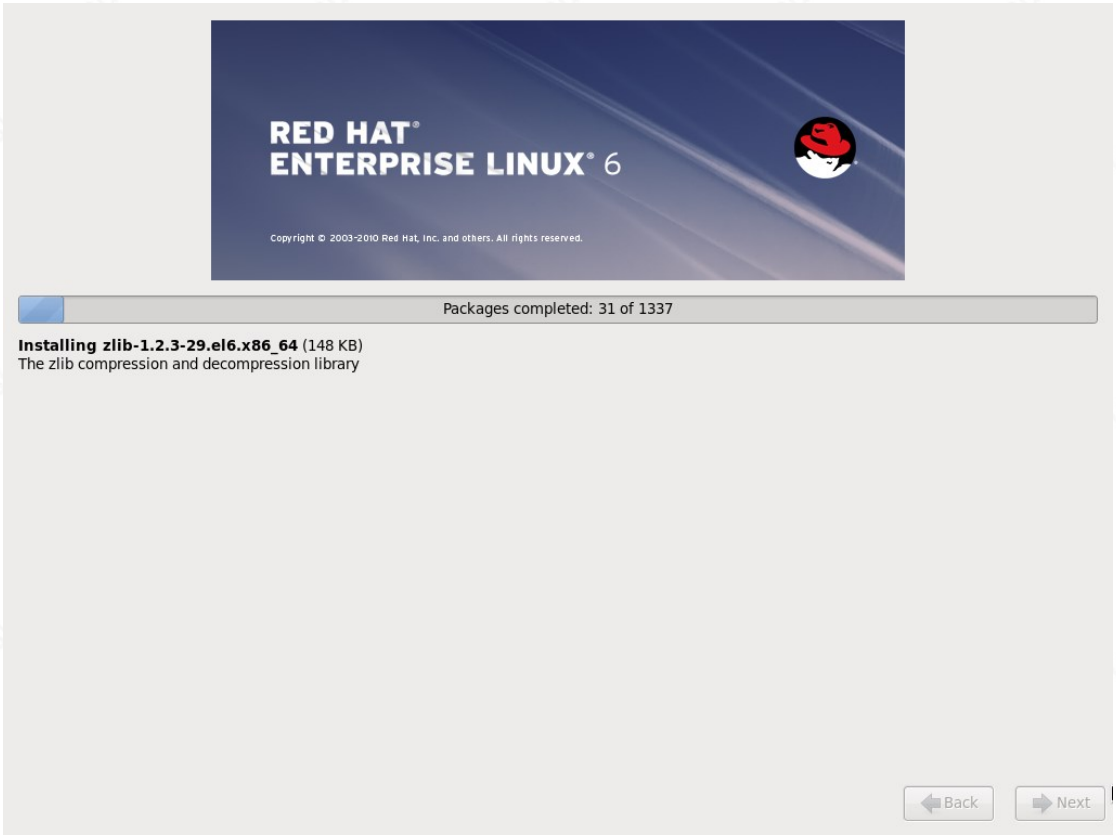
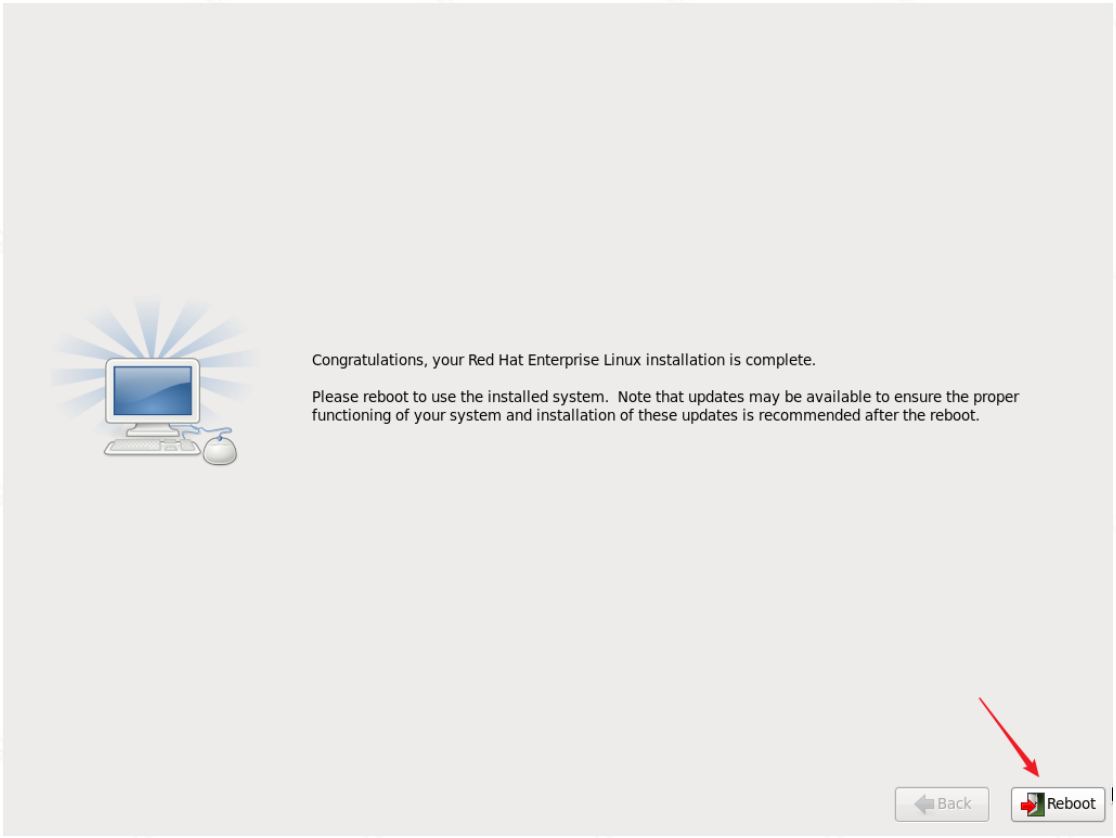


Click "Reboot"



After the reboot, comes the Welcome screen. Click "Forward"

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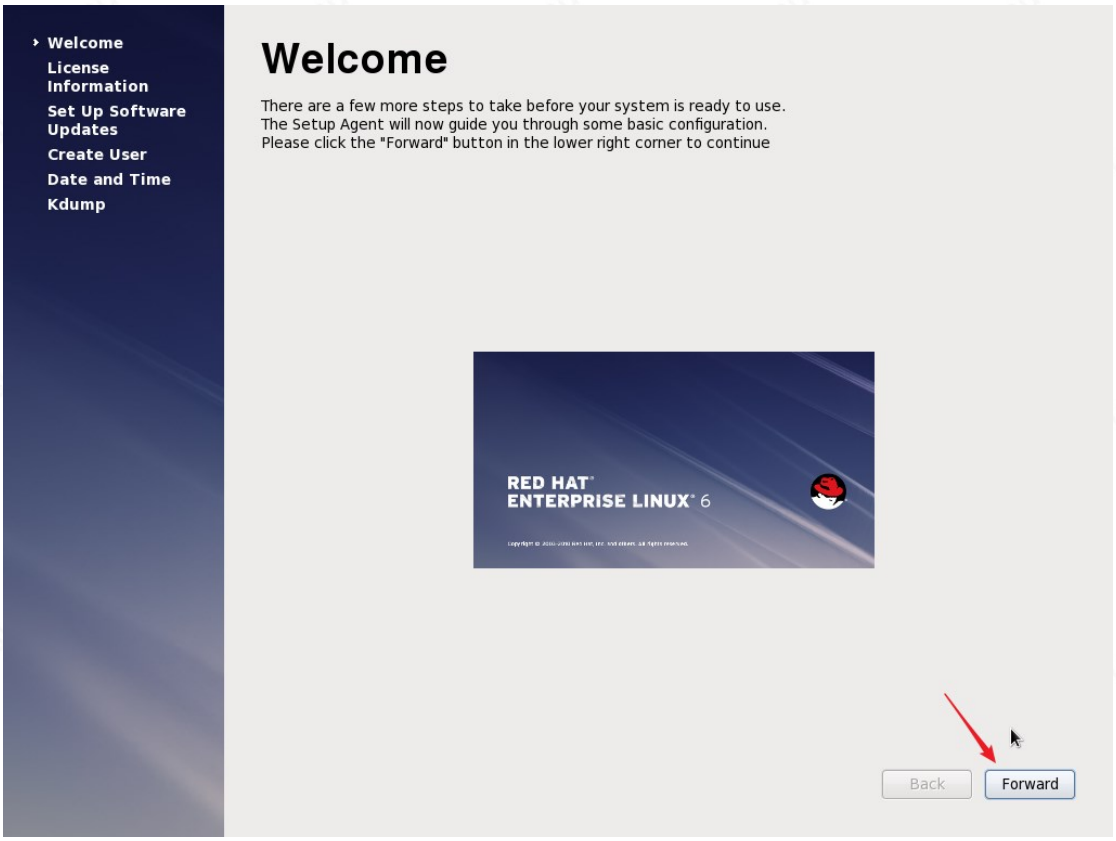
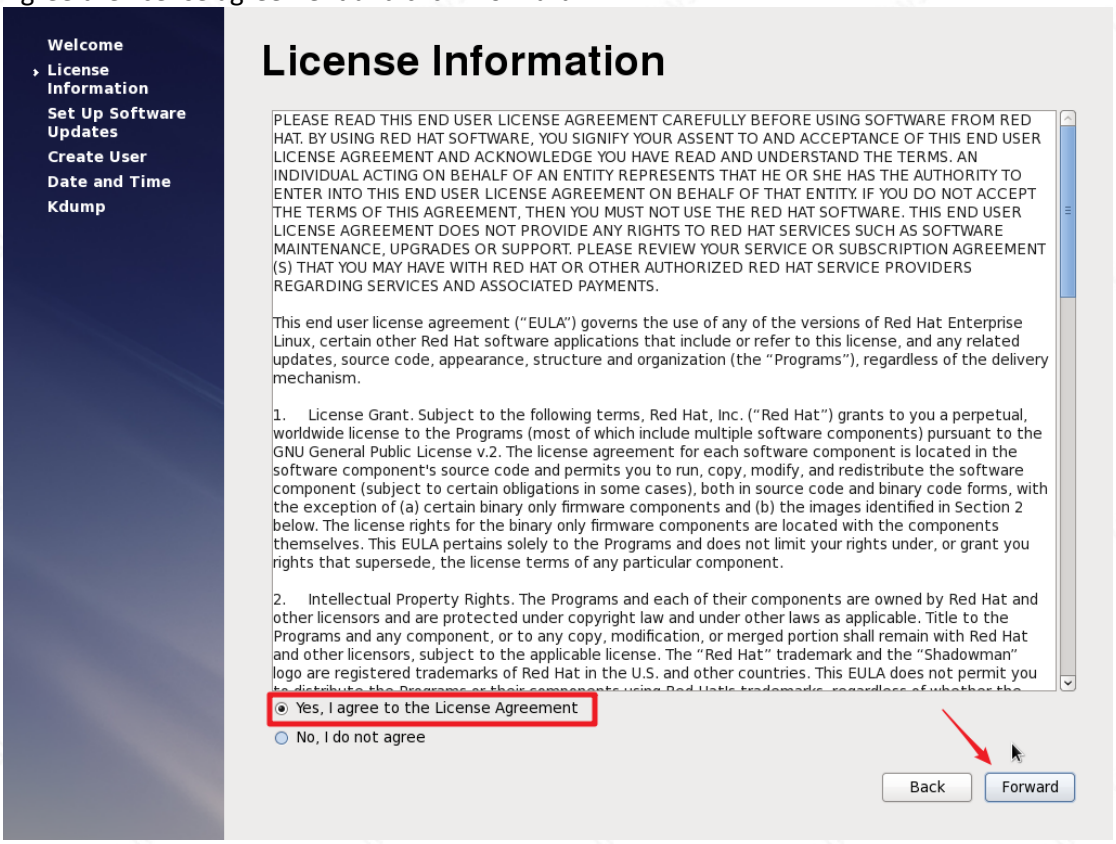


Agree the license agreement and click "Forward"



We can skip the software updates for now. Click "Forward"

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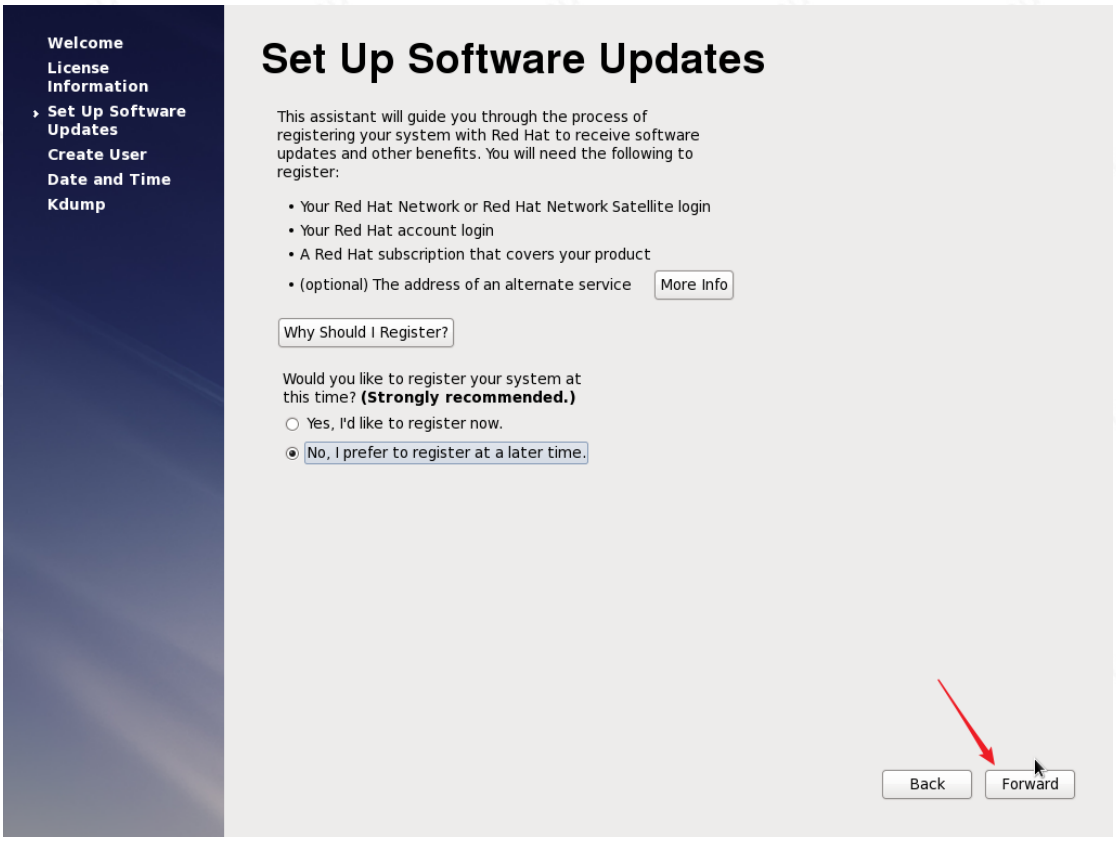
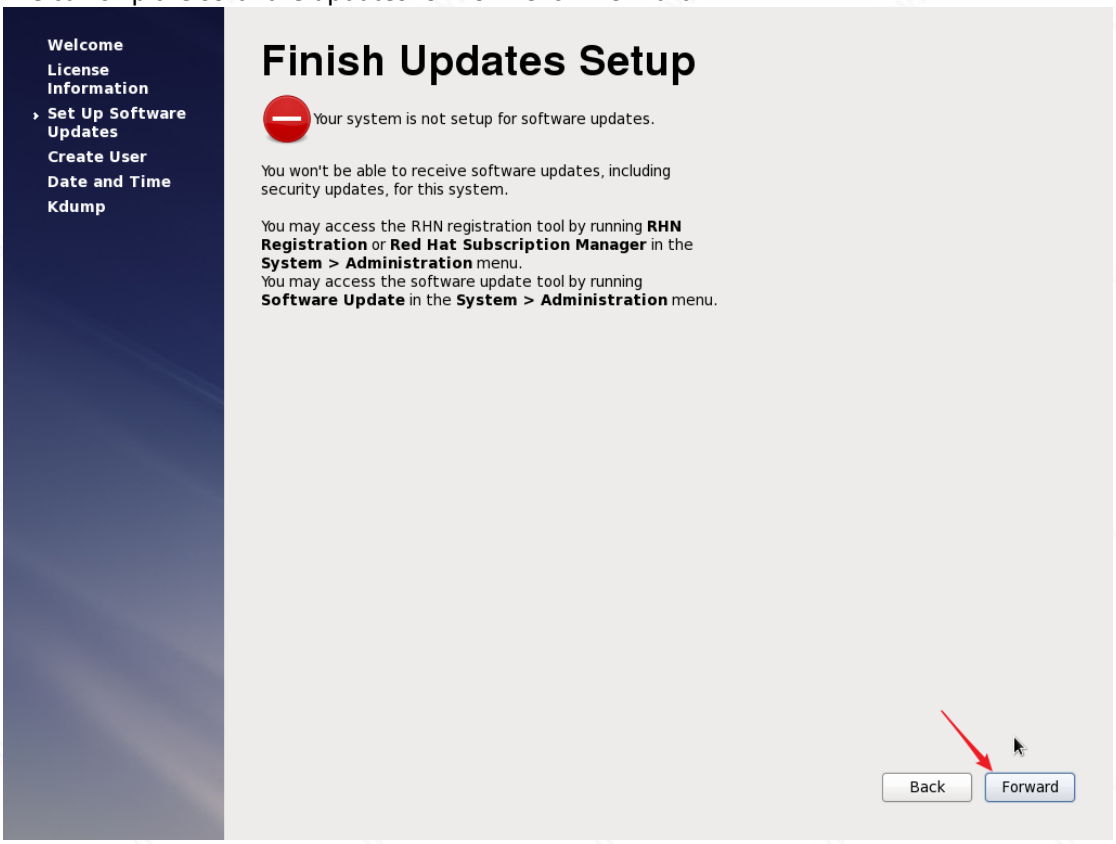


We can skip the software updates for now. Click "Forward"



We do not need to create a user now. Click "Forward"

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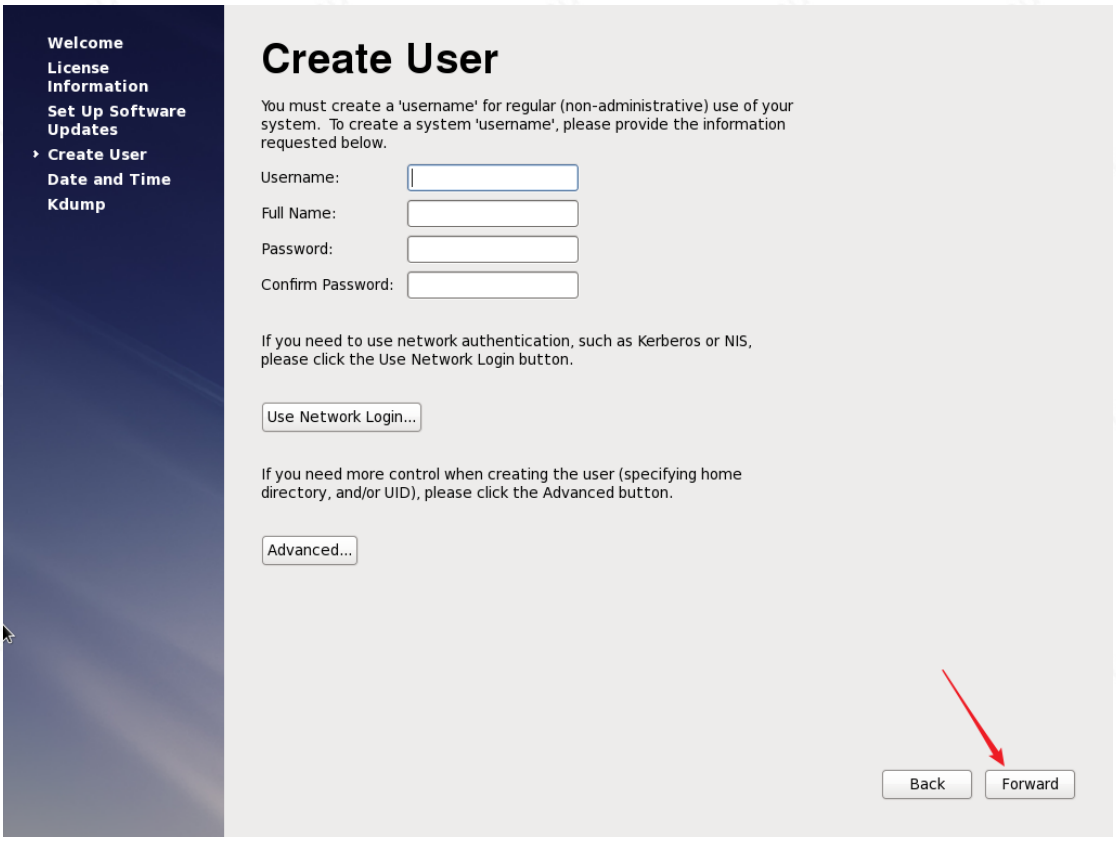
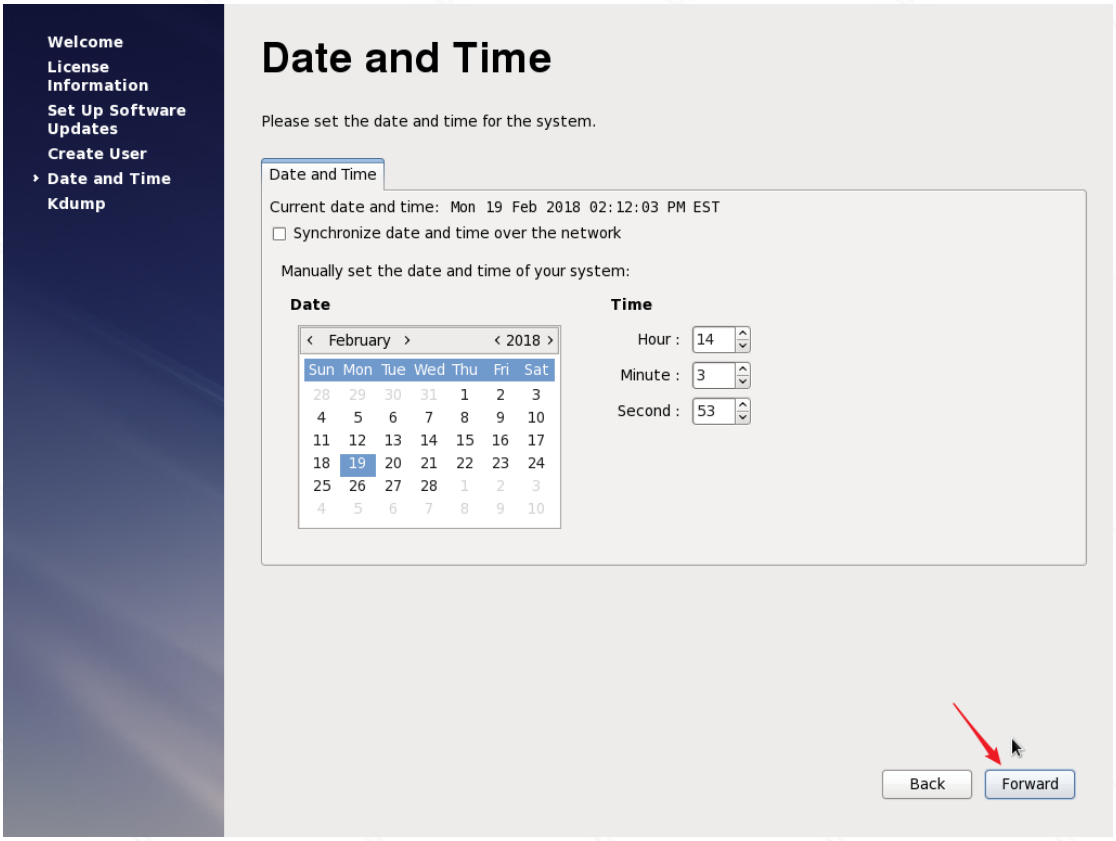


Set Date and Time and click "Forward"



Since this is a test environment, we can disable Kdump. Click "Finish"

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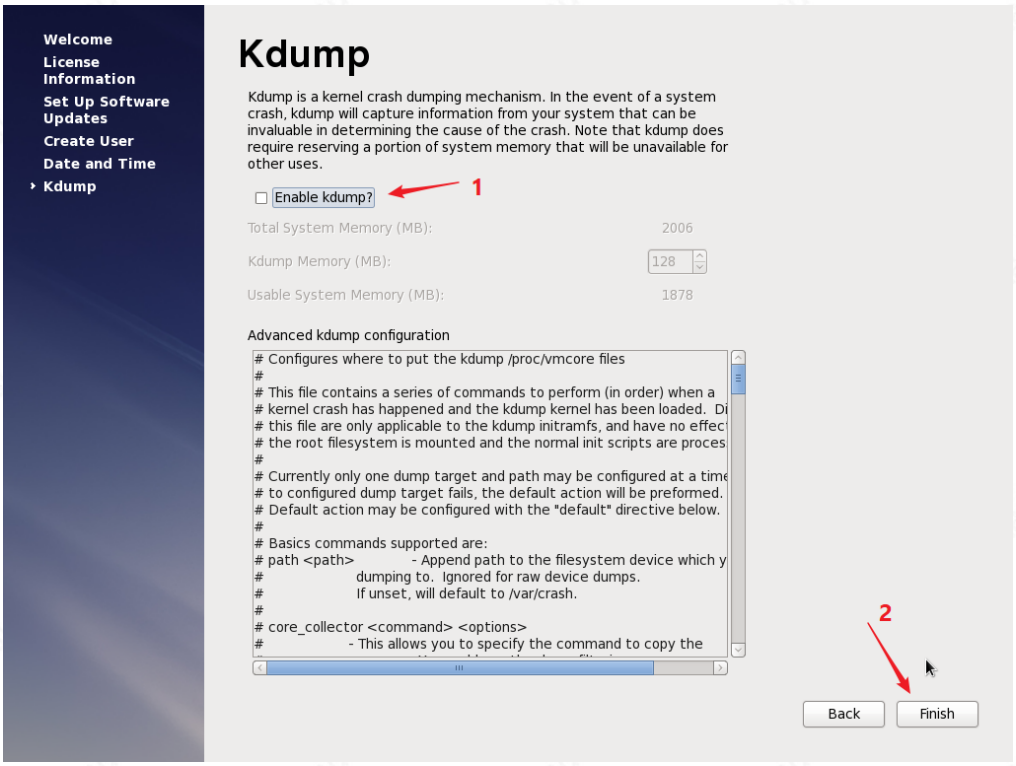
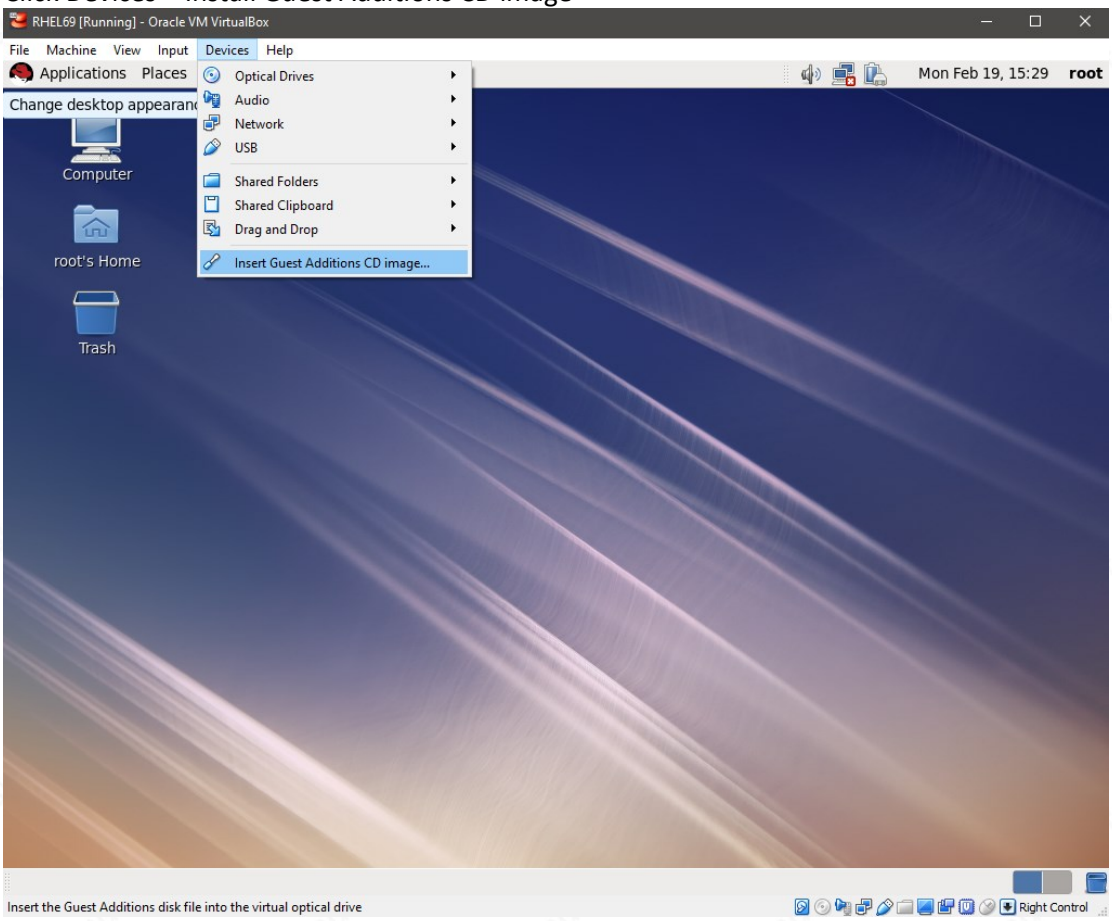


4. INSTALL GUEST ADDONS

Click Devices > Install Guest Additions CD image



Click "OK"

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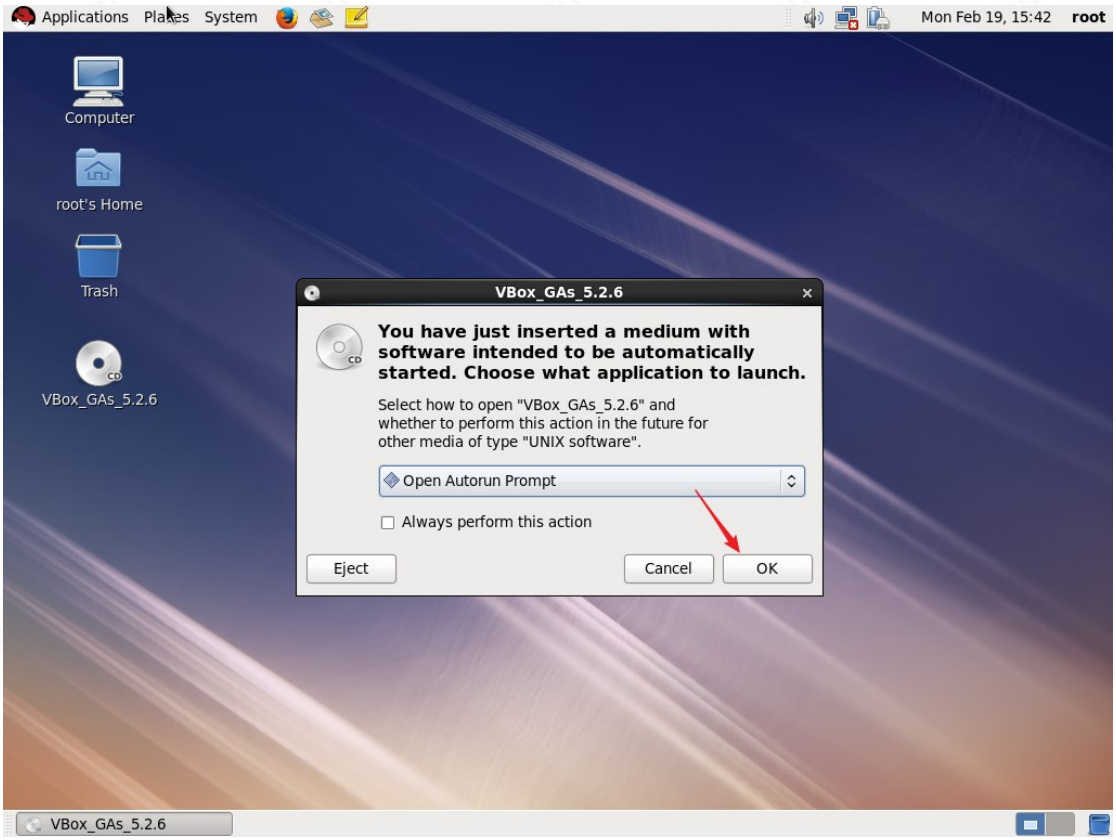
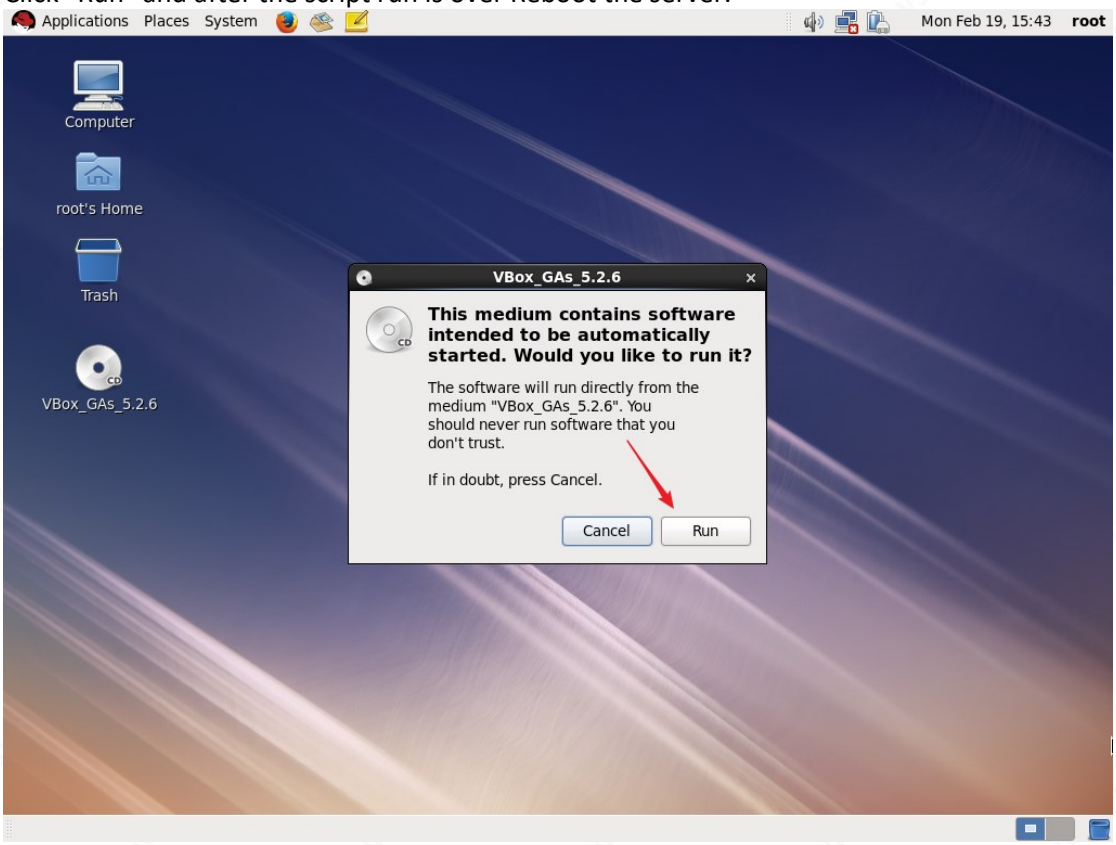


Click "Run" and after the script run is over Reboot the server.



Press 'Return' and Reboot the server.

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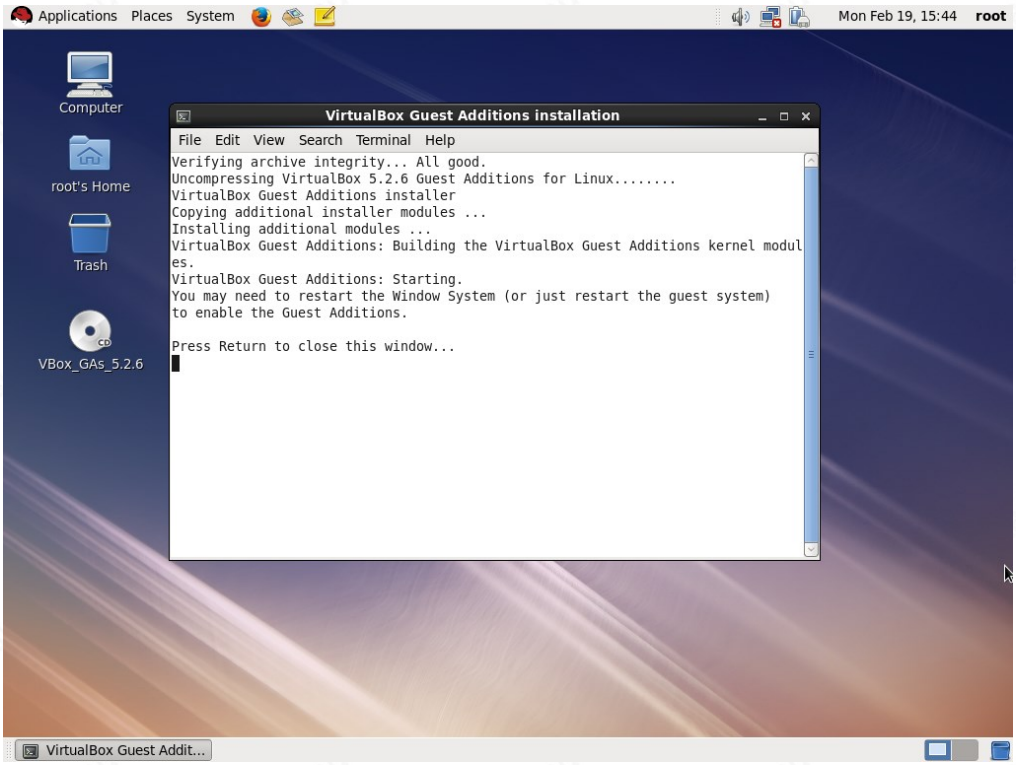
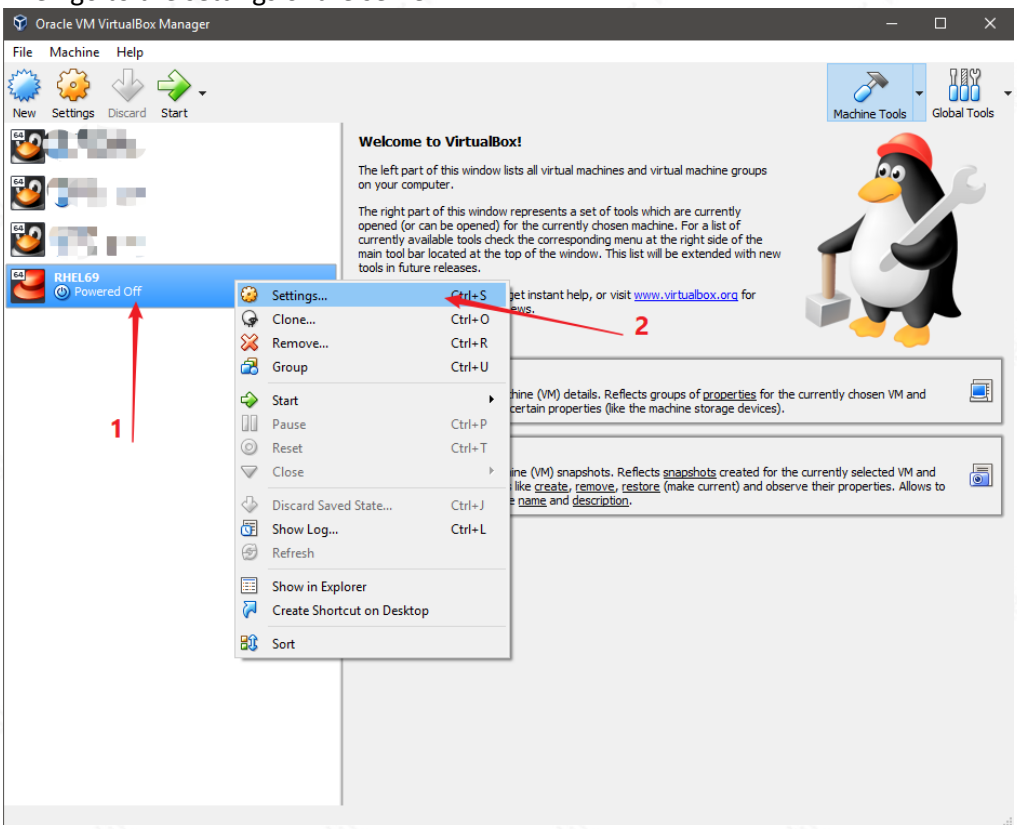


5. NETWORK CONFIG & PUTTY CONNECTIVITY

First, shutdown the server.
Then go to the settings of the server



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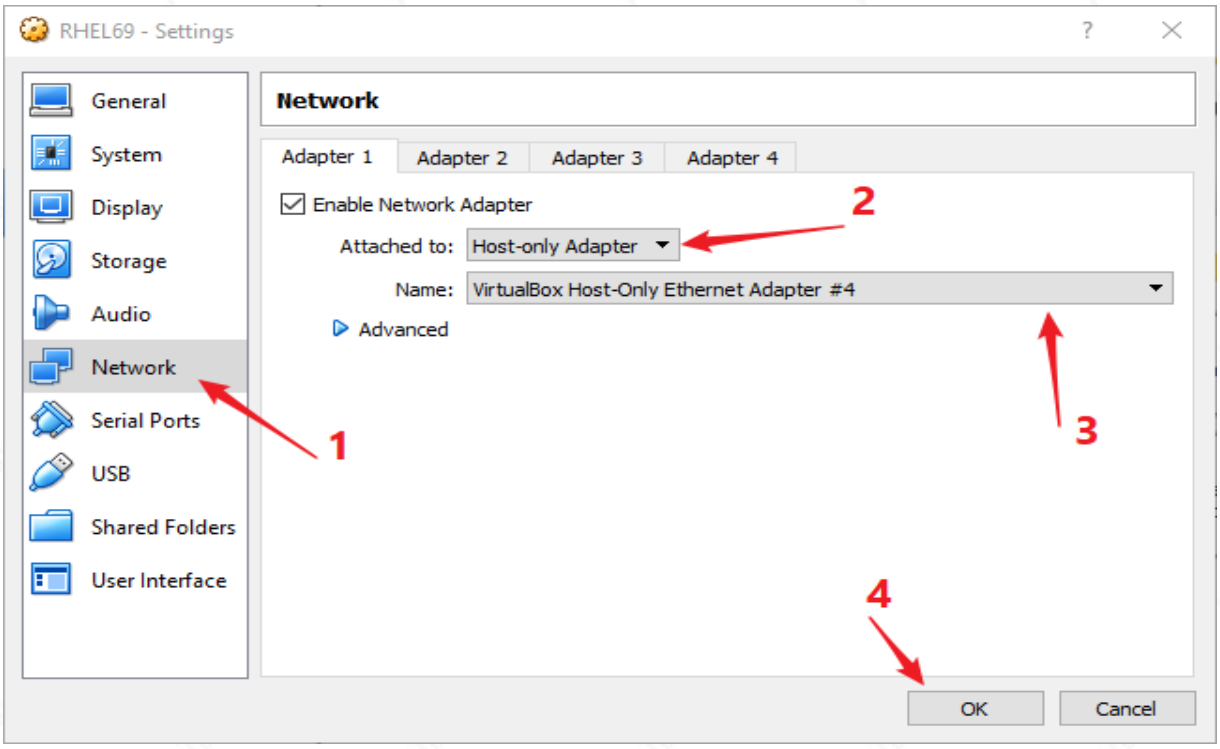
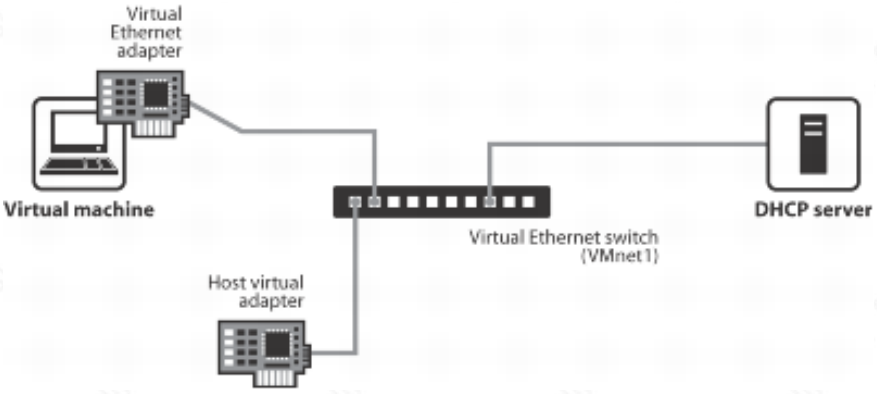
Select the Host-only adapter. For most of the tests (that do not require internet) host-only adapter works fine. Since I want to connect via Putty, I need connectivity with the host OS. I also don't want to change the IP of the guest everytime I connect the host OS to another network. So a static setting which is best maintained with host-only adapter is more proper here.



NETWORK TYPES SUMMARY

Bridged	Has a connection with the host Has a connection with the physical network Can connect to the internet
NAT	Does not have a connection with the host Does not have a connection with the physical network Can connect to the internet
Host-Only	Has a connection with the host Does not have a connection with the physical network Can NOT connect to the internet

Host-only networking creates a network that is completely contained within the host computer.



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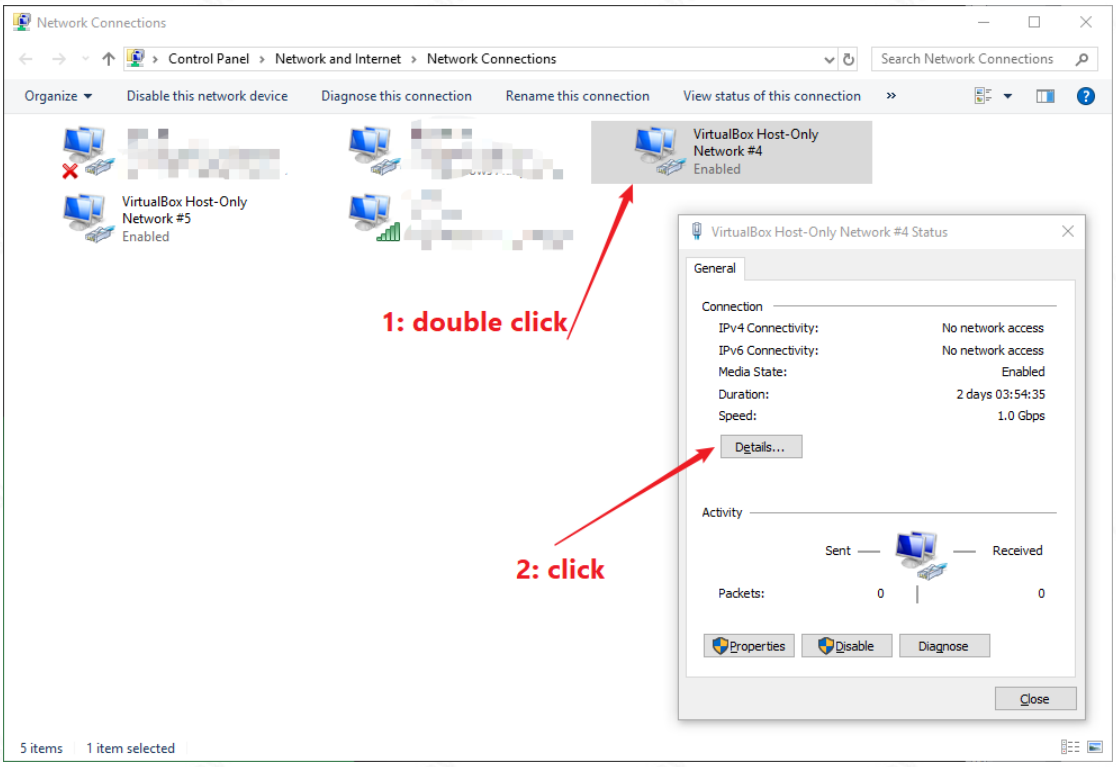
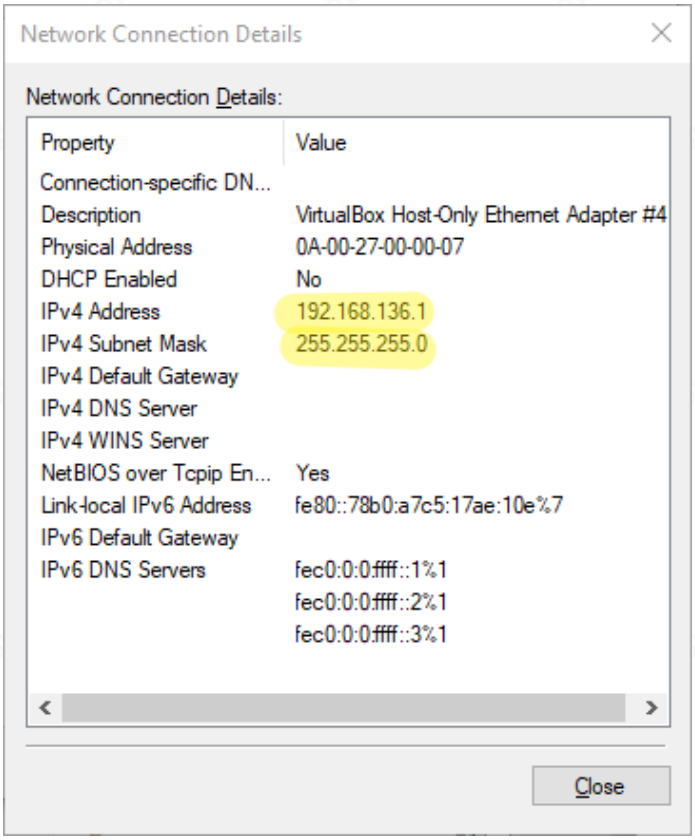
Open the “Network and Sharing Center” of the host machine (Windows in our case) Click the "Change adapter settings" Have a look at the connection details by double-clicking the "VirtualBox Host-Only Network #4" (The one that we have chosen in the previous step)



The highligted values below are important...
Note them down



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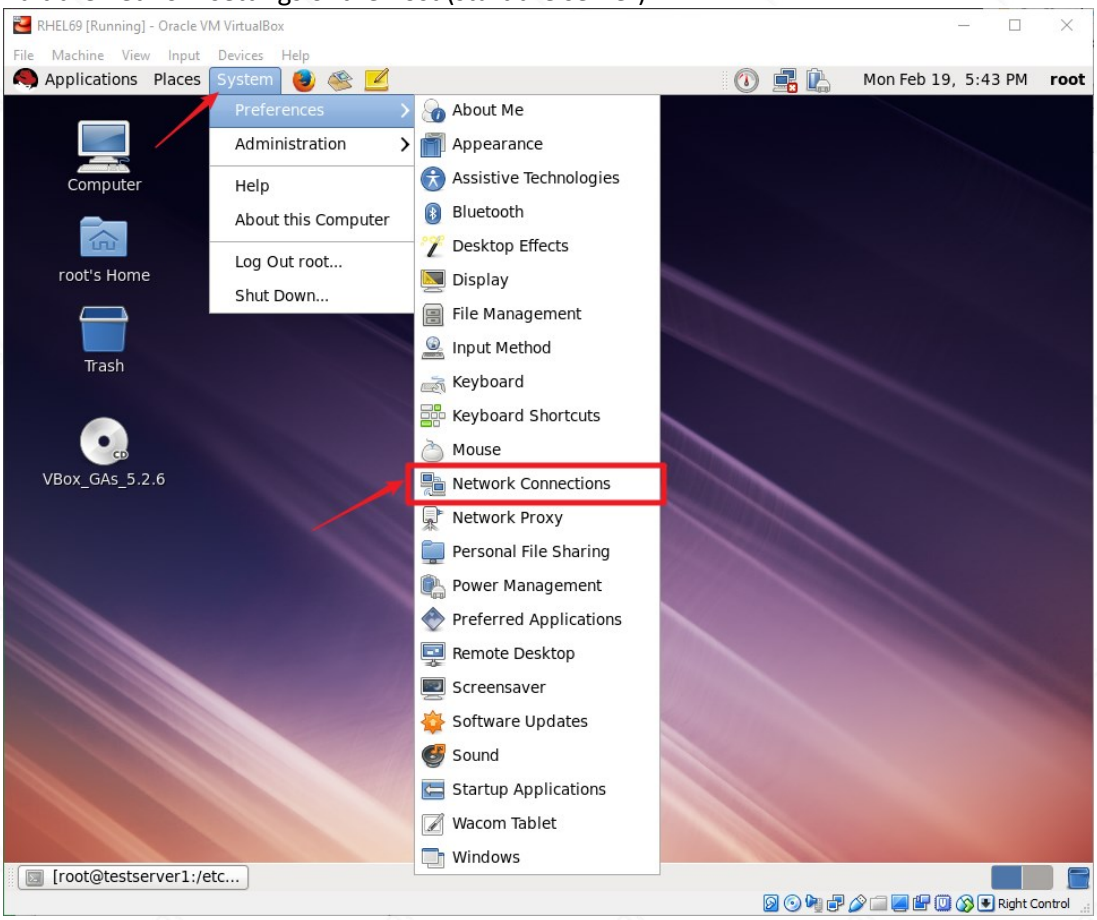
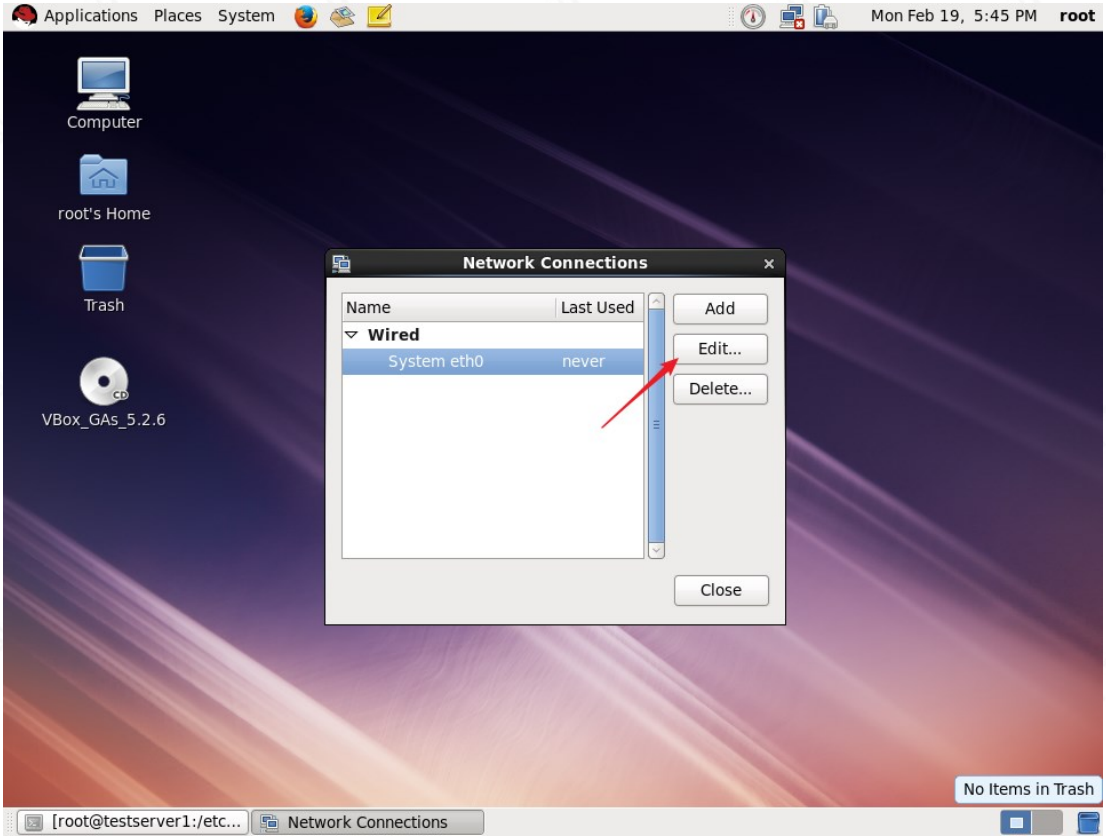
Edit the network settings of the host (start the server)



Click "Edit"



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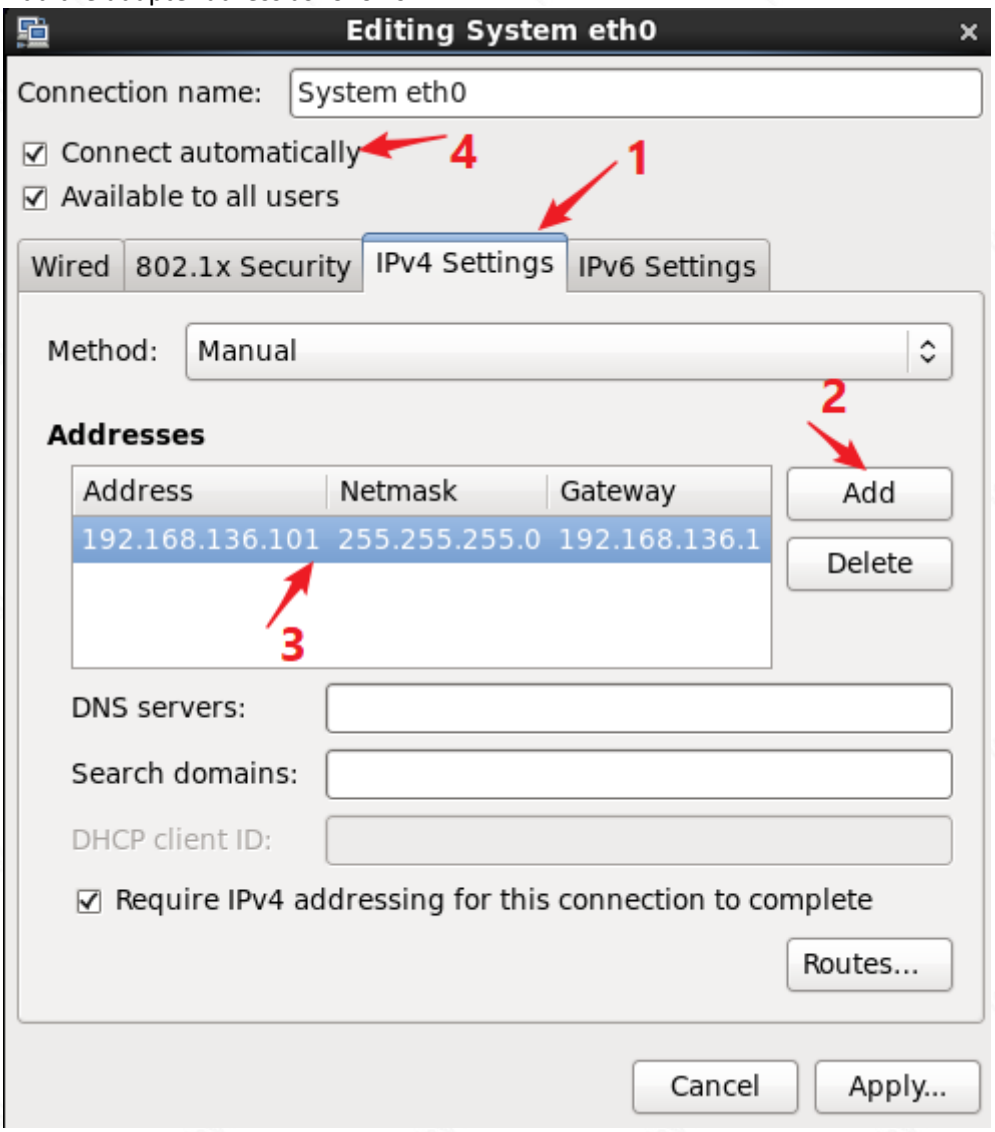
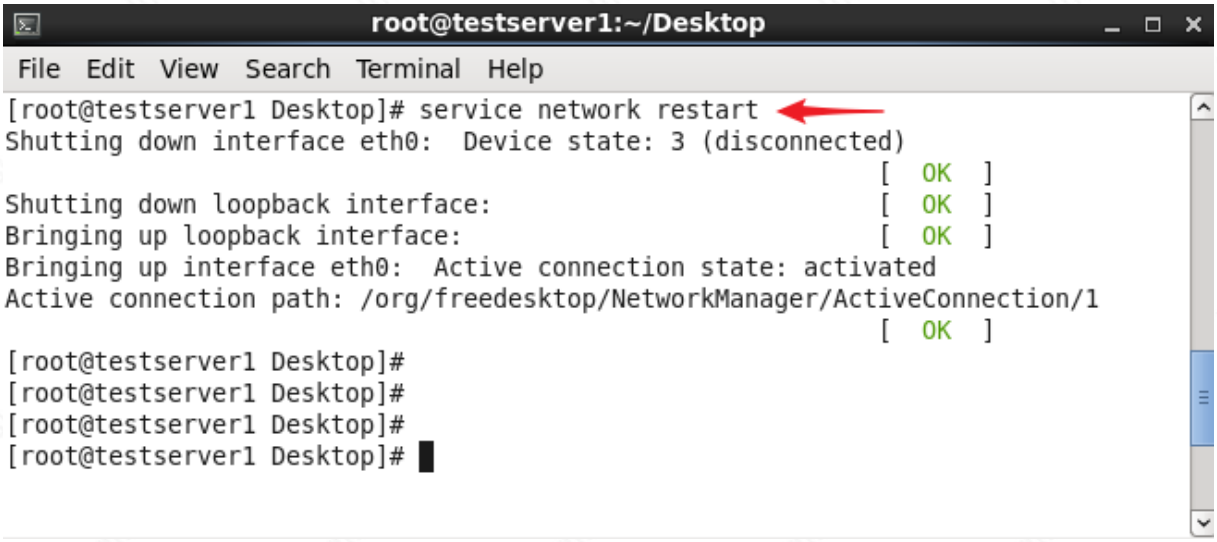
Add the adapter adress as follows



Restart the network service



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6. DISABLE FIREWALL

```
service iptables stop
chkconfig iptables off
```

Now, we should be able to connect with putty...

7. DISABLE SELINUX

Edit the /etc/selinux/config file.

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#     enforcing - SELinux security policy is enforced.
#     permissive - SELinux prints warnings instead of enforcing.
#     disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of these two values:
#     targeted - Targeted processes are protected,
#     mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Either reboot or run the following command

```
setenforce disabled
```

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8. EDIT HOSTS FILE

Add the host ip and name to the hosts file

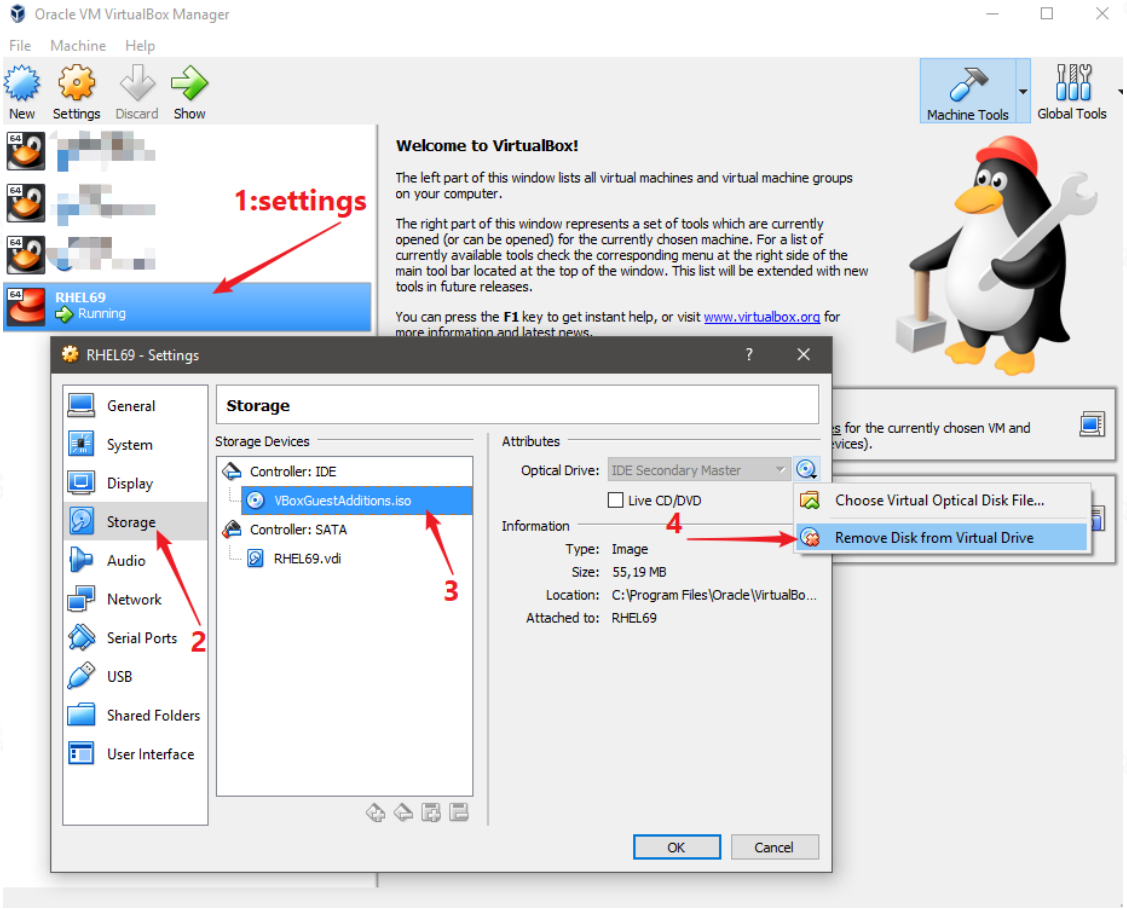
```
[root@testserver1 ~]# vi /etc/hosts

127.0.0.1               localhost localhost.localdomain localhost4 localhost4.localdomain4
192.168.136.101         testserver1.com         testserver1
```

9. Install RPMs

We can directly install the RPMs from the installation dvd, but this might cause some dependency problems while installing. Therefore, we are going to create a yum repository from the dvd and install the packages using the yum command.

First, remove all mounted disks from the server, if there are any.



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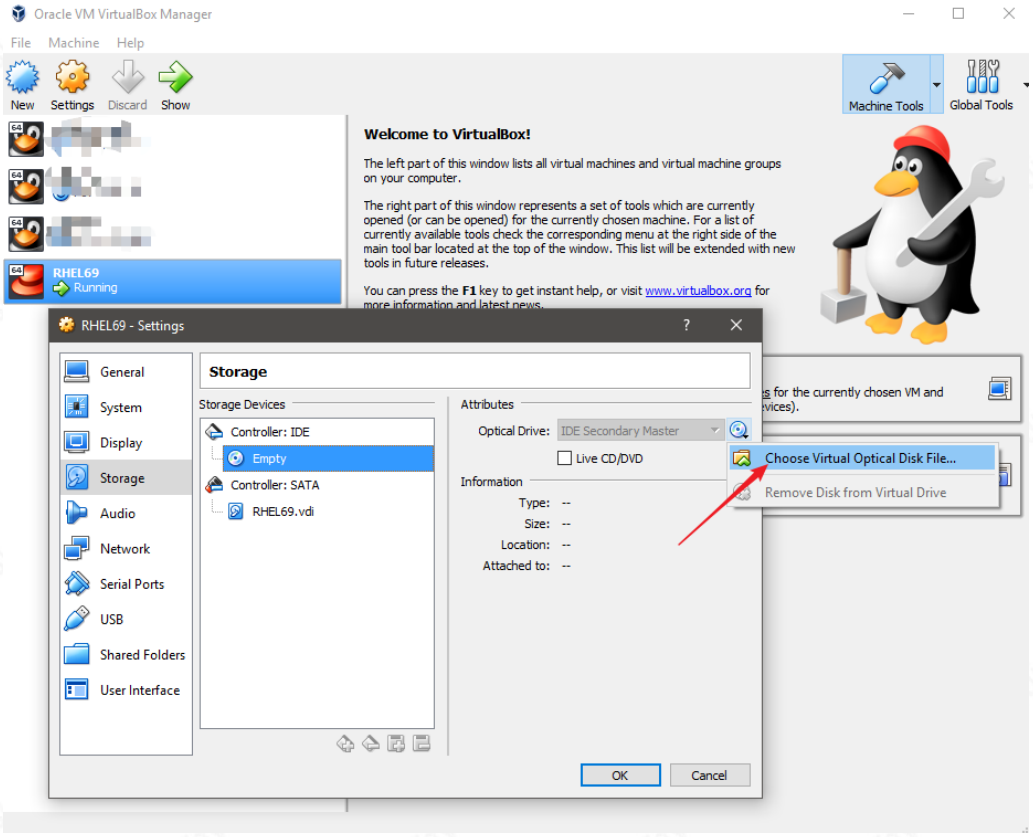
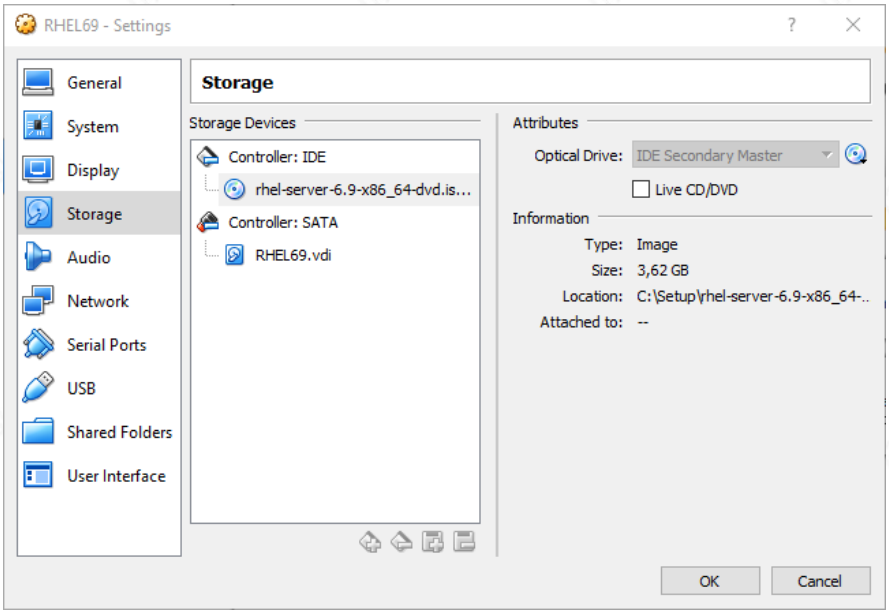
Then, attach the linux installation iso



Click "OK"



The installation DVD now should have been mounted

```
[root@testserver1 RHEL-6.9 Server.x86_64]# pwd

/media/RHEL-6.9 Server.x86_64
```

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The naming may cause some problems in the yum repo file so, create a symbolic link as follows

```
[root@testserver1 ~]# mkdir -p /linuxdvd
[root@testserver1 ~]# ln -s /media/RHEL-6.9\ Server.x86_64/Server /linuxdvd
```

Note: Be careful about the slashes. Try changing directory using the link (test).

Edit the yum repository file and add the following lines in red

```
[root@testserver1 ~]# vi /etc/yum.repos.d/dvd.repo

[rhel69]
name= Red Hat Enterprise Linux 6.9 DVD
baseurl=file:///linuxdvd/Server
gpgcheck=0
enabled=1
```

Check the status with the following command. It should return something similar.

```
[root@testserver1 Server]# yum repolist

This system is not registered with an entitlement server. You can use subscription-manager to register.
rhel69                          | 4.1 kB     00:00 ...
rhel69/primary_db               | 3.1 MB     00:00 ...
...
..
.
```

Install RPMs (with root user)

```
yum install binutils-2*x86_64*
yum install glibc-2*x86_64* nss-softokn-freebl-3*x86_64*
yum install glibc-2*i686* nss-softokn-freebl-3*i686*
yum install compat-libstdc++-33*x86_64*
yum install glibc-common-2*x86_64*
yum install glibc-devel-2*x86_64*
yum install glibc-devel-2*i686*
yum install glibc-headers-2*x86_64*
yum install elfutils-libelf-0*x86_64*
yum install elfutils-libelf-devel-0*x86_64*
yum install gcc-4*x86_64*
yum install gcc-c++-4*x86_64*
yum install ksh-*x86_64*
yum install libaio-0*x86_64*
yum install libaio-devel-0*x86_64*
yum install libaio-0*i686*
yum install libaio-devel-0*i686*
yum install libgcc-4*x86_64*
yum install libgcc-4*i686*
yum install libstdc++-4*x86_64*
yum install libstdc++-4*i686*
yum install libstdc++-devel-4*x86_64*
yum install make-3.81*x86_64*
yum install numactl-devel-2*x86_64*
yum install sysstat-9*x86_64*
yum install compat-libstdc++-33*i686*
yum install compat-libcap*
yum install libaio
yum install libaio.i686
yum install libaio-devel
yum install libaio-devel.i686
yum install libaio-devel-0.3.107-10.el6.x86_64.rpm
```

10.USER and GROUP CREATION

Create the users and groups

```
[root@testserver1 Server]# groupadd oinstall
[root@testserver1 Server]# groupadd dba
[root@testserver1 Server]# groupadd oper
[root@testserver1 Server]# useradd -g oinstall -G dba,oper oracle
```

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Edit the security limits for this user - add the following red lines

```
[root@testserver1 Server]# vi /etc/security/limits.conf

oracle              soft    nproc   16384
oracle              hard    nproc   16384
oracle              soft    nofile  4096
oracle              hard    nofile  65536
oracle              soft    stack   10240
```

11.KERNEL PARAMETERS

Edit the kernel parameters - add the following red lines

```
[root@testserver1 Server]# vi /etc/sysctl.conf

fs.suid_dumpable = 1
fs.aio-max-nr = 1048576
fs.file-max = 6815744
kernel.shmall = 2097152
kernel.shmmax = 1051795456
kernel.shmmni = 4096
# semaphores: semmsl, semmns, semopm, semmni
kernel.sem = 250 32000 100 128
net.ipv4.ip_local_port_range = 9000 65500
net.core.rmem_default=262144
net.core.rmem_max=4194304
net.core.wmem_default=262144
net.core.wmem_max=1048586
```

Run the following command to make the previous changes effective

```
[root@testserver1 Server]# /sbin/sysctl -p
```

12.CREATE DIRECTORIES & COPY FILES

Create directories

```
[root@testserver1 Server]# mkdir -p /setup
[root@testserver1 Server]# mkdir -p /u01/app/oracle/product/11.2.0/dbhome
[root@testserver1 Server]# chown -R oracle:oinstall /u01
[root@testserver1 Server]# chmod -R 775 /u01
```

Copy the following files to /setup path using an ftp tool.

```
p13390677_112040_Linux-x86-64_1of7.zip
p13390677_112040_Linux-x86-64_1of7.zip
```

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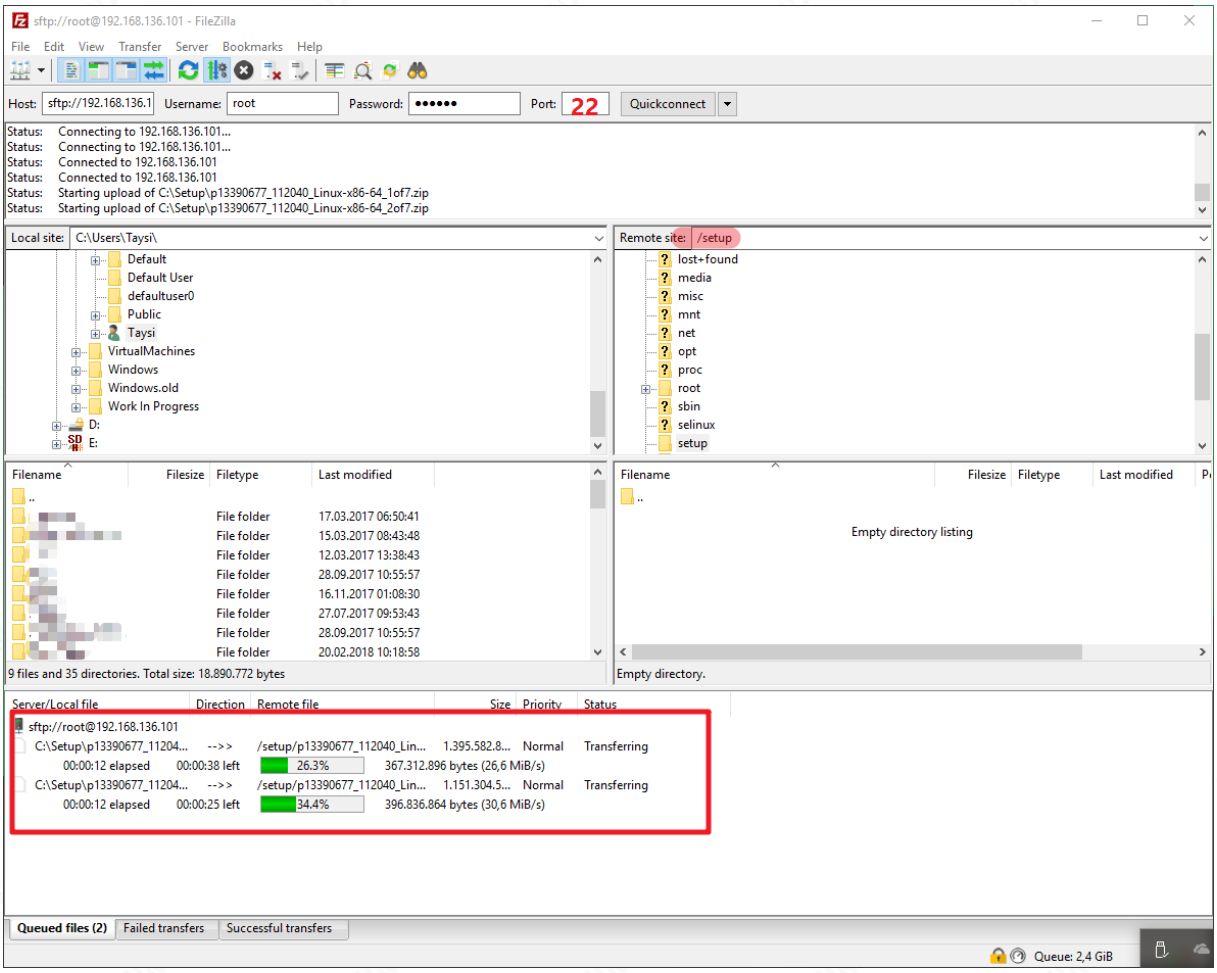

Change the owner and mode

```
[root@testserver1 ~]# cd /setup
[root@testserver1 ~]# chown -R oracle:oinstall /setup
[root@testserver1 setup]# chown -R oracle:oinstall p*
[root@testserver1 setup]# chmod 755 p*
```

13.CREATE BASH PROFILE for ORACLE USER

Edit the bash profile for Oracle user and add the red lines.

```
[root@testserver1 setup]# su - oracle
[oracle@testserver1 ~]$ vi .bash_profile


TMP=/tmp; export TMP
TMPDIR=$TMP; export TMPDIR

ORACLE_HOSTNAME=testserver1.com; export ORACLE_HOSTNAME
ORACLE_UNQNAME=DBALPHA; export ORACLE_UNQNAME
ORACLE_BASE=/u01/app/oracle; export ORACLE_BASE
ORACLE_HOME=/u01/app/oracle/product/11.2.0/dbhome; export ORACLE_HOME
ORACLE_SID=DBALPHA; export ORACLE_SID

PATH=/usr/sbin:$PATH; export PATH
PATH=$ORACLE_HOME/bin:$PATH; export PATH

LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib; export CLASSPATH
```

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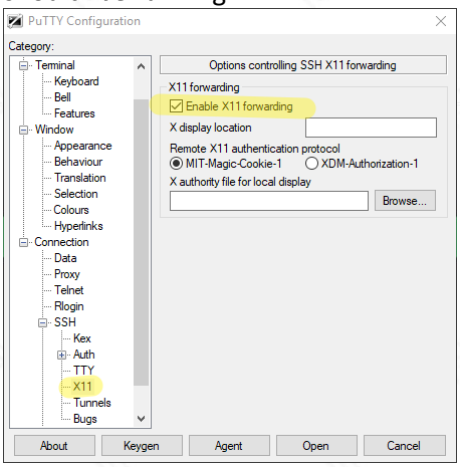
After editing the bash profile, re-login with the oracle user (or just run the bash profile) to make the variables effective.

14.BEGIN SOFTWARE INSTALLATION

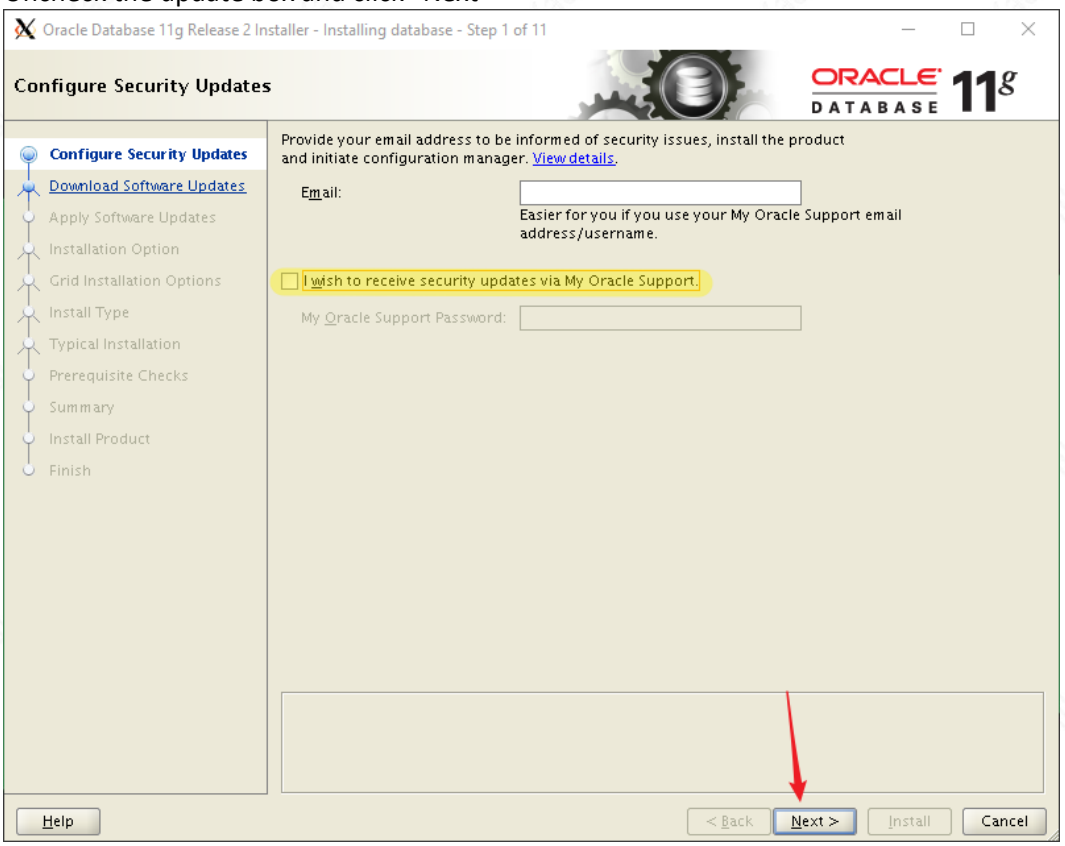
Connect with putty and be sure that the X11 forwarding is enabled in putty. Also your Xming tool should be running.



Unzip the files and run the installation

```
[oracle@testserver1 setup]$ cd /setup
[oracle@testserver1 setup]$ unzip p13390677_112040_Linux-x86-64_1of7.zip
[oracle@testserver1 setup]$ unzip p13390677_112040_Linux-x86-64_2of7.zip
[oracle@testserver1 setup]$ cd /setup/database/
[oracle@testserver1 database]$ ./runInstaller
```

Uncheck the update box and click "Next"



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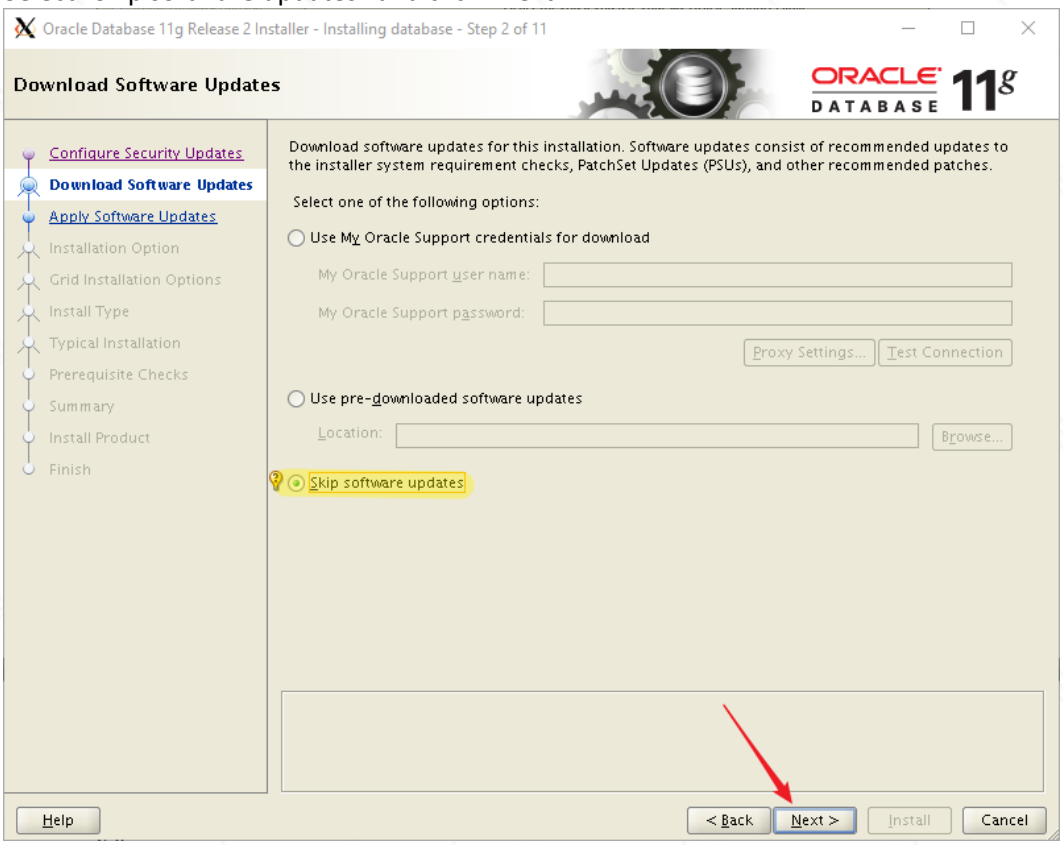
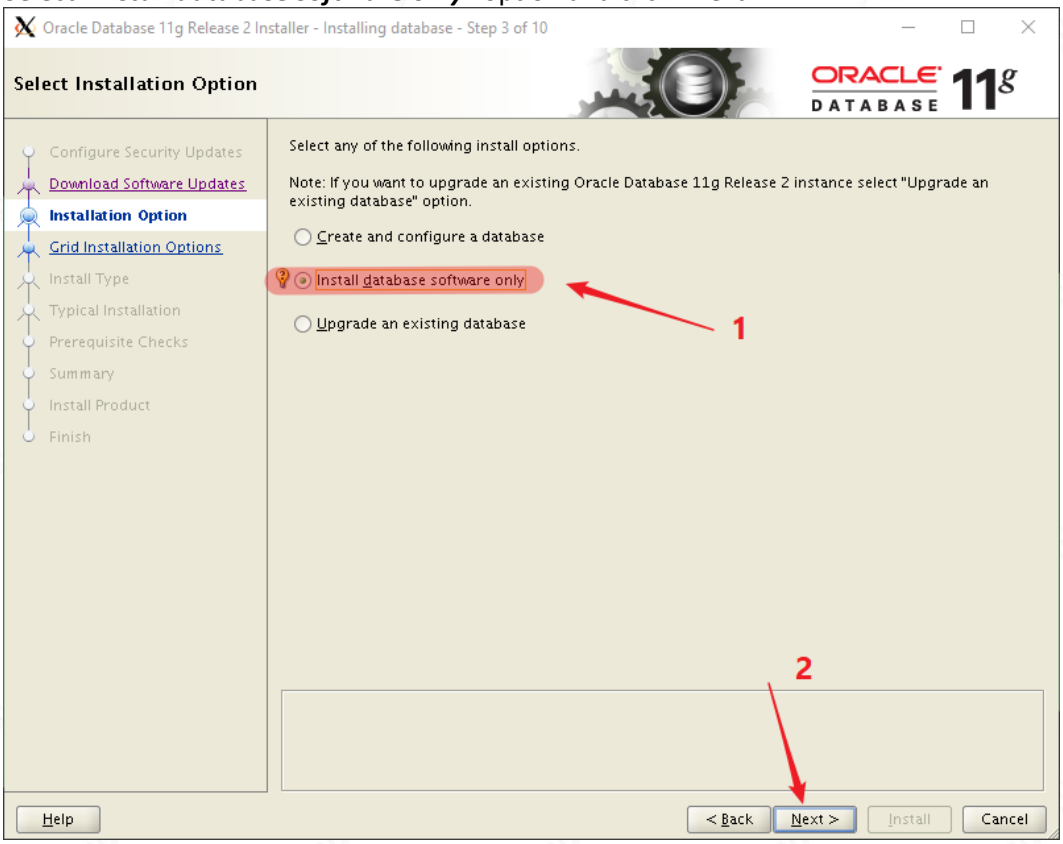
Select "Skip software updates" and click "Next"



Select ***"Install database software only***" option and click "Next"



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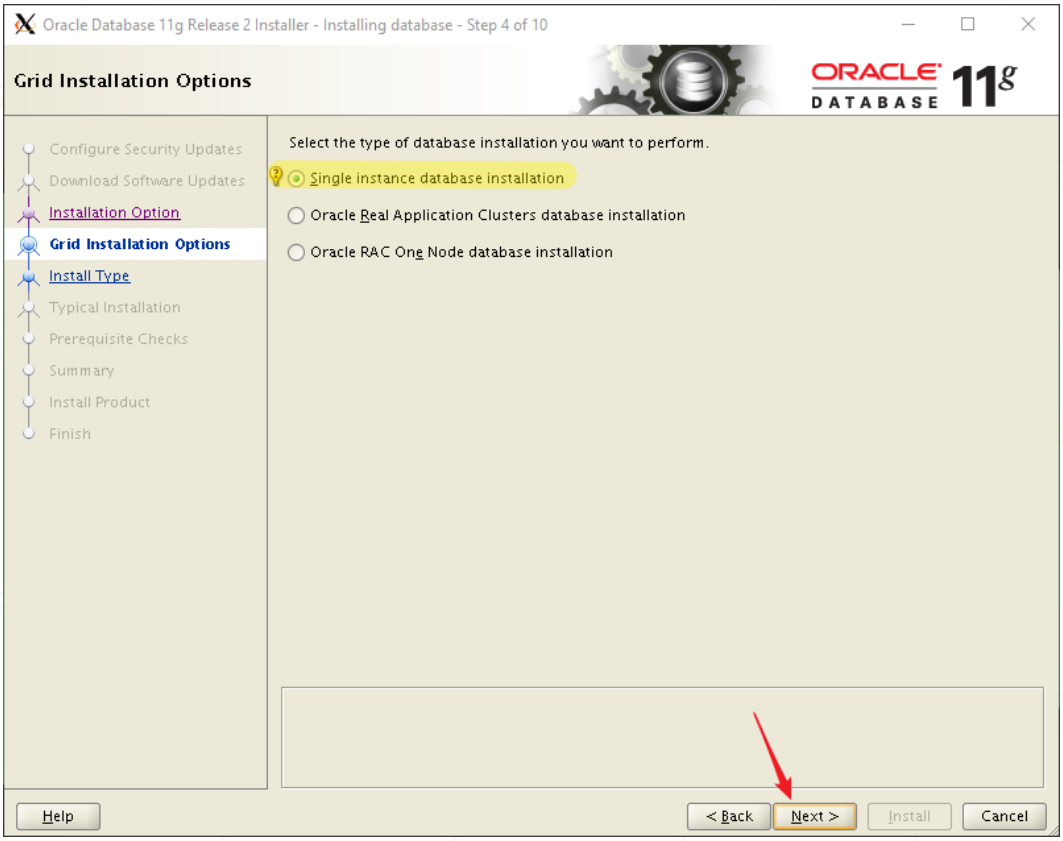
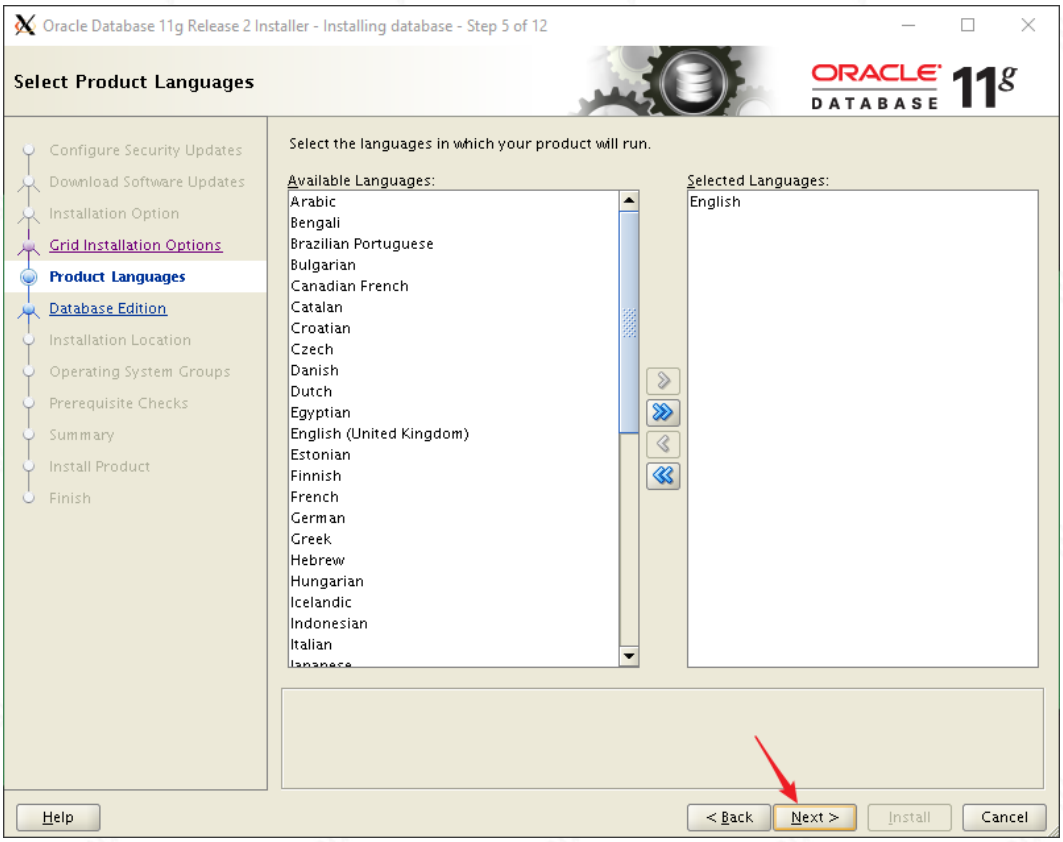
Click "Next"



Click "Next"



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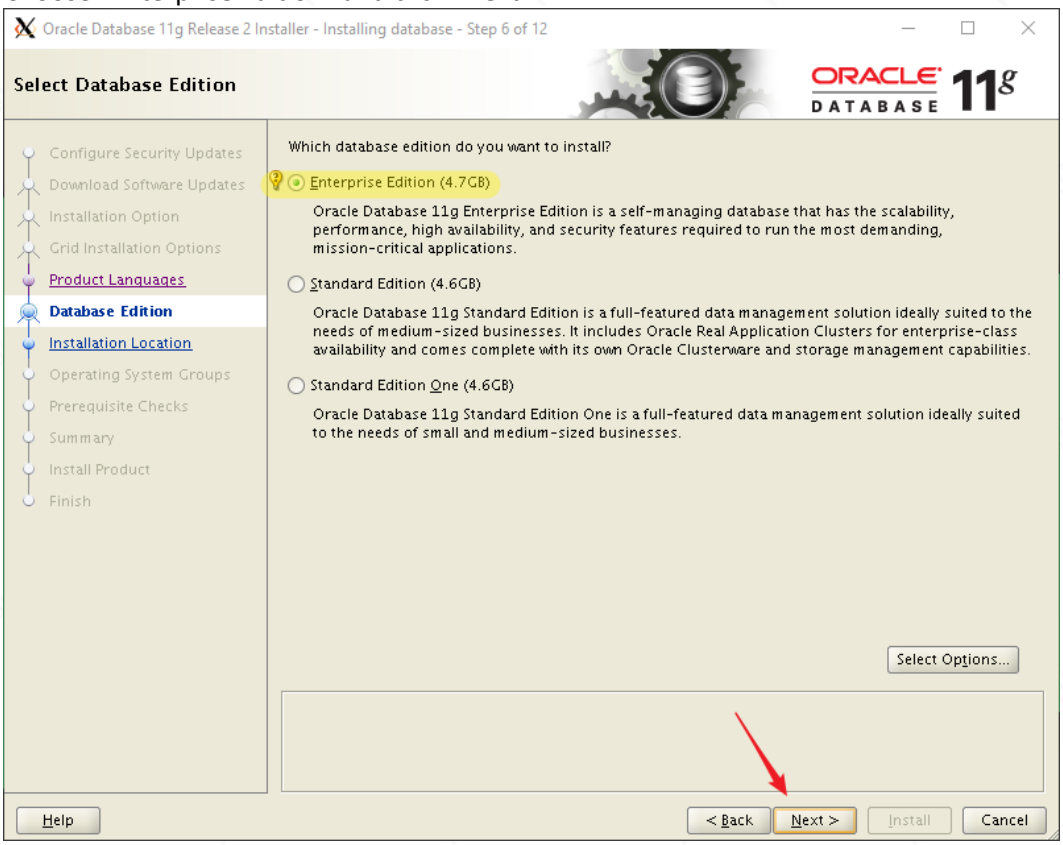
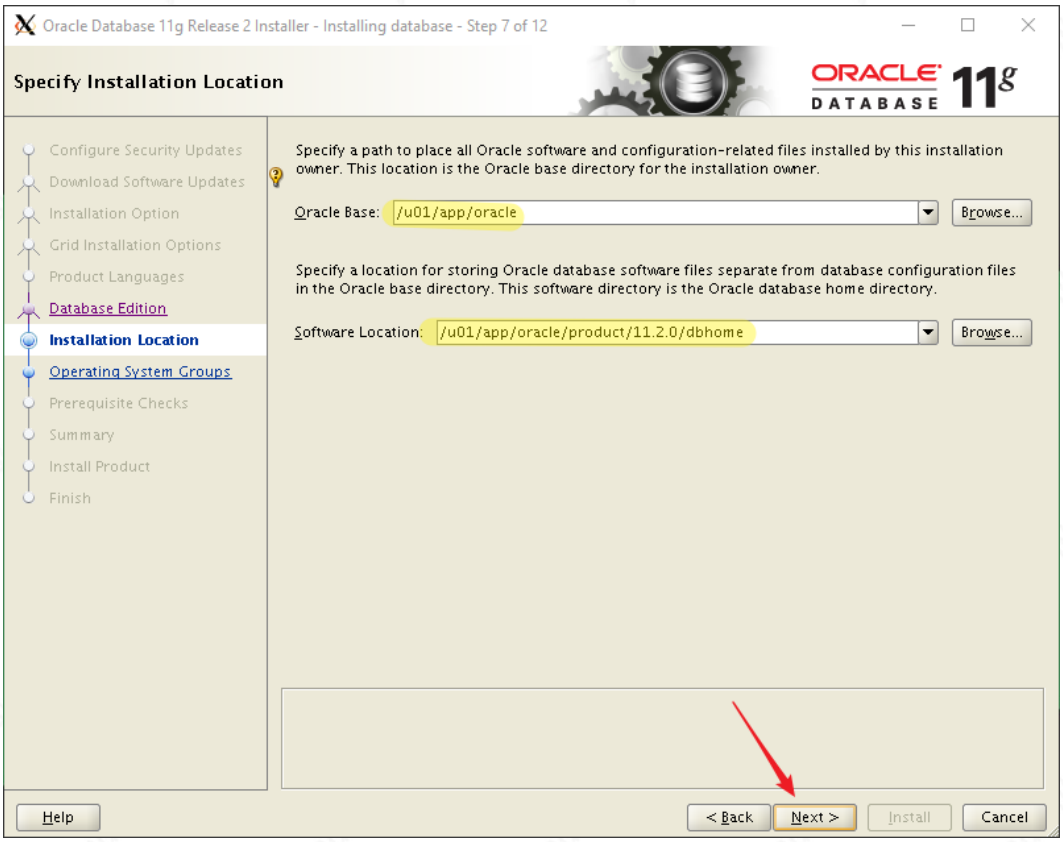
Choose "Enterprise Edition" and click "Next"



Click "Next"



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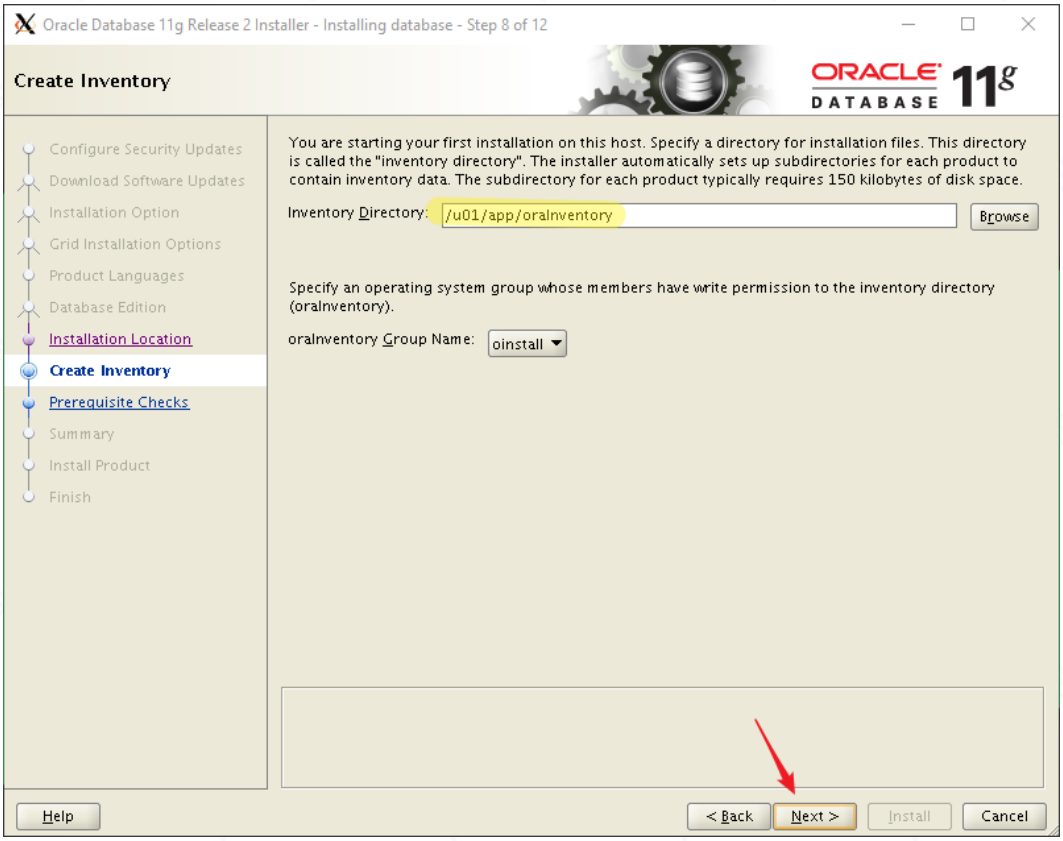
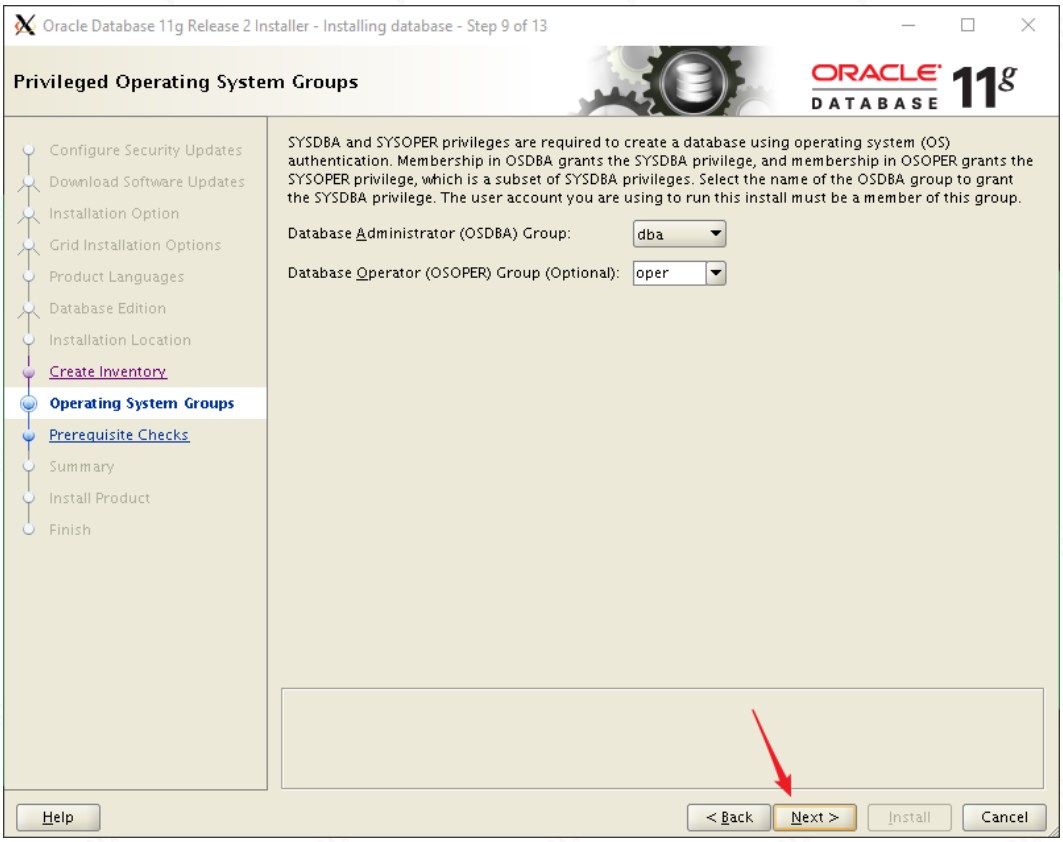
Click "Next"



Click "Next"



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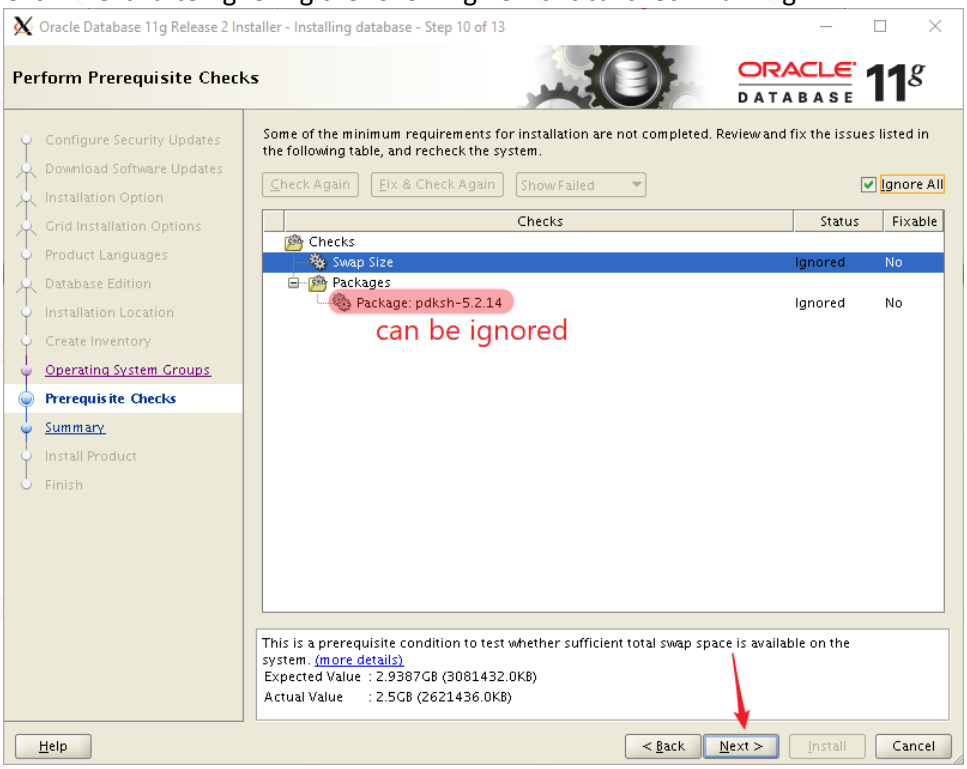
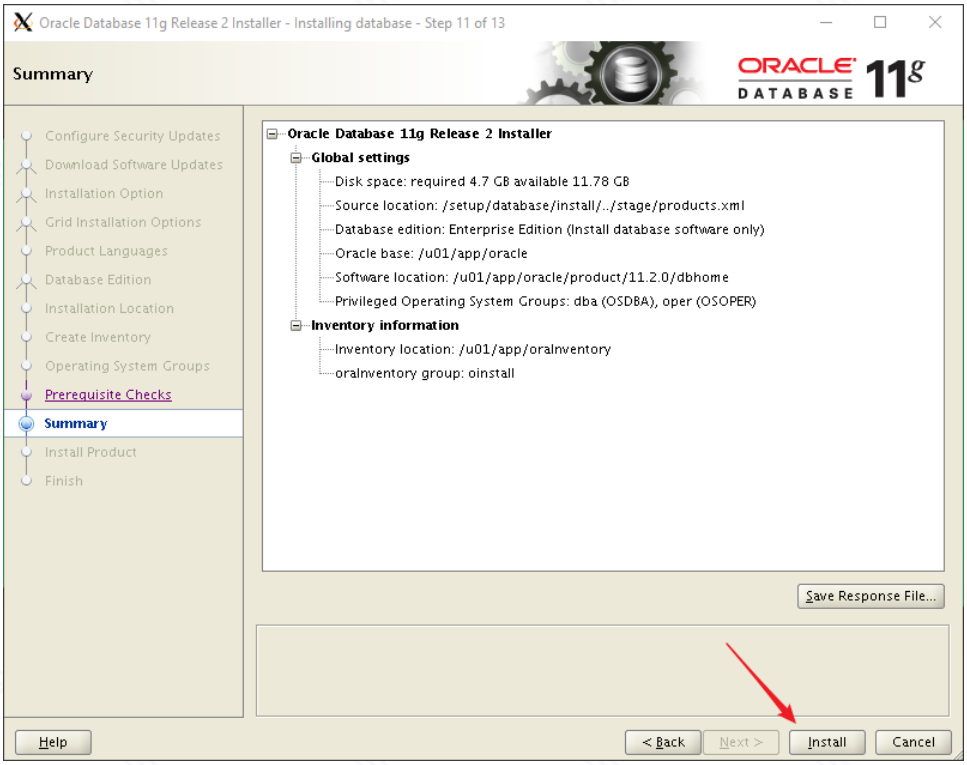
Click "Next" after ignoring the following non-critical check warning



The pdksh package is not required for a successful installation of Oracle 11.2.0.4 (Doc ID 1962046.1)
And since this is a test installation swap size can also be ignored.

Click "Install"



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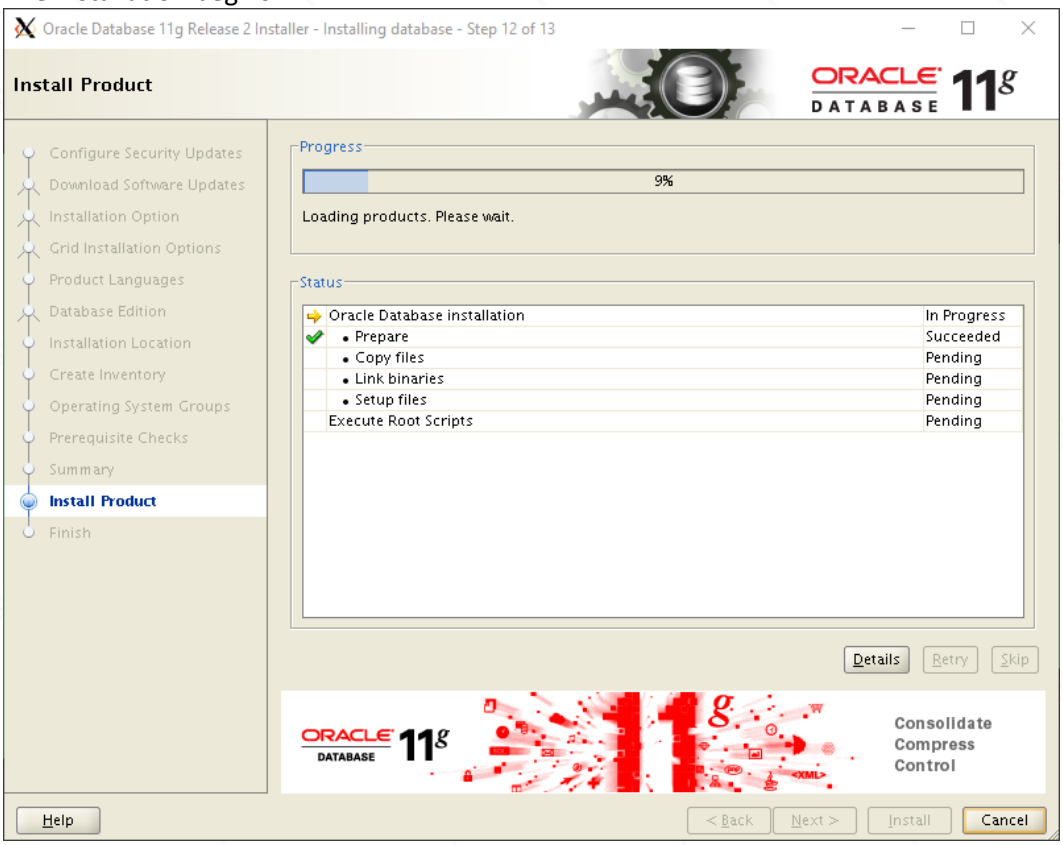
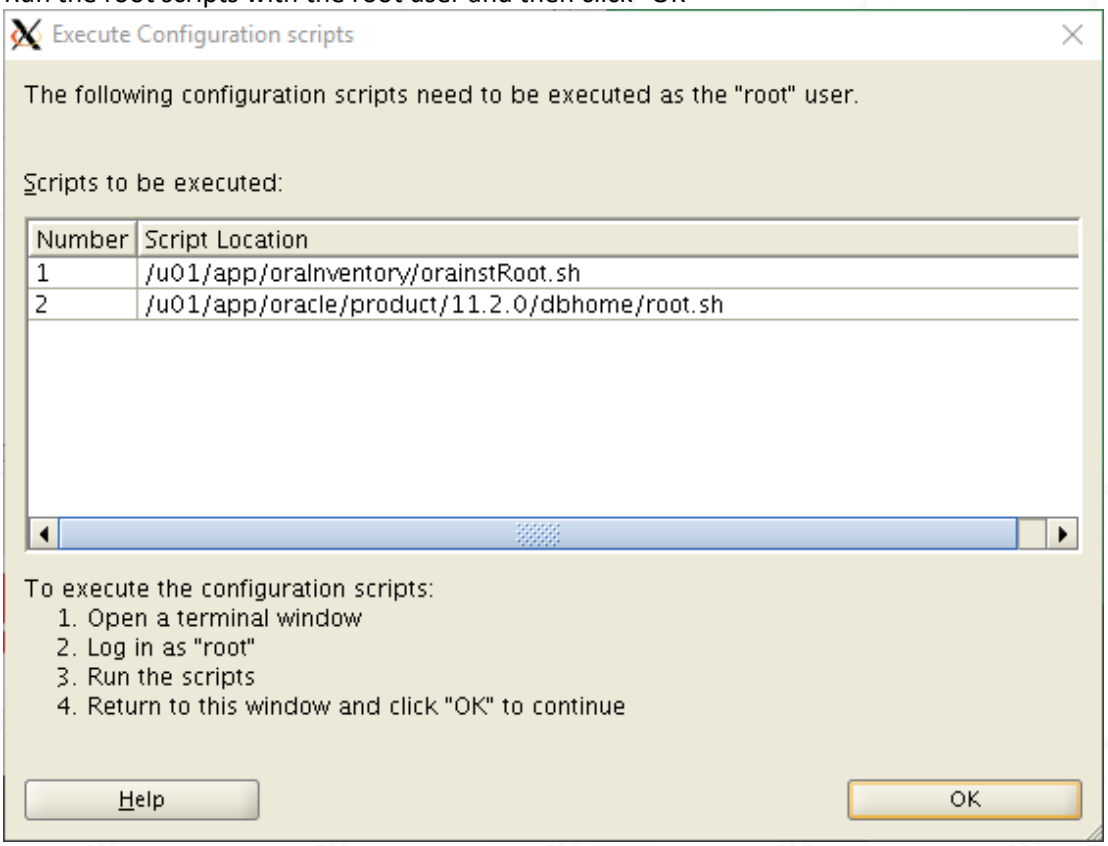
The installation begins.



Run the root scripts with the root user and then click "OK"



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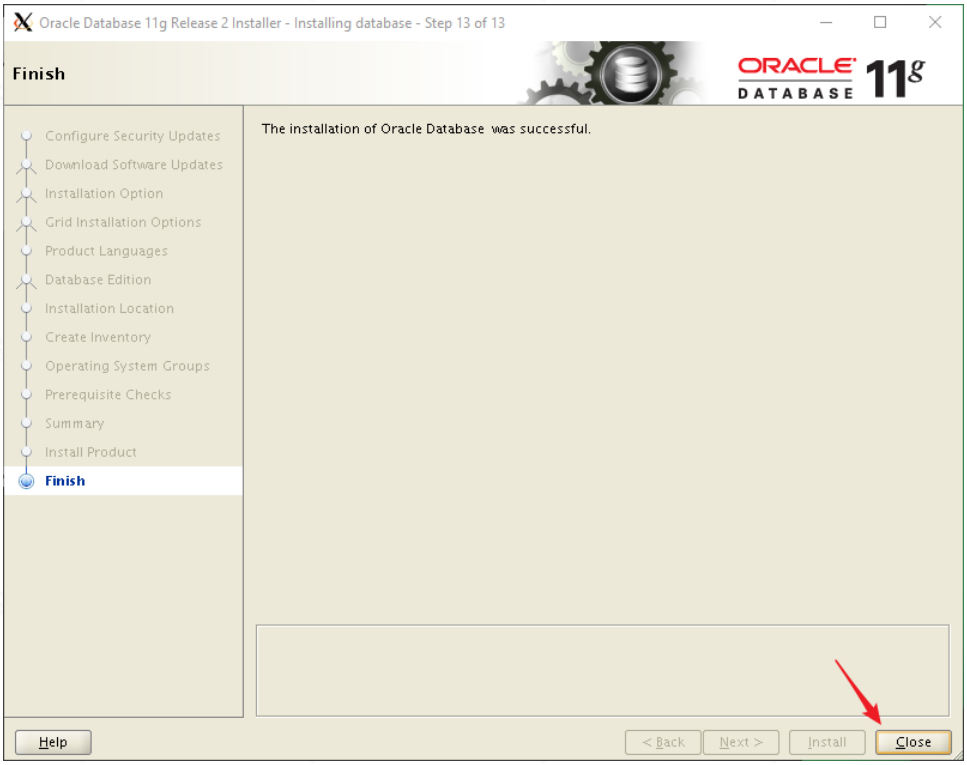
The installation was successful. Click "Close"

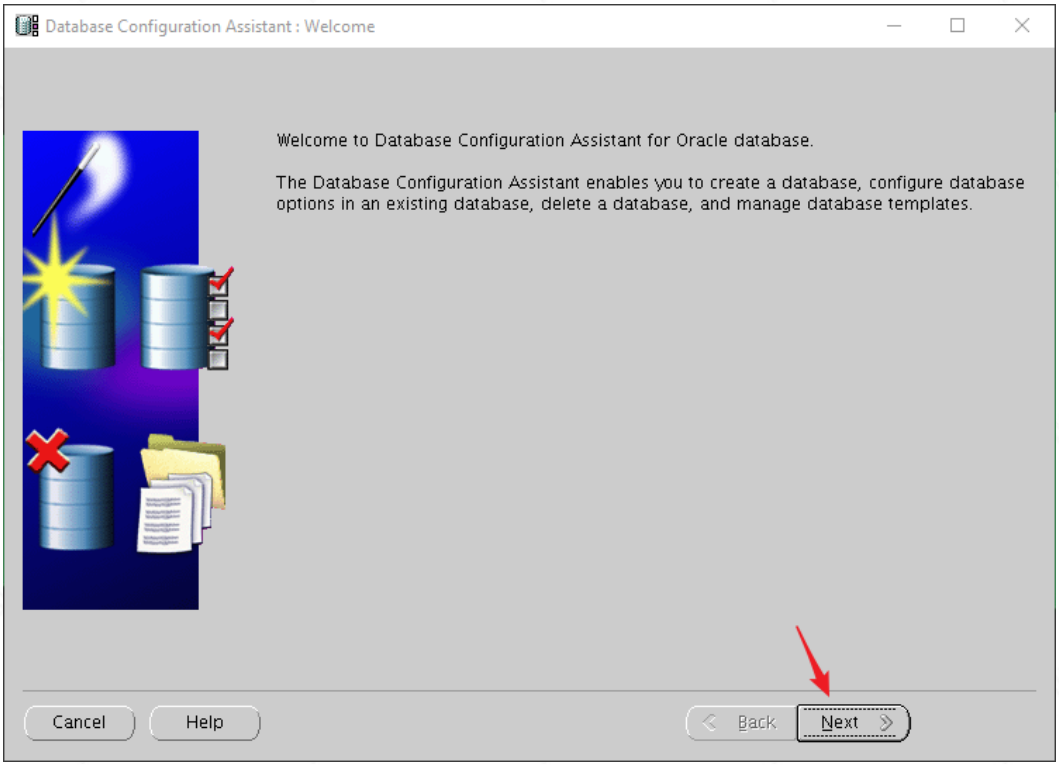


15.INSTALL DATABASE

Now the software is ready, we can go on with the database installation

```
[oracle@testserver1 setup]$ dbca
```

Click "Next"



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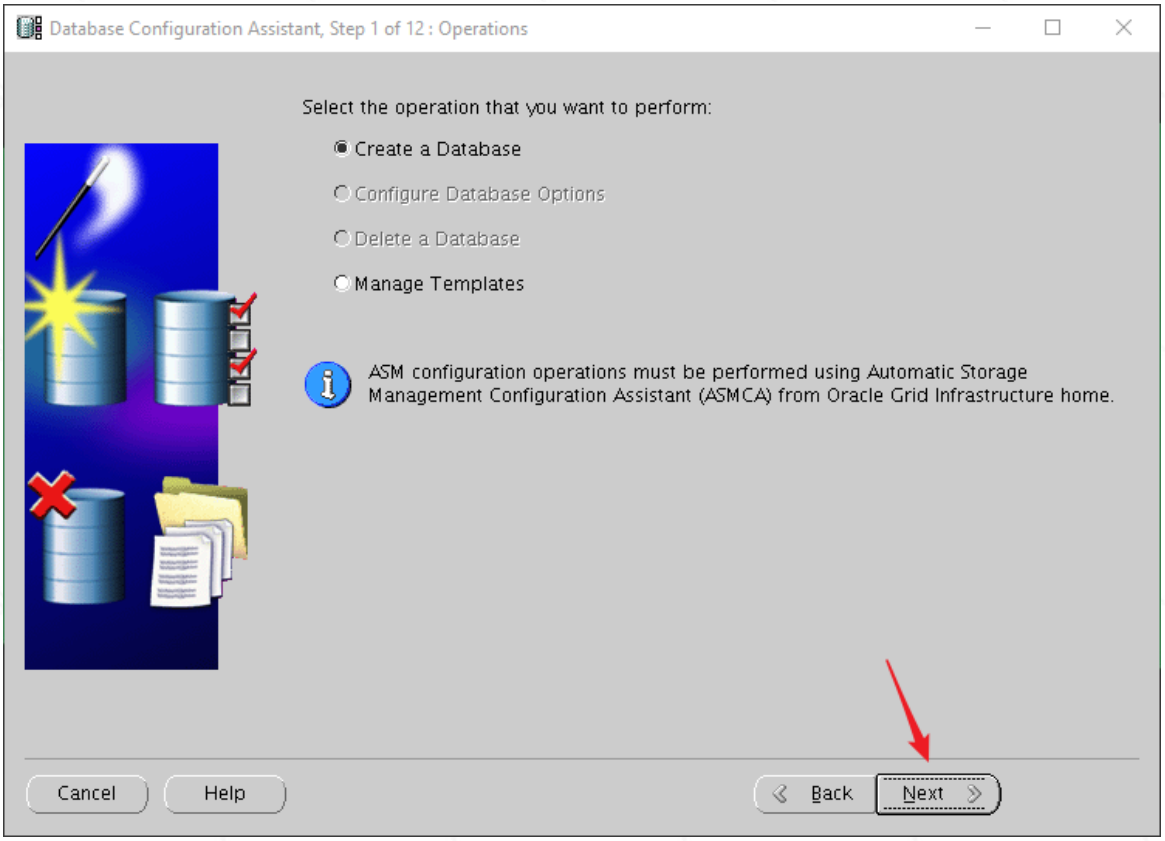
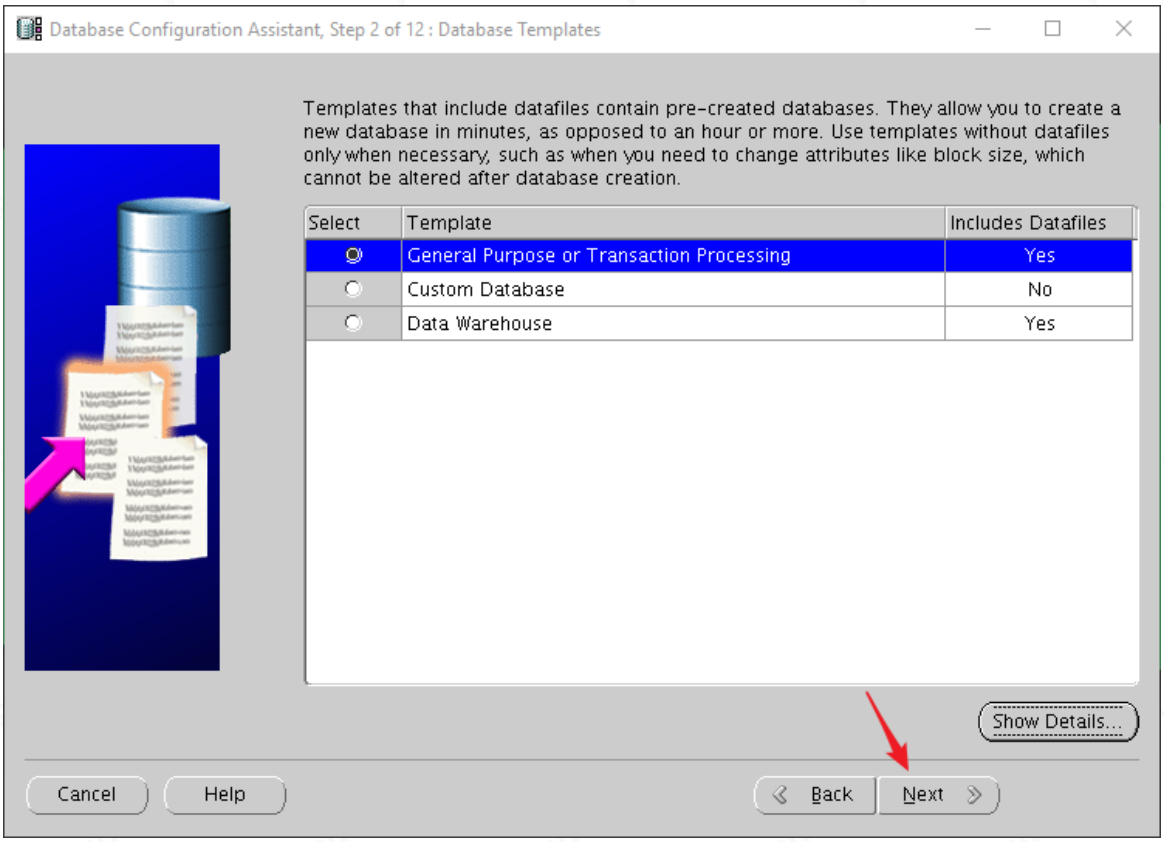
Click "Next"



Click "Next"



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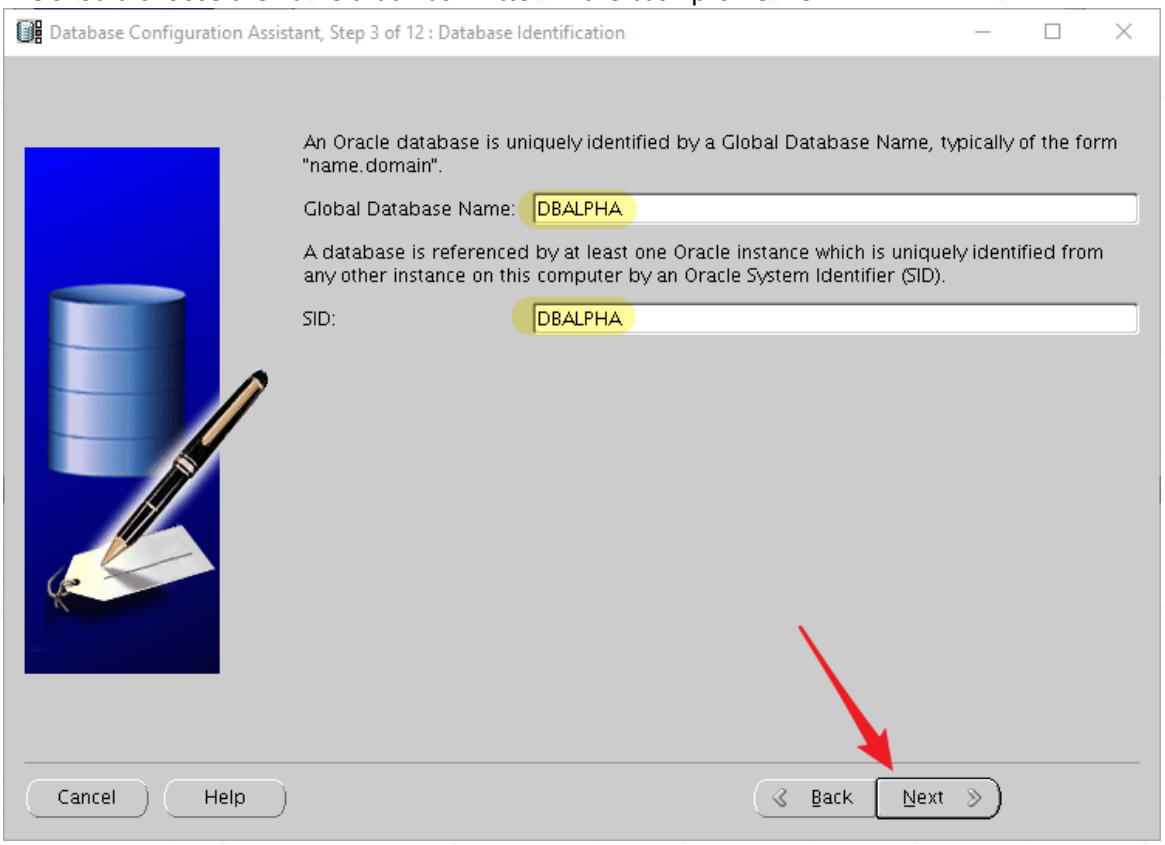
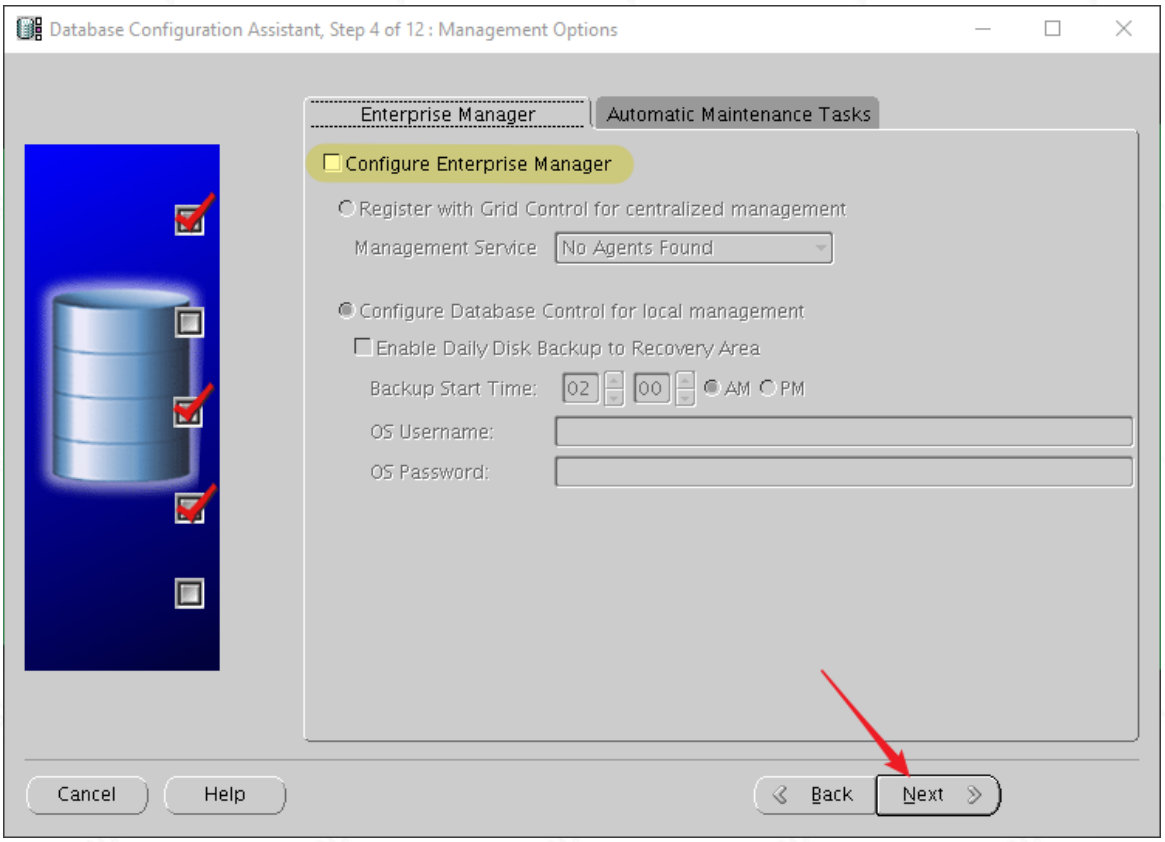
We should choose the name that was written in the bash profile file



Uncheck EM and click "Next"



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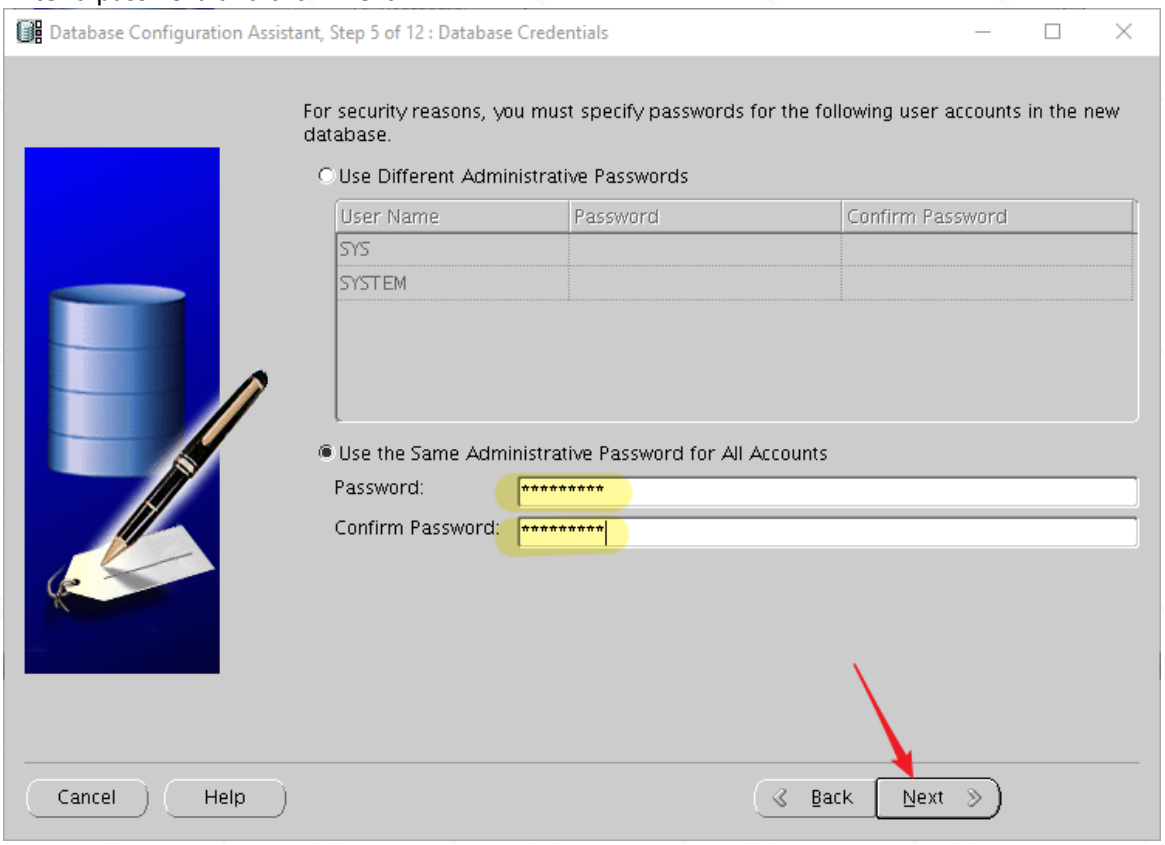
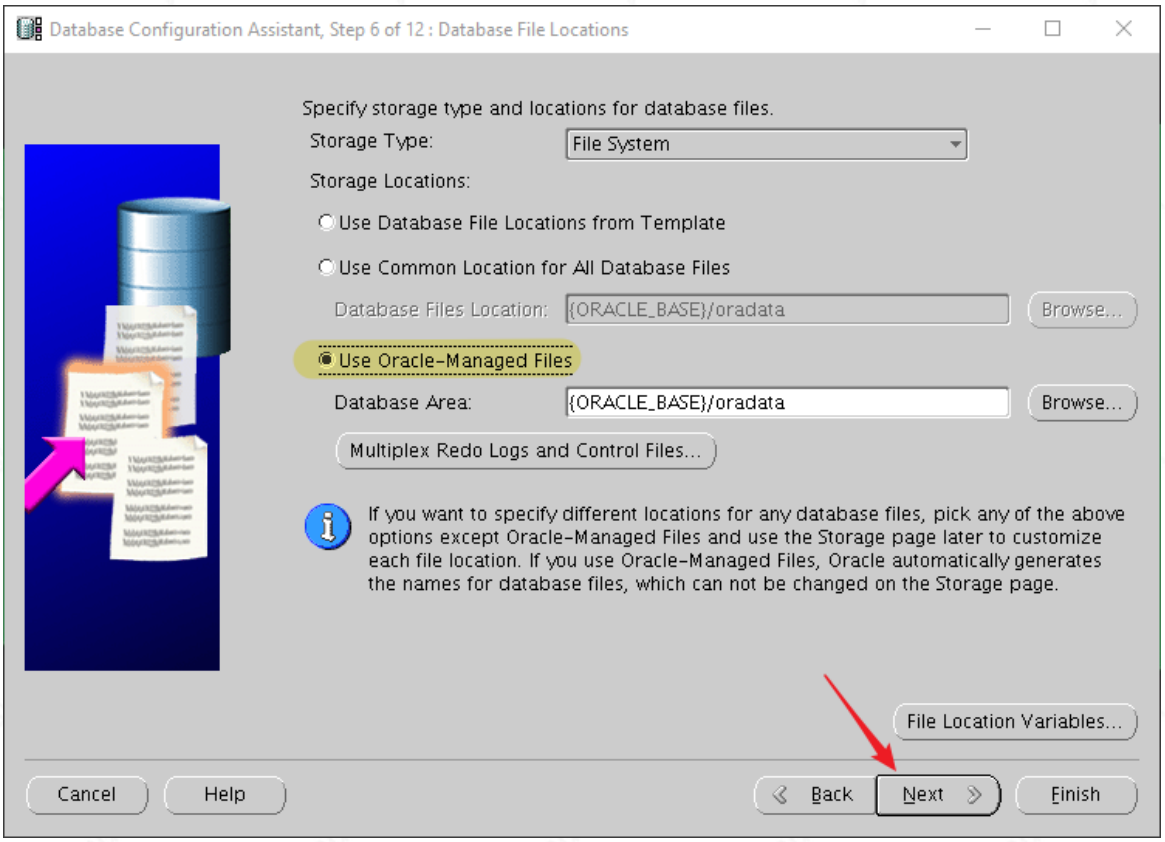
Enter a password and click "Next"



Just choose OMF and click "Next"



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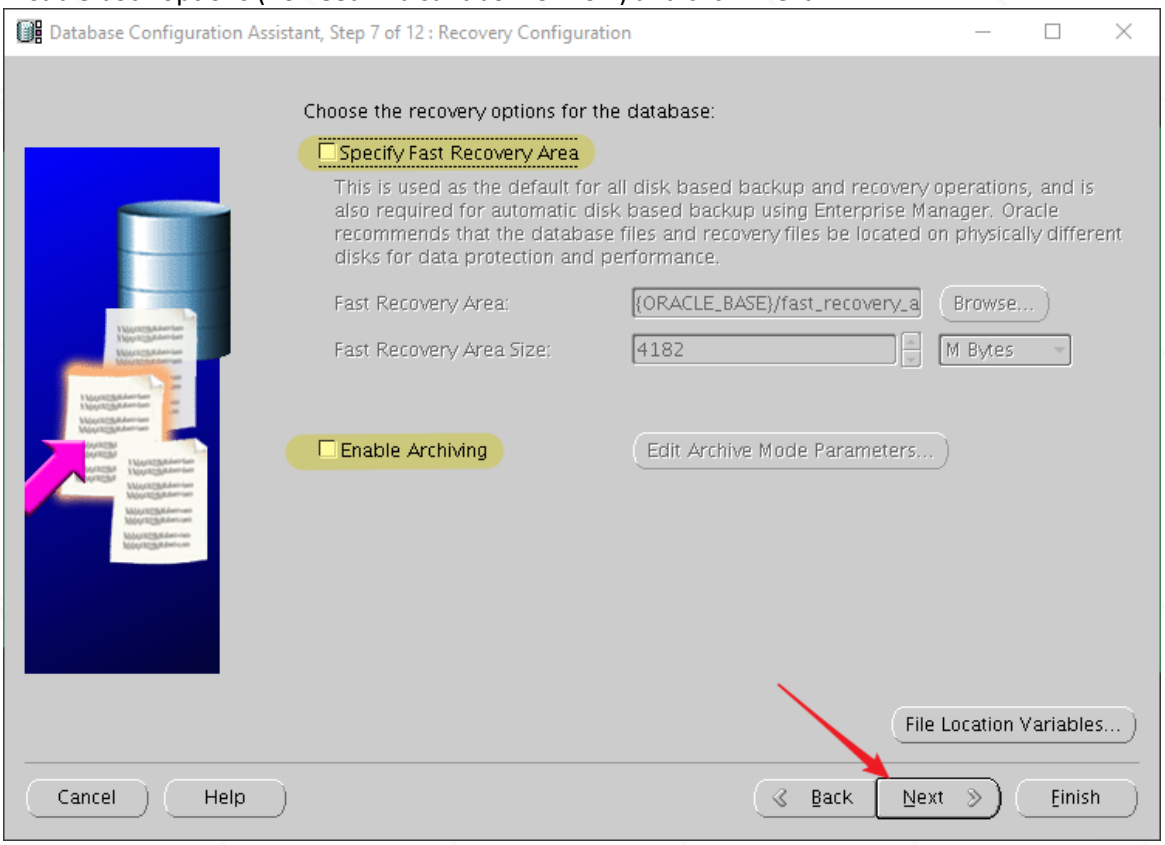
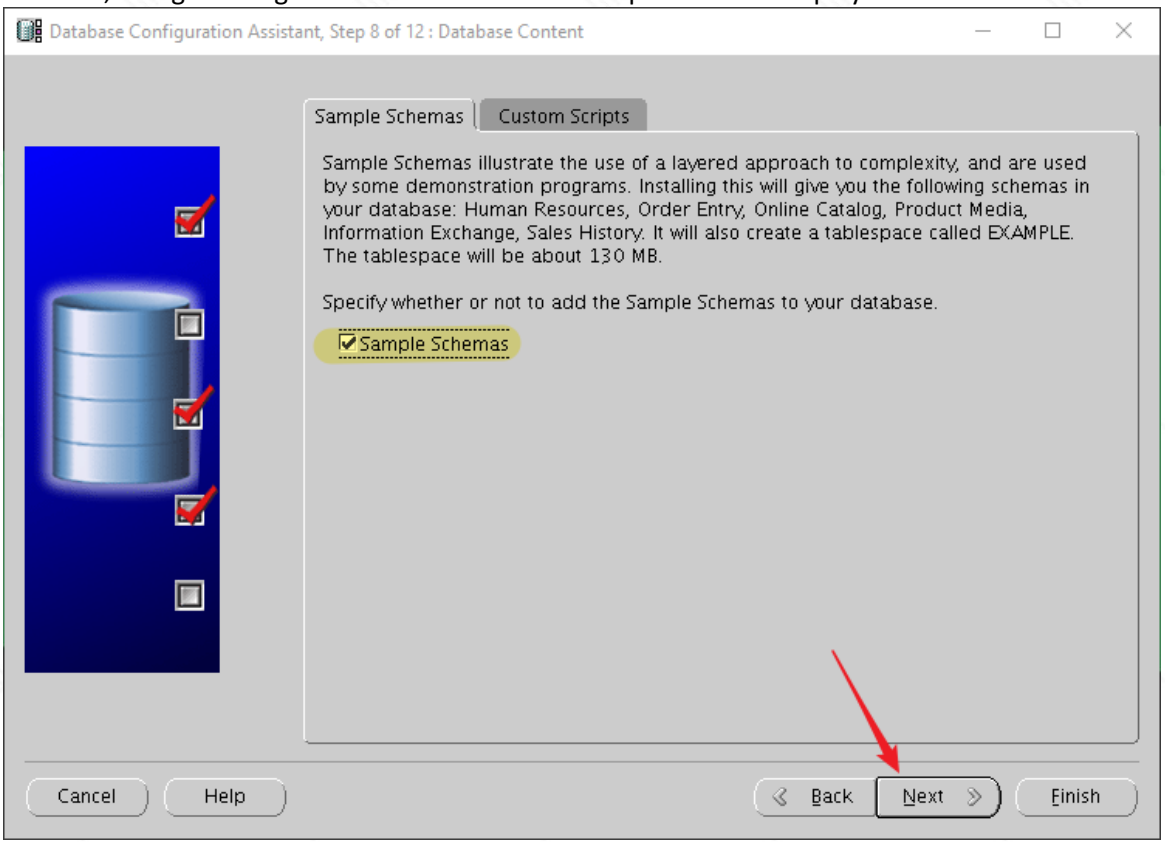
Disable both options (no need in a sandbox for now) and click "Next"



You should not be installing these sample schemas in a production environment, but since it is a sandbox, it might be a good idea to install some sample schemas to play around...



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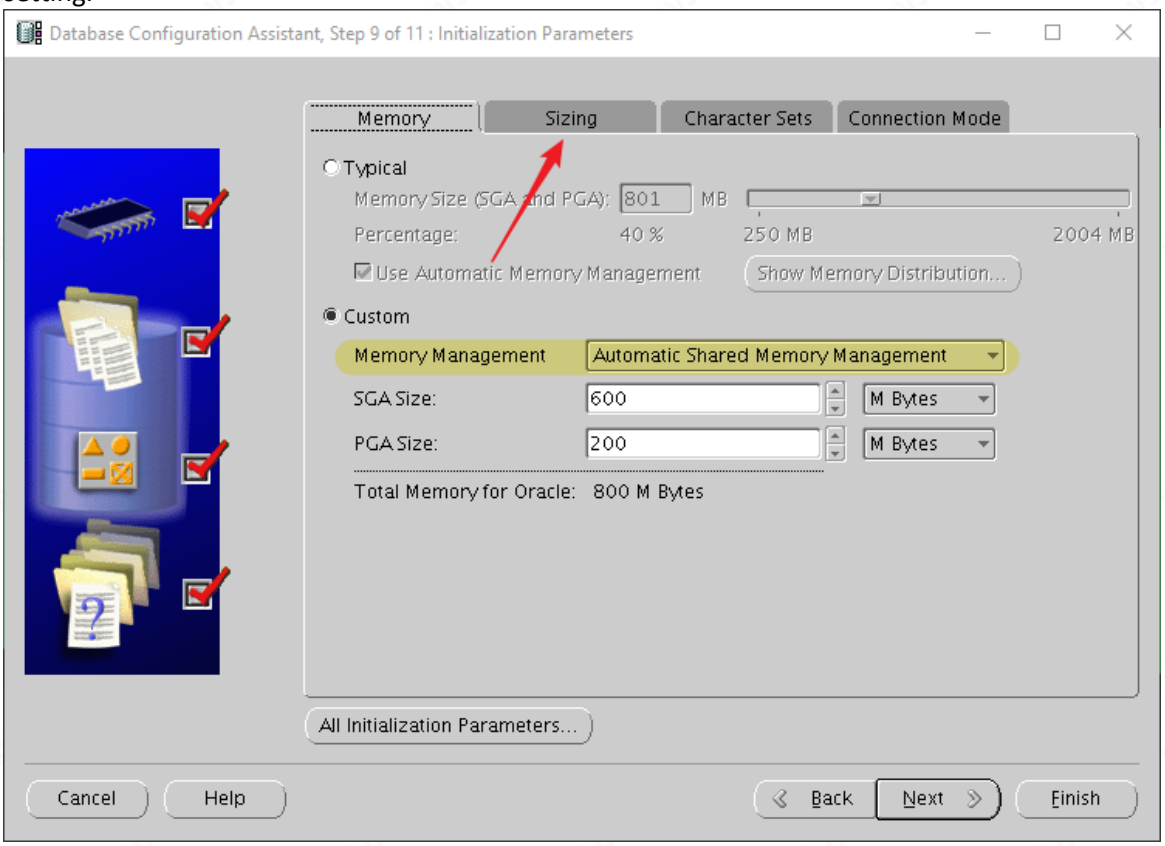
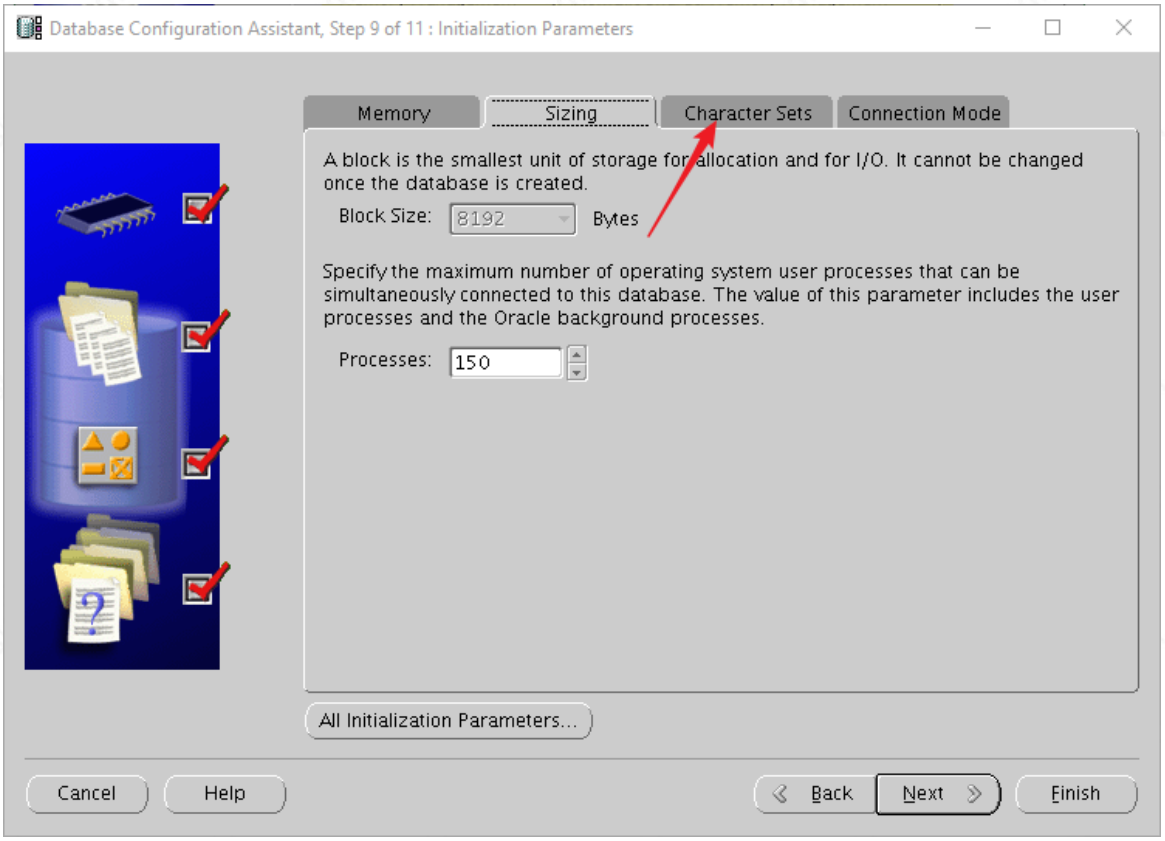
Actually, this section is really important for a production database. There are some concepts like hugepages - the way, the size how the linux OS allocates memory and AMM for instance does not work with hugepages. If you are intending to use hugepages you have to be using ASMM or a manual setting.





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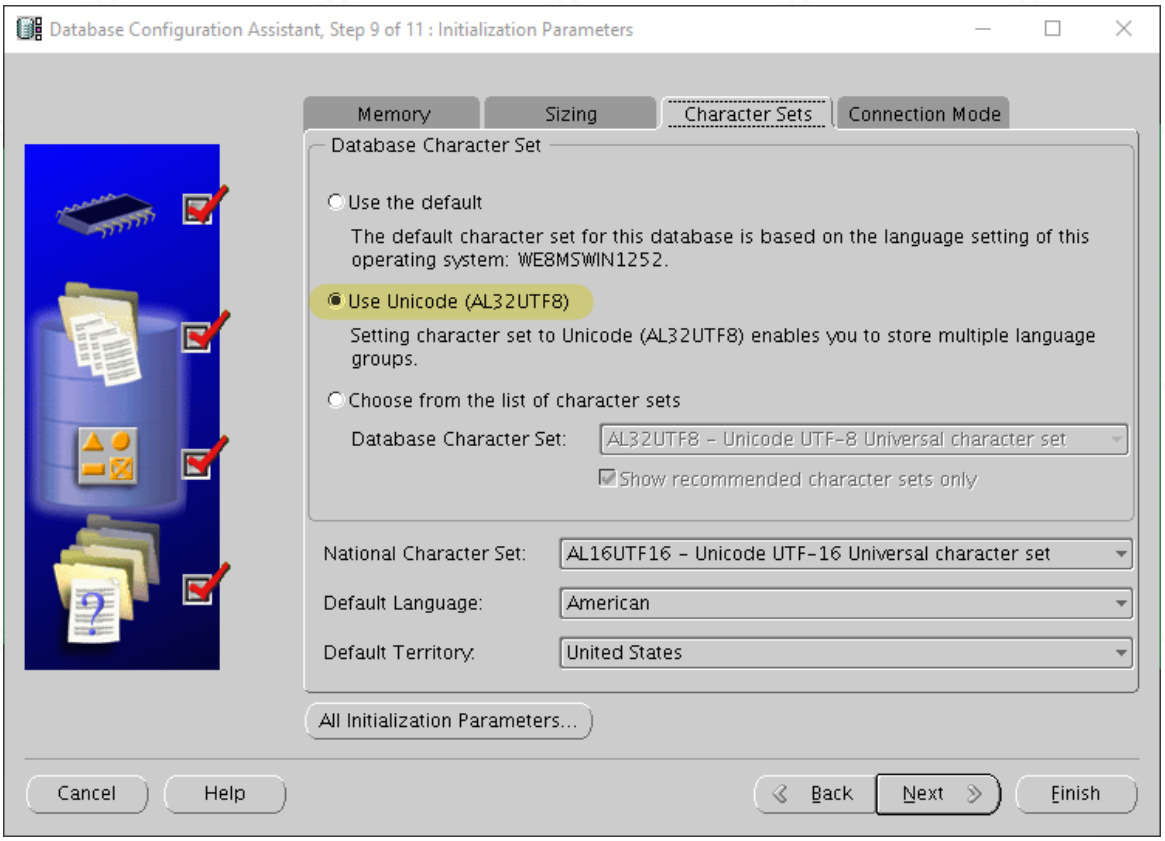

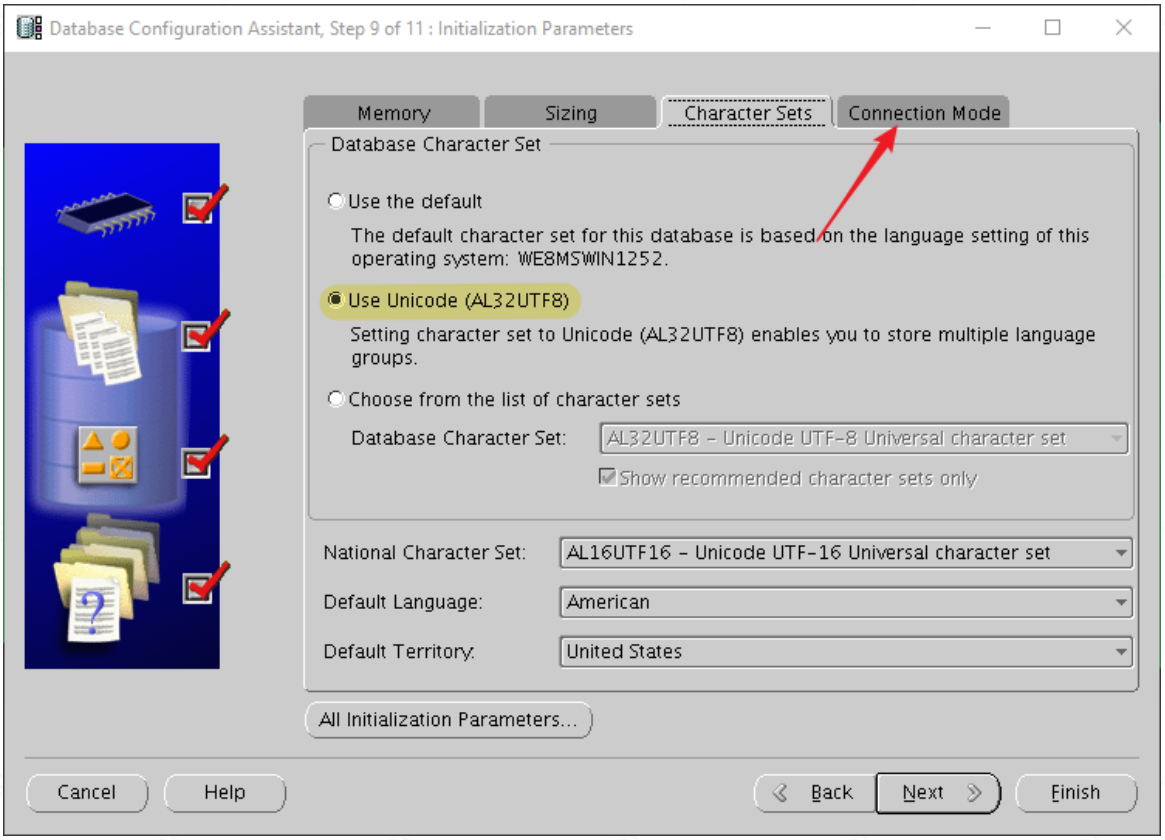

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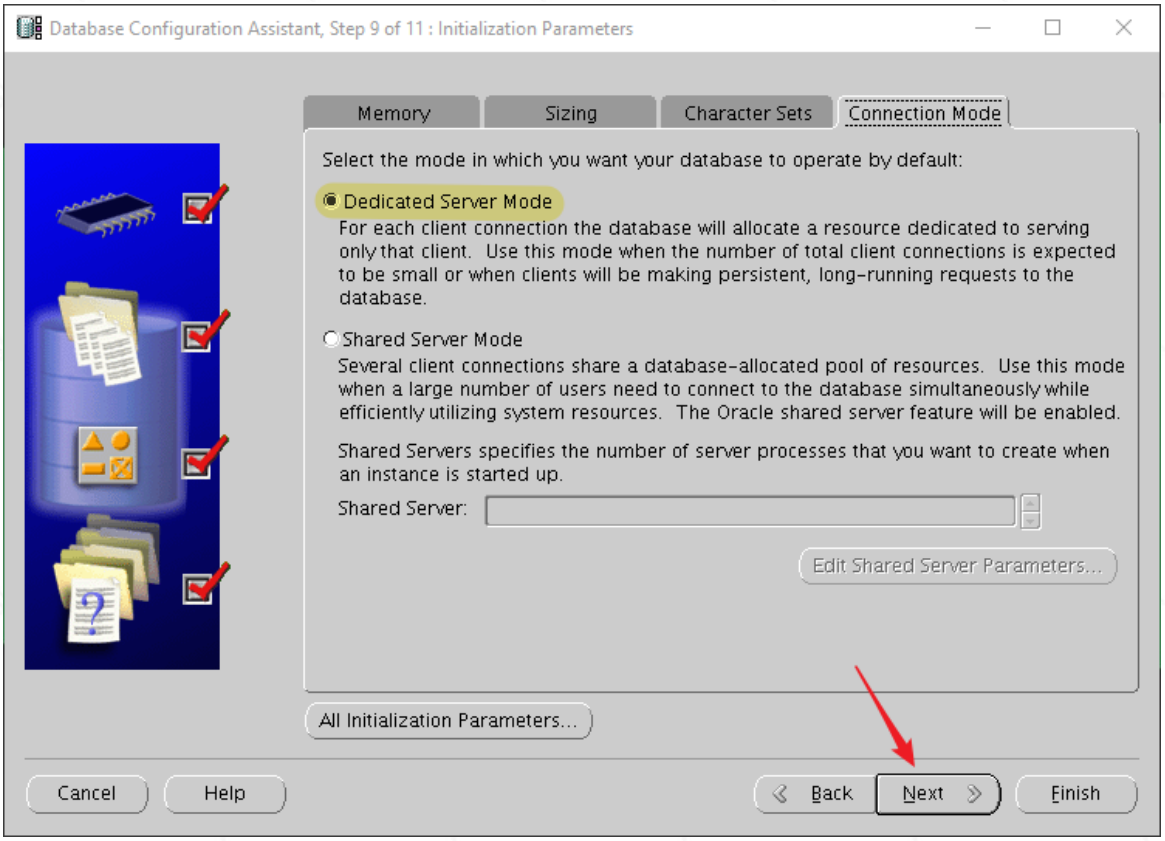
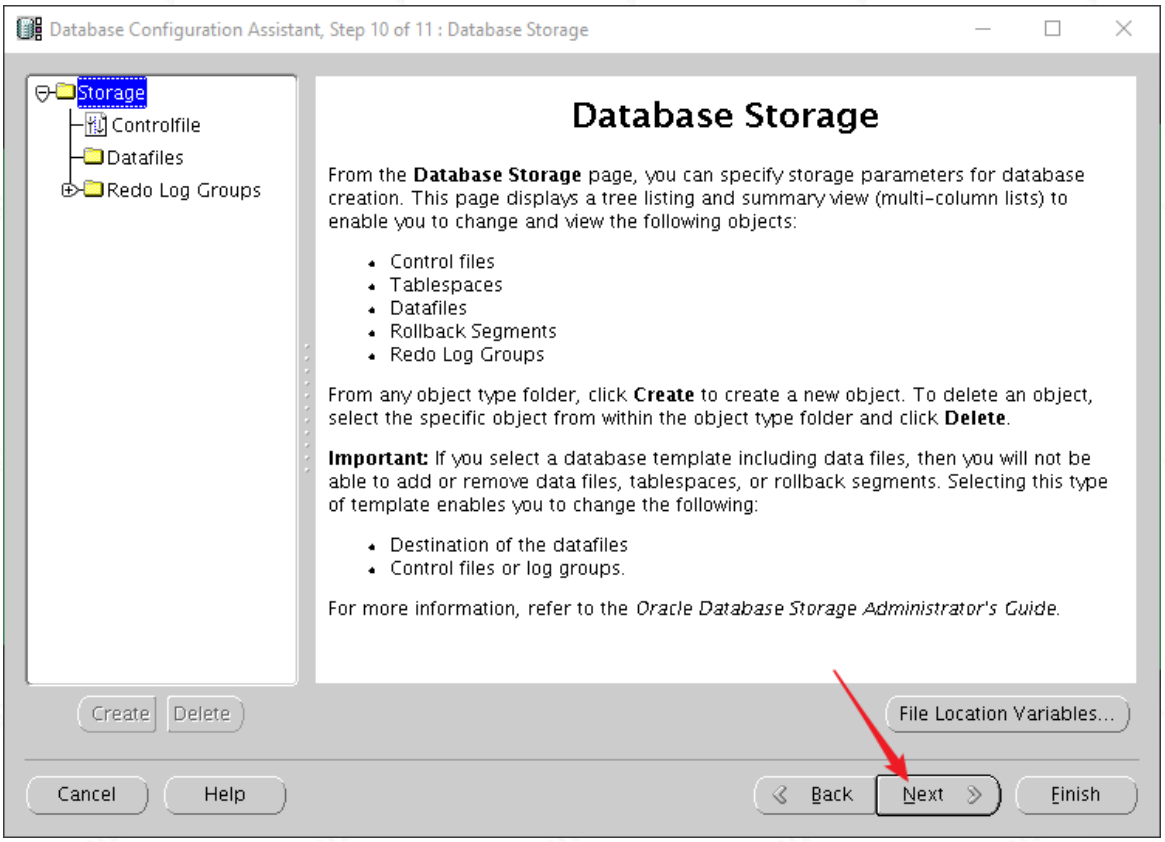
Click "Next"



Click "Next"



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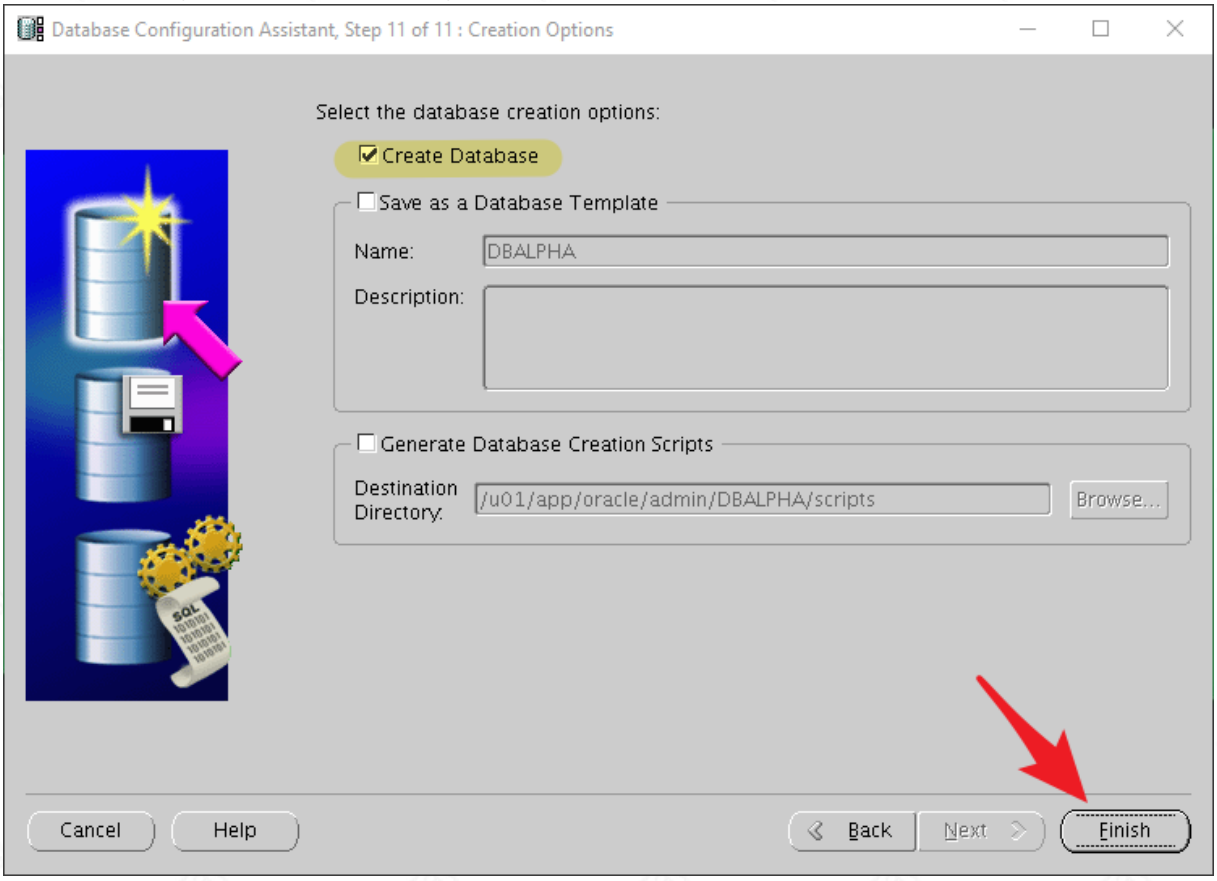
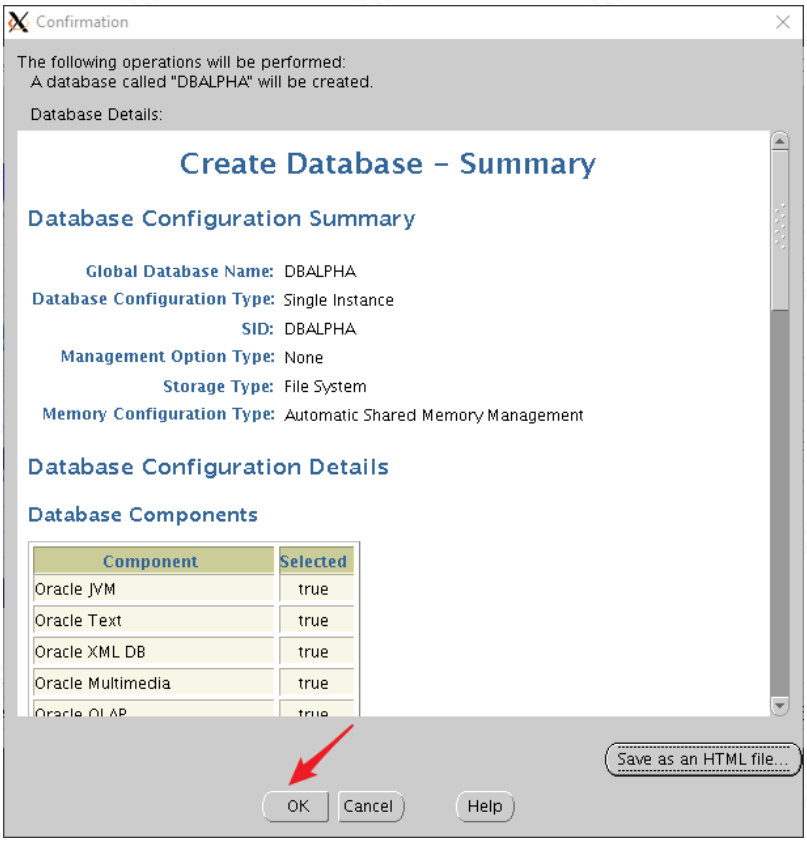
Click "Finish" (do not click the Finnish)



Click "OK"



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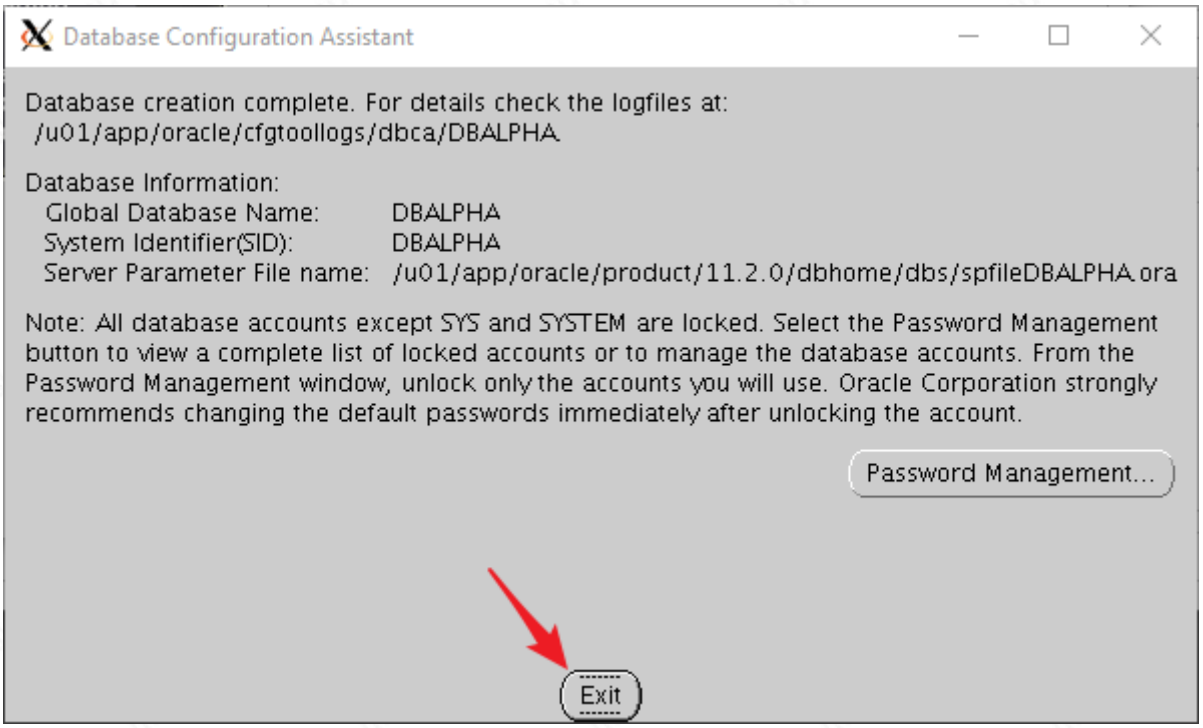

THE END.

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