

# Oracle Database 11gR2 Installation

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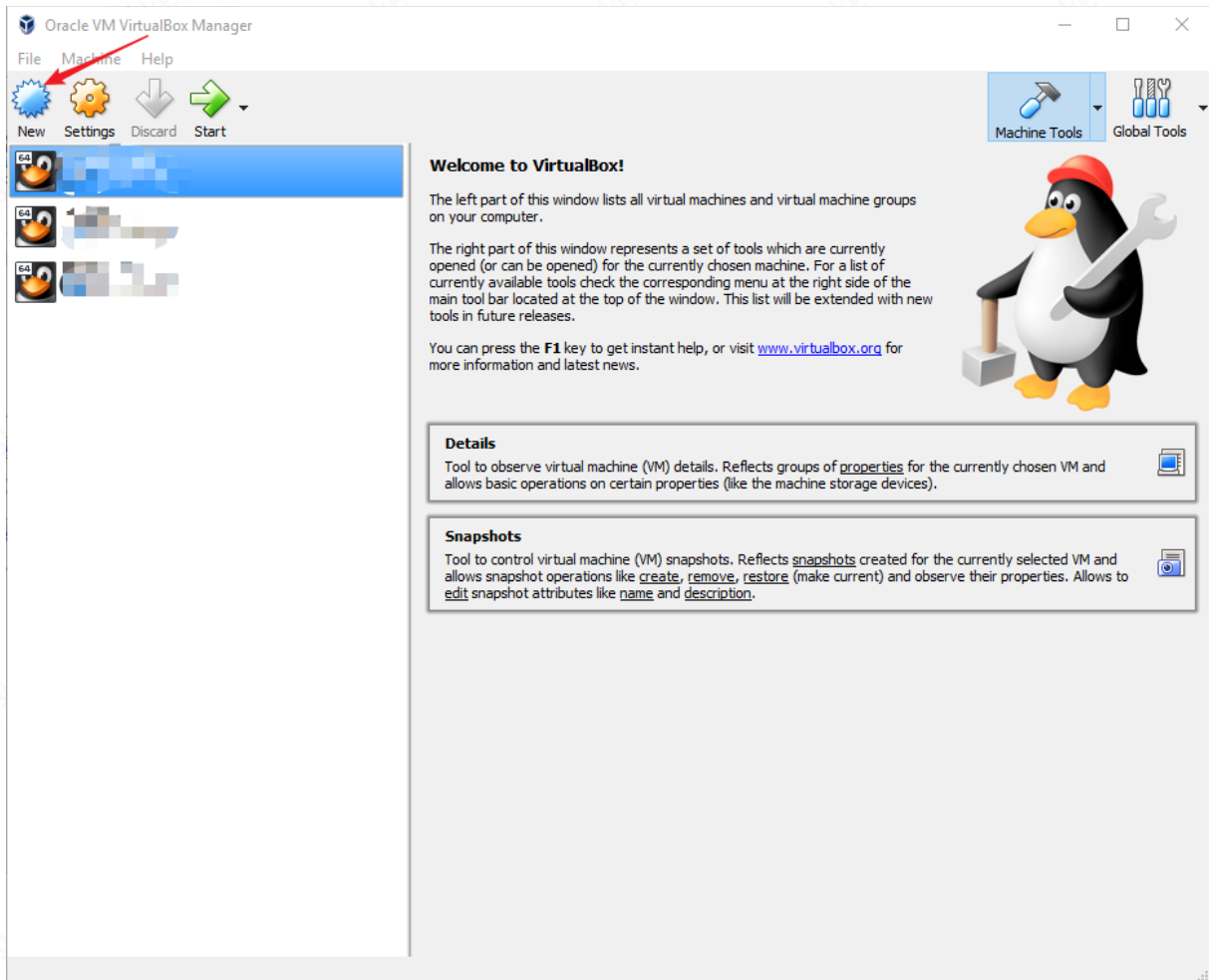
Single Instance Oracle Database 11gR2 (11.2.0.4) Installation on RedHat 6.9 using File System.  
These installations are for testing purposes only.

## 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"



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

?


×

← Create Virtual Machine

### Name and operating system

Please choose a descriptive name for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

Name:

Type:  

Version:

Arrange the total memory and click "Next"

?


×

← Create Virtual Machine


### Memory size

Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.

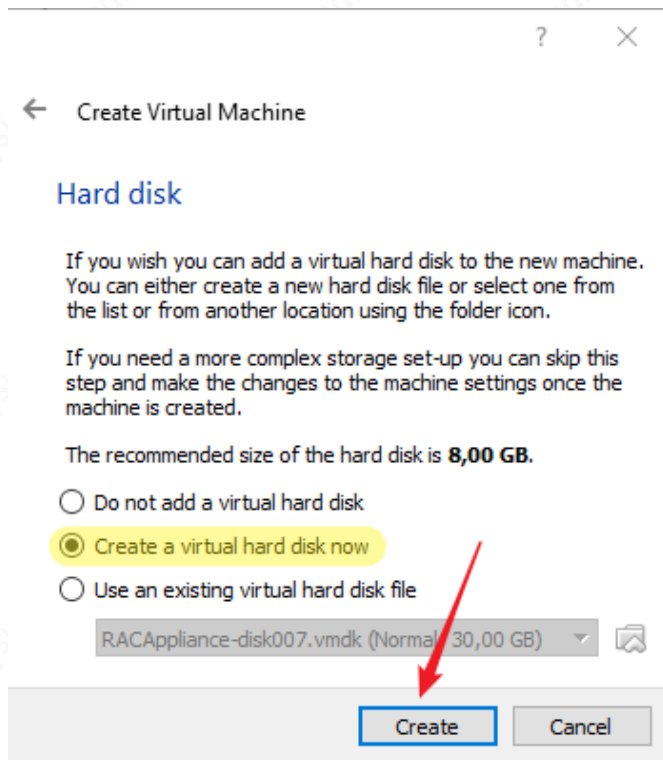
The recommended memory size is **1024 MB**.

 2048 MB

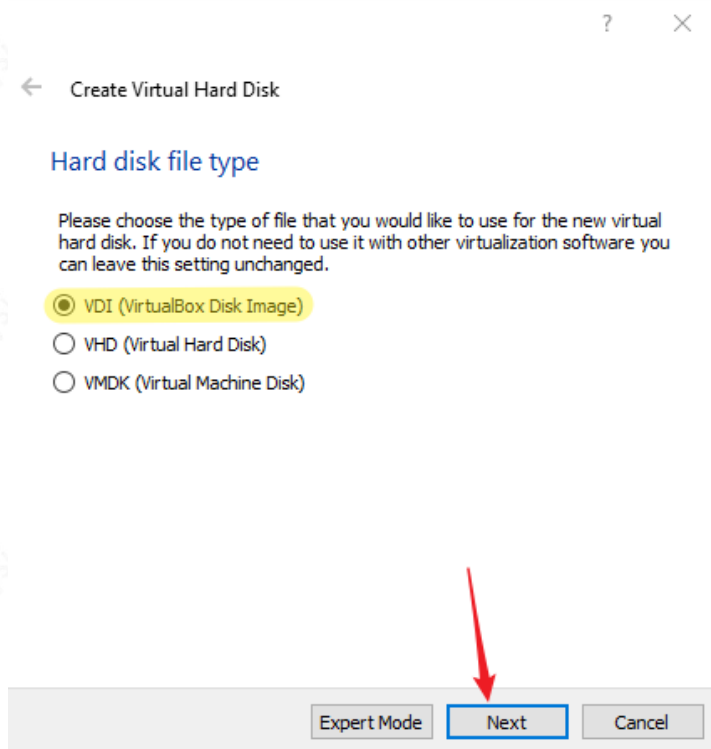
4 MB 16384 MB



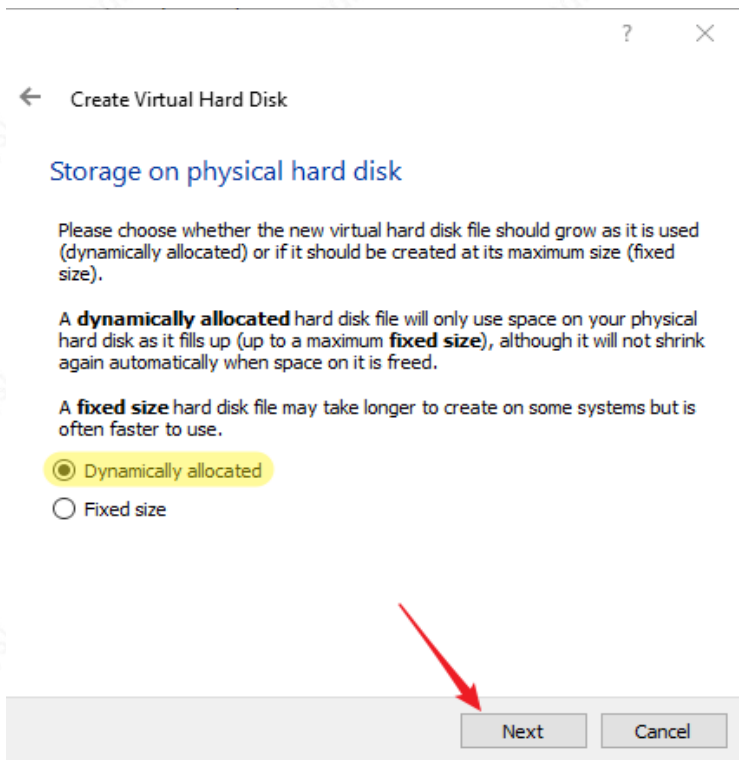
Select "Create a virtual hard disk now" and click "Create"



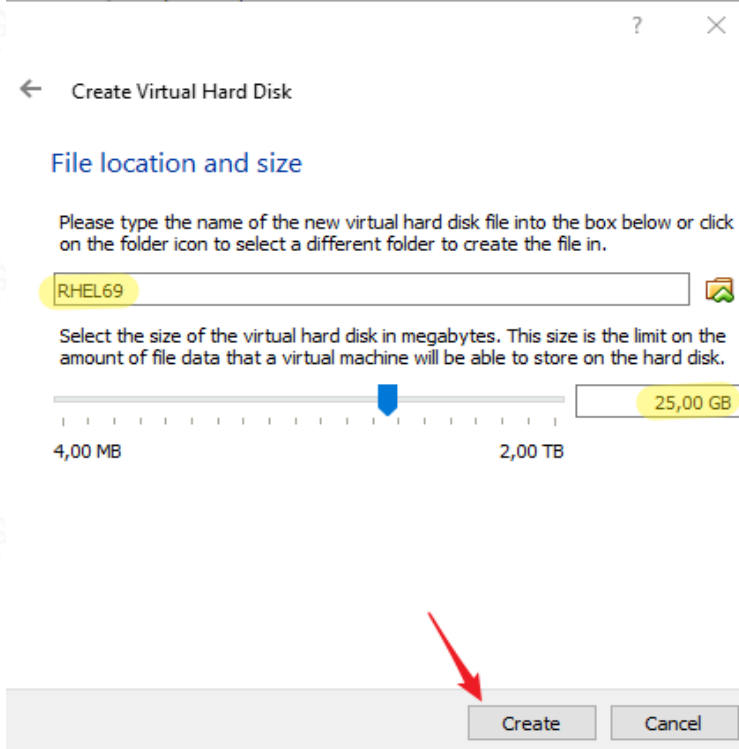
Select "VDI" as the hard disk file type and click "Next"



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

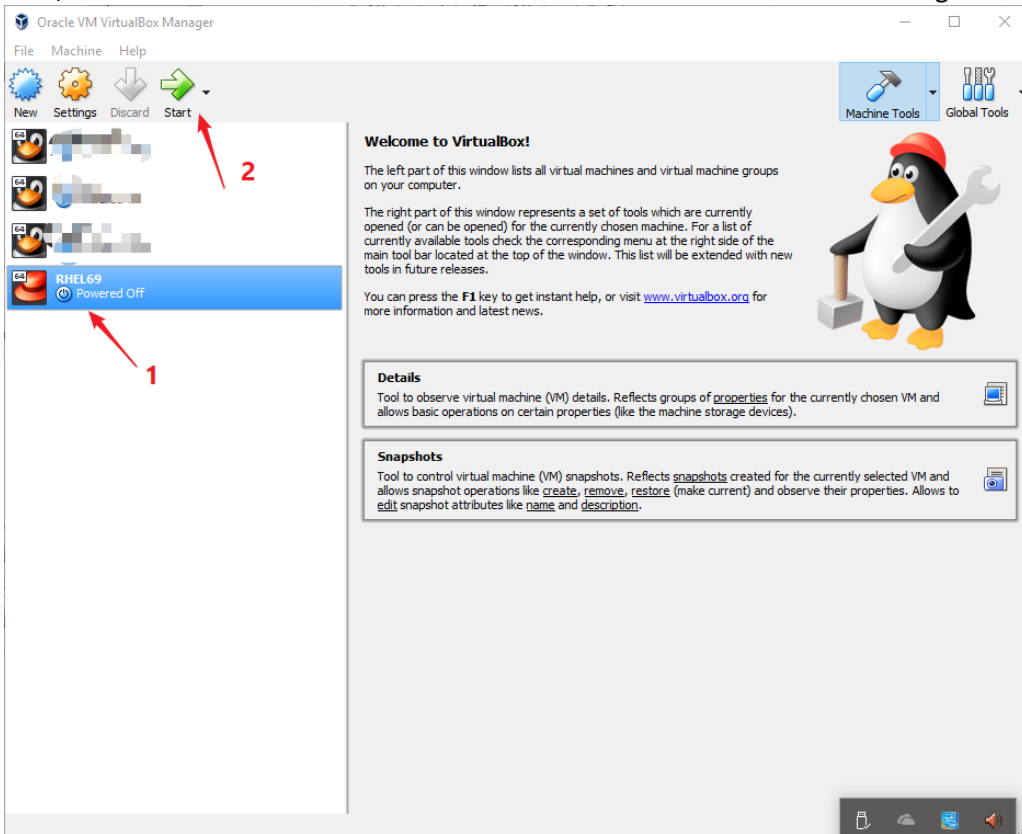


For a single instance Oracle database test server, 25GB of disk space is more than enough even if we are planning to use "File System" for datafiles instead of ASM.

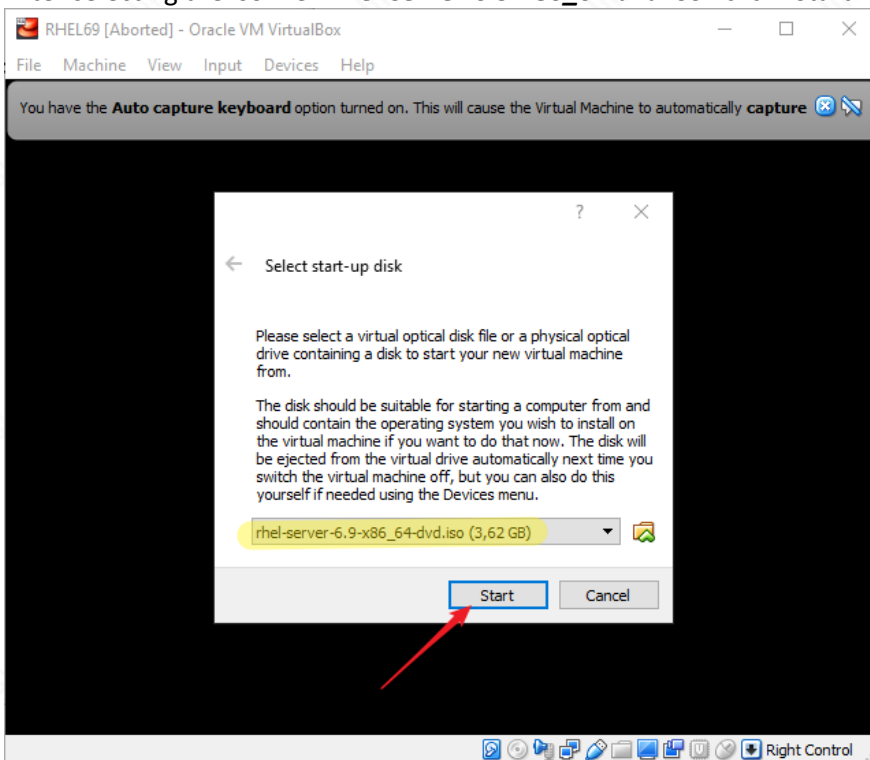


Start the server

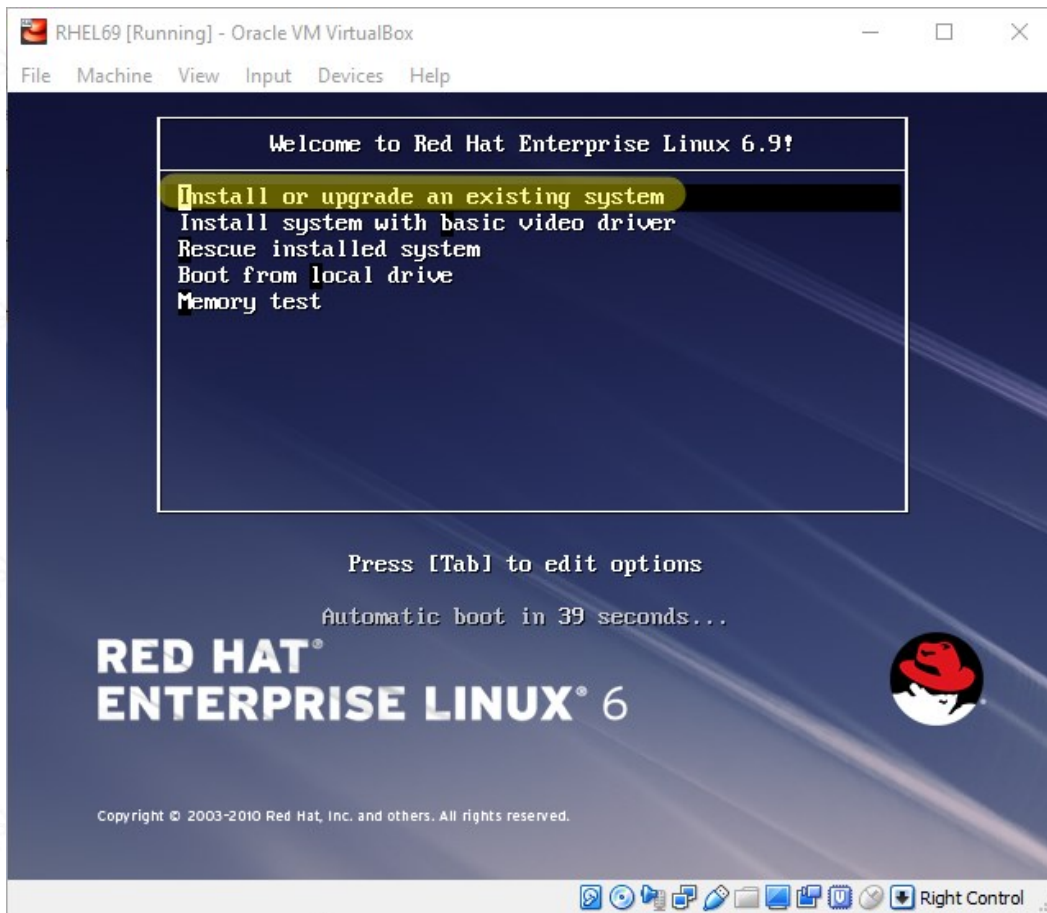
First, select the server to be started and then click the "Start" button with the green arrow.



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"



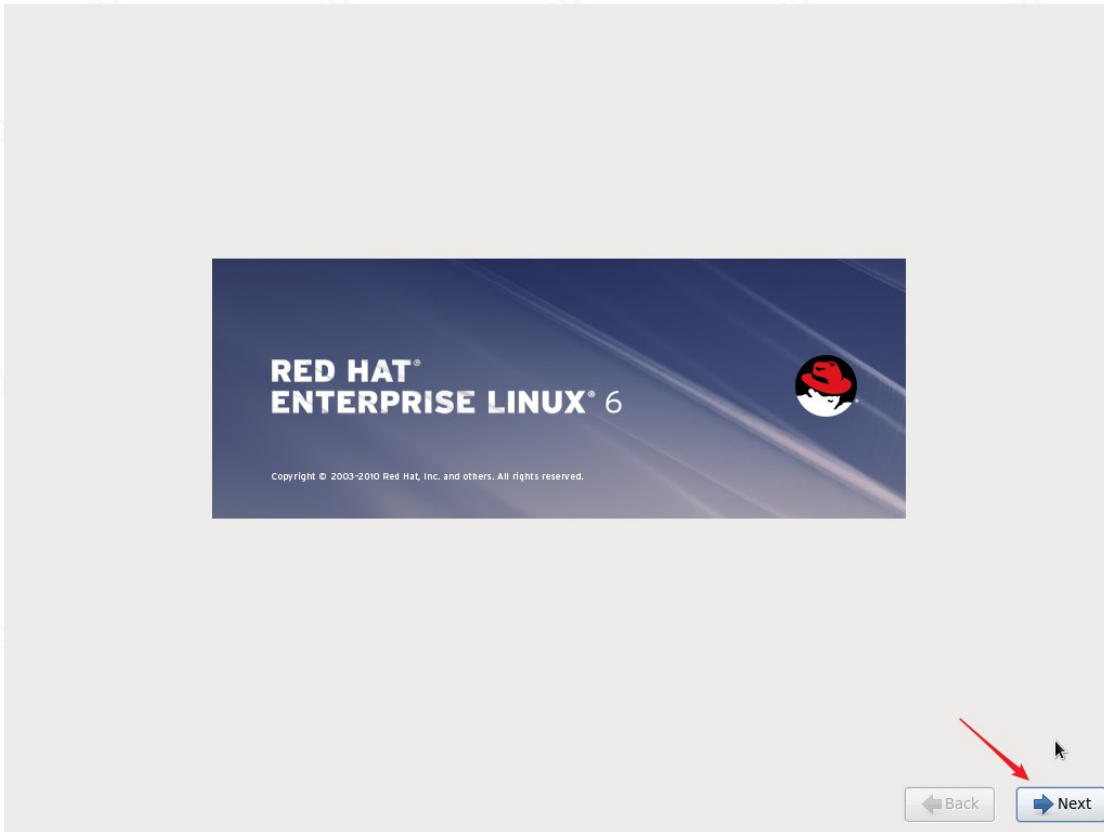
### 3. LINUX INSTALLATION



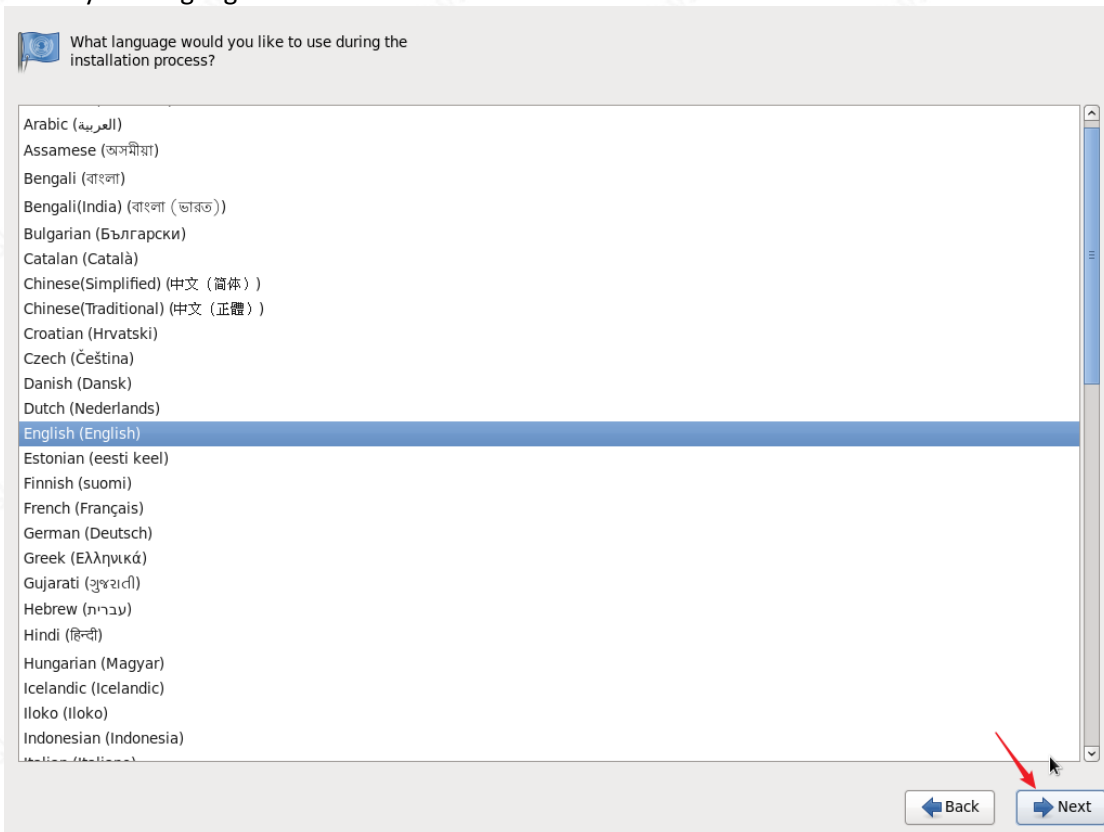
Select "Skip" and press the "Enter" key to continue.



Click "Next"

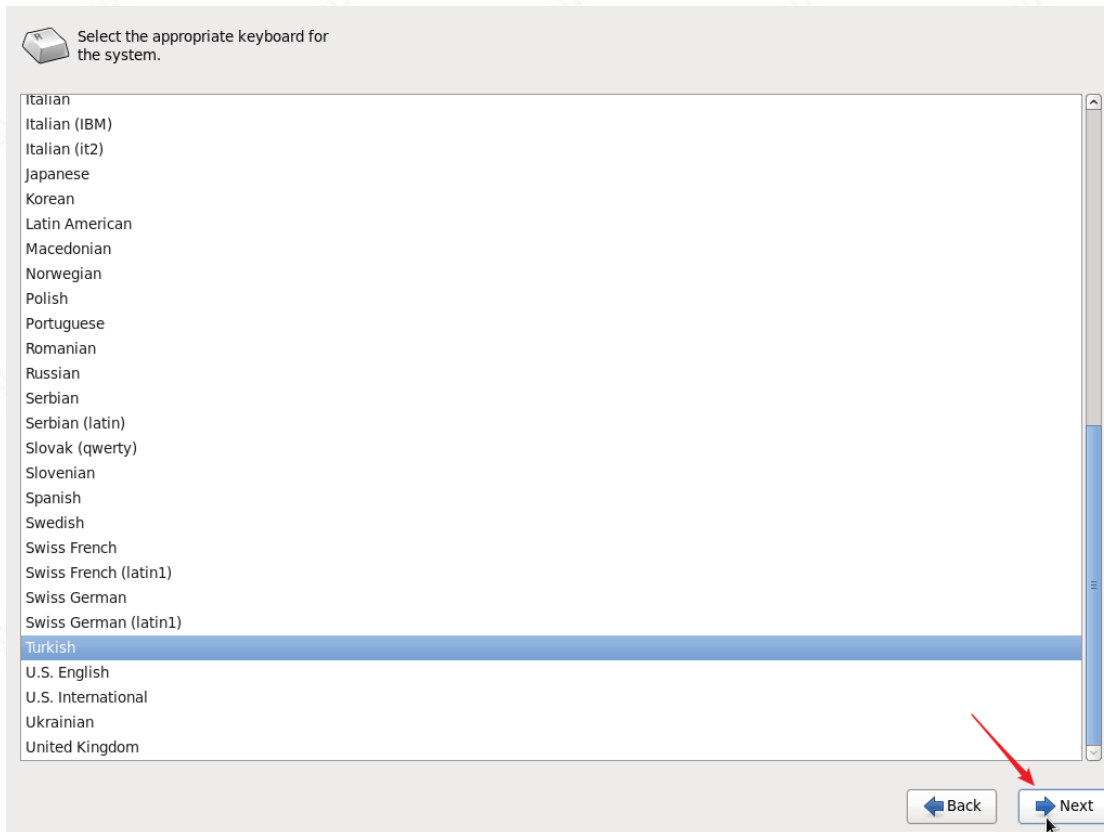


Select your language and click "Next"

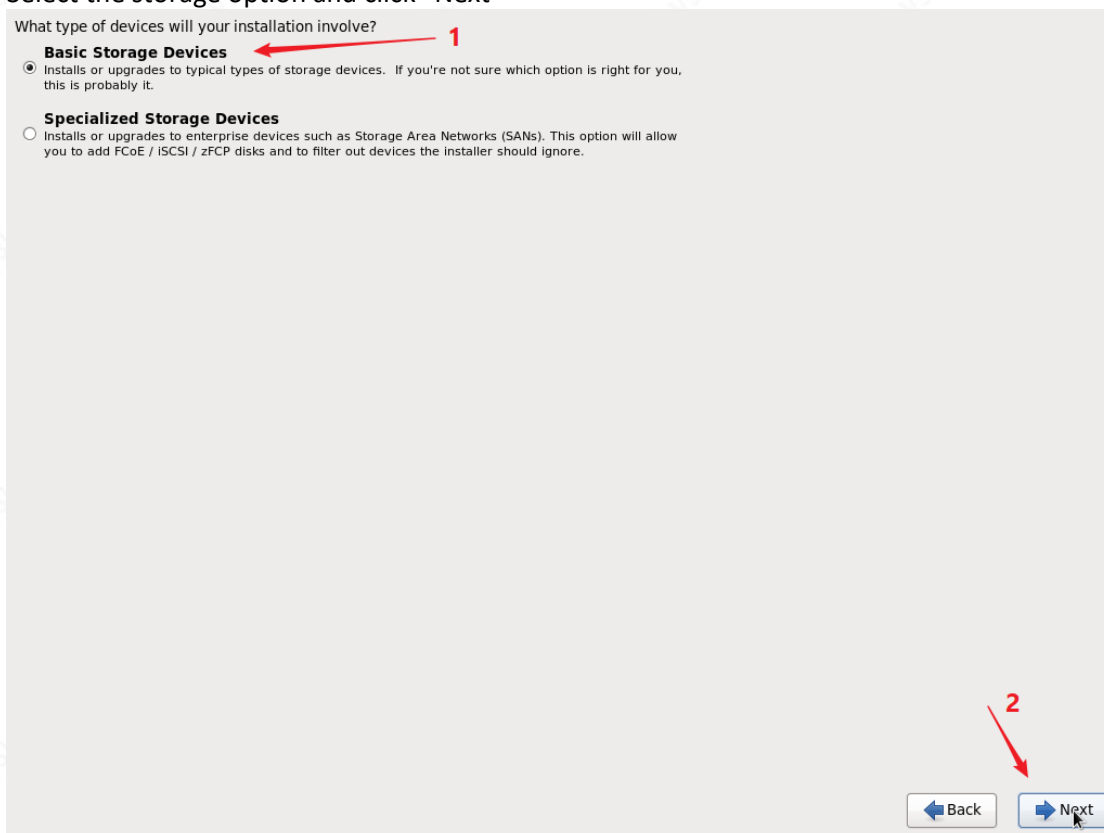


Select the proper keyboard and click "Next"

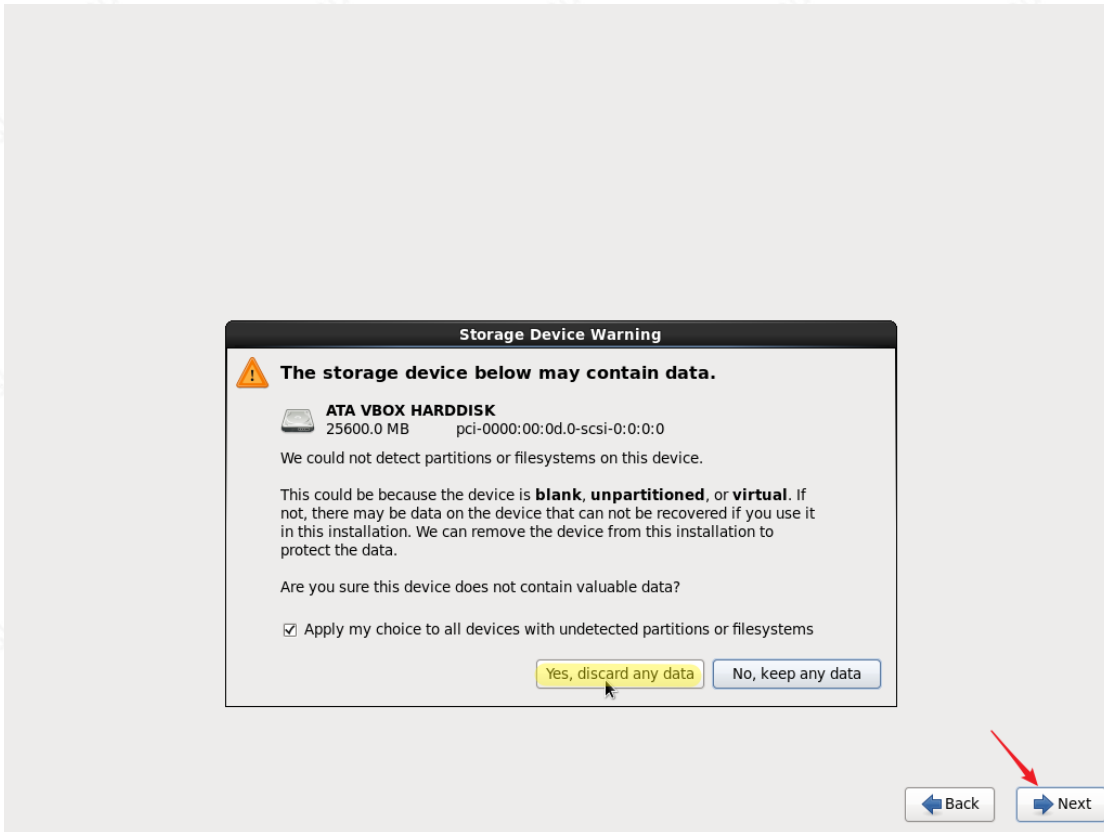




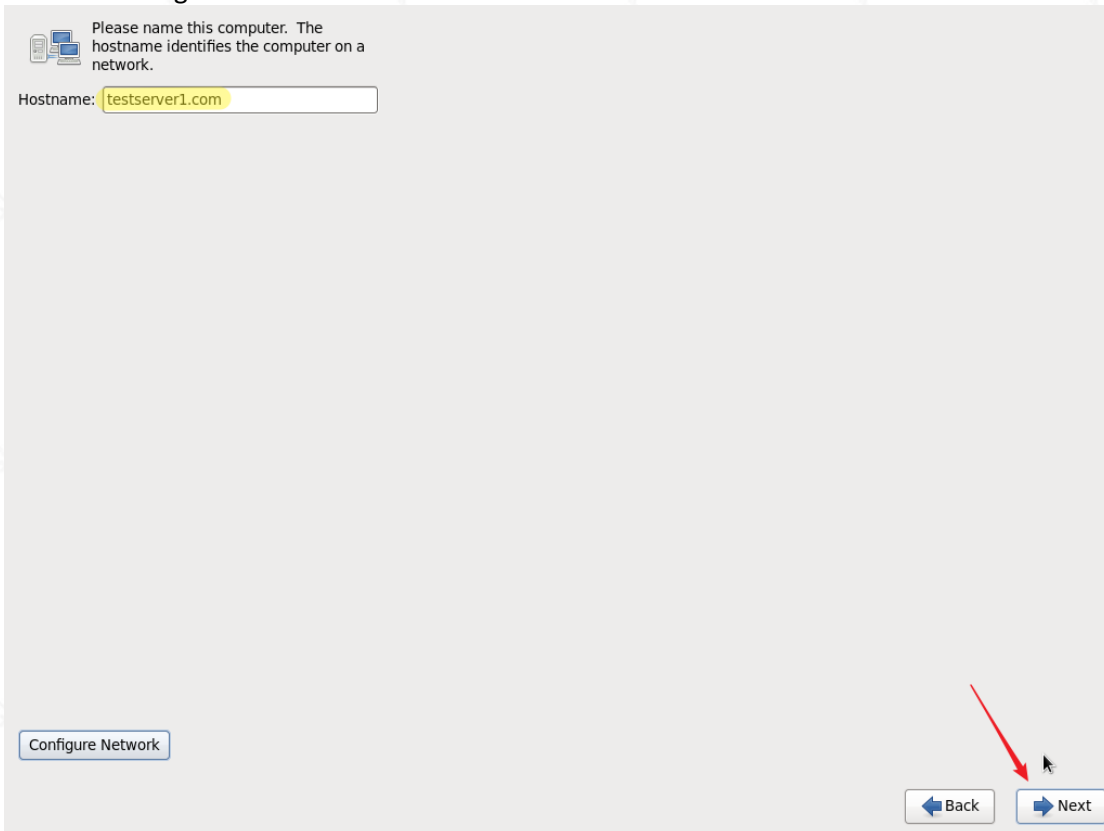
Select the storage option and click "Next"



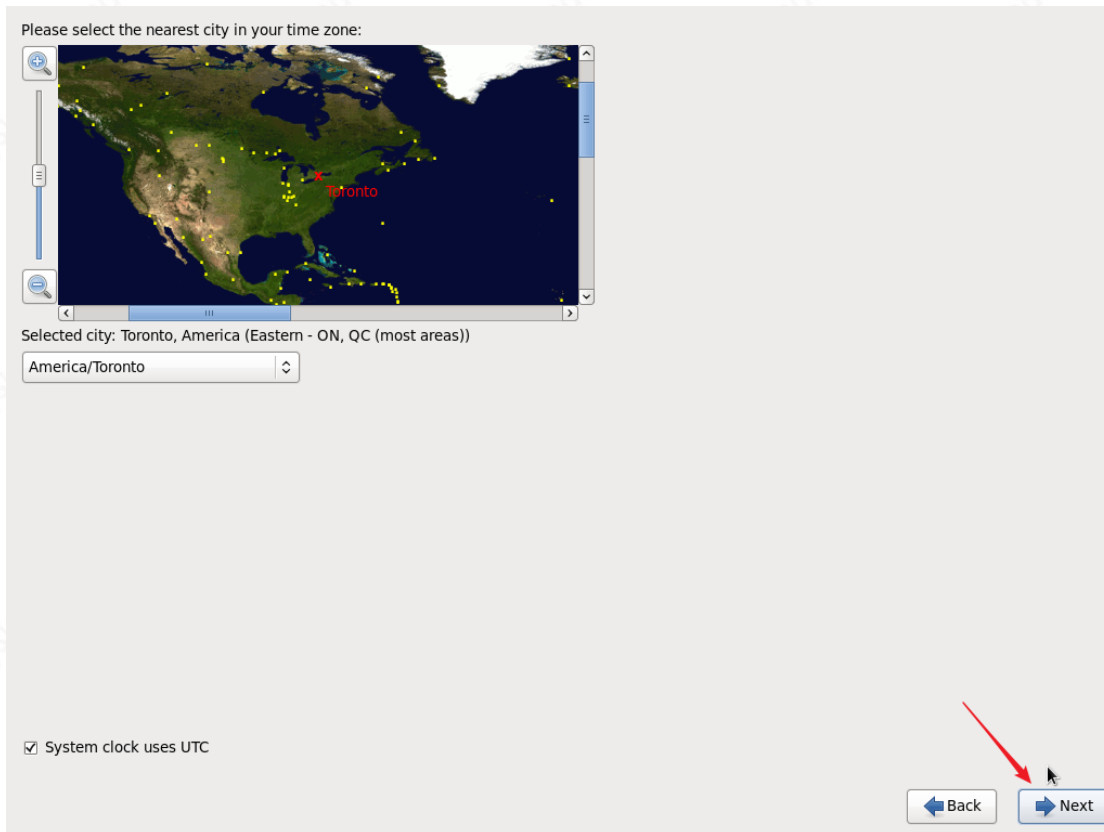
Select "Yes, discard any data" and click "Next"



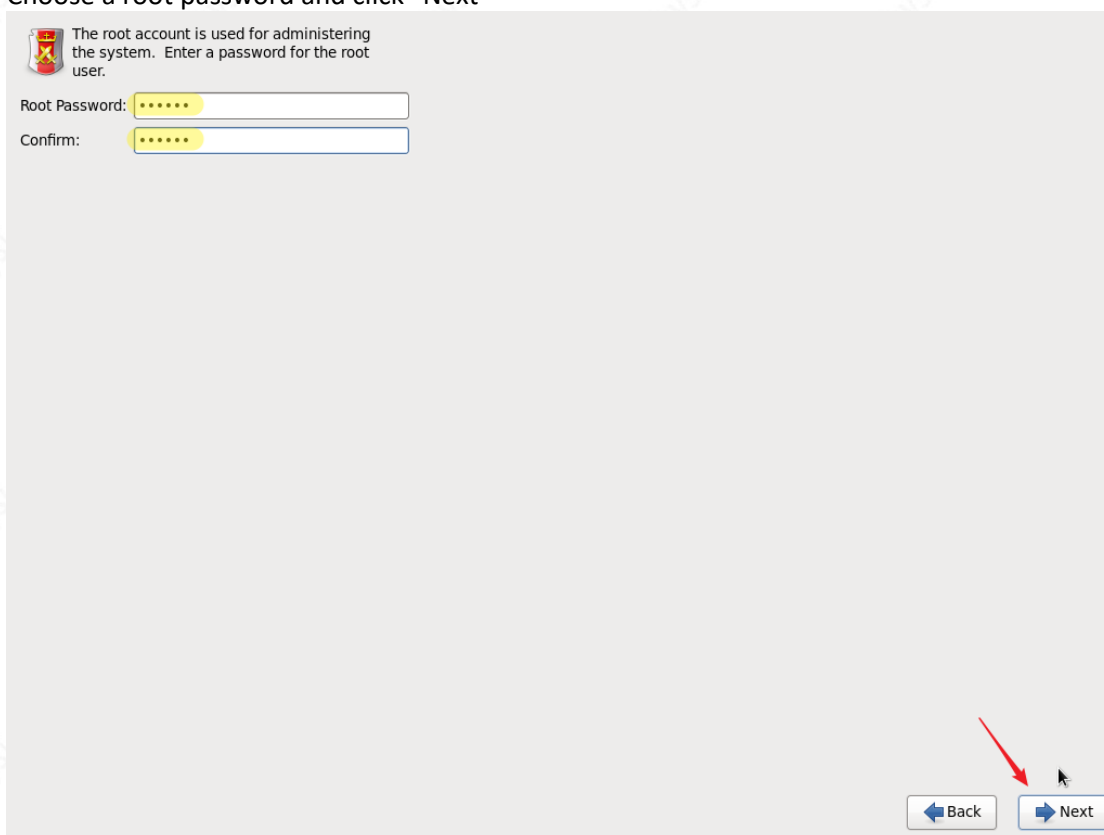
Enter a hostname and then click "Next"  
Network configuration will be done later in the documentation.



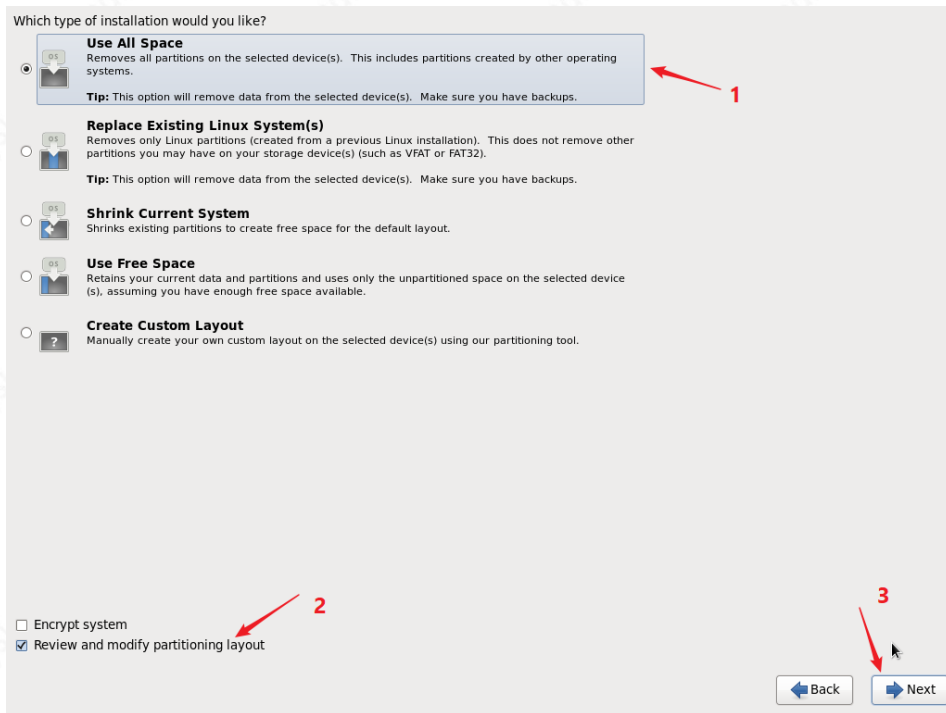
Select the time-zone and then click "Next"



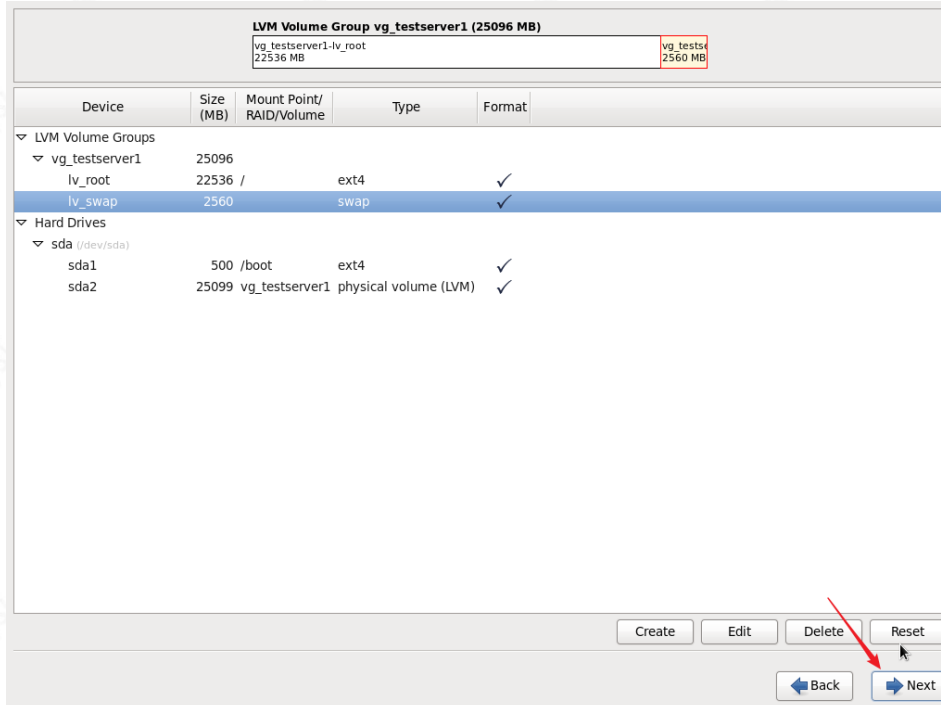
Choose a root password and click "Next"



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



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"

**LVM Volume Group vg\_testserver1 (25096 MB)**

vg_testserver1-lv_root	22536 MB	vg_testserver1-lv_swap	2560 MB
------------------------	----------	------------------------	---------

Device	Size (MB)	Mount Point/ RAID/Volume	Type	Format
LVM Volume Groups				
vg_testserver1	25096			
lv_root	22536	/	ext4	✓
lv_swap	2560		swap	✓
Hard Drives				
sda (/dev/sda)				
sda1	500	/boot		
sda2	25099	vg_testserver1		

**Format Warnings**

⚠ The following pre-existing devices have been selected to be formatted, destroying all data.

/dev/sda partition table (MSDOS)

Cancel Format

Create Edit Delete Reset

Back Next

Click "Write changes to disk"

Device	Size (MB)	Mount Point/ RAID/Volume	Type	Format
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**Writing storage configuration to disk**

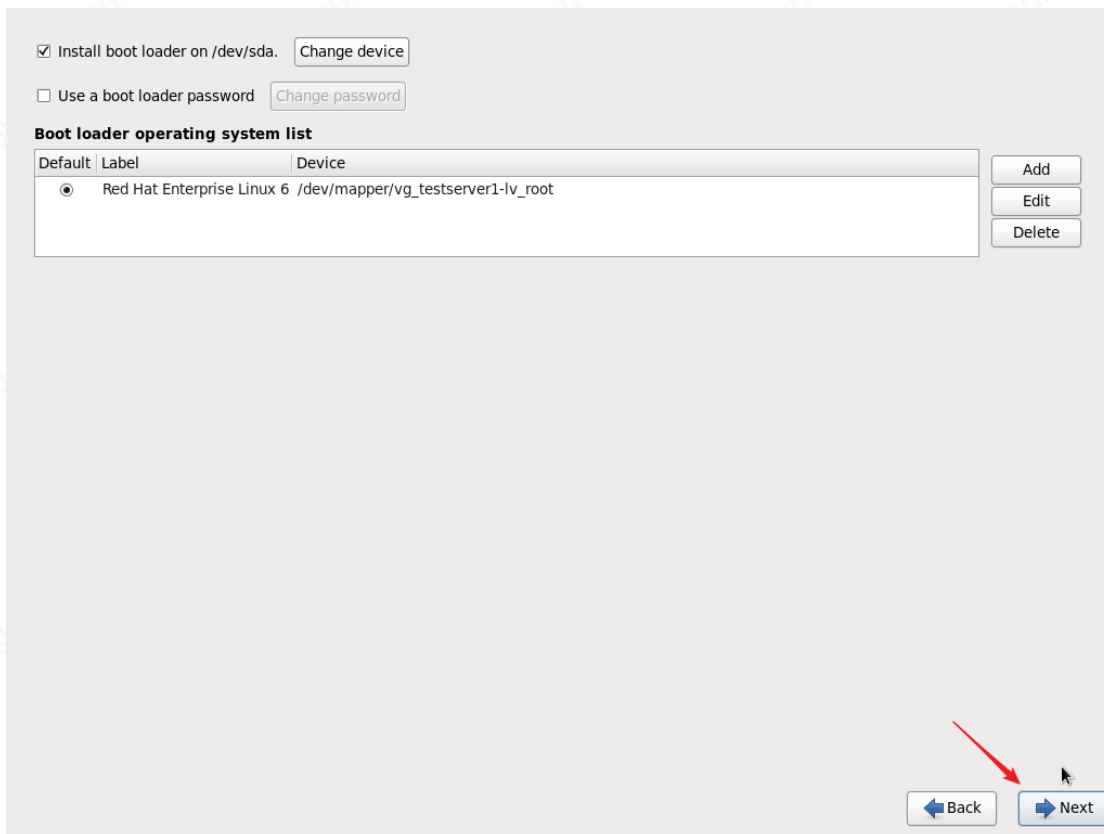
⚠ The partitioning options you have selected will now be written to disk. Any data on deleted or reformatted partitions will be lost.

Go back Write changes to disk

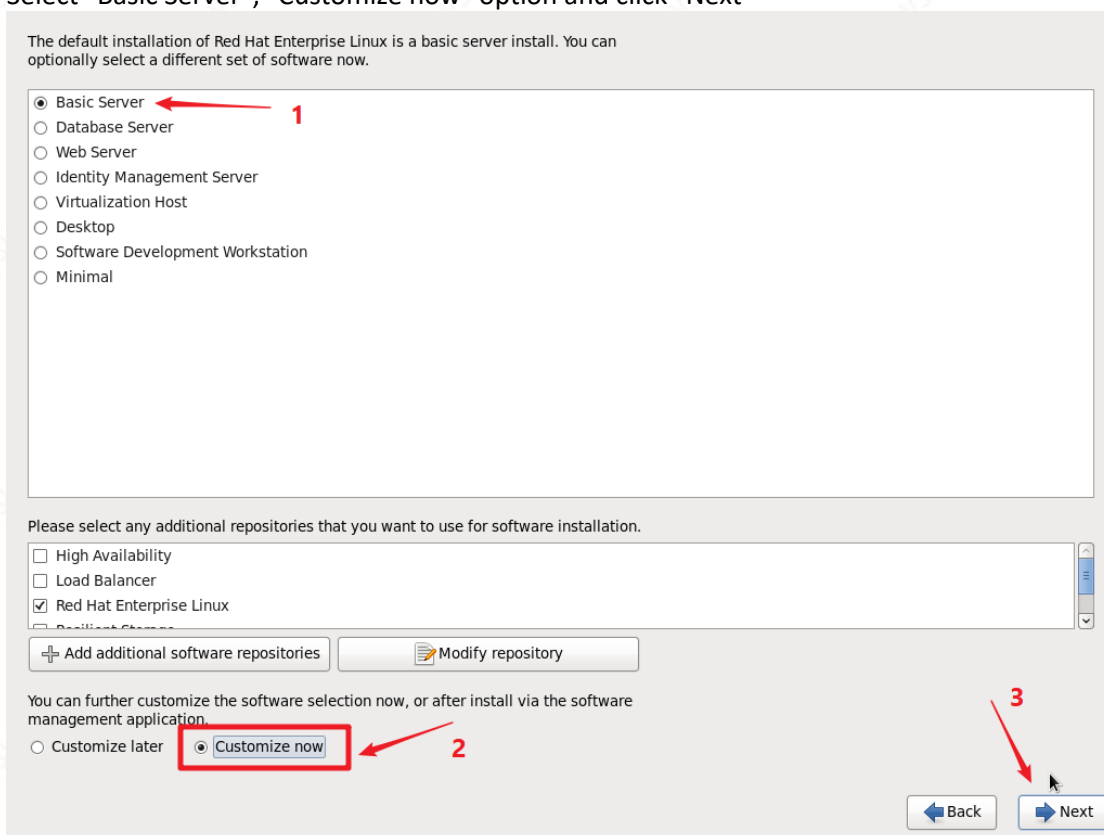
Create Edit Delete Reset

Back Next

Click "Next"



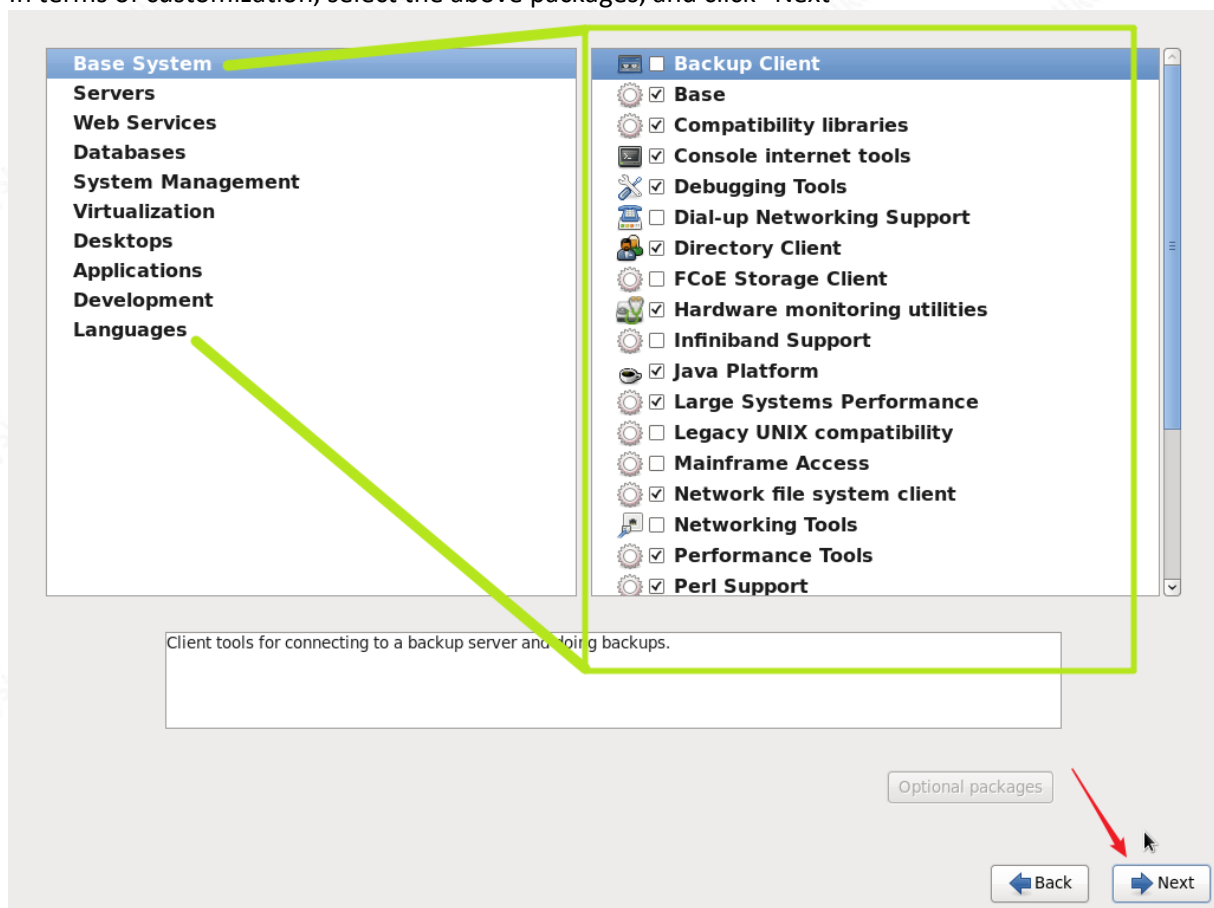
Select "Basic Server", "Customize now" option and click "Next"



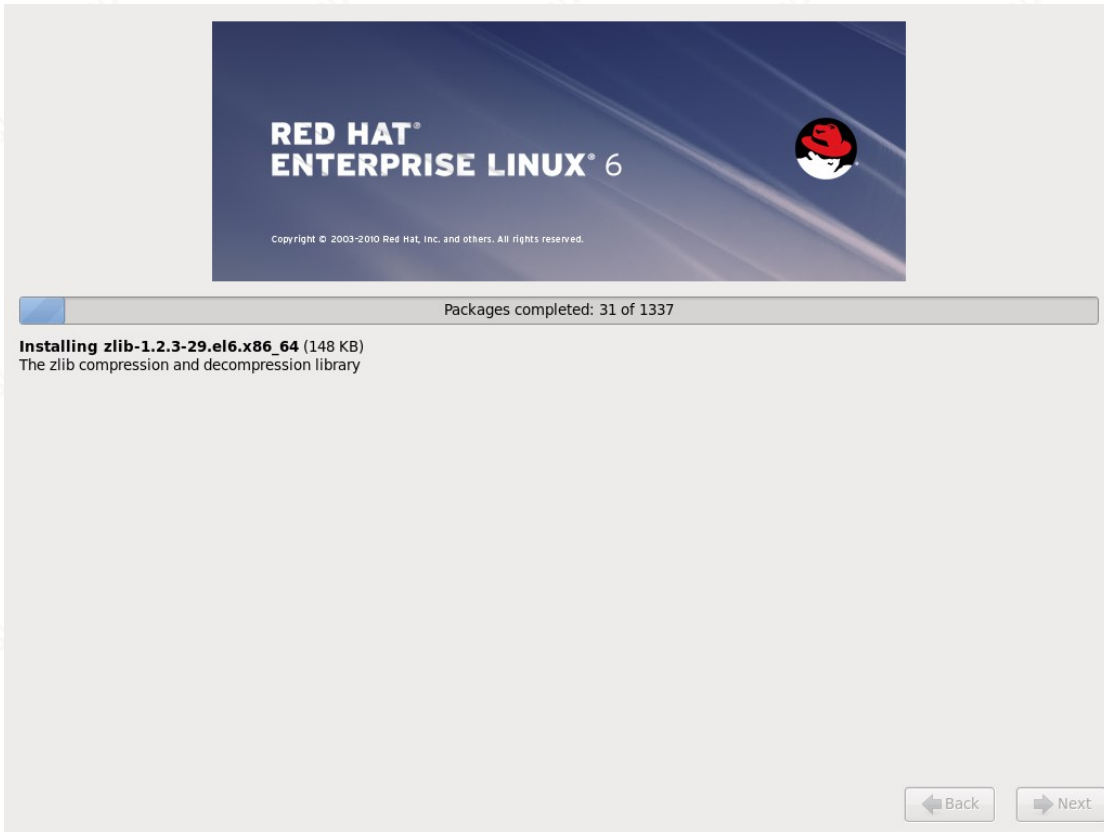
- Base System > Base

- 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

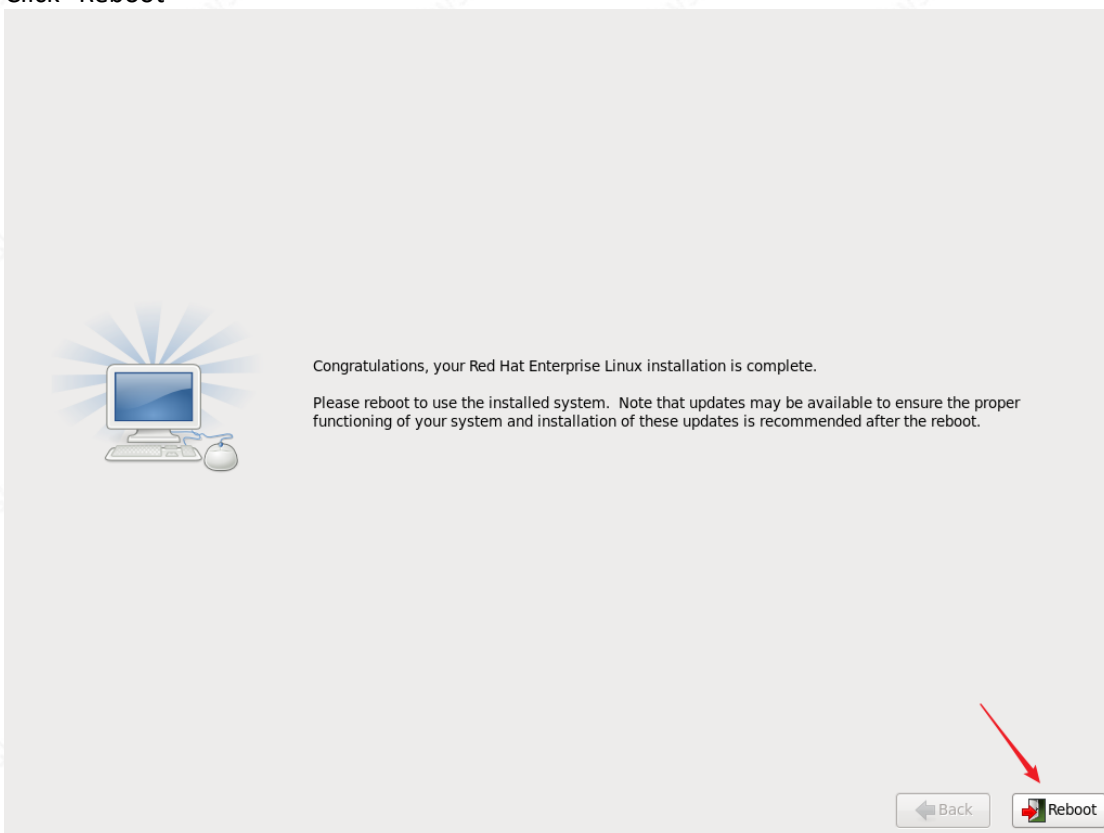
In terms of customization, select the above packages, and click "Next"



Installation begins...



Click "Reboot"




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



› Welcome  
License Information  
Set Up Software Updates  
Create User  
Date and Time  
Kdump

## Welcome

There are a few more steps to take before your system is ready to use. The Setup Agent will now guide you through some basic configuration. Please click the "Forward" button in the lower right corner to continue



Back Forward

Agree the license agreement and click "Forward"

› Welcome  
› License Information  
Set Up Software Updates  
Create User  
Date and Time  
Kdump

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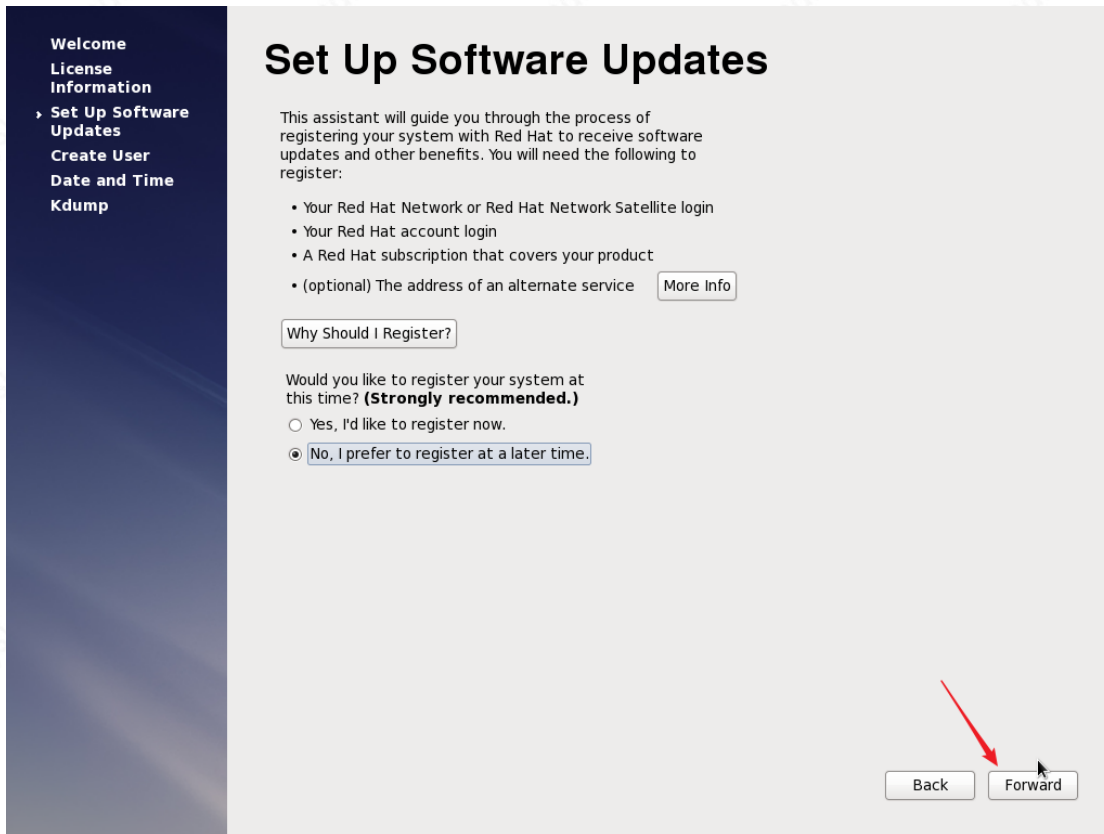
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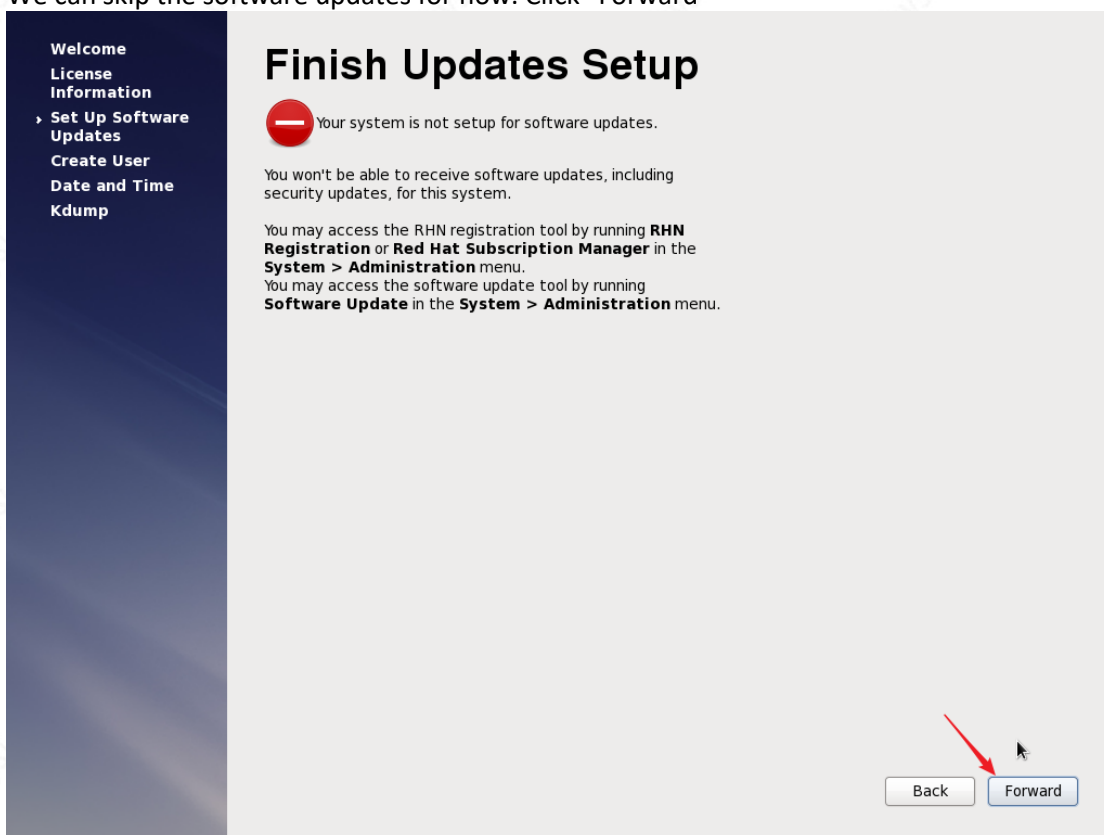
Yes, I agree to the License Agreement  
 No, I do not agree

Back Forward

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



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



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

Welcome  
License Information  
Set Up Software Updates  
Create User  
Date and Time  
Kdump

## Create User

You must create a 'username' for regular (non-administrative) use of your system. To create a system 'username', please provide the information requested below.

Username:

Full Name:

Password:

Confirm Password:

If you need to use network authentication, such as Kerberos or NIS, please click the Use Network Login button.

If you need more control when creating the user (specifying home directory, and/or UID), please click the Advanced button.

Set Date and Time and click "Forward"

Welcome  
License Information  
Set Up Software Updates  
Create User  
Date and Time  
Kdump

## Date and Time

Please set the date and time for the system.

Date and Time

Current date and time: Mon 19 Feb 2018 02:12:03 PM EST

Synchronize date and time over the network

Manually set the date and time of your system:

**Date**

<	February	>	<	2018	>	
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	1	2	3
4	5	6	7	8	9	10

**Time**

Hour:

Minute:

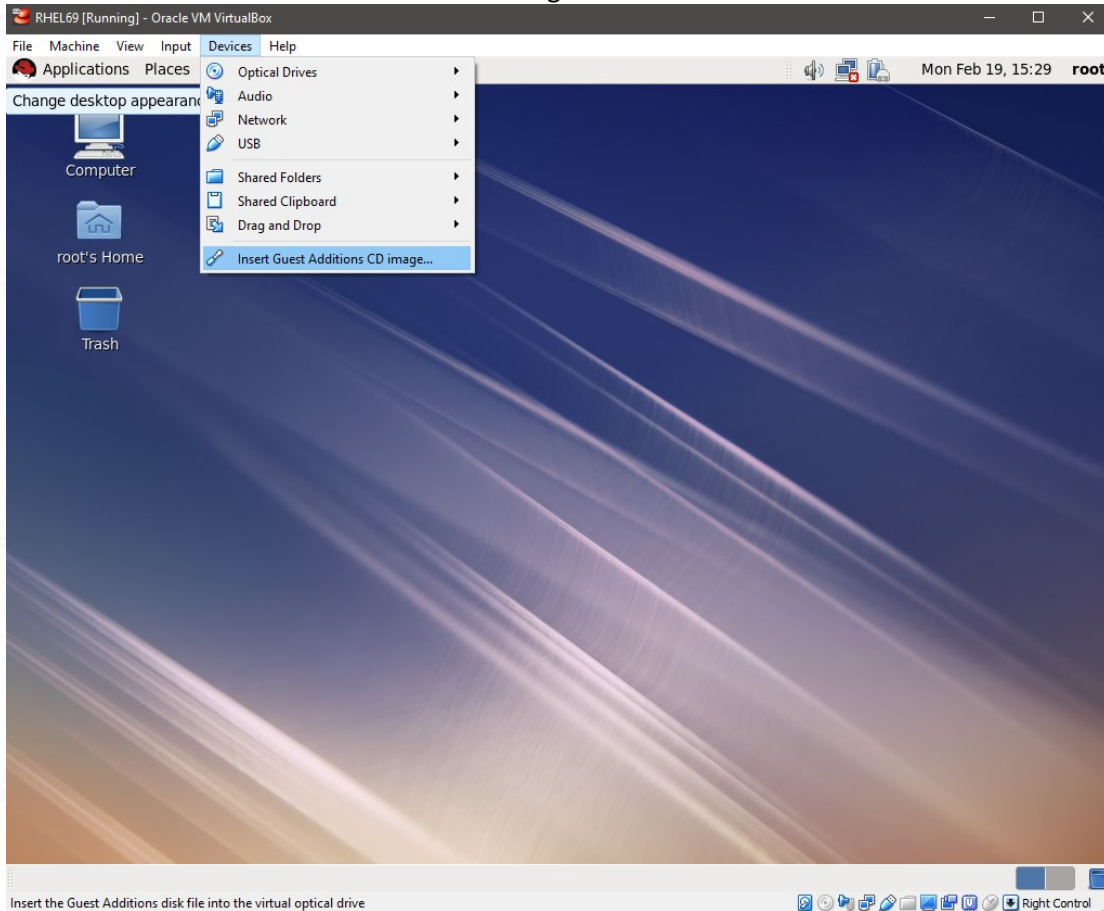
Second:

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

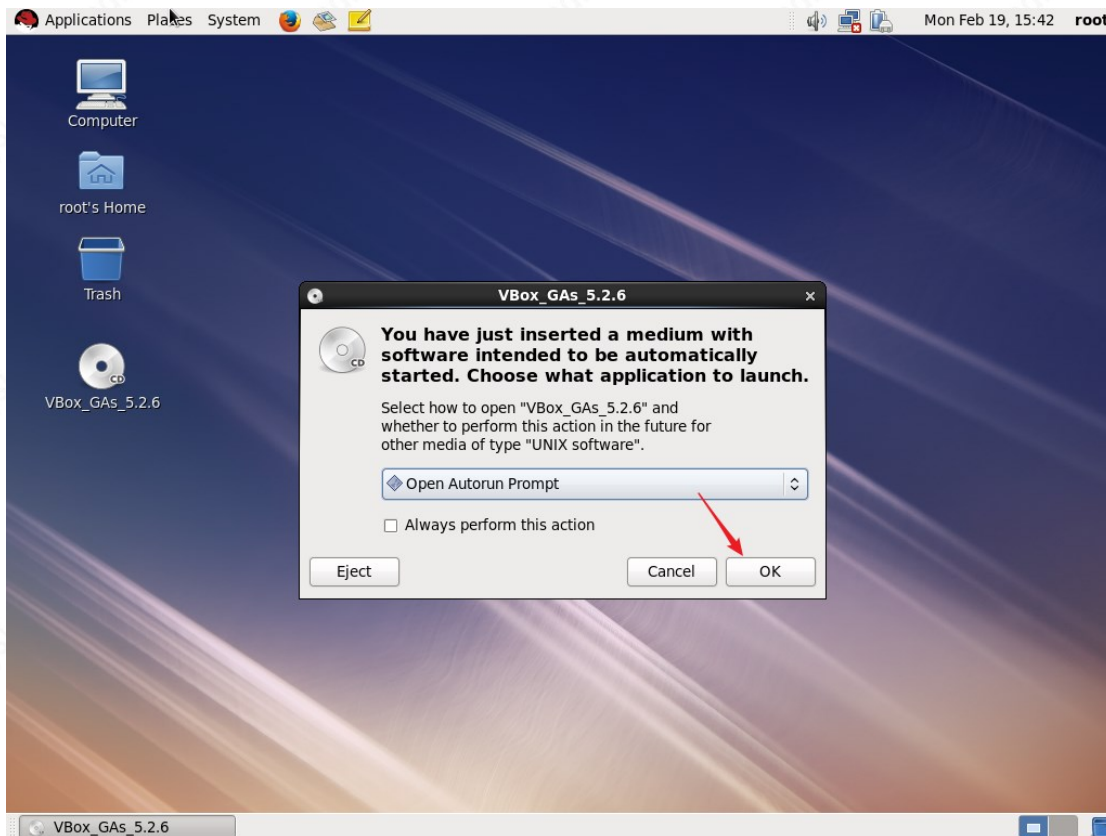


#### 4. INSTALL GUEST ADDONS

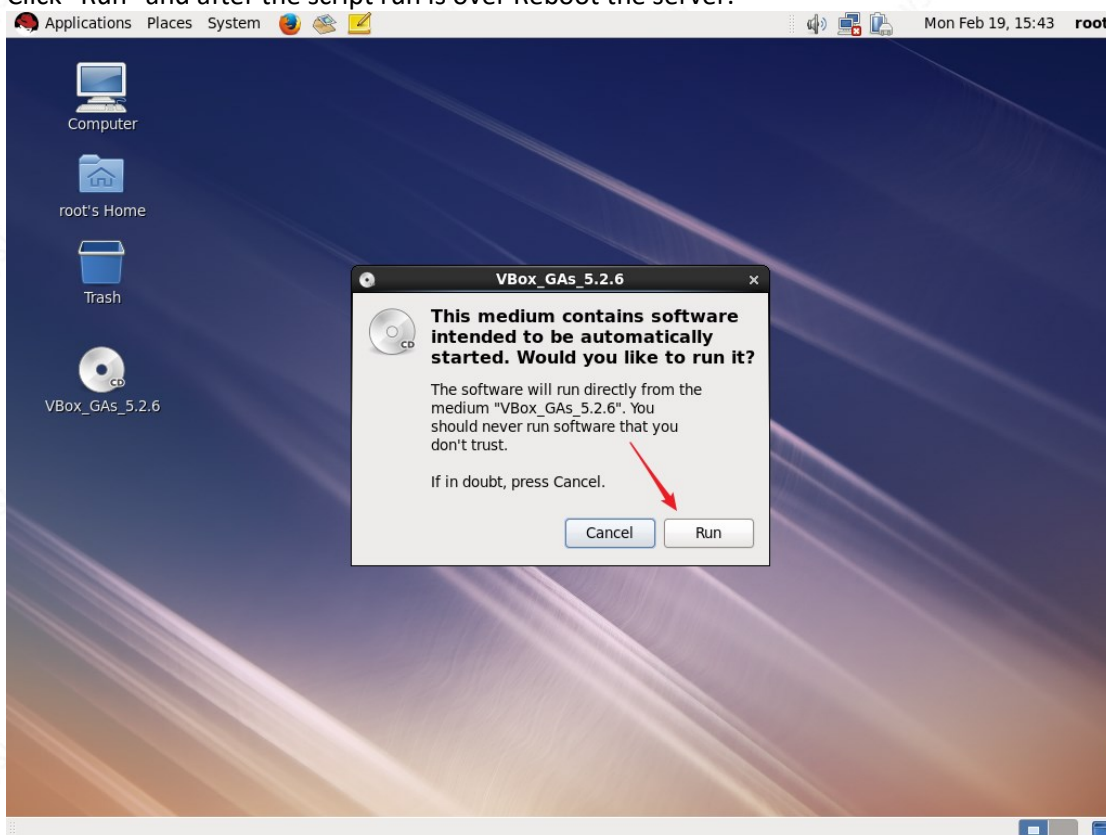
Click Devices > Install Guest Additions CD image



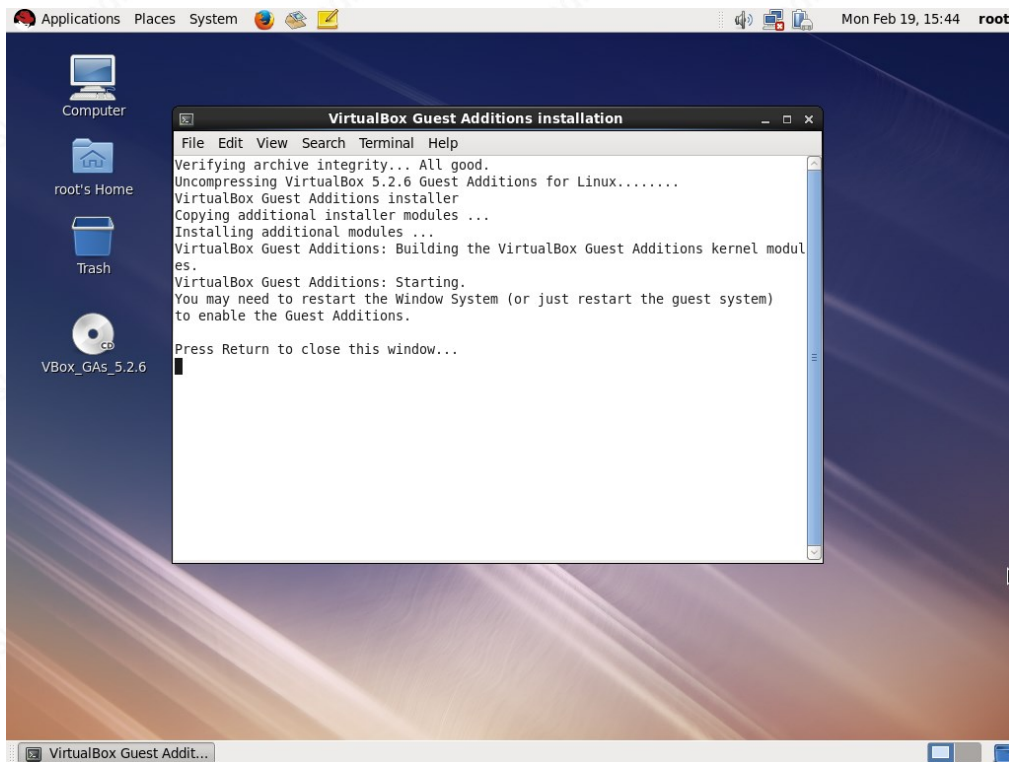
Click "OK"



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



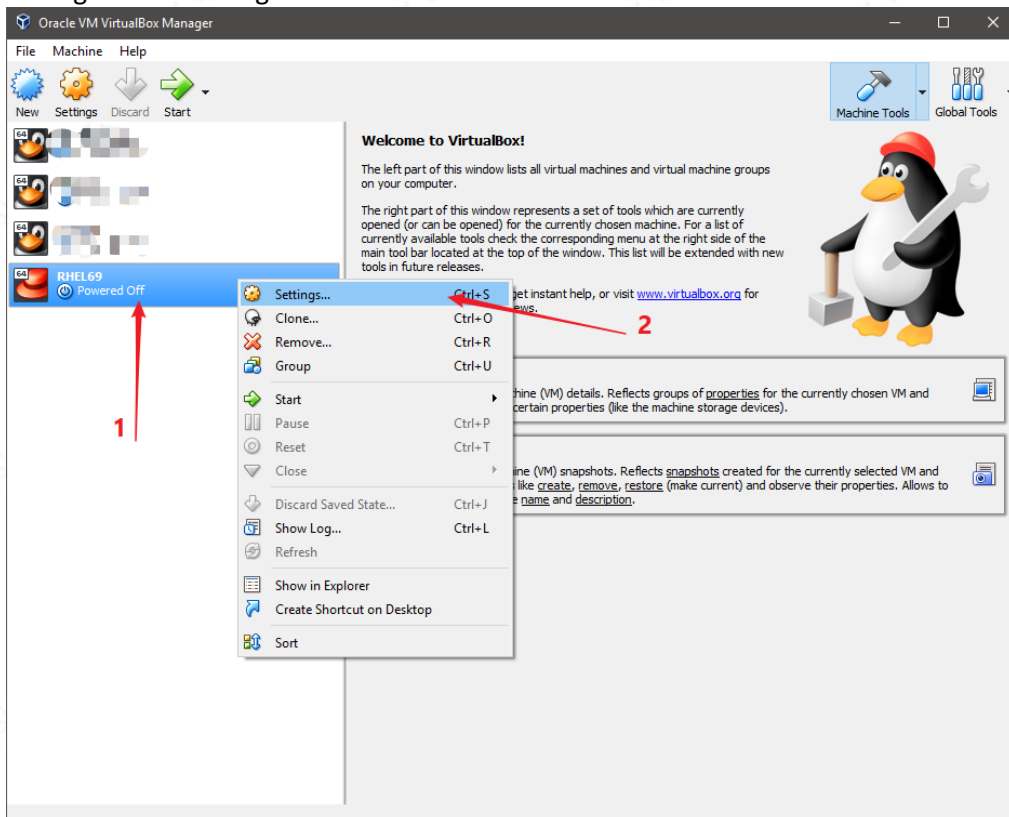
Press 'Return' and Reboot the server.



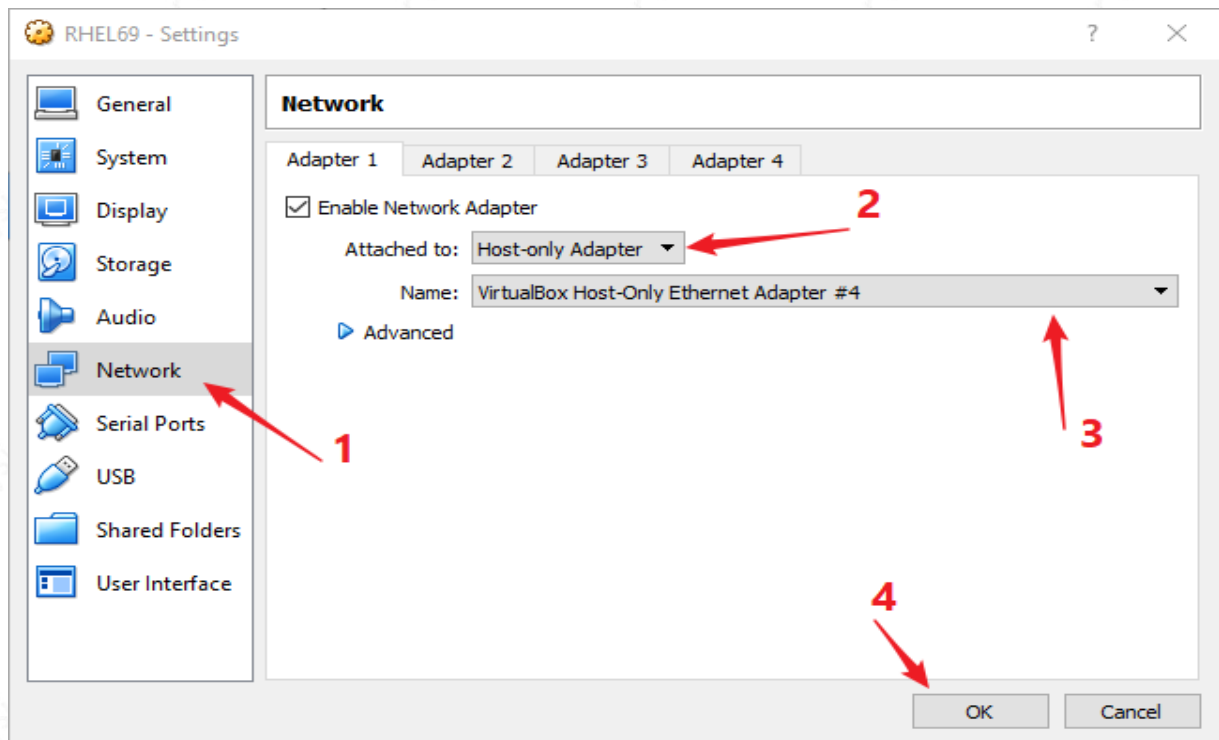
## 5. NETWORK CONFIG & PUTTY CONNECTIVITY

First, shutdown the server.

Then go to the settings of the server



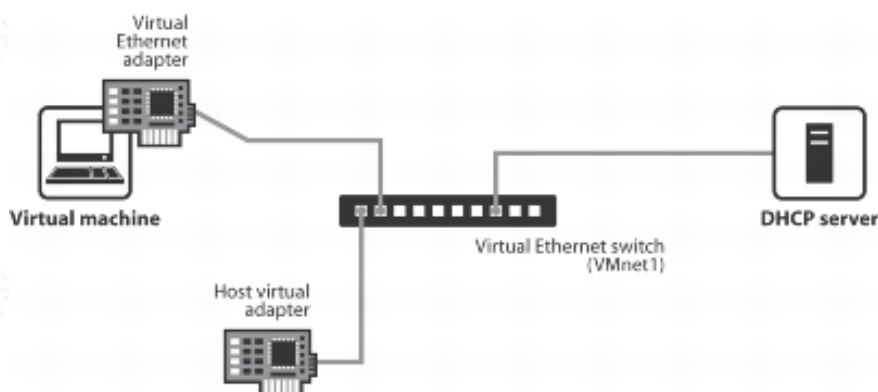
Select the Host-only adapter. For most of the tests (that do not require internet) host-only adapter works fine. Since I want to connect via Putty, I need connectivity with the host OS. I also don't want to change the IP of the guest everytime I connect the host OS to another network. So a static setting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



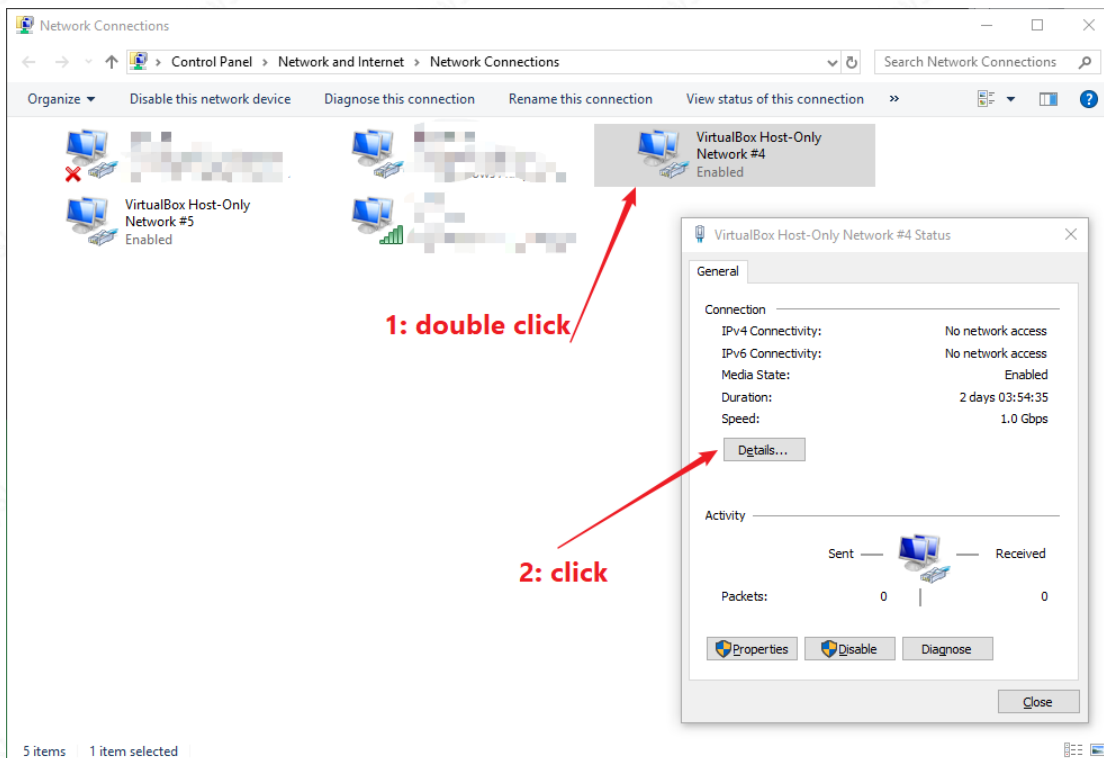
#### NETWORK TYPES SUMMARY

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

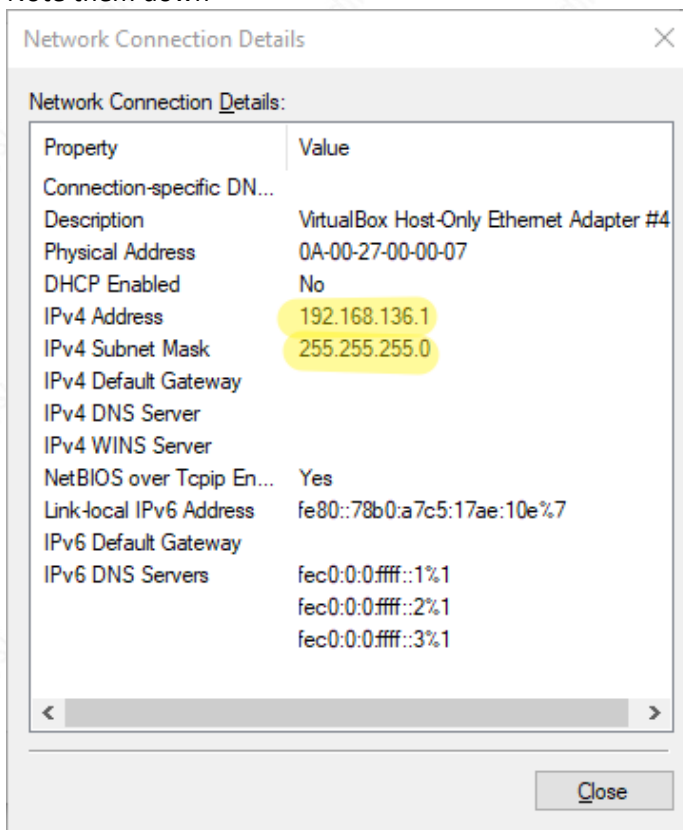
Host-only networking creates a network that is completely contained within the host computer.



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)

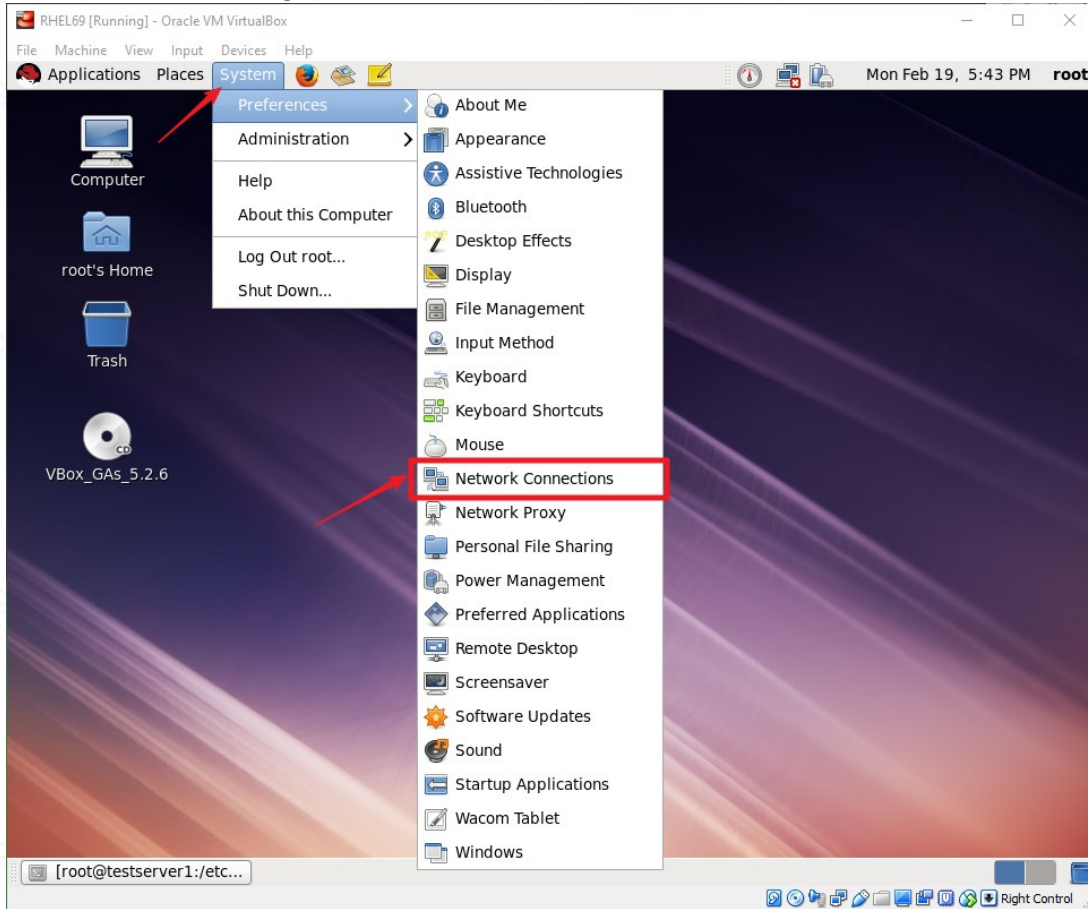


The highlighted values below are important...  
Note them down

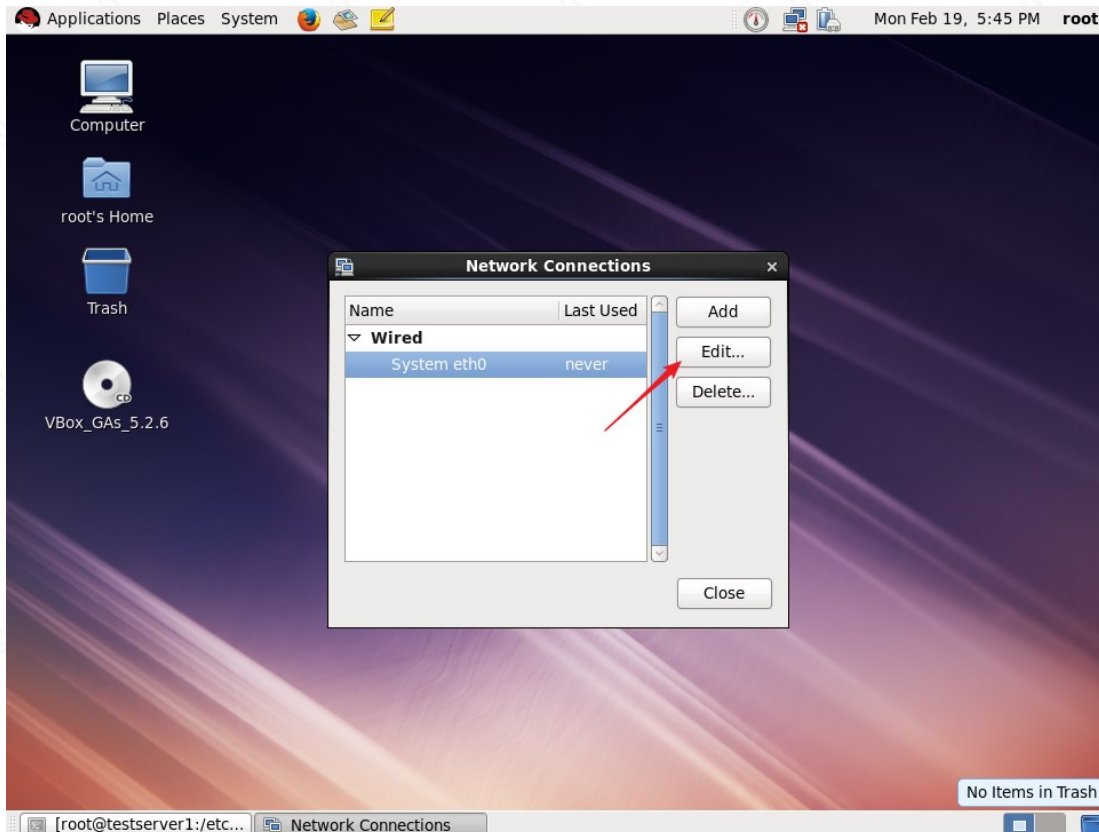




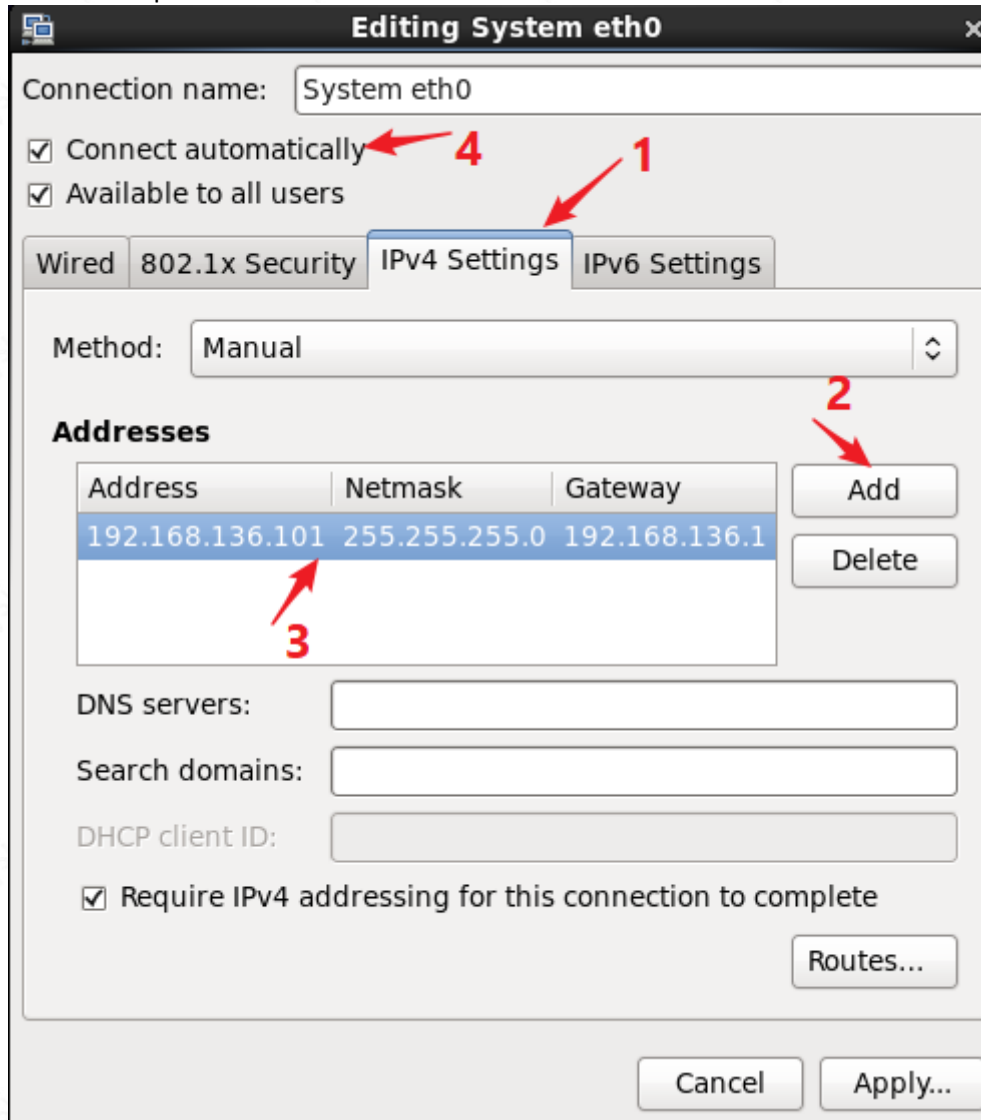
## Edit the network settings of the host (start the server)



## Click "Edit"



Add the adapter address as follows



Restart the network service

```
root@testserver1:~/Desktop
File Edit View Search Terminal Help
[root@testserver1 Desktop]# service network restart
Shutting down interface eth0: Device state: 3 (disconnected)
[ OK ]
Shutting down loopback interface:
[ OK ]
Bringing up loopback interface:
[ OK ]
Bringing up interface eth0: Active connection state: activated
Active connection path: /org/freedesktop/NetworkManager/ActiveConnection/1
[ OK ]

[root@testserver1 Desktop]#
[root@testserver1 Desktop]#
[root@testserver1 Desktop]#
[root@testserver1 Desktop]#
```

## 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
```

# ||----- ORACLE DATABASE INSTALLATION TASKS BEGIN -----||

## 8. EDIT HOSTS FILE

Add the host ip and name to the hosts file

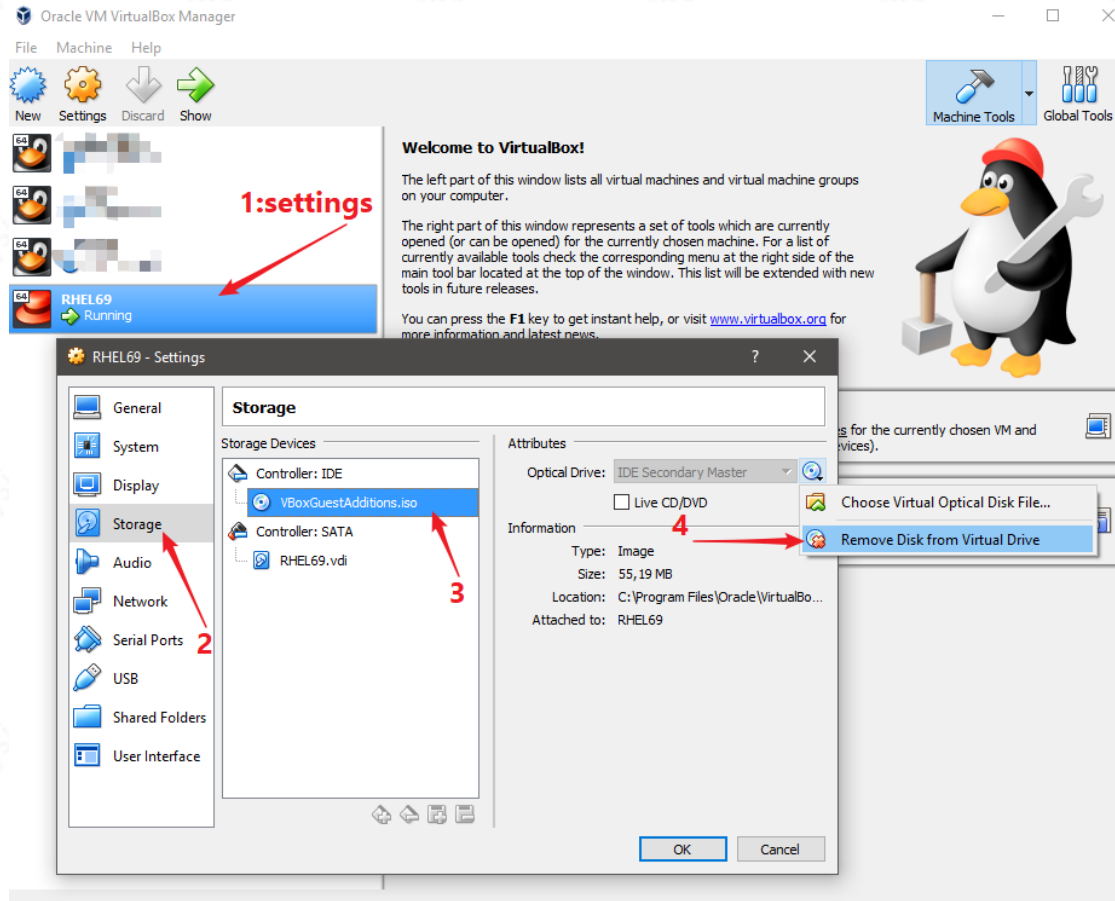
```
[root@testserver1 ~]# vi /etc/hosts
```

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

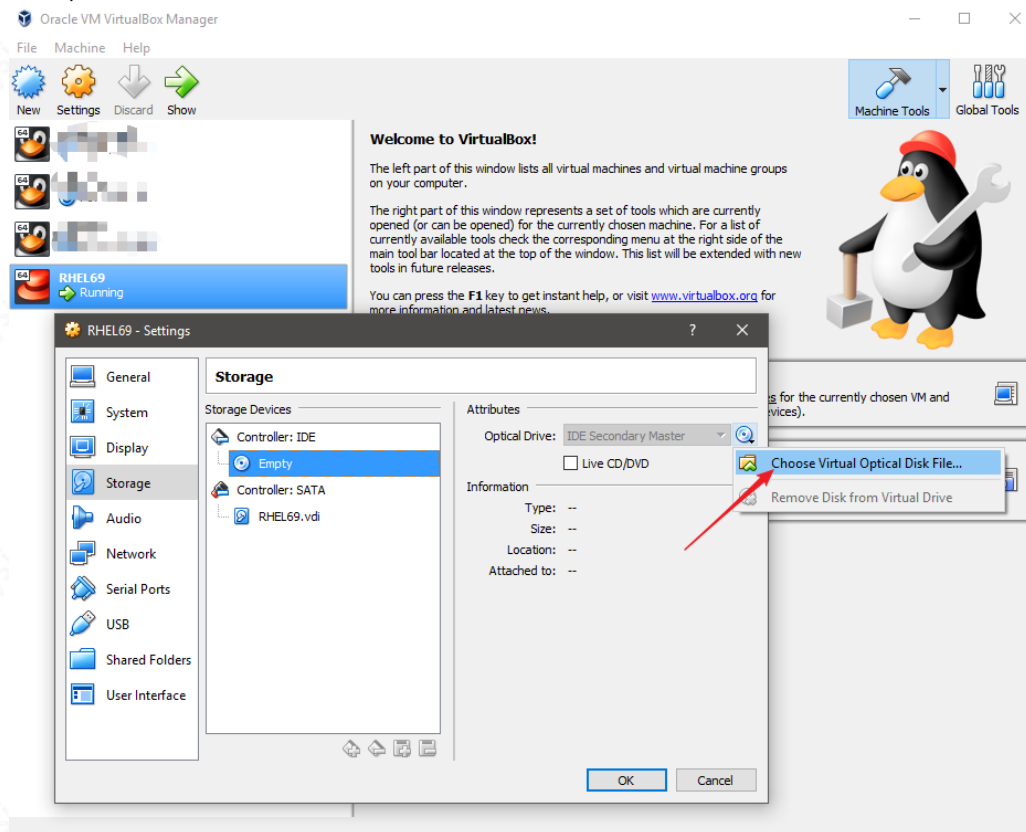
## 9. Install RPMs

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.

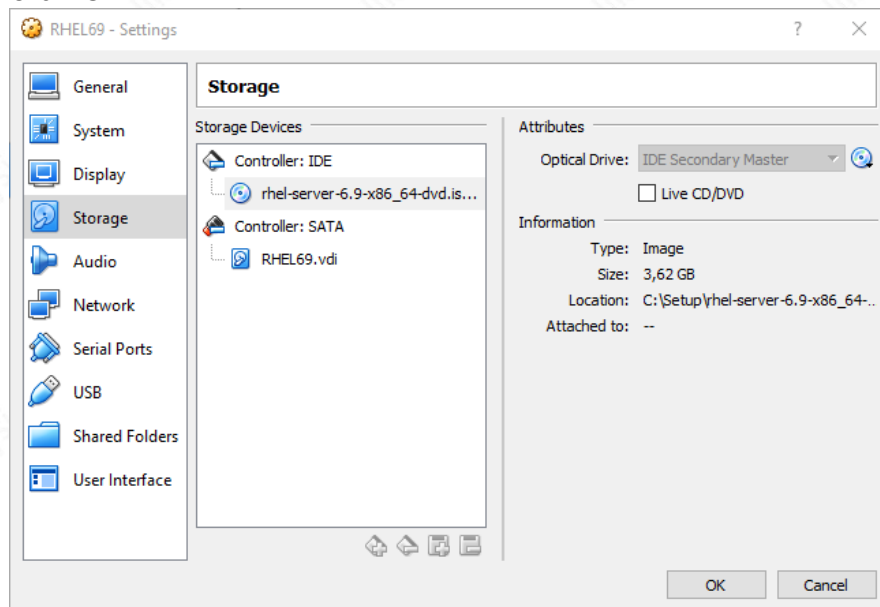
First, remove all mounted disks from the server, if there are any.



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
```

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
```

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.shmni = 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
```

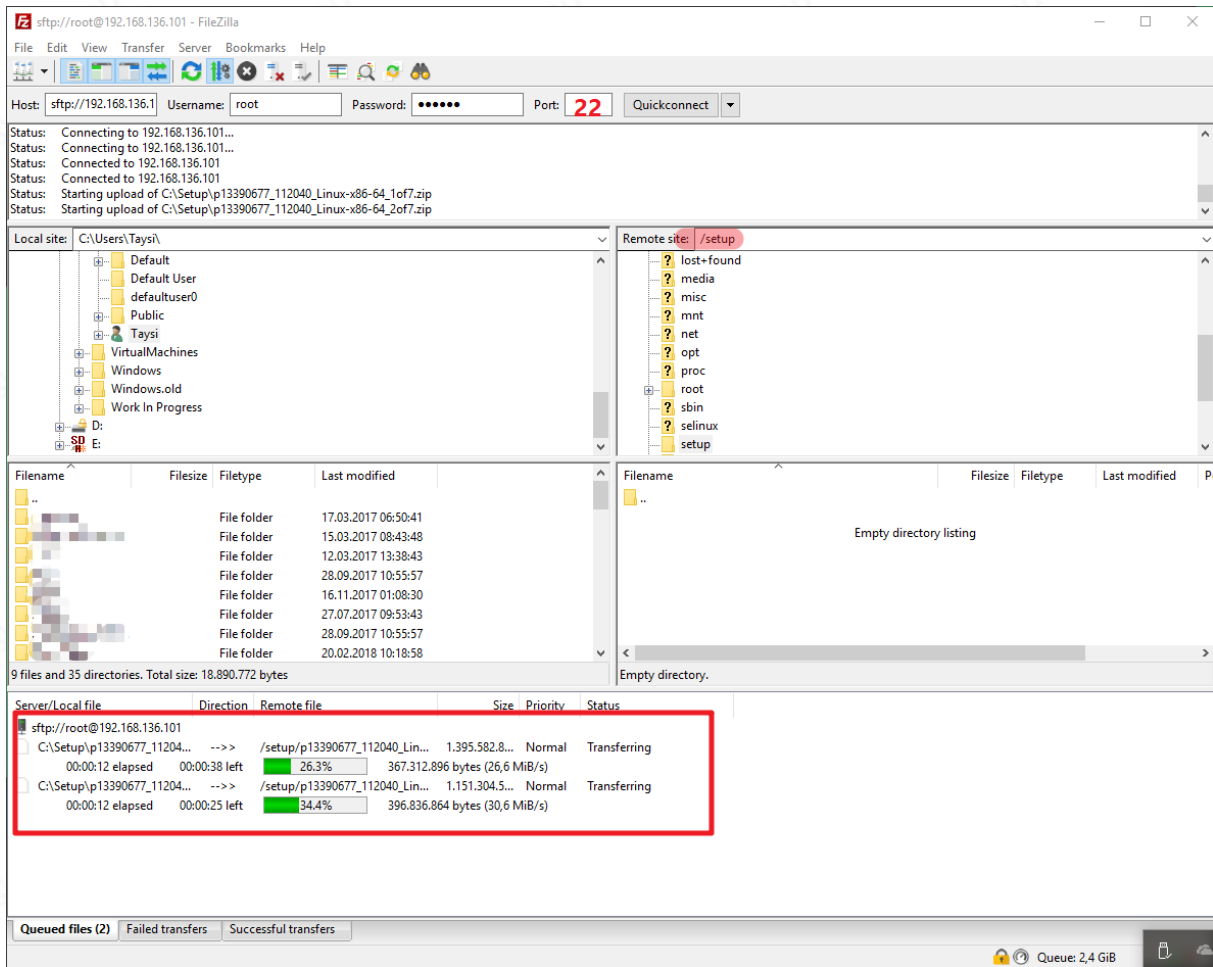
## 12.CREATE DIRECTORIES & COPY FILES

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
```



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

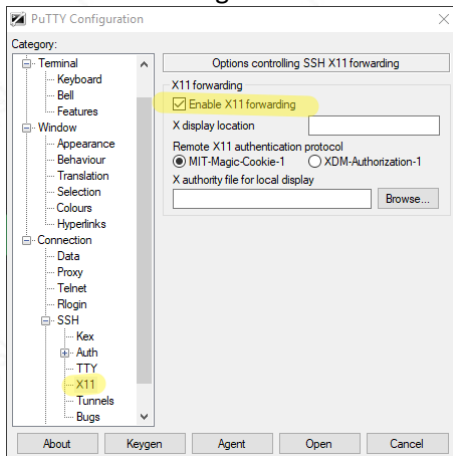
LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib; export LD_LIBRARY_PATH
CLASSPATH=$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib; export CLASSPATH
```



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

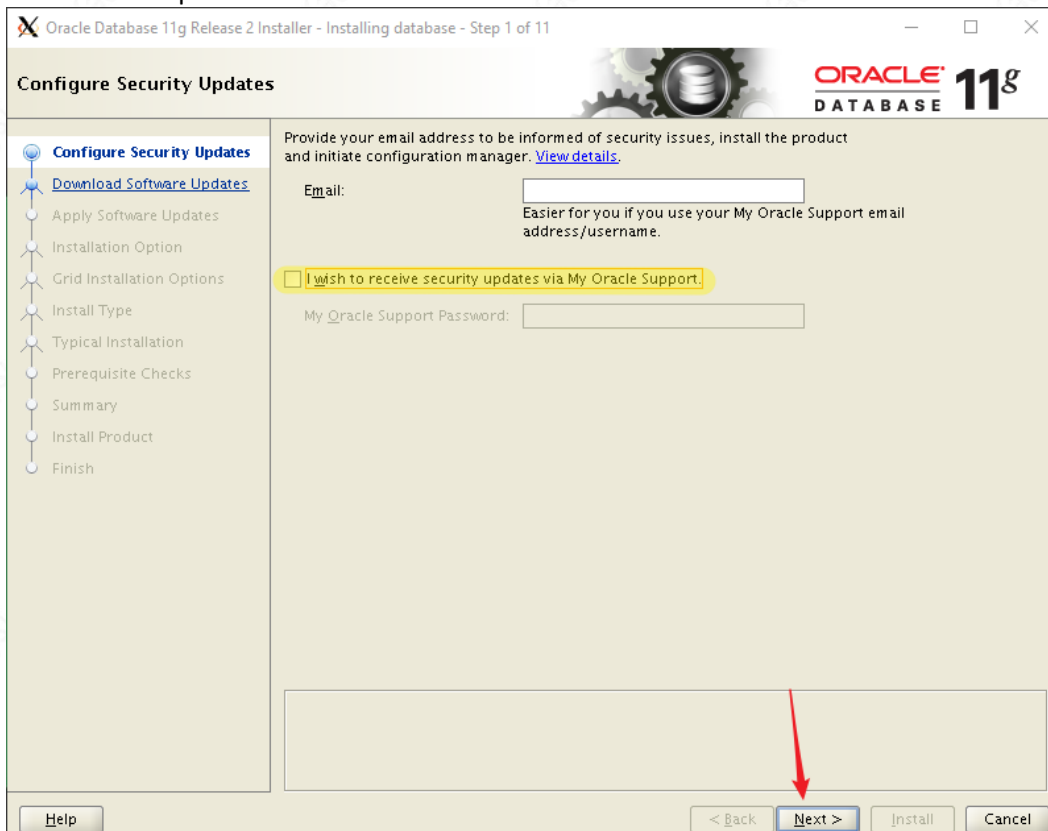
Connect with putty and be sure that the X11 forwarding is enabled in putty. Also your Xming tool should be running.



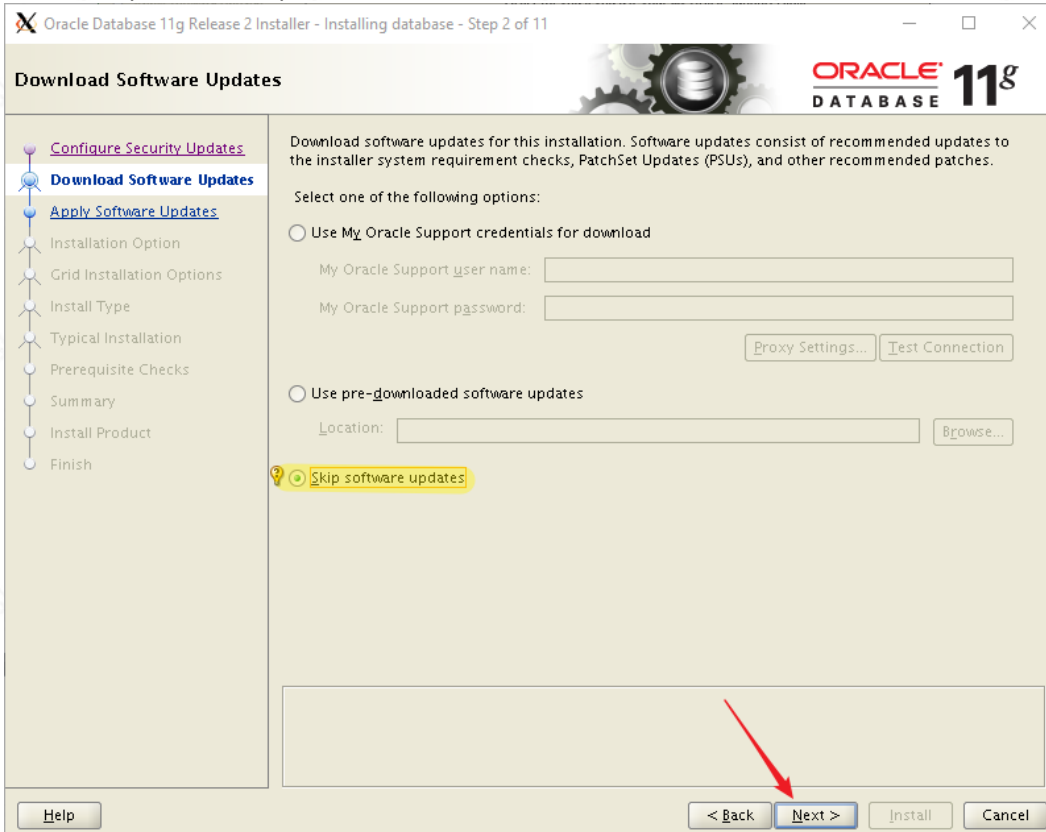
Unzip the files and run the installation

```
[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
```

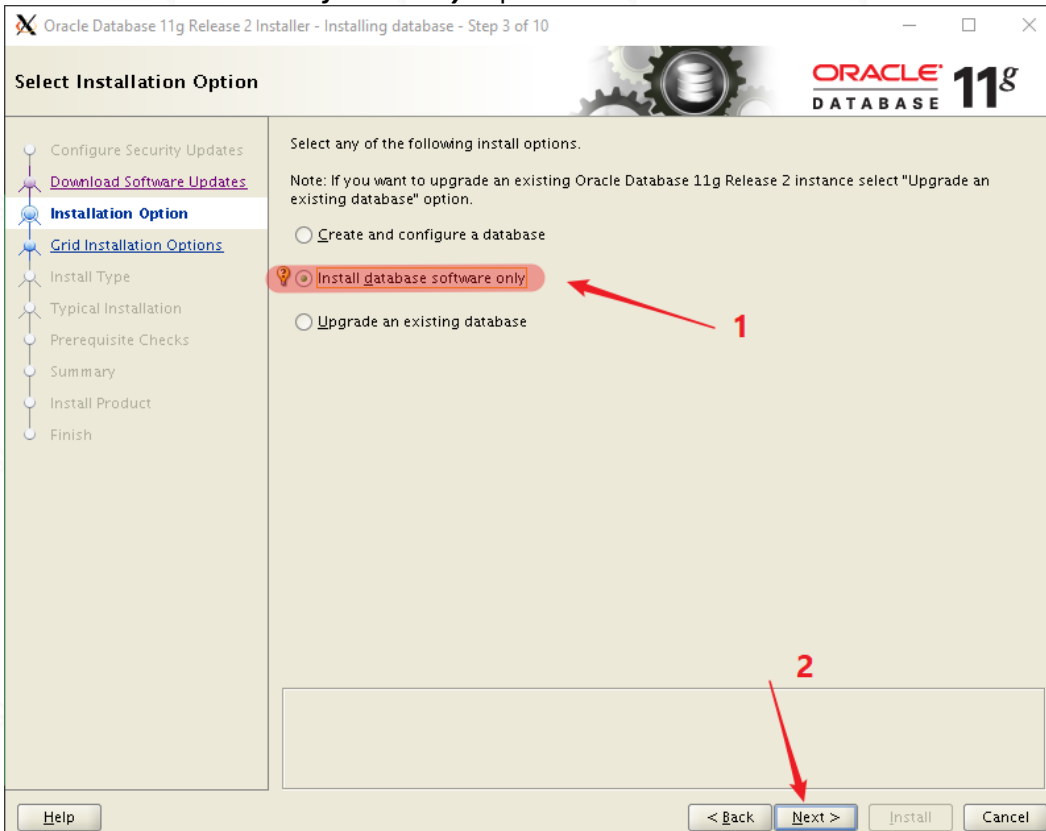
Uncheck the update box and click "Next"



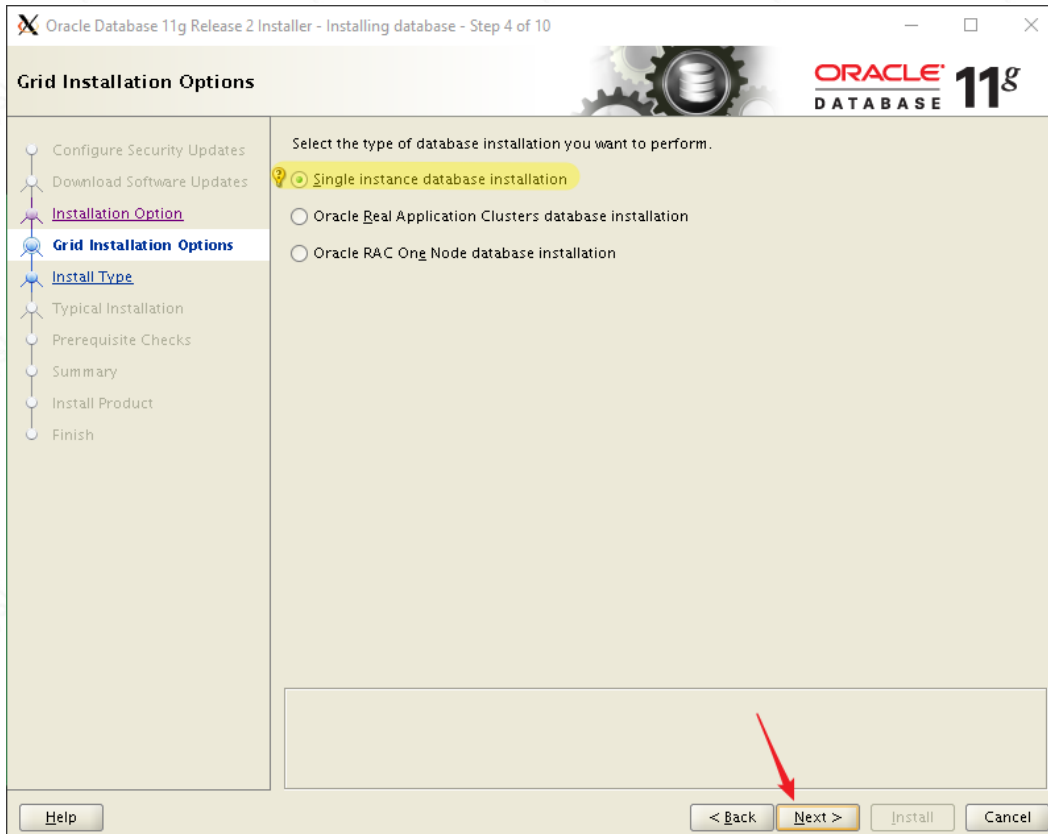
Select "Skip software updates" and click "Next"



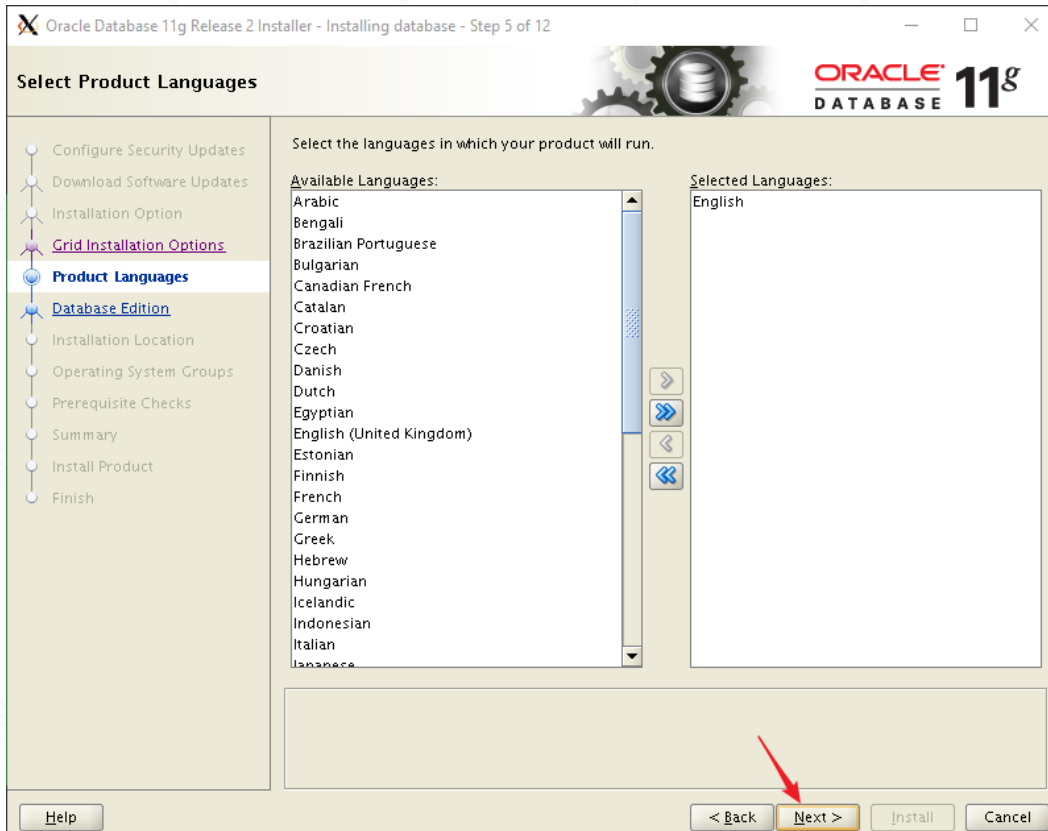
Select "Install database software only" option and click "Next"



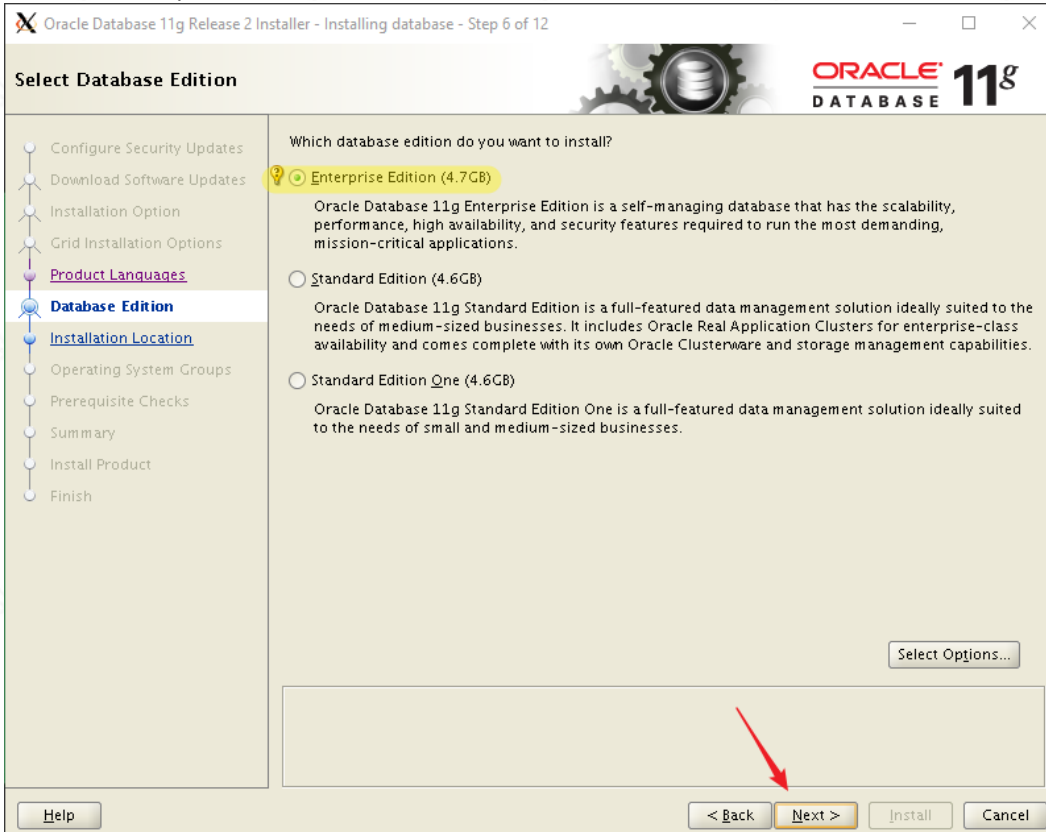
Click "Next"



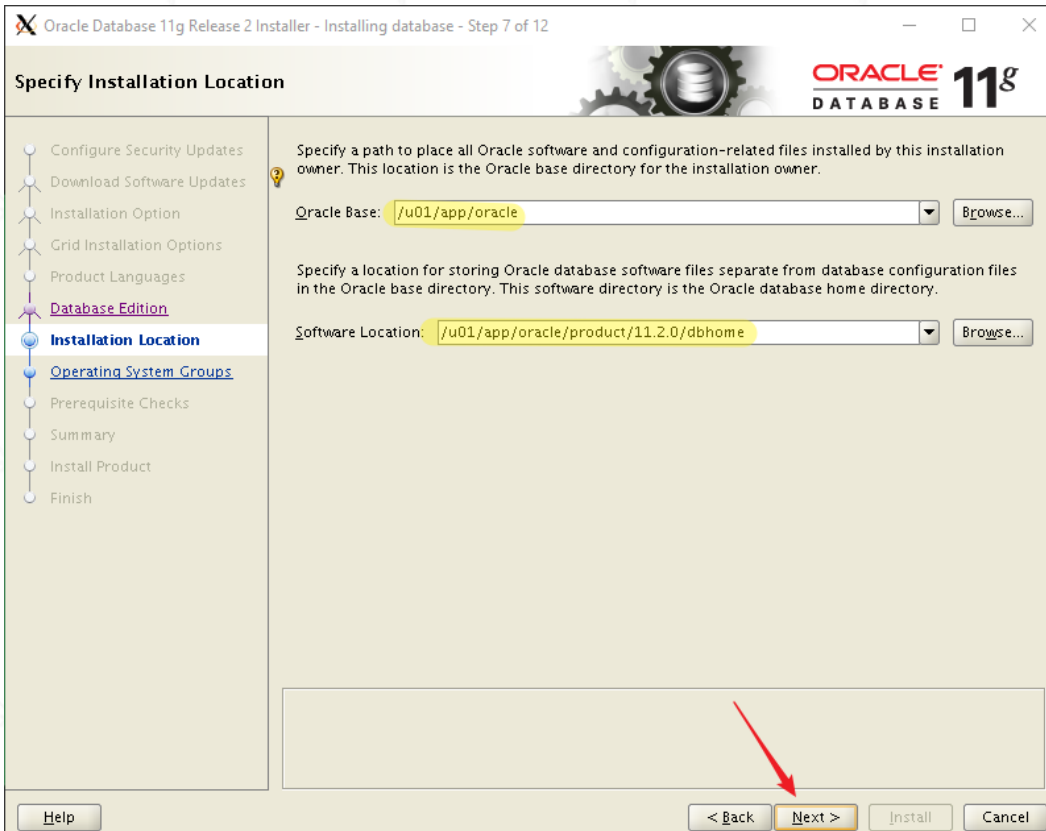
Click "Next"



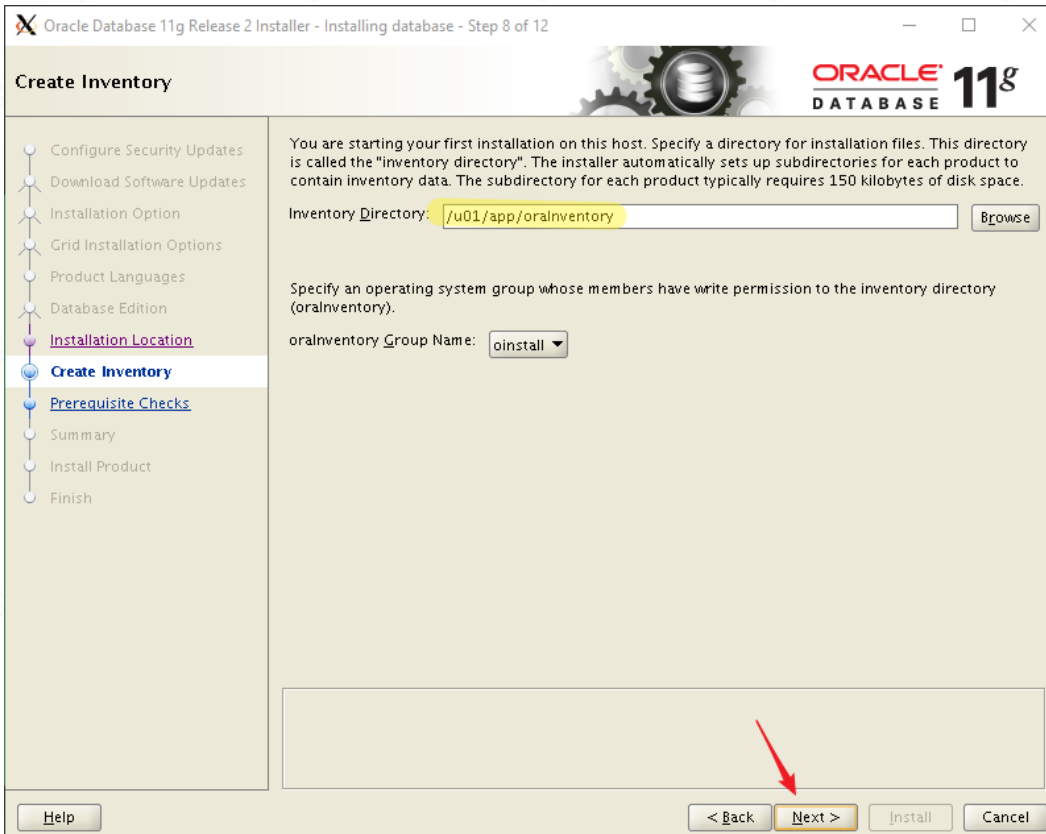
### Choose "Enterprise Edition" and click "Next"



### Click "Next"



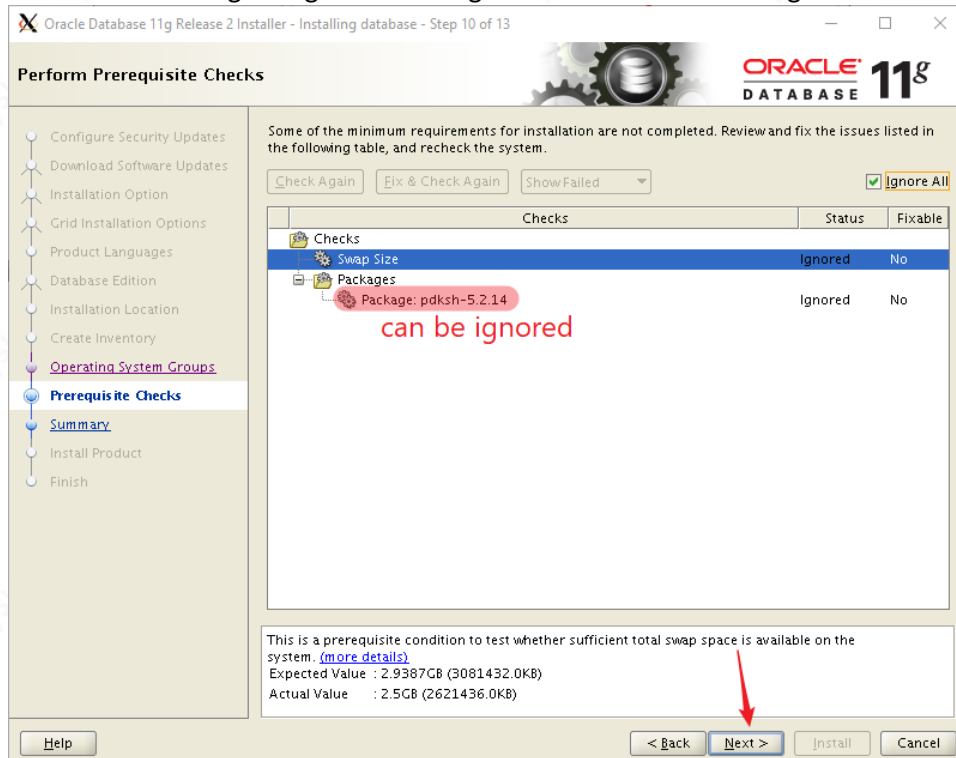
Click "Next"



Click "Next"

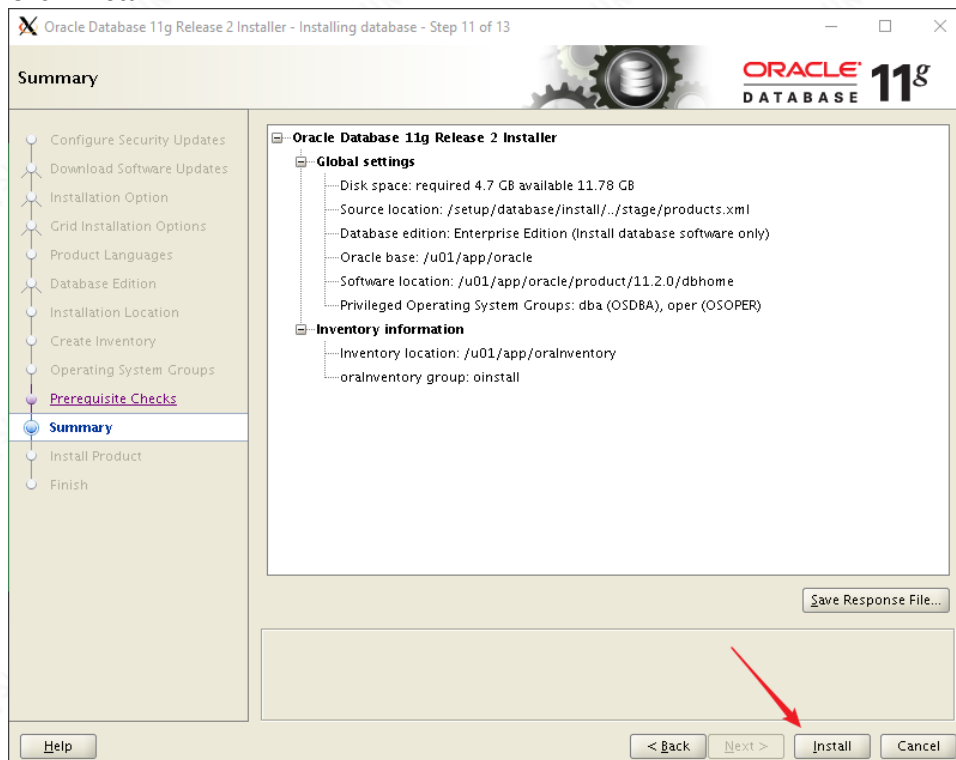


Click "Next" after ignoring the following non-critical check warning

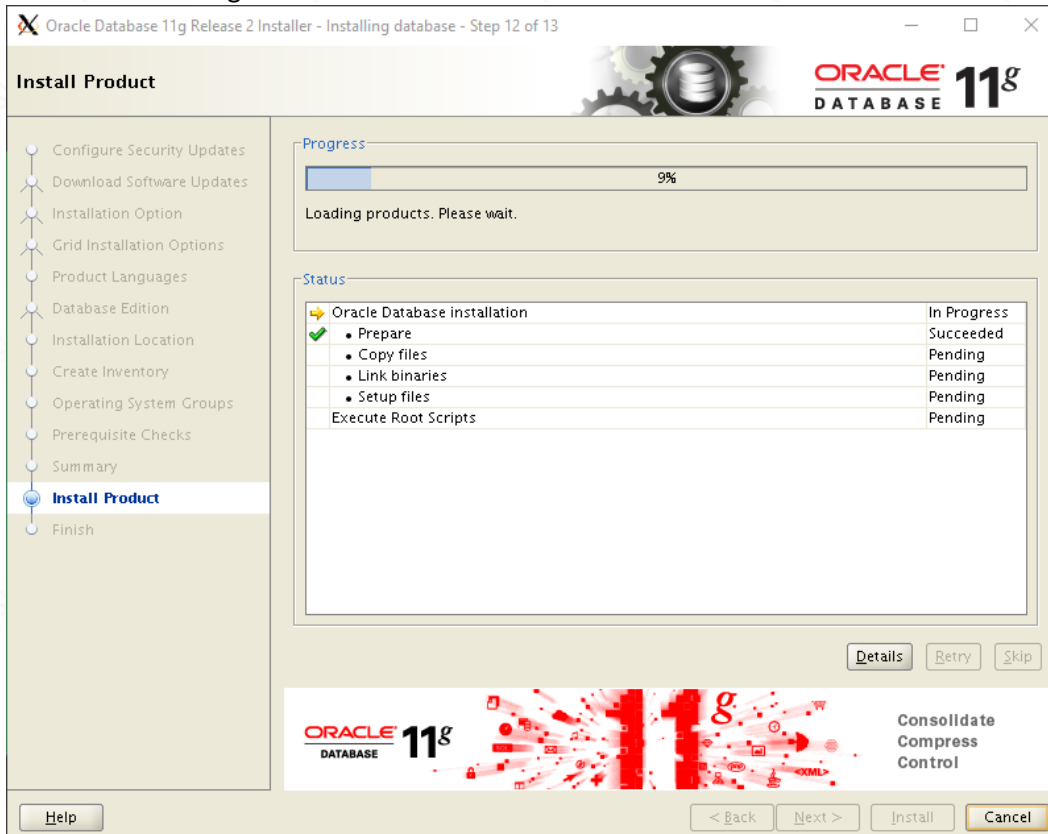


The pdksh package is not required for a successful installation of Oracle 11.2.0.4 (Doc ID 1962046.1) And since this is a test installation swap size can also be ignored.

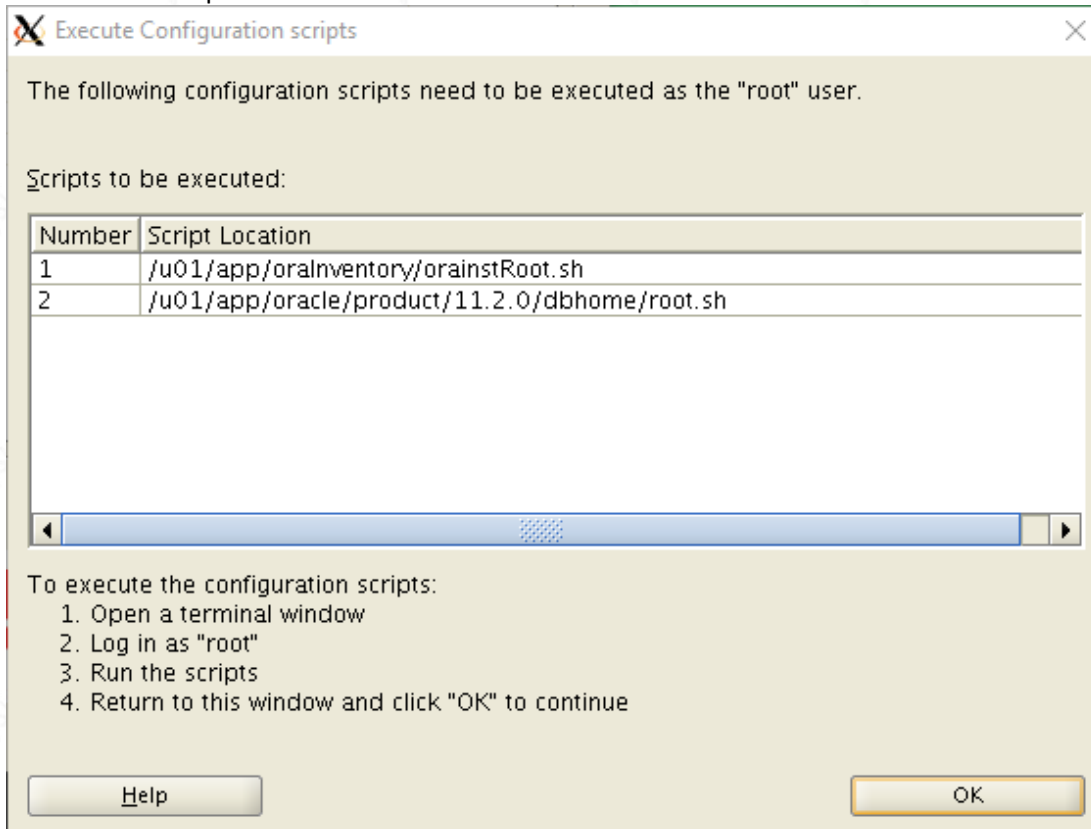
Click "Install"



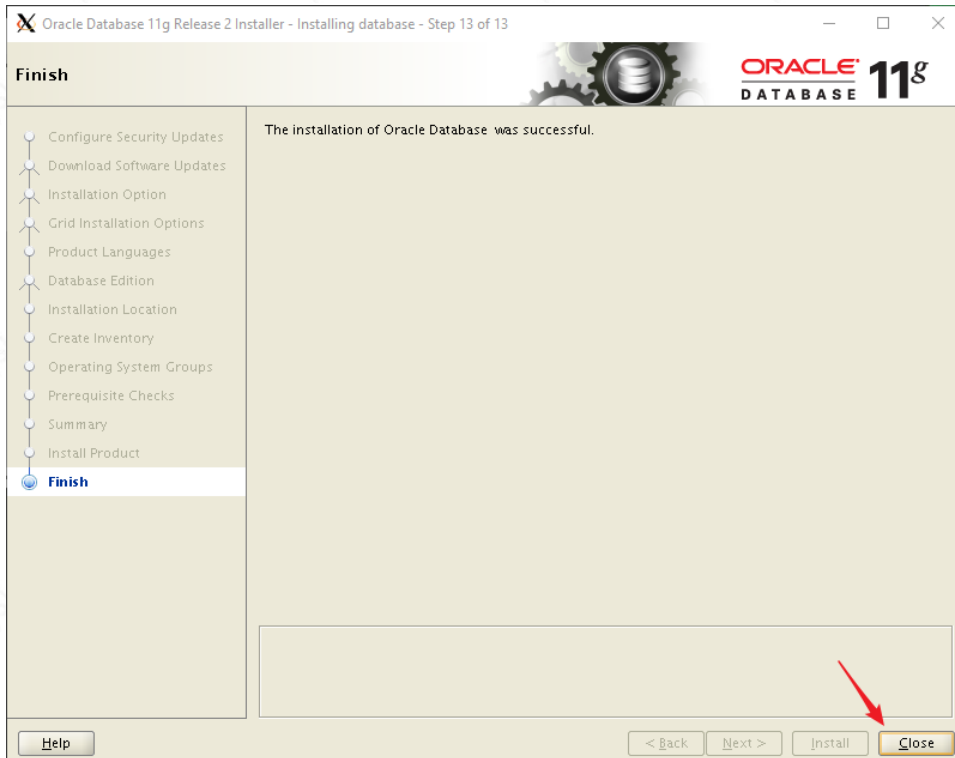
The installation begins.



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



The installation was successful. Click "Close"

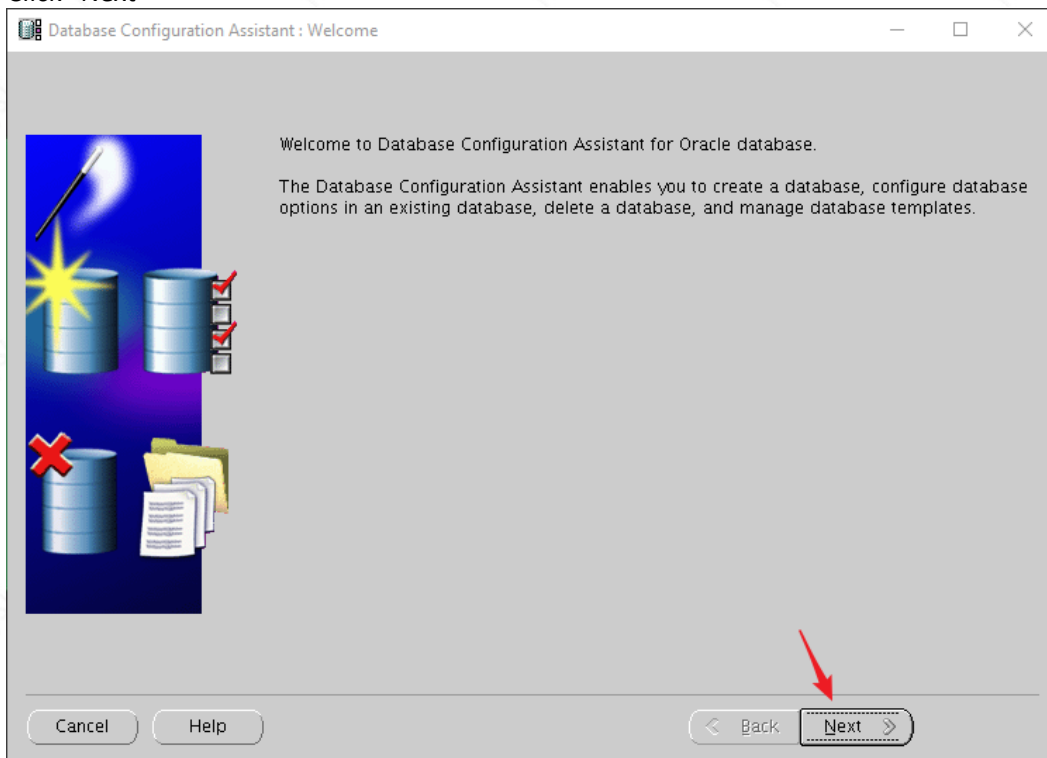


## 15. INSTALL DATABASE

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

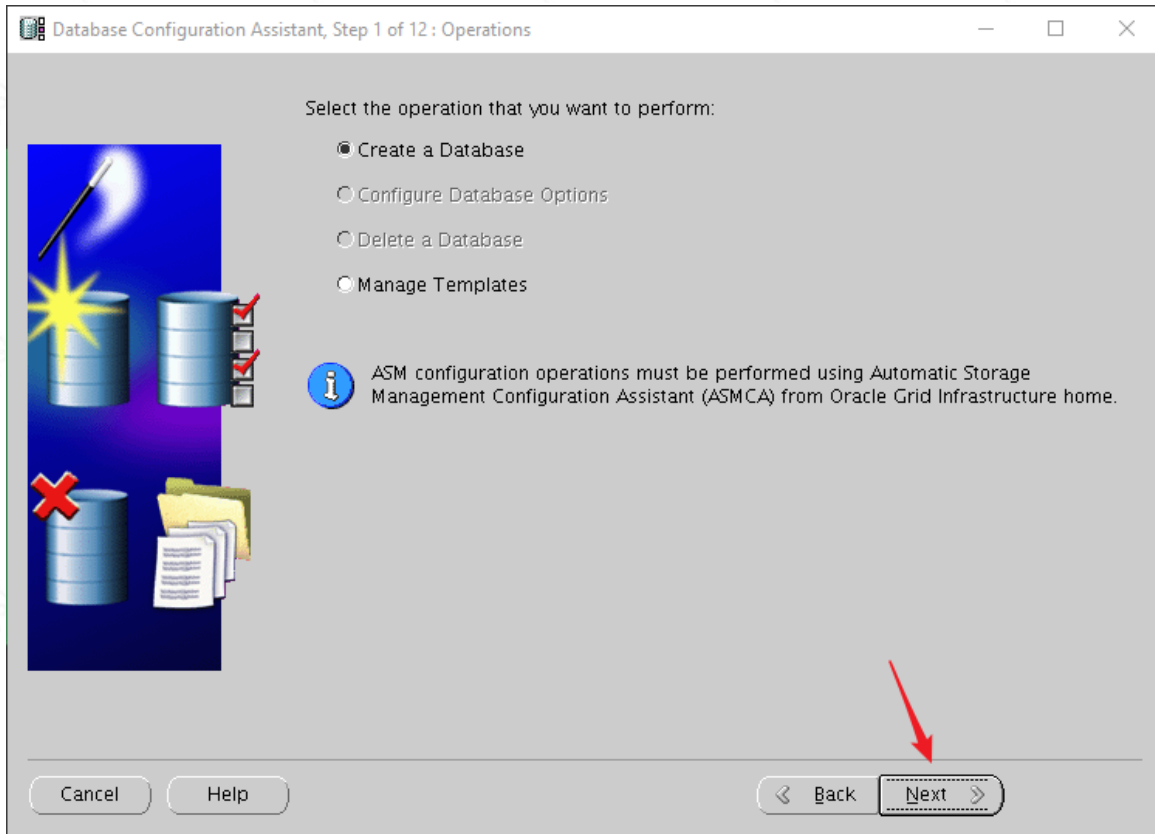
```
[oracle@testserver1 setup]$ dbca
```

Click "Next"

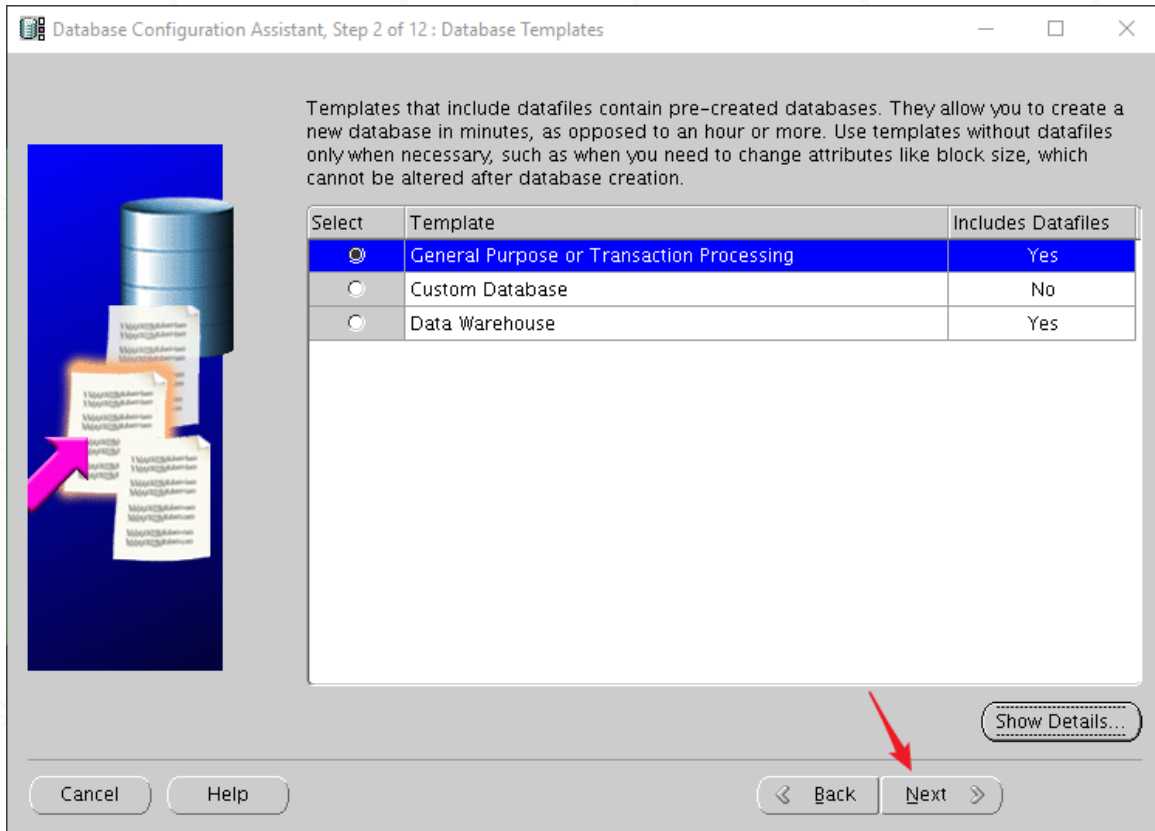




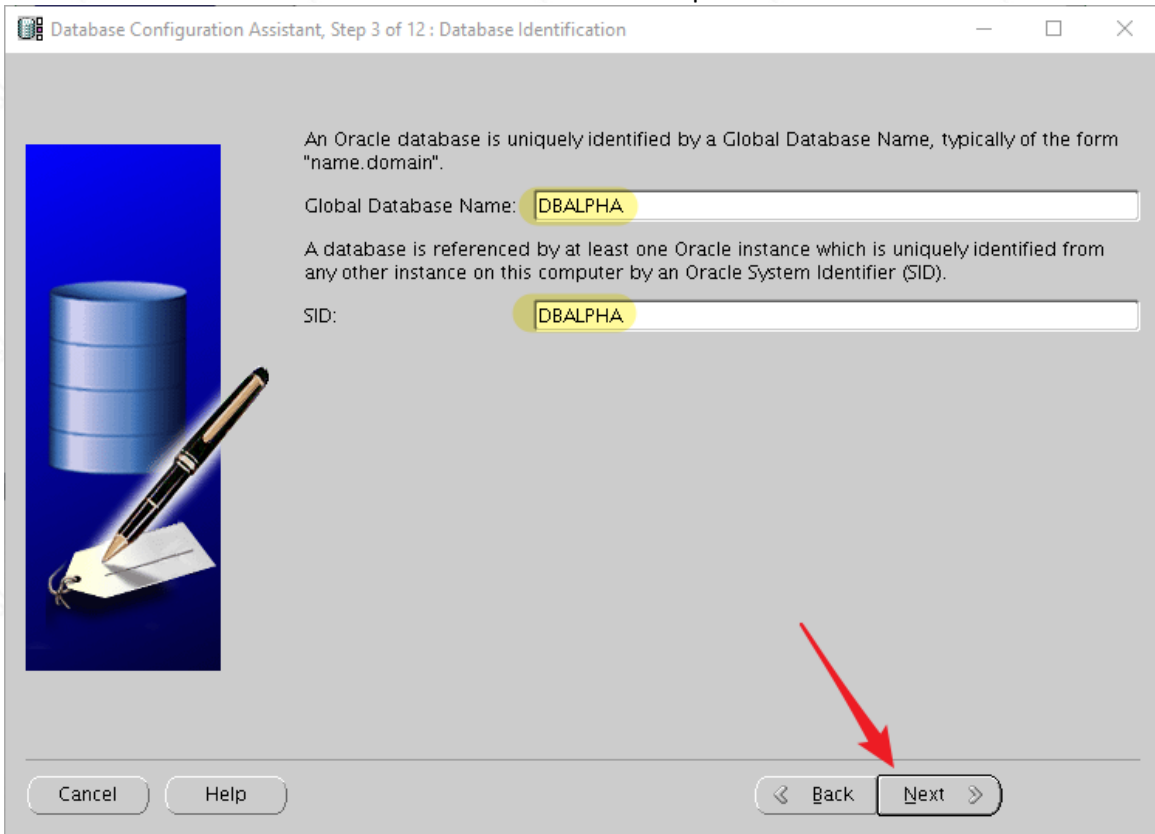
Click "Next"



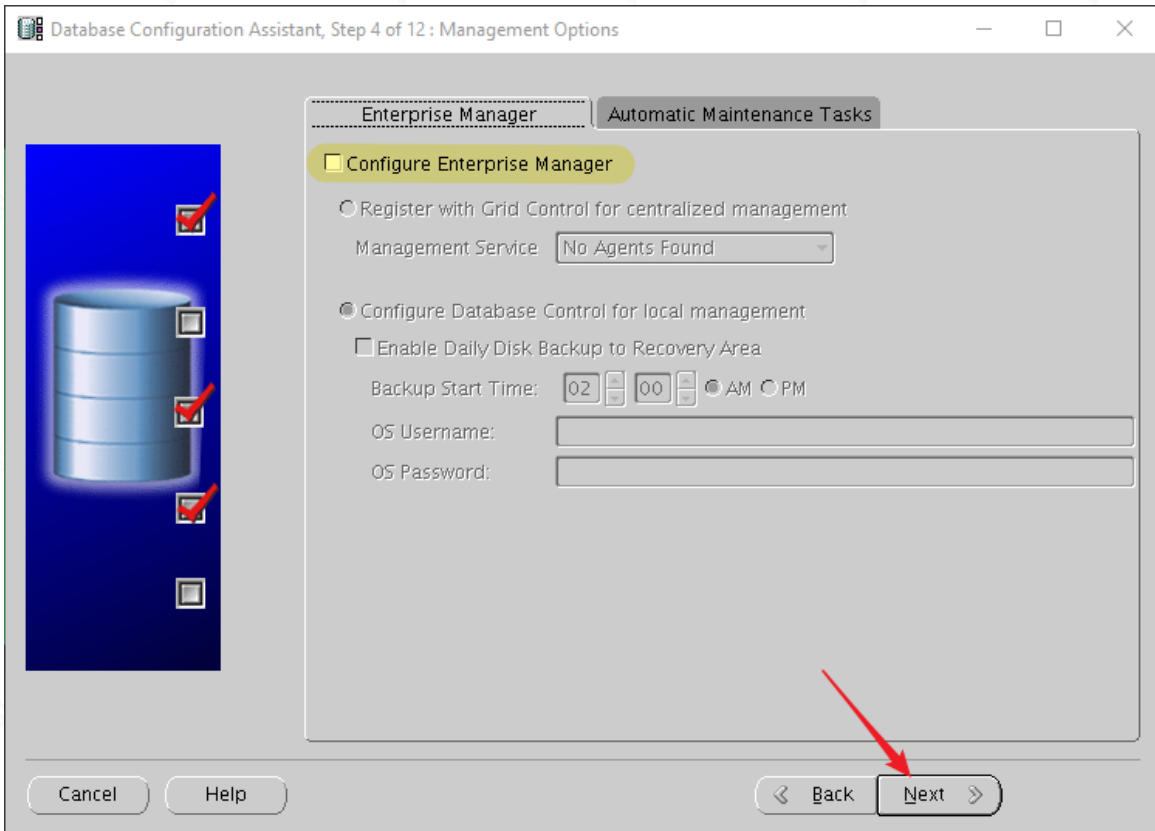
Click "Next"



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



Uncheck EM and click "Next"



### Enter a password and click "Next"

Database Configuration Assistant, Step 5 of 12: Database Credentials

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

Use Different Administrative Passwords

User Name	Password	Confirm Password
SYS		
SYSTEM		

Use the Same Administrative Password for All Accounts

Password:

Confirm Password:

Cancel Help Back Next Finish

### Just choose OMF and click "Next"

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

Specify storage type and locations for database files.

Storage Type: File System

Storage Locations:

Use Database File Locations from Template

Use Common Location for All Database Files

Database Files Location: {ORACLE\_BASE}/oradata Browse...

Use Oracle-Managed Files

Database Area: {ORACLE\_BASE}/oradata Browse...

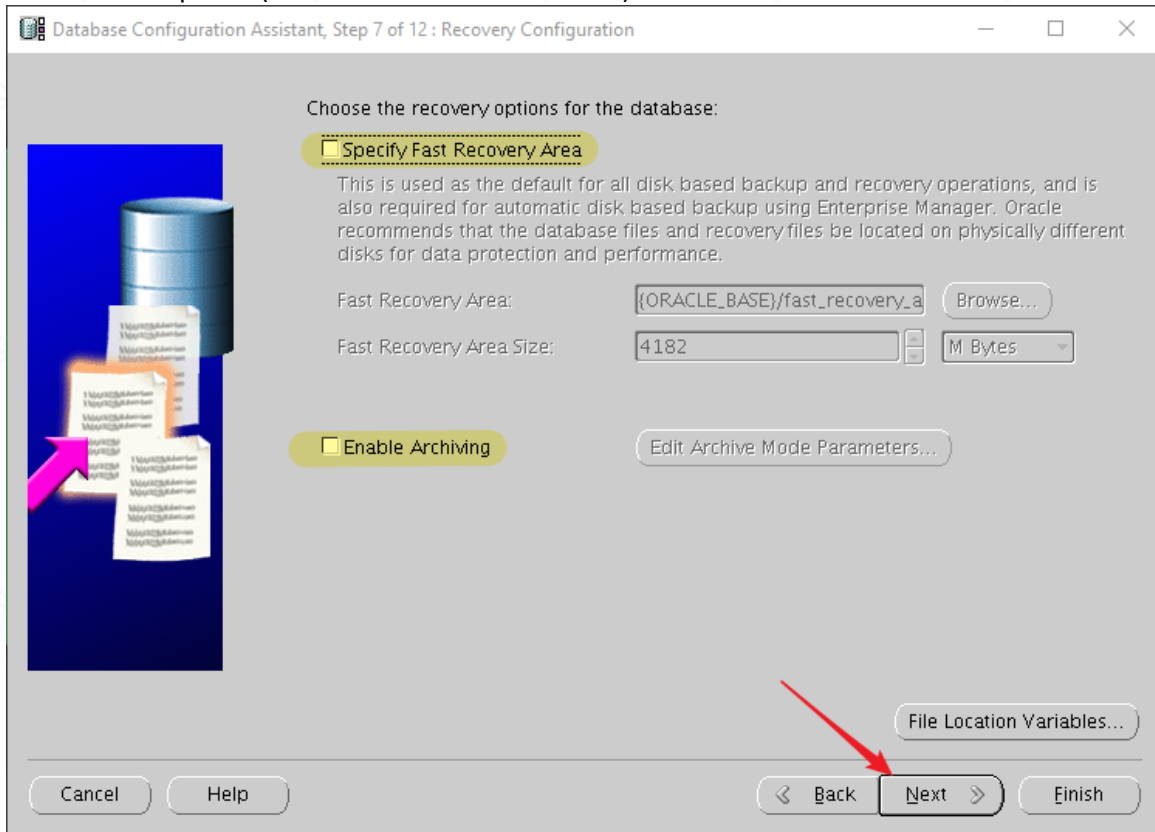
Multiplex Redo Logs and Control Files...

**i** If you want to specify different locations for any database files, pick any of the above options except Oracle-Managed Files and use the Storage page later to customize each file location. If you use Oracle-Managed Files, Oracle automatically generates the names for database files, which can not be changed on the Storage page.

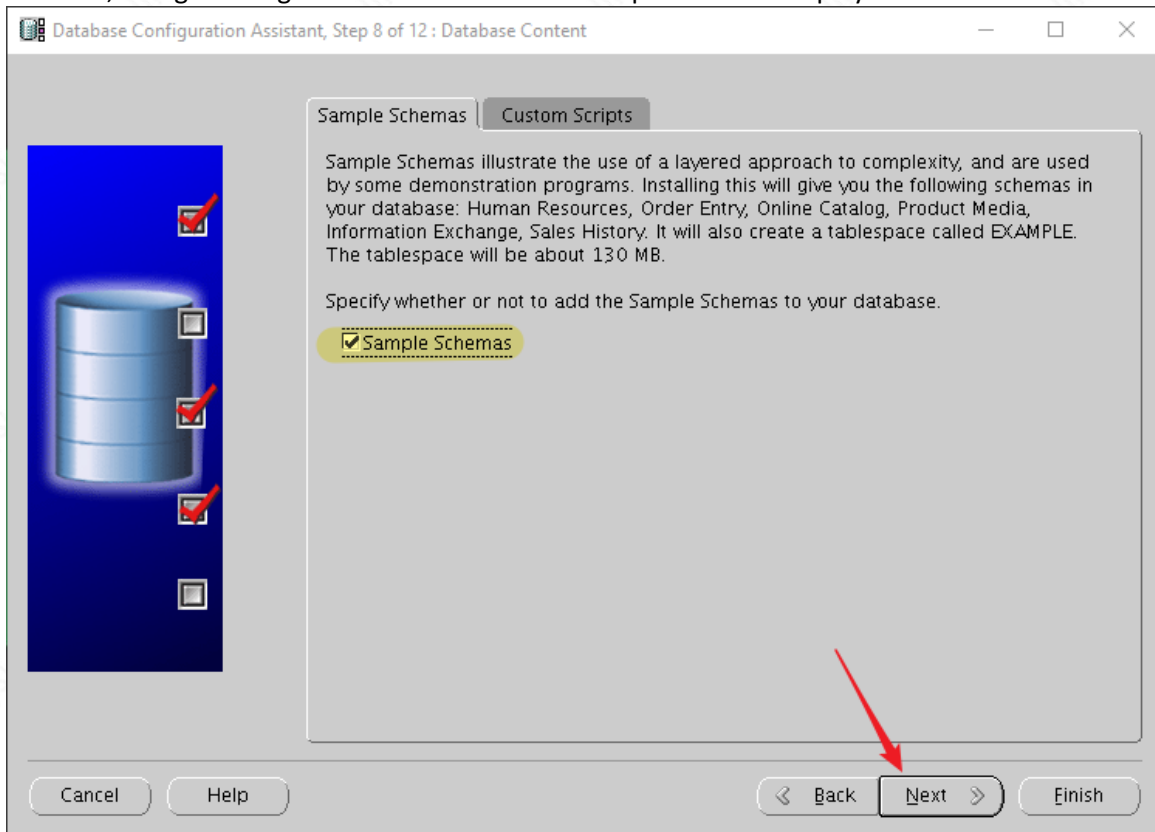
File Location Variables...

Cancel Help Back Next Finish

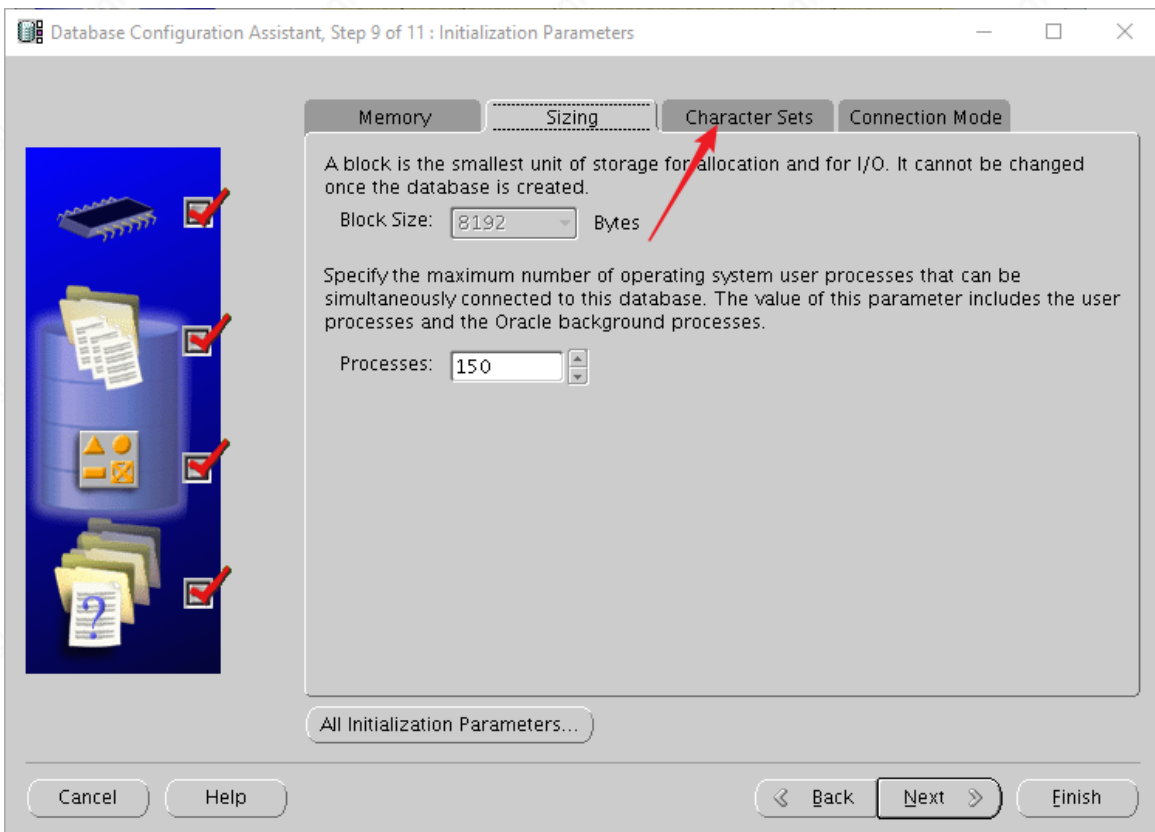
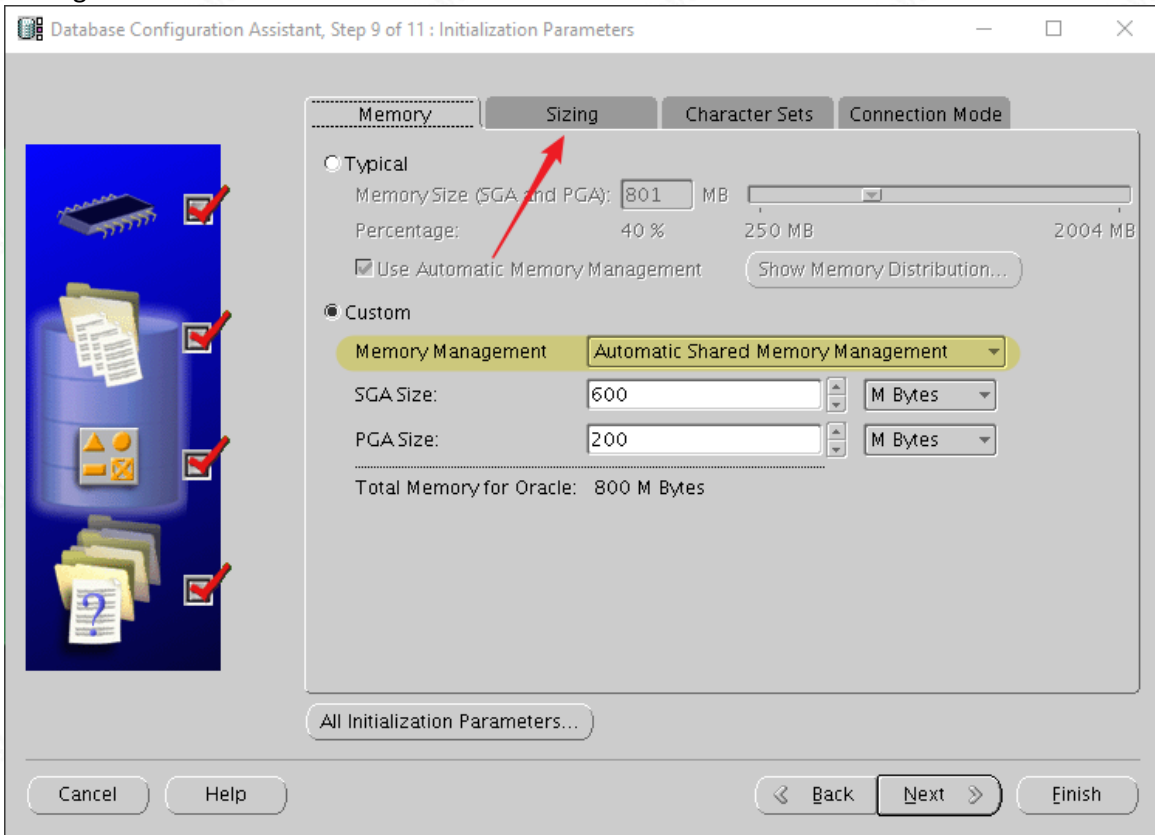
Disable both options (no need in a sandbox for now) and click "Next"

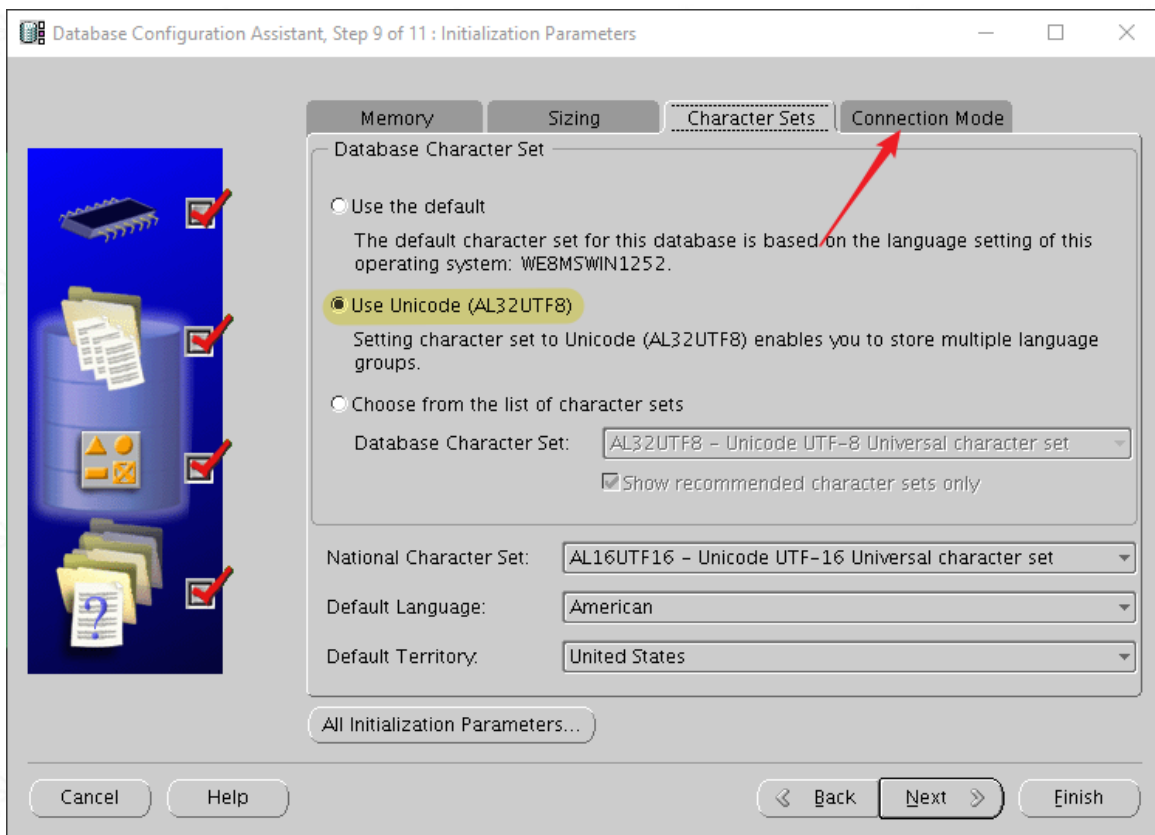
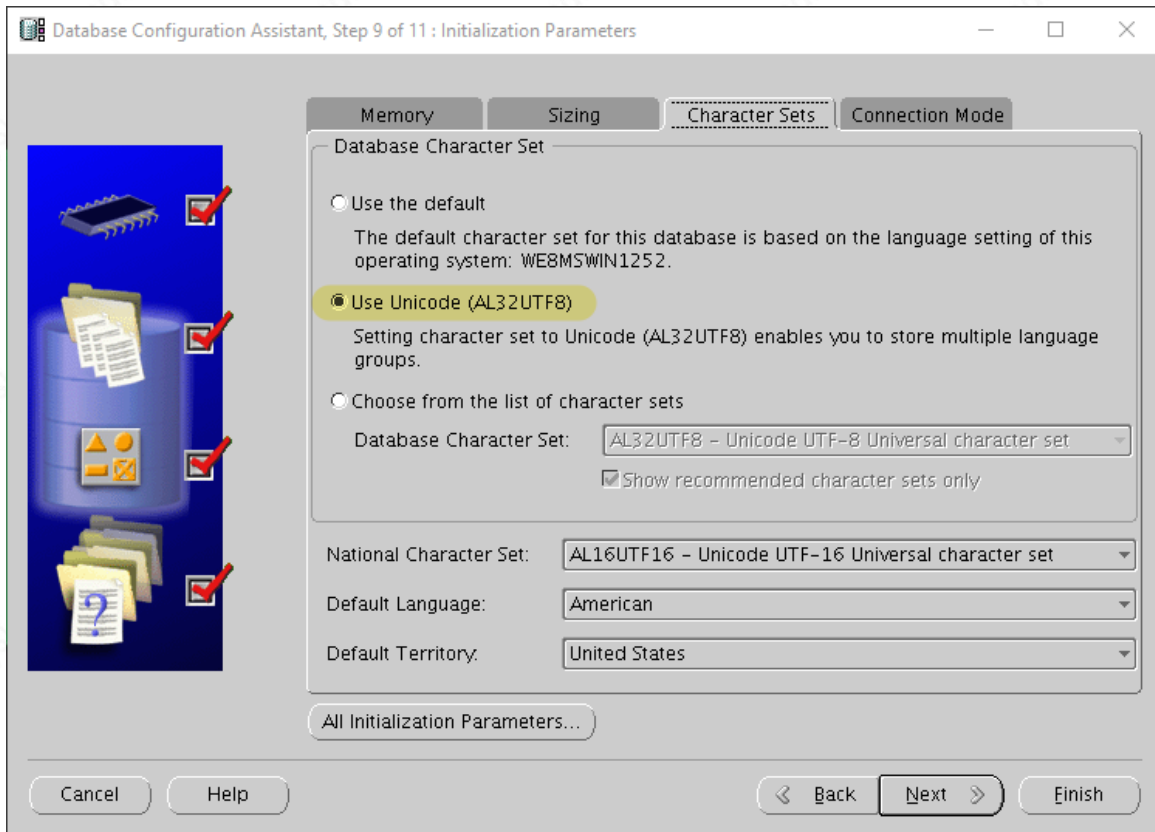


You should not be installing these sample schemas in a production environment, but since it is a sandbox, it might be a good idea to install some sample schemas to play around...

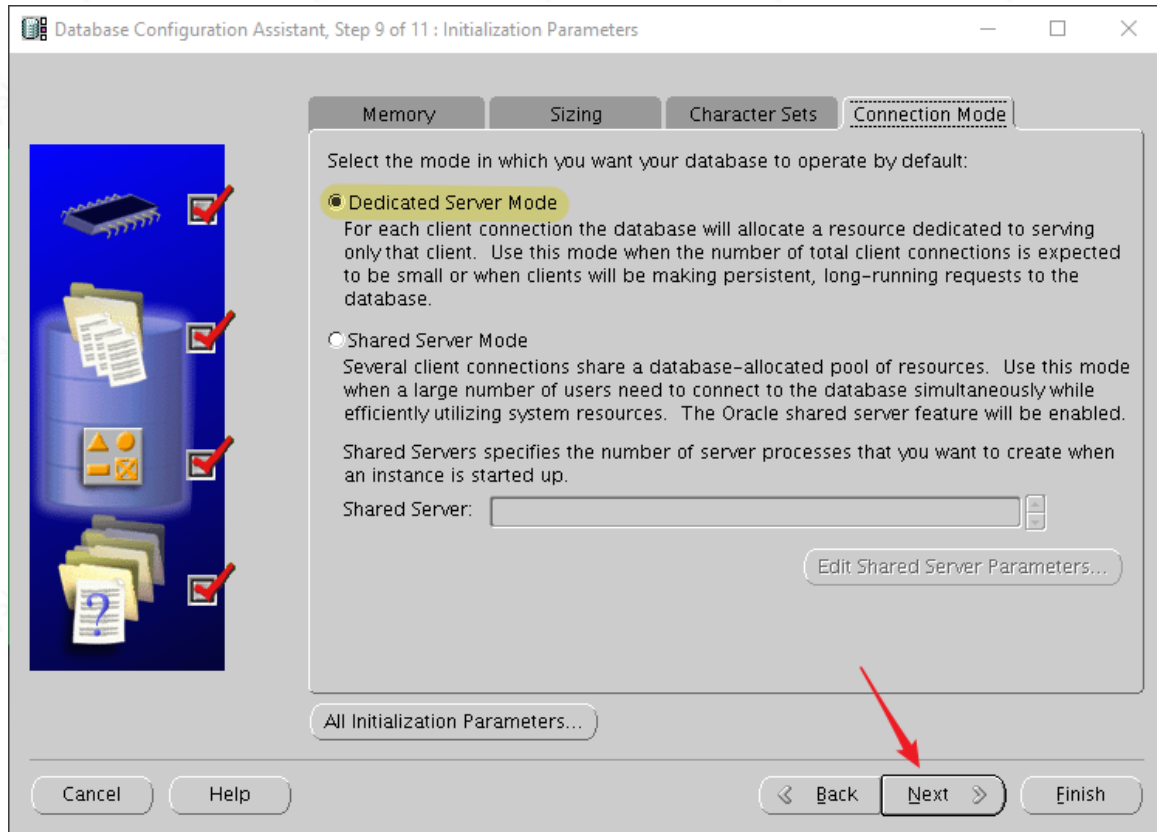


Actually, this section is really important for a production database. There are some concepts like hugepages - the way, the size how the linux OS allocates memory and AMM for instance does not work with hugepages. If you are intending to use hugepages you have to be using ASMM or a manual setting.

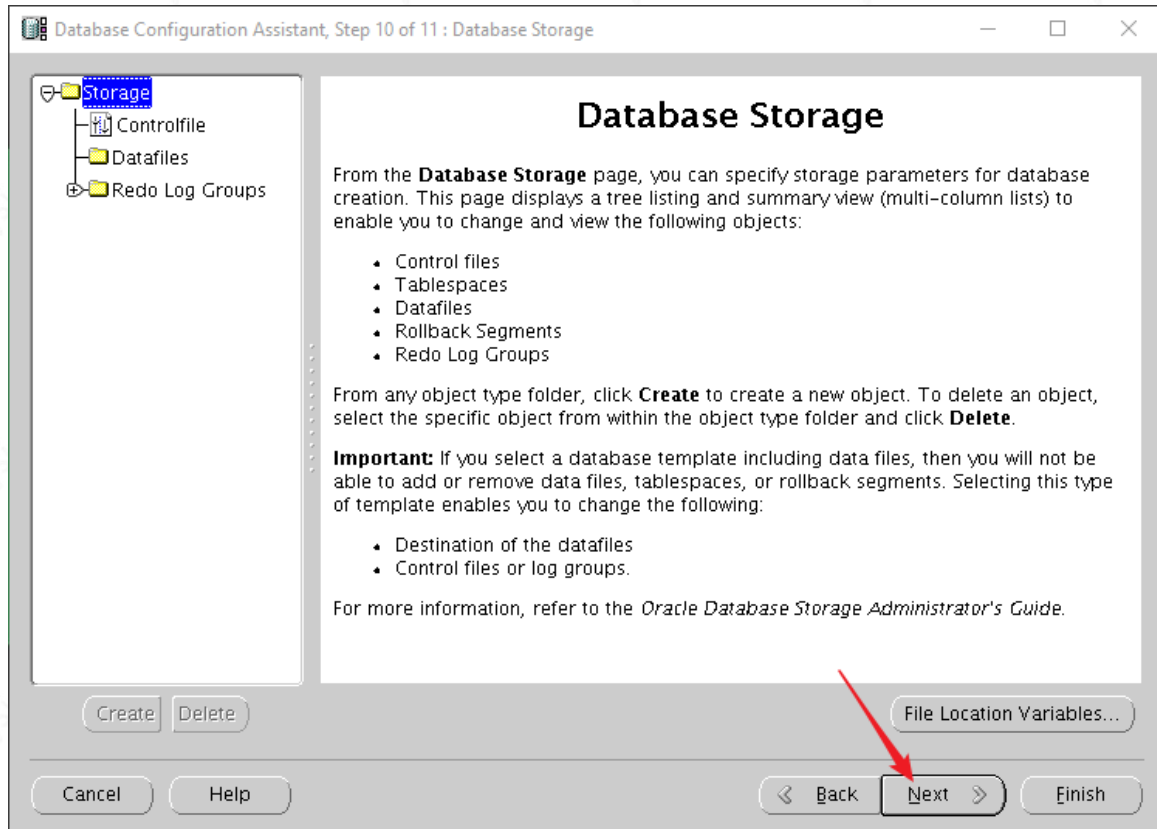




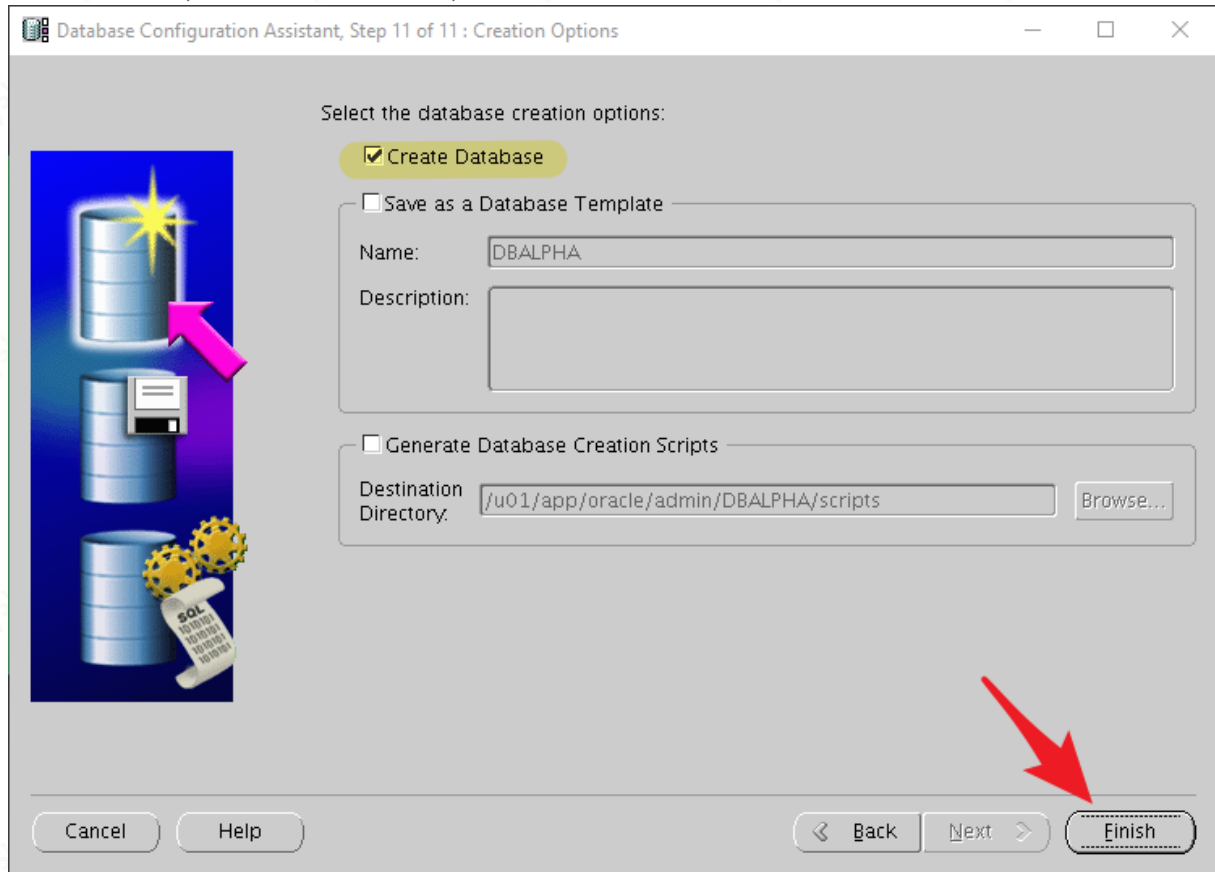
Click "Next"



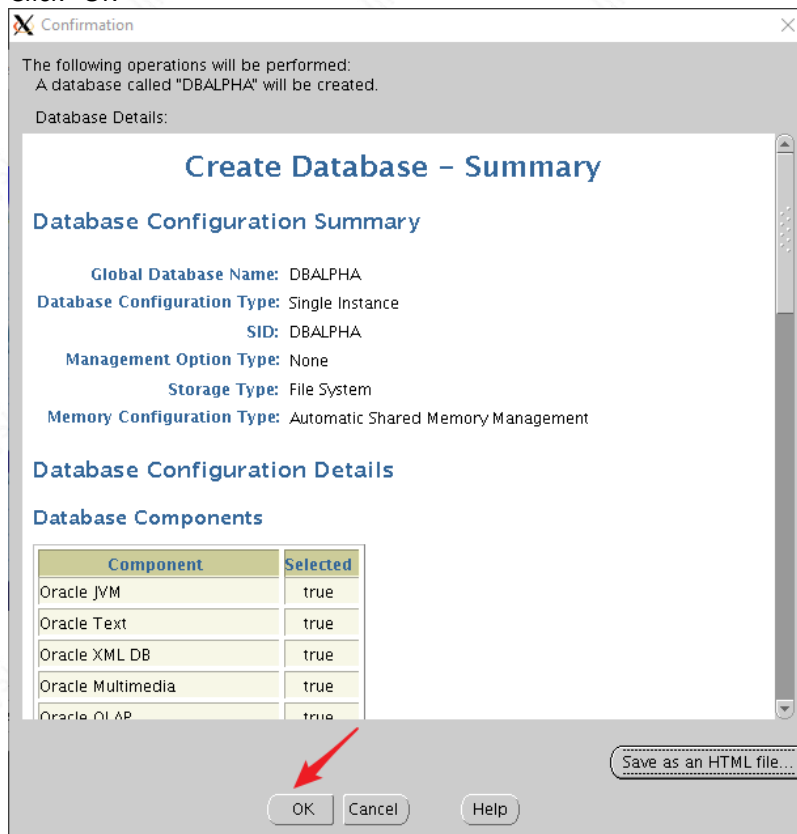
Click "Next"



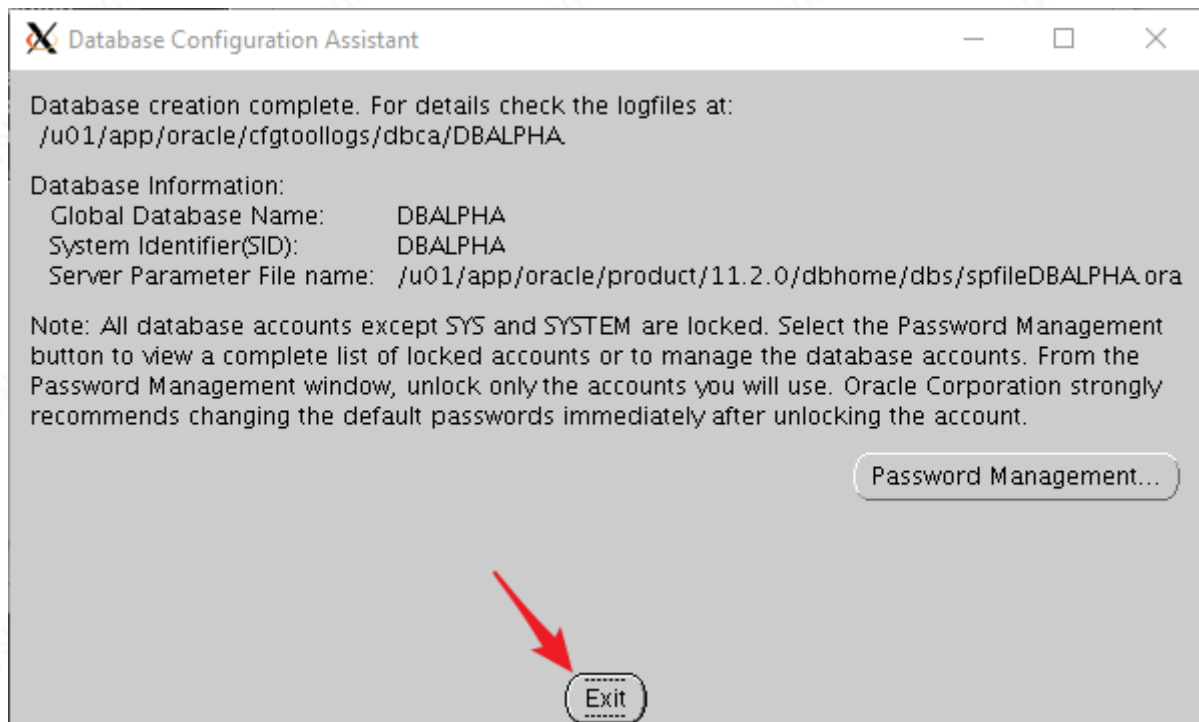
Click "Finish" ( do not click the Finnish 🇫🇮 )



Click "OK"







**THE END.**