

# OJT1.1 Linux Basic

- Linux OS Structure Overview
  - ✓ Structure of File System
  - ✓ Process
  - ✓ Permission
  - ✓ user environment(bash)
- How to read online manual(summary)
- How to use major command
  - ✓ Major Command(ps, netstat, iostat, vmstat, top, grep, find, etc)
  - ✓ vi editor

# 1. Linux Server Installation

## 1. Linux Server Installation

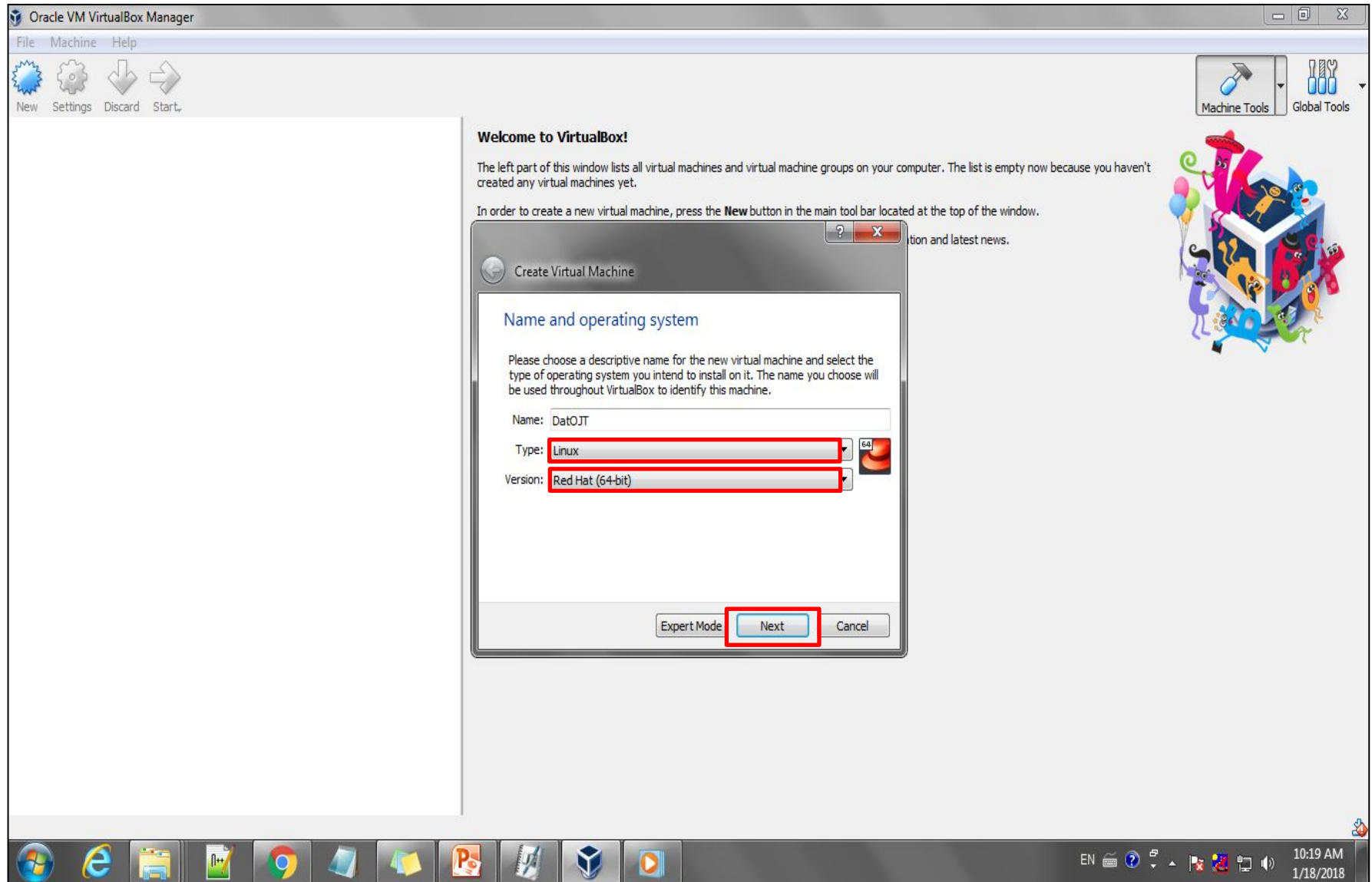
We will show the Linux server installation with the Redhat 6.2 installation.

The minimum hardware requirement for Redhat 6.2 is

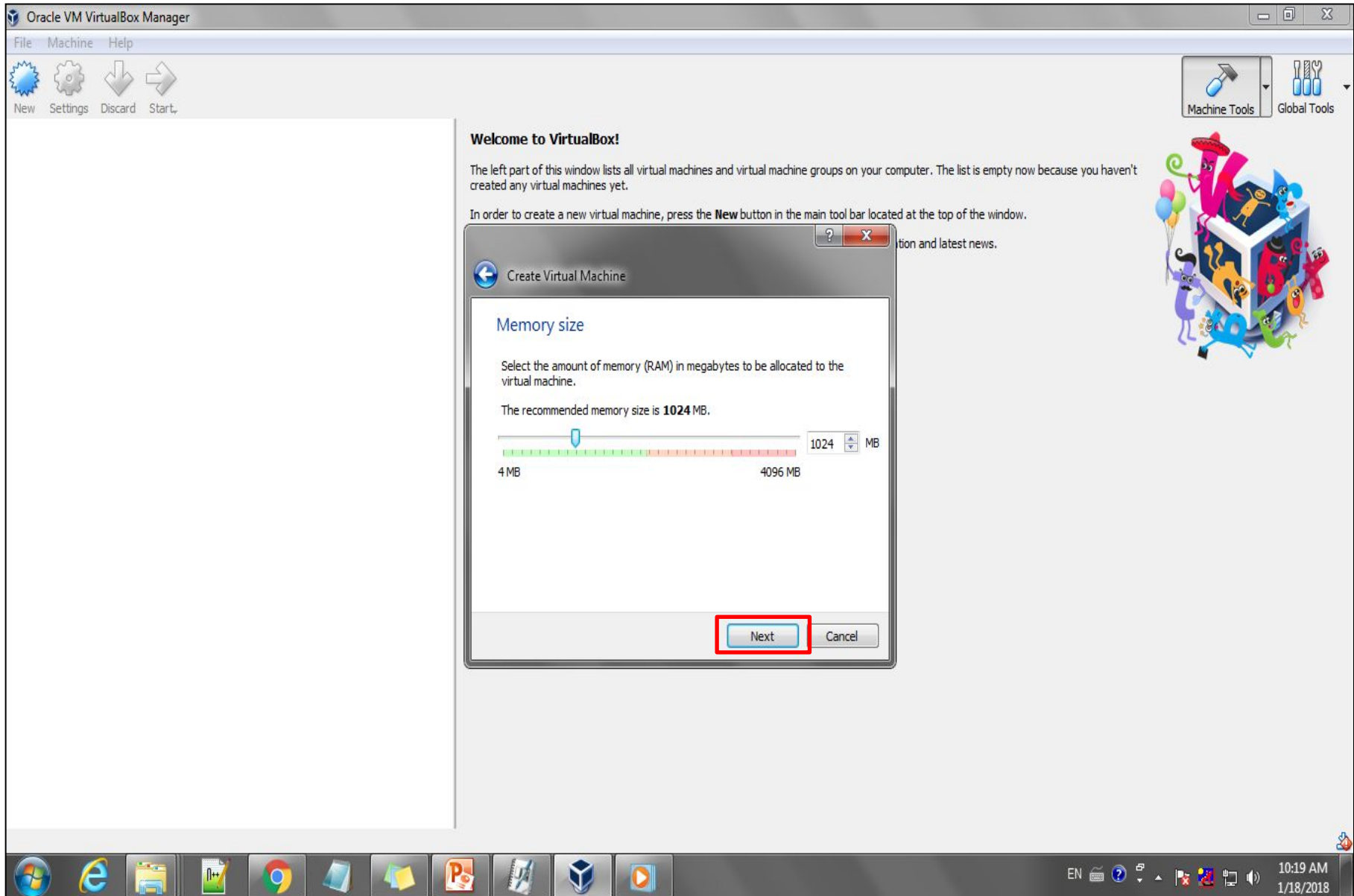
Criteria	Requirements
CPU Type	Pentium 4 or higher; 2 GHz or higher
Memory/RAM	2 GB minimum, up to the system limit
Hard Disk	6 GB minimum

# 1. Linux Server Installation

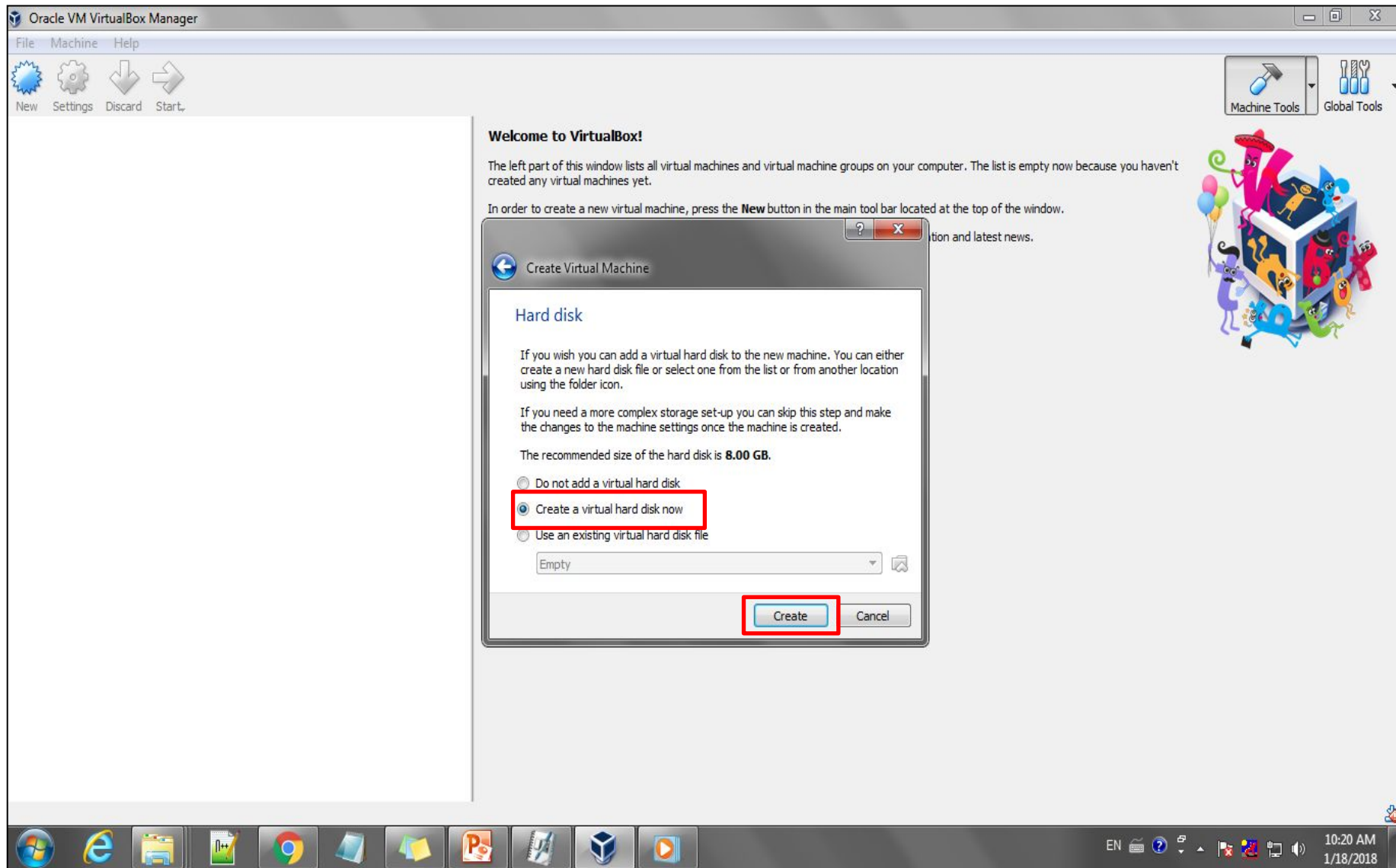
In this section, we will install Linux(redhat) on VirtualBox application.



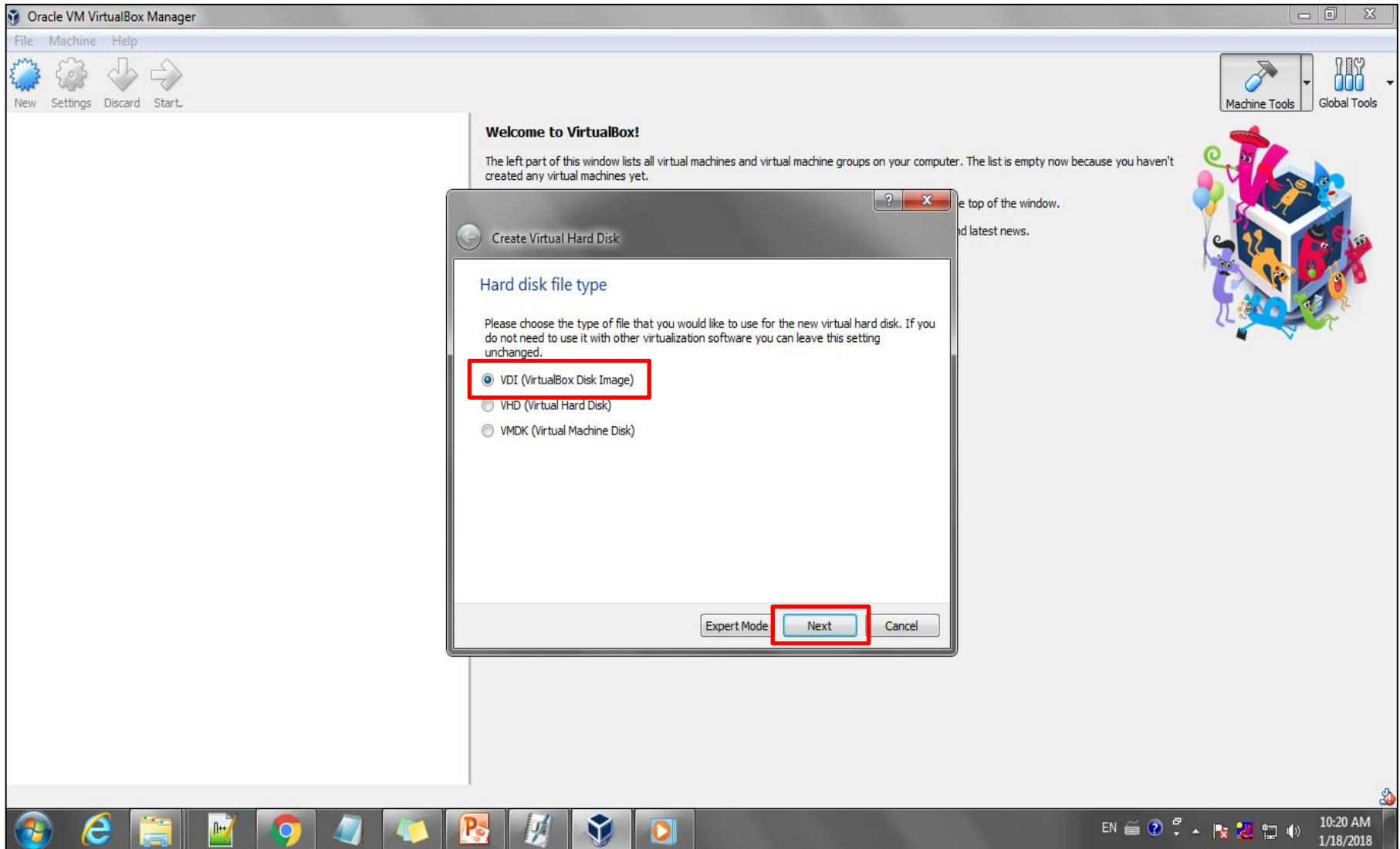
# 1. Linux Server Installation



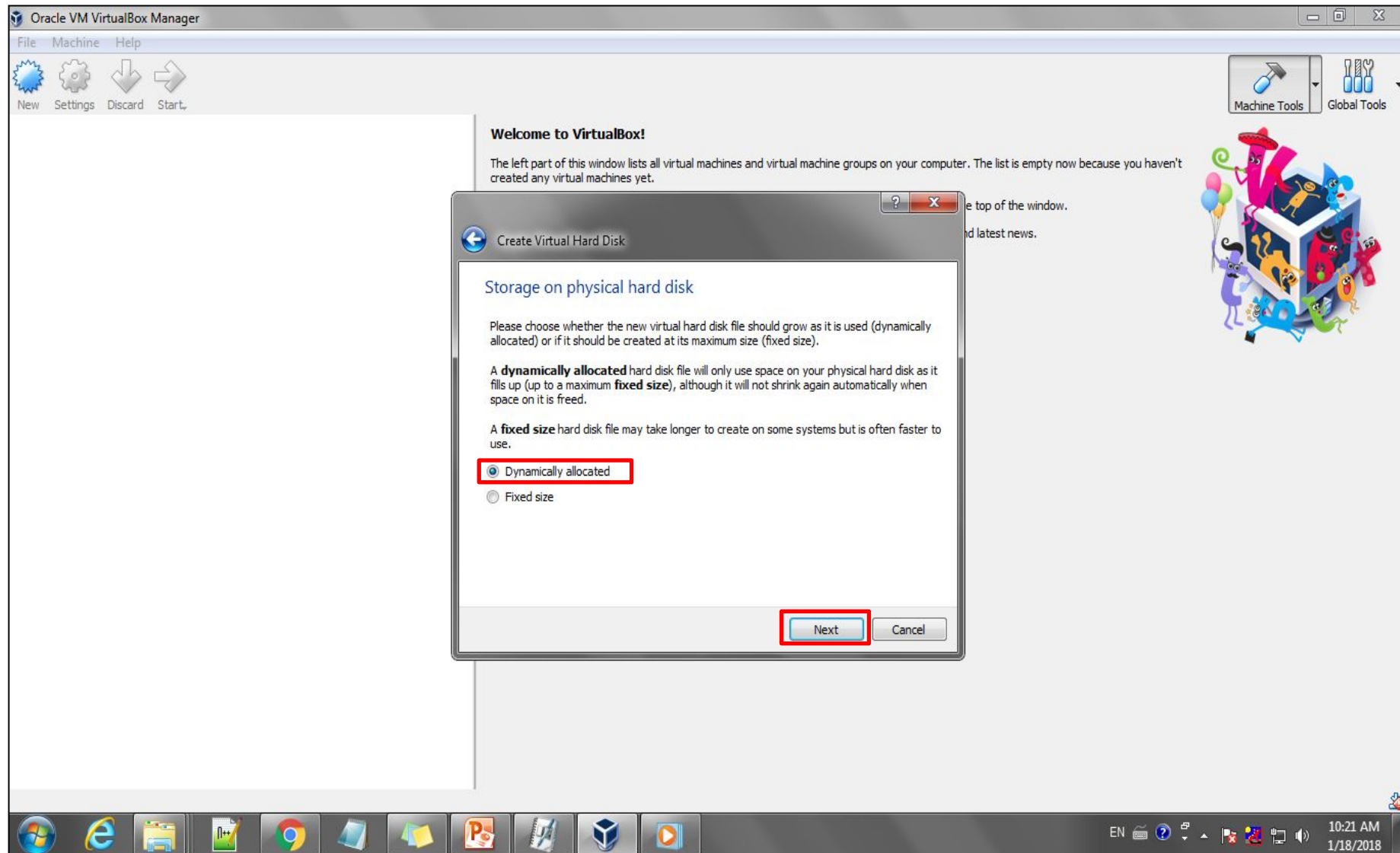
# 1. Linux Server Installation



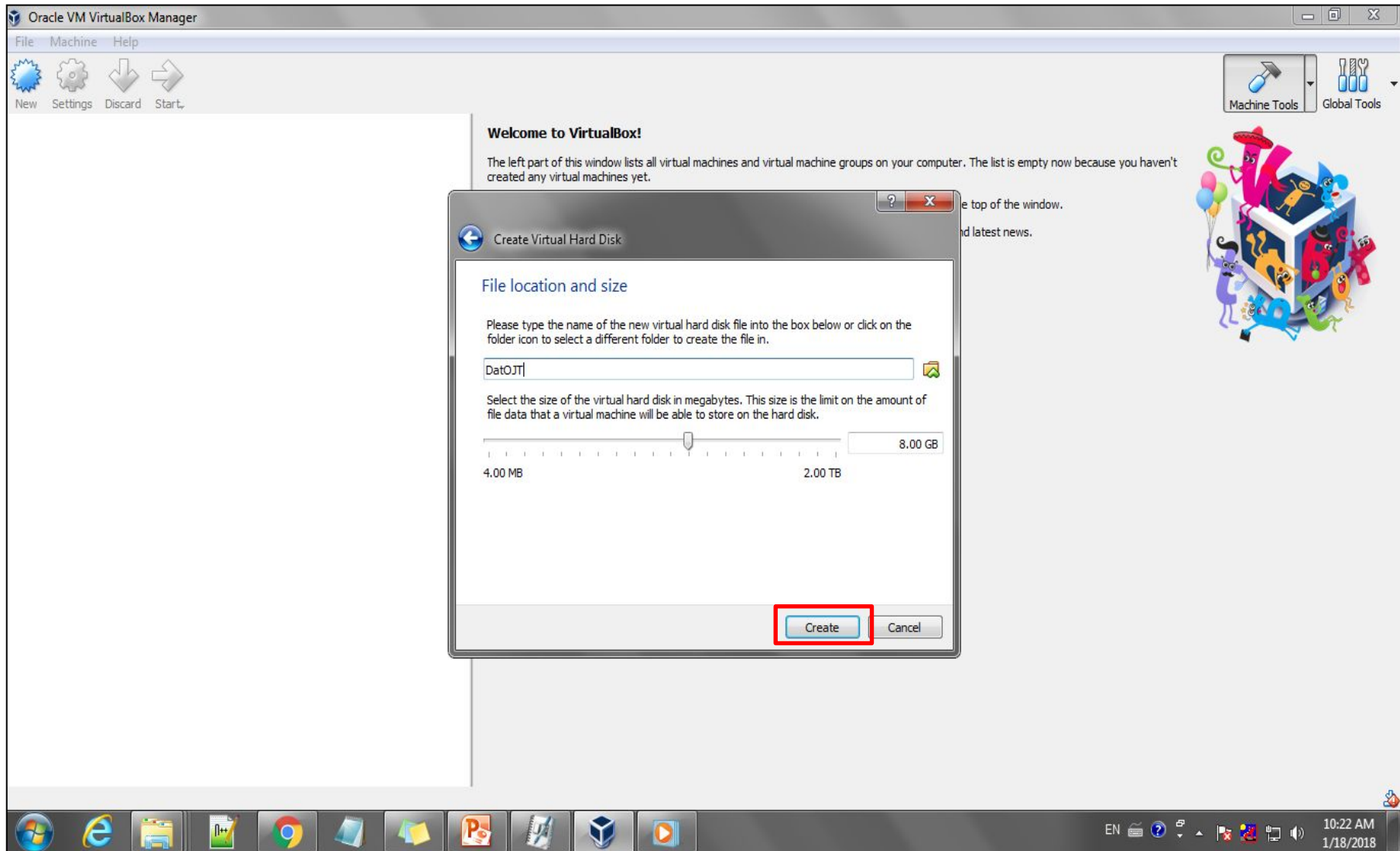
# 1. Linux Server Installation



# 1. Linux Server Installation

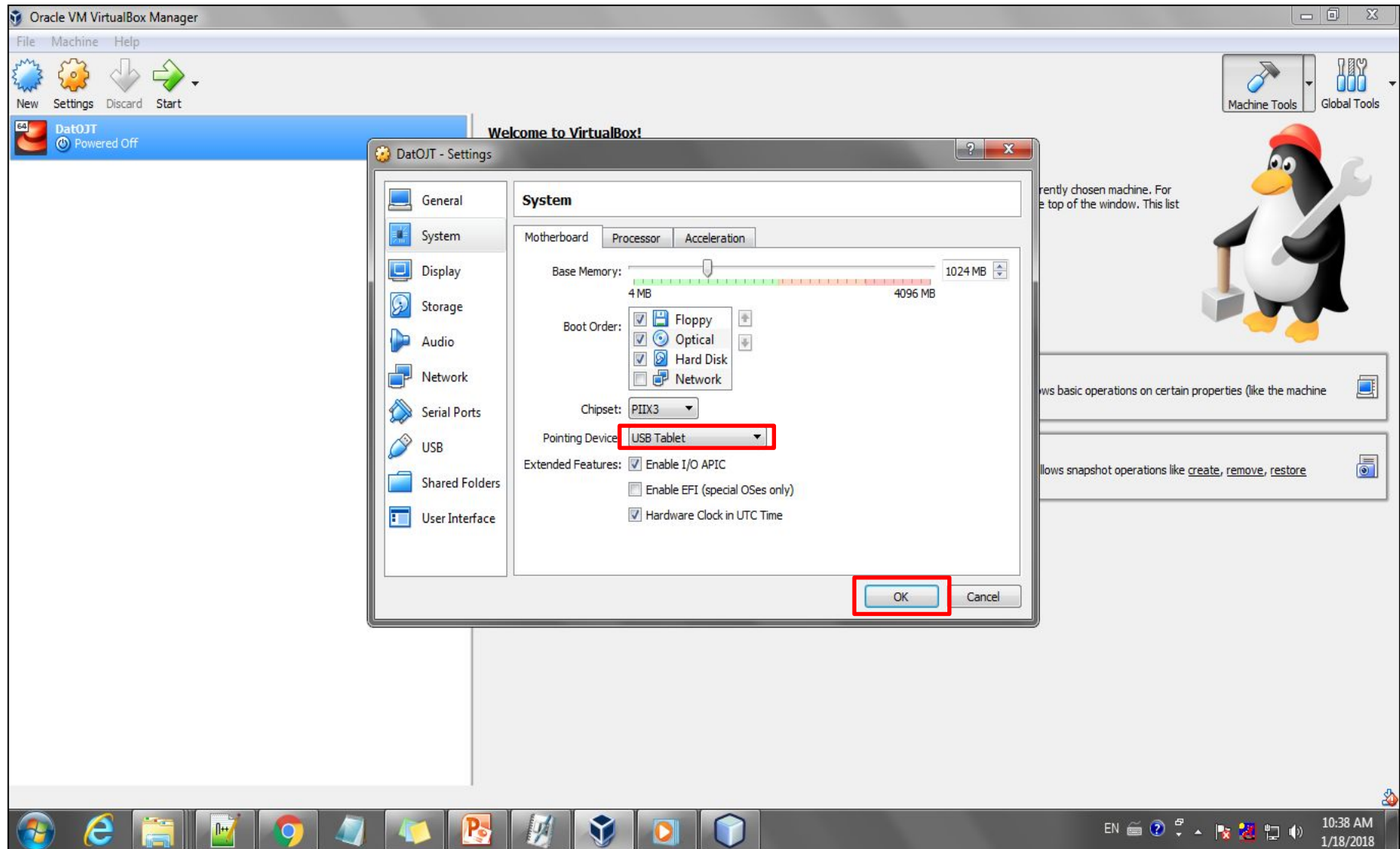


# 1. Linux Server Installation

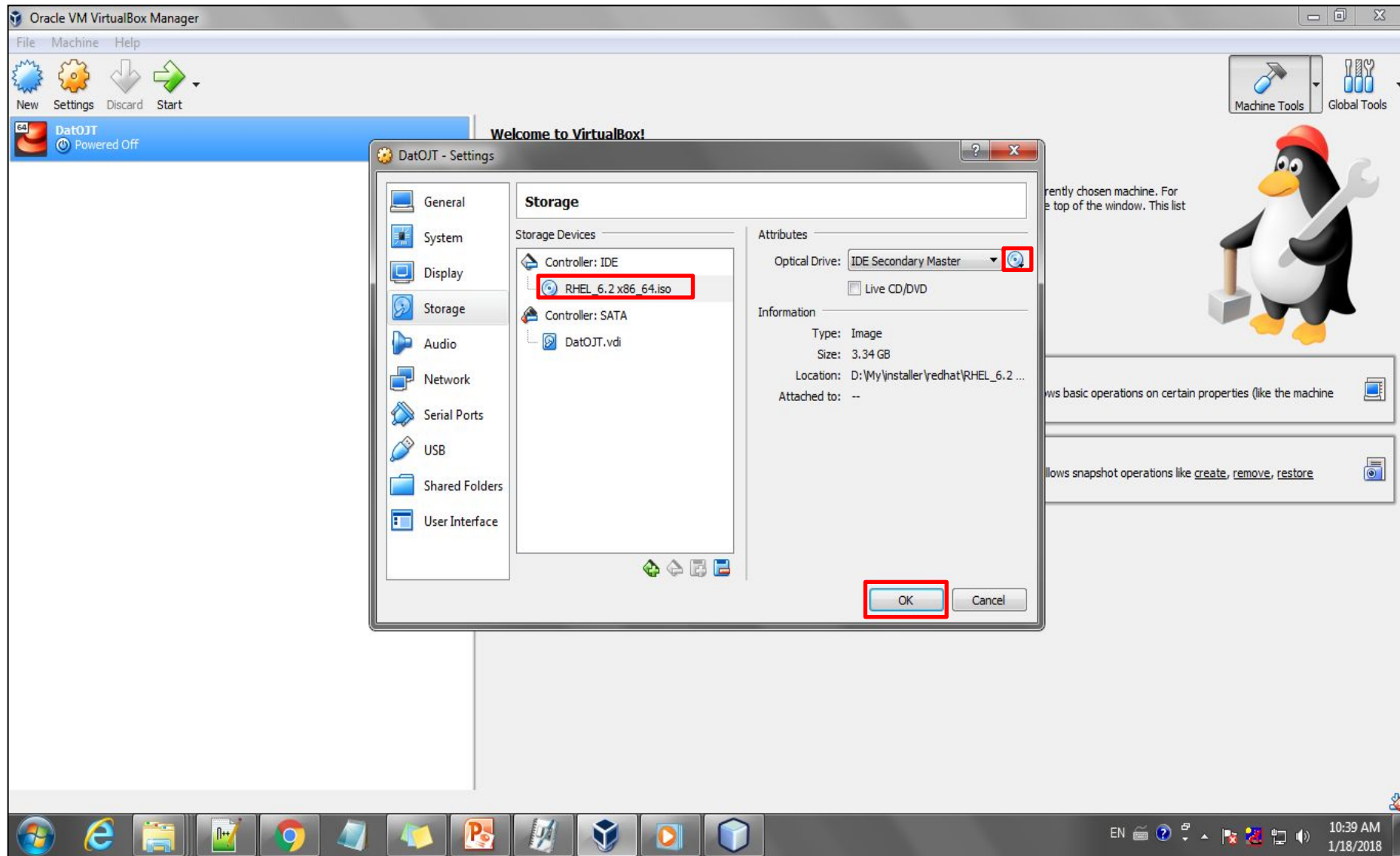




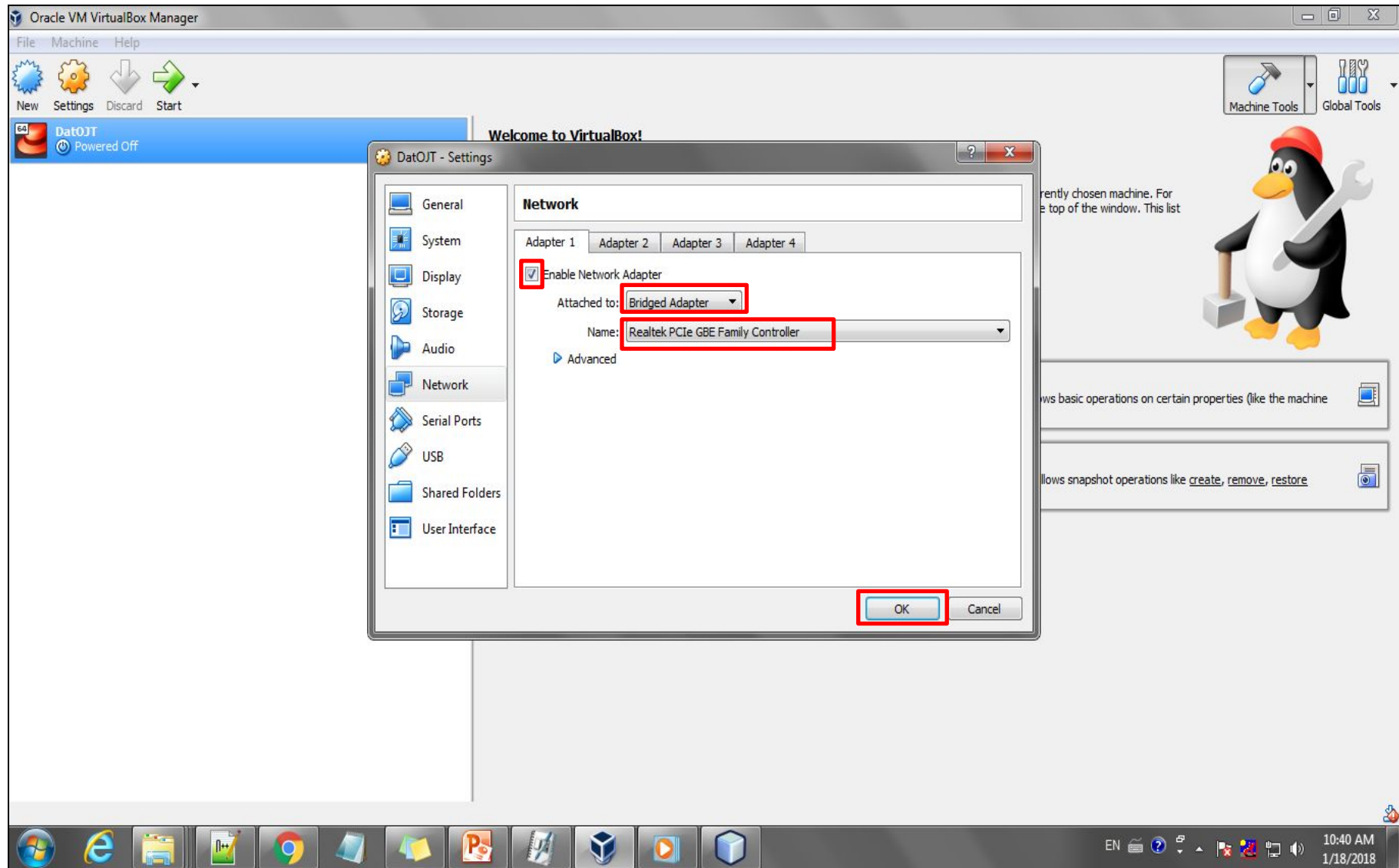
# 1. Linux Server Installation



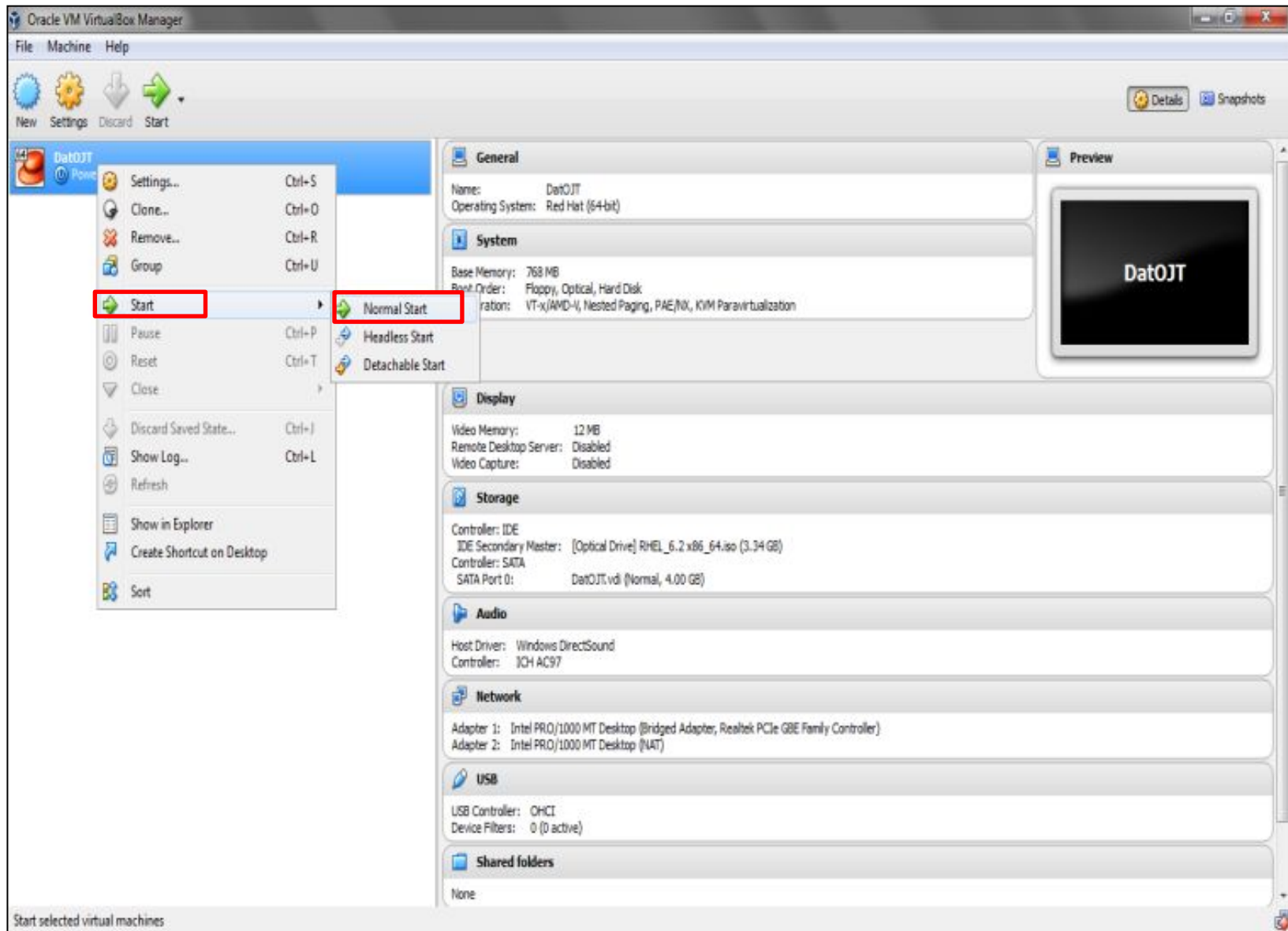
# 1. Linux Server Installation



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# 1. Linux Server Installation



# 1. Linux Server Installation

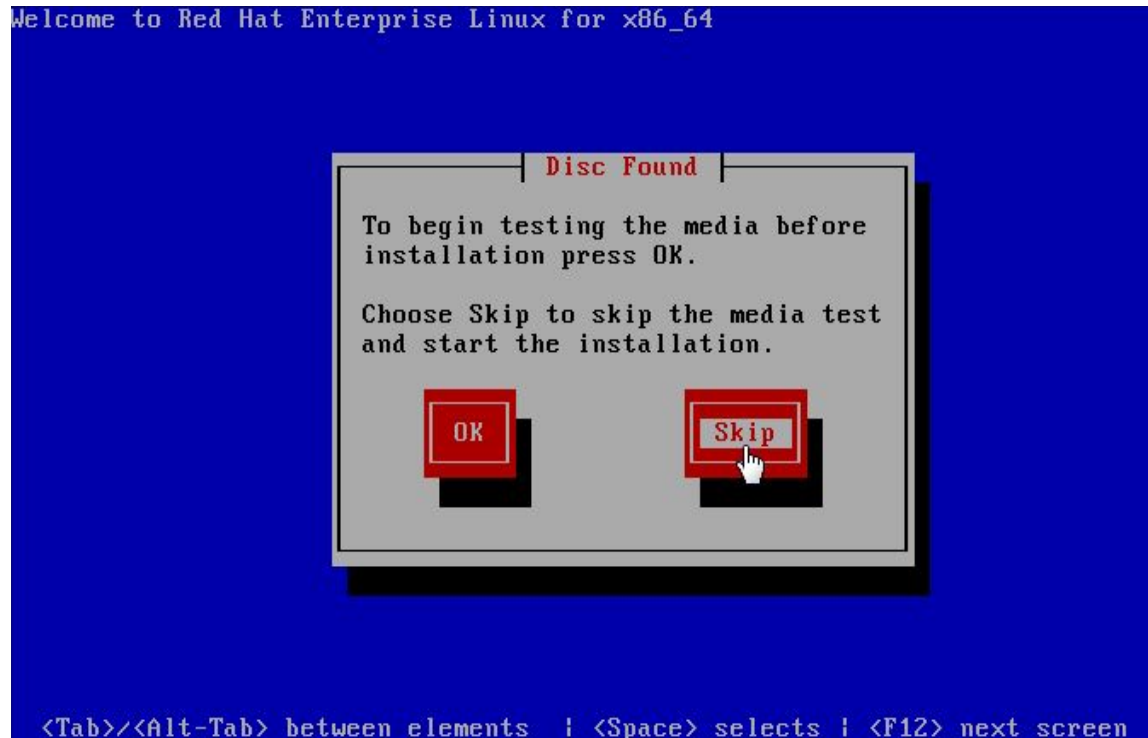
1. At the Welcome wizard, choose the top menu **Install or upgrade an existing system**.

Note: choose with up or down arrow on keyboard and press enter.



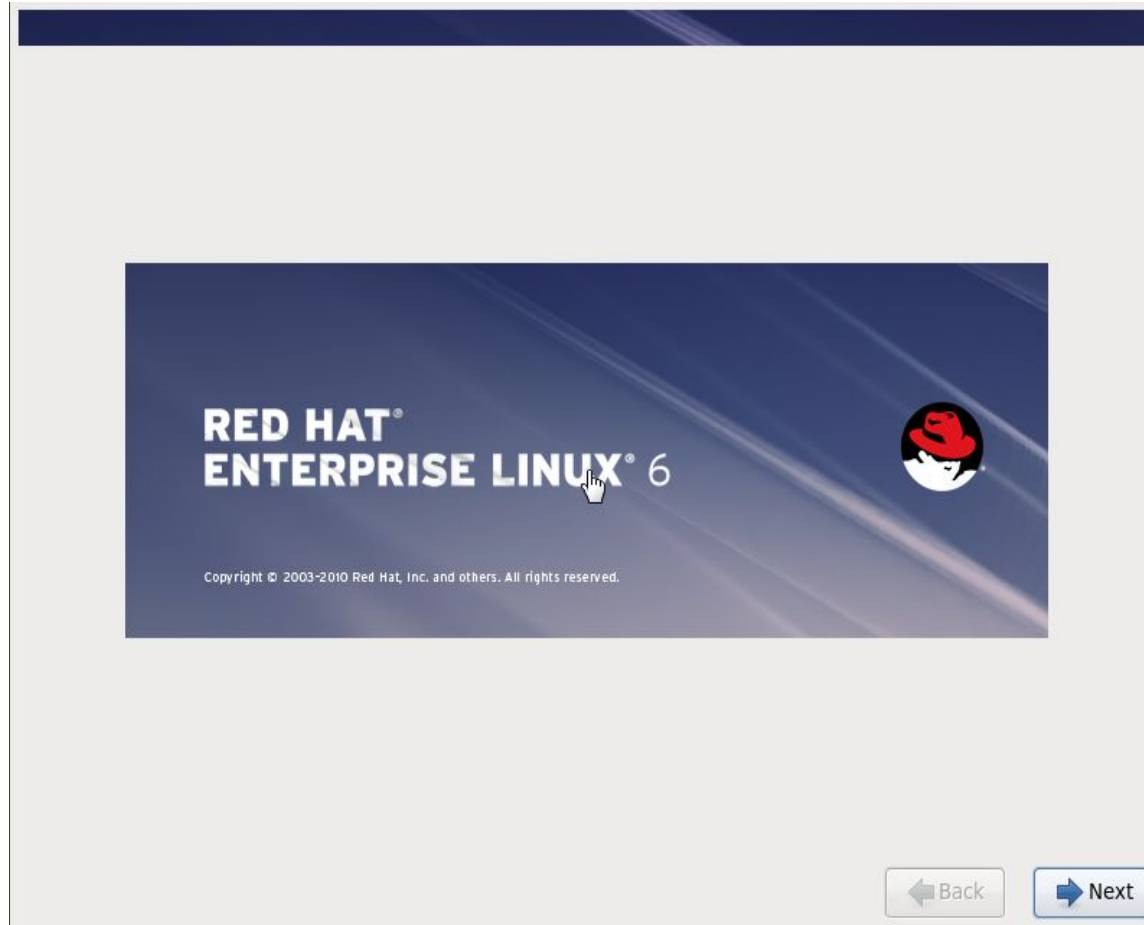
# 1. Linux Server Installation

2. In this media testing step, choose **Skip**.



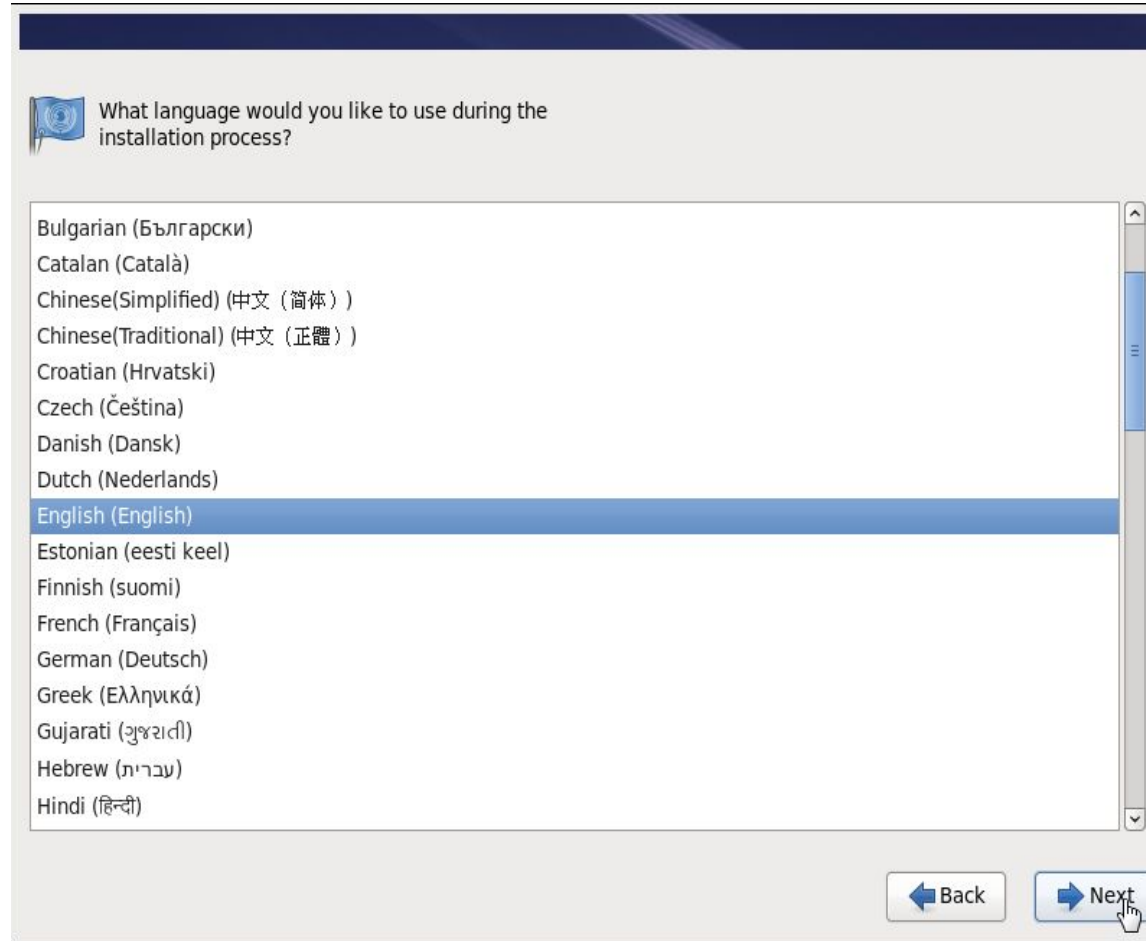
# 1. Linux Server Installation

3. Click **Next**.



# 1. Linux Server Installation

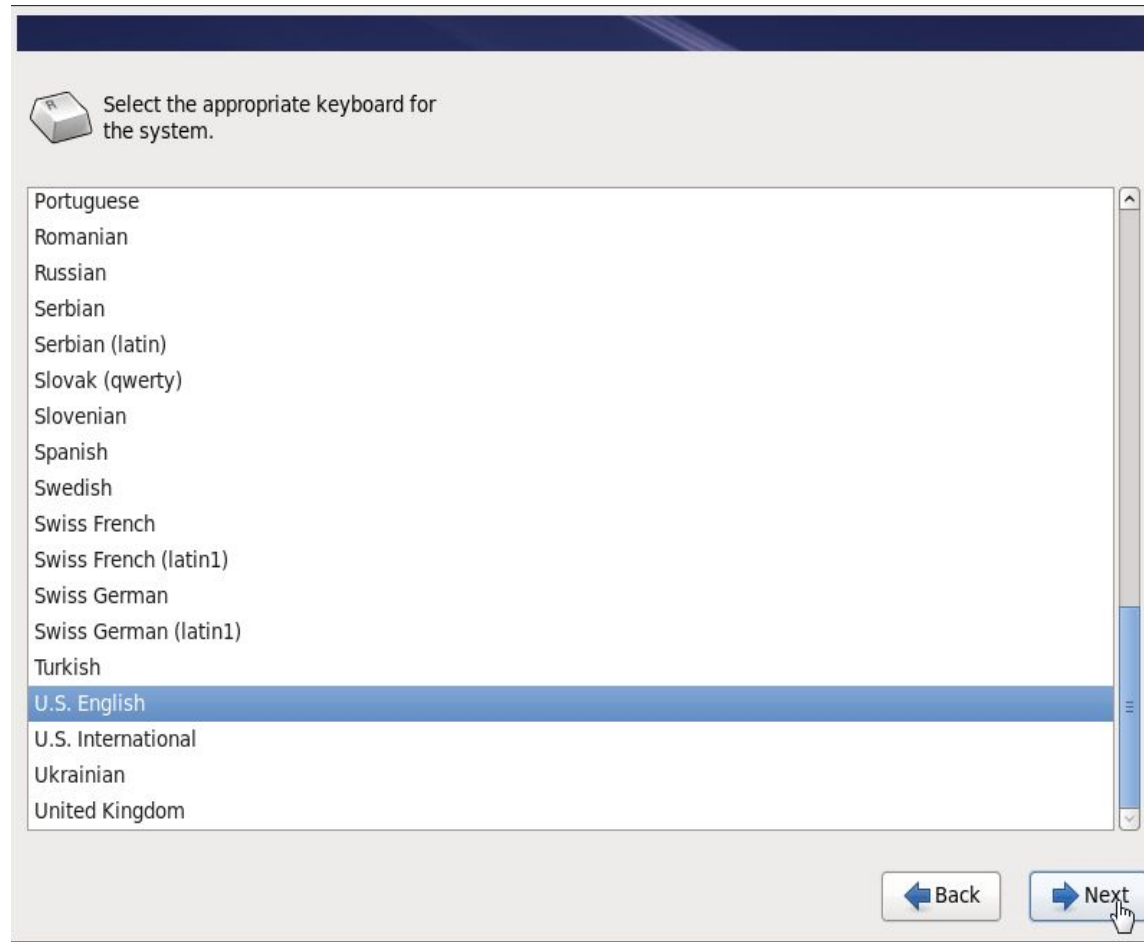
4. Choose the language English ( English ) and click **Next**.





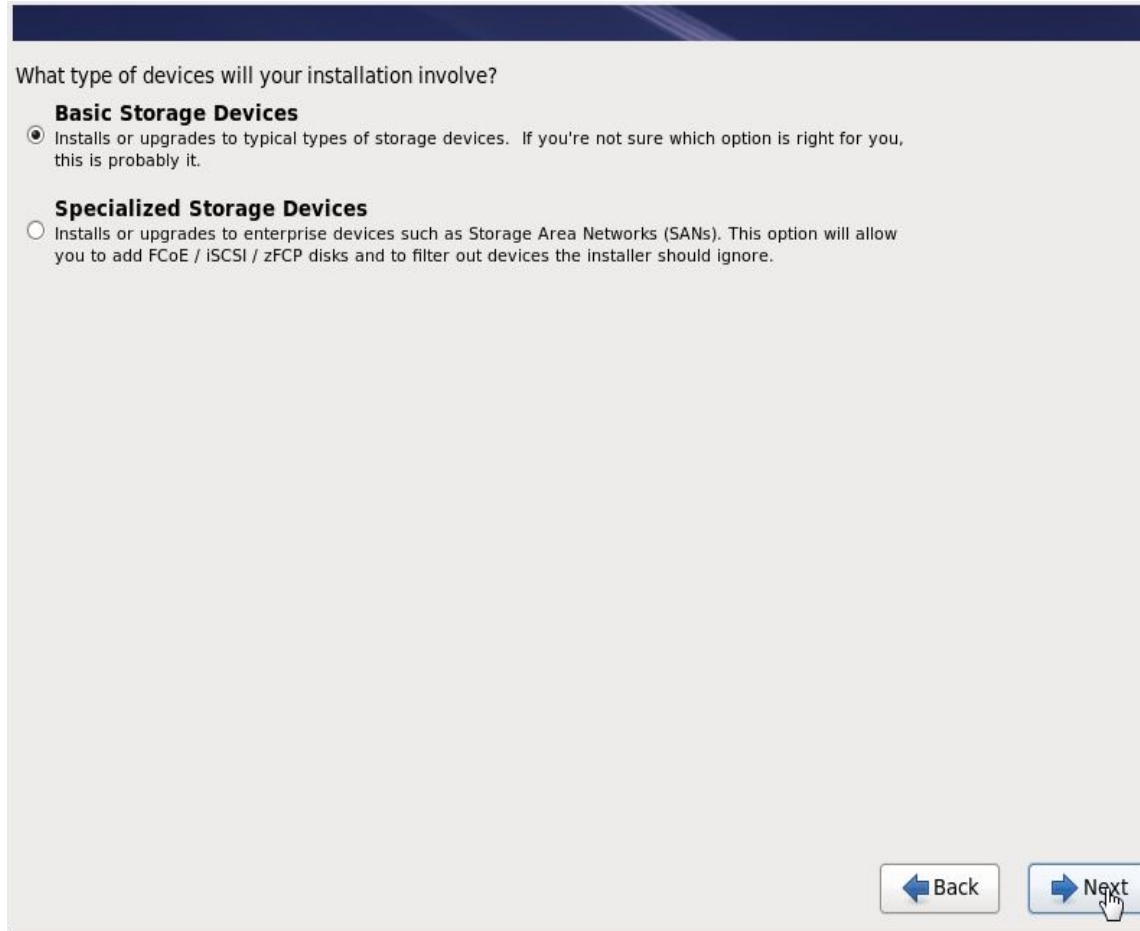
# 1. Linux Server Installation

5. Select U.S. English keyboard for selecting appropriate keyboard for the system.



# 1. Linux Server Installation

## 6. Choose **Basic Storage Devices** and click **Next**.



What type of devices will your installation involve?

**Basic Storage Devices**

☒ Installs or upgrades to typical types of storage devices. If you're not sure which option is right for you, this is probably it.

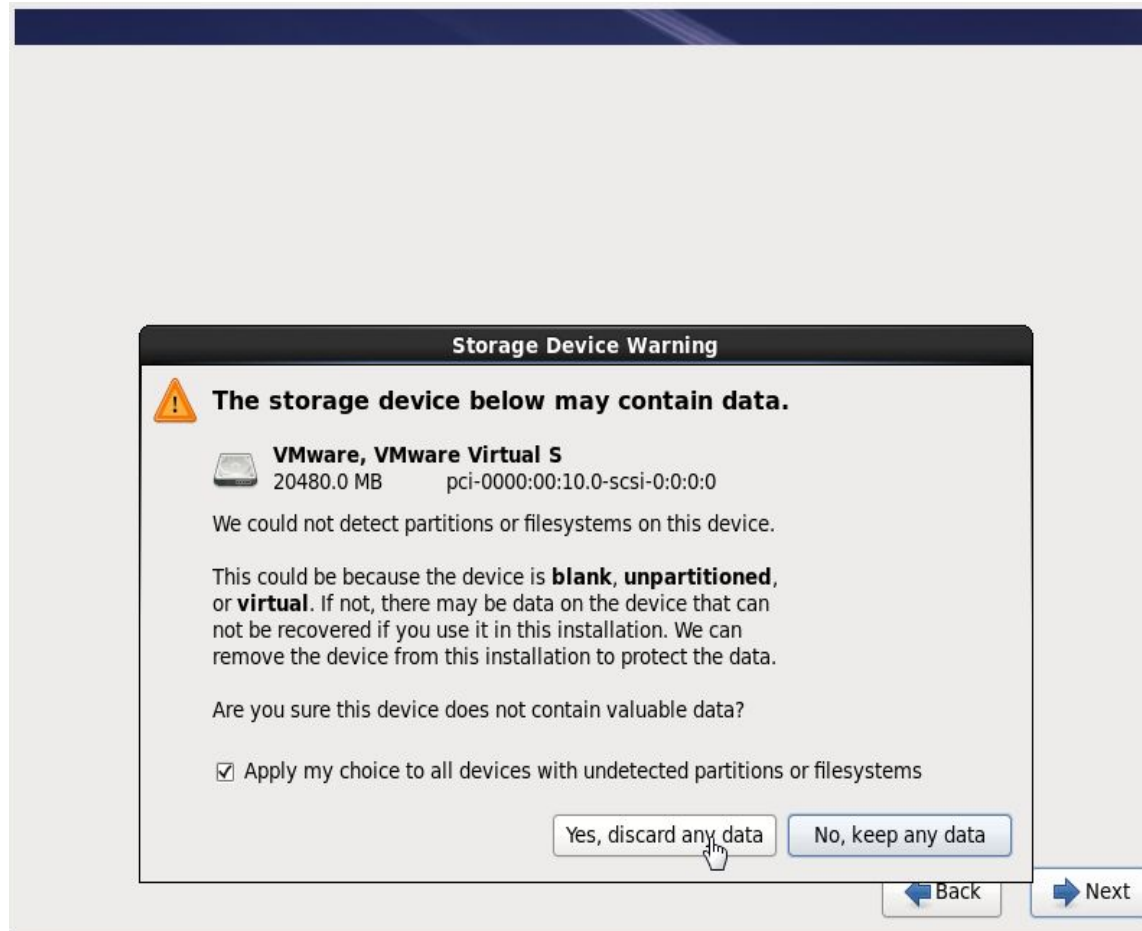
**Specialized Storage Devices**

☐ Installs or upgrades to enterprise devices such as Storage Area Networks (SANs). This option will allow you to add FCoE / iSCSI / zFCP disks and to filter out devices the installer should ignore.

← Back      Next →

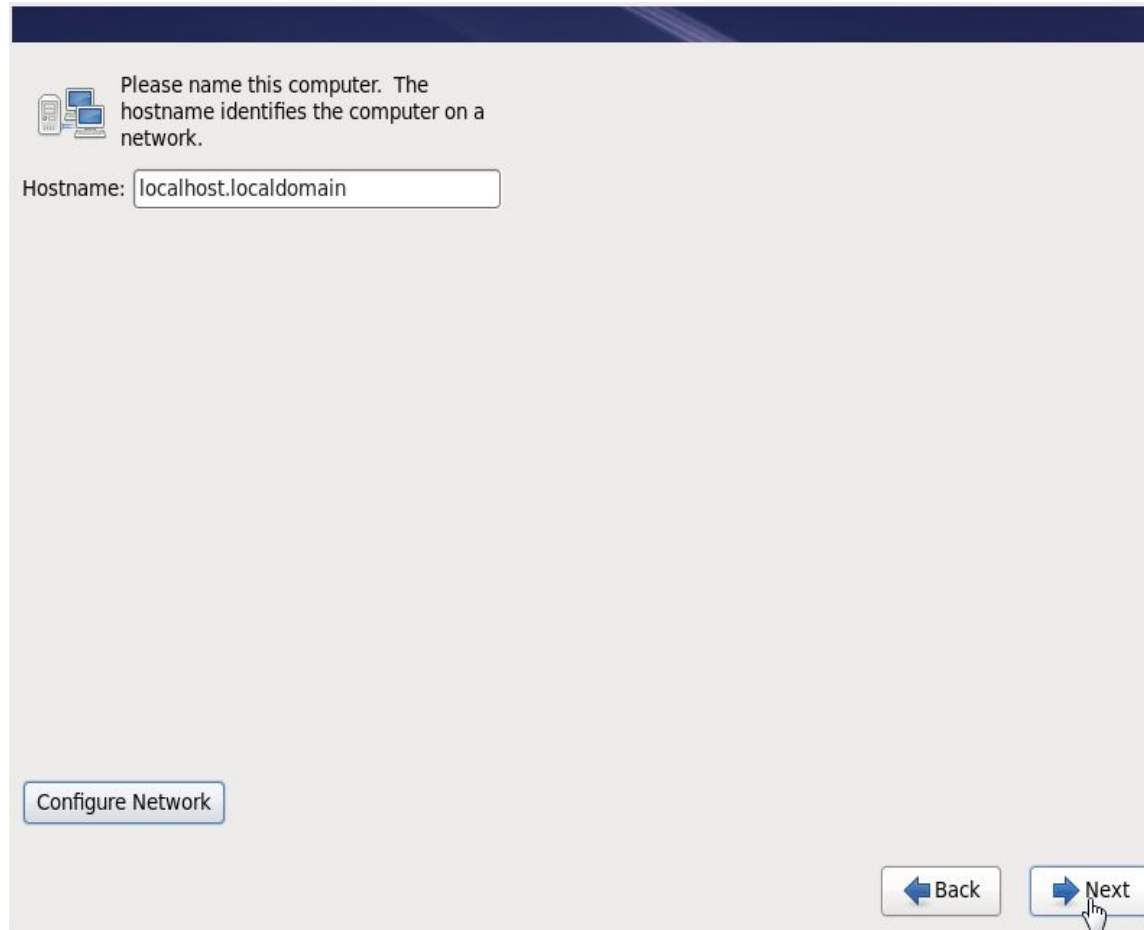
# 1. Linux Server Installation

7. Click **Yes, discard any data** and click **Next**.



# 1. Linux Server Installation

8. Define hostname and click **Next**.



Please name this computer. The hostname identifies the computer on a network.

Hostname:

[Configure Network](#)


[Back](#) [Next](#)

The image shows a Linux installation window with a dark blue header. The main area is light gray. At the top left, there is an icon of a computer and the text 'Please name this computer. The hostname identifies the computer on a network.' Below this, the label 'Hostname:' is followed by a text input field containing 'localhost.localdomain'. In the bottom left corner, there is a button labeled 'Configure Network'. In the bottom right corner, there are two buttons: 'Back' with a left-pointing arrow and 'Next' with a right-pointing arrow. A mouse cursor is pointing at the 'Next' button.

# 1. Linux Server Installation

9. Choose **Rangoon, Asia** time zone by click on map or choosing in drop-down menu.  
And then click **Next**.

Please select the nearest city in your time zone:



Selected city: Vientiane, Asia

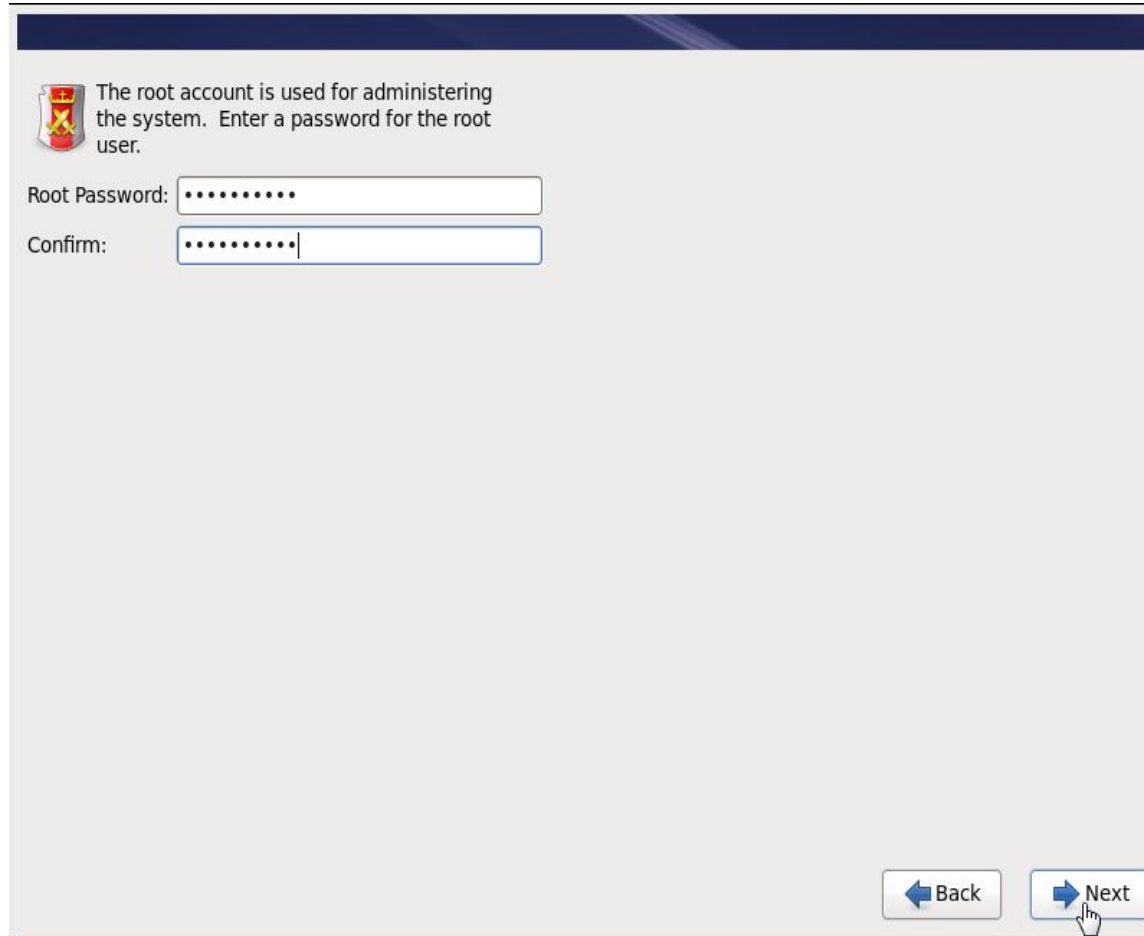
Asia/Vientiane

☒ System clock uses UTC

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# 1. Linux Server Installation

10. Define Root user's password. And click **Next**.



The screenshot shows a window with a dark blue header. Below the header, on the left, is a red shield icon with a yellow cross. To its right, the text reads: "The root account is used for administering the system. Enter a password for the root user." Below this text are two input fields. The first is labeled "Root Password:" and contains eight dots. The second is labeled "Confirm:" and contains eight dots followed by a vertical cursor line. At the bottom right of the window are two buttons: "Back" with a left-pointing arrow and "Next" with a right-pointing arrow. A mouse cursor is pointing at the "Next" button.

The root account is used for administering the system. Enter a password for the root user.

Root Password:

Confirm:

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# 1. Linux Server Installation

11. Choose **Use All Space** for automatic partitioning and click **Next**.

Which type of installation would you like?

☒ **Use All Space**  
Removes all partitions on the selected device(s). This includes partitions created by other operating systems.  
**Tip:** This option will remove data from the selected device(s). Make sure you have backups.

☐ **Replace Existing Linux System(s)**  
Removes only Linux partitions (created from a previous Linux installation). This does not remove other partitions you may have on your storage device(s) (such as VFAT or FAT32).  
**Tip:** This option will remove data from the selected device(s). Make sure you have backups.

☐ **Shrink Current System**  
Shrinks existing partitions to create free space for the default layout.

☐ **Use Free Space**  
Retains your current data and partitions and uses only the unpartitioned space on the selected device(s), assuming you have enough free space available.

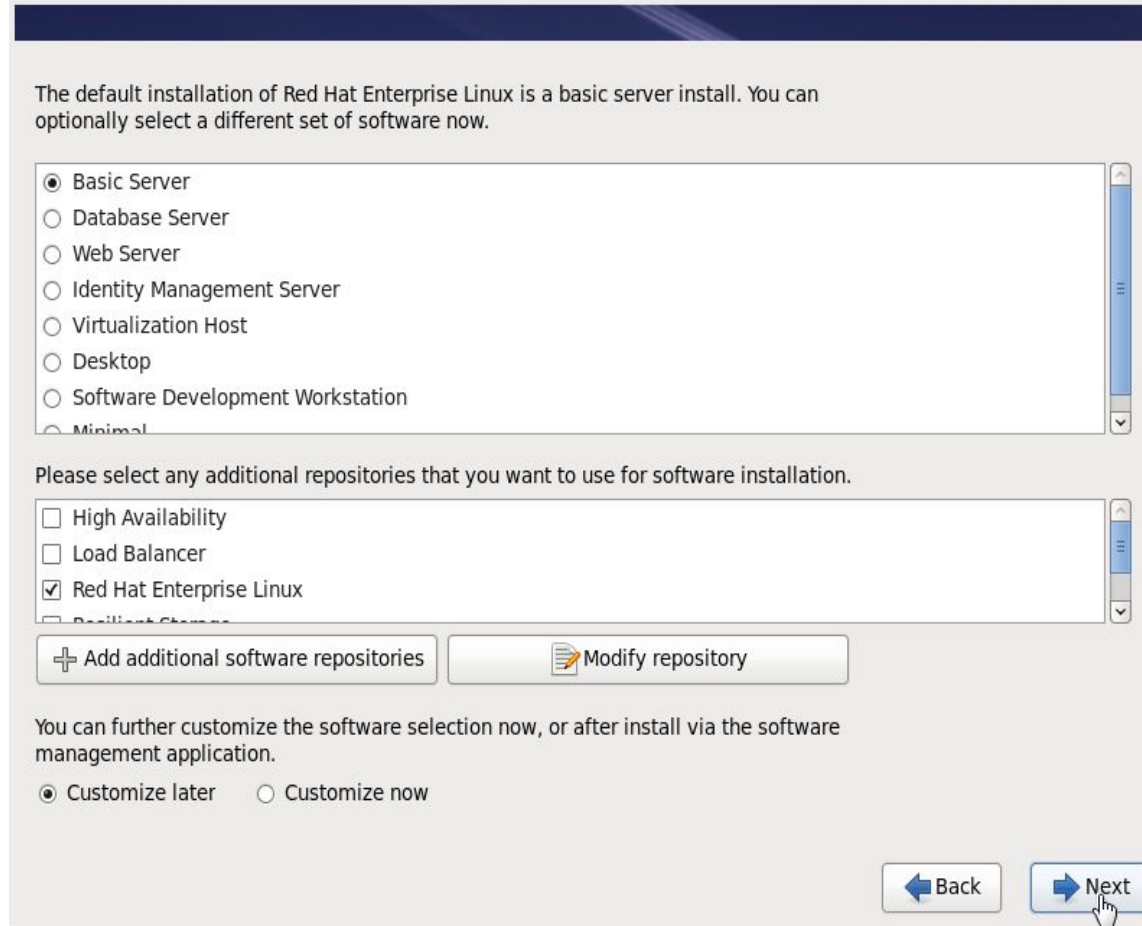
☐ **Create Custom Layout**  
Manually create your own custom layout on the selected device(s) using our partitioning tool.

☐ Encrypt system  
☒ Review and modify partitioning layout

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# 1. Linux Server Installation

16. Choose Basic Server in the upper box and choose customize later at the bottom and click **Next**.



The default installation of Red Hat Enterprise Linux is a basic server install. You can optionally select a different set of software now.

☒ Basic Server  
☐ Database Server  
☐ Web Server  
☐ Identity Management Server  
☐ Virtualization Host  
☐ Desktop  
☐ Software Development Workstation  
☐ Minimal

Please select any additional repositories that you want to use for software installation.

☐ High Availability  
☐ Load Balancer  
☒ Red Hat Enterprise Linux  
☐ Resilient Storage

[+ Add additional software repositories](#) [Modify repository](#)

You can further customize the software selection now, or after install via the software management application.

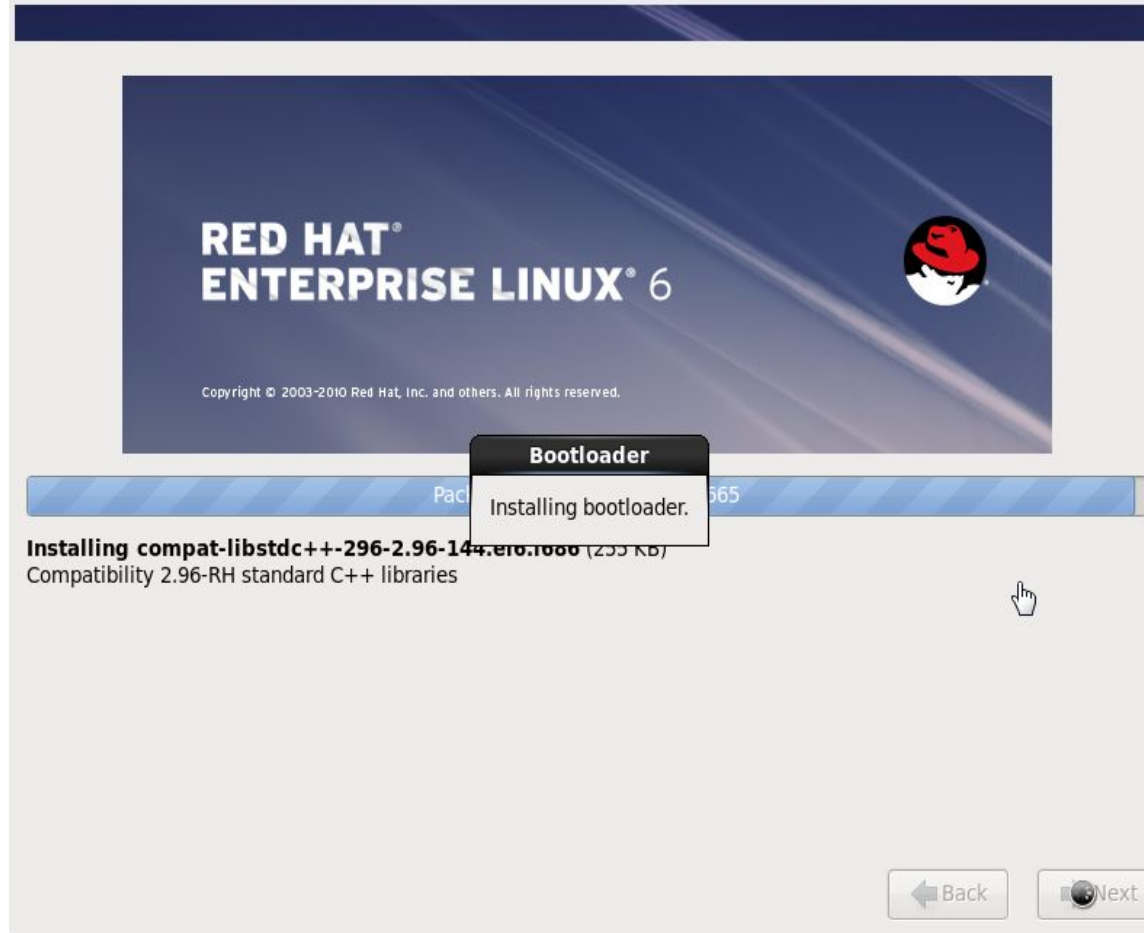
☒ Customize later ☐ Customize now

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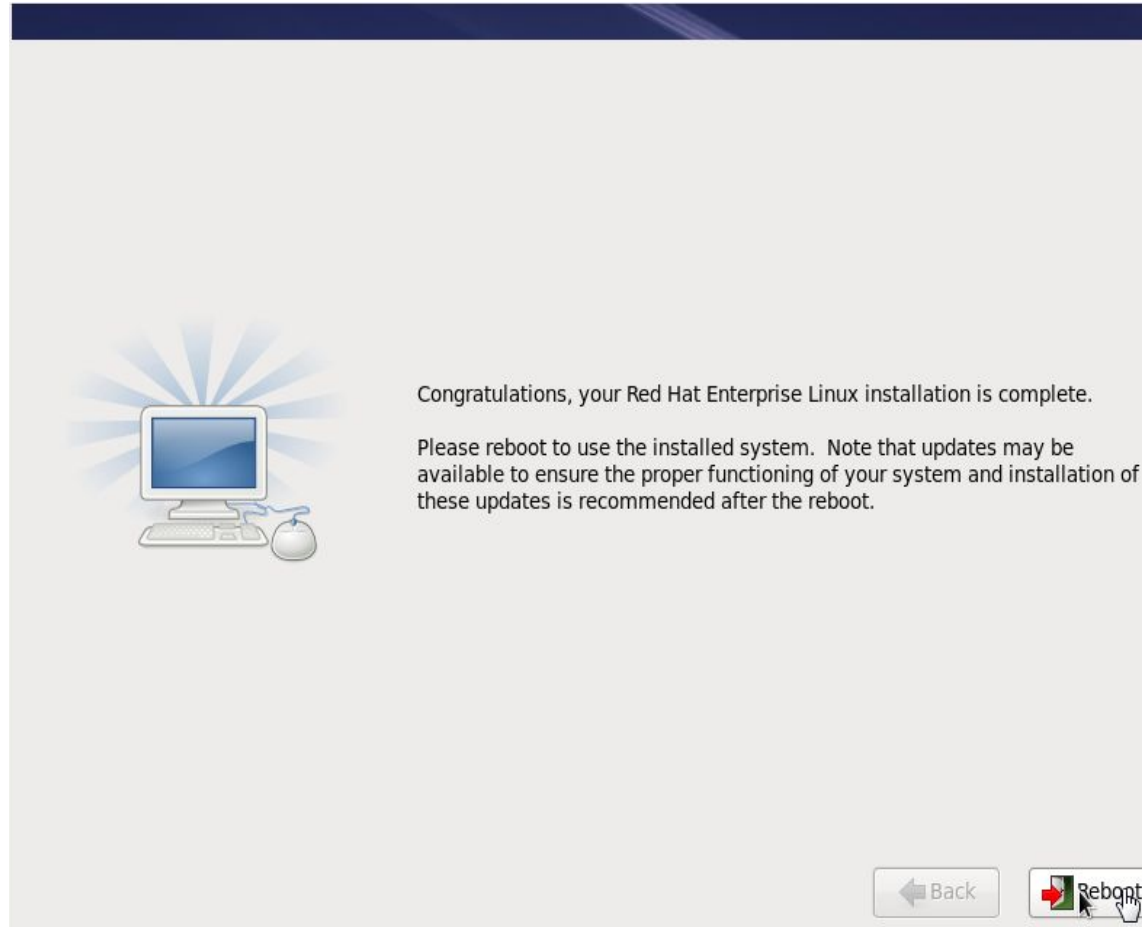
# 1. Linux Server Installation

17. Server is in process of installing operation system.



# 1. Linux Server Installation

18. After installation, system need to reboot. Click **Reboot**.



# 1. Linux Server Installation

19. Operation system is starting up and ready to use.



```
Red Hat Enterprise Linux Server release 6.5 (Santiago)
Kernel 2.6.32-431.el6.x86_64 on an x86_64

localhost login: _
```

# Linux OS Structure Overview

## Structure of File System

Dir	Summary
/	Root directory
/bin	Basic commands for all users. These commands can use on single user mode.
/boot	Necessary files for booting.
/dev	Device files
/etc	Configuration files
/home	Home directory for each users.
/lib	Shared library. Necessary libraries for kernel booting and basic commands execution.
/mnt	Temporally mount directory for other devices.
/opt	Additional Applications. Installation location of additional applications by RPM Package system.
/proc	Various information of kernel. Process, Memory, Parameters, Disk I/O, Network and etc.

# Linux OS Structure Overview

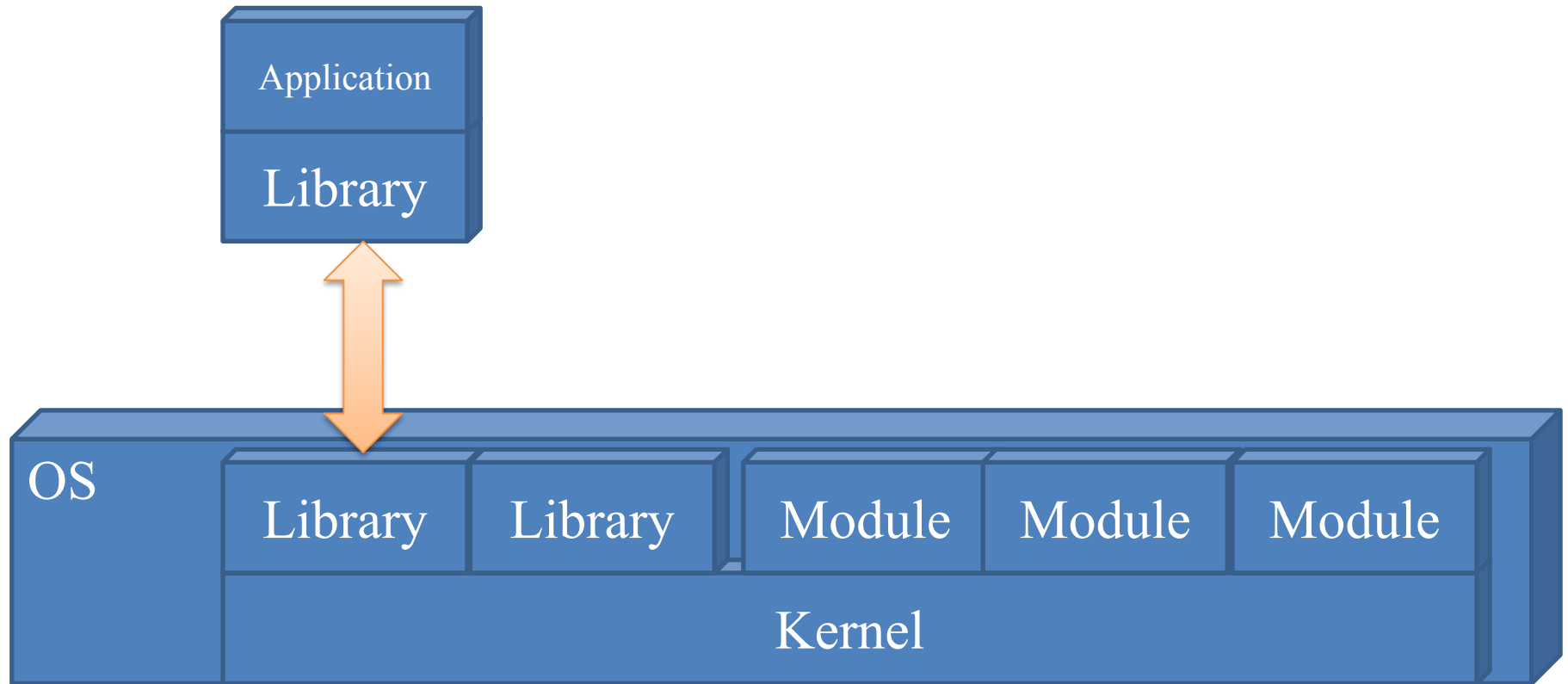
## Structure of File System

Dir	Summary
<b>/root</b>	Home Directory for root user
<b>/sbin</b>	Commands for system management
<b>/tmp</b>	Temporary Directory
<b>/usr</b>	Various Programs
<b>/var</b>	Working space for printing cache, mail, log files and etc.

Dir	Summary
<b>/usr/bin</b>	Various commands that not use on single user mode.
<b>/usr/local</b>	Applications for system administrator
<b>/usr/sbin</b>	Various commands
<b>/usr/share</b>	Data that does not depend on the architecture
<b>/var/cache</b>	Temporary cache files.
<b>/var/lock</b>	Exclusive control files
<b>/var/log</b>	Log-files for various programs.
<b>/var/run</b>	Files are included process number

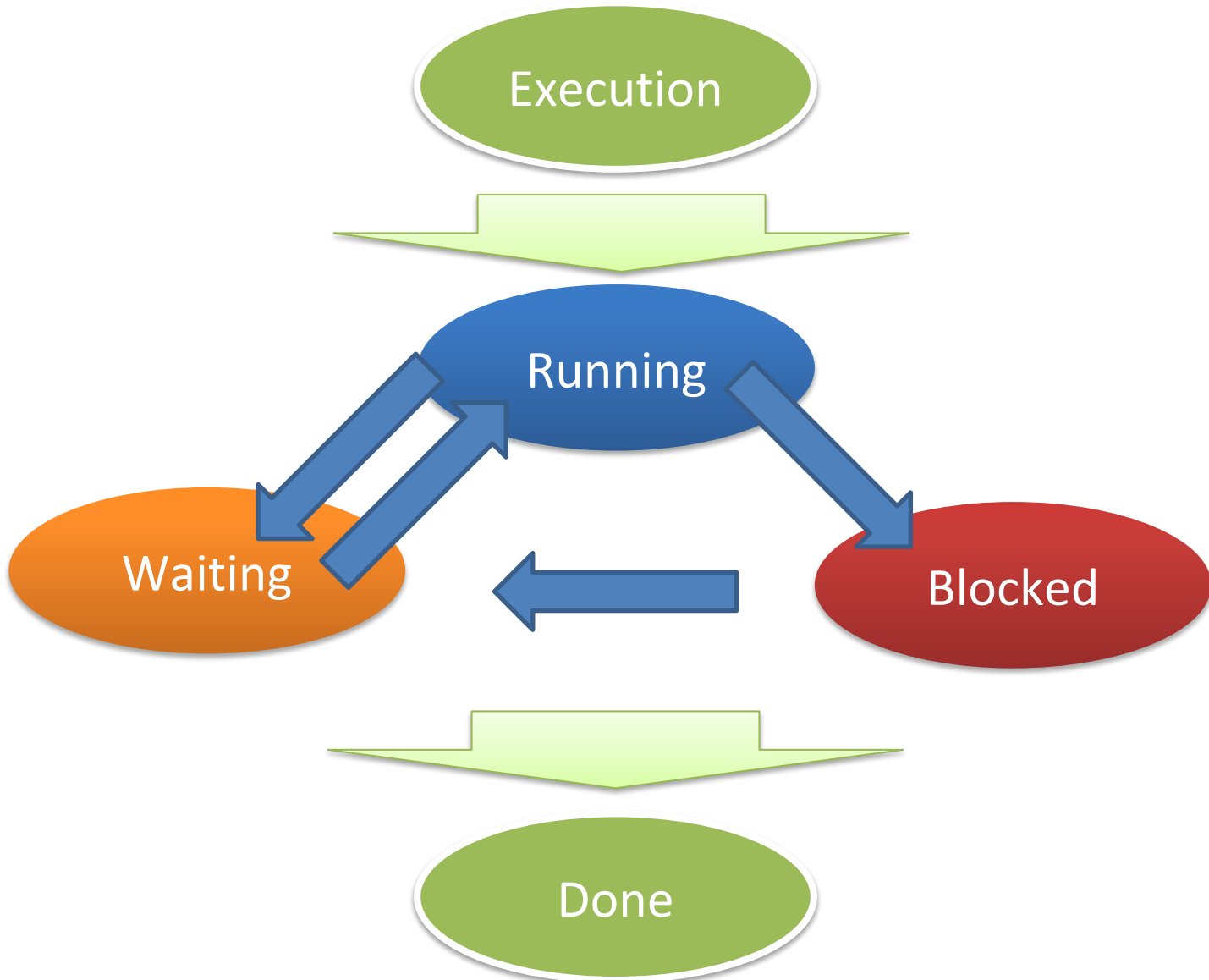
# Linux OS Structure Overview

## Process



# Linux OS Structure Overview

## Process



# Linux OS Structure Overview

## Permission

Linux has the two kind of users.

One kind of user is "root" user who has permission to control all.

Other users are normal user who has equal permission .

The permission on Linux is very simple. that are "read", "write" and "execution".

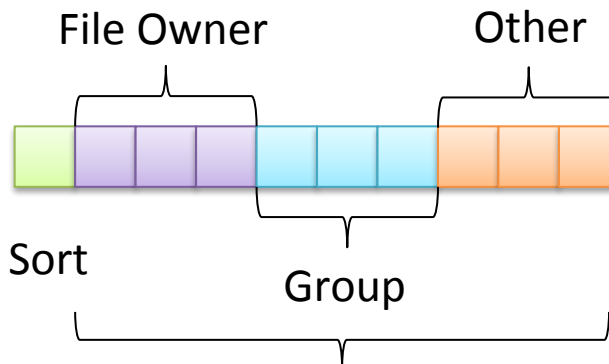
It can set above permission on the file owner, same group user and other user.



# Linux OS Structure Overview

## Permission

```
-rw-r--r-- 1 root root 19565 Mar 18 19:26 BATCH_sendSecurities.log
-r--r--r-- 1 root root 9306 Nov 17 2014 Client.pm
drwxr-xr-x 3 1031 users 4096 Sep 1 2014 JSON-RPC-0.96
-r--r--r-- 1 root root 486120 Aug 25 2014 OpenIPMI-libs-2.0.16-12.el6.x86_64.rpm
```

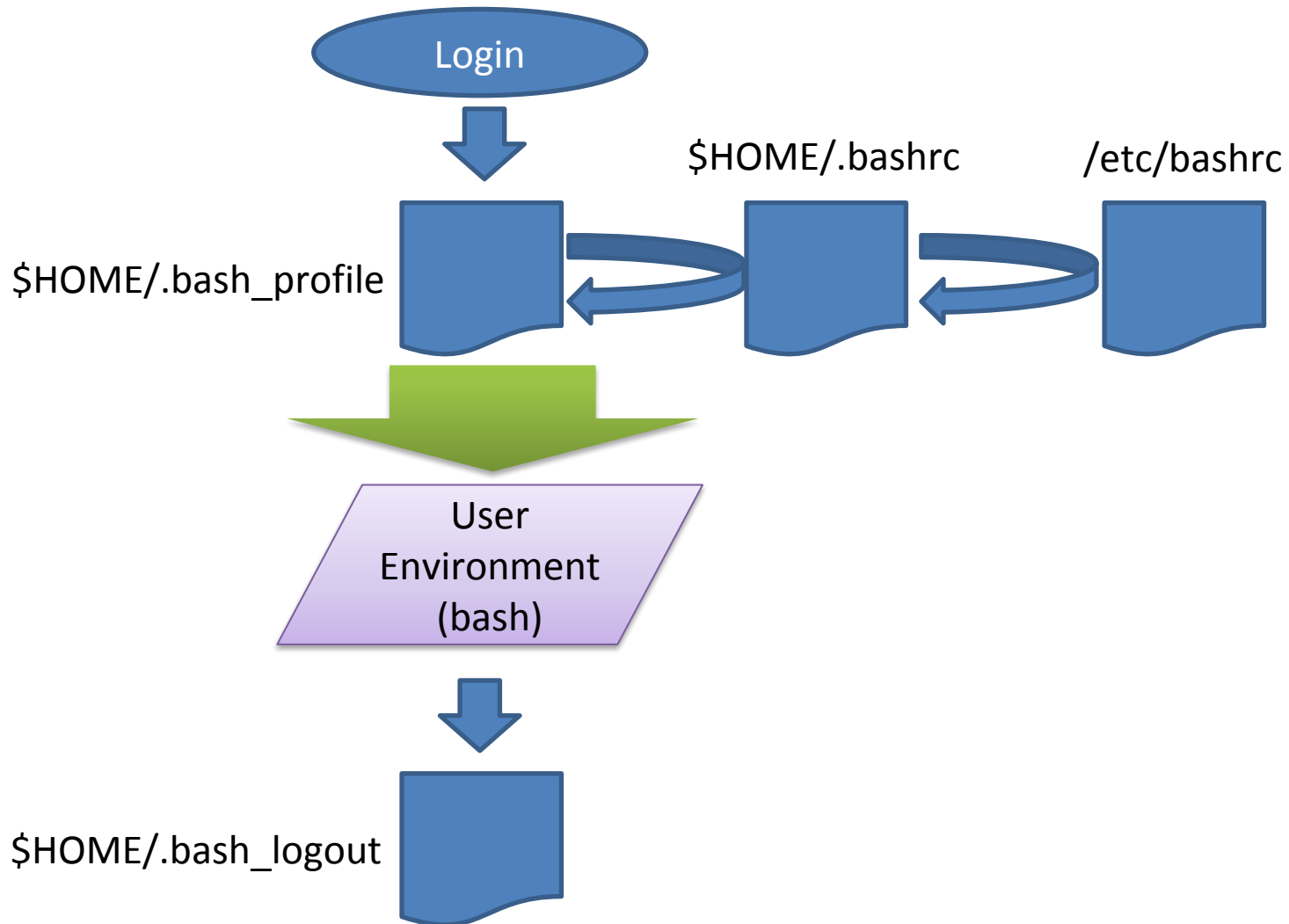


d : Directory  
l : Symbolic Link  
c : Character Device  
b : Block Device  
- : Normal File

r : Read  
w : Write  
x : Execute (or search for directories)  
X : execute/search only if the file is a directory or  
already has execute permission for some users  
s : Set user or group ID on execution  
t : restricted deletion flag or sticky bit  
S : Do not set the execute permission  
T : Do not set the execute permission

# Linux OS Structure Overview

## user environment(bash)



# How to read online manual(summary)

## NAME

ftp - Internet file transfer program

## SYNOPSIS

ftp [-pinegvd] [host]

## DESCRIPTION

Ftp is the user interface to the Internet standard File Transfer Protocol.

-i Turns off interactive prompting during multiple file transfers.

## OPTIONS

-i Turns off interactive prompting during multiple file transfers.

## ENVIRONMENT

SHELL

## SEE ALSO

ftpd(8), RFC 959

## FILES

/etc/hosts /etc/sysconfig/network

# How to use major command

## Major Commands

Command	Summary
<b>groupadd</b>	Create a group.
<b>groupdel</b>	Remove the group.
<b>groupmod</b>	To change the group information.
<b>id</b>	It displays the user information (user ID · user name, group ID · group name).
<b>passwd</b>	To configure the user's password.
<b>su</b>	Switch the user.
<b>useradd</b>	Create a user.
<b>userdel</b>	Delete the user.
<b>usermod</b>	Update the user information.

# How to use major command

## Major Commands

### Practice

- Let create the private group.
- Let create the private account user.  
Home directory : /home/xxx
- Let change the password of created user.
- Let login the private account.

# How to use major command

## Major Commands

Command	Summary
<b>chkconfig</b>	And view and set of system services startup settings.
<b>clear</b>	Clear the screen of the terminal.
<b>date</b>	To display and set the date.
<b>df</b>	It displays the usage of the drive.
<b>env</b>	To set the temporary environment variable.
<b>exit</b>	Log out.
<b>free</b>	It displays the memory usage of the host.
<b>hostname</b>	To view and change the host name.
<b>kill</b>	It sends a signal to a process. (If the process forcing terminated.)
<b>logger</b>	Writes to the system log.

# How to use major command

## Major Commands

### Practice

- Let display status(on/off) of Daemon.
- Let display the time on the GMT and Unix Time.
- Let display the usage of Disk under the root , as Megabytes.
- Let display the environment variable of shell.
- Let display hostname.
- Let write the data to system log(/dev/log/message).
- Let send the signal to the sshd process of your login.

# How to use major command

## Major Commands

Command	Summary
<b>mount</b>	Mount the file system.
<b>clear</b>	Clear the screen of the terminal.
<b>ps</b>	Displays the current process state.
<b>pstree</b>	And tree view of the current process state.
<b>pwd</b>	It displays the current directory as an absolute path name.
<b>top</b>	It displays the task of the host in real time.
<b>vmstat</b>	It displays the system operation status of the host.
<b>netstat</b>	It is a command line tool for monitoring network connections.
<b>iostat</b>	It displays CPU statistics and input/output statistics for devices and partitions.
<b>who</b>	It displays the information of the currently logged in user.



# How to use major command

## Major Commands

### Practice

- Let display the list of all processes.
- Let display the full path of current directory.
- Let display the process information by top command.
- Let display the system status information by vmstat.
- Let display the listening processes.
- Let display the disk I/O information.

# How to use major command

## Major Commands

Command	Summary
<b>basename</b>	prints filename NAME with any leading directory components removed.
<b>cd</b>	Change to the directory where you specify the current directory (the current working directory)。
<b>chgrp</b>	Change the ownership group of files and directories.
<b>chmod</b>	Change the access rights to files and directories.
<b>chown</b>	Change the owner user and owner group of the file.
<b>cp</b>	Copy the file.
<b>dirname</b>	Remove the directory name from the file path.
<b>du</b>	To display the disk usage of files and directories.

# How to use major command

## Major Commands

Command	Summary
<b>find</b>	Search for a file or directory using the conditional expression.
<b>ln</b>	Link to generate a (set a different name to the directory file, a mechanism that can be accessed by its name).
<b>ls</b>	It displays the files and directories that exist in the directory.
<b>mkdir</b>	Create a directory.
<b>mv</b>	Move the file.
<b>rm</b>	Delete the file or directory.
<b>rmdir</b>	Remove the directory.
<b>stat</b>	To display the details of the file.
<b>touch</b>	Change the last update date and time of the file.

# How to use major command

## Major Commands

### Practice

- Let display the filename of /tmp/a.txt by basename command.
- Let display the directory name of /tmp/a.txt by dirname command.
- Let create new file under the home directory by touch command.
- Let confirm the permission of created file by ls command.
- Let change the group of created file.
- Let change the permission of created file.

# How to use major command

## Major Commands

### Practice

- Let copy the file from the a.txt under the home directory to the b.txt under the home directory.
- Let change the filename from the b.txt under the home directory to the c.txt.
- Let find the b.txt from root directory by find command.
- Let delete the c.txt file.

# How to use major command

## Major Commands

Command	Summary
<b>cat</b>	It displays the contents of the file.
<b>diff</b>	It compares two of the text file on a row-by-row basis.
<b>cut</b>	Displays take out the part of each line from the file.
<b>echo</b>	It displays the contents of the specified string or variable.
<b>grep</b>	File contains the specified string and, to find the line.
<b>head</b>	Print the first part of the file.
<b>join</b>	Combine the two files.
<b>less</b>	To browse the contents of a text file.
<b>more</b>	To browse the contents of a text file on a page-by-page basis.

# How to use major command

## Major Commands

### Practice

- Let find the file that included hostname.
- Let display the contents of file that included hostname.
- Let display the contents of file that included hostname by more command.
- Let display the "hello world" by echo command.
- diff ????

vi editor



# vi editor

vi is a screen-oriented text editor originally created for the Unix operating system.

Basically, vi is designed to operate only with the keyboard.

So, do not use the arrow keys to move the cursor.

Each functions are called by the shortcut keys and the command.

Therefore, It is necessary the mastery in order to use features.

# vi editor

## Shortcut & Command

Key	Summary
i	Change to insert mode.
r	Change to replace mode.
c	Change to replace the only one character. cw Change the word
x	Delete one character. 3x Delete 4 characters
j	Down Cursor
l	Right Cursor
h	Left Cursor
k	Up Cursor

# vi editor

## Shortcut & Command

Key	Summary
yy	Copy one line to the memory. 4yy Copy 4 lines to the memory.
p	Insert the data from the memory.
dd	Delete one line 4dd Delete 4 lines.
:w	Save the file. :w! Force write.
:q	Quit the editor :q! Force quit.
u	undo

# vi editor

## Shortcut & Command

Key	Summary
control + F	Page Down
control + B	Page Up
:xx,yytzz	Copy the line between xx and yy , to zz. xx : line number yy : line number zz : line number
:%s/xx/yy/	Replace xx string to yy string.
/xxxx	find

# vi editor

## Practice

- Let insert word in file
- Let replace word in file
- Let delete 4 characters in file
- Let copy one line in file
- Let delete one line in file
- Let save the file
- Let quit from the file
- Let cover the previous state in file
- Let page down in file
- Let find the word in file