Lab 1 for Operating Systems

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Class: AI1601

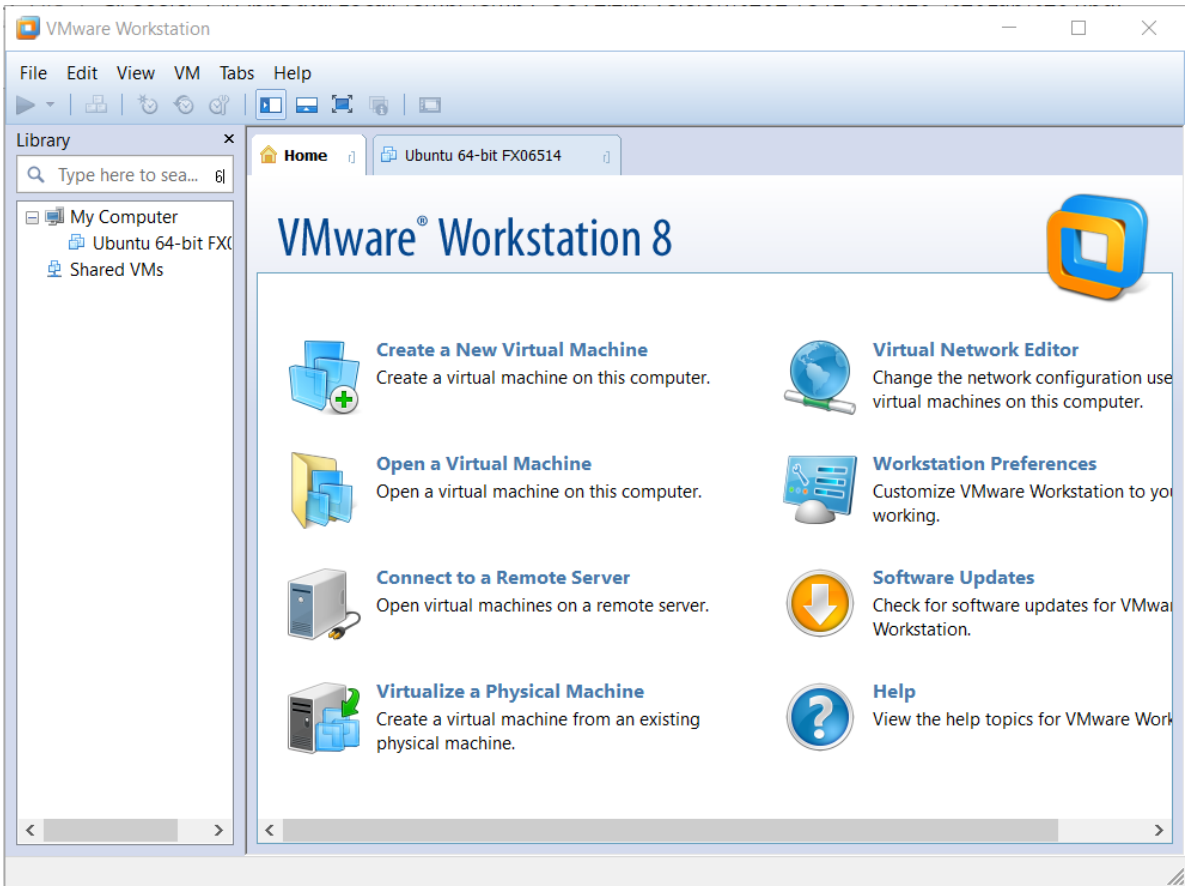
Install VMware Workstation (current version is 8.0.0)

Requirement

- VMware Workstation 8.x: https://my.vmware.com/web/vmware/downloads/info/slug/datacenter_download_archives/vmware_workstation/8_0
- Fedora OS .ISO file: https://archives.fedoraproject.org/pub/archive/fedora/linux/releases/11/Fedora/i386/iso/

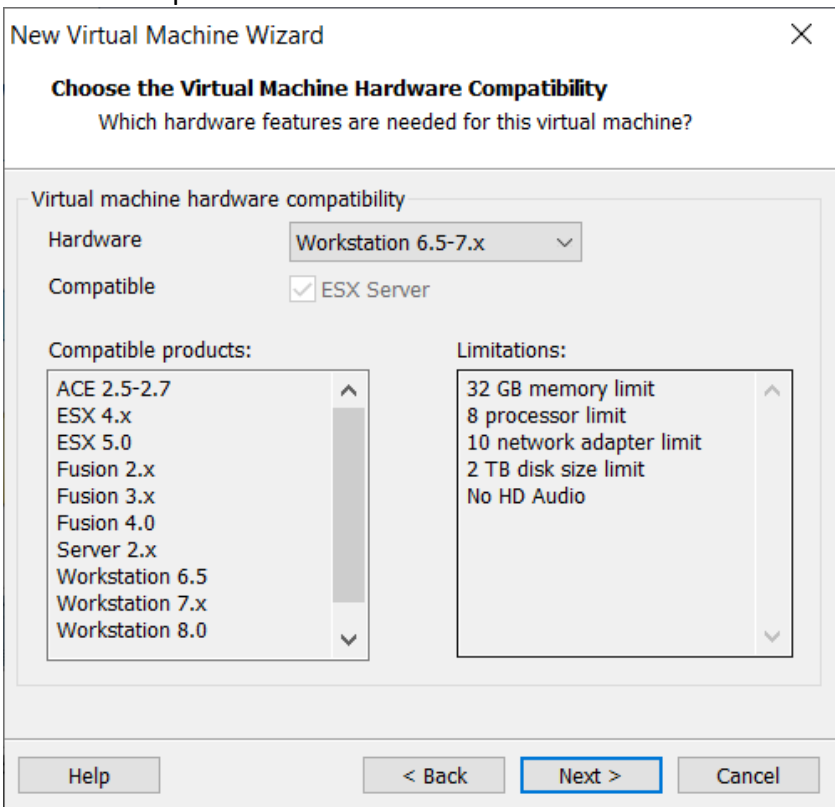
Step-by-step installation

1. Click **"Create a new Virtual Machine"**.

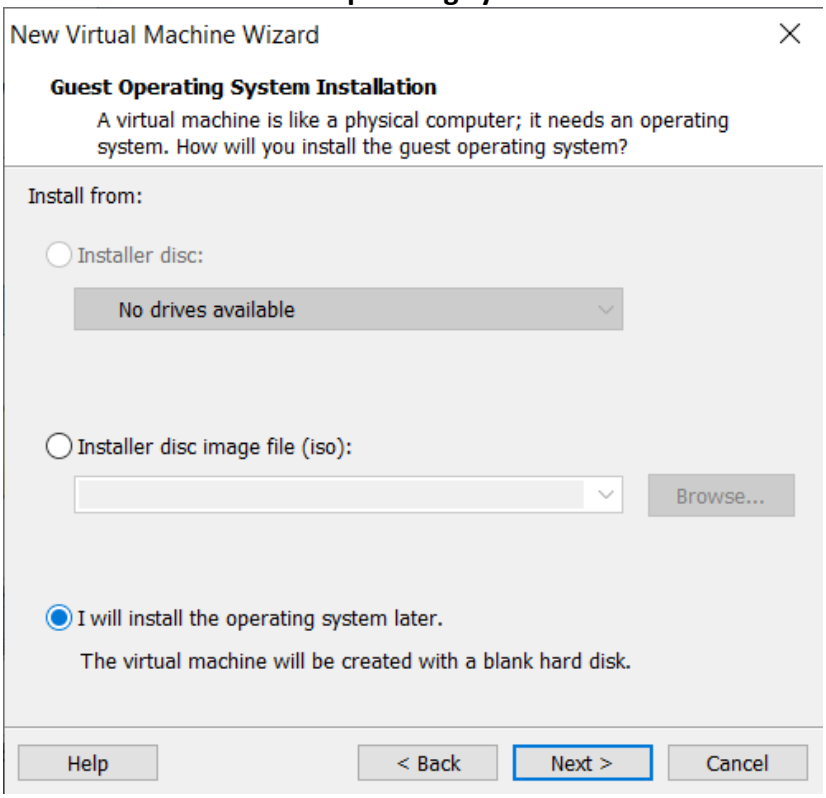


2. The **“New Virtual Machine Wizard”** window is appeared, choose **“Custom (advanced)”** and click **Next** to configure the hardware.

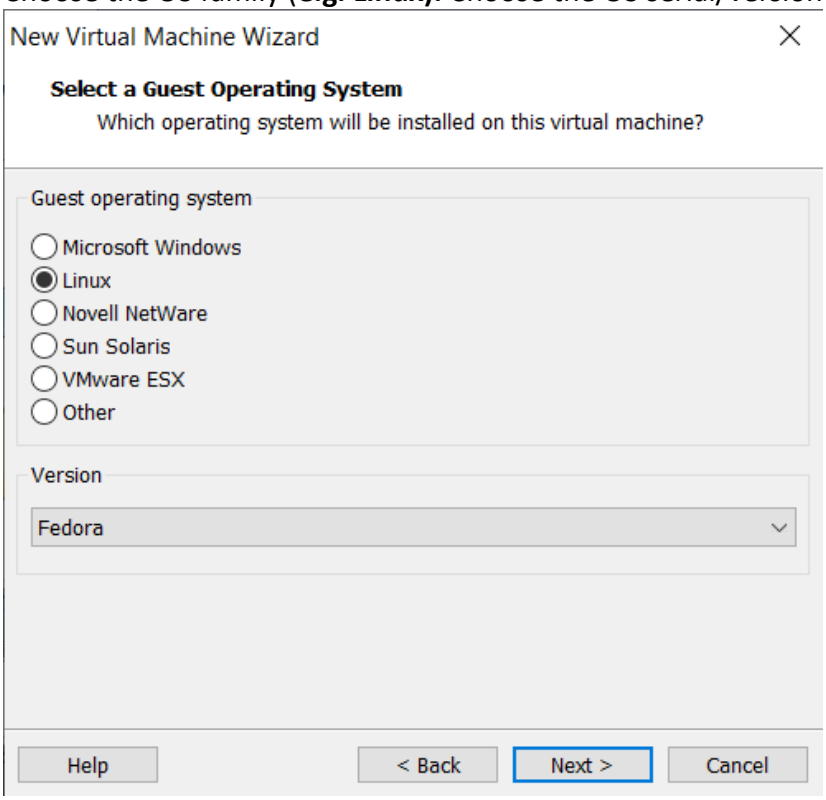
3. Choose **“Workstation x”** in *Hardware compatibility* and decide the chosen workstation that is corresponded. Click **Next**.



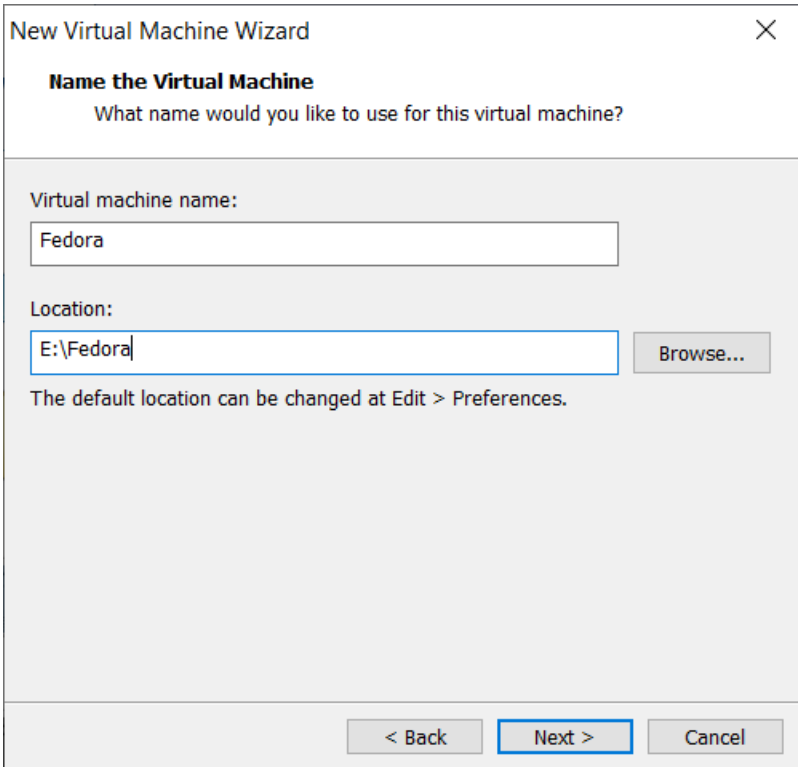
4. Choose **“I will install the operating system later”.** Click **Next**.



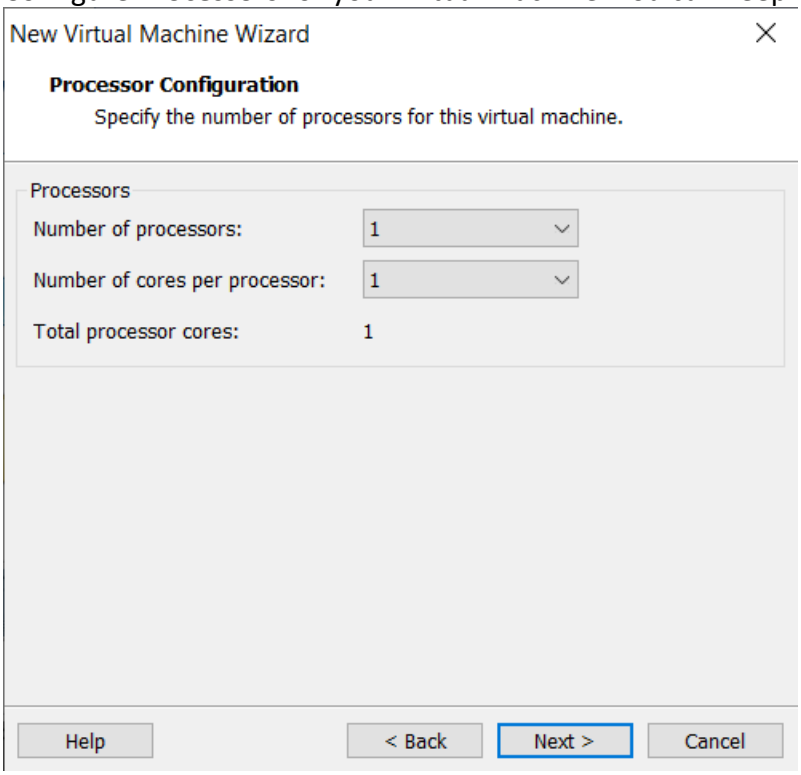
5. Choose the OS family (**e.g. Linux).** Choose the OS serial/version **(e.g. Fedora).** Click **Next**.



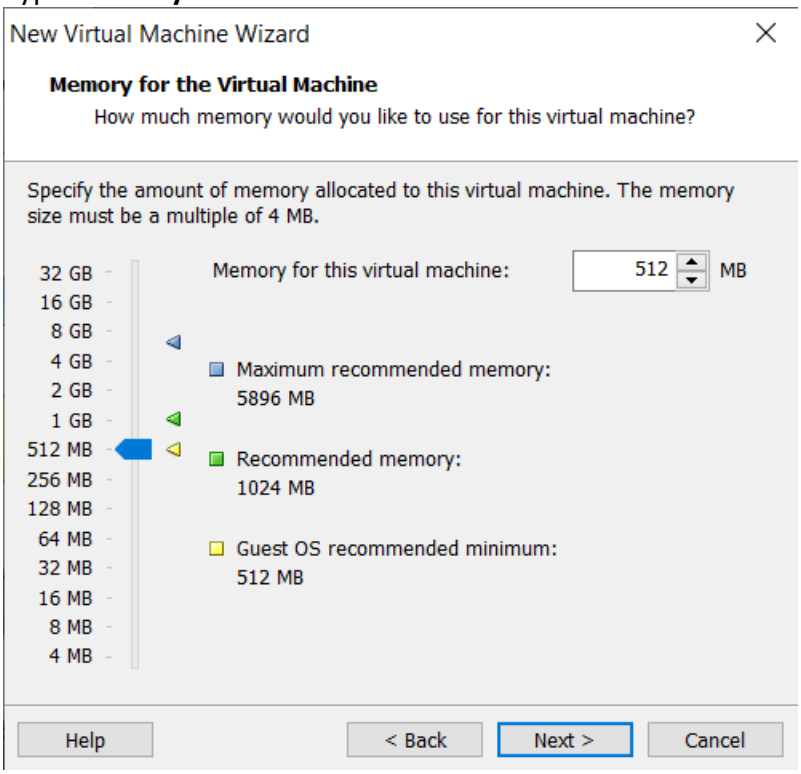
6. Type the name of virtual machine and location on hard disk to store the virtual machine. Click **Next**.



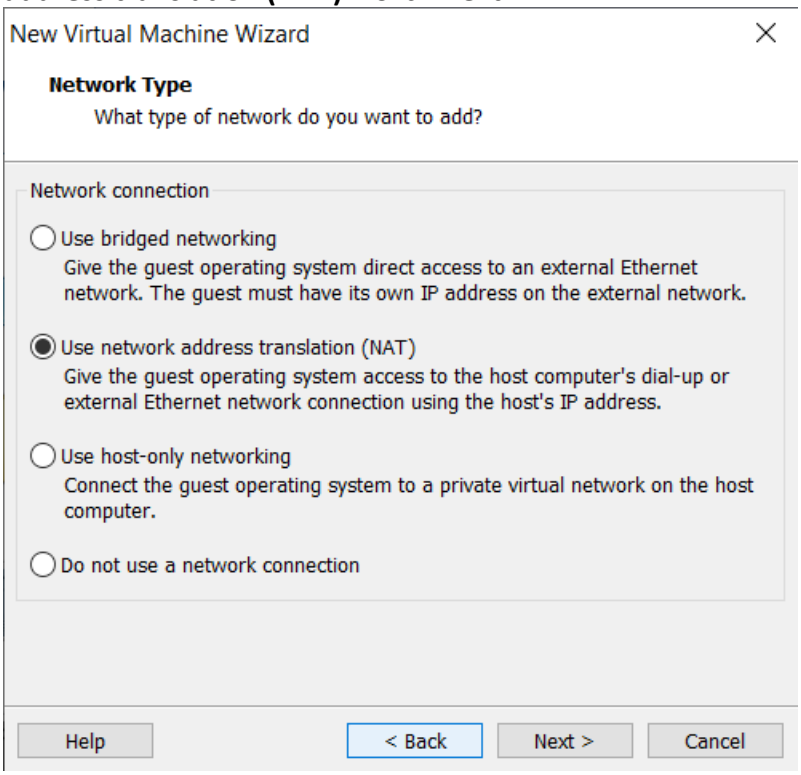
7. Configure **Processors** for your virtual machine. You can keep it as default. Click **Next**



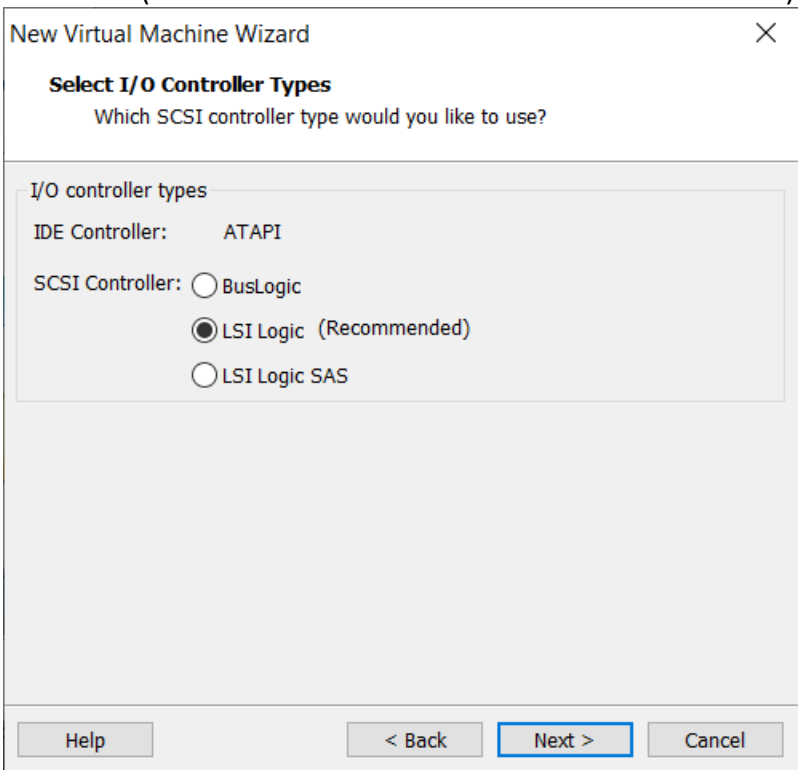
8. Type **memory size of RAM** that is used for the OS. Click **Next**.



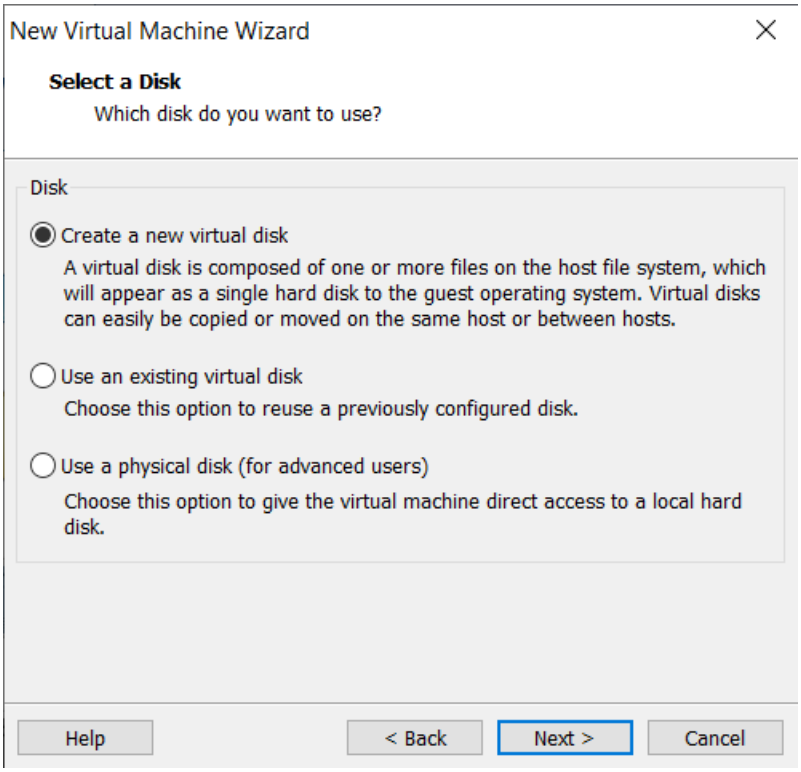
9. Choose the network connection that you want. In this case, I choose "**Use network address translation (NAT)"**. Click **Next**.



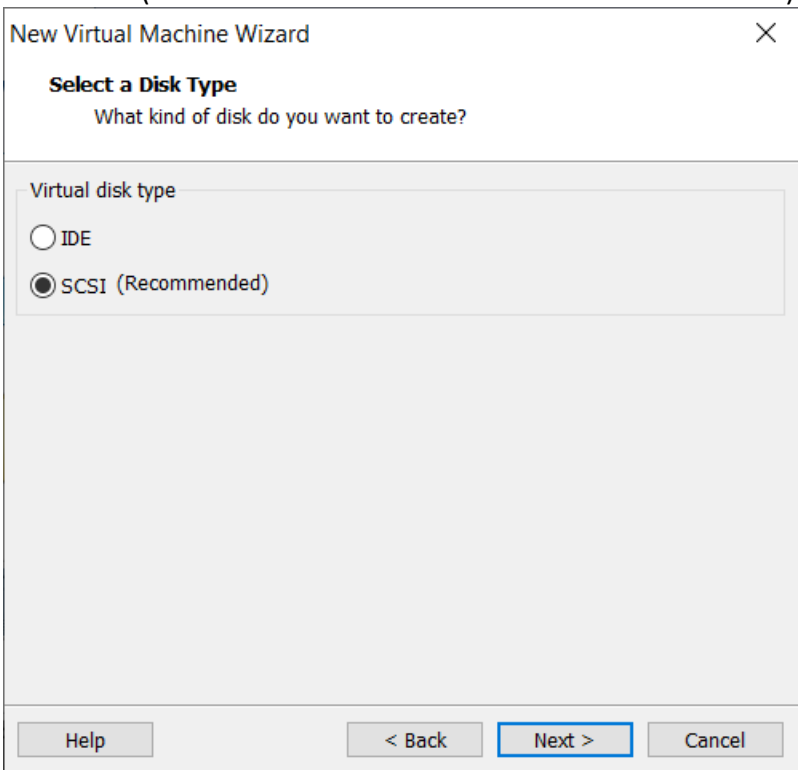
10. Click **Next** (should be used the recommendation of software).



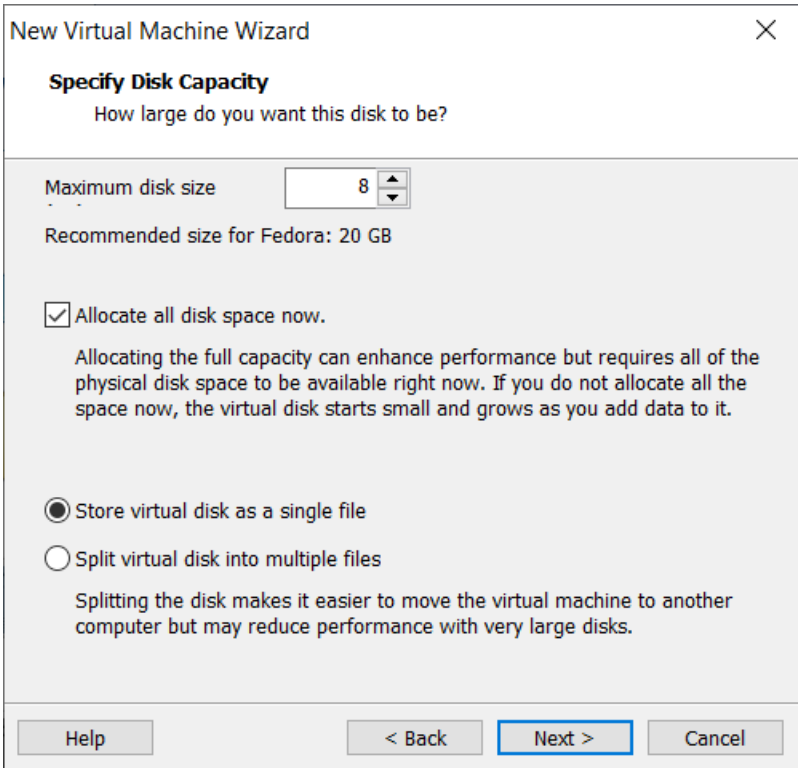
11. Choose **"Create a new virtual disk"**. Click **Next**.



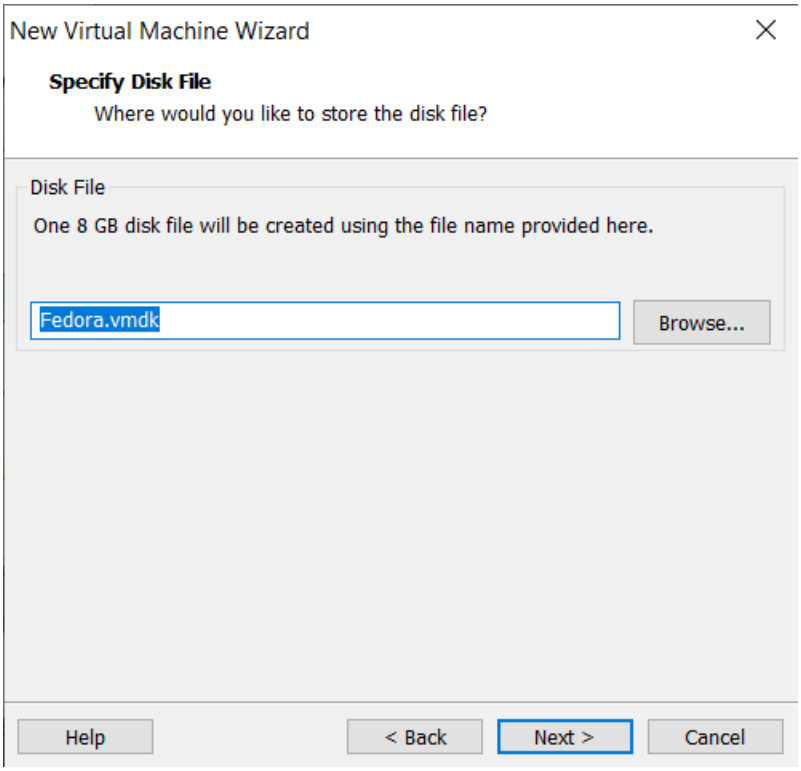
12. Click **Next** (should be used the recommendation of software).



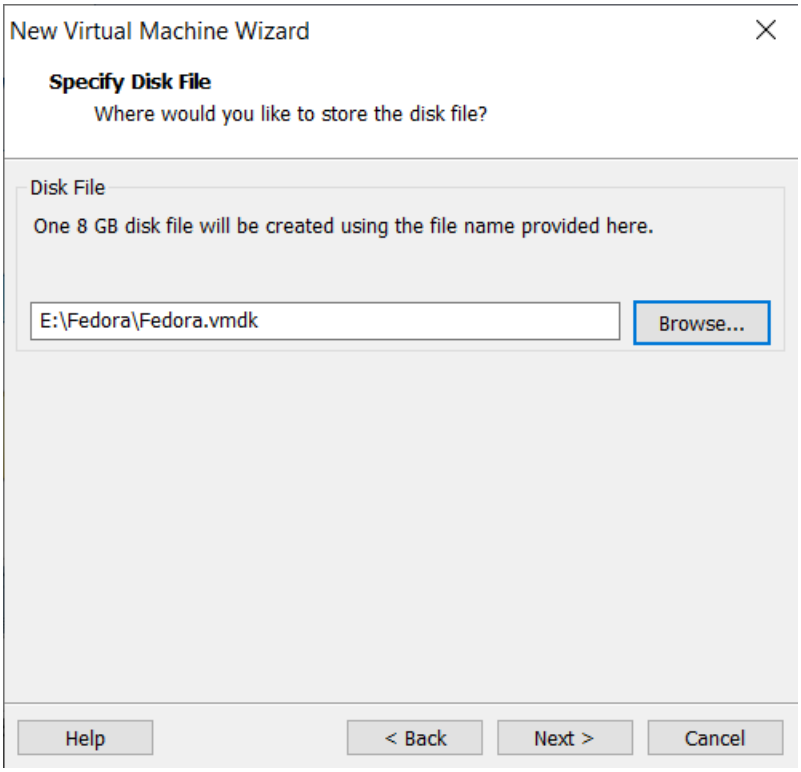
13. Click **Next**.



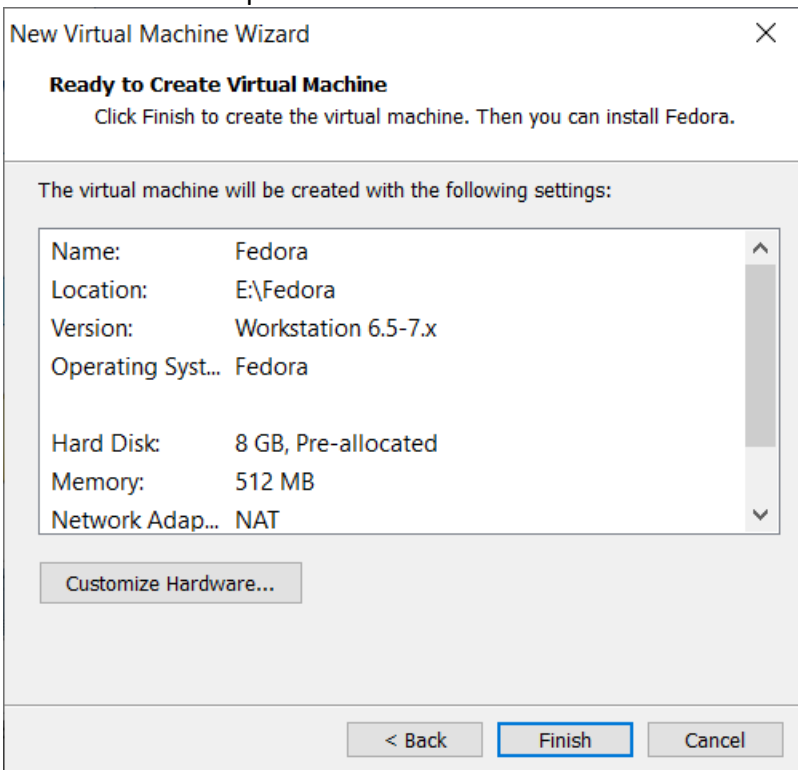
14. Click **Next**.



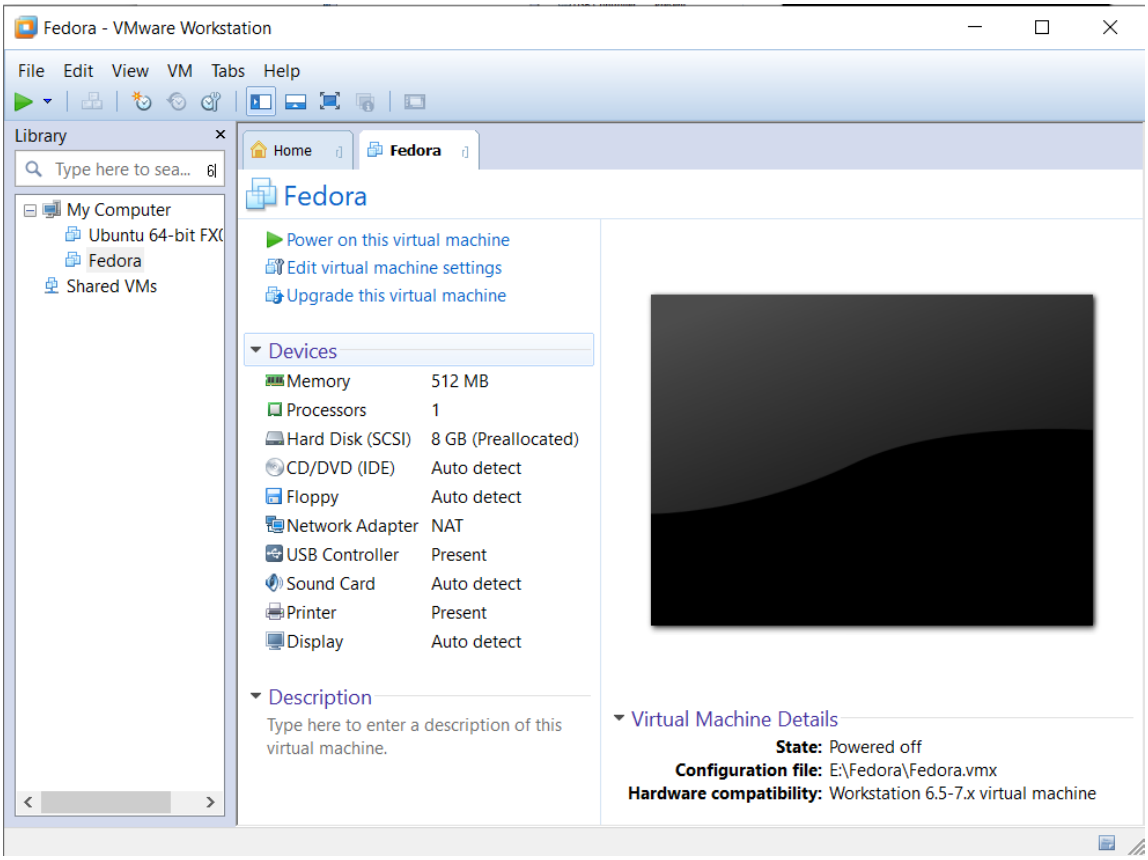
15. Click **Next**.



16. Click **Finish** to complete the installation of the new machine.

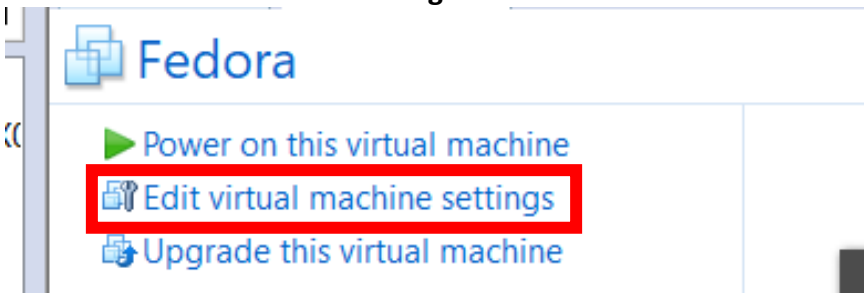


17. The window as below is shown.

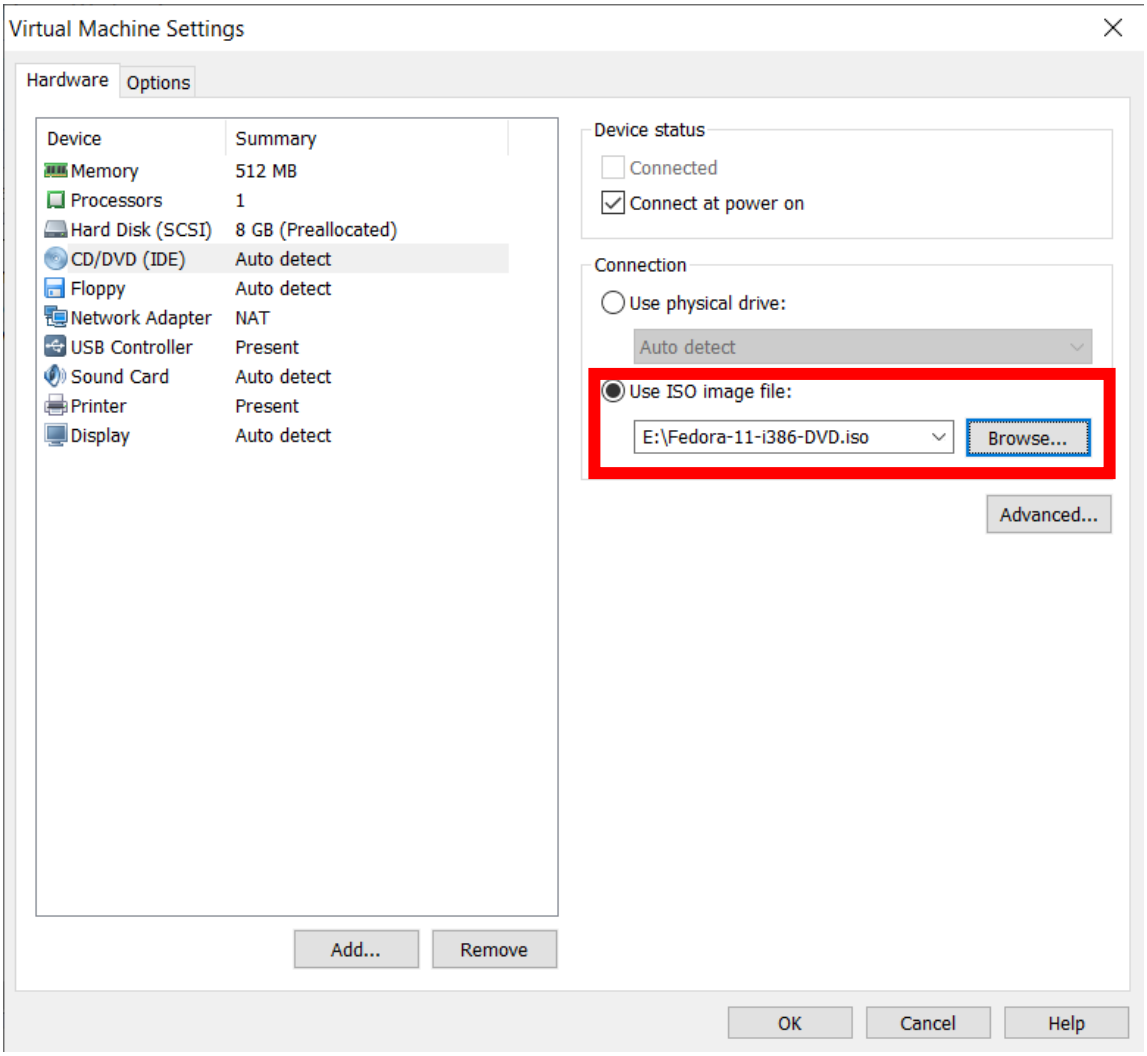


Setup the Fedora OS on VMWare

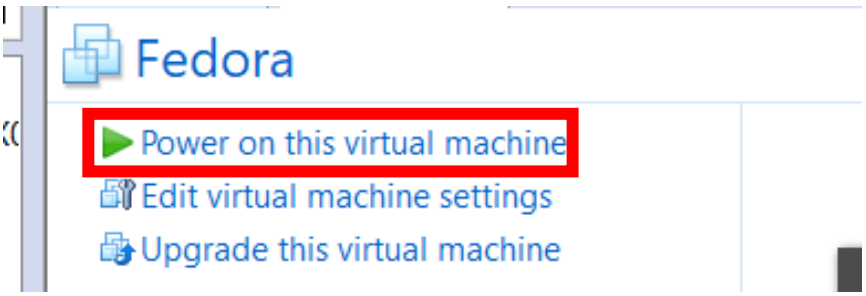
1. Creating the Virtual Machine disk for setup Fedora 11 OS (Recommended: HDD >= 8GB, RAM >= 512MB, the Network connection should be NAT).
   Click **"Edit virtual machine settings"**.



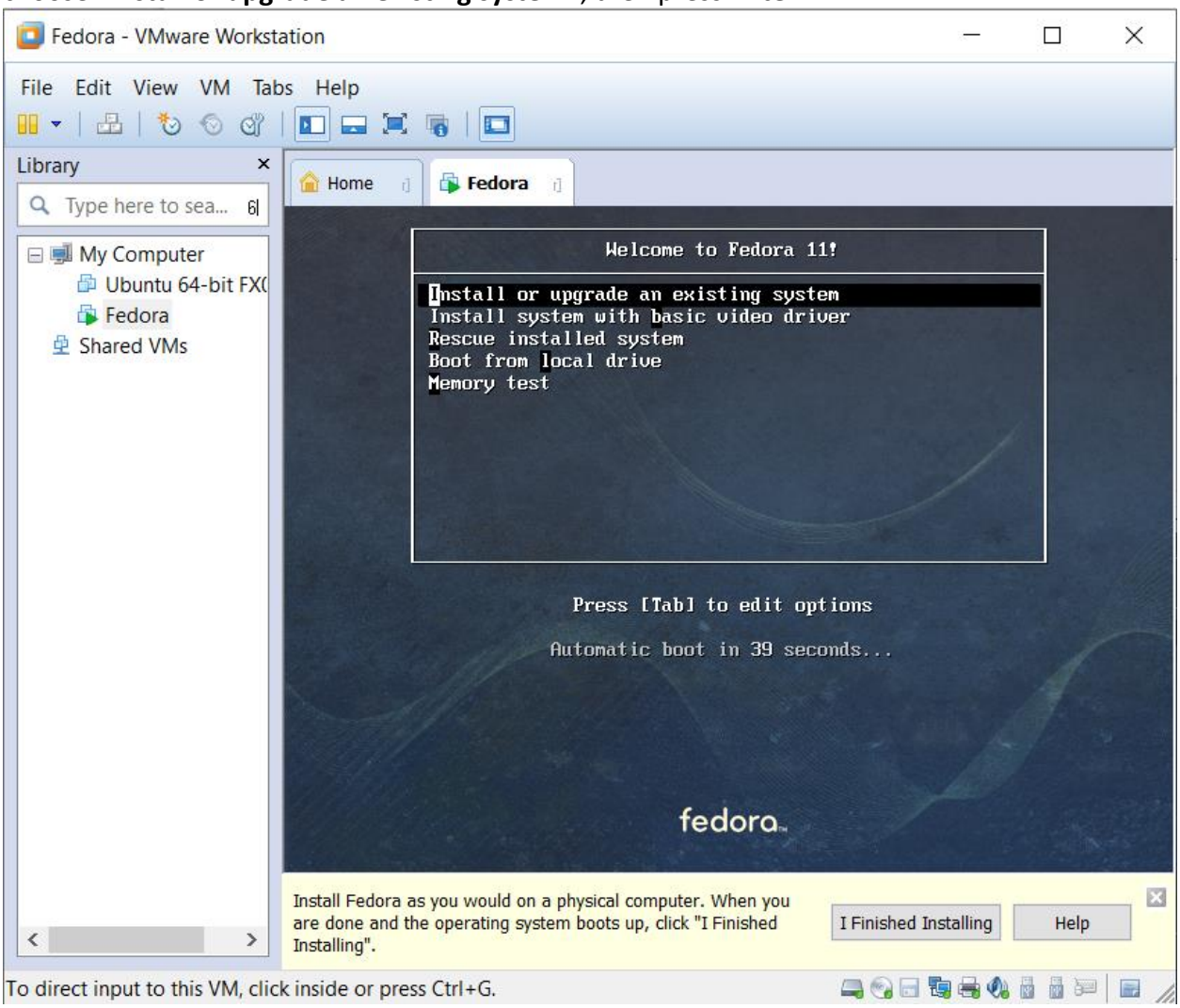
2. Choose **Hardware tab/ Choose CD/DVD (IDE).** Choose **"Use ISO image file"** and browse to the ISO file. Click **OK**.



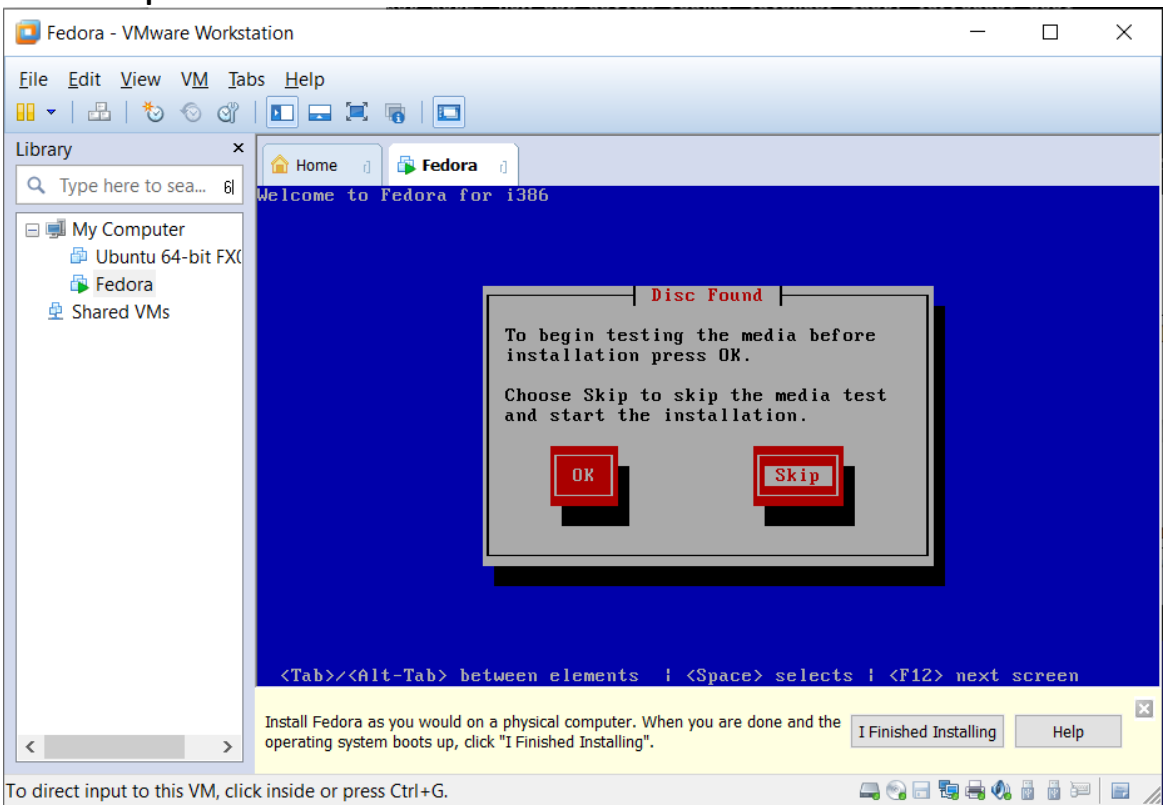
3. Click the **“Power on this virtual machine”.**



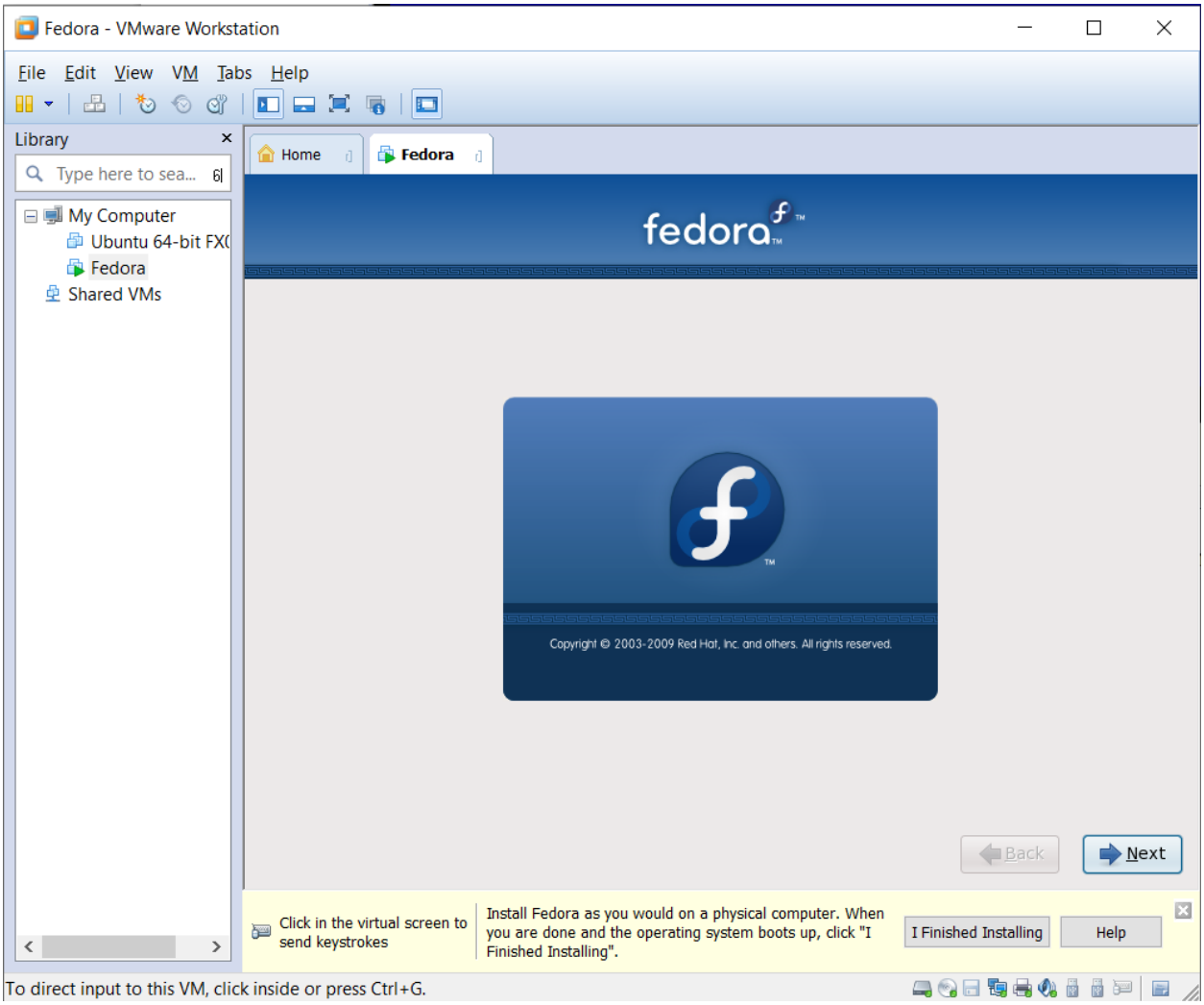
4. The virtual machine is started, then you can see the screen. Use your arrow keys to choose **“Install or upgrade an existing system”**, then press **Enter**.



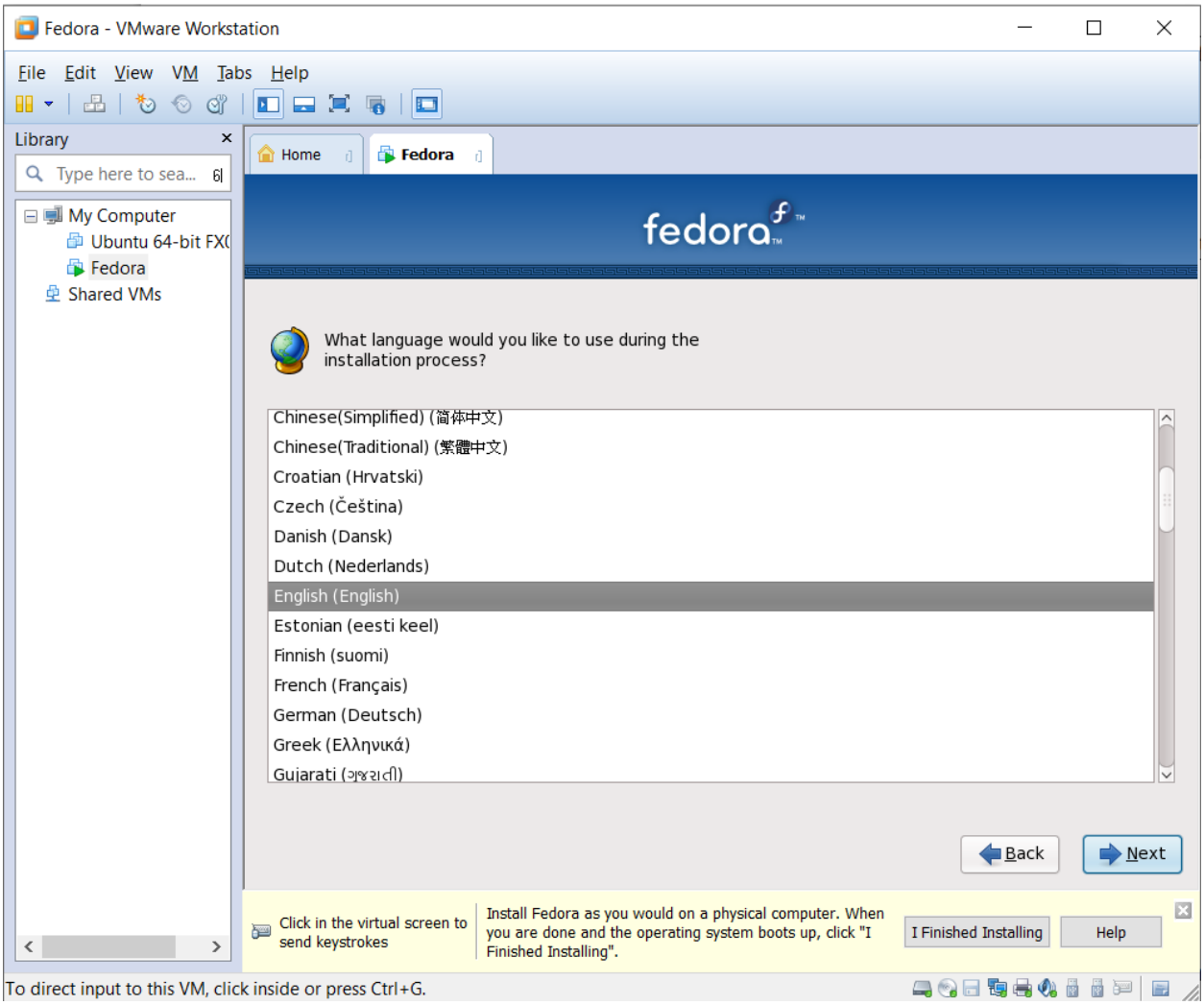
5. Choose **Skip**.



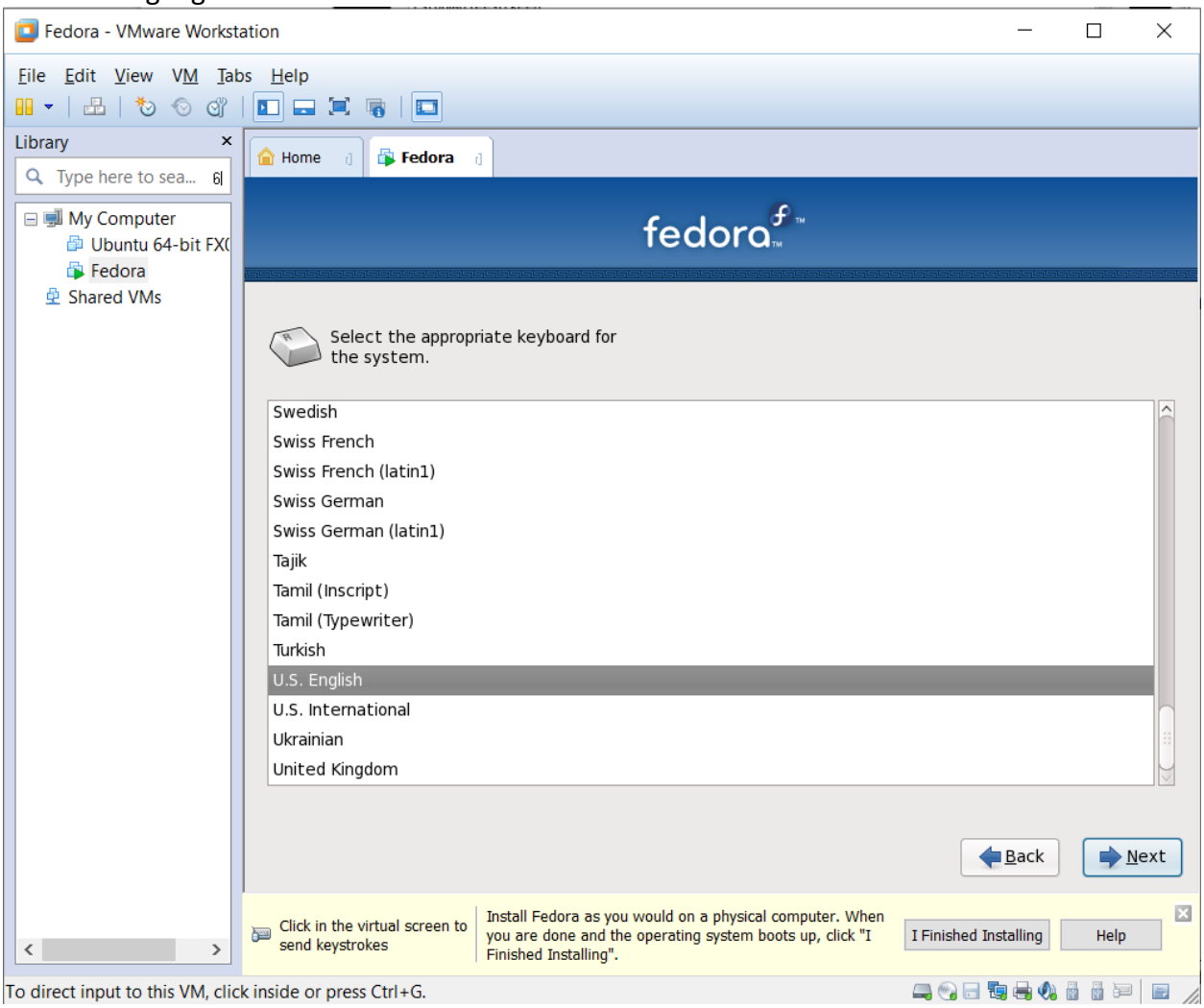
6. Click **Next**.


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Copyright © 2003-2009 Red Hat, Inc. and others. All rights reserved.
Back
Next
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

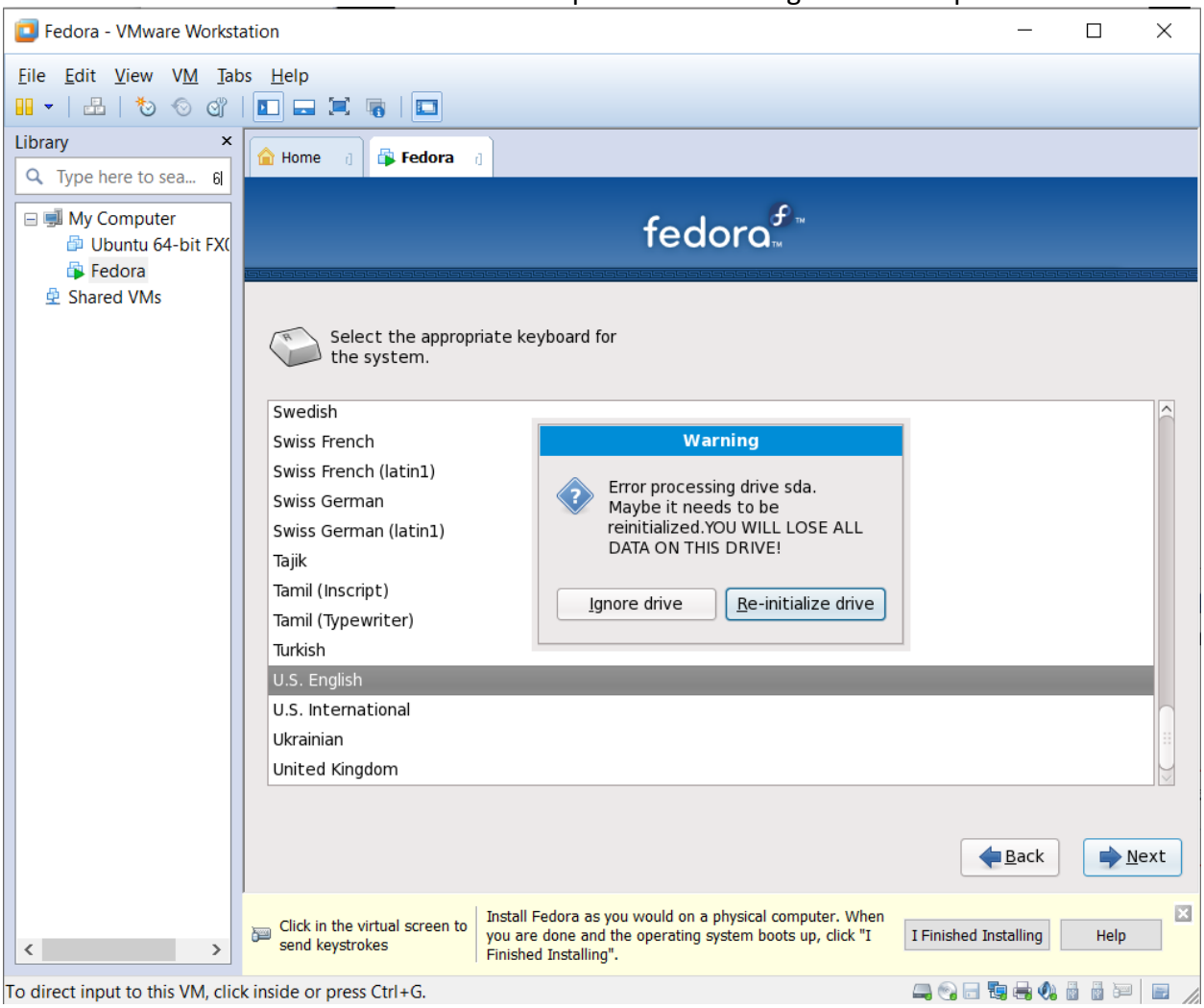
7. Click **Next**.


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
What language would you like to use during the installation process?
Chinese(Simplified) (简体中文)
Chinese(Traditional) (繁體中文)
Croatian (Hrvatski)
Czech (Čeština)
Danish (Dansk)
Dutch (Nederlands)
English (English)
Estonian (eesti keel)
Finnish (suomi)
French (Français)
German (Deutsch)
Greek (Ελληνικά)
Gujarati (ગુજરાતી)
Back
Next
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

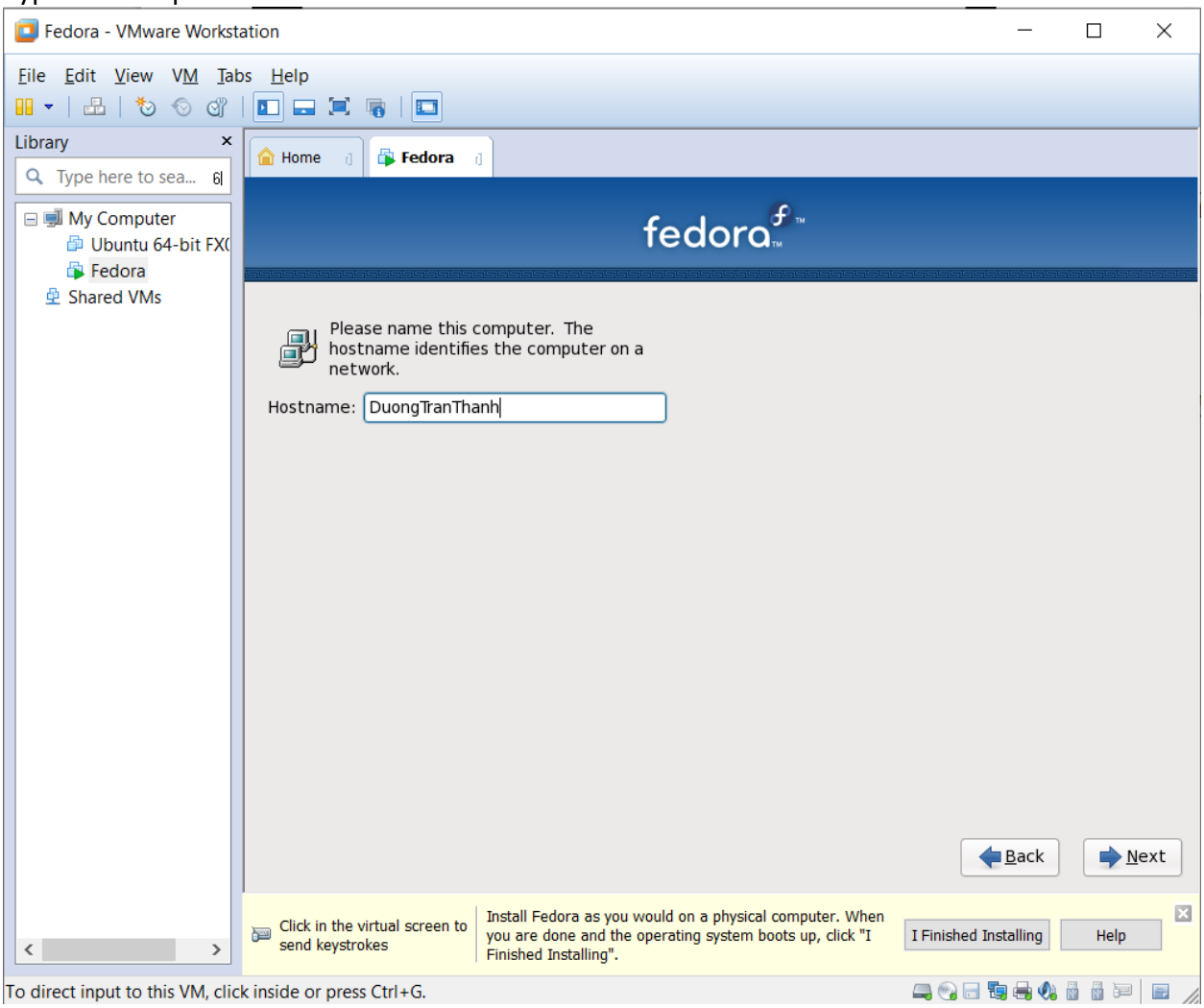
8. Choose Language. Click **Next**.



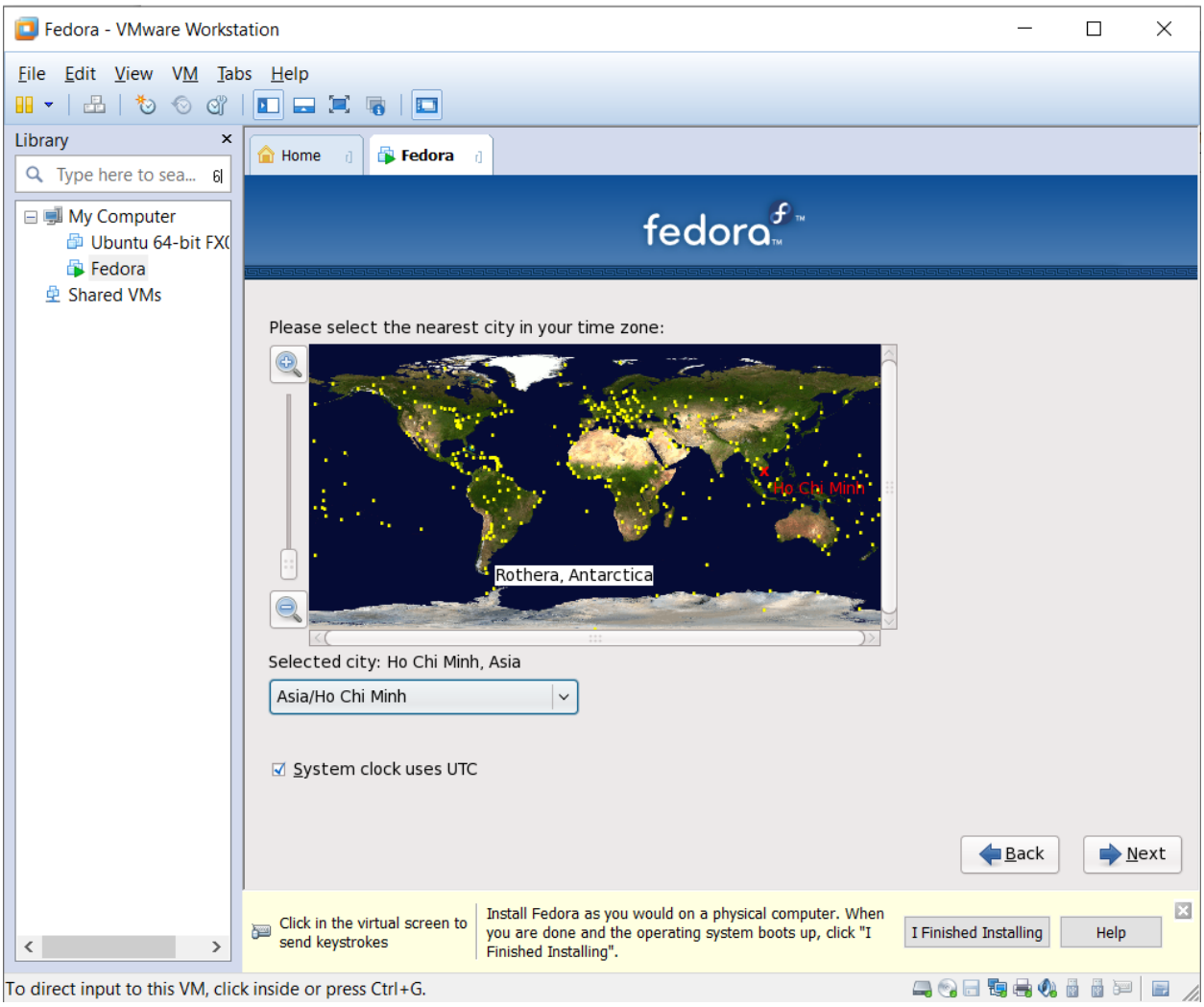
9. Click **“Re-initialize drive”** to reset the default partition following the OS’s requirement.



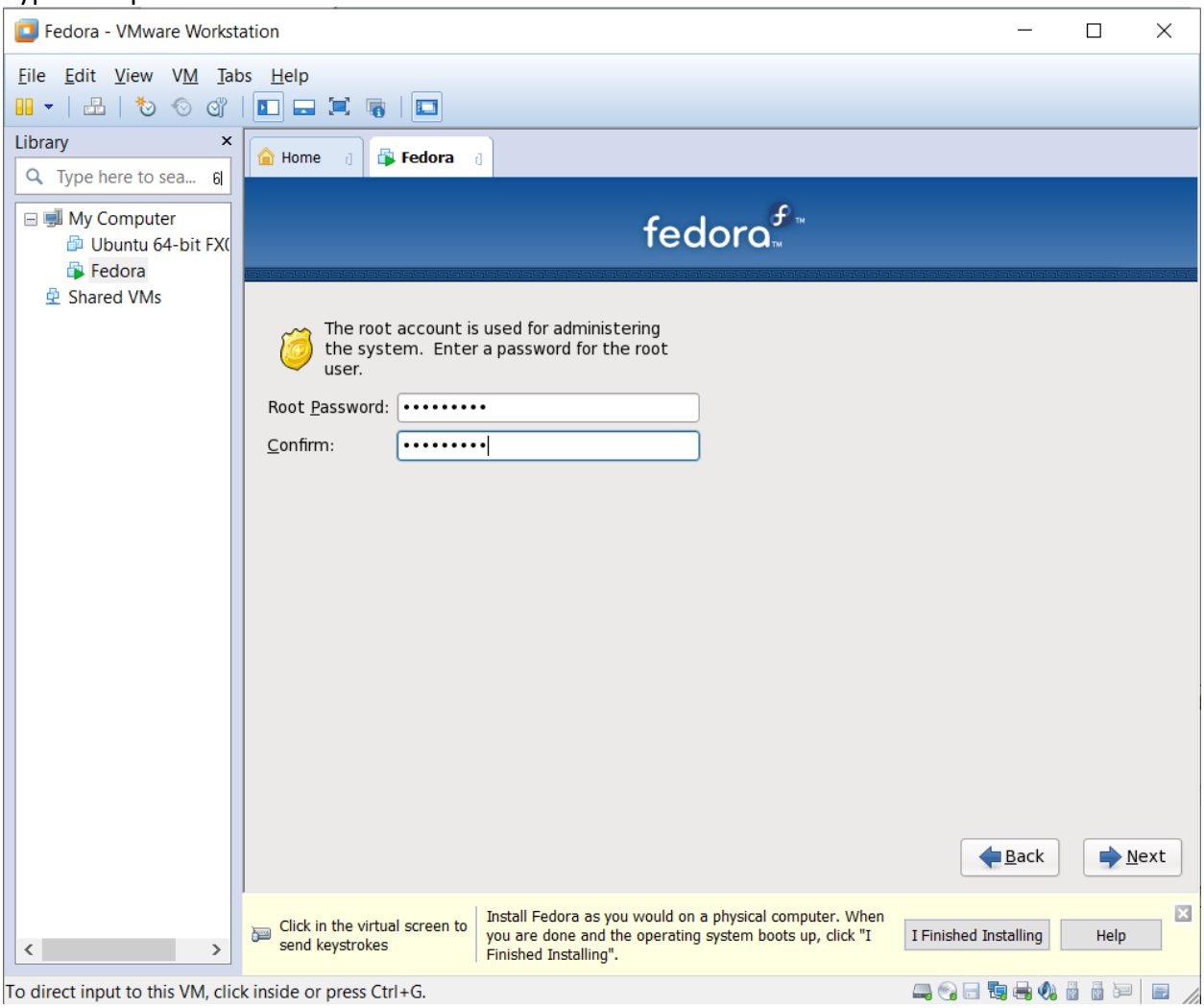
10. Type the computer name.



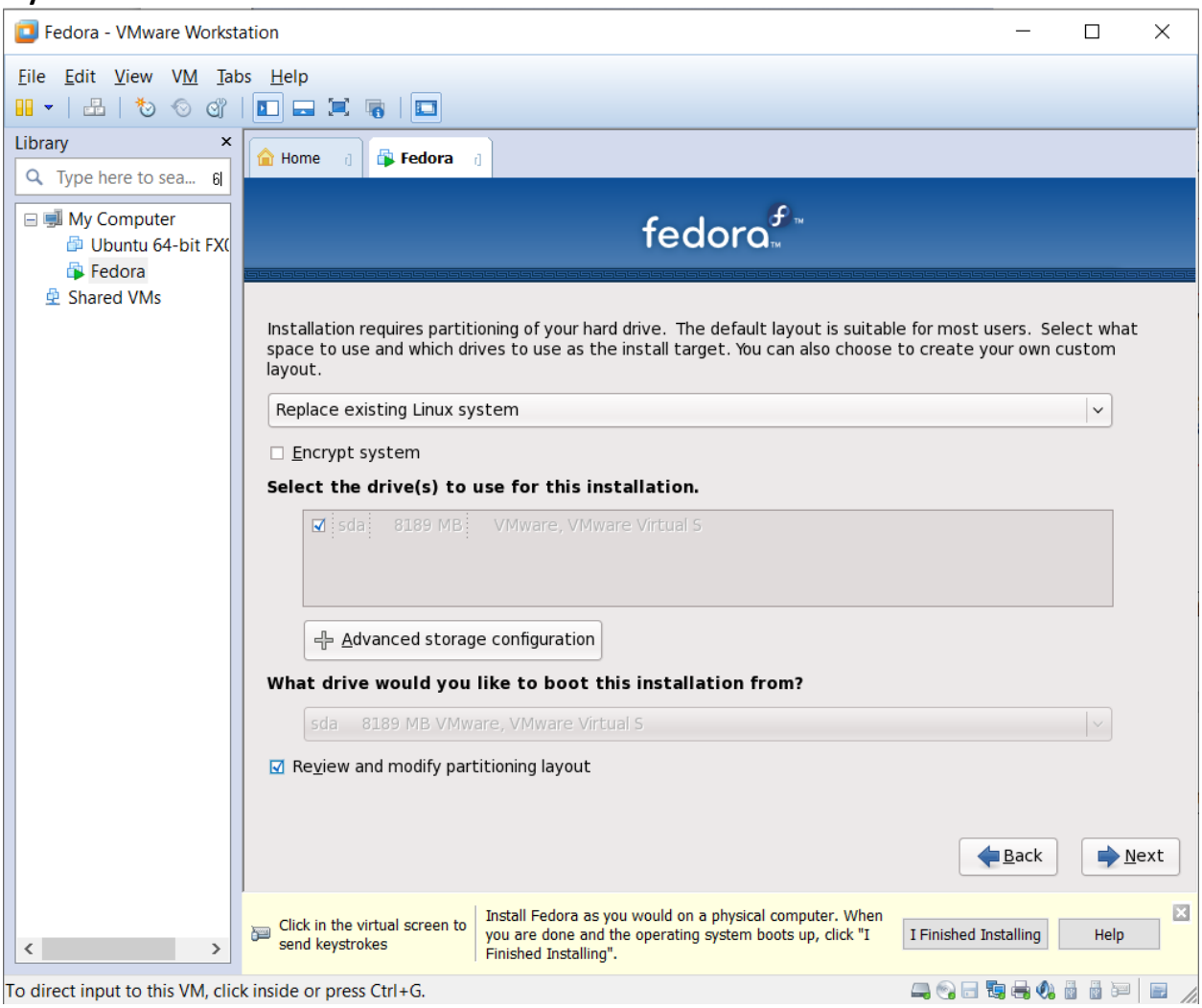
11. Choose **Asia/Ho Chi Minh**. Click **Next**.


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Please select the nearest city in your time zone:
Ho Chi Minh
Rothera, Antarctica
Selected city: Ho Chi Minh, Asia
Asia/Ho Chi Minh
System clock uses UTC
Back
Next
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

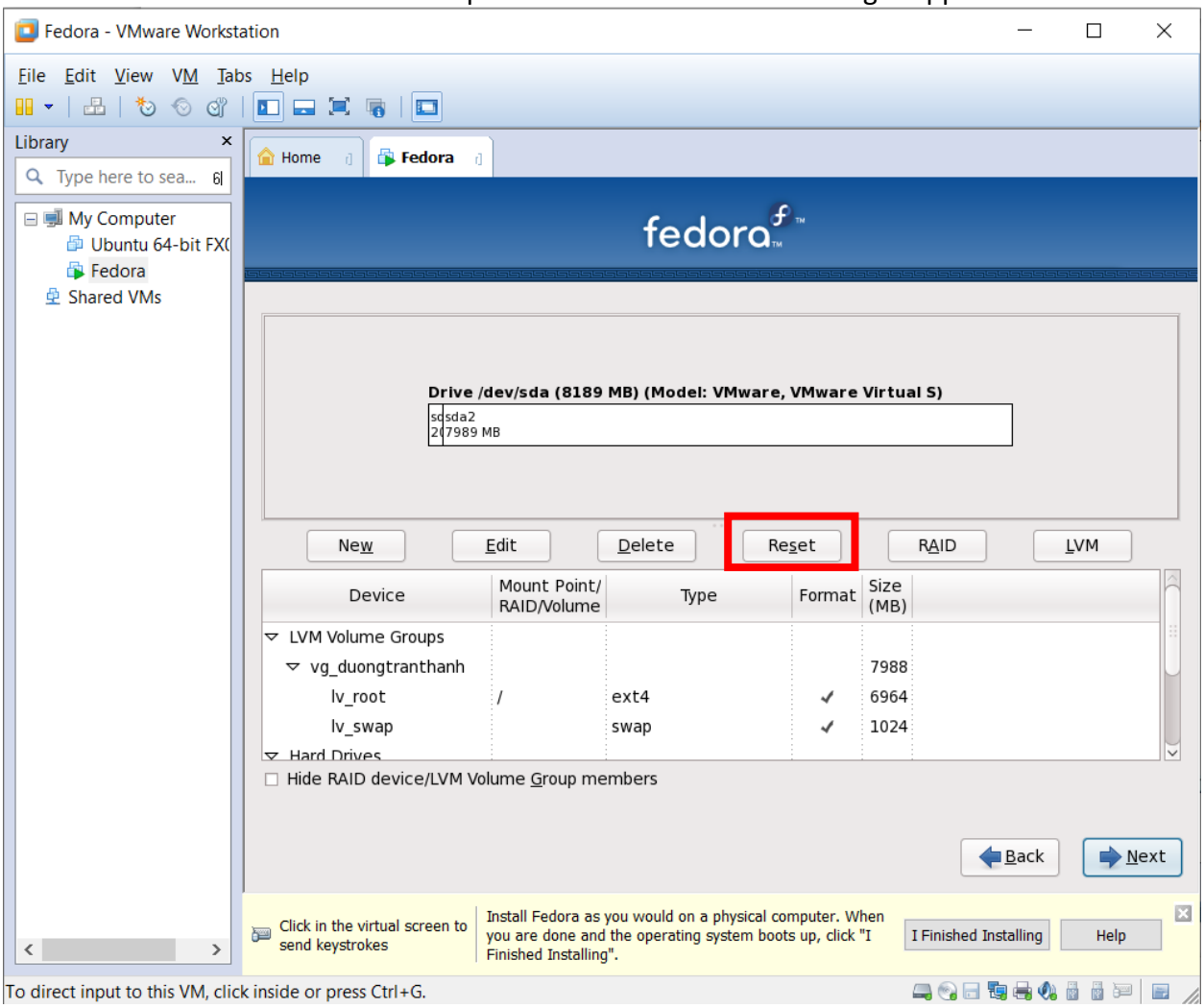
12. Type root password and confirm. Click **Next**.



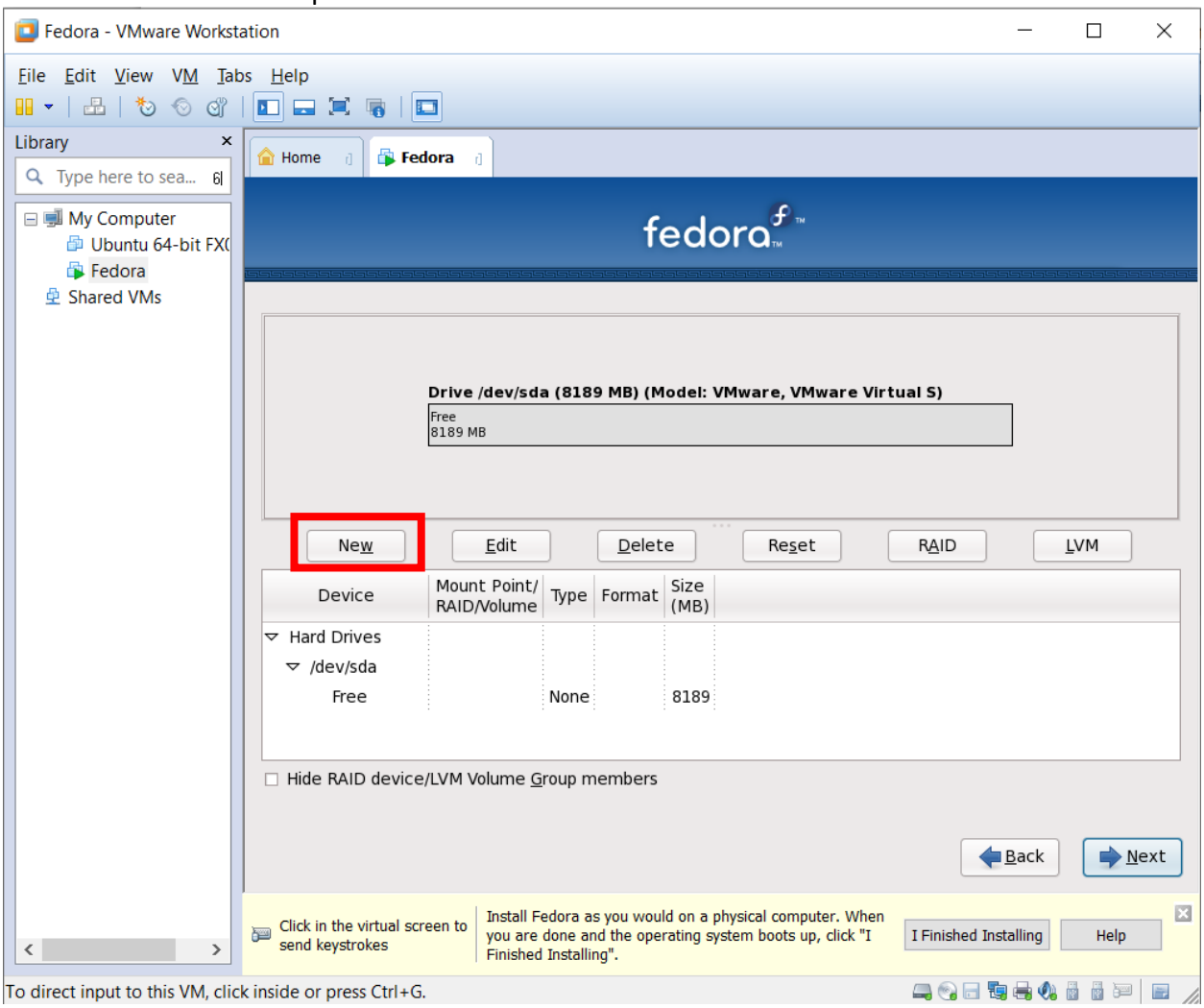
13. Choose **“Replace existing Linux System”.** Check **“Review and modify partitioning layout”.**

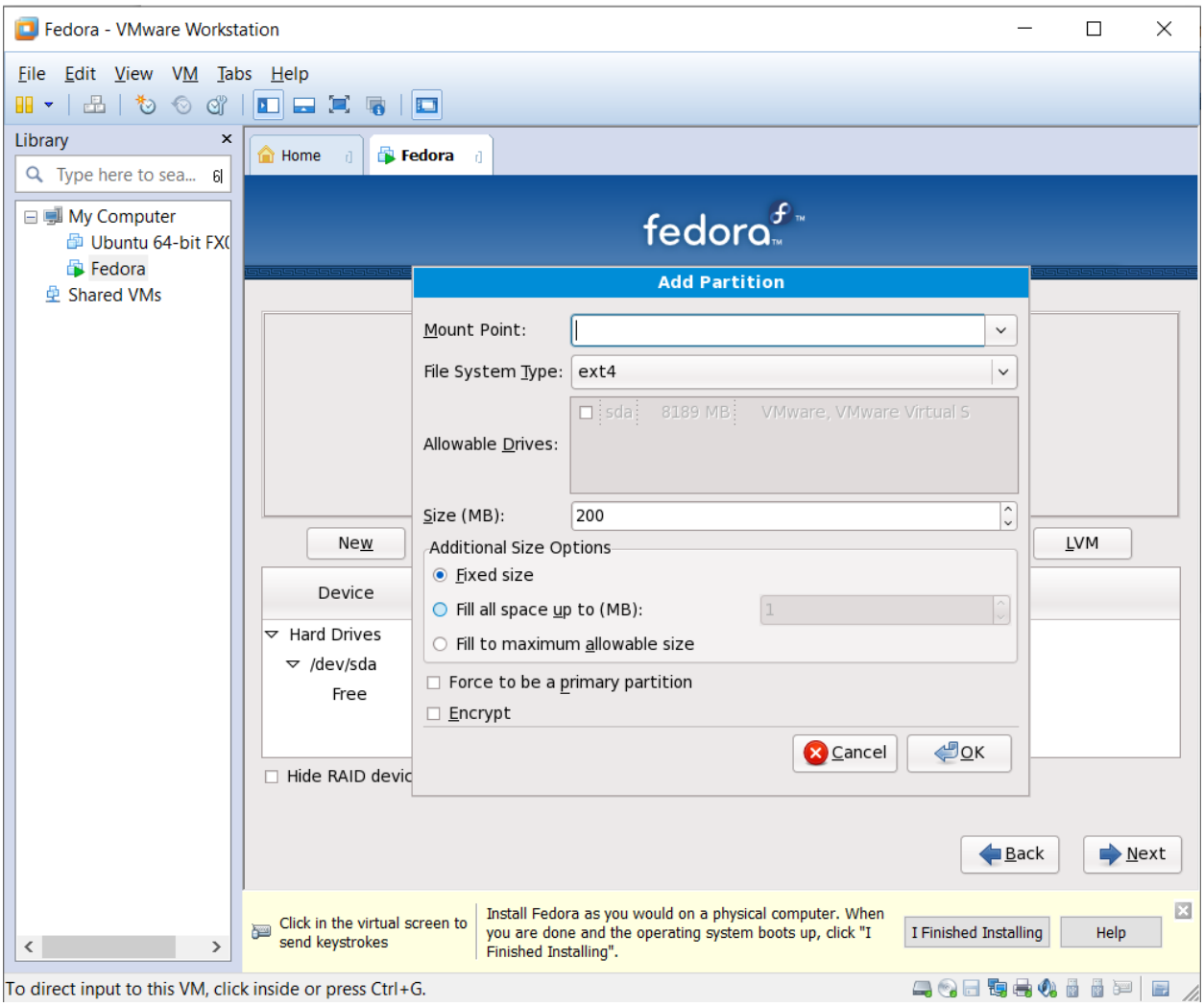


14. Choose **Reset** to delete the available partition. Click **Yes** if the warning is appeared.

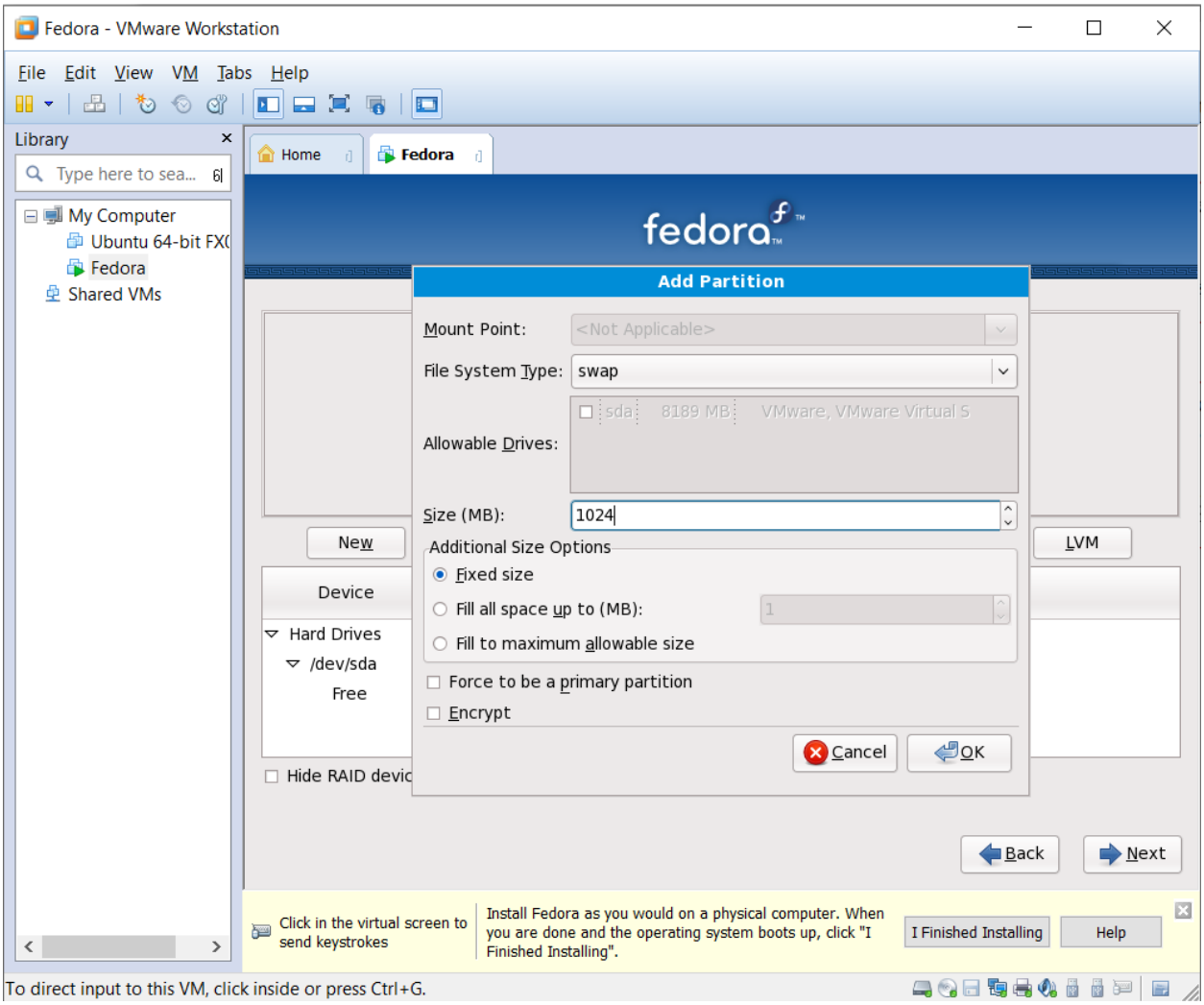


15. Click New to create new partition.




Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Add Partition
Mount Point:
File System Type: ext4
Allowable Drives:
sda 8189 MB VMware, VMware Virtual S
Size (MB): 200
Additional Size Options
Fixed size
Fill all space up to (MB):
Fill to maximum allowable size
Force to be a primary partition
Encrypt
Cancel
OK
New
LVM
Device
Hard Drives
/dev/sda
Free
Hide RAID devic
Back
Next
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

16. Click **OK**.


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Add Partition
Mount Point:
<Not Applicable>
File System Type:
swap
Allowable Drives:
sda 8189 MB VMware, VMware Virtual S
Size (MB):
1024
Additional Size Options
Fixed size
Fill all space up to (MB):
Fill to maximum allowable size
Force to be a primary partition
Encrypt
Cancel
OK
New
LVM
Device
Hard Drives
/dev/sda
Free
Hide RAID devic
Back
Next
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Help
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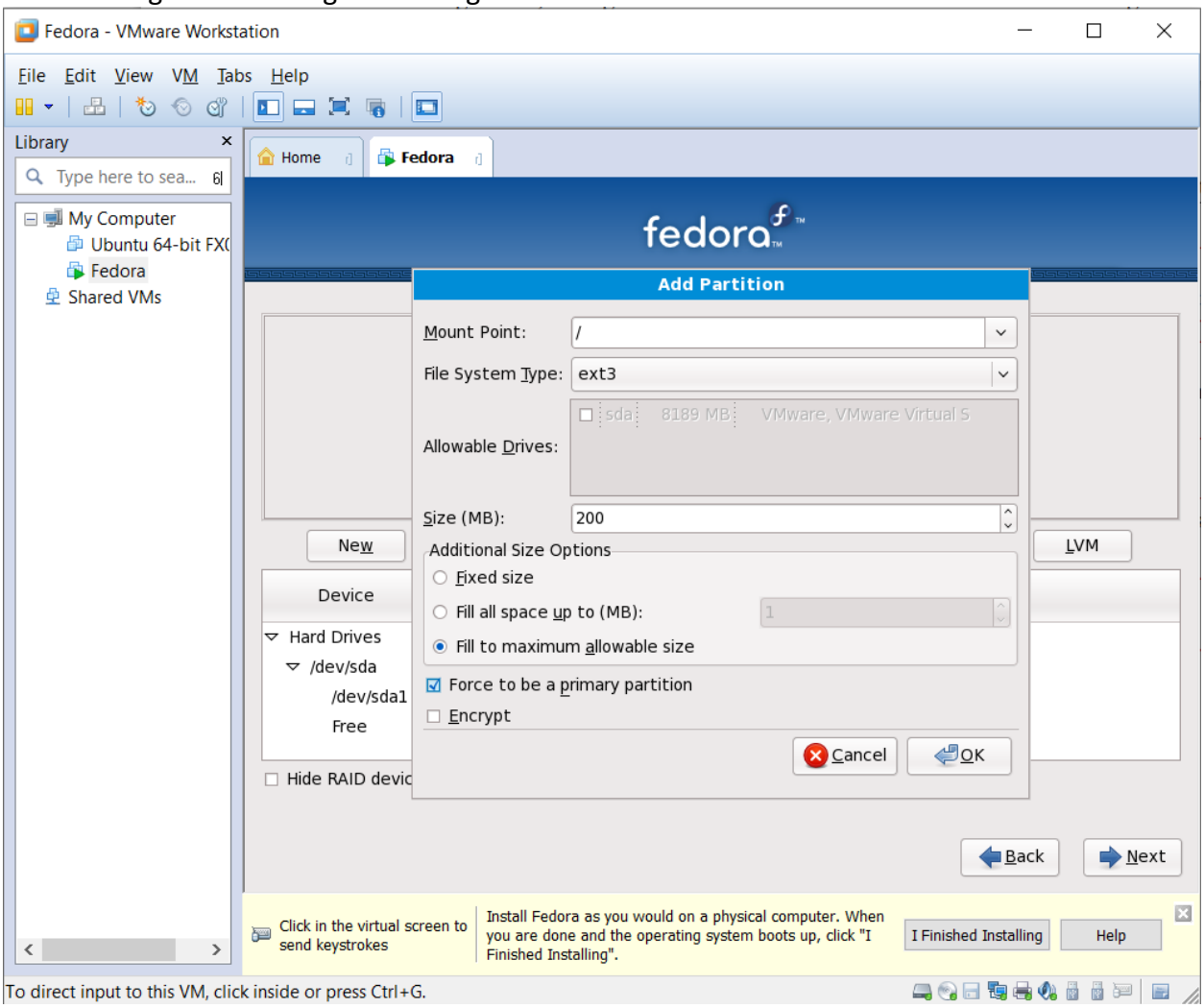
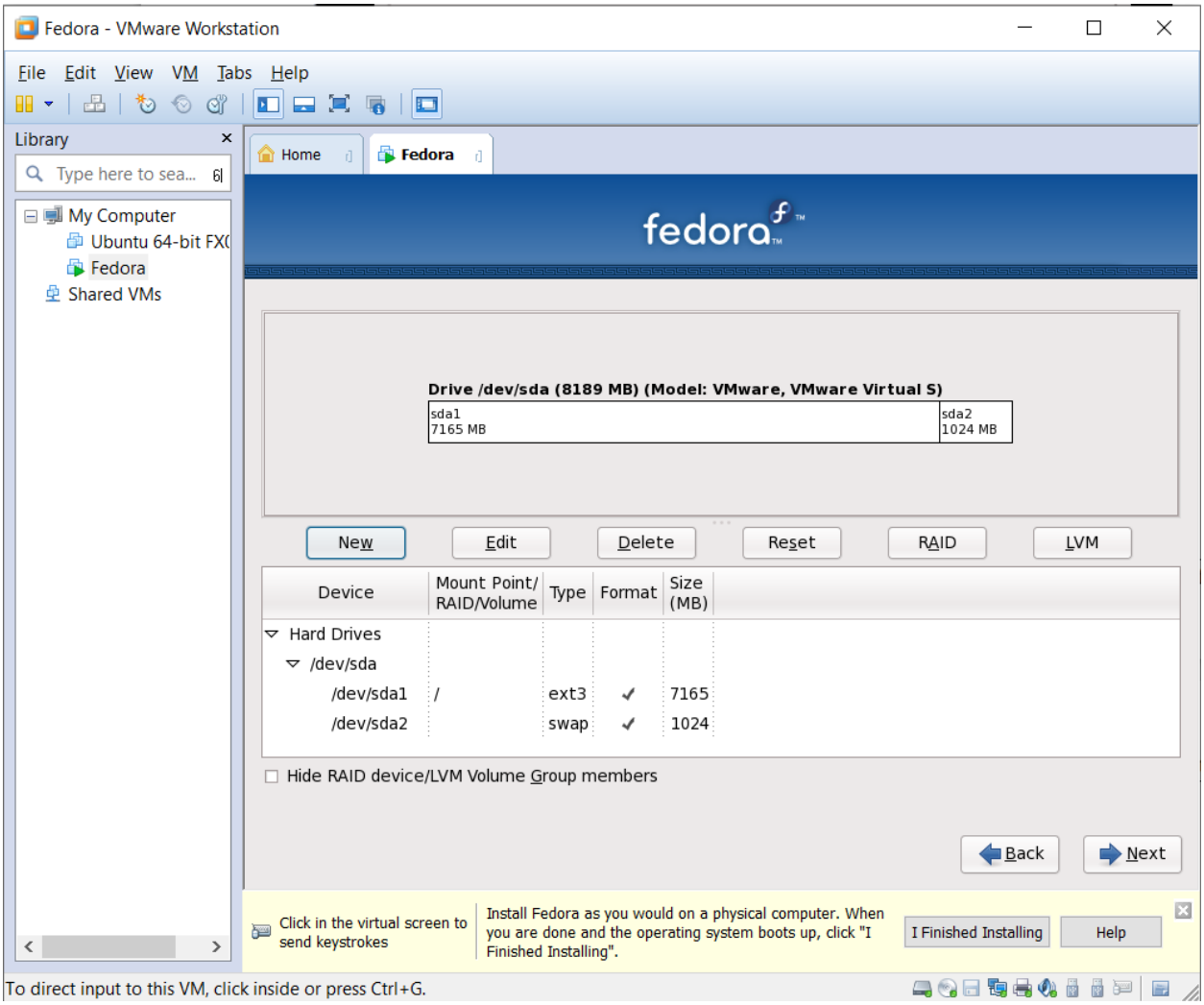
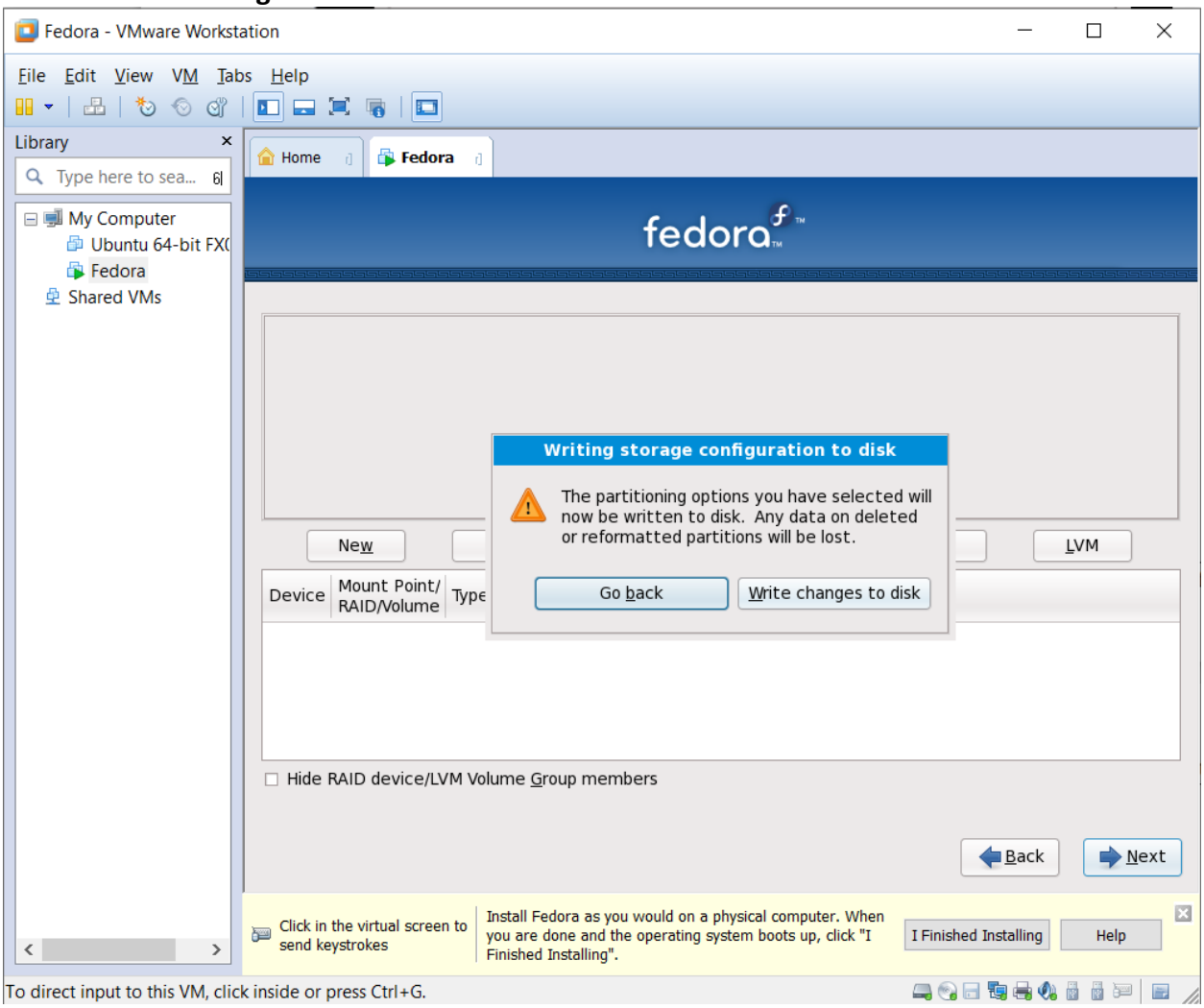
17. Click **New** again and configure as image below. Click **OK**.



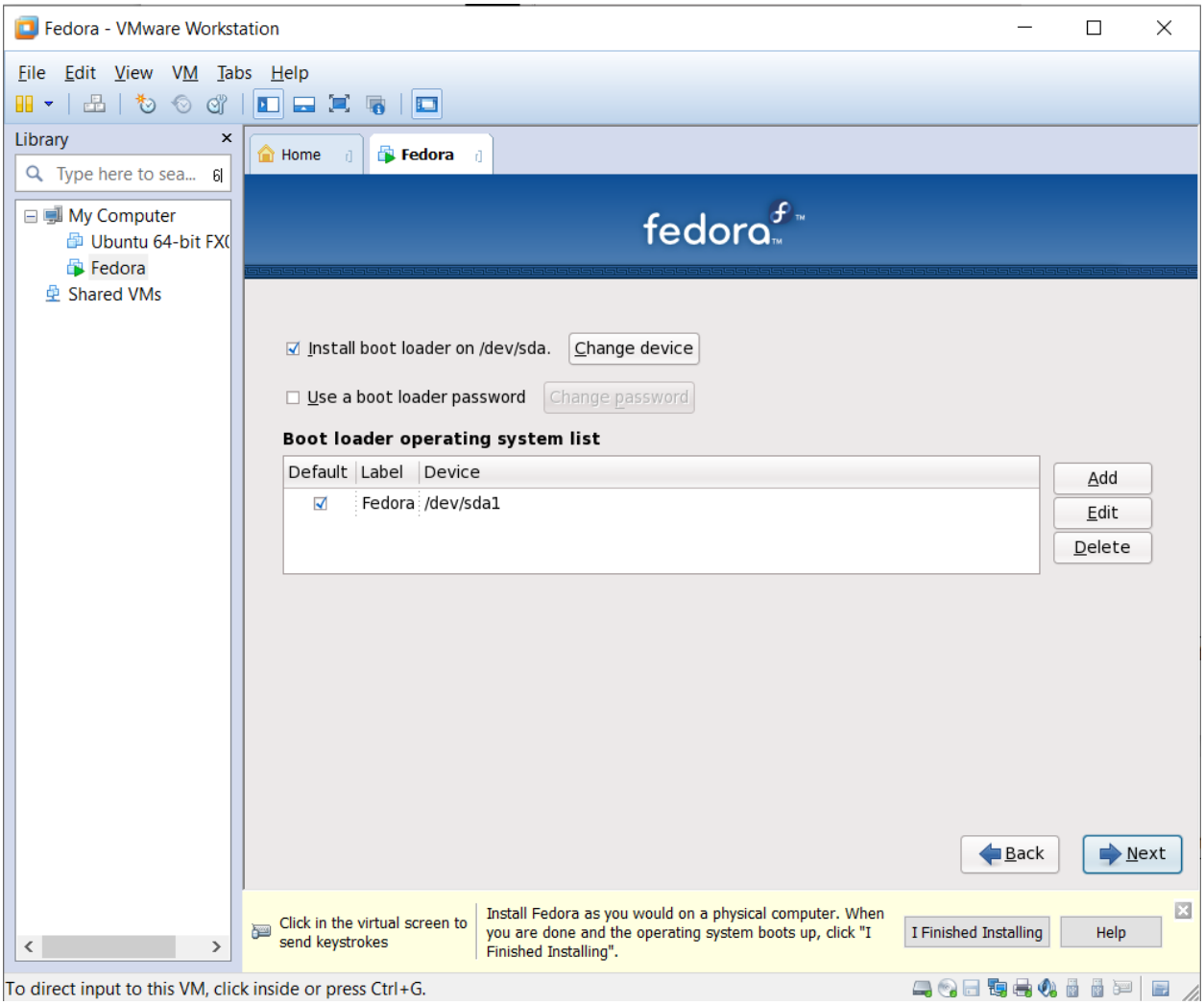
18. Click **Next**.



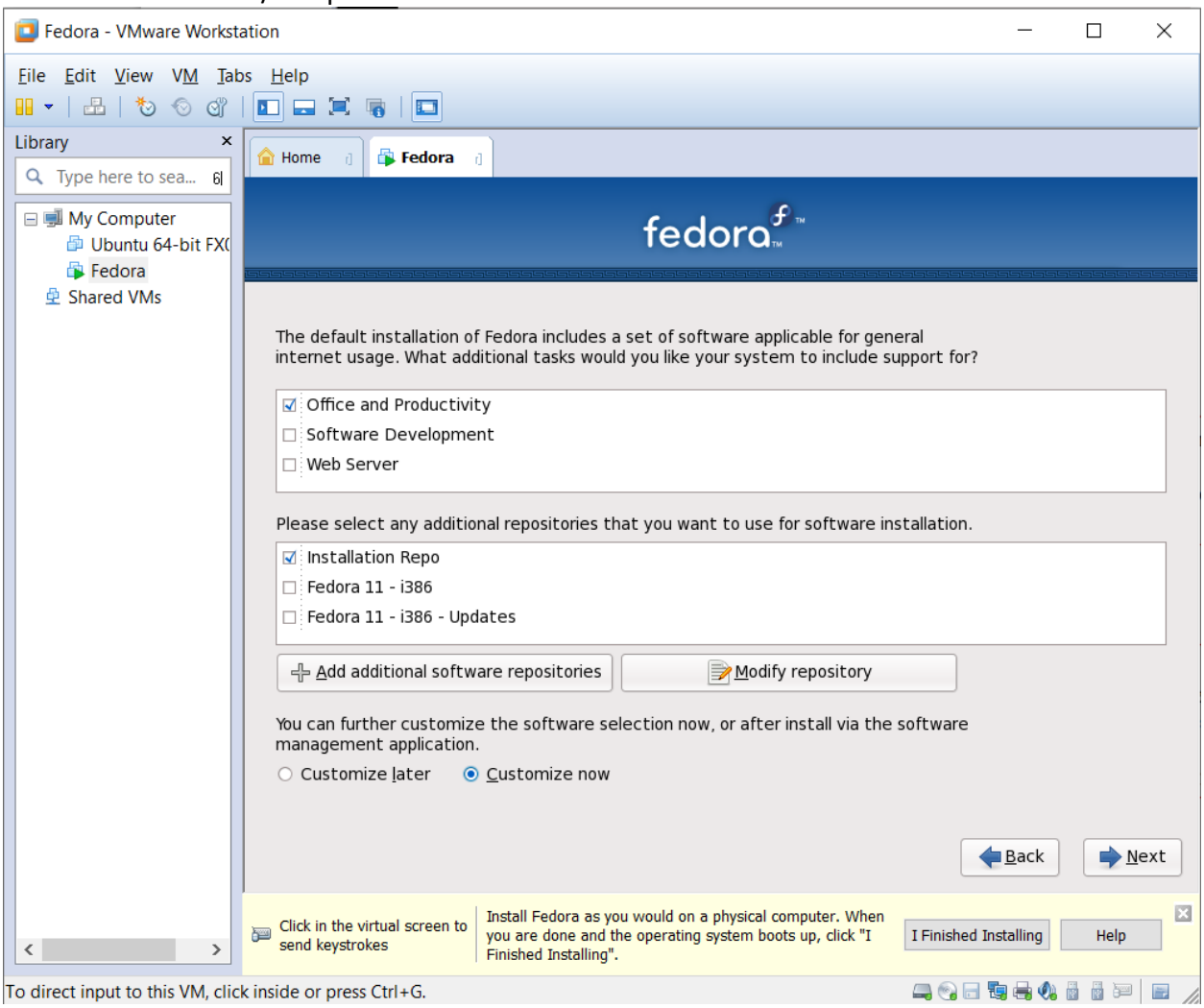
19. Choose **“Write changes to disk”.**



20. Click **Next**.

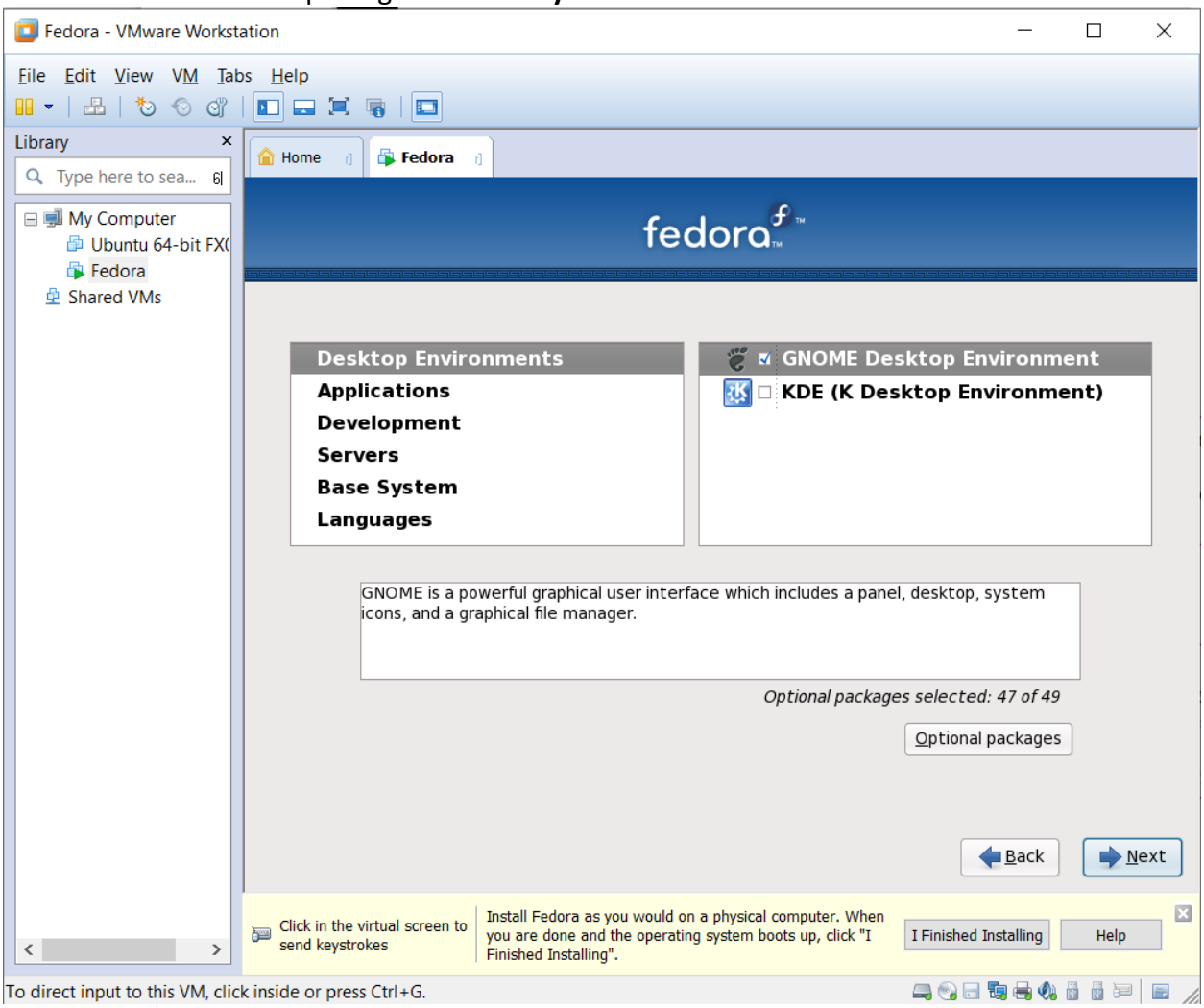


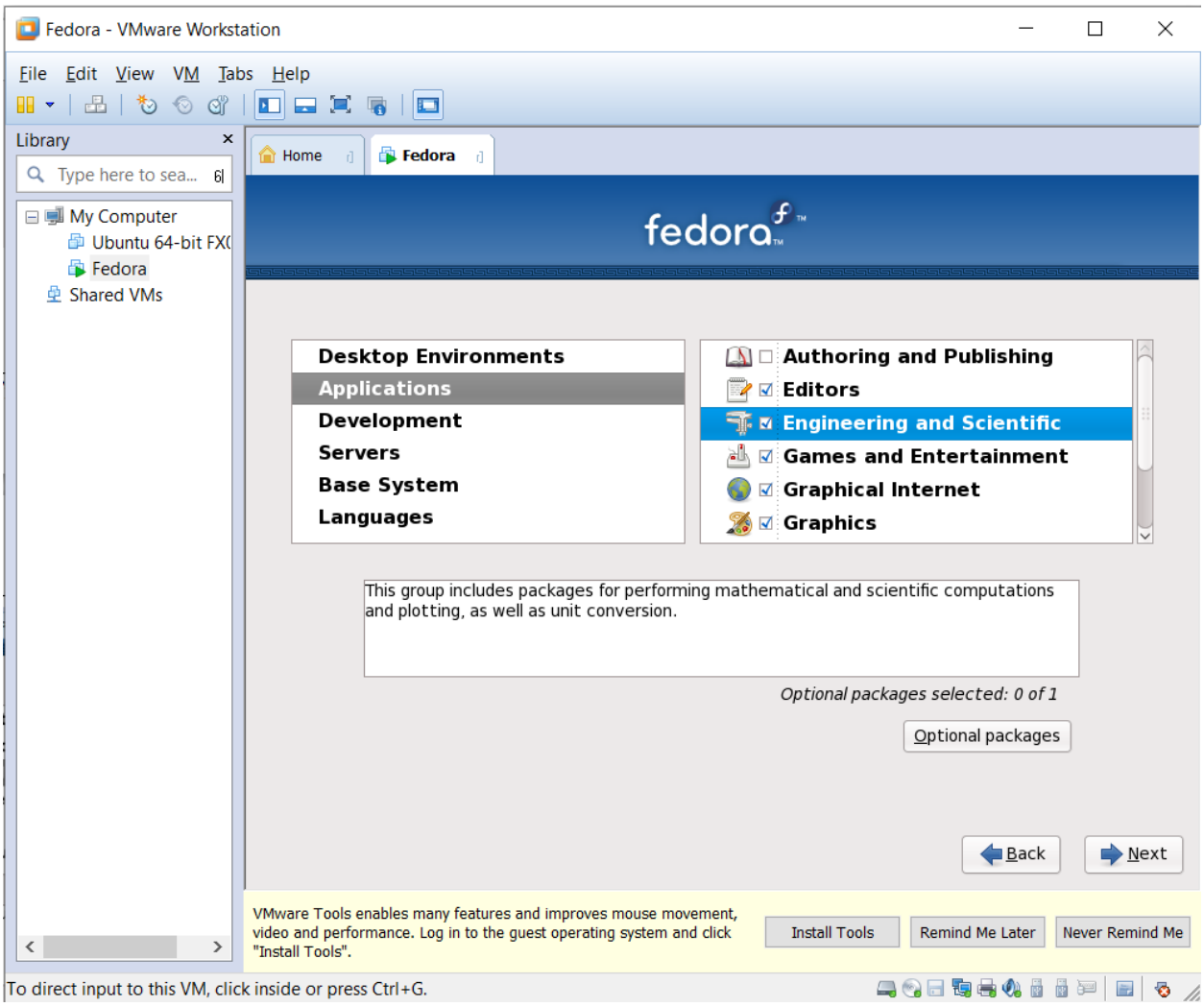
21. Choose the software/component installed. Click **Next**.

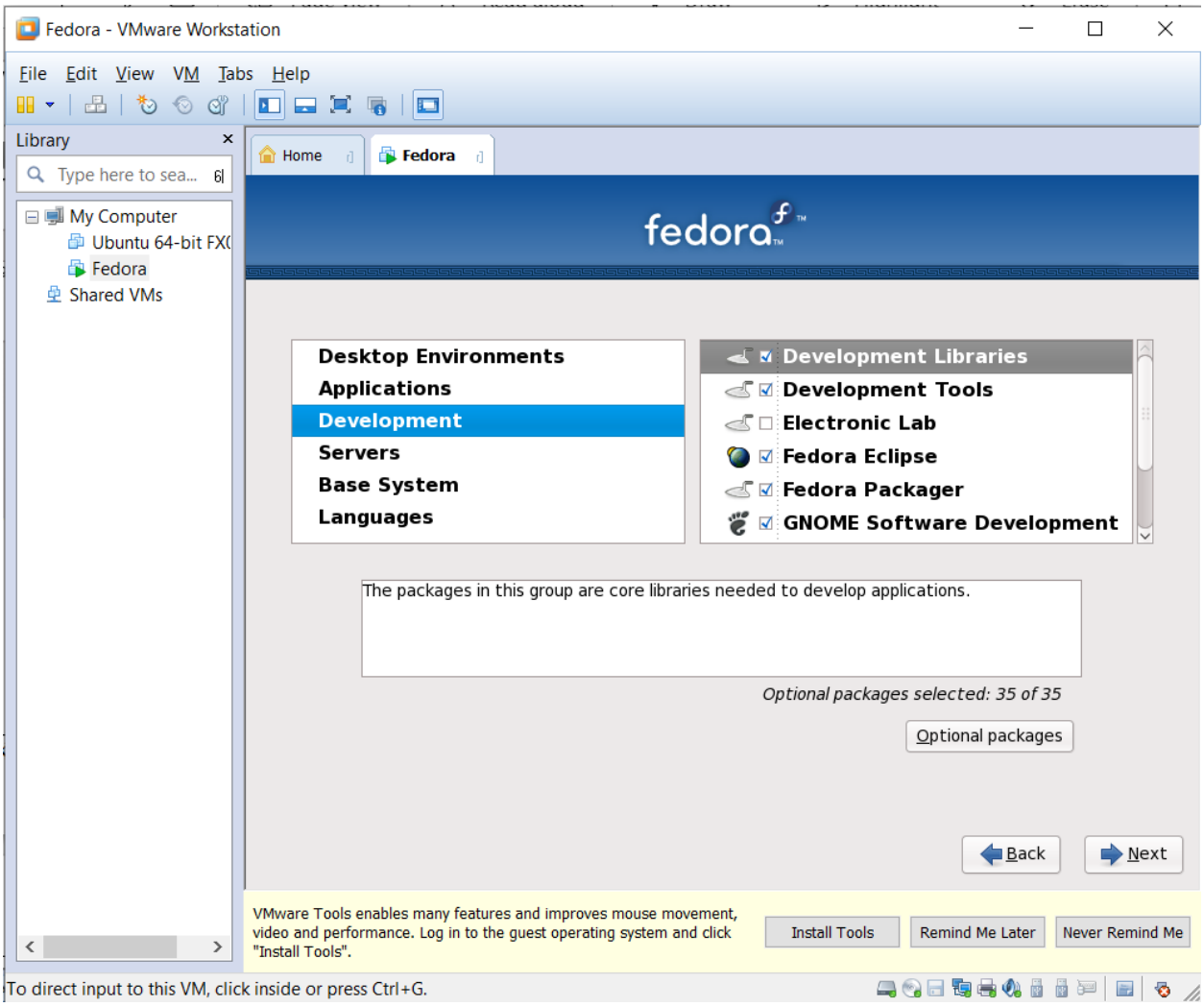


22. Choose each of component, then choose software you want to install.

Notes: must choose the package **mc*** in **System Tools**.




Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Desktop Environments
Applications
Development
Servers
Base System
Languages
Authoring and Publishing
Editors
Engineering and Scientific
Games and Entertainment
Graphical Internet
Graphics
This group includes packages for performing mathematical and scientific computations and plotting, as well as unit conversion.
Optional packages selected: 0 of 1
Optional packages
Back
Next
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
Remind Me Later
Never Remind Me
To direct input to this VM, click inside or press Ctrl+G.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File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Desktop Environments
Applications
Development
Servers
Base System
Languages
Development Libraries
Development Tools
Electronic Lab
Fedora Eclipse
Fedora Packager
GNOME Software Development
The packages in this group are core libraries needed to develop applications.
Optional packages selected: 35 of 35
Optional packages
Back
Next
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
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Never Remind Me
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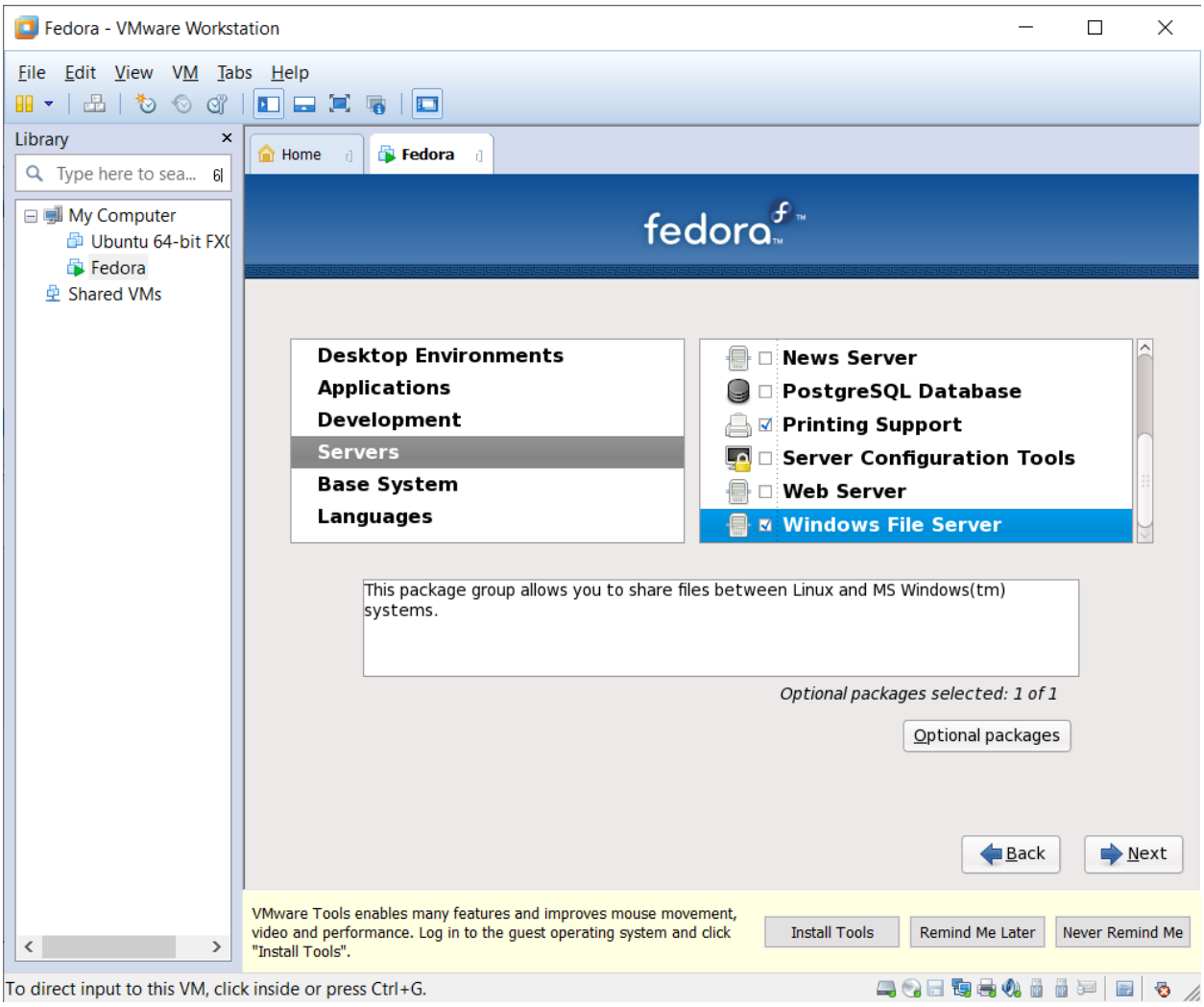
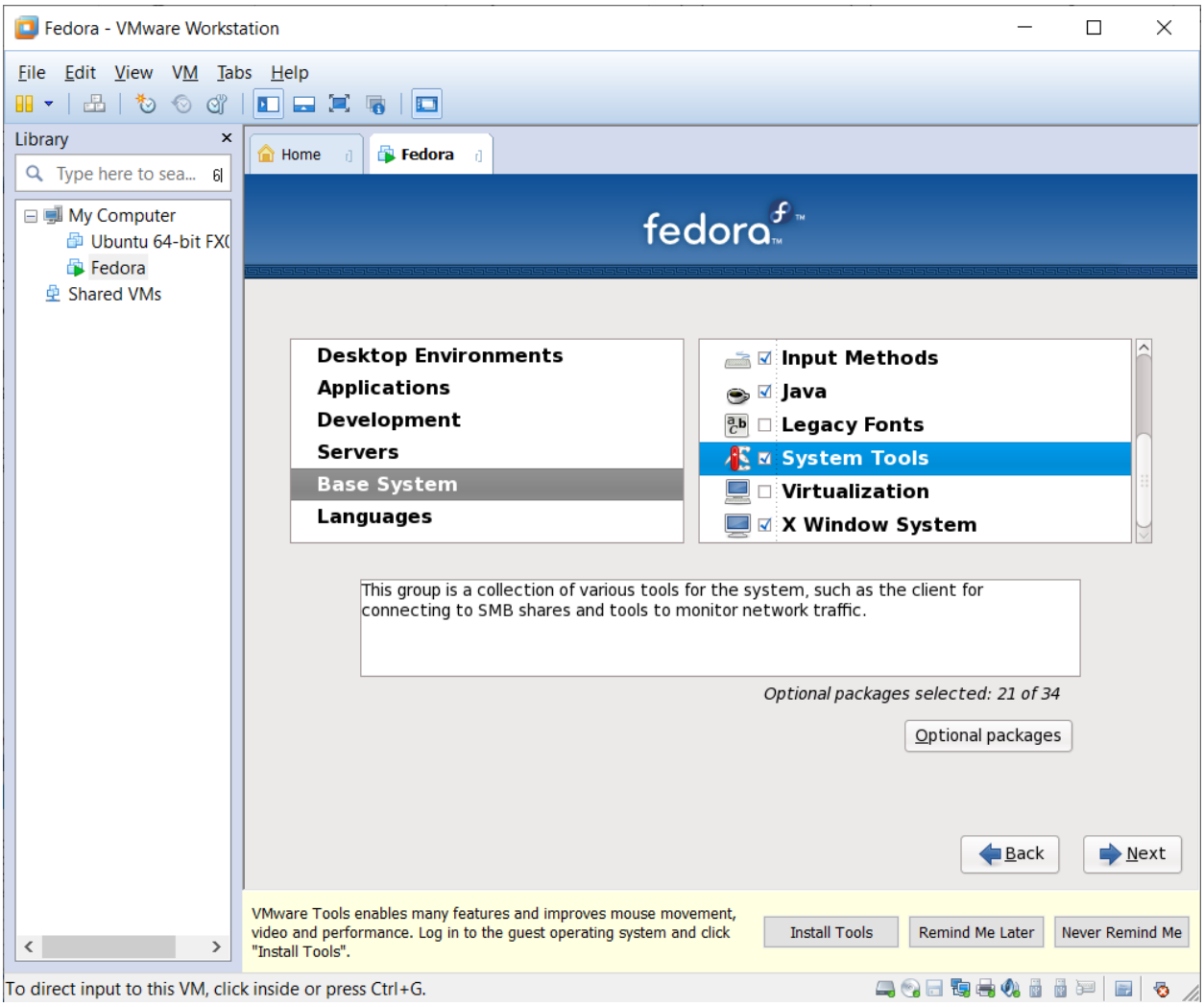
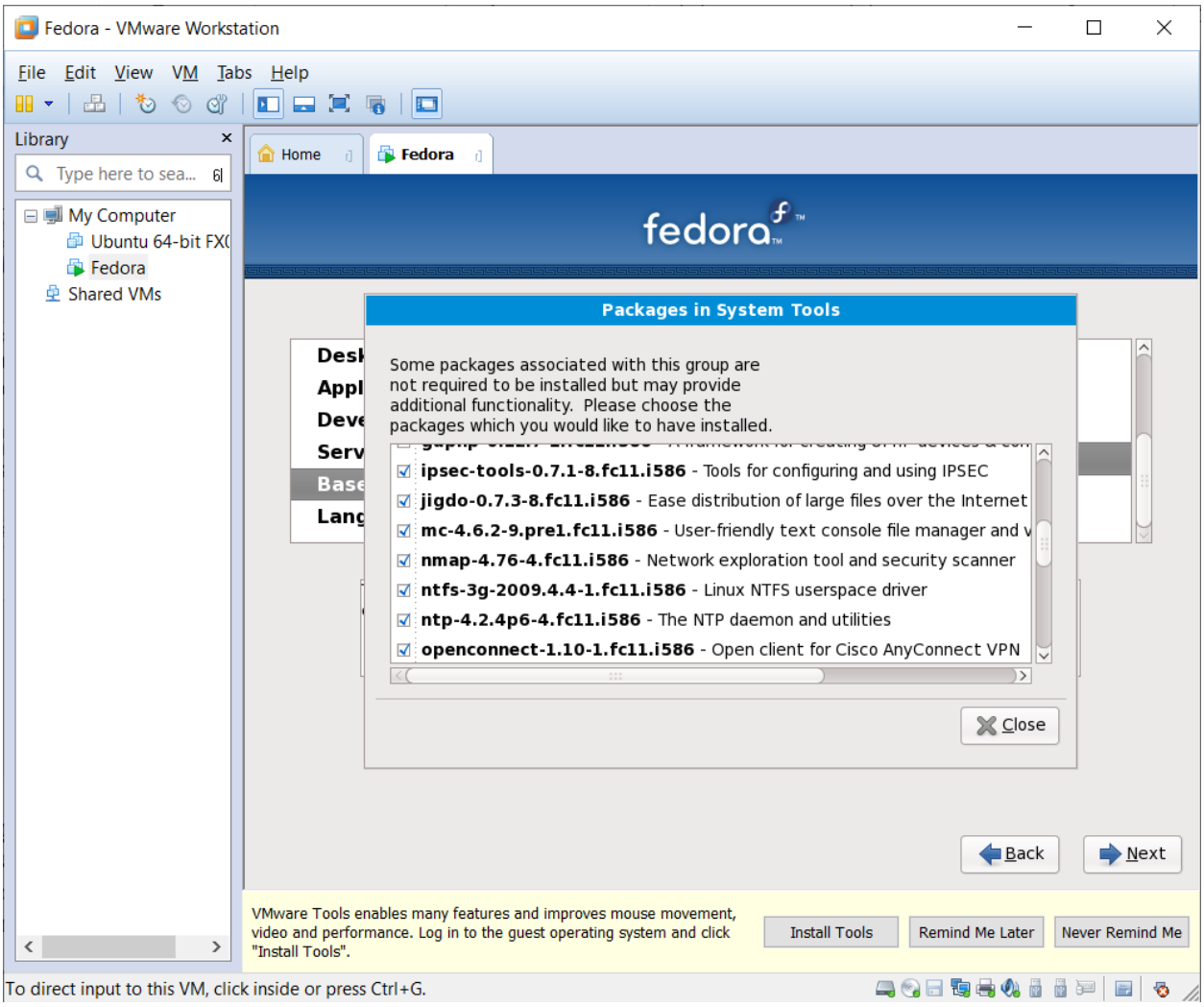
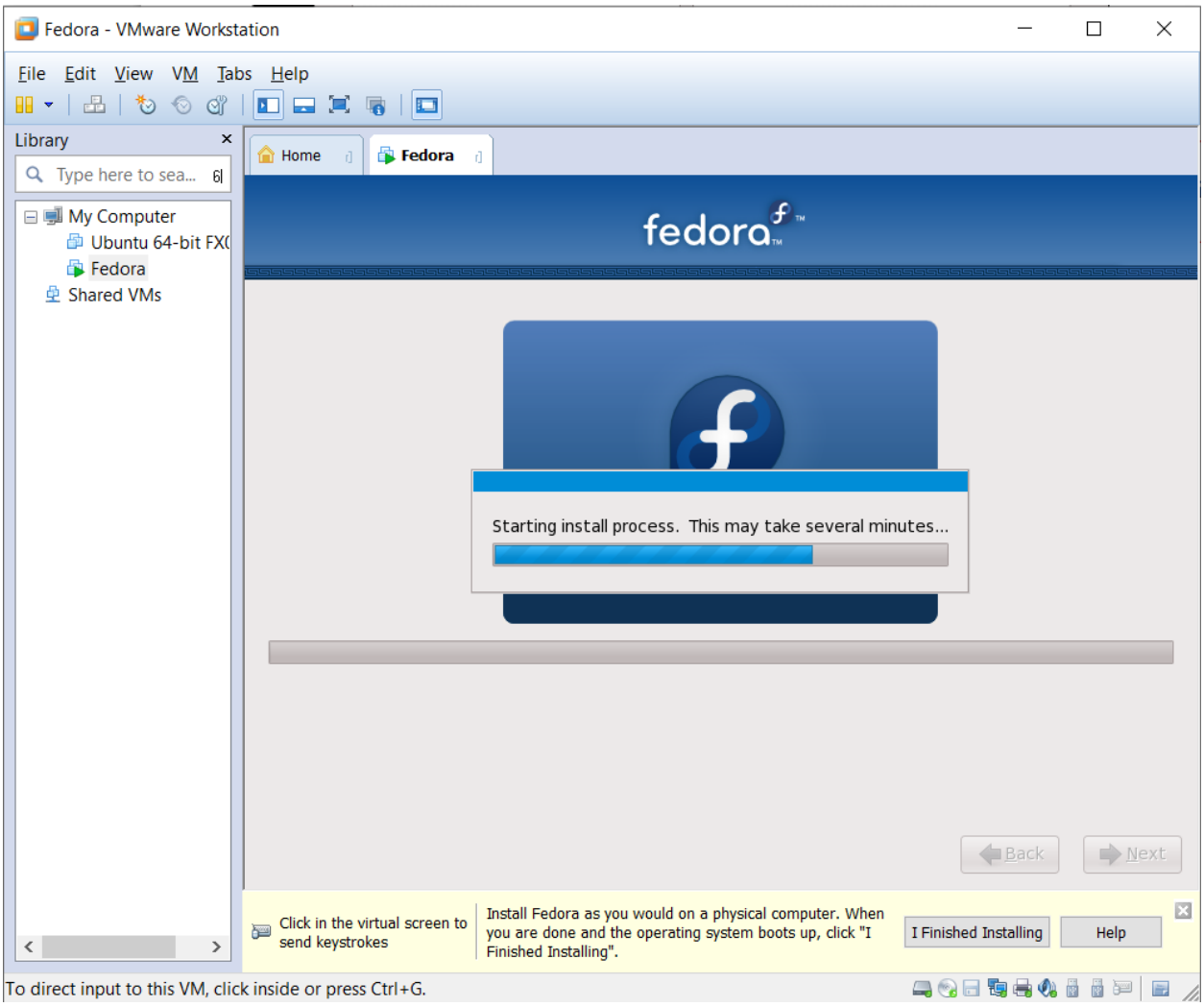
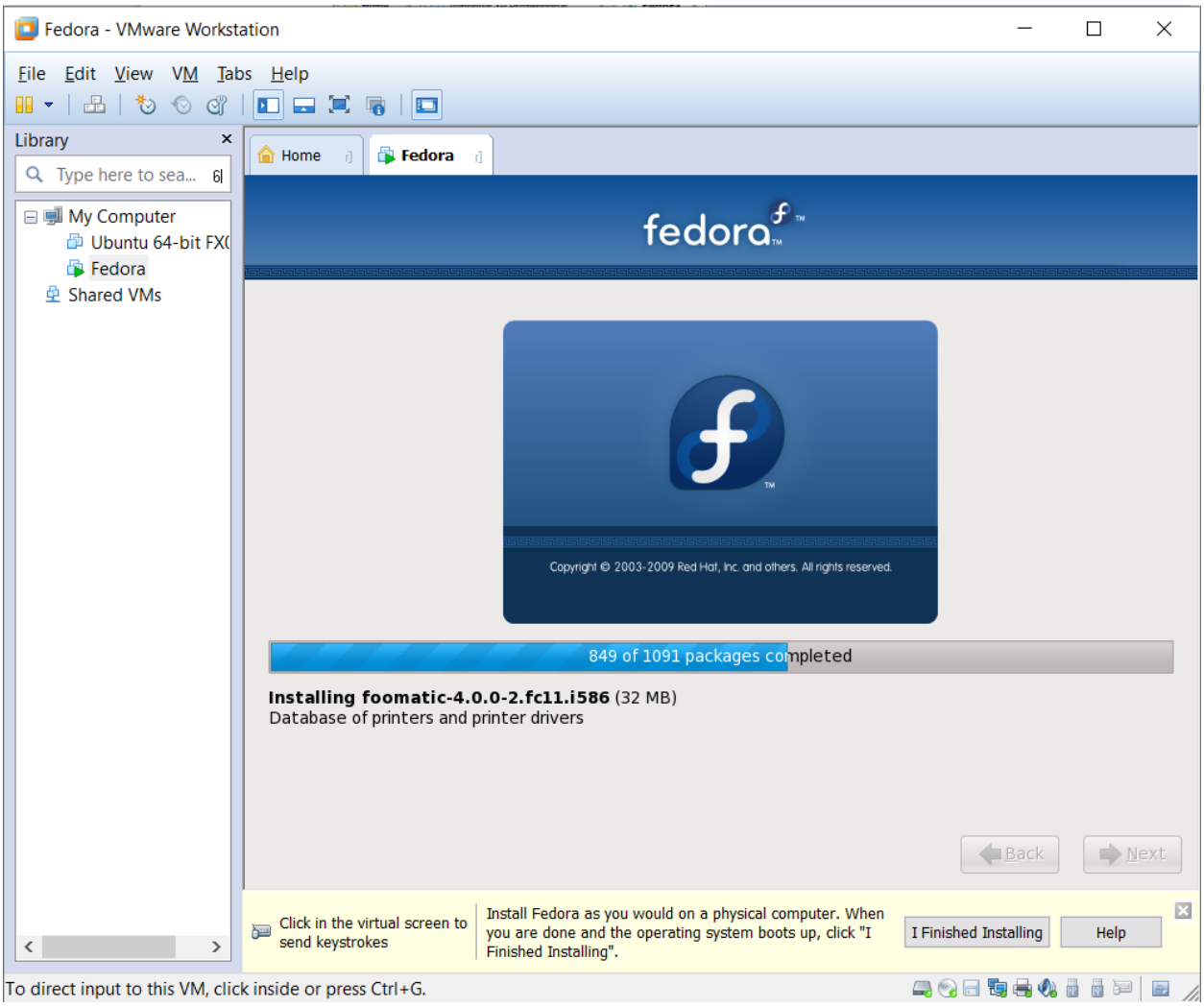

Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Desktop Environments
Applications
Development
Servers
Base System
Languages
News Server
PostgreSQL Database
Printing Support
Server Configuration Tools
Web Server
Windows File Server
This package group allows you to share files between Linux and MS Windows(tm) systems.
Optional packages selected: 1 of 1
Optional packages
Back
Next
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
Remind Me Later
Never Remind Me
To direct input to this VM, click inside or press Ctrl+G.

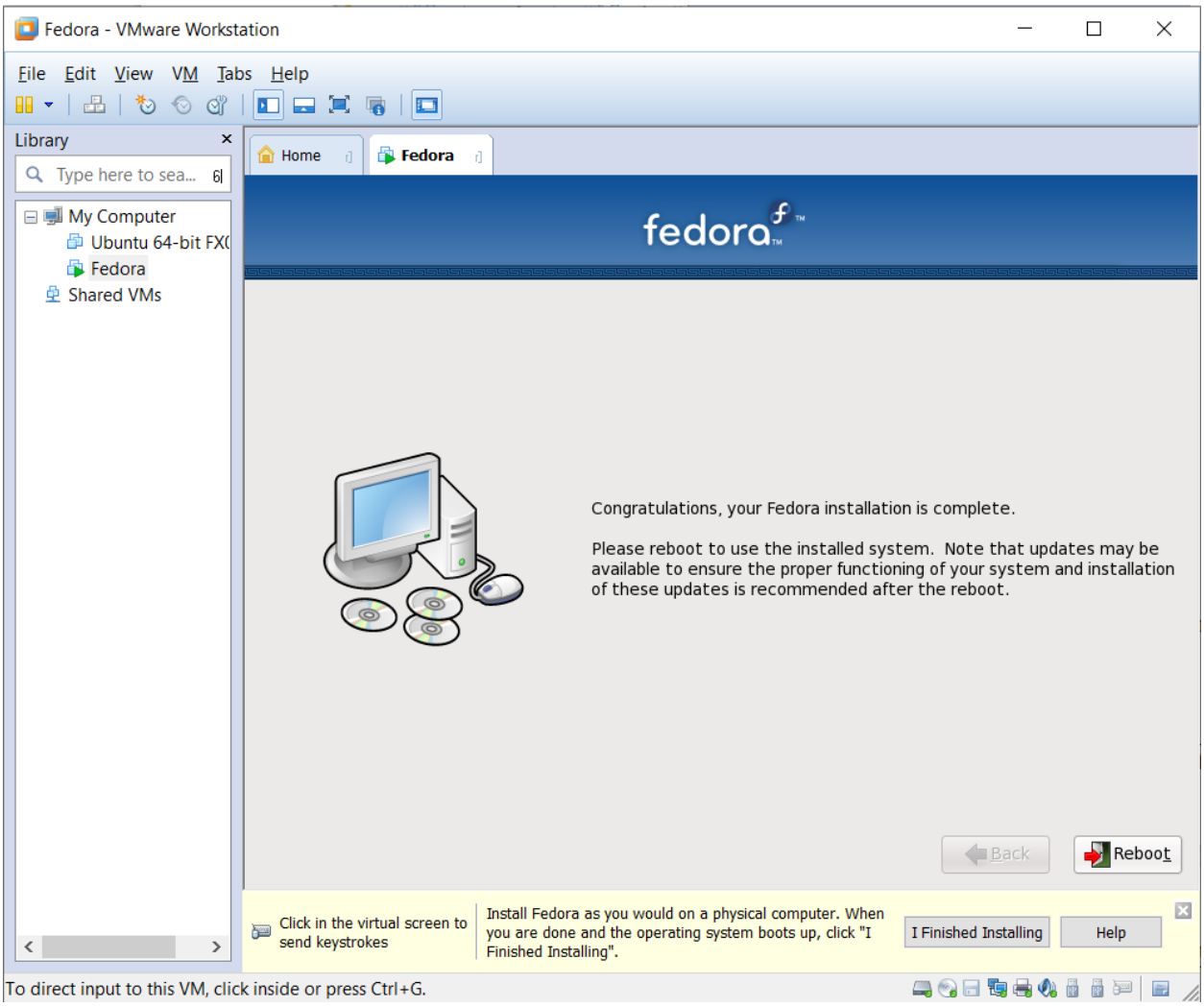

Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Desktop Environments
Applications
Development
Servers
Base System
Languages
Input Methods
Java
Legacy Fonts
System Tools
Virtualization
X Window System
This group is a collection of various tools for the system, such as the client for connecting to SMB shares and tools to monitor network traffic.
Optional packages selected: 21 of 34
Optional packages
Back
Next
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
Remind Me Later
Never Remind Me
To direct input to this VM, click inside or press Ctrl+G.


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Packages in System Tools
Some packages associated with this group are not required to be installed but may provide additional functionality. Please choose the packages which you would like to have installed.
ipsec-tools-0.7.1-8.fc11.i586 - Tools for configuring and using IPSEC
jigdo-0.7.3-8.fc11.i586 - Ease distribution of large files over the Internet
mc-4.6.2-9.pre1.fc11.i586 - User-friendly text console file manager and v
nmap-4.76-4.fc11.i586 - Network exploration tool and security scanner
ntfs-3g-2009.4.4-1.fc11.i586 - Linux NTFS userspace driver
ntp-4.2.4p6-4.fc11.i586 - The NTP daemon and utilities
openconnect-1.10-1.fc11.i586 - Open client for Cisco AnyConnect VPN
Close
Back
Next
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
Remind Me Later
Never Remind Me
To direct input to this VM, click inside or press Ctrl+G.


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
fedora
Starting install process. This may take several minutes...
Back
Next
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

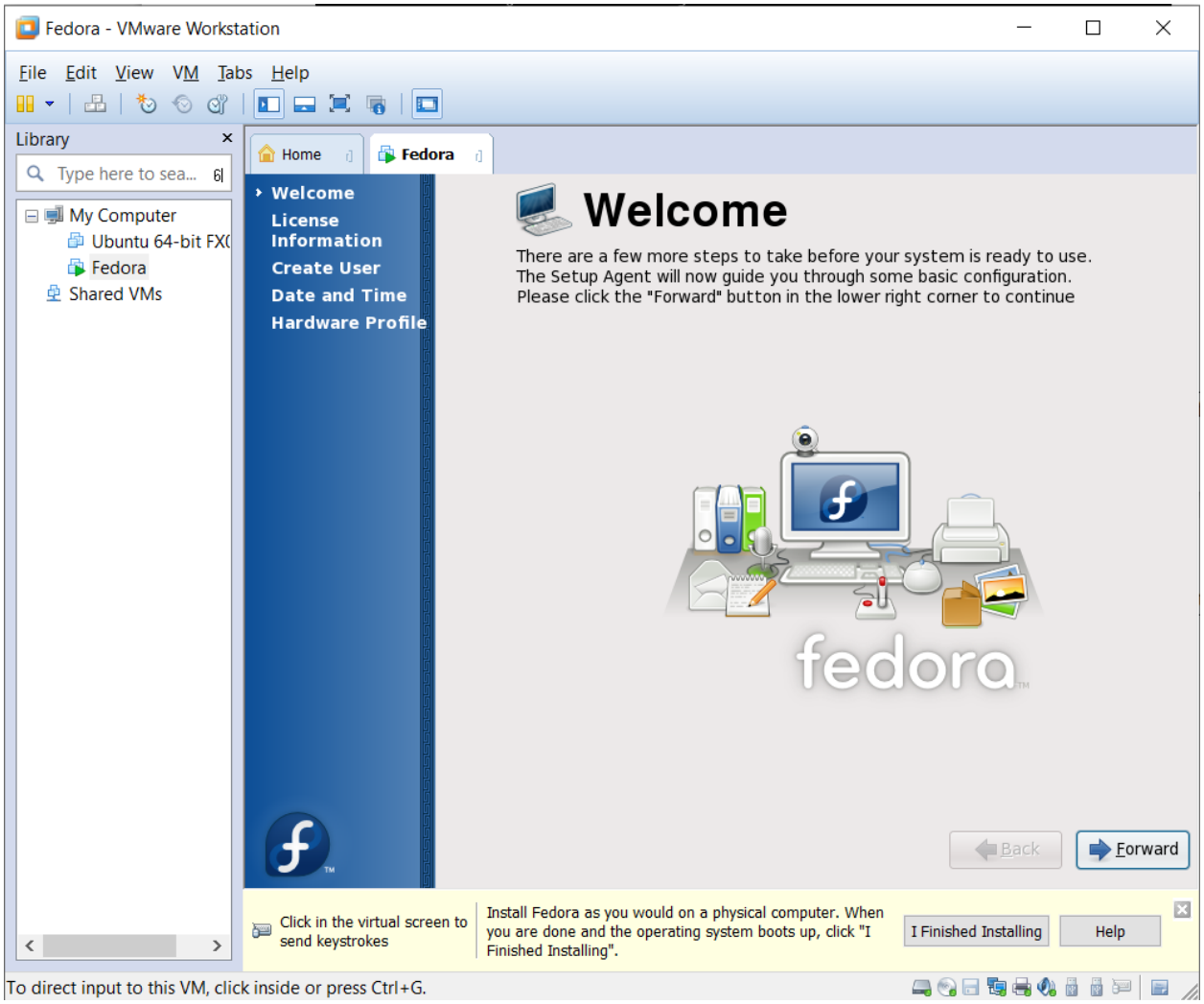


23. Click **Reboot** to finish.



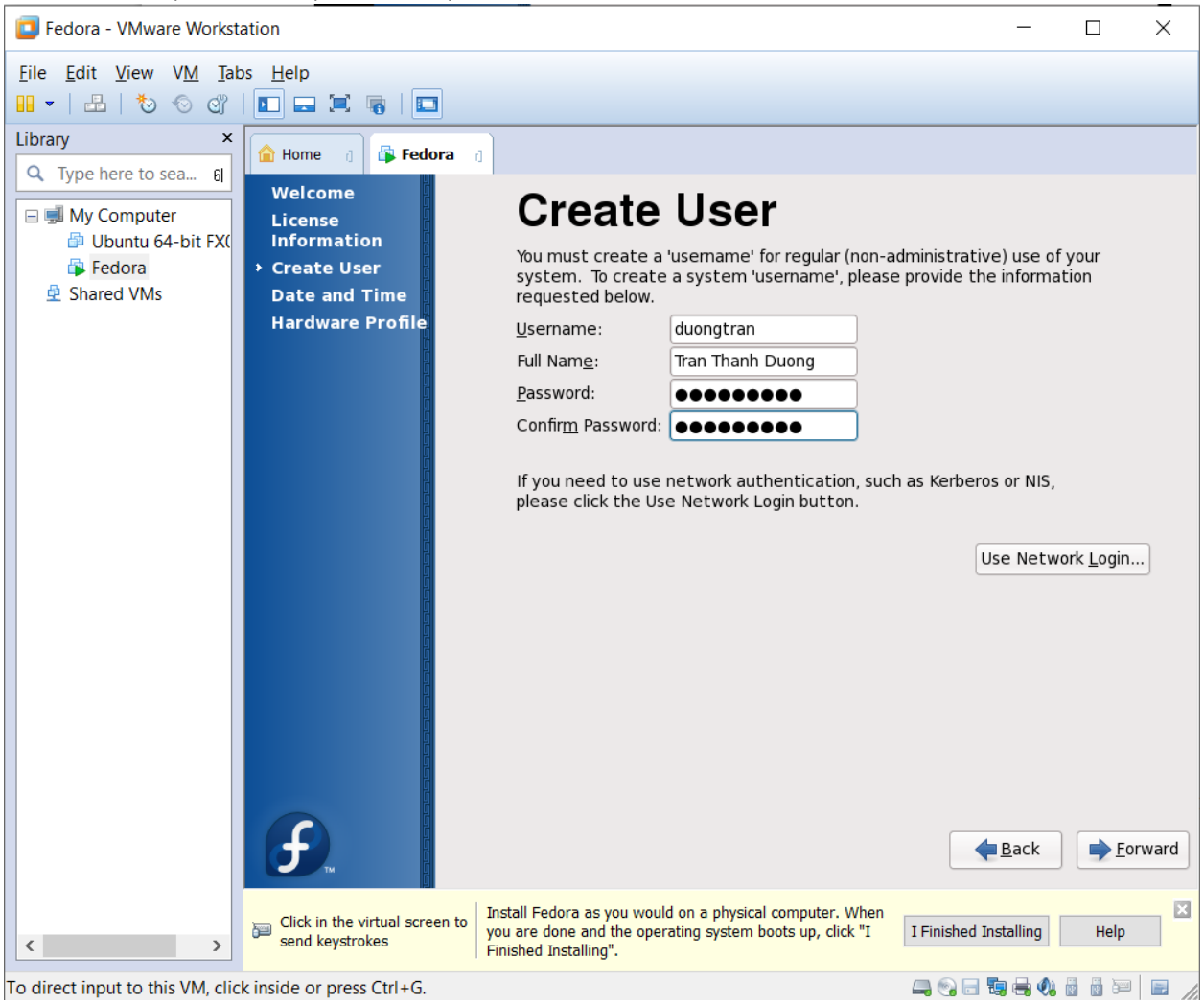
How to use the Fedora OS

1. Click **Forward**.

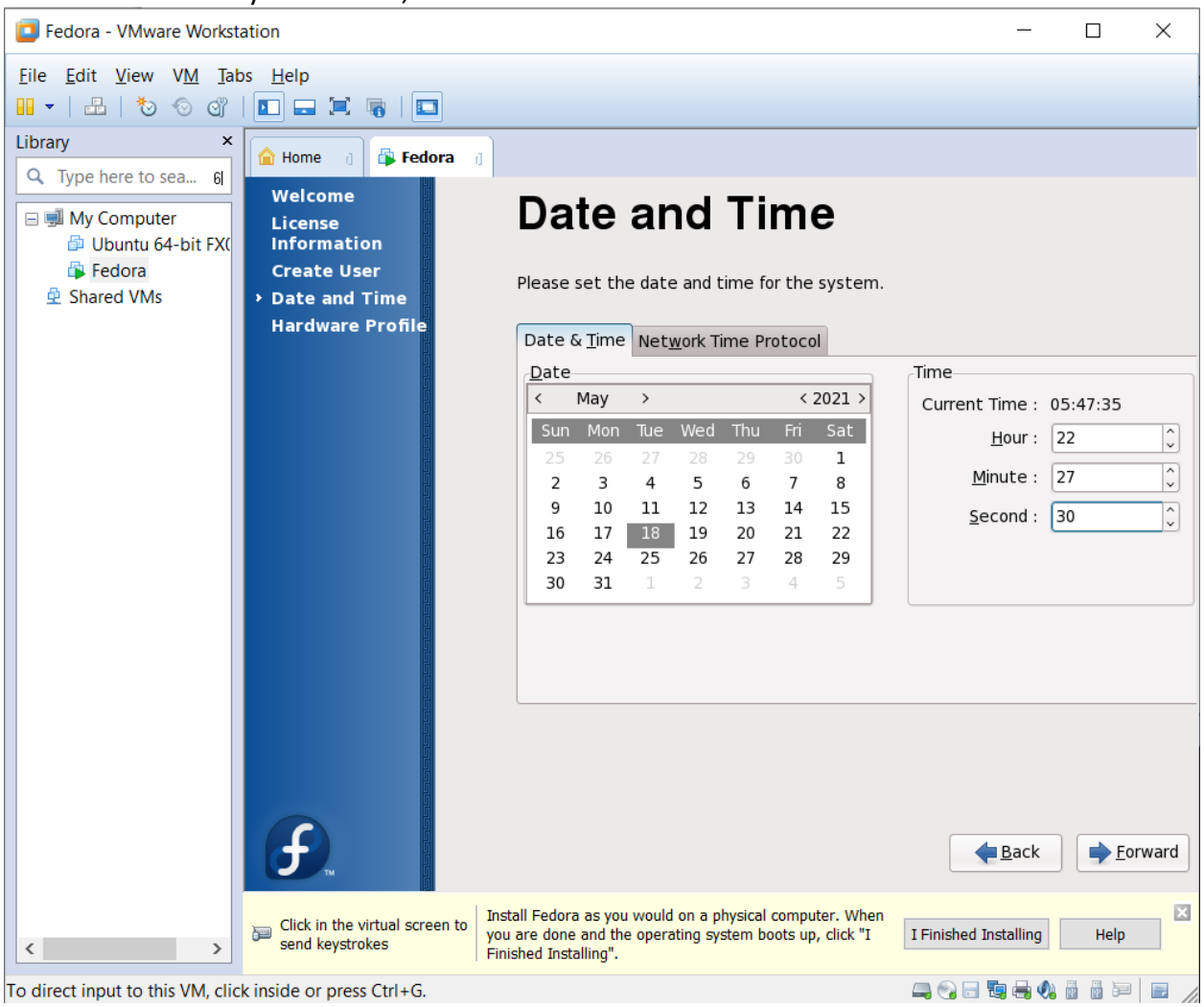


2. Click **Forward** again.

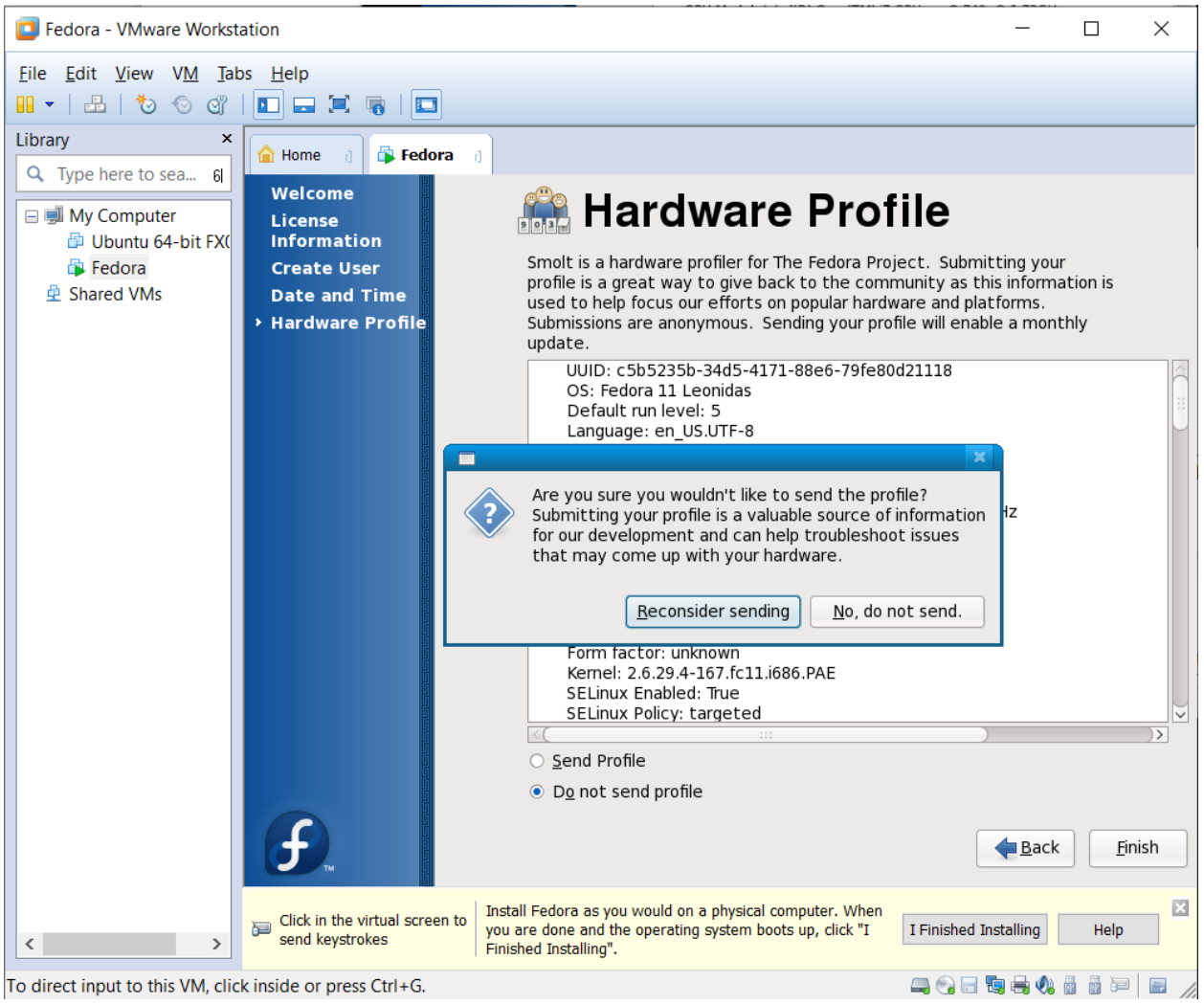
3. Fill Username, Full Name, Password, Confirm Password. Then click **Forward**.



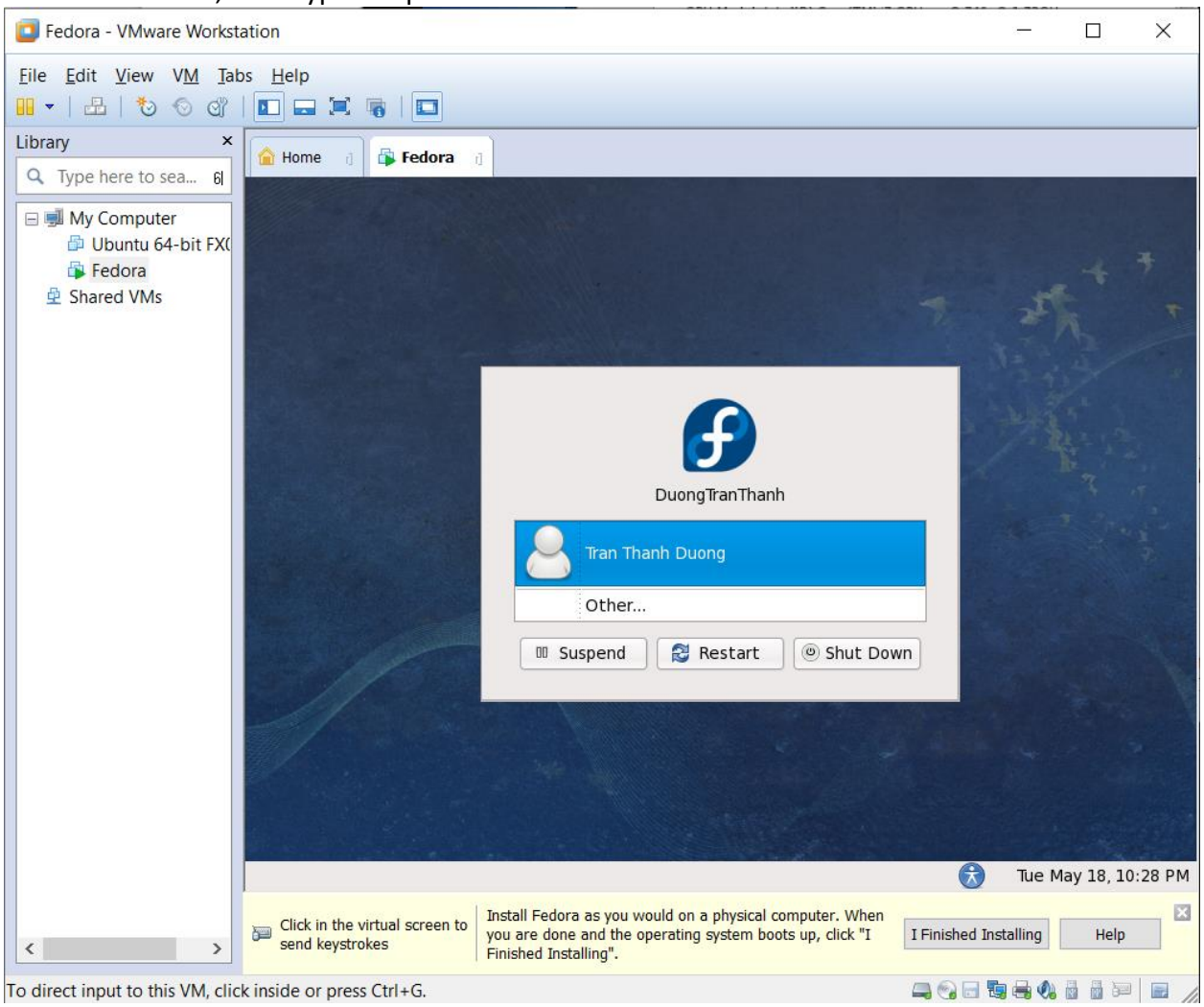
4. Choose the correctly time. Then, click **Forward**.

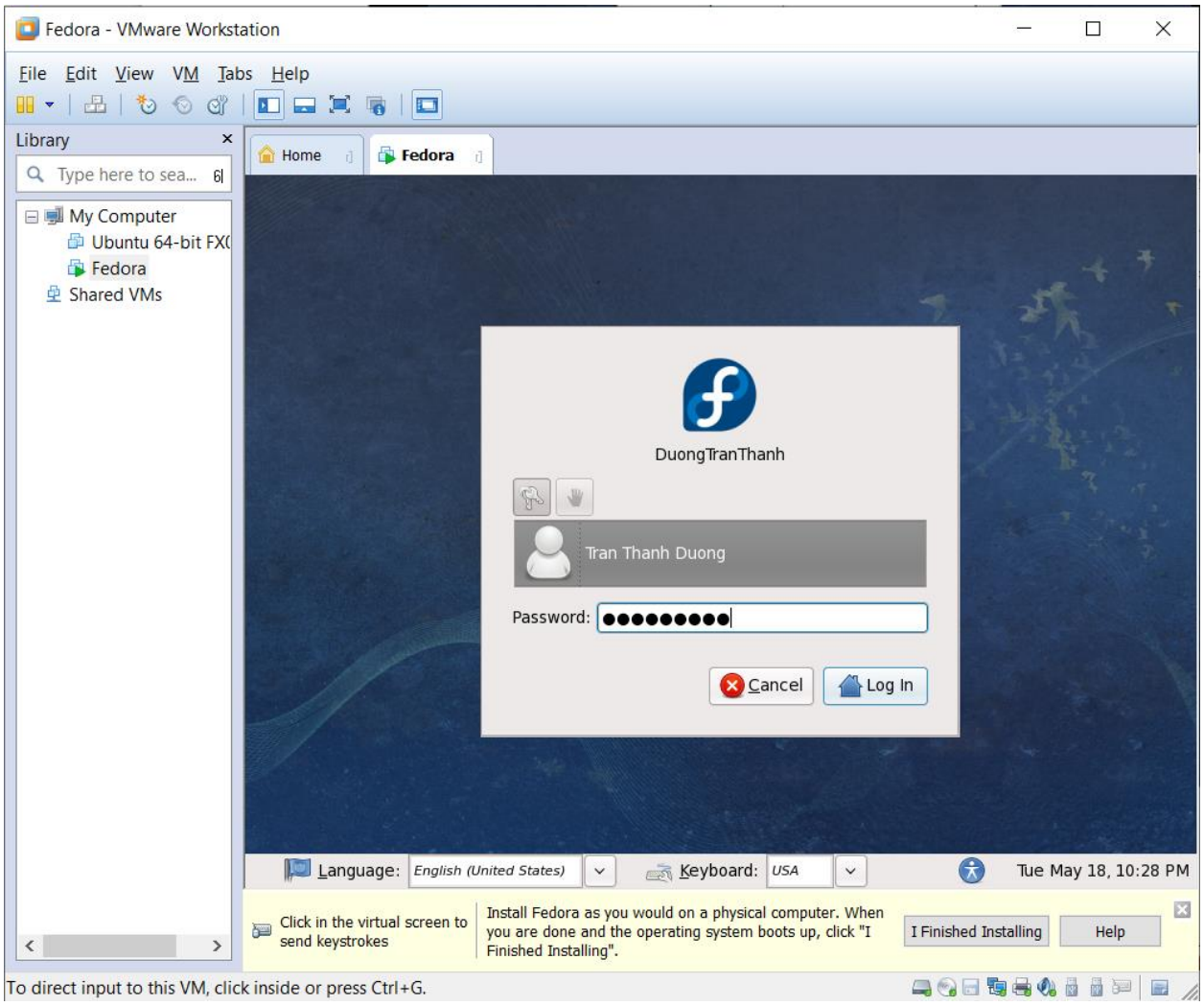


5. Click **Finish**

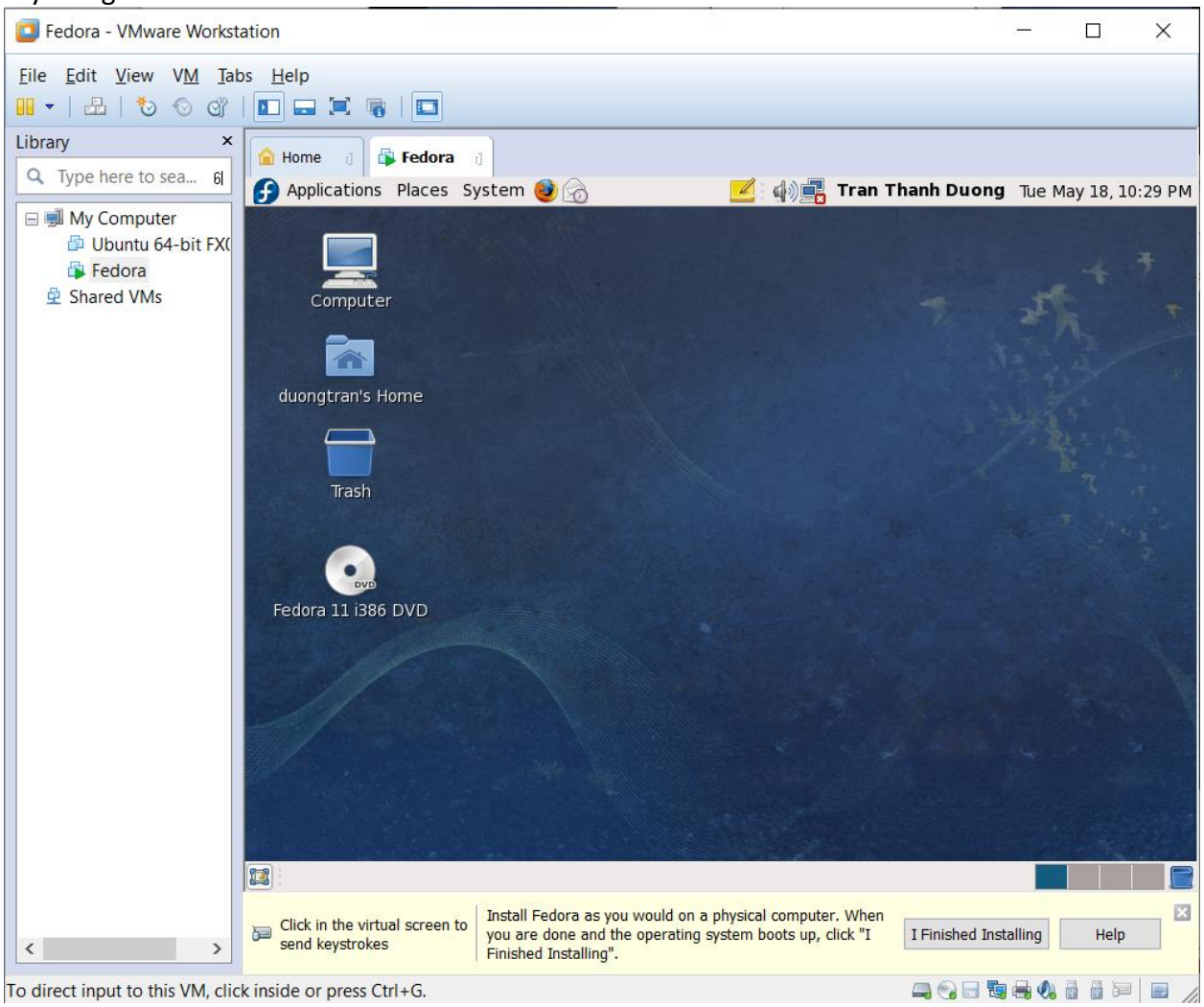

Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
Welcome
License Information
Create User
Date and Time
Hardware Profile
Hardware Profile
Smolt is a hardware profiler for The Fedora Project. Submitting your profile is a great way to give back to the community as this information is used to help focus our efforts on popular hardware and platforms. Submissions are anonymous. Sending your profile will enable a monthly update.
UUID: c5b5235b-34d5-4171-88e6-79fe80d21118
OS: Fedora 11 Leonidas
Default run level: 5
Language: en_US.UTF-8
Are you sure you wouldn't like to send the profile? Submitting your profile is a valuable source of information for our development and can help troubleshoot issues that may come up with your hardware.
Reconsider sending
No, do not send.
Form factor: unknown
Kernel: 2.6.29.4-167.fc11.i686.PAE
SELinux Enabled: True
SELinux Policy: targeted
Send Profile
Do not send profile
Back
Finish
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

6. Click the account, then type the password.




Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX
Fedora
Shared VMs
Home
Fedora
DuongTranThanh
Tran Thanh Duong
Password:
Cancel
Log In
Language: English (United States)
Keyboard: USA
Tue May 18, 10:28 PM
Click in the virtual screen to send keystrokes
Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".
I Finished Installing
Help
To direct input to this VM, click inside or press Ctrl+G.

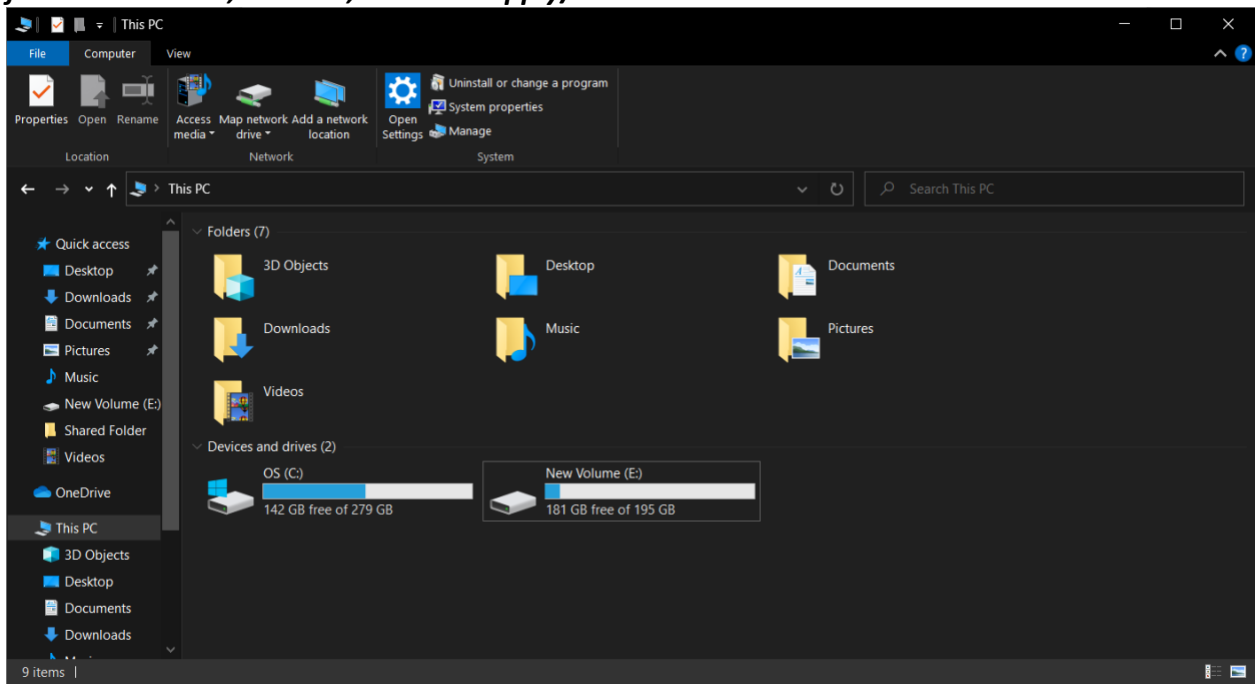
7. Try using it.

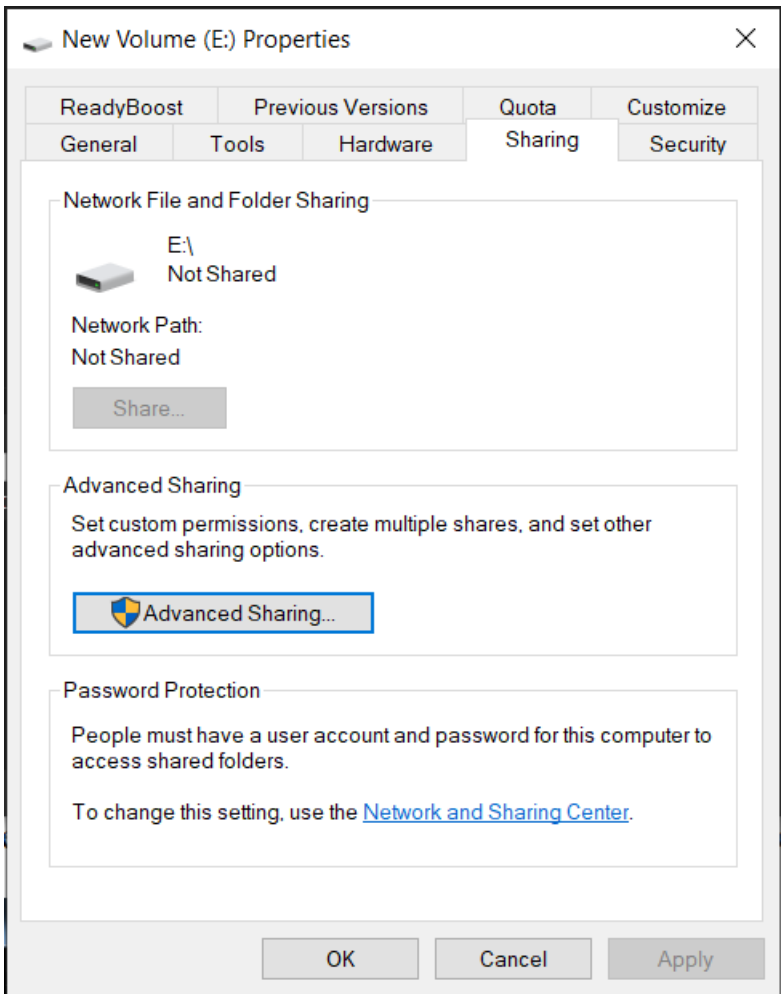


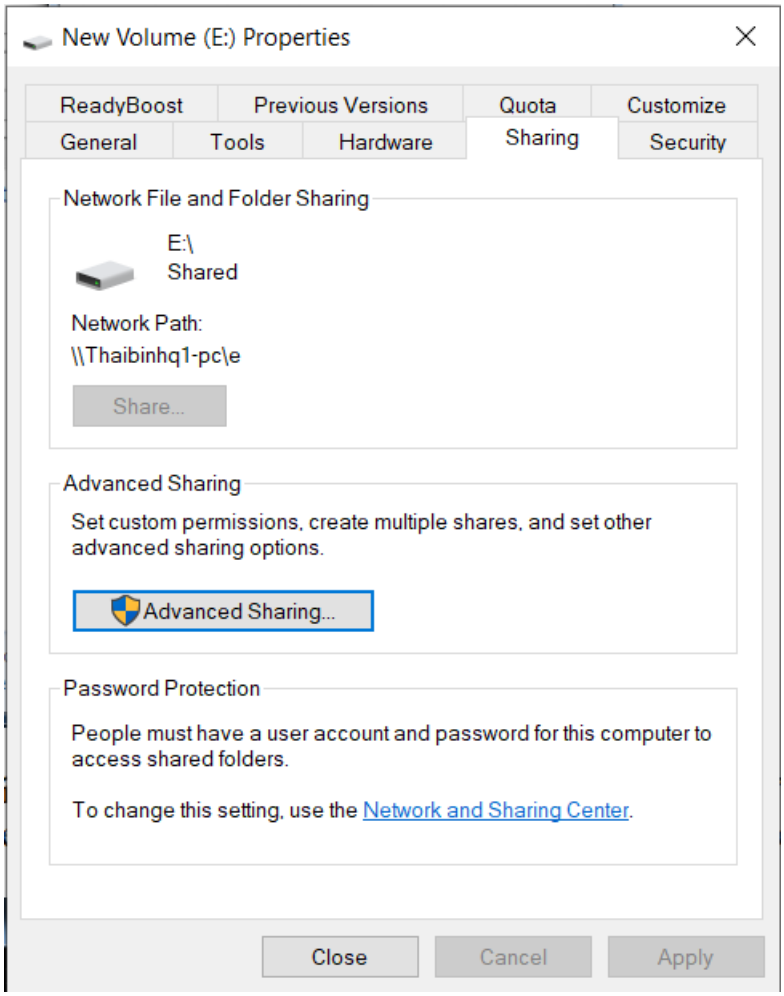
Learning to use the mc, terminal in Fedora OS, and setting up the addition program, networking for OS

Connect to real machine to access the shared hark disk

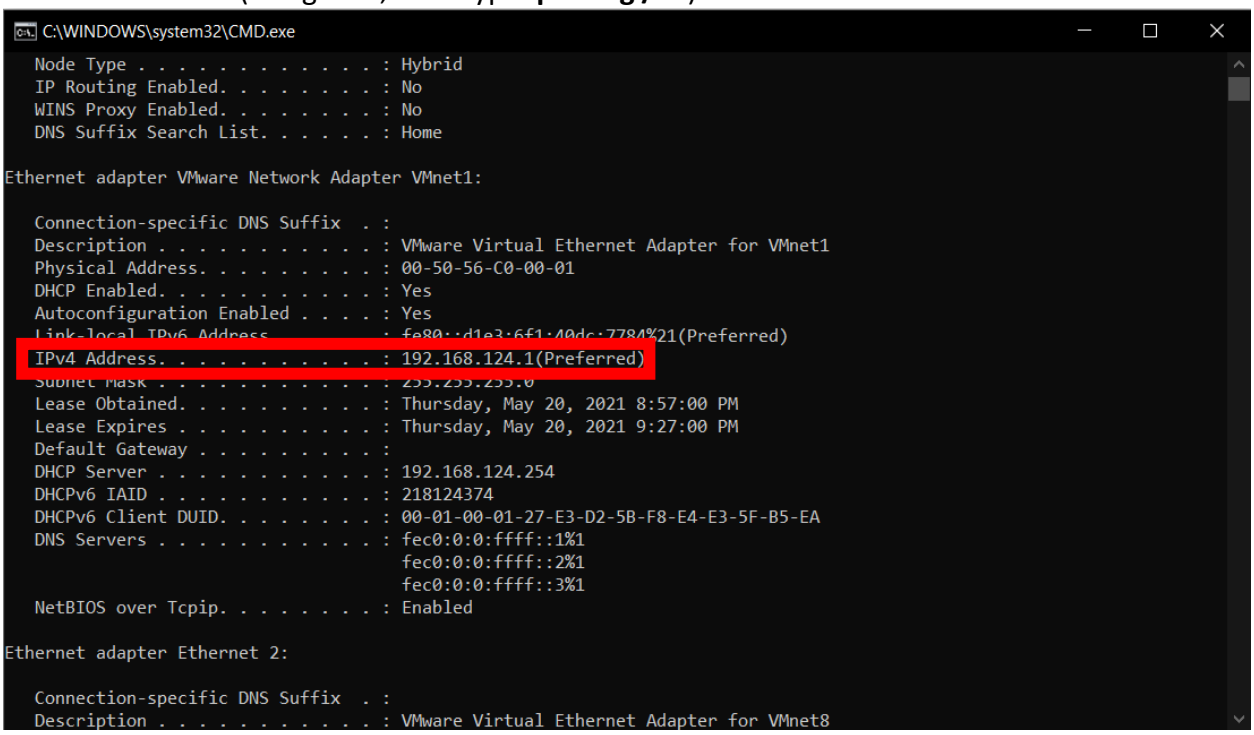
1. In Windows:
    - Set password using ***Administrative Tools/ Computer Management/ Choose Local Users and Groups/ Choose Users/ Right click on Administrator, then choose Set Password ...***
    - Create the shared disk or folder ***(right click on disk or folder/ Click Properties/ Choose the Sharing tab/ Click Advanced Sharing Button/ check the "Share this folder" checkbox, click OK, and click Apply/ OK***




New Volume (E:) Properties
ReadyBoost
Previous Versions
Quota
Customize
General
Tools
Hardware
Sharing
Security
Network File and Folder Sharing
E:\
Not Shared
Network Path:
Not Shared
Share...
Advanced Sharing
Set custom permissions, create multiple shares, and set other advanced sharing options.
Advanced Sharing...
Password Protection
People must have a user account and password for this computer to access shared folders.
To change this setting, use the Network and Sharing Center.
OK
Cancel
Apply

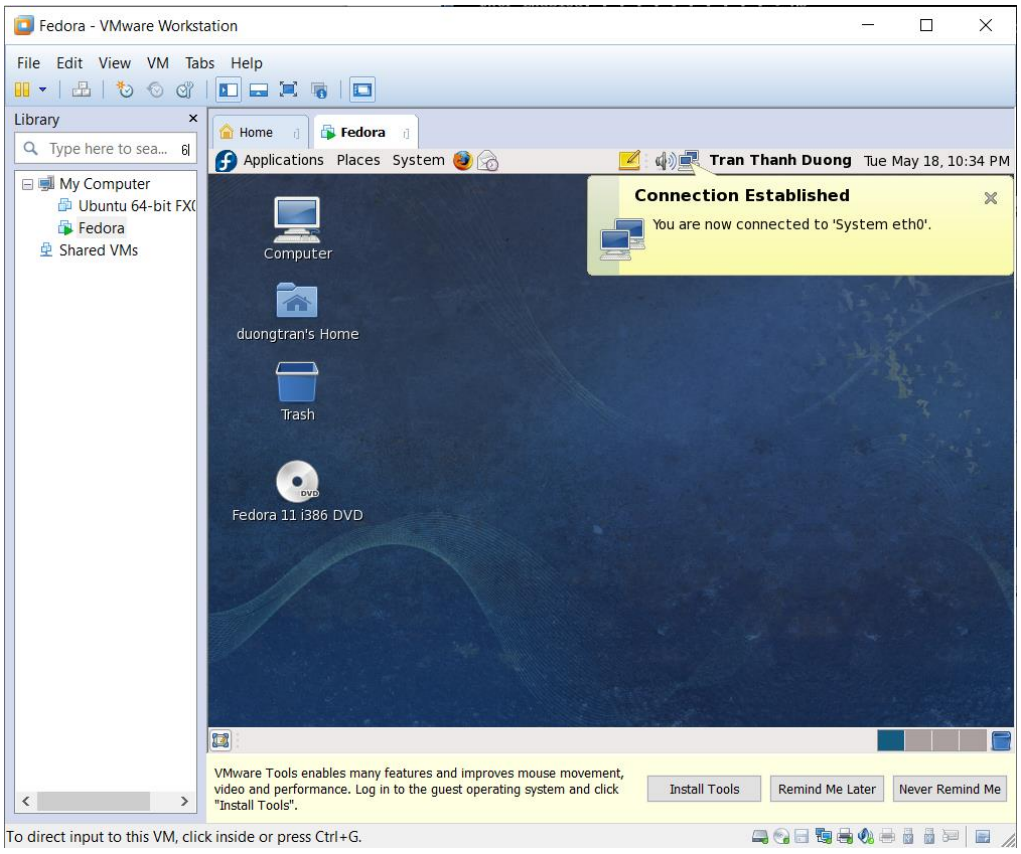

New Volume (E:) Properties
ReadyBoost
Previous Versions
Quota
Customize
General
Tools
Hardware
Sharing
Security
Network File and Folder Sharing
E:\
Shared
Network Path:
\\Thaibinhq1-pc\e
Share...
Advanced Sharing
Set custom permissions, create multiple shares, and set other advanced sharing options.
Advanced Sharing...
Password Protection
People must have a user account and password for this computer to access shared folders.
To change this setting, use the Network and Sharing Center.
Close
Cancel
Apply

2. Get the IP config of the VMnet1 that is used to type the "Server" item of **"Connect to Server"** in Fedora (using cmd, then type **ipconfig /all**)

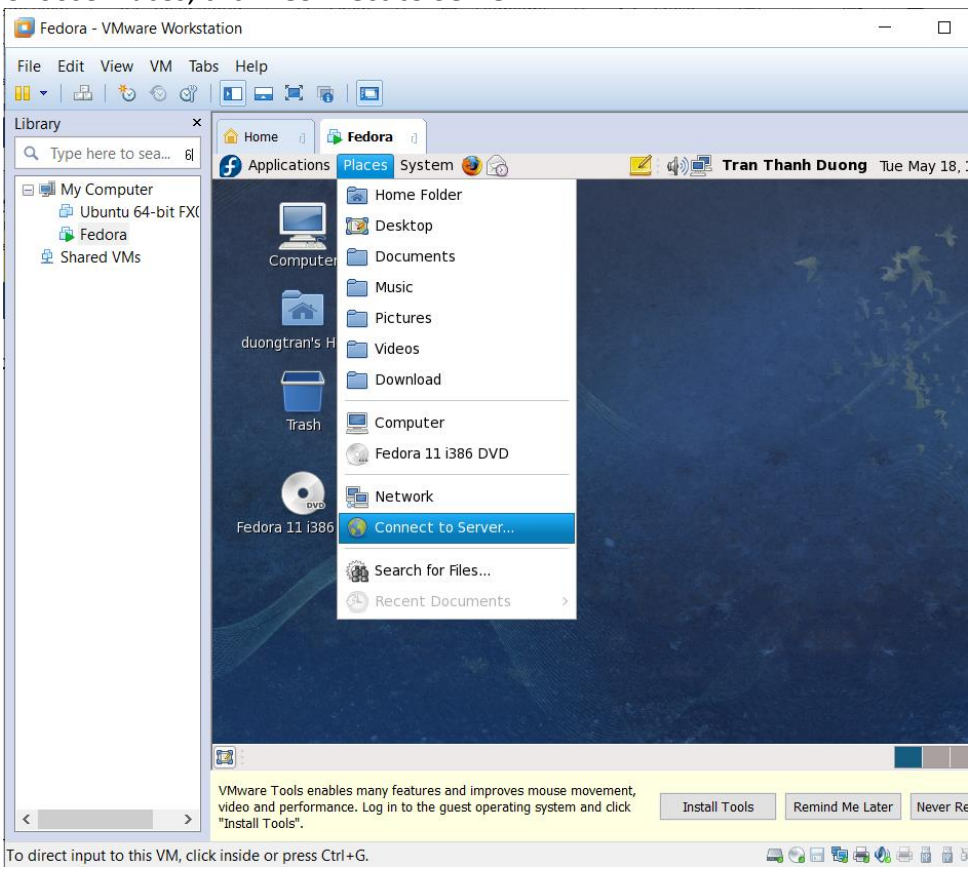


3. In Fedora, access the shared disk or folder as following:

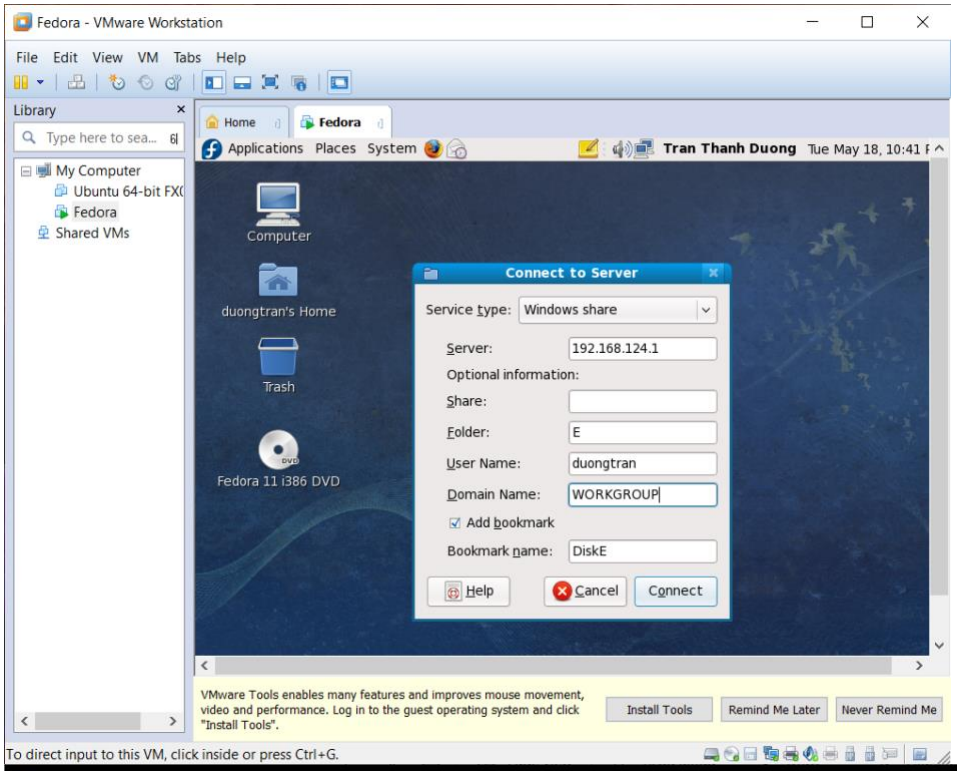
- Connect or active the connection.

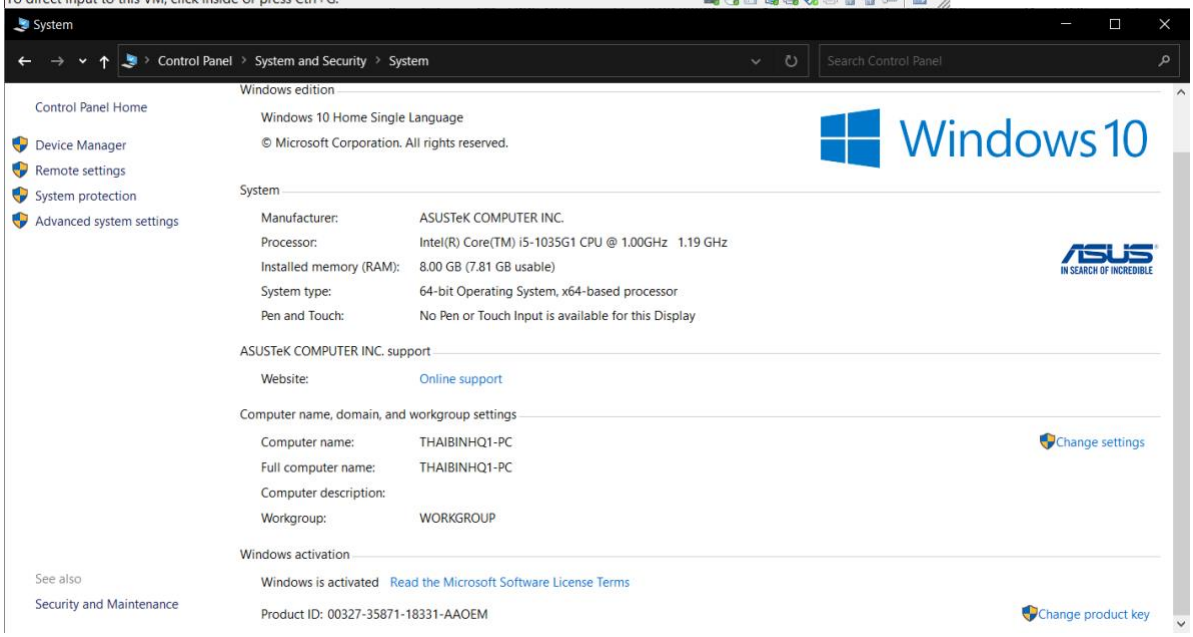


- Choose Places, click **“Connect to Server”**

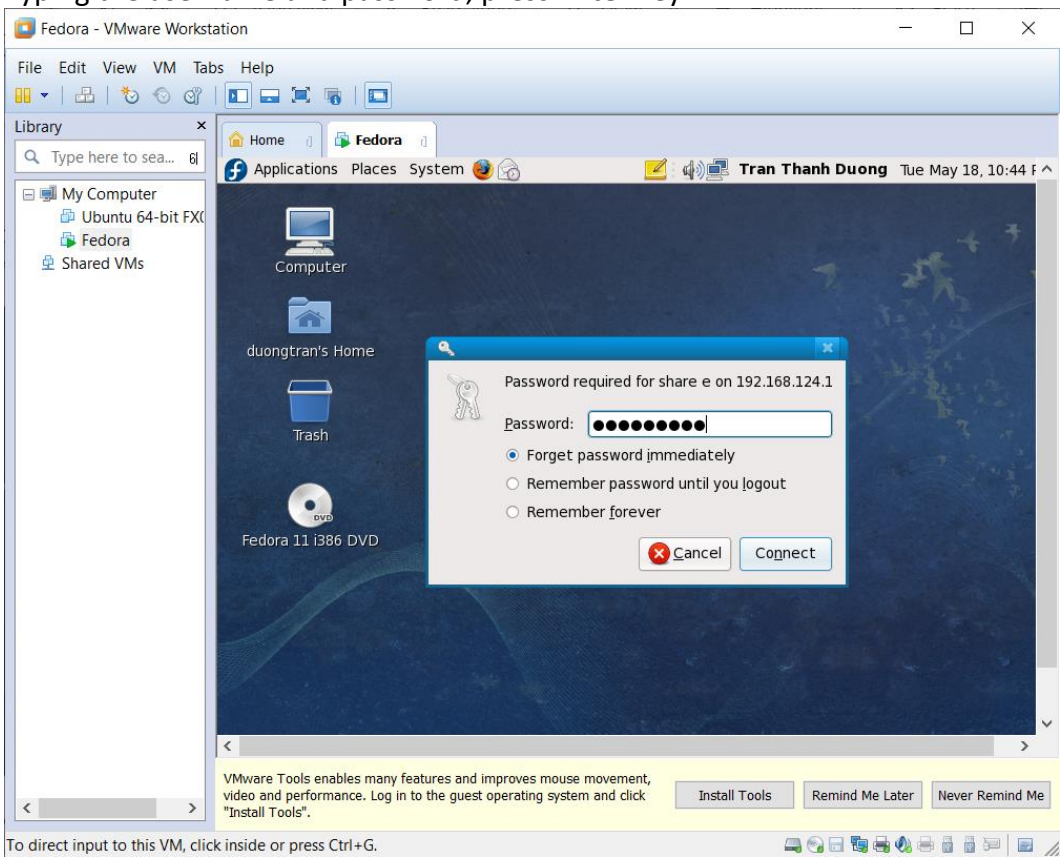


- Click **Connect**.

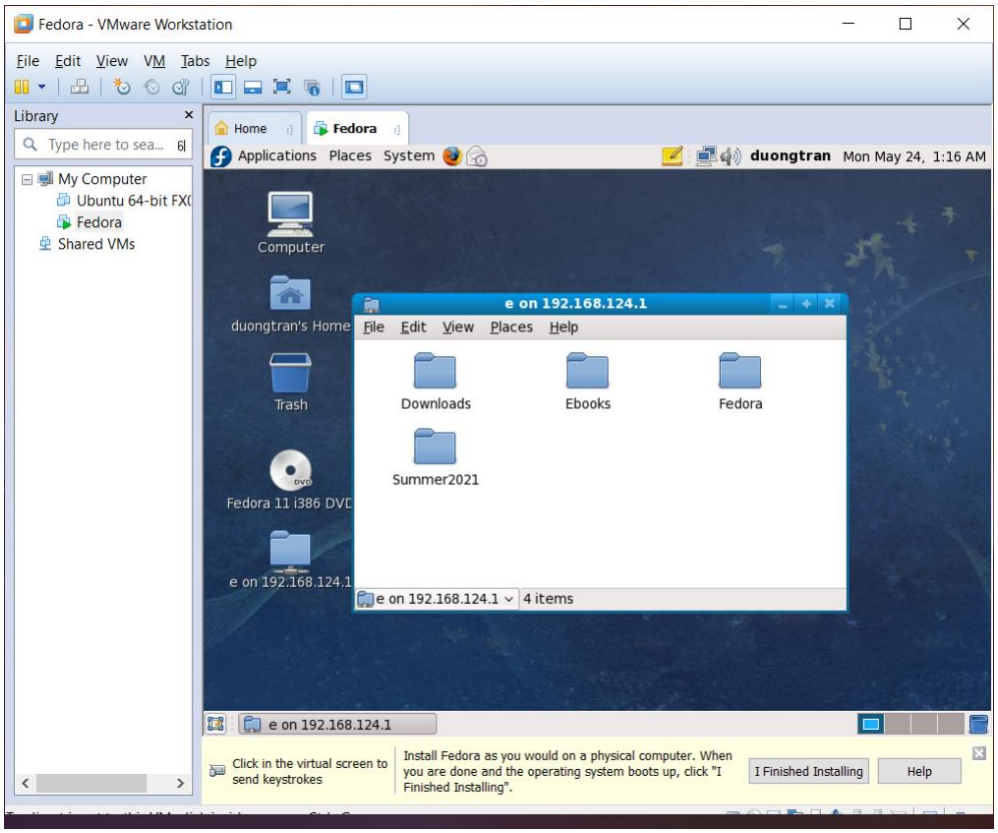




- Typing the username and password, press **Enter** key.



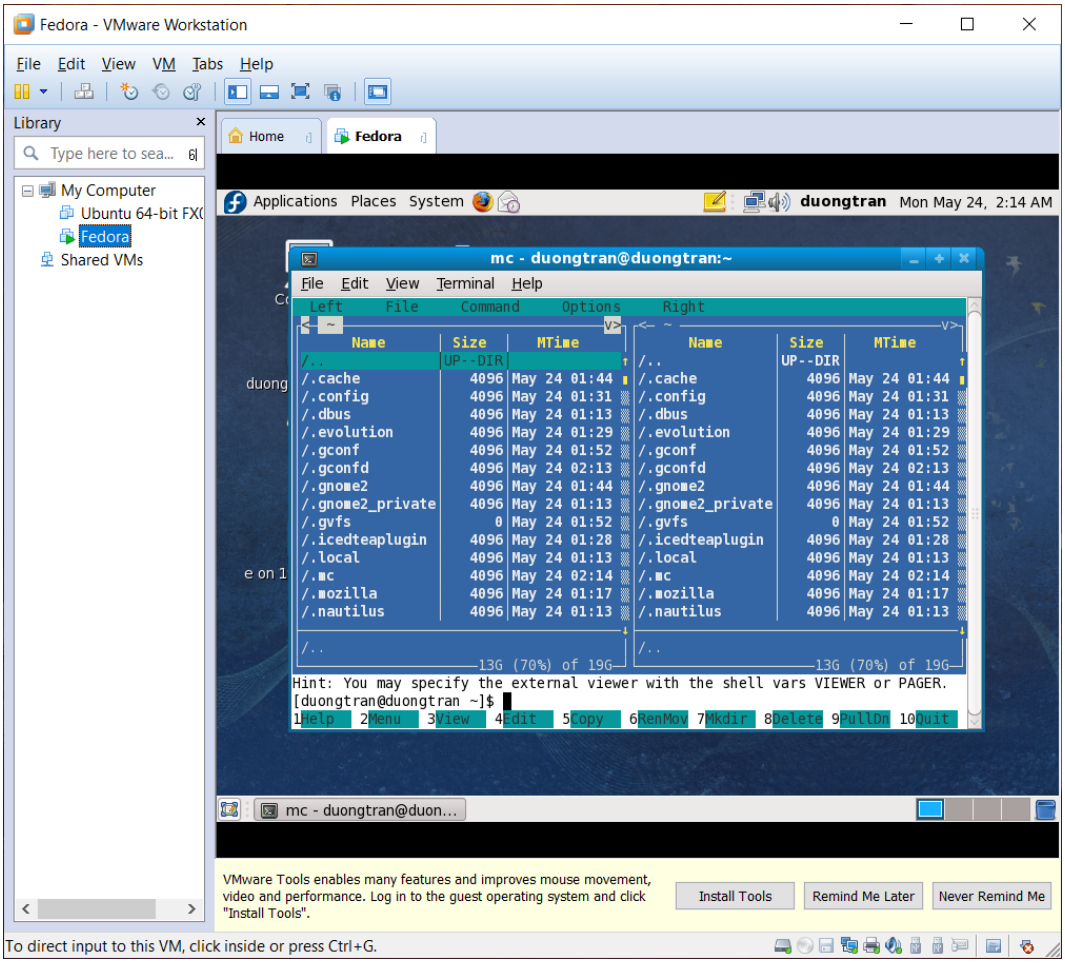
- The windows shared object is appeared.



Using the command prompt of Fedora

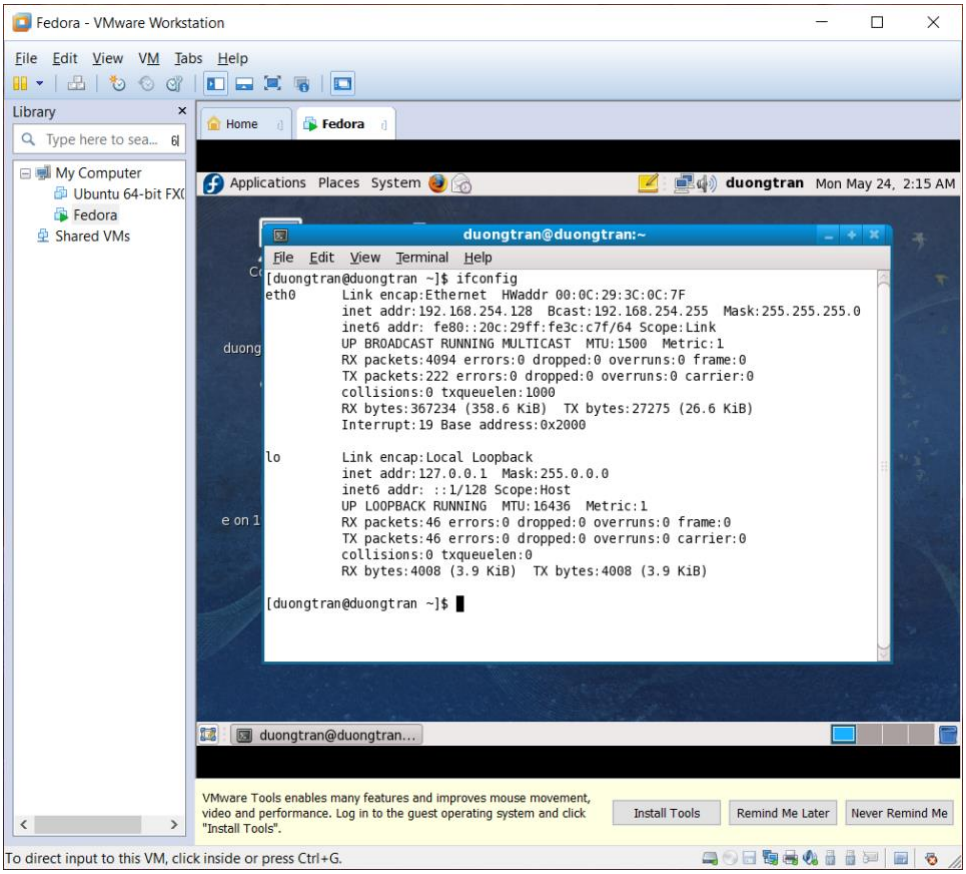
1. Choose the **"Application"** menu on the taskbar.
2. Choose **"System Tools",** click the Terminal items.
3. Using some command as:

- mc



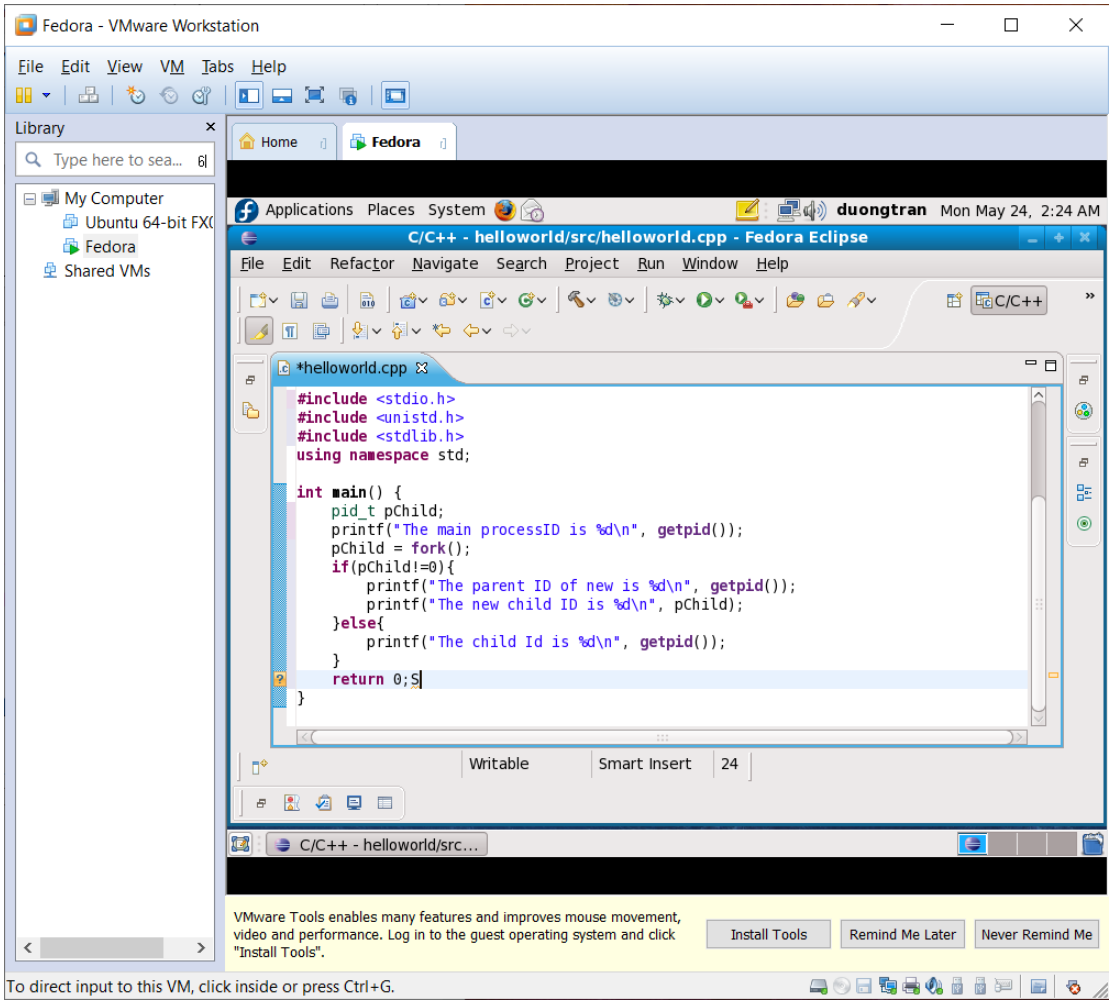
F7 Function: using to create a new directory.

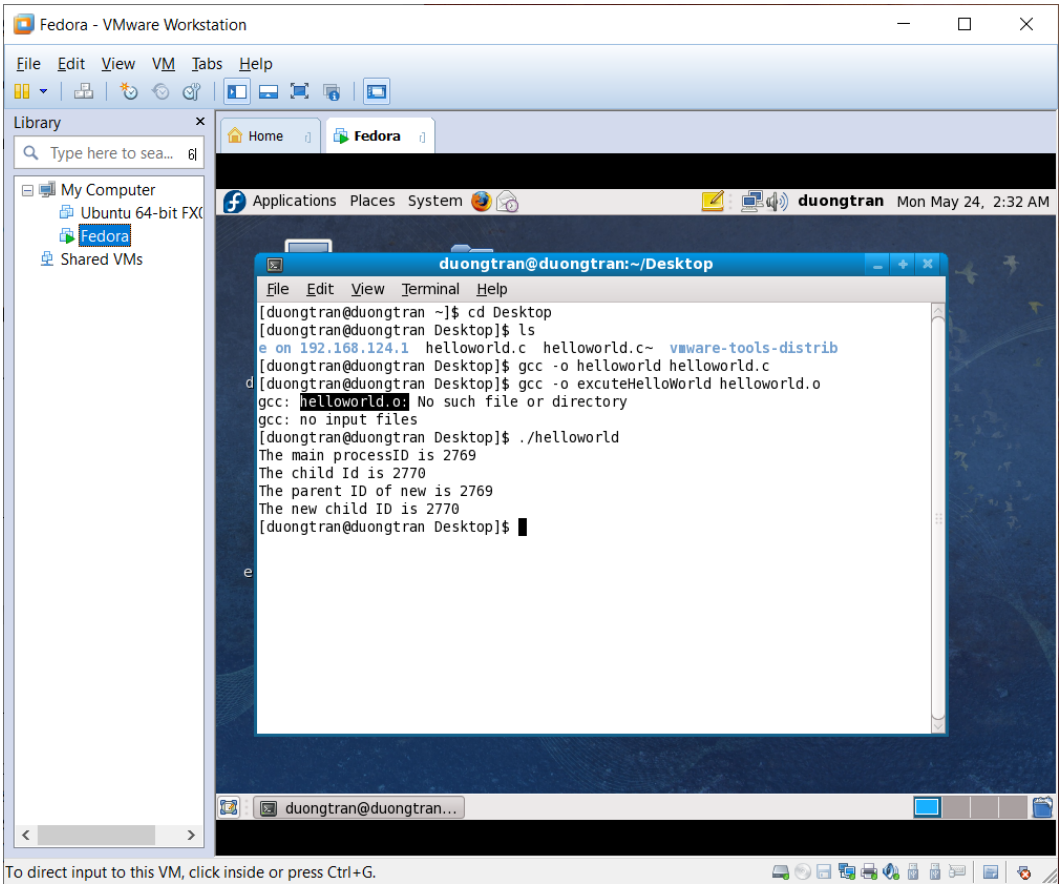
- ifconfig



Use the compiler in C-C++ language in Linux with gcc

- Syntax for C compiler: **gcc -o -filedestination filesource**
- Syntax for C++ compiler: **g++ -o filedestination filesource**


Fedora - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to sea...
My Computer
Ubuntu 64-bit FX(
Fedora
Shared VMs
Home
Fedora
Applications Places System
duongtran Mon May 24, 2:24 AM
C/C++ - helloworld/src/helloworld.cpp - Fedora Eclipse
File Edit Refactor Navigate Search Project Run Window Help
C/C++
*helloworld.cpp
#include <stdio.h>
#include <unistd.h>
#include <stdlib.h>
using namespace std;
int main() {
pid_t pChild;
printf("The main processID is %d\n", getpid());
pChild = fork();
if(pChild!=0){
printf("The parent ID of new is %d\n", getpid());
printf("The new child ID is %d\n", pChild);
}else{
printf("The child Id is %d\n", getpid());
}
return 0;
}
Writable
Smart Insert
24
C/C++ - helloworld/src...
VMware Tools enables many features and improves mouse movement, video and performance. Log in to the guest operating system and click "Install Tools".
Install Tools
Remind Me Later
Never Remind Me
To direct input to this VM, click inside or press Ctrl+G.



Explanation code: This sample code is using **fork(),** which is used to create a new process (or **child process**), which runs concurrently with the **parent process**. If **pChild = 0**, means the child process is running, **pChild != 0** means the parent process is running. The output result is both, so the child process and parent process are running concurrently.