

Operating System Sessional

CSE-308

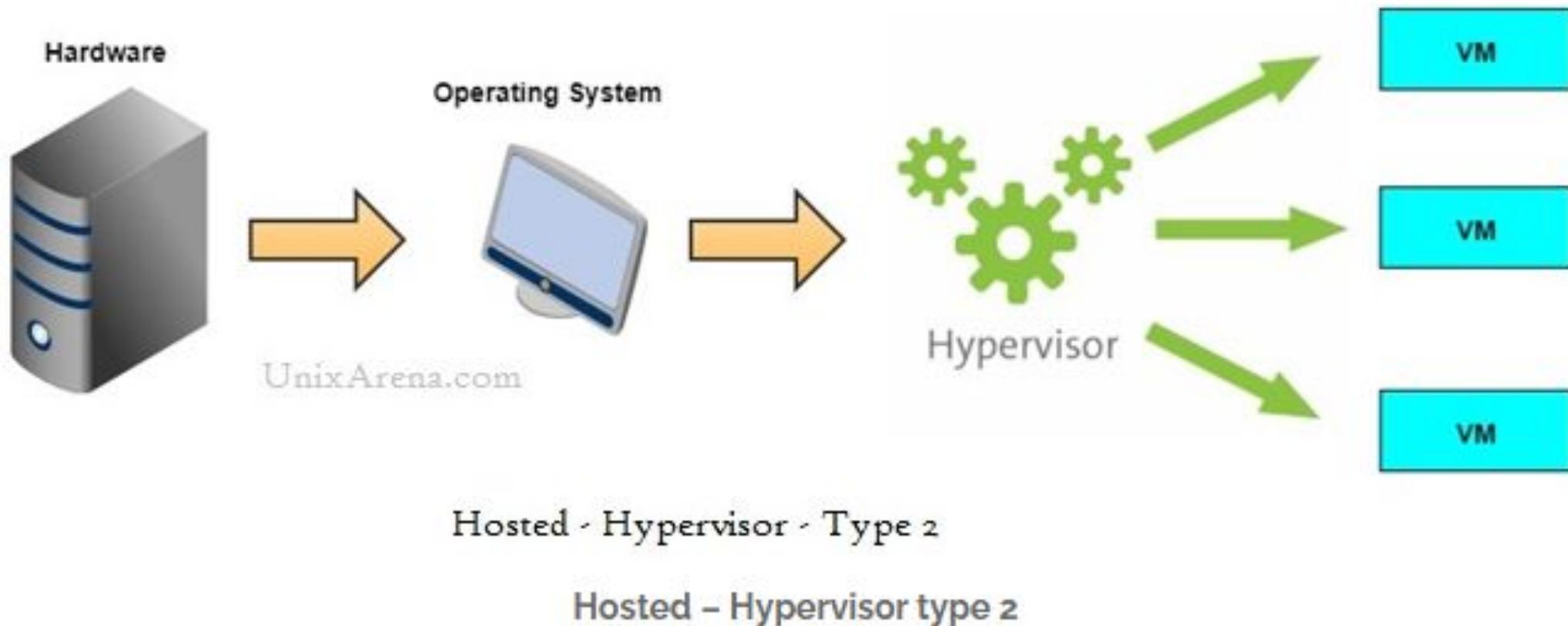
Lab-1

Installation: VMware & Ubuntu

Outline

- Installation of OS in various Modes
- System Requirements – VMware
- System Requirements – Ubuntu
- Installing VMware
- Activating VMware
- VM creation
- Virtualization Technology
- Ubuntu Installation
- Zoom Installation

Installation of OS in with VM



System Requirements – VMware

1. A minimum **of 4 GB** of physical RAM. **At least 8 GB** of RAM to run virtual machines in typical production environments.
2. To support 64-bit virtual machines, support for hardware virtualization (Intel VT-x or AMD RVI) must be enabled on x64 CPUs.

You may install **VMware 12 Pro** (as shown in this slide) or **VMware workstation 16 player** (free, as shown in class).

System Requirements – Ubuntu

1. **2 GHz** dual core processor
2. **4 GiB** RAM (system memory)
3. **25 GB** of hard-drive space (or USB stick, memory card or external drive but see LiveCD for an alternative approach)
4. VGA capable of 1024x768 screen resolution
5. Either a CD/DVD drive or a USB port for the installer media
6. Internet access is helpful

VMware and Ubuntu - Download Links

We'll run 64-bit ubuntu (linux based OS) on top of windows using Virtual Machine (with VMware player).

VMware for windows: [Download Here](#)

Latest Ubuntu (20.04.3 LTS) ISO: [Download Here](#)

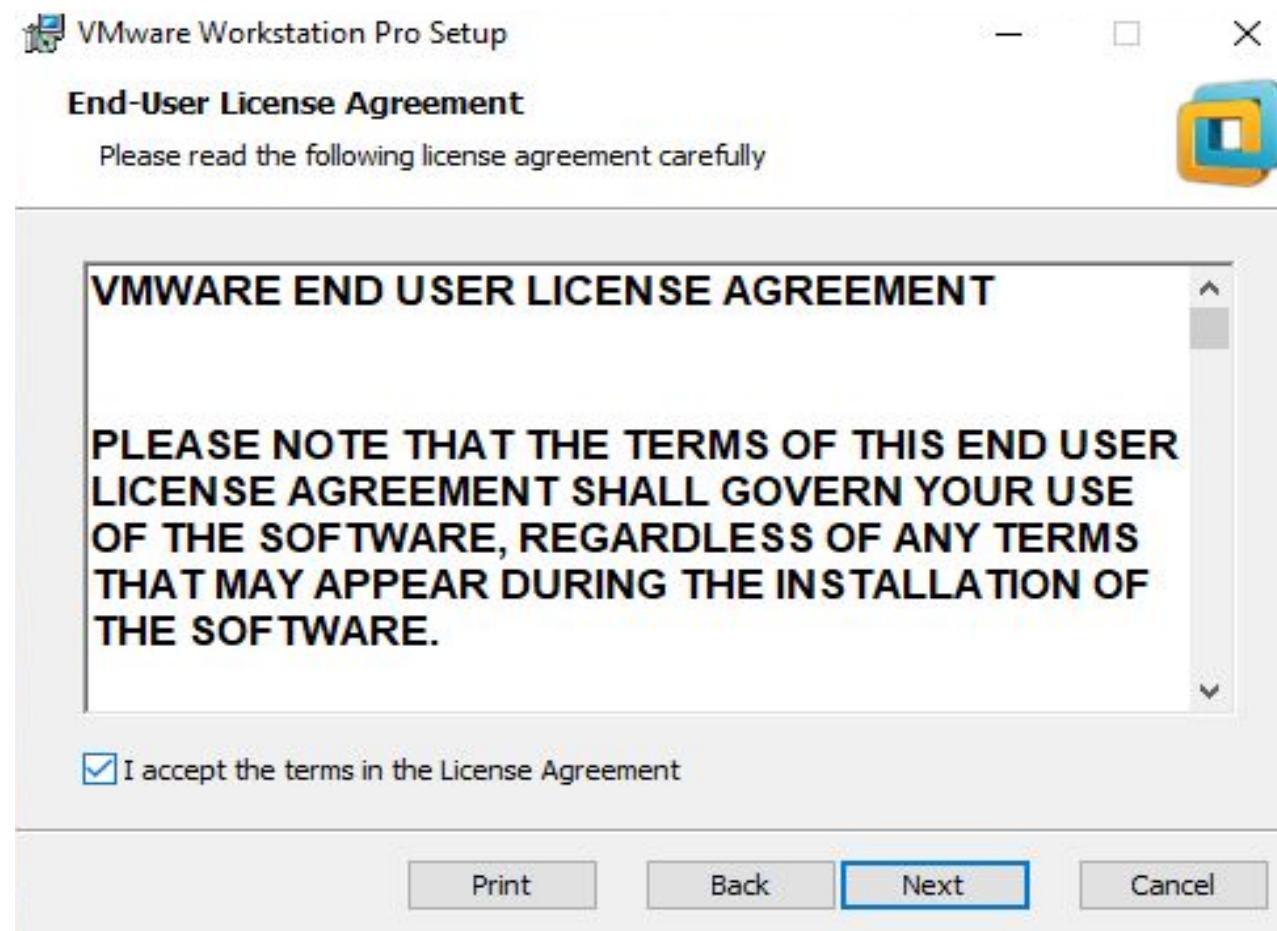
Installing VMware



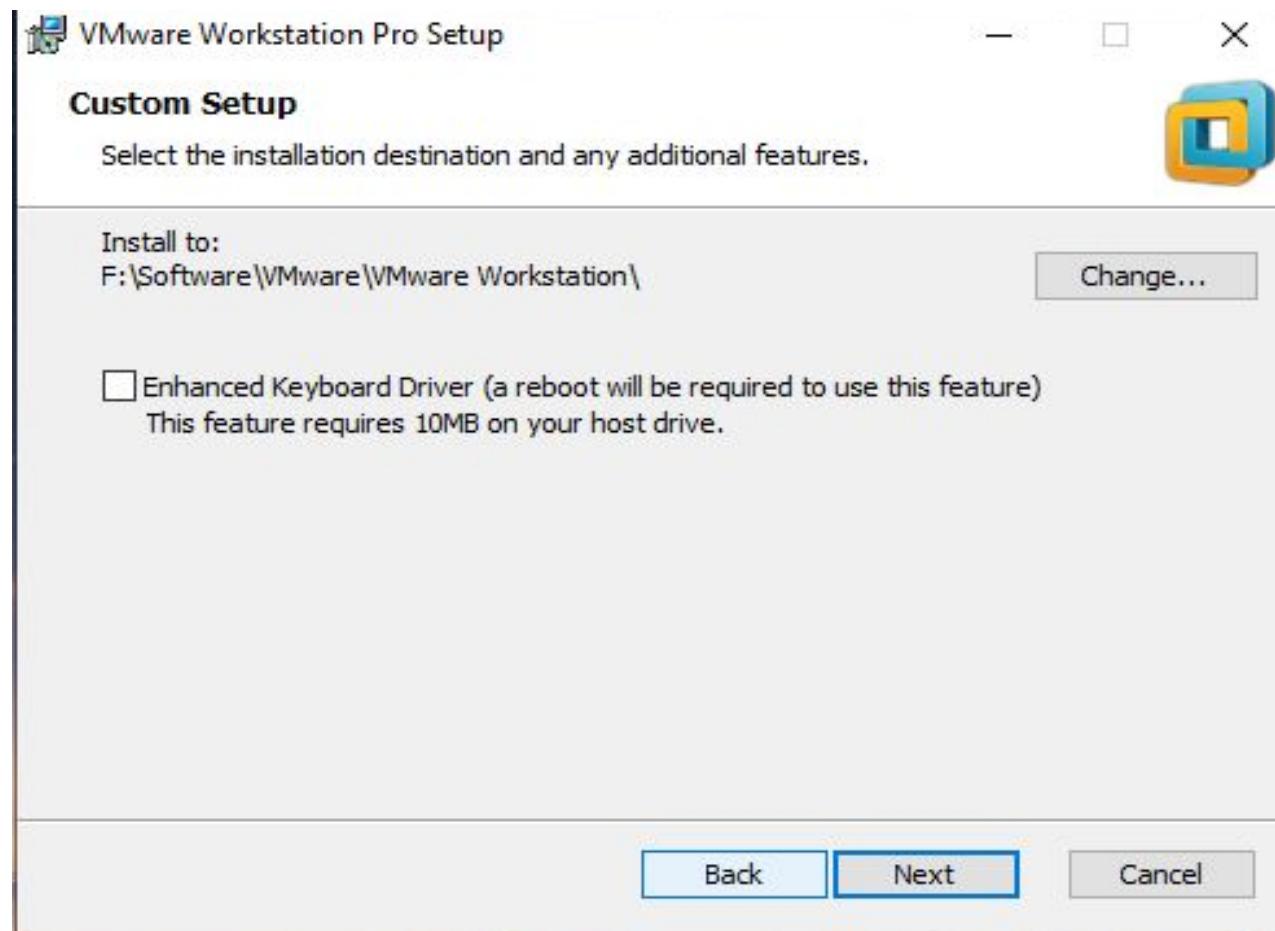
Installing VMware



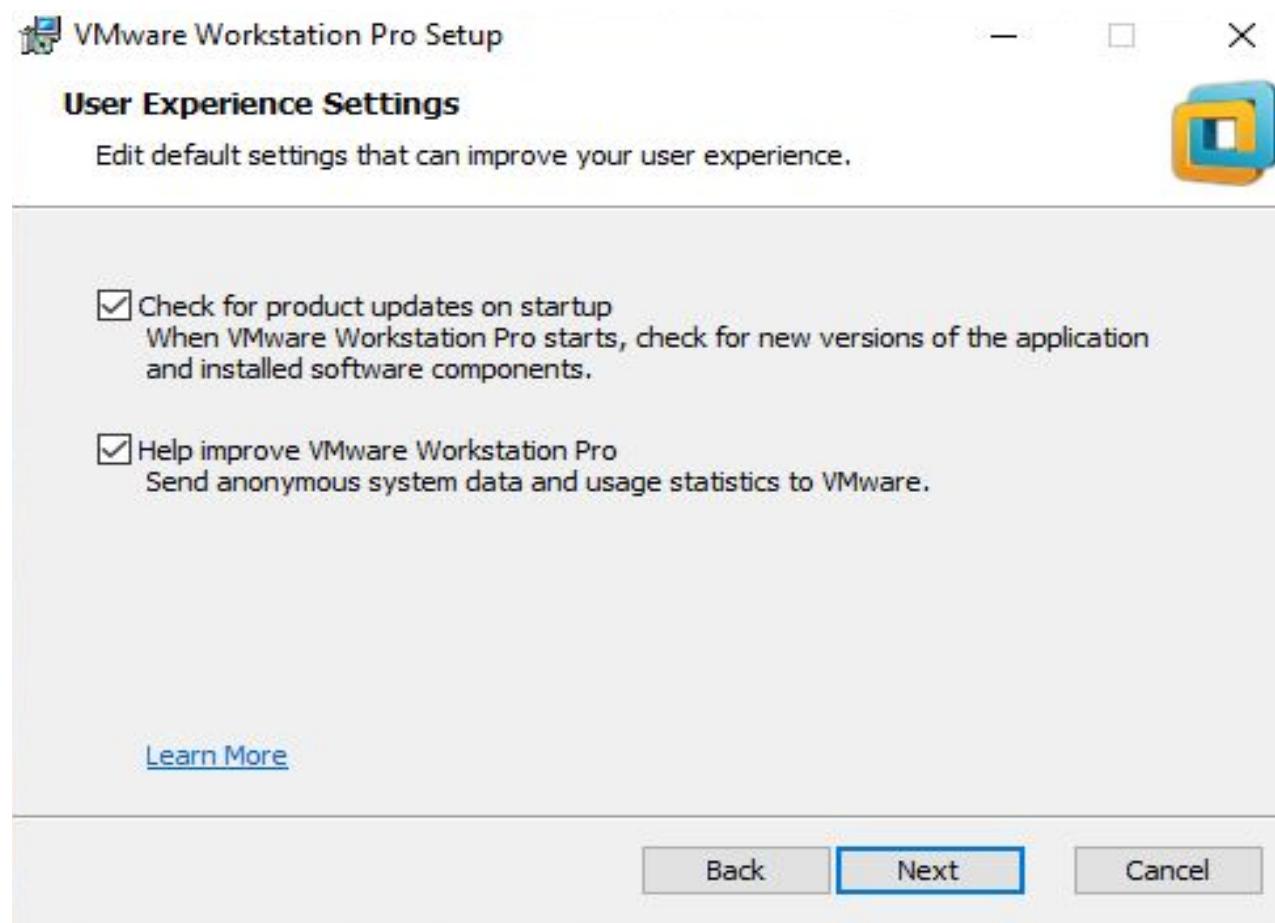
Installing VMware



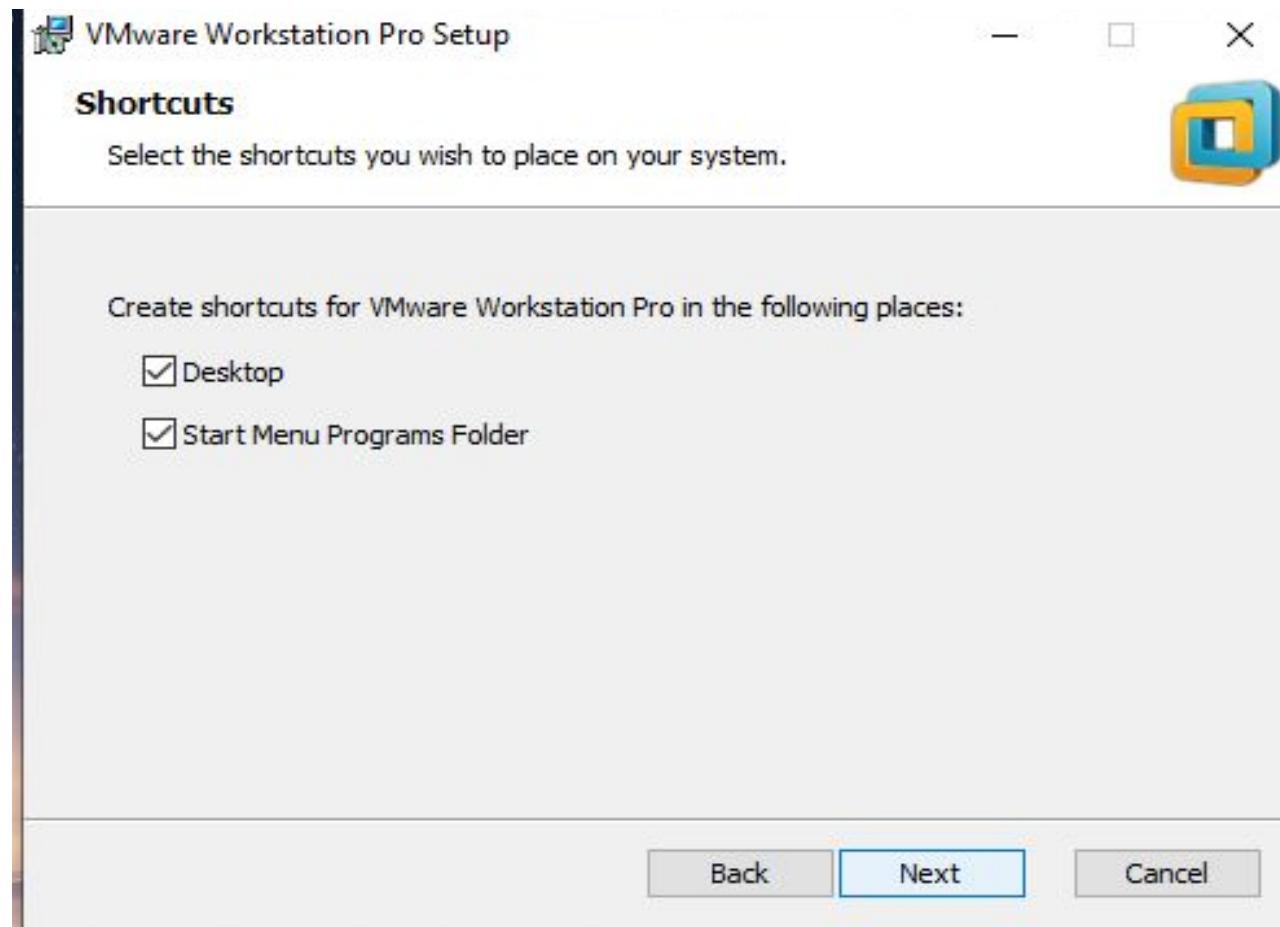
Installing VMware



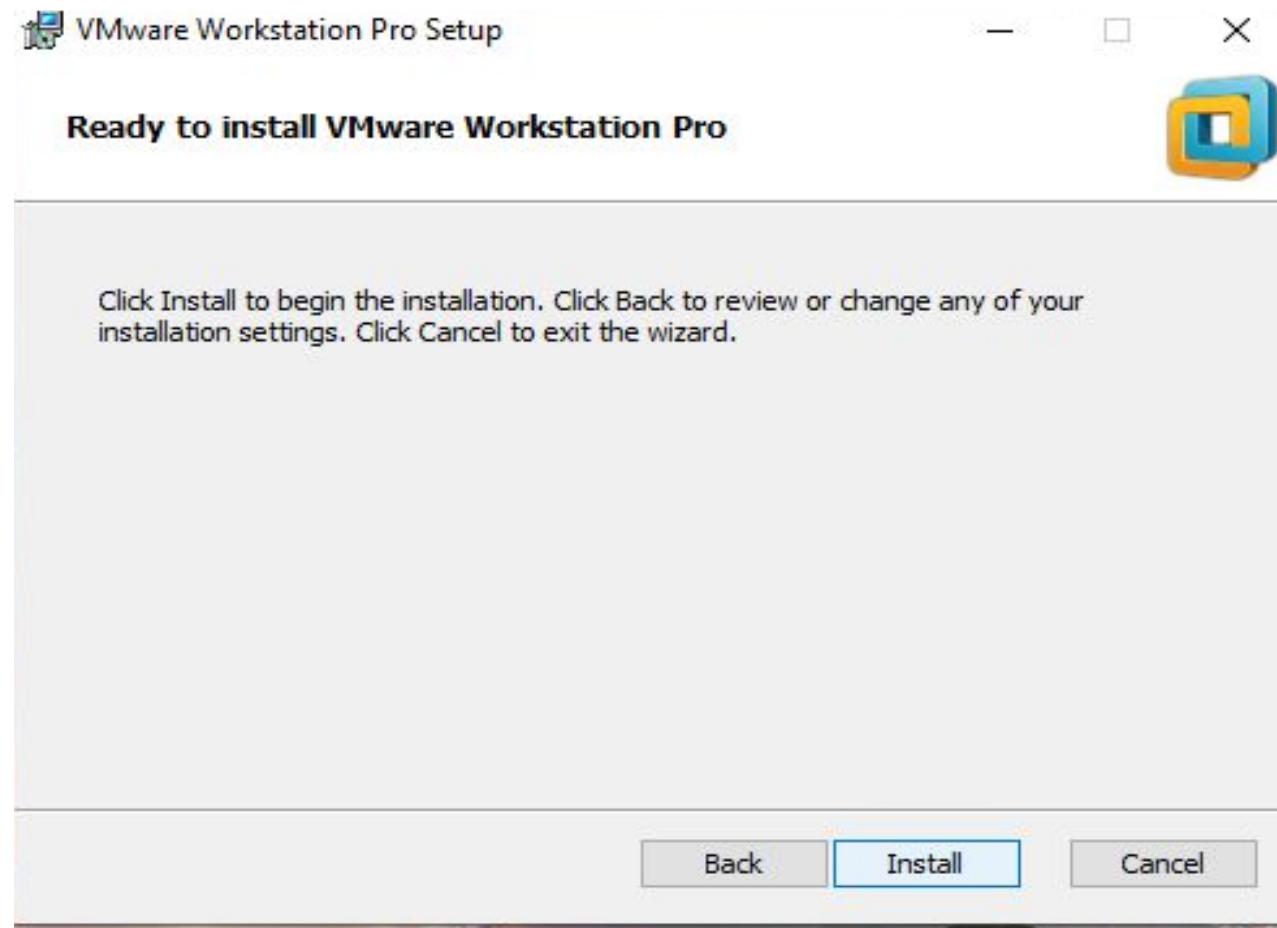
Installing VMware



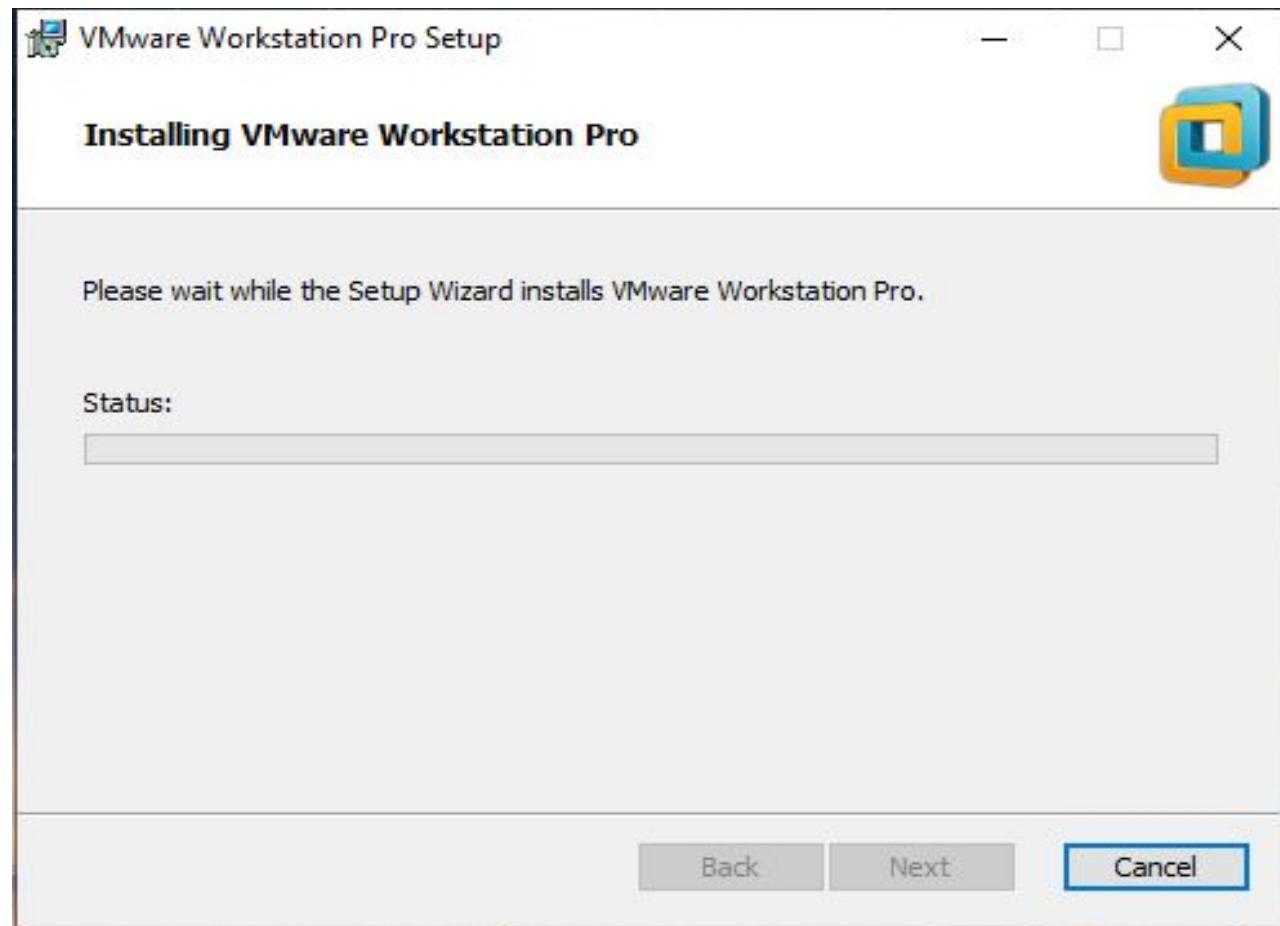
Installing VMware



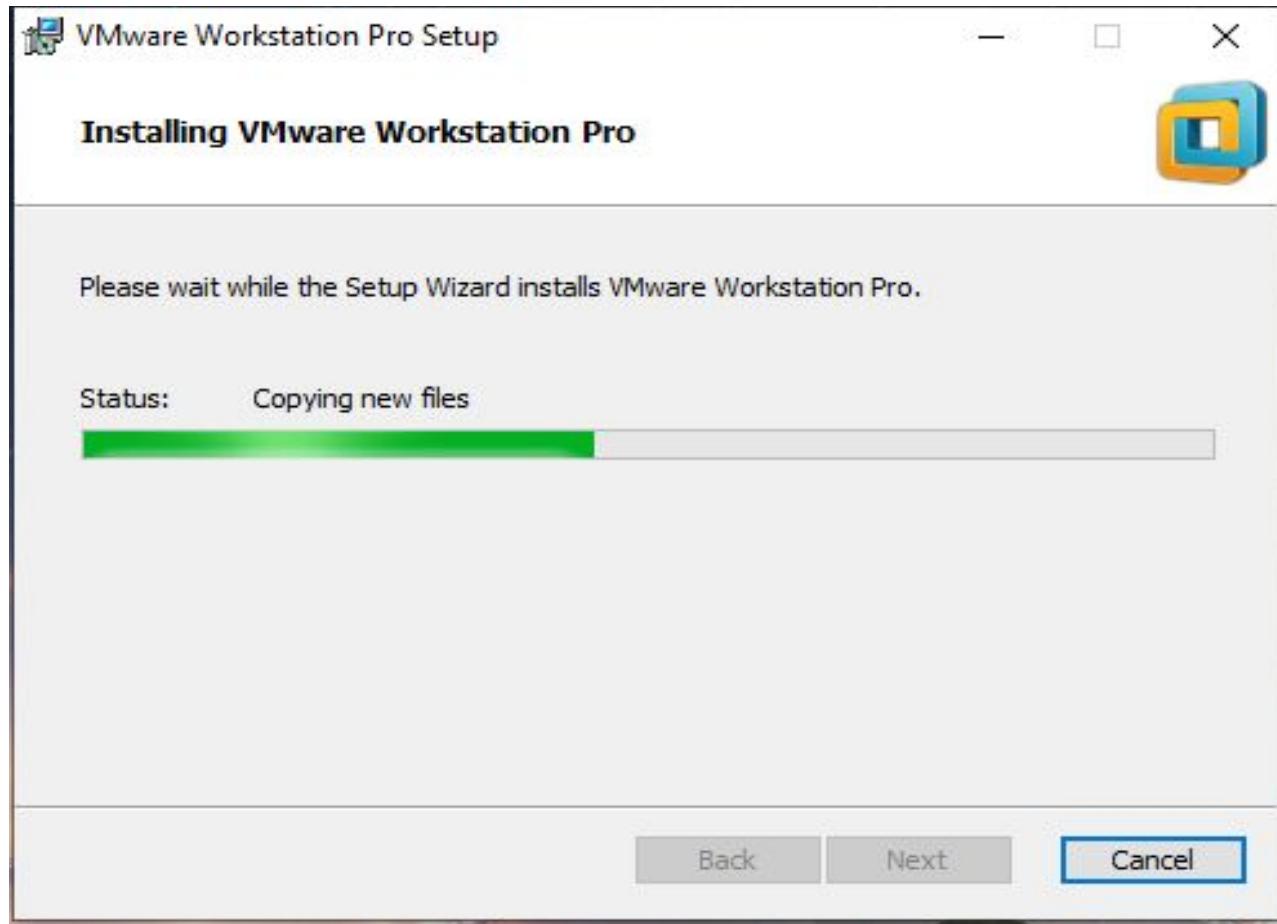
Installing VMware



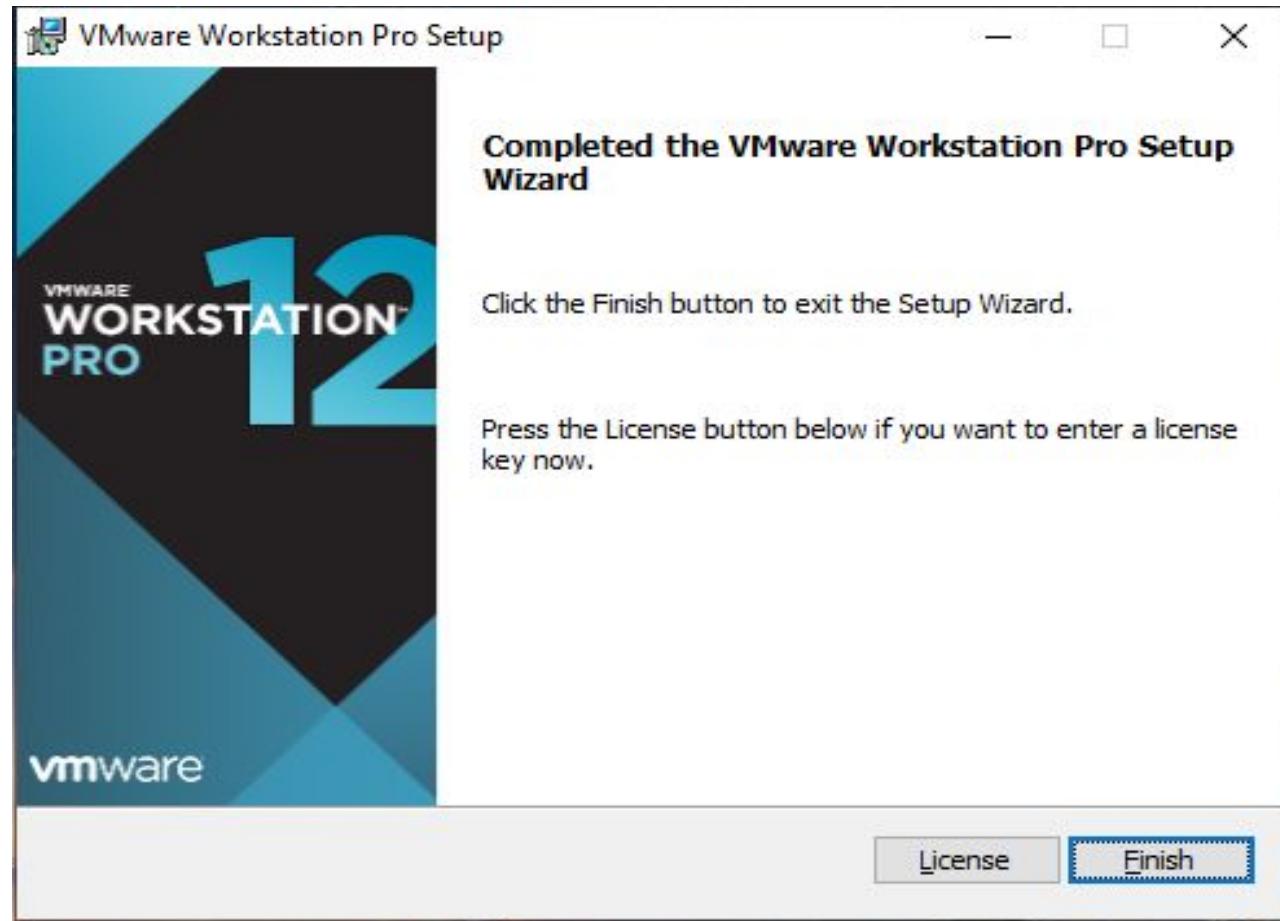
Installing VMware



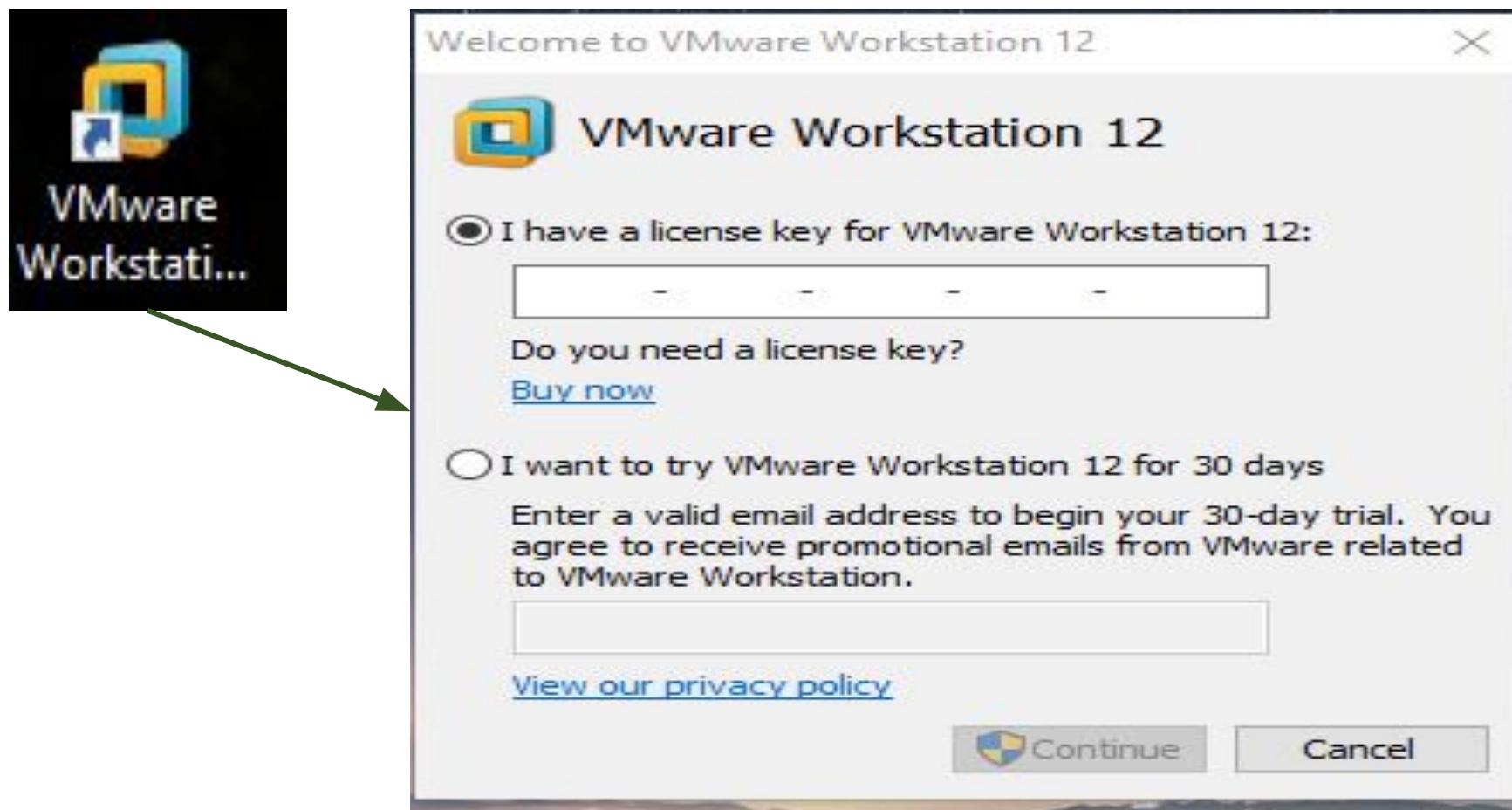
Installing VMware



Installing VMware



Activating VMware

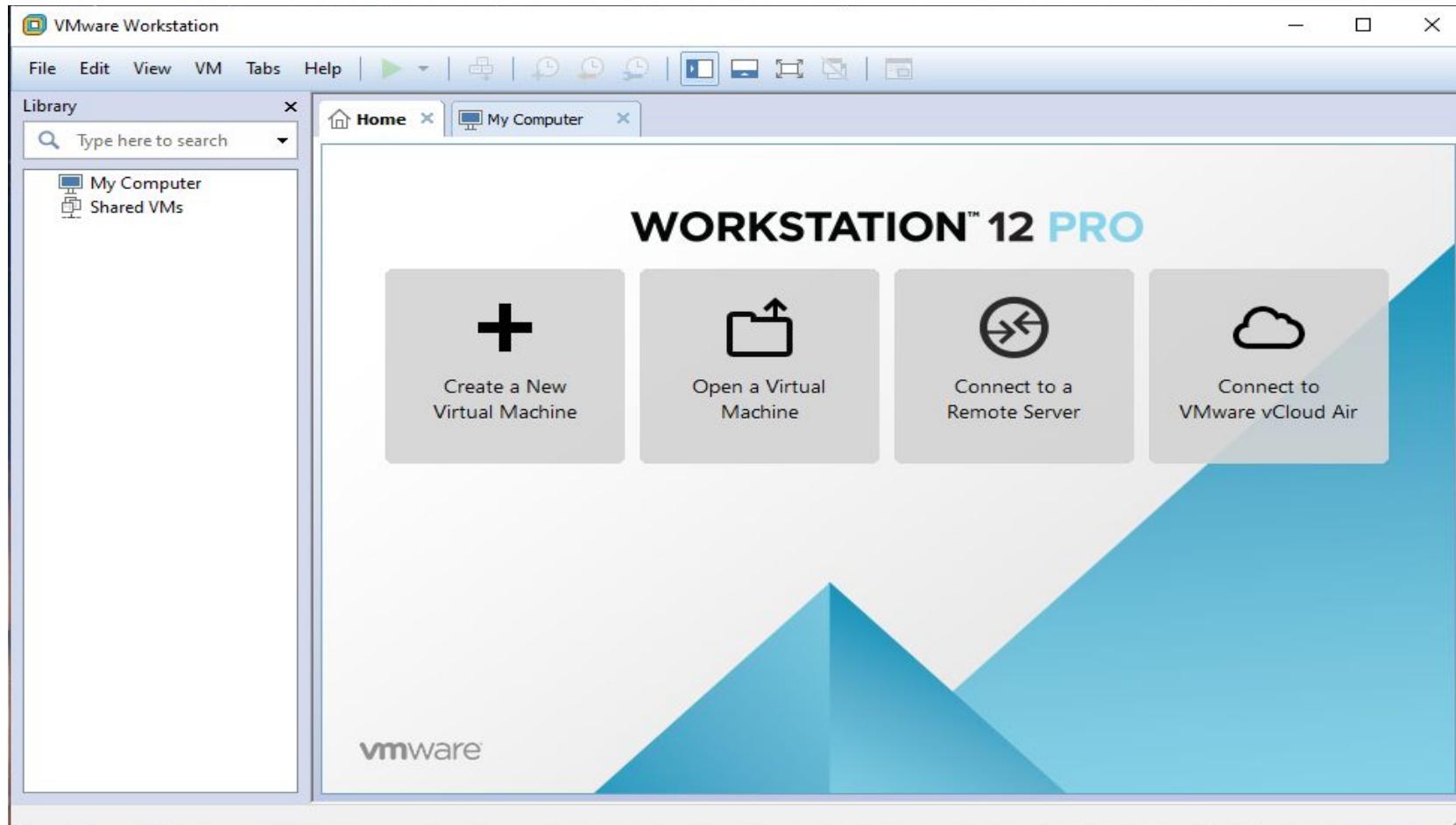


Installing VMware – license key

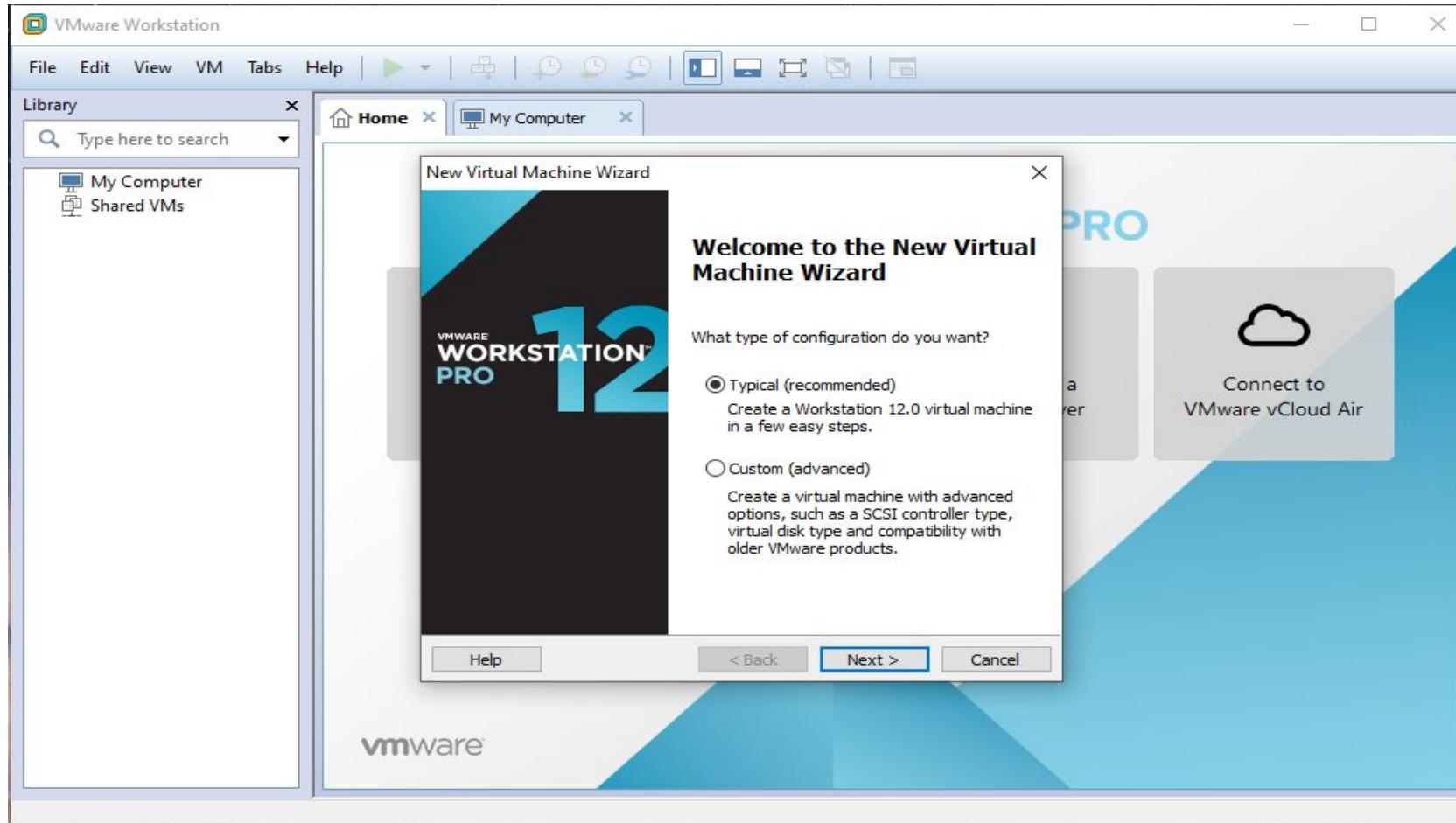
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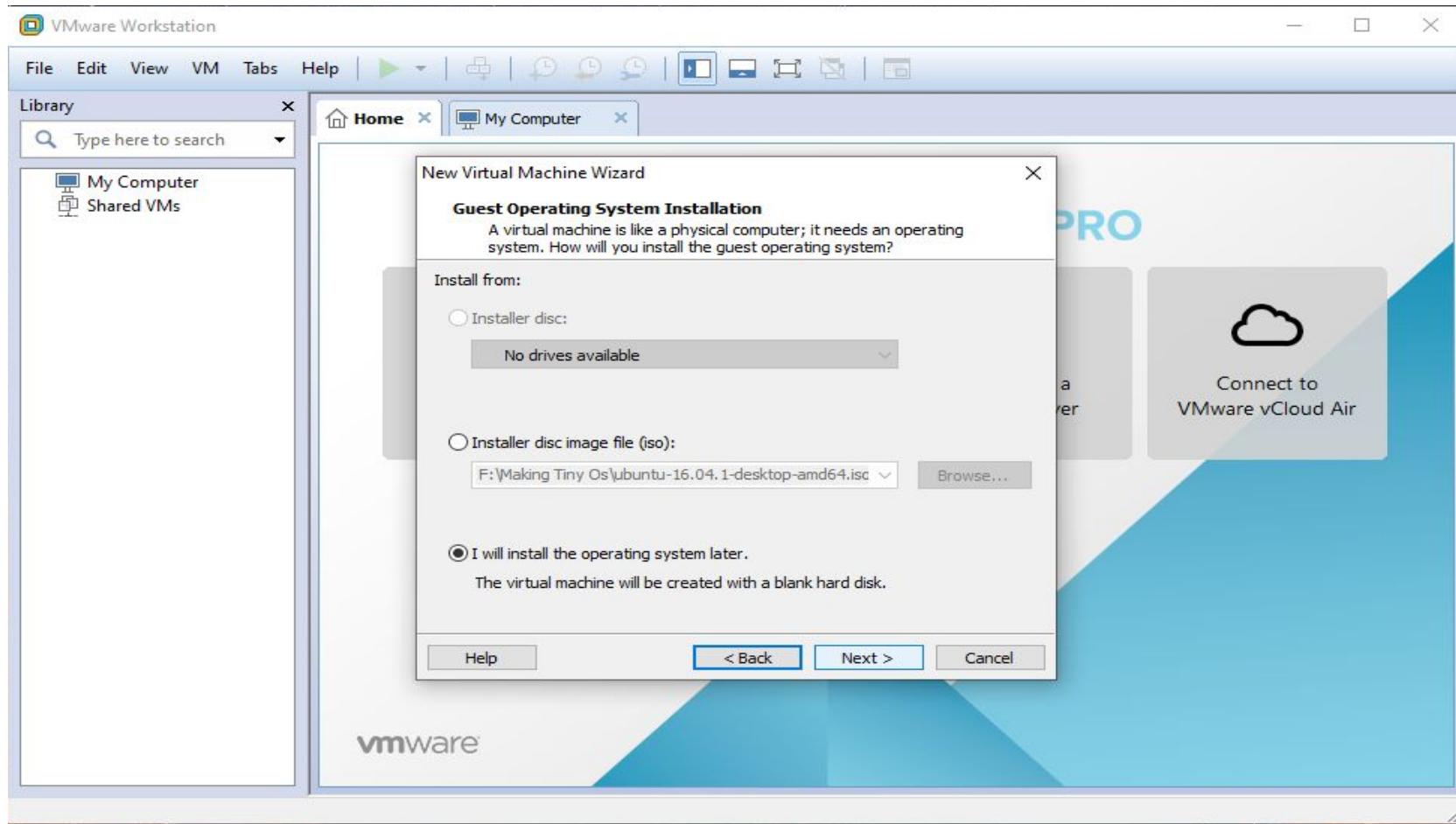
VMware



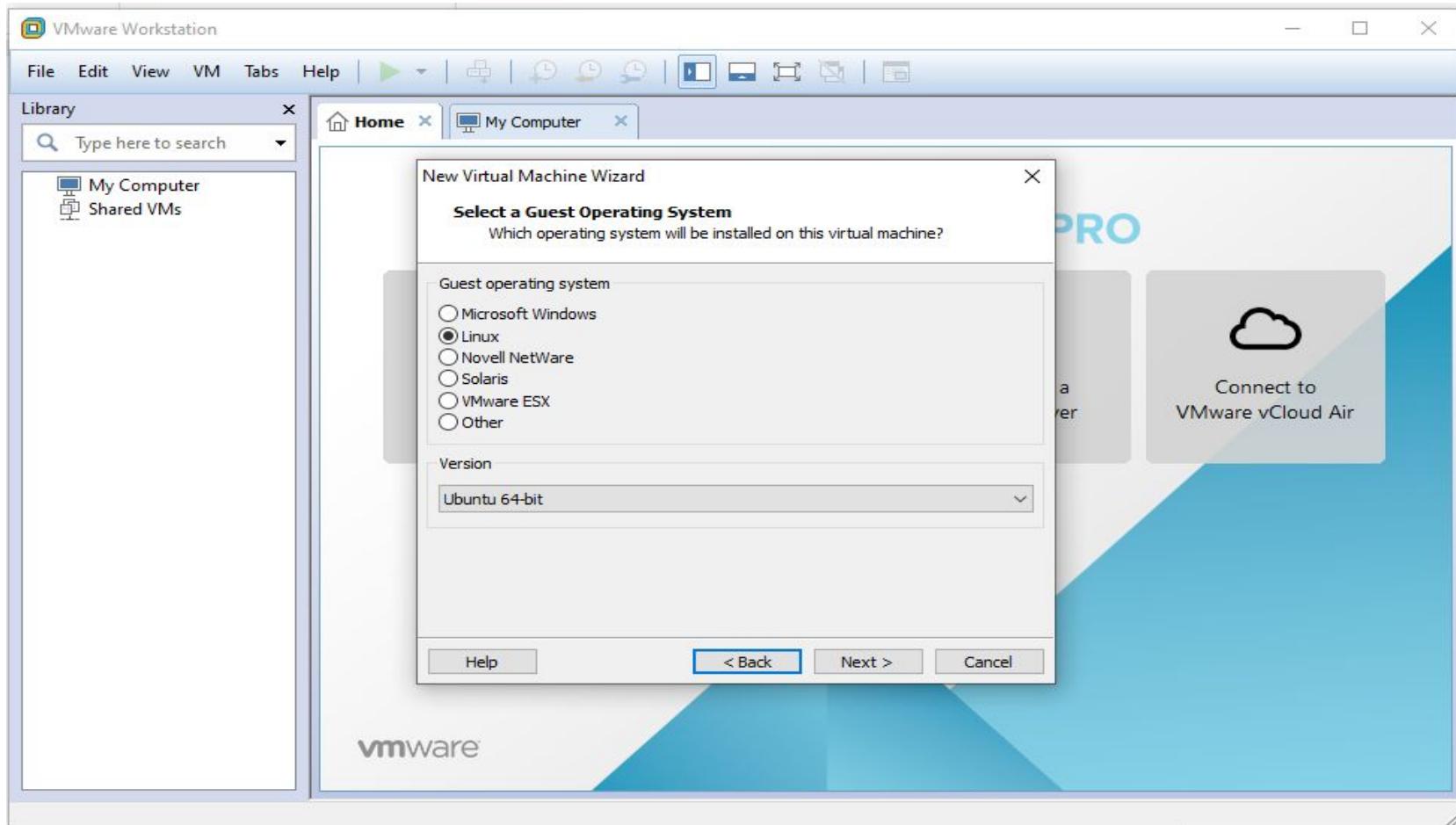
Creating VM



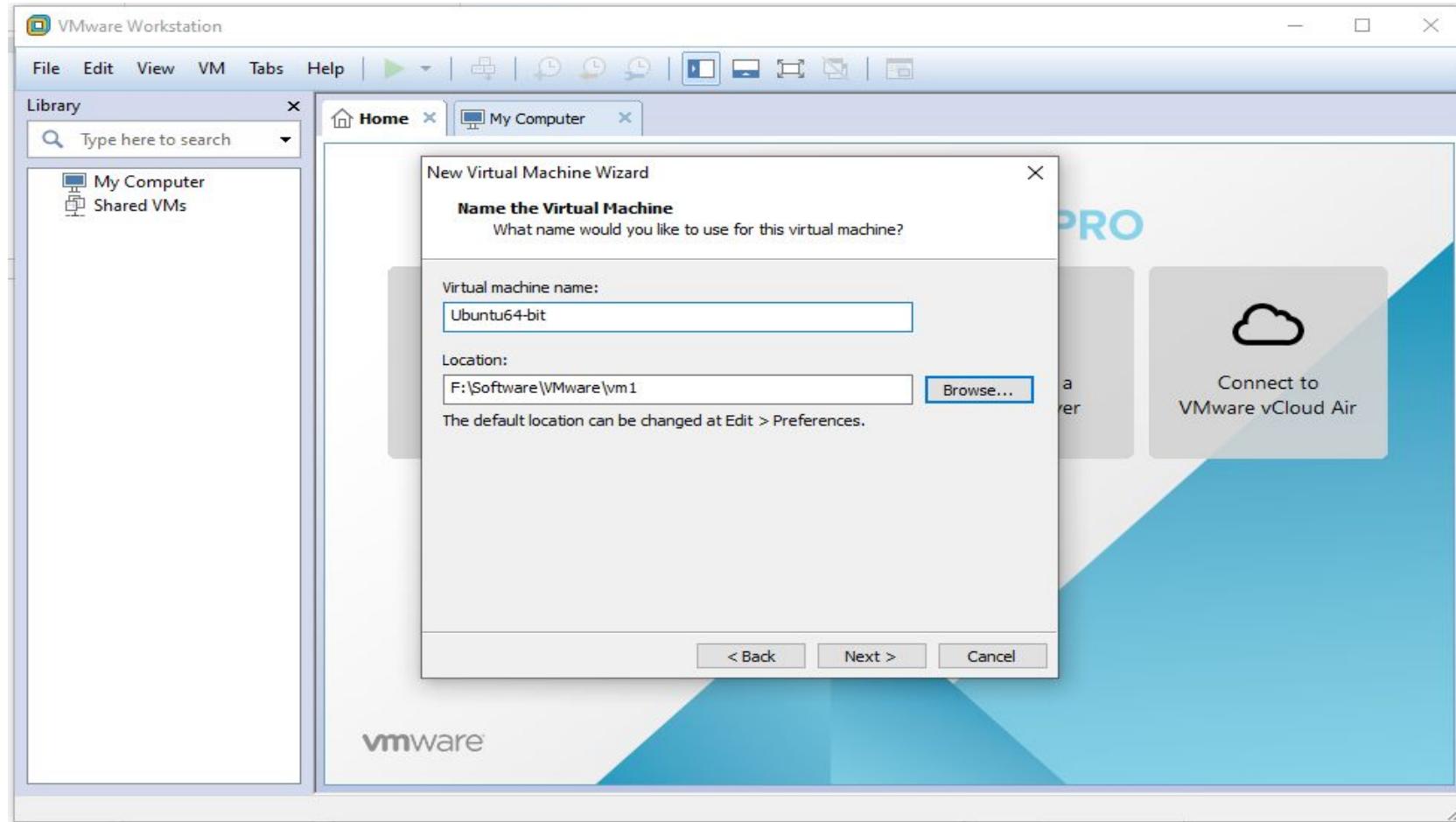
Creating VM



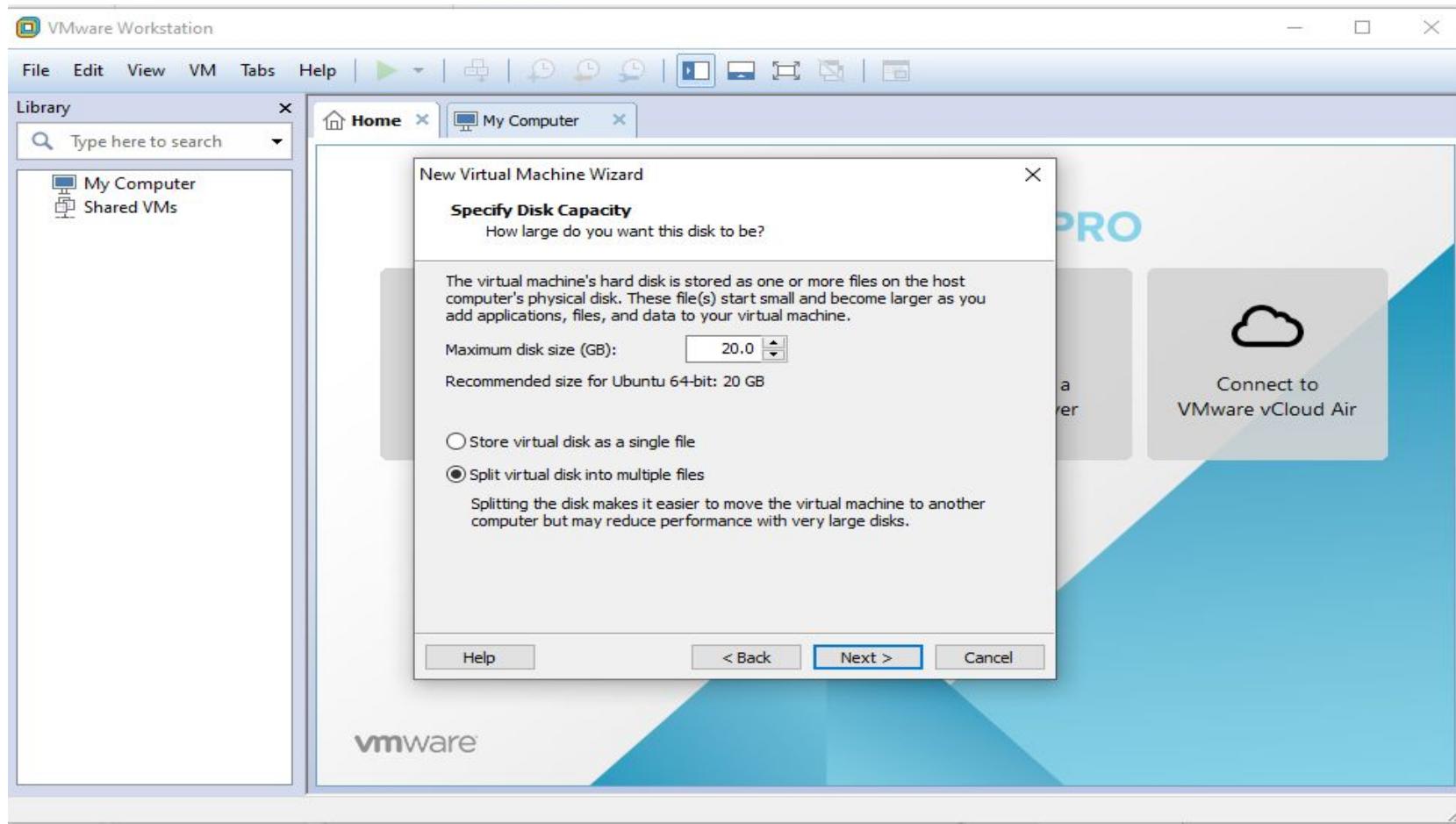
Creating VM



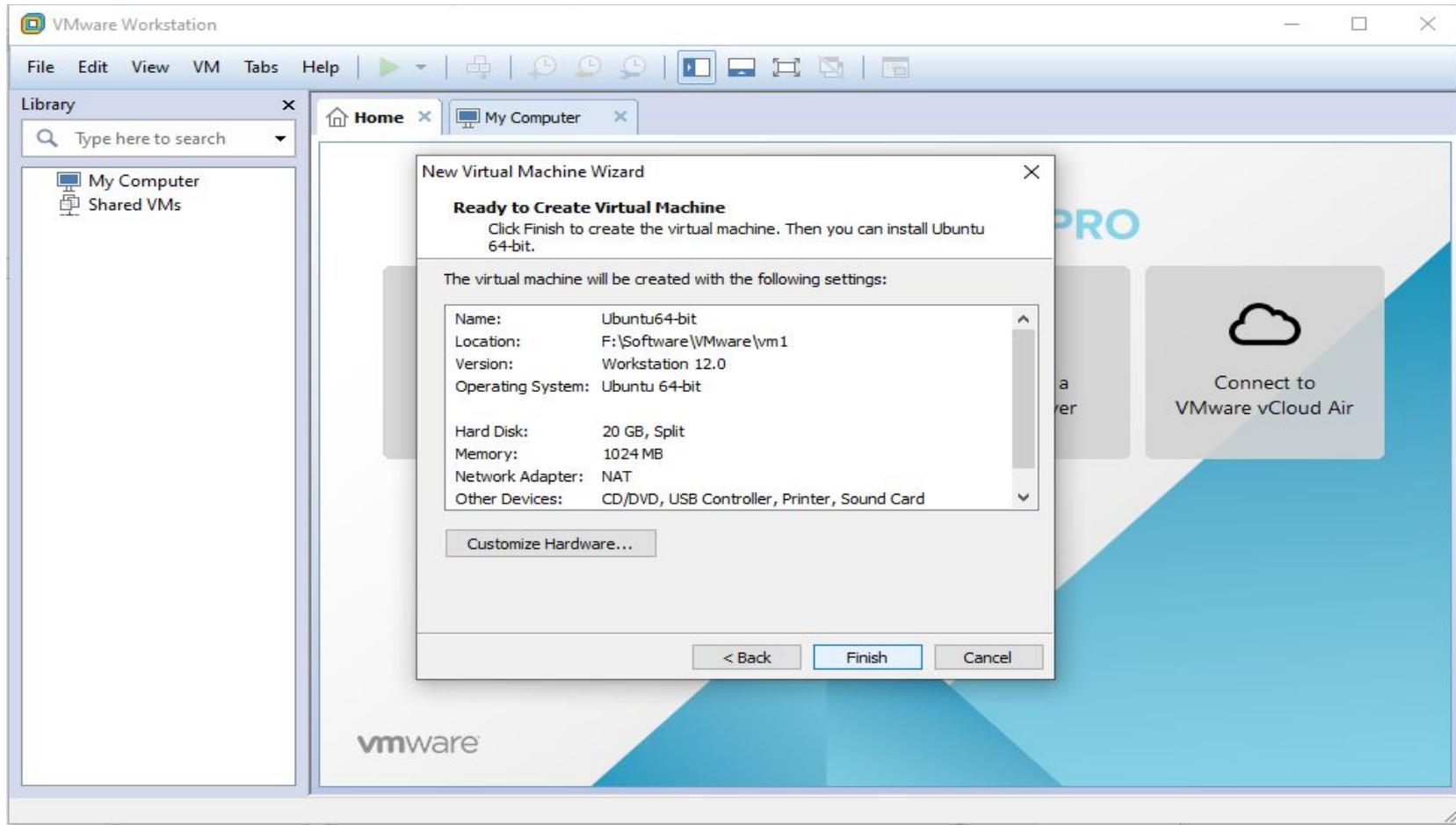
Creating VM



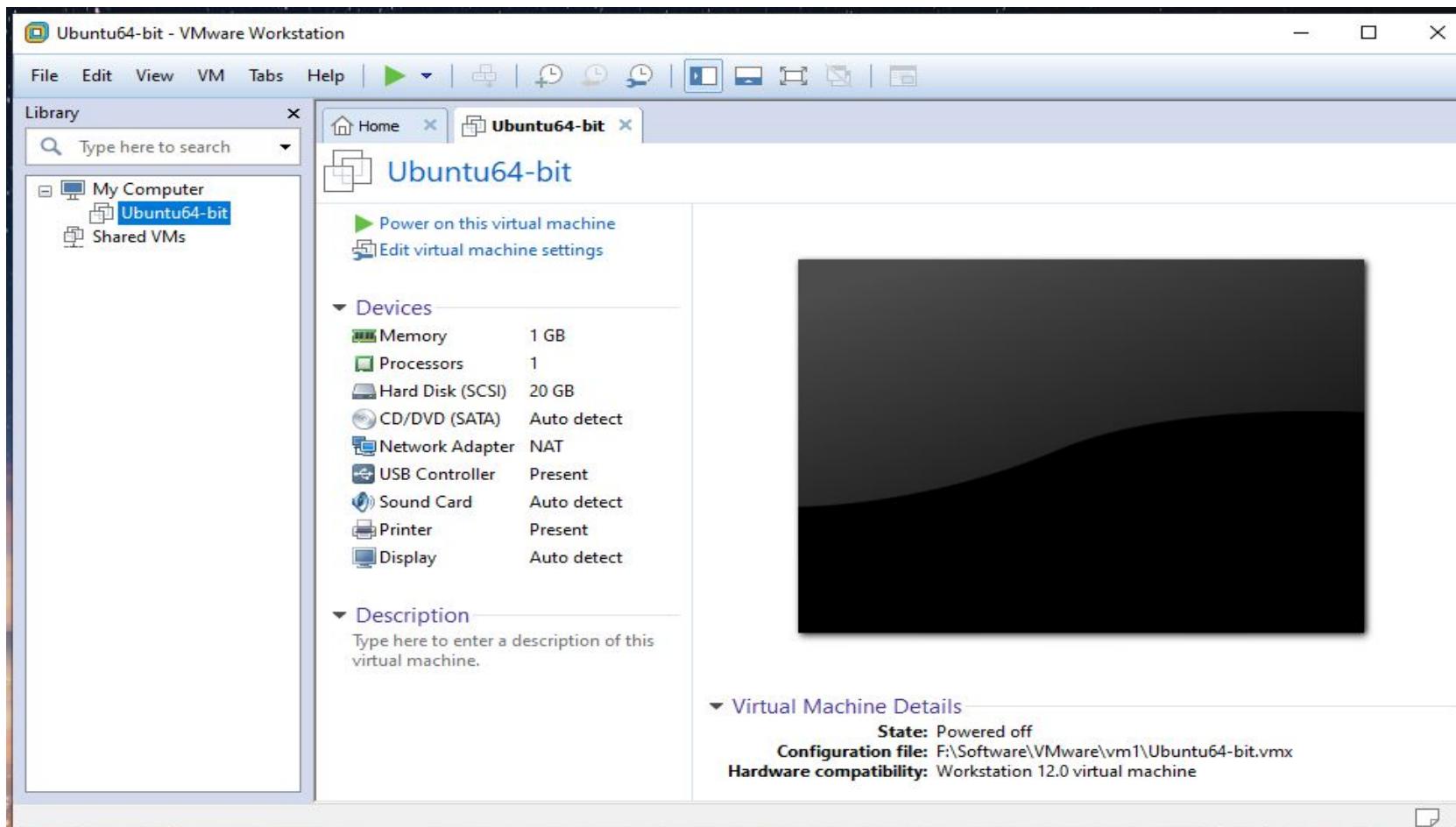
Creating VM



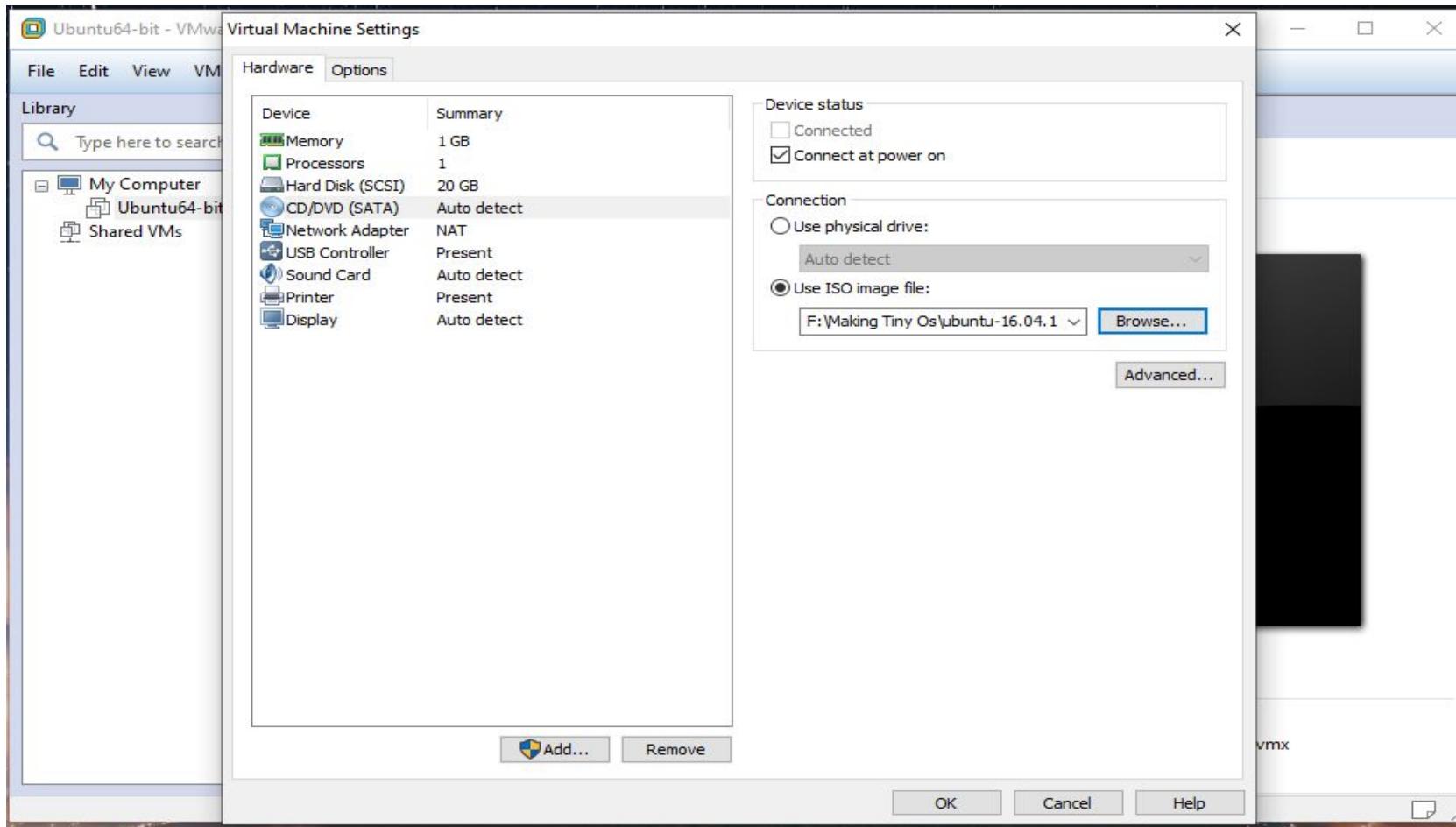
Creating VM



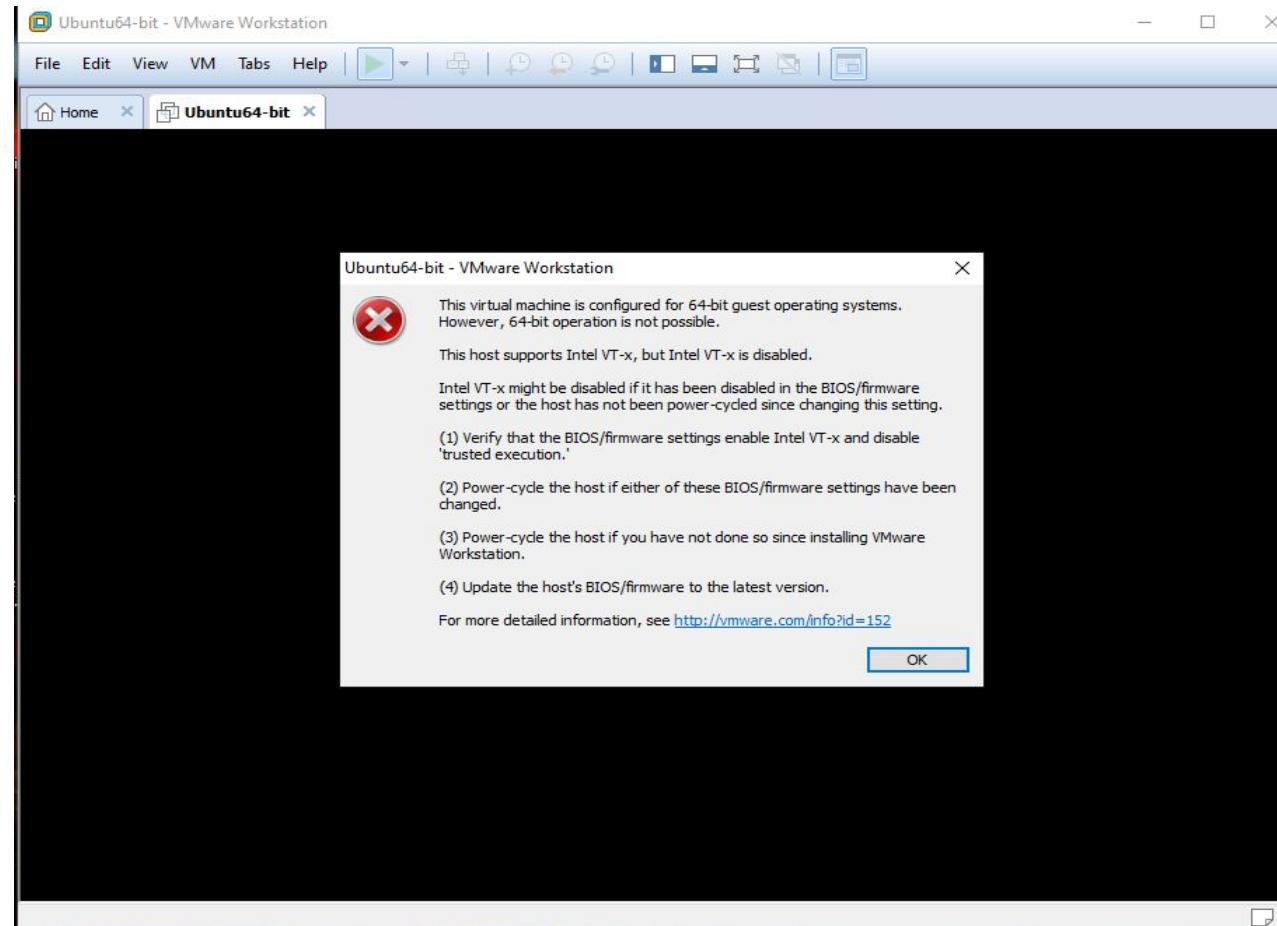
Creating VM



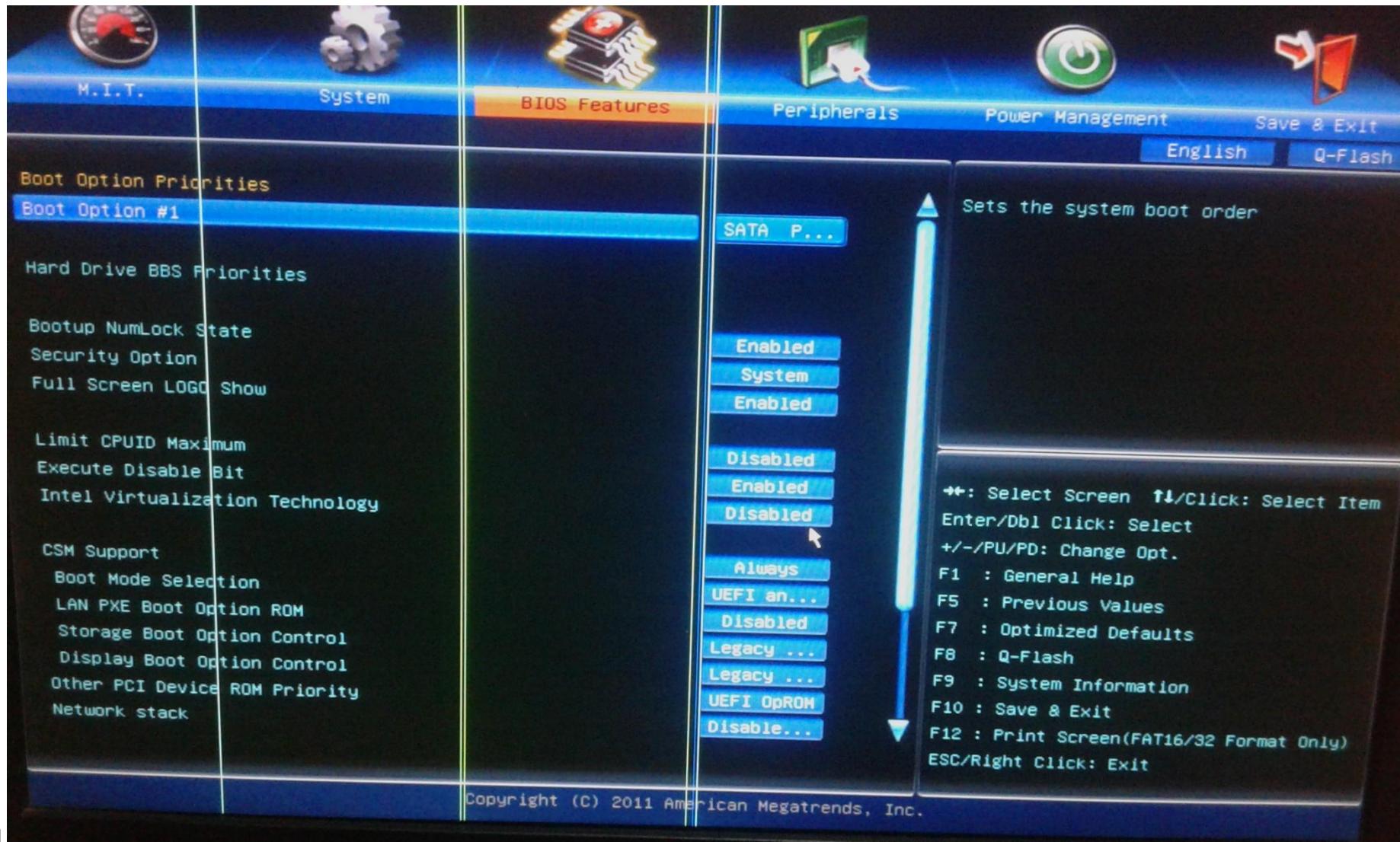
Creating VM



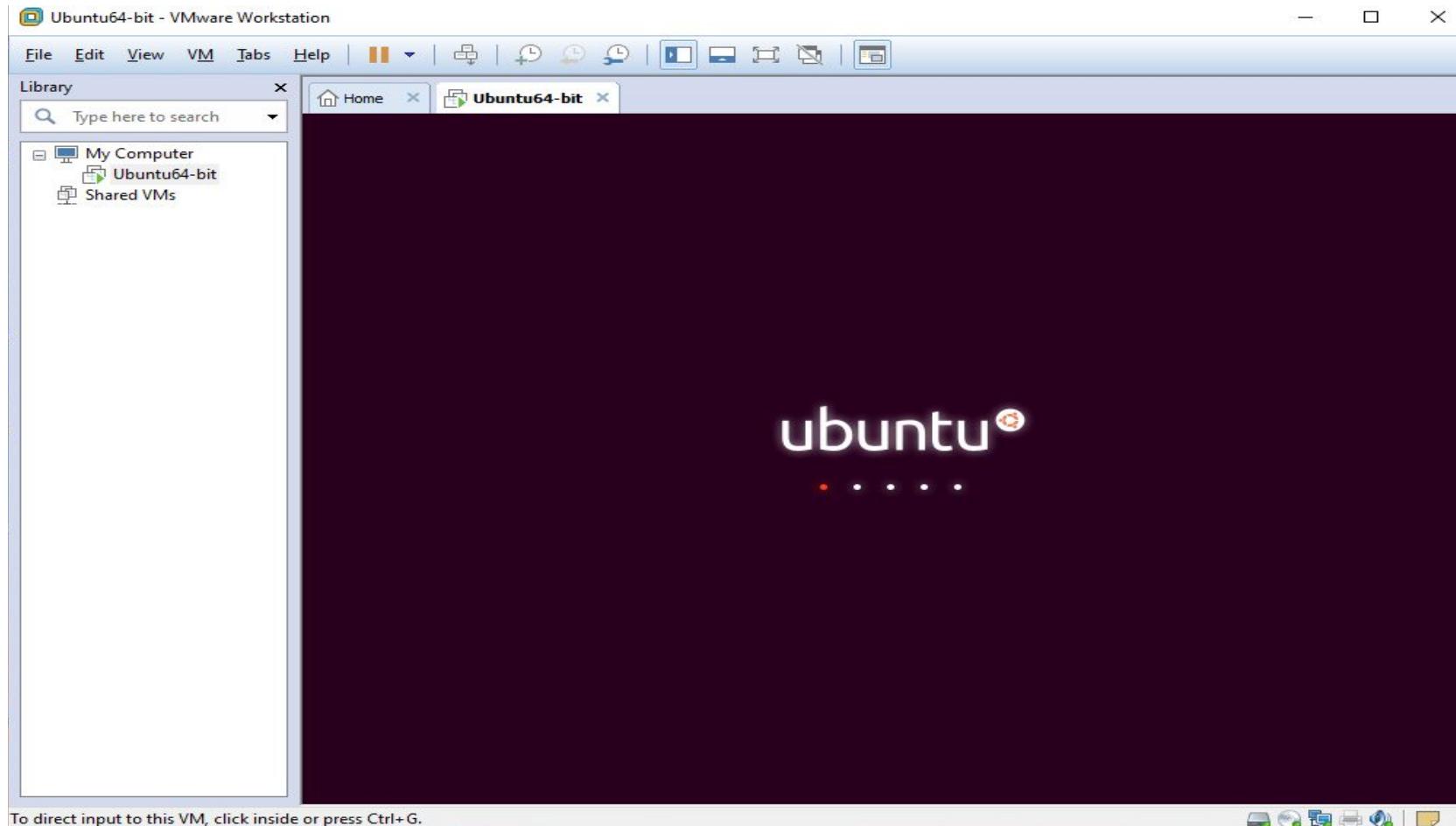
Virtualization Problem



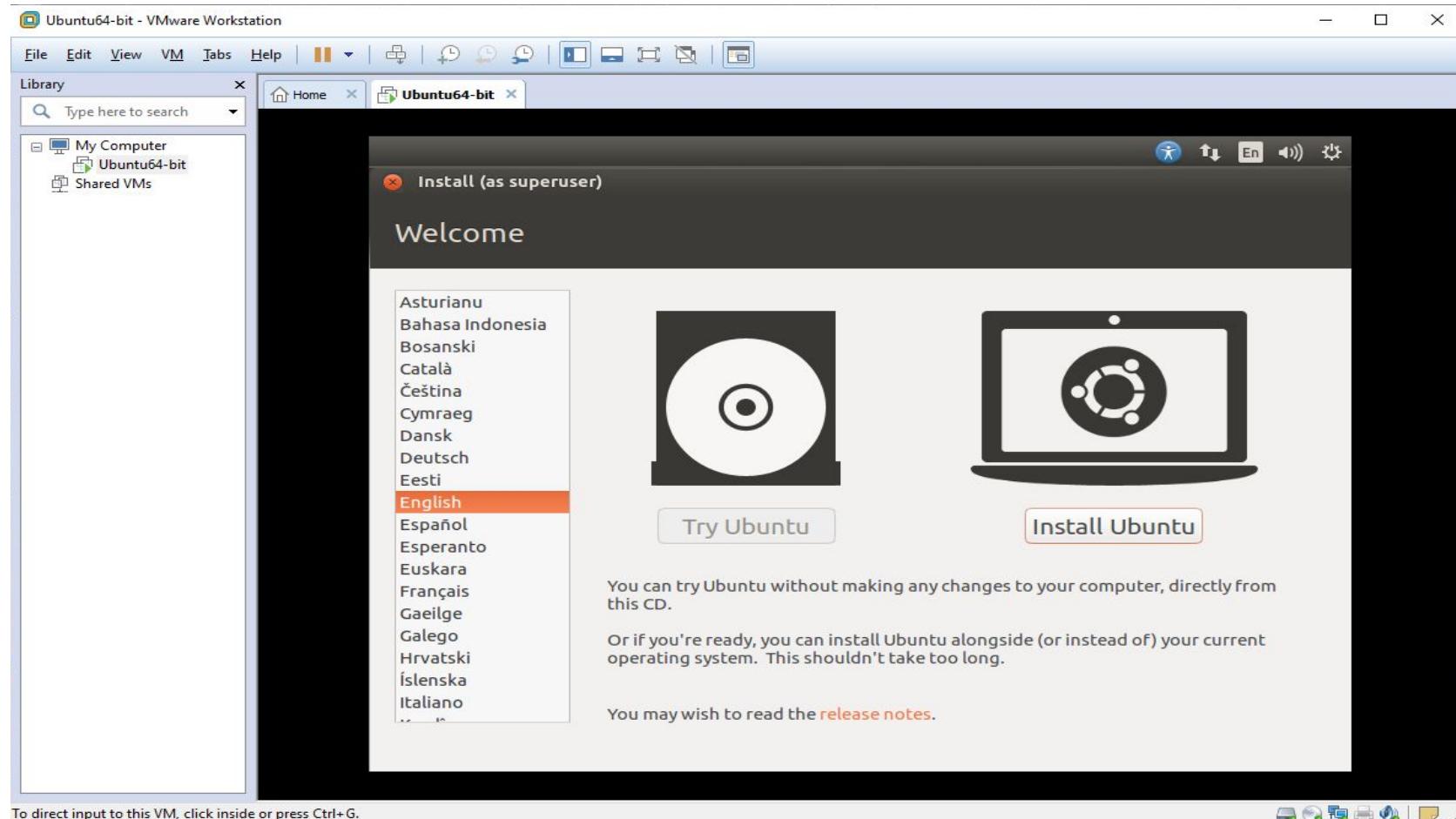
Enabling Virtualization Technology



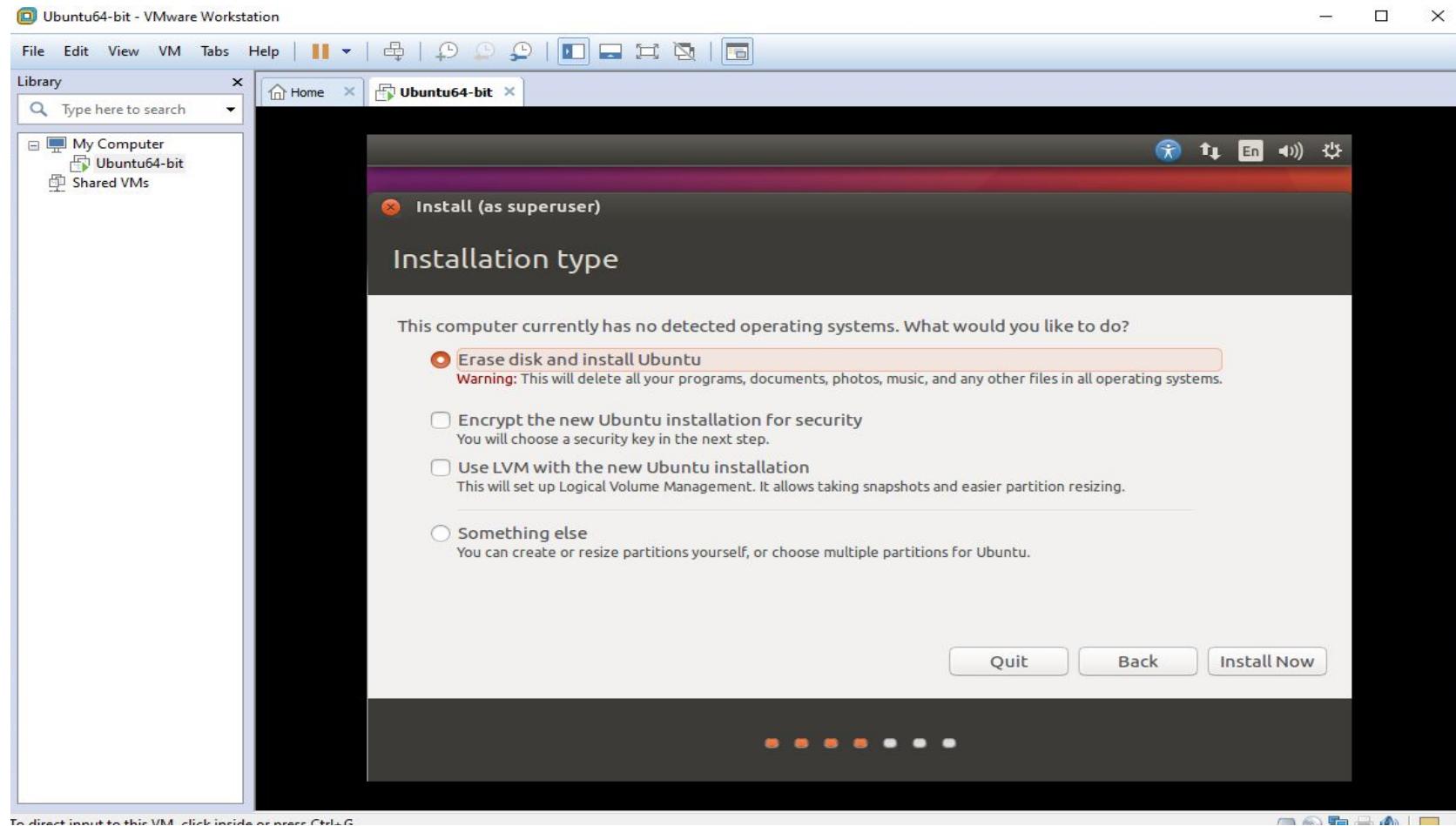
Installing Ubuntu on VM



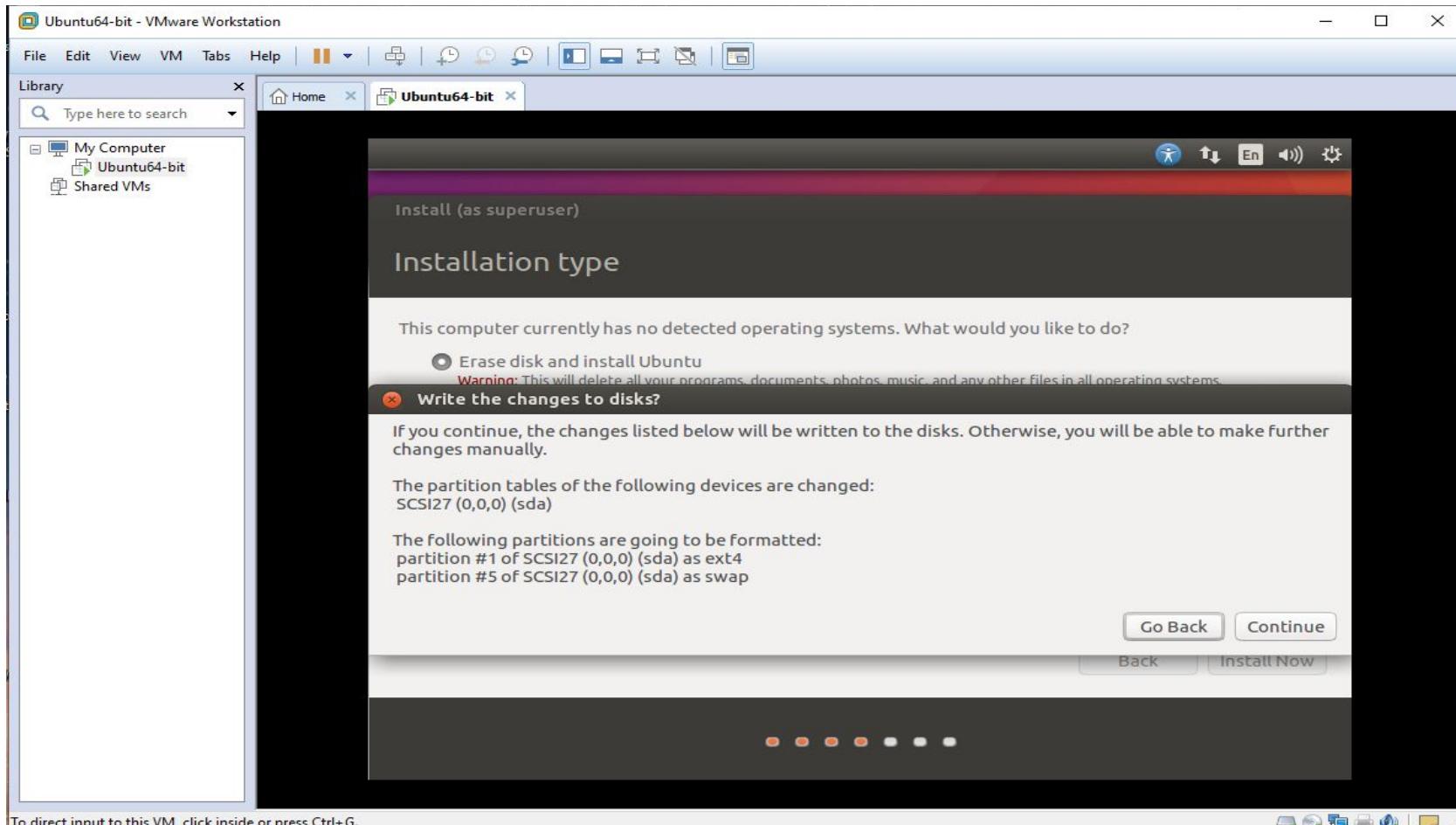
Installing Ubuntu on VM



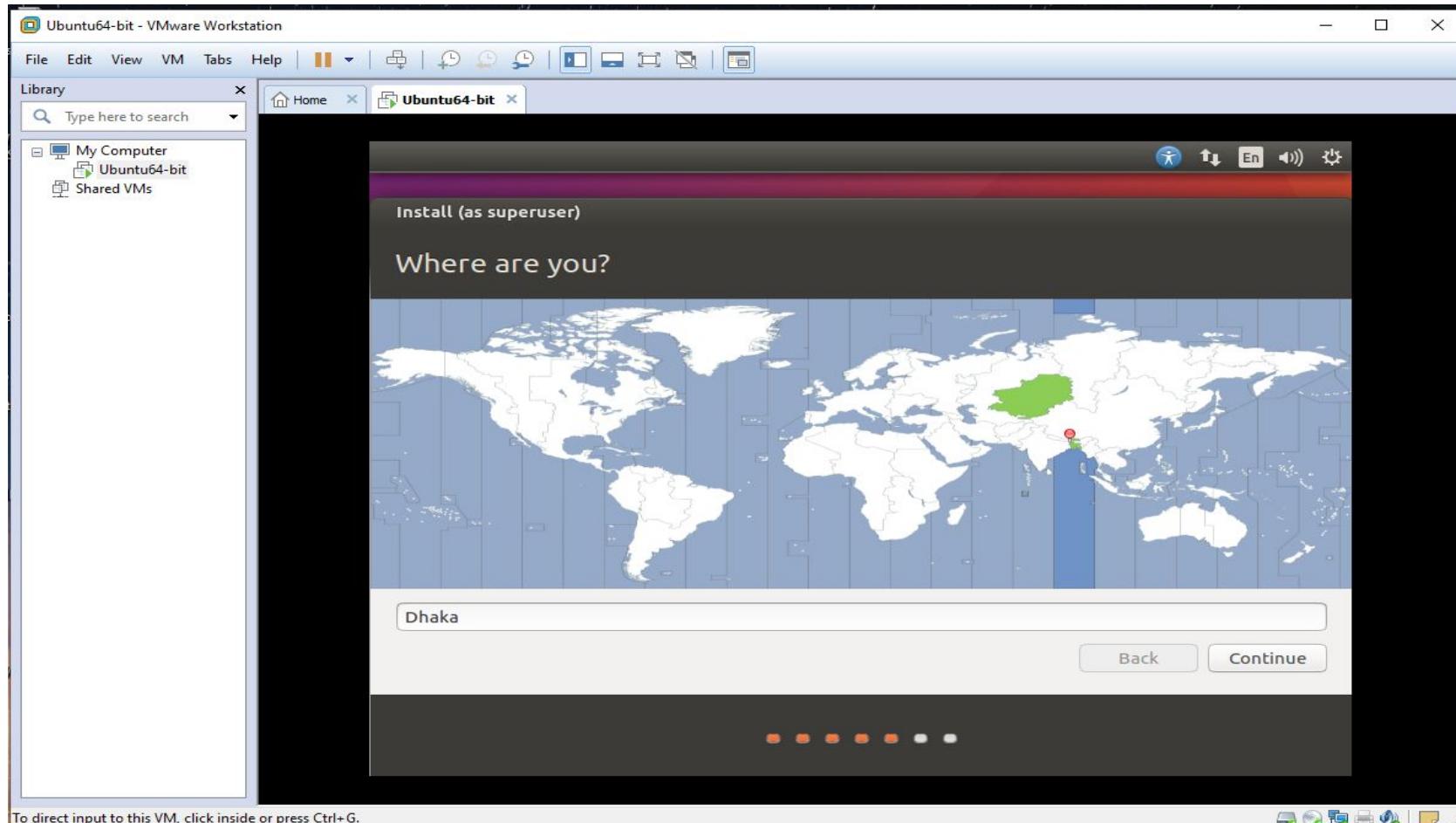
Installing Ubuntu on VM



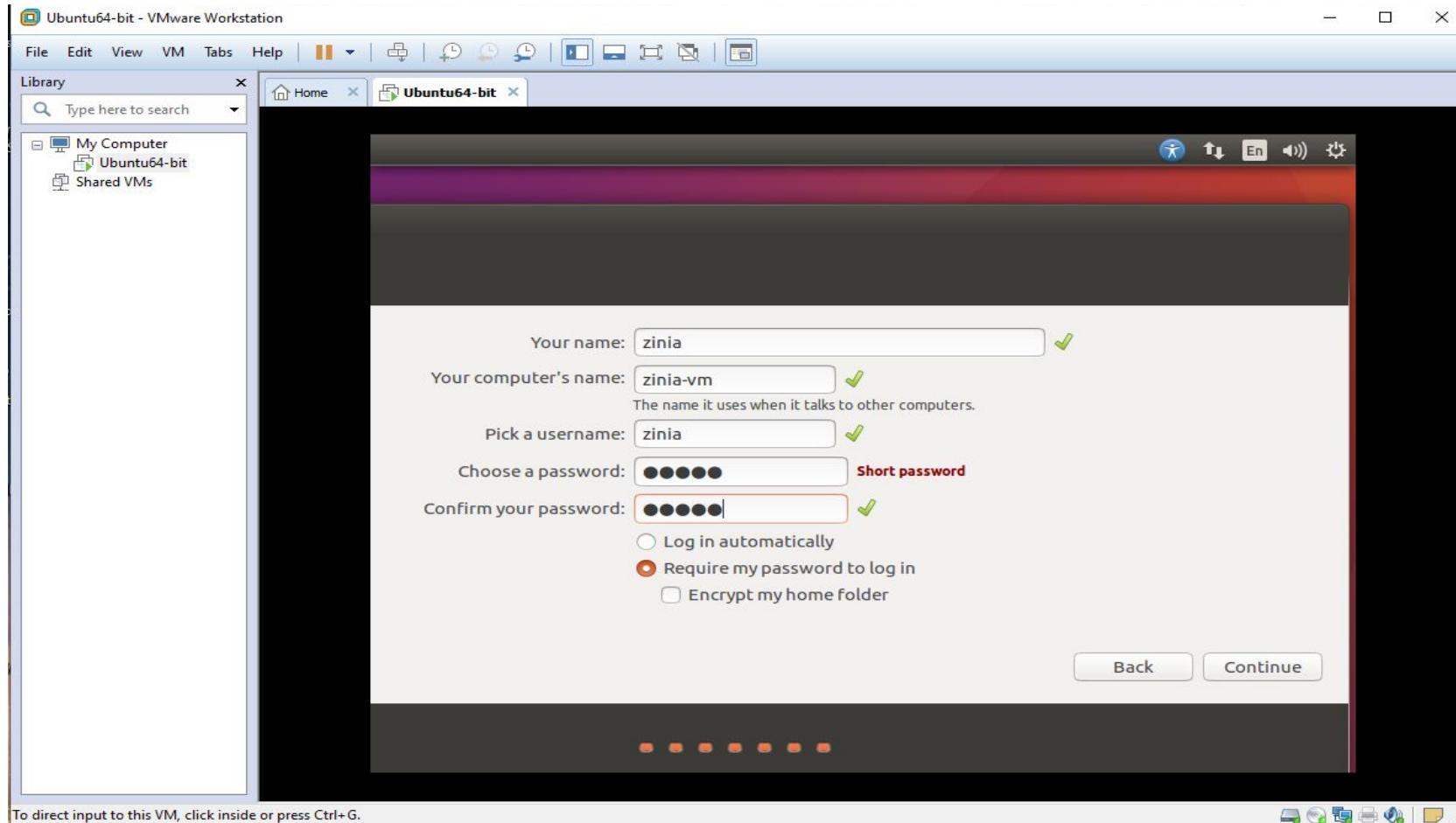
Installing Ubuntu on VM



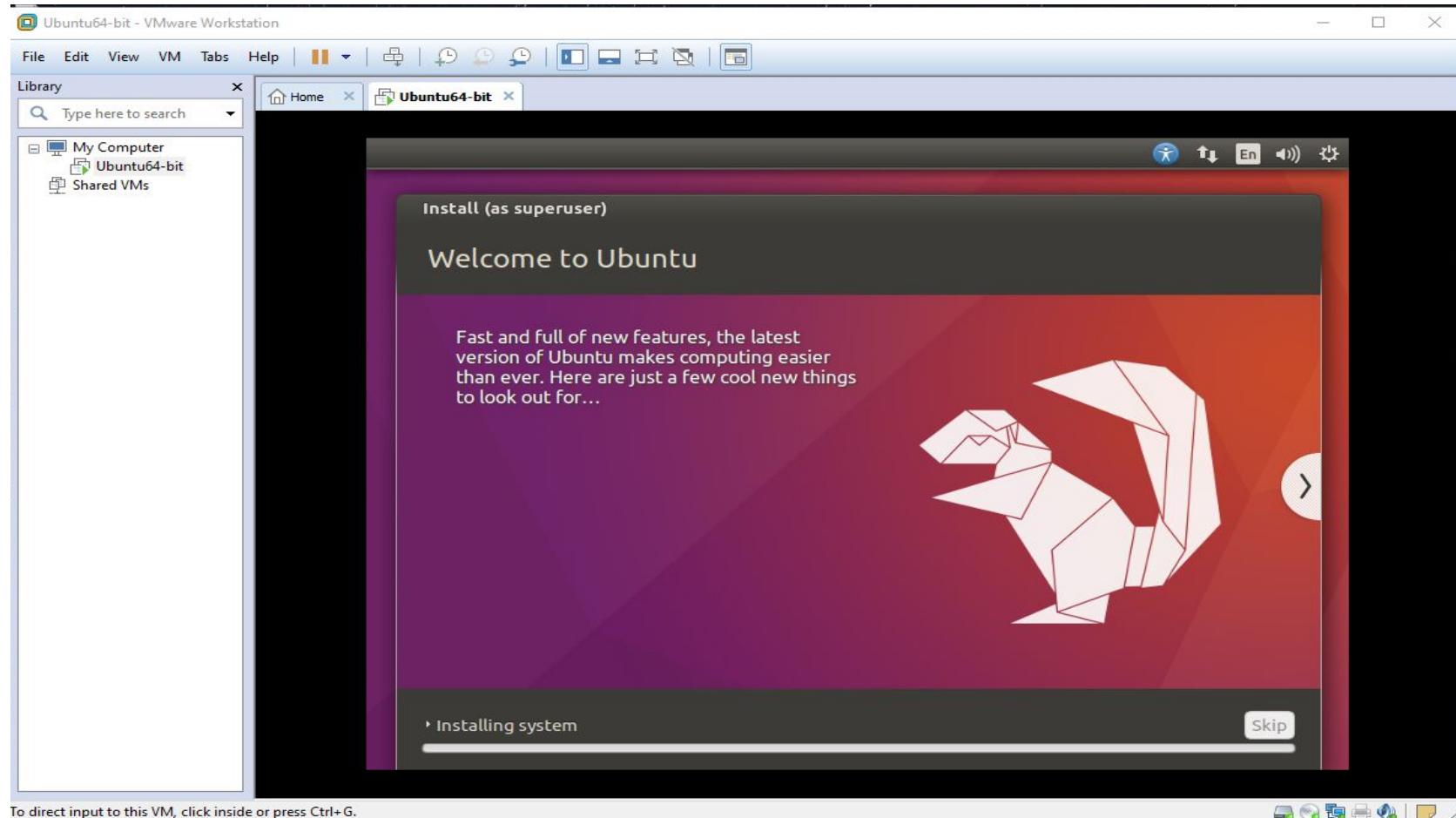
Installing Ubuntu on VM



Installing Ubuntu on VM



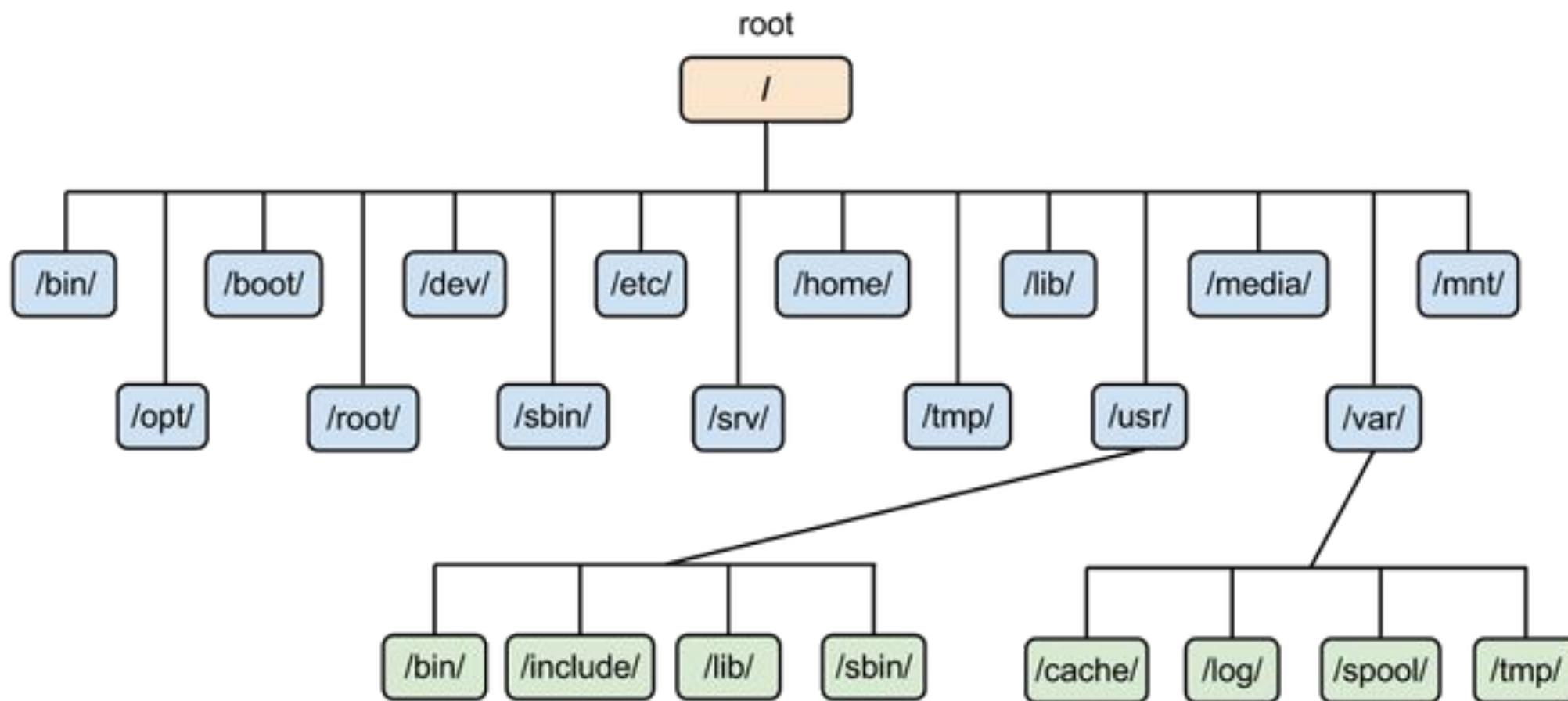
Installing Ubuntu on VM



File Structure and Basic Commands of Linux

Ubuntu 20.04 LTS

File System



Basic commands

```
uname  
whoami  
pwd  
date  
cal  
clear  
echo  
cd  
../  
./  
ls  
touch  
cat  
>  
>>  
wc
```

```
mkdir  
chmod  
cp  
mv  
rm  
find  
grep  
head  
tail  
pipeline |  
less  
more  
read  
bc  
man  
history
```

Basic commands - Self Study

aspell
awk
chown
cpio
corn
declare
df
enable
env
eval
exec
exit
expect
free

ifup
ifdown
locate
slocate
lft
ln
mc
neat
netconfig
netcfg
netstat
nslookup
od
rpm
rsync
screen
sdiff

sed
snort
export
cmp
comm
alias
apt-get
ps
clear
passwd
sort
sudo
vi

Overview of Basic Commands

[Linux Command Line for Beginners](#)

[Changing File Permission](#)

Basic commands - Try yourself

1. Create two directory named “CSE 308” & “Backup” in Desktop directory.
2. Create a file in the “CSE 308” directory name with your student_id.txt.
3. Write your informations like full name, level, batch, hobby in that student_id.txt file.
4. Now copy this file in another directory named “Backup”.

Some Useful Shell Commands

The following slides cover some useful shell commands. For each command, a brief description is given.

Many commands were shown in class 1. Many will be shown as necessary as we move along the OS sessional. In the meantime, feel free to explore these commands (and much more on your own).

Introduction

- Many people says that Linux is a command based operating system.
- So many of us thinks that Linux is not so user friendly OS.
- But it is not true. Linux is a GUI based OS with a Shell which is more powerful than its counterpart in Windows OS.
- We will be familiar with some shell commands.

Identity

- Type ***uname*** and Linux will tell his name to you
- If you want to know your name type ***whoami***

Manual

- For each command Linux contains manual. To view the manual : *man name*
 - ***man uname***

Editors

- To view files a large number of editors are available. They are:
 - kwrite
 - emacs
 - gedit
 - vi
- To view : ***editorname filename***
 - ***kwrite file.txt***

User

- In Linux , root is the most powerful user. But other users can be created easily. Each linux user must be under certain group.
 - To add a group : ***groupadd group1***
 - To delete a group : ***groupdel group1***
 - To add a user : ***useradd –g groupname username***
 - To delete a user : ***userdel username***
 - To change a user : ***su user1***
 - To update the passwd : ***passwd user1***

View Text

- To view a line of text in the shell: ***echo***
 - ***echo 'welcome to linux'***
- To clear the shell : ***clear***

Directory and File Permissions

- Each file or directory has 3 security groups.
 - Owner
 - Group
 - All Others
- Each security group has 3 flags that control the access status : read, write, execute
- They are listed as 'rwx' or a "-" if the access is turned off.
 - ***rwxrwxrwx*** [read, write and executable for owner, group and all others]
 - ***rw-r--r--*** [read and write by owner, read only for group and all others]

Directory and File Permissions

- To change the permissions type ***chmod***
 - u, g, o or all [whose permission you are changing]
 - + or - [type of change: add or subtract permission]
 - combination of r , w or x [which permission you are changing: read, write or execute]
 - file or directory [name of file or directory to change]
 - ***chmod go+rw file1 file2*** add read and write access for group and others for files 'file1' and 'file2'
 - ***chmod a+rwx file1*** add read, write and execute for everyone for 'file1'.
 - ***chmod 555 file1***

Directory and File Permissions

- To change the owner of a file or directory type ***chown***.
- ***chown*** username <file or directory>
 - ***chown user1 file***
- To change the group of a file or directory type ***chgrp***.
- ***chgrp*** groupname <file or directory>
 - ***chgrp group1 file1 file2***

Directory and File Listings

- To list information about directory or files : ***ls***
- This command contains some options.
 - **-a**[do not hide entries starting with .]
 - **-A** [do not list implied . and ..]
 - **-h**[print sizes in human readable format]
 - **-l** [use a long listing format]
 - **-S** [sort by file size]
 - **Permissions.Directories.Owner.Group.Size.Date.Name**
drwx---rwx . 2 . oracle . oinstall . 1206 . Jan 22 15:10 . a

Directory Operations

- To print the current directory : ***pwd***
- To change the current directory : ***cd dirname***
 - The variable HOME is the default directory.
- To make a new directory : ***mkdir***
 - -m [set permission mode (as in chmod)]
 - -v [print a message for each created directory]
- To delete an empty directory : ***rmdir***

Directory Operations

- To move to a directory pushing the current directory to stack : ***pushd dirname***
- Effect:
 - adds a directory to the top of the directory stack
 - or rotates the stack making the new top of the stack the current working directory

Directory Operations

- To moves to the directory at the top of the stack as well as to remove the topmost entry : *popd*
- Effect:
 - removes the top directory from the stack
 - performs a *cd* to the new top directory.

Directory Operations

- To display the list of currently remembered directories :
dirs
- The default display is on a single line with directory names separated by spaces.
- How to add to the list : *pushd*
- How to remove from the list : *popd*

File Operations

- To copy a file : ***cp***
- Copy source to destination or multiple sources to directory
 - **-i** [prompt before overwrite]
 - **-r** [copy directories recursively]
 - **-u** [copy only when the src file is newer than the dest file or when the dest file is missing]

File Operations

- To remove a file or directory : ***rm***
 - ***-f*** [ignore nonexistent files, never prompt]
 - ***-i*** [prompt before any removal]
 - ***-r*** [remove the contents of directories recursively]
 - ***-v*** [explain what is being done]

File Operations

- To move or rename a file : ***mv***
 - rename src to dest or move src(s) to directory
 - **-i** [prompt before overwrite]
 - **-u** [move only when the src file is newer than the dest file or when the dest file is missing]
 - **-v** [explain what is being done]

File Operations

- To determine file type : ***file filename***
- File tests each argument in an attempt to classify it. This causes the file type to be printed
 - **-i** [show the mime type].
 - **-v** [Print the version of the file]
 - ***file a.txt*** : a.txt: very short file
 - ***file a.xls*** : a.xls: Microsoft Office Document
 - ***file -i a.xls*** : a.xls: \012- application/msword

File Operations

- To concat files and print on the standard output : ***cat file1 file2 file3 ...***
 - ***-n*** [number all output lines]
 - ***-s*** [never more than one single blank line]

File Viewing

- To view files in shell use: ***more*** or ***less***.
 - ***more filename***
 - ***less filename***
- The main difference between more and less is that
 - less allows backward and forward movement using the arrow keys.
 - more only uses the [Spacebar] and the [B] key for forward and backward navigation.

File Viewing

- To output the first lines of files : ***head file1 file2 file3 ...***
- Print the first 10 lines of each file to standard output
- With more than one file , precede each with a header giving the file name
 - ***-n*** [output the last n lines, instead of the last 10]

File Viewing

- To output the last lines of files : *tail file1 file2 file3 ...*
- Print the last 10 lines of each file to standard output
- With more than one file, precede each with a header giving the file name
 - **-n**[output the last n lines, instead of the last 10]

File Viewing

- To sort lines of a text files : *sort file1 file2 file3...*
- Write sorted concatenation of all file(s) to standard output.

File Viewing

- To print the number of lines, words and bytes in files :
wc file1 file2 file3 ...
- print byte, word, and newline counts for each file and a total line if more than one file is specified.
 - ***-l*** [print the newline counts]
 - ***-w*** [print the word counts]

Standard I/O/E

- By default, three default files known as standard files are automatically opened when a command is executed.
- They are standard input (***stdin***) ,standard output (***stdout***) and standard error (***stderr***).
- For example, the command ***ls -a*** scans the current directory and collects a list of all the files, produces a human readable list, and outputs the result to the terminal window.

Redirection

- Linux redirection features can be used to detach the default files from ***stdin*, *stdout* and *stderr*** and attach other files to them.
- **Input redirection:**
 - < - get input from file instead of the keyboard
- **Output redirection:**
 - > - send output to file instead of the terminal window
- **Append output:**
 - >> - command is used to append to a file if it already exists

Piping

- The input of a command may come from the output of another command.
- This is accomplished with the ' | ' pipe operator.
- **How to view the lines 15-20 of a file named 'a.txt' ?**

Piping

- The input of a command may come from the output of another command.
- This is accomplished with the ' | ' pipe operator.
- **How to view the lines 15-20 of a file named 'a.txt' ?**
 - *head -20 a.txt | tail -5*

Grep

- grep matches a pattern in a given a list of files or standard input and outputs only the matching lines.
 - *grep* pattern filename
 - *grep abcfile.txt*
- grep patterns are case sensitive by default.
- Some options
 - **-i** [case insensitive search]
 - **-c** [count of total matches]
 - **-E** [regular expressions can be provided as patterns]
 - **-n** [display the line numbers of the matched lines]

Find

- search for files in a directory hierarchy.
- By default, find returns all files below the current working directory.
 - ***find***
- To search a pattern : ***find -name '*txt'***
- To search for a file type :
 - ***find -type d*** [find all directories]
 - ***find -type f*** [find all regular files]
- Find executes the '***-print***' action by default. To change it to style such as '***ls***' : ***find -type f -ls***

Find

- To search all the directories
 - not recommended
 - ***find / -name "myfile" -type f***
- To search a specific directory
 - ***find /home/dir1 -name "myfile" -type f***
- To search multiple directories
 - ***find dir1 dir2 -name "myfile" -type f***
- To Search for all files owned by a user
 - ***find -user userid***
- To take an action
 - ***find -type f -name '*ch*' -exec chmod a+rwx {} \;***
 - **{}** is replaced with the name of the file
 - The ; indicates the end of the command.

Thanks