SYSTEMS SECURITY

한양대학교 소프트웨어융합대학 소프트웨어학부
이 연준 교수

Index

- **Introduction**
- **Lab Objective**
- **Lab Preparation & Task**
  - ***Linux & Package Setup***
- **Evaluation**

INTRODUCTION

Instructor

- **Instructor : Prof Yeonjoon Lee**
  - ***Office : Engineering Building III, Room 504***
  - ***Email : yeonjoonlee@hanyang.ac.kr***
  - ***Office hour : Right after class or by appointment***
- **Class meeting time and location**
  - ***Class : Tuesday 15:00 - 17:00***
  - ***Engineering Building I, Room 305***

Assistant Instructor

- **Assistant Instructor : Seokwon Lee**
  - ***Office : Engineering Building III, Room 519-2***
  - ***Email : sevenshards00@gmail.com***
  - ***Office hour : Wednesday 15:00-17:00 or by appointment***
- **Class meeting time and location**
  - ***Lab Class : Friday 09:00 – 11:00***
  - ***Engineering Building III, Room 318***

Course Objectives

- **Introduction to Systems Security**
  - ***We learn security vulnerabilities found in the system through various labs.***
  - ***Buffer Overflow, Return-To-LibC, Race Condition, etc…***

LAB OBJECTIVE

Lab Objectives

- **Setup the lab environment**
  - ***Install Virtual Machine (VM)***
  - ***Install Ubuntu 16.04***
  - ***Settings***

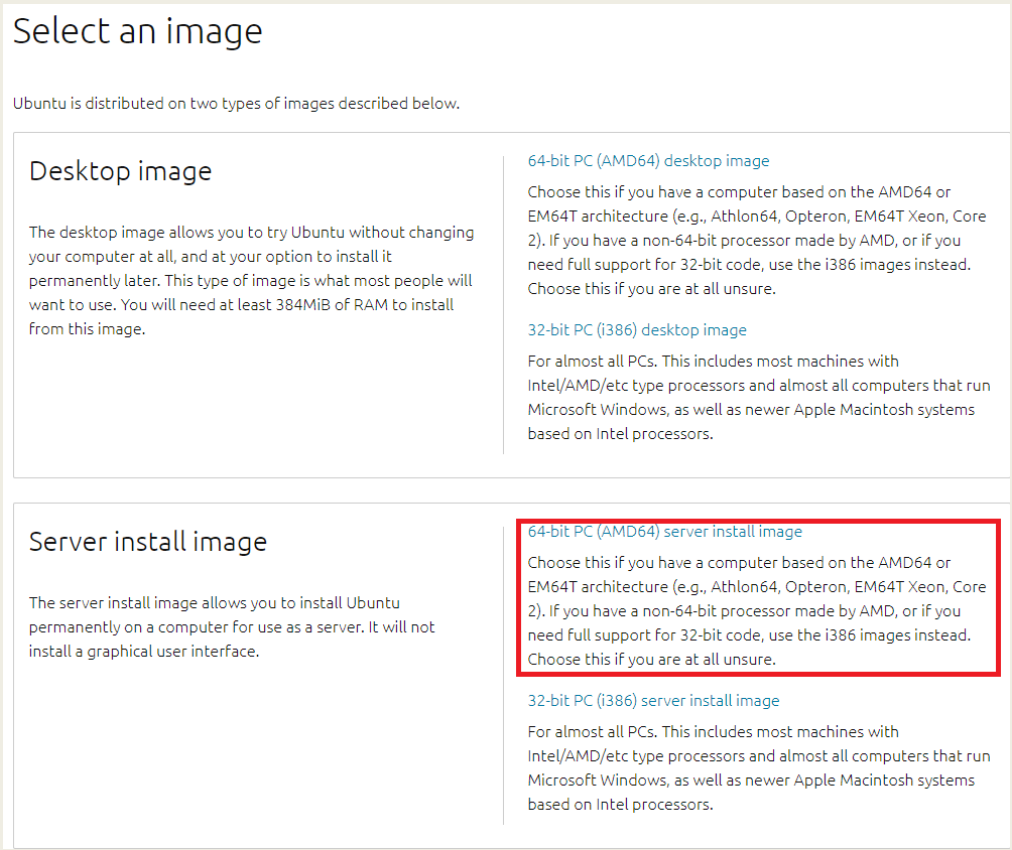
LAB PREPARATION & TASK

Virtual Machine

vmware®

Ubuntu 16.04.6 LTS (Xenial Xerus)

- http://releases.ubuntu.com/16.04/



Select an image

Ubuntu is distributed on two types of images described below.

Desktop image

The desktop image allows you to try Ubuntu without changing your computer at all, and at your option to install it permanently later. This type of image is what most people will want to use. You will need at least 384MiB of RAM to install from this image.

64-bit PC (AMD64) desktop image

Choose this if you have a computer based on the AMD64 or EM64T architecture (e.g., Athlon64, Opteron, EM64T Xeon, Core 2). If you have a non-64-bit processor made by AMD, or if you need full support for 32-bit code, use the i386 images instead. Choose this if you are at all unsure.

32-bit PC (i386) desktop image

For almost all PCs. This includes most machines with Intel/AMD/etc type processors and almost all computers that run Microsoft Windows, as well as newer Apple Macintosh systems based on Intel processors.

Server install image

The server install image allows you to install Ubuntu permanently on a computer for use as a server. It will not install a graphical user interface.

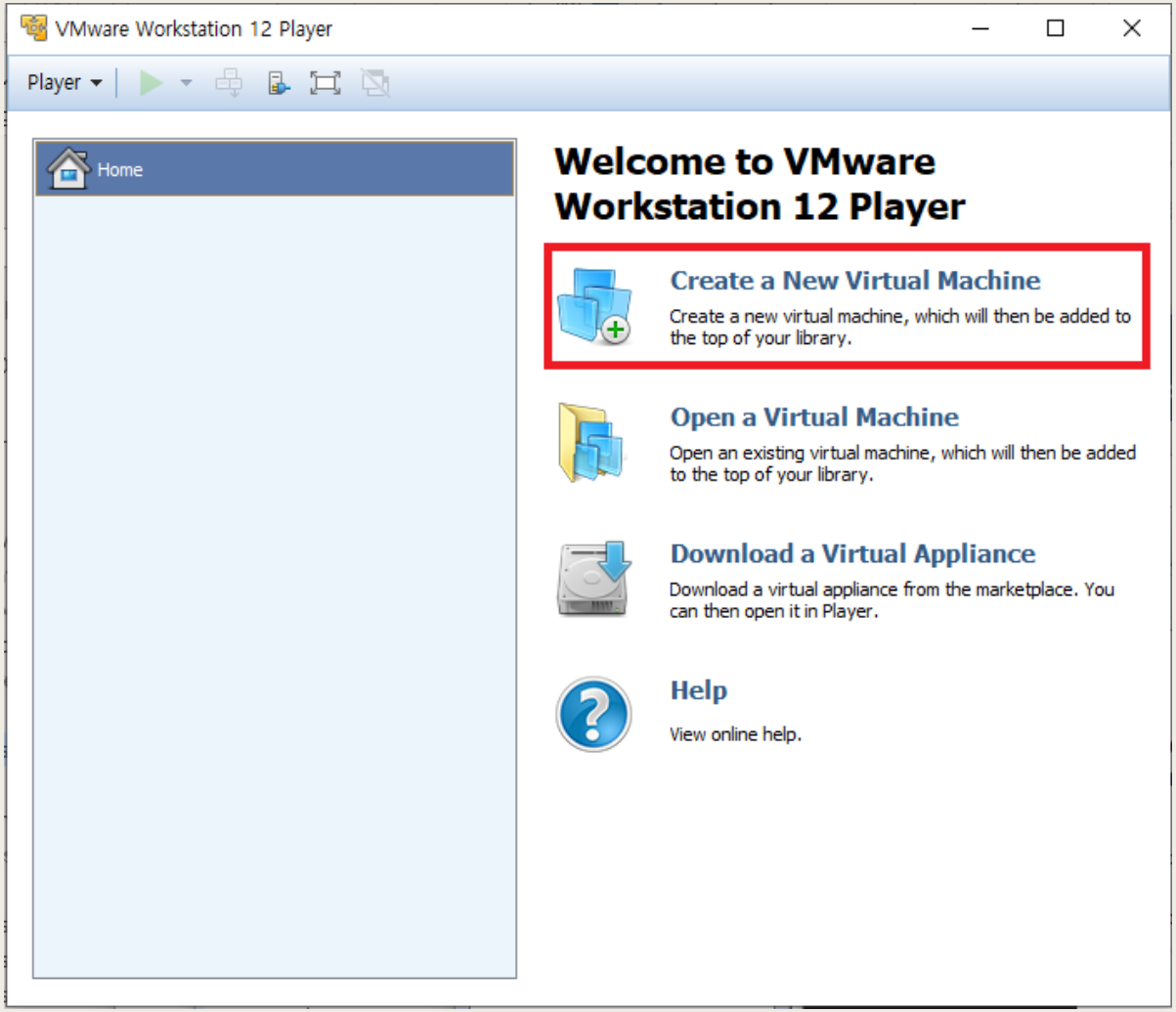
64-bit PC (AMD64) server install image

Choose this if you have a computer based on the AMD64 or EM64T architecture (e.g., Athlon64, Opteron, EM64T Xeon, Core 2). If you have a non-64-bit processor made by AMD, or if you need full support for 32-bit code, use the i386 images instead. Choose this if you are at all unsure.

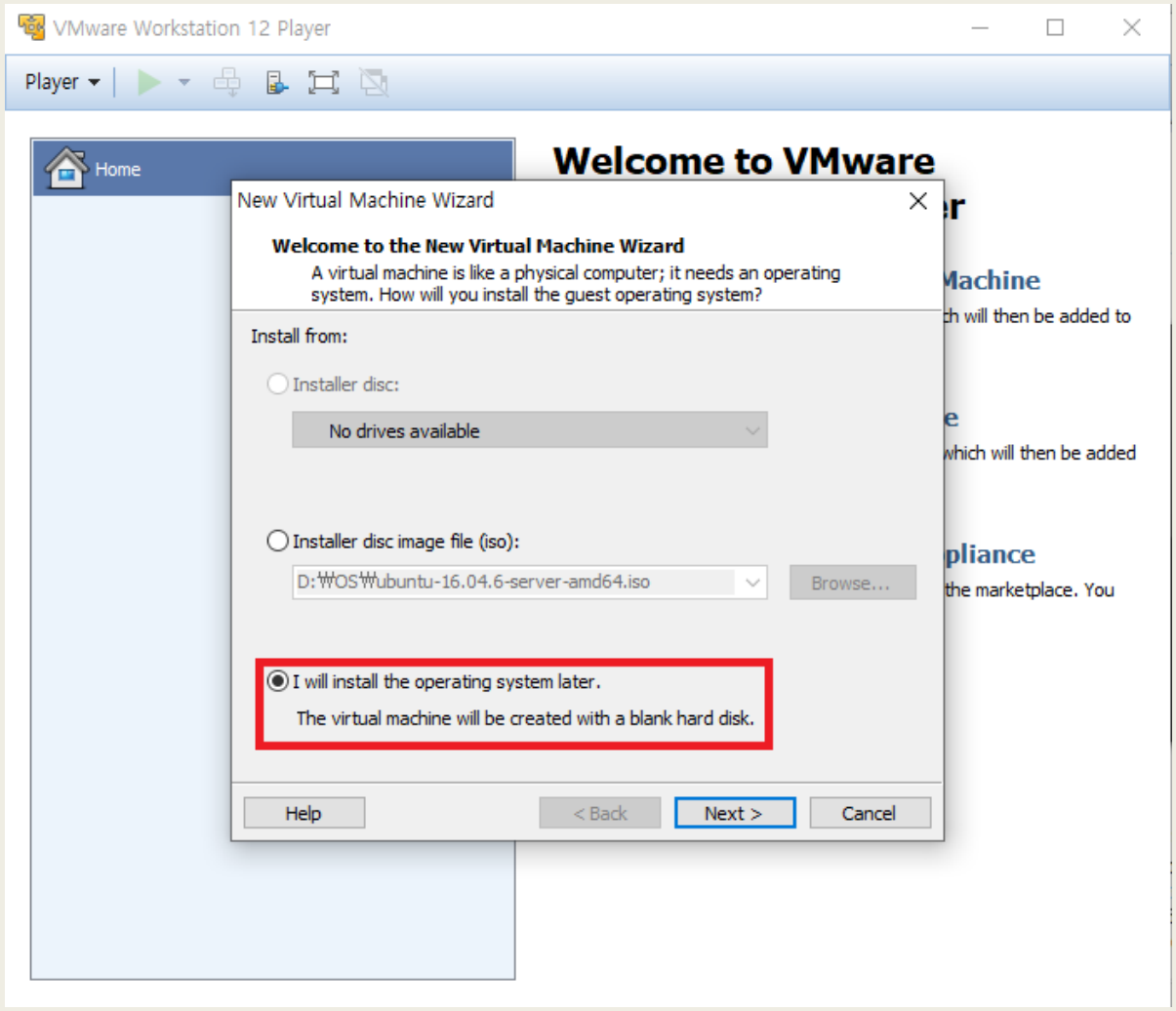
32-bit PC (i386) server install image

For almost all PCs. This includes most machines with Intel/AMD/etc type processors and almost all computers that run Microsoft Windows, as well as newer Apple Macintosh systems based on Intel processors.

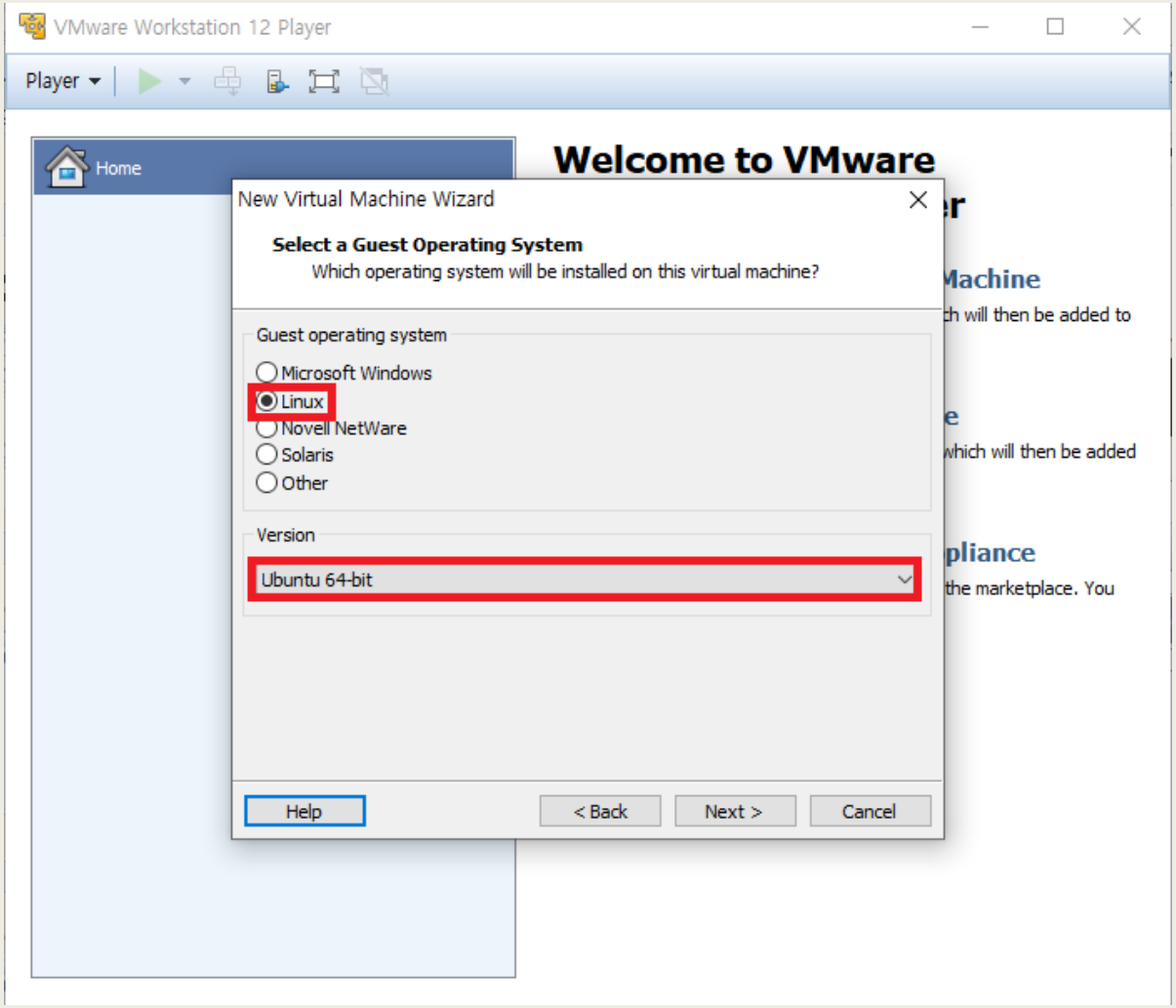
VM Setting - (1)


VMware Workstation 12 Player
Player
Home
Welcome to VMware Workstation 12 Player
Create a New Virtual Machine
Create a new virtual machine, which will then be added to the top of your library.
Open a Virtual Machine
Open an existing virtual machine, which will then be added to the top of your library.
Download a Virtual Appliance
Download a virtual appliance from the marketplace. You can then open it in Player.
Help
View online help.

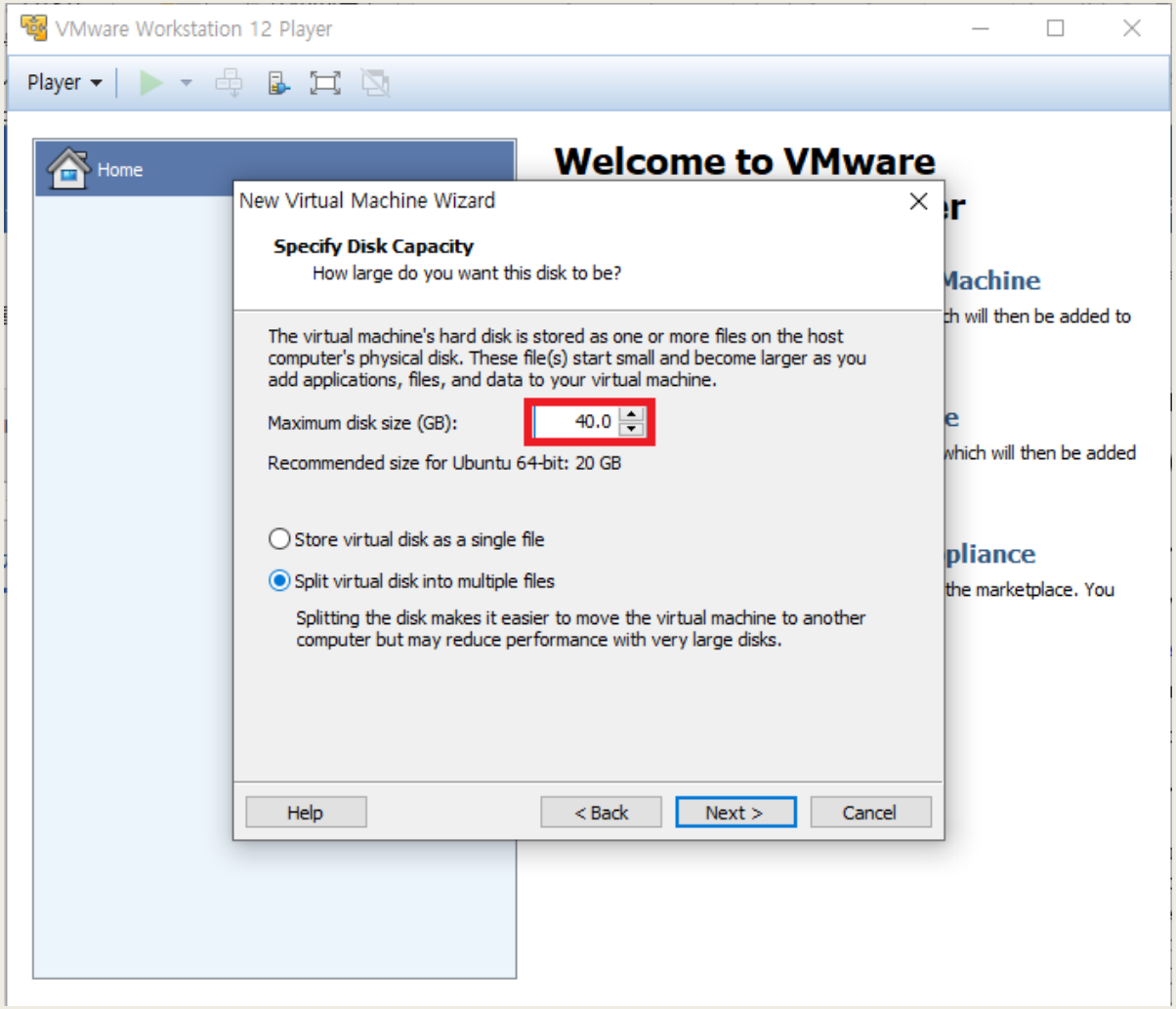
VM Setting - (2)


VMware Workstation 12 Player
Player
Home
Welcome to VMware
New Virtual Machine Wizard
Welcome to the New Virtual Machine Wizard
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?
Install from:
Installer disc:
No drives available
Installer disc image file (iso):
D:₩OS₩ubuntu-16.04.6-server-amd64.iso
Browse...
I will install the operating system later.
The virtual machine will be created with a blank hard disk.
Help
< Back
Next >
Cancel

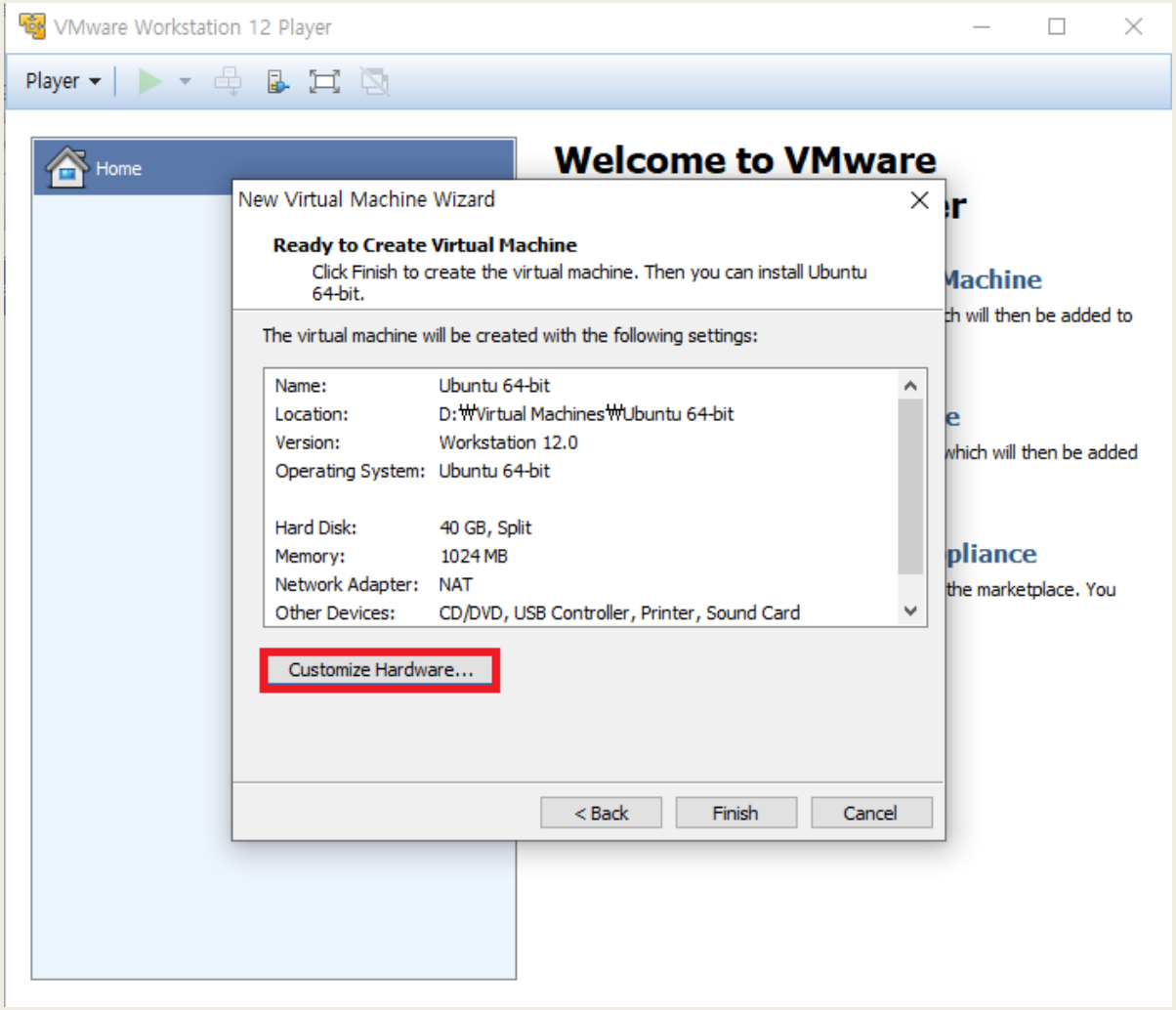
VM Setting - (3)


VMware Workstation 12 Player
Player
Home
Welcome to VMware
New Virtual Machine Wizard
Select a Guest Operating System
Which operating system will be installed on this virtual machine?
Guest operating system
Microsoft Windows
Linux
Novell NetWare
Solaris
Other
Version
Ubuntu 64-bit
Help
< Back
Next >
Cancel

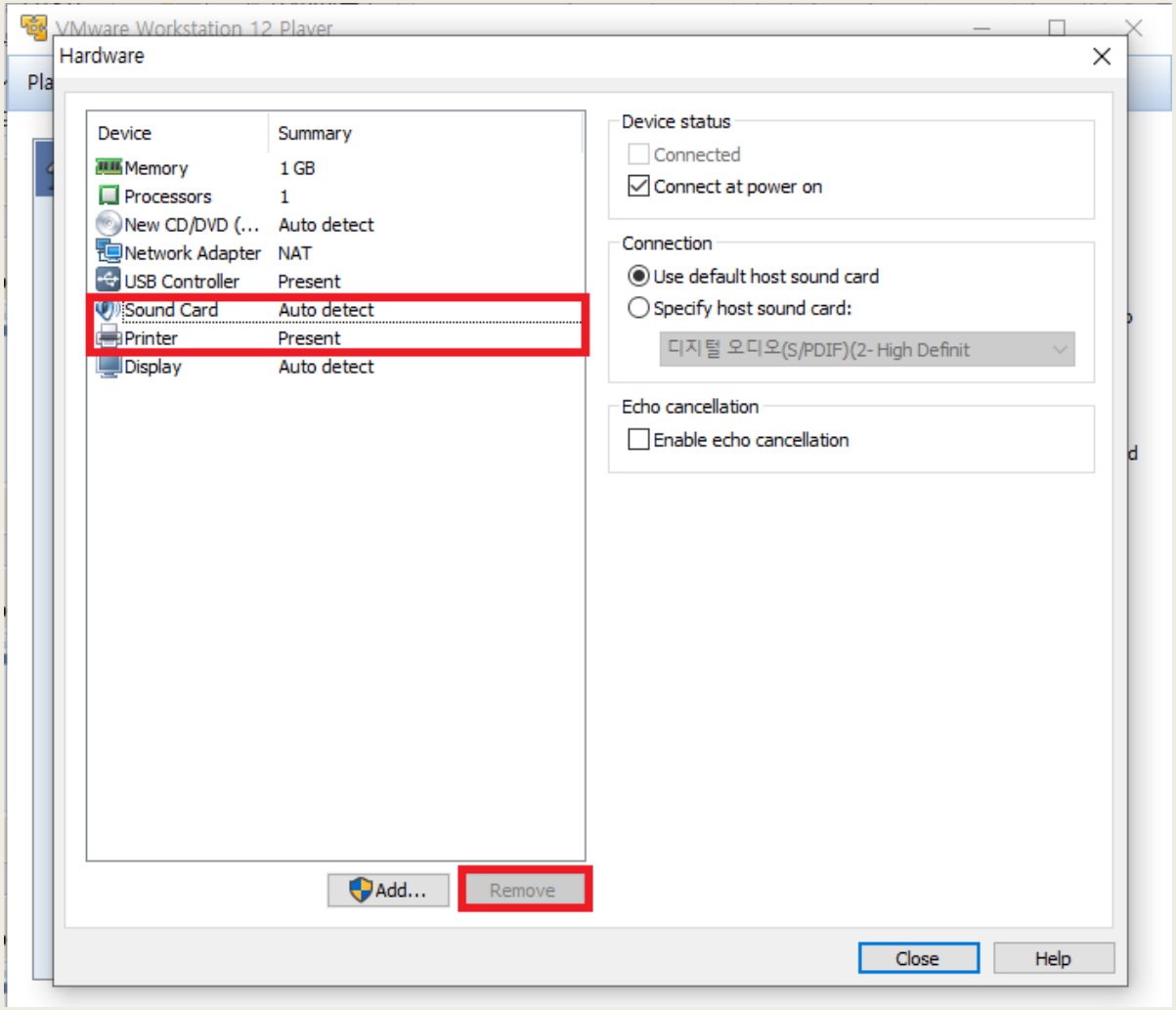
VM Setting - (4)


VMware Workstation 12 Player
Player
Home
Welcome to VMware
New Virtual Machine Wizard
Specify Disk Capacity
How large do you want this disk to be?
The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.
Maximum disk size (GB):
40.0
Recommended size for Ubuntu 64-bit: 20 GB
Store virtual disk as a single file
Split virtual disk into multiple files
Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.
Help
< Back
Next >
Cancel

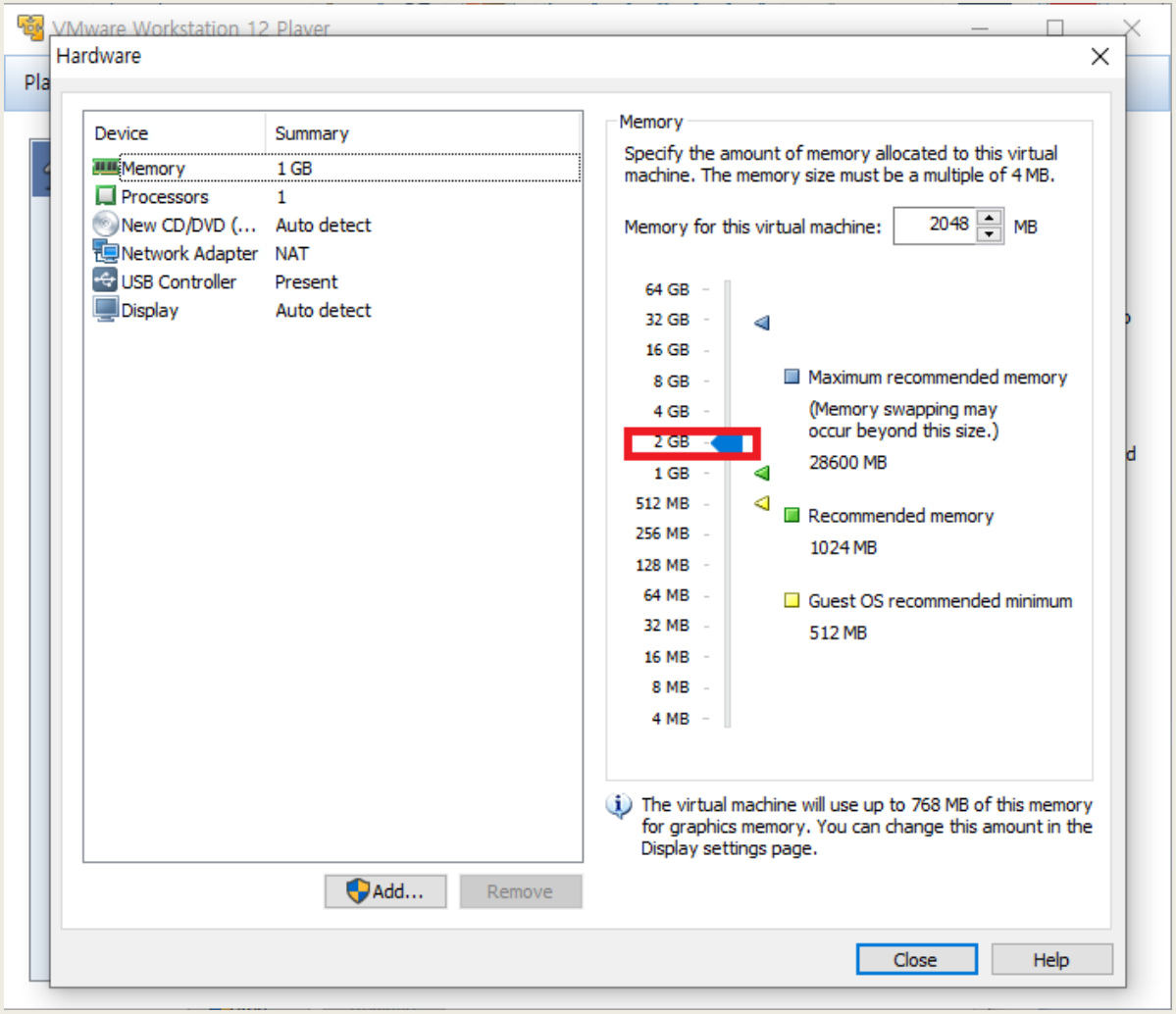
VM Setting - (5)


VMware Workstation 12 Player
Player
Home
Welcome to VMware
New Virtual Machine Wizard
Ready to Create Virtual Machine
Click Finish to create the virtual machine. Then you can install Ubuntu 64-bit.
The virtual machine will be created with the following settings:
Name: Ubuntu 64-bit
Location: D:₩Virtual Machines₩Ubuntu 64-bit
Version: Workstation 12.0
Operating System: Ubuntu 64-bit
Hard Disk: 40 GB, Split
Memory: 1024 MB
Network Adapter: NAT
Other Devices: CD/DVD, USB Controller, Printer, Sound Card
Customize Hardware...
< Back
Finish
Cancel

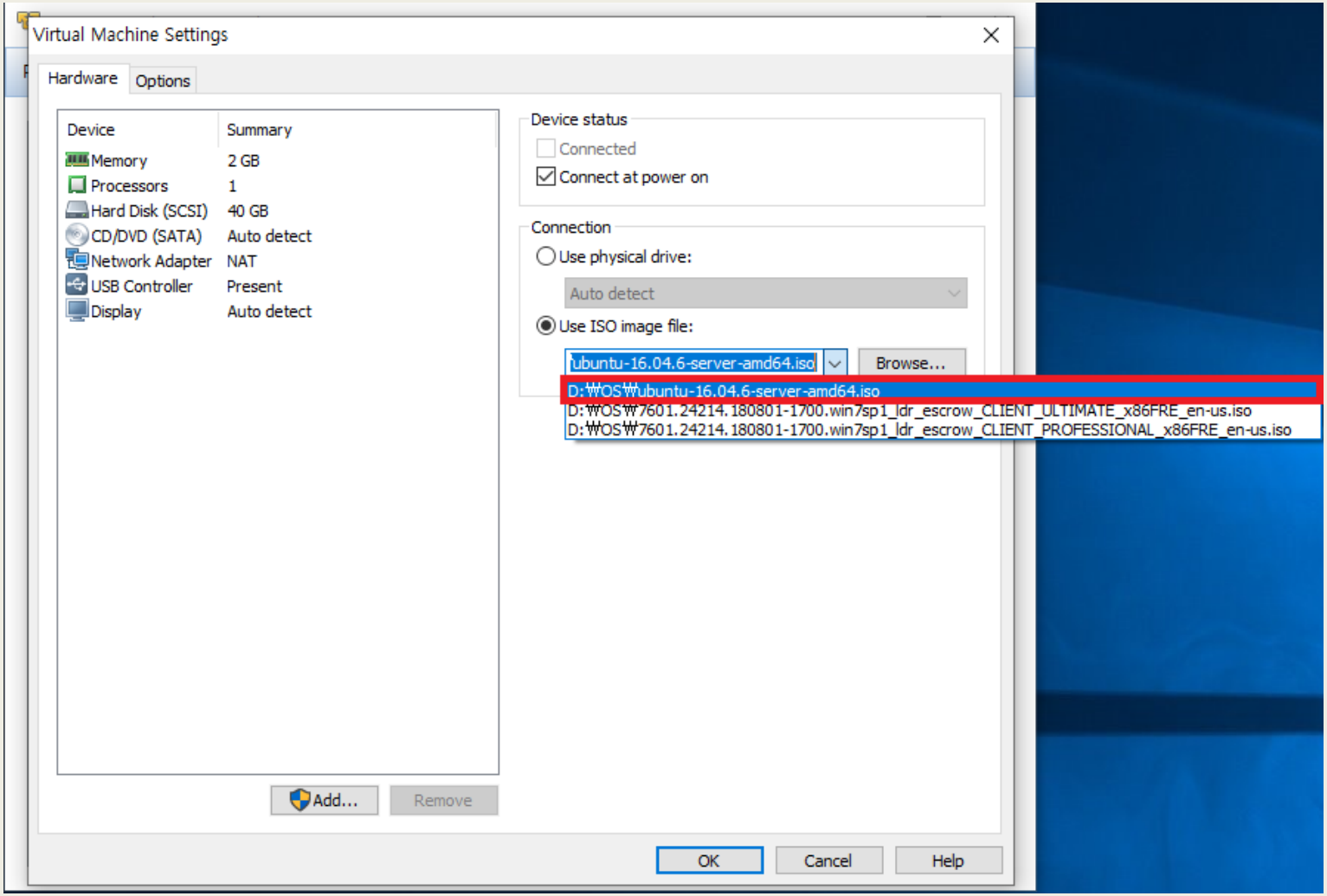
VM Setting - (6)


VMware Workstation 12 Player
Hardware
Device
Summary
Memory
1 GB
Processors
1
New CD/DVD (...
Auto detect
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Printer
Present
Display
Auto detect
Add...
Remove
Device status
Connected
Connect at power on
Connection
Use default host sound card
Specify host sound card:
디지털 오디오(S/PDIF)(2- High Definit
Echo cancellation
Enable echo cancellation
Close
Help

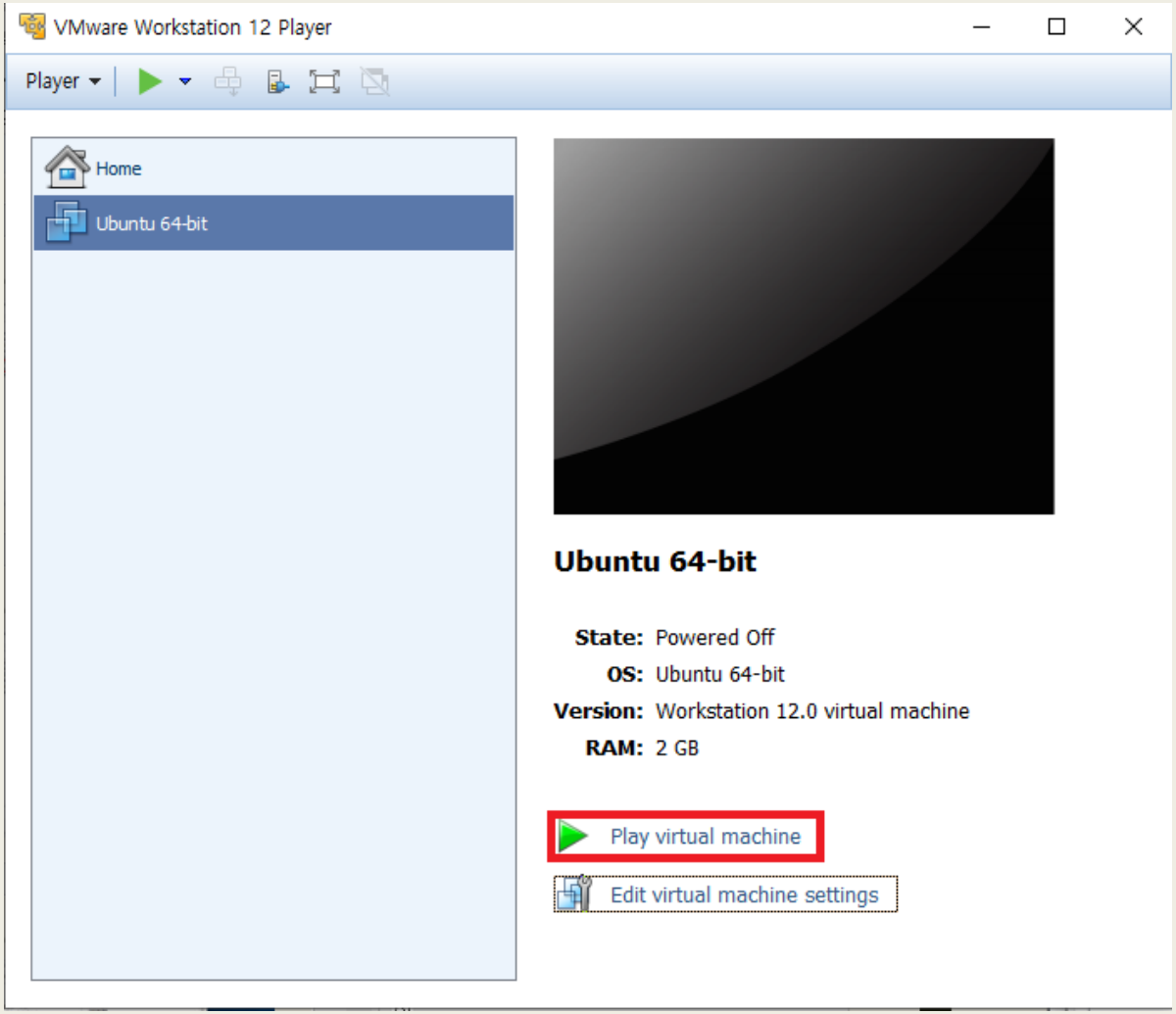
VM Setting - (7)


VMware Workstation 12 Player
Hardware
Device
Summary
Memory
1 GB
Processors
1
New CD/DVD (...
Auto detect
Network Adapter
NAT
USB Controller
Present
Display
Auto detect
Add...
Remove
Memory
Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.
Memory for this virtual machine:
2048
MB
64 GB
32 GB
16 GB
8 GB
4 GB
2 GB
1 GB
512 MB
256 MB
128 MB
64 MB
32 MB
16 MB
8 MB
4 MB
Maximum recommended memory
(Memory swapping may occur beyond this size.)
28600 MB
Recommended memory
1024 MB
Guest OS recommended minimum
512 MB
The virtual machine will use up to 768 MB of this memory for graphics memory. You can change this amount in the Display settings page.
Close
Help

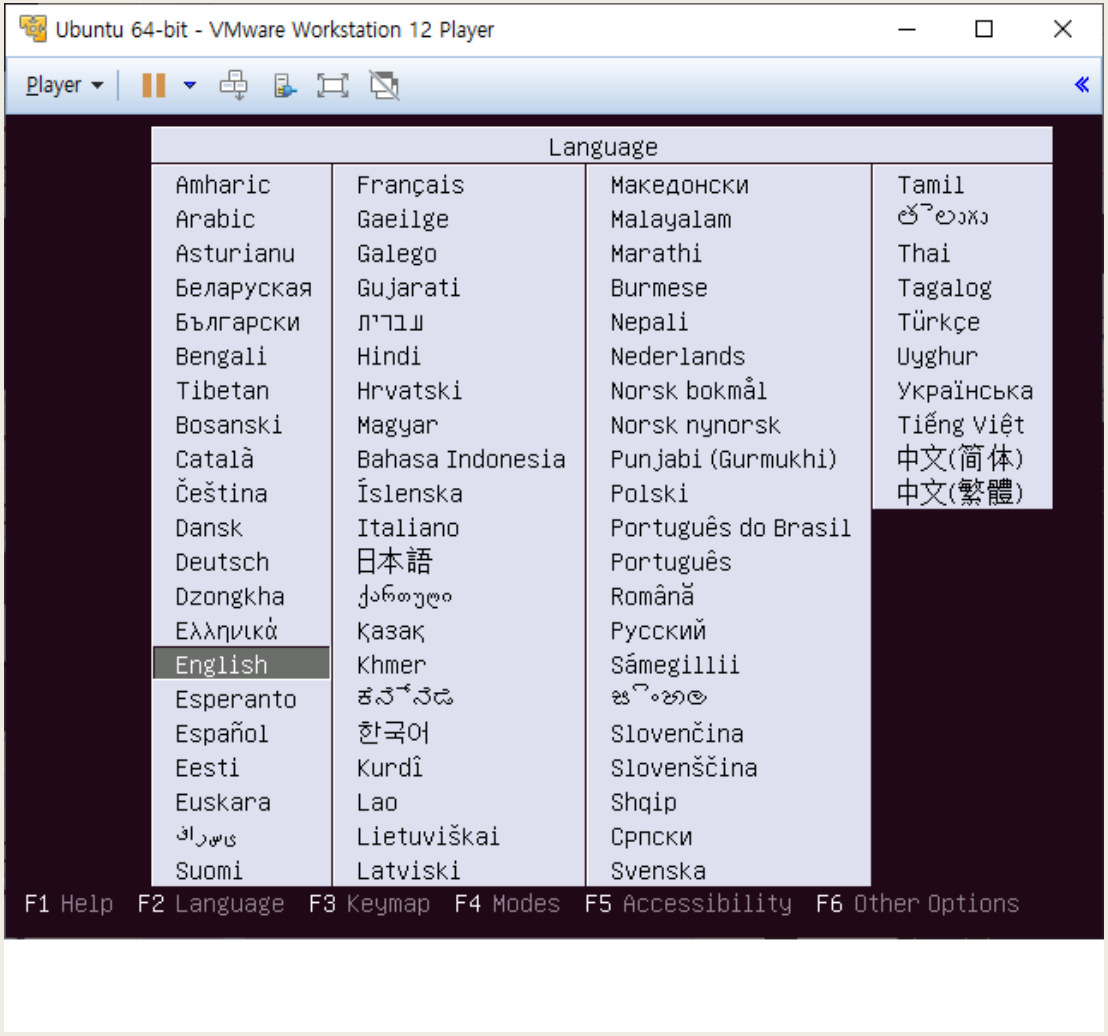
VM Setting - (8)


Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
2 GB
Processors
1
Hard Disk (SCSI)
40 GB
CD/DVD (SATA)
Auto detect
Network Adapter
NAT
USB Controller
Present
Display
Auto detect
Add...
Remove
Device status
Connected
Connect at power on
Connection
Use physical drive:
Auto detect
Use ISO image file:
ubuntu-16.04.6-server-amd64.iso
Browse...
D:₩OS₩ubuntu-16.04.6-server-amd64.iso
D:₩OS₩7601.24214.180801-1700.win7sp1_ldr_escrow_CLIENT_ULTIMATE_x86FRE_en-us.iso
D:₩OS₩7601.24214.180801-1700.win7sp1_ldr_escrow_CLIENT_PROFESSIONAL_x86FRE_en-us.iso
OK
Cancel
Help

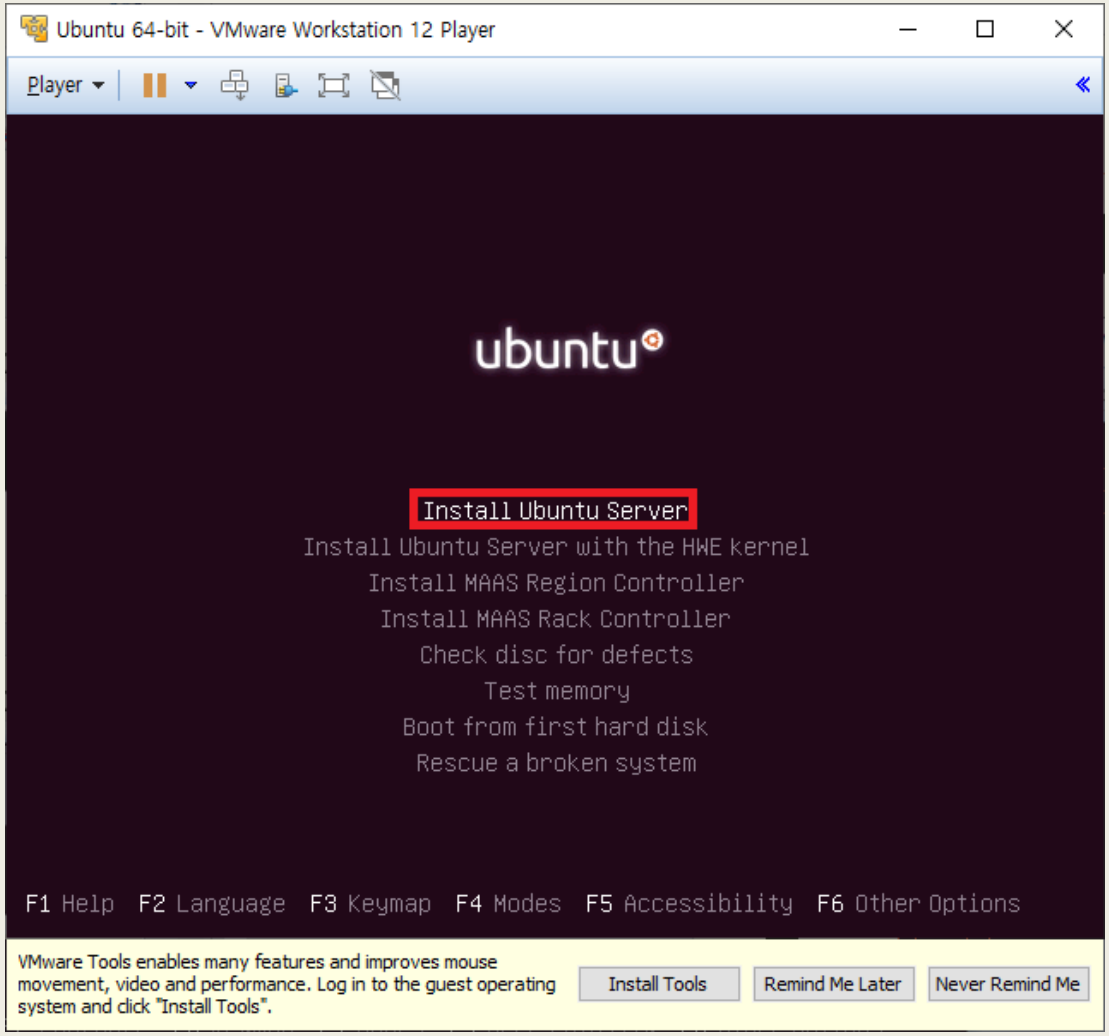
Ubuntu Setup - (1)



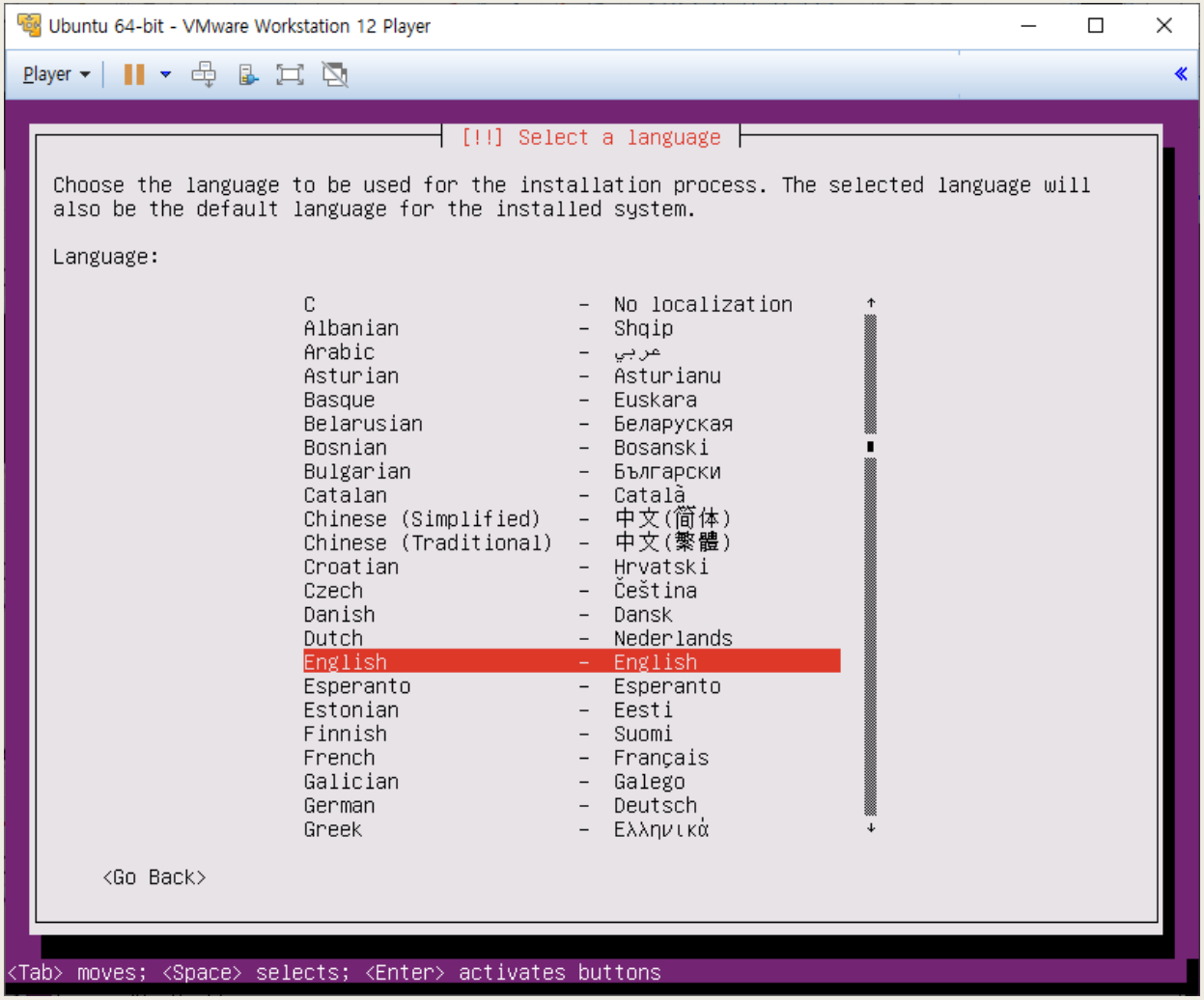
Ubuntu Setup - (2)



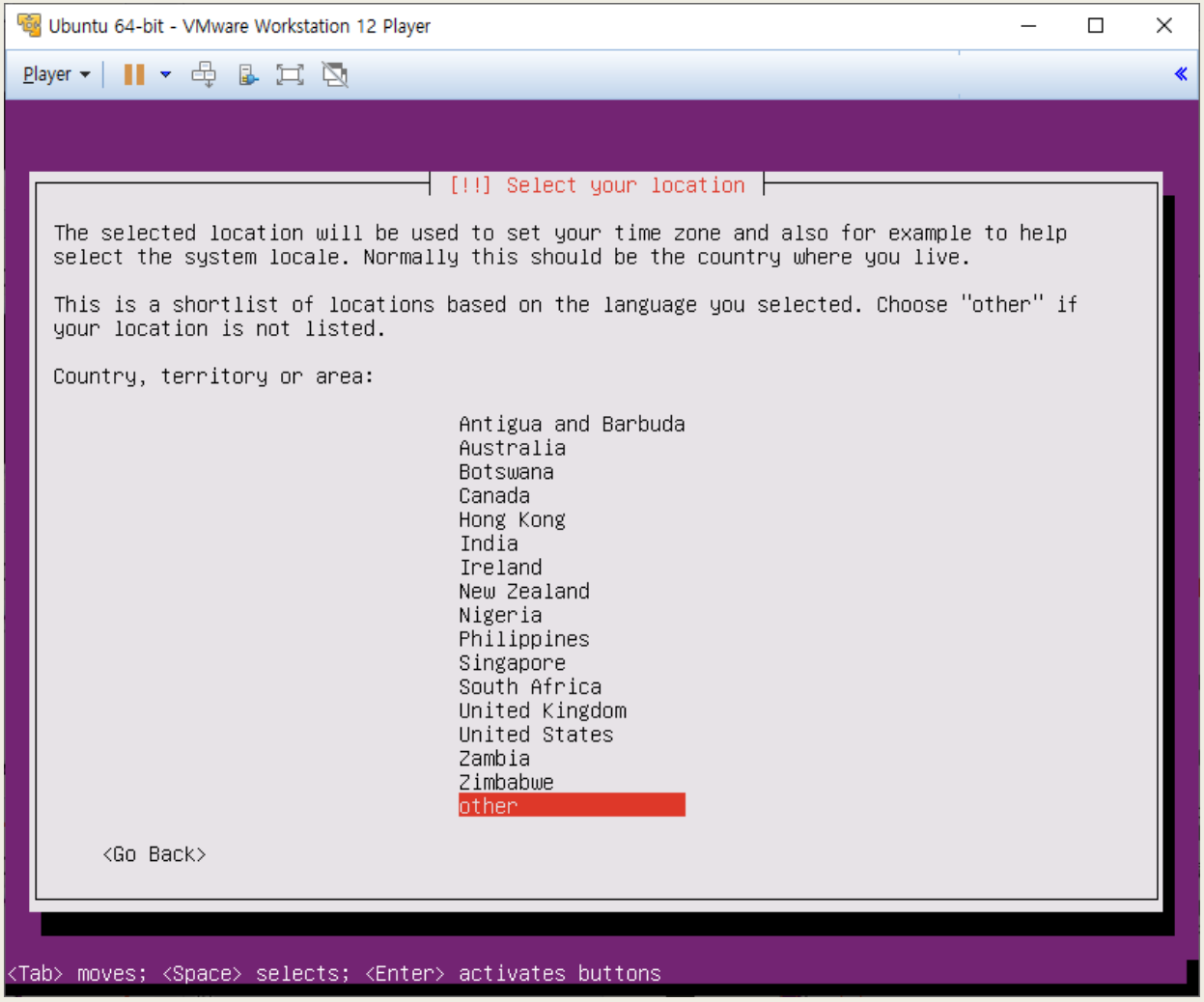
Ubuntu Setup - (3)



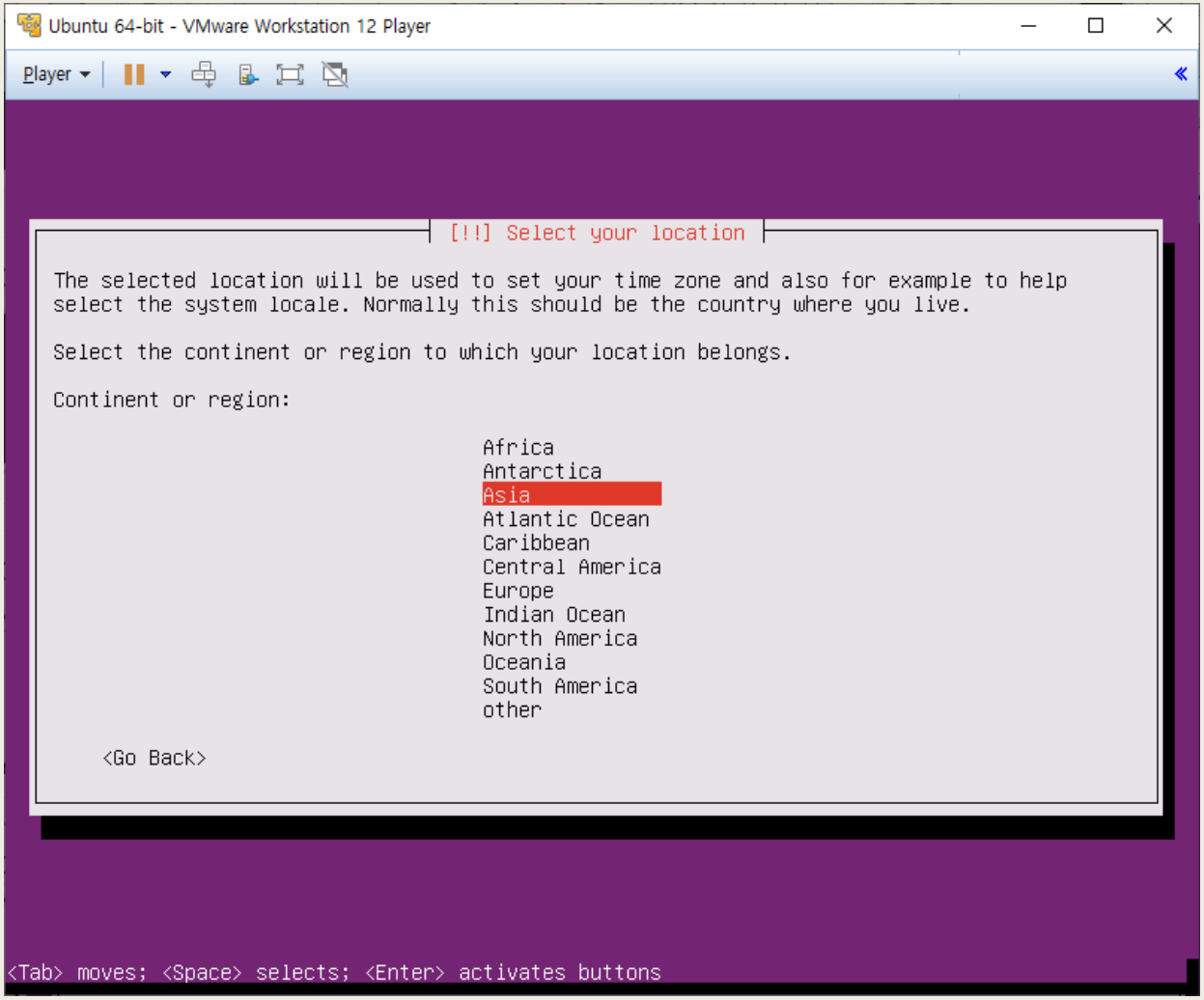
Ubuntu Setup - (4)



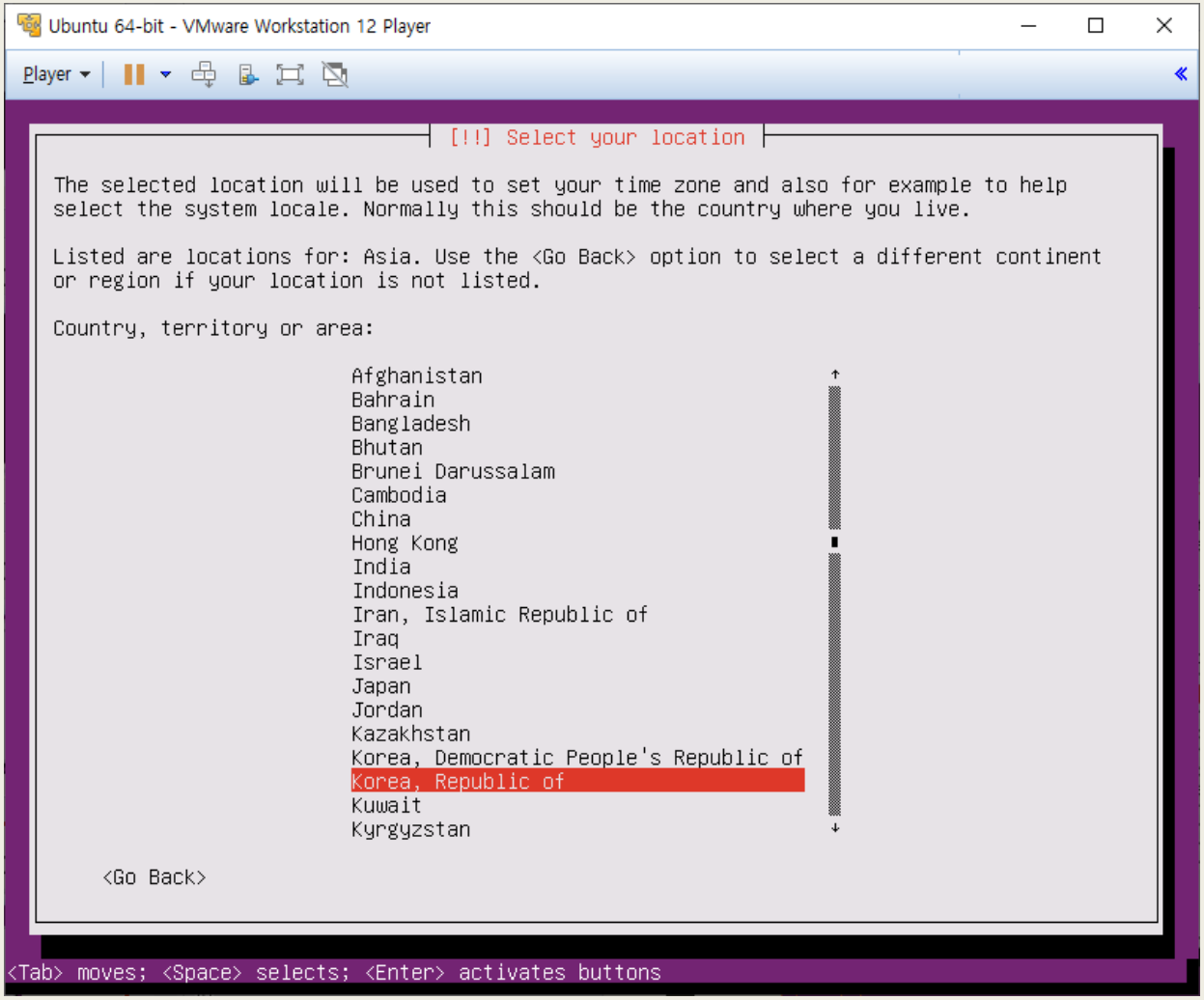
Ubuntu Setup - (5)



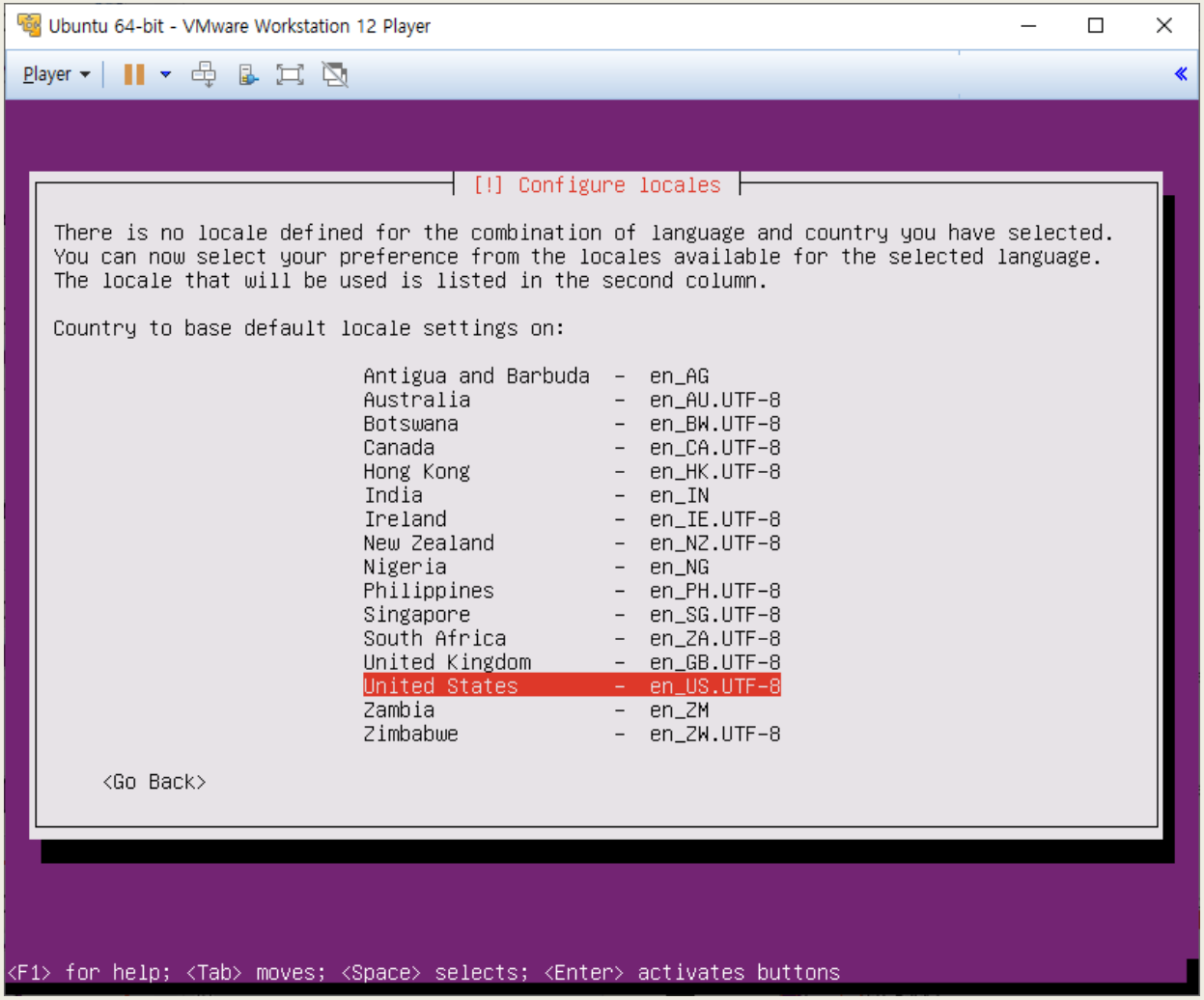
Ubuntu Setup - (6)



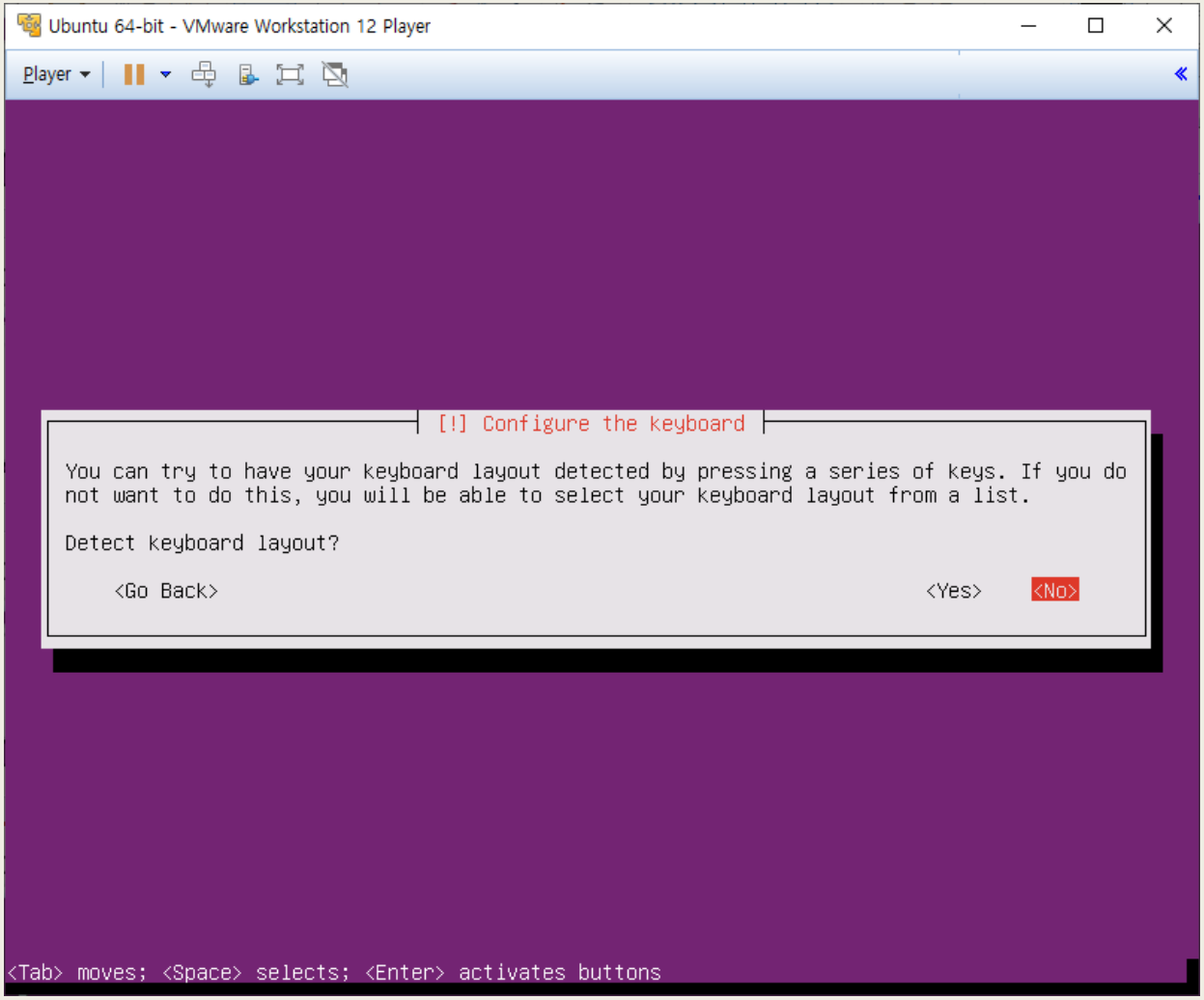
Ubuntu Setup - (7)



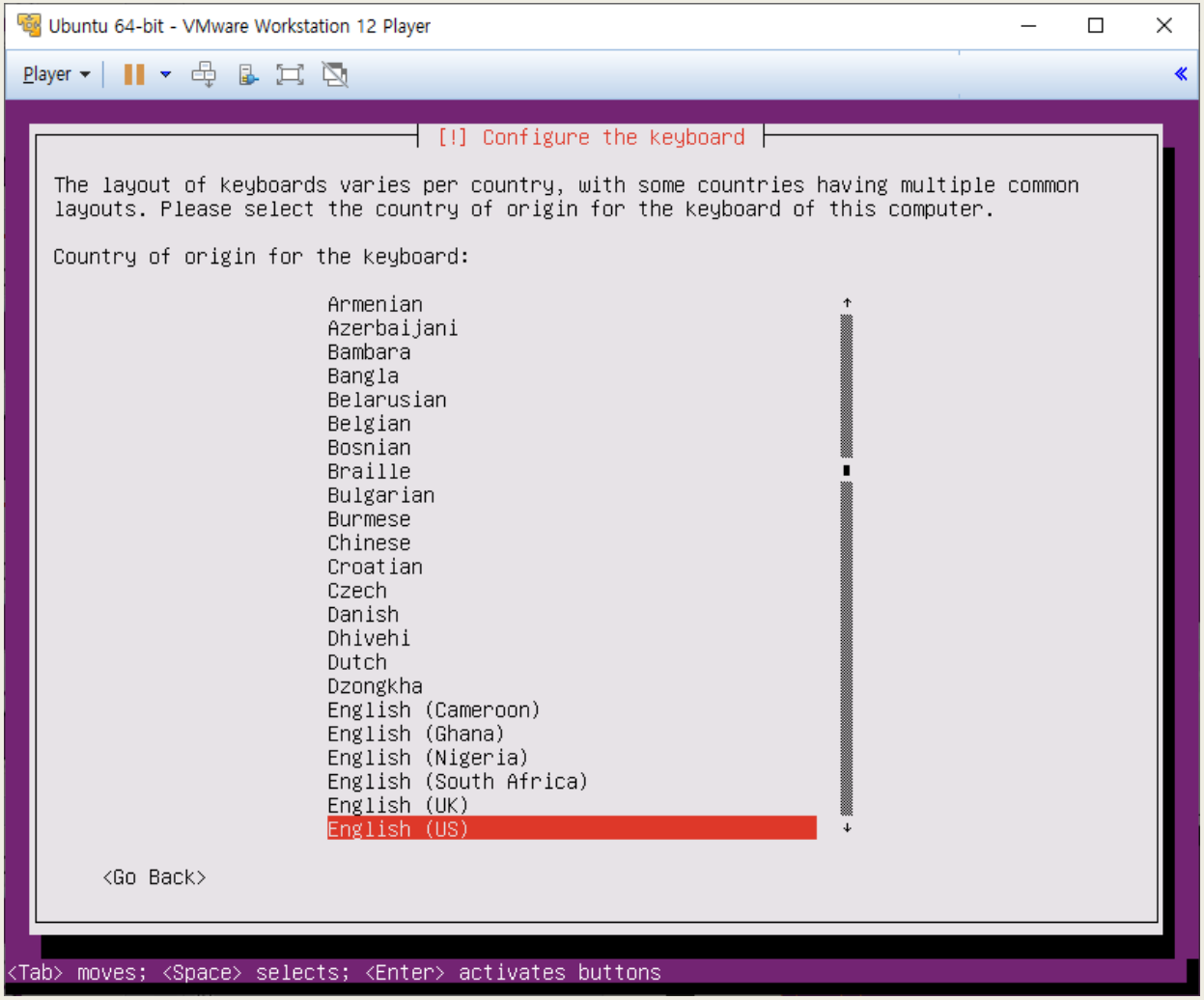
Ubuntu Setup - (8)



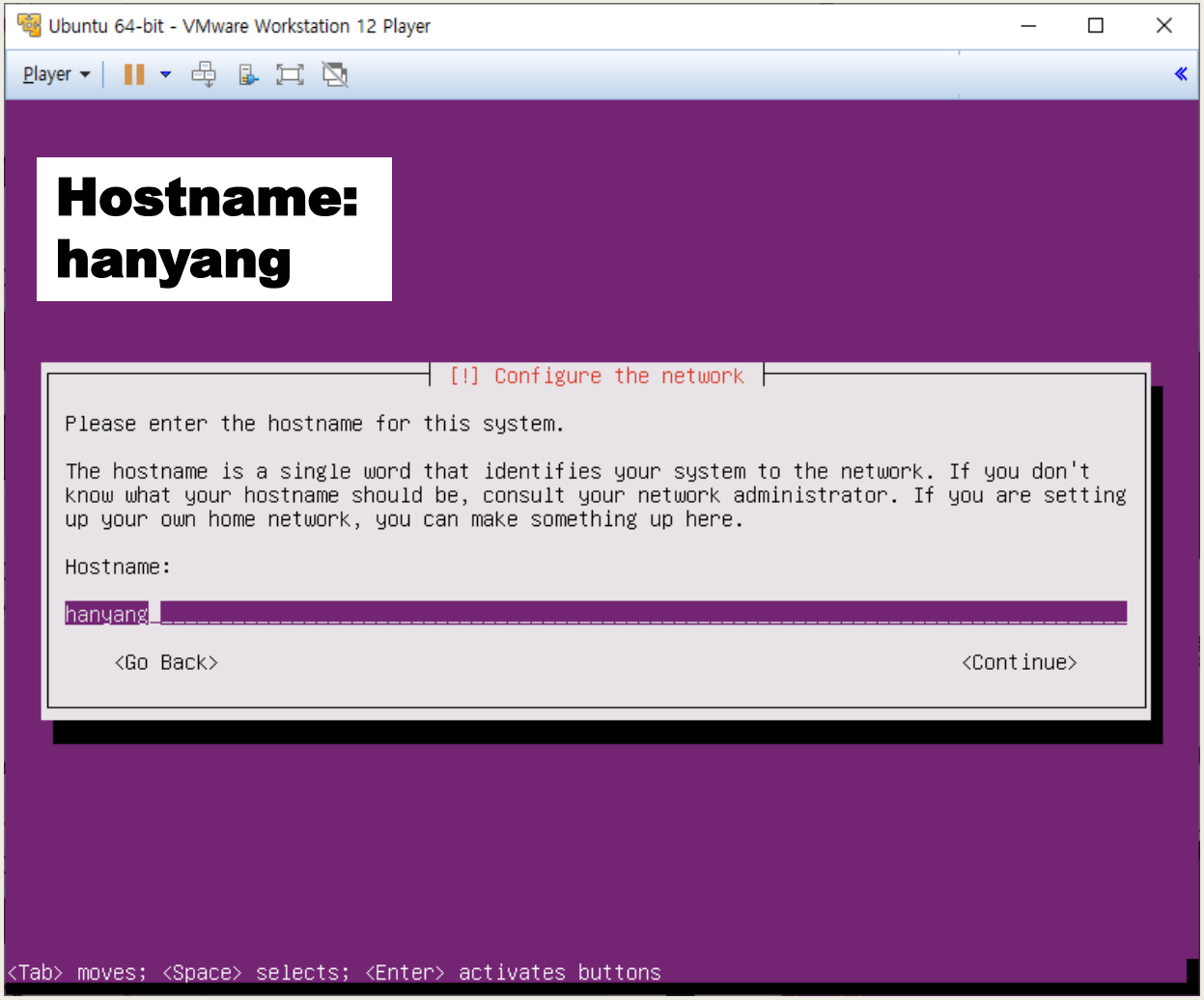
Ubuntu Setup - (9)



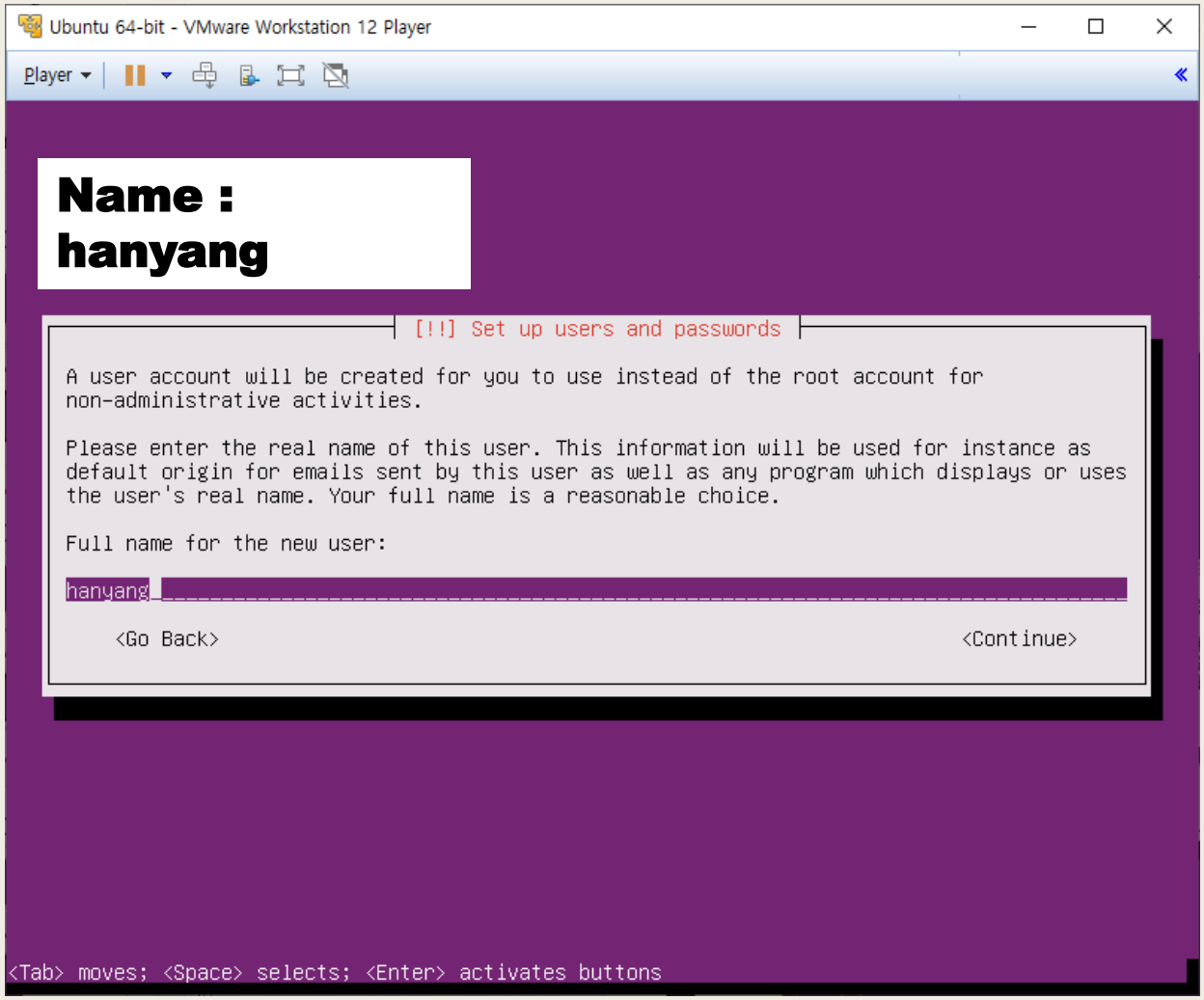
Ubuntu Setup - (10)



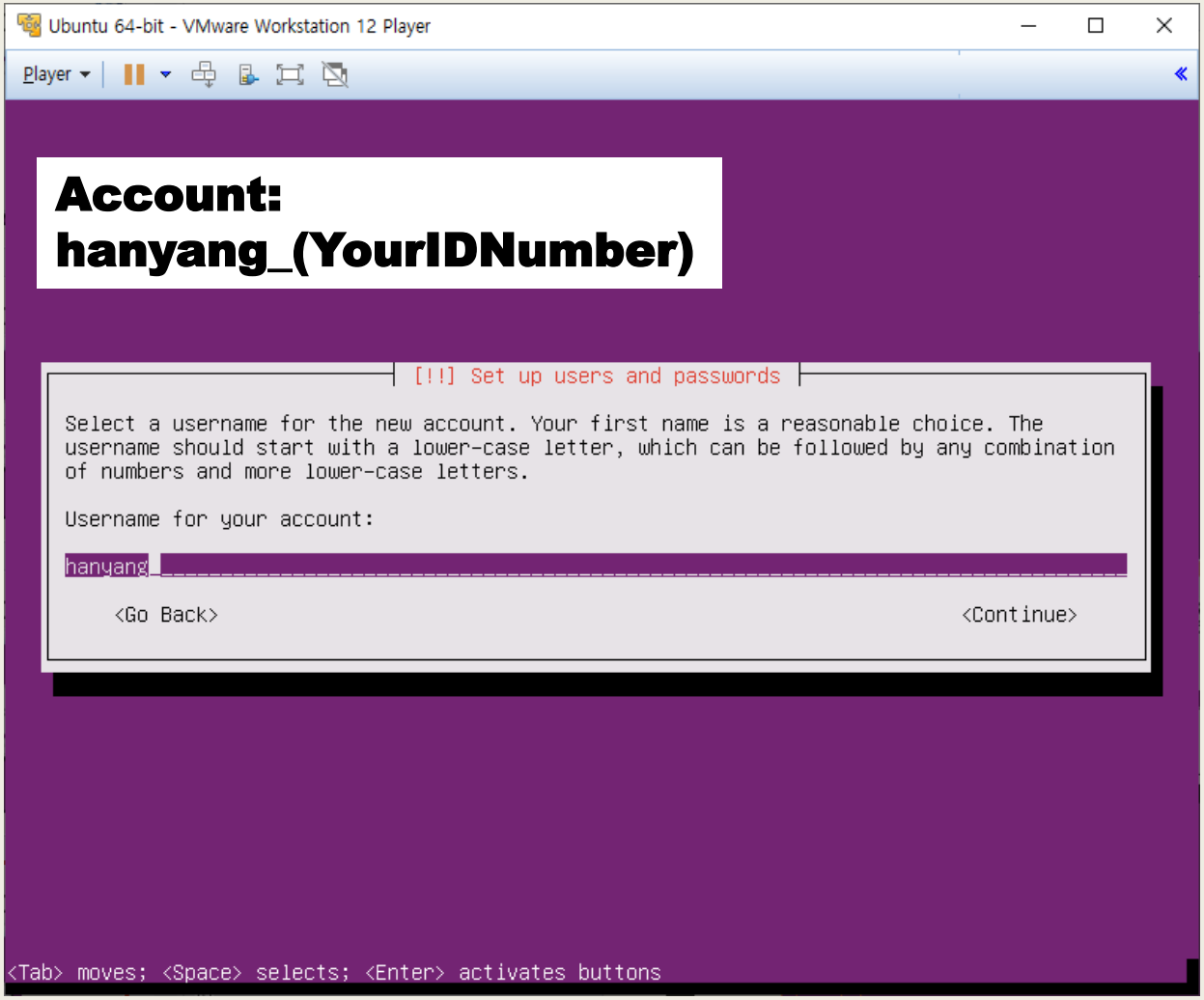
Ubuntu Setup - (11)



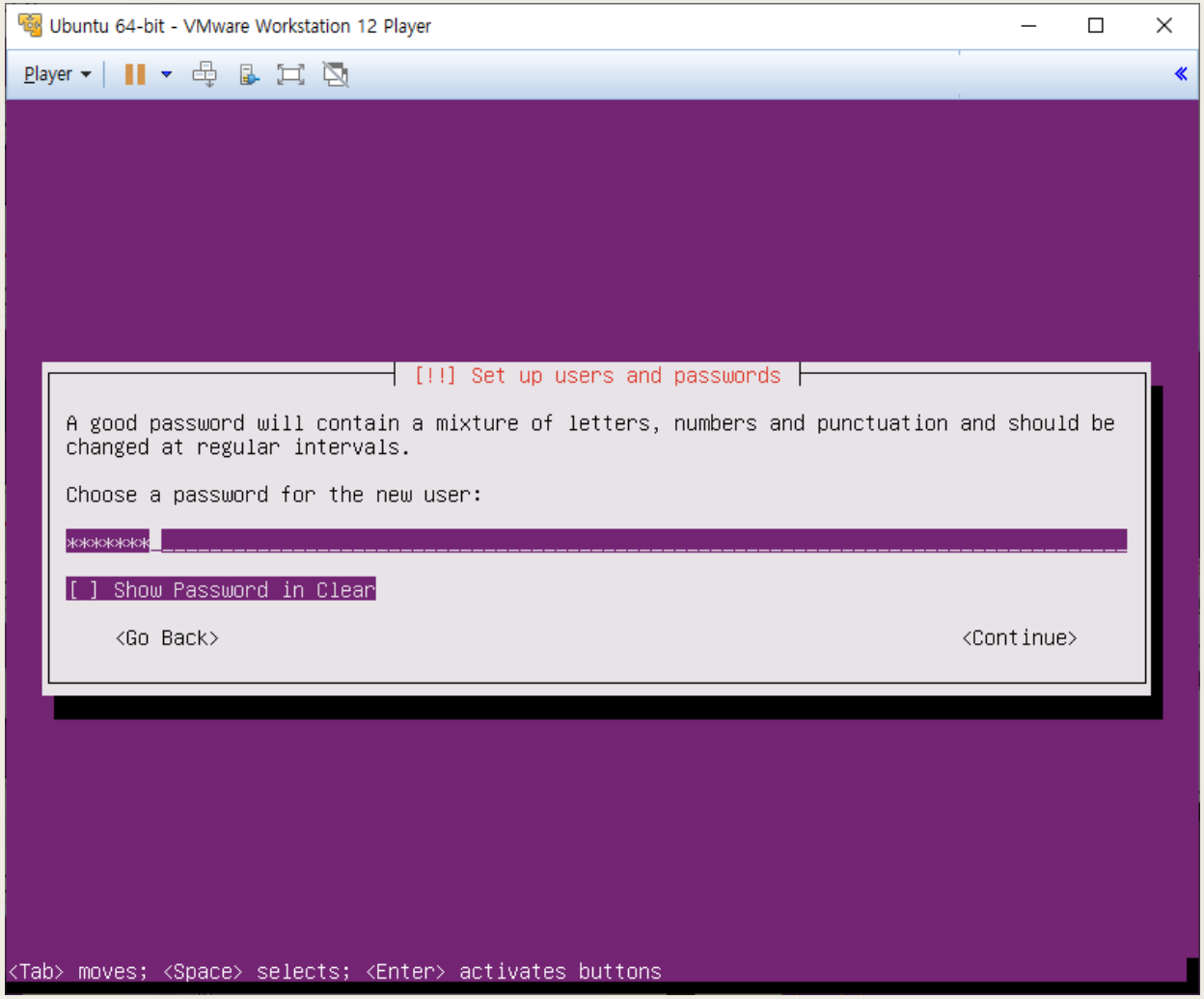
Ubuntu Setup - (12)



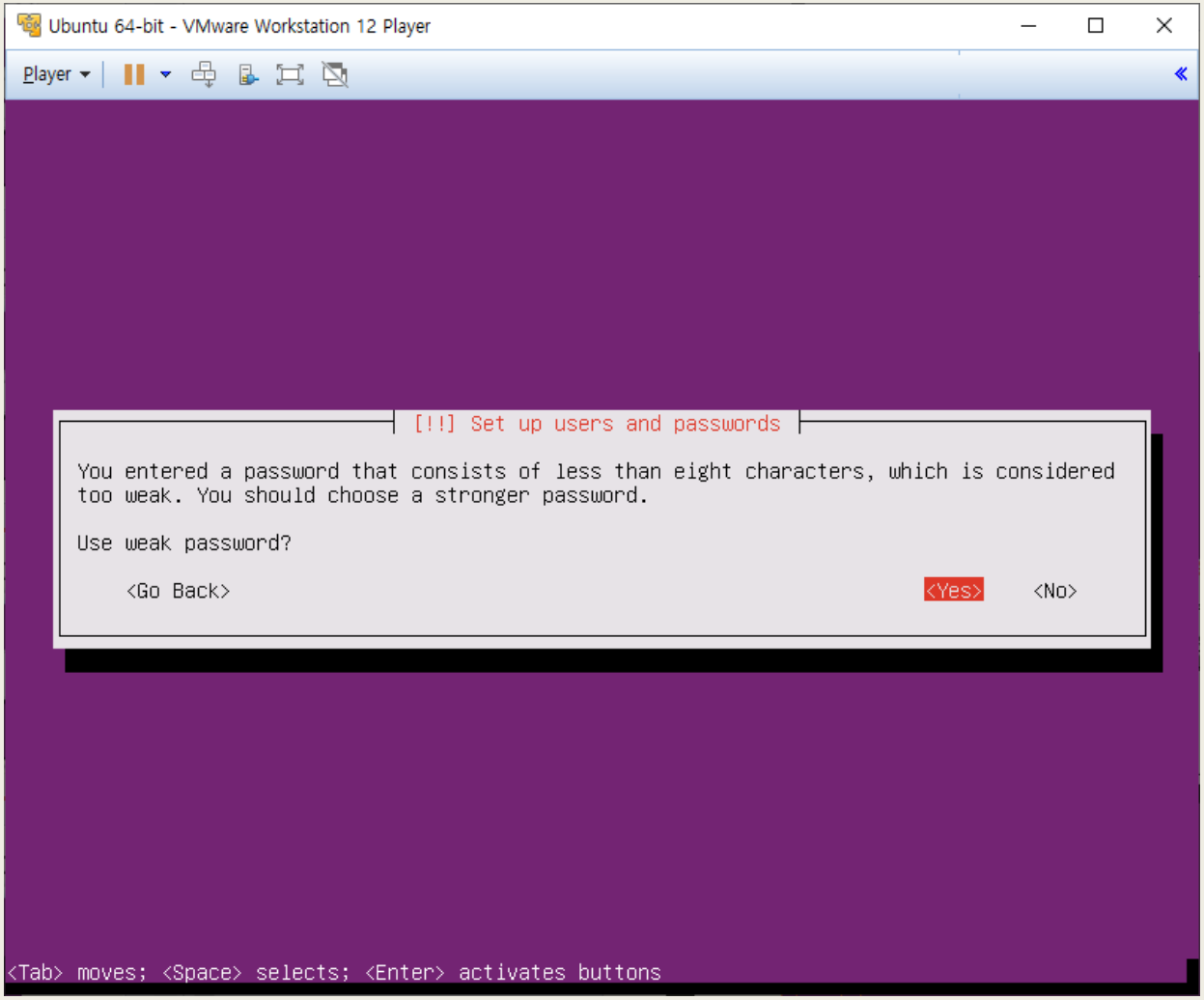
Ubuntu Setup - (13)



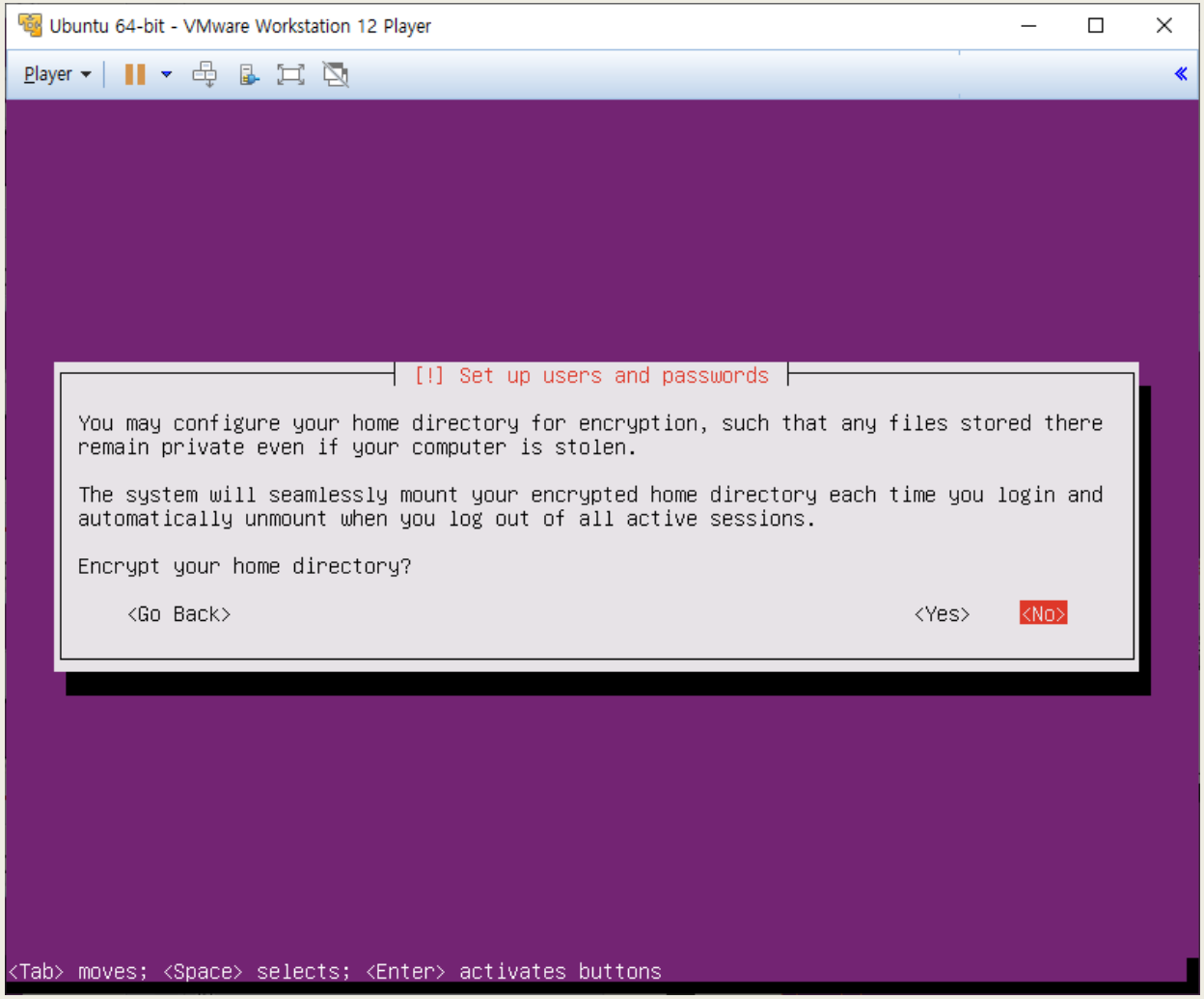
Ubuntu Setup - (14)



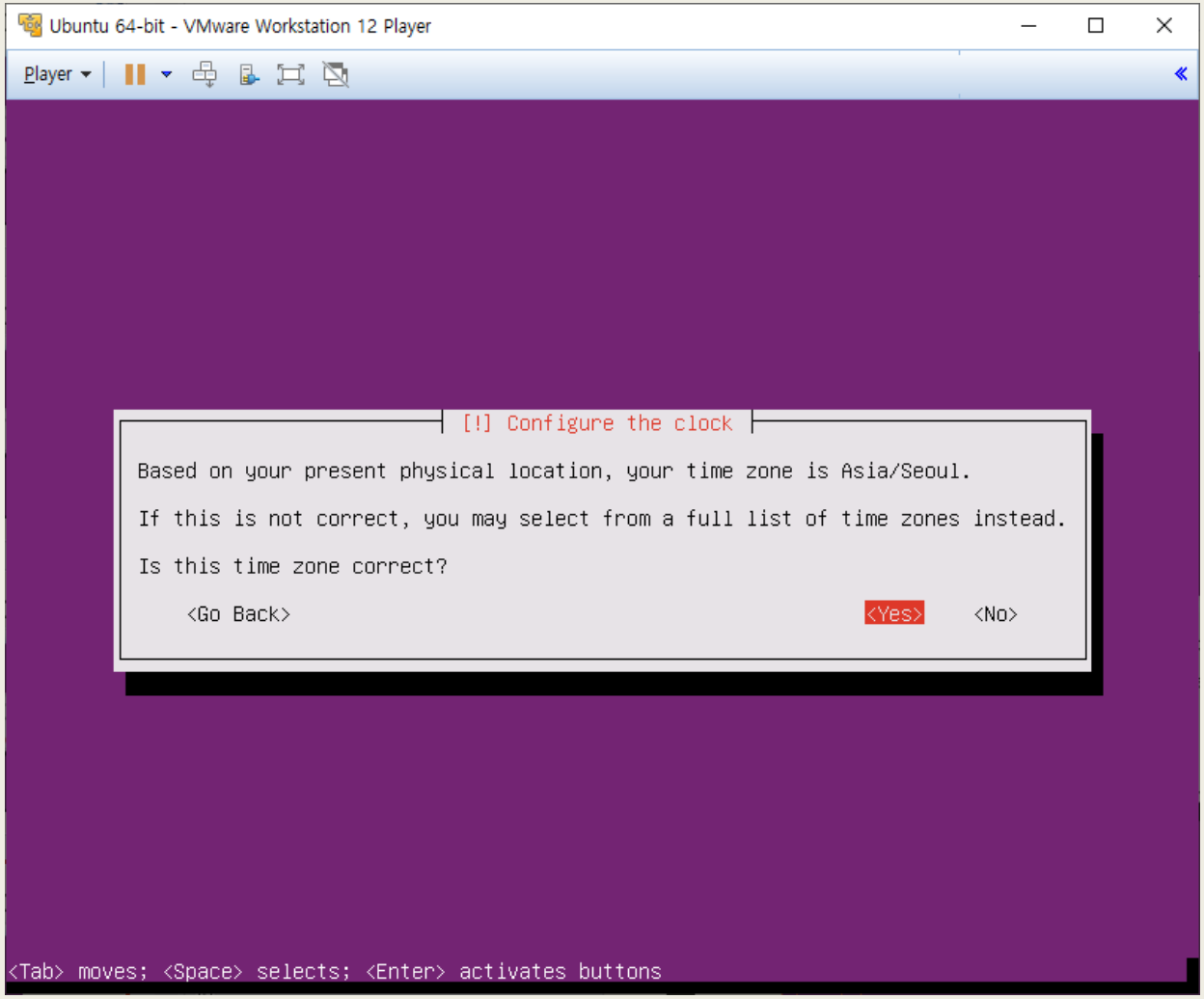
Ubuntu Setup - (15)



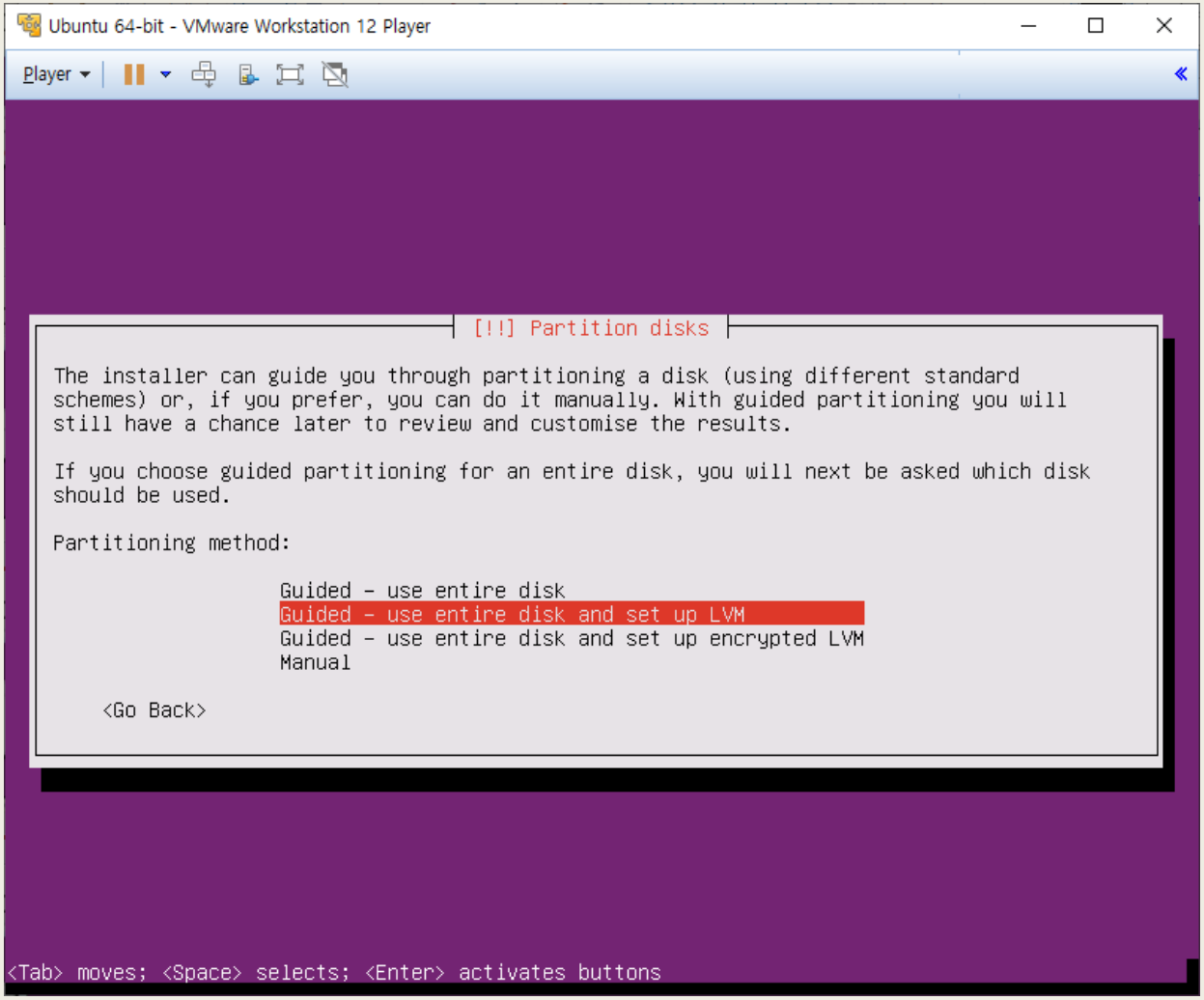
Ubuntu Setup - (16)



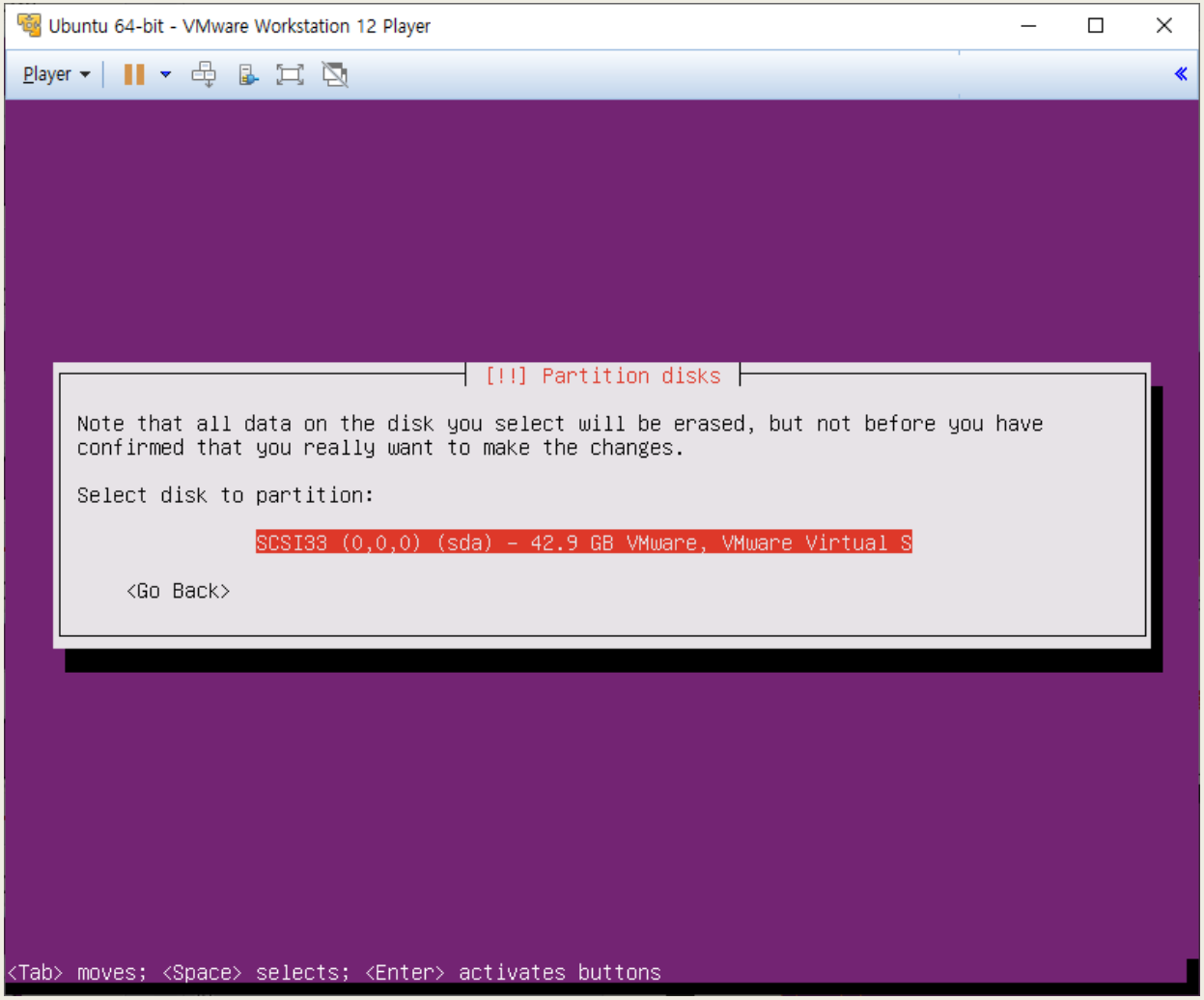
Ubuntu Setup - (17)



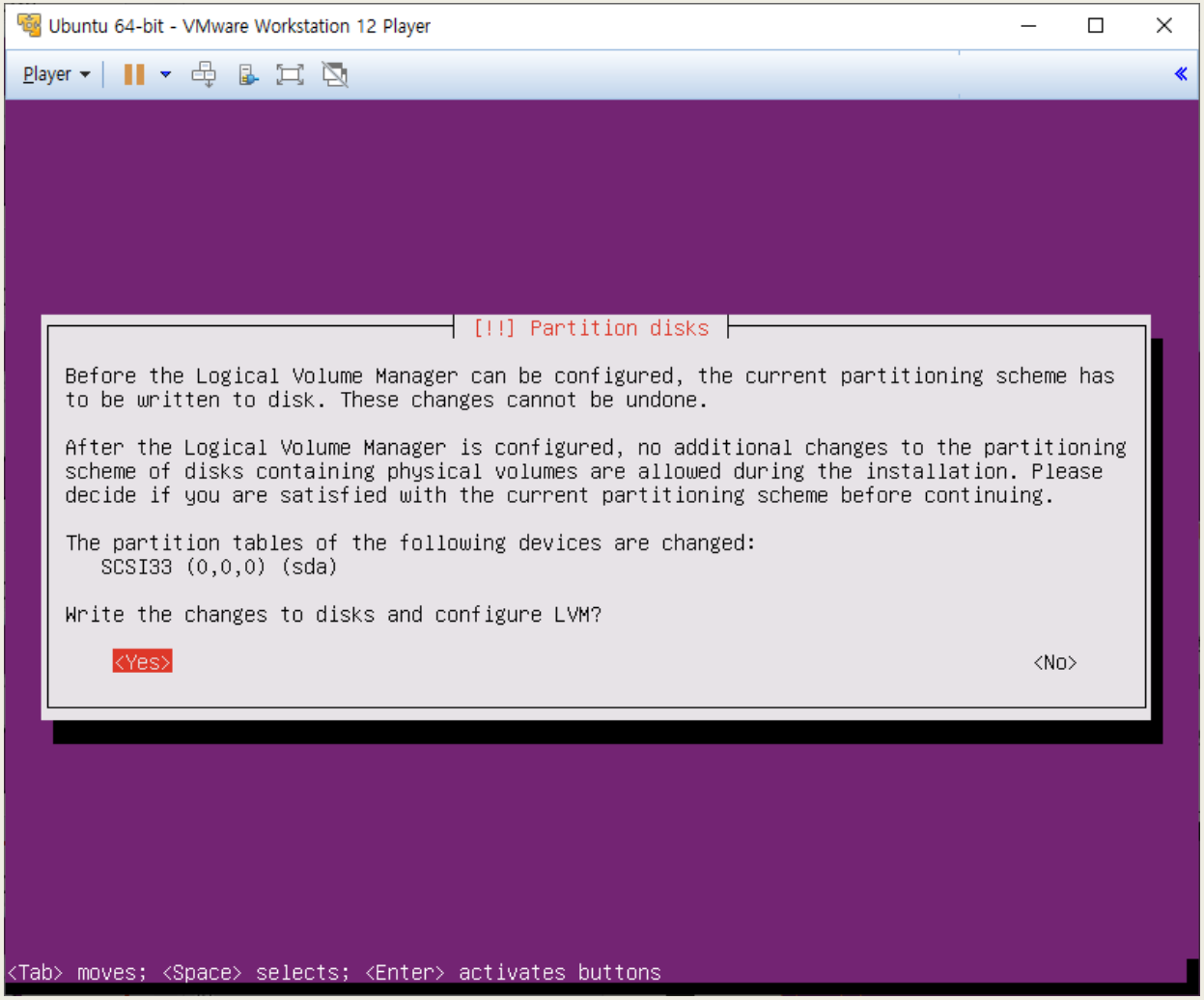
Ubuntu Setup - (18)



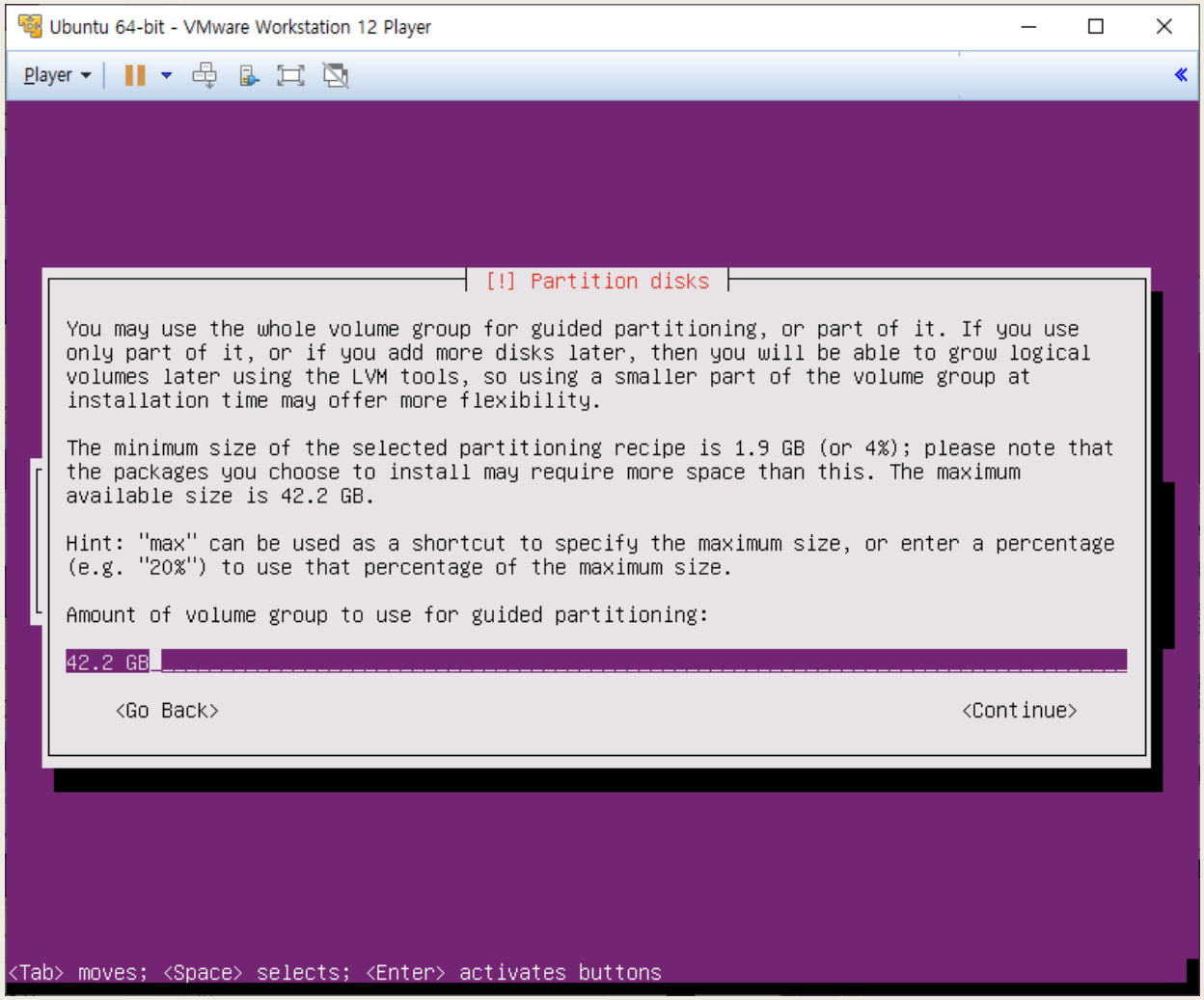
Ubuntu Setup - (19)



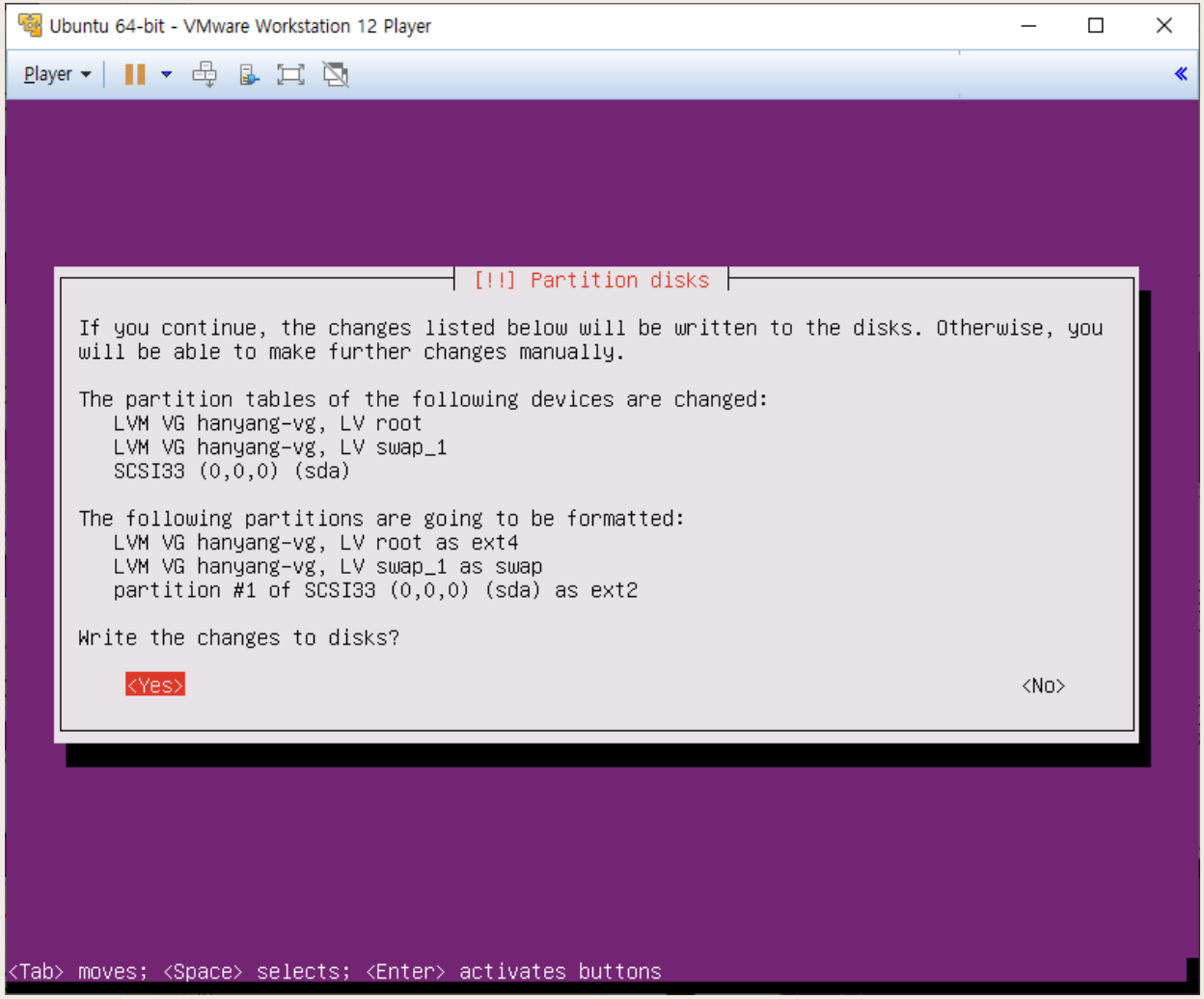
Ubuntu Setup - (20)



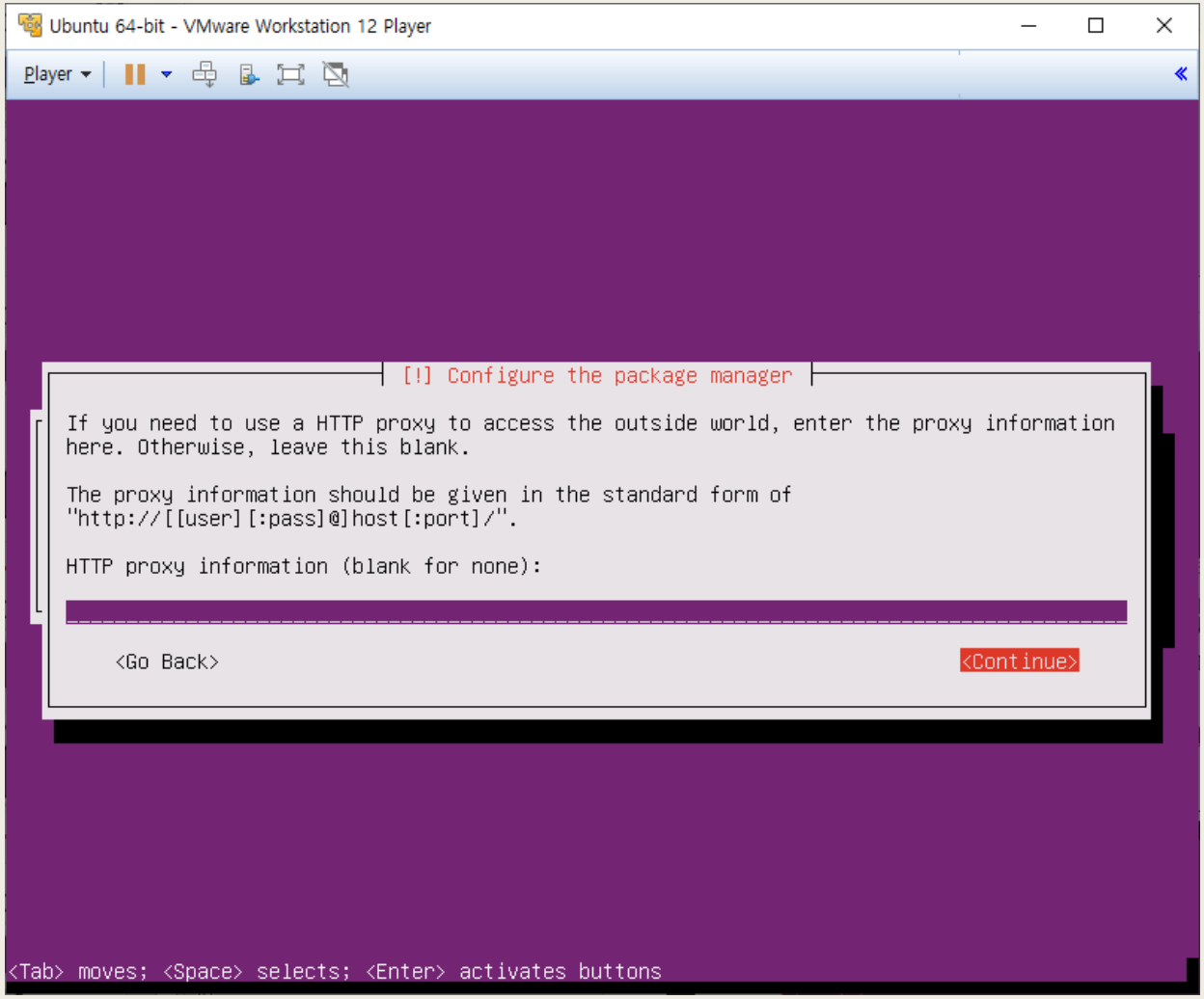
Ubuntu Setup - (21)



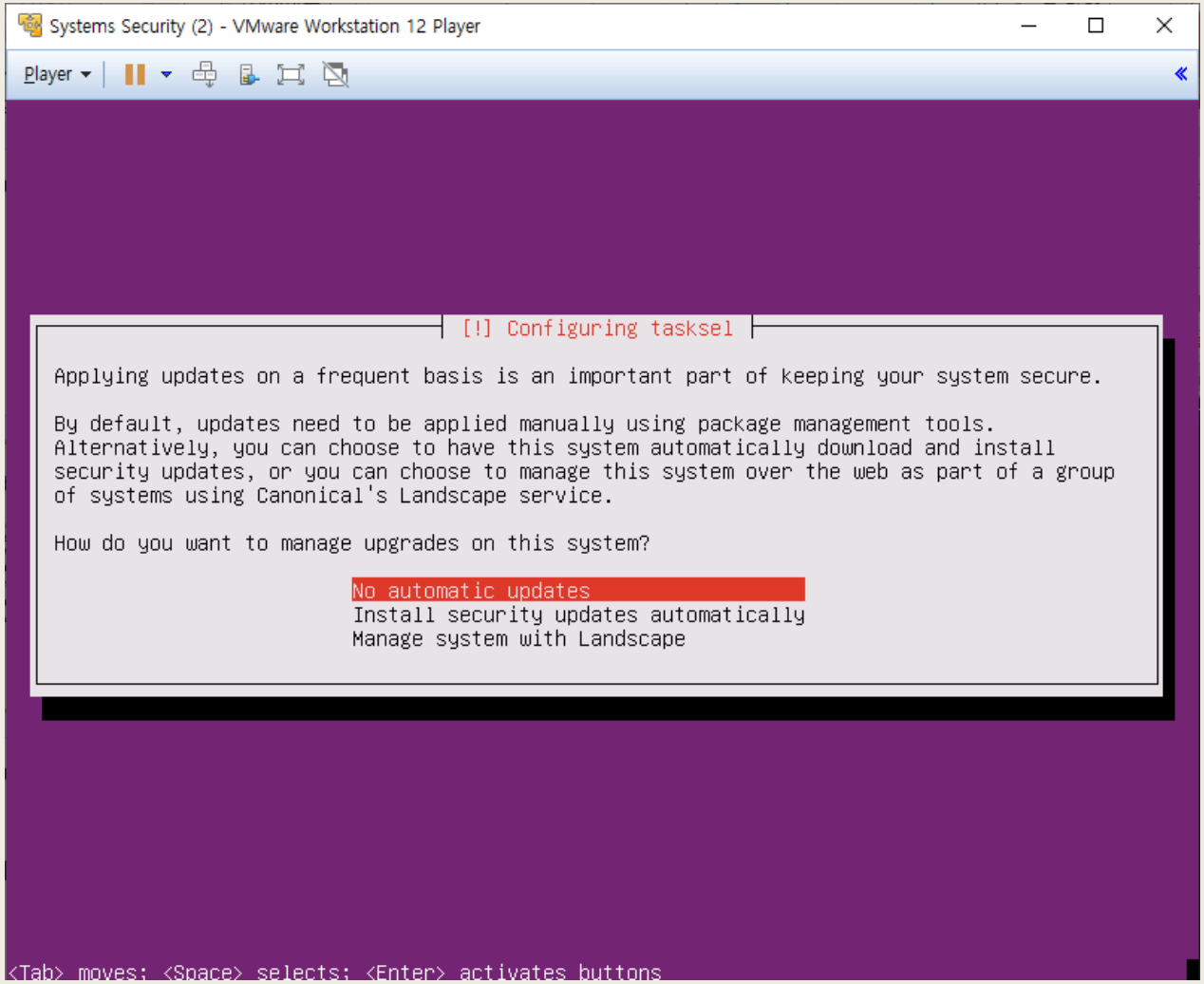
Ubuntu Setup - (22)



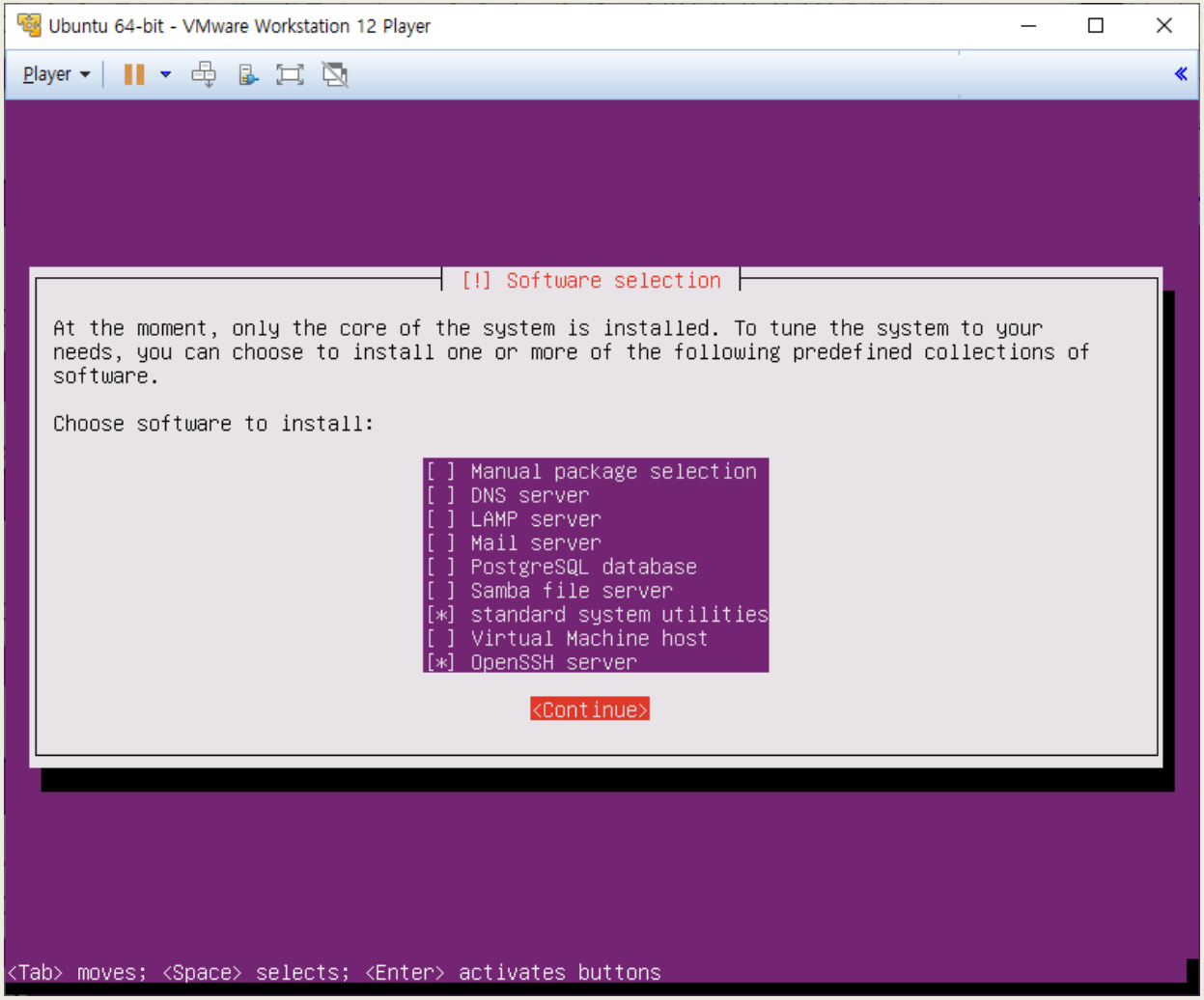
Ubuntu Setup - (23)



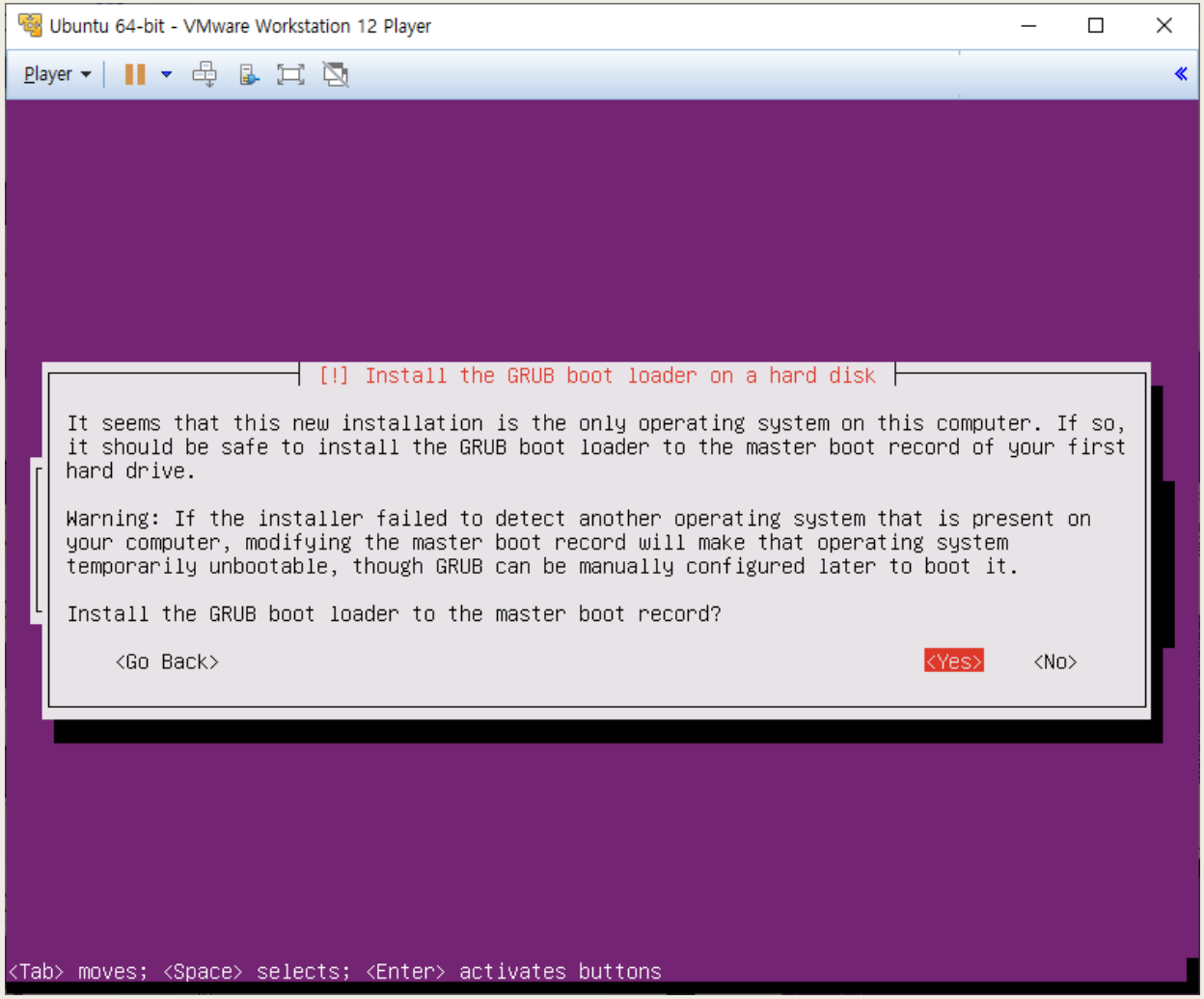
Ubuntu Setup - (24)



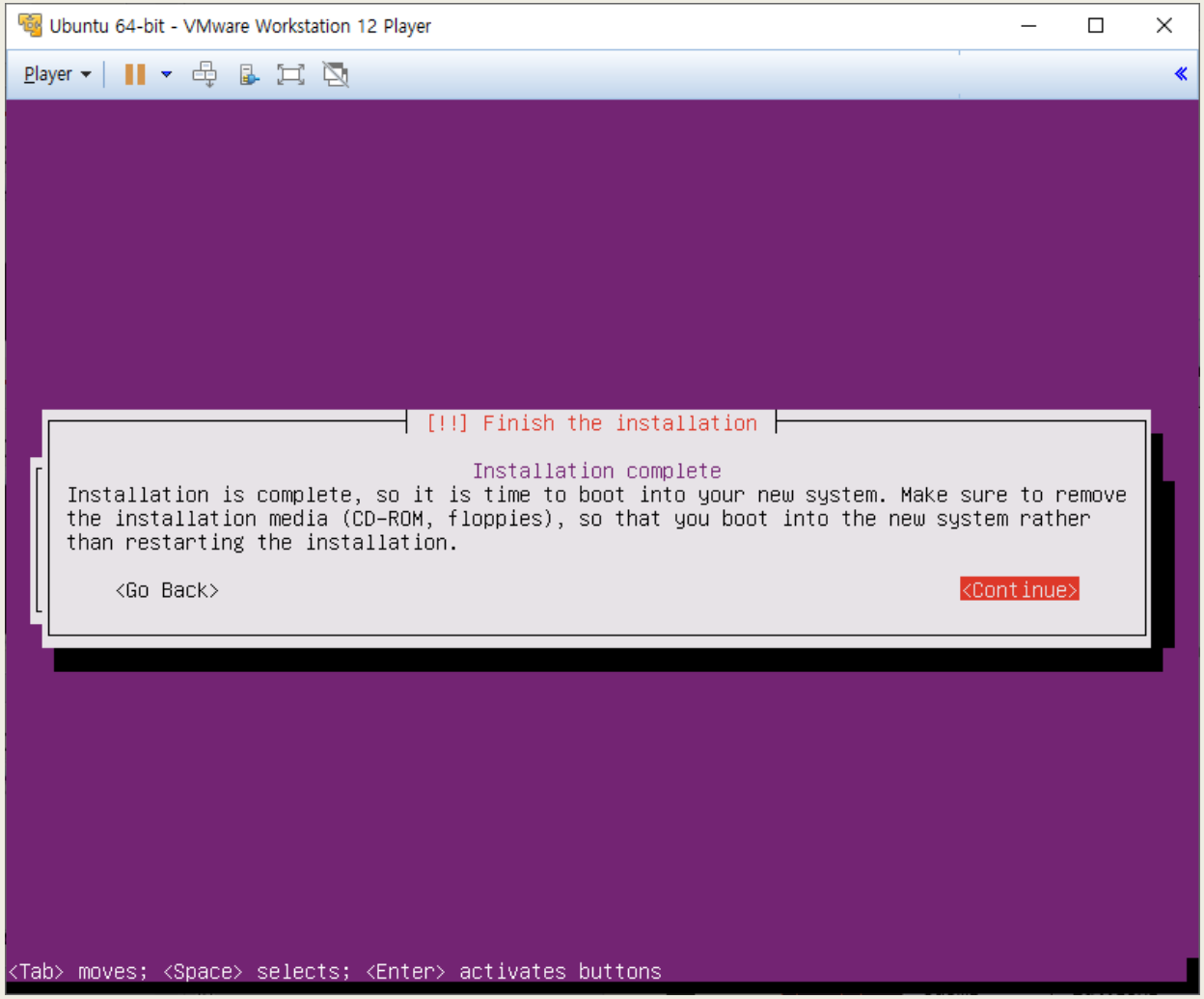
Ubuntu Setup - (25)



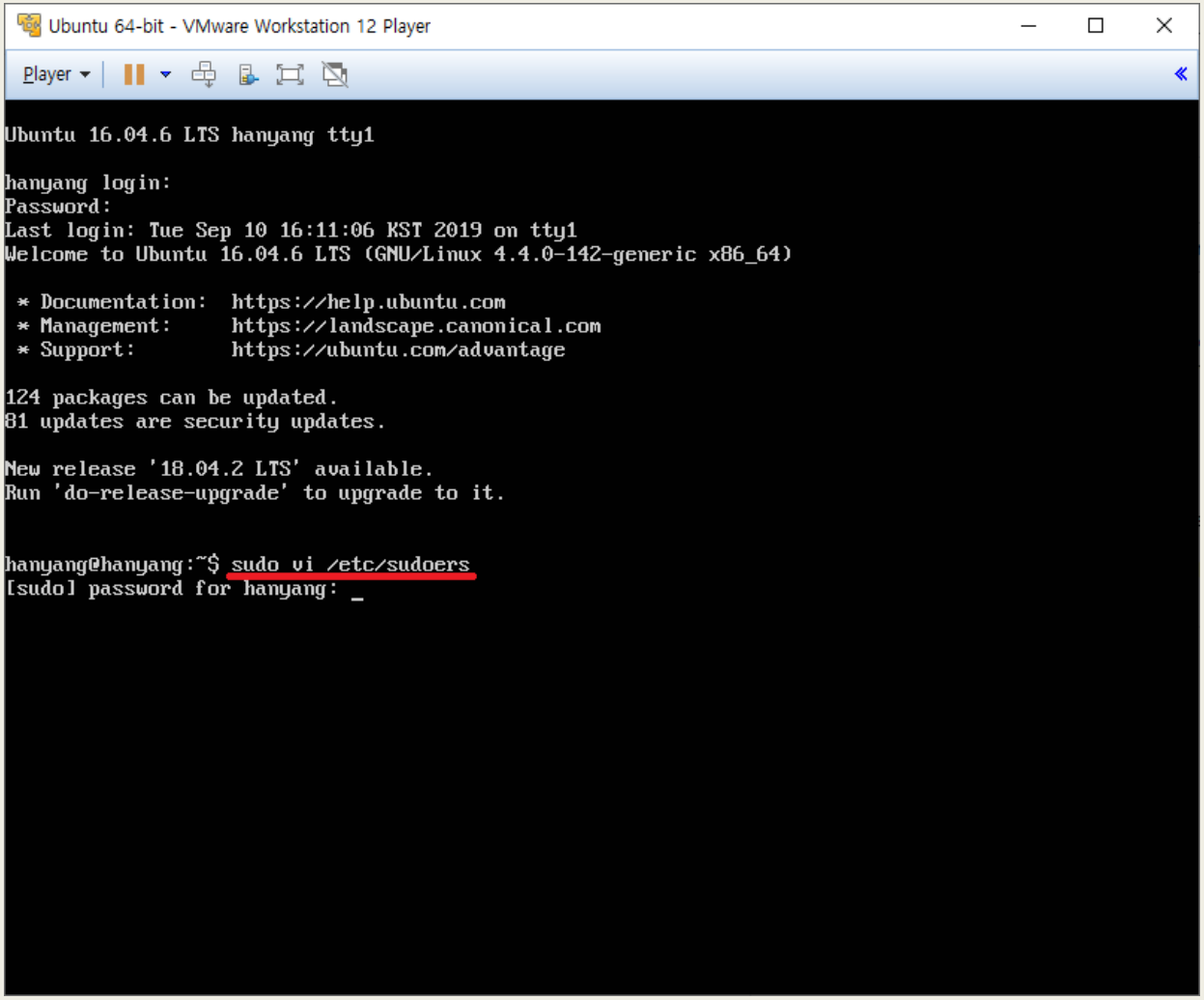
Ubuntu Setup - (26)



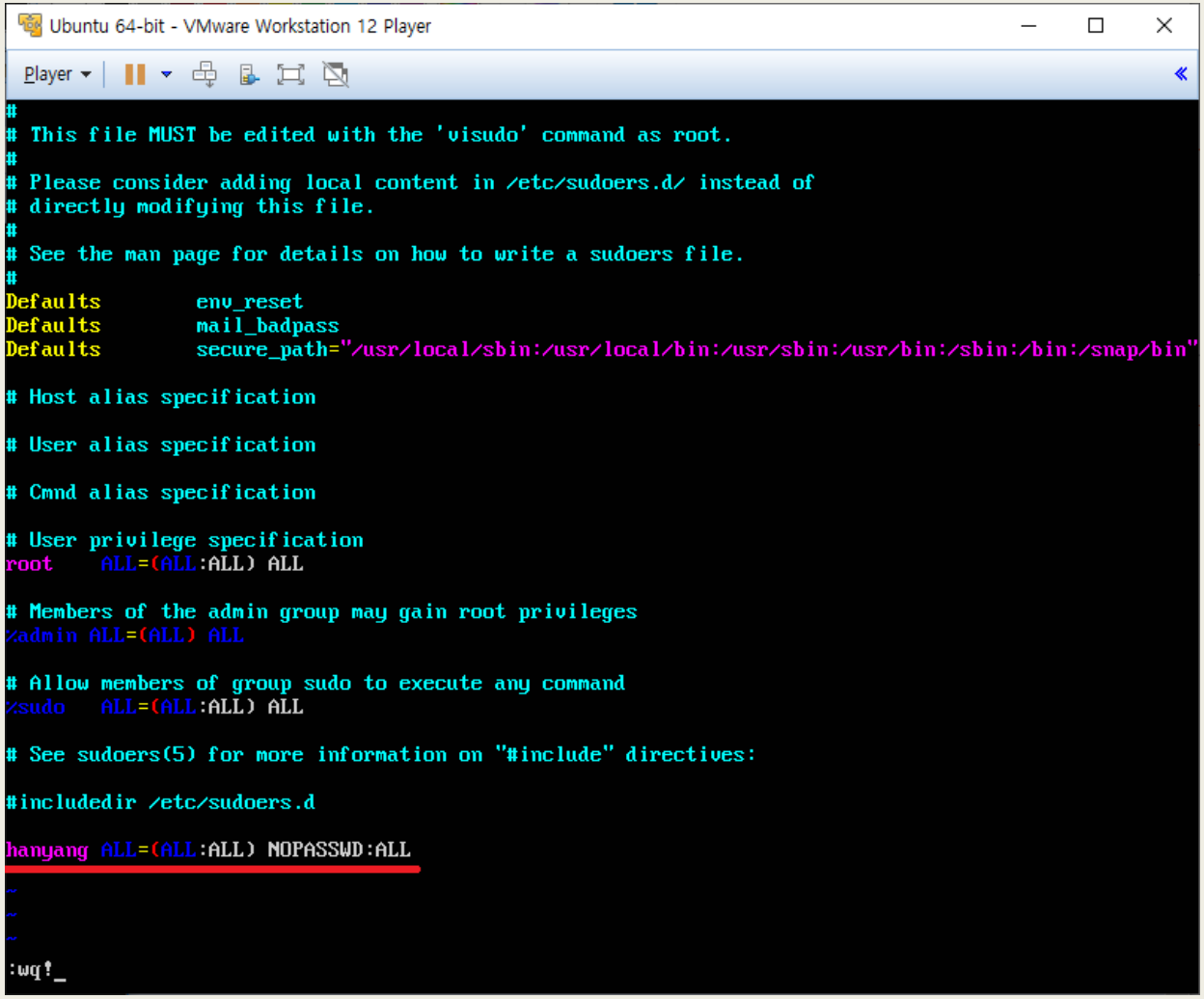
Ubuntu Setup - (27)



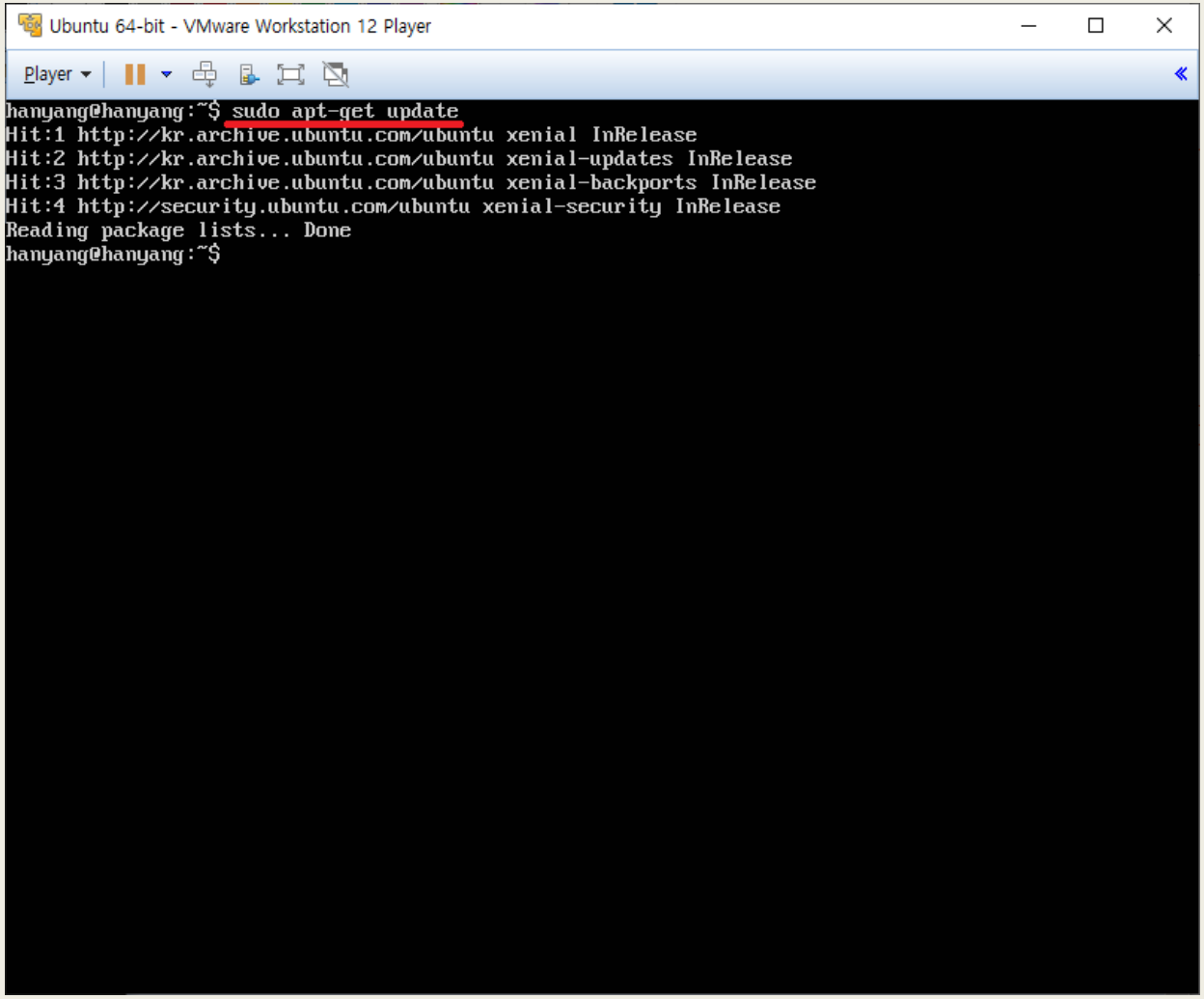
Sudoer Setting - (1)



Sudoer Setting - (2)



Package Update



Evaluation

- **Linux Setup**
  - **Enter the ‘whoami’ command at the command line to and confirm that your account appears.**
  - **When using the 'sudo' command, save a screenshot that does not require a password.**

- **Save the results as screenshots and submit reports as MS Word or PDF files.**

Evaluation

- **Due date : 2020/03/26 23:59**
- **When submitting a report, the subject of the e-mail is ‘StudentName_IDNumber’.**
  - **e.g.)** 이석원**_2019101059**
- **send : sevenshards00@gmail.com**

Q&A