

실습 1주차

CPS LAB

오리엔테이션 & 실습 환경 구성

목차

1. 오리엔테이션

- ① 조교 소개
- ② 실습 진행 관련 설명

2. 실습 환경 구성

- ① Ubuntu 이미지 다운로드
- ② VMware 다운로드
- ③ Ubuntu 설치

3. 부록

가상머신 설치(MAC) **p23 참조**
학습과제(Vim, GCC, Make)
P33 참조

조교 소개

실습 조교 : 윤균홍

연구실 : 학연산클러스터 622호 사이버 피지컬 시스템 연구실

연락처 : 031-400-4748 (대학원생 연구실)

이메일 : kyhooon@hanyang.ac.kr

실습 검사로 출석 인증

실습 환경 구성

Ubuntu 20.04 설치 (권장)

- VMware 다운로드

확인사항: 하드디스크 용량 **40GB** 이상

실습 환경 구성

순서

1. Ubuntu 이미지 다운로드
2. VMware 다운로드
3. Ubuntu 설치

CMOS(BIOS) 가상화 설정

- 가상화가 설정되지 않은 경우, 재부팅 후 BIOS 진입 후, **가상화 ON**
 - 예) HP 컴퓨터 예제 화면 (ESC/F10)
 - [Security] – [System Security] – [Virtualization Technology] enable
 - [File] – [save and close]



제조사별 CMOS(BIOS) 진입 키

No.	Model	Bios	Boot	Recover	Remark
1	Acer	DEL / F2	-	ALT+F10	
2	Asus	DEL	F8	F9	
3	삼성	F2	F10	F4	
4	엘지	F2	F12	F11	
5	Dell	F2	F12	Ctrl+F11	
6	Fujitsu	F2	F12	-	
7	Hansung	F2	F7	-	
8	HP	ESC/F10	F9	F11	
9	MSI	DEL	F11	F3	
10	Lenovo	Fn+F2	Fn+F12	F11	
11	Sony	F2 / ASSIST	-	F10	
12	TG	F2	F9	F5	

Ubuntu 이미지 다운로드

Ubuntu 20.04 LTS(Long-term support)

ISO Image File

- https://releases.ubuntu.com/20.04.6/?_ga=2.83983453.577757734.1693553904-1123419597.1693553904

ubuntu releases

Ubuntu 20.04.6 LTS (Focal Fossa)

Select an image

Ubuntu is distributed on three 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 1024MiB 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). Choose this if you are at all unsure.

VMware 다운로드

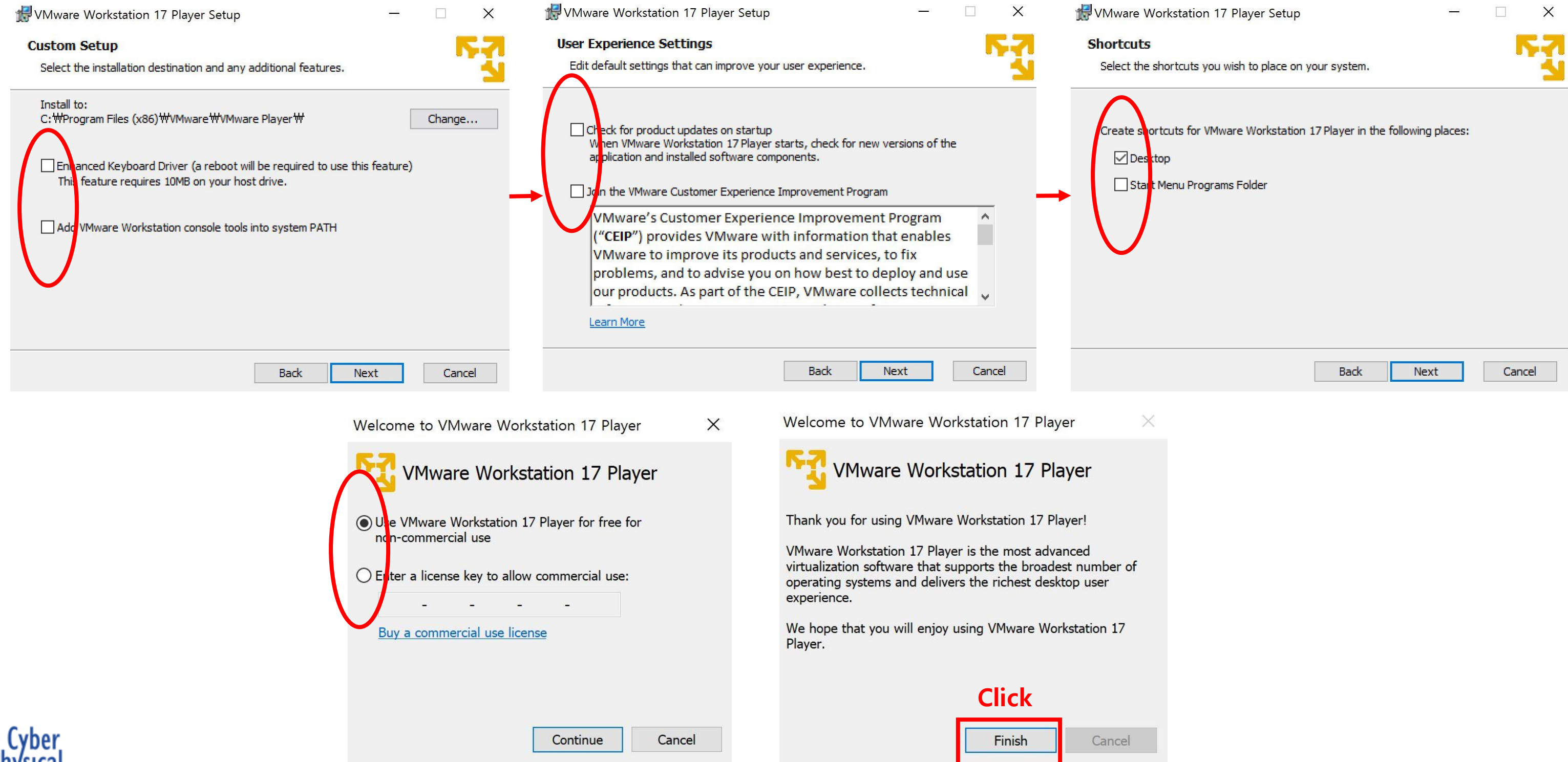
설치:

- <https://customerconnect.vmware.com/en/downloads/details?downloadGroup=WKST-PLAYER-1702&productId=1377&rPId=104734>

The screenshot shows the VMware Customer Connect website. The top navigation bar includes links for Products and Accounts, Knowledge, Communities, Support, Success, and Learning. The main content area is titled "Download Product" and features a "Select Version" dropdown menu with "17.0.2" selected. Below this, there are links for "Documentation" (Release Notes) and "Release Date" (2023-04-25). The "Type" is listed as "Product Binaries". On the right side, there is a "Product Resources" section with links for "View My Download History", "Product Info", "Documentation", "Knowledge Base", "Community", "Self-Help Support", "Support Policies", and "Workstation Player Upgrade". At the bottom, there is a "Product Downloads" section with tabs for "Product Downloads", "Drivers & Tools", "Open Source", "Custom ISOs", and "OEM Addons". The "Product Downloads" tab is active, showing a table with two rows of download links. The first row is for "VMware Workstation 17.0.2 Player for Linux 64-bit" with a file size of 498.04 MB and a file type of bundle. The second row is for "VMware Workstation 17.0.2 Player for Windows 64-bit Operating Systems" with a file size of 577.06 MB and a file type of exe. Both rows have a "DOWNLOAD NOW" button next to them. The "DOWNLOAD NOW" button for the Windows version is circled in red.

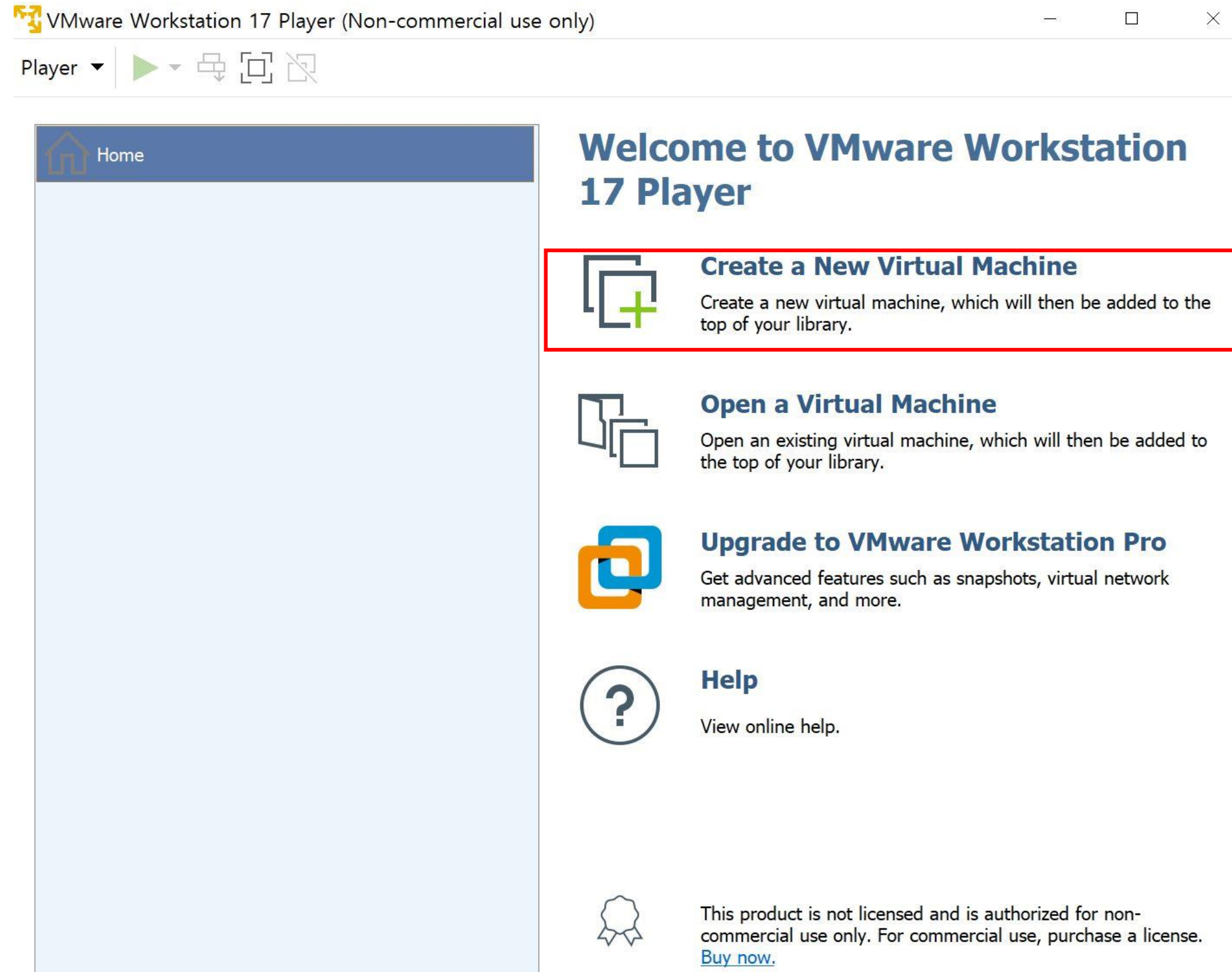
File	Information
VMware Workstation 17.0.2 Player for Linux 64-bit	File size: 498.04 MB File type: bundle Read More
VMware Workstation 17.0.2 Player for Windows 64-bit Operating Systems	File size: 577.06 MB File type: exe Read More

VMware 다운로드



Ubuntu 설치 (1)

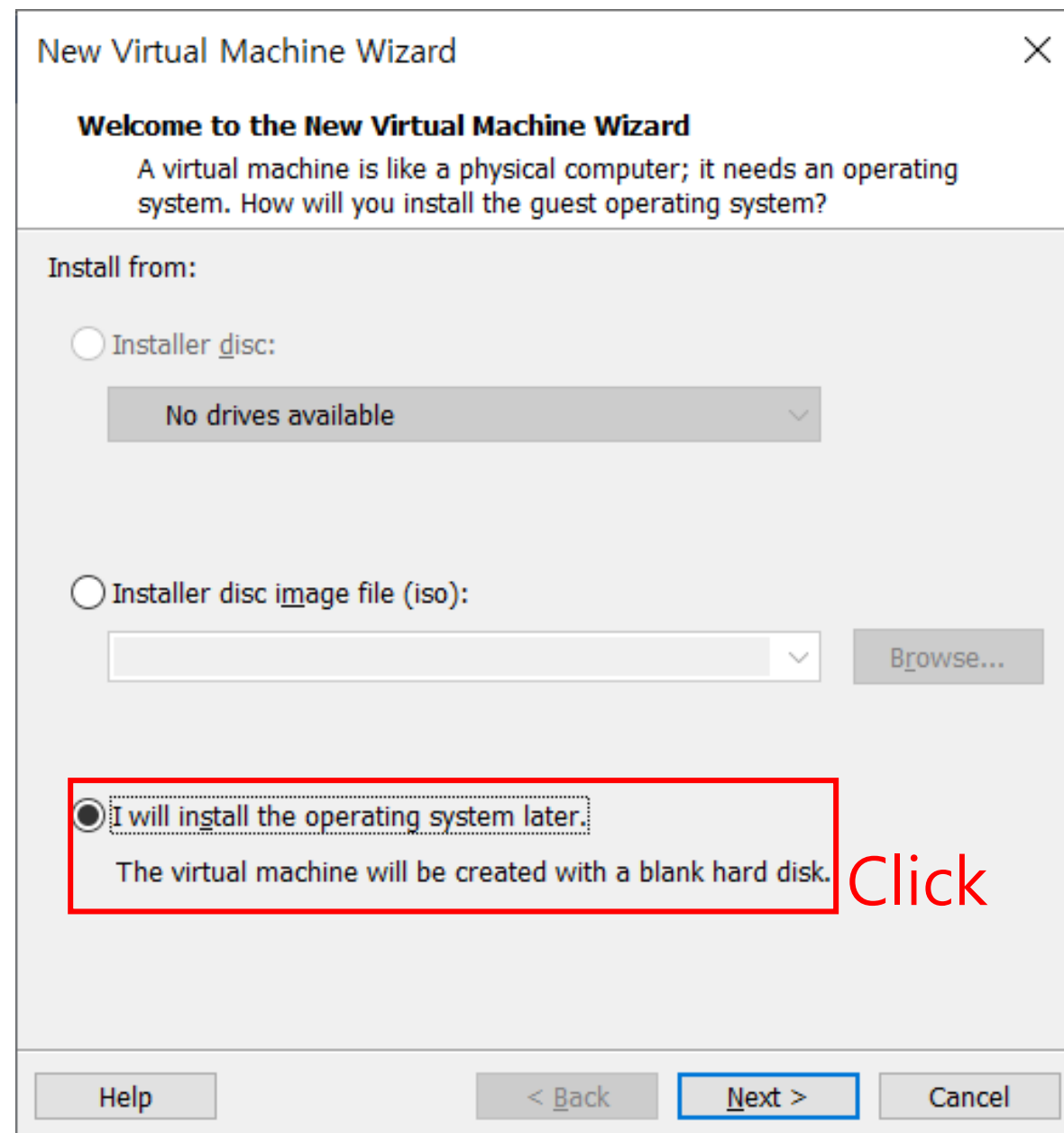
VMware 실행 – Create a New Virtual Machine



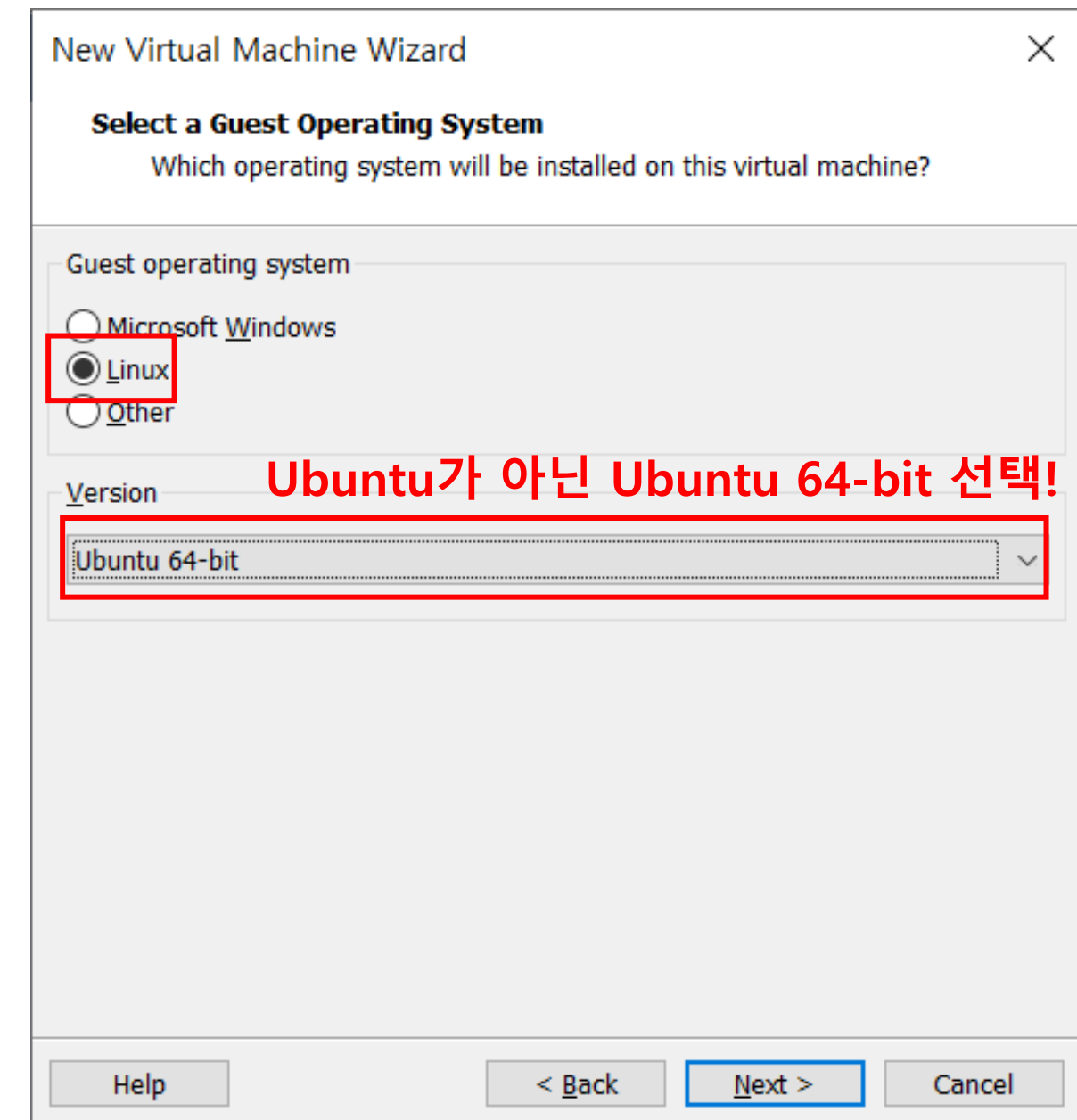
Ubuntu 설치 (2)

Guest operating system : Linux 선택

Version : Ubuntu 64-bit 선택

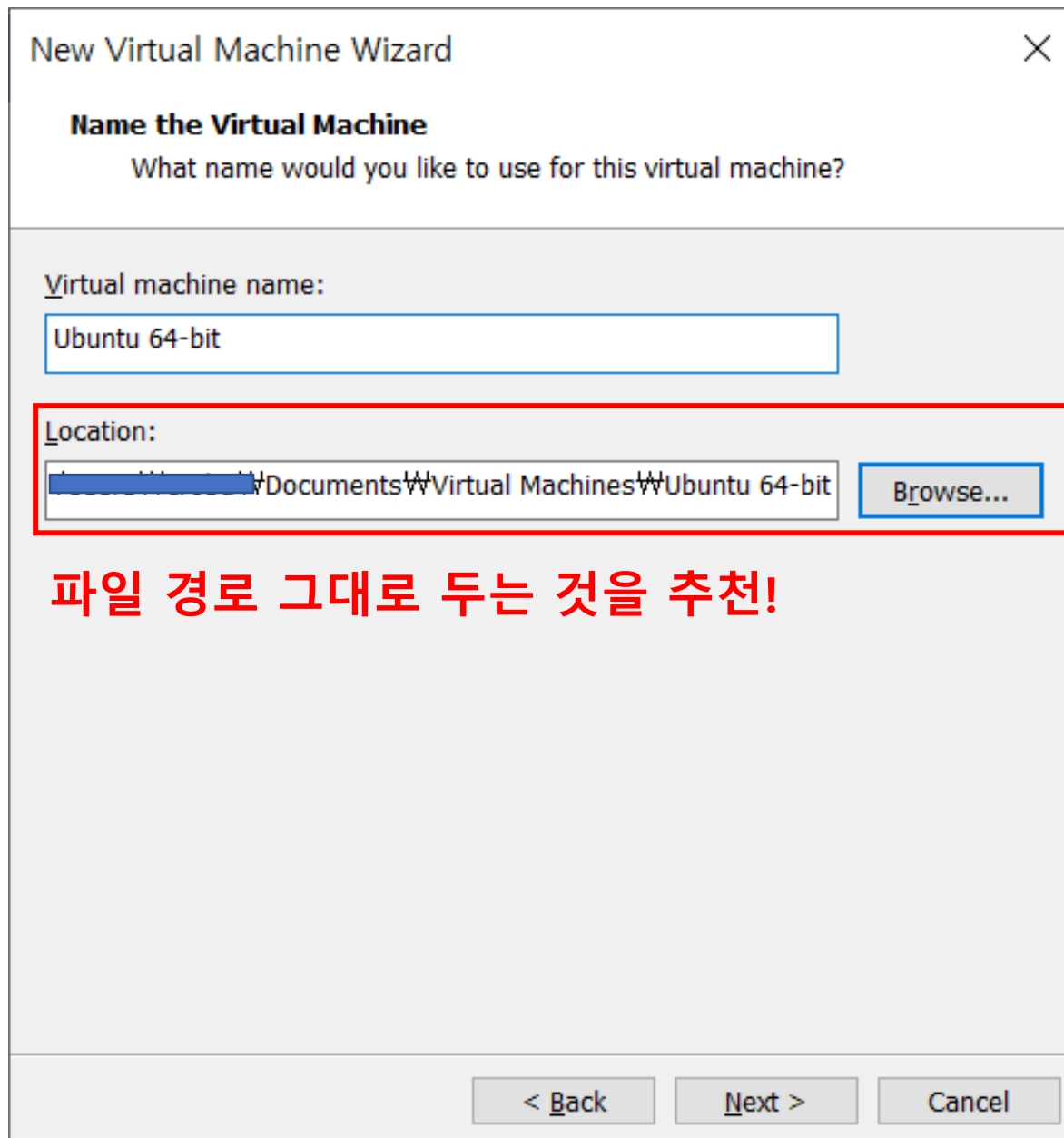


Click



Ubuntu 설치 (3)

Maximum disk size : **40GB** 설정



New Virtual Machine Wizard

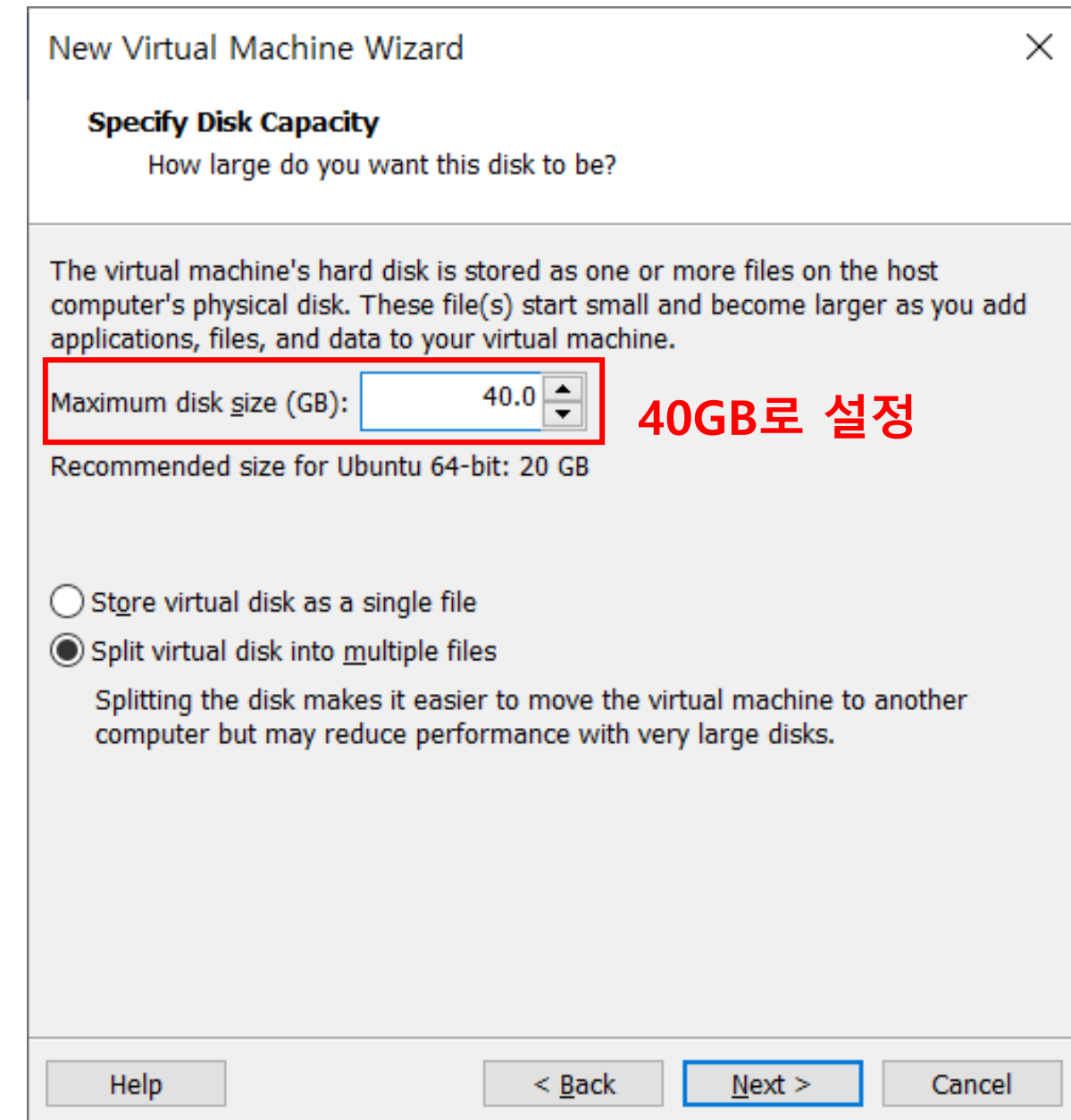
Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:
Ubuntu 64-bit

Location:
C:\Users\user\Documents\Virtual Machines\Ubuntu 64-bit Browse...

파일 경로 그대로 두는 것을 추천!

< Back Next > Cancel



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 **40GB로 설정**

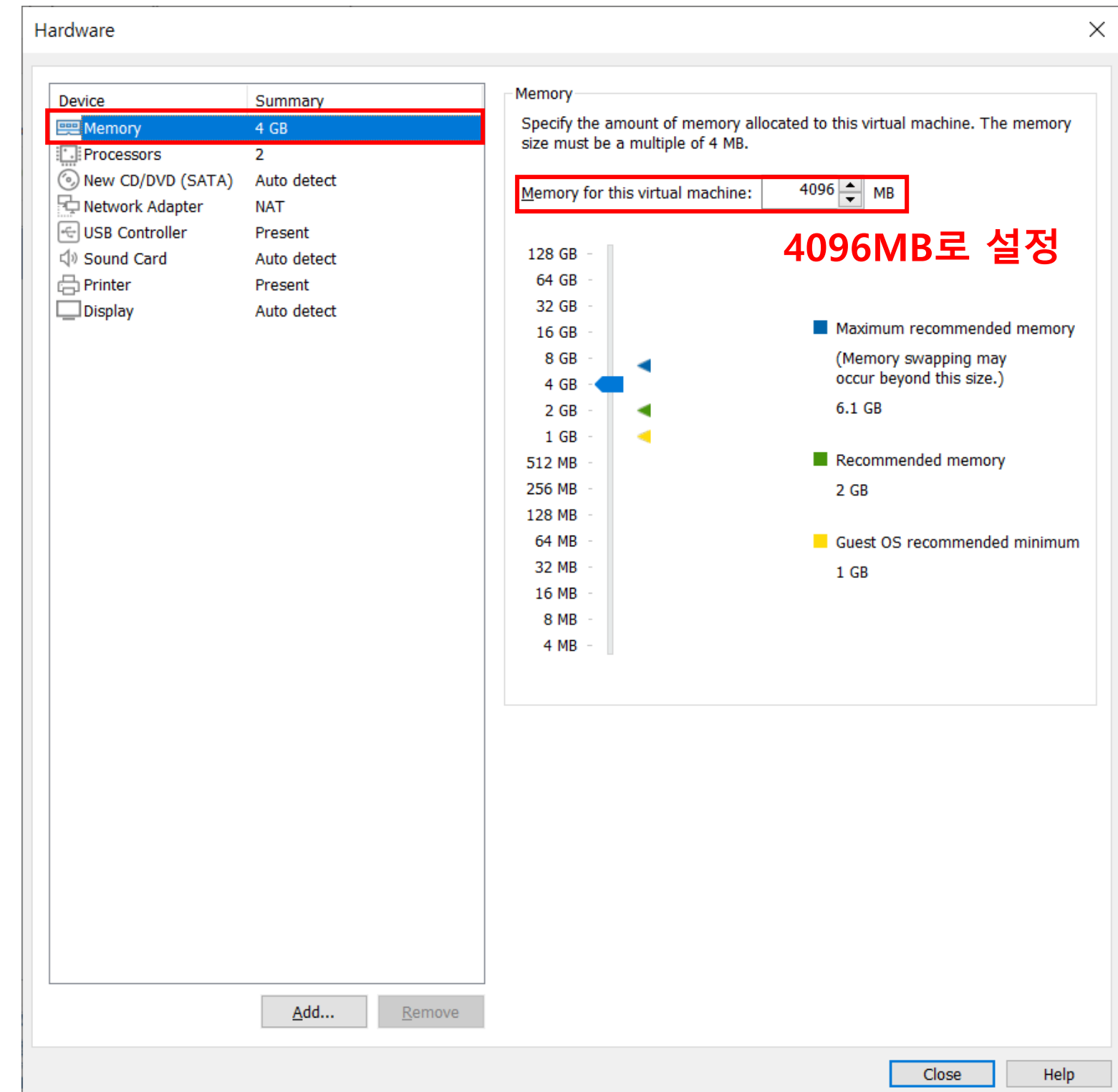
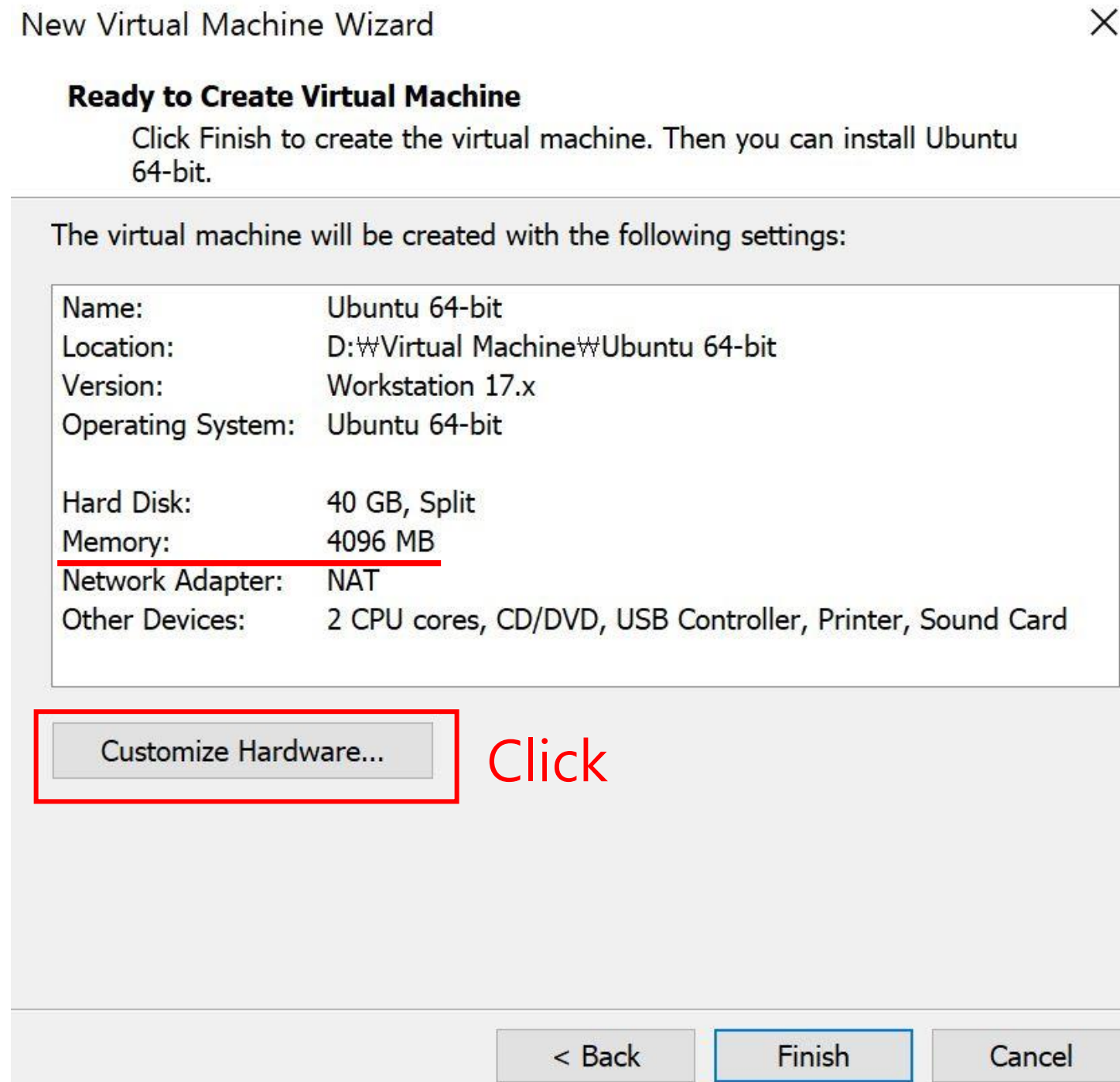
Recommended size for Ubuntu 64-bit: 20 GB

☐ 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

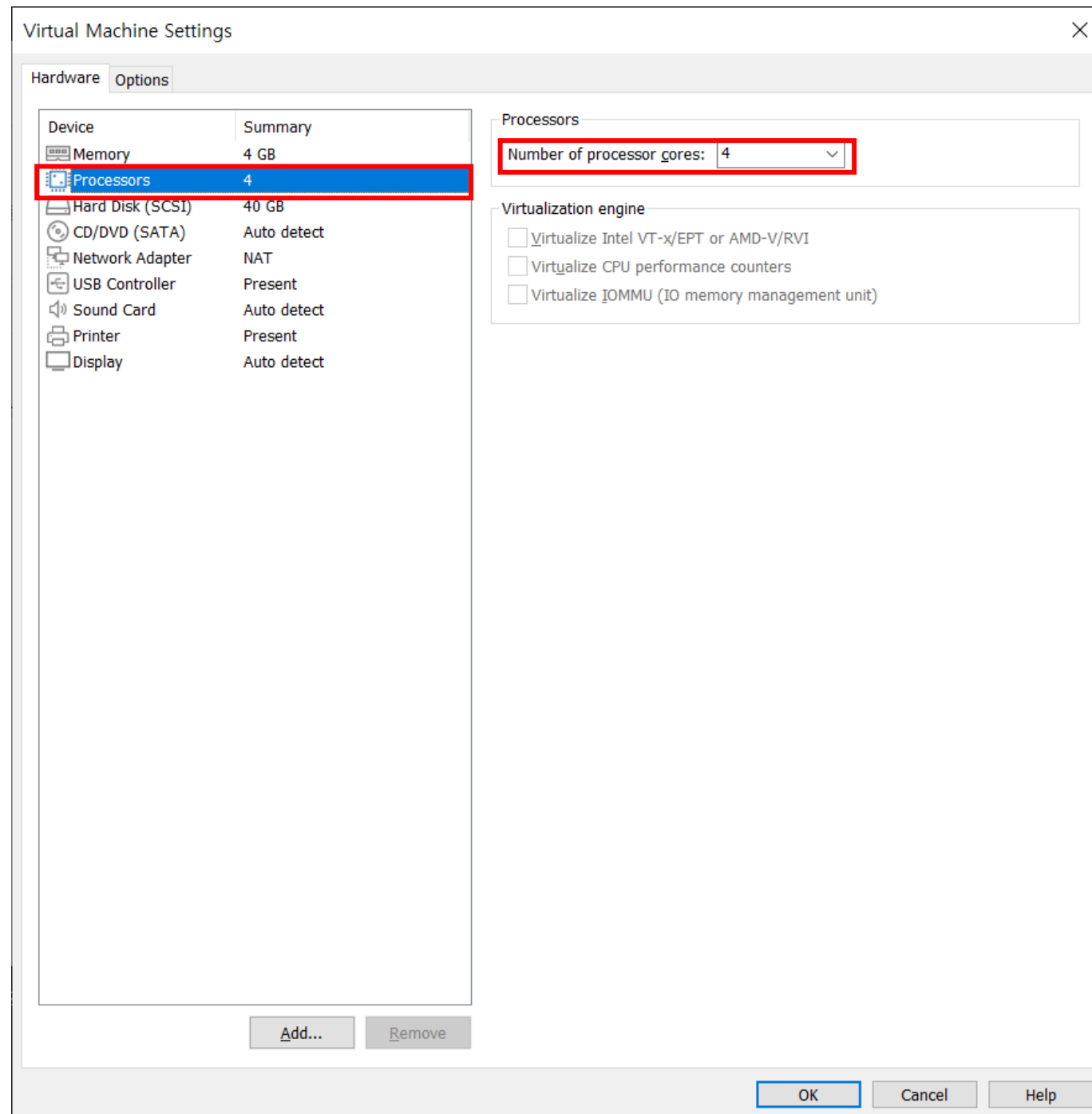
Ubuntu 설치 (4)

Memory : **4096MB** 설정



Ubuntu 설치 (5)

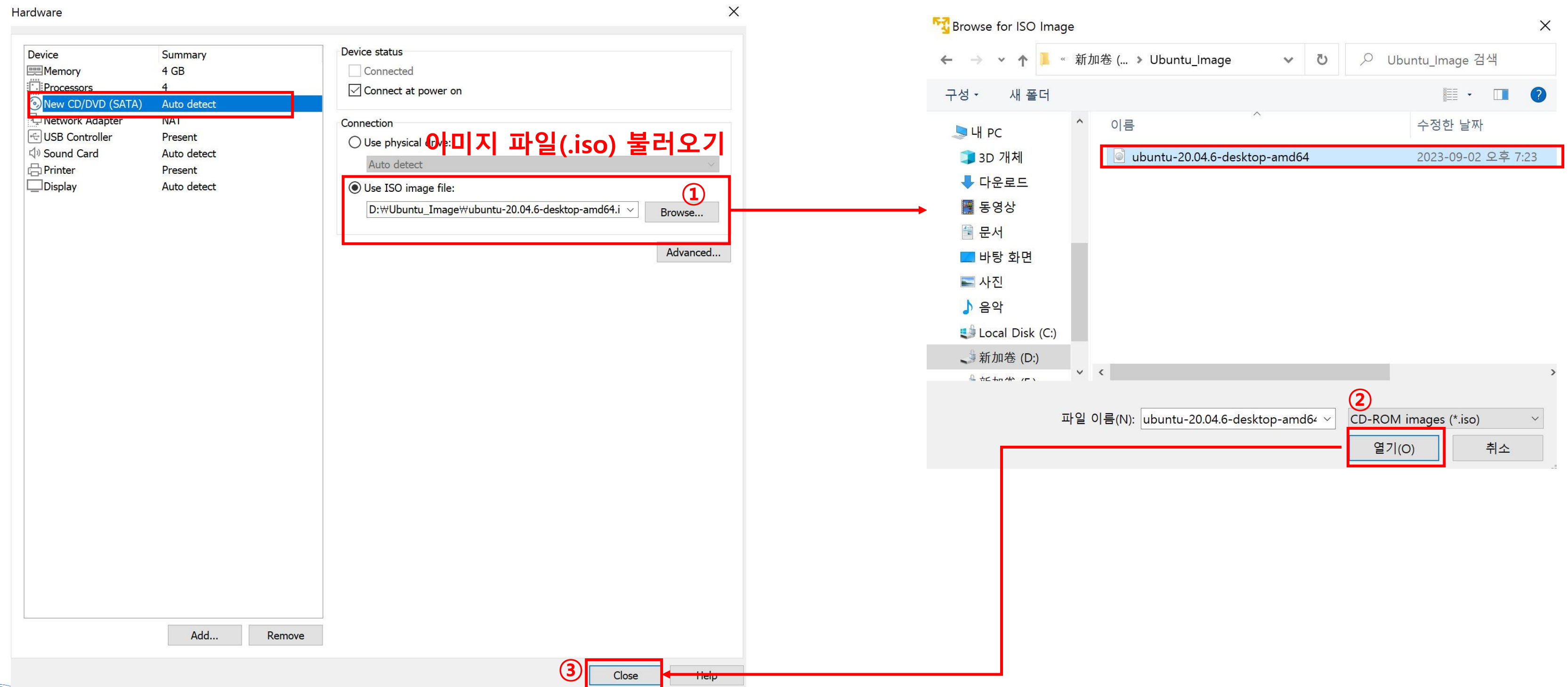
Processors : **4** 설정 (컴퓨터 사양에 따라 조정)



- Core의 개수가 **많을수록** 작업을 분담해서 처리할 수 있기 때문에 효율이 좋아진다.
- 단, Virtual Machine을 사용하는 **PC의 사양에 따라 알맞게 Core 개수의 조정이 필요**하다.

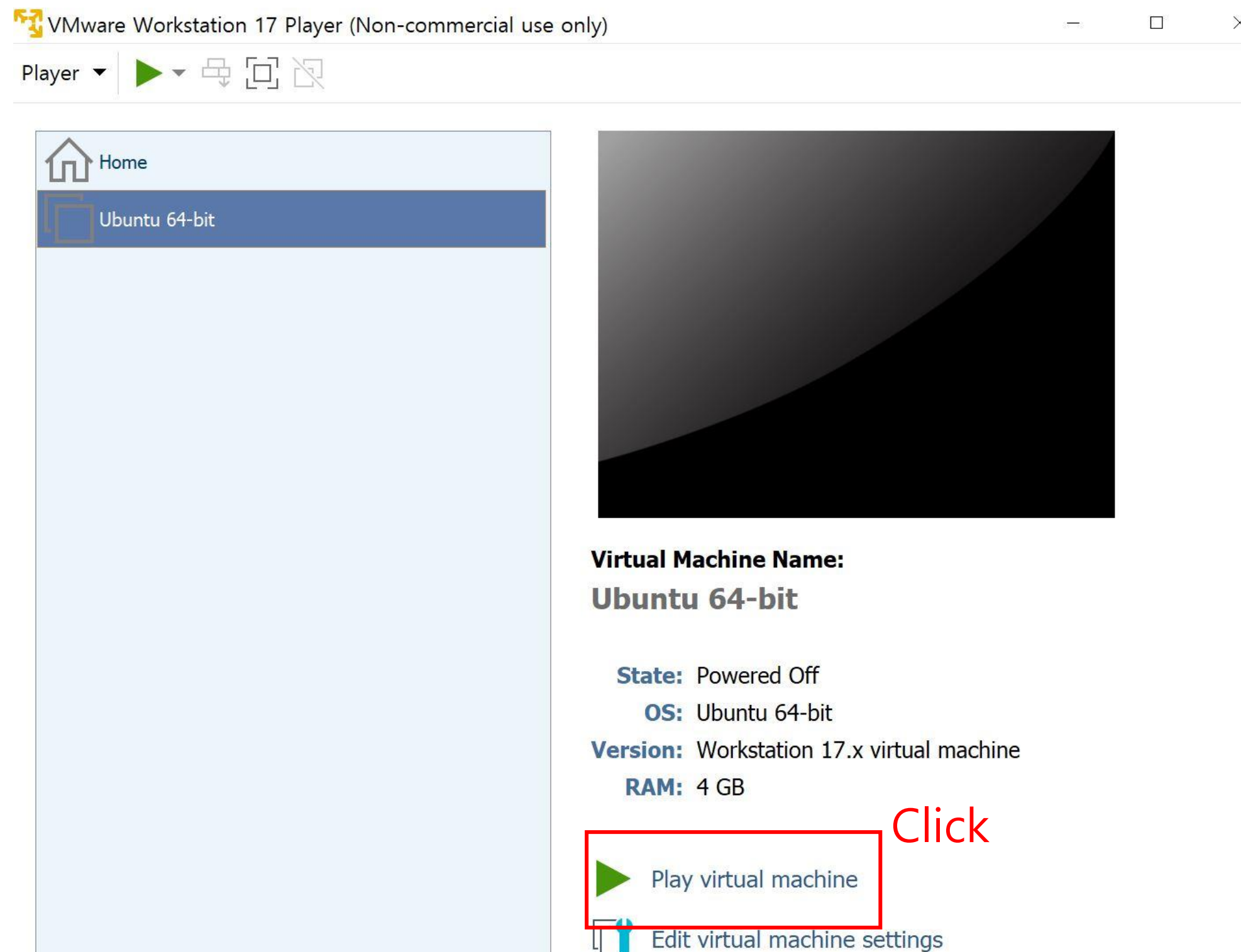
Ubuntu 설치 (6)

다운받은 Ubuntu 18.04 image file(.iso) 불러오기



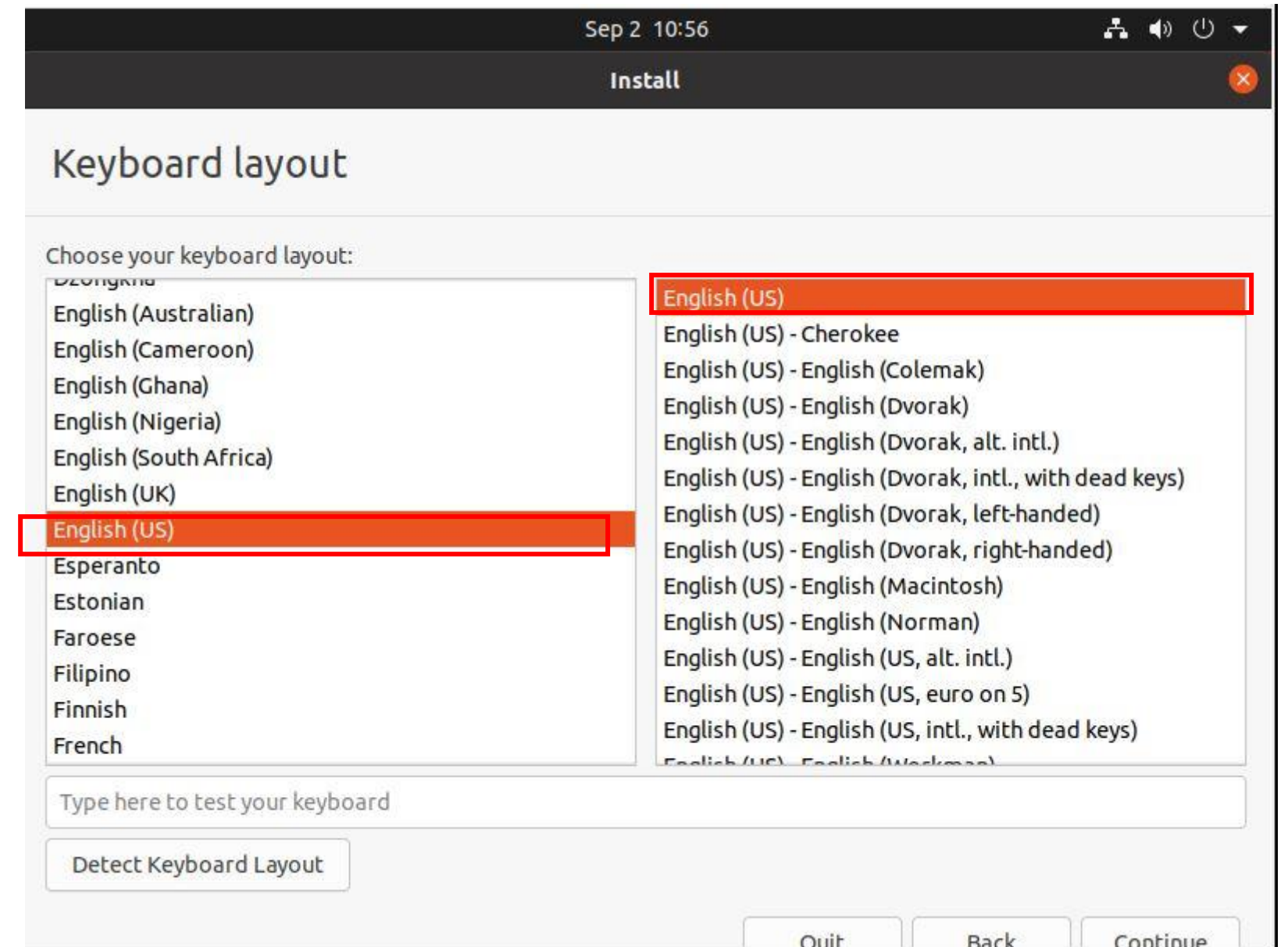
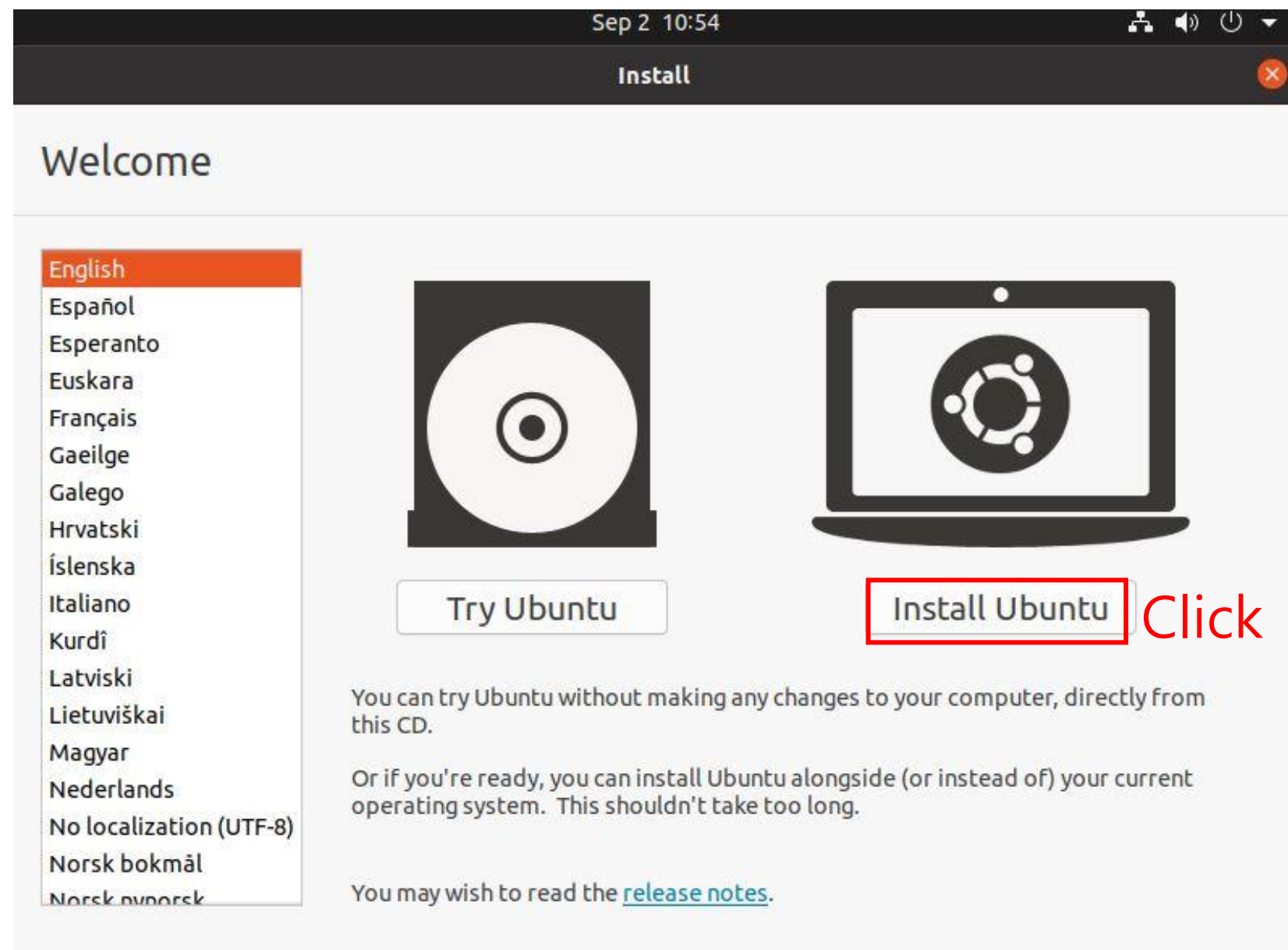
Ubuntu 설치 (7)

생성한 가상 머신 Ubuntu-64-bit 실행



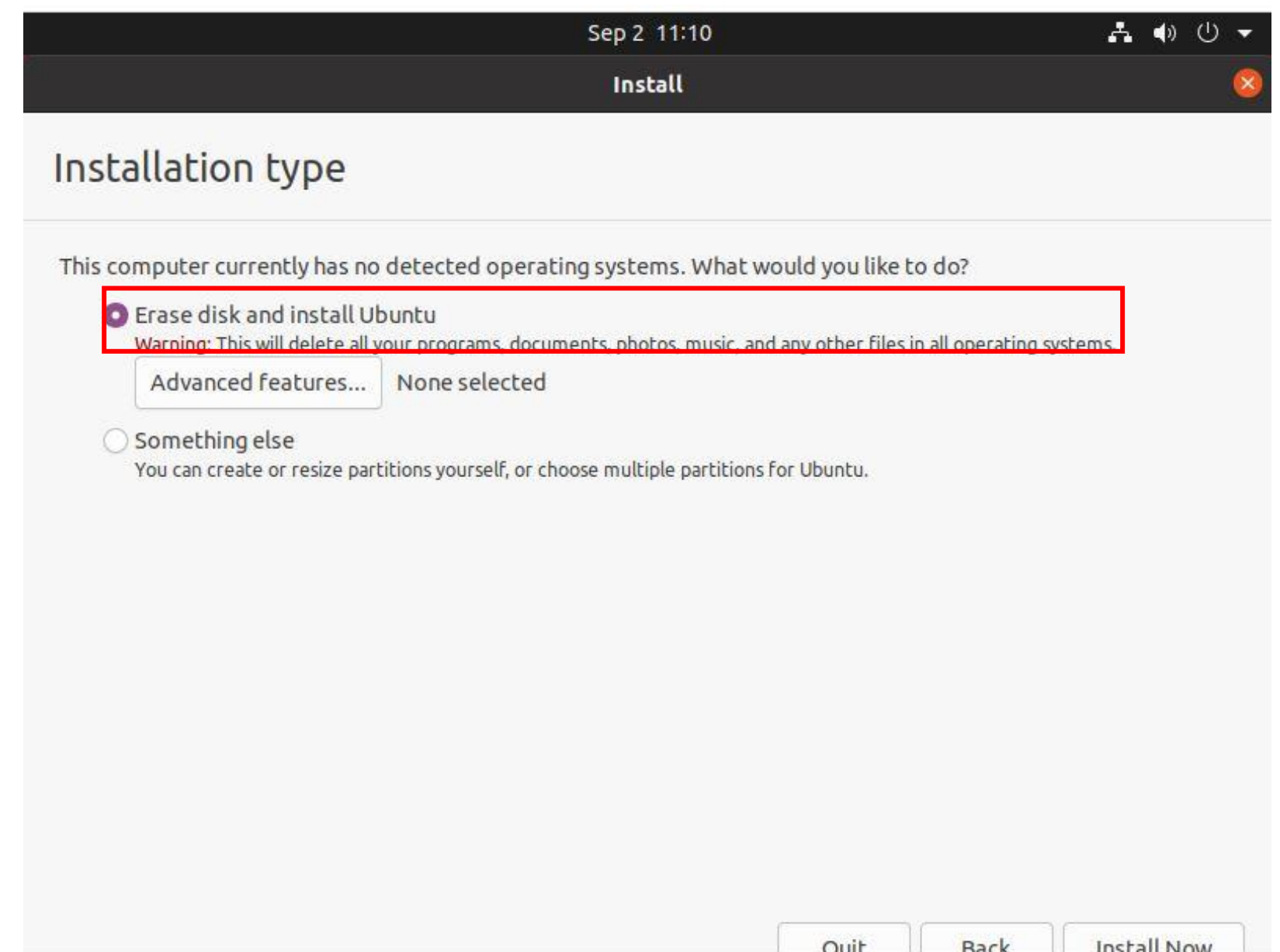
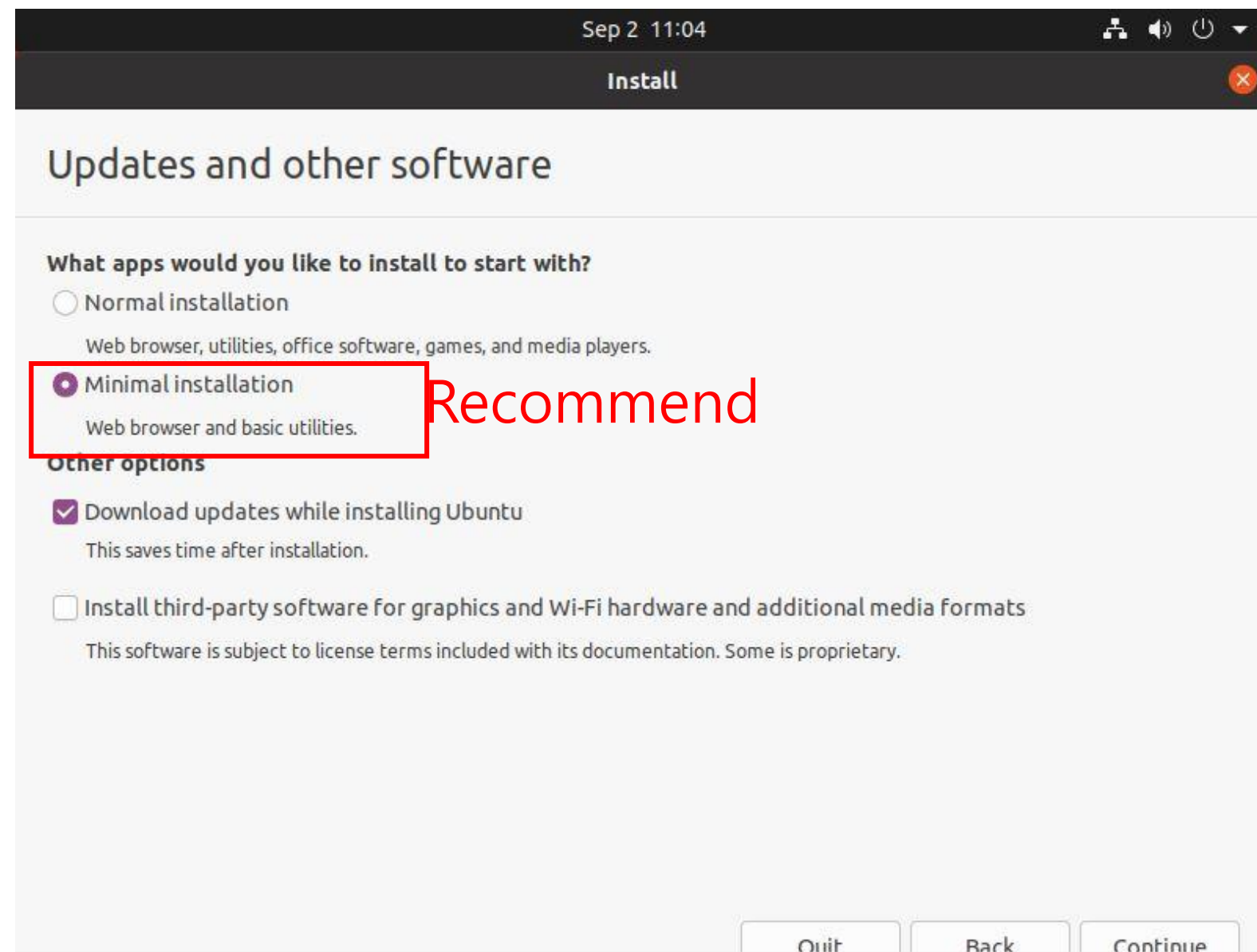
Ubuntu 설치 (8)

Keyboard layout – English(US) / English(US) 선택



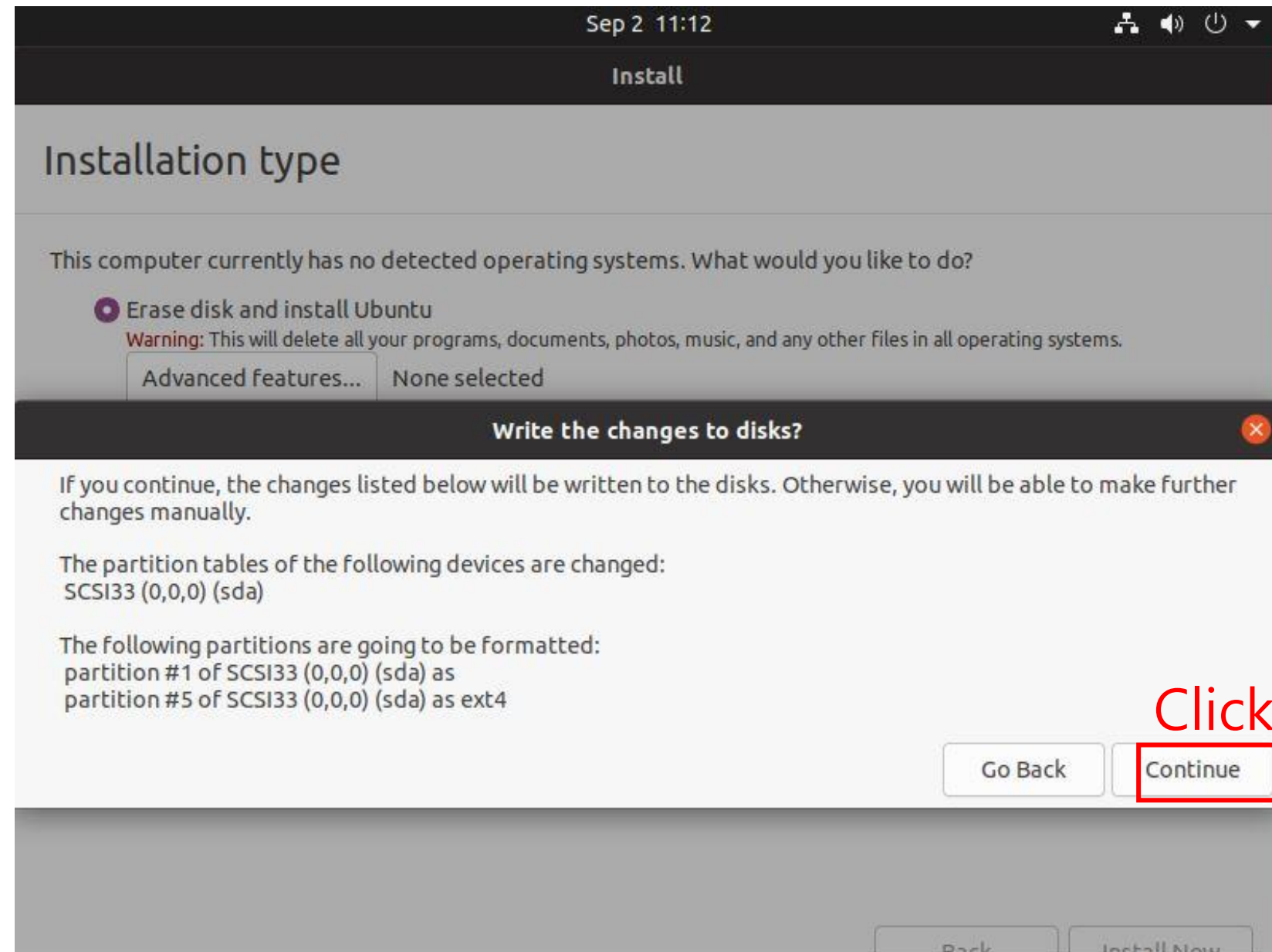
Ubuntu 설치 (9)

Normal installation / Minimal installation(추천) 중 선택
Installation type - **Erase disk and install Ubuntu** 선택



Ubuntu 설치 (10)

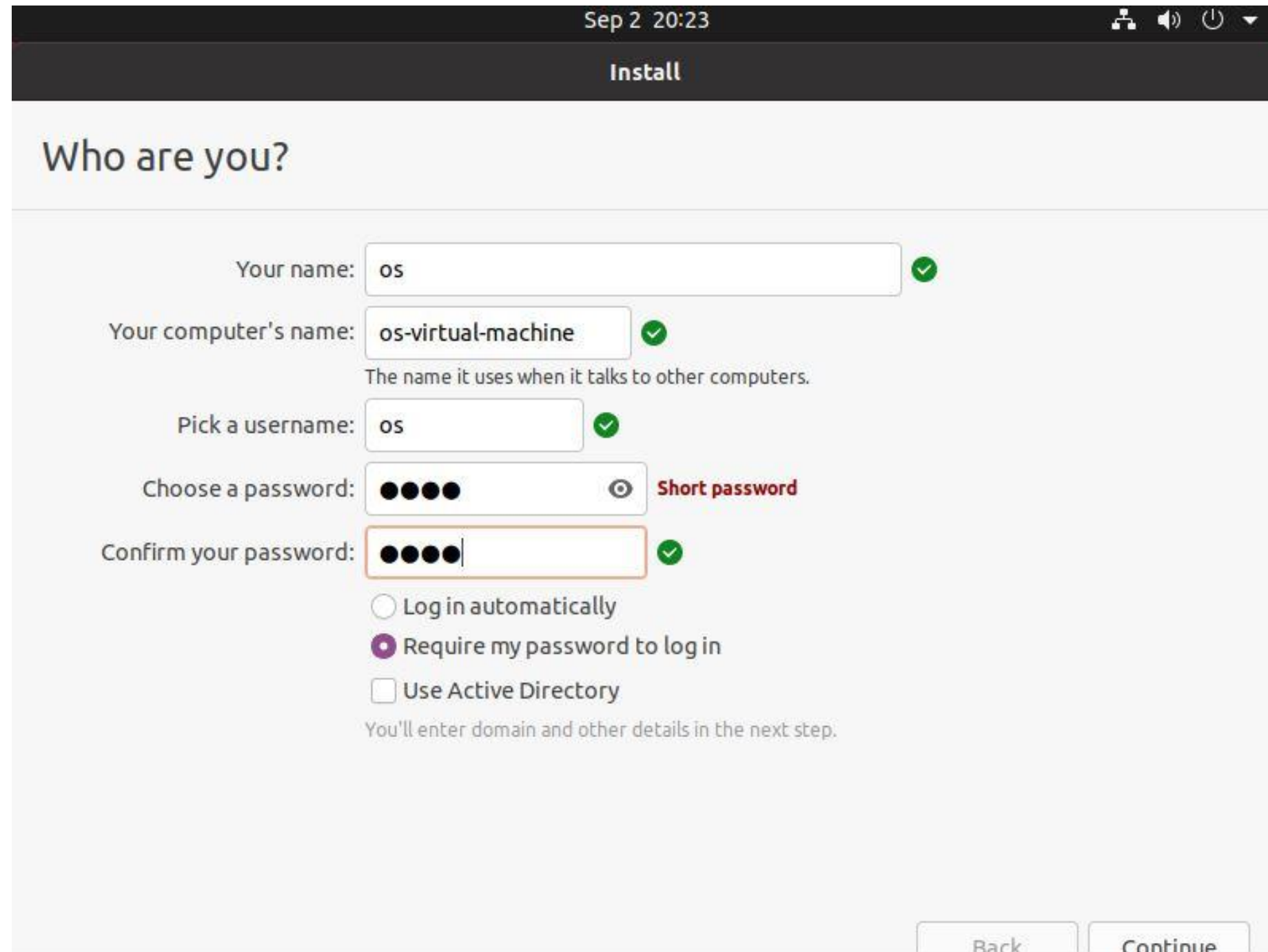
Timezone – Seoul 선택



Ubuntu 설치 (11)

User name, User Password 등 설정

→ Ubuntu 환경에서 사용 할 사용자 계정이 됨



The screenshot shows the 'Who are you?' screen in the Ubuntu installer. The window title is 'Install' and the date/time is 'Sep 2 20:23'. The screen contains the following fields and options:

- Your name:** 'os' (with a green checkmark)
- Your computer's name:** 'os-virtual-machine' (with a green checkmark). Below this is the text: 'The name it uses when it talks to other computers.'
- Pick a username:** 'os' (with a green checkmark)
- Choose a password:** Four black dots, an eye icon, and the text 'Short password'.
- Confirm your password:** Four black dots, a green checkmark, and a red border around the field.
- Log in options:**
 - ☐ Log in automatically
 - ☒ Require my password to log in
 - ☐ Use Active Directory
- Footer text:** 'You'll enter domain and other details in the next step.'
- Buttons:** 'Back' and 'Continue' at the bottom right.

감사합니다.

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부록

가상머신 (MAC)

- VMware Fusion(**추천**)
- VirtualBox



추천



부록

VMware 설치

Please login or create an account to access your downloads:

- <https://customerconnect.vmware.com/evalcenter?p=fusion-player-personal>

vmware® Multi-Cloud Services Products Solutions Partners Resources GET STARTED

Home / Evaluate VMware Products / VMware Fusion Player – Personal Use License

VMware Fusion Player – Personal Use License

Fusion Player offers a Personal Use License, available for free with a valid CustomerConnect account. Home users, Open Source contributors, students, and anyone else can use Fusion Player Free for Non-Commercial activity.

Top Evaluation Resources

- Fusion Community
- Documentation and Release Notes
- Downloading and installing VMware Fusion
- Fusion Player FAQ

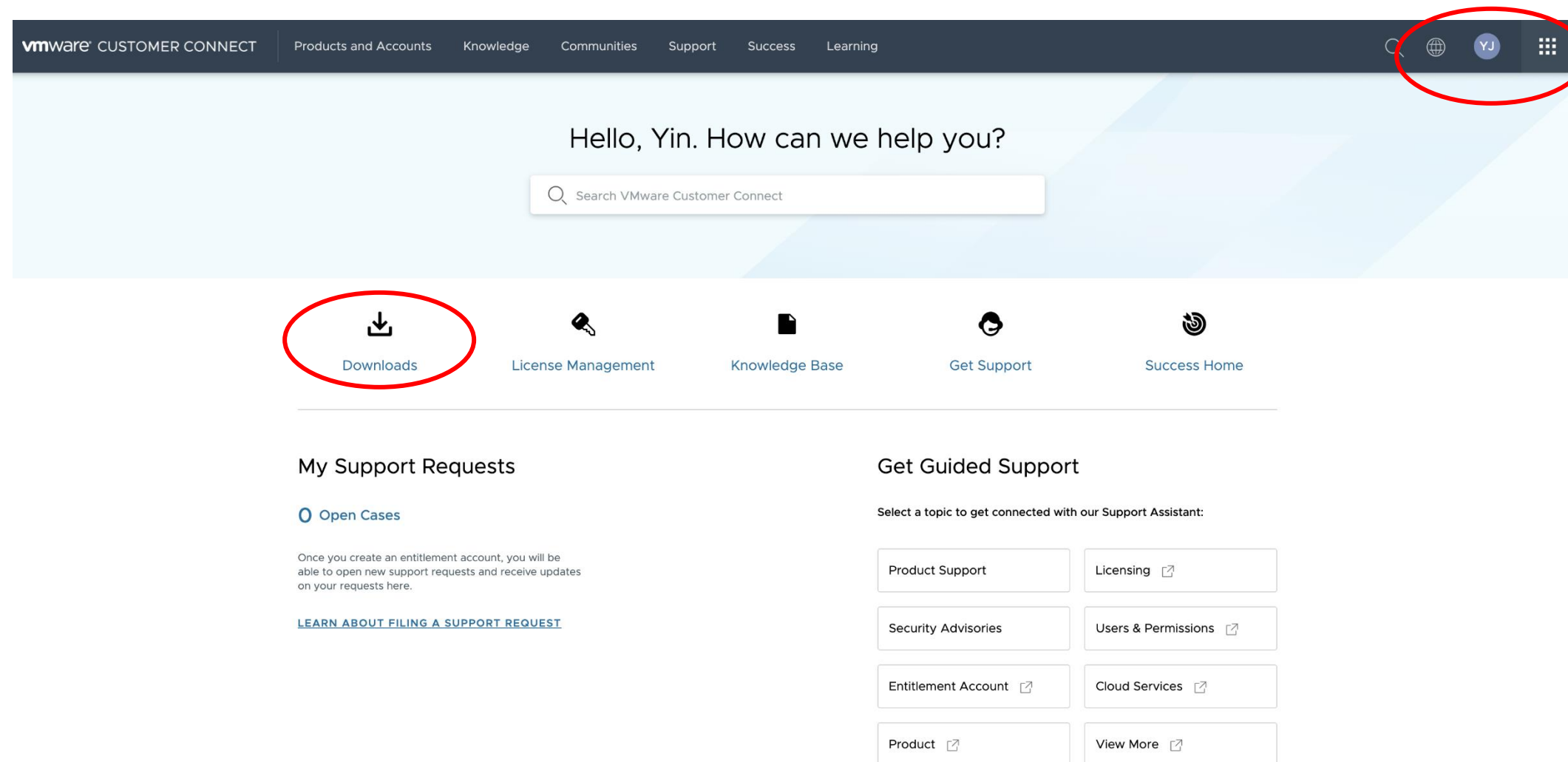
Installation & Configuration License & Download Troubleshooting & Support How to Buy

Please login or create an account to access your downloads

부록

VMware 설치

계정생성하여 Downloads 클릭



부록

VMware 설치

Home / My Products

All Downloads

Search All Downloads



My Products

All Products

Products A-Z

End of Life Products

DESKTOP & END-USER COMPUTING

Desktop & End-User Computing

Products	
VMware Workspace ONE	View Download Components Drivers & Tools Get Training
VMware Horizon	View Download Components Drivers & Tools Try Get Training
VMware Horizon (with View)	View Download Components Drivers & Tools Get Training
VMware Horizon Air	View Download Components Drivers & Tools Get Training
VMware Horizon Apps	View Download Components Drivers & Tools
VMware Horizon Service	View Download Components Drivers & Tools
VMware Horizon Standard and Enterprise Plus Subscriptions	View Download Components Drivers & Tools
Advanced Monitoring for VMware Horizon by ControlUp	View Download Components Drivers & Tools
VMware Horizon DaaS	View Download Components Drivers & Tools Get Training
VMware Horizon Clients	View Download Components Drivers & Tools Get Training
Windows OS Optimization Tool for VMware Horizon	View Download Components Drivers & Tools
VMware Dynamic Environment Manager	View Download Components Drivers & Tools Try Get Training
VMware App Volumes	View Download Components Drivers & Tools Try Get Training
VMware Workspace ONE Access (VIDM)	View Download Components Drivers & Tools Try
VMware Workspace	View Download Components Drivers & Tools Get Training
VMware ThinApp	View Download Components Drivers & Tools Try Get Training
VMware Workstation Pro	View Download Components Drivers & Tools
VMware Workstation Player	View Download Components
VMware Fusion	View Download Components Drivers & Tools Try
VMware TrustPoint	View Download Components Drivers & Tools
VMware Unified Access Gateway	View Download Components Drivers & Tools
VMware Workspace ONE Assist for VMware Horizon	View Download Components Drivers & Tools



부록

VMware 설치

Home / VMware Fusion

Download VMware Fusion

Select Version.

13.0 ▾

Select the relevant installation package to download from the tabs below. You may be prompted to log in to complete the download. If you do not have a profile, you may be asked to create one before being able to complete the download process.

Get Your License Key

[Read More](#)

Product Resources

- [View My Download History](#)
- [Product Info](#)
- [Documentation](#)
- [Community](#)
- [Download Free Trial](#)
- [Fusion Player Upgrade](#)
- [Fusion Pro Upgrade](#)
- [↓ Get Free Trial](#)

[Product Downloads](#) [Drivers & Tools](#) [Open Source](#) [Custom ISOs](#) [OEM Addons](#)

Product	Release Date	
▼ VMware Fusion 13.0.2		
VMware Fusion 13.0.2 (for Intel-based and Apple silicon Macs)	2023-04-25	GO TO DOWNLOADS

[Product Downloads](#) [Drivers & Tools](#) [Open Source](#) [Custom ISOs](#) [OEM Addons](#)

File	Information
VMware Fusion 13.0.2 (for Intel-based and Apple silicon Macs)	
File size: 672.09 MB File type: dmg	
Read More	
DOWNLOAD NOW	

[MD5 checksums](#), [SHA1 checksums](#) and [SHA256 checksums](#).

VMware General Terms: [View VMware General Terms](#)

부록

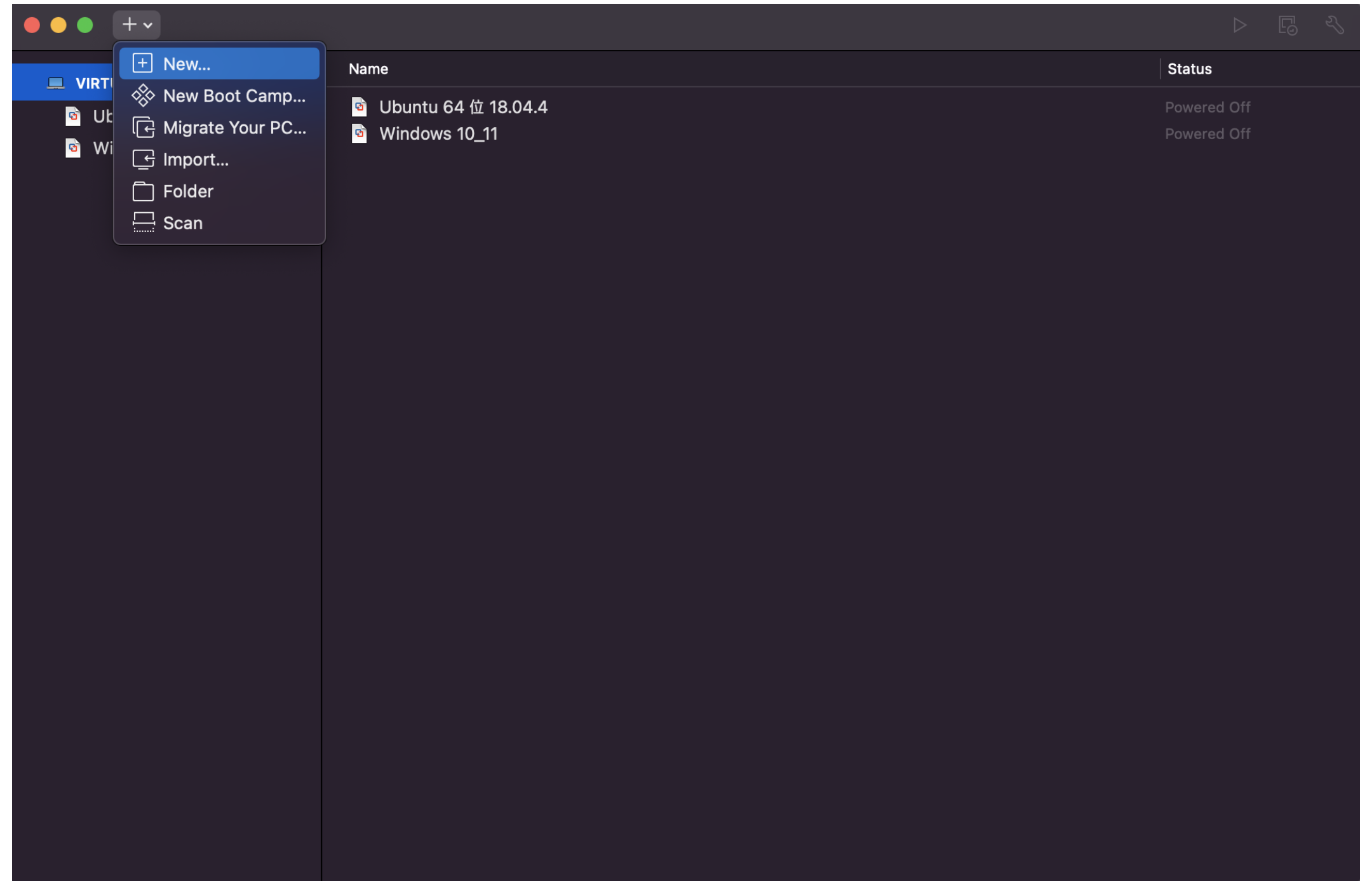
Ubuntu 설치

Ubuntu image 설치 :

- P8 동일

VMware 설정:

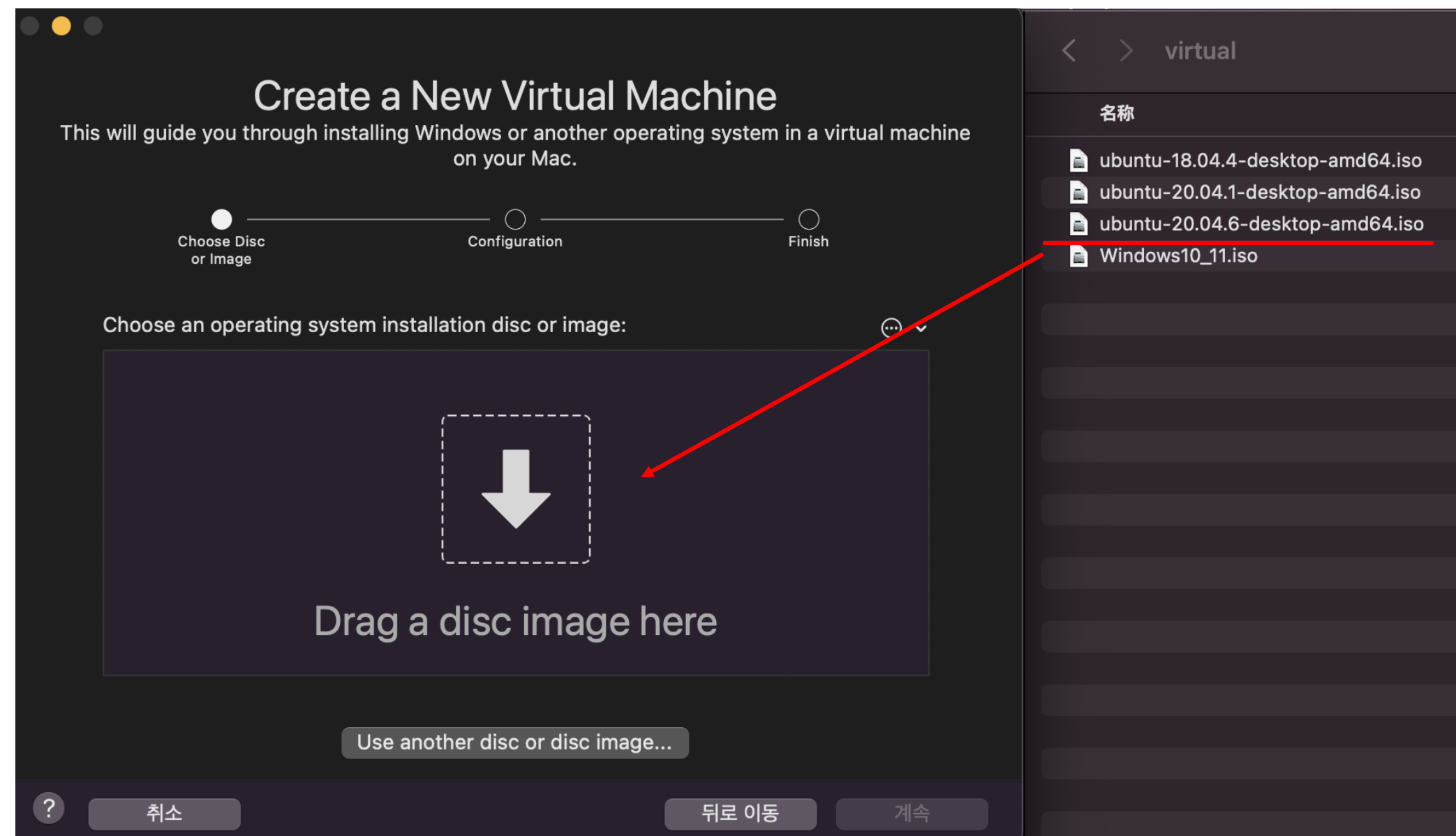
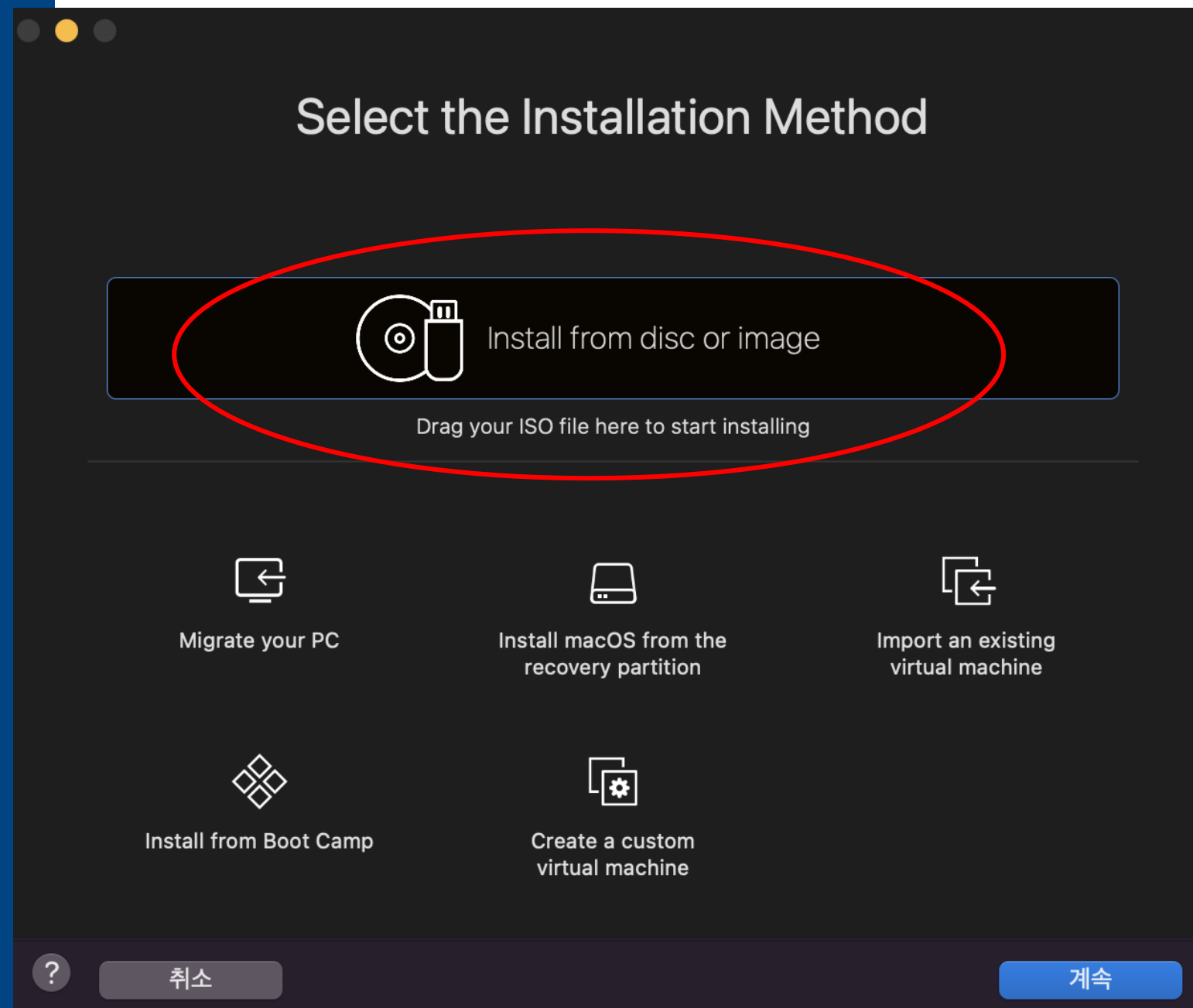
- 설치완료되면 사진과 동일
- 새로운 가상머신 추가



부록

Ubuntu 설치

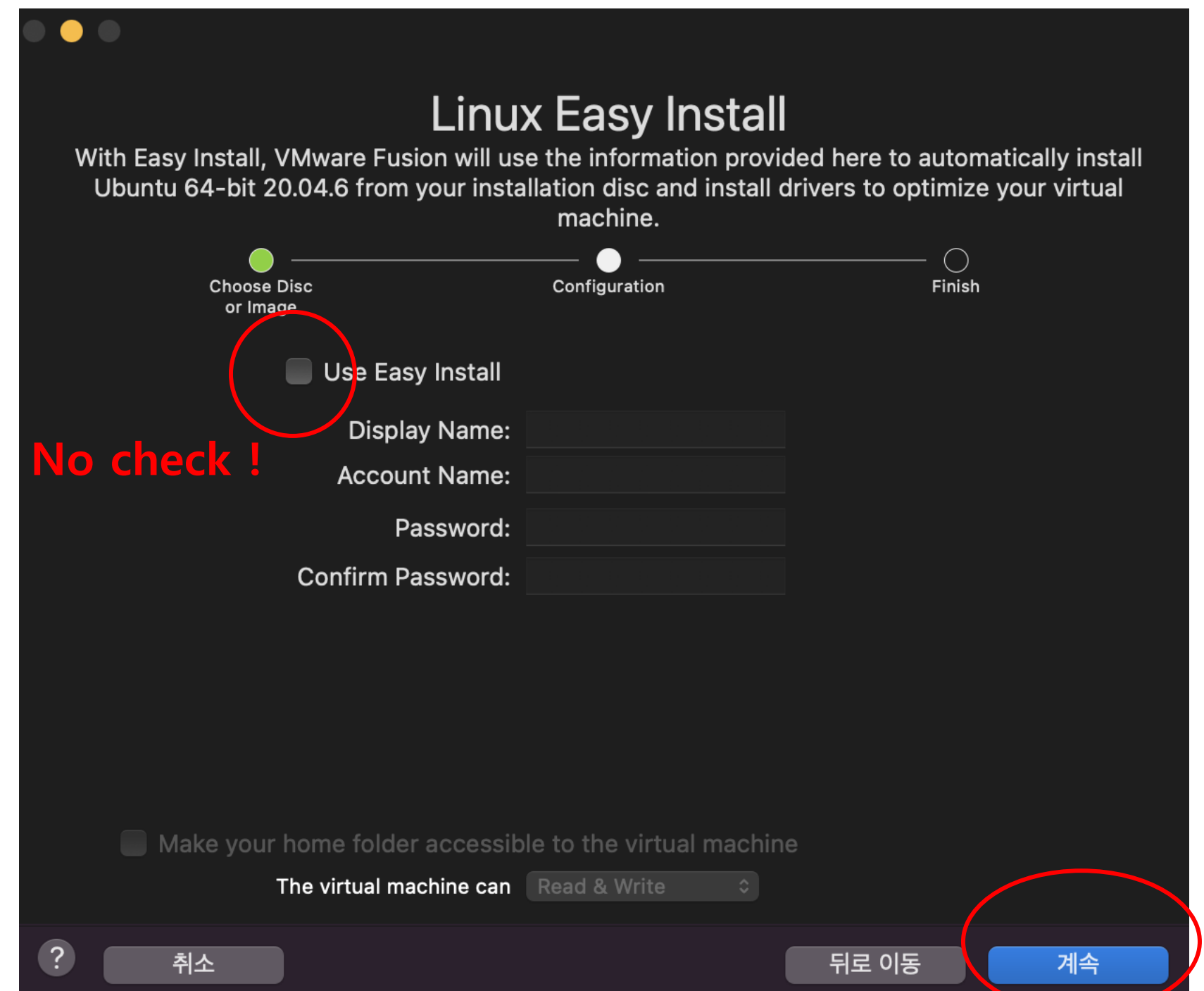
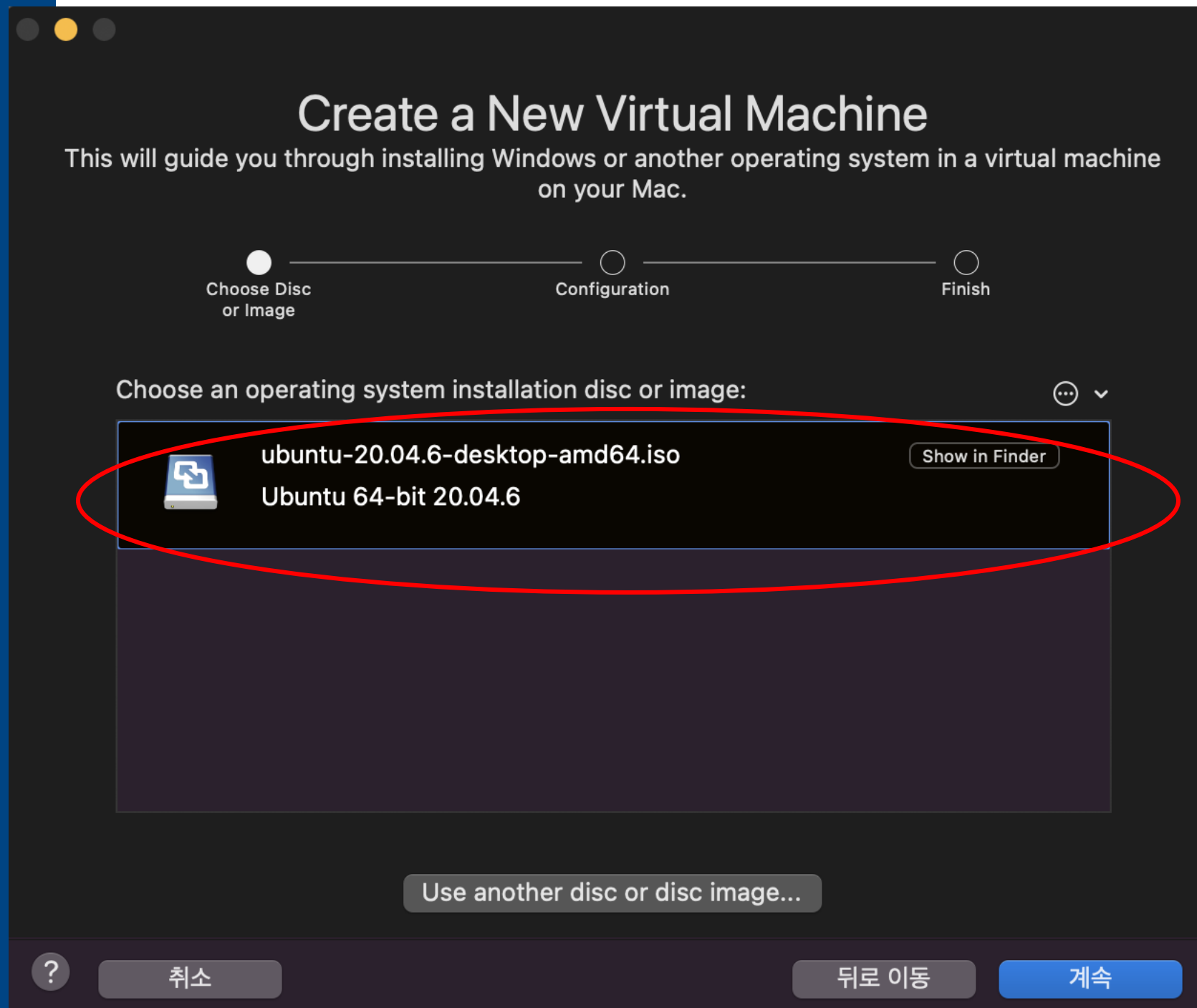
가상머신 추가



부록

Ubuntu 설치

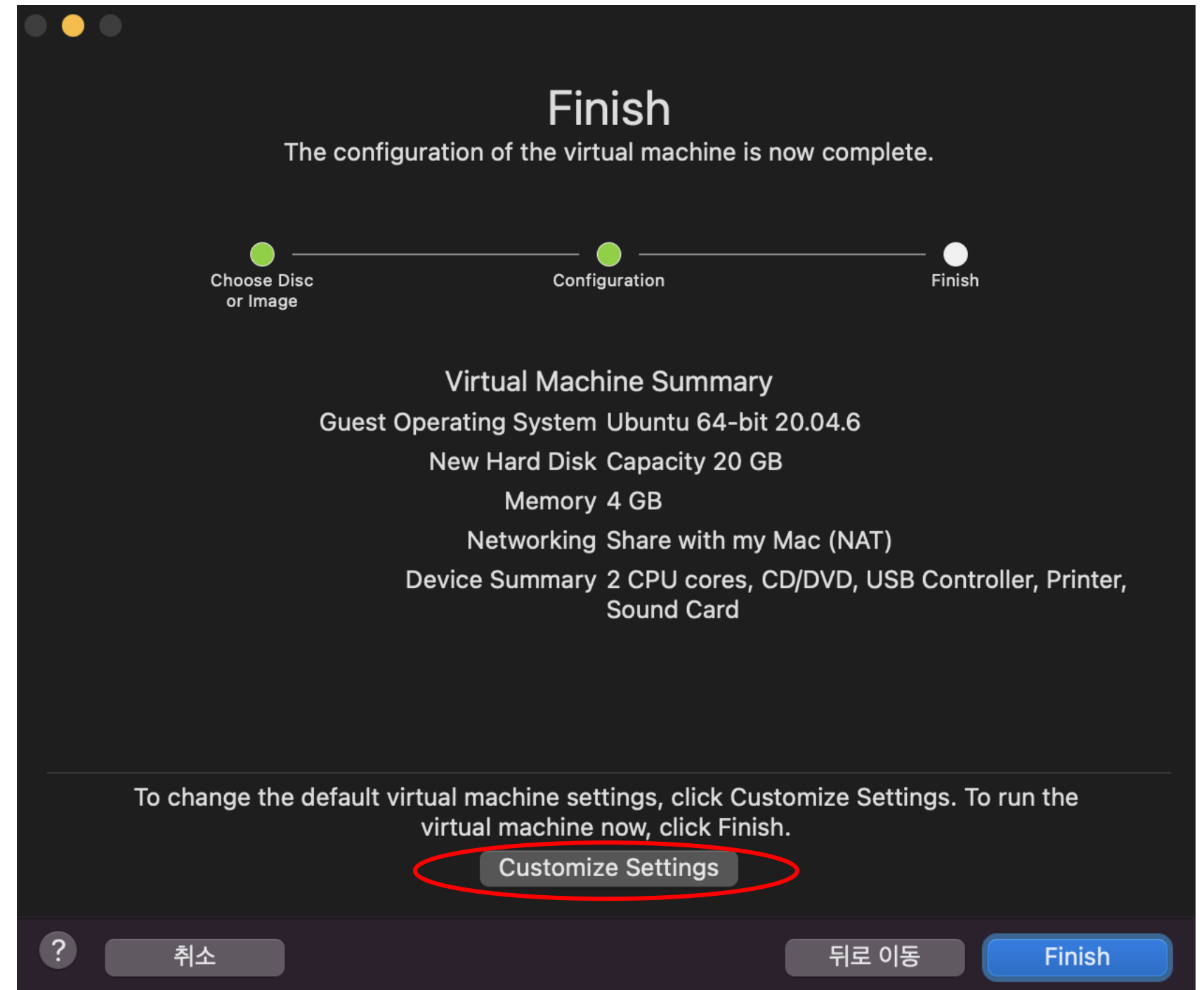
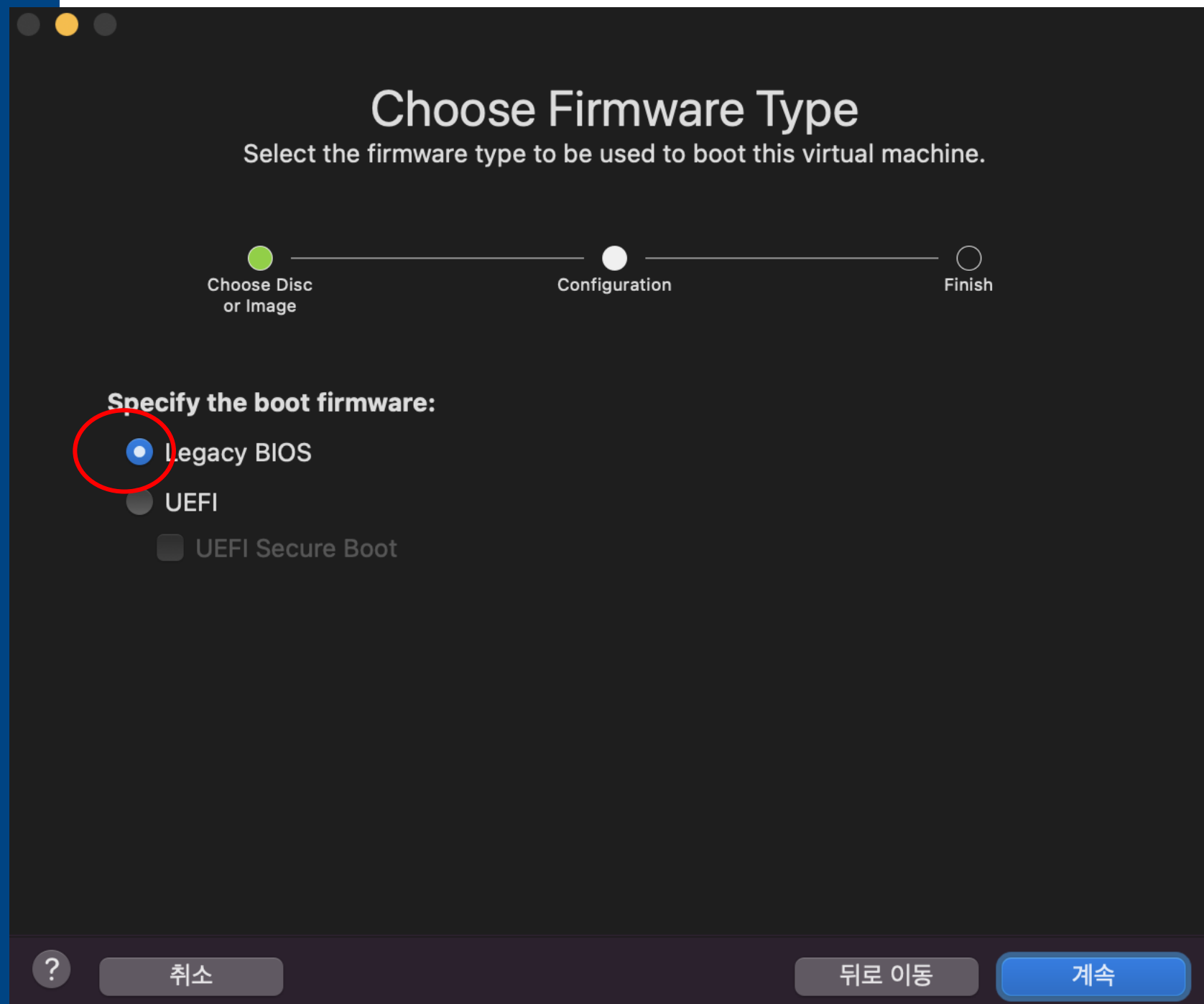
가상머신 추가



부록

Ubuntu 설치

Customize settings -> P14-15 동일



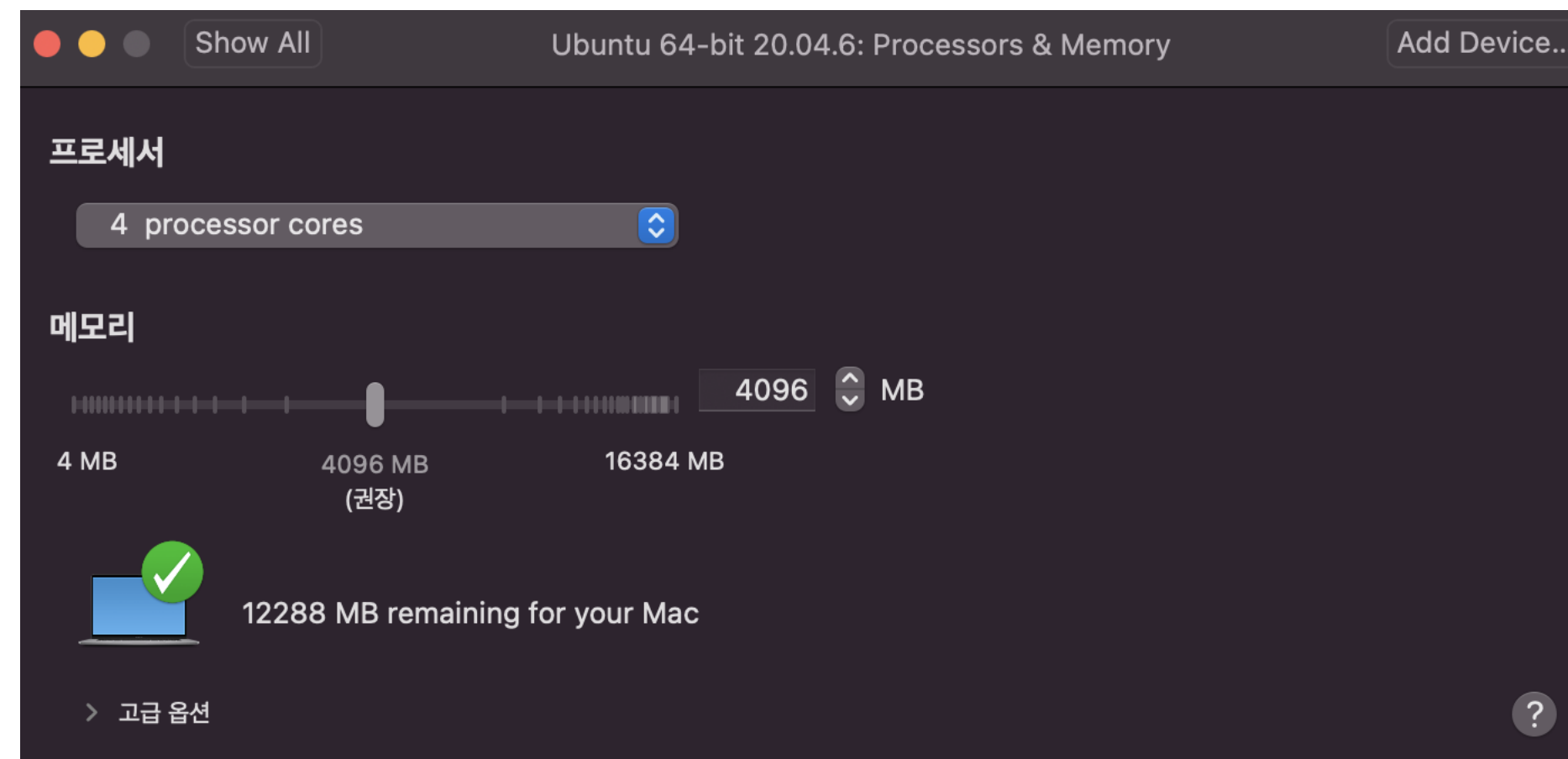
부록

Ubuntu 설치

컴퓨터 사양에 따라 조절 (CPU, Memory)

Ubuntu 설치:

- P18-21



Tool

학습자료:

Vim:

- 참조만: <https://missing.csail.mit.edu/2020/editors/>
- 학습게임: <https://vim-adventures.com/>
- Documentation: <https://www.vim.org/docs.php>

Make & GCC:

- <https://makefiletutorial.com/#getting-started>