

2026 Winter RocksDB Study Linux on VM

2025.01.02

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VirtualBox 설치

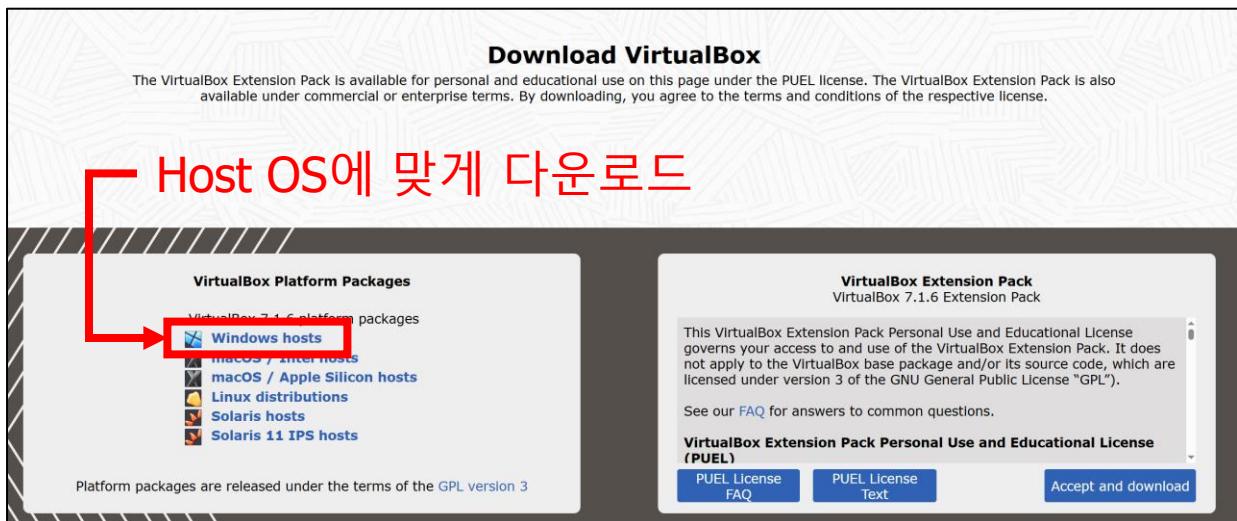
■ VirtualBox란?

- 오라클에서 개발한 오픈 소스 가상화 소프트웨어
- 하나의 운영 체제(OS)에서 다른 운영 체제를 가상 환경으로 실행할 수 있음
 - 강의에서는 Guest OS로 Linux Ubuntu를 사용
- Windows, macOS, Linux 등 다양한 운영 체제에서 사용 가능

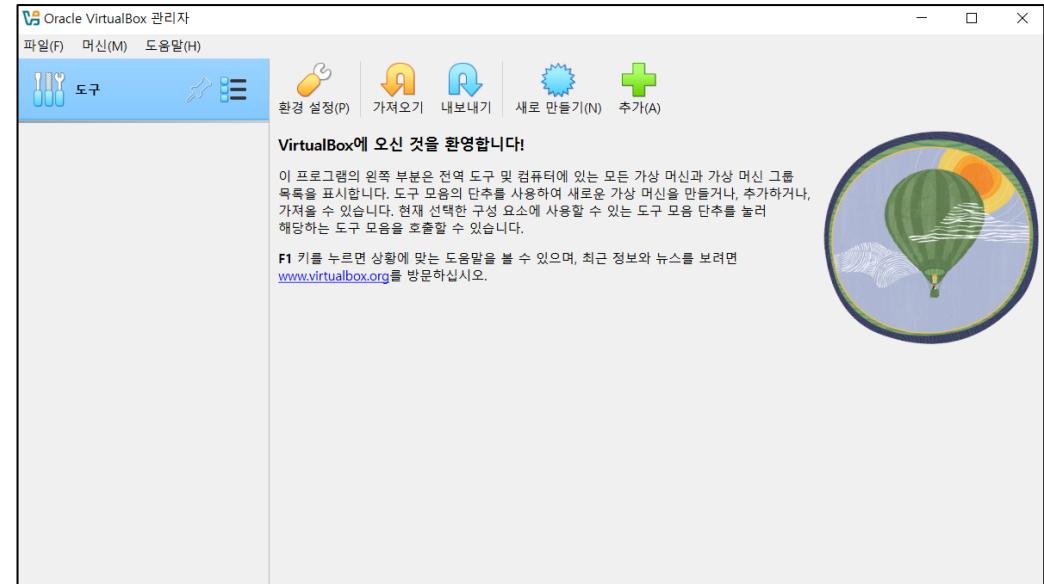
1. Windows

1) VirtualBox 설치

- <https://www.virtualbox.org>



VirtualBox 다운로드 페이지



설치 후 VirtualBox 초기화면

1. Windows

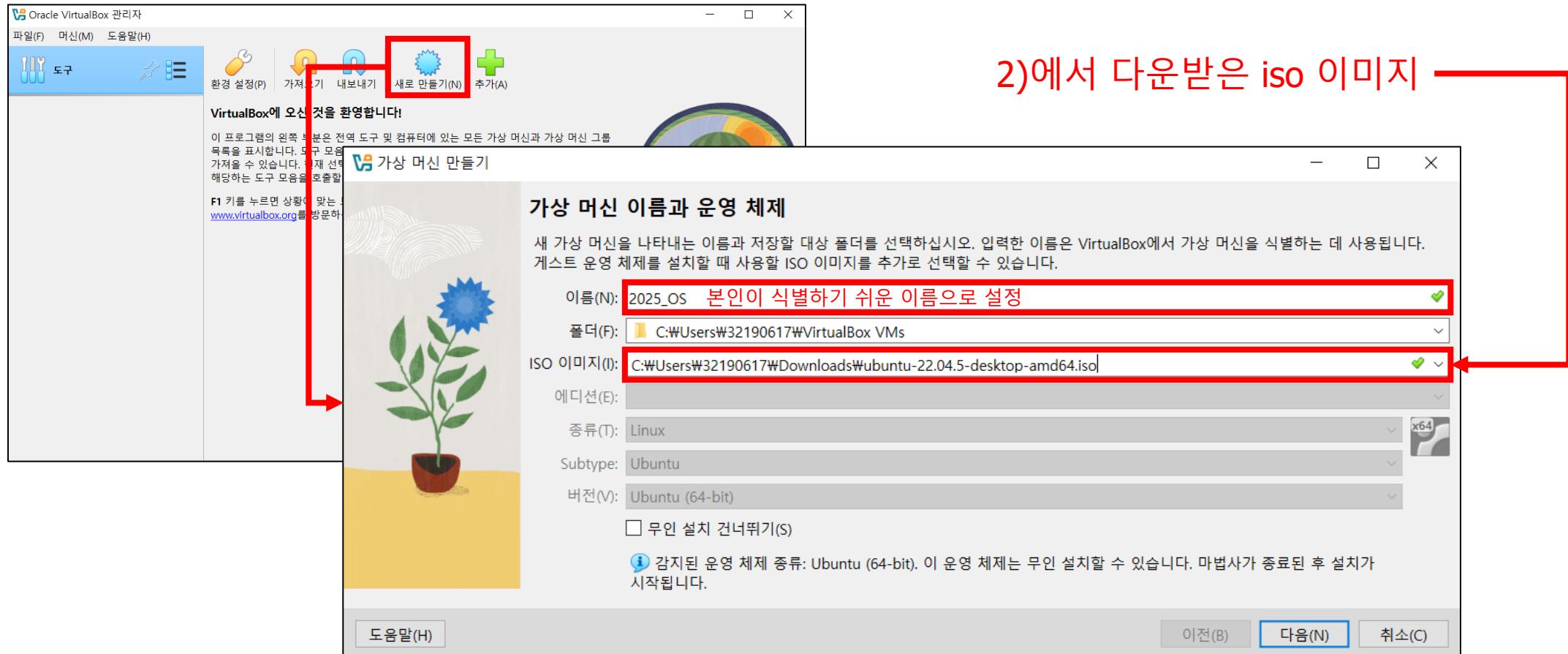
2) Ubuntu Desktop 22.04 이미지 다운로드 (AMD64)

- <https://releases.ubuntu.com/jammy/>



1. Windows

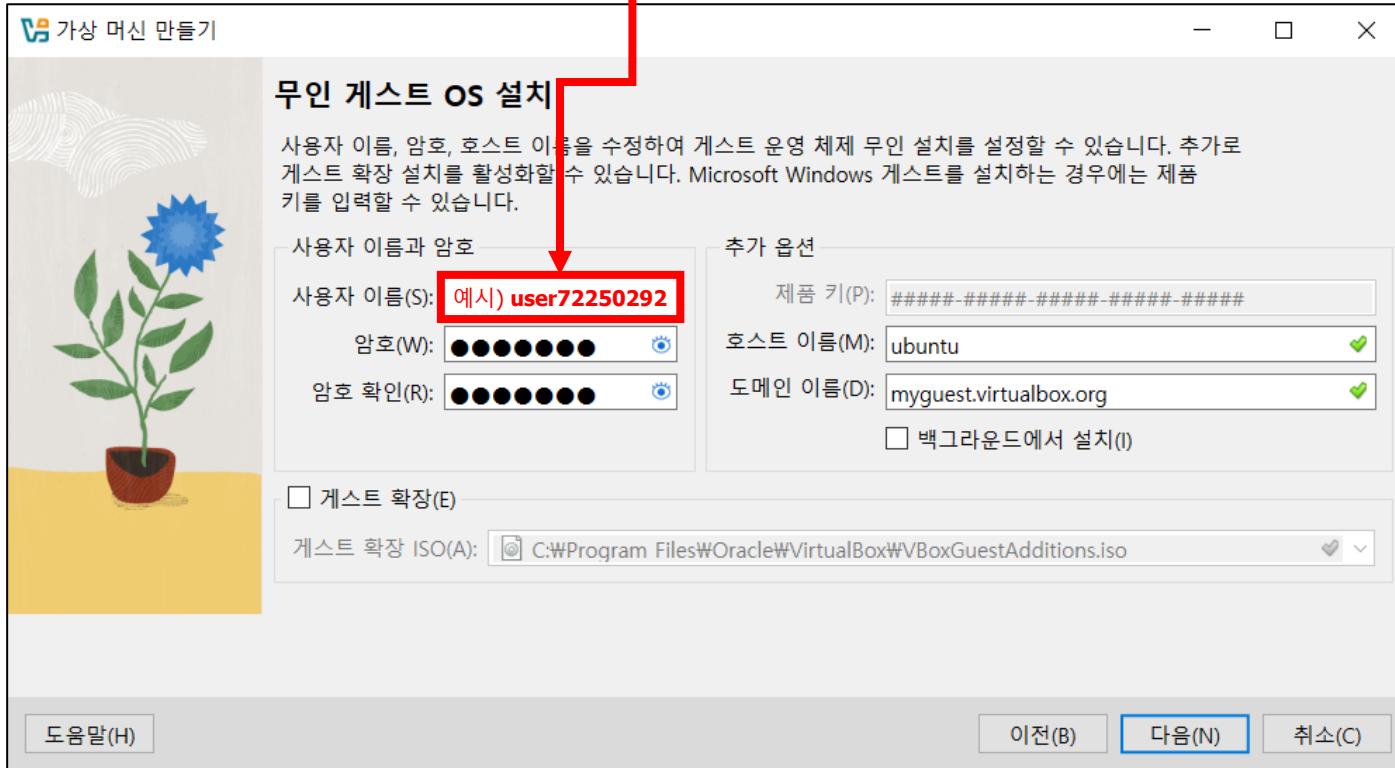
3) VM 생성 – VM 이름 및 ISO 이미지 선택



1. Windows

3) VM 생성 – 계정 생성

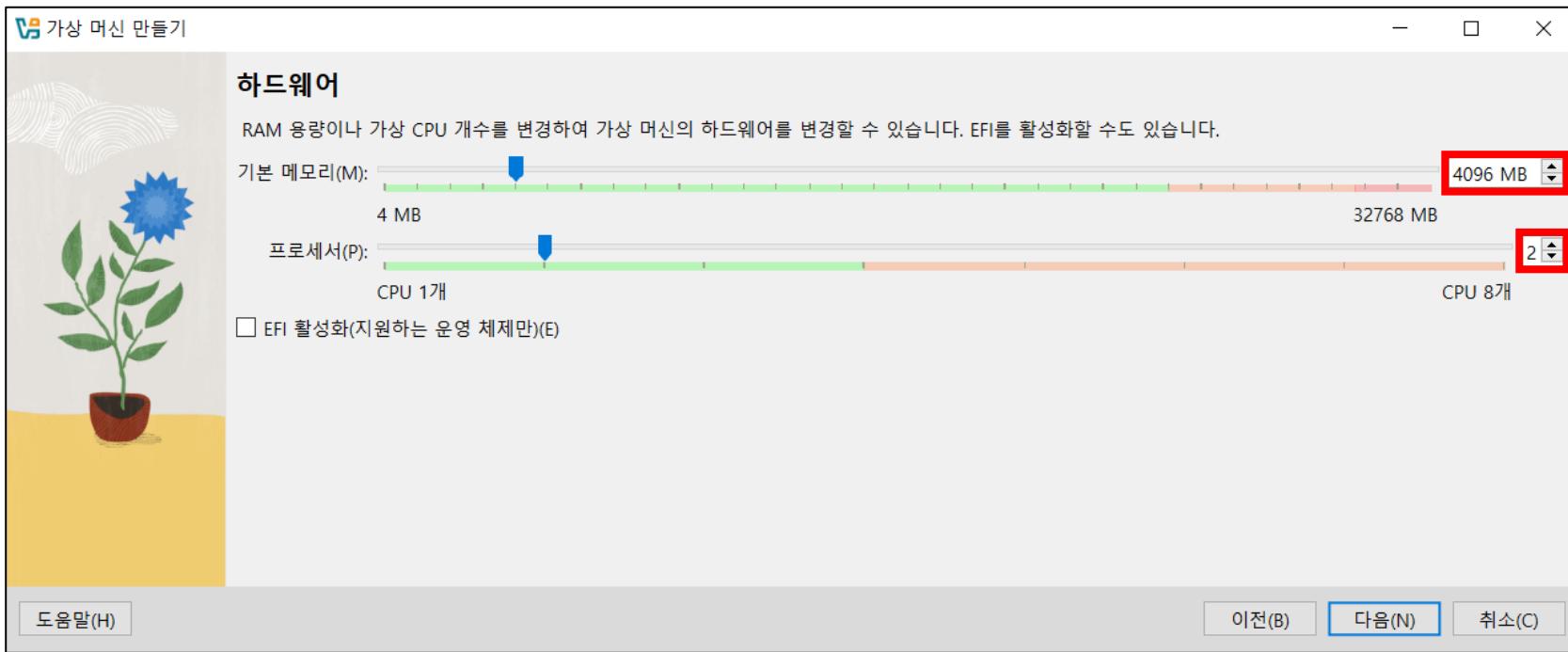
- 사용자 이름: **user + 학번으로 설정**



1. Windows

3) VM 생성 – 하드웨어 사양 선택

- 메모리: 4096MB, 프로세서: 2개
- 본인 컴퓨터 사양에 맞춰 설정 가능



1. Windows

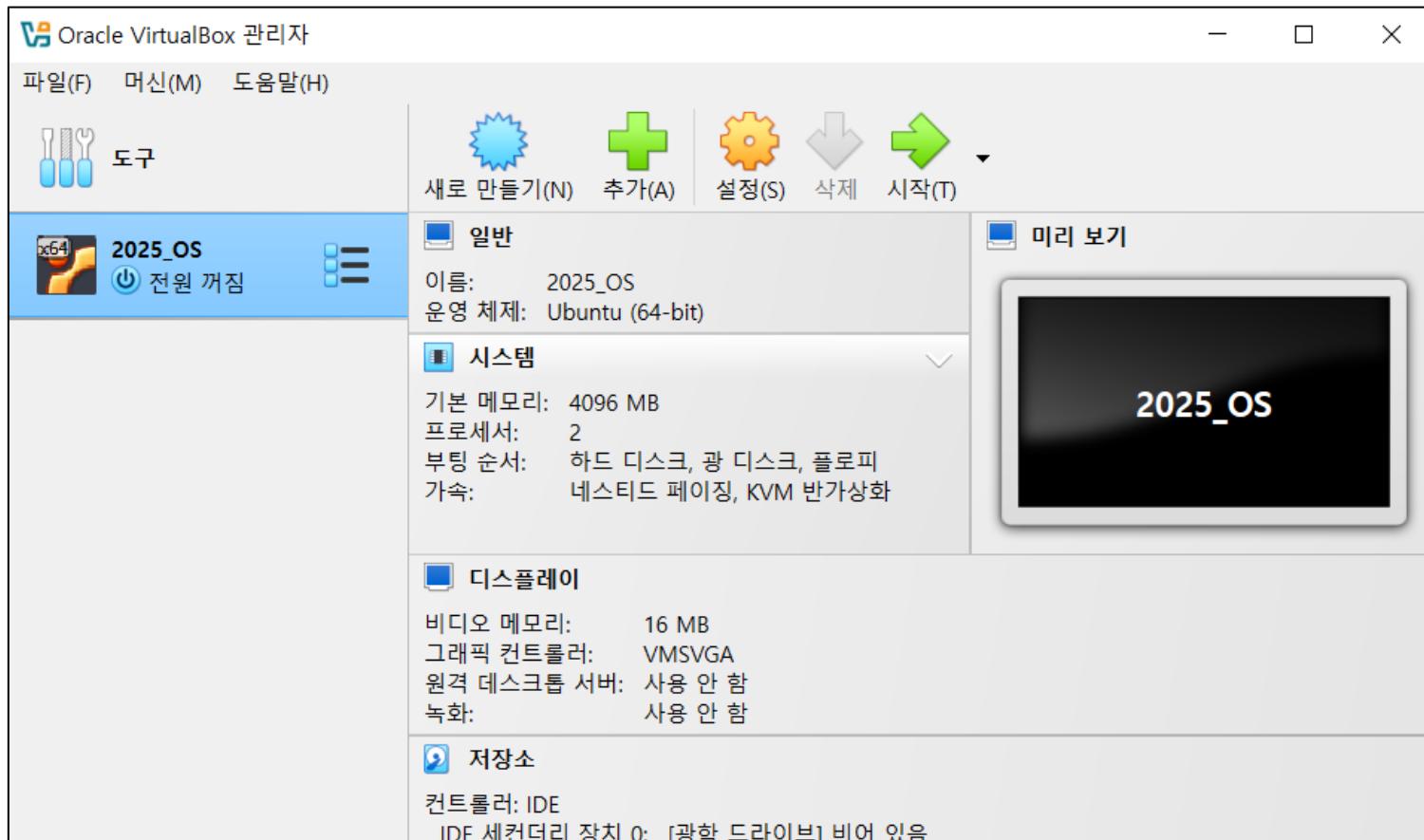
3) VM 생성 – 하드웨어 사양 선택

- 디스크 크기: 64GB
- 여유공간이 부족하다면 작게 설정



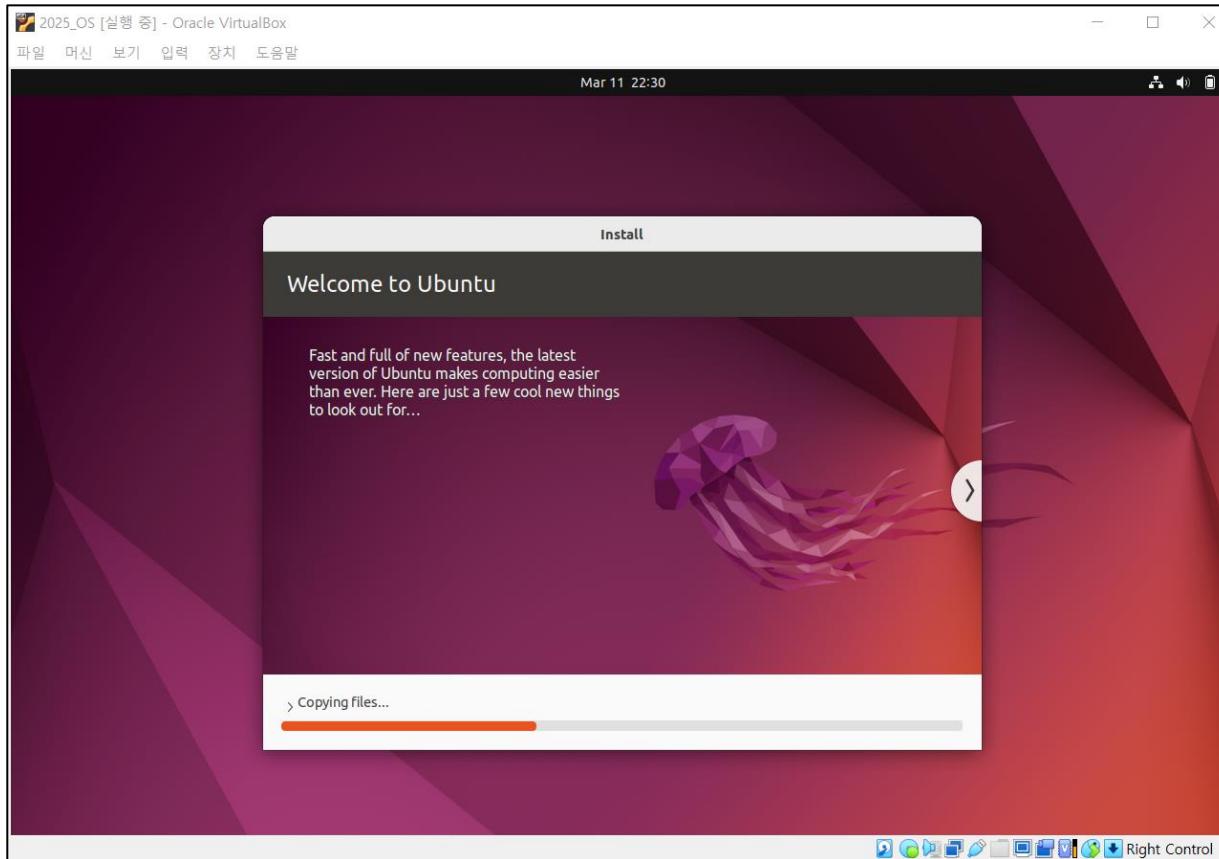
1. Windows

3) VM 생성 – 완료



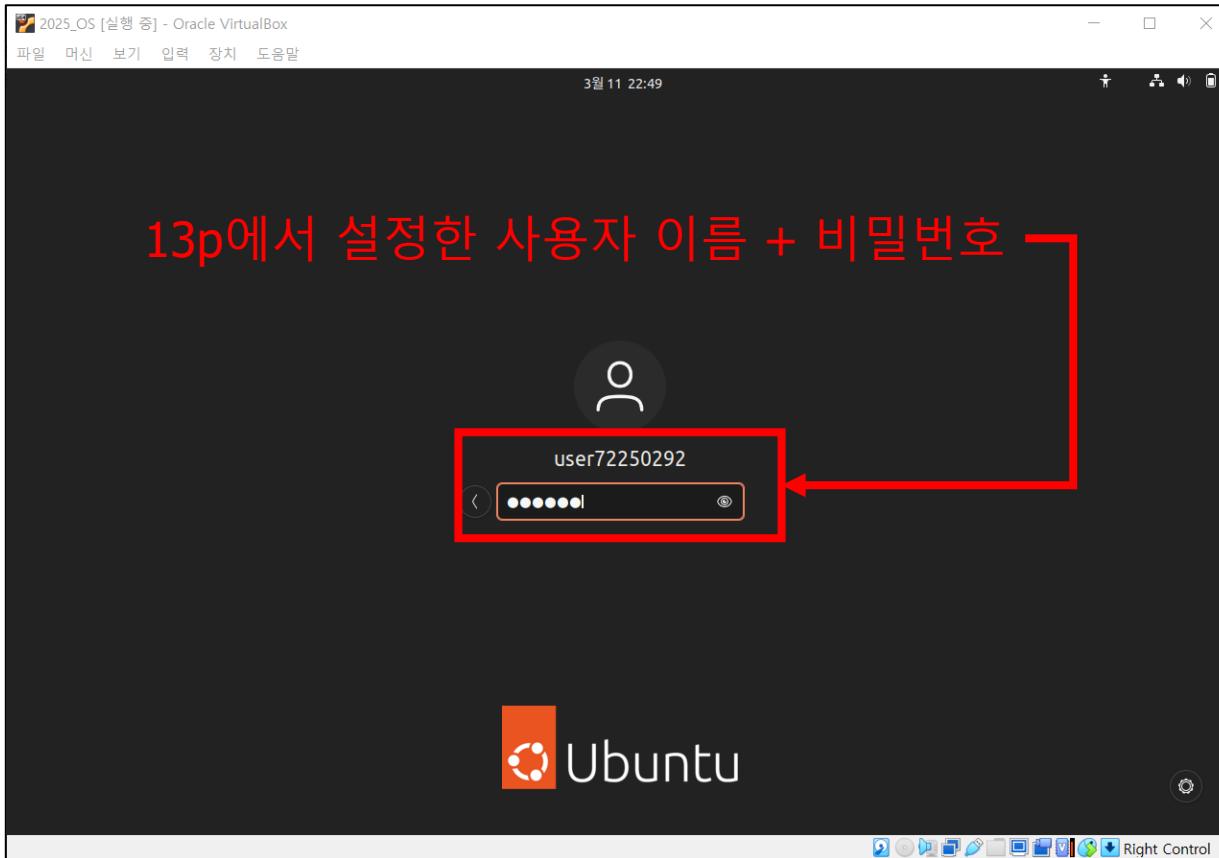
1. Windows

4) 초기 설정 – ubuntu 설치



1. Windows

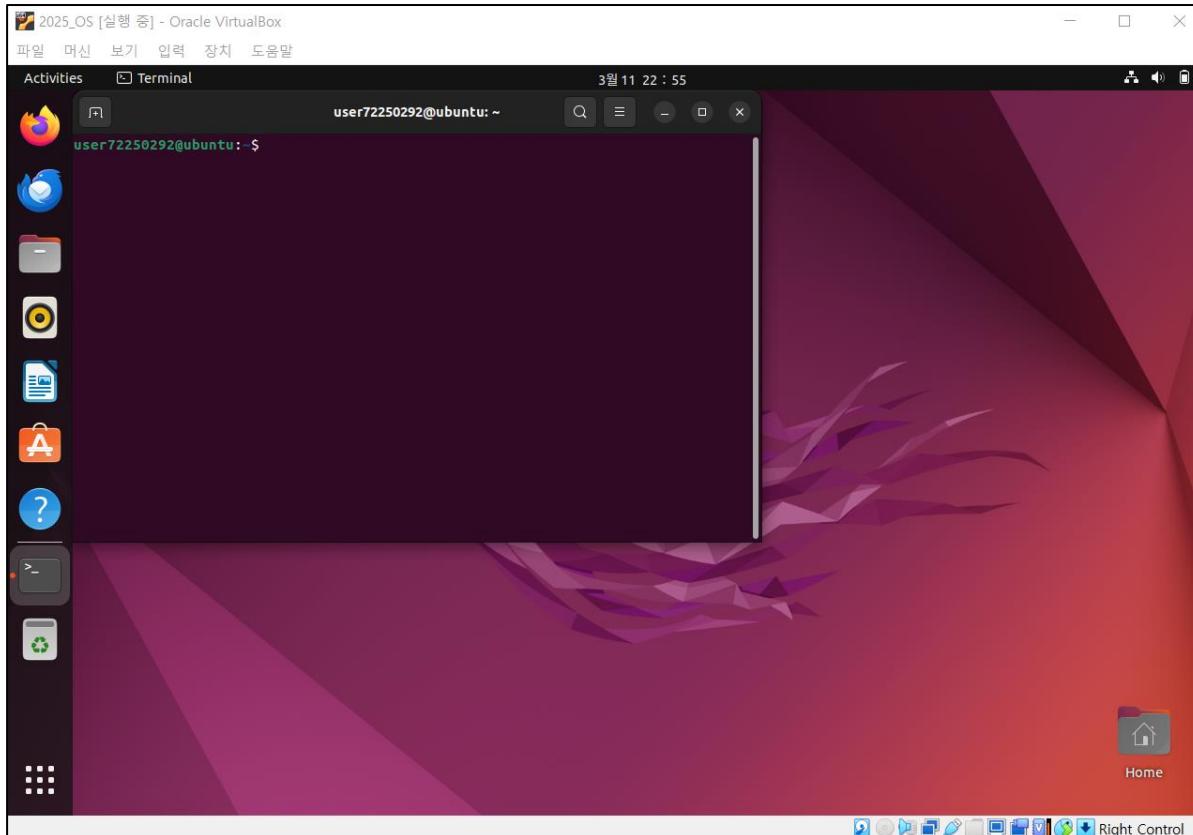
4) 초기 설정 – 계정 확인 및 로그인



1. Windows

4) 초기 설정 – 터미널 열기

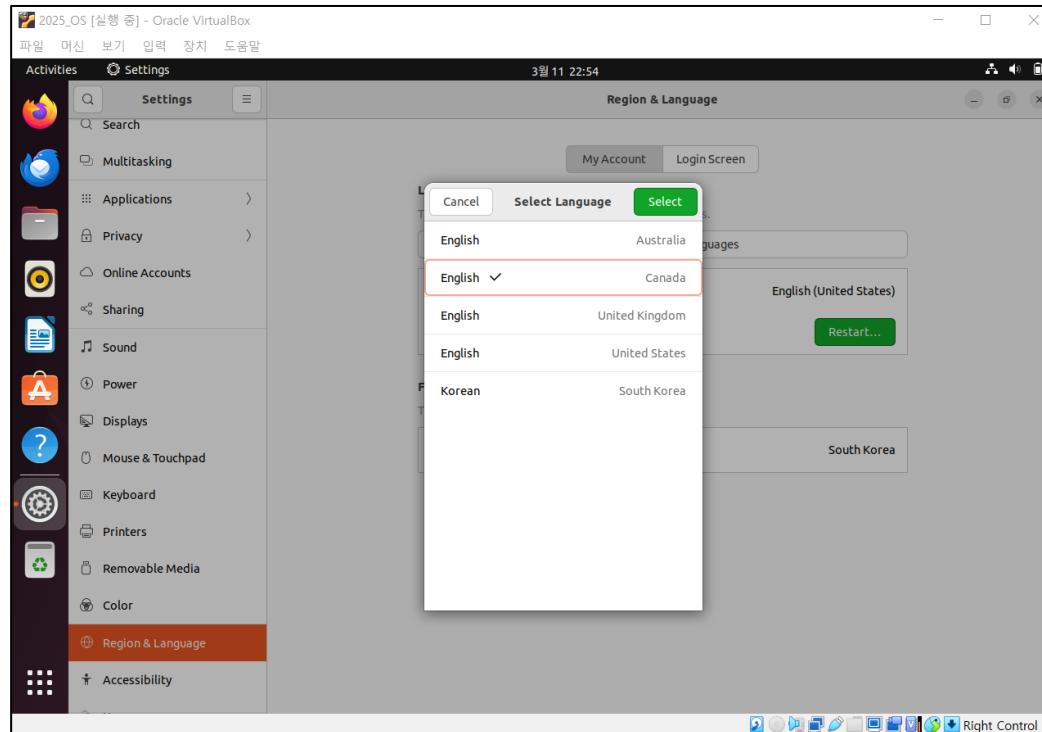
- 터미널 단축키: Ctrl + Alt + t



1. Windows

4) 초기 설정 – 터미널 열기

- 만약 터미널이 안 열린다면 Settings → Region & Language → Language
- English(United State)를 English(Canada)로 변경 후 restart



1. Windows

4) 초기 설정 – sudo 권한 설정

- sudo 명령어 실행 시 오류가 난다면 아래 과정 수행

```
user72250292@ubuntu:~$ sudo apt update
[sudo] password for user72250292:
user72250292 is not in the sudoers file. This incident will be reported.
```

- root로 전환 후 13p의 비밀번호 입력, {username}을 sudo 그룹에 추가하여 권한 부여
 - \$ su
 - \$ usermod -aG sudo {username}
 - \$ reboot
- 재부팅후 sudo 명령어 작동 확인

```
user72250292@ubuntu:~$ sudo apt update
[sudo] password for user72250292:
Ign:1 http://kr.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://kr.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://kr.archive.ubuntu.com/ubuntu jammy-backports InRelease
```

1. Windows

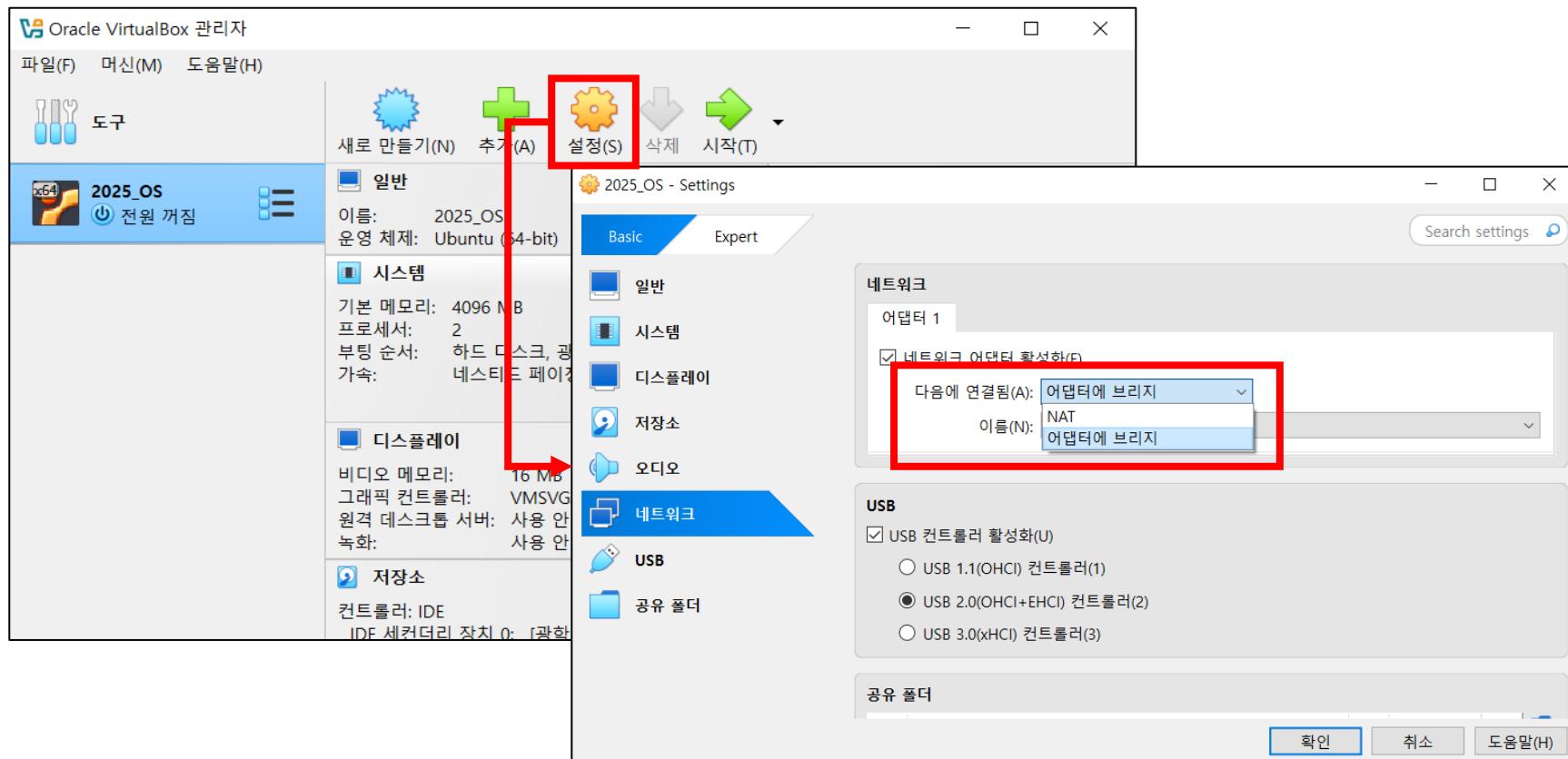
5) Optional – SSH 설정

- SSH: 다른 컴퓨터에 원격으로 접속하여 명령을 실행하고 정보를 주고받을 수 있는 프로토콜
- 호스트(윈도우)에서 VM(우분투)에 원격으로 접속해 터미널 사용 가능

1. Windows

5) Optional – SSH 설정

- VirtualBox 네트워크 → 어댑터에 브릿지 설정



1. Windows

5) Optional – SSH 설정

- VM 실행 후 아래 명령어 실행
- \$ sudo apt install -y openssh-server net-tools
 - openssh-server: SSH 접속을 가능하게 해주는 패키지
 - net-tools: ip 정보 및 네트워크 관련 정보를 확인할 수 있는 패키지

- \$ systemctl status sshd
 - SSH 서버가 정상적으로 동작 중임을 확인

```
user72250292@ubuntu:~$ systemctl status sshd
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/lib/systemd/system/ssh.service; enabled;
  Active: active (running) since Tue 2025-03-11 23:32:17 KS
    Docs: man:sshd(8)
          man:sshd_config(5)
```

- \$ ifconfig
 - IP 주소 확인

```
user72250292@ubuntu:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.0.22 brd 192.168.0.255 netmask 255.255.255.0
inet6 fe80::82b3:3427:b6c3:6741 brd fe80::ff:fe00:82b3:3427 prefixlen 64
          scopeid 0x20<link>
          ether 08:00:27:de:b3:a2 txqueuelen 1000 (Ethernet)
```

1. Windows

5) Optional – SSH 설정

- Host(윈도우)에서 터미널 실행 (VM은 실행 중인 상태)
- > ssh {username}@{IP address}
 - IP address: 24p에서 확인한 IP (VM 재시작시 바뀔 수 있으니 확인 필요)

```
PS C:\Users\Boseung> ssh user72250292@192.168.0.22
The authenticity of host '192.168.0.22 (192.168.0.22)' can't be established.
ED25519 key fingerprint is SHA256:Rr9M0oNx9L8ZtHU53pnmlsRasyxfG3ur5VgypctWvLc.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.0.22' (ED25519) to the list of known hosts.
user72250292@192.168.0.22's password: [REDACTED]
```

UTM 설치

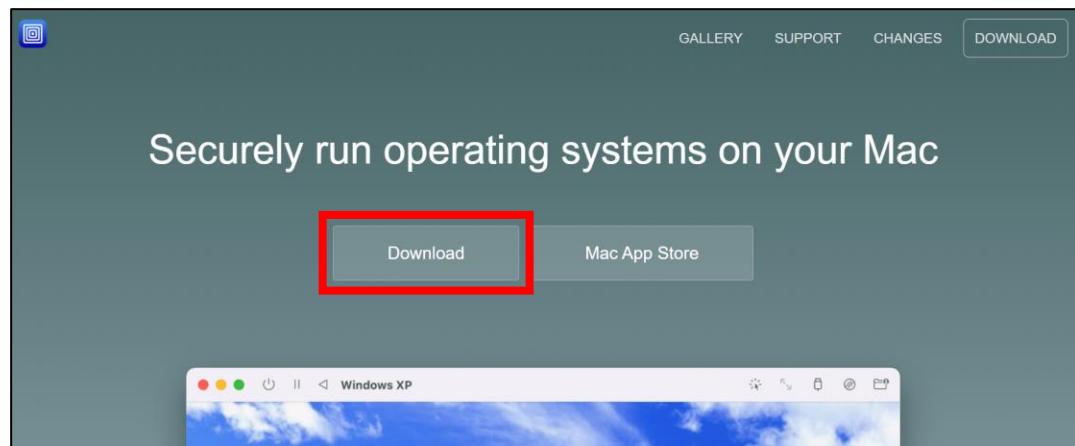
■ UTM이란?

- macOS에서 가상화를 지원하는 오픈 소스 가상화 소프트웨어
- Apple Silicon에서 다양한 운영 체제를 실행할 수 있음
- Windows, Linux 등 다양한 운영 체제를 가상 환경에서 실행 가능
 - 강의에서는 Guest OS로 Linux를 사용

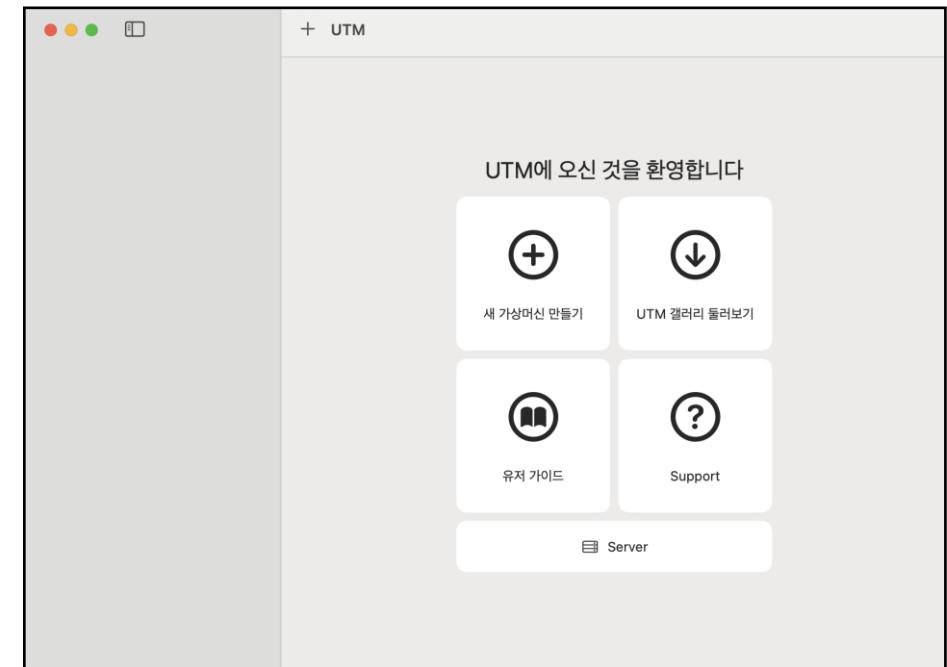
2. Mac (ARM)

1) UTM 설치

- <https://mac.getutm.app/>



UTM 다운로드 페이지

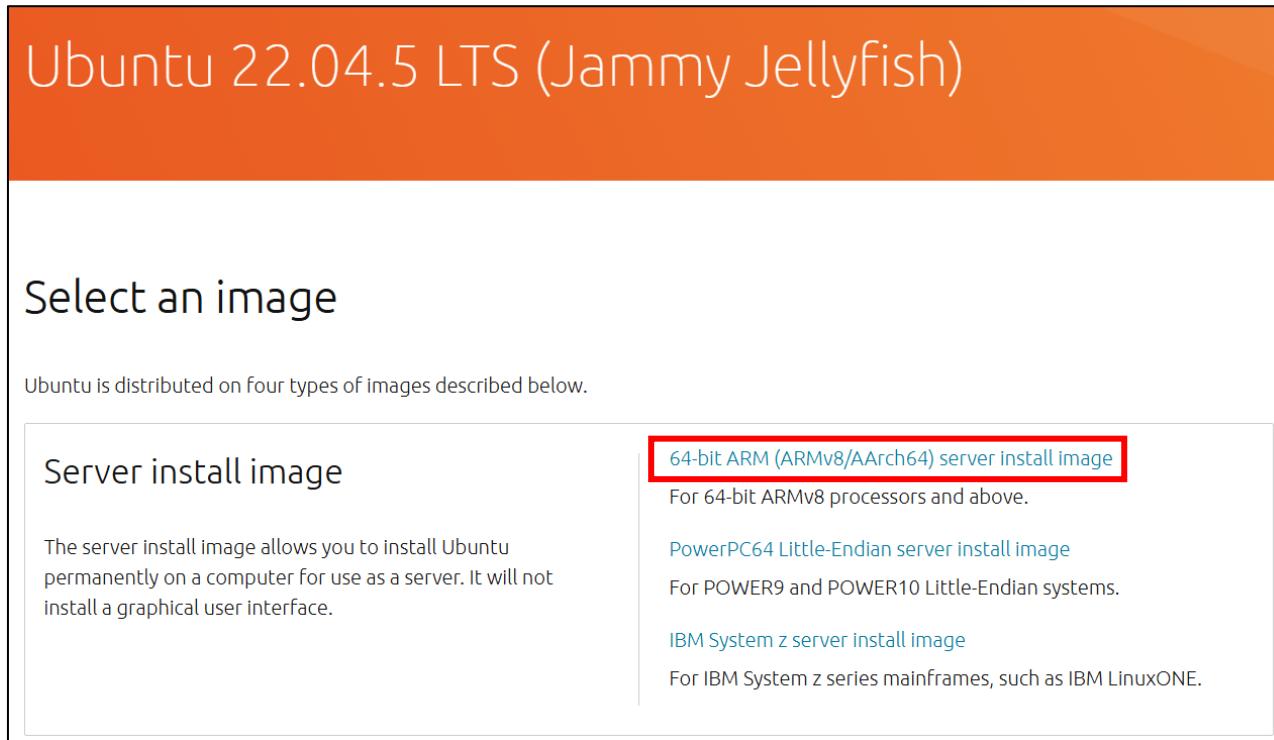


설치 후 UTM 초기화면

2. Mac (ARM)

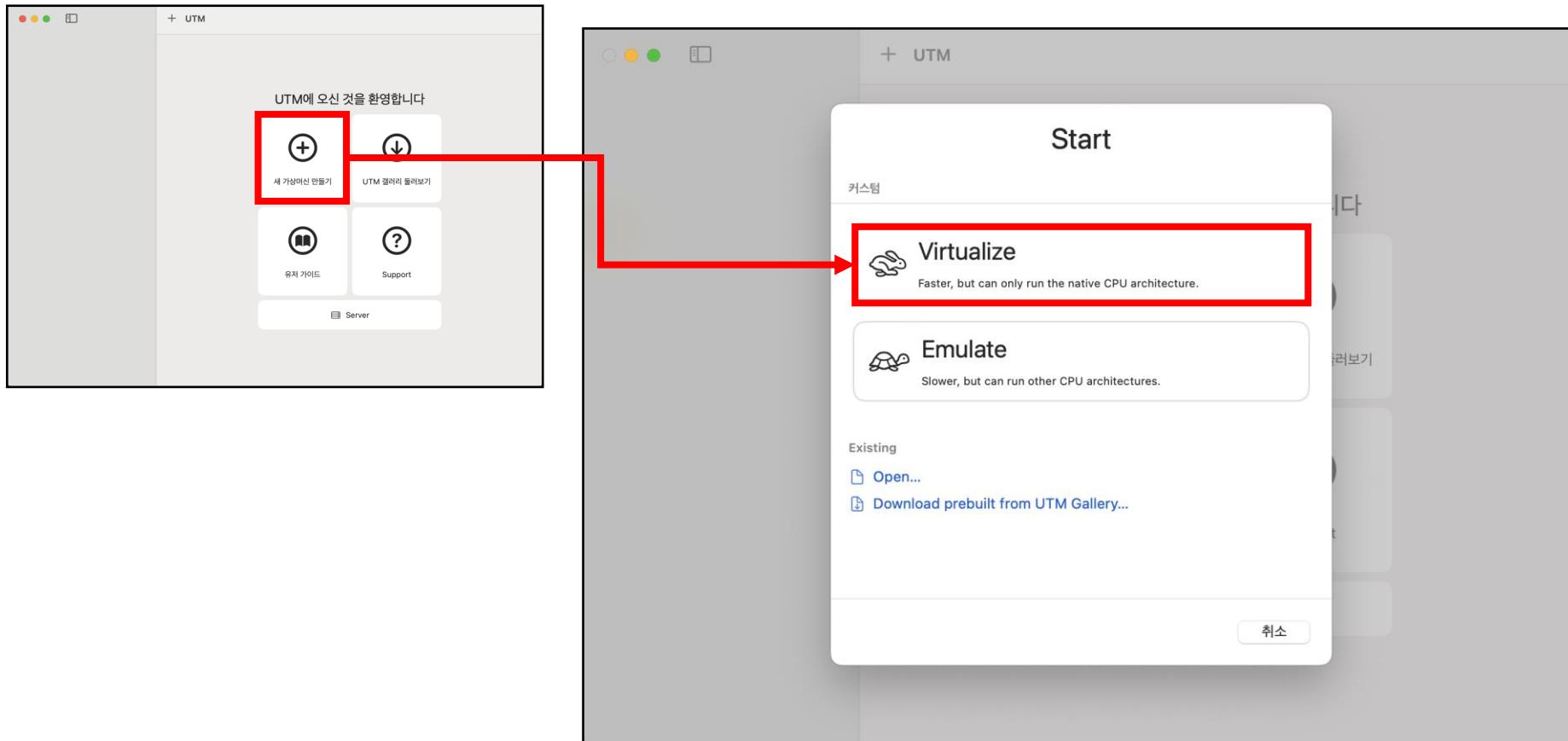
2) Ubuntu Desktop 22.04 이미지 다운로드 (ARM)

- <https://cdimage.ubuntu.com/releases/jammy/release/>



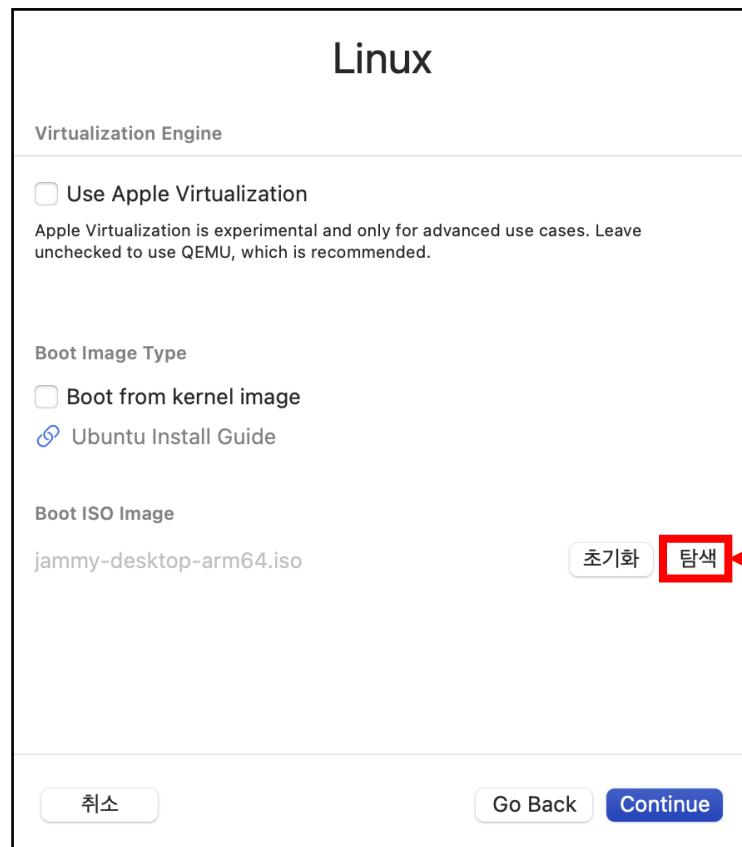
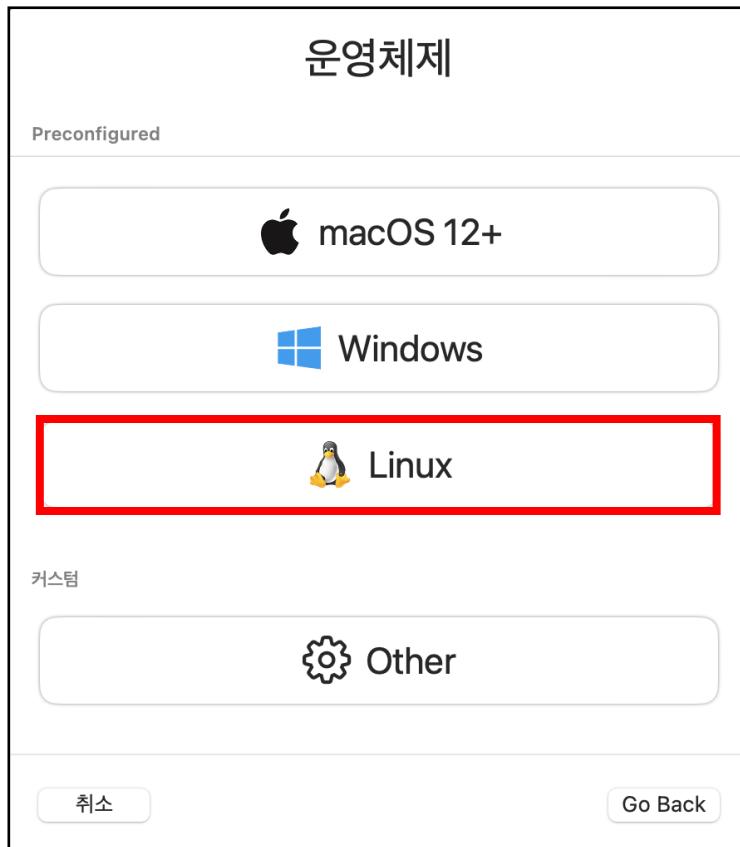
2. Mac (ARM)

3) VM 생성



2. Mac (ARM)

3) VM 생성



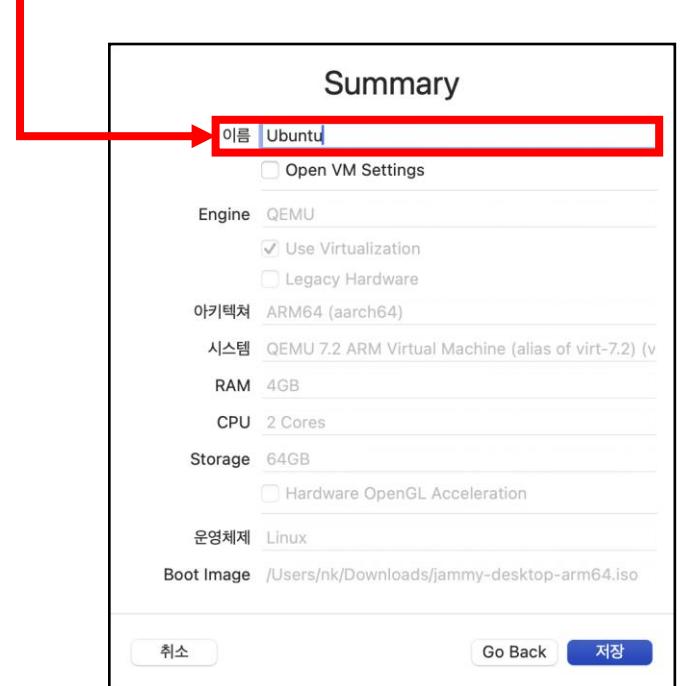
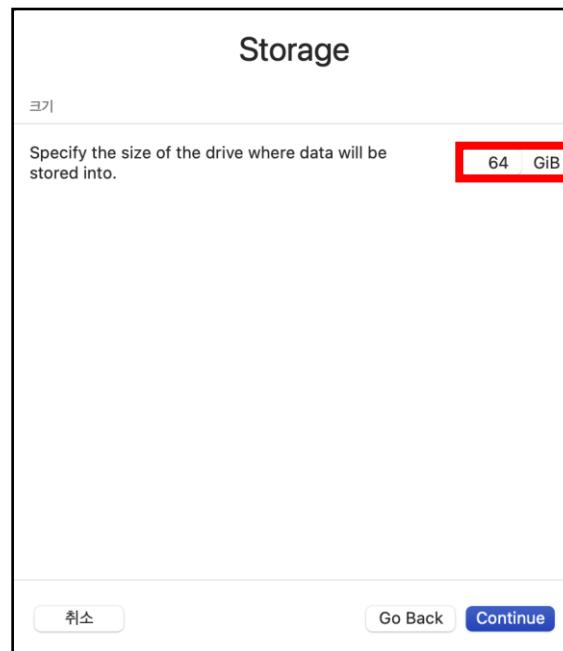
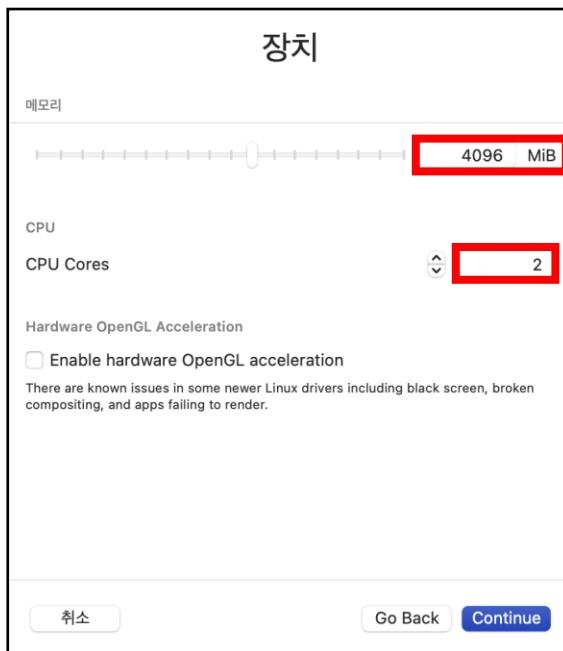
2)에서 다운받은 iso 이미지

2. Mac (ARM)

3) VM 생성

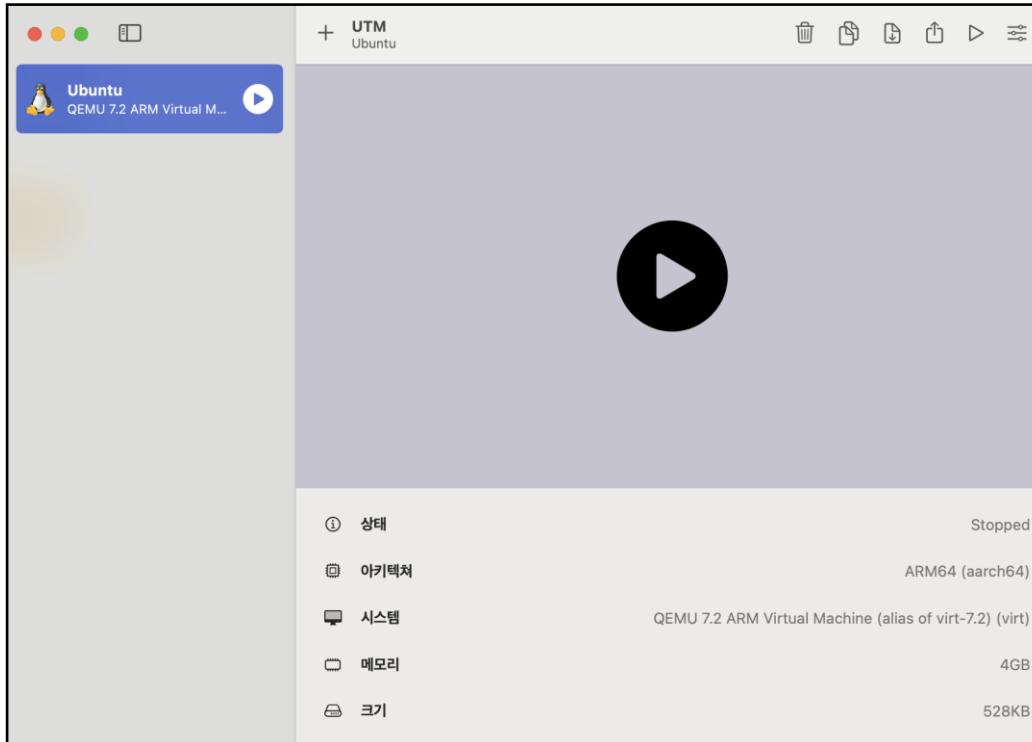
- 메모리: 4096MB, Core: 2개, 디스크: 64GB
- 본인 컴퓨터 사양에 맞춰 설정 가능

본인이 식별하기 쉬운 이름으로 설정



2. Mac (ARM)

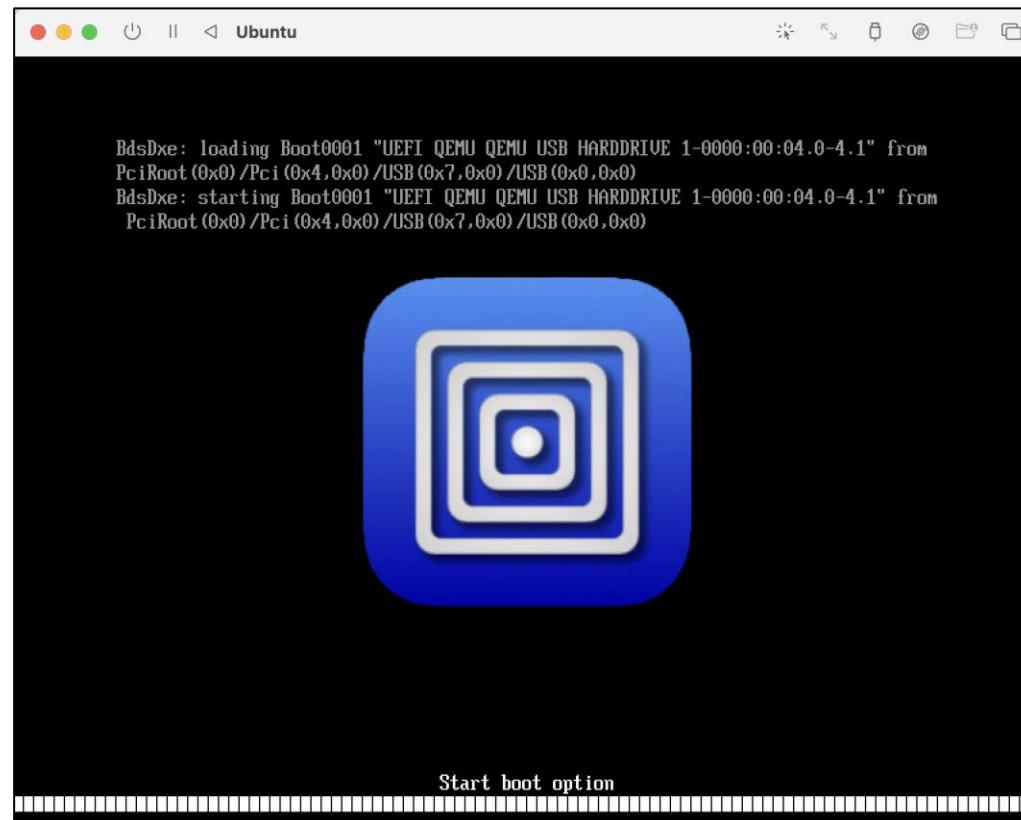
3) VM 생성 - 완료



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

- 초기 VM 실행 화면



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

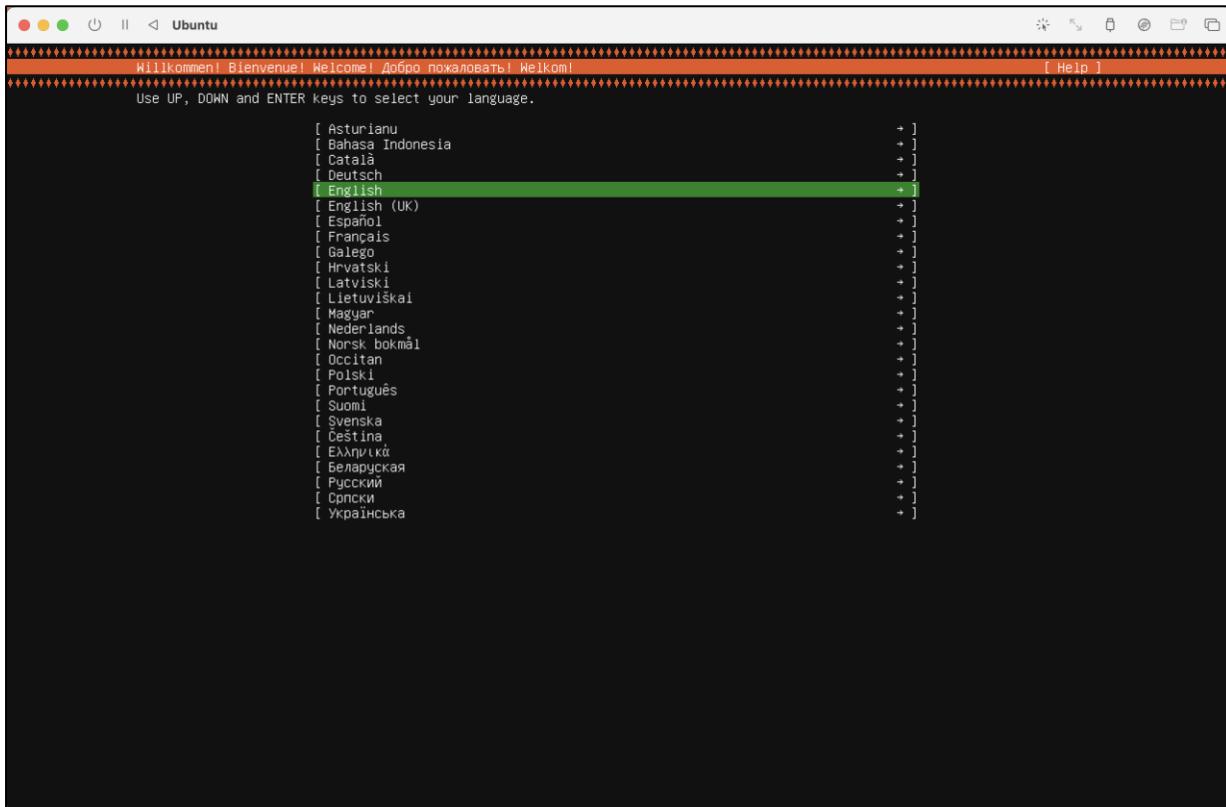
- 단계에 따라 설치 진행



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

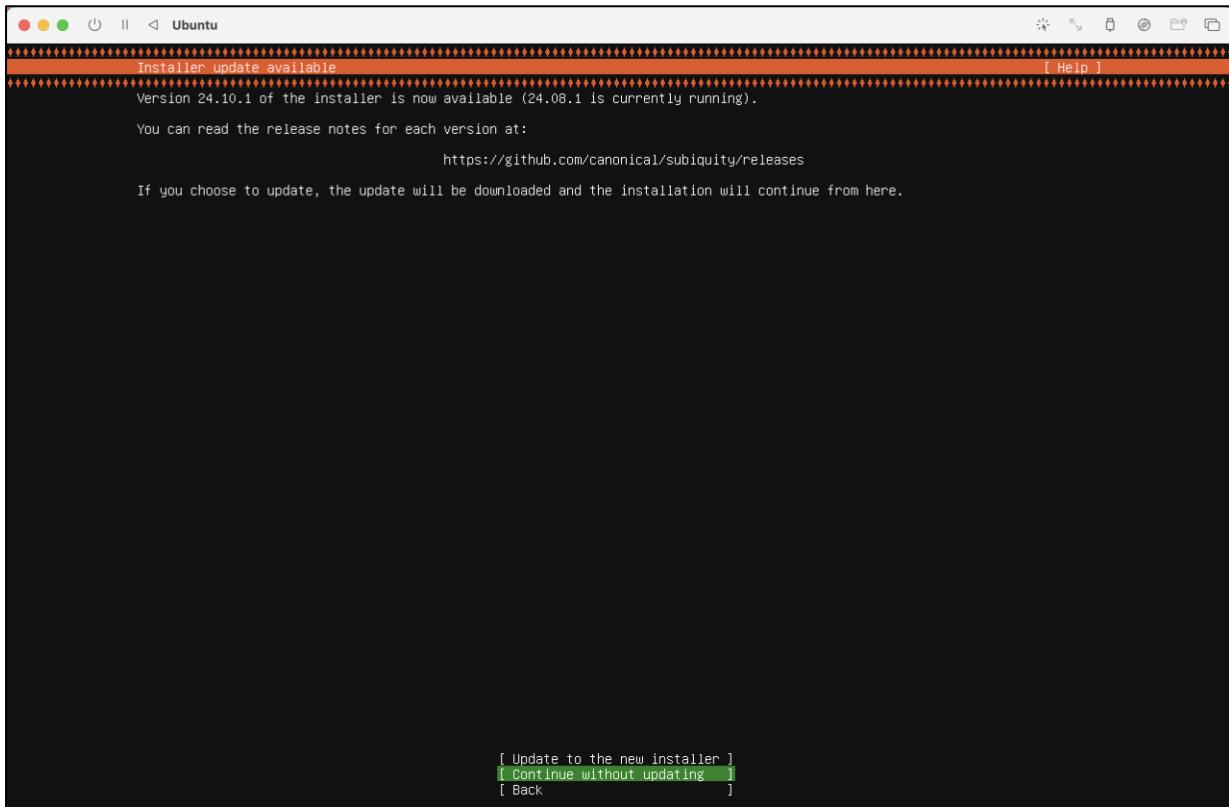
- 언어 설정: English



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

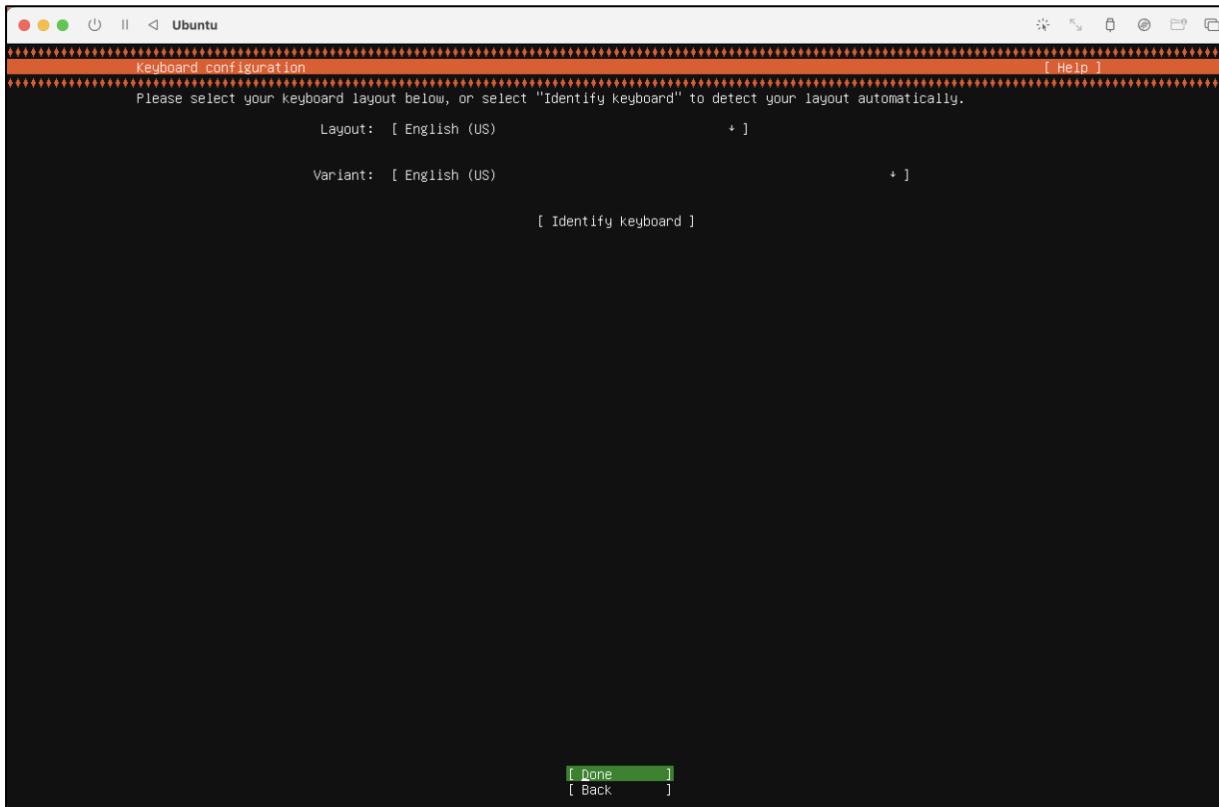
- 24버전으로 업데이트: 안함



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

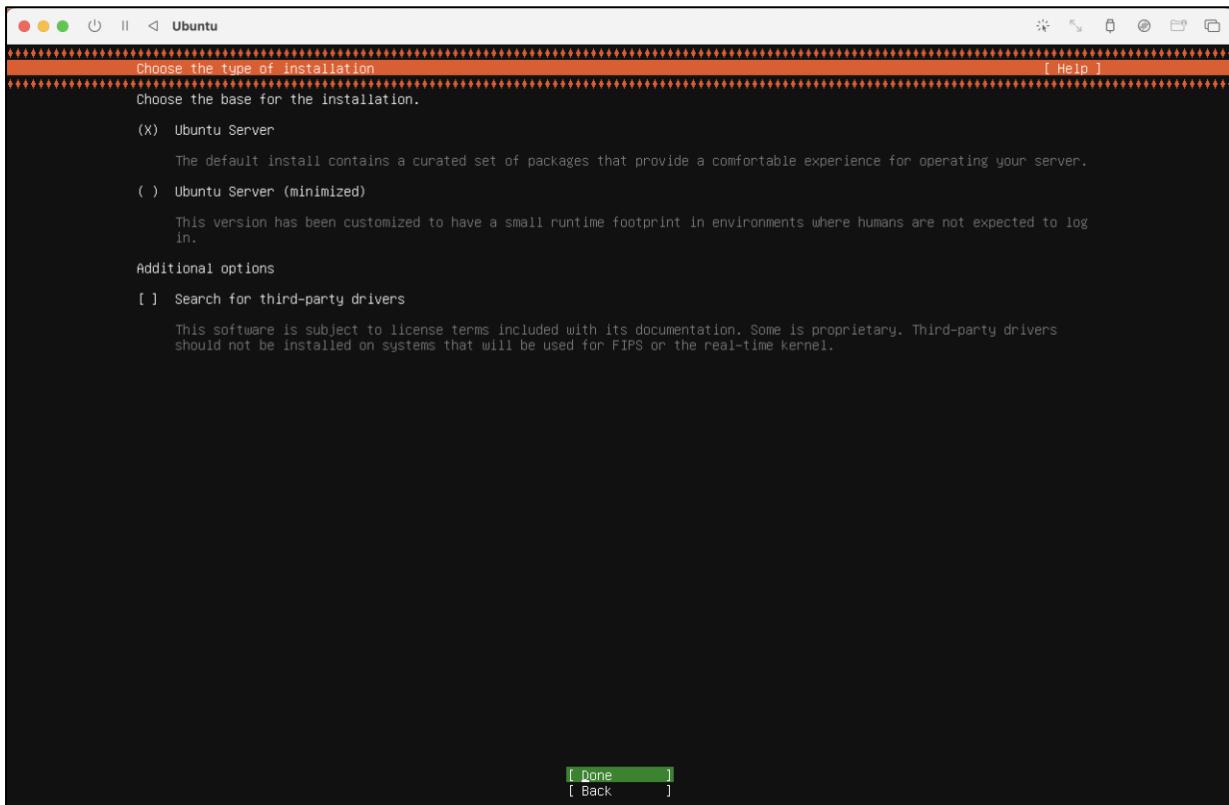
- 키보드 레이아웃: English



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

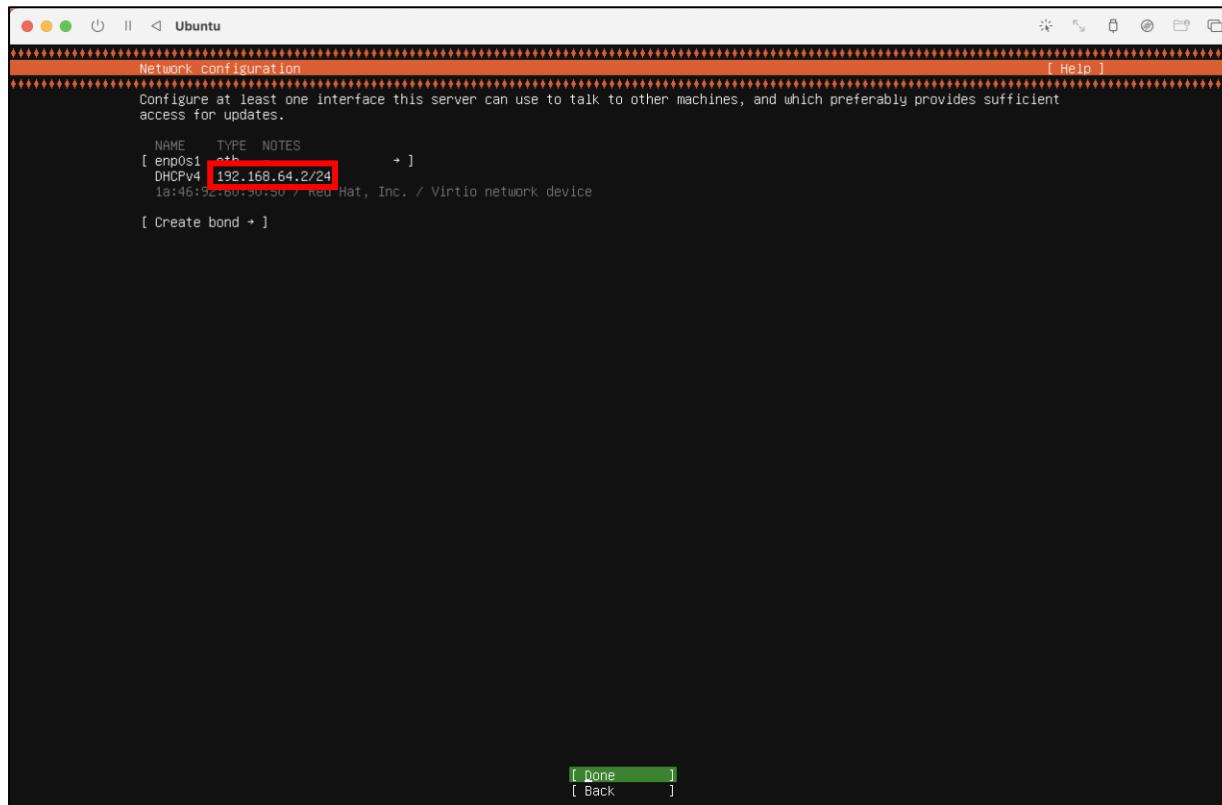
- Ubuntu 설치: Default



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

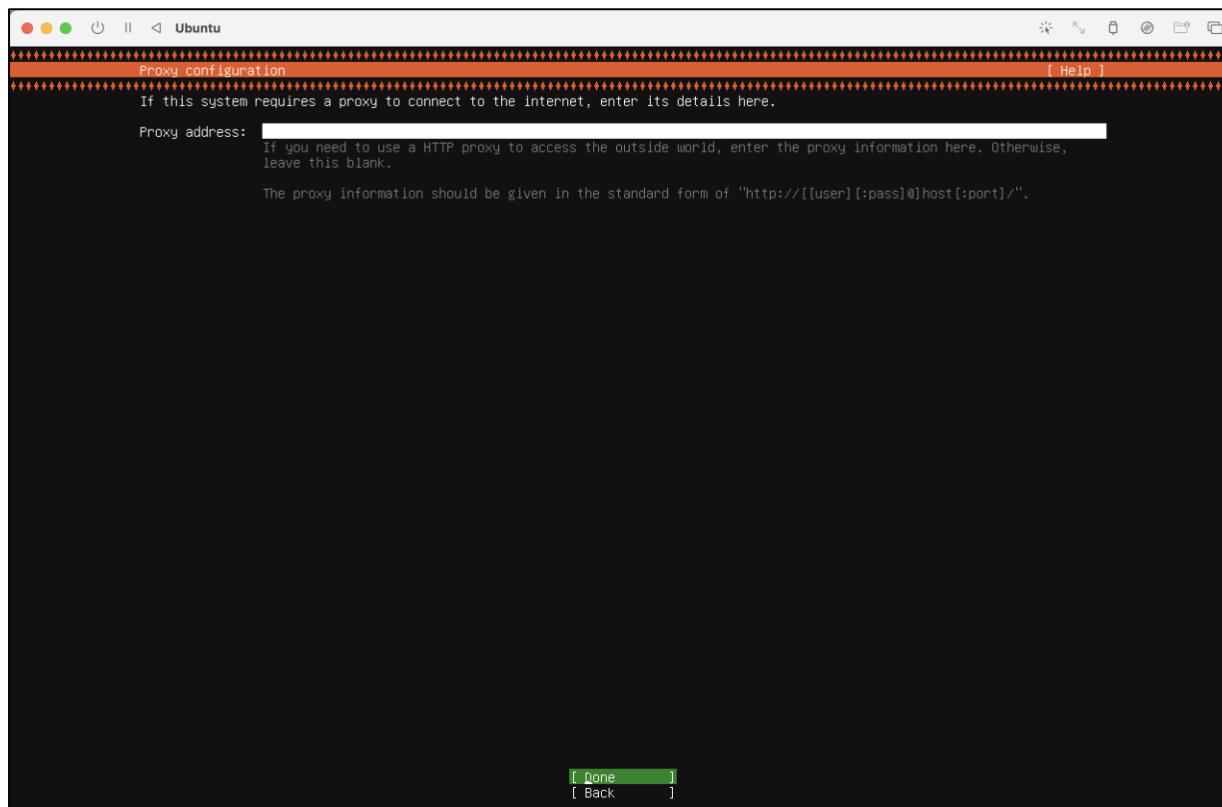
- 네트워크 설정: 그대로 진행, SSH를 사용할 것이라면 IP 주소 기억할 것



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

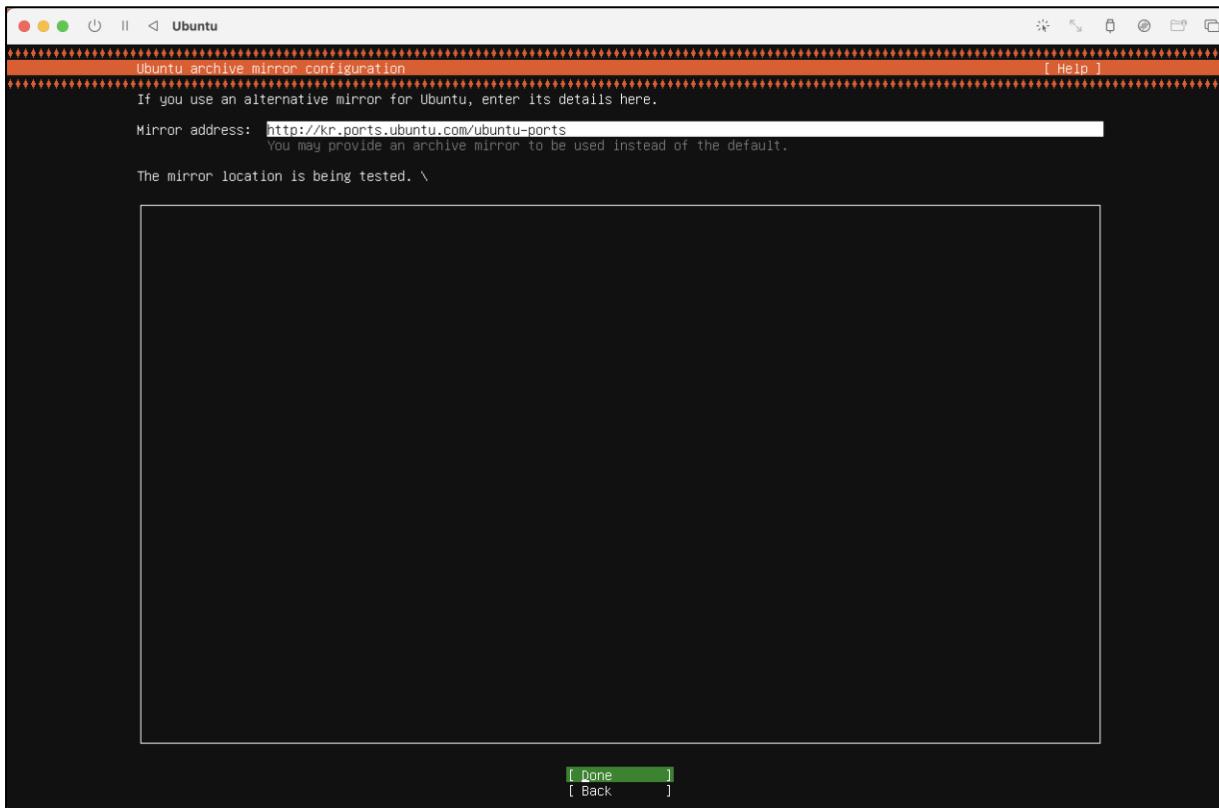
- Proxy 주소: 그대로 진행



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

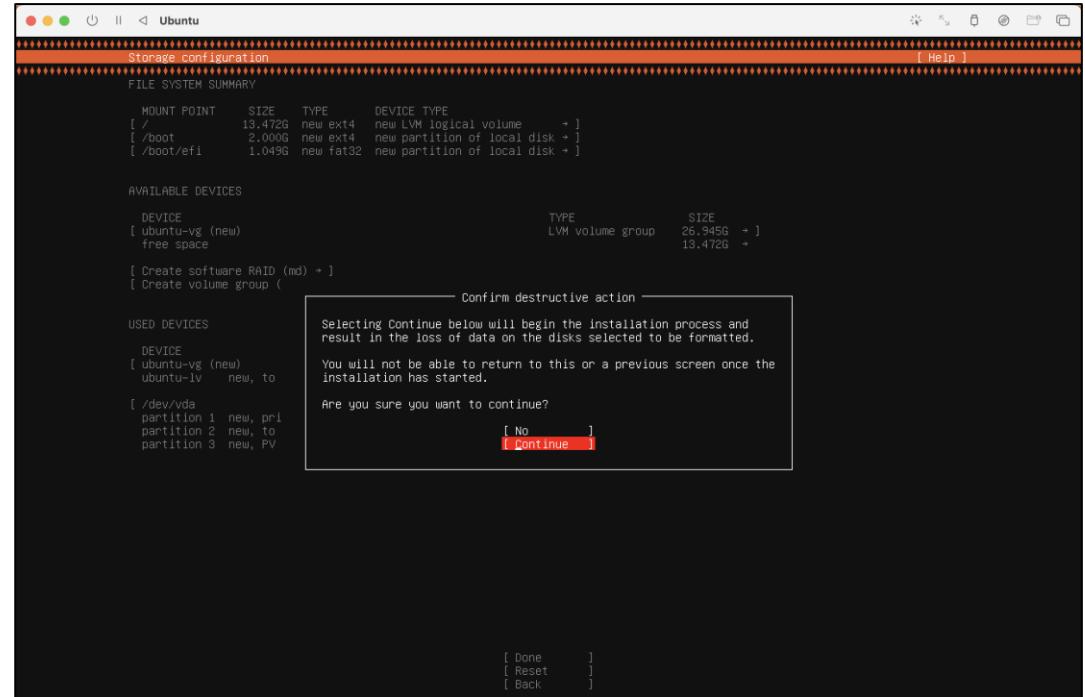
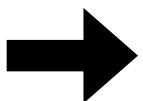
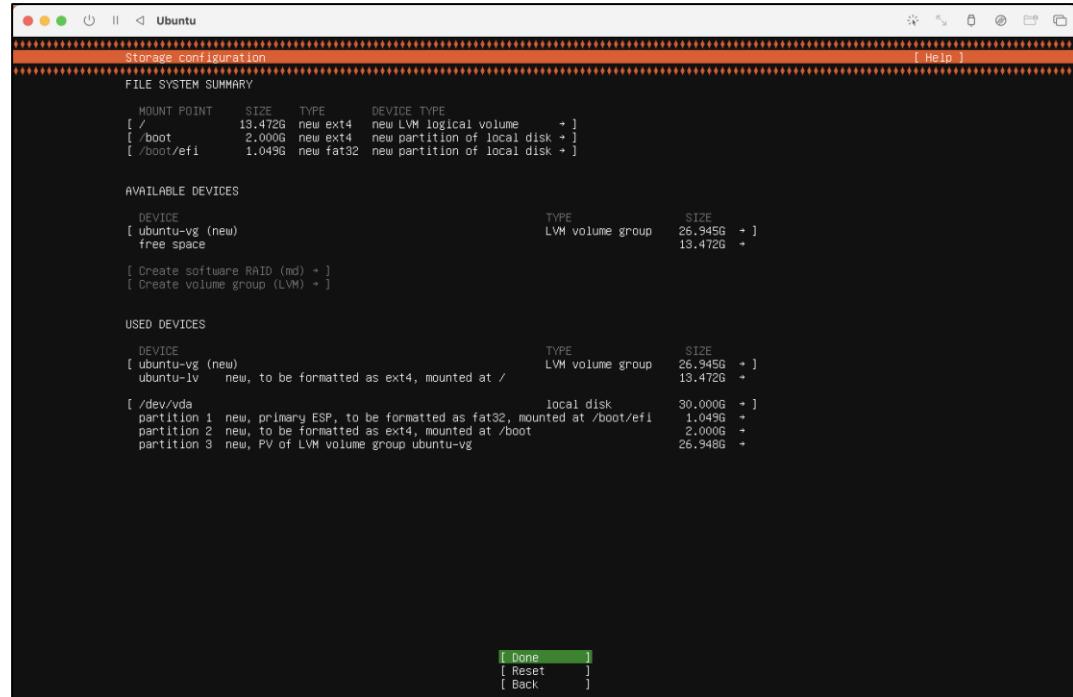
- Mirror 서버: 그대로 진행



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

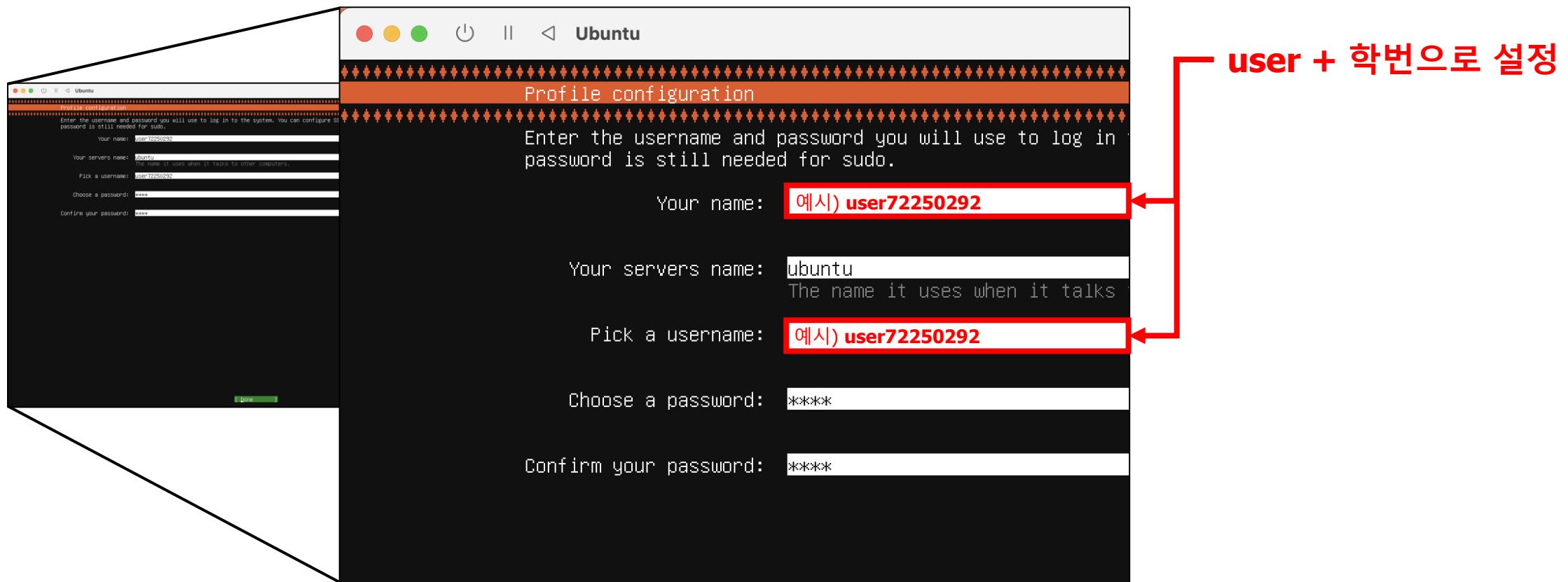
- 파일 시스템 설정: 그대로 진행



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

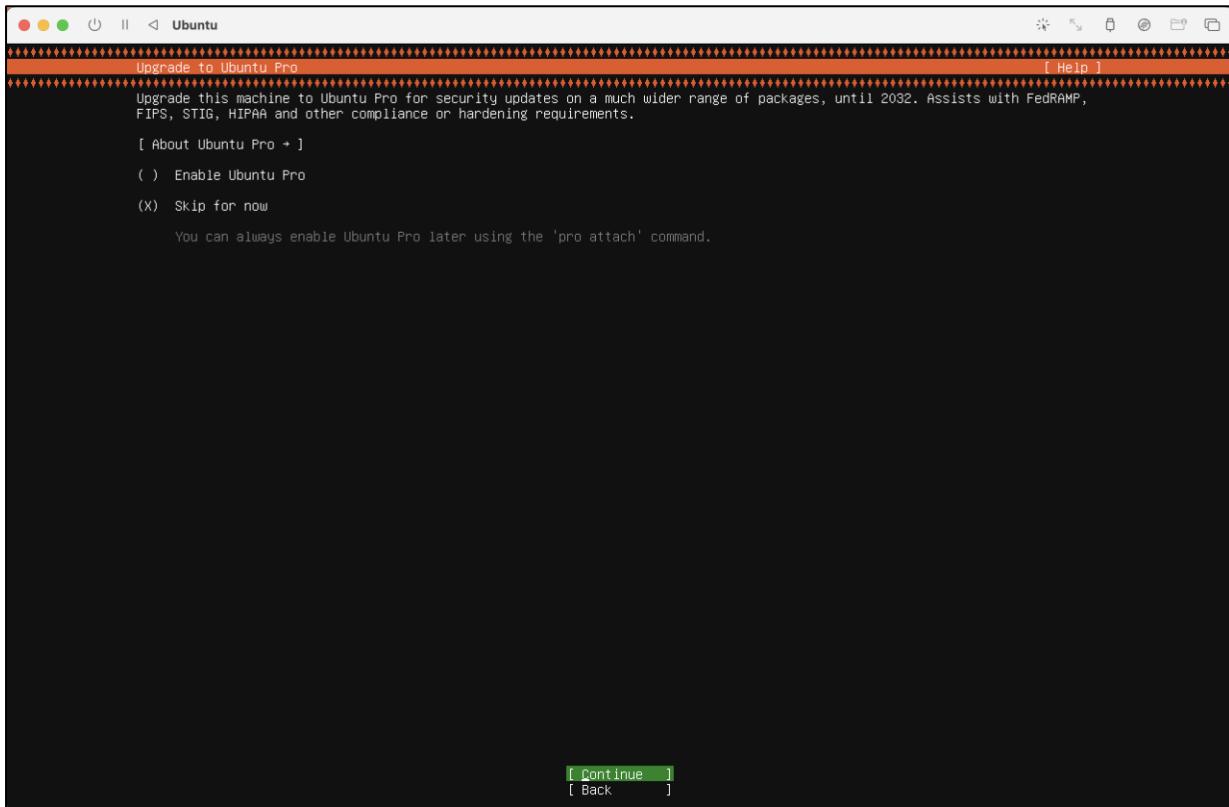
- 계정 설정



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

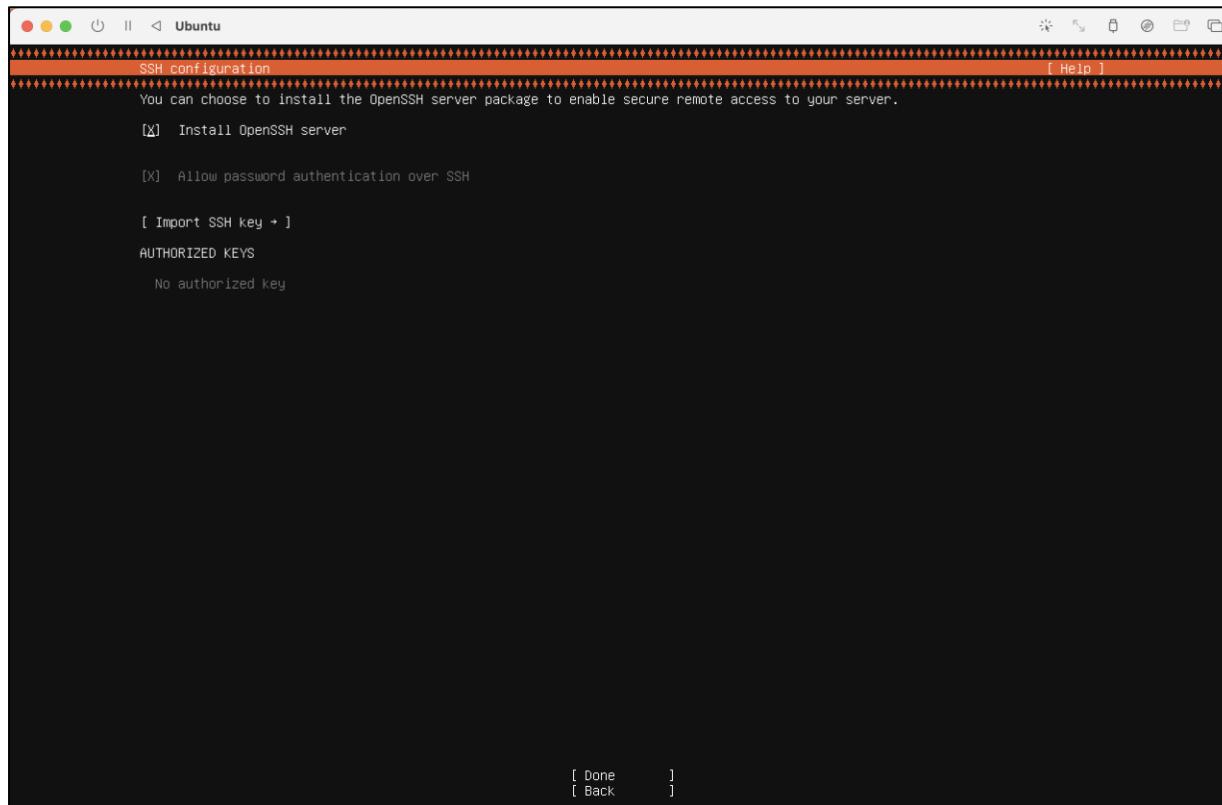
- Ubuntu pro로 업데이트: Skip



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

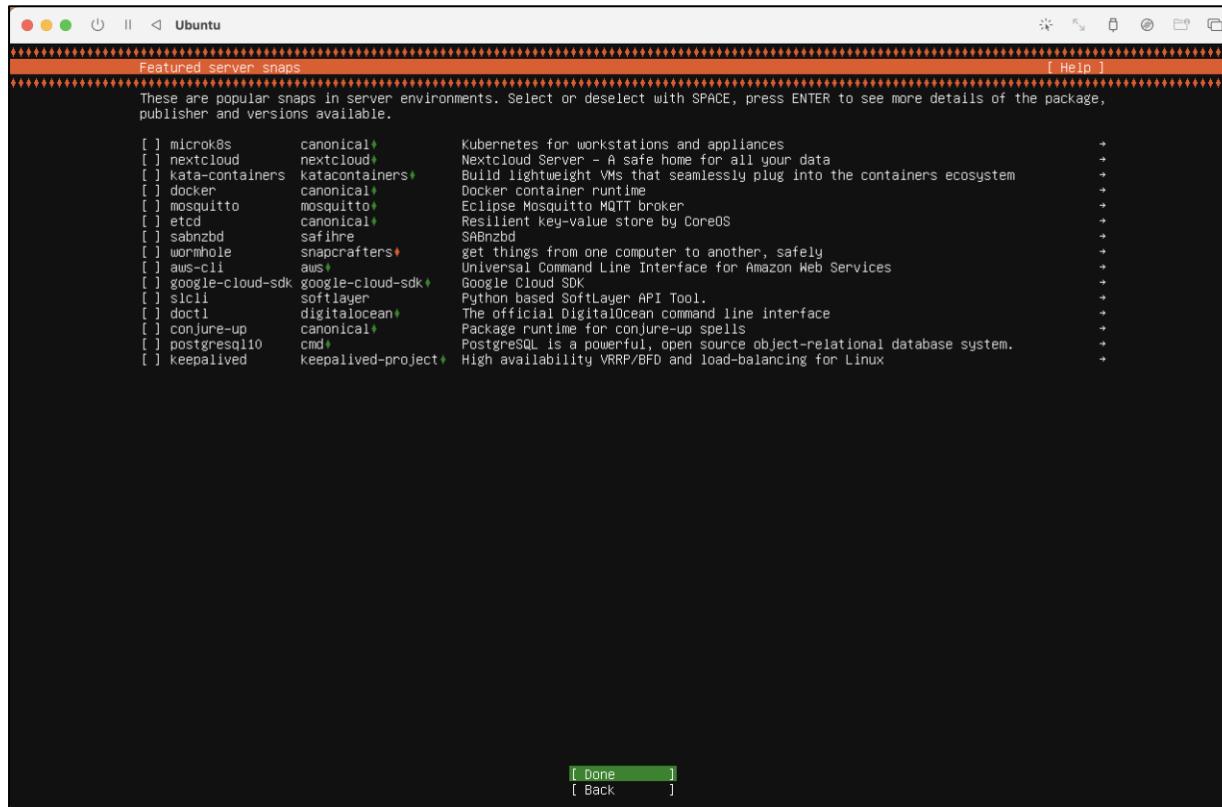
- SSH 서버 설정: SSH를 사용할 것이라면 체크 아니면 Skip



2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

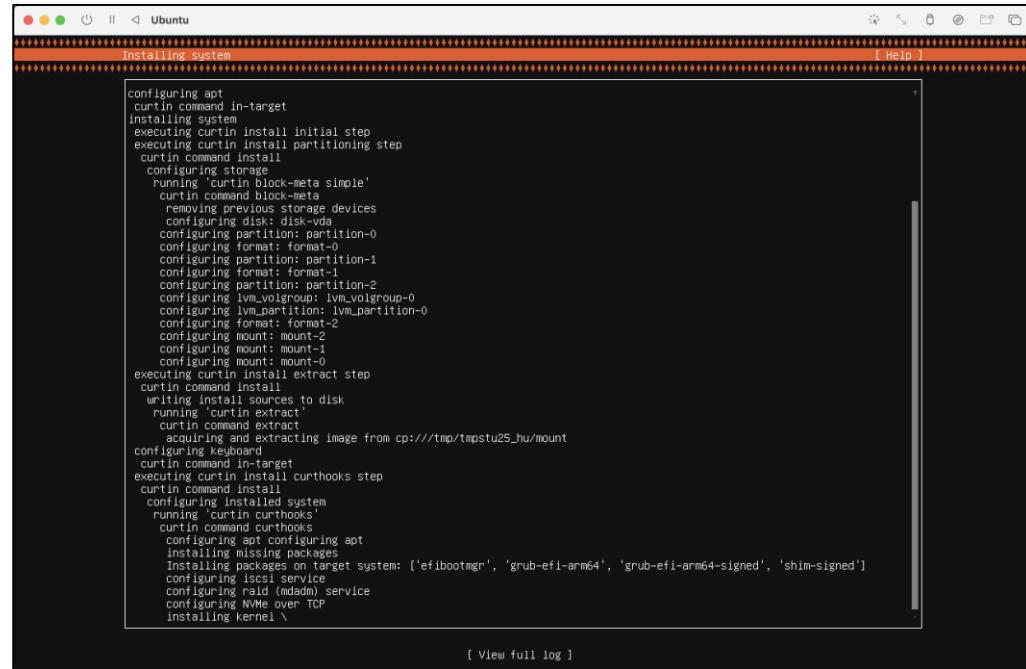
- 서버 snap 패키지 설치: Skip



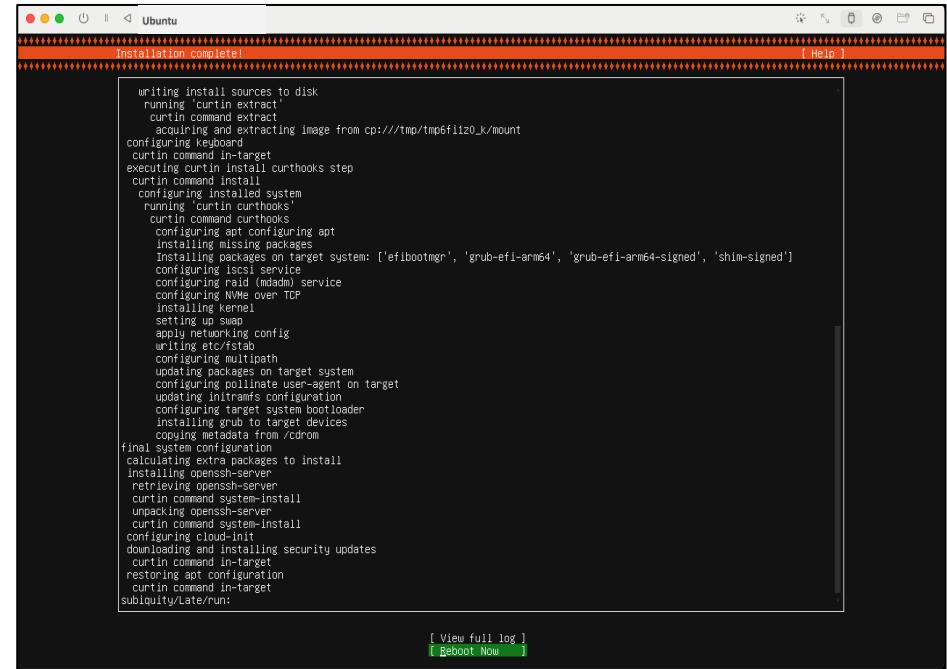
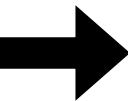
2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

- Ubuntu 설치 진행 화면, 완료되면 reboot



```
Ubuntu
Installing system [ Help ]
configuring apt
curtin command in-target
installing system
executing curtin install initial step
executing curtin install partitioning step
curtin command install
configuring storage
running 'block-meta simple'
curtin command block-meta
removing previous storage devices
configuring disk: disk-vda
configuring partition: partition-0
configuring format: format-0
configuring partition: partition-1
configuring format: format-1
configuring partition: partition-2
configuring logicalvolume/vm_vggroup-0
configuring lvm partition: lvm_partition-0
configuring format: format-2
configuring mount: mount-2
configuring mount: mount-1
configuring mount: mount-0
executing curtin install extract step
curtin command install
writing install sources to disk
running 'curtin extract'
curtin command extract
acquiring and extracting image from cp:///tmp/tmpsttu25_hu/mount
configuring keyboard
curtin command in-target
executing curtin install curthooks step
curtin command install
configuring installed system
running 'curtin curthooks'
curtin command curthooks
configuring apt configuring apt
installing missing packages
Installing packages on target system: ['efibootmgr', 'grub-efi-arm64', 'grub-efi-arm64-signed', 'shim-signed']
configuring raid (mdadm) service
configuring NvMe over TCP
configuring NvMe over TCP
installing kernel
setting up swap
apply networking config
writing etc/fstab
configuring multipath
updating packages on target system
configuring pollinate user-agent on target
updating initramfs configuration
configuring target system bootloader
installing grub to target devices
copying metadata from /cdrom
final system configuration
calculating extra packages to install
installing openssh-server
retrieving openssh-server
curtin command system-install
unpacking openssh-server
curtin command system-install
configuring apt
downloading and installing security updates
curtin command in-target
restoring apt configuration
curtin command in-target
ubiquity/Late/run:
[ View full log ]
```

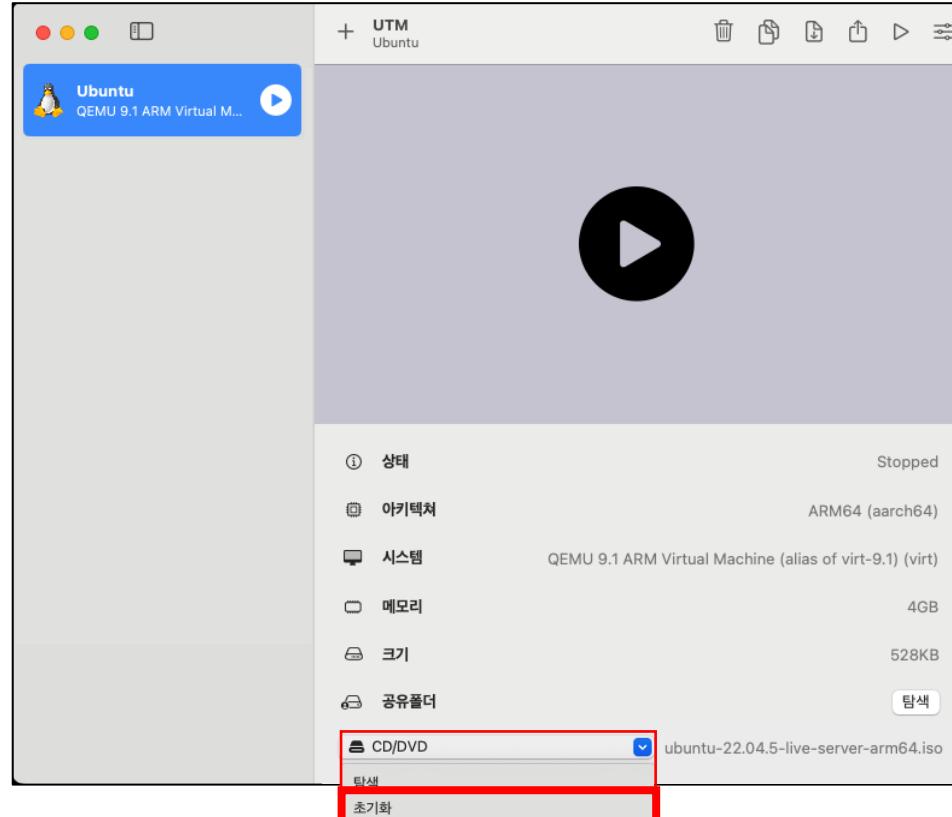


```
Ubuntu
Installation complete! [ Help ]
writing install sources to disk
running 'curtin extract'
curtin command extract
acquiring and extracting image from cp:///tmp/tmp6filiz0_k/mount
configuring keyboard
curtin command in-target
executing curtin install curthooks step
curtin command install
configuring installed system
running 'curtin curthooks'
curtin command curthooks
configuring apt configuring apt
installing missing packages
Installing packages on target system: ['efibootmgr', 'grub-efi-arm64', 'grub-efi-arm64-signed', 'shim-signed']
configuring iscsi service
configuring raid (mdadm) service
configuring NvMe over TCP
installing kernel
setting up swap
apply networking config
writing etc/fstab
configuring multipath
updating packages on target system
configuring pollinate user-agent on target
updating initramfs configuration
configuring target system bootloader
installing grub to target devices
copying metadata from /cdrom
final system configuration
calculating extra packages to install
installing openssh-server
retrieving openssh-server
curtin command system-install
unpacking openssh-server
curtin command system-install
configuring apt
downloading and installing security updates
curtin command in-target
restoring apt configuration
curtin command in-target
ubiquity/Late/run:
[ View full log ]
[ Reboot Now ]
```

2. Mac (ARM)

4) 초기 설정 – Ubuntu 설치

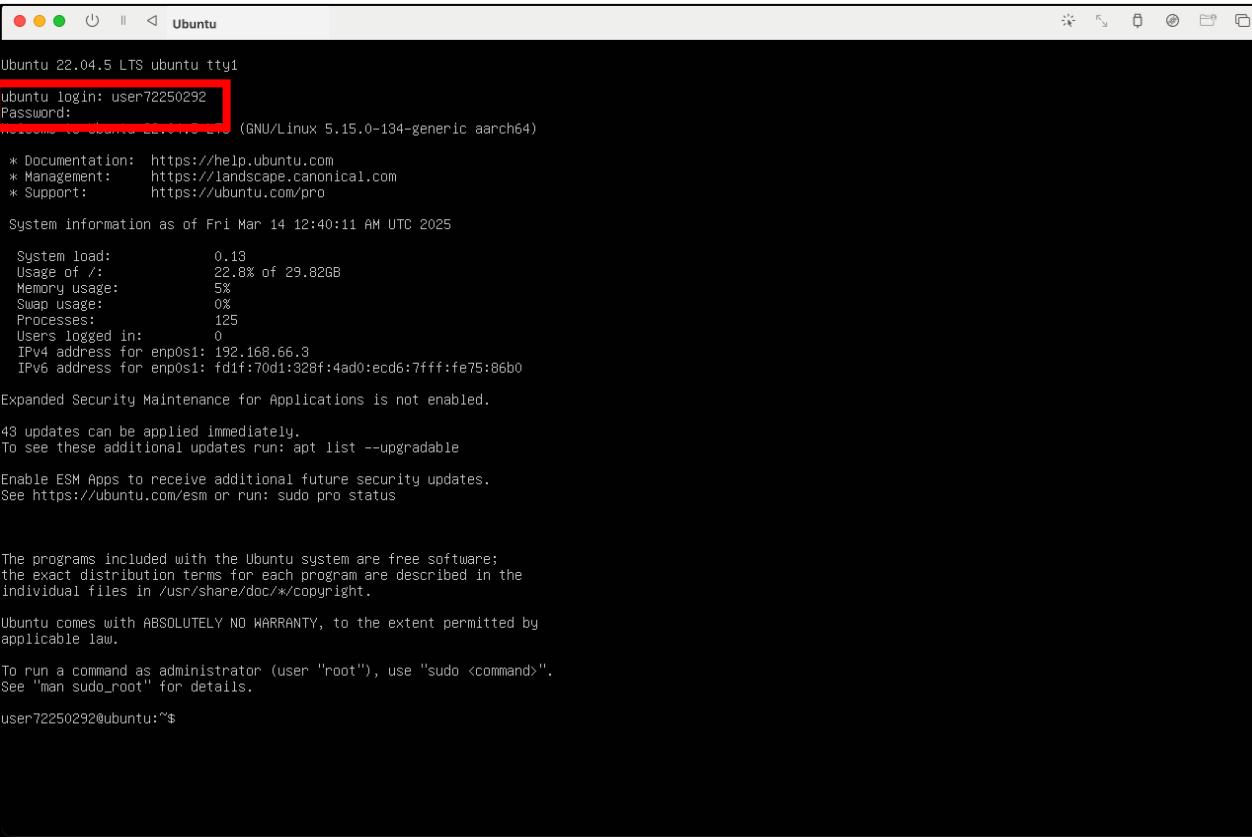
- 검은 화면이 뜬다면 VM 종료, CD/DVD 초기화 후 다시 시작



2. Mac (ARM)

4) 초기 설정 – 로그인

- {username} + 비밀번호 입력



The screenshot shows a terminal window titled "Ubuntu 22.04.5 LTS ubuntu ttym1". It displays the following text:

```
Ubuntu 22.04.5 LTS ubuntu ttym1
ubuntu login: user72250292
>Password:
Welcome to Ubuntu 22.04 LTS (GNU/Linux 5.15.0-134-generic aarch64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Fri Mar 14 12:40:11 AM UTC 2025

 System load:      0.13
 Usage of /:       22.8% of 29.82GB
 Memory usage:    5%
 Swap usage:      0%
 Processes:        125
 Users logged in: 0
 IPv4 address for enp0s1: 192.168.66.3
 IPv6 address for enp0s1: fd1f:70d1:328f:4ad0:ecd6:7fff:fe75:86b0

Expanded Security Maintenance for Applications is not enabled.

43 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

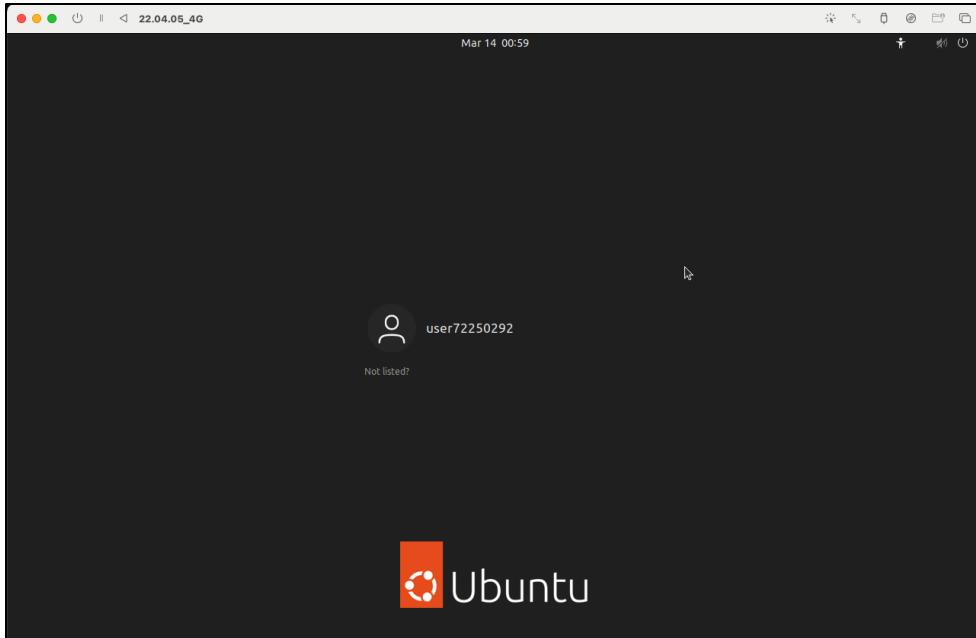
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

user72250292@ubuntu:~$
```

2. Mac (ARM)

5) Optional – GUI 환경으로 변경

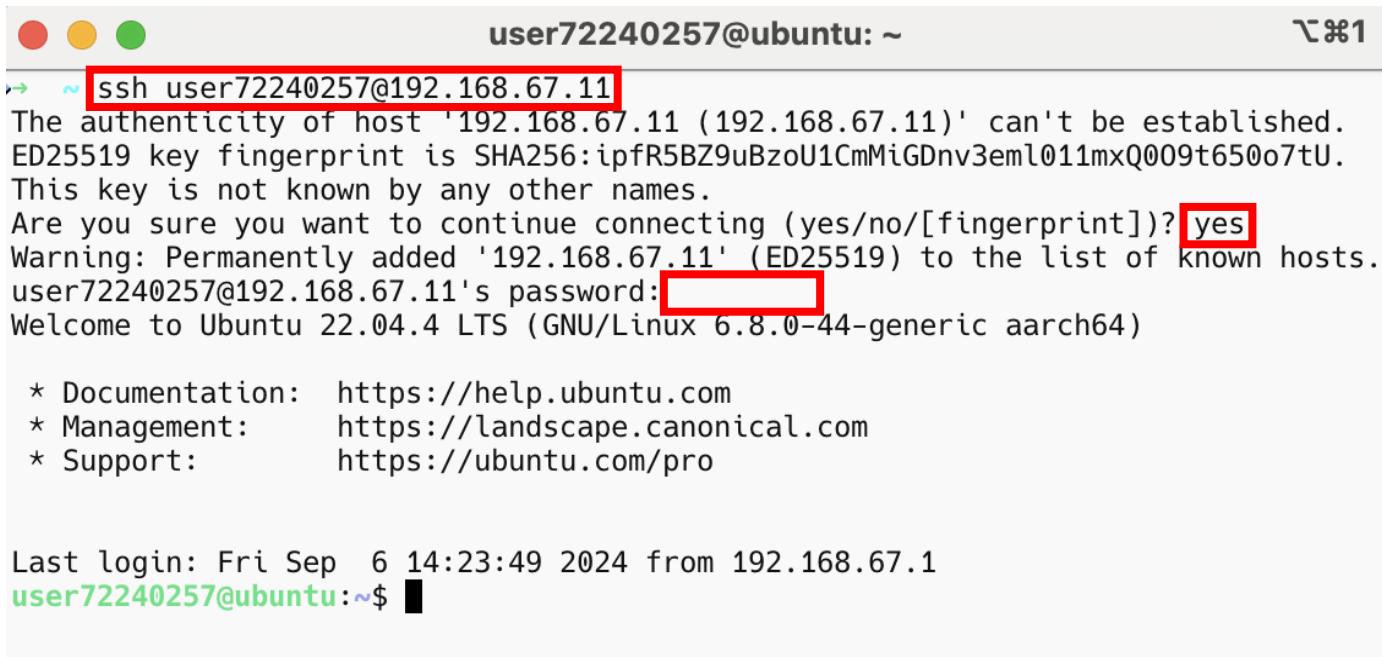
- \$ sudo apt install ubuntu-desktop
- 설치 완료 후 \$ sudo reboot
- reboot 후 다음 화면이 나온다면 성공



2. Mac (ARM)

5) Optional – SSH 설정

- Host(macOS)에서 터미널 실행 (VM은 실행 중인 상태)
- ~ ssh {username}@{IP address}
 - 39p에서 알아낸 IP 주소 또는 \$ ip a로 알아낸 IP 주소



The authenticity of host '192.168.67.11 (192.168.67.11)' can't be established.
ED25519 key fingerprint is SHA256:ipfR5BZ9uBzoU1CmMiGDnv3eml011mxQ009t650o7tU.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.67.11' (ED25519) to the list of known hosts.
user72240257@192.168.67.11's password:
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.8.0-44-generic aarch64)

* Documentation: <https://help.ubuntu.com>
* Management: <https://landscape.canonical.com>
* Support: <https://ubuntu.com/pro>

Last login: Fri Sep 6 14:23:49 2024 from 192.168.67.1
user72240257@ubuntu:~\$

Thank you

2025.01.02

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