

GIỚI THIỆU MÔI TRƯỜNG THỰC HÀNH MÁY ẢO VIRTUAL BOX

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Giới thiệu VirtualBox

Welcome to VirtualBox.org!

VirtualBox is a powerful x86 and AMD64/Intel64 **virtualization** product for enterprise as well as home use. Not only is VirtualBox an extremely feature rich, high performance product for enterprise customers, it is also the only professional solution that is freely available as Open Source Software under the terms of the GNU General Public License (GPL) version 3. See "**About VirtualBox**" for an introduction.

Presently, VirtualBox runs on Windows, Linux, macOS, and Solaris hosts and supports a large number of **guest operating systems** including but not limited to Windows (NT 4.0, 2000, XP, Server 2003, Vista, Windows 7, Windows 8, Windows 10), DOS/Windows 3.x, Linux (2.4, 2.6, 3.x and 4.x), Solaris and OpenSolaris, OS/2, and OpenBSD.

VirtualBox is being actively developed with frequent releases and has an ever growing list of features, supported guest operating systems and platforms it runs on. VirtualBox is a community effort backed by a dedicated company: everyone is encouraged to contribute while Oracle ensures the product always meets professional quality criteria.

<https://www.virtualbox.org/wiki/Downloads>

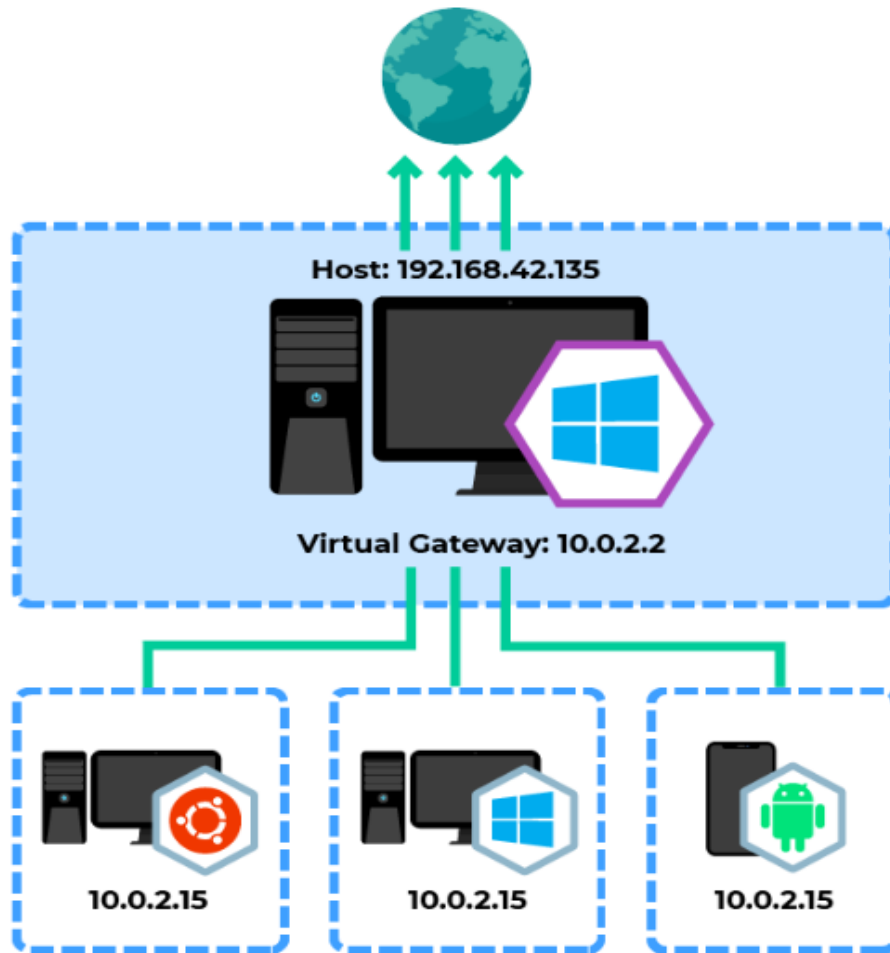
Khả năng VirtualBox

- ❖ Tạo mới máy tính với kiến trúc tùy chọn
 - ❑ Chọn hệ điều hành cho máy tính mới
 - ❑ Tạo đĩa cứng cho máy tính mới hoặc sử dụng lại đĩa cứng của một máy ảo đã cài trước
 - ❑ Mỗi máy ảo lưu trong một tập tin ảnh (đĩa cứng)
 - ❑ Chọn kiểu giao tiếp mạng phù hợp
- ❖ Máy ảo có thể giao tiếp mạng với các máy thật

Cài đặt VirtualBox

- ❖ Cài thủ công:
 - ❑ Download từ <http://www.virtualbox.org/>
- ❖ Dưới Ubuntu Desktop
 - ❑ `sudo apt install virtualbox`
- ❖ Máy tính Ubuntu Desktop trong phòng thực tập đã cài đặt sẵn VirtualBox
- ❖ Bấm vào nút Launcher ở góc trên, bên trái màn hình → Nhập vào ô tìm kiếm từ virtualbox → Nhấp vào VirtualBox

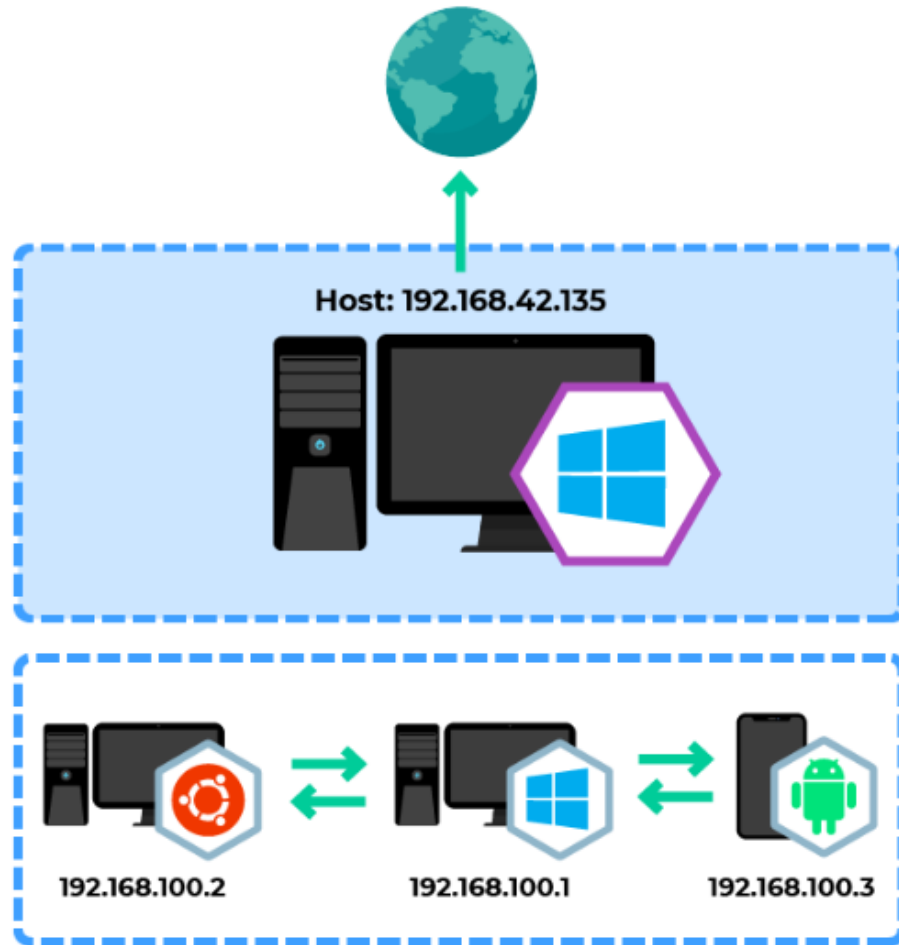
Giới thiệu các chế độ card mạng VirtualBox – NAT Mode



Các máy ảo có thể:

- Truy cập mạng Internet
- Không giao tiếp được với nhau

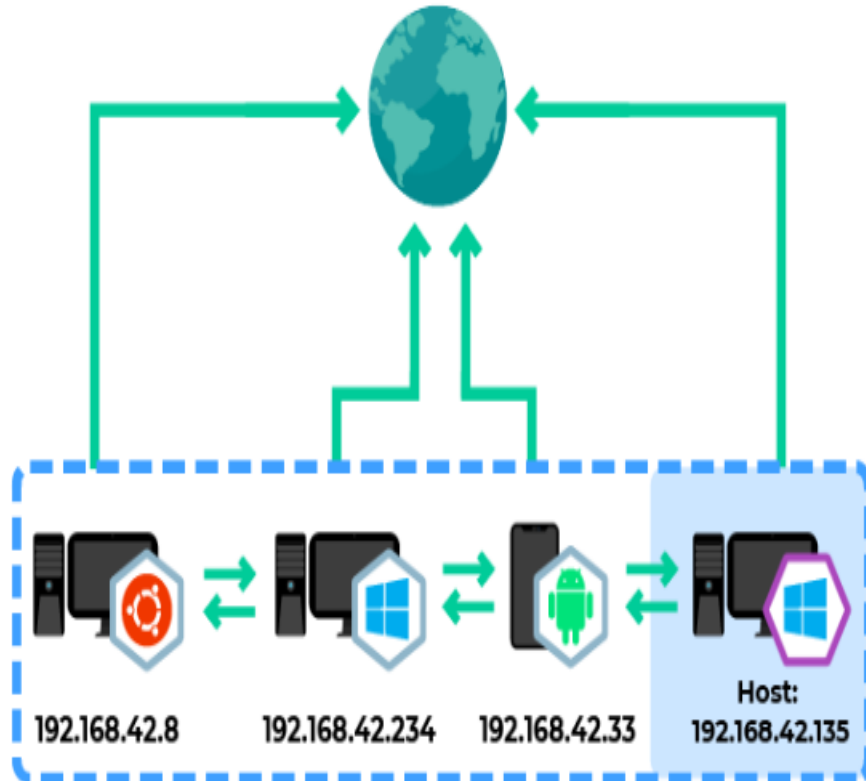
Giới thiệu các chế độ card mạng VirtualBox – Internal Mode



Các máy ảo có thể:

- Không truy cập mạng Internet
- Giao tiếp được với nhau

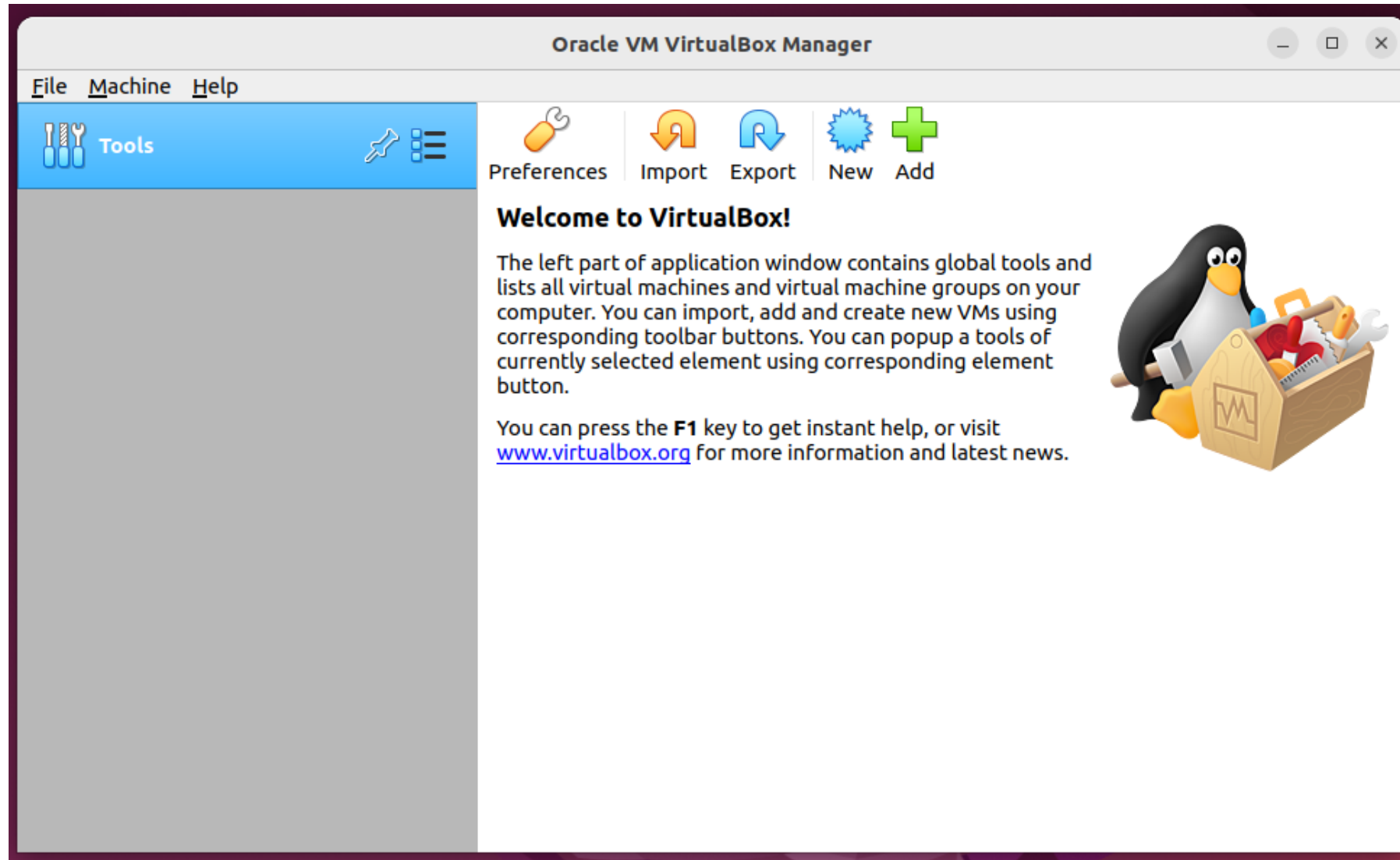
Giới thiệu các chế độ card mạng VirtualBox– Bridged Mode



Các máy ảo có thể:

- Truy cập mạng Internet
- Giao tiếp được với nhau

Tạo máy ảo



Tạo máy ảo

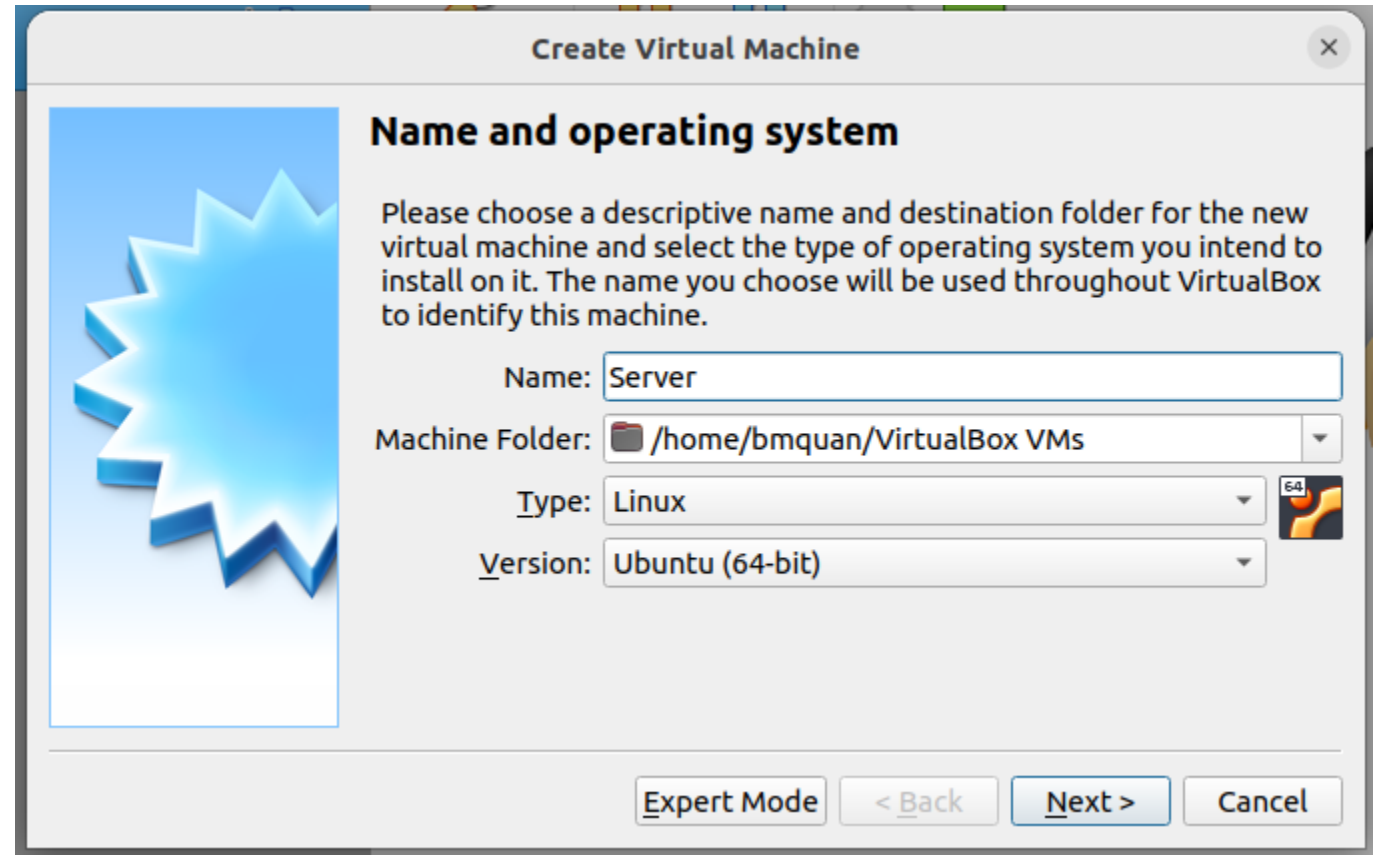
❖ Vào tab Machine chọn New

Name: <tên máy>

Machine Folder: thư mục
lưu trữ máy ảo

Type: <Linux>

Version: Ubuntu (64 bit)



Tạo máy ảo

Ubuntu Server
Ram: 1024 MB

Create Virtual Machine

Memory size

Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.

The recommended memory size is **1024 MB**.

4 MB 12288 MB

1024 MB

< Back Next > Cancel

Create Virtual Machine

Hard disk

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.

If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.

The recommended size of the hard disk is **10,00 GB**.

☐ Do not add a virtual hard disk

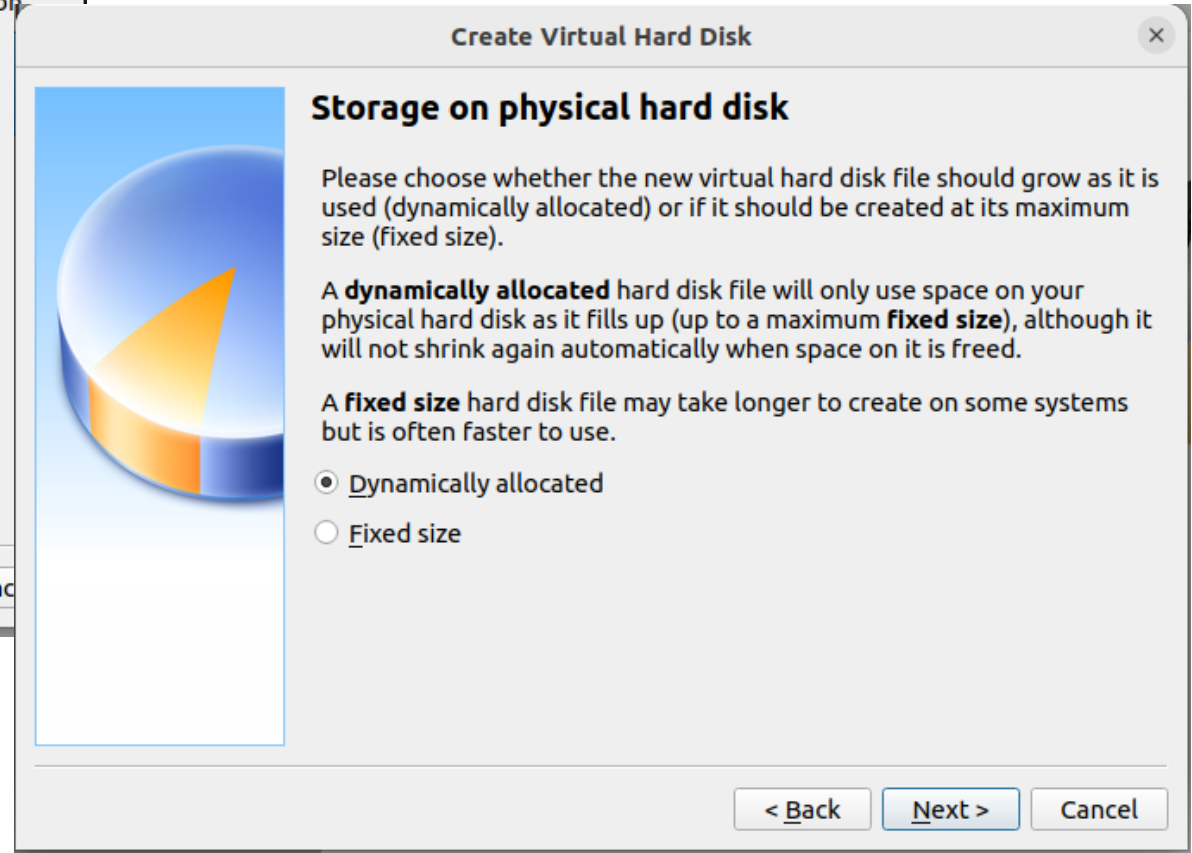
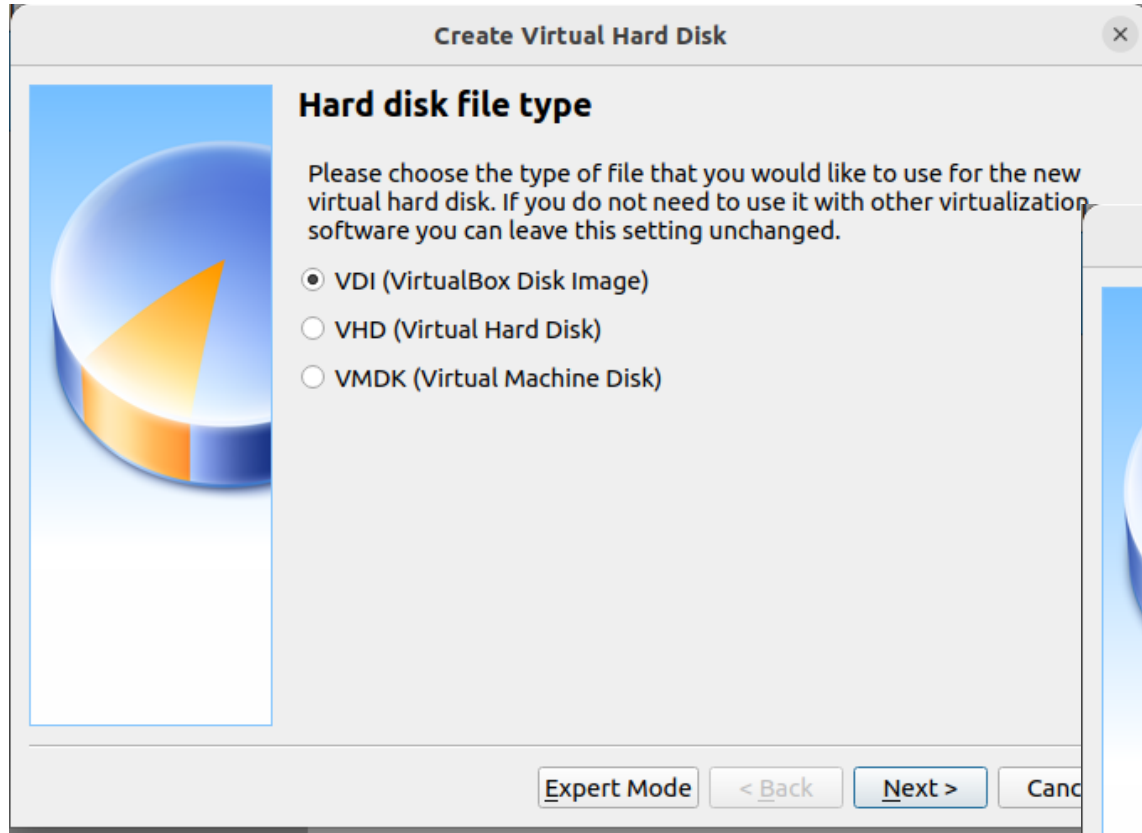
☒ Create a virtual hard disk now

☐ Use an existing virtual hard disk file

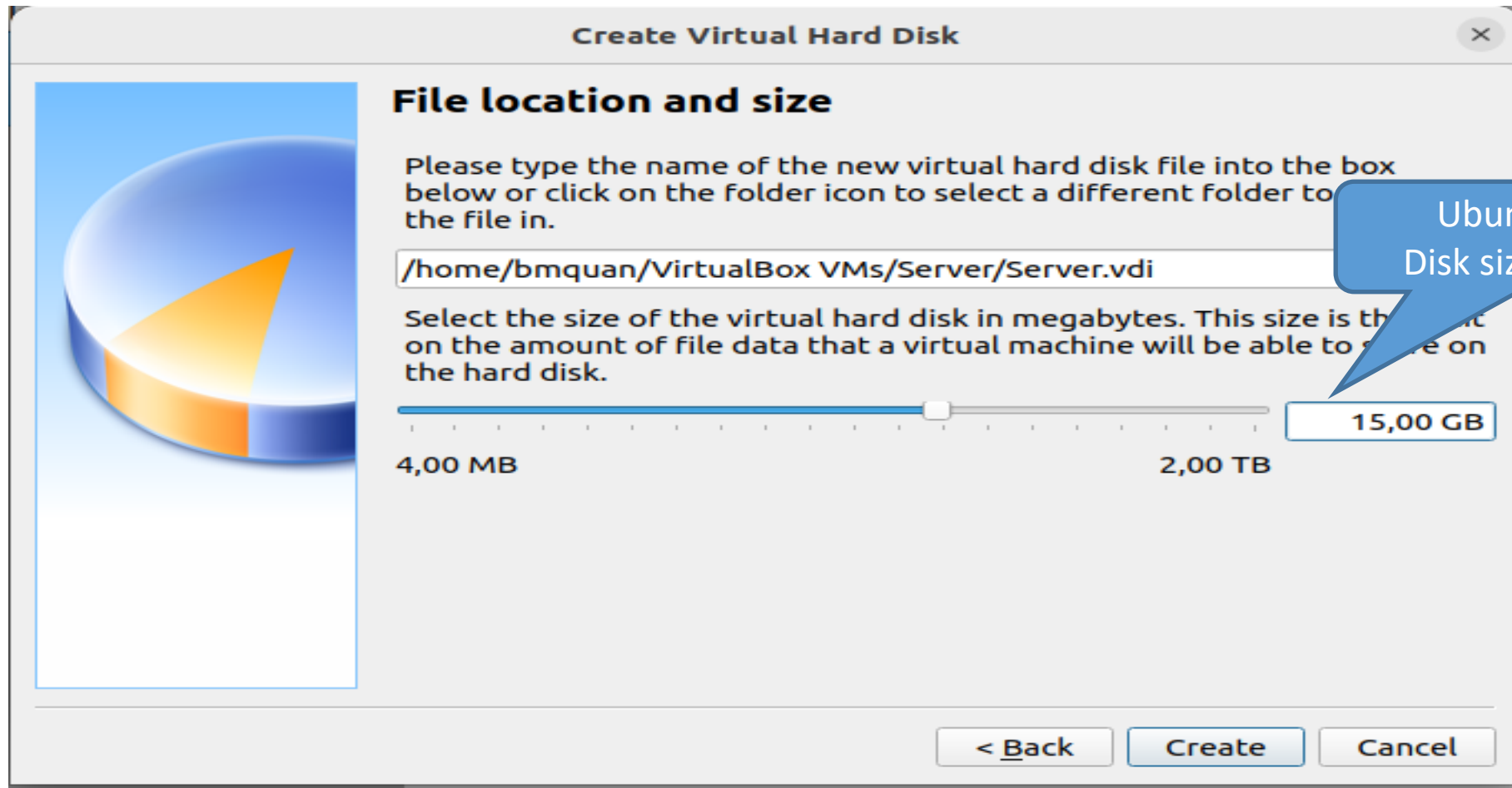
Empty

< Back Create Cancel

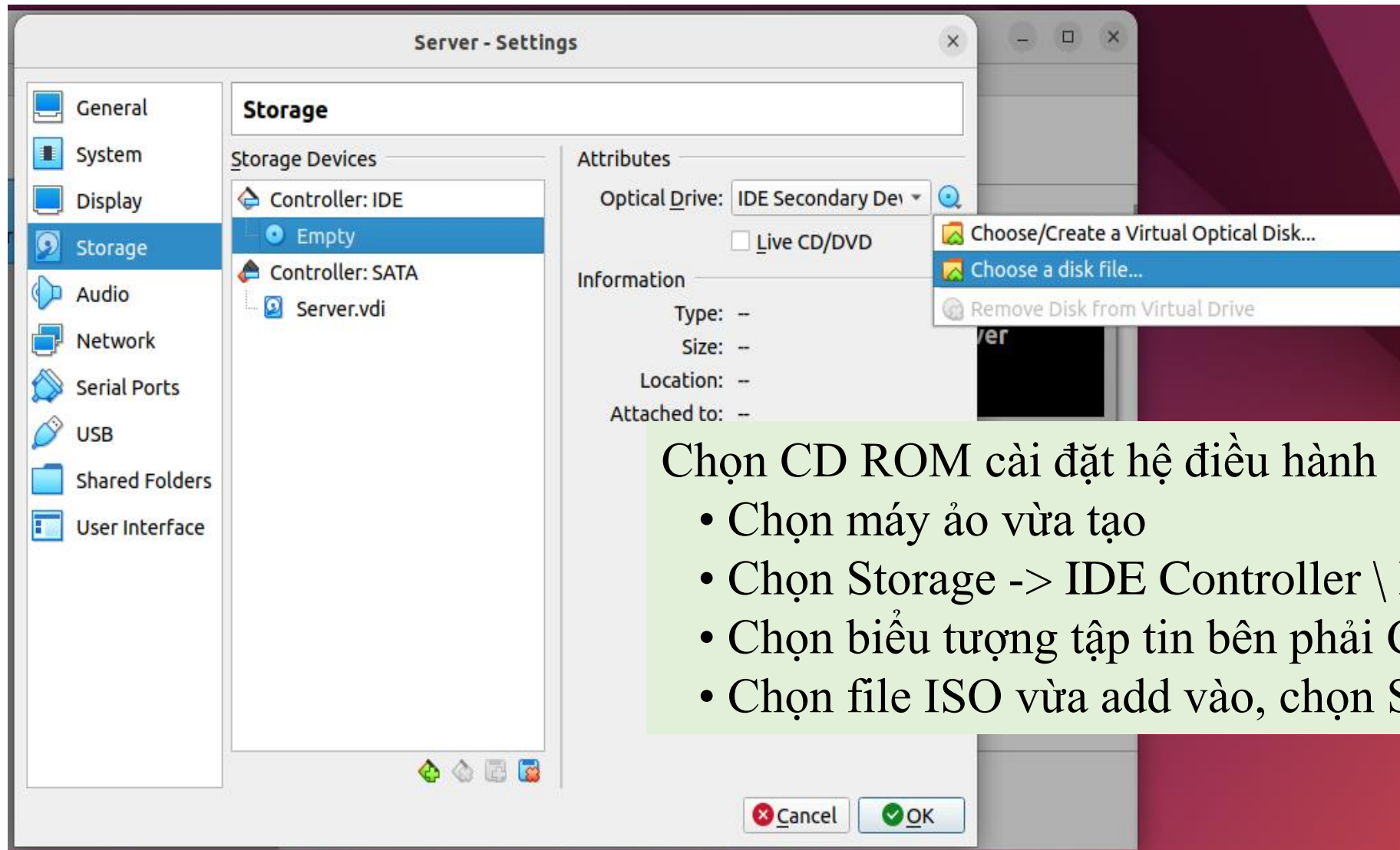
Tạo máy ảo



Tạo máy ảo



Tạo máy ảo



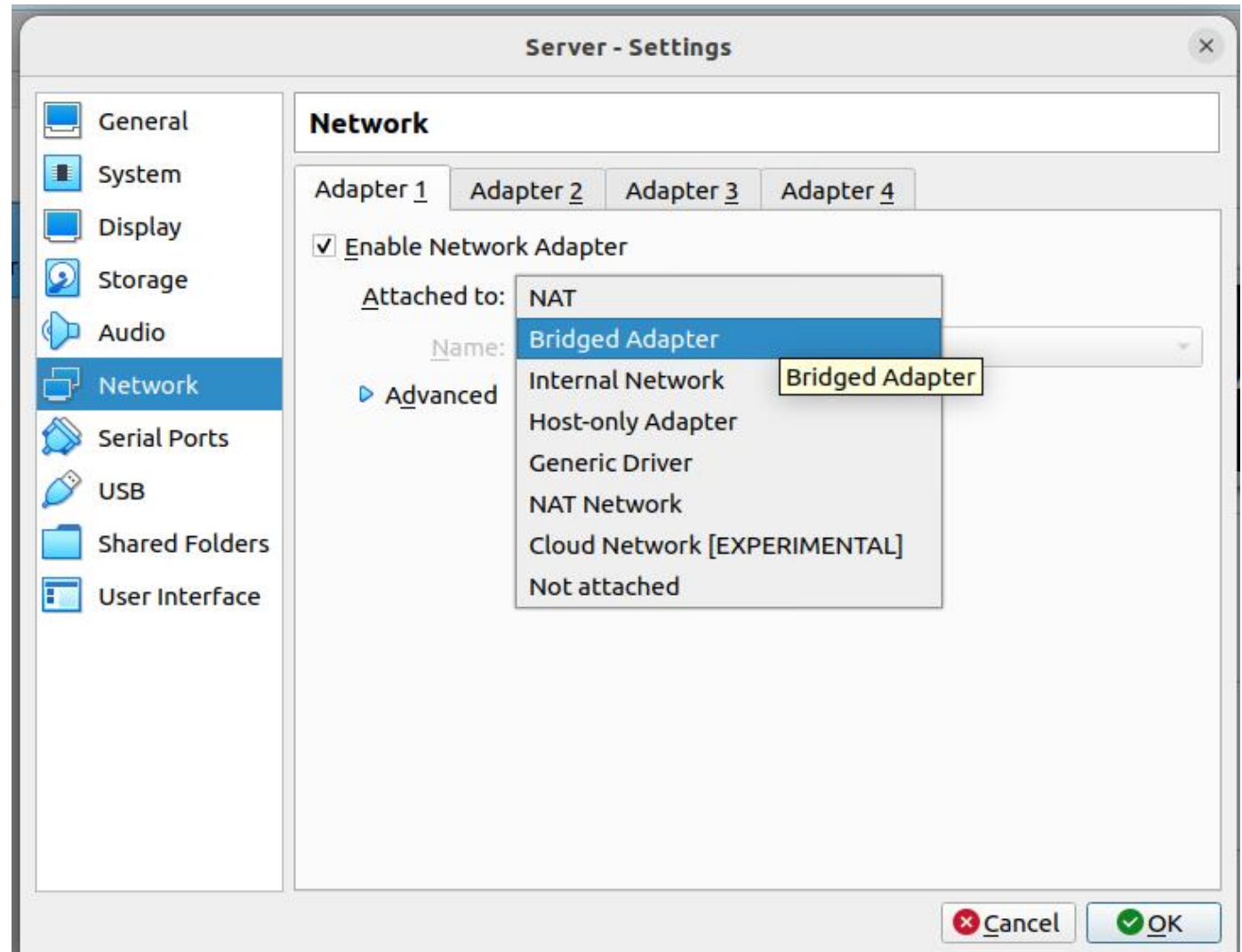
Chọn CD ROM cài đặt hệ điều hành

- Chọn máy ảo vừa tạo
- Chọn Storage -> IDE Controller \ Empty
- Chọn biểu tượng tập tin bên phải CD/DVD Device
- Chọn file ISO vừa add vào, chọn Select -> Bấm OK

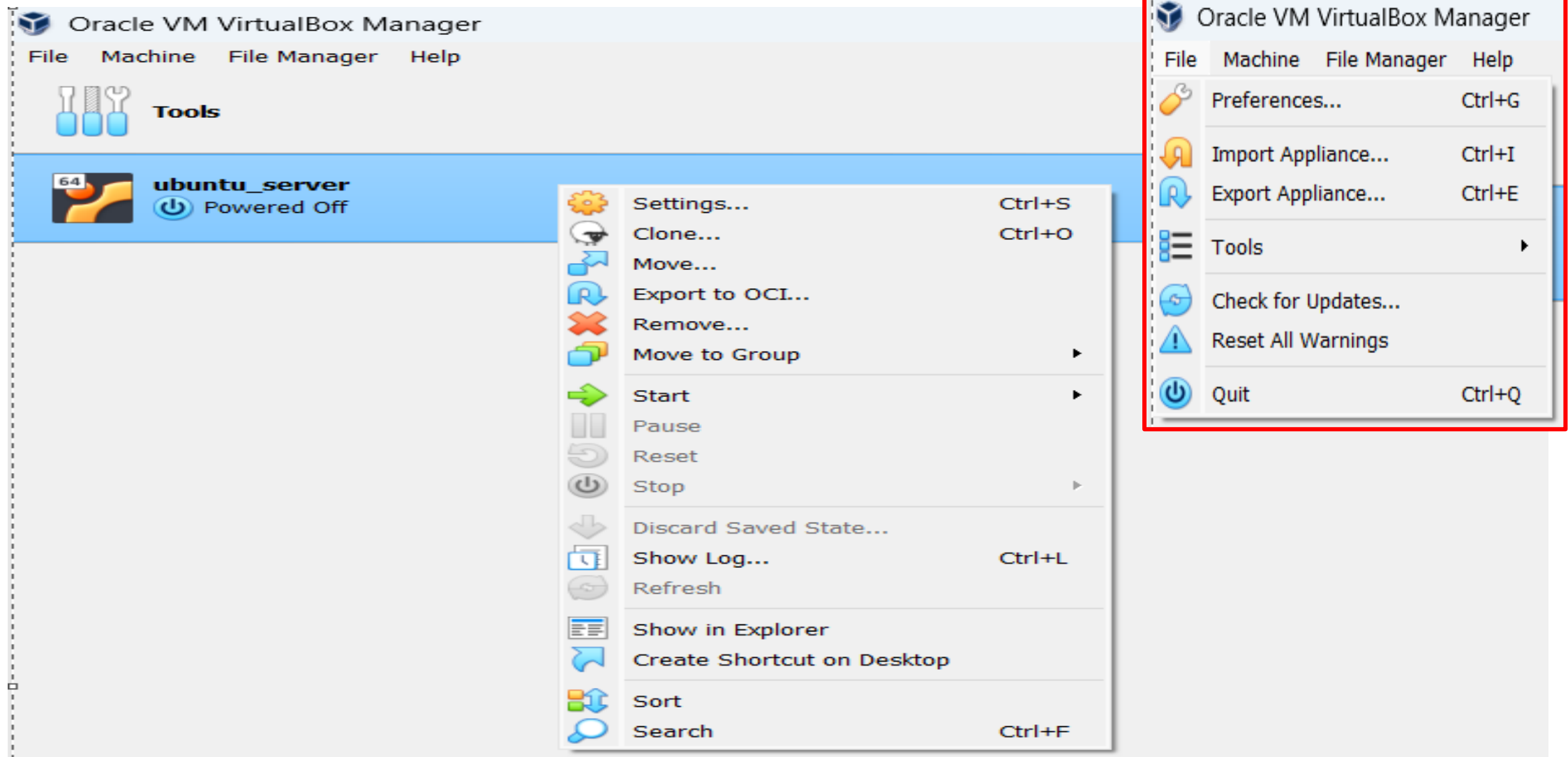
Tạo máy ảo – chế độ card mạng

Chọn Network:

- Chọn Bridged Adapter
- Loại này cho phép máy tính ảo có thể giao tiếp mạng như một máy tính thật



Khởi động máy ảo – Import - Export



Tương tác với máy ảo

- ❖ Làm việc trên máy ảo
 - ❑ Nhấp chuột trái vào phạm vi máy ảo
- ❖ Lấy lại điều khiển từ máy ảo
 - ❑ Bấm phím Ctrl bên phải để lấy lại điều khiển chuột cho máy ảo

Lưu trữ & phục hồi máy ảo

- ❖ Từ version 4.1
- ❖ Mỗi máy ảo được lưu bởi một thư mục trong thư mục:
`/home/your-username/VirtualBox VMs/ VB-Machine-Name`
- ☐ Copy thư mục VB-Machine-Name vào USB
- ☐ Phục hồi lại máy ảo bằng cách chọn:
- ☐ Machine \ Add \ Chọn thư mục của máy ảo trên USB

Một số vấn đề phát sinh

❖ Khi copy máy ảo qua lại giữa Linux và Windows:

❑ Không nhìn thấy card mạng

❑ Giải pháp:

➤ Khởi động Máy ảo Linux

➤ Đánh lệnh sau để xóa file cấu hình về card mạng

`sudo rm /etc/udev/rules.d/70-persistent-net.rules`

➤ Tắt máy ảo

➤ Vào tùy chọn Network của máy ảo để xem Card mạng ánh xạ đến tên nào eth0, eth1, ...?

➤ Khởi động lại máy ảo

Bài tập

- ❖ Gọi thực thi VirtualBox trên Ubuntu Desktop
- ❖ Tạo một máy ảo sẵn sàng cho việc cài đặt Ubuntu Server
- ❖ Download Ubuntu-server-22.04.iso về lưu ở máy tính thật
- ❖ Đưa tập tin iso vào ổ CD-ROM của máy ảo
- ❖ Thử khởi động (không cần thiết phải cài đặt)
- ❖ Export máy ảo vừa tạo ra USB
- ❖ Import lại máy ảo từ USB vào VirtualBox

Cài đặt Ubuntu Server

Willkommen! Bienvenue! Welcome! Добро пожаловать! Welkom!

[Help]

Use UP, DOWN and ENTER keys to select your language.

[Asturianu	▶]
[Bahasa Indonesia	▶]
[Català	▶]
[Deutsch	▶]
[English	▶]
[English (UK)	▶]
[Español	▶]
[Français	▶]
[Galego	▶]
[Hrvatski	▶]
[Latviski	▶]
[Lietuviškai	▶]
[Magyar	▶]
[Nederlands	▶]
[Norsk bokmål	▶]
[Polski	▶]
[Português	▶]
[Suomi	▶]
[Svenska	▶]
[Čeština	▶]
[Ελληνικά	▶]
[Беларуская	▶]
[Русский	▶]
[Српски	▶]
[Українська	▶]

Installer update available

[Help]

Version 23.04.2 of the installer is now available (23.02.1 is currently running).

You can read the release notes for each version at:

<https://github.com/canonical/subiquity/releases>

If you choose to update, the update will be downloaded and the installation will continue from here.

[Update to the new installer]
[Continue without updating]
[Back]

Cài đặt Ubuntu Server

Keyboard configuration

[Help]

Please select your keyboard layout below, or select "Identify keyboard" to detect your layout automatically.

Layout: [English (US) ▼]

Variant: [English (US) ▼]

[Identify keyboard]

[Done]
[Back]

Choose type of install

[Help]

Choose the base for the installation.

(X) Ubuntu Server

The default install contains a curated set of packages that provide a comfortable experience for operating your server.

() Ubuntu Server (minimized)

This version has been customized to have a small runtime footprint in environments where humans are not expected to log in.

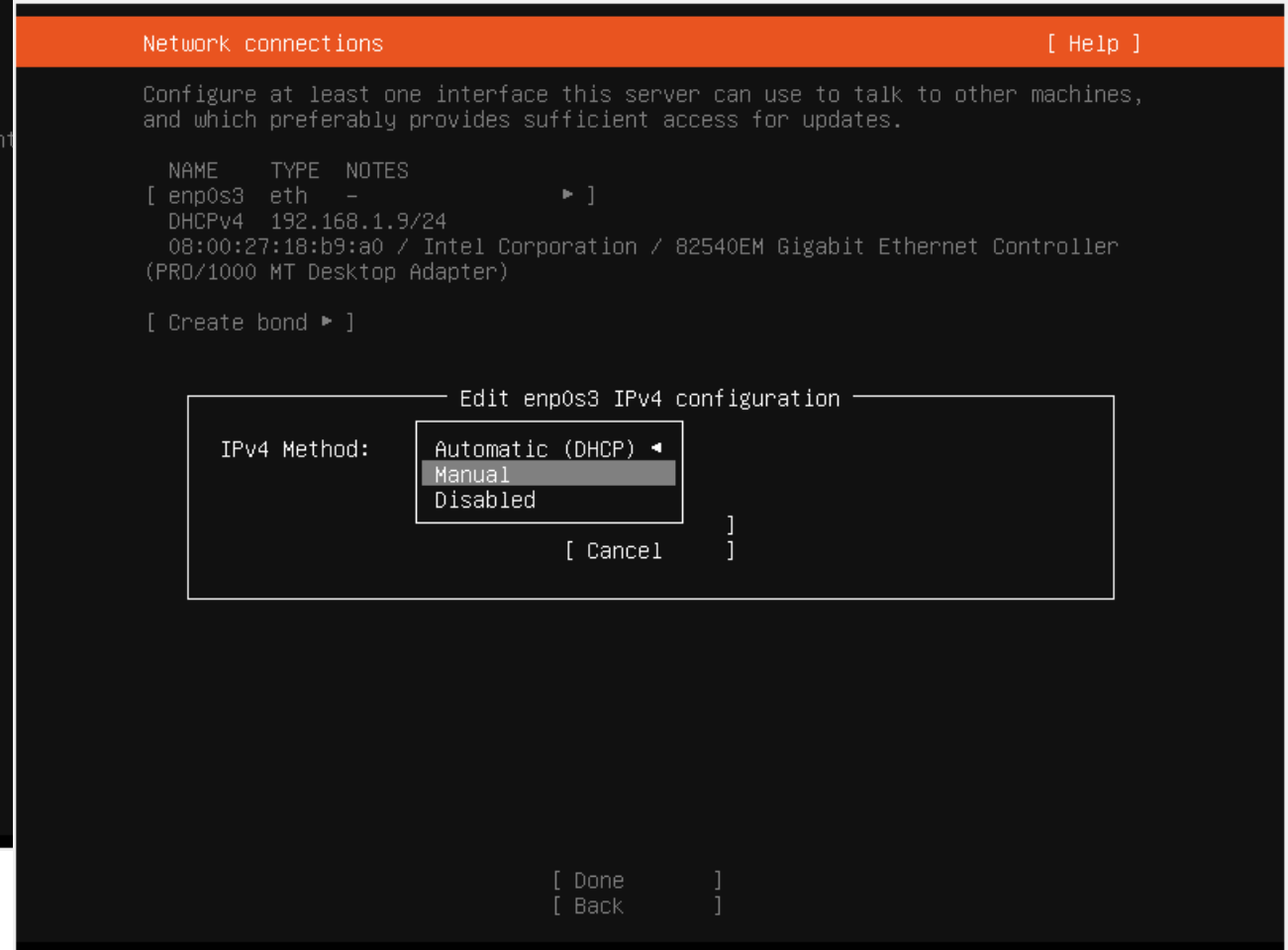
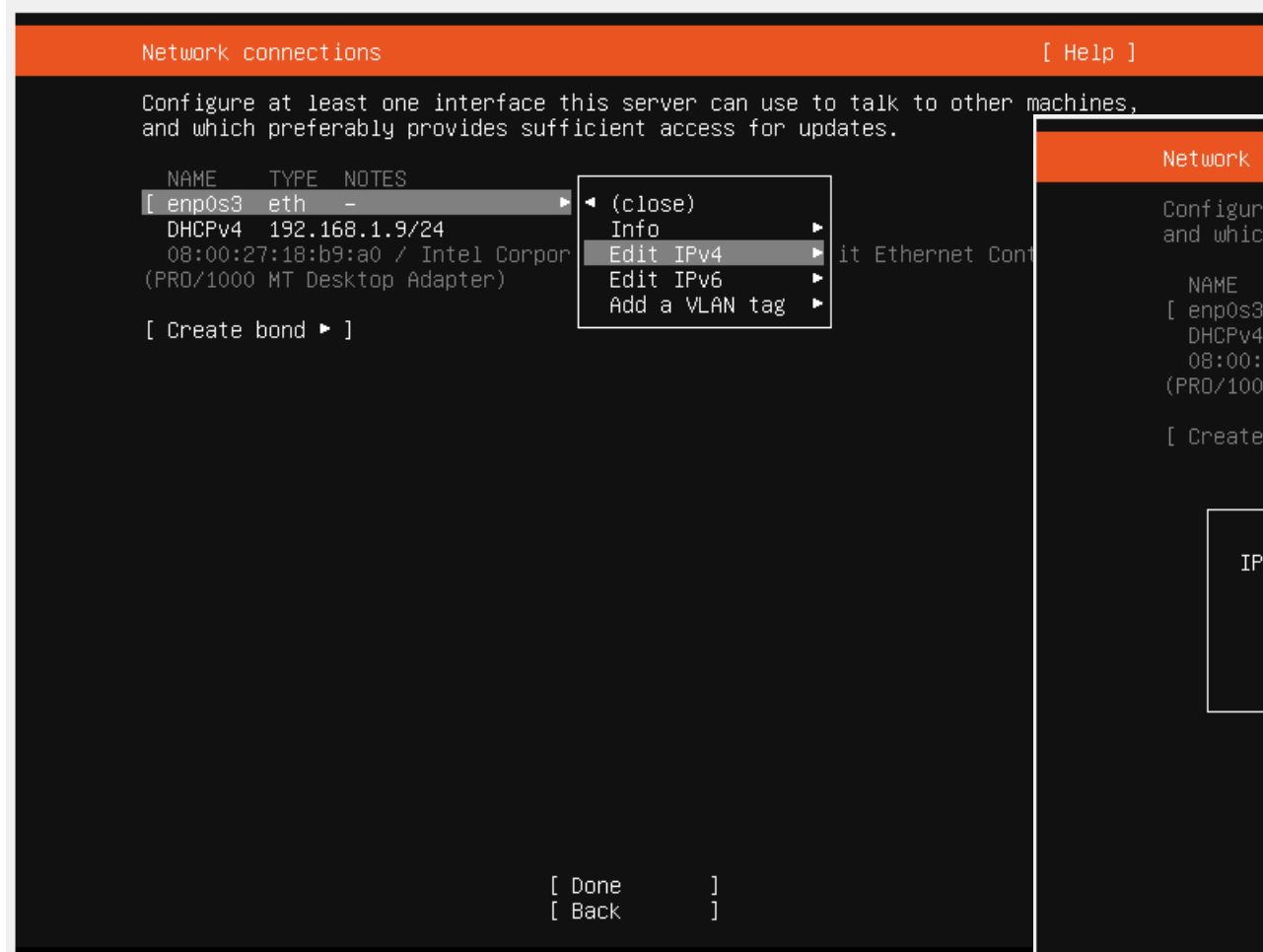
Additional options

[] Search for third-party drivers

This software is subject to license terms included with its documentation. Some is proprietary. Third-party drivers should not be installed on systems that will be used for FIPS or the real-time kernel.

[Done]
[Back]

Cài đặt Ubuntu Server



Cài đặt Ubuntu Server

Ví dụ: Phòng Lab 215 CICT:
Network: 172.30.113.0/24
IP máy 1: 172.30.113.11

IPv4 Configuration

IPv4 Method: [Manual ▼]

Subnet: 192.168.1.0/24

Address: 192.168.1.11

Gateway: 192.168.1.1

Name servers: 8.8.8.8
IP addresses, comma separated

Search domains:
Domains, comma separated

[Save]
[Cancel]

[Done]
[Back]

Ví dụ: Phòng Lab 215 CICT:
DNS: 172.18.27.2, 172.18.27.6

Configure proxy [Help]

If this system requires a proxy to connect to the internet, enter its details here.

Proxy address:
If you need to use a HTTP proxy to access the outside world, enter the proxy information here. Otherwise, leave this blank.

The proxy information should be given in the standard form of "http://[[user]:[pass]]host[:port]/".

[Done]
[Back]

Cài đặt Ubuntu Server

Configure Ubuntu archive mirror [Help]

If you use an alternative mirror for Ubuntu, enter its details here.

Mirror address:

You may provide an archive mirror that will be used as the default.

☒ Done
☐ Back

Guided storage configuration [Help]

Configure a guided storage layout, or create a custom one:

☐ Use an entire disk

[VBOX_HARDDISK_VB2112b147-1054970c local disk 15.000G ▼]

☒ Set up this disk as an LVM group

☐ Encrypt the LVM group with LUKS

Passphrase:

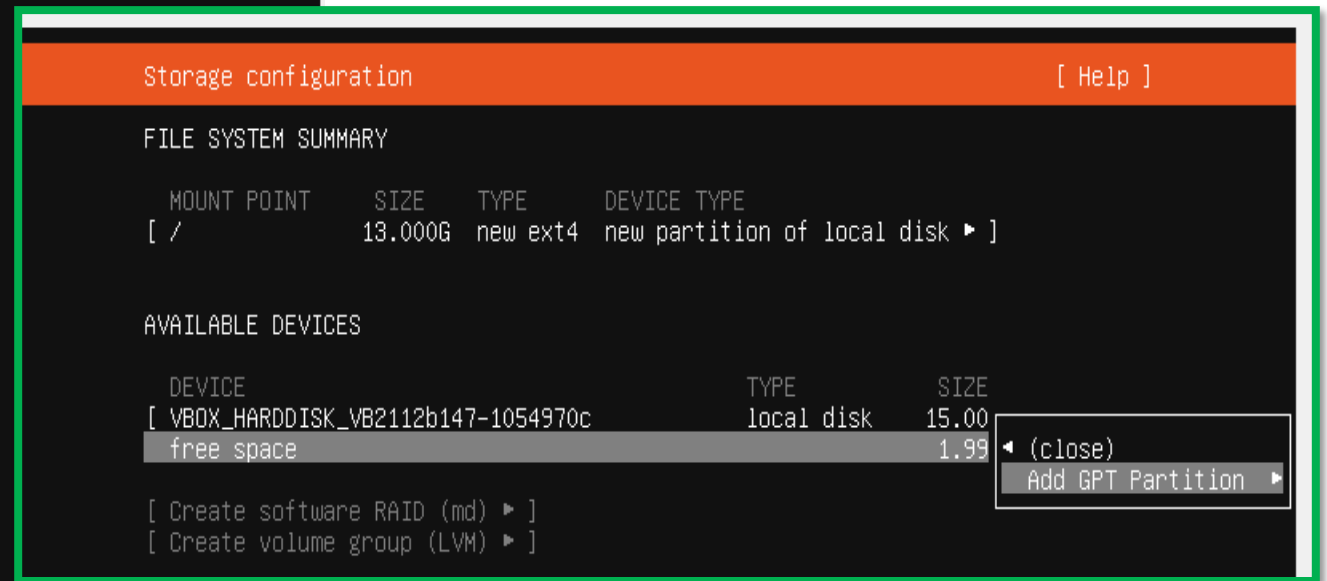
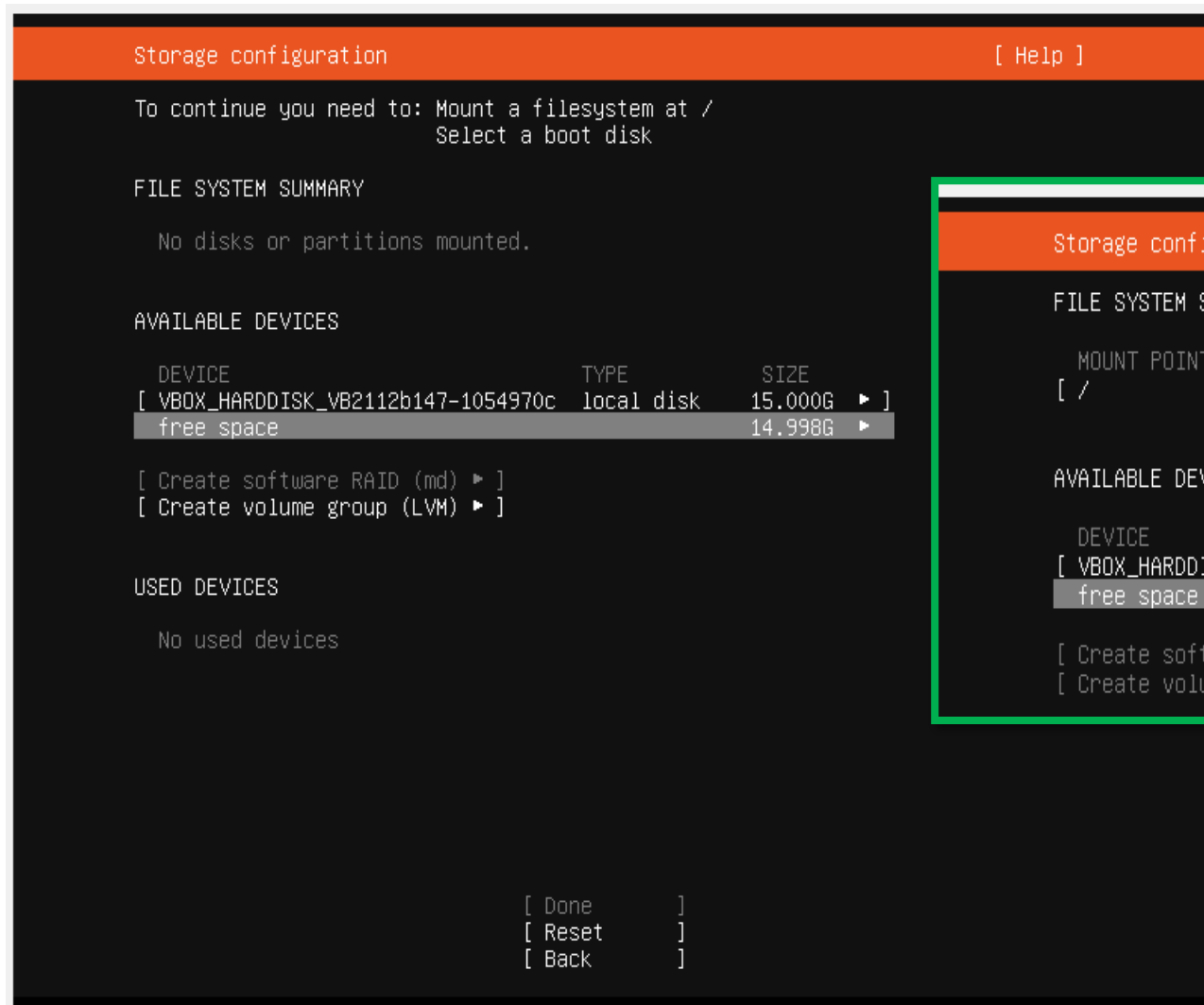
Confirm passphrase:

☒ Custom storage layout

Phân vùng ổ cứng máy tính

☐ Done
☐ Back

Cài đặt Ubuntu Server



Cài đặt Ubuntu Server

Storage configuration [Help]

To continue you need to: Mount a filesystem at /
Select a boot disk

FILE SYSTEM SUMMARY

No disks or partitions mounted.

Adding GPT partition to VBOX_HARDDISK_VB2112b147-1054970c

Size (max 14.998G): 13 G

Format: [ext4 ▼]

Mount: [/ ▼]

[Create]
[Cancel]

[Done]
[Reset]
[Back]

Storage configuration [Help]

FILE SYSTEM SUMMARY

MOUNT POINT	SIZE	TYPE	DEVICE TYPE
[/	13.000G	new ext4	new partition of local disk ▶]

AVAILABLE DEVICES

Adding GPT partition to VBOX_HARDDISK_VB2112b147-1054970c

Size (max 1.997G): 1.997G

Format: [swap ▼]

Mount: [/boot ▼]

[Create]
[Cancel]

[Done]
[Reset]
[Back]

Cài đặt Ubuntu Server

```
Storage configuration [ Help ]

FILE SYSTEM SUMMARY

MOUNT POINT    SIZE    TYPE    DEVICE TYPE
[ /             13.000G new ext4 new partition of local disk ► ]
[ SWAP          1.997G new swap new partition of local disk ► ]

AVAILABLE DEVICES

No available devices

[ Create software RAID (md) ► ]
[ Create volume group (LVM) ► ]

USED DEVICES

DEVICE                                TYPE    SIZE
[ VBOX_HARDDISK_VB2112b147-1054970c  local disk  15.000G ► ]
partition 1  new, BIOS grub spacer    1.000M ►
partition 2  new, to be formatted as ext4, mounted at / 13.000G ►
partition 3  new, to be formatted as swap    1.997G ►

[ Done      ]
[ Reset     ]
[ Back      ]
```

```
Storage configuration [ Help ]

FILE SYSTEM SUMMARY

MOUNT POINT    SIZE    TYPE    DEVICE TYPE
[ /             13.000G new ext4 new partition of local disk ► ]
[ SWAP          1.997G new swap new partition of local disk ► ]

AVAILABLE DEVICES

Confirm destructive action

Selecting Continue below will begin the installation process and
result in the loss of data on the disks selected to be formatted.

You will not be able to return to this or a previous screen once the
installation has started.

Are you sure you want to continue?

[ No      ]
[ Continue ]

[ Done      ]
[ Reset     ]
[ Back      ]
```

Cài đặt Ubuntu Server

Profile setup [Help]

Enter the username and password you will use to log in to the system. You can configure SSH access on the next screen but a password is still needed for sudo.

Your name:

Your server's name:
The name it uses when it talks to other computers.

Pick a username:

Choose a password:

Confirm your password:

[Done]

Upgrade to Ubuntu Pro [Help]

Upgrade this machine to Ubuntu Pro for security updates on a much wider range of packages, until 2032. Assists with FedRAMP, FIPS, STIG, HIPAA and other compliance or hardening requirements.

[About Ubuntu Pro ►]

() Enable Ubuntu Pro

(X) Skip for now

You can always enable Ubuntu Pro later via the 'pro attach' command.

[Continue]
[Back]

Cài đặt Ubuntu Server

SSH Setup [Help]

You can choose to install the OpenSSH server package to enable secure remote access to your server.

[] Install OpenSSH server

Import SSH identity: [No ▼]
You can import your SSH keys from GitHub or

Import Username:

[X] Allow password authentication over SSH

[Done]
[Back]

Featured Server Snaps [Help]

These are popular snaps in server environments. Select or deselect with SPACE, press ENTER to see more details of the package, publisher and versions available.

[] microk8s	Kubernetes for workstations and appliances	▶
[] nextcloud	Nextcloud Server - A safe home for all your data	▶
[] wekan	The open-source kanban	▶
[] kata-containers	Build lightweight VMs that seamlessly plug into the c	▶
[] docker	Docker container runtime	▶
[] canonical-livepatch	Canonical Livepatch Client	▶
[] rocketchat-server	Rocket.Chat server	▶
[] mosquitto	Eclipse Mosquitto MQTT broker	▶
[] etcd	Resilient key-value store by CoreOS	▶
[] powershell	PowerShell for every system!	▶
[] stress-ng	tool to load and stress a computer	▶
[] sabnzbd	SABnzbd	▶
[] wormhole	get things from one computer to another, safely	▶
[] aws-cli	Universal Command Line Interface for Amazon Web Servi	▶
[] google-cloud-sdk	Google Cloud SDK	▶
[] slcli	Python based SoftLayer API Tool.	▶
[] doctl	The official DigitalOcean command line interface	▶
[] conjure-up	Package runtime for conjure-up spells	▶
[] postgresql10	PostgreSQL is a powerful, open source object-relatio	▶
[] heroku	CLI client for Heroku	▶
[] keepalived	High availability VRRP/BFD and load-balancing for Lin	▶
[] prometheus	The Prometheus monitoring system and time series data	▶
[] juju	Juju - a model-driven operator lifecycle manager for	▶

[Done]
[Back]

Cài đặt Ubuntu Server

Installing system

[Help]

```
curtin command block-meta
  removing previous storage devices
  configuring disk: disk-sda
  configuring partition: partition-0
  configuring partition: partition-1
  configuring format: format-0
  configuring mount: mount-0
  configuring partition: partition-2
  configuring format: format-1
  configuring mount: mount-1
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/tmpu0up929o/mount
executing curtin install curthooks step
curtin command install
  configuring installed system
  running 'mount --bind /cdrom /target/cdrom'
  running 'curtin in-target -- setupcon --save-only'
  curtin command in-target
  running 'curtin curthooks'
  curtin command curthooks
    configuring apt configuring apt
    installing missing packages
    configuring iscsi service
    configuring raid (mdadm) service
    installing kernel /
```

[View full log]

Install complete!

[Help]

```
configuring installed system
  running 'mount --bind /cdrom /target/cdrom'
  running 'curtin in-target -- setupcon --save-only'
  curtin command in-target
  running 'curtin curthooks'
  curtin command curthooks
    configuring apt configuring apt
    installing missing packages
    configuring iscsi service
    configuring raid (mdadm) service
    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
final system configuration
  configuring cloud-init
  calculating extra packages to install
  downloading and installing security updates
  curtin command in-target
  restoring apt configuration
  curtin command in-target
subiquity/Late/run
```

[View full log]

[Reboot Now]

Tài liệu tham khảo

- ❖ <https://www.virtualbox.org/manual>
- ❖ <https://www.virtualbox.org/manual/ch06.html>
- ❖ <https://ubuntu.com/download/server>
- ❖ <https://tecadmin.net/install-nagios-monitoring-server-on-ubuntu/>
- ❖ <https://tecadmin.net/monitor-remote-linux-host-using-nagios/>
- ❖ <https://www.youtube.com/watch?v=rJzHpc1kQW4>
- ❖ <https://openclassrooms.com/en/courses/7163136-set-up-virtual-machines-using-virtualbox-and-vsphere/7359231-establish-communication-between-virtual-machines>