



# Introduction to Linux Systems

## Networking

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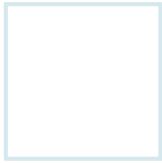
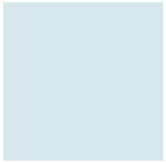
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# NIC Configuration

- Configure static IP
  - by GUI
  - by **netplan** (18.04)
- Recover



# Print available network interface

\$ ip addr

or

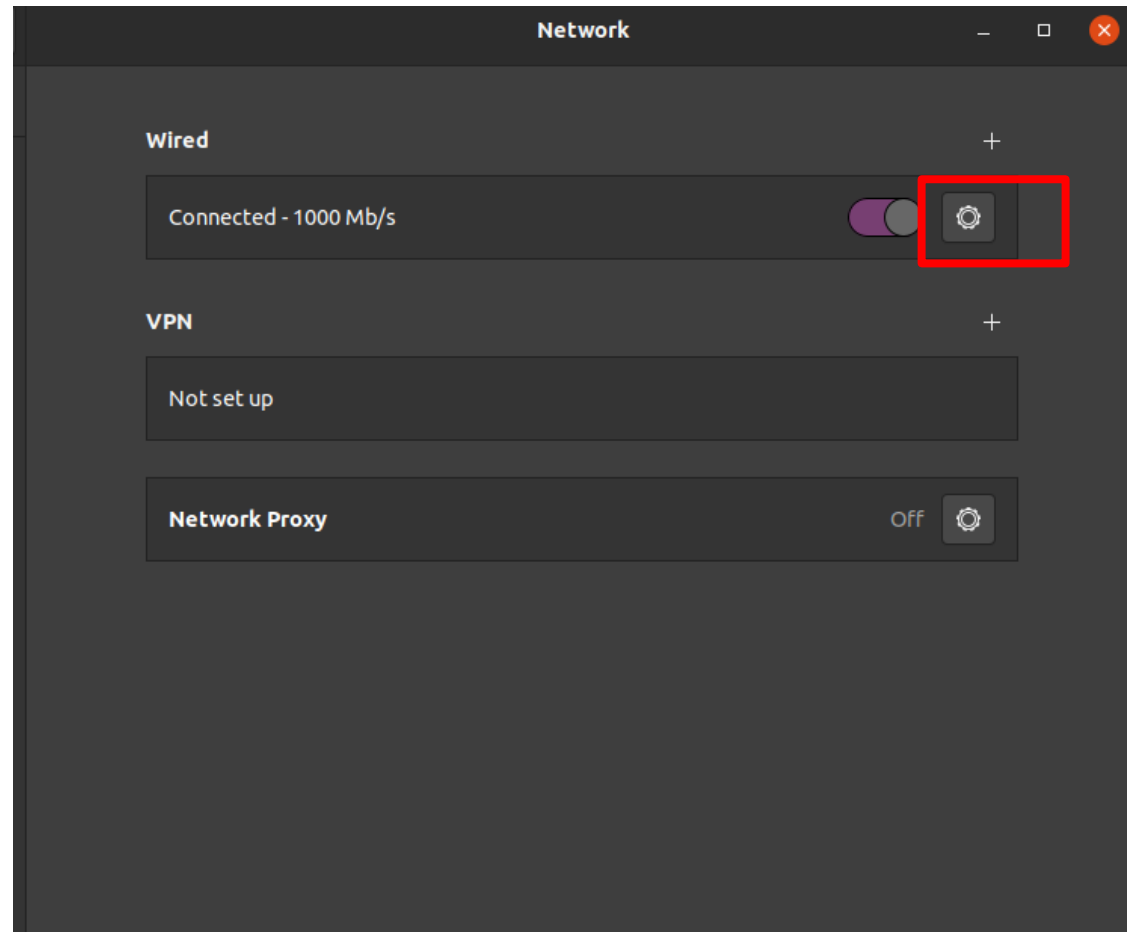
\$ ip a

```
eecheng@eecheng-vm:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:b4:96:7f brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 86375sec preferred_lft 86375sec
    inet6 fe80::a25d:c84b:bd9b:d1a4/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```



# Configure static IP by GUI

1. Open settings
2. Network
3. Open setting of wired

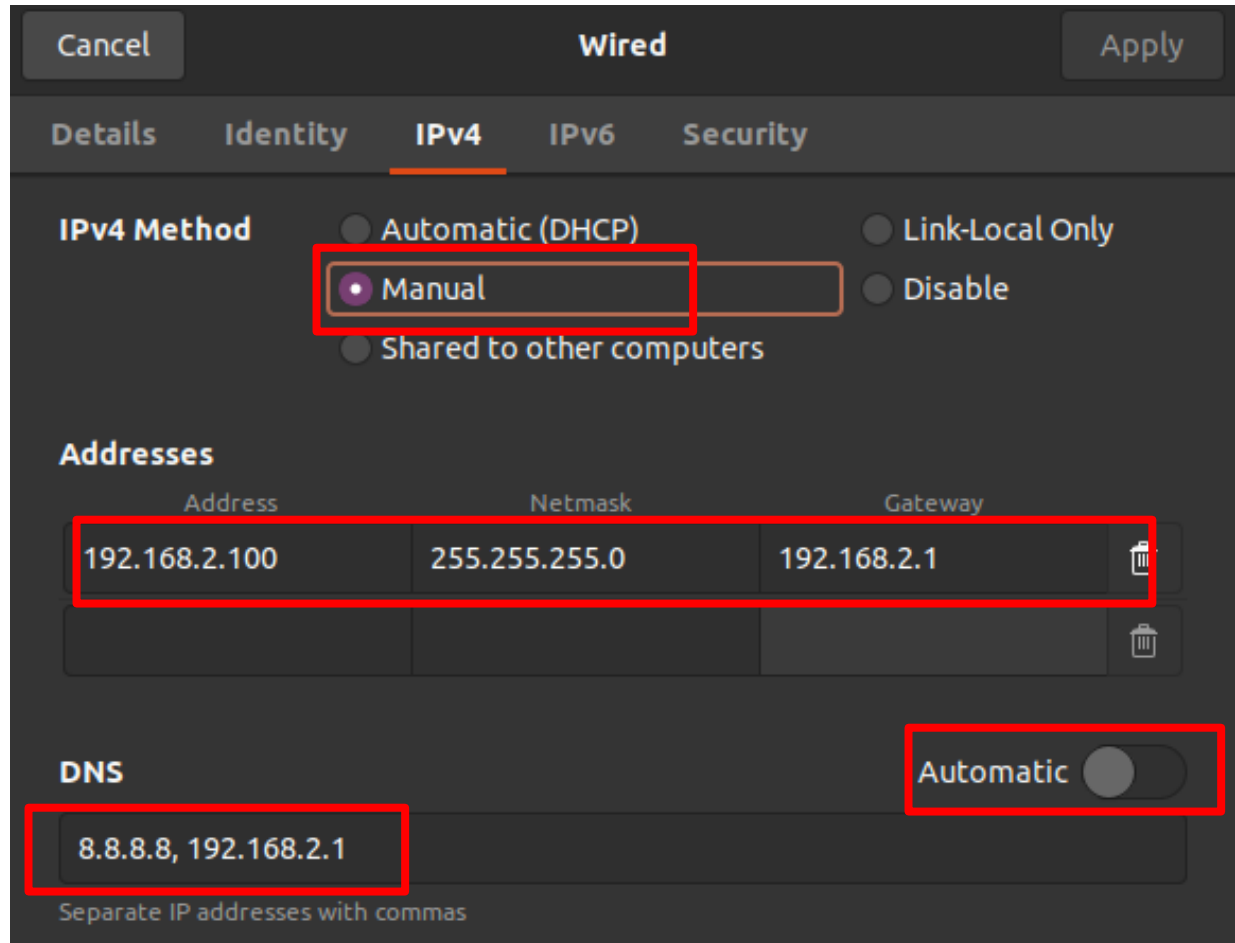




# Configure static IP by GUI

1. IPv4
2. Configure highlighted sections

為了檢查方便，麻煩同學按照範例設定 IP



Cancel **Wired** Apply

Details Identity **IPv4** IPv6 Security

**IPv4 Method**

- ☐ Automatic (DHCP)
- ☒ **Manual**
- ☐ Link-Local Only
- ☐ Disable
- ☐ Shared to other computers

**Addresses**

Address	Netmask	Gateway
192.168.2.100	255.255.255.0	192.168.2.1

**DNS**

Automatic ☐

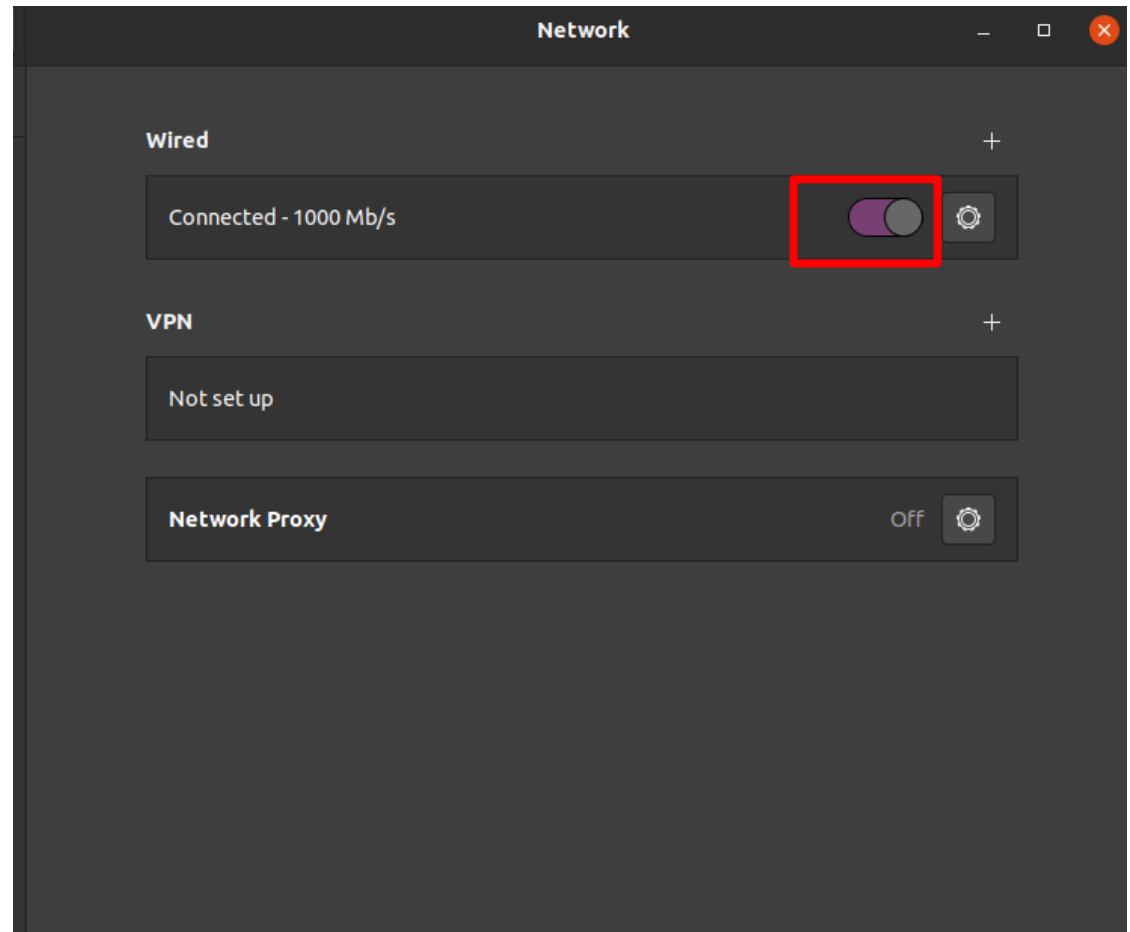
8.8.8.8, 192.168.2.1

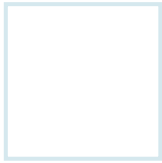
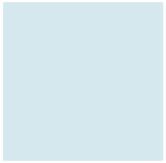
Separate IP addresses with commas



# Configure static IP by GUI

- Toggle connected wired twice time

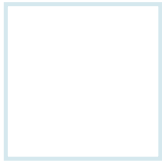
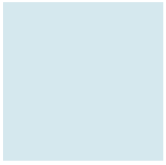




# Configure static IP by GUI

Dump available network interface again

```
eecheng@eecheng-vm:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:b4:96:7f brd ff:ff:ff:ff:ff:ff
    inet 192.168.2.100/24 brd 192.168.2.255 scope global noprefixroute enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a25d:c84b:bd9b:d1a4/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```



# Configure static IP by netplan

1. backup original network config file (under /etc/netplan)
2. edit config file (.yaml)





# Example config file

```
network:
  version: 2
  renderer: networkd
  ethernets:
    ens3:
      dhcp4: no
      addresses:
        - 192.168.121.221/24
      gateway4: 192.168.121.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
```



# Validate and apply configuration

1. \$ sudo netplan try
2. \$ sudo netplan apply



# Recovery (GUI)

Cancel

Wired

Apply

Details

Identity

IPv4

IPv6

Security

Link speed

1000 Mb/s

IPv4 Address

192.168.2.100

IPv6 Address

fe80::a25d:c84b:bd9b:d1a4

Hardware Address

08:00:27:B4:96:7F

Default Route

192.168.2.1

DNS

8.8.8.8 192.168.2.1

☒

Connect automatically

☒

Make available to other users

☐

Metered connection: has data limits or can incur charges

Software updates and other large downloads will not be started automatically.

Remove Connection Profile



# Recovery (netplan)

1. restore backup file (.yaml) to /etc/netplan
2. type “sudo netplan apply”

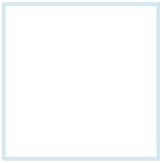
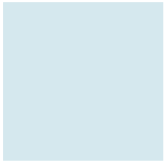


# Demo

截圖檢查項目：

1. 透過 ip addr 之類的工具印出修改 static IP 前後的 network interface 資訊

繳交方式：截圖上傳至 moodle



# QUESTIONS