Fait par Raphaël GEAY

I. Setup

Uniquement avec des commandes, prouvez-que :

```
raphael@Client1:~$ ip a
```

```
link/ether 08:00:27:9e:eb:e4 brd ff:ff:ff:ff:ff:ff
    inet 10.5.1.11/24 brd 10.5.1.255 scope global enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe9e:ebe4/64 scope link
       valid_lft forever preferred_lft forever
```

```
raphael@Client2:~$ ip a
```

```
link/ether 08:00:27:21:f5:7e brd ff:ff:ff:ff:ff:ff
    inet 10.5.1.12/24 brd 10.5.1.255 scope global enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe21:f57e/64 scope link
       valid_lft forever preferred_lft forever
```

```
[raphael@localhost ~]$ ip a
```

```
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:ef:38:92 brd ff:ff:ff:ff:ff:ff
    inet 10.5.1.254/24 brd 10.5.1.255 scope global noprefixroute enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:feef:3892/64 scope link
       valid_lft forever preferred_lft forever
```

```
raphael@Client1:~$ ping 10.5.1.12
```

```
PING 10.5.1.12 (10.5.1.12) 56(84) bytes of data.
64 bytes from 10.5.1.12: icmp_seq=1 ttl=64 time=0.744 ms
64 bytes from 10.5.1.12: icmp_seq=2 ttl=64 time=0.458 ms
64 bytes from 10.5.1.12: icmp_seq=3 ttl=64 time=0.481 ms
64 bytes from 10.5.1.12: icmp_seq=4 ttl=64 time=0.532 ms
64 bytes from 10.5.1.12: icmp_seq=5 ttl=64 time=0.445 ms
64 bytes from 10.5.1.12: icmp_seq=6 ttl=64 time=0.430 ms
64 bytes from 10.5.1.12: icmp_seq=7 ttl=64 time=0.453 ms
64 bytes from 10.5.1.12: icmp_seq=8 ttl=64 time=0.466 ms
^C
--- 10.5.1.12 ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7190ms
rtt min/avg/max/mdev = 0.430/0.501/0.744/0.096 ms
```

```
raphael@Client1:~$ ping 10.5.1.254
```

```
PING 10.5.1.254 (10.5.1.254) 56(84) bytes of data.
64 bytes from 10.5.1.254: icmp_seq=1 ttl=64 time=1.00 ms
64 bytes from 10.5.1.254: icmp_seq=2 ttl=64 time=0.513 ms
64 bytes from 10.5.1.254: icmp_seq=3 ttl=64 time=0.462 ms
64 bytes from 10.5.1.254: icmp_seq=4 ttl=64 time=0.559 ms
64 bytes from 10.5.1.254: icmp_seq=5 ttl=64 time=0.495 ms
64 bytes from 10.5.1.254: icmp_seq=6 ttl=64 time=0.524 ms
64 bytes from 10.5.1.254: icmp_seq=7 ttl=64 time=0.548 ms
64 bytes from 10.5.1.254: icmp_seq=8 ttl=64 time=0.466 ms
^C
--- 10.5.1.254 ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7136ms
rtt min/avg/max/mdev = 0.462/0.571/1.001/0.165 ms
```

```
[raphael@localhost ~]$ ping 10.5.1.11
```

```
PING 10.5.1.11 (10.5.1.11) 56(84) bytes of data.
64 bytes from 10.5.1.11: icmp_seq=1 ttl=64 time=0.961 ms
64 bytes from 10.5.1.11: icmp_seq=2 ttl=64 time=0.480 ms
64 bytes from 10.5.1.11: icmp_seq=3 ttl=64 time=0.483 ms
64 bytes from 10.5.1.11: icmp_seq=4 ttl=64 time=0.451 ms
^C
--- 10.5.1.11 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3051ms
rtt min/avg/max/mdev = 0.451/0.593/0.961/0.212 ms
```

II. Accès internet pour tous

Déjà, prouvez que le routeur a un accès internet

```
[raphael@localhost ~]$ ping youtube.com
```

```
PING youtube.com (142.250.178.142) 56(84) bytes of data.
64 bytes from par21s22-in-f14.1e100.net (142.250.178.142): icmp_seq=1 ttl=109
time=52.5 ms
64 bytes from par21s22-in-f14.1e100.net (142.250.178.142): icmp_seq=2 ttl=109
time=191 ms
64 bytes from par21s22-in-f14.1e100.net (142.250.178.142): icmp_seq=3 ttl=109
time=151 ms
64 bytes from par21s22-in-f14.1e100.net (142.250.178.142): icmp_seq=4 ttl=109
time=110 ms
^C
--- youtube.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rtt min/avg/max/mdev = 52.451/125.889/190.718/51.183 ms
```

Activez le routage

```
[raphael@localhost ~]$ sudo firewall-cmd --add-masquerade --permanent
```

```
success
```

```
[raphael@localhost ~]$ sudo firewall-cmd --reload
```

```
success
```

Prouvez que les clients ont un accès internet

```
raphael@Client1:~$ ping youtube.com
```

```
PING youtube.com (216.58.213.78) 56(84) bytes of data.
64 bytes from par21s18-in-f14.1e100.net (216.58.213.78): icmp_seq=1 ttl=113
time=15.8 ms
64 bytes from par21s18-in-f14.1e100.net (216.58.213.78): icmp_seq=2 ttl=113
time=13.8 ms
64 bytes from par21s18-in-f14.1e100.net (216.58.213.78): icmp_seq=3 ttl=113
time=12.6 ms
64 bytes from par21s18-in-f14.1e100.net (216.58.213.78): icmp_seq=4 ttl=113
time=12.6 ms
^C
--- youtube.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3029ms
rtt min/avg/max/mdev = 12.590/13.706/15.830/1.311 ms
```

⬡ Montrez-moi le contenu final du fichier de configuration de l'interface réseau

```
raphael@Client2:~$ cat /etc/netplan/01-netcfg.yaml
```

```
network:
  version: 2
  renderer: networkd
  ethernets:
    enp0s8:
      dhcp4: no
      addresses: [10.5.1.12/24]
      gateway4: 10.5.1.254
      nameservers:
        addresses: [1.1.1.1]
```

III. Serveur SSH

⬡ Sur routeur.tp5.b1, déterminer sur quel port écoute le serveur SSH

```
[raphael@localhost ~]$ sudo ss -lnpt | grep 22
```

```
LISTEN 0      128          0.0.0.0:22        0.0.0.0:*    users:
(("sshd",pid=703,fd=3))
```

⬡ Sur routeur.tp5.b1, vérifier que ce port est bien ouvert

```
[raphael@localhost ~]$ sudo firewall-cmd --list-all
```

```
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: enp0s3 enp0s8
  sources:
  services: cockpit dhcpv6-client ssh
  ports:
  protocols:
  forward: yes
  masquerade: yes
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:
```

```
[raphael@localhost ~]$ cat /etc/services | grep ssh
```

```
ssh             22/tcp                          # The Secure Shell (SSH) Protocol
```

IV. Serveur DHCP

Installez et configurez un serveur DHCP sur la machine routeur.tp5.b1

```
[raphael@localhost ~]$ sudo dnf install dhcp-server
```

```
[raphael@localhost ~]$ sudo nano /etc/dhcp/dhcpd.conf
```

```
[raphael@localhost ~]$ sudo cat /etc/dhcp/dhcpd.conf
```

```
#
# DHCP Server Configuration file.
#   see /usr/share/doc/dhcp-server/dhcpd.conf.example
#   see dhcpd.conf(5) man page
```

```
#

subnet 10.5.1.0 netmask 255.255.255.0 {
    range 10.5.1.137 10.5.1.237;
    option routers 10.5.1.254;
    option domain-name-servers 1.1.1.1;
}
```

Créez une nouvelle machine client client3.tp5.b1

```
raphael@raphael-VirtualBox:~$ sudo hostnamectl set-hostname Client3
```

```
raphael@Client3:~$ sudo nano /etc/netplan/01-netcfg.yaml
```

```
raphael@Client3:~$ sudo netplan apply
```

```
raphael@Client3:~$ ip a
```

```
inet 10.5.1.137/24 metric 100 brd 10.5.1.255 scope global dynamic enp0s8
```

```
raphael@Client3:~$ ping youtube.com
```

```
PING youtube.com (142.251.37.206) 56(84) bytes of data.
64 bytes from mrs09s15-in-f14.1e100.net (142.251.37.206): icmp_seq=1 ttl=114
time=16.1 ms
64 bytes from mrs09s15-in-f14.1e100.net (142.251.37.206): icmp_seq=2 ttl=114
time=21.9 ms
64 bytes from mrs09s15-in-f14.1e100.net (142.251.37.206): icmp_seq=3 ttl=114
time=20.5 ms
64 bytes from mrs09s15-in-f14.1e100.net (142.251.37.206): icmp_seq=4 ttl=114
time=18.9 ms
^C
--- youtube.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3012ms
rtt min/avg/max/mdev = 16.130/19.352/21.926/2.149 ms
```

⬡ Consultez le bail DHCP qui a été créé pour notre client

```
raphael@Client1:~$ cd /var/lib/dhcpd/
```

```
raphael@Client3:~$ cat dhcpd.leases
```

```
lease 10.5.1.137 {
  starts 3 2024/10/15 21:20:24;
  ends 3 2024/10/15 22:20:24;
  binding state active;
  next binding state free;
  hardware ethernet 00:16:3E:02:05:07;
  client-hostname "Client3";
}
```

⬡ Confirmez qu'il s'agit bien de la bonne adresse MAC

```
raphael@Client3:~$ ip a
```

```
2: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 00:16:3E:02:05:07 brd ff:ff:ff:ff:ff:ff
    inet 10.5.1.137/24 brd 10.5.1.255 scope global dynamic enp0s8
       valid_lft 3291sec preferred_lft 3291sec
```