

compte rendu TP2

SMAIL AGHILAS

Groupe TP4

1 - Corrigé du TP1:

Vérification de la box:

```
s21219997@V-PJ-47-065:~$ vagrant box list
mlreseaux (virtualbox, 0)
```

2 - Un reseaux IPv6:

- configuration des machines.
Le type d'adressage est Unicast.
- Vérifier qu'on a accès à toutes les machines depuis chacune :

Ping de VM1-6 vers VM2-6

```
mlreseaux@VM1-6:~$ ping6 fc00:1234:2::2
PING fc00:1234:2::2(fc00:1234:2::2) 56 data bytes
64 bytes from fc00:1234:2::2: icmp_seq=1 ttl=64 time=1.45 ms
64 bytes from fc00:1234:2::2: icmp_seq=2 ttl=64 time=1.12 ms
^C
--- fc00:1234:2::2 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 1.121/1.284/1.447/0.163 ms
```

Ping de VM1-6 vers VM3-6

```
mlreseaux@VM1-6:~$ ping6 fc00:1234:2::3
PING fc00:1234:2::3(fc00:1234:2::3) 56 data bytes
64 bytes from fc00:1234:2::3: icmp_seq=1 ttl=63 time=2.12 ms
64 bytes from fc00:1234:2::3: icmp_seq=2 ttl=63 time=1.74 ms
^C
--- fc00:1234:2::3 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time
1002ms
rtt min/avg/max/mdev = 1.740/1.929/2.119/0.189 ms
```

Ping de VM2-6 vers VM1-6

```
mlreseaux@VM2-6:~$ ping6 fc00:1234:1::1
PING fc00:1234:1::1(fc00:1234:1::1) 56 data bytes
64 bytes from fc00:1234:1::1: icmp_seq=1 ttl=64 time=0.940 ms
64 bytes from fc00:1234:1::1: icmp_seq=2 ttl=64 time=1.19 ms
64 bytes from fc00:1234:1::1: icmp_seq=3 ttl=64 time=1.73 ms
^C
--- fc00:1234:1::1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time
2013ms
rtt min/avg/max/mdev = 0.940/1.284/1.725/0.327 ms
```

Ping de VM2-6 vers VM3-6

```
mlreseaux@VM2-6:~$ ping6 fc00:1234:2::3
PING fc00:1234:2::3(fc00:1234:2::3) 56 data bytes
64 bytes from fc00:1234:2::3: icmp_seq=1 ttl=64 time=0.978 ms
64 bytes from fc00:1234:2::3: icmp_seq=2 ttl=64 time=0.840 ms
^C
--- fc00:1234:2::3 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time
1002ms
rtt min/avg/max/mdev = 0.840/0.909/0.978/0.069 ms
```

Ping de VM3-6 vers VM1-6

```
mlreseaux@VM3-6:~$ ping6 fc00:1234:1::1
PING fc00:1234:1::1(fc00:1234:1::1) 56 data bytes
64 bytes from fc00:1234:1::1: icmp_seq=1 ttl=63 time=1.88 ms
64 bytes from fc00:1234:1::1: icmp_seq=2 ttl=63 time=1.41 ms
^C
--- fc00:1234:1::1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time
1002ms
rtt min/avg/max/mdev = 1.412/1.645/1.879/0.233 ms
```

Ping de VM3-6 vers VM2-6

```
mlreseaux@VM3-6:~$ ping6 fc00:1234:1::2
PING fc00:1234:1::2(fc00:1234:1::2) 56 data bytes
64 bytes from fc00:1234:1::2: icmp_seq=1 ttl=64 time=0.880 ms
64 bytes from fc00:1234:1::2: icmp_seq=2 ttl=64 time=0.813 ms
^C
```

```
--- fc00:1234:1::2 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time
1002ms
rtt min/avg/max/mdev = 0.813/0.846/0.880/0.033 ms
```

2- Les tables de routage :

La table de routage de VM1-6

```
mlreseaux@VM1-6:~$ ip -6 route
::1 dev lo proto kernel metric 256 pref medium
fc00:1234:1::/64 dev eth1 proto kernel metric 100 pref medium
fe80::/64 dev eth1 proto kernel metric 100 pref medium
fe80::/64 dev eth0 proto kernel metric 256 pref medium
default via fc00:1234:1::2 dev eth1 proto static metric 100
pref medium
```

La table de routage de VM2-6

```
mlreseaux@VM2-6:~$ ip -6 route
::1 dev lo proto kernel metric 256 pref medium
fc00:1234:1::/64 dev eth1 proto kernel metric 101 pref medium
fc00:1234:2::/64 dev eth2 proto kernel metric 100 pref medium
fe80::/64 dev eth2 proto kernel metric 100 pref medium
fe80::/64 dev eth1 proto kernel metric 101 pref medium
fe80::/64 dev eth0 proto kernel metric 256 pref medium
```

La table de routage de VM3-6

```
mlreseaux@VM3-6:~$ ip -6 route
::1 dev lo proto kernel metric 256 pref medium
fc00:1234:2::/64 dev eth1 proto kernel metric 100 pref medium
fe80::/64 dev eth1 proto kernel metric 100 pref medium
fe80::/64 dev eth0 proto kernel metric 256 pref medium
default via fc00:1234:2::2 dev eth1 proto static metric 100
pref medium
```

3- Capture du trafic sur VM2-6 :

No.	Time	Source	Destination	Protocol	Length	Info
0	0.000000000	fe80::c51:cbel:6aa5::	ff02::1:ff00::3	ICMPv6	80	Neighbor Solicitation for fe80::c51:cbel:6aa5:: from 08:00:27:31:72:ba
2	0.000000174	fe80::c51:cbel:6aa5::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::c51:cbel:6aa5:: (sol, ov) is at 08:00:27:c8:2b:ee
3	0.000000272	fe80::c51:cbel:6aa5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) request id=63a89, seq=1, hop limit=63 (reply in 8)
4	0.002023213	fe80::c51:cbel:6aa5::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::c51:cbel:6aa5:: from 08:00:27:c8:2b:ee
5	0.002023302	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::c433:d71f:584a:: from 08:00:27:c8:2b:ee
6	0.002040767	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::c433:d71f:584a:: (rtr, sol, ov) is at 08:00:27:31:72:ba
7	0.002040848	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::c433:d71f:584a:: (rtr, sol, ov) is at 08:00:27:31:72:ba
8	0.002722051	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) reply id=63a89, seq=1, hop limit=64 (request in 3)
9	0.000912113	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::8281:b8c1:ee5:: from 08:00:27:26:e4:b8
10	0.000671347	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::8281:b8c1:ee5:: (rtr, sol, ov) is at 08:00:27:26:e4:b8
11	0.000355136	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::8281:b8c1:ee5:: from 08:00:27:26:e4:b8
12	0.000339994	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::8281:b8c1:ee5:: (rtr, sol, ov) is at 08:00:27:26:e4:b8
13	0.00042361	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) request id=63a89, seq=2, hop limit=63 (reply in 14)
14	0.002747606	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) reply id=63a89, seq=1, hop limit=63 (request in 13)
15	0.002790425	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) request id=63a89, seq=2, hop limit=63 (reply in 16)
16	0.002804478	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) reply id=63a89, seq=2, hop limit=64 (request in 15)
17	0.001751523	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) request id=63a89, seq=2, hop limit=64 (reply in 18)
18	0.002828666	fe80::8281:b8c1:ee5::	ff02::1:ff00::2	ICMPv6	118	Echo (ping) reply id=63a89, seq=2, hop limit=63 (request in 17)
19	0.000797301	fe80::dfcf:3994:ed8::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::dfcf:3994:ed8:: from 08:00:27:26:e4:b8
20	0.000767672	fe80::dfcf:3994:ed8::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::dfcf:3994:ed8:: (rtr, sol, ov) is at 08:00:27:26:e4:b8
21	0.00031717	fe80::dfcf:3994:ed8::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::dfcf:3994:ed8:: from 08:00:27:26:e4:b8
22	0.00031794	fe80::dfcf:3994:ed8::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::dfcf:3994:ed8:: (rtr, sol, ov) is at 08:00:27:26:e4:b8
23	0.002934198	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::c433:d71f:584a:: from 08:00:27:c8:2b:ee
24	0.003005700	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::c433:d71f:584a:: (rtr, sol, ov) is at 08:00:27:c8:2b:ee
25	0.003263434	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Solicitation for fe80::c433:d71f:584a:: from 08:00:27:31:72:ba
26	0.00327930	fe80::c433:d71f:584a::	ff02::1:ff00::2	ICMPv6	80	Neighbor Advertisement fe80::c433:d71f:584a:: (rtr, sol, ov) is at 08:00:27:31:72:ba

La machine VM1-6 envoie un message de sollicitation de voisin NS (Neighbor solicitation) vers l'adresse multicast afin d'obtenir l'adresse physique de la machine VM3-6. VM3-6 répond avec un message d'annonce de voisin NA (Neighbor Advertisement) et donne son adresse physique à VM1-6. Puis VM1-6 envoie les paquets ICMP.

3. Configuration réseau semi-automatique

3.2. Configuration de VM2-6

Vérifier que DNS fonctionne :

```
mlreseaux@VM2-6:~$ sudo dhclient eth0
We trust you have received the usual lecture from the local
System
Administrator. It usually boils down to these three things:
```

- #1) Respect the privacy of others.
 - #2) Think before you type.
 - #3) With great power comes great responsibility.
- [sudo] password for

4. Configuration de fichiers et de services via ansible

Configurations ansible au mode statique :

VM1-6

```

# Configuration eth1 / Ansible playbook
# RAPPEL: eth0 est à vagrant, ne pas y toucher

- hosts: localhost
  remote_user: root
  tasks:

# Configurations Réseaux
- name: Suppression de la passerelle par défaut
  shell: ip route del default
  ignore_errors: true

- name: Configuration de VM1/eth1
  nmcli:
    type: ethernet
    conn_name: eth1 via ansible
    ifname: eth1
    state: present
    autoconnect: true
    ip6: fc00:1234:1::1/64

- name: Configuration de la route vers LAN2 via VM2
  community.general.nmcli:
    type: ethernet
    conn_name: eth1 via ansible
    ifname: eth1
    routes6: fc00:1234:2::/64 fc00:1234:1::2
    state: present

- name: Activation explicite de la configuration eth1
  shell: nmcli con up "eth1 via ansible"

```

VM2-6

```

# Configuration eth1 / Ansible playbook
# RAPPEL: eth0 est à vagrant, ne pas y toucher

- hosts: localhost
  remote_user: root
  tasks:

# Configurations Réseaux
- name: Suppression de la passerelle par défaut
  shell: ip route del default
  ignore_errors: true

```

```

- name: Configuration de VM2/eth1
  nmcli:
    type: ethernet
    conn_name: eth1 via ansible
    ifname: eth1
    state: present
    autoconnect: true
    ip6: fc00:1234:1::2/64

- name: Configuration de VM2/eth2
  nmcli:
    type: ethernet
    conn_name: eth2 via ansible
    ifname: eth2
    state: present
    autoconnect: true
    ip6: fc00:1234:2::2/64

- name: Activation du routage IPv6
  sysctl:
    name: net.ipv6.conf.all.forwarding
    value: '1'
    sysctl_set: yes

- name: Activation explicite de la configuration eth1
  shell: nmcli con up "eth1 via ansible"

- name: Activation explicite de la configuration eth2
  shell: nmcli con up "eth2 via ansible"

```

VM3-6

```

# Configuration eth1 / Ansible playbook
# RAPPEL: eth0 est à vagrant, ne pas y toucher

- hosts: localhost
  remote_user: root
  tasks:

# Configurations Réseaux
- name: Suppression de la passerelle par défaut
  shell: ip route del default
  ignore_errors: true

- name: Configuration de VM3/eth1
  nmcli:
    type: ethernet
    conn_name: eth1 via ansible
    ifname: eth1
    state: present
    autoconnect: true
    ip6: fc00:1234:2::3/64

- name: Configuration de la route vers LAN1 via VM2
  community.general.nmcli:

```

Configurations ansible au mode automatique :

VM1-6

```
# Configuration eth1 / Ansible playbook
# RAPPEL: eth0 est à vagrant, ne pas y toucher

- hosts: localhost
  remote_user: root
  tasks:

# Configurations Réseaux
- name: Suppression de la passerelle par défaut
  shell: ip route del default
  ignore_errors: true

- name: Configuration de VM1-6/eth1
  nmcli:
    type: ethernet
    conn name: eth1 via ansible
    ifname: eth1
    state: present
    autoconnect: true
    method6: auto

- name: Activation explicite de la configuration eth1
  shell: nmcli con up "eth1 via ansible"
```

VM2

```
# Configuration eth1 / Ansible playbook
# RAPPEL: eth0 est à vagrant, ne pas y toucher

- hosts: localhost
  remote_user: root
  tasks:

# Configurations Réseaux
- name: Suppression de la passerelle par défaut
  shell: ip route del default
  ignore_errors: true

- name: Configuration de VM2/eth1
  nmcli:
    type: ethernet
    conn name: eth1 via ansible
```



```
    ifname: eth1
    state: present
    autoconnect: true
    ip6: fc00:1234:1::2/64

- name: Configuration de VM2/eth2
  nmcli:
    type: ethernet
    conn name: eth2 via ansible
    ifname: eth2
    state: present
    autoconnect: true
    ip6: fc00:1234:2::2/64

- name: Installer radvd
  package:
    name: radvd
    state: present

- name: fichier de configuration radvd.conf
  copy:
    src: /vagrant/radvd.conf
    dest: /etc/radvd.conf
    owner: root
    group: root
    mode: '0644'

- name: Démarrer le service radvd
  service:
    name: radvd
    state: started

- name: Activation du routage IPv6
  sysctl:
    name: net.ipv6.conf.all.forwarding
    value: '1'
    sysctl set: yes

- name: Activation explicite de la configuration eth1
  shell: nmcli con up "eth1 via ansible"

- name: Activation explicite de la configuration eth2
  shell: nmcli con up "eth2 via ansible"
```