ALSHAHOUD Mohamed

Labo Routage

Lo : 209.165.200.225/27

```
VLAN
10 R&D    172.16.10.0/24
20 STAFF  172.16.20.0/24
30 MGNT   172.16.30.0/24
90 TRASH
99 NATIF
```

10.10.13.0/30

f0/0   R3   f0/1

g0/0/1   .2   .2   10.10.23.0/30
                          g0/0/1

R1   .1   .1   R2
.2   g0/0/0   Passerelle virtuelle   g0/0/0   .3
                          .1

f0/5   f0/5

VLAN 10   f0/6   f0/1   f0/1   f0/18   VLAN 30
PC1   S1   f0/2   f0/2   S2   PC3

                                      f0/24

                              VLAN 20
                              PC2

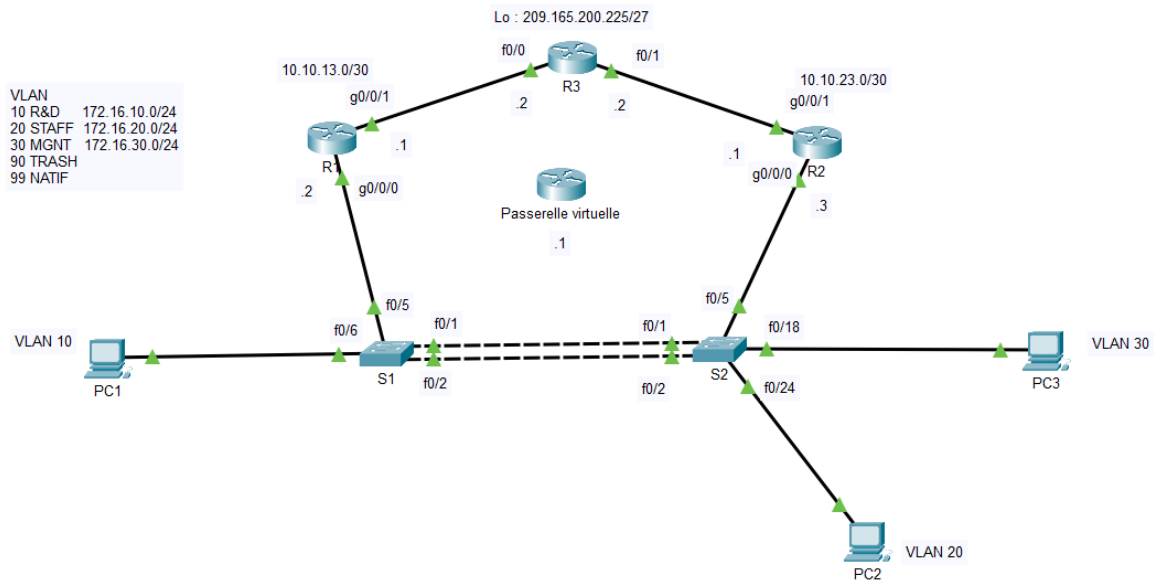**ping depuis PC1 vers PC2**

```
root@PC-1-T:~# ping 172.16.20.12
PING 172.16.20.12 (172.16.20.12) 56(84) bytes of data.
64 bytes from 172.16.20.12: icmp_seq=1 ttl=63 time=1.57 ms
64 bytes from 172.16.20.12: icmp_seq=2 ttl=63 time=1.59 ms
64 bytes from 172.16.20.12: icmp_seq=3 ttl=63 time=1.57 ms
64 bytes from 172.16.20.12: icmp_seq=4 ttl=63 time=1.48 ms
64 bytes from 172.16.20.12: icmp_seq=5 ttl=63 time=1.44 ms
64 bytes from 172.16.20.12: icmp_seq=6 ttl=63 time=1.08 ms
64 bytes from 172.16.20.12: icmp_seq=7 ttl=63 time=1.46 ms
64 bytes from 172.16.20.12: icmp_seq=8 ttl=63 time=1.17 ms
64 bytes from 172.16.20.12: icmp_seq=9 ttl=63 time=1.39 ms
64 bytes from 172.16.20.12: icmp_seq=10 ttl=63 time=1.63 ms
64 bytes from 172.16.20.12: icmp_seq=11 ttl=63 time=1.42 ms
64 bytes from 172.16.20.12: icmp_seq=12 ttl=63 time=1.35 ms
64 bytes from 172.16.20.12: icmp_seq=13 ttl=63 time=1.49 ms
64 bytes from 172.16.20.12: icmp_seq=14 ttl=63 time=1.50 ms
^C
--- 172.16.20.12 ping statistics ---
14 packets transmitted, 14 received, 0% packet loss, time 13020ms
rtt min/avg/max/mdev = 1.088/1.443/1.630/0.152 ms
root@PC-1-T:~#
```

ping depuis PC1 vers PC3

```
root@PC-1-T:~# ping 172.16.30.13
PING 172.16.30.13 (172.16.30.13) 56(84) bytes of data.
64 bytes from 172.16.30.13: icmp_seq=1 ttl=63 time=1.51 ms
64 bytes from 172.16.30.13: icmp_seq=2 ttl=63 time=1.56 ms
64 bytes from 172.16.30.13: icmp_seq=3 ttl=63 time=1.53 ms
64 bytes from 172.16.30.13: icmp_seq=4 ttl=63 time=1.60 ms
64 bytes from 172.16.30.13: icmp_seq=5 ttl=63 time=1.10 ms
64 bytes from 172.16.30.13: icmp_seq=6 ttl=63 time=1.45 ms
^C
--- 172.16.30.13 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 1.102/1.462/1.606/0.170 ms
root@PC-1-T:~#
```

ping depuis PC1 vers S1

```
root@PC-1-T:~# ping 172.16.30.11
PING 172.16.30.11 (172.16.30.11) 56(84) bytes of data.
64 bytes from 172.16.30.11: icmp_seq=2 ttl=255 time=1.34 ms
64 bytes from 172.16.30.11: icmp_seq=3 ttl=255 time=1.56 ms
64 bytes from 172.16.30.11: icmp_seq=4 ttl=255 time=1.40 ms
64 bytes from 172.16.30.11: icmp_seq=5 ttl=255 time=1.47 ms
64 bytes from 172.16.30.11: icmp_seq=6 ttl=255 time=1.33 ms
64 bytes from 172.16.30.11: icmp_seq=7 ttl=255 time=1.34 ms
64 bytes from 172.16.30.11: icmp_seq=8 ttl=255 time=1.54 ms
^C
--- 172.16.30.11 ping statistics ---
8 packets transmitted, 7 received, 12% packet loss, time 7010ms
rtt min/avg/max/mdev = 1.333/1.430/1.563/0.092 ms
root@PC-1-T:~#
```

ping depuis PC1 vers S2 :

```
root@PC-1-T:~# ping 172.16.30.12
PING 172.16.30.12 (172.16.30.12) 56(84) bytes of data.
64 bytes from 172.16.30.12: icmp_seq=1 ttl=254 time=2.21 ms
64 bytes from 172.16.30.12: icmp_seq=2 ttl=254 time=2.19 ms
64 bytes from 172.16.30.12: icmp_seq=3 ttl=254 time=2.11 ms
64 bytes from 172.16.30.12: icmp_seq=4 ttl=254 time=2.10 ms
64 bytes from 172.16.30.12: icmp_seq=5 ttl=254 time=2.17 ms
^C
--- 172.16.30.12 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 2.100/2.159/2.214/0.067 ms
root@PC-1-T:~#
```

ping depuis PC1 vers R1

```
root@PC-1-T:~# ping 172.16.10.2
PING 172.16.10.2 (172.16.10.2) 56(84) bytes of data.
64 bytes from 172.16.10.2: icmp_seq=1 ttl=255 time=0.881 ms
64 bytes from 172.16.10.2: icmp_seq=2 ttl=255 time=1.16 ms
64 bytes from 172.16.10.2: icmp_seq=3 ttl=255 time=1.21 ms
64 bytes from 172.16.10.2: icmp_seq=4 ttl=255 time=0.982 ms
^C
--- 172.16.10.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 0.881/1.060/1.216/0.139 ms
root@PC-1-T:~#
```

ping depuis PC1 vers R2

```
root@PC-1-T:~# ping 172.16.10.3
PING 172.16.10.3 (172.16.10.3) 56(84) bytes of data.
64 bytes from 172.16.10.3: icmp_seq=1 ttl=255 time=1.26 ms
64 bytes from 172.16.10.3: icmp_seq=2 ttl=255 time=1.73 ms
64 bytes from 172.16.10.3: icmp_seq=3 ttl=255 time=0.975 ms
64 bytes from 172.16.10.3: icmp_seq=4 ttl=255 time=1.17 ms
64 bytes from 172.16.10.3: icmp_seq=5 ttl=255 time=1.03 ms
64 bytes from 172.16.10.3: icmp_seq=6 ttl=255 time=1.13 ms
^C
--- 172.16.10.3 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5006ms
rtt min/avg/max/mdev = 0.975/1.218/1.731/0.251 ms
root@PC-1-T:~#
```

ping depuis PC1 vers R3

```
root@PC-1-T:~# ping 209.165.200.225
PING 209.165.200.225 (209.165.200.225) 56(84) bytes of data.
64 bytes from 209.165.200.225: icmp_seq=1 ttl=254 time=1.39 ms
64 bytes from 209.165.200.225: icmp_seq=2 ttl=254 time=1.72 ms
64 bytes from 209.165.200.225: icmp_seq=3 ttl=254 time=1.82 ms
64 bytes from 209.165.200.225: icmp_seq=4 ttl=254 time=1.69 ms
64 bytes from 209.165.200.225: icmp_seq=5 ttl=254 time=1.73 ms
^C
--- 209.165.200.225 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4007ms
rtt min/avg/max/mdev = 1.398/1.675/1.828/0.148 ms
root@PC-1-T:~#
```

ping depuis PC1 vers la passerelle virtuelle

```
root@PC-1-T:~# ping 172.16.10.1
PING 172.16.10.1 (172.16.10.1) 56(84) bytes of data.
64 bytes from 172.16.10.1: icmp_seq=1 ttl=255 time=1.39 ms
64 bytes from 172.16.10.1: icmp_seq=2 ttl=255 time=1.50 ms
64 bytes from 172.16.10.1: icmp_seq=3 ttl=255 time=1.50 ms
64 bytes from 172.16.10.1: icmp_seq=4 ttl=255 time=1.47 ms
64 bytes from 172.16.10.1: icmp_seq=5 ttl=255 time=1.73 ms
64 bytes from 172.16.10.1: icmp_seq=6 ttl=255 time=1.64 ms
^C
--- 172.16.10.1 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 1.399/1.543/1.738/0.123 ms
root@PC-1-T:~#
```

```
root@PC-2-T:~# ping 172.16.10.11
PING 172.16.10.11 (172.16.10.11) 56(84) bytes of data.
64 bytes from 172.16.10.11: icmp_seq=1 ttl=63 time=1.45 ms
64 bytes from 172.16.10.11: icmp_seq=2 ttl=63 time=1.58 ms
64 bytes from 172.16.10.11: icmp_seq=3 ttl=63 time=1.23 ms
64 bytes from 172.16.10.11: icmp_seq=4 ttl=63 time=1.40 ms
64 bytes from 172.16.10.11: icmp_seq=5 ttl=63 time=1.19 ms
^C
--- 172.16.10.11 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4006ms
rtt min/avg/max/mdev = 1.199/1.375/1.581/0.144 ms
root@PC-2-T:~#
```

```
root@PC-2-T:~# ping 172.16.30.13
PING 172.16.30.13 (172.16.30.13) 56(84) bytes of data.
64 bytes from 172.16.30.13: icmp_seq=1 ttl=63 time=1.60 ms
64 bytes from 172.16.30.13: icmp_seq=2 ttl=63 time=1.07 ms
64 bytes from 172.16.30.13: icmp_seq=3 ttl=63 time=1.44 ms
64 bytes from 172.16.30.13: icmp_seq=4 ttl=63 time=1.44 ms
64 bytes from 172.16.30.13: icmp_seq=5 ttl=63 time=1.26 ms
64 bytes from 172.16.30.13: icmp_seq=6 ttl=63 time=1.22 ms
64 bytes from 172.16.30.13: icmp_seq=7 ttl=63 time=1.72 ms
^C
--- 172.16.30.13 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6008ms
rtt min/avg/max/mdev = 1.077/1.397/1.723/0.210 ms
root@PC-2-T:~#
```

```
root@PC-2-T:~# ping 172.16.30.11
PING 172.16.30.11 (172.16.30.11) 56(84) bytes of data.
64 bytes from 172.16.30.11: icmp_seq=3 ttl=254 time=1.64 ms
64 bytes from 172.16.30.11: icmp_seq=4 ttl=254 time=1.47 ms
64 bytes from 172.16.30.11: icmp_seq=5 ttl=254 time=1.38 ms
64 bytes from 172.16.30.11: icmp_seq=6 ttl=254 time=1.55 ms
64 bytes from 172.16.30.11: icmp_seq=7 ttl=254 time=1.48 ms
64 bytes from 172.16.30.11: icmp_seq=8 ttl=254 time=2.09 ms
64 bytes from 172.16.30.11: icmp_seq=9 ttl=254 time=1.63 ms
^C
--- 172.16.30.11 ping statistics ---
9 packets transmitted, 7 received, 22% packet loss, time 8049ms
rtt min/avg/max/mdev = 1.389/1.611/2.099/0.218 ms
root@PC-2-T:~#
```

```
root@PC-2-T:~# ping 172.16.30.12
PING 172.16.30.12 (172.16.30.12) 56(84) bytes of data.
64 bytes from 172.16.30.12: icmp_seq=1 ttl=254 time=2.09 ms
64 bytes from 172.16.30.12: icmp_seq=2 ttl=254 time=2.29 ms
64 bytes from 172.16.30.12: icmp_seq=3 ttl=254 time=2.47 ms
64 bytes from 172.16.30.12: icmp_seq=4 ttl=254 time=2.51 ms
64 bytes from 172.16.30.12: icmp_seq=5 ttl=254 time=2.34 ms
64 bytes from 172.16.30.12: icmp_seq=6 ttl=254 time=2.19 ms
^C
--- 172.16.30.12 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5006ms
rtt min/avg/max/mdev = 2.099/2.320/2.514/0.150 ms
root@PC-2-T:~#
```

ping depuis PC2 vers la passerelle virtuelle

```
root@PC-2-T:~# ping 172.16.20.1
PING 172.16.20.1 (172.16.20.1) 56(84) bytes of data.
64 bytes from 172.16.20.1: icmp_seq=1 ttl=255 time=1.24 ms
64 bytes from 172.16.20.1: icmp_seq=2 ttl=255 time=14.8 ms
64 bytes from 172.16.20.1: icmp_seq=3 ttl=255 time=1.38 ms
64 bytes from 172.16.20.1: icmp_seq=4 ttl=255 time=1.64 ms
64 bytes from 172.16.20.1: icmp_seq=5 ttl=255 time=1.57 ms
64 bytes from 172.16.20.1: icmp_seq=6 ttl=255 time=1.70 ms
^C
--- 172.16.20.1 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5008ms
rtt min/avg/max/mdev = 1.240/3.729/14.832/4.968 ms
root@PC-2-T:~#
```

ping depuis PC2 vers R1

```
root@PC-2-T:~# ping 172.16.20.2
PING 172.16.20.2 (172.16.20.2) 56(84) bytes of data.
64 bytes from 172.16.20.2: icmp_seq=1 ttl=255 time=1.03 ms
64 bytes from 172.16.20.2: icmp_seq=2 ttl=255 time=1.28 ms
64 bytes from 172.16.20.2: icmp_seq=3 ttl=255 time=1.31 ms
64 bytes from 172.16.20.2: icmp_seq=4 ttl=255 time=1.12 ms
64 bytes from 172.16.20.2: icmp_seq=5 ttl=255 time=1.14 ms
64 bytes from 172.16.20.2: icmp_seq=6 ttl=255 time=1.06 ms
64 bytes from 172.16.20.2: icmp_seq=7 ttl=255 time=1.20 ms
64 bytes from 172.16.20.2: icmp_seq=8 ttl=255 time=1.14 ms
^C
--- 172.16.20.2 ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7009ms
rtt min/avg/max/mdev = 1.034/1.163/1.311/0.100 ms
root@PC-2-T:~#
```

ping depuis PC2 vers R2

```
root@PC-2-T:~# ping 172.16.20.3
PING 172.16.20.3 (172.16.20.3) 56(84) bytes of data.
64 bytes from 172.16.20.3: icmp_seq=1 ttl=255 time=1.05 ms
64 bytes from 172.16.20.3: icmp_seq=2 ttl=255 time=1.34 ms
64 bytes from 172.16.20.3: icmp_seq=3 ttl=255 time=1.43 ms
64 bytes from 172.16.20.3: icmp_seq=4 ttl=255 time=1.17 ms
64 bytes from 172.16.20.3: icmp_seq=5 ttl=255 time=1.29 ms
64 bytes from 172.16.20.3: icmp_seq=6 ttl=255 time=1.23 ms
^C
--- 172.16.20.3 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5006ms
rtt min/avg/max/mdev = 1.051/1.254/1.431/0.123 ms
root@PC-2-T:~#
```

```
root@PC-2-T:~# ping 209.165.200.225
PING 209.165.200.225 (209.165.200.225) 56(84) bytes of data.
64 bytes from 209.165.200.225: icmp_seq=1 ttl=254 time=1.91 ms
64 bytes from 209.165.200.225: icmp_seq=2 ttl=254 time=1.74 ms
64 bytes from 209.165.200.225: icmp_seq=3 ttl=254 time=1.83 ms
64 bytes from 209.165.200.225: icmp_seq=4 ttl=254 time=1.66 ms
64 bytes from 209.165.200.225: icmp_seq=5 ttl=254 time=1.68 ms
64 bytes from 209.165.200.225: icmp_seq=6 ttl=254 time=1.66 ms
^C
--- 209.165.200.225 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5009ms
rtt min/avg/max/mdev = 1.660/1.751/1.918/0.101 ms
root@PC-2-T:~#
```

```
root@PC-3-T:~# ping 172.16.10.11
PING 172.16.10.11 (172.16.10.11) 56(84) bytes of data.
64 bytes from 172.16.10.11: icmp_seq=1 ttl=63 time=1.58 ms
64 bytes from 172.16.10.11: icmp_seq=2 ttl=63 time=1.40 ms
64 bytes from 172.16.10.11: icmp_seq=3 ttl=63 time=1.52 ms
64 bytes from 172.16.10.11: icmp_seq=4 ttl=63 time=1.37 ms
64 bytes from 172.16.10.11: icmp_seq=5 ttl=63 time=1.31 ms
64 bytes from 172.16.10.11: icmp_seq=6 ttl=63 time=1.39 ms
64 bytes from 172.16.10.11: icmp_seq=7 ttl=63 time=1.25 ms
^C
--- 172.16.10.11 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6009ms
rtt min/avg/max/mdev = 1.250/1.406/1.585/0.116 ms
root@PC-3-T:~#
```

```
root@PC-3-T:~# ping 172.16.20.12
PING 172.16.20.12 (172.16.20.12) 56(84) bytes of data.
64 bytes from 172.16.20.12: icmp_seq=1 ttl=63 time=1.03 ms
64 bytes from 172.16.20.12: icmp_seq=2 ttl=63 time=1.75 ms
64 bytes from 172.16.20.12: icmp_seq=3 ttl=63 time=1.53 ms
64 bytes from 172.16.20.12: icmp_seq=4 ttl=63 time=1.47 ms
64 bytes from 172.16.20.12: icmp_seq=5 ttl=63 time=1.47 ms
64 bytes from 172.16.20.12: icmp_seq=6 ttl=63 time=1.18 ms
^C
--- 172.16.20.12 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 1.032/1.408/1.754/0.239 ms
root@PC-3-T:~#
```

```
root@PC-3-T:~# ping 172.16.30.11
PING 172.16.30.11 (172.16.30.11) 56(84) bytes of data.
64 bytes from 172.16.30.11: icmp_seq=1 ttl=255 time=0.946 ms
64 bytes from 172.16.30.11: icmp_seq=2 ttl=255 time=1.24 ms
64 bytes from 172.16.30.11: icmp_seq=3 ttl=255 time=1.23 ms
64 bytes from 172.16.30.11: icmp_seq=4 ttl=255 time=1.34 ms
64 bytes from 172.16.30.11: icmp_seq=5 ttl=255 time=0.995 ms
64 bytes from 172.16.30.11: icmp_seq=6 ttl=255 time=1.35 ms
^C
--- 172.16.30.11 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5006ms
rtt min/avg/max/mdev = 0.946/1.186/1.359/0.163 ms
root@PC-3-T:~#
```

```
root@PC-3-T:~# ping 172.16.30.12
PING 172.16.30.12 (172.16.30.12) 56(84) bytes of data.
64 bytes from 172.16.30.12: icmp_seq=2 ttl=255 time=2.15 ms
64 bytes from 172.16.30.12: icmp_seq=3 ttl=255 time=2.12 ms
64 bytes from 172.16.30.12: icmp_seq=4 ttl=255 time=2.18 ms
64 bytes from 172.16.30.12: icmp_seq=5 ttl=255 time=2.08 ms
64 bytes from 172.16.30.12: icmp_seq=6 ttl=255 time=1.98 ms
64 bytes from 172.16.30.12: icmp_seq=7 ttl=255 time=1.89 ms
64 bytes from 172.16.30.12: icmp_seq=8 ttl=255 time=1.94 ms
^C
--- 172.16.30.12 ping statistics ---
8 packets transmitted, 7 received, 12% packet loss, time 7038ms
rtt min/avg/max/mdev = 1.893/2.052/2.183/0.115 ms
root@PC-3-T:~#
```

ping depuis PC3 vers R1

```
root@PC-3-T:~# ping 172.16.30.2
PING 172.16.30.2 (172.16.30.2) 56(84) bytes of data.
64 bytes from 172.16.30.2: icmp_seq=1 ttl=255 time=1.58 ms
64 bytes from 172.16.30.2: icmp_seq=2 ttl=255 time=1.11 ms
64 bytes from 172.16.30.2: icmp_seq=3 ttl=255 time=1.17 ms
64 bytes from 172.16.30.2: icmp_seq=4 ttl=255 time=1.19 ms
64 bytes from 172.16.30.2: icmp_seq=5 ttl=255 time=1.28 ms
64 bytes from 172.16.30.2: icmp_seq=6 ttl=255 time=1.19 ms
64 bytes from 172.16.30.2: icmp_seq=7 ttl=255 time=1.28 ms
^C
--- 172.16.30.2 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6008ms
rtt min/avg/max/mdev = 1.117/1.262/1.587/0.149 ms
root@PC-3-T:~#
```

ping depuis PC3 vers R2

```
root@PC-3-T:~# ping 172.16.30.3
PING 172.16.30.3 (172.16.30.3) 56(84) bytes of data.
64 bytes from 172.16.30.3: icmp_seq=1 ttl=255 time=1.73 ms
64 bytes from 172.16.30.3: icmp_seq=2 ttl=255 time=1.58 ms
64 bytes from 172.16.30.3: icmp_seq=3 ttl=255 time=1.32 ms
64 bytes from 172.16.30.3: icmp_seq=4 ttl=255 time=1.37 ms
64 bytes from 172.16.30.3: icmp_seq=5 ttl=255 time=1.22 ms
64 bytes from 172.16.30.3: icmp_seq=6 ttl=255 time=1.27 ms
^C
--- 172.16.30.3 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5007ms
rtt min/avg/max/mdev = 1.221/1.417/1.739/0.188 ms
root@PC-3-T:~#
```

ping depuis PC3 vers R3

```
root@PC-3-T:~# ping 209.165.200.225
PING 209.165.200.225 (209.165.200.225) 56(84) bytes of data.
64 bytes from 209.165.200.225: icmp_seq=1 ttl=254 time=1.37 ms
64 bytes from 209.165.200.225: icmp_seq=2 ttl=254 time=1.41 ms
64 bytes from 209.165.200.225: icmp_seq=3 ttl=254 time=1.48 ms
64 bytes from 209.165.200.225: icmp_seq=4 ttl=254 time=1.62 ms
64 bytes from 209.165.200.225: icmp_seq=5 ttl=254 time=1.86 ms
64 bytes from 209.165.200.225: icmp_seq=6 ttl=254 time=1.54 ms
^C
--- 209.165.200.225 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5008ms
rtt min/avg/max/mdev = 1.372/1.549/1.860/0.164 ms
root@PC-3-T:~#
```

ping depuis PC3 vers la passerelle virtuelle

```
root@PC-3-T:~# ping 172.16.30.1
PING 172.16.30.1 (172.16.30.1) 56(84) bytes of data.
64 bytes from 172.16.30.1: icmp_seq=1 ttl=255 time=1.34 ms
64 bytes from 172.16.30.1: icmp_seq=2 ttl=255 time=1.34 ms
64 bytes from 172.16.30.1: icmp_seq=3 ttl=255 time=1.73 ms
64 bytes from 172.16.30.1: icmp_seq=4 ttl=255 time=1.44 ms
64 bytes from 172.16.30.1: icmp_seq=5 ttl=255 time=1.44 ms
64 bytes from 172.16.30.1: icmp_seq=6 ttl=255 time=1.58 ms
64 bytes from 172.16.30.1: icmp_seq=7 ttl=255 time=1.50 ms
^C
--- 172.16.30.1 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6009ms
rtt min/avg/max/mdev = 1.340/1.485/1.739/0.139 ms
root@PC-3-T:~#
```

show etherchannel summary sur S1 :

```
S1#sh eth sum
Flags:  D - down         P - bundled in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator

        M - not in use, minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port


Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol    Ports
------+-------------+-----------+----------------------------------------------
1      Po1(SU)         PAgP       Fa0/1(P)    Fa0/2(P)

S1#
```

show etherchannel summary sur S2 :

```
S2#sh eth sum
Flags:  D - down         P - in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        u - unsuitable for bundling
        U - in use       f - failed to allocate aggregator
        d - default port

Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol    Ports
------+-------------+-----------+----------------------------------------------
1      Po1(SU)         PAgP       Fa0/1(Pd)   Fa0/2(P)

S2#
```

```
S1#show interfaces trunk

Port          Mode              Encapsulation  Status        Native vlan
Fa0/5         on                802.1q         trunking      99
Po1           on                802.1q         trunking      99

Port          Vlans allowed on trunk
Fa0/5         1-4094
Po1           1-4094

Port          Vlans allowed and active in management domain
Fa0/5         1,10,20,30,40,90,99-100,200,333,999-1000
Po1           1,10,20,30,40,90,99-100,200,333,999-1000

Port          Vlans in spanning tree forwarding state and not pruned
Fa0/5         1,10,20,30,40,90,99-100,200,333,999-1000
Po1           1,10,20,30,40,90,99-100,200,333,999-1000
S1#
```

```
S2#show interfaces trunk

Port          Mode              Encapsulation  Status        Native vlan
Fa0/5         on                802.1q         trunking      99
Po1           on                802.1q         trunking      99

Port          Vlans allowed on trunk
Fa0/5         1-4094
Po1           1-4094

Port          Vlans allowed and active in management domain
Fa0/5         1,10,20,30,90,99
Po1           1,10,20,30,90,99

Port          Vlans in spanning tree forwarding state and not pruned
Fa0/5         1,10,20,30,90,99
Po1           1,10,20,30,90,99
S2#
```

show vlan brief sur S1 :

```
S1#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active
10   R&D                              active    Fa0/6
20   STAFF                            active
30   MGNT                             active
40   Sales                            active
90   TRASH                            active    Fa0/3, Fa0/4, Fa0/7, Fa0/8
                                                Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                Gi0/1, Gi0/2
99   NATIF                            active
100  team100                          active
200  team200                          active
333  VLAN0333                         active
999  ParkingLot                       active
1000 Native                           active
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
S1#
```

show vlan brief sur S2 :

```
S2#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active
10   VLAN0010                         active
20   VLAN0020                         active    Fa0/24
30   VLAN0030                         active    Fa0/18
90   VLAN0090                         active    Fa0/3, Fa0/4, Fa0/6, Fa0/7
                                                Fa0/8, Fa0/9, Fa0/10, Fa0/11
                                                Fa0/12, Fa0/13, Fa0/14, Fa0/15
                                                Fa0/16, Fa0/17, Fa0/19, Fa0/20
                                                Fa0/21, Fa0/22, Fa0/23
99   VLAN0099                         active
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
S2#
```

sh ip int br sur S1 :

```
S1#sh ip int br
Interface            IP-Address       OK? Method Status                Protocol
Vlan1                unassigned       YES unset  administratively down  down
Vlan10               unassigned       YES manual administratively down  down
Vlan30               172.16.30.11     YES manual up                     up
FastEthernet0/1      unassigned       YES unset  up                     up
FastEthernet0/2      unassigned       YES unset  up                     up
FastEthernet0/3      unassigned       YES unset  administratively down  down
FastEthernet0/4      unassigned       YES unset  administratively down  down
FastEthernet0/5      unassigned       YES unset  up                     up
FastEthernet0/6      unassigned       YES unset  up                     up
FastEthernet0/7      unassigned       YES unset  administratively down  down
FastEthernet0/8      unassigned       YES unset  administratively down  down
FastEthernet0/9      unassigned       YES unset  administratively down  down
FastEthernet0/10     unassigned       YES unset  administratively down  down
FastEthernet0/11     unassigned       YES unset  administratively down  down
FastEthernet0/12     unassigned       YES unset  administratively down  down
FastEthernet0/13     unassigned       YES unset  administratively down  down
FastEthernet0/14     unassigned       YES unset  administratively down  down
FastEthernet0/15     unassigned       YES unset  administratively down  down
FastEthernet0/16     unassigned       YES unset  administratively down  down
FastEthernet0/17     unassigned       YES unset  administratively down  down
FastEthernet0/18     unassigned       YES unset  administratively down  down
FastEthernet0/19     unassigned       YES unset  administratively down  down
FastEthernet0/20     unassigned       YES unset  administratively down  down
FastEthernet0/21     unassigned       YES unset  administratively down  down
FastEthernet0/22     unassigned       YES unset  administratively down  down
FastEthernet0/23     unassigned       YES unset  administratively down  down
FastEthernet0/24     unassigned       YES unset  administratively down  down
GigabitEthernet0/1   unassigned       YES unset  administratively down  down
GigabitEthernet0/2   unassigned       YES unset  administratively down  down
Port-channel1        unassigned       YES unset  up                     up
S1#
```

sh ip int br sur S2:

```
S2#sh ip int br
Interface                IP-Address      OK? Method Status                Protocol
Vlan1                    unassigned      YES unset  administratively down down
Vlan10                   unassigned      YES manual administratively down down
Vlan30                   172.16.30.12    YES manual up                    up
FastEthernet0/1          unassigned      YES unset  up                    up
FastEthernet0/2          unassigned      YES unset  up                    up
FastEthernet0/3          unassigned      YES unset  administratively down down
FastEthernet0/4          unassigned      YES unset  administratively down down
FastEthernet0/5          unassigned      YES unset  up                    up
FastEthernet0/6          unassigned      YES unset  administratively down down
FastEthernet0/7          unassigned      YES unset  administratively down down
FastEthernet0/8          unassigned      YES unset  administratively down down
FastEthernet0/9          unassigned      YES unset  administratively down down
FastEthernet0/10         unassigned      YES unset  administratively down down
FastEthernet0/11         unassigned      YES unset  administratively down down
FastEthernet0/12         unassigned      YES unset  administratively down down
FastEthernet0/13         unassigned      YES unset  administratively down down
FastEthernet0/14         unassigned      YES unset  administratively down down
FastEthernet0/15         unassigned      YES unset  administratively down down
FastEthernet0/16         unassigned      YES unset  administratively down down
FastEthernet0/17         unassigned      YES unset  administratively down down
FastEthernet0/18         unassigned      YES unset  up                    up
FastEthernet0/19         unassigned      YES unset  administratively down down
FastEthernet0/20         unassigned      YES unset  administratively down down
FastEthernet0/21         unassigned      YES unset  administratively down down
FastEthernet0/22         unassigned      YES unset  administratively down down
FastEthernet0/23         unassigned      YES unset  administratively down down
FastEthernet0/24         unassigned      YES unset  up                    up
Port-channel1            unassigned      YES unset  up                    up
S2#
```

ifconfig sur pc1 :

```
root@PC-1-T:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 7e:f5:43:c5:1a:44
          inet addr:172.16.10.11  Bcast:0.0.0.0  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:105689 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1017 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6668986 (6.6 MB)  TX bytes:219743 (219.7 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:35 errors:0 dropped:0 overruns:0 frame:0
          TX packets:35 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3808 (3.8 KB)  TX bytes:3808 (3.8 KB)

root@PC-1-T:~#
```

```
root@PC-2-T:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 2e:37:b3:ea:b8:6e
          inet addr:172.16.20.12  Bcast:0.0.0.0  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:107931 errors:0 dropped:2 overruns:0 frame:0
          TX packets:2606 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6869212 (6.8 MB)  TX bytes:254720 (254.7 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:668 (668.0 B)  TX bytes:668 (668.0 B)

root@PC-2-T:~#
```

ifconfig sur pc3 :

```
root@PC-3-T:~# ifconfig
eth0      Link encap:Ethernet  HWaddr ae:1a:c9:cf:85:32
          inet addr:172.16.30.13  Bcast:0.0.0.0  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:105934 errors:0 dropped:0 overruns:0 frame:0
          TX packets:626 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6678290 (6.6 MB)  TX bytes:185216 (185.2 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

root@PC-3-T:~#
```

sh ip inter br sur R1

```
R1#sh ip inter br
Interface                  IP-Address      OK? Method Status                 Protocol
GigabitEthernet0/0/0       unassigned      YES unset  up                     up
Gi0/0/0.10                 172.16.10.2     YES manual up                     up
Gi0/0/0.20                 172.16.20.2     YES manual up                     up
Gi0/0/0.30                 172.16.30.2     YES manual up                     up
GigabitEthernet0/0/1       10.10.13.1      YES manual up                     up
GigabitEthernet0/0/2       unassigned      YES unset  administratively down down
GigabitEthernet0          unassigned      YES unset  administratively down down
R1#
```

sh ip route sur R1

```
R1#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is 10.10.13.2 to network 0.0.0.0

S*     0.0.0.0/0 [1/0] via 10.10.13.2
       10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C         10.10.13.0/30 is directly connected, GigabitEthernet0/0/1
L         10.10.13.1/32 is directly connected, GigabitEthernet0/0/1
       172.16.0.0/16 is variably subnetted, 6 subnets, 2 masks
C         172.16.10.0/24 is directly connected, GigabitEthernet0/0/0.10
L         172.16.10.2/32 is directly connected, GigabitEthernet0/0/0.10
C         172.16.20.0/24 is directly connected, GigabitEthernet0/0/0.20
L         172.16.20.2/32 is directly connected, GigabitEthernet0/0/0.20
C         172.16.30.0/24 is directly connected, GigabitEthernet0/0/0.30
L         172.16.30.2/32 is directly connected, GigabitEthernet0/0/0.30
R1#
```

sh standby brief sur R1

```
R1#sh standby brief
                    P indicates configured to preempt.
                    |
Interface   Grp  Pri P State    Active           Standby          Virtual IP
Gi0/0/0.10  10   110 P Active   local            172.16.10.3      172.16.10.1
Gi0/0/0.20  20   100   Standby  172.16.20.3      local            172.16.20.1
Gi0/0/0.30  30   110 P Active   local            172.16.30.3      172.16.30.1
R1#
```

sh ip inter br sur R2

```
R2#sh ip inter br
Interface               IP-Address      OK? Method Status                 Protocol
GigabitEthernet0/0/0    unassigned      YES unset  up                     up
Gi0/0/0.10              172.16.10.3     YES manual up                     up
Gi0/0/0.20              172.16.20.3     YES manual up                     up
Gi0/0/0.30              172.16.30.3     YES manual up                     up
GigabitEthernet0/0/1    10.10.23.1      YES manual up                     up
GigabitEthernet0/0/2    unassigned      YES unset  administratively down down
GigabitEthernet0       unassigned      YES unset  administratively down down
R2#
```

sh ip route sur R2

```
R2#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is 10.10.23.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.10.23.2
      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.10.23.0/30 is directly connected, GigabitEthernet0/0/1
L        10.10.23.1/32 is directly connected, GigabitEthernet0/0/1
      172.16.0.0/16 is variably subnetted, 6 subnets, 2 masks
C        172.16.10.0/24 is directly connected, GigabitEthernet0/0/0.10
L        172.16.10.3/32 is directly connected, GigabitEthernet0/0/0.10
C        172.16.20.0/24 is directly connected, GigabitEthernet0/0/0.20
L        172.16.20.3/32 is directly connected, GigabitEthernet0/0/0.20
C        172.16.30.0/24 is directly connected, GigabitEthernet0/0/0.30
L        172.16.30.3/32 is directly connected, GigabitEthernet0/0/0.30
R2#
```

sh ip dhcp binding sur R2

c'est R3 qui gère l'attribution des adresses IP pour tout mon réseau, et non R1 ou R2. Alors ce résultat est normal

```
     via Natto, receive
R2#sh ip dhcp binding
Bindings from all pools not associated with VRF:
IP address      Client-ID/              Lease expiration      Type      State      Interface
                Hardware address/
                User name
R2#
```

sh standby brief sur R2

```
R2#sh standby brief
                    P indicates configured to preempt.
                    |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
Gi0/0/0.10  10   100   Standby 172.16.10.2     local           172.16.10.1
Gi0/0/0.20  20   110 P Active  local           172.16.20.2     172.16.20.1
Gi0/0/0.30  30   100   Standby 172.16.30.2     local           172.16.30.1
R2#
```

sh ip dhcp binding sur R3

```
R3#sh ip dhcp binding
Bindings from all pools not associated with VRF:
IP address          Client-ID/              Lease expiration      Type
                    Hardware address/
                    User name
172.16.10.11        017e.f543.c51a.44       Jan 03 2006 03:08 PM  Automatic
172.16.10.12        01de.f3eb.01fe.57       Jan 04 2006 02:13 PM  Automatic
172.16.20.11        015a.6e68.fd81.00       Jan 03 2006 02:51 PM  Automatic
172.16.20.12        012e.37b3.eab8.6e       Jan 04 2006 01:28 PM  Automatic
172.16.20.13        0152.1533.f0d8.2f       Jan 04 2006 02:13 PM  Automatic
172.16.30.13        01ae.1ac9.cf85.32       Jan 04 2006 01:38 PM  Automatic
172.16.30.14        01ee.4d2c.d9d9.f9       Jan 04 2006 02:13 PM  Automatic
R3#
```

```
R3#sh ip inter br
Interface                IP-Address      OK? Method Status                 Protocol
FastEthernet0/0          10.10.13.2      YES manual up                     up
FastEthernet0/1          10.10.23.2      YES manual up                     up
Serial0/0/0              unassigned      YES unset  administratively down down
Serial0/0/1              unassigned      YES unset  administratively down down
FastEthernet0/1/0        unassigned      YES unset  up                     down
FastEthernet0/1/1        unassigned      YES unset  up                     down
FastEthernet0/1/2        unassigned      YES unset  up                     down
FastEthernet0/1/3        unassigned      YES unset  up                     down
Loopback0                209.165.200.225 YES manual up                     up
Vlan1                    unassigned      YES unset  up                     down
R3#
```

```
R3#sh ip interface
FastEthernet0/0 is up, line protocol is up
   Internet address is 10.10.13.2/30
   Broadcast address is 255.255.255.255
   Address determined by setup command
   MTU is 1500 bytes
   Helper address is not set
   Directed broadcast forwarding is disabled
   Outgoing access list is not set
   Inbound  access list is not set
   Proxy ARP is enabled
   Local Proxy ARP is disabled
   Security level is default
   Split horizon is enabled
   ICMP redirects are always sent
   ICMP unreachables are always sent
   ICMP mask replies are never sent
   IP fast switching is enabled
   IP fast switching on the same interface is disabled
   IP Flow switching is disabled
   IP CEF switching is enabled
   IP CEF switching turbo vector
   IP multicast fast switching is enabled
   IP multicast distributed fast switching is disabled
   IP route-cache flags are Fast, CEF
   Router Discovery is disabled
   IP output packet accounting is disabled
   IP access violation accounting is disabled
   TCP/IP header compression is disabled
   RTP/IP header compression is disabled
   Policy routing is disabled
   Network address translation is disabled
   BGP Policy Mapping is disabled
   Input features: MCI Check
   WCCP Redirect outbound is disabled
   WCCP Redirect inbound is disabled
   WCCP Redirect exclude is disabled
FastEthernet0/1 is up, line protocol is up

R3#
```

sh ip route sur R3 :

```
R3#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C        10.10.13.0/30 is directly connected, FastEthernet0/0
L        10.10.13.2/32 is directly connected, FastEthernet0/0
C        10.10.23.0/30 is directly connected, FastEthernet0/1
L        10.10.23.2/32 is directly connected, FastEthernet0/1
      172.16.0.0/24 is subnetted, 3 subnets
S        172.16.10.0 [1/0] via 10.10.13.1
S        172.16.20.0 [1/0] via 10.10.23.1
S        172.16.30.0 [1/0] via 10.10.13.1
      209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C        209.165.200.224/27 is directly connected, Loopback0
L        209.165.200.225/32 is directly connected, Loopback0
R3#
```

sh ip route | begin Gateway sur R1 :

```
R1#sh ip route | begin Gateway
Gateway of last resort is 10.10.13.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.10.13.2
      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.10.13.0/30 is directly connected, GigabitEthernet0/0/1
L        10.10.13.1/32 is directly connected, GigabitEthernet0/0/1
      172.16.0.0/16 is variably subnetted, 6 subnets, 2 masks
C        172.16.10.0/24 is directly connected, GigabitEthernet0/0/0.10
L        172.16.10.2/32 is directly connected, GigabitEthernet0/0/0.10
C        172.16.20.0/24 is directly connected, GigabitEthernet0/0/0.20
L        172.16.20.2/32 is directly connected, GigabitEthernet0/0/0.20
C        172.16.30.0/24 is directly connected, GigabitEthernet0/0/0.30
L        172.16.30.2/32 is directly connected, GigabitEthernet0/0/0.30
R1#
```

```
R2#sh ip route | begin Gateway
Gateway of last resort is 10.10.23.2 to network 0.0.0.0

S*      0.0.0.0/0 [1/0] via 10.10.23.2
        10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C          10.10.23.0/30 is directly connected, GigabitEthernet0/0/1
L          10.10.23.1/32 is directly connected, GigabitEthernet0/0/1
        172.16.0.0/16 is variably subnetted, 6 subnets, 2 masks
C          172.16.10.0/24 is directly connected, GigabitEthernet0/0/0.10
L          172.16.10.3/32 is directly connected, GigabitEthernet0/0/0.10
C          172.16.20.0/24 is directly connected, GigabitEthernet0/0/0.20
L          172.16.20.3/32 is directly connected, GigabitEthernet0/0/0.20
C          172.16.30.0/24 is directly connected, GigabitEthernet0/0/0.30
L          172.16.30.3/32 is directly connected, GigabitEthernet0/0/0.30
R2#
```

```
R3#sh ip route | begin Gateway
Gateway of last resort is not set

        10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C          10.10.13.0/30 is directly connected, FastEthernet0/0
L          10.10.13.2/32 is directly connected, FastEthernet0/0
C          10.10.23.0/30 is directly connected, FastEthernet0/1
L          10.10.23.2/32 is directly connected, FastEthernet0/1
        172.16.0.0/24 is subnetted, 3 subnets
S          172.16.10.0 [1/0] via 10.10.13.1
S          172.16.20.0 [1/0] via 10.10.23.1
S          172.16.30.0 [1/0] via 10.10.13.1
        209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C          209.165.200.224/27 is directly connected, Loopback0
L          209.165.200.225/32 is directly connected, Loopback0
R3#
```

```
R1#sh ipv6 route | begin C
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, a - Application
L   FF00::/8 [0/0]
     via Null0, receive
```

sh ip route static sur R1 :

```
R1#sh ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is 10.10.13.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.10.13.2
R1#
```

sh ip route static sur R2 :

```
R2#sh ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR

Gateway of last resort is 10.10.23.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.10.23.2
R2#
```

```
R3#sh ip route static
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      172.16.0.0/24 is subnetted, 3 subnets
S        172.16.10.0 [1/0] via 10.10.13.1
S        172.16.20.0 [1/0] via 10.10.23.1
S        172.16.30.0 [1/0] via 10.10.13.1
R3#
```

traceroute 172.16.10.1 depuis pc1 :

```
root@PC-1-T:~# traceroute 172.16.10.1
traceroute to 172.16.10.1 (172.16.10.1), 30 hops max, 60 byte packets
 1  172.16.10.2 (172.16.10.2)  5.622 ms * *
root@PC-1-T:~#
```

traceroute 209.165.200.225 depuis pc1 :

```
root@PC-1-T:~# traceroute 209.165.200.225
traceroute to 209.165.200.225 (209.165.200.225), 30 hops max, 60 byte packets
 1  172.16.10.2 (172.16.10.2)  1.349 ms  1.321 ms  1.464 ms
 2  10.10.13.2 (10.10.13.2)  2.945 ms * *
root@PC-1-T:~#
```

traceroute 172.16.20.3 depuis pc1 :

```
root@PC-1-T:~# traceroute 172.16.20.3
traceroute to 172.16.20.3 (172.16.20.3), 30 hops max, 60 byte packets
 1  172.16.10.2 (172.16.10.2)  0.791 ms  0.778 ms  0.779 ms
 2  172.16.20.3 (172.16.20.3)  1.350 ms * *
root@PC-1-T:~#
```

ping depuis PC1 vers la passerelle virtuelle avant enlever le câble

```
root@PC-1-T:~# ping 172.16.10.1
PING 172.16.10.1 (172.16.10.1) 56(84) bytes of data.
64 bytes from 172.16.10.1: icmp_seq=1 ttl=255 time=1.33 ms
64 bytes from 172.16.10.1: icmp_seq=2 ttl=255 time=1.15 ms
64 bytes from 172.16.10.1: icmp_seq=3 ttl=255 time=1.44 ms
64 bytes from 172.16.10.1: icmp_seq=4 ttl=255 time=1.31 ms
64 bytes from 172.16.10.1: icmp_seq=5 ttl=255 time=1.56 ms
64 bytes from 172.16.10.1: icmp_seq=6 ttl=255 time=1.76 ms
64 bytes from 172.16.10.1: icmp_seq=7 ttl=255 time=1.60 ms
64 bytes from 172.16.10.1: icmp_seq=8 ttl=255 time=1.43 ms
64 bytes from 172.16.10.1: icmp_seq=9 ttl=255 time=1.40 ms
64 bytes from 172.16.10.1: icmp_seq=10 ttl=255 time=1.50 ms
64 bytes from 172.16.10.1: icmp_seq=11 ttl=255 time=1.36 ms
```

ping depuis PC1 vers la passerelle virtuelle avant et après enlever le câble

```
root@PC-1-T:~# ping 172.16.10.1
PING 172.16.10.1 (172.16.10.1) 56(84) bytes of data.
64 bytes from 172.16.10.1: icmp_seq=1 ttl=255 time=1.33 ms
64 bytes from 172.16.10.1: icmp_seq=2 ttl=255 time=1.15 ms
64 bytes from 172.16.10.1: icmp_seq=3 ttl=255 time=1.44 ms
64 bytes from 172.16.10.1: icmp_seq=4 ttl=255 time=1.31 ms
64 bytes from 172.16.10.1: icmp_seq=5 ttl=255 time=1.56 ms
64 bytes from 172.16.10.1: icmp_seq=6 ttl=255 time=1.76 ms
64 bytes from 172.16.10.1: icmp_seq=7 ttl=255 time=1.60 ms
64 bytes from 172.16.10.1: icmp_seq=8 ttl=255 time=1.43 ms
64 bytes from 172.16.10.1: icmp_seq=9 ttl=255 time=1.40 ms
64 bytes from 172.16.10.1: icmp_seq=10 ttl=255 time=1.50 ms
64 bytes from 172.16.10.1: icmp_seq=11 ttl=255 time=1.36 ms
64 bytes from 172.16.10.1: icmp_seq=22 ttl=255 time=1.41 ms
64 bytes from 172.16.10.1: icmp_seq=23 ttl=255 time=1.48 ms
64 bytes from 172.16.10.1: icmp_seq=24 ttl=255 time=1.56 ms
64 bytes from 172.16.10.1: icmp_seq=25 ttl=255 time=1.66 ms
64 bytes from 172.16.10.1: icmp_seq=26 ttl=255 time=1.55 ms
64 bytes from 172.16.10.1: icmp_seq=27 ttl=255 time=1.47 ms
64 bytes from 172.16.10.1: icmp_seq=28 ttl=255 time=1.66 ms
64 bytes from 172.16.10.1: icmp_seq=29 ttl=255 time=1.65 ms
64 bytes from 172.16.10.1: icmp_seq=30 ttl=255 time=1.63 ms
64 bytes from 172.16.10.1: icmp_seq=31 ttl=255 time=1.65 ms
64 bytes from 172.16.10.1: icmp_seq=32 ttl=255 time=1.49 ms
64 bytes from 172.16.10.1: icmp_seq=33 ttl=255 time=1.62 ms
64 bytes from 172.16.10.1: icmp_seq=34 ttl=255 time=1.65 ms
64 bytes from 172.16.10.1: icmp_seq=35 ttl=255 time=1.47 ms
64 bytes from 172.16.10.1: icmp_seq=36 ttl=255 time=1.51 ms
64 bytes from 172.16.10.1: icmp_seq=37 ttl=255 time=1.66 ms
64 bytes from 172.16.10.1: icmp_seq=38 ttl=255 time=1.56 ms
64 bytes from 172.16.10.1: icmp_seq=39 ttl=255 time=1.48 ms
64 bytes from 172.16.10.1: icmp_seq=40 ttl=255 time=1.52 ms
64 bytes from 172.16.10.1: icmp_seq=41 ttl=255 time=1.50 ms
64 bytes from 172.16.10.1: icmp_seq=42 ttl=255 time=1.79 ms
64 bytes from 172.16.10.1: icmp_seq=43 ttl=255 time=1.59 ms
64 bytes from 172.16.10.1: icmp_seq=44 ttl=255 time=1.62 ms
64 bytes from 172.16.10.1: icmp_seq=45 ttl=255 time=1.39 ms
64 bytes from 172.16.10.1: icmp_seq=46 ttl=255 time=1.69 ms
64 bytes from 172.16.10.1: icmp_seq=47 ttl=255 time=1.80 ms
64 bytes from 172.16.10.1: icmp_seq=48 ttl=255 time=1.41 ms
^C
--- 172.16.10.1 ping statistics ---
48 packets transmitted, 38 received, 20% packet loss, time 47300ms
rtt min/avg/max/mdev = 1.154/1.539/1.808/0.143 ms
root@PC-1-T:~# |
```

```
root@PC-1-T:~# traceroute 172.16.10.1
traceroute to 172.16.10.1 (172.16.10.1), 30 hops max, 60 byte packets
 1  172.16.10.2 (172.16.10.2)  1.547 ms * *
root@PC-1-T:~#
```