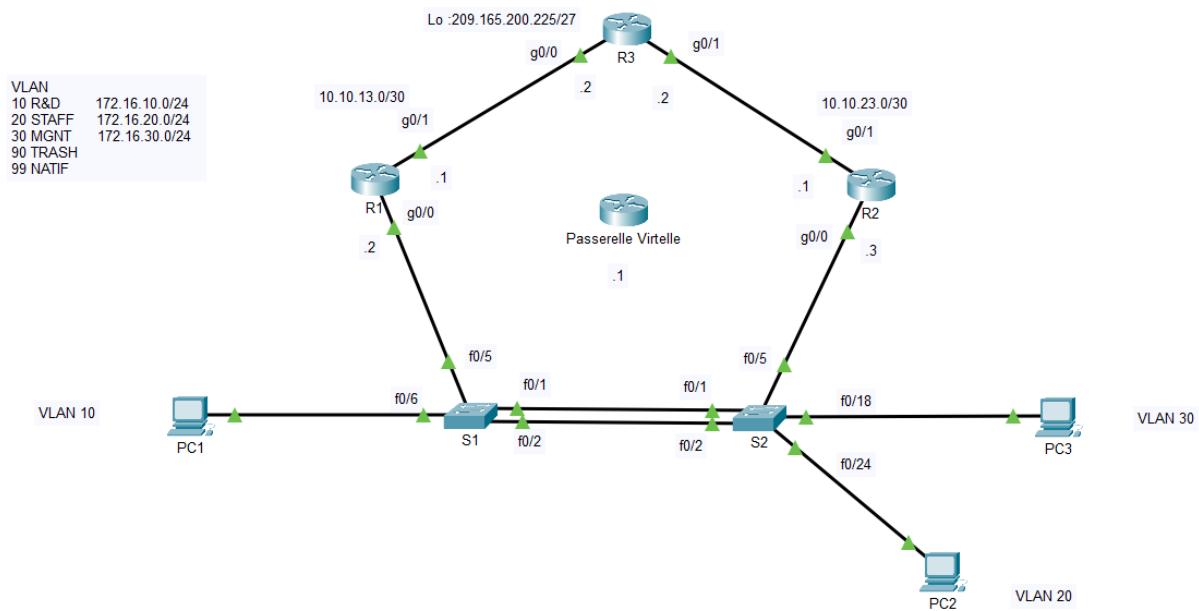


ALSHAHoud Mohamed

Labo OPSF



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 (vers l'interface Loopback de 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:~# |
```

ping depuis PC2 vers PC1

```
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:~# |
```

ping depuis PC2 vers PC3

```
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:~# |
```

ping depuis PC2 vers S1

```
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:~# |
```

ping depuis PC2 vers S2

```
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:~# |
```

ping depuis PC2 vers R3(vers l'interface Loopback de R3) :

```
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:~# |
```

ping depuis PC3 vers PC1

```
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:~# |
```

ping depuis PC3 vers PC2

```
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:~# |
```

ping depuis PC3 vers s1

```
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:~# |
```

ping depuis PC3 vers s2

```
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(vers l'interface Loopback de 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#
```

show interfaces trunk sur S1 :

```
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#
```

show interfaces trunk sur S2 :

```
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

sh ip int br sur S2:

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

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:~# |
```

ifconfig sur pc2 :

```
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  manual 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 - 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

```
USER NAME
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

```
USER NAME
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
GigabitEthernet0/0/3 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
      + - 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 Natt0, receive
R2#sh ip dhcp binding
Bindings from all pools not associated with VRF:
IP address      Client-ID/
                  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   S 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   S 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/
                  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#|
```

sh ip inter br sur R3

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#					

sh ip interface sur 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 unreachable messages 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#
```

sh ip route | begin Gateway sur R2 :

```
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#
```

sh ip route | begin Gateway sur R3 :

```
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#
```

sh ipv6 route | begin C sur R1 :

```
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#|
```

[sh ip route static sur R3 :](#)

```
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#
```

[show ip protocols sur R1](#)

[show ip ospf neighbor sur R1](#)

[show ip route ospf sur R1](#)

[show ip ospf interface sur R1](#)

[show ip ospf interface brief sur R1](#)

[show ip route ospf | begin 10 sur R1](#)

[show ip route ospf sur 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:~# |
```

[traceroute 172.16.10.1 sur pc1 qui passe par R2 après reconnecter le câble](#)

```
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:~# |
```