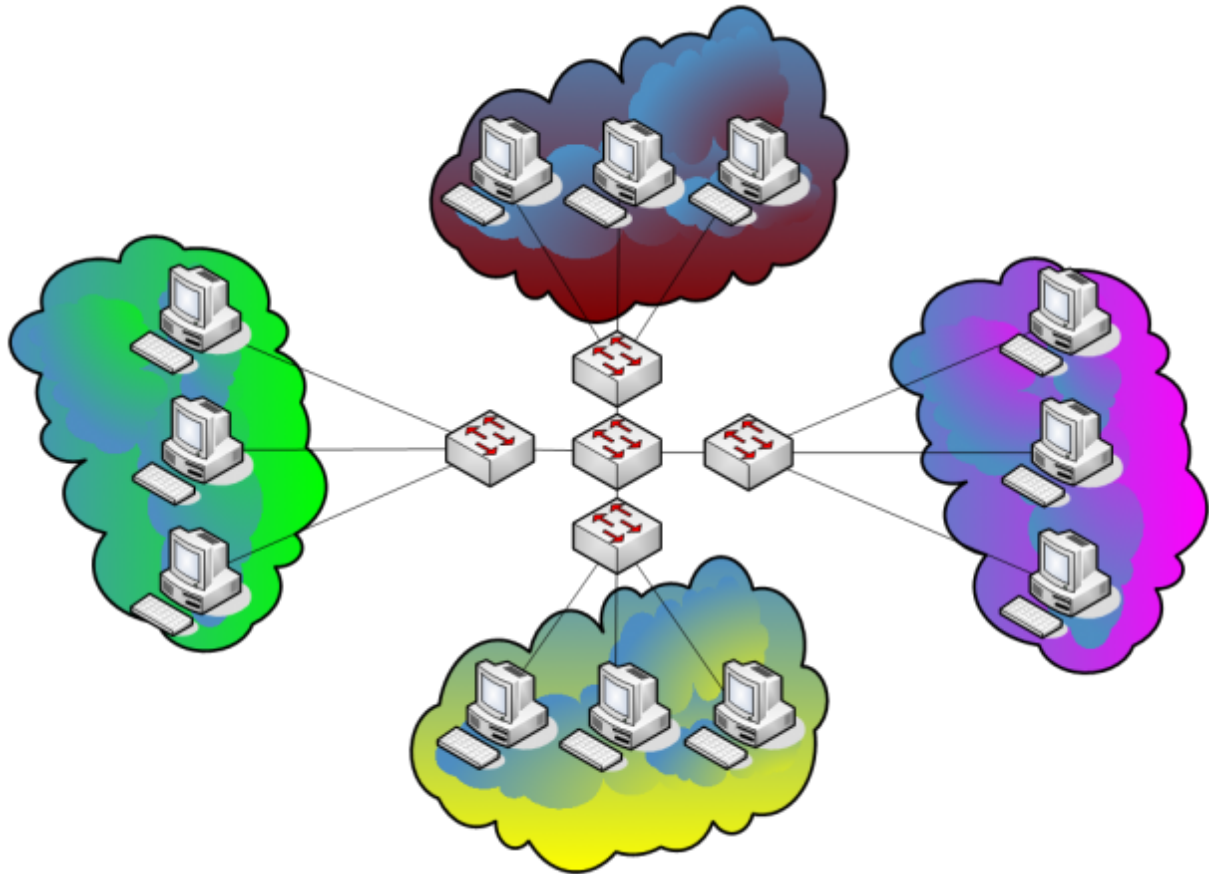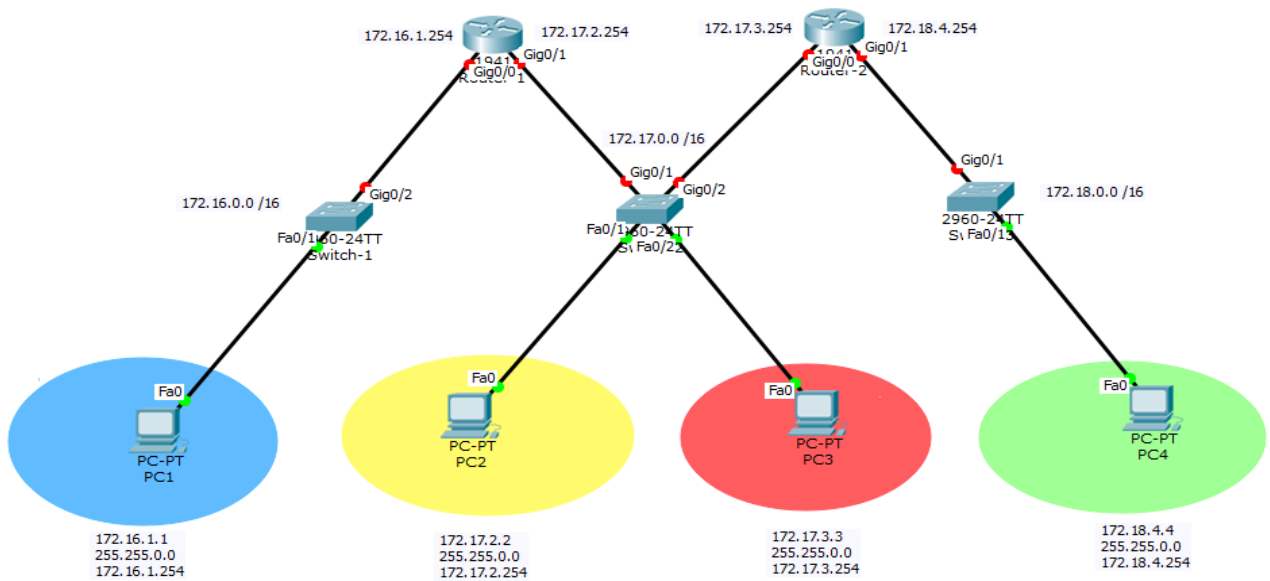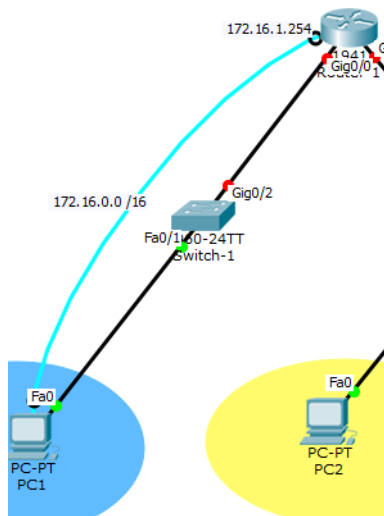# Maquettage d'infrastructure réseau VLAN et routage Inter-vlan

● Connecter un câble console (bleu ciel) de PC-1 sur Routeur-1 comme le montre la copie d'écran ci-dessous, en utilisant le port RS-232 (port série) de PC-1 et le port Console du Routeur-1.

● Accéder ensuite à l'application « Terminal » sur PC-1 pour configurer le routeur.
Connexion câble console Application

```
        --- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]: n


Press RETURN to get started!



Router>en
Router#conf
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interf
Router(config)#interface gig
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip address 172.16.1.254 255.255.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#inter
Router(config-if)#interface giga
Router(config-if)#interface gigabitEthernet 0/1
Router(config-if)#ip address 172.17.2.254 255.255.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#
```

! Configuration de Routeur-2 directement dans l'onglet CLI du routeur
● Cliquer sur le routeur.
● Choisir le 3ème onglet (CLI).
● Taper les commandes en vous aidant de la copie d'écran ci-dessous :

```
Press RETURN to get started!



Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int gi0/0
Router(config-if)#ip addr 172.17.3.254 255.255.0.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#inter gi0/1
Router(config-if)#172.18.4.254 255.255.0.0
                         ^
% Invalid input detected at '^' marker.

Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#
```

● Effectuer un test de communication (ping) entre PC-1 et PC-2.
● Effectuer un test de communication (ping) entre PC-3 et PC-4.

	Successful	PC1	PC2	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC3	PC4	ICMP		0.000	N	1	(edit)	(delete)

● Expliquer pourquoi les deux derniers tests doivent fonctionner.

Ces deux derniers tests doivent fonctionner car les passerelle par défaut des pc sont sur le même routeur.

● Effectuer un test de communication (ping) entre PC-1 et PC-3.

	Failed	PC1	PC3	ICMP		0.000	N	2	(edit)	(delete)

Ce ping à échouer car leur gateway ne fait pas partie du même routeur.

● Effectuer un test de communication (ping) entre PC-2 et PC-4.

	Failed	PC2	PC4	ICMP		0.000	N	0	(edit)	(delete)

Ce ping à échouer car leur gateway ne fait pas partie du même routeur.

● Effectuer un test de communication (ping) entre PC-1 et PC-4.

	Failed	PC1	PC4	ICMP		0.000	N	1	(edit)	(delete)

Ce ping à échouer car leur gateway ne fait pas partie du même routeur.

● Vérifier premièrement la table de routage actuelle de Routeur-1.

```
Router>en
Router#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol

GigabitEthernet0/0     172.16.1.254    YES manual up                    up

GigabitEthernet0/1     172.17.2.254    YES manual up                    up

Vlan1                  unassigned      YES unset  administratively down down
Router#show 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, E - EGP
       i - IS-IS, 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

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/16 is directly connected, GigabitEthernet0/0
L       172.16.1.254/32 is directly connected, GigabitEthernet0/0
     172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.17.0.0/16 is directly connected, GigabitEthernet0/1
L       172.17.2.254/32 is directly connected, GigabitEthernet0/1
Router#
```

● Ajouter sur Routeur-1 la route vers le 3ème réseau, autrement dit vers la destination 172.18.0.0 / 24.

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 172.18.0.0 255.255.0.0 172.17.3.254
Router(config)#ex
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show 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, E - EGP
       i - IS-IS, 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

Gateway of last resort is not set

     172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/16 is directly connected, GigabitEthernet0/0
L       172.16.1.254/32 is directly connected, GigabitEthernet0/0
     172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.17.0.0/16 is directly connected, GigabitEthernet0/1
L       172.17.2.254/32 is directly connected, GigabitEthernet0/1
S    172.18.0.0/16 [1/0] via 172.17.3.254
Router#
```

Avant de faire la manipulation similaire sur Routeur-2, faites à nouveau les tests et noter les réponses :
Effectuer un test de communication (ping) entre PC-1 et PC-3.

```
PC>ping 172.17.3.3

Pinging 172.17.3.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.17.3.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Effectuer un test de communication (ping) entre PC-2 et PC-4.

```
PC>ping 172.18.4.254

Pinging 172.18.4.254 with 32 bytes of data:

Reply from 172.18.4.254: bytes=32 time=0ms TTL=255
Reply from 172.18.4.254: bytes=32 time=0ms TTL=255
Reply from 172.18.4.254: bytes=32 time=0ms TTL=255
Reply from 172.18.4.254: bytes=32 time=2ms TTL=255

Ping statistics for 172.18.4.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

Effectuer un test de communication (ping) entre PC-1 et PC-4.

```
PC>ping 172.18.4.254

Pinging 172.18.4.254 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.18.4.254:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Vous n'avez dû constater aucune différence pour le 1er test qui échoue avec le même message ; en revanche le 2ème test réussit ; quant au 3ème test, il échoue mais le message change.

Vérifier d'abord la table de routage actuelle de Routeur-2.

Ajouter ensuite sur Routeur-2 la route vers le réseau de gauche, vers la destination 172.16.0.0 / 16.

```
Router>en show ip route
          ^
% Invalid input detected at '^' marker.

Router>en
Router#show 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, E - EGP
       i - IS-IS, 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

Gateway of last resort is not set

     172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        172.17.0.0/16 is directly connected, GigabitEthernet0/0
L        172.17.3.254/32 is directly connected, GigabitEthernet0/0
     172.18.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        172.18.0.0/16 is directly connected, GigabitEthernet0/1
L        172.18.4.254/32 is directly connected, GigabitEthernet0/1
```

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 172.16.0.0 255.255.0.0 172.17.2.254
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#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, E - EGP
       i - IS-IS, 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

Gateway of last resort is not set

S    172.16.0.0/16 [1/0] via 172.17.2.254
     172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.17.0.0/16 is directly connected, GigabitEthernet0/0
L       172.17.3.254/32 is directly connected, GigabitEthernet0/0
     172.18.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.18.0.0/16 is directly connected, GigabitEthernet0/1
L       172.18.4.254/32 is directly connected, GigabitEthernet0/1
```

Faites à nouveau les tests suivants et noter les réponses (la réponse peut prendre un certain temps) :
Effectuer un test de communication (ping) entre PC-1 et PC-3.

```
PC>ping  172.17.3.254

Pinging 172.17.3.254 with 32 bytes of data:

Reply from 172.17.3.254: bytes=32 time=1ms TTL=254
Reply from 172.17.3.254: bytes=32 time=0ms TTL=254
Reply from 172.17.3.254: bytes=32 time=0ms TTL=254
Reply from 172.17.3.254: bytes=32 time=0ms TTL=254

Ping statistics for 172.17.3.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Effectuer un test de communication (ping) entre PC-2 et PC-4.

```
PC>ping 172.18.4.4

Pinging 172.18.4.4 with 32 bytes of data:

Reply from 172.18.4.4: bytes=32 time=1ms TTL=127
Reply from 172.18.4.4: bytes=32 time=0ms TTL=127
Reply from 172.18.4.4: bytes=32 time=0ms TTL=127
Reply from 172.18.4.4: bytes=32 time=0ms TTL=127

Ping statistics for 172.18.4.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Effectuer un test de communication (ping) entre PC-1 et PC-4.

```
PC>ping 172.18.4.4

Pinging 172.18.4.4 with 32 bytes of data:

Reply from 172.18.4.4: bytes=32 time=0ms TTL=126
Reply from 172.18.4.4: bytes=32 time=0ms TTL=126
Reply from 172.18.4.4: bytes=32 time=0ms TTL=126
Reply from 172.18.4.4: bytes=32 time=0ms TTL=126

Ping statistics for 172.18.4.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

LES PROLONGATIONS:

```
Router#show 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, E - EGP
       i - IS-IS, 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

Gateway of last resort is not set

S    172.16.0.0/16 [1/0] via 172.18.4.254
S    172.17.0.0/16 [1/0] via 172.18.4.254
     172.18.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.18.0.0/16 is directly connected, GigabitEthernet0/0
L       172.18.5.254/32 is directly connected, GigabitEthernet0/0
     192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/1
L       192.168.10.254/32 is directly connected, GigabitEthernet0/1
```