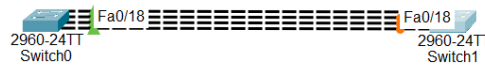


TP N° 7 Partie N° 2

1. Faite la topologie suivante :



Remarque

- On doit utilise la model 2960-24 TT qui supporte **STP**.
- On utilise les ports f0/1-2 et f0/18 , f0/20. (je mentionne ceci just pour simplifie le suivi de ce tp vous n'etes pas oblige d'utilise les meme interfaces)

2. Afficher l'état **STP** de tout les switchs

The screenshot displays the IOS Command Line Interface for a switch named Switch1. The configuration is as follows:

```
Switchen
Switchen#show sp
Switchen#show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    32769
           Address     0009.7033.5AA0
           This bridge is the root
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID   Priority    32768 (priority 32768 sys-id-ext 1)
           Address     0009.7033.5AA0
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 30

Interface   Role Sts Cost        Prio.Nbr Type
-----
Fa0/18     Desig FWD 19         128.18 P2P
Fa0/20     Desig FWD 19         128.20 P2P
Fa0/2       Desig FWD 19         128.2 P2P
Fa0/1       Desig FWD 19         128.1 P2P
```

3. Expliquer le resultat

Explication

- **switch 0** : puisqu'il est le **Root Bridge** (plus petite **MAC**) tout ces port sont **Designated**.
- **switch 1** : Puisque tout les ports ont le meme cout 19 **STP** prendra comme **Root Port** celui avec l'index interface la plus petite donc le port f0/1 est **Root Port** et les autre deviennent **Blocked Port**

4. C'est quoi **EtherChannel** ?

EtherChannel

C'est un protocole d'agrégation de ports de switch qui permet de regrouper plusieurs interfaces (même si pas contiguës) en un **canal de ports** qui est une interface virtuelle.

$$\text{bandwidth}_{\text{canal}} = \sum_{i=1}^n \text{bandwidth}_i$$

Un switch 2960-24TT supporte au max 6 interfaces dans un canal.
Un switch peut avoir plusieurs canaux.

5. Comment configurer **EtherChannel** ?

Config

On selectionne plusieurs interfaces avec : `int range <intervalle_1> , ... , <intervalle_n>`
Puis on passe au niveau 4 et on utilise : `channel-group <id_group> mode on`
On peut selectionner un canal avec : `int port-channel <id_group>`

```
Switch0
Physical Config CLI Attributes
IOS Command Line Interface
Switch0#
Switch0#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch0(config)#int range E0/1 , E0/20
Switch0(config-if-range)#channel-
Switch0(config-if-range)#channel-
Switch0(config-if-range)#channel-group 1 mode on
Switch0(config-if-range)#
Switch0(config-if-range)#
Creating a port-channel interface Port-channel 1
VLINE-S-CHANGED: Interface Port-channel1, changed state to up
VLINEPROTO-S-UPDOWN: Line protocol on Interface Port-channel1, changed state to up
Switch0(config-if-range)#exit
Switch0(config)#int port-
Switch0(config)#int port-channel 1
Switch0(config-if)#show
Switch0(config-if)#showport mode t
Switch0(config-if)#showport mode trunk

Switch1
Physical Config CLI Attributes
IOS Command Line Interface
Switch1#
Switch1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch1(config)#int range E0/1 , E0/20
Switch1(config-if-range)#channel-
Switch1(config-if-range)#channel-
Switch1(config-if-range)#channel-group 1 mode on
Switch1(config-if-range)#
Switch1(config-if-range)#
Creating a port-channel interface Port-channel 1
VLINE-S-CHANGED: Interface Port-channel1, changed state to up
VLINEPROTO-S-UPDOWN: Line protocol on Interface Port-channel1, changed state to up
Switch1(config-if-range)#exit
Switch1(config)#int port-
Switch1(config)#int port-channel 1
Switch1(config-if)#show
Switch1(config-if)#showport mode t
Switch1(config-if)#showport mode trunk
```

Remarque

On les a mit en **trunk mode** car les switches sont relie entre-eux.

6. Comment voir l'etat du **EtherChannel** dans une switch :

Etat

`show interfaces port-channel <id_group>` donne des information sur un seul canal par mis ces information on a la bandwidth du canal dans notre exampel ca va etre 200Mbps.
`show etherchannel summary` donne un apprecu sur tout les cannaux leur id et les interlaces concernent

```
Switch0
Physical Config CLI Attributes
IOS Command Line Interface
Switch0#show interfaces port-channel 1
Port-channel1 is up, line protocol is up (connected)
Hardware is Ethernet-802.17ae, 7733 (bia 0002.17ae.7733)
MTU 1500 bytes, BW 2000000 Kbit, DLR 100 usec,
 reliability 255/255, tagged 0/255, raised 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full duplex, 100Mb/s
Input flow-control is off, output flow-control is off
Members in this channel: Fa0/1 Fa0/20
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:00, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/0 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
956 packets input, 19335 bytes, 0 no buffer
Received 556 broadcasts, 0 multicast, 0 packets, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 watchdog, 0 multicast, 0 pause input
0 input packets with dribble condition detected
237 packets output, 49370 bytes, 0 underruns
0 output errors, 0 collisions, 10 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out

Switch0
Physical Config CLI Attributes
IOS Command Line Interface
Switch0#show etherchannel summary
Flags: D - down P - in port-channel
I - stand-alone S - suspended
H - hot-standby (SACP only)
R - Layer3 S - Layer2
U - in use F - failed to allocate aggregator
U - unable to form bundle
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 ..... Fa0/1(P) Fa0/20(P)
```

```
Switch1
Physical Config CLI Attributes
IOS Command Line Interface

Switch(config-if)#show interfaces port-channel 1
Port-channel1 is up, Line protocol is up (connected)
Hardware is Ethernet, address is 0001.c79a.c188 (bia 0001.c79a.c188)
MTU 1500 bytes, BW 1000000 kbit, DCT 100 uses,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 10000/r
input flow-control is off, output flow-control is off
Vlan membership is this channel: Po1/Po2
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:09, output 00:00:09, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue 1/0/0 (size/max)
5 minute input rate: 0 bits/sec, 0 packets/sec
5 minute output rate: 0 bits/sec, 0 packets/sec
956 packets input, 193351 bytes, 0 no buffer
Received 956 broadcasts, 0 input, 0 packets, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 watchdog, 0 multicast, 0 pause input
0 input packets with dribble condition detected
2357 packets output, 463570 bytes, 0 underruns
0 output errors, 0 collisions, 10 interface resets
0 interface, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

```
Switch1
Physical Config CLI Attributes
IOS Command Line Interface

Switch(config-if)#do show etherchannel summary
Flags: D - down, P - in port-channel
I - stand-alone s - suspended
H - Hot-standby (NACP only)
R - Layer3 S - Layer2
U - in use F - failed to allocate aggregator
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(SD) - Po2/1(P) Po2/2(P)
```

7. Re-Afficher l'état STP de tout les switches

```
Switch0
Physical Config CLI Attributes
IOS Command Line Interface

Switch(config-if)#do show spanning-tree
VLAN001
Spanning tree enabled protocol ieee
Root ID Priority 32768
Address 0009.7c35.5a00
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32768 (priority 32768 sys-id-ext 1)
Address 0009.7c35.5a00
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/18 Desg FWD 19 128.18 P2p
Po1 Desg FWD 12 128.27 P2p
Fa0/2 Desg FWD 19 128.2 P2p
```

```
Switch1
Physical Config CLI Attributes
IOS Command Line Interface

Switch(config-if)#do show spanning-tree
VLAN001
Spanning tree enabled protocol ieee
Root ID Priority 32768
Address 0009.7c35.5a00
Cost 12
Port 27 (Port-channel1)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32768 (priority 32768 sys-id-ext 1)
Address 0009.bcc5.4480
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
-----
Po1 Root FWD 12 128.27 P2p
Fa0/2 Altn BLK 19 128.02 P2p
Fa0/18 Altn BLK 19 128.18 P2p
```

8. Expliquer le resultat

Explication

- **switch 0** : puisqu'il est le **Root Bridge** (plus petite MAC) tout ces port sont **Designated**.
- **switch 1** : puisque le cannale a une bandwidth de 200 Mbps donc il est le plus rapid il est **Root Port** et les autre sont **Blocked Port**.