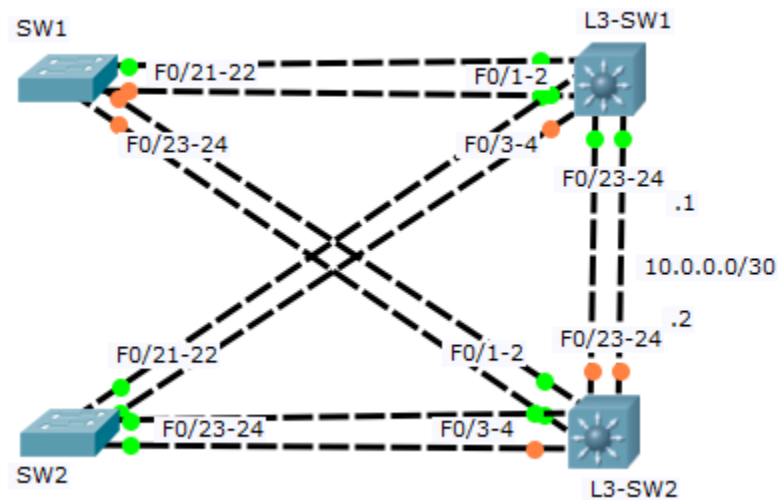# HƯỚNG DẪN LAB
LAB 14 – EtherChannels

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Sơ đồ LAB :

Yêu cầu

- Đấu nối và đặt tên thiết bị như sơ đồ
- Cấu hình đường trunk cho các link kết nối giữa các switch, trừ hai link giữa L3-SW1 và L3-SW2
- Cấu hình đường kết nối giữa L3-SW1 và L3-SW2
- Cấu hình Rapid Spanning Tree cho các switch
- Cấu hình EtherChannel để tận dụng tất cả các đường dự phòng như sau :

Thiết bị	Port	Channel	Mode
L3-SW1	F0/1-2	PortChannel 1	On
	F0/3-4	PortChannel 2	On
	F0/23-24	PortChannel 3	On
L3-SW2	F0/1-2	PortChannel 1	On
	F0/3-4	PortChannel 2	On
	F0/23-24	PortChannel 3	On
SW1	F0/21-22	PortChannel 1	On
	F0/23-24	PortChannel 2	On
SW2	F0/21-22	PortChannel 1	On
	F0/23-24	PortChannel 2	On

- Đặt IP cho kết nối Layer 3 giữa L3-SW1 và L3-SW2 như sơ đồ
- Quan sát các thông số khi cấu hình EtherChannel

Lưu ý : Với sơ đồ như trên, sẽ có rất nhiều port bị block do RSTP (như hình vẽ) . Hai đường kết nối giữa L3-SW1 và L3-SW2 là đường layer 3 tách biệt, vì vậy phải cần đến 2 subnet mới có thể đặt IP cho các cổng.

Mục tiêu cuối cùng của bài lab là bảo cấu hình để trạng thái các port như hình dưới đây
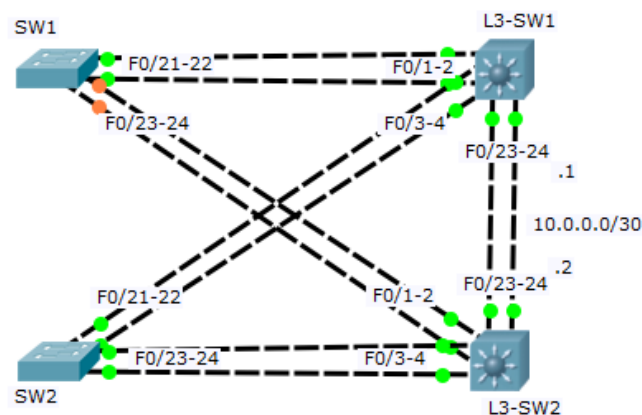
Lưu ý : hoạt động của STP và RSTP dựa vào địa chỉ MAC của thiết bị, mà địa chỉ MAC có tính chất ngẫu nhiên. Do đó, khi làm lab, kết quả của học viên có thể sẽ không giống với hướng dẫn. Ví dụ, Root Bridge khác, port bị block khác. Tuy nhiên, phải đảm bảo trong sơ đồ có đúng 1 port channel bị block.

Các bước thực hiện

Bước 1: Đấu nối và đổi tên thiết bị như sơ đồ.

Bước 2: Cấu hình trunk

L3-SW1

```
L3-SW1(config)#interface range F0/1-4
L3-SW1(config-if-range)#switchport trunk encapsulation dot1q
L3-SW1(config-if-range)#switchport mode trunk

Kiểm tra:
L3-SW1#show interfaces trunk
Port          Mode          Encapsulation Status        Native vlan
Fa0/1         on            802.1q        trunking      1
Fa0/2         on            802.1q        trunking      1
Fa0/3         on            802.1q        trunking      1
Fa0/4         on            802.1q        trunking      1

Port          Vlans allowed on trunk
Fa0/1         1-1005
Fa0/2         1-1005
Fa0/3         1-1005
Fa0/4         1-1005

Port          Vlans allowed and active in management domain
Fa0/1         1
Fa0/2         1
Fa0/3         1
Fa0/4         1

Port          Vlans in spanning tree forwarding state and not pruned
Fa0/1         none
Fa0/2         none
Fa0/3         none
Fa0/4         none
```

L3-SW2

```
L3-SW2(config)#interface range F0/1-4
L3-SW2(config-if-range)#switchport trunk  encapsulation dot1q
L3-SW2(config-if-range)#switchport mode trunk

Kiểm tra:
L3-SW2#show interfaces trunk
Port          Mode          Encapsulation Status        Native vlan
Fa0/1         on            802.1q        trunking      1
Fa0/2         on            802.1q        trunking      1
Fa0/3         on            802.1q        trunking      1
Fa0/4         on            802.1q        trunking      1

Port          Vlans allowed on trunk
Fa0/1         1-1005
Fa0/2         1-1005
Fa0/3         1-1005
Fa0/4         1-1005

Port          Vlans allowed and active in management domain
Fa0/1         1
Fa0/2         1
```

```
Fa0/3       1
Fa0/4       1


Port        Vlans in spanning tree forwarding state and not pruned
Fa0/1       none
Fa0/2       none
Fa0/3       none
Fa0/4       none
```

```
SW1(config)#int range F0/21-24
SW1(config-if-range)#switchport mode trunk
```

Kiểm tra:
```
SW1#show interfaces trunk
Port        Mode            Encapsulation  Status      Native vlan
Fa0/21      on              802.1q         trunking    1
Fa0/22      on              802.1q         trunking    1
Fa0/23      on              802.1q         trunking    1
Fa0/24      on              802.1q         trunking    1


Port        Vlans allowed on trunk
Fa0/21      1-1005
Fa0/22      1-1005
Fa0/23      1-1005
Fa0/24      1-1005


Port        Vlans allowed and active in management domain
Fa0/21      1
Fa0/22      1
Fa0/23      1
Fa0/24      1


Port        Vlans in spanning tree forwarding state and not pruned
Fa0/21      1
Fa0/22      none
Fa0/23      none
Fa0/24      none
```

SW2

```
SW2(config)#interface range F0/21-24
SW2(config-if-range)#switchport mode trunk
```

Kiểm tra:
```
SW2#show interfaces trunk
Port        Mode            Encapsulation  Status      Native vlan
Fa0/21      on              802.1q         trunking    1
Fa0/22      on              802.1q         trunking    1
Fa0/23      on              802.1q         trunking    1
Fa0/24      on              802.1q         trunking    1


Port        Vlans allowed on trunk
Fa0/21      1-1005
Fa0/22      1-1005
Fa0/23      1-1005
Fa0/24      1-1005


Port        Vlans allowed and active in management domain
Fa0/21      1
```

```
Fa0/22      1
Fa0/23      1
Fa0/24      1

Port        Vlans in spanning tree forwarding state and not pruned
Fa0/21      1
Fa0/22      1
Fa0/23      1
Fa0/24      1
```

Bước 3: Cấu hình đường layer cho kết nối giữa L3-SW1 và L3-SW2

L3-SW1
L3-SW1(config)#**interface range F0/23-24** L3-SW1(config-if-range)#**no switchport**

L3-SW2
L3-SW2(config)#**interface range F0/23-24** L3-SW2(config-if-range)#**no switchport**

Bước 4: Cấu hình RSTP cho tất cả các switch

L3-SW1

```
L3-SW1(config)#spanning-tree mode rapid-pvst

Kiểm tra:
L3-SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     000B.BE77.A2EB
             Cost        19
             Port        3(FastEthernet0/3)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0010.1127.32C2
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20


Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1            Desg FWD 19        128.1    P2p
Fa0/2            Desg FWD 19        128.2    P2p
Fa0/3            Root FWD 19        128.3    P2p
Fa0/4            Altn BLK 19        128.4    P2p
```

L3-SW2

```
L3-SW2(config)#spanning-tree mode rapid-pvst

Kiểm tra:
L3-SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
```

```
   Root ID     Priority     32769
               Address      000B.BE77.A2EB
               Cost         19
               Port         3(FastEthernet0/3)
               Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

   Bridge ID  Priority     32769  (priority 32768 sys-id-ext 1)
               Address      0030.A3BA.D8AC
               Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
               Aging Time   20

Interface          Role Sts Cost       Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1              Desg FWD 19         128.1    P2p
Fa0/3              Root FWD 19         128.3    P2p
Fa0/2              Desg FWD 19         128.2    P2p
Fa0/4              Altn BLK 19         128.4    P2p
```

SW1

```
SW1(config)#spanning-tree mode rapid-pvst


Kiểm tra:
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID     Priority     32769
               Address      000B.BE77.A2EB
               Cost         38
               Port         21(FastEthernet0/21)
               Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

   Bridge ID  Priority     32769  (priority 32768 sys-id-ext 1)
               Address      0060.3EBA.A02C
               Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
               Aging Time   20

Interface          Role Sts Cost       Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/24             Altn BLK 19         128.24   P2p
Fa0/22             Altn BLK 19         128.22   P2p
Fa0/23             Altn BLK 19         128.23   P2p
Fa0/21             Root LSN 19         128.21   P2p
```

SW2

```
SW2(config)#spanning-tree mode rapid-pvst


Kiểm tra:
SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID     Priority     32769
               Address      000B.BE77.A2EB
               This bridge is the root
               Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

   Bridge ID  Priority     32769  (priority 32768 sys-id-ext 1)
               Address      000B.BE77.A2EB
               Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
               Aging Time   20
```

```
Interface          Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/23             Desg BLK 19        128.23   P2p
Fa0/21             Desg BLK 19        128.21   P2p
Fa0/24             Desg BLK 19        128.24   P2p
Fa0/22             Desg BLK 19        128.22   P2p
```

Lúc này, Spanning Tree đang chạy trên các port Fast Ethernet, nên có rất nhiều port bị Block.

Bước 5: Cấu hình EtherChannel

```
                              L3-SW1
L3-SW1(config)#interface range F0/1-2
L3-SW1(config-if-range)#channel-group 1 mode on
L3-SW1(config-if-range)#exit
L3-SW1(config)#interface range F0/3-4
L3-SW1(config-if-range)#channel-group 2 mode on
L3-SW1(config-if-range)#exit
L3-SW1(config)#interface range F0/23-24
L3-SW1(config-if-range)#channel-group 3 mode on



Kiểm tra:
L3-SW1#show etherchannel summary

Group  Port-channel  Protocol    Ports
------+-------------+-----------+----------------------------------------------

1      Po1(SU)          -        Fa0/1(P) Fa0/2(P)
2      Po2(SU)          -        Fa0/3(D) Fa0/4(P)
3      Po3(RU)          -        Fa0/23(P) Fa0/24(P)


L3-SW1#show etherchannel port-channel
            Channel-group listing:
            ---------------------

Group: 1
----------
            Port-channels in the group:
            --------------------------

Port-channel: Po1
------------

Age of the Port-channel   = 00d:00h:27m:26s
Logical slot/port  = 2/1        Number of ports = 2
GC                 = 0x00000000      HotStandBy port = null
Port state         = Port-channel
Protocol           =    PAGP
Port Security      = Disabled

Ports in the Port-channel:

Index  Load  Port    EC state          No of bits
------+------+------+-----------------+-----------
  0     00    Fa0/1   On                    0
  0     00    Fa0/2   On                    0
Time since last port bundled:    00d:00h:23m:20s    Fa0/2
```

```
Group: 2
----------
                 Port-channels in the group:
                 ---------------------------

Port-channel: Po2
------------

Age of the Port-channel   = 00d:00h:27m:05s
Logical slot/port   = 2/2         Number of ports = 2
GC                  = 0x00000000      HotStandBy port = null
Port state          = Port-channel
Protocol            =     PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port     EC state         No of bits
------+------+------+------------------+-----------
  0     00     Fa0/3    On                    0
  0     00     Fa0/4    On                    0
Time since last port bundled:    00d:00h:27m:05s    Fa0/4


Group: 3
----------
                 Port-channels in the group:
                 ---------------------------

Port-channel: Po3
------------

Age of the Port-channel   = 00d:00h:00m:16s
Logical slot/port   = 2/3         Number of ports = 2
GC                  = 0x00000000      HotStandBy port = null
Port state          = Port-channel
Protocol            =     PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port     EC state         No of bits
------+------+------+------------------+-----------
  0     00     Fa0/23   On                    0
  0     00     Fa0/24   On                    0
Time since last port bundled:    00d:00h:00m:16s    Fa0/24
```

Từ output, có thể thấy :

- Có 3 port channel là **Po1**, **Po2** và **Po3**
- Po1**(SU)** và Po2**(SU)** cho thấy đây là port channel **layer 2**
- Po3(**RU**) cho thấy đây là port channel **layer 3**
- **Po1** gồm **F0/1** và **F0/2**
- **Po2** gồm **F0/3** và **F0/4**
- **Po3** gồm **F0/23** và **F0/24**
- Tuy **Protocol PAGP**, nhưng chúng ta đang cấu hình mode **On**, nên các switch **không chạy giao thức** nào cả.

- **EC State** là mode mà chúng ta vừa cấu hình cho các port , ở đây là mode **On**

```
                                    L3-SW2
L3-SW2(config)#interface range F0/1-2
L3-SW2(config-if-range)#channel-group 1 mode on
L3-SW2(config-if-range)#exit
L3-SW2(config)#interface range F0/3-4
L3-SW2(config-if-range)#channel-group 2 mode on
L3-SW2(config-if-range)#exit
L3-SW2(config)#interface range F0/23-24
L3-SW2(config-if-range)#channel-group 3 mode on


Kiểm tra:
L3-SW2#show etherchannel summary

Group  Port-channel  Protocol    Ports
------+-------------+-----------+------------------------------------------------

1      Po1(SU)          -        Fa0/1(D) Fa0/2(P)
2      Po2(SU)          -        Fa0/3(D) Fa0/4(P)
3      Po3(RU)          -        Fa0/23(P) Fa0/24(P)



L3-SW2#show etherchannel port-channel
               Channel-group listing:
               ----------------------

Group: 1
----------
               Port-channels in the group:
               --------------------------

Port-channel: Po1
------------

Age of the Port-channel   = 00d:00h:17m:14s
Logical slot/port   = 2/1       Number of ports = 2
GC                  = 0x00000000      HotStandBy port = null
Port state          = Port-channel
Protocol            =   PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port    EC state         No of bits
------+------+------+-----------------+-----------
  0     00    Fa0/1    On                  0
  0     00    Fa0/2    On                  0
Time since last port bundled:   00d:00h:17m:14s    Fa0/2


Group: 2
----------
               Port-channels in the group:
               --------------------------

Port-channel: Po2
------------

Age of the Port-channel   = 00d:00h:16m:46s
```

```
Logical slot/port    = 2/2          Number of ports = 2
GC                   = 0x00000000      HotStandBy port = null
Port state           = Port-channel
Protocol             =    PAGP
Port Security        = Disabled


Ports in the Port-channel:

Index   Load   Port    EC state          No of bits
------+------+------+-----------------+-----------
  0     00    Fa0/3   On                    0
  0     00    Fa0/4   On                    0
Time since last port bundled:    00d:00h:16m:46s    Fa0/4



Group: 3
----------
             Port-channels in the group:
             --------------------------


Port-channel: Po3
------------


Age of the Port-channel   = 00d:00h:00m:43s
Logical slot/port    = 2/3          Number of ports = 2
GC                   = 0x00000000      HotStandBy port = null
Port state           = Port-channel
Protocol             =    PAGP
Port Security        = Disabled


Ports in the Port-channel:

Index   Load   Port    EC state          No of bits
------+------+------+-----------------+-----------
  0     00    Fa0/23  On                    0
  0     00    Fa0/24  On                    0
Time since last port bundled:    00d:00h:00m:43s    Fa0/24
```

SW1

```
SW1(config)#interface range F0/21-22
SW1(config-if-range)#channel-group 1 mode on
SW1(config-if-range)#exit
SW1(config)#interface range F0/23-24
SW1(config-if-range)#channel-group 2 mode on
```

Kiểm tra:
```
SW1#show etherchannel summary

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-------------------------------------------

1     Po1(SU)          -       Fa0/21(D) Fa0/22(P)
2     Po2(SU)          -       Fa0/23(D) Fa0/24(P)



SW1#show etherchannel port-channel
             Channel-group listing:
             ---------------------


Group: 1
----------
```

```
            Port-channels in the group:
            ---------------------------


Port-channel: Po1
------------

Age of the Port-channel   = 00d:00h:00m:29s
Logical slot/port   = 2/1        Number of ports = 2
GC                  = 0x00000000     HotStandBy port = null
Port state          = Port-channel
Protocol            =    PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port      EC state          No of bits
------+------+------+------------------+-----------
  0     00    Fa0/21   On                    0
  0     00    Fa0/22   On                    0
Time since last port bundled:   00d:00h:00m:29s    Fa0/22


Group: 2
----------
            Port-channels in the group:
            ---------------------------


Port-channel: Po2
------------

Age of the Port-channel   = 00d:00h:00m:07s
Logical slot/port   = 2/2        Number of ports = 2
GC                  = 0x00000000     HotStandBy port = null
Port state          = Port-channel
Protocol            =    PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port      EC state          No of bits
------+------+------+------------------+-----------
  0     00    Fa0/23   On                    0
  0     00    Fa0/24   On                    0
Time since last port bundled:   00d:00h:00m:07s    Fa0/24
```

SW2

```
SW2(config)#interface range F0/21-22
SW2(config-if-range)#channel-group 1 mode on
SW2(config-if-range)#exit
SW2(config)#interface range F0/23-24
SW2(config-if-range)#channel-group 2 mode on



SW2#show etherchannel summary

Group  Port-channel  Protocol    Ports
------+-------------+-----------+---------------------------------------------

1      Po1(SU)          -      Fa0/21(D)  Fa0/22(P)
2      Po2(SU)          -      Fa0/23(D)  Fa0/24(P)
```

```
SW2#show etherchannel port-channel
                Channel-group listing:
                ----------------------

Group: 1
----------
                Port-channels in the group:
                ---------------------------

Port-channel: Po1
------------

Age of the Port-channel   = 00d:00h:00m:20s
Logical slot/port   = 2/1        Number of ports = 2
GC                  = 0x00000000      HotStandBy port = null
Port state          = Port-channel
Protocol            =    PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port     EC state        No of bits
------+------+------+------------------+-----------
  0     00    Fa0/21   On                   0
  0     00    Fa0/22   On                   0
Time since last port bundled:   00d:00h:00m:20s    Fa0/22


Group: 2
----------
                Port-channels in the group:
                ---------------------------

Port-channel: Po2
------------

Age of the Port-channel   = 00d:00h:00m:07s
Logical slot/port   = 2/2        Number of ports = 2
GC                  = 0x00000000      HotStandBy port = null
Port state          = Port-channel
Protocol            =    PAGP
Port Security       = Disabled

Ports in the Port-channel:

Index   Load   Port     EC state        No of bits
------+------+------+------------------+-----------
  0     00    Fa0/23   On                   0
  0     00    Fa0/24   On                   0
Time since last port bundled:   00d:00h:00m:07s    Fa0/24
```
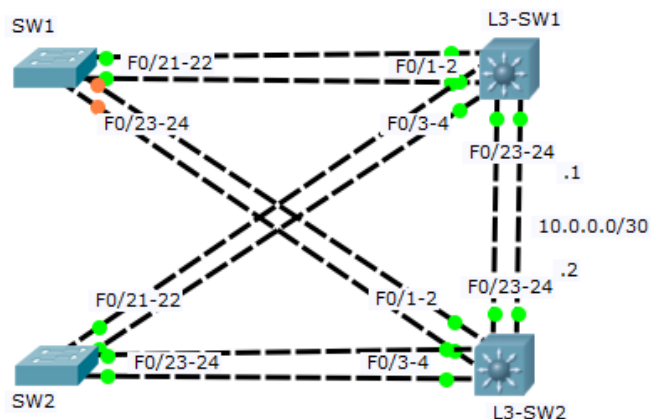
Bước 6: Kiểm tra lại sơ đồ

Lúc này, các interface đã được đưa vào port channel. Port F0/23-24 trên SW1 bị block do STP. Các port còn lại đều up.

Bước 7: Kiểm tra lại bằng câu lệnh

L3-SW1

```
L3-SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     000B.BE77.A2EB
             Cost        9
             Port        28(Port-channel 2)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0010.1127.32C2
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20


Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Po1              Desg FWD 9         128.27   Shr
Po2              Root FWD 9         128.28   Shr
```

Từ output, có thể thấy:

- Cây Spanning Tree bây giờ không còn chạy trên các port F0/1, F0/2... nữa, mà là chạy trên các **port channel**
    o Root Port là **Port Channel 2**
    o **Po1** là **Designated Port**, đang ở trạng thái **Fowarding** và có **cost** bằng **9**
    o **Po2** là **Root Port**, đang ở trạng thái **Fowarding** và có **cost** bằng **9**
- Do gom 2 port Fast Ethernet lại thành 1 port channel, nên bandwidth của Port Channel sẽ gấp đôi bandwidth của port Fast Ethernet. Do đó, cost của Port Channel chỉ bằng một nửa cost của port Fast Ethernet (cụ thể là bằng 9)
- Port Channel 3 không tham gia vào cây Spanning Tree, do Port Channel 3 là port layer 3

```
L3-SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     000B.BE77.A2EB
             Cost        9
             Port        28(Port-channel 2)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0030.A3BA.D8AC
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Po2              Root FWD 9         128.28   Shr
Po1              Desg FWD 9         128.27   Shr
```

```
SW1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     000B.BE77.A2EB
             Cost        18
             Port        27(Port-channel 1)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     0060.3EBA.A02C
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Po2              Altn BLK 9         128.28   Shr
Po1              Root FWD 9         128.27   Shr
```

Có thể thấy **Po2** đang là **Alternate Port** và đang bị **block**, do đó, trên port **F0/23** và **F0/24** cũng đang bị **block**.

```
SW2#show spanning-tree
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    32769
             Address     000B.BE77.A2EB
             This bridge is the root
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32769  (priority 32768 sys-id-ext 1)
             Address     000B.BE77.A2EB
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  20

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Po1              Desg FWD 9         128.27   Shr
Po2              Desg FWD 9         128.28   Shr
```

SW2 đang là **root switch**. Ở bài lab này, chúng ta không quan tâm switch nào là root switch, nên không cần phải chỉnh thêm gì cả.

Bước 8: Đặt IP cho đường Layer 3

Vì chúng ta đã gom hai port F0/23 và F0/24 vào PortChannel 3, nên khi đặt IP, chúng ta phải **đặt IP cho PortChannel**, không đặt IP cho từng port.

L3-SW1
```
L3-SW1(config)#interface Po3
L3-SW1(config-if)#ip address 10.0.0.1 255.255.255.252

Kiểm tra:
L3-SW1#show ip interface brief
Interface              IP-Address      OK? Method Status                 Protocol
Port-channel 1         unassigned      YES unset  up                     up
Port-channel 2         unassigned      YES unset  up                     up
Port-channel 3         10.0.0.1        YES manual up                     up
FastEthernet0/1        unassigned      YES unset  up                     up
FastEthernet0/2        unassigned      YES unset  up                     up
FastEthernet0/3        unassigned      YES unset  up                     up
FastEthernet0/4        unassigned      YES unset  up                     up
FastEthernet0/5        unassigned      YES unset  down                   down
FastEthernet0/6        unassigned      YES unset  down                   down
FastEthernet0/7        unassigned      YES unset  down                   down
FastEthernet0/8        unassigned      YES unset  down                   down
FastEthernet0/9        unassigned      YES unset  down                   down
FastEthernet0/10       unassigned      YES unset  down                   down
FastEthernet0/11       unassigned      YES unset  down                   down
FastEthernet0/12       unassigned      YES unset  down                   down
FastEthernet0/13       unassigned      YES unset  down                   down
FastEthernet0/14       unassigned      YES unset  down                   down
FastEthernet0/15       unassigned      YES unset  down                   down
FastEthernet0/16       unassigned      YES unset  down                   down
FastEthernet0/17       unassigned      YES unset  down                   down
FastEthernet0/18       unassigned      YES unset  down                   down
FastEthernet0/19       unassigned      YES unset  down                   down
FastEthernet0/20       unassigned      YES unset  down                   down
FastEthernet0/21       unassigned      YES unset  down                   down
FastEthernet0/22       unassigned      YES unset  down                   down
FastEthernet0/23       unassigned      YES unset  up                     up
FastEthernet0/24       unassigned      YES unset  up                     up
GigabitEthernet0/1     unassigned      YES unset  down                   down
GigabitEthernet0/2     unassigned      YES unset  down                   down
Vlan1                  unassigned      YES unset  administratively down down
```

L3-SW2
```
L3-SW2(config)#interface Po3
L3-SW2(config-if)#ip address 10.0.0.2 255.255.255.252

Kiểm tra:
L3-SW2#show ip interface brief
Interface              IP-Address      OK? Method Status                 Protocol
Port-channel 1         unassigned      YES unset  up                     up
Port-channel 2         unassigned      YES unset  up                     up
Port-channel 3         10.0.0.2        YES manual up                     up
FastEthernet0/1        unassigned      YES unset  up                     up
FastEthernet0/2        unassigned      YES unset  up                     up
FastEthernet0/3        unassigned      YES unset  up                     up
```

```
FastEthernet0/4       unassigned      YES unset  up                    up
FastEthernet0/5       unassigned      YES unset  down                  down
FastEthernet0/6       unassigned      YES unset  down                  down
FastEthernet0/7       unassigned      YES unset  down                  down
FastEthernet0/8       unassigned      YES unset  down                  down
FastEthernet0/9       unassigned      YES unset  down                  down
FastEthernet0/10      unassigned      YES unset  down                  down
FastEthernet0/11      unassigned      YES unset  down                  down
FastEthernet0/12      unassigned      YES unset  down                  down
FastEthernet0/13      unassigned      YES unset  down                  down
FastEthernet0/14      unassigned      YES unset  down                  down
FastEthernet0/15      unassigned      YES unset  down                  down
FastEthernet0/16      unassigned      YES unset  down                  down
FastEthernet0/17      unassigned      YES unset  down                  down
FastEthernet0/18      unassigned      YES unset  down                  down
FastEthernet0/19      unassigned      YES unset  down                  down
FastEthernet0/20      unassigned      YES unset  down                  down
FastEthernet0/21      unassigned      YES unset  down                  down
FastEthernet0/22      unassigned      YES unset  down                  down
FastEthernet0/23      unassigned      YES unset  up                    up
FastEthernet0/24      unassigned      YES unset  up                    up
GigabitEthernet0/1    unassigned      YES unset  down                  down
GigabitEthernet0/2    unassigned      YES unset  down                  down
Vlan1                 unassigned      YES unset  administratively down down
```

Lưu ý: Khi **show ip interface brief**, học viên có thể gặp trường hợp port **up/down** dù đã cấu hình đúng. Ví dụ:

L3-SW2
```
L3-SW2#show ip interface brief
Interface          IP-Address      OK? Method Status                Protocol
Port-channel 1     unassigned      YES unset  up                    up
Port-channel 2     unassigned      YES unset  up                    up
Port-channel 3     10.0.0.2        YES manual up                    up
FastEthernet0/1    unassigned      YES unset  up                    up
FastEthernet0/2    unassigned      YES unset  up                    up
FastEthernet0/3    unassigned      YES unset  up                    up
FastEthernet0/4    unassigned      YES unset  up                    up
FastEthernet0/5    unassigned      YES unset  down                  down
FastEthernet0/6    unassigned      YES unset  down                  down
FastEthernet0/7    unassigned      YES unset  down                  down
FastEthernet0/8    unassigned      YES unset  down                  down
FastEthernet0/9    unassigned      YES unset  down                  down
FastEthernet0/10   unassigned      YES unset  down                  down
FastEthernet0/11   unassigned      YES unset  down                  down
FastEthernet0/12   unassigned      YES unset  down                  down
FastEthernet0/13   unassigned      YES unset  down                  down
FastEthernet0/14   unassigned      YES unset  down                  down
FastEthernet0/15   unassigned      YES unset  down                  down
FastEthernet0/16   unassigned      YES unset  down                  down
FastEthernet0/17   unassigned      YES unset  down                  down
FastEthernet0/18   unassigned      YES unset  down                  down
FastEthernet0/19   unassigned      YES unset  down                  down
FastEthernet0/20   unassigned      YES unset  down                  down
FastEthernet0/21   unassigned      YES unset  down                  down
FastEthernet0/22   unassigned      YES unset  down                  down
FastEthernet0/23   unassigned      YES unset  up                    down
FastEthernet0/24   unassigned      YES unset  up                    up
GigabitEthernet0/1 unassigned      YES unset  down                  down
GigabitEthernet0/2 unassigned      YES unset  down                  down
Vlan1              unassigned      YES unset  administratively down down
```

Khi đó, chỉ cần vào port đang gặp vấn đề, **shutdown** sau đó **no shutdown** port là được

L3-SW2

```
L3-SW2(config)#interface F0/23
L3-SW2(config-if)#shutdown
L3-SW2(config-if)#no shutdown

Kiểm tra:
L3-SW2#show ip interface brief
Interface              IP-Address     OK? Method Status                 Protocol
Port-channel 1         unassigned     YES unset  up                     up
Port-channel 2         unassigned     YES unset  up                     up
Port-channel 3         10.0.0.2       YES manual up                     up
FastEthernet0/1        unassigned     YES unset  up                     up
FastEthernet0/2        unassigned     YES unset  up                     up
FastEthernet0/3        unassigned     YES unset  up                     up
FastEthernet0/4        unassigned     YES unset  up                     up
FastEthernet0/5        unassigned     YES unset  down                   down
FastEthernet0/6        unassigned     YES unset  down                   down
FastEthernet0/7        unassigned     YES unset  down                   down
FastEthernet0/8        unassigned     YES unset  down                   down
FastEthernet0/9        unassigned     YES unset  down                   down
FastEthernet0/10       unassigned     YES unset  down                   down
FastEthernet0/11       unassigned     YES unset  down                   down
FastEthernet0/12       unassigned     YES unset  down                   down
FastEthernet0/13       unassigned     YES unset  down                   down
FastEthernet0/14       unassigned     YES unset  down                   down
FastEthernet0/15       unassigned     YES unset  down                   down
FastEthernet0/16       unassigned     YES unset  down                   down
FastEthernet0/17       unassigned     YES unset  down                   down
FastEthernet0/18       unassigned     YES unset  down                   down
FastEthernet0/19       unassigned     YES unset  down                   down
FastEthernet0/20       unassigned     YES unset  down                   down
FastEthernet0/21       unassigned     YES unset  down                   down
FastEthernet0/22       unassigned     YES unset  down                   down
FastEthernet0/23       unassigned     YES unset  up                     up
FastEthernet0/24       unassigned     YES unset  up                     up
GigabitEthernet0/1     unassigned     YES unset  down                   down
GigabitEthernet0/2     unassigned     YES unset  down                   down
Vlan1                  unassigned     YES unset  administratively down  down
```

Bước 9: Ping kiểm tra

L3-SW1

```
L3-SW1#ping 10.0.0.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms
```

L3-SW2

```
L3-SW2#ping 10.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms
```