

## Tóm tắt EtherChannel

Công nghệ EtherChannel có thể bó từ 2 đến 16 link FE, GE, 10GE thành 1 link logical. Khi đó, switch đối xử các port thuộc EtherChannel như 1 port duy nhất

Switch hoặc thiết bị ở 2 đầu EtherChannel phải hiểu và sử dụng công nghệ EtherChannel để đảm bảo hoạt động đúng và chống loop. Nếu chỉ có 1 đầu sử dụng EtherChannel, còn đầu bên kia không sử dụng thì có thể gây ra loop.

Traffic không phải lúc nào cũng được phân bố đồng đều qua các đường link thuộc EtherChannel, mà nó phụ thuộc vào phương pháp load balancing mà switch sử dụng và mẫu traffic trong mạng.

Nếu một trong các link thuộc EtherChannel bị down thì traffic sẽ tự động được chuyển sang link khác trong channel chỉ trong vòng vài miliseconds (theo kết quả mình test trên thiết bị thật thì thậm chí không bị rớt 1 gói tin nào). Khi link up trở lại thì traffic được phân bố lại như cũ

## Bài tập: Cấu hình port EtherChannel sử dụng PAgP



### Yêu cầu:

- Cấu hình 4 port e0/0 đến e0/3 thành 1 port duy nhất
- Sử dụng chuẩn của Cisco

```
SW1(config)#interface range e0/0 – 3
SW1(config-if-range)#channel-protocol pagp
SW1(config-if-range)#channel-group 10 ?
mode Etherchannel Mode of the interface
SW1(config-if-range)#channel-group 10 mode ?
active      Enable LACP unconditionally
auto        Enable PAgP only if a PAgP device is detected
desirable   Enable PAgP unconditionally
on          Enable Etherchannel only
passive     Enable LACP only if a LACP device is detected
SW1(config-if-range)#channel-group 10 mode desirable
```

```
SW2(config)#interface range e0/0 – 3
SW2(config-if-range)#channel-protocol pagp
SW2(config-if-range)#channel-group 10 mode ?
active      Enable LACP unconditionally
auto        Enable PAgP only if a PAgP device is detected
desirable   Enable PAgP unconditionally
on           Enable Etherchannel only
passive     Enable LACP only if a LACP device is detected
SW2(config-if-range)#channel-group 10 mode auto
```

**Ghi chú:** số 10 trong channel-group trên 2 Switch không nhất thiết phải giống nhau

```
SW2#show etherchannel summary
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
-----+-----+-----+-----
10     Po10 (SU)      PAgP        Et0/0 (P)  Et0/1 (P)  Et0/2 (P)
                   Et0/3 (P)
```

```
SW2#show spanning-tree
```

```
VLAN0001
```

```
Spanning tree enabled protocol ieee
```

```
Root ID    Priority    32769
           Address    aabb.cc00.0100
           Cost      19
           Port      65 (Port-channel10)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
```

```
Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
           Address    aabb.cc00.0200
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time 15 sec
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Et1/0	Desg	FWD	100	128.5	Shr
Et1/1	Desg	FWD	100	128.6	Shr
Et1/2	Desg	FWD	100	128.7	Shr
Et1/3	Desg	FWD	100	128.8	Shr
Et2/0	Desg	FWD	100	128.9	Shr
Et2/1	Desg	FWD	100	128.10	Shr
Et2/2	Desg	FWD	100	128.11	Shr
Et2/3	Desg	FWD	100	128.12	Shr
Et3/0	Desg	FWD	100	128.13	Shr
Et3/1	Desg	FWD	100	128.14	Shr
Et3/2	Desg	FWD	100	128.15	Shr
Et3/3	Desg	FWD	100	128.16	Shr
Po10	Root	FWD	19	128.65	Shr

```
SW2#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
Ethernet0/0	unassigned	YES	unset	up	up
Ethernet0/1	unassigned	YES	unset	up	up
Ethernet0/2	unassigned	YES	unset	up	up
Ethernet0/3	unassigned	YES	unset	up	up
Ethernet1/0	unassigned	YES	unset	up	up
Ethernet1/1	unassigned	YES	unset	up	up
Ethernet1/2	unassigned	YES	unset	up	up
Ethernet1/3	unassigned	YES	unset	up	up
Ethernet2/0	unassigned	YES	unset	up	up
Ethernet2/1	unassigned	YES	unset	up	up
Ethernet2/2	unassigned	YES	unset	up	up
Ethernet2/3	unassigned	YES	unset	up	up
Ethernet3/0	unassigned	YES	unset	up	up
Ethernet3/1	unassigned	YES	unset	up	up
Ethernet3/2	unassigned	YES	unset	up	up
Ethernet3/3	unassigned	YES	unset	up	up
Port-channel10	unassigned	YES	unset	up	up
Vlan1	unassigned	YES	unset	administratively down	down

```
SW1#show spanning-tree
```

```
VLAN0001
```

```
Spanning tree enabled protocol ieee
```

```
Root ID      Priority      32769
```

```
Address      aabb.cc00.0100
```

```
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      aabb.cc00.0100
```

```
Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
```

```
Aging Time   300 sec
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Et1/0	Desg	FWD	100	128.5	Shr
Et1/1	Desg	FWD	100	128.6	Shr
Et1/2	Desg	FWD	100	128.7	Shr
Et1/3	Desg	FWD	100	128.8	Shr
Et2/0	Desg	FWD	100	128.9	Shr
Et2/1	Desg	FWD	100	128.10	Shr
Et2/2	Desg	FWD	100	128.11	Shr
Et2/3	Desg	FWD	100	128.12	Shr
Et3/0	Desg	FWD	100	128.13	Shr
Et3/1	Desg	FWD	100	128.14	Shr
Et3/2	Desg	FWD	100	128.15	Shr
Et3/3	Desg	FWD	100	128.16	Shr
Po10	Desg	FWD	19	128.65	Shr

### Cấu hình Portchannel 10 là port Trunk

```
SW1(config)#interface port-channel 10
```

```
SW1(config-if)#switchport trunk encapsulation dot1q
```

```
SW1(config-if)#switchport mode trunk
```

```
SW1(config-if)#exit
```

```
SW2(config)#interface port-channel 10
```

```
SW2(config-if)#switchport trunk encapsulation dot1q
```

```
SW2(config-if)#switchport mode trunk
```

```
SW2(config-if)#exit
```

```
SW2#show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Po10	on	802.1q	trunking	1

Port	Vlans allowed on trunk
Po10	1-4094

Port	Vlans allowed and active in management domain
Po10	1

Port	Vlans in spanning tree forwarding state and not pruned
Po10	none

```
SW1#show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Po10	desirable	802.1q	trunking	1

Port	Vlans allowed on trunk
Po10	1-4094

Port	Vlans allowed and active in management domain
Po10	1

Port	Vlans in spanning tree forwarding state and not pruned
Po10	1

# Layer 3 Etherchannel



```
SW1(config)#interface range e0/0 – 3
SW1(config-if-range)#channel-protocol pagp
SW1(config-if-range)#channel-group 10 mode desirable
SW1(config)#interface port-channel 10
SW1(config-if)#no switchport
SW1(config-if)#ip address 1.1.1.1 255.0.0.0
```

```
SW2(config)#interface range e0/0 – 3
SW2(config-if-range)#channel-protocol pagp
SW2(config-if-range)#channel-group 10 mode desirable
SW2(config-if-range)#exit
SW2(config)#interface port-channel 10
SW2(config-if)#no switchport
SW2(config-if)#ip address 1.1.1.2 255.0.0.0
```

```
SW1#show interfaces port-channel 10
Port-channel10 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 0000.0000.0000 (bia 0000.0000.0000)
  Internet address is 1.1.1.1/8
```

```
SW2#show interfaces port-channel 10
Port-channel10 is up, line protocol is up (connected)
  Hardware is Ethernet, address is 0000.0000.0000 (bia 0000.0000.0000)
  Internet address is 1.1.1.2/8
```