EtherChannel Tutorial

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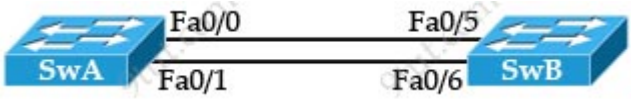
EtherChannel Configuration

To assign and configure an EtherChannel interface to an EtherChannel group, use the **channel-group** command in interface mode: **channel-group** *number* **mode** { active | on | {auto [non-silent]} | {desirable [non-silent]} | passive}
For example we will create channel-group number 1:

Switch(config-if)#channel-group 1 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

If a port-channel interface has not been created before using this command, it will be created automatically and you will see this line: "Creating a port-channel interface Port-channel 1". In this example, we will create an EtherChannel via LACP between SwA & SwB with the topology shown below:



SwA Configuration	SwB Configuration

//Assign EtherChannel group 1 to fa0/0 and fa0/1 and set Active mode on them
SwA(config)#interface range fa0/0 – 1
SwA(config-if-range)#channel-group 1 mode active
Creating a port-channel interface Port-channel 1
//Next configure the representing port-channel interface as trunk
SwA(config)#interface port-channel 1
SwA(config-if)#switchport trunk encapsulation dot1q
SwA(config-if)#switchport mode trunk
	//Assign EtherChannel group 2 to fa0/5 and fa0/6 and set Passive mode on them
	SwB(config)#interface range fa0/5 – 6
	SwB(config-if-range)#channel-group 2 mode passive
	Creating a port-channel interface Port-channel 2
	//Next configure the representing port-channel interface as trunk
	SwB(config)#interface port-channel 2
	SwB(config-if)#switchport trunk encapsulation dot1q
	SwB(config-if)#switchport mode trunk

That is all the configuration for the EtherChannel to work well on both switches. We can verify with the "show etherchannel <*port-channel number*> port-channel" or "show etherchannel summary" command.

```
SwA# show etherchannel 1 port-channel
     Port-channels in the group:
     ---------------------------
 Port-channel: Po1
 Age of the Port -channel   = 0d:00h:02m:37s
 Logical slot/port   = 2/1          Number of ports = 2
 GC                  = 0x00010001      HotStandBy port = null
```

```
Port state          = Port-channel Ag -Inuse
Protocol            =   LACP
Port security       = Disabled

Ports in the Port-channel:

Index   Load   Port     EC state        No of bits
------+------+------+------------------ +-----------
  0     00     Fa0/0    Active                  0
  0     00     Fa0/1    Active                  0

Time since last port bundled:    0d:00h:02m:27s    Fa0/1
```

The "**show etherchannel** *number* **port-channel**" command can be used to display information about a specific port channel (in this case port-channel 1). From the command above we can see Port-channel 1 consists of Fa0/0 & Fa0/1 and they are in Active state.

```
 SwA# 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
 ------+------------ +-----------+-----------------------------------------------
 1      Po1(SU)         LACP      Fa0/0(P)   Fa0/1(P)
```

The "show etherchannel summary" can be used to simply display one line of information per port-channel. In this case we learn from the last line that Group 1 uses LACP. This is a Layer 2 EtherChannel (symbolized by "SU", in which "S" means "Layer2" & "U" means this port-channel is up.

EtherChannel Load-Balancing

EtherChannel load-balances traffic among port members of the same channel. Load balancing between member interface is based on:
+ Source MAC address
+ Destination MAC address
+ Source IP address
+ Destination IP address
+ Combination of Source and Destination MAC address
+ Combination of Source and Destination IP address

Note: Some old switch/router flatforms do not support all the load-balancing methods above. To configure load-distribution method, use the command **port-channel load-balance** under global configuration mode. For example to load-balance based on destination MAC use the command:

```
Router(config)#port-channel load-balance dst-mac
```

How the router/switch load-balances traffic among member interface is out of the scope of this article. For more information about EtherChannel load-balancing please visit http://www.cisco.com/en/US/tech/tk389/tk213/technologies_tech_note09186a0080094714.shtml#topic1.

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1. Patrick
   June 1st, 2021

   is the static on an open standard?

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