Table of Contents

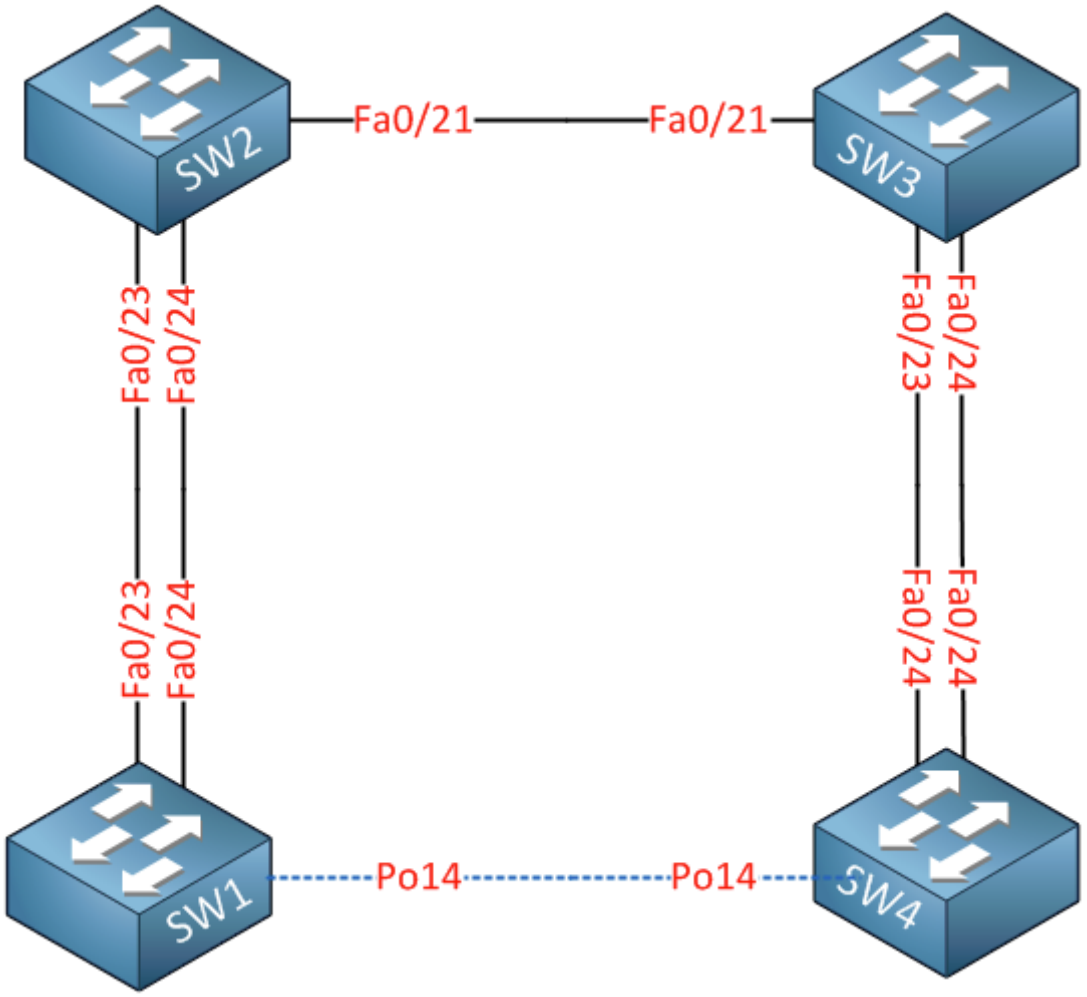
CCIE Routing & Switching

EtherChannel over 802.1Q Tunneling

6 votes

In this tutorial we will take a look how you can create an Etherchannel link over 802.1Q tunneling. If you have no idea how 802.1Q tunneling works, it's best to read my previous tutorial first that covers the basics of 802.1Q tunneling.

Here's the topology that I will use:

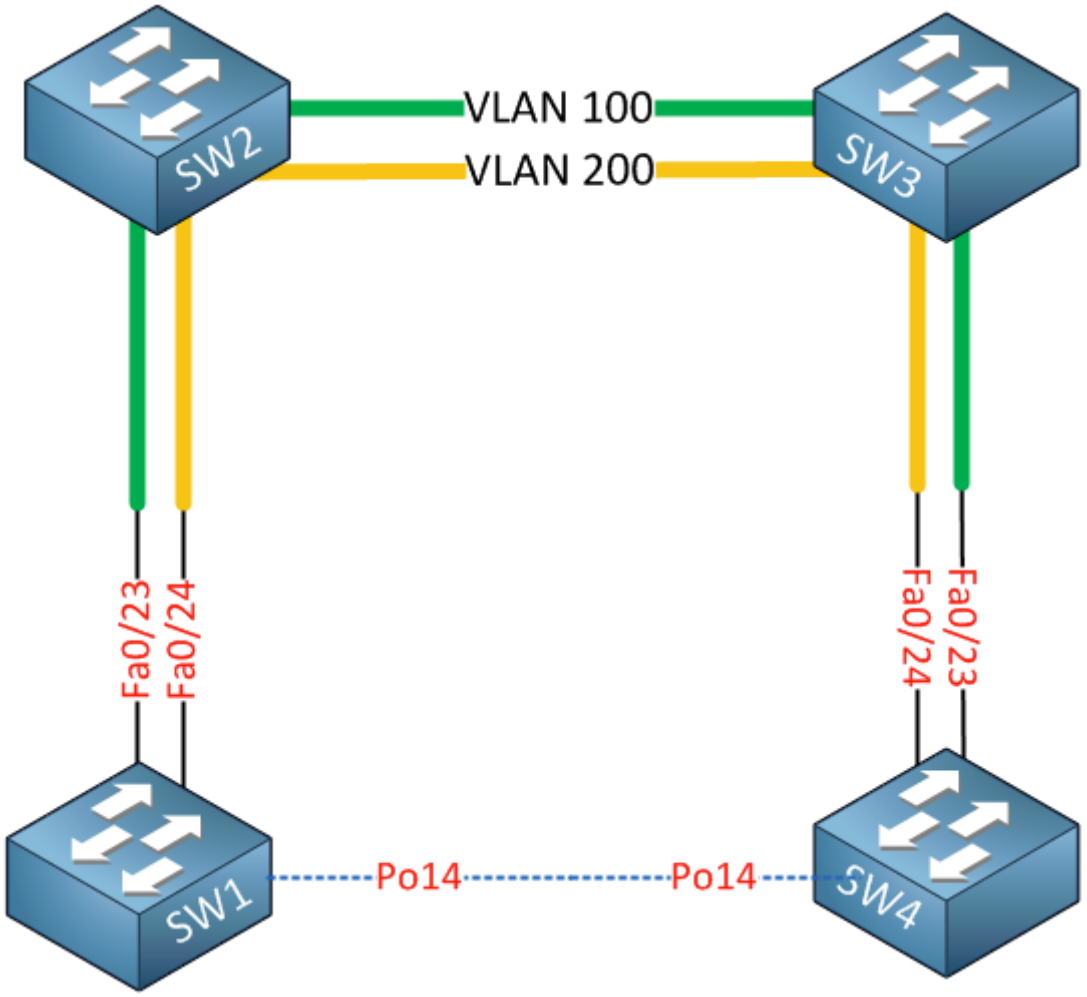


SW2 and SW3 are the service provider network. SW1 and SW4 belong to the customer and present two different sites. The idea is that we want to create an Etherchannel between SW1 and SW4 over the service provider network. First we will configure the trunk between SW2 and SW3:

```
SW2(config)#interface fastEthernet 0/21
SW2(config-if)#switchport trunk encapsulation dot1q
SW2(config-if)#switchport mode trunk
```

```
SW3(config)#interface fastEthernet 0/21
SW3(config-if)#switchport trunk encapsulation dot1q
SW3(config-if)#switchport mode trunk
```

Our next move is to configure the interfaces pointing towards the customer switches. To "simulate" that our FastEthernet 0/23 +/24 interfaces on SW1 and SW4 are directly connected to each other we have to use a separate "transit" VLAN for each interface pair. Traffic on the FastEthernet 0/23 interface will flow in service provider VLAN 100 and traffic for FastEthernet 0/24 will use VLAN 200. Take a look at the picture below to visualize this:



If we would use a single transit VLAN for all traffic on the FastEthernet 0/23 and 24 interfaces then we run into issues with our Etherchannel because FastEthernet 0/23 could talk to 0/24 or vice versa.

Here's the configuration for SW2:

```
SW2(config)#interface fastEthernet 0/23
SW2(config-if)#switchport access vlan 100
SW2(config-if)#switchport mode dot1q-tunnel
SW2(config-if)#l2protocol-tunnel point-to-point pagp
```

```
SW2(config)#interface fastEthernet 0/24
SW2(config-if)#switchport access vlan 200
SW2(config-if)#switchport mode dot1q-tunnel
SW2(config-if)#l2protocol-tunnel point-to-point pagp
```

The magic bullet that makes the etherchannel possible is the **l2protocol-tunnel command** and specifying PAgP or LACP. The configuration for SW3 is similar:

```
SW3(config)#interface fastEthernet 1/0/23
SW3(config-if)#switchport access vlan 100
SW3(config-if)#switchport mode dot1q-tunnel
SW3(config-if)#l2protocol-tunnel point-to-point pagp
```

```
SW3(config)#interface fastEthernet 0/24
SW3(config-if)#switchport access vlan 200
SW3(config-if)#switchport mode dot1q-tunnel
SW3(config-if)#l2protocol-tunnel point-to-point pagp
```

Our service provider switches are now ready, the configuration on the customer switches is just a regular Etherchannel configuration:

```
SW1(config)#interface range fastEthernet 0/23 - 24
SW1(config-if-range)#switchport trunk encapsulation dot1q
SW1(config-if-range)#switchport mode trunk
SW1(config-if-range)#channel-group 14 mode desirable
Creating a port-channel interface Port-channel 14
```

And something similar for SW4:

```
SW4(config)#interface range fastEthernet 0/23 - 24
SW4(config-if-range)#switchport trunk encapsulation dot1q
SW4(config-if-range)#switchport mode trunk
SW4(config-if-range)#channel-group 14 mode desirable
Creating a port-channel interface Port-channel 14
```

If everything went OK you should see a message on the console that the port channel interface is "up". We can also verify it with the show etherchannel command:

```
SW1#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
------+-------------+-----------+-----------------------------------------------
--
14     Po14(SU)        PAgP      Fa0/23(P)   Fa0/24(P)
```

```
SW4#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
------+-------------+-----------+-----------------------------------------------
--
14     Po14(SU)        PAgP      Fa0/23(P) Fa0/24(P)
```

Looking good, we have an etherchannel between SW1 and SW4! That's all we have for now...

If you have any questions, feel free to leave a comment!

Rate this Lesson:

« Previous Lesson
802.1Q Tunneling (Q-in-Q)

Next Lesson »
How to change the Native VLAN

Home › Forums › EtherChannel over 802.1Q Tunneling

This topic contains 5 replies, has 4 voices, and was last updated by Rene Molenaar 1 year ago.

Viewing 5 posts - 1 through 5 (of 5 total)

- Author
  Posts | Subscribe
- May 11, 2015 at 18:23 #11949 Reply

Mauro P
Participant
Hello Rene what happens if i have more switches for example SW1 -> SW2 -> SW5 -> SW3 -> SW4.
Will the SW5 switch only need to have vlan 100 and 200 created? and also be in trunk with SW2 and SW3? Like it happens with MPLS VPN Provider Router that only needs to know IGP and dont need to know MP-BGP. I hope you getting my line of thought. Waiting for your reply 🙂

May 11, 2015 at 19:11 #11950 Reply

Rene Molenaar
Keymaster
Hi Mauro,

That's right, SW5 would only require VLAN 100 and 200. It's a like a "P" router in MPLS VPN.

Rene

May 21, 2015 at 05:08 #11951 Reply

Dan B
Participant
Hi Rene,
I wonder if you could make a write up for FCoE in NX-OS.

Thanks!

June 9, 2015 at 10:54 #11952 Reply

Edwin P
Participant
Hi Rene,

But, if you assign a specific customer vlan just for one link, doesn't that defeat the purpose of building the etherchannel i.o.w to have a redundancy when one link in the channel goes down ?

June 10, 2015 at 12:40 #11953 Reply

Rene Molenaar
Keymaster
Hi Edwin,

Yes, in this example there's still only one link between SW2 and SW3. I've only added this example since it's a topic on the CCIE R&S blueprint.

Rene

- Author
  Posts

Viewing 5 posts - 1 through 5 (of 5 total)

Reply To: EtherChannel over 802.1Q Tunneling

b / link b-quote del img ul ol li code close tags

Please put code in between `backticks` or use the CODE button.
To place inline images, please use any image share service (such as TinyPic or Imgur) and use the IMG button!

Notify me of follow-up replies via email

Maximum file size allowed is 2048 KB.

Attachments:
Выберите файл Файл не выбран
Add another file

Submit

About NetworkLessons.com

Hello There! I'm René Molenaar (CCIE #41726), Your Personal Instructor of Networklessons.com. I'd like to teach you everything about Cisco, Wireless and Security. I am here to Help You Master Networking!

Read my story

Social Fans

Highest Rated Lessons

MPLS Layer 3 VPN Configuration
(25 votes)

VRF Lite Configuration on Cisco IOS
(23 votes)

Cisco Portfast Configuration
(20 votes)

IPv6 Address Types
(18 votes)

EIGRP Stub Explained
(17 votes)

New Lessons

Introduction to Cisco IOS XE
ERSPAN Configuration on Cisco IOS XE
IGMP Filter
IGMP Snooping without Router
Cisco Group Management Protocol (CGMP)

EtherChannel over 802.1Q Tunneling written by Rene Molenaar average rating 4.3/5 - 6 user ratings