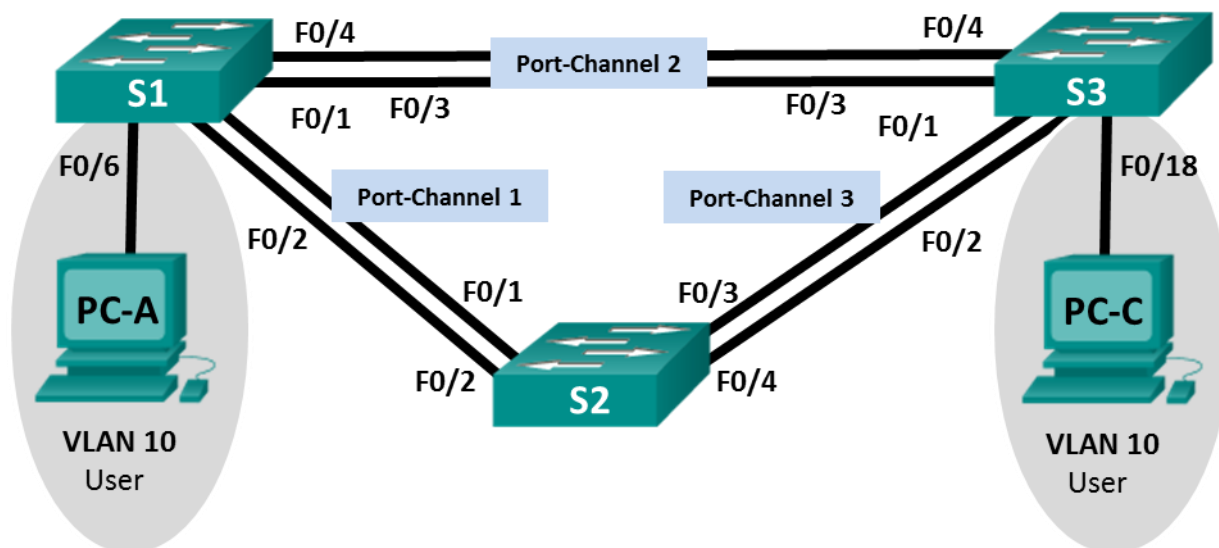


Lab – Troubleshooting EtherChannel (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask
S1	VLAN 99	192.168.1.11	255.255.255.0
S2	VLAN 99	192.168.1.12	255.255.255.0
S3	VLAN 99	192.168.1.13	255.255.255.0
PC-A	NIC	192.168.0.2	255.255.255.0
PC-C	NIC	192.168.0.3	255.255.255.0

VLAN Assignments

VLAN	Name
10	User
99	Management

Objectives

Part 1: Build the Network and Load Device Configurations

Part 2: Troubleshoot EtherChannel

Background / Scenario

The switches at your company were configured by an inexperienced network administrator. Several errors in the configuration have resulted in speed and connectivity issues. Your manager has asked you to troubleshoot and correct the configuration errors and document your work. Using your knowledge of EtherChannel and standard testing methods, find and correct the errors. Ensure that all of the EtherChannels use Port Aggregation Protocol (PAgP), and that all hosts are reachable.

Note: The switches used are Cisco Catalyst 2960s with Cisco IOS Release 15.0(2) (lanbasek9 image). Other switches and Cisco IOS versions can be used. Depending on the model and Cisco IOS version, the commands available and output produced might vary from what is shown in the labs.

Note: Make sure that the switches have been erased and have no startup configurations. If you are unsure, contact your instructor.

Instructor Note: Refer to the Instructor Lab Manual for the procedures to initialize and reload devices.

Required Resources

- 3 Switches (Cisco 2960 with Cisco IOS Release 15.0(2) lanbasek9 image or comparable)
- 2 PCs (Windows 7, Vista, or XP with a terminal emulation program, such as Tera Term)
- Console cables to configure the Cisco IOS devices via the console ports
- Ethernet cables as shown in the topology

Part 1: Build the Network and Load Device Configurations

In Part 1, you will set up the network topology, configure basic settings on the PC hosts, and load configurations on the switches.

Step 1: Cable the network as shown in the topology.

Step 2: Configure the PC hosts.

Step 3: Erase the startup and VLAN configurations and reload the switches.

Step 4: Load switch configurations.

Load the following configurations into the appropriate switch. All switches have the same passwords. The privileged EXEC password is **class**. The password for console and vty access is **cisco**. As all switches are Cisco devices, the network administrator decided to use Cisco's PAgP on all port channels configured with EtherChannel. Switch S2 is the root bridge for all VLANs in the topology.

Switch S1 Configuration:

```
hostname S1
interface range f0/1-24, g0/1-2
shutdown
exit
enable secret class
no ip domain lookup
line vty 0 15
password cisco
login
line con 0
```

```
password cisco
logging synchronous
login
exit
vlan 10
  name User
vlan 99
  Name Management
interface range f0/1-2
  switchport mode trunk
! channel-group 1 mode desirable
  channel-group 1 mode active
  switchport trunk native vlan 99
  no shutdown
interface range f0/3-4
  channel-group 2 mode desirable
  switchport trunk native vlan 99
! switchport mode trunk
  no shutdown
interface f0/6
  switchport mode access
  switchport access vlan 10
  no shutdown
interface vlan 99
  ip address 192.168.1.11 255.255.255.0
interface port-channel 1
  switchport trunk native vlan 99
  switchport mode trunk
interface port-channel 2
  switchport trunk native vlan 99
  switchport mode access
! switchport mode trunk
```

Switch S2 Configuration:

```
hostname S2
interface range f0/1-24, g0/1-2
  shutdown
exit
enable secret class
no ip domain lookup
line vty 0 15
  password cisco
  login
line con 0
  password cisco
  logging synchronous
```

```
login
exit
vlan 10
  name User
vlan 99
  name Management
spanning-tree vlan 1,10,99 root primary
interface range f0/1-2
  switchport mode trunk
  channel-group 1 mode desirable
  switchport trunk native vlan 99
  no shutdown
interface range f0/3-4
  switchport mode trunk
  channel-group 3 mode desirable
  switchport trunk native vlan 99
! no shutdown
interface vlan 99
  ip address 192.168.1.12 255.255.255.0
interface port-channel 1
  switchport trunk native vlan 99
  switchport trunk allowed vlan 1,99
! switchport trunk allowed 1,10,99
interface port-channel 3
  switchport trunk native vlan 99
  switchport trunk allowed vlan 1,10,99
  switchport mode trunk
```

Switch S3 Configuration:

```
hostname S3
interface range f0/1-24, g0/1-2
  shutdown
exit
enable secret class
no ip domain lookup
line vty 0 15
  password cisco
  login
line con 0
  password cisco
  logging synchronous
  login
exit
vlan 10
  name User
vlan 99
```

```
name Management
interface range f0/1-2
! switchport mode trunk
! channel-group 3 mode desirable
! switchport trunk native vlan 99
! no shutdown
interface range f0/3-4
switchport mode trunk
! channel-group 2 mode desirable
channel-group 3 mode desirable
switchport trunk native vlan 99
no shutdown
interface f0/18
switchport mode access
switchport access vlan 10
no shutdown
interface vlan 99
ip address 192.168.1.13 255.255.255.0
! interface port-channel 2
! switchport trunk native vlan 99
! switchport mode trunk
interface port-channel 3
switchport trunk native vlan 99
switchport mode trunk
```

Step 5: Save your configuration.

Part 2: Troubleshoot EtherChannel

In Part 2, you must examine the configurations on all switches, make corrections if needed, and verify full functionality.

Step 1: Troubleshoot S1.

- a. Use the **show interfaces trunk** command to verify that the port channels are functioning as trunk ports.

```
S1# show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Fa0/1	on	802.1q	trunking	99
Fa0/2	on	802.1q	trunking	99

```
Port          Vlans allowed on trunk
Fa0/1         1-4094
Fa0/2         1-4094
```

```
Port          Vlans allowed and active in management domain
Fa0/1         1,10,99
Fa0/2         1,10,99
```

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

Do port channels 1 and 2 appear as trunked ports? _____ **No**

- b. Use the **show etherchannel summary** command to verify that interfaces are configured in the correct port channel, the proper protocol is configured, and the interfaces are in use.

```
S1# 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: 2
```

```
Number of aggregators:          2
```

Group	Port-channel	Protocol	Ports
1	Po1 (SD)	LACP	Fa0/1 (I) Fa0/2 (I)
2	Po2 (SD)	PAgP	Fa0/3 (I) Fa0/4 (I)

Based on the output, are there any EtherChannel issues? If issues are found, record them in the space provided below.

Yes. Port Channel 1 is configured with the Link Aggregation Control Protocol (LACP), and the ports in Port Channel 2 are functioning independently (I = stand-alone).

- c. Use the command **show run | begin interface Port-channel** command to view the running configuration beginning with the first port channel interface.

```
S1# show run | begin interface Port-channel
```

```
interface Port-channel1
  switchport trunk native vlan 99
  switchport mode trunk
!
interface Port-channel2
  switchport trunk native vlan 99
  switchport mode access
!
interface FastEthernet0/1
  switchport trunk native vlan 99
  switchport mode trunk
```

```
channel-group 1 mode active
!
interface FastEthernet0/2
  switchport trunk native vlan 99
  switchport mode trunk
  channel-group 1 mode active
!
interface FastEthernet0/3
  switchport trunk native vlan 99
  switchport mode access
  channel-group 2 mode desirable
!
interface FastEthernet0/4
  switchport trunk native vlan 99
  switchport mode access
  channel-group 2 mode desirable
!
interface FastEthernet0/5
  shutdown
!
interface FastEthernet0/6
  switchport access vlan 10
  switchport mode access
!
interface FastEthernet0/7
  shutdown
!
<output omitted>
```

- d. Resolve all problems found in the outputs from the previous **show** commands. Record the commands used to correct the configurations.

```
S1(config)# interface range f0/1-2
S1(config-if-range)# no channel-group 1 mode active
S1(config-if-range)# channel-group 1 mode desirable
S1(config-if-range)# exit
S1(config)# interface port-channel 2
S1(config-if)# switchport mode trunk
```

- e. Use the **show interfaces trunk** command to verify trunk settings.

```
S1# show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Po1	on	802.1q	trunking	99
Po2	on	802.1q	trunking	99

```
Port      Vlans allowed on trunk
Po1       1-4094
Po2       1-4094

Port      Vlans allowed and active in management domain
Po1       1,10,99
Po2       1,10,99

Port      Vlans in spanning tree forwarding state and not pruned
Po1       1,10,99
Po2       1,10,99
```

- f. Use the **show etherchannel summary** command to verify that the port channels are up and in use.

```
S1# 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: 2
Number of aggregators:           2
```

Group	Port-channel	Protocol	Ports	
1	Po1 (SU)	PAgP	Fa0/1 (P)	Fa0/2 (P)
2	Po2 (SU)	PAgP	Fa0/3 (P)	Fa0/4 (P)

Step 2: Troubleshoot S2.

- a. Issue the command to verify that the port channels are functioning as trunk ports. Record the command used in the space provided below.

```
S2# show interfaces trunk
```

```
S2# show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Po1	on	802.1q	trunking	99

```
Port      Vlans allowed on trunk
```

```
Po1       1,99
```

```
Port      Vlans allowed and active in management domain
```



```
Po1 1,99
```

```
Port Vlan in spanning tree forwarding state and not pruned
```

```
Po1 1,99
```

Based on the output, are there any issues with the configurations? If issues are found, record them in the space provided below.

Port Channel 3 is not present in the output, and VLAN 10 is not allowed in Port Channel 1.

- b. Issue the command to verify that interfaces are configured in the correct port channel and the proper protocol is configured.

```
S2# 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: 2
```

```
Number of aggregators: 2
```

Group	Port-channel	Protocol	Ports
1	Po1 (SU)	PAgP	Fa0/1 (P) Fa0/2 (P)
3	Po3 (SD)	PAgP	Fa0/3 (D) Fa0/4 (D)

Based on the output, are there any EtherChannel issues? If issues are found, record them in the space provided below.

Yes. Port Channel 3 is down.

- c. Use the command **show run | begin interface Port-channel** to view the running configuration beginning with the first port-channel interface.

```
S2# show run | begin interface Port-channel
```

```
interface Port-channel1
  switchport trunk native vlan 99
  switchport trunk allowed vlan 1,99
  switchport mode trunk
!
interface Port-channel3
  switchport trunk native vlan 99
  switchport trunk allowed vlan 1,10,99
```

```
switchport mode trunk
!
interface FastEthernet0/1
switchport trunk native vlan 99
switchport trunk allowed vlan 1,99
switchport mode trunk
channel-group 1 mode desirable
!
interface FastEthernet0/2
switchport trunk native vlan 99
switchport trunk allowed vlan 1,99
switchport mode trunk
channel-group 1 mode desirable
!
interface FastEthernet0/3
switchport trunk native vlan 99
switchport trunk allowed vlan 1,10,99
switchport mode trunk
shutdown
channel-group 3 mode desirable
!
interface FastEthernet0/4
switchport trunk native vlan 99
switchport trunk allowed vlan 1,10,99
switchport mode trunk
shutdown
channel-group 3 mode desirable
!
interface FastEthernet0/5
shutdown
!
interface FastEthernet0/6
shutdown
!
<output omitted>
```

- d. Resolve all problems found in the outputs from the previous **show** commands. Record the commands used to correct the configuration.

```
S2(config)# interface range f0/3-4
S2(config-if-range)# no shutdown
S2(config-if-range)# exit
S2(config)# interface port-channel 1
```

```
S2(config-if)# switchport trunk allowed vlan 1,10,99
```

- e. Issue the command to verify trunk settings.

```
S2# show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Po1	on	802.1q	trunking	99

Port	Vlans allowed on trunk
Po1	1,10,99

Port	Vlans allowed and active in management domain
Po1	1,10,99

Port	Vlans in spanning tree forwarding state and not pruned
Po1	1,10,99

- f. Issue the command to verify that the port channels are functioning. Remember that port channel issues can be caused by either end of the link.

```
S2# 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: 2
```

```
Number of aggregators:          2
```

Group	Port-channel	Protocol	Ports
1	Po1 (SU)	PAgP	Fa0/1 (P) Fa0/2 (P)
3	Po3 (SD)	PAgP	Fa0/3 (D) Fa0/4 (D)

Step 3: Troubleshoot S3.

- a. Issue the command to verify that the port channels are functioning as trunk ports.

```
S3# show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Po3	on	802.1q	trunking	99

Port	Vlans allowed on trunk
Po3	1-4094

Port	Vlans allowed and active in management domain
------	---

```
Po3          1,10,99
```

```
Port          Vlans in spanning tree forwarding state and not pruned
```

```
Po3          1,10,99
```

Based on the output, are there any issues with the configurations? If issues are found, record them in the space provided below.

Port Channel 2 is not present in the output.

- b. Issue the command to verify that the interfaces are configured in the correct port channel and that the proper protocol is configured.

```
S3# 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
3	Po3 (SU)	PAgP	Fa0/3 (P) Fa0/4 (P)

Based on the output, are there any EtherChannel issues? If issues are found, record them in the space provided below.

Port Channel 2 is not present, and Port Channel 3 is incorrectly configured for interfaces f0/3 and f0/4.

- c. Use the command **show run | begin interface Port-channel** command to view the running configuration beginning with the first port channel interface.

```
S3# show run | begin interface Port-channel
```

```
interface Port-channel3
  switchport trunk native vlan 99
  switchport mode trunk
```

```
!
```

```
interface FastEthernet0/1
```

```
shutdown
```

```
!
```

```
interface FastEthernet0/2
shutdown
!
interface FastEthernet0/3
switchport trunk native vlan 99
switchport mode trunk
channel-group 3 mode desirable
!
interface FastEthernet0/4
switchport trunk native vlan 99
switchport mode trunk
channel-group 3 mode desirable
!
interface FastEthernet0/5
shutdown
!
interface FastEthernet0/6
shutdown
!
<output omitted>
```

- d. Resolve all problems found. Record the commands used to correct the configuration.

```
S3(config)# interface range f0/3-4
S3(config-if-range)# channel-group 2 mode desirable
S3(config-if-range)# interface range f0/1-2
S3(config-if-range)# switchport mode trunk
S3(config-if-range)# switchport trunk native vlan 99
S3(config-if-range)# channel-group 3 mode desirable
S3(config-if-range)# no shutdown
```

- e. Issue the command to verify trunk settings. Record the command used in the space provided below.

```
S3# show interfaces trunk
S3# show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Po2       on        802.1q         trunking    99
Po3       on        802.1q         trunking    99

Port      Vlans allowed on trunk
```

```
Po2      1-4094
Po3      1-4094
```

```
Port      Vlans allowed and active in management domain
Po2      1,10,99
Po3      1,10,99
```

```
Port      Vlans in spanning tree forwarding state and not pruned
Po2      1,10,99
Po3      1,10,99
```

- f. Issue the command to verify that the port channels are functioning. Record the command used in the space provided below.

```
S3# show etherchannel summary
```

```
S3# 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: 2
Number of aggregators:          2
```

Group	Port-channel	Protocol	Ports
2	Po2 (SU)	PAgP	Fa0/3 (P) Fa0/4 (P)
3	Po3 (SU)	PAgP	Fa0/1 (P) Fa0/2 (P)

Step 4: Verify EtherChannel and Connectivity.

- a. Use the **show interfaces etherchannel** command to verify full functionality of the port channels.

```
S1# show interfaces etherchannel
```

```
----
```

```
FastEthernet0/1:
```

```
Port state      = Up Mstr In-Bndl
```

```
Channel group = 1      Mode = Desirable-S1      Gchange = 0
```

```
Port-channel   = Po1      GC      = 0x00010001      Pseudo port-channel = Po1
```

```
Port index     = 0      Load = 0x00      Protocol = PAgP
```

```
Flags:  S - Device is sending Slow hello.  C - Device is in Consistent state.
        A - Device is in Auto mode.         P - Device learns on physical port.
```

Lab – Troubleshooting EtherChannel

```

    d - PAgP is down.
Timers: H - Hello timer is running.      Q - Quit timer is running.
        S - Switching timer is running.   I - Interface timer is running.

Local information:

Port      Flags State  Timers  Hello    Partner  PAgP    Learning  Group
        Port  Name  State  Timers  Interval Count  Priority  Method  Ifindex
Fa0/1     SC    U6/S7  H       30s     1        128     Any      5001

Partner's information:

Port      Partner      Partner      Partner      Partner Group
        Name      Device ID      Port      Age  Flags  Cap.
Fa0/1     S2           0cd9.96e8.6f80 Fa0/1      23s SC    10001

Age of the port in the current state: 0d:00h:38m:38s

----
FastEthernet0/2:
Port state      = Up Mstr In-Bndl
Channel group = 1      Mode = Desirable-Sl      Gcchange = 0
Port-channel   = Po1      GC      = 0x00010001      Pseudo port-channel = Po1
Port index     = 0      Load = 0x00      Protocol = PAgP

Flags:  S - Device is sending Slow hello.  C - Device is in Consistent state.
        A - Device is in Auto mode.        P - Device learns on physical port.
        d - PAgP is down.
Timers: H - Hello timer is running.      Q - Quit timer is running.
        S - Switching timer is running.   I - Interface timer is running.

Local information:

Port      Flags State  Timers  Hello    Partner  PAgP    Learning  Group
        Port  Name  State  Timers  Interval Count  Priority  Method  Ifindex
Fa0/2     SC    U6/S7  H       30s     1        128     Any      5001

Partner's information:

Port      Partner      Partner      Partner      Partner Group
        Name      Device ID      Port      Age  Flags  Cap.
Fa0/2     S2           0cd9.96e8.6f80 Fa0/2      7s  SC    10001

Age of the port in the current state: 0d:00h:38m:38s

----
FastEthernet0/3:
Port state      = Up Mstr In-Bndl
Channel group = 2      Mode = Desirable-Sl      Gcchange = 0
Port-channel   = Po2      GC      = 0x00020001      Pseudo port-channel = Po2
Port index     = 0      Load = 0x00      Protocol = PAgP
```

Flags: S - Device is sending Slow hello. C - Device is in Consistent state.
A - Device is in Auto mode. P - Device learns on physical port.
d - PAgP is down.

Timers: H - Hello timer is running. Q - Quit timer is running.
S - Switching timer is running. I - Interface timer is running.

Local information:

Port	Flags	State	Timers	Hello Interval	Partner Count	PAgP Priority	Learning Method	Group Ifindex
Fa0/3	SC	U6/S7	H	30s	1	128	Any	5002

Partner's information:

Port	Partner Name	Partner Device ID	Partner Port	Age	Partner Flags	Partner Group Cap.
Fa0/3	S3	0cd9.96d2.5100	Fa0/3	5s	SC	20001

Age of the port in the current state: 0d:00h:28m:48s

FastEthernet0/4:

Port state = Up Mstr In-Bndl

Channel group = 2 Mode = Desirable-SL Gcchange = 0

Port-channel = Po2 GC = 0x00020001 Pseudo port-channel = Po2

Port index = 0 Load = 0x00 Protocol = PAgP

Flags: S - Device is sending Slow hello. C - Device is in Consistent state.
A - Device is in Auto mode. P - Device learns on physical port.
d - PAgP is down.

Timers: H - Hello timer is running. Q - Quit timer is running.
S - Switching timer is running. I - Interface timer is running.

Local information:

Port	Flags	State	Timers	Hello Interval	Partner Count	PAgP Priority	Learning Method	Group Ifindex
Fa0/4	SC	U6/S7	H	30s	1	128	Any	5002

Partner's information:

Port	Partner Name	Partner Device ID	Partner Port	Age	Partner Flags	Partner Group Cap.
Fa0/4	S3	0cd9.96d2.5100	Fa0/4	6s	SC	20001

Age of the port in the current state: 0d:00h:28m:48s

Port-channel1:

Age of the Port-channel = 0d:00h:57m:52s

Lab – Troubleshooting EtherChannel

```
Logical slot/port   = 2/1           Number of ports = 2
GC                 = 0x00010001      HotStandBy port = null
Port state         = Port-channel Ag-Inuse
Protocol           = PAgP
Port security      = Disabled
```

Ports in the Port-channel:

Index	Load	Port	EC state	No of bits
0	00	Fa0/1	Desirable-Sl	0
0	00	Fa0/2	Desirable-Sl	0

Time since last port bundled: 0d:00h:38m:38s Fa0/1

Time since last port Un-bundled: 0d:00h:42m:15s Fa0/2

Port-channel2:

Age of the Port-channel = 0d:00h:57m:48s

Logical slot/port = 2/2 Number of ports = 2

GC = 0x00020001 HotStandBy port = null

Port state = Port-channel Ag-Inuse

Protocol = PAgP

Port security = Disabled

Ports in the Port-channel:

Index	Load	Port	EC state	No of bits
0	00	Fa0/3	Desirable-Sl	0
0	00	Fa0/4	Desirable-Sl	0

Time since last port bundled: 0d:00h:28m:48s Fa0/4

Time since last port Un-bundled: 0d:00h:28m:51s Fa0/4

b. Verify connectivity of the management VLAN.

Can S1 ping S2? ☒ Yes

Can S1 ping S3? ☒ Yes

Can S2 ping S3? ☒ Yes

c. Verify connectivity of PCs.

Can PC-A ping PC-C? ☒ Yes

If EtherChannels are not fully functional, connectivity between switches does not exist, or connectivity between hosts does not exist. Troubleshoot to resolve any remaining issues.

Note: It may be necessary to disable the PC firewall for pings between the PCs to succeed.

Device Configs - Final

Switch S1

```
S1#show run
Building configuration...

Current configuration : 2241 bytes
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname S1
!
boot-start-marker
boot-end-marker
!
enable secret 4 06YFDUHH6lwAE/kLkDq9BGholQM5EnRtoyr8cHAUg.2
!
no aaa new-model
system mtu routing 1500
!
no ip domain-lookup
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
interface Port-channel1
    switchport trunk native vlan 99
    switchport mode trunk
!
interface Port-channel2
    switchport trunk native vlan 99
    switchport mode trunk
!
interface FastEthernet0/1
    switchport trunk native vlan 99
    switchport mode trunk
    channel-group 1 mode desirable
!
interface FastEthernet0/2
    switchport trunk native vlan 99
    switchport mode trunk
    channel-group 1 mode desirable
!
interface FastEthernet0/3
    switchport trunk native vlan 99
    switchport mode trunk
    channel-group 2 mode desirable
!
interface FastEthernet0/4
    switchport trunk native vlan 99
```

```
switchport mode trunk
channel-group 2 mode desirable
!
interface FastEthernet0/5
shutdown
!
interface FastEthernet0/6
switchport access vlan 10
switchport mode access
!
interface FastEthernet0/7
shutdown
!
interface FastEthernet0/8
shutdown
!
interface FastEthernet0/9
shutdown
!
interface FastEthernet0/10
shutdown
!
interface FastEthernet0/11
shutdown
!
interface FastEthernet0/12
shutdown
!
interface FastEthernet0/13
shutdown
!
interface FastEthernet0/14
shutdown
!
interface FastEthernet0/15
shutdown
!
interface FastEthernet0/16
shutdown
!
interface FastEthernet0/17
shutdown
!
interface FastEthernet0/18
shutdown
!
interface FastEthernet0/19
shutdown
!
interface FastEthernet0/20
shutdown
!
interface FastEthernet0/21
shutdown
!
interface FastEthernet0/22
shutdown
```

```
!  
interface FastEthernet0/23  
shutdown  
!  
interface FastEthernet0/24  
shutdown  
!  
interface GigabitEthernet0/1  
shudown  
!  
interface GigabitEthernet0/2  
shudown  
!  
interface Vlan1  
no ip address  
!  
interface Vlan99  
ip address 192.168.1.11 255.255.255.0  
!  
ip http server  
ip http secure-server  
!  
line con 0  
password cisco  
logging synchronous  
login  
line vty 0 4  
password cisco  
login  
line vty 5 15  
password cisco  
login  
!  
end
```

Switch S2

```
S2#show run  
Building configuration...  
  
Current configuration : 2476 bytes  
!  
version 15.0  
no service pad  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname S2  
!  
boot-start-marker  
boot-end-marker  
!  
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2  
!  
no aaa new-model  
system mtu routing 1500
```

Lab – Troubleshooting EtherChannel

```
!  
no ip domain-lookup  
!  
spanning-tree mode pvst  
spanning-tree extend system-id  
spanning-tree vlan 1,10,99 priority 24576  
!  
vlan internal allocation policy ascending  
!  
interface Port-channel1  
  switchport trunk native vlan 99  
  switchport trunk allowed vlan 1,10,99  
  switchport mode trunk  
!  
interface Port-channel3  
  switchport trunk native vlan 99  
  switchport trunk allowed vlan 1,10,99  
  switchport mode trunk  
!  
interface FastEthernet0/1  
  switchport trunk native vlan 99  
  switchport trunk allowed vlan 1,10,99  
  switchport mode trunk  
  channel-group 1 mode desirable  
!  
interface FastEthernet0/2  
  switchport trunk native vlan 99  
  switchport trunk allowed vlan 1,10,99  
  switchport mode trunk  
  channel-group 1 mode desirable  
!  
interface FastEthernet0/3  
  switchport trunk native vlan 99  
  switchport trunk allowed vlan 1,10,99  
  switchport mode trunk  
  channel-group 3 mode desirable  
!  
interface FastEthernet0/4  
  switchport trunk native vlan 99  
  switchport trunk allowed vlan 1,10,99  
  switchport mode trunk  
  channel-group 3 mode desirable  
!  
interface FastEthernet0/5  
  shutdown  
!  
interface FastEthernet0/6  
  shutdown  
!  
interface FastEthernet0/7  
  shutdown  
!  
interface FastEthernet0/8  
  shutdown  
!  
interface FastEthernet0/9  
  shutdown
```

```
!  
interface FastEthernet0/10  
shutdown  
!  
interface FastEthernet0/11  
shutdown  
!  
interface FastEthernet0/12  
shutdown  
!  
interface FastEthernet0/13  
shutdown  
!  
interface FastEthernet0/14  
shutdown  
!  
interface FastEthernet0/15  
shutdown  
!  
interface FastEthernet0/16  
shutdown  
!  
interface FastEthernet0/17  
shutdown  
!  
interface FastEthernet0/18  
shutdown  
!  
interface FastEthernet0/19  
shutdown  
!  
interface FastEthernet0/20  
shutdown  
!  
interface FastEthernet0/21  
shutdown  
!  
interface FastEthernet0/22  
shutdown  
!  
interface FastEthernet0/23  
shutdown  
!  
interface FastEthernet0/24  
shutdown  
!  
interface GigabitEthernet0/1  
shudown  
!  
interface GigabitEthernet0/2  
shudown  
!  
interface Vlan1  
no ip address  
!  
interface Vlan99  
ip address 192.168.1.12 255.255.255.0
```

```
!  
ip http server  
ip http secure-server  
!  
line con 0  
  password cisco  
  logging synchronous  
  login  
line vty 0 4  
  password cisco  
  login  
line vty 5 15  
  password cisco  
  login  
!  
end
```

Switch S3

```
S3#show run  
Building configuration...  
  
Current configuration : 2239 bytes  
!  
version 15.0  
no service pad  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname S3  
!  
boot-start-marker  
boot-end-marker  
!  
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2  
!  
no aaa new-model  
system mtu routing 1500  
!  
no ip domain-lookup  
!  
spanning-tree mode pvst  
spanning-tree extend system-id  
!  
vlan internal allocation policy ascending  
!  
interface Port-channel2  
  switchport trunk native vlan 99  
  switchport mode trunk  
!  
interface Port-channel3  
  switchport trunk native vlan 99  
  switchport mode trunk  
!  
interface FastEthernet0/1  
  switchport trunk native vlan 99
```

Lab – Troubleshooting EtherChannel

```
switchport mode trunk
channel-group 3 mode desirable
!
interface FastEthernet0/2
switchport trunk native vlan 99
switchport mode trunk
channel-group 3 mode desirable
!
interface FastEthernet0/3
switchport trunk native vlan 99
switchport mode trunk
channel-group 2 mode desirable
!
interface FastEthernet0/4
switchport trunk native vlan 99
switchport mode trunk
channel-group 2 mode desirable
!
interface FastEthernet0/5
shutdown
!
interface FastEthernet0/6
shutdown
!
interface FastEthernet0/7
shutdown
!
interface FastEthernet0/8
shutdown
!
interface FastEthernet0/9
shutdown
!
interface FastEthernet0/10
shutdown
!
interface FastEthernet0/11
shutdown
!
interface FastEthernet0/12
shutdown
!
interface FastEthernet0/13
shutdown
!
interface FastEthernet0/14
shutdown
!
interface FastEthernet0/15
shutdown
!
interface FastEthernet0/16
shutdown
!
interface FastEthernet0/17
shutdown
!
```


Lab – Troubleshooting EtherChannel

```
interface FastEthernet0/18
  switchport access vlan 10
  switchport mode access
!
interface FastEthernet0/19
  shutdown
!
interface FastEthernet0/20
  shutdown
!
interface FastEthernet0/21
  shutdown
!
interface FastEthernet0/22
  shutdown
!
interface FastEthernet0/23
  shutdown
!
interface FastEthernet0/24
  shutdown
!
interface GigabitEthernet0/1
  shutdown
!
interface GigabitEthernet0/2
  shutdown
!
interface Vlan1
  no ip address
!
interface Vlan99
  ip address 192.168.1.13 255.255.255.0
!
ip http server
ip http secure-server
!
line con 0
  password cisco
  logging synchronous
  login
line vty 0 4
  password cisco
  login
line vty 5 15
  password cisco
  login
!
end
```