Lab – Troubleshooting EtherChannel

Topology
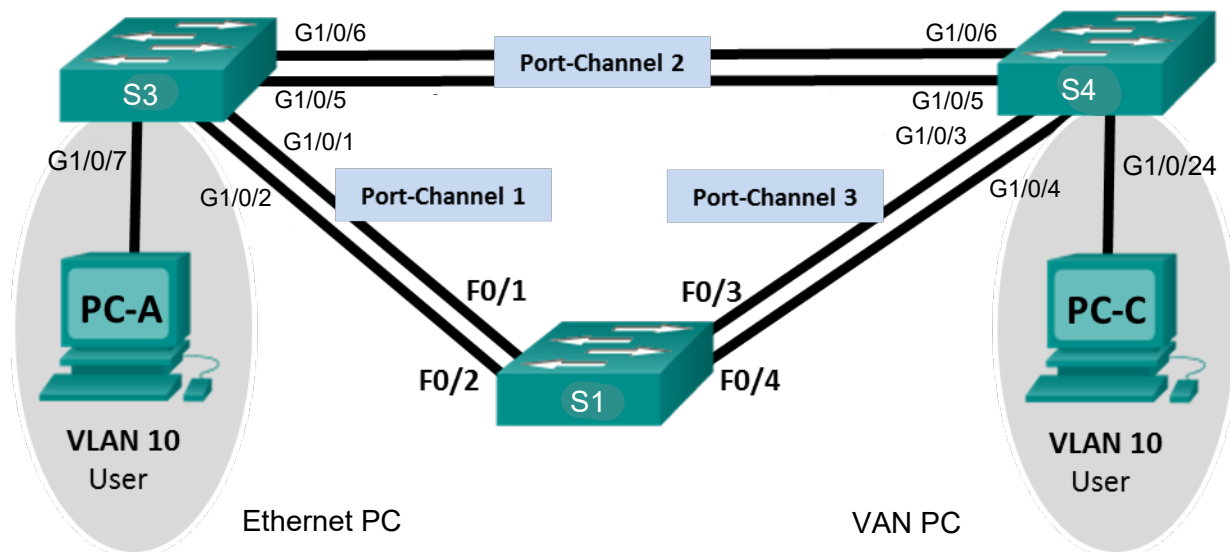
Addressing Table

Device	Interface	IP Address	Subnet Mask
S1	VLAN 99	192.168.1.11	255.255.255.0
S3	VLAN 99	192.168.1.13	255.255.255.0
S4	VLAN 99	192.168.1.14	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: Make sure that the switches have been erased and have no startup configurations.

Required Resources

- 3 Switches
- 2 Virtual PCs (if on-campus)
- 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:   Erase the startup and VLAN configurations and reload the switches.

Step 2:   Verify the network is cabled as shown in the topology.

Step 3:   In on-campus, configure the PC hosts.

Step 4:   Load switch configurations.

Load the following configurations into the appropriate switch. 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 S3 Configuration:

```
hostname S3
interface range g1/0/1-24, g1/1/1-4
shutdown
exit
no ip domain lookup
line con 0
 logging synchronous
 exit
vlan 10
 name User
vlan 99
 Name Management
interface range g1/0/1-2
 switchport mode trunk
 channel-group 1 mode active
 switchport trunk native vlan 99
 no shutdown
interface range g1/0/5-6
 channel-group 2 mode desirable
 switchport trunk native vlan 99
 no shutdown
interface g1/0/7
 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 1
 switchport trunk native vlan 99
 switchport mode trunk
interface port-channel 2
 switchport trunk native vlan 99
 switchport mode access
```

Switch S1 Configuration:

```
hostname S1
interface range f0/1-24, g0/1-2
 shutdown
 exit
no ip domain lookup
line con 0
 logging synchronous
 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
interface vlan 99
 ip address 192.168.1.11 255.255.255.0
interface port-channel 1
 switchport trunk native vlan 99
 switchport trunk allowed vlan 1,99
interface port-channel 3
 switchport trunk native vlan 99
 switchport trunk allowed vlan 1,10,99
 switchport mode trunk
```

Switch S4 Configuration:

```
hostname S4
interface range g1/0/1-24, g1/1/1-4
 shutdown
 exit
no ip domain lookup
line con 0
 logging synchronous
 exit
vlan 10
 name User
vlan 99
 name Management
interface range g1/0/3-4
interface range g1/0/5-6
 switchport mode trunk
 channel-group 3 mode desirable
 switchport trunk native vlan 99
 no shutdown
interface g1/0/24
 switchport mode access
 switchport access vlan 10
 no shutdown
interface vlan 99
 ip address 192.168.1.14 255.255.255.0
interface port-channel 3
 switchport trunk native vlan 99
 switchport mode trunk
```

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 S3.

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

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.

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

No issue with EtherChannel
_____

_____

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

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

no ip domain-lookup   interface range g1/0/1-24, g1/1/1-4   interface range g1/0/5-6
_____

interface port-channel 2   switchport mode trunk
_____   channel-group 2 mode desirable
switchport mode trunk   switchport trunk native vlan 99
switchport trunk native vlan 99   no shutdown

_____

_____

_____

_____

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

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

Step 2: Troubleshoot S1.

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

show int trunk
_____

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

Yes, the int trunk menu cannot be opened
_____

_____

_____

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

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

No issue with EtherChannel
_____

_____

_____

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

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

Omit root bridge registry		no ip domain-lookup
interface range f0/1-2	interface port-channel 1	interface range f0/3-4
switchport mode trunk	switchport mode trunk	switchport mode trunk c
~~channel-group 1 mode passive~~	~~switchport trunk native vlan 99~~	hannel-group 3 mode desirable
switchport trunk native vlan 99	switchport trunk allowed vlan 1,10, 99	switchport trunk native vlan 99
~~no shutdown~~		~~no shutdown~~

_____

e. Issue the command to verify trunk settings.

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.

Step 3: Troubleshoot S4.

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

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

Only one port-channel show up while 2 are needed
_____

_____

_____

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

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

No issue is found on the EtherChannel
_____

_____

_____

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

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

no ip domain-lookup	interface port-channel 2
	switchport mode trunk
interface range g1/0/3-4	~~switchport trunk native vlan 99~~
~~switchport mode trunk~~	
channel-group 3 mode desirable	
switchport trunk native vlan 99	
~~no shutdown~~	
~~interface range g1/0/5-6~~	
switchport mode trunk	
~~channel-group 2 mode desirable~~	
switchport trunk native vlan 99	
no shutdown	

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

 show interface trunk
_____

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

show ether sum
_____

Step 4:   Verify EtherChannel and Connectivity.

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

b. Verify connectivity of the management VLAN.

Can S1 ping S2? Yes_____

Can S1 ping S3? Yes_____

Can S2 ping S3? Yes_____

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

Would PC-A be able to ping PC-C? Yes_____