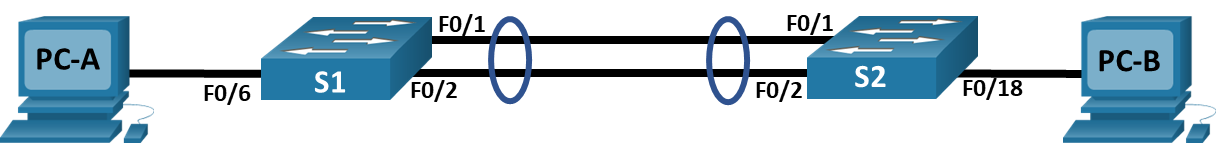
Lab 10 - Implement EtherChannel

**Name/ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

# Topology



IP: 192.168.20.4 /24

VLAN 10:

IP: 192.168.10.11 /24

VLAN 10:

IP: 192.168.10.12 /24

IP: 192.168.20.3 /24

# VLAN Table

| VLAN | Name | Interface Assigned |
| --- | --- | --- |
| 10 | Management | VLAN 10 |
| 20 | Clients | S1: F0/6  S2: F0/18 |
| 999 | Parking\_Lot | S1: F0/3-5, F0/7-24, G0/1-2  S2: F0/3-17, F0/19-24, G0/1-2 |
| 1000 | Native | N/A |

# Objectives

Part 1: Build the Network and Configure Basic Device Settings

Part 2: Create VLANs and Assign Switch Ports

Part 3: Configure 802.1Q Trunks between the Switches

Part 4: Implement and Verify an EtherChannel between the switches

Lab Report General Instructions

1. Lab report should include your names and IDs.
2. Lab report should include answers to all questions highlighted in grey.
3. Lab report should include all required screenshots.
4. Screenshots should include your names at the command prompt.
5. Lab report should include answers to all reflection questions. Pls use your own words to answer the questions. Copy answers will receive zero.
6. Reflection questions should be answered clearly with enough elaboration.

# Background / Scenario

Link aggregation allows the creation of logical links that are comprised of two or more physical links. This provides increased throughput beyond using only one physical link. Link aggregation also provides redundancy if one of the links fails.

In this lab, you will configure EtherChannel, a form of link aggregation used in switched networks. You will configure EtherChannel using Link Aggregation Control Protocol (LACP).

**Note**: LACP is a link aggregation protocol that is defined by IEEE 802.3ad, and it is not associated with any specific vendor.

LACP allows Cisco switches to manage Ethernet channels between switches that conform to the 802.3ad protocol. You can configure up to 16 ports to form a channel. Eight of the ports are in active mode and the other eight are in standby mode. When any of the active ports fail, a standby port becomes active. Standby mode works only for LACP, not for PAgP.

**Note**: The switches used with CCNA hands-on labs are Cisco Catalyst 2960s with Cisco IOS Release 15.2(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.

# Required Resources

* 2 Switches (Cisco 2960 with Cisco IOS Release 15.2(2) lanbasek9 image or comparable)
* 2 PCs (Windows 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

# Instructions

## Build the Network and Configure Basic Device Settings

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

### Cable the network as shown in the topology.

The network is built as shown in the topology.

### Configure basic settings for both switches S1 and S2.

* + - 1. Assign a device name to the switch.

Open configuration window

* + - 1. Disable DNS lookup to prevent the router from attempting to translate incorrectly entered commands as though they were host names.
      2. Save the running configuration to the startup configuration file.

Close configuration window

### Configure PC hosts.

Refer to the topology for PC host address information.

## Create VLANs and Assign Switch Ports

In Part 2, you will create VLANs as specified in the table above on both switches. You will then assign the VLANs to the appropriate interface and verify your configuration settings. Complete the following tasks on each switch.

### Create VLANs on the switches.

* + - 1. On both switches create and name the required VLANs from the VLAN Table above.

Open configuration window

* + - 1. Configure and activate the management interface on each switch using the IP address information on the topology.
      2. Shutdown all unused ports. First, configure all unused ports for static access mode, then assign them to the ParkingLot VLAN, and administratively deactivate them.

### Assign VLANs to the correct switch interfaces.

* + - 1. Assign used ports to the appropriate VLAN (specified in the VLAN table above) and configure them for static access mode.
      2. Issue the **show vlan** **brief** command and verify that the VLANs are assigned to the correct ports.

Close configuration window

## Configure 802.1Q trunks between the switches.

In Part 3, you will manually configure interfaces F0/1 and F0/2 as 802.1Q trunks.

* + - 1. Change the switchport mode on the interfaces F0/1 and F0/2 to force trunking. Use the **interface range** command to reduce the number of commands required. Make sure to do this on both switches S1 and S2.

Open configuration window

* + - 1. As a part of the trunk configuration, set the native VLAN to 1000 on both switches. You may see error messages temporarily while the two interfaces are configured for different native VLANs.
      2. As another part of trunk configuration, specify that VLANs 10, 20, and 1000 are allowed to cross the trunk.
      3. Issue the **show interfaces trunk** command to verify the trunking ports, Native VLAN and allowed VLANs across the trunk.

**Why is the “Vlans in spanning tree forwarding state and not pruned” entry different for F0/1 and F0/2?**

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Close configuration window

## Implement and Verify an EtherChannel between the switches.

* + - 1. Create a LACP-based EtherChannel using F0/1 and F0/2 using group number 1, with both switches actively negotiating the EtherChannel protocol. Use the **interface range** command to reduce the number of commands required.

1. S1(config)# **interface range f0/1-2**
2. S1(config-if-range)# **channel-group 1 mode active**
3. S1(config-if-range)# **exit**
4. S2(config)# **interface range f0/1-2**
5. S2(config-if-range)# **channel-group 1 mode active**
6. S2(config-if-range)# **exit**

Open configuration window

* + - 1. After the EtherChannel is configured, a virtual Port-Channel interface is automatically created. Now interface Port-Channel 1 represents the logical interface of the bundled physical ports F0/1 and F0/2. Additionally, the Port-Channel will inherit the configuration of the first physical port added to the EtherChannel.
      2. Issue the **show interfaces trunk** command to verify trunking is still in place

#### Question:

**What does the port ‘Po1’ represent?**

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**Screenshot the command output on both switches S1 and S2 and paste them here. Add your name/ID at the command prompt.**

* + - 1. Use the **show etherchannel summary** command to verify the EtherChannel configuration.

Close configuration window

**Screenshot the command output on both switches S1 and S2 and paste them here. Add your name/ID at the command prompt.**

# Reflection Questions

* 1. **What are some of the advantages of using EtherChannel technology?**

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