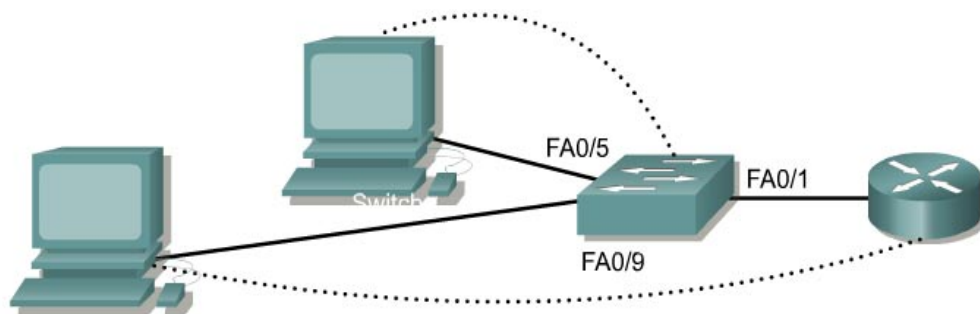


LAB Inter-VLAN Routing



Switch Designation	Switch Name	Enable Secret Password	Enable, VTY, and Console Passwords	VLAN 1 IP Address	Subnet Mask	VLAN Names and Numbers	Switch Port Assignments
Switch 1	Switch A	class	cisco	192.168.1.2	255.255.255.0	VLAN 1 Native VLAN 10 Sales VLAN 20 Support	fa0/1 - 0/4 fa0/5 - 0/8 fa0/9 - 0/12

Straight-through cable	—————
Serial cable	————— Z
Console (Rollover)
Crossover cable	- - - - -

Objective

- Create a basic switch configuration and verify it
- Create multiple VLANs, name them and assign multiple member ports to them
- Create a basic configuration on a router
- Create an 802.1q trunk line between the switch and router to allow communication between VLANs
- Test the routing functionality

Background/Preparation

When managing a switch, the Management Domain is always VLAN 1. The Network Administrator's workstation must have access to a port in the VLAN 1 Management Domain. All ports are assigned to VLAN 1 by default. This lab will also help demonstrate how VLANs can be used to separate traffic and reduce broadcast domains.

Cable a network similar to the one in the diagram. The router has to be from the 2600 series. The configuration output used in this lab is produced from a 2950 series switch. Any other switch used may produce different output. T

Note: The router used must have a Fast Ethernet interface in order to support trunking and inter-VLAN routing. The 2500 series router cannot be used for this lab. Go to the erase and reload instructions. Perform those steps on all switches in this lab assignment before continuing.

Step 1 Configure the switch

Configure the hostname, access, and command mode passwords, as well as the management LAN settings. These values are shown in the chart. If problems occur while performing this configuration, refer to previous laborations.

Step 2 Configure the hosts attached to the switch

Configure the hosts using the following information.

- a. For the host in port 0/5:
IP address 192.168.5.2
Subnet mask 255.255.255.0
Default gateway 192.168.5.1
- b. For the host in port 0/9:
IP address 192.168.7.2
Subnet mask 255.255.255.0
Default gateway 192.168.7.1

Step 3 Verify connectivity

- a. To verify that the host and switch are correctly configured, ping the switch from the hosts.
- b. Ping the switch IP address from the hosts.
- c. Were the pings successful? _____
- d. Why or why not? _____

Step 4 Create and name two VLANs

Enter the following commands to create and name two VLANs:

```
Switch_A#vlan database
Switch_A(vlan)#vlan 10 name Sales
Switch_A(vlan)#vlan 20 name Support
Switch_A(vlan)#exit
```

Step 5 Assign ports to VLAN 10

Assigning ports to VLANs must be done from the interface mode. Enter the following commands to add ports 0/5 to 0/8 to VLAN 10:

```
Switch_A#configure terminal
Switch_A(config)#interface fastethernet 0/5
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 10
```

```
Switch_A(config-if)#interface fastethernet 0/6
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 10

Switch_A(config-if)#interface fastethernet 0/7
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 10

Switch_A(config-if)#interface fastethernet 0/8
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 10
Switch_A(config-if)#end
```

Step 6 Assign ports to VLAN 20

Enter the following commands to add ports 0/9 to 0/12 to VLAN 20:

```
Switch_A#configure terminal
Switch_A(config)#interface fastethernet 0/9
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 20
Switch_A(config-if)#interface fastethernet 0/10
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 20

Switch_A(config-if)#interface fastethernet 0/11
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 20

Switch_A(config-if)#interface fastethernet0/12
Switch_A(config-if)#switchport mode access
Switch_A(config-if)#switchport access vlan 20

Switch_A(config-if)#end
```

Step 7 Display the VLAN interface information

a. On Switch_A, type the command `show vlan` at the privileged EXEC prompt as follows:

```
Switch_A#show vlan
```

b. Are ports assigned correctly? _____

Step 8 Create the trunk

On Switch_A, type the following commands at the Fast Ethernet 0/1 interface command prompt.

```
Switch_A(config)#interface fastethernet0/1
Switch_A(config-if)#switchport mode trunk
Switch_A(config-if)#end
```

Step 9 Configure the router

a. Configure the router with the following data. Note that, in order to support trunking and inter-VLAN routing, the router must have a Fast Ethernet interface.

Hostname is **Router_A**

Console, VTY, and enable passwords are **cisco**.

Enable secret password is **class**.

b. Then configure the Fast Ethernet interface using the following commands:

```
Router_A(config)#interface fastethernet 0/0
Router_A(config-if)#no shutdown
Router_A(config-if)#interface fastethernet 0/0.1
Router_A(config-subif)#encapsulation dot1q 1
Router_A(config-subif)#ip address 192.168.1.1 255.255.255.0
Router_A(config-if)#interface fastethernet 0/0.2
Router_A(config-subif)#encapsulation dot1q 10
Router_A(config-subif)#ip address 192.168.5.1 255.255.255.0
Router_A(config-if)#interface fastethernet 0/0.3
Router_A(config-subif)#encapsulation dot1q 20
Router_A(config-subif)#ip address 192.168.7.1 255.255.255.0
Router_A(config-subif)#end
```

Step 10 Save the router configuration

Step 11 Display the router routing table

a. Type **show ip route** at the privileged EXEC mode prompt.

b. Are there entries in the routing table? _____

c. What interface are they all pointing to? _____

d. Why is there not a need to run a routing protocol? _____

Step 12 Test the VLANs and the trunk

Ping from the host in Switch_A port 0/9 to the host in port 0/5.

a. Was the ping successful? _____

b. Why? _____

Ping from the host in Switch_A port 0/5 to the switch IP 192.168.1.2.

c. Was the ping successful? _____

Step 13 Move the hosts

a. Move the hosts to other VLANs and try pinging the management VLAN 1.

b. Note the results of the pinging.

Once the steps are complete, erase the startup configuration, logoff by typing **exit**, and turn all the devices off. Then remove and store the cables and adapter.