Module 4: Inter-VLAN Routing

Switching, Routing and Wireless
Essentials v7.0 (SRWE)

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Module Objectives

Module Title: Inter-VLAN Routing

Module Objective: Describe, Configure and Troubleshoot inter-VLAN routing

Topic Title	Topic Objective
Inter-VLAN Routing Operation	Describe options for configuring inter-VLAN routing.
Router-on-a-Stick Inter-VLAN Routing	Configure router-on-a-stick inter-VLAN routing.
Inter-VLAN Routing using Layer 3 Switches	Configure inter-VLAN routing using Layer 3 switching.
Troubleshoot Inter-VLAN Routing	Troubleshoot common inter-VLAN routing issues.

4.1 Inter-VLAN Routing Operation

What is Inter-VLAN Routing?

VLANs are used to segment switched Layer 2 networks for a variety of reasons. Regardless of the reason, hosts in one VLAN cannot communicate with hosts in another VLAN unless there is a router or a Layer 3 switch to provide routing services.

Inter-VLAN routing is the process of forwarding network traffic from one VLAN to another VLAN.

There are three inter-VLAN routing options:

- **Legacy Inter-VLAN routing** - This is a legacy solution. It does not scale well.
- **Router-on-a-Stick** - This is an acceptable solution for a small to medium-sized network.
- **Layer 3 switch using switched virtual interfaces (SVIs)** - This is the most scalable solution for medium to large organizations.

Inter-VLAN Routing Operation
Legacy Inter-VLAN Routing

- The first inter-VLAN routing solution relied on using a router with multiple Ethernet interfaces. Each router interface was connected to a switch port in different VLANs. The router interfaces served as the default gateways to the local hosts on the VLAN subnet.

- Legacy inter-VLAN routing using physical interfaces works, but it has a significant limitation. It is not reasonably scalable because routers have a limited number of physical interfaces. Requiring one physical router interface per VLAN quickly exhausts the physical interface capacity of a router.

- **Note**: This method of inter-VLAN routing is no longer implemented in switched networks and is included for explanation purposes only.

4 - Inter-VLAN Routing
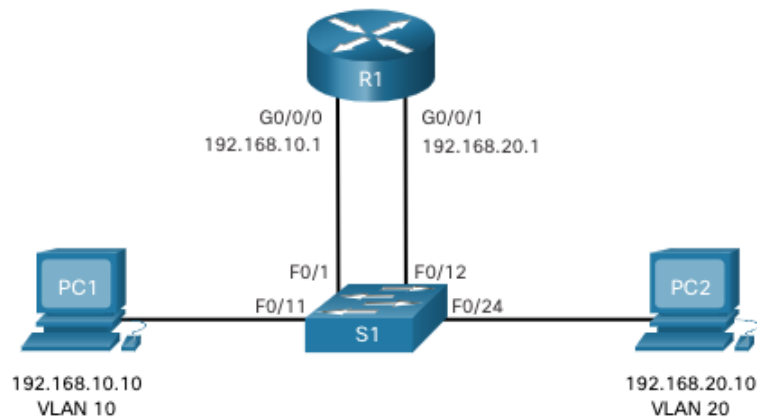
Inter-VLAN Routing Operation
Router-on-a-Stick Inter-VLAN Routing

The 'router-on-a-stick' inter-VLAN routing method overcomes the limitation of the legacy inter-VLAN routing method. It only requires one physical Ethernet interface to route traffic between multiple VLANs on a network.

- A Cisco IOS router Ethernet interface is configured as an 802.1Q trunk and connected to a trunk port on a Layer 2 switch. Specifically, the router interface is configured using subinterfaces to identify routable VLANs.

- The configured subinterfaces are software-based virtual interfaces. Each is associated with a single physical Ethernet interface. Subinterfaces are configured in software on a router. Each subinterface is independently configured with an IP address and VLAN assignment. Subinterfaces are configured for different subnets that correspond to their VLAN assignment. This facilitates logical routing.

- When VLAN-tagged traffic enters the router interface, it is forwarded to the VLAN subinterface. After a routing decision is made based on the destination IP network address, the router determines the exit interface for the traffic. If the exit interface is configured as an 802.1q subinterface, the data frames are VLAN-tagged with the new VLAN and sent back out the physical interface

Note: The router-on-a-stick method of inter-VLAN routing does not scale beyond 50 VLANs.

Inter-VLAN Routing on a Layer 3 Switch

The modern method of performing inter-VLAN routing is to use Layer 3 switches and switched virtual interfaces (SVI). An SVI is a virtual interface that is configured on a Layer 3 switch, as shown in the figure.

Note: A Layer 3 switch is also called a multilayer switch as it operates at Layer 2 and Layer 3. However, in this course we use the term Layer 3 switch.
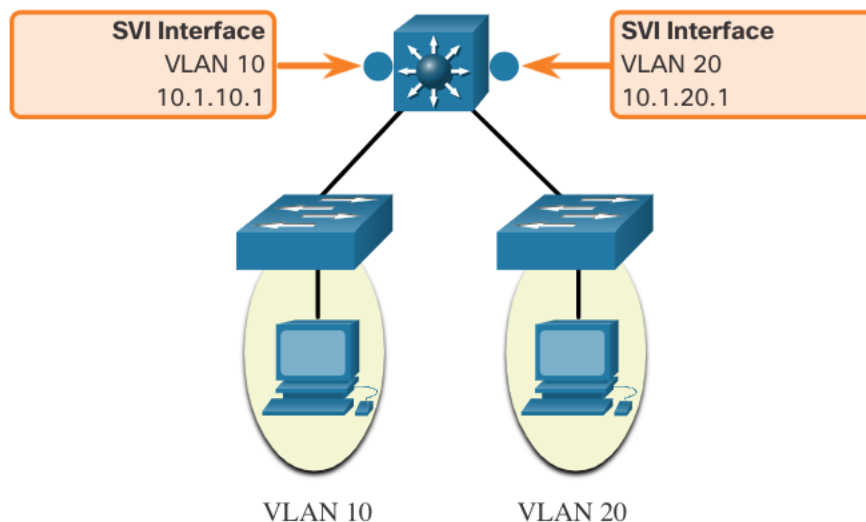
Inter-VLAN Routing on a Layer 3 Switch (Cont.)

Inter-VLAN SVIs are created the same way that the management VLAN interface is configured. The SVI is created for a VLAN that exists on the switch. Although virtual, the SVI performs the same functions for the VLAN as a router interface would. Specifically, it provides Layer 3 processing for packets that are sent to or from all switch ports associated with that VLAN.

The following are advantages of using Layer 3 switches for inter-VLAN routing:

- They are much faster than router-on-a-stick because everything is hardware switched and routed.

- There is no need for external links from the switch to the router for routing.

- They are not limited to one link because Layer 2 EtherChannels can be used as trunk links between the switches to increase bandwidth.

- Latency is much lower because data does not need to leave the switch in order to be routed to a different network.

- They more commonly deployed in a campus LAN than routers.

- The only disadvantage is that Layer 3 switches are more expensive.

4.2 Router-on-a-Stick Inter-VLAN Routing

Router-on-a-Stick Inter-VLAN Routing
Router-on-a-Stick Scenario

- In the figure, the R1 GigabitEthernet 0/0/1 interface is connected to the S1 FastEthernet 0/5 port. The S1 FastEthernet 0/1 port is connected to the S2 FastEthernet 0/1 port. These are trunk links that are required to forward traffic within and between VLANs.

- To route between VLANs, the R1 GigabitEthernet 0/0/1 interface is logically divided into three subinterfaces, as shown in the table. The table also shows the three VLANs that will be configured on the switches.

- Assume that R1, S1, and S2 have initial basic configurations. Currently, PC1 and PC2 cannot **ping** each other because they are on separate networks. Only S1 and S2 can **ping** each other, but they but are unreachable by PC1 or PC2 because they are also on different networks.

- To enable devices to ping each other, the switches must be configured with VLANs and trunking, and the router must be configured for inter-VLAN routing.

192.168.10.10/24
Gateway: 192.168.10.1
VLAN 10

192.168.20.10/24
Gateway: 192.168.20.1
VLAN 20
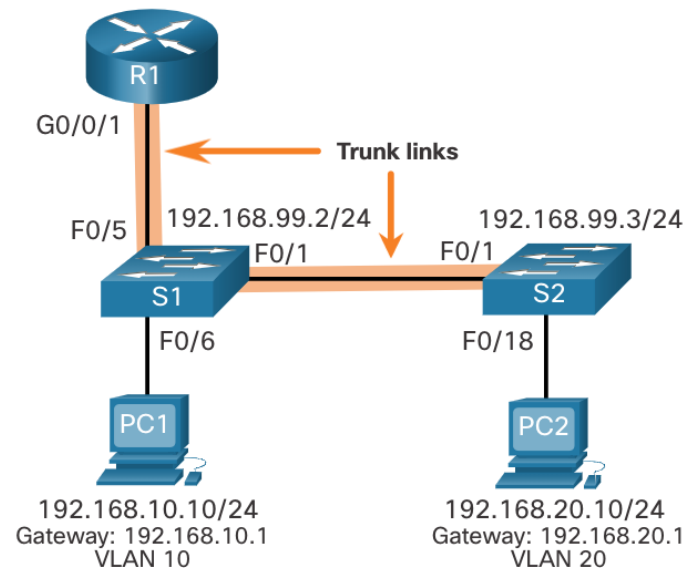
Subinterface	VLAN	IP Address
G0/0/1.10	10	192.168.10.1/24
G0/0/1.20	20	192.168.20.1/24
G0/0/1.30	99	192.168.99.1/24

Router-on-a-Stick Inter-VLAN Routing
S1 VLAN and Trunking Configuration

Complete the following steps to configure S1 with VLANs and trunking:

- **Step 1**. Create and name the VLANs.

- **Step 2**. Create the management interface.

- **Step 3**. Configure access ports.

- **Step 4**. Configure trunking ports.

Router-on-a-Stick Inter-VLAN Routing
S2 VLAN and Trunking Configuration

The configuration for S2 is similar to S1.

```
S2(config)# vlan 10
S2(config-vlan)# name LAN10
S2(config-vlan)# exit
S2(config)# vlan 20
S2(config-vlan)# name LAN20
S2(config-vlan)# exit
S2(config)# vlan 99
S2(config-vlan)# name Management
S2(config-vlan)# exit
S2(config)#
S2(config)# interface vlan 99
S2(config-if)# ip add 192.168.99.3 255.255.255.0
S2(config-if)# no shut
S2(config-if)# exit
S2(config)# ip default-gateway 192.168.99.1
S2(config)# interface fa0/18
S2(config-if)# switchport mode access
S2(config-if)# switchport access vlan 20
S2(config-if)# no shut
S2(config-if)# exit
S2(config)# interface fa0/1
S2(config-if)# switchport mode trunk
S2(config-if)# no shut
S2(config-if)# exit
S2(config-if)# end
*Mar  1 00:23:52.137: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
```

Router-on-a-Stick Inter-VLAN Routing
R1 Subinterface Configuration

The router-on-a-stick method requires you to create a subinterface for each VLAN to be routed. A subinterface is created using the **interface** *interface_id subinterface_id* global configuration mode command. The subinterface syntax is the physical interface followed by a period and a subinterface number. Although not required, it is customary to match the subinterface number with the VLAN number.

Each subinterface is then configured with the following two commands:

- **encapsulation dot1q** *vlan_id* **[native]** - This command configures the subinterface to respond to 802.1Q encapsulated traffic from the specified *vlan-id*. The **native** keyword option is only appended to set the native VLAN to something other than VLAN 1.

- **ip address** *ip-address subnet-mask* - This command configures the IPv4 address of the subinterface. This address typically serves as the default gateway for the identified VLAN.

Repeat the process for each VLAN to be routed. Each router subinterface must be assigned an IP address on a unique subnet for routing to occur. When all subinterfaces have been created, enable the physical interface using the **no shutdown** interface configuration command. If the physical interface is disabled, all subinterfaces are disabled.

Router-on-a-Stick Inter-VLAN Routing
R1 Subinterface Configuration (Cont.)

In the configuration, the R1 G0/0/1 subinterfaces are configured for VLANs 10, 20, and 99.

```
R1(config)# interface G0/0/1.10
R1(config-subif)# Description Default Gateway for VLAN 10
R1(config-subif)# encapsulation dot1Q 10
R1(config-subif)# ip add 192.168.10.1 255.255.255.0
R1(config-subif)# exit
R1(config)#
R1(config)# interface G0/0/1.20
R1(config-subif)# Description Default Gateway for VLAN 20
R1(config-subif)# encapsulation dot1Q 20
R1(config-subif)# ip add 192.168.20.1 255.255.255.0
R1(config-subif)# exit
R1(config)#
R1(config)# interface G0/0/1.99
R1(config-subif)# Description Default Gateway for VLAN 99
R1(config-subif)# encapsulation dot1Q 99
R1(config-subif)# ip add 192.168.99.1 255.255.255.0
R1(config-subif)# exit
R1(config)#
R1(config)# interface G0/0/1
R1(config-if)# Description Trunk link to S1
R1(config-if)# no shut
R1(config-if)# end
R1#
*Sep 15 19:08:47.015: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/1, changed state to down
*Sep 15 19:08:50.071: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/1, changed state to up
*Sep 15 19:08:51.071: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/1,
changed state to up
R1#
```

Router-on-a-Stick Inter-VLAN Routing
Verify Connectivity Between PC1 and PC2

The router-on-a-stick configuration is complete after the switch trunk and the router subinterfaces have been configured. The configuration can be verified from the hosts, router, and switch.

From a host, verify connectivity to a host in another VLAN using the **ping** command. It is a good idea to first verify the current host IP configuration using the **ipconfig** Windows host command.

Next, use **ping** to verify connectivity with PC2 and S1, as shown in the figure.
The **ping** output successfully confirms inter-VLAN routing is operating.

```
C:\Users\PC1> ping 192.168.20.10
Pinging 192.168.20.10 with 32 bytes of data:
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127
Reply from 192.168.20.10: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.20.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss).
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\PC1>
C:\Users\PC1> ping 192.168.99.2
Pinging 192.168.99.2 with 32 bytes of data:
Request timed out.
Request timed out.
Reply from 192.168.99.2: bytes=32 time=2ms TTL=254
Reply from 192.168.99.2: bytes=32 time=1ms TTL=254
Ping statistics for 192.168.99.2:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss).
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms
C:\Users\PC1>
```

Router-on-a-Stick Inter-VLAN Routing Verification

In addition to using **ping** between devices, the following **show** commands can be used to verify and troubleshoot the router-on-a-stick configuration.

- **show ip route**
- **show ip interface brief**
- **show interfaces**
- **show interfaces trunk**

4.3 Inter-VLAN Routing using Layer 3 Switches

Inter-VLAN Routing using Layer 3 Switches
Layer 3 Switch Inter-VLAN Routing

Inter-VLAN routing using the router-on-a-stick method is simple to implement for a small to medium-sized organization. However, a large enterprise requires a faster, much more scalable method to provide inter-VLAN routing.

Enterprise campus LANs use Layer 3 switches to provide inter-VLAN routing. Layer 3 switches use hardware-based switching to achieve higher-packet processing rates than routers. Layer 3 switches are also commonly implemented in enterprise distribution layer wiring closets.

Capabilities of a Layer 3 switch include the ability to do the following:

- Route from one VLAN to another using multiple switched virtual interfaces (SVIs).

- Convert a Layer 2 switchport to a Layer 3 interface (i.e., a routed port). A routed port is similar to a physical interface on a Cisco IOS router.

- To provide inter-VLAN routing, Layer 3 switches use SVIs. SVIs are configured using the same **interface vlan** *vlan-id* command used to create the management SVI on a Layer 2 switch. A Layer 3 SVI must be created for each of the routable VLANs.

Inter-VLAN Routing using Layer 3 Switches
Layer 3 Switch Scenario

In the figure, the Layer 3 switch, D1, is connected to two hosts on different VLANs. PC1 is in VLAN 10 and PC2 is in VLAN 20, as shown. The Layer 3 switch will provide inter-VLAN routing services to the two hosts.
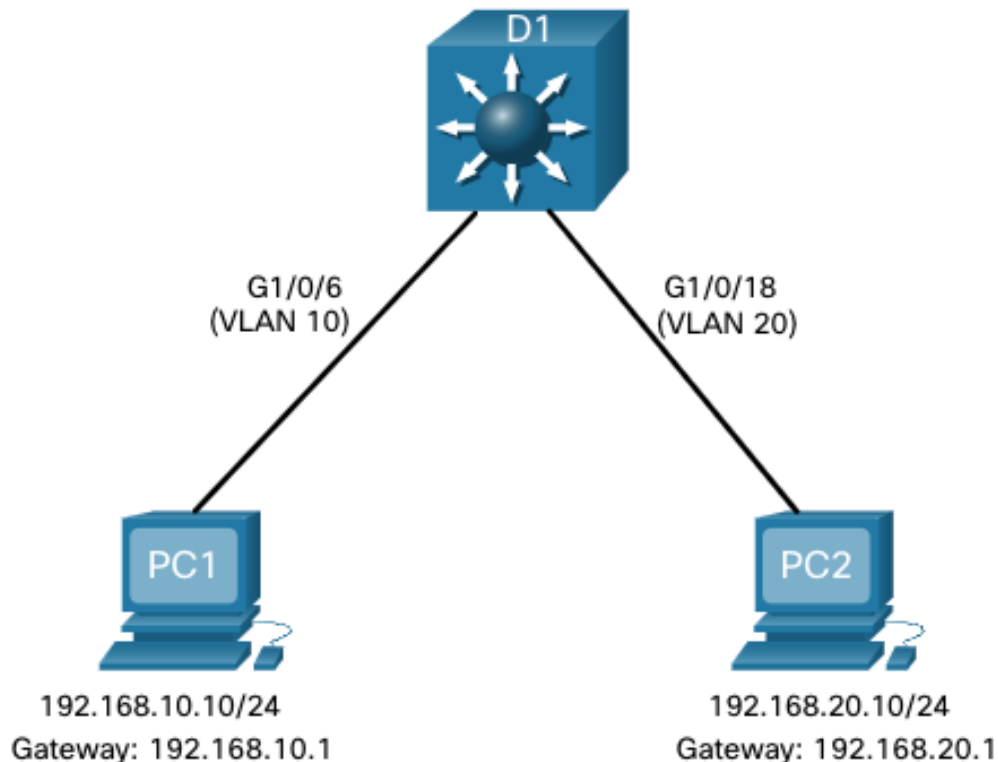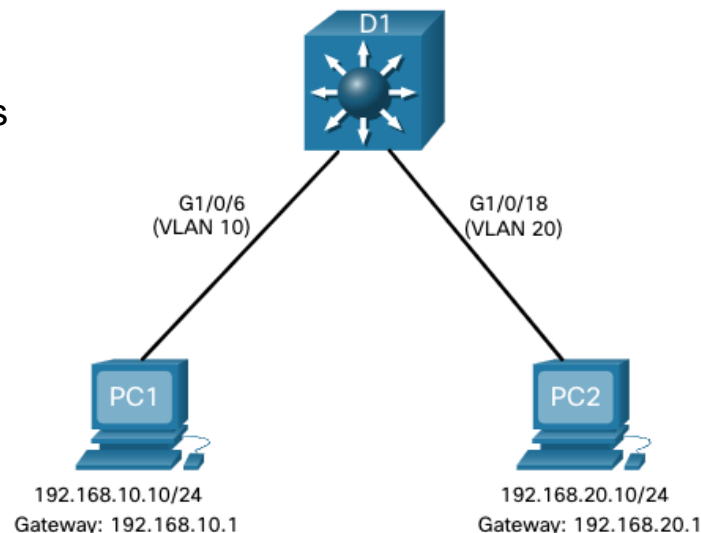
Inter-VLAN Routing using Layer 3 Switches
Layer 3 Switch Configuration

Complete the following steps to configure S1 with VLANs and trunking:

- **Step 1**. Create the VLANs. In the example, VLANs 10 and 20 are used.

- **Step 2**. Create the SVI VLAN interfaces. The IP address configured will serve as the default gateway for hosts in the respective VLAN.

- **Step 3**. Configure access ports. Assign the appropriate port to the required VLAN.

- **Step 4**. Enable IP routing. Issue the **ip routing** global configuration command to allow traffic to be exchanged between VLANs 10 and 20. This command must be configured to enable inter-VAN routing on a Layer 3 switch for IPv4.

Inter-VLAN Routing using Layer 3 Switches
Layer 3 Switch Inter-VLAN Routing Verification

Inter-VLAN routing using a Layer 3 switch is simpler to configure than the router-on-a-stick method. After the configuration is complete, the configuration can be verified by testing connectivity between the hosts.

- From a host, verify connectivity to a host in another VLAN using the **ping** command. It is a good idea to first verify the current host IP configuration using the **ipconfig** Windows host command.

- Next, verify connectivity with PC2 using the **ping** Windows host command. The successful **ping** output confirms inter-VLAN routing is operating.

Inter-VLAN Routing using Layer 3 Switches
Routing on a Layer 3 Switch

If VLANs are to be reachable by other Layer 3 devices, then they must be advertised using static or dynamic routing. To enable routing on a Layer 3 switch, a routed port must be configured.

A routed port is created on a Layer 3 switch by disabling the switchport feature on a Layer 2 port that is connected to another Layer 3 device. Specifically, configuring the **no switchport** interface configuration command on a Layer 2 port converts it into a Layer 3 interface. Then the interface can be configured with an IPv4 configuration to connect to a router or another Layer 3 switch.

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Inter-VLAN Routing using Layer 3 Switches
Routing Scenario on a Layer 3 Switch

In the figure, the previously configured D1 Layer 3 switch is now connected to R1. R1 and D1 are both in an Open Shortest Path First (OSPF) routing protocol domain. Assume inter-VLAN has been successfully implemented on D1. The G0/0/1 interface of R1 has also been configured and enabled. Additionally, R1 is using OSPF to advertise its two networks, 10.10.10.0/24 and 10.20.20.0/24.

Note: OSPF routing configuration is covered in another course. In this module, OSPF configuration commands will be given to you in all activities and assessments. It is not required that you understand the configuration in order to enable OSPF routing on the Layer 3 switch.
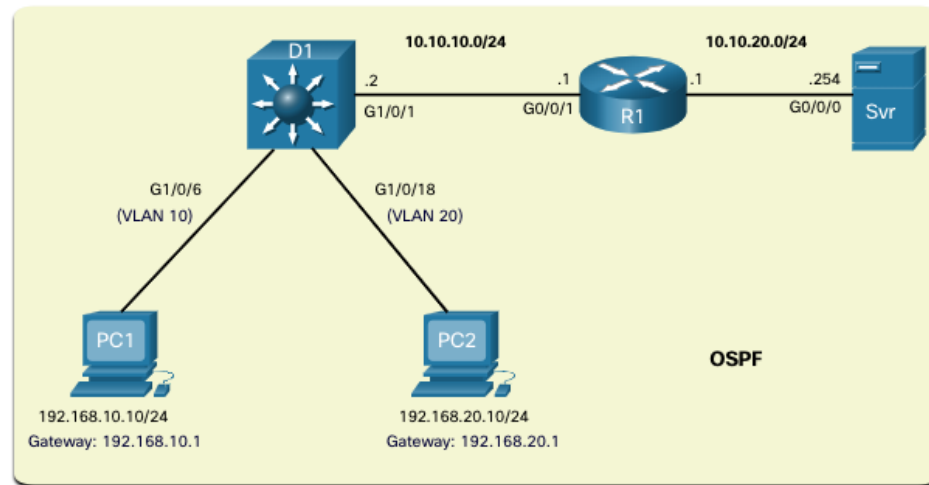
Inter-VLAN Routing using Layer 3 Switches
Routing Configuration on a Layer 3 Switch

Complete the following steps to configure D1 to route with R1:

- **Step 1**. Configure the routed port. Use the **no switchport** command to convert the port to a routed port, then assign an IP address and subnet mask. Enable the port.

- **Step 2**. Enable routing. Use the **ip routing** global configuration command to enable routing.

- **Step 3**. Configure routing. Use an appropriate routing method. In this example, Single-Area OSPFv2 is configured

- **Step 4**. Verify routing. Use the **show ip route** command.

- **Step 5**. Verify connectivity. Use the **ping** command to verify reachability.

4.4 Troubleshoot Inter-VLAN Routing

Troubleshoot Inter-VLAN Routing
Common Inter-VLAN Issues

There are a number of reasons why an inter-VAN configuration may not work. All are related to connectivity issues. First, check the physical layer to resolve any issues where a cable might be connected to the wrong port. If the connections are correct, then use the list in the table for other common reasons why inter-VLAN connectivity may fail.

| Issue Type	How to Fix	How to Verify
Missing VLANs	•Create (or re-create) the VLAN if it does not exist. •Ensure host port is assigned to the correct VLAN.	**show vlan [brief]** **show interfaces switchport** **ping**
Switch Trunk Port Issues	•Ensure trunks are configured correctly. •Ensure port is a trunk port and enabled.	**show interface trunk** **show running-config**
Switch Access Port Issues	•Assign correct VLAN to access port. •Ensure port is an access port and enabled. •Host is incorrectly configured in the wrong subnet.	**show interfaces switchport** **show running-config interface** **ipconfig**
Router Configuration Issues	•Router subinterface IPv4 address is incorrectly configured. •Router subinterface is assigned to the VLAN ID.	**show ip interface brief** **show interfaces**

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Troubleshoot Inter-VLAN Routing Scenario

Examples of some of these inter-VLAN routing problems will now be covered in more detail. This topology will be used for all of these issues.

Router R1 Subinterfaces		
Subinterface	**VLAN**	**IP Address**
G0/0/0.10	10	192.168.10.1/24
G0/0/0.20	20	192.168.20.1/24
G0/0/0.30	99	192.168.99.1/24
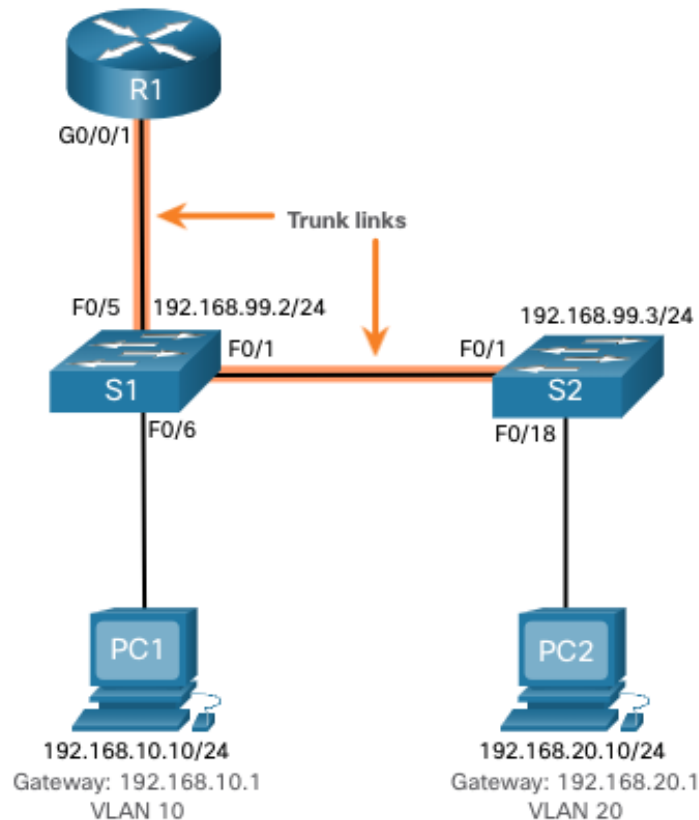
4 - Inter-VLAN Routing

Missing VLANs

An inter-VLAN connectivity issue could be caused by a missing VLAN. The VLAN could be missing if it was not created, it was accidently deleted, or it is not allowed on the trunk link.

When a VLAN is deleted, any ports assigned to that VLAN become inactive. They remain associated with the VLAN (and thus inactive) until you assign them to a new VLAN or recreate the missing VLAN. Recreating the missing VLAN would automatically reassign the hosts to it.

Use the **show interface** *interface-id* **switchport** command to verify the VLAN membership of the port.

```
S1(config)# do show interface fa0/6 switchport
Name: Fa0/6
Switchport: Enabled
Administrative Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 10 (Inactive)
Trunking Native Mode VLAN: 1 (default)
Administrative Native VLAN tagging: enabled
Voice VLAN: none
(Output omitted)
```

Troubleshoot Inter-VLAN Routing
Switch Trunk Port Issues

Another issue for inter-VLAN routing includes misconfigured switch ports. In a legacy inter-VLAN solution, this could be caused when the connecting router port is not assigned to the correct VLAN.

However, with a router-on-a-stick solution, the most common cause is a misconfigured trunk port.

- Verify that the port connecting to the router is correctly configured as a trunk link using the **show interface trunk** command.

- If that port is missing from the output, examine the configuration of the port with the **show running-config interface X** command to see how the port is configured.

```
S1# show interface trunk
Port            Mode            Encapsulation  Status      Native vlan
Fa0/1           on              802.1q         trunking    1
Port            Vlans allowed on trunk
Fa0/1           1-4094
Port            Vlans allowed and active in management domain
Fa0/1           1,10,20,99
Port            Vlans in spanning tree forwarding state and not pruned
Fa0/1           1,10,20,99
S1#
```

Troubleshoot Inter-VLAN Routing
Switch Access Port Issues

When a problem is suspected with a switch access port configuration, use verification commands to examine the configuration and identify the problem.

A common indicator of this issue is the PC having the correct address configuration (IP Address, Subnet Mask, Default Gateway), but being unable to ping its default gateway.

- Use the **show vlan brief**, **show interface X switchport** or **show running-config interface X** command to verify the interface VLAN assignment.

```
S1# show interface fa0/6 switchport
Name: Fa0/6
Switchport: Enabled
Administrative Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dotlq
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Administrative Native VLAN tagging: enabled
Voice VLAN: none
```

Troubleshoot Inter-VLAN Routing
Router Configuration Issues

Router-on-a-stick configuration problems are usually related to subinterface misconfigurations.

- Verify the subinterface status using the **show ip interface brief** command.

- Verify which VLANs each of the subinterfaces is on. To do so, the **show interfaces** command is useful but it generates a great deal of additional unrequired output. The command output can be reduced using IOS command filters. In this example, use the **include** keyword to identify that only lines containing the letters "Gig" or "802.1Q"

```
R1# show interfaces | include Gig|802.1Q
GigabitEthernet0/0/0 is administratively down, line protocol is down
GigabitEthernet0/0/1 is up, line protocol is up
  Encapsulation 802.1Q Virtual LAN, Vlan ID  1., loopback not set
GigabitEthernet0/0/1.10 is up, line protocol is up
  Encapsulation 802.1Q Virtual LAN, Vlan ID  100.
GigabitEthernet0/0/1.20 is up, line protocol is up
  Encapsulation 802.1Q Virtual LAN, Vlan ID  20.
GigabitEthernet0/0/1.99 is up, line protocol is up
  Encapsulation 802.1Q Virtual LAN, Vlan ID  99.
R1#
```

4.5 Summary

Summary
What Did I Learn In This Module?

- Inter-VLAN routing is the process of forwarding network traffic from one VLAN to another VLAN.
- Three options include legacy, router-on-a-stick, and Layer 3 switch using SVIs.
- To configure a switch with VLANs and trunking, complete the following steps: create and name the VLANs, create the management interface, configure access ports, and configure trunking ports.
- The router-on-a-stick method requires a subinterface to be created for each VLAN to be routed. A subinterface is created using the **interface interface_id subinterface_id** global configuration mode command.
- Each router subinterface must be assigned an IP address on a unique subnet for routing to occur. When all subinterfaces have been created, the physical interface must be enabled using the no shutdown interface configuration command.
- Enterprise campus LANs use Layer 3 switches to provide inter-VLAN routing. Layer 3 switches use hardware-based switching to achieve higher-packet processing rates than routers.
- Capabilities of a Layer 3 switch include routing from one VLAN to another using multiple switched virtual interfaces (SVIs) and converting a Layer 2 switchport to a Layer 3 interface (i.e., a routed port).
- To provide inter-VLAN routing, Layer 3 switches use SVIs. SVIs are configured using the same **interface vlan vlan-id** command used to create the management SVI on a Layer 2 switch.

Summary
What Did I Learn In This Module? (Cont.)

- To configure a switch with VLANS and trunking, complete the following steps: create the VLANS, create the SVI VLAN interfaces, configure access ports, and enable IP routing.
- To enable routing on a Layer 3 switch, a routed port must be configured. A routed port is created on a Layer 3 switch by disabling the switchport feature on a Layer 2 port that is connected to another Layer 3 device. The interface can be configured with an IPv4 configuration to connect to a router or another Layer 3 switch.
- To configure a Layer 3 switch to route with a router, follow these steps: configure the routed port, enable routing, configure routing, verify routing, and verify connectivity.
- There are a number of reasons why an inter-VAN configuration may not work. All are related to connectivity issues such as missing VLANs, switch trunk port issues, switch access port issues, and router configuration issues.
- A VLAN could be missing if it was not created, it was accidently deleted, or it is not allowed on the trunk link.
- Another issue for inter-VLAN routing includes misconfigured switch ports.
- In a legacy inter-VLAN solution, a misconfigured switch port could be caused when the connecting router port is not assigned to the correct VLAN.

Summary
What Did I Learn In This Module? (Cont.)

- With a router-on-a-stick solution, the most common cause is a misconfigured trunk port.
- When a problem is suspected with a switch access port configuration, use **ping** and **show interfaces interface-id switchport** commands to identify the problem.
- Router configuration problems with router-on-a-stick configurations are usually related to subinterface misconfigurations. Verify the subinterface status using the **show ip interface brief** command.

Module 4: Activities

What activities are associated with this module?

Page #	Activity Type	Activity Name
4.1.5	Check Your Understanding	Inter-VLAN Routing Operations
4.2.7	Packet Tracer	Configure Router-on-a-Stick Inter-VLAN Routing
4.3.8	Packet Tracer	Configure Layer 3 Switching and inter-VLAN Routing
4.4.7	Check Your Understanding	Troubleshoot Inter-VLAN Routing
4.4.8	Packet Tracer	Troubleshoot Inter-VLAN Routing

Module 4: Activities (Cont.)

What activities are associated with this module?

Page #	Activity Type	Activity Name
4.5.1	Packet Tracer	Inter-VLAN Routing Challenge