

## **Module 4 – Inter-VLAN Routing**

### **Switching, Routing, and Wireless Essentials – Semester 2**

### **Student Version**

#### **Module 4 Sections:**

- 4.0 Introduction
- 4.1 Inter-VLAN Routing Operation
- 4.2 Router-on-a-Stick Inter-VLAN Routing
- 4.3 Inter-VLAN Routing using Layer 3 Switches
- 4.4 Troubleshoot Inter-VLAN Routing
- 4.5 Module Practice and Quiz

#### **Required Materials:**

Reading Organizer

Packet Tracer Activities:      4.2.7 - Configure Router-on-a-Stick Inter-VLAN Routing  
   4.3.8 - Configure Layer 3 Switching and Inter-VLAN Routing  
   4.4.8 - Troubleshoot Inter-VLAN Routing  
   4.5.1 - Inter-VLAN Routing Challenge

Labs:    4.2.8 - Configure Router-on-a-Stick Inter-VLAN Routing  
          4.4.9 - Troubleshoot Inter-VLAN Routing  
          4.5.2 - Implement Inter-VLAN Routing

Module's 1 - 4 Exam

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Name \_\_\_\_\_ Date \_\_\_\_\_

## Module 4 – Inter-VLAN Routing

### Reading Organizer

#### Student Version

**Note:** The Reading Organizer has weighted scoring. Any question with the word **explain, define, or describe** in it is expected to have a longer answer and is worth two points each.

**After completion of this module, you should be able to:**

- Describe options for configuring inter-VLAN routing.
- Configure router-on-a-stick inter-VLAN routing.
- Configure inter-VLAN routing using Layer 3 switching.
- Troubleshoot common inter-VLAN configuration issues.

#### 4.1 Inter-VLAN Routing Operation

1. Hosts in one VLAN cannot communicate with hosts in another VLAN unless there is a \_\_\_\_\_ or a \_\_\_\_\_ to provide routing services.
2. List the three inter-VLAN routing options.
  - a.
  - b.
  - c.
3. The first inter-VLAN routing solution relied on using a router with \_\_\_\_\_ Ethernet interfaces.
4. Legacy inter-VLAN routing using physical interfaces works. Explain its significant limitations.

5. Explain how the 'router-on-a-stick' inter-VLAN routing method overcomes the limitation of the legacy inter-VLAN routing method.

6. The 'router-on-a-stick' inter-VLAN routing method configures router interface to use \_\_\_\_\_ to identify routable VLANs.

7. The modern method of performing inter-VLAN routing is to use \_\_\_\_\_ and \_\_\_\_\_ (SVI).

8. Describe three advantages of using Layer 3 switches for inter-VLAN routing. (List 3 out of the 5 options.)

a.

b.

c.

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

9. What are the four steps required to set up a switch VLAN and trunking configuration?

Step 1.

Step 2.

Step 3.

Step 4.

10. What two commands are required to setup router subinterfaces?

a.

b.

11. When all subinterfaces have been created, enable the physical interface using the \_\_\_\_\_ interface configuration command.

12. If the physical interface is disabled, what happens to all the subinterfaces?

13. When is a router-on-a-stick configuration complete?

14. What four show commands can you use to verify router-on-a-stick inter-VLAN routing?

a.

b.

c.

d.

### 4.3 Inter-VLAN Routing using Layer 3 Switches

15. Why do modern, enterprise networks rarely use router-on-a-stick?

16. Layer 3 switches use \_\_\_\_\_ switching to achieve higher-packet processing rates than routers.

17. Layer 3 switches are also commonly implemented in enterprise \_\_\_\_\_ wiring closets.

18. Describe the two capabilities of a Layer 3 switch.

a.

b.

19. What are the four steps required to configure a layer 3 switch?

Step 1.

Step 2.

Step 3.

Step 4.

20. From a host, verify connectivity to a host in another VLAN using the \_\_\_\_\_ command.

21. If VLANs are to be reachable by other Layer 3 devices, then they must be advertised using \_\_\_\_\_ or \_\_\_\_\_ routing.

22. To enable routing on a Layer 3 switch, a \_\_\_\_\_ must be configured.

#### 4.4 Troubleshoot Inter-VLAN Routing

23. Write in the fixes to the following VLAN issues.

Missing VLANs –

a.

b.

Switch Trunk Port Issues –

a.

b.

Switch Access Port Issues –

a.

b.

c.

Router Configuration Issues –

a.

b.

24. An inter-VLAN connectivity issue could be caused by a missing VLAN. List three reasons the VLAN could be missing.

a.

b.

c.

25. Which switch CLI command will show all the VLANs on the switch and which ports are assigned to them?

26. Router-on-a-stick configuration problems are usually related to \_\_\_\_\_  
misconfigurations.