Packet Tracer –Investigating a VLAN Implementation

Topology



1. Addressing Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Default Gateway |
| S1 | VLAN 99 | 172.17.99.31 | 255.255.255.0 | N/A |
| S2 | VLAN 99 | 172.17.99.32 | 255.255.255.0 | N/A |
| S3 | VLAN 99 | 172.17.99.33 | 255.255.255.0 | N/A |
| PC1 | NIC | 172.17.10.21 | 255.255.255.0 | 172.17.10.1 |
| PC2 | NIC | 172.17.20.22 | 255.255.255.0 | 172.17.20.1 |
| PC3 | NIC | 172.17.30.23 | 255.255.255.0 | 172.17.30.1 |
| PC4 | NIC | 172.17.10.24 | 255.255.255.0 | 172.17.10.1 |
| PC5 | NIC | 172.17.20.25 | 255.255.255.0 | 172.17.20.1 |
| PC6 | NIC | 172.17.30.26 | 255.255.255.0 | 172.17.30.1 |
| PC7 | NIC | 172.17.10.27 | 255.255.255.0 | 172.17.10.1 |
| PC8 | NIC | 172.17.20.28 | 255.255.255.0 | 172.17.20.1 |
| PC9 | NIC | 172.17.30.29 | 255.255.255.0 | 172.17.30.1 |

1. Objectives

Part 1: Observe Broadcast Traffic in a VLAN Implementation

Part 2: Observe Broadcast Traffic without VLANs

Part 3: Complete Reflection Questions

1. Background

In this activity, you will observe how broadcast traffic is forwarded by the switches when VLANs are configured and when VLANs are not configured.

1. Observe Broadcast Traffic in a VLAN Implementation
	1. Ping from PC1 to PC6.
		1. Wait for all the link lights to turn to green. To accelerate this process, click **Fast Forward Time** locatedin the bottom yellow tool bar.
		2. Click the **Simulation** tab and use the **Add Simple PDU**tool. Click on **PC1**, and then click on**PC6**.
		3. Click the **Capture/Forward**button to step through the process. Observe the ARP requests as they traverse the network. When the Buffer Fullwindow appears, click the **View Previous Events** button.
		4. Were the pings successful? Why?
		5. Look at the Simulation Panel, where did **S3** send the packet after receiving it?

In normal operation, when a switch receives a broadcast frame on one of its ports, it forwards the frame out all other ports. Notice that **S2** only sends the ARP request out Fa0/1 to **S1**. Also notice that **S3** only sends the ARP request out F0/11 to **PC4**. **PC1** and **PC4** both belong to VLAN 10. **PC6** belongs to VLAN 30. Because broadcast traffic is contained within the VLAN, **PC6** never receives the ARP request from **PC1**. Because **PC4** is not the destination, it discards the ARP request. The ping from **PC1** fails because **PC1** never receives an ARP reply.

* 1. Ping from PC1 to PC4.
		1. Click the **New**button under the Scenario 0dropdown tab. Now click on the **Add Simple PDU** icon on the right side of Packet Tracer and ping from**PC1** to **PC4**.
		2. Click the **Capture/Forward**button to step through the process. Observe the ARP requests as they traverse the network. When the Buffer Fullwindow appears, click the **View Previous Events** button.
		3. Were the pings successful? Why
		4. Examine the Simulation Panel. When the packet reached **S1**,why does it also forward the packet to **PC7**?
1. Observe Broadcasts Traffic without VLANs
	1. Clear the configurations on all three switches and delete the VLAN database.
		1. Return to **Realtime** mode.
		2. Delete the startup configuration on all 3 switches. What command isused to delete the startupconfiguration of the switches?
		3. Where is the VLAN file stored in the switches?
		4. Delete the VLAN file on all 3 switches. What command deletes the VLAN file stored in the switches?