Packet Tracer - VLAN Configuration

Addressing Table

Device	Interface	IP Address	Subnet Mask	VLAN
PC1	NIC	172.17.10.21	255.255.255.0	10
PC2	NIC	172.17.20.22	255.255.255.0	20
PC3	NIC	172.17.30.23	255.255.255.0	30
PC4	NIC	172.17.10.24	255.255.255.0	10
PC5	NIC	172.17.20.25	255.255.255.0	20
PC6	NIC	172.17.30.26	255.255.255.0	30

Objectives

Part 1: Verify the Default VLAN Configuration

Part 2: Configure VLANs

Part 3: Assign VLANs to Ports

Background

VLANs are helpful in the administration of logical groups, allowing members of a group to be easily moved, changed, or added. This activity focuses on creating and naming VLANs, and assigning access ports to specific VLANs.

Part 1: View the Default VLAN Configuration

Step 1: Display the current VLANs.

On S1, issue the command that displays all VLANs configured. By default, all interfaces are assigned to VLAN 1.

Step 2: Verify connectivity between PCs on the same network.

Notice that each PC can ping the other PC that shares the same subnet.

- PC1 can ping PC4
- PC2 can ping PC5
- PC3 can ping PC6

Pings to hosts on other networks fail.

What benefits can VLANs provide to the network?

VLANs can provide added security because of the logical segmentation while reducing the cost of the network since new hardware will not be necessary (if it can already support VLANs0 for the segmentation.

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Part 2: Configure VLANs

Step 1: Create and name VLANs on S1.

a. Create the following VLANs. Names are case-sensitive and must match the requirement exactly:

- VLAN 10: Faculty/Staff

```
S1#(config)# vlan 10
S1#(config-vlan)# name Faculty/Staff
```

b. Create the remaining VLANS.

- VLAN 20: Students
- VLAN 30: Guest(Default)
- VLAN 99: Management&Native
- VLAN 150: VOICE

Step 2: Verify the VLAN configuration.

Which command will only display the VLAN name, status, and associated ports on a switch?

Step 3: Create the VLANs on S2 and S3.

Use the same commands from Step 1 to create and name the same VLANs on S2 and S3.

Step 4: Verify the VLAN configuration.

Part 3: Assign VLANs to Ports

Step 1: Assign VLANs to the active ports on S2.

a. Configure the interfaces as access ports and assign the VLANs as follows:

- VLAN 10: FastEthernet 0/11

```
S2(config)# interface f0/11
S2(config-if)# switchport mode access
S2(config-if)# switchport access vlan 10
```

b. Assign the remaining ports to the appropriate VLAN.

- VLAN 20: FastEthernet 0/18
- VLAN 30: FastEthernet 0/6

Step 2: Assign VLANs to the active ports on S3.

S3 uses the same VLAN access port assignments as S2. Configure the interfaces as access ports and assign the VLANs as follows:

- VLAN 10: FastEthernet 0/11
- VLAN 20: FastEthernet 0/18
- VLAN 30: FastEthernet 0/6

Step 3: Assign the VOICE VLAN to FastEthernet 0/11 on S3.

As shown in the topology, the S3 FastEthernet 0/11 interface connects to a Cisco IP Phone and PC4. The IP phone contains an integrated three-port 10/100 switch. One port on the phone is labeled Switch and connects to F0/4. Another port on the phone is labeled PC and connects to PC4. The IP phone also has an internal port that connects to the IP phone functions.

The S3 F0/11 interface must be configured to support user traffic to PC4 using VLAN 10 and voice traffic to the IP phone using VLAN 150. The interface must also enable QoS and trust the Class of Service (CoS) values assigned by the IP phone. IP voice traffic requires a minimum amount of throughput to support acceptable voice communication quality. This command helps the switchport to provide this minimum amount of throughput.

```
S3(config)# interface f0/11
S3(config-if)# mls qos trust cos
S3(config-if)# switchport voice vlan 150
```

Step 4: Verify loss of connectivity.

Previously, PCs that shared the same network could ping each other successfully.

Study the output of from the following command on **S2** and answer the following questions based on your knowledge of communication between VLANS. Pay close attention to the Gig0/1 port assignment.

```
S2# show vlan brief
VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                Fa0/5, Fa0/7, Fa0/8, Fa0/9
                                                Fa0/10, Fa0/12, Fa0/13, Fa0/14
                                                Fa0/15, Fa0/16, Fa0/17, Fa0/19
                                                Fa0/20, Fa0/21, Fa0/22, Fa0/23
                                                Fa0/24, Gig0/1, Gig0/2
10   Faculty/Staff                    active    Fa0/11
20   Students                         active    Fa0/18
30   Guest(Default)                   active    Fa0/6
99   Management&Native                active
150  VOICE                            active
```

Try pinging between PC1 and PC4.

Although the access ports are assigned to the appropriate VLANs, were the pings successful? Explain.

No. The pings failed because the ports between the switches are on VLAN 1 and 10

What could be done to resolve this issue?

Configure the ports between the switches as trunk ports