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.

## View the Default VLAN Configuration

### Display the current VLANs.

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

### 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.

#### Question:

What benefits can VLANs provide to the network?

Type your answers here.

The primary benefits of using VLANs are as follows: security, cost reduction, higher performance, broadcast storm mitigation, improved IT staff efficiency, and simpler project and application management.

## Configure VLANs

### Create and name VLANs on S1.

* + - 1. Create the following VLANs. Names are case-sensitive and must match the requirement exactly:
* VLAN 10: Faculty/Staff

Open configuration window

S1#(config)# **vlan 10**

S1#(config-vlan)# **name Faculty/Staff**

* + - 1. Create the remaining VLANS.
* VLAN 20: Students
* VLAN 30: Guest(Default)
* VLAN 99: Management&Native
* VLAN 150: VOICE

S1#(config-vlan)# **vlan 20**

S1#(config-vlan)# **name Students**

S1#(config-vlan)# **vlan 30**

S1#(config-vlan)# **name Guest(Default)**

S1#(config-vlan)# **vlan 99**

S1#(config-vlan)# **name Management&Native**

S1#(config-vlan)# **vlan 150**

S1#(config-vlan)# **name VOICE**

Graphical user interface, text

Description automatically generated

### Verify the VLAN configuration.

#### Question:

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

S1# **show vlan brief**

### 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.

Graphical user interface

Description automatically generated

Graphical user interface

Description automatically generated

### Verify the VLAN configuration.

Close configuration window

## Assign VLANs to Ports

### Assign VLANs to the active ports on S2.

* + - 1. Configure the interfaces as access ports and assign the VLANs as follows:
* VLAN 10: FastEthernet 0/11

Open configuration window

S2(config)# **interface f0/11**

S2(config-if)# **switchport mode access**

S2(config-if)# **switchport access vlan 10**

* + - 1. Assign the remaining ports to the appropriate VLAN.
* VLAN 20: FastEthernet 0/18
* VLAN 30: FastEthernet 0/6

S2(config-if)# **interface f0/18**

S2(config-if)# **switchport mode access**

S2(config-if)# **switchport access vlan 20**

S2(config-if)# **interface f0/6**

S2(config-if)# **switchport mode access**

S2(config-if)# **switchport access vlan 30**

### 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

S3(config)# **interface f0/11**

S3(config-if)# **switchport mode access**

S3(config-if)# **switchport access vlan 10**

S3(config-if)# **interface f0/18**

S3(config-if)# **switchport mode access**

S3(config-if)# **switchport access vlan 20**

S3(config-if)# **interface f0/6**

S3(config-if)# **switchport mode access**

S3(config-if)# **switchport access vlan 30**

### 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**

### 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

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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.

#### Questions:

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

Type your answers here.

No, the pings failed because the ports between the switches are in VLAN 1 and PC1 and PC4 are in VLAN 10.

What could be done to resolve this issue?

Type your answers here.

Configure the ports between the switches as trunk ports.

Close configuration window

End of document

# Answer Scripts

# Switch S1

vlan 10

name Faculty/Staff

vlan 20

name Students

vlan 30

name Guest(Default)

vlan 99

name Management&Native

vlan 150

name VOICE

# Switch S2

vlan 10

name Faculty/Staff

vlan 20

name Students

vlan 30

name Guest(Default)

vlan 99

name Management&Native

vlan 150

name VOICE

interface fa0/11

switchport mode access

switchport access vlan 10

interface fa0/18

switchport mode access

switchport access vlan 20

interface fa0/6

switchport mode access

switchport access vlan 30

# Switch S3

vlan 10

name Faculty/Staff

vlan 20

name Students

vlan 30

name Guest(Default)

vlan 99

name Management&Native

vlan 150

name VOICE

interface fa0/11

switchport mode access

switchport access vlan 10

mls qos trust cos

switchport voice vlan 150

interface fa0/18

switchport mode access

switchport access vlan 20

interface fa0/6

switchport mode access

switchport access vlan 30