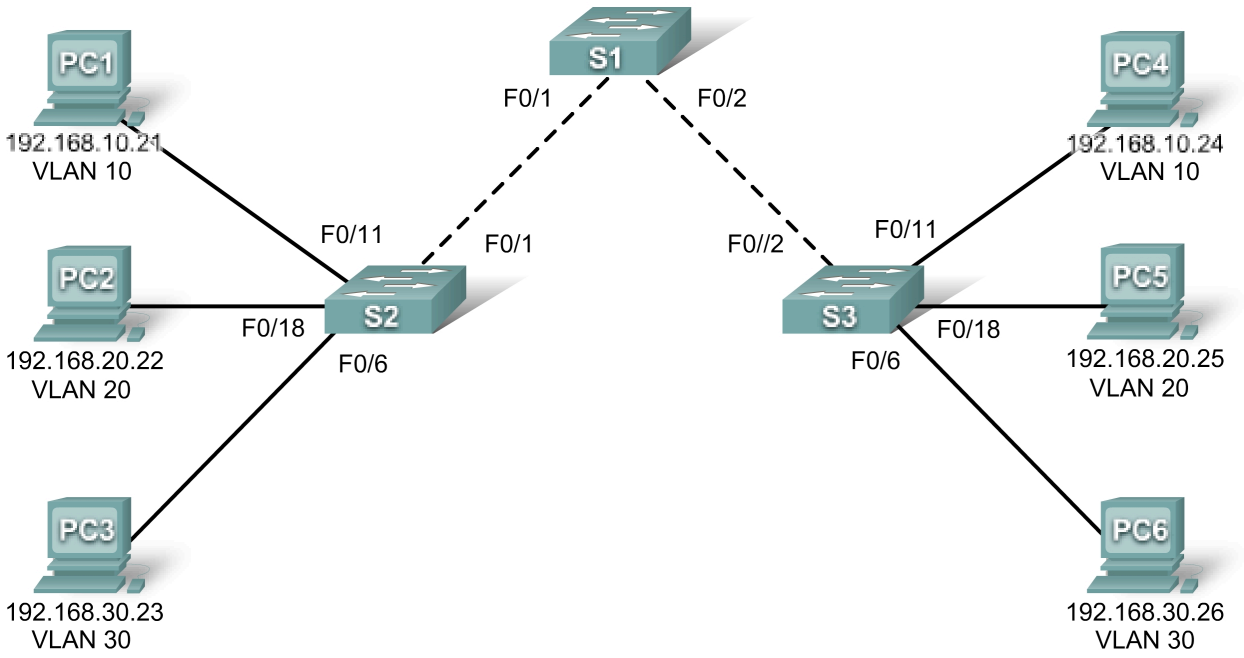
PT Activity 3.5.3: Troubleshooting VLAN Configurations

Topology Diagram



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
S1	**VLAN 56**	192.168.56.11	255.255.255.0	N/A
S2	**VLAN 56**	192.168.56.12	255.255.255.0	N/A
S3	**VLAN 56**	192.168.56.13	255.255.255.0	N/A
PC1	**NIC**	192.168.10.21	255.255.255.0	192.168.10.1
PC2	**NIC**	192.168.20.22	255.255.255.0	192.168.20.1
PC3	**NIC**	192.168.20.23	255.255.255.0	192.168.30.1
PC4	**NIC**	192.168.10.24	255.255.255.0	192.168.10.1
PC5	**NIC**	192.168.20.25	255.255.255.0	192.168.20.1
PC6	**NIC**	192.168.30.26	255.255.255.0	192.168.30.1

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Port Assignments (Switches 2 and 3)

Ports	Assignment	Network
Fa0/1 – 0/5	VLAN 56 – Management&Native	192.168.56.0/24
Fa0/6 – 0/10	VLAN 30 – Guest(Default)	192.168.30.0/24
Fa0/11 – 0/17	VLAN 10 – Faculty/Staff	192.168.10.0/24
Fa0/18 – 0/24	VLAN 20 – Students	192.168.20.0/24

Learning Objectives

- Find and correct the network errors.
- Document the corrections to the network.

Introduction

In this activity, you will practice troubleshooting a misconfigured VLAN environment. The initial network has errors. Your objective is to locate and correct any and all errors in the configurations and establish end-to-end connectivity. Your final configuration should match the topology diagram and addressing table. All passwords are set to **cisco**, except the **enable secret** password, which is set to **class**.

Task 1: Find and Correct Network Errors

Once all errors are corrected, PCs belonging to the same VLAN should be able to ping each other. In addition, S1, S2, and S3 should be able to ping each other.

Your completion percentage should be 100%. If not, find and correct any errors.

S1 Errors:

```
vlan 10
 name Faculty/Staff
vlan 20
 name Students
vlan 30
 name Guest(Default)
vlan 56
 name Management&Native
!It is a common error to forget to create the VLANs on all switches,
especially on a switch where there are no ports in that VLAN. The show vlan
command reveals this problem.
!
interface FastEthernet0/1
 switchport trunk native vlan 56
interface FastEthernet0/2
 switchport trunk native vlan 56
 !Forgetting this command causes a native VLAN mismatch. An error should be
produced on the switch. This prevents data for VLAN 56 from being passed
properly from switch to switch.
```

S2 Errors:

```
interface FastEthernet0/1
 switchport mode trunk
```

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```
!Accidentally misconfiguring these ports as access ports can cause some
interesting behavior. The port is made an access port in VLAN 1 (the
default). This, combined with the native VLAN on the trunk being 56, results
in traffic on VLAN 56 being sent on VLAN 1. The show interfaces trunk command
reveals this.
!
interface Vlan1
 no ip address
 !The default VLAN was configured as the management VLAN. This address is
reachable if the mistake made on the trunk links is not changed. This however
is not correct.
!
interface Vlan56
 ip address 192.168.56.12 255.255.255.0
 no shutdown
!The correct management VLAN was not configured and the IP address was put on
the default VLAN. The show ip interface brief command reveals this.
```

S3 Errors:

```
vlan 56
 name Management&Native
!The management VLAN was not configured. It is a common mistake to assume the
VLAN exists if you configured the SVI for that VLAN.
!
interface FastEthernet0/6
 switchport access vlan 30
interface FastEthernet0/11
 switchport access vlan 10
interface FastEthernet0/18
 switchport access vlan 20
!
!The ports were not put in their respective VLANs. This is evident because
all the hosts connected to this switch can reach the others because they are
all in the default VLAN. This can be seen with a show vlan command.
!
interface Vlan56
 ip address 192.168.56.13 255.255.255.0
 no shutdown
!This device is not reachable via the management VLAN without an IP address.
The absence of this command is evident through a show ip interface brief
command.
```

Task 2: Document the Corrected Network

Switch 1

```
hostname S1
no ip domain-lookup
enable secret class
!
vlan 10,20,30,56
!
interface FastEthernet0/1
 switchport trunk native vlan 56
 switchport mode trunk
 no shutdown
!
```

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```
interface FastEthernet0/2
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/3
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/4
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/5
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/6
 shutdown
!
!<output omitted - remaining ports on S1 are shutdown>
!
!
interface Vlan56
 ip address 192.168.56.11 255.255.255.0
 no ip route-cache
!
line con 0
password cisco
login
line vty 0 4
 no login
line vty 5 15
 password cisco
 login
!
end
```

Switch 2

```
hostname S2
no ip domain-lookup
enable secret cisco
!
vlan 10,20,30,56
!
interface FastEthernet0/1
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/2
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/3
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/4
```

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```
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/5
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/6
switchport access vlan 30
 switchport mode access
!
interface FastEthernet0/7
 switchport access vlan 30
 switchport mode access
!
interface FastEthernet0/8
 switchport access vlan 30
 switchport mode access
!
interface FastEthernet0/9
 switchport access vlan 30
 switchport mode access
!
interface FastEthernet0/10
 switchport access vlan 30
 switchport mode access
!
interface FastEthernet0/11
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/12
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/13
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/14
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/15
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/16
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/17
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/18
 switchport access vlan 20
```

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```
 switchport mode access
!
interface FastEthernet0/19
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/20
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/21
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/22
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/23
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/24
 switchport access vlan 20
 switchport mode access
!
!
!
interface Vlan56
 ip address 192.168.56.12 255.255.255.0
!
line con 0
 password cisco
 login
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

Switch 3

```
hostname S3
no ip domain-lookup
enable secret class
!
vlan 10,20,30,56
!
interface FastEthernet0/1
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/2
 switchport trunk native vlan 56
 switchport mode trunk
```

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```
!
interface FastEthernet0/3
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/4
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/5
 switchport trunk native vlan 56
 switchport mode trunk
!
interface FastEthernet0/6
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
 !
interface FastEthernet0/7
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/8
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/9
 switchport access vlan 30
 switchport mode access
 spanning-tree portfast
!
interface FastEthernet0/10
 switchport access vlan 30
!
interface FastEthernet0/11
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/12
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/13
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/14
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/15
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/16
```

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```
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/17
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/18
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/19
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/20
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/21
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/22
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/23
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/24
 switchport access vlan 20
 switchport mode access
!
interface Vlan56
 ip address 192.168.56.13 255.255.255.0

!
line con 0
 password cisco
 login
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

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