

VLANs and Trunks

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Course Code: Data Communication and Computer Networking

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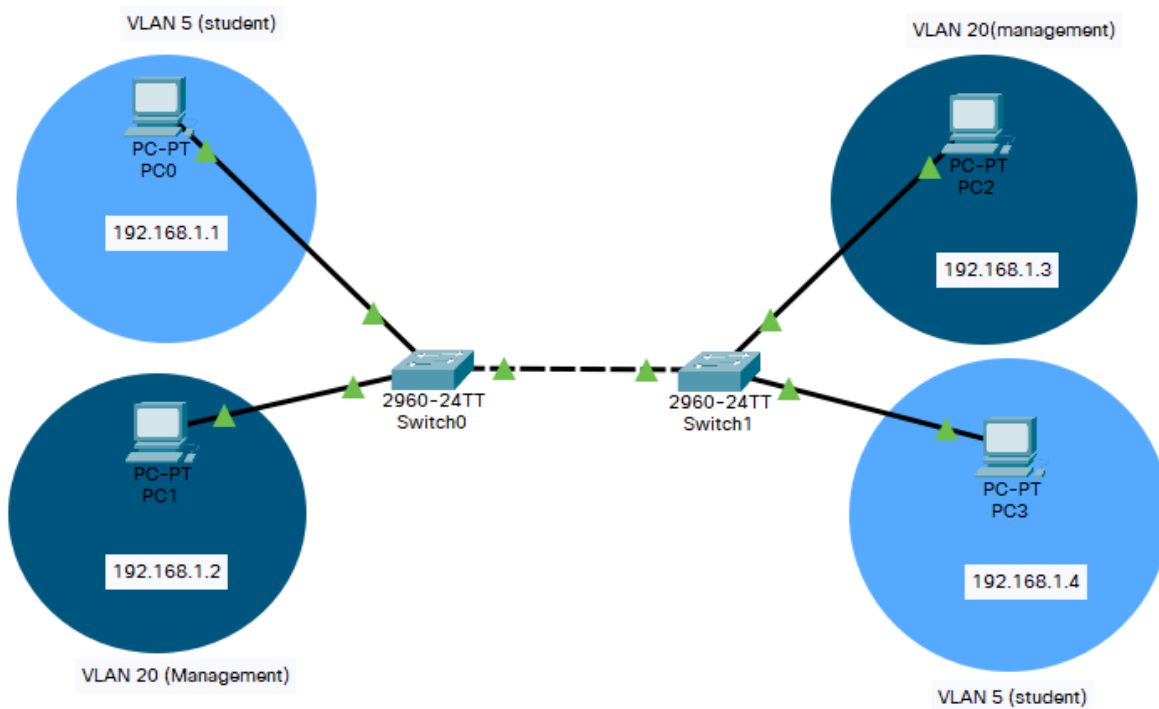
17^h January, 2022

VLANs and Trunks:

Suppose there are two Blocks in an institute:

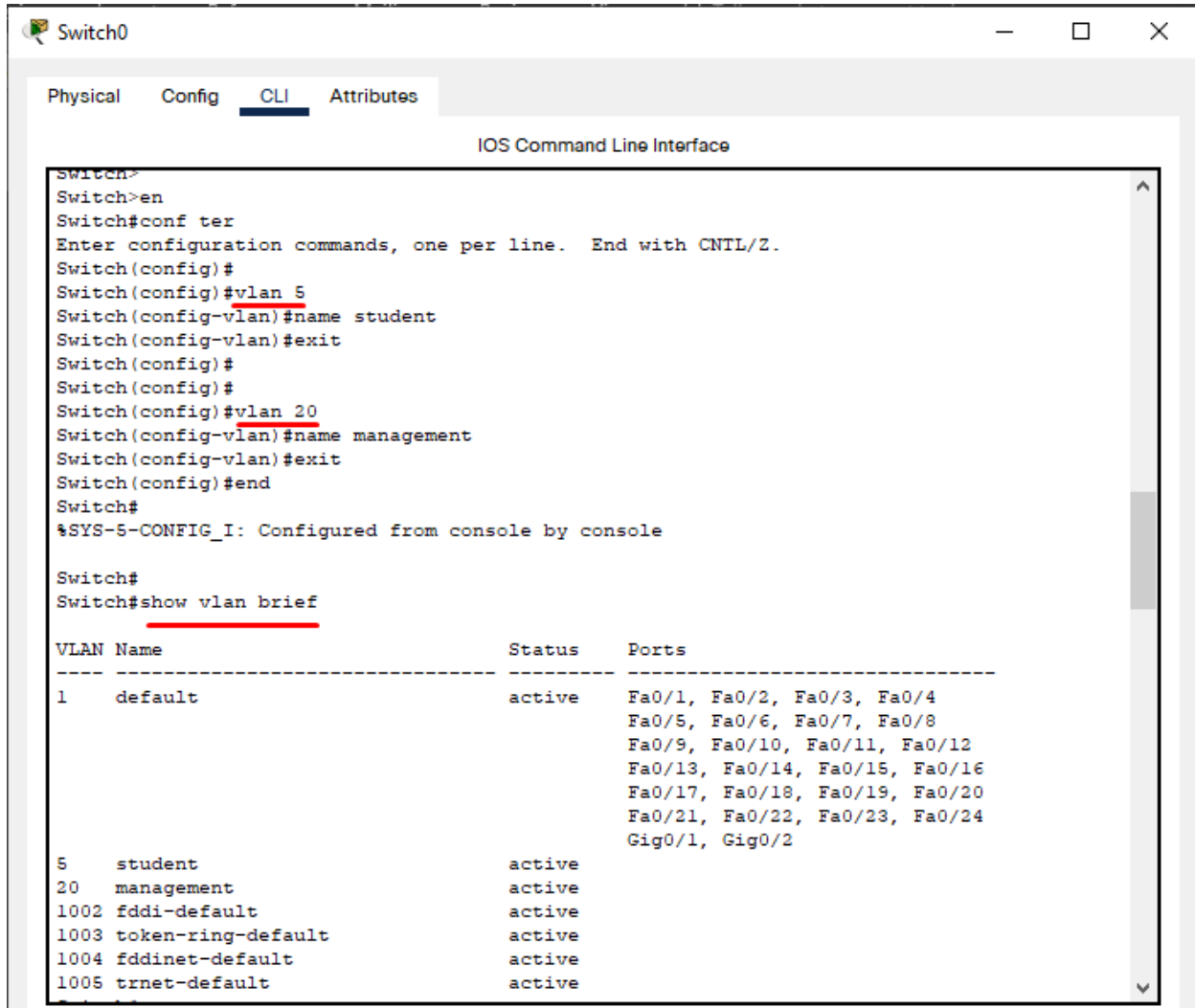
- Students
- Management

When we send a message, it broadcasted to all hosts over same network. To overcome this issue, we set two VLANs; one for students and one for teachers.



Step-By-Step Configuration

1. Configure IPs of All connected PCs.
2. Configure Switch-0
 - a. Create VLANs



The screenshot shows a network switch configuration window titled "Switch0". The "CLI" tab is selected, displaying the "IOS Command Line Interface". The commands entered are:

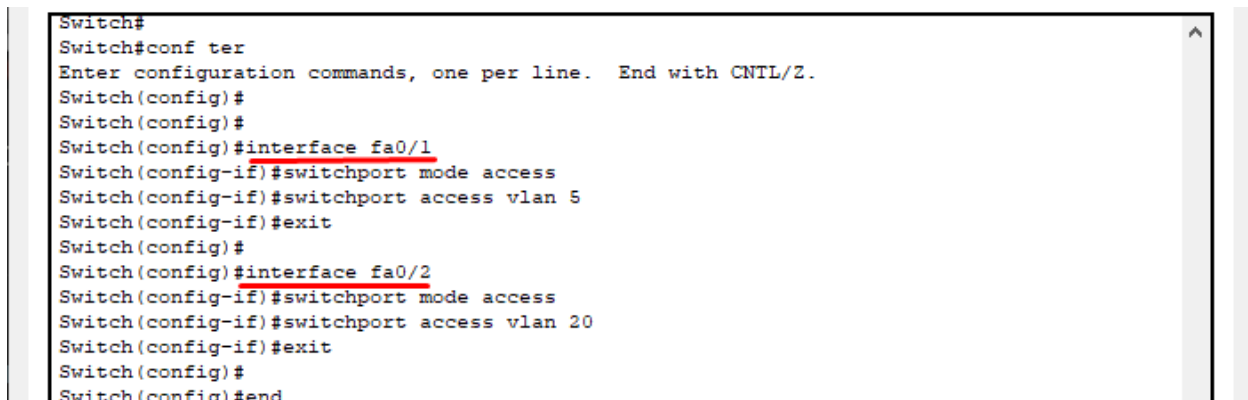
```
Switch>
Switch>en
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
Switch(config)#vlan 5
Switch(config-vlan)#name student
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#
Switch(config)#vlan 20
Switch(config-vlan)#name management
Switch(config-vlan)#exit
Switch(config)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#
Switch#show vlan brief
```

The output of the `show vlan brief` command is displayed as a table:

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
5 student	active	
20 management	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

- b. Configure Interfaces



The screenshot shows the continuation of the network switch configuration. The commands entered are:

```
Switch#
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
Switch(config)#
Switch(config)#interface fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 5
Switch(config-if)#exit
Switch(config)#
Switch(config)#interface fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#
Switch(config)#end
```

```
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#
Switch#show vlan
```

VLAN Name	Status	Ports
1 default	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
5 student	active	Fa0/1
20 management	active	Fa0/2
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	

c. Trunking

Switch0

Physical
Config
CLI
Attributes

IOS Command Line Interface

```
Switch#
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
Switch(config)#
Switch(config)#interface fa0/3
Switch(config-if)#switchport mode trunk

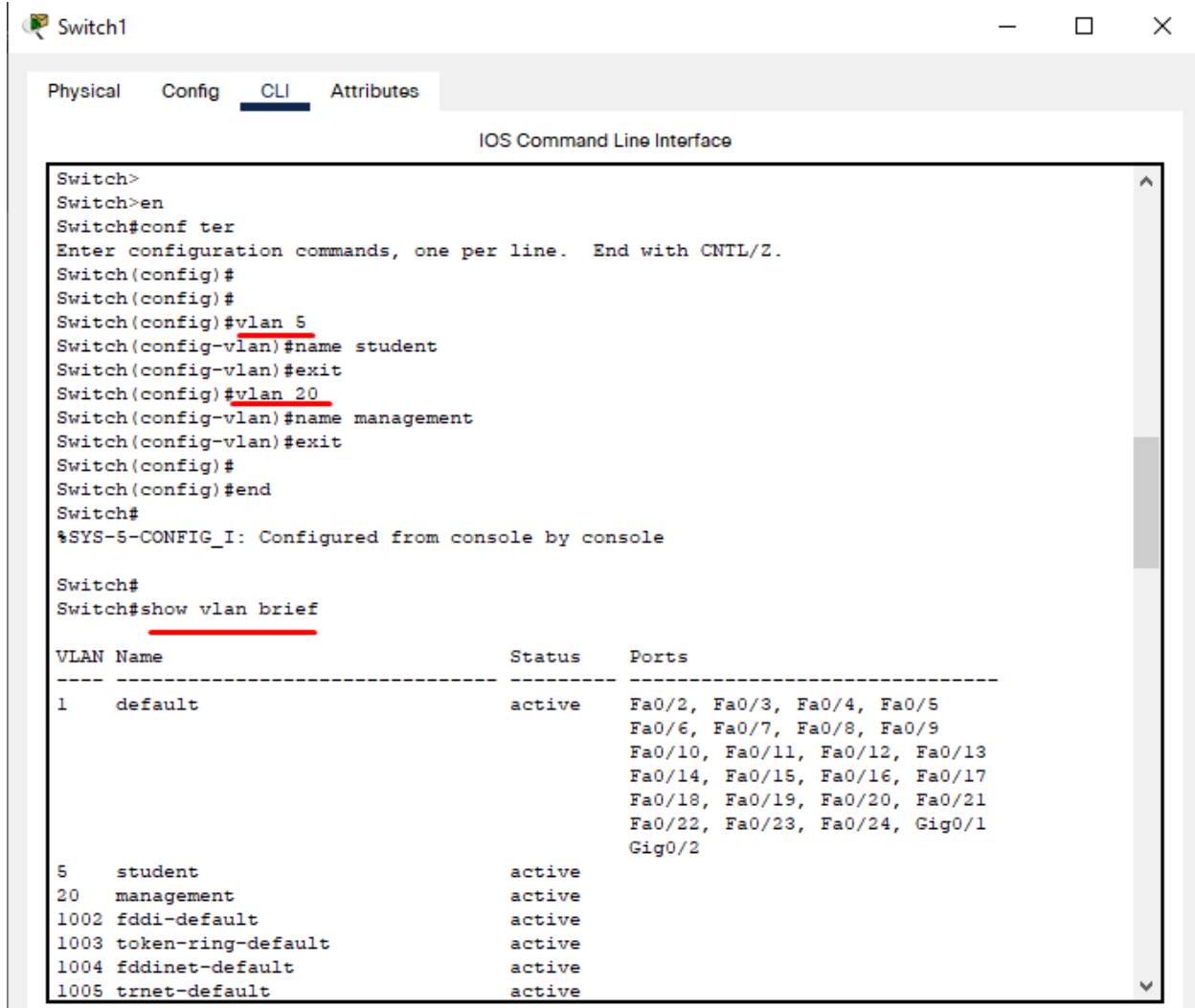
Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

Switch(config-if)#
```

3. Configure Switch-1

a. Create VLANs

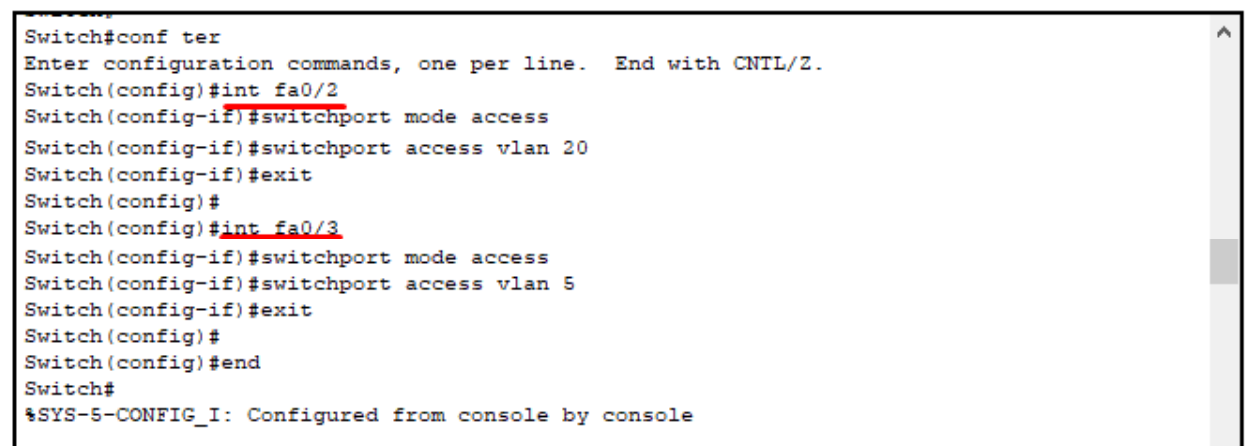


```
Switch>
Switch>en
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
Switch(config)#
Switch(config)#vlan 5
Switch(config-vlan)#name student
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name management
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#
Switch#show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24, Gig0/1 Gig0/2
5	student	active	
20	management	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

b. Configure Interfaces



```
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#
Switch(config)#int fa0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 5
Switch(config-if)#exit
Switch(config)#
Switch(config)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch#show vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
5	student	active	Fa0/3
20	management	active	Fa0/2
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

4. Ping from PC-0 to PC-4 (Same VLAN)

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```

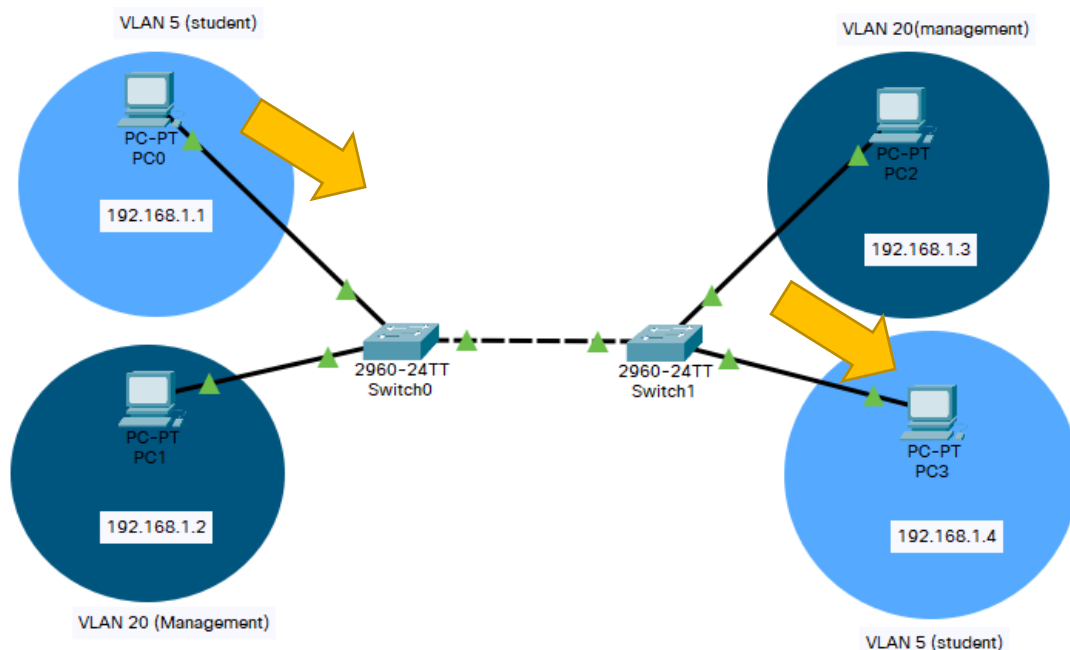
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time=2ms TTL=128
Reply from 192.168.1.4: bytes=32 time=1ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

```



5. Ping from PC-0 to Pc-1 (Different VLAN)

