

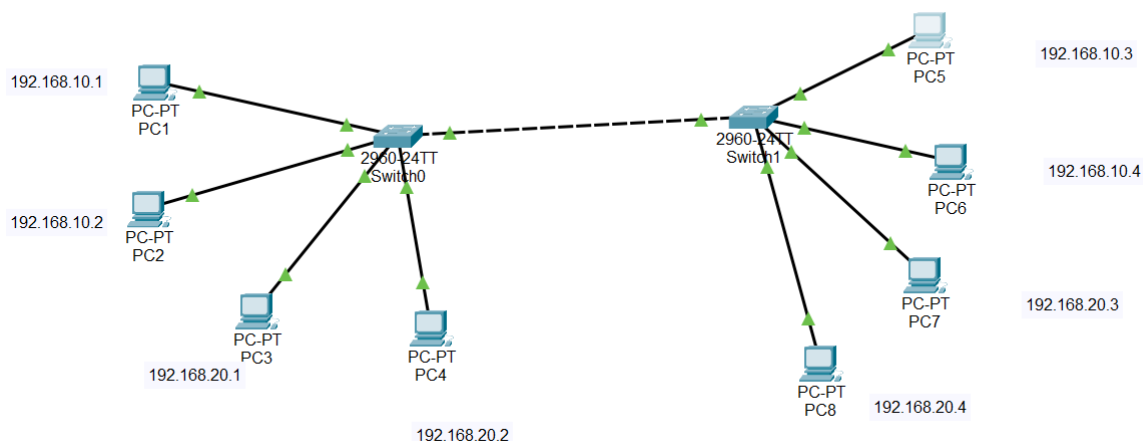
Session 4 Construction of Different VLANS and TRUNKING using cisco packet tracer.

Constructing different VLANs (Virtual Local Area Networks) and configuring trunking using Cisco Packet Tracer involves a few steps:

Trunking is used in a network to allow multiple VLANs to communicate across network devices (like switches) over a single physical link. It enables the transportation of traffic from different VLANs over the same link, reducing the need for multiple physical connections and ensuring that VLAN segmentation is maintained across the network.

Step 1: Setting Up the Network Topology

Network Architecture



Devices:

- **Switch 1 (S1)**
- **Switch 2 (S2)**
- **PCs (End Devices)**
 - PC1 and PC2 connected to S1 (assigned to VLAN 10)
 - PC3 and PC4 connected to S1 (assigned to VLAN 20)
 - PC5 and PC6 connected to S2 (assigned to VLAN 10)
 - PC7 and PC8 connected to S2 (assigned to VLAN 20)

VLANs:

- **VLAN 10:** IP range 192.168.10.0/24
- **VLAN 20:** IP range 192.168.20.0/24

Trunk Ports:

- **Fa0/24** on both S1 and S2

Configuration Steps

Step 1: Setting Up the Network Topology

1. Add Devices in Packet Tracer:

- Drag and drop two switches (**S1** and **S2**).
- Add PCs and connect them to the switches using copper straight-through cables.
- Connect **fa0/24** of **S1** to **fa0/24** of **S2** using a cross-over cable.

Switch 0 Configuration

Switch>enable

Switch#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Create VLAN 10

Switch(config)#vlan 10

Switch(config-vlan)#name VLAN10

Switch(config-vlan)#exit

Create VLAN 20

Switch(config)#vlan 20

Switch(config-vlan)#name VLAN20

Switch(config-vlan)#exit

Assign Ports to VLAN 10:

Switch(config)#interface range fa0/1 - 4

Switch(config-if-range)#switchport mode access

Switch(config-if-range)#switchport access vlan 10

Switch(config-if-range)#exit

Assign Ports to VLAN 20:

Switch(config)#interface range fa0/5 - 8

Switch(config-if-range)#switchport mode access

Switch(config-if-range)#switchport access vlan 20

Switch(config-if-range)#exit

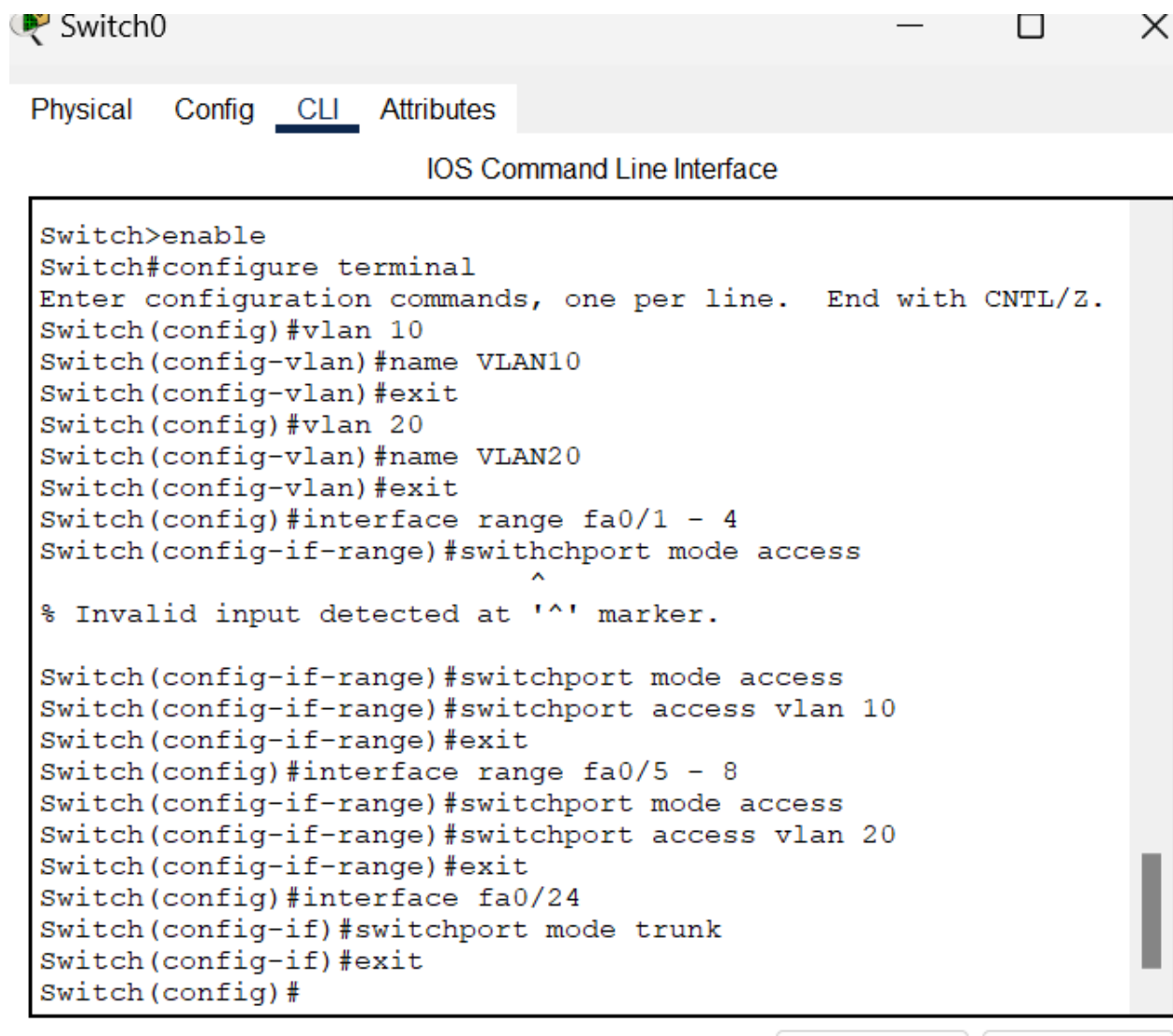
Set a Port to Trunk Mode- S0

Switch(config)#interface fa0/24

Switch(config-if)#switchport mode trunk

Switch(config-if)#exit

Switch(config)#



Switch 1 Configuration

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

Create VLAN 10

```
Switch(config)#vlan 10
Switch(config-vlan)#name VLAN10
Switch(config-vlan)#exit
```

Create VLAN 20

```
Switch(config)#vlan 20
Switch(config-vlan)#name VLAN20
Switch(config-vlan)#exit
```

Assign Ports to VLAN 10:

```
Switch(config)#interface range fa0/1-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
```

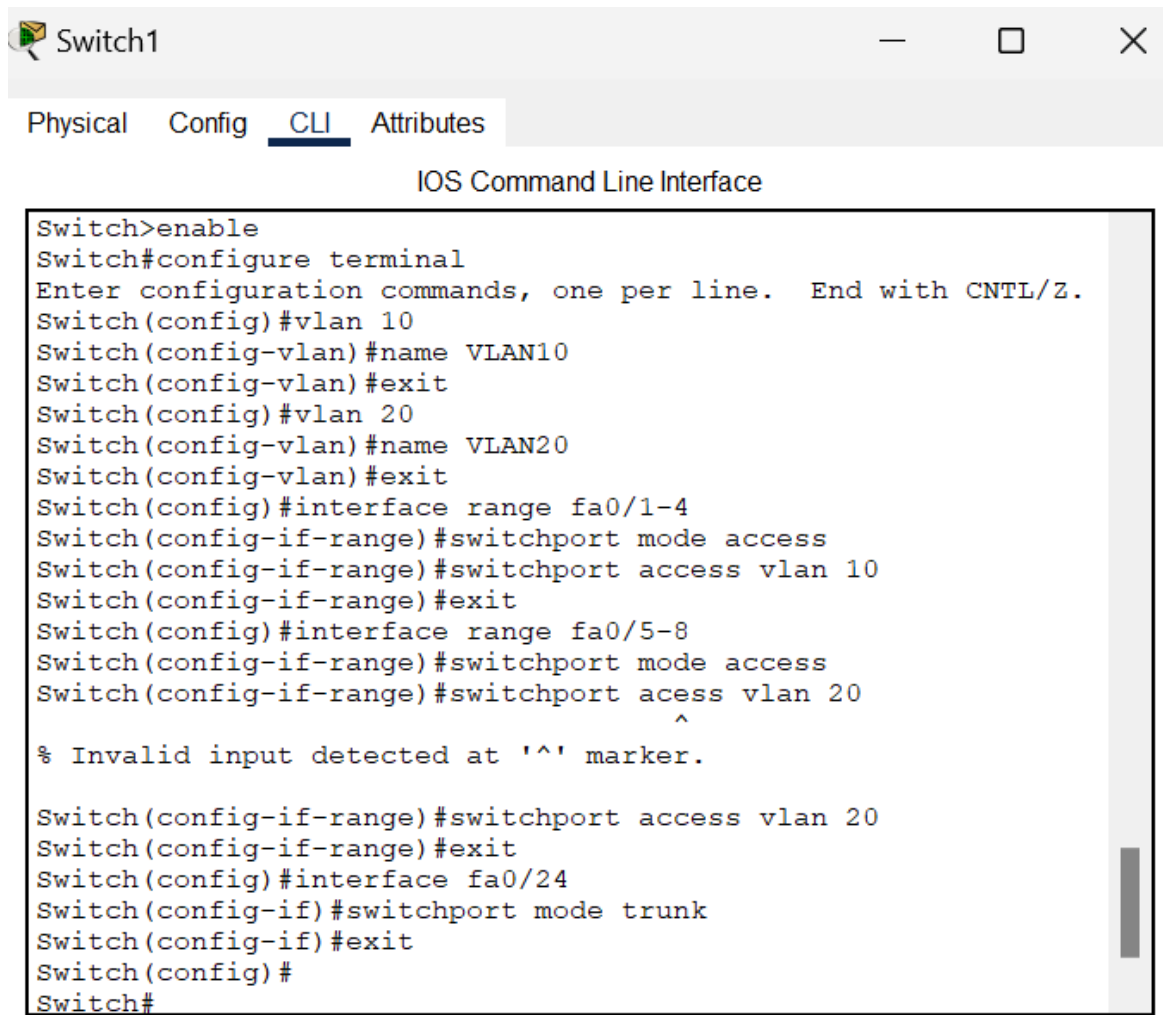
Assign Ports to VLAN 20:

```
Switch(config)#interface range fa0/5-8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
```

Configuring Trunking on Switch 1

```
Switch(config)#interface fa0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#
```

Switch#



```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name VLAN10
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name VLAN20
Switch(config-vlan)#exit
Switch(config)#interface range fa0/1-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#interface range fa0/5-8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#^
% Invalid input detected at '^' marker.

Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#interface fa0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#
Switch#
```

Verify Connectivity

1. Check Trunk Ports:

```
Switch# show interfaces trunk
```

```
Switch>show interfaces trunk
Port      Mode           Encapsulation  Status        Native
vlan
Fa0/24    on             802.1q         trunking      1

Port      Vlans allowed on trunk
Fa0/24    1-1005

Port      Vlans allowed and active in management domain
Fa0/24    1,10,20

Port      Vlans in spanning tree forwarding state and not
pruned
Fa0/24    1,10,20

Switch>
```

Check VLANs:

Switch# show vlan brief

```
Switch>show vlan brief

VLAN Name                Status    Ports
-----
1    default              active    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, Gig0/1
                                           Gig0/2
10   VLAN10               active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
20   VLAN20               active    Fa0/5, Fa0/6, Fa0/7, Fa0/8
1002 fddi-default          active
1003 token-ring-default  active
1004 fddinet-default      active
1005 trnet-default       active

Switch>
```

Step 5: Configure End Devices

1. Assign IP Addresses to PCs:

- PC1: 192.168.10.1/24
- PC2: 192.168.10.2/24
- PC3: 192.168.20.1/24
- PC4: 192.168.20.2/24
- PC5: 192.168.10.3/24
- PC6: 192.168.10.4/24
- PC7: 192.168.20.3/24
- PC8: 192.168.20.4/24

□ Test Connectivity within VLANs:

- Ping from PC1 to PC2 (both in VLAN 10)
- Ping from PC3 to PC4 (both in VLAN 20)
- Ping from PC5 to PC1 (both in VLAN 10, across switches)

```
6 C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

- **Ping from PC7 to PC3** (both in VLAN 20, across switches)
- ☐ **Verify that PCs in different VLANs cannot communicate without a router:**
- **Ping from PC1 to PC3** should fail (VLAN 10 to VLAN 20)
 - **Ping from PC7 to PC1**