

Date: 18/07/2024

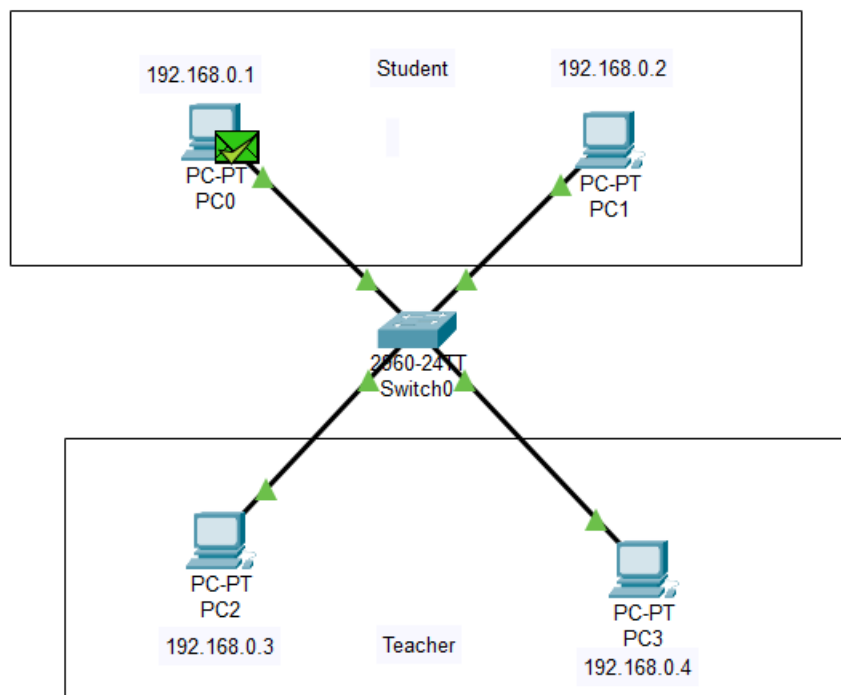
Lab Practical #05:

Study the concept of VLAN using packet tracer.

Practical Assignment #05:

1. Implement the different network structures in VLAN and VLAN trunking. Also check connectivity between them using ping command or PDU utility.

Ex: 1



- **Create the Network:**
 - Add a switch and four PCs.
 - Connect PCs to the switch with Ethernet cables.
- **Assign IP Addresses to PCs:**
 - PC0: 192.168.0.1
 - PC1: 192.168.0.2
 - PC2: 192.168.0.3
 - PC3: 192.168.0.4
- **Create VLANs on the Switch:**
 - Go to Config tab > VLAN Database.
 - Add VLAN 150 (STUDENT), VLAN 200 (Teacher).

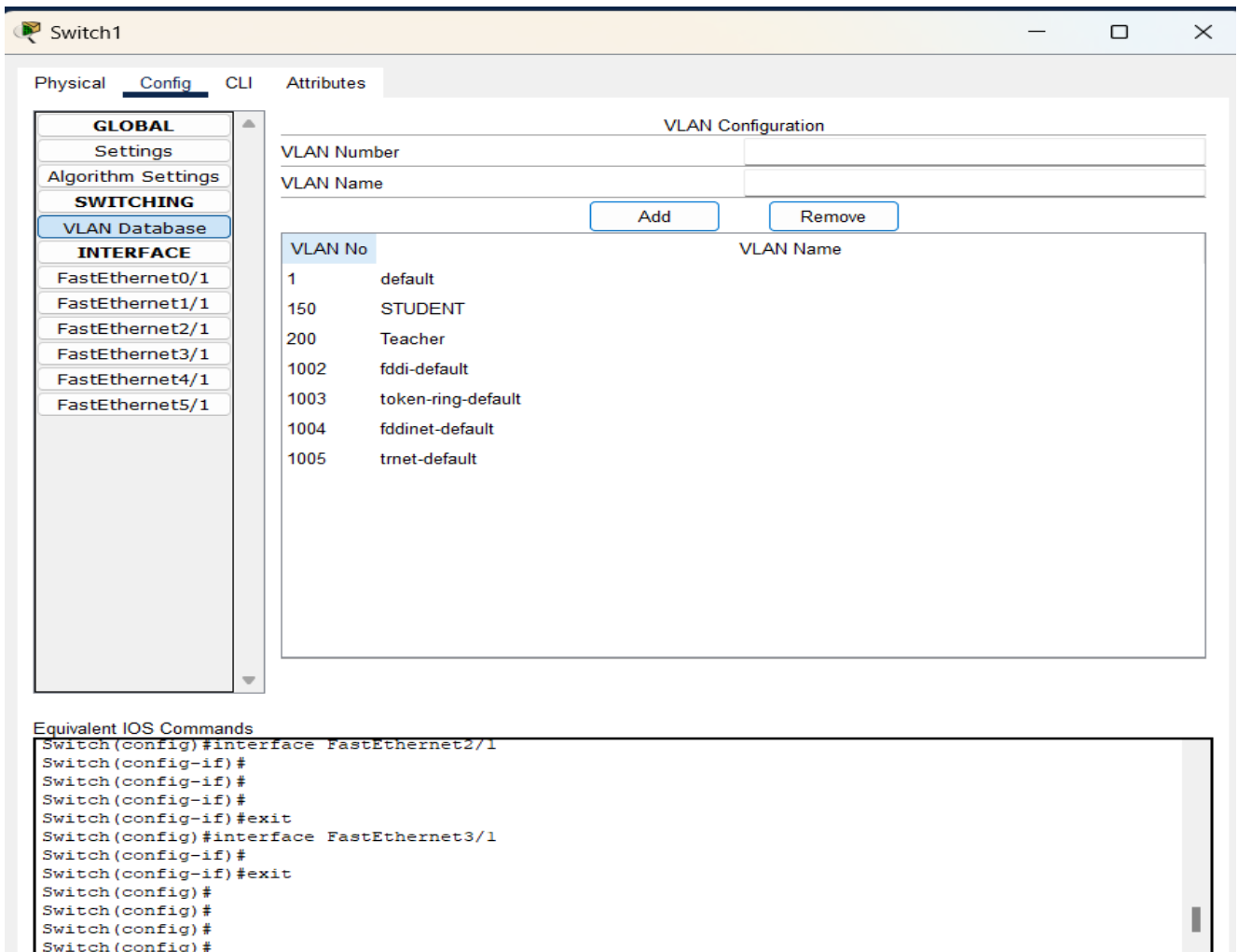
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• **Assign VLANs to Ports:**

- FastEthernet0/1 (PC0): VLAN 150
- FastEthernet0/2 (PC1): VLAN 150
- FastEthernet0/3 (PC2): VLAN 200
- FastEthernet0/4 (PC3): VLAN 200

• **Test Connectivity:**

- Ping within VLANs (PC0 to PC1 and PC2 to PC3).



Switch1

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/1

FastEthernet1/1

FastEthernet2/1

FastEthernet3/1

FastEthernet4/1

FastEthernet5/1

VLAN Configuration

VLAN Number

VLAN Name

Add Remove

VLAN No	VLAN Name
1	default
150	STUDENT
200	Teacher
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

Equivalent IOS Commands

```
Switch(config)#interface FastEthernet2/1
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet3/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
```

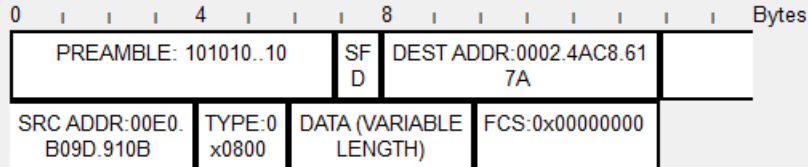
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PDU Information at Device: PC0

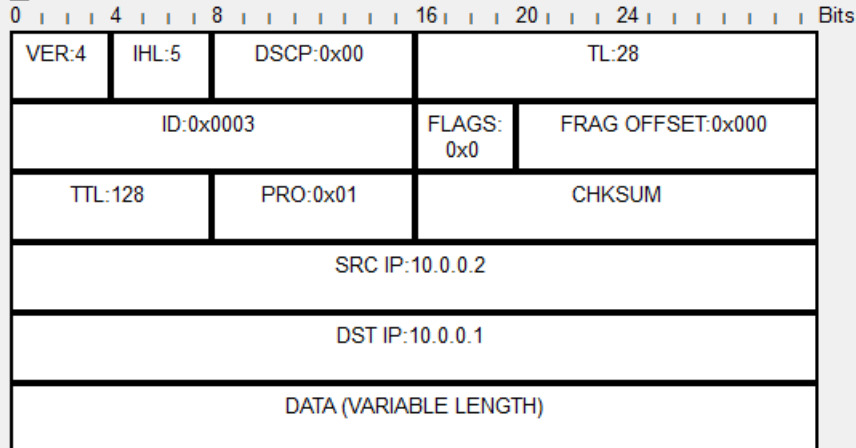
OSI Model Inbound PDU Details

PDU Formats

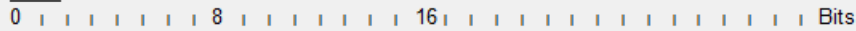
EthernetII



IP

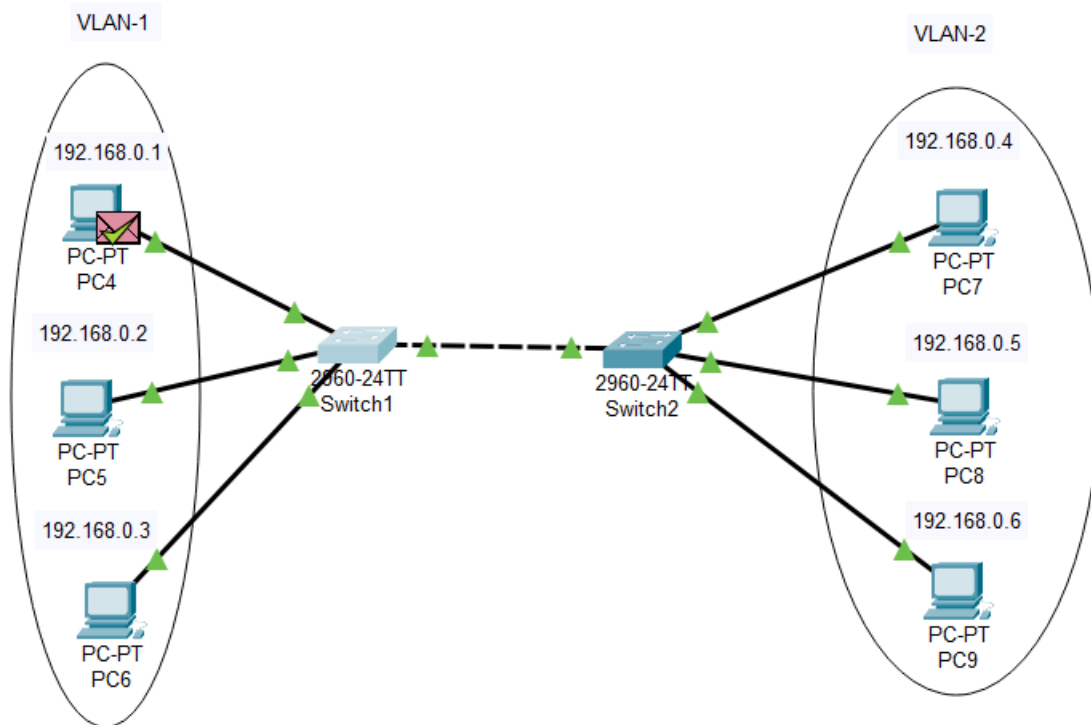


ICMP



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Ex: 2



Steps:

- **Create the Network:**

- Add two switch and 6 PCs.
- Connect PCs to the switch with Ethernet cables.
- Also Connect both switches together

- **Assign IP Addresses to PCs:**

- PC4: 192.168.0.1
- PC5: 192.168.0.2
- PC6: 192.168.0.3
- PC7: 192.168.0.4
- PC8: 192.168.0.5
- PC9: 192.168.0.6

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• **Create VLANs on the Switch:**

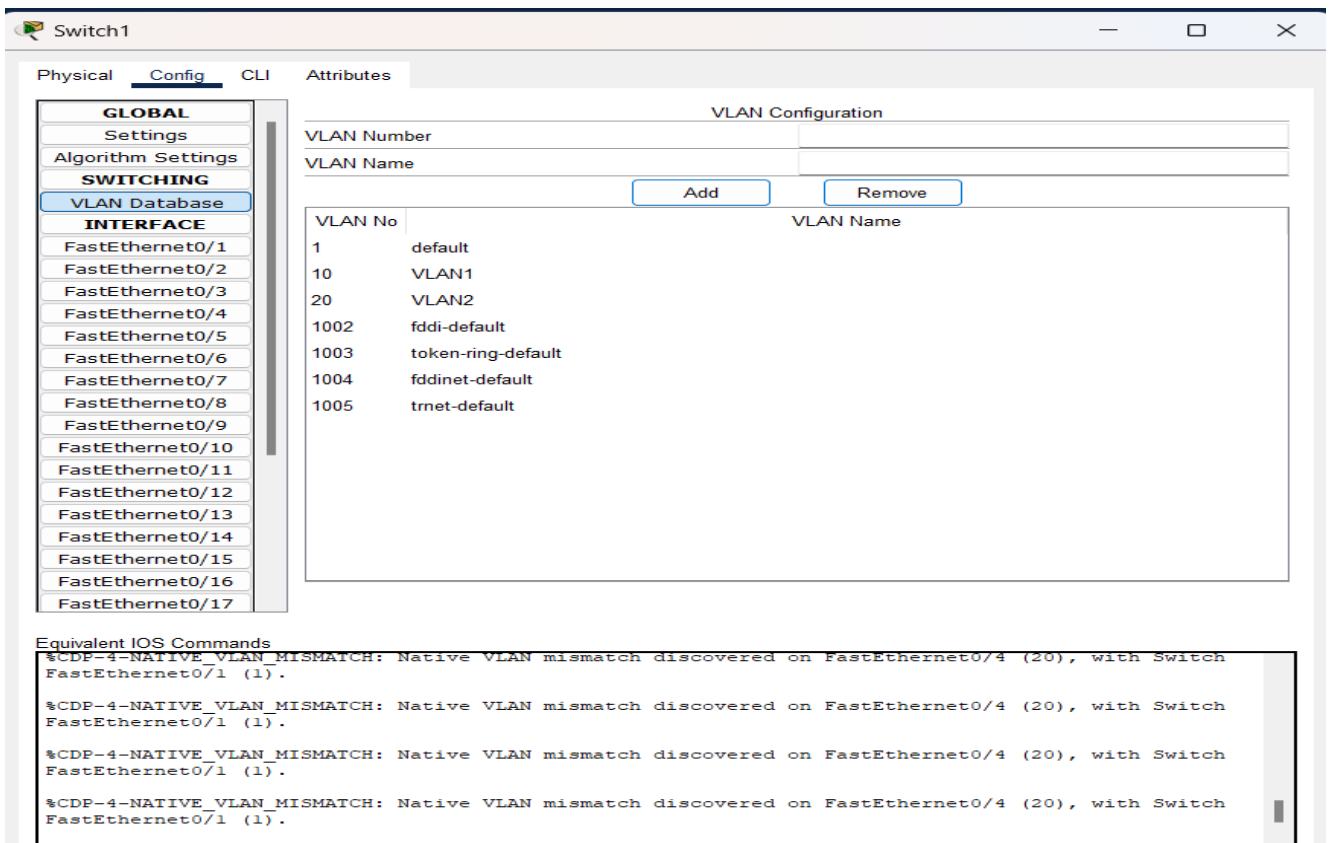
- Go to Config tab > VLAN Database.
- Add VLAN 10 (VLAN1), VLAN 20 (VLAN2).

• **Assign VLANs to Ports:**

- FastEthernet0/1 (PC4): VLAN 10
- FastEthernet0/2 (PC5): VLAN 10
- FastEthernet0/3 (PC6): VLAN 10
- FastEthernet0/4 (PC7): VLAN 20
- FastEthernet0/5 (PC8): VLAN 20
- FastEthernet0/6 (PC9): VLAN 20

• **Test Connectivity:**

- Ping within VLANs (PC4 to PC6).



Switch1

Physical Config CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

SWITCHING

- VLAN Database**

INTERFACE

- FastEthernet0/1
- FastEthernet0/2
- FastEthernet0/3
- FastEthernet0/4
- FastEthernet0/5
- FastEthernet0/6
- FastEthernet0/7
- FastEthernet0/8
- FastEthernet0/9
- FastEthernet0/10
- FastEthernet0/11
- FastEthernet0/12
- FastEthernet0/13
- FastEthernet0/14
- FastEthernet0/15
- FastEthernet0/16
- FastEthernet0/17

VLAN Configuration

VLAN Number	VLAN Name
1	default
10	VLAN1
20	VLAN2
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

Equivalent IOS Commands

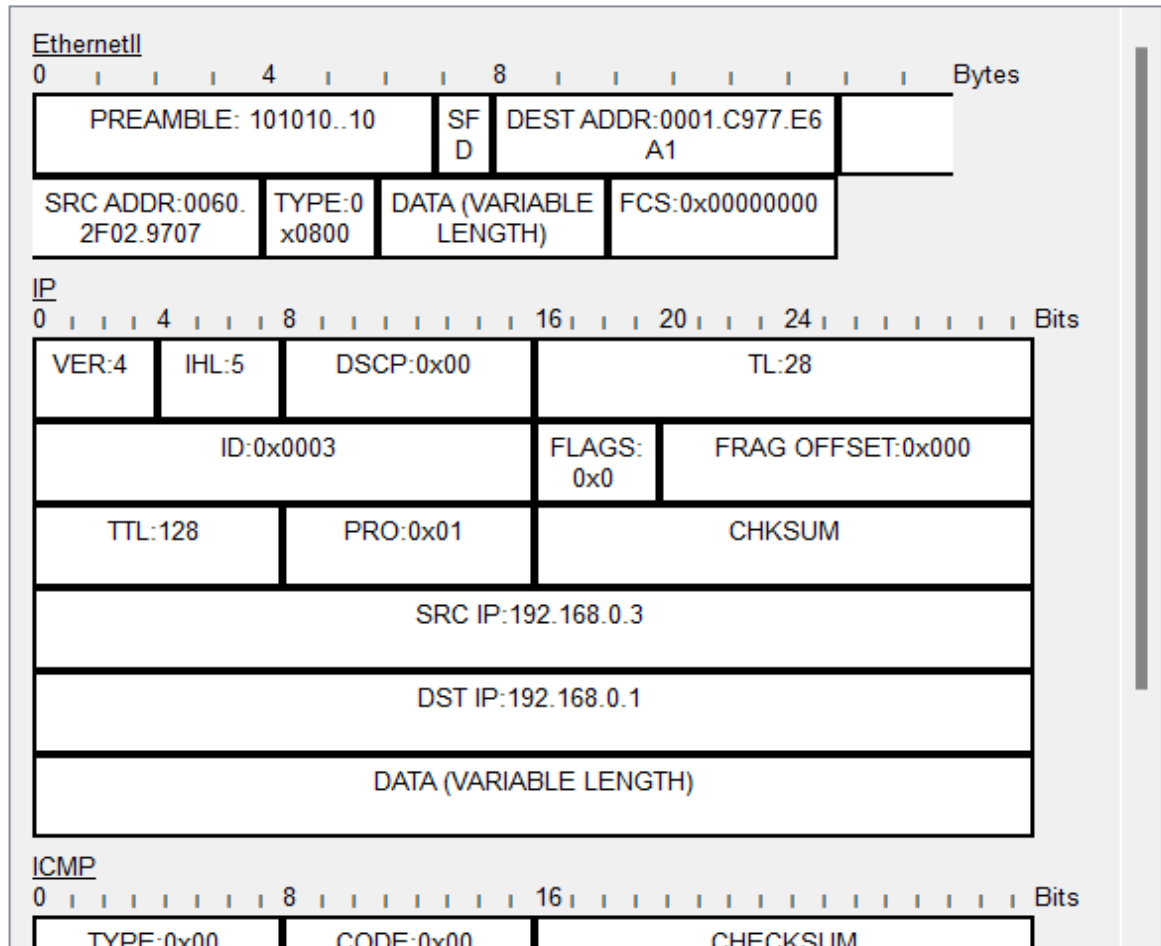
```
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/4 (20), with Switch FastEthernet0/1 (1).  
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/4 (20), with Switch FastEthernet0/1 (1).  
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/4 (20), with Switch FastEthernet0/1 (1).  
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/4 (20), with Switch FastEthernet0/1 (1).
```

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PDU Information at Device: PC4

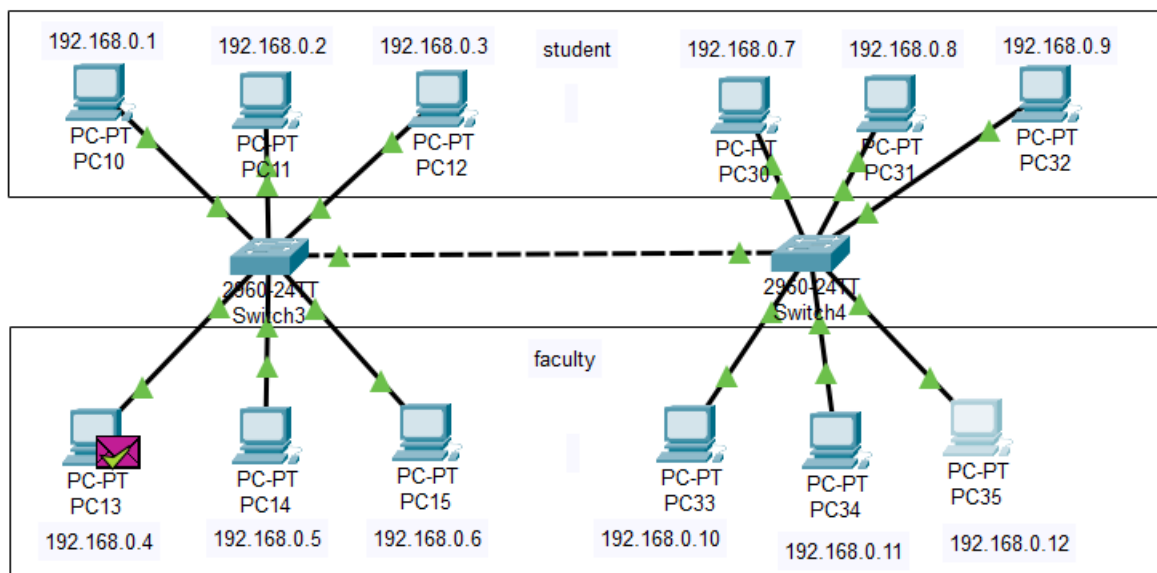
OSI Model Inbound PDU Details

PDU Formats



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Ex: 3



Steps:

- **Create the Network:**

- Add two switch and 12 PCs.
- Connect PCs to the switch with Ethernet cables.
- Also Connect both switches together

- **Assign IP Addresses to PCs:**

- PC10: 192.168.0.1
- PC11: 192.168.0.2
- PC12: 192.168.0.3
- PC13: 192.168.0.4
- PC14: 192.168.0.5
- PC15: 192.168.0.6



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- PC30: 192.168.0.7
- PC31: 192.168.0.8
- PC32: 192.168.0.9
- PC33: 192.168.0.10
- PC34: 192.168.0.11
- PC35: 192.168.0.12

• Create VLANs on the Switch:

- Go to Config tab > VLAN Database.
- Add VLAN 10 (student), VLAN 20 (faculty).

• Assign VLANs to Ports:

- FastEthernet0/1 (PC10): VLAN 10
- FastEthernet0/2 (PC11): VLAN 10
- FastEthernet0/3 (PC12): VLAN 10
- FastEthernet0/4 (PC13): VLAN 20
- FastEthernet0/5 (PC14): VLAN 20
- FastEthernet0/6 (PC15): VLAN 20
- FastEthernet0/2 (PC30): VLAN 10
- FastEthernet0/3 (PC31): VLAN 10
- FastEthernet0/4 (PC32): VLAN 10
- FastEthernet0/5 (PC33): VLAN 20
- FastEthernet0/6 (PC34): VLAN 20
- FastEthernet0/7 (PC35): VLAN 20

• Test Connectivity:

- Ping within VLANs (PC13 to PC35).

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Switch3

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/1

FastEthernet0/2

FastEthernet0/3

FastEthernet0/4

FastEthernet0/5

FastEthernet0/6

FastEthernet0/7

FastEthernet0/8

FastEthernet0/9

FastEthernet0/10

FastEthernet0/11

FastEthernet0/12

FastEthernet0/13

FastEthernet0/14

FastEthernet0/15

FastEthernet0/16

FastEthernet0/17

VLAN Configuration

VLAN Number

VLAN Name

Add

Remove

VLAN No	VLAN Name
1	default
10	student
20	faculty
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

Equivalent IOS Commands

```
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/6
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/8
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
```

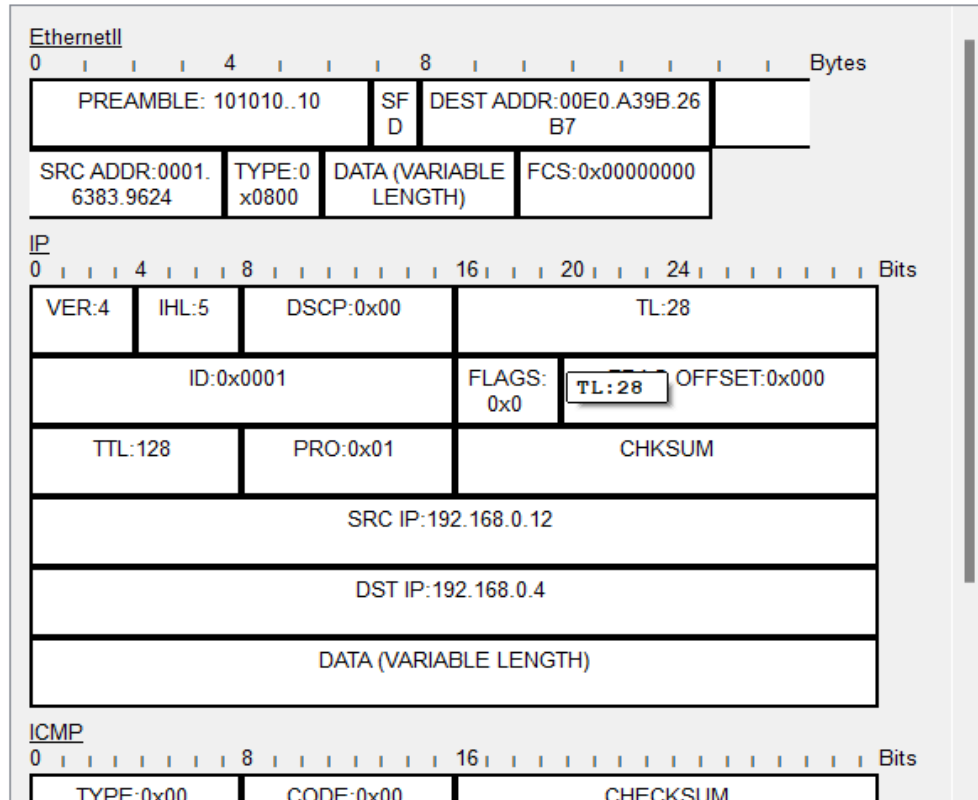


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PDU Information at Device: PC13

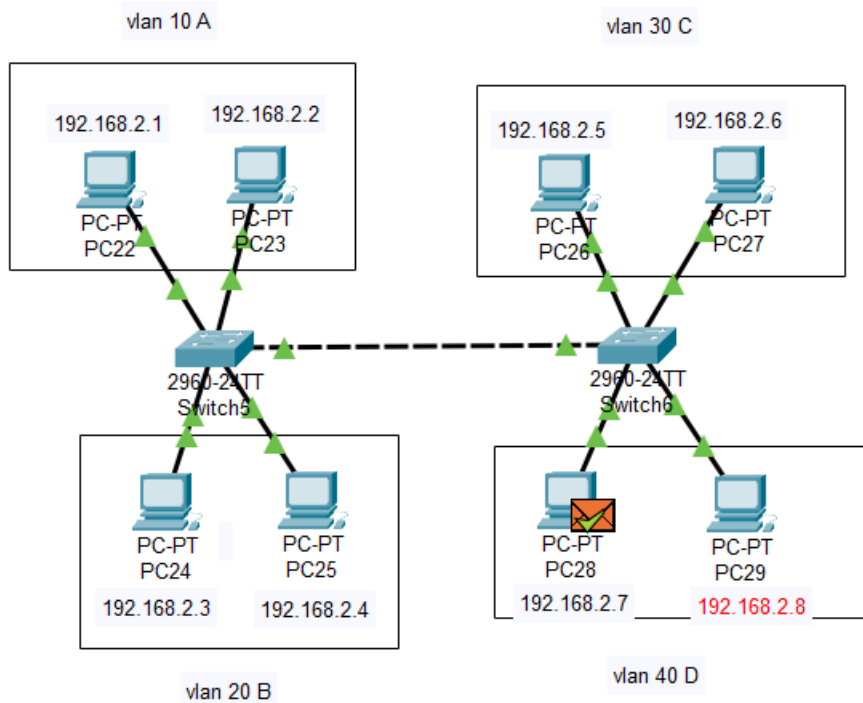
OSI Model Inbound PDU Details

PDU Formats



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Ex: 4



Steps:

- **Create the Network:**

- Add two switch and 2 PCs with different group.
- Connect PCs to the switch with Ethernet cables.
- Also Connect both switches together

- **Assign IP Addresses to PCs:**

- PC22: 192.168.2.1
- PC23: 192.168.2.2
- PC24: 192.168.2.3
- PC25: 192.168.2.4
- PC26: 192.168.2.5
- PC27: 192.168.2.6



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- PC28: 192.168.2.7
- PC29: 192.168.2.8

• Create VLANs on the Switch:

- Go to Config tab > VLAN Database.
- Add VLAN 10 (A), VLAN 20 (B), VLAN 30 (C), VLAN 40 (D).

• Assign VLANs to Ports:

FOR SWITCH 1:

- FastEthernet0/1 (PC22): VLAN 10
- FastEthernet0/2 (PC23): VLAN 10
- FastEthernet0/3 (PC24): VLAN 20
- FastEthernet0/4 (PC25): VLAN 20
- FastEthernet0/5 : Trunk VLAN 1-1005

FOR SWITCH 2:

- FastEthernet0/1 (PC26): VLAN 30
- FastEthernet0/2 (PC27): VLAN 30
- FastEthernet0/3 (PC28): VLAN 40
- FastEthernet0/4 (PC29): VLAN 40
- FastEthernet0/5 : Trunk VLAN 1-1005

• Test Connectivity:

- Ping within VLANs (PC28 to PC29).

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Switch5

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

SWITCHING

VLAN Database

INTERFACE

FastEthernet0/1

FastEthernet0/2

FastEthernet0/3

FastEthernet0/4

FastEthernet0/5

FastEthernet0/6

FastEthernet0/7

FastEthernet0/8

FastEthernet0/9

FastEthernet0/10

FastEthernet0/11

FastEthernet0/12

FastEthernet0/13

FastEthernet0/14

FastEthernet0/15

FastEthernet0/16

FastEthernet0/17

VLAN Configuration

VLAN Number

VLAN Name

Add Remove

VLAN No	VLAN Name
1	default
10	A
20	B
30	C
40	D
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

Equivalent IOS Commands

```
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/3
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/2
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#
Switch(config)#
```



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PDU Information at Device: PC28

OSI Model [Inbound PDU Details](#)

PDU Formats

