

Date: 24/07/2024

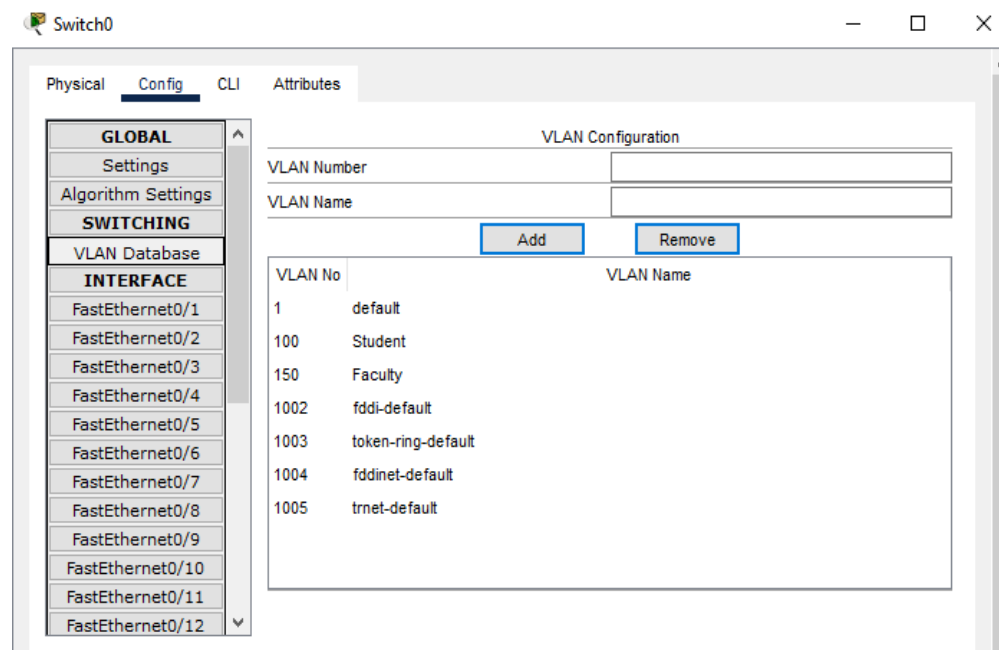
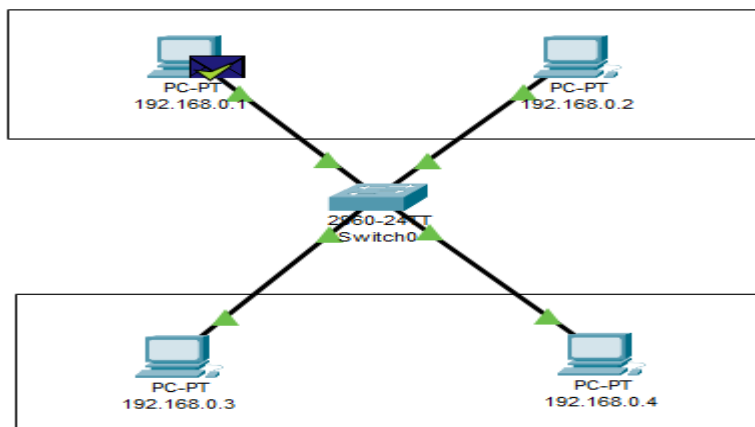
Lab Practical #05:

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.

Example-1



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PDU Information at Device: 192.168.0.1

OSI Model [Inbound PDU Details](#)

PDU Formats

EthernetII			
0	4	8	Bytes
PREAMBLE: 101010..10		DEST ADDR: 0000.0C71.85D0	
SRC ADDR: 0002.1686.A259	TYP E: 0x	DATA (VARIABLE LENGTH)	FCS: 0x00000000
IP			
0	4	8	16 20 24 Bits
VER: 4	IHL: 5	DSCP: 0x00	TL: 28
ID: 0x0002		FLAG: 0	FRAG OFFSET: 0x000
TTL: 128	PRO: 0x01	CHKSUM	
SRC IP: 192.168.0.2			
DST IP: 192.168.0.1			
DATA (VARIABLE LENGTH)			
ICMP			
0	8	16	Bits
TYPE: 0x00		CODE: 0x00	
CHECKSUM			

➤ Steps

Step 1: Set Up the Network Devices

1. Add a Switch: - Drag and drop a switch onto the workspace from the "Switches" section.
2. Add PCs: - Drag and drop four PCs onto the workspace from the "End Devices" section.

Step 2: Assign IP Addresses to PCs

- Click on PC to open its configuration window.
- Go to Config tab and after go to FastEthernet0.
- Now set the IP address and set Subnet Mask.
- Click on Setting and set Display Name same as your IP Address.
- Do these for all other PCs.

Step 3: Connect the PCs to the Switch

- Use the "Copper Straight-Through" cable to connect each PC to the switch.
- Connect 192.168.0.1 to port FastEthernet0/1.
- Connect 192.168.0.2 to port FastEthernet0/2.
- Connect 192.168.0.3 to port FastEthernet0/3.
- Connect 192.168.0.4 to port FastEthernet0/4.

Step 4: Configure the VLANs

1. Open the Switch Configuration:
 - Click on the switch to open its configuration window.
 - Go to the "Config" tab.
2. Create VLANs:
 - In the "VLAN Database" section, add VLAN 100 and name it "Students".
 - Add VLAN 150 and name it "Faculty".



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3. Assign Ports to VLANs:

- o In the "Interface" section, select FastEthernet0/1.
 - Set the "VLAN ID" to 100.
- o Select FastEthernet0/2.
 - Set the "VLAN ID" to 100.
- o Select FastEthernet0/3.
 - Set the "VLAN ID" to 150
- o Select FastEthernet0/4.
 - Set the "VLAN ID" to 150.

Step 5: Verify the VLAN Configuration

1. Verify VLANs on the Switch:

- o Go to the "VLAN Database" section in the switch configuration and ensure VLAN 100 and VLAN 150 are listed with the correct ports.

2. Test Connectivity:

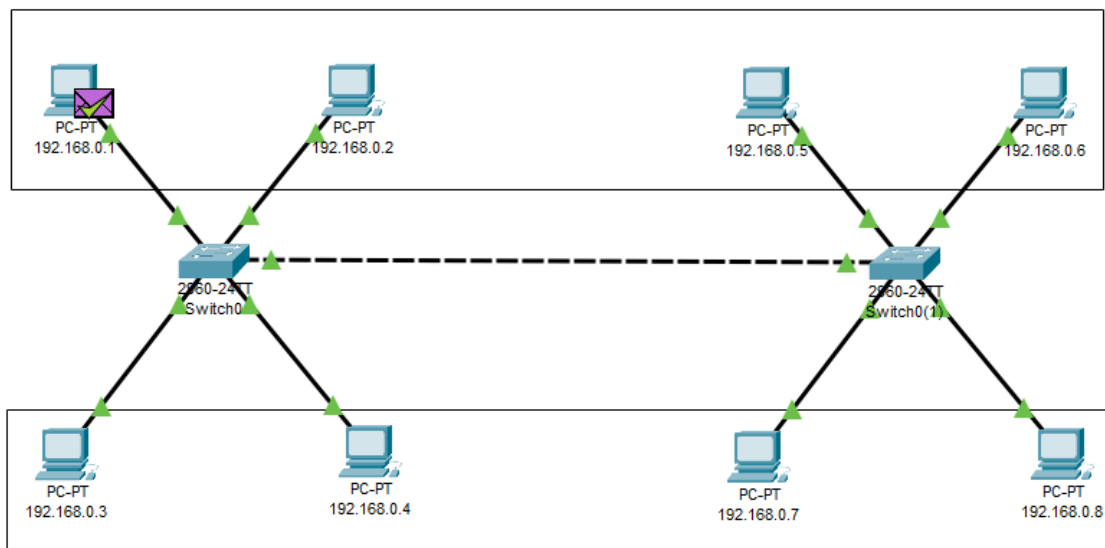
- o Send a Message (PDU) from PC 192.168.0.1 to the 192.168.0.2 if Message was send
- o successfully then VLAN is works.
- o Send a Message (PDU) from 192.168.0.1 to the 192.168.0.2 if Message was failed then VLAN is not works.

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Example-2

➤ Steps

- Take 8 pc and assign Ip address and label to each pc.
- Take 2 Switch and Make 2 Lan with 4 pc each.
- Now there is local area network but We need to implement Virtual Lan database
- for implement Virtual Lan we need to configure Virtual Lan database in configure
- Section in switch.
- Make 2 New Virtual Lan configuration with unique Virtual Lan number and name.
- Now check the Port where the pc is connected and open that port configuration
- in switch and set Virtual Lan to access mode and select your Virtual Lan database
- name in dropdown.
- Now we need to connect both Switch but here we need to give Virtual Lan mode
- to trunk because there are number different Virtual Lan signal travel threwh it.
- Now you configure two Virtual Lan in different local area network



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Switch0

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

VLAN Configuration

VLAN Number:

VLAN Name:

VLAN No	VLAN Name
1	default
100	Student
150	Faculty
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

PDU Information at Device: 192.168.0.1

OSI Model [Inbound PDU Details](#)

PDU Formats

EthernetII

0 4 8 Bytes

PREAMBLE: 101010..10 DEST ADDR: 00D0.97EC.A C89

SRC ADDR: 000 C.85E0.24EE TYP E:0x DATA (VARIABLE LENGTH) FCS: 0x00000000

IP

0 4 8 16 20 24 Bits

VER: 4 IHL: 5 DSCP: 0x00 TL: 28

ID: 0x0003 FLA GS: 0 FRAG OFFSET: 0x000

TTL: 128 PRO: 0x01 CHKSUM

SRC IP: 192.168.0.5

DST IP: 192.168.0.1

DATA (VARIABLE LENGTH)

ICMP

0 8 16 Bits

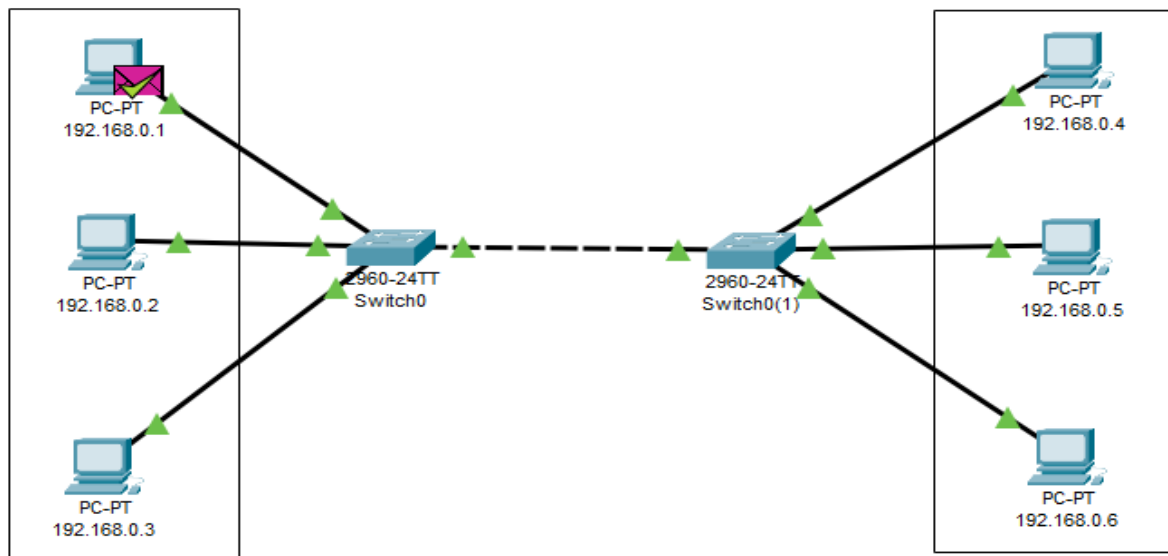
TYPE: 0x00 CODE: 0x00 CHECKSUM

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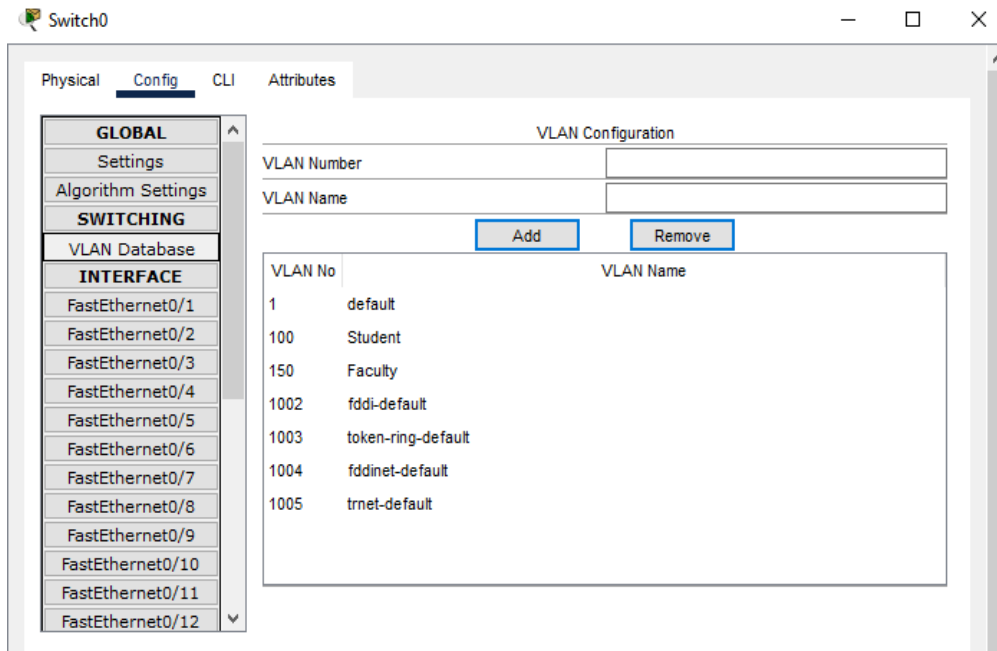
Example-3

➤ Steps

- Take 6 pc and assign Ip address and label to each pc.
- Take 2 Switch and Make 2 Lan with 3 pc each.
- Now there is local area network first for Group-1(Students) and second for Group2(Faculty) but We need to implement Virtual Lan database for implement Virtual
- Lan we need to configure Virtual Lan database in configure Section in switch.
- Make 2 New Virtual Lan configuration with unique Virtual Lan number and name.
- Now check the Port where the pc is connected and open that port configuration
- in switch and set Virtual Lan to access mode and select your Virtual Lan database
- name in dropdown.
- Now we need to connect both Switch but here we need to give Virtual Lan mode
- to trunk because there are number different Virtual Lan signal travel threw it.
- Now you configure two Virtual Lan in different local area network.



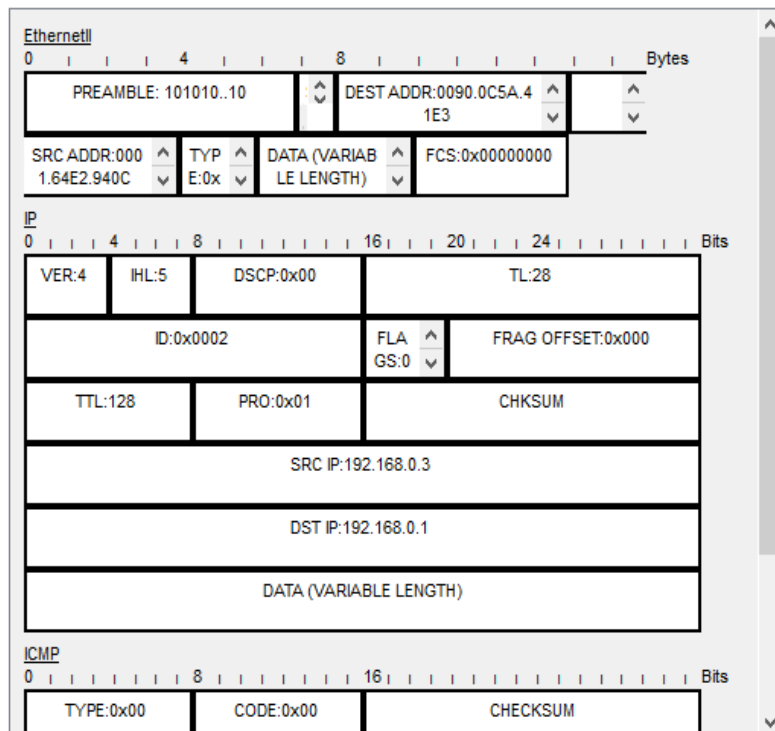
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'DU Information at Device: 192.168.0.1

OSI Model [Inbound PDU Details](#)

PDU Formats

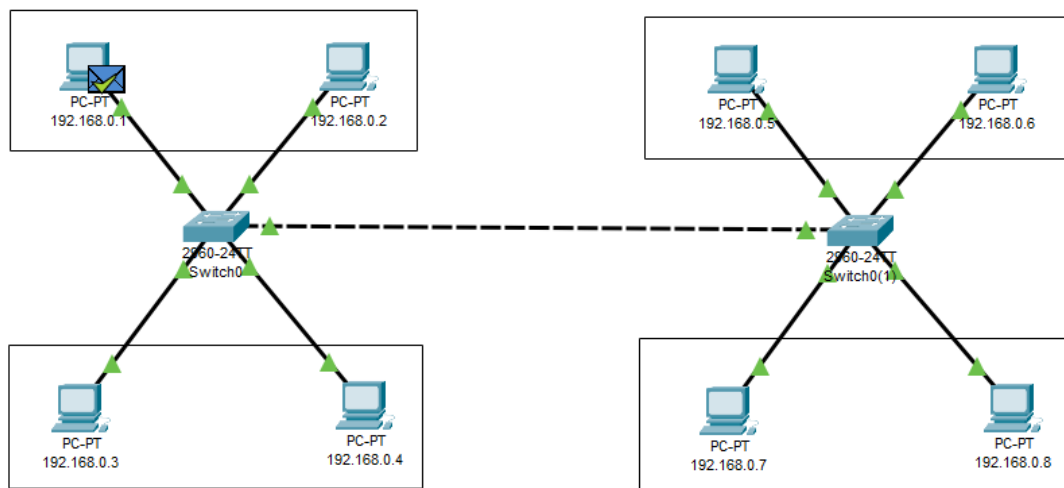


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Example-4

➤ Steps

- Take 8 pc and assign Ip address and label to each pc.
- Take 2 Switch and Make 2 Lan with 4 pc each.
- Now there is local area network and group in to Group-1(Student), Group2(Faculty), Group-3(Student2) and Group-4(Faculty2) but We need to implement Virtual
- Lan database for implement Virtual Lan we need to configure Virtual Lan database
- in configure Section in switch.
- Make 4 New Virtual Lan configuration with unique Virtual Lan number and name.
- Now check the Port where the pc is connected and open that port configuration
- in switch and set Virtual Lan to access mode and select your Virtual Lan database
- name in dropdown.
- Now we need to connect both Switch but here we need to give Virtual Lan mode
- to trunk because there are number different Virtual Lan signal travel threw it.
- Now you configure two Virtual Lan in different local area network.



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Switch0

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

VLAN Configuration

VLAN Number:

VLAN Name:

VLAN No	VLAN Name
1	default
100	Student
150	Faculty
200	Student2
300	Faculty2
1002	fddi-default
1003	token-ring-default
1004	fddinet-default
1005	trnet-default

PDU Information at Device: 192.168.0.1

OSI Model [Inbound PDU Details](#)

PDU Formats

