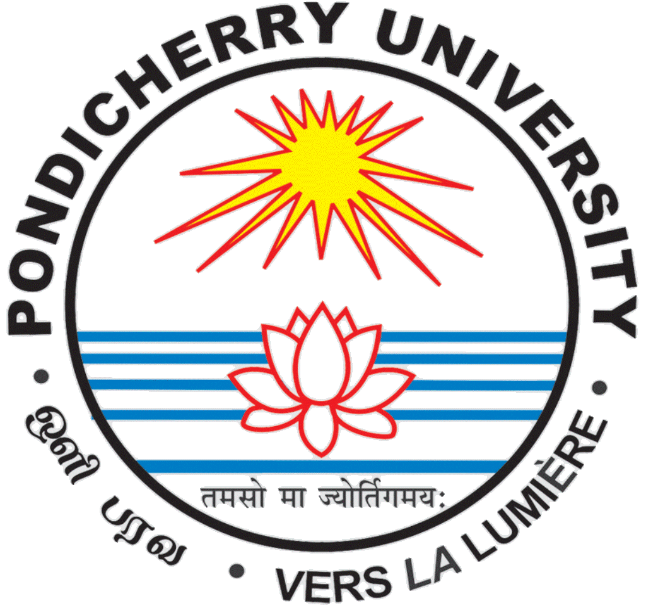
**PONDICHERRY UNIVERSITY**

**(A Central University)**



**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE**

**M.Sc. Computer Science**

NAME : JOHN CHARLES L

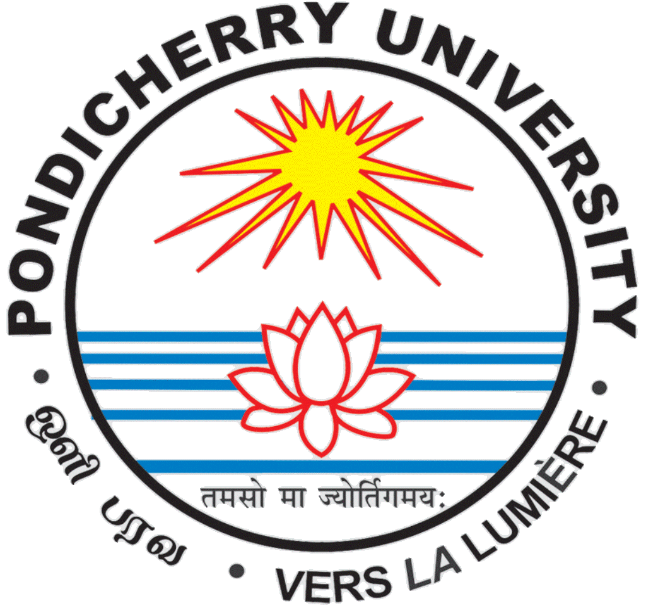
REG. NO. : 23370030

SEMESTER : 3St Semester

SUBJECT : CSSC513 – WEB TECHNOLOGY AND COMPUTER NETWORK LAB

**PONDICHERRY UNIVERSITY**

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**SCHOOL OF ENGINEERING AND TECHNOLOGY**

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PRACTICAL LAB RECORD

**BONAFIDE CERTIFICATE**

This is to certify that this is a Bonafide record of practical work done by **John Charles L**

having Reg. No. **23370030** semester-III from the month July 2024 to December 2024.

**FACULTY IN-CHARGE**

Submitted for the Practical Examination held on: \_\_\_\_\_\_\_

**EXTERNAL EXAMINER**

**INTERNAL EXAMINER**

**TOPOLOGYY**

Ex.No. 1

04/10/2024

**AIM:**

To configure a basic Network Topology using Cisco Packet Tracer.

**PROCEDURE:**

1. **Place the devices:**

* From the **Devices menu**, select **Routers** and choose the **1841 Router**. Place it in the center.
* Go to **Switches**, select two **2960 switches**, and place them on the left and right of the router.
* From **End Devices**, select **PC** and place three PCs connected to the left switch and three PCs connected to the right switch.

1. **Configure Connections:**

* **Router to Switches:**
  + Use the **Copper Straight-Through Cable** tool to connect:
    - **Router FastEthernet0/0** to **Switch0 FastEthernet0/1** (left switch).
    - **Router FastEthernet0/1** to **Switch1 FastEthernet0/1** (right switch).
* **Switches to PCs:**
  + For **Switch0**, connect each of its **FastEthernet ports (e.g., FastEthernet0/2, FastEthernet0/3, and FastEthernet0/4)** to **PC0, PC1, and PC2**.
  + For **Switch1**, connect its **FastEthernet ports (e.g., FastEthernet0/2, FastEthernet0/3, and FastEthernet0/4)** to **PC3, PC4, and PC5**.

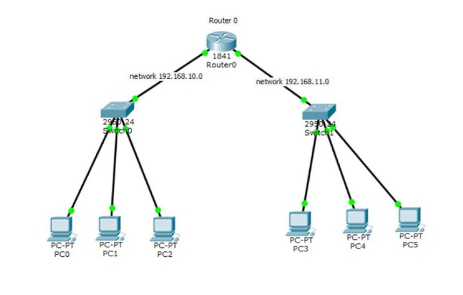
1. **Configure IP Addresses:**

* **Router Interfaces:**
  + Click on **Router0**, go to **Config** > **FastEthernet0/0**, and set:
    - **IP Address:** 192.168.10.1
    - **Subnet Mask:** 255.255.255.0
    - **Turn on** the interface by clicking on **Port Status**.
  + Go to **FastEthernet0/1** and set:
    - **IP Address:** 192.168.11.1
    - **Subnet Mask:** 255.255.255.0
    - **Turn on** the interface by clicking on **Port Status**.
* **PCs:**
  + For **PC0, PC1, and PC2** (connected to the left switch):
    - Set IP addresses within the 192.168.10.0 network (e.g., 192.168.10.2, 192.168.10.3, 192.168.10.4) with a **Subnet Mask** of 255.255.255.0.
    - Set the **Default Gateway** to 192.168.10.1.
  + For **PC3, PC4, and PC5** (connected to the right switch):
    - Set IP addresses within the 192.168.11.0 network (e.g., 192.168.11.2, 192.168.11.3, 192.168.11.4) with a **Subnet Mask** of 255.255.255.0.
    - Set the **Default Gateway** to 192.168.11.1.

1. **Test Connectivity:**

* Use the **Ping Tool** from **PC0** to **PC3** (or any PC on a different subnet) to verify connectivity.

DIAGRAM:



RESULT:

Thus the configuration of the basic Network Topology is successfully pings indicate proper configuration and connectivity between the subnets.

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**VLAN**

Ex.No. 2

18/10/2024

**AIM:**

To configure VLANs on a switch and router in Cisco Packet Tracer to enable communication between devices in different VLANs through inter-VLAN routing.

**PROCEDURE:**

**Step 1: Set Up the Devices**

* Place the **Router**, **Switch**, and **PCs** in the workspace.
* Connect the **Router to the Switch** using a cross-over cable from **Router FastEthernet0/0** to **Switch FastEthernet0/20**.
* Connect each **PC to the Switch**:
  + PC1 and PC2 will be in VLAN 10 (connect to any ports like Fa0/1 and Fa0/2).
  + PC3 and PC4 will be in VLAN 20 (connect to any ports like Fa0/3 and Fa0/4).

**Step 2: Configure VLANs on the Switch**

1. **Access the Switch CLI:**
   * Click on the switch, go to the **CLI** tab.
2. **Enter Configuration Mode:**

config# enable

config# configure terminal

1. **Create VLANs:**
   * **VLAN 10:**

config# vlan 10

config# name VLAN10

config# exit

* + **VLAN 20:**

config# vlan 20

config# name VLAN20

config# exit

1. **Assign Ports to VLANs:**
   * For **VLAN 10 (PC1 and PC2)**:

config# interface FastEthernet0/1

config# switchport mode access

config# switchport access vlan 10

config# exit

config# interface FastEthernet0/2

config# switchport mode access

config# switchport access vlan 10

config# exit

* + For **VLAN 20 (PC3 and PC4)**:

config# interface FastEthernet0/3

config# switchport mode access

config# switchport access vlan 20

config# exit

config# interface FastEthernet0/4

config# switchport mode access

config# switchport access vlan 20

config# exit

1. **Configure the Trunk Port:**
   * Set the port connected to the router as a trunk port (e.g., FastEthernet0/20).

config# interface FastEthernet0/20

config# switchport mode trunk

config# exit

**Step 3: Configure the Router for Inter-VLAN Routing**

1. **Access the Router CLI:**
   * Click on the router, go to the **CLI** tab.
2. **Enter Configuration Mode:**

config# enable

config# configure terminal

1. **Configure Subinterfaces for Each VLAN:**
   * **Subinterface for VLAN 10:**

config# interface FastEthernet0/0.10

config# encapsulation dot1Q 10

config# ip address 192.168.1.100 255.255.255.0

config# exit

* + **Subinterface for VLAN 20:**

config# interface FastEthernet0/0.20

config# encapsulation dot1Q 20

config# ip address 192.168.2.100 255.255.255.0

config# exit

1. **Enable the Main Interface:**
   * Make sure the main interface **FastEthernet0/0** is up.

config# interface FastEthernet0/0

config# no shutdown

config# exit

**Step 4: Configure IP Addresses on PCs**

* For **PC1 (VLAN 10)**:
  + IP Address: 192.168.1.1
  + Subnet Mask: 255.255.255.0
  + Default Gateway: 192.168.1.100
* For **PC2 (VLAN 10)**:
  + IP Address: 192.168.1.2
  + Subnet Mask: 255.255.255.0
  + Default Gateway: 192.168.1.100
* For **PC3 (VLAN 20)**:
  + IP Address: 192.168.2.1
  + Subnet Mask: 255.255.255.0
  + Default Gateway: 192.168.2.100
* For **PC4 (VLAN 20)**:
  + IP Address: 192.168.2.2
  + Subnet Mask: 255.255.255.0
  + Default Gateway: 192.168.2.100

**Step 5: Test Connectivity**

* **Ping** from PC1 to PC2 within VLAN 10 (should succeed).
* **Ping** from PC3 to PC4 within VLAN 20 (should succeed).
* **Ping** between PCs in different VLANs (e.g., PC1 to PC3) to verify inter-VLAN routing (should also succeed).

DIAGRAM:

A computer network diagram with a few computers connected to it

Description automatically generated

RESULT:

Thus the configuration of VLAN is successfully done and the ping from one PC to other PCs is verified.

**FIREWALL**

Ex.No. 3

01/11/2024

**AIM:**

To setup an network based firewall using Cisco Packet Tracer.

**PROCEDURE:**

**Step 1: Replace Router\_A with Firewall\_1**

* **a.** Remove **Router\_A** and replace it with **Firewall\_1**.
* **b.** Connect the **FastEthernet 0/0** interface on **Firewall\_1** to the **FastEthernet 0/1** interface on **Switch\_A**.  
  Connect the **FastEthernet 0/1** interface on **Firewall\_1** to the **Ethernet 6** interface of the **ISP cloud**.  
  *(Use straight-through cables for both connections.)*
* **c.** Confirm that the host name of **Firewall\_1** is **Firewall\_1**.
* **d.** On **Firewall\_1**, configure the WAN IP address and subnet mask for the **FastEthernet 0/1** interface as **209.165.200.225** and **255.255.255.224**.
* **e.** Configure the LAN IP address and subnet mask for the **FastEthernet 0/0** interface on **Firewall\_1** as **192.168.1.1** and **255.255.255.0**.

**Step 2: Verify the Firewall\_1 Configuration**

* **a.** Use the **show run** command to verify your configuration. This is a partial example of the output:

Firewall\_1#show run

Building configuration...

hostname Firewall\_1

!

interface FastEthernet0/0

ip address 192.168.1.1 255.255.255.0

ip nat inside

duplex auto

speed auto

!

interface FastEthernet0/1

ip address 209.165.200.225 255.255.255.224

ip access-group 100 in

ip nat outside

duplex auto

speed auto

!

interface Vlan1

no ip address

shutdown

!

ip nat inside source list 1 interface FastEthernet0/0 overload

ip classless

ip route 192.168.2.0 255.255.255.0 192.168.1.2

ip route 192.168.3.0 255.255.255.0 192.168.1.3

!

access-list 1 permit 192.168.0.0 0.0.255.255

access-list 100 deny ip any host 209.165.200.225

<output omitted>

!

end

* **b.** From **PC\_B**, ping **209.165.200.225** to verify that the internal computer can access the Internet.

PC>ping 209.165.200.225

Pinging 209.165.200.225 with 32 bytes of data:

Reply from 209.165.200.225: bytes=32 time=107ms TTL=120

Reply from 209.165.200.225: bytes=32 time=98ms TTL=120

Reply from 209.165.200.225: bytes=32 time=104ms TTL=120

Reply from 209.165.200.225: bytes=32 time=95ms TTL=120

Ping statistics for 209.165.200.225:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 95ms, Maximum = 107ms, Average = 101ms

* **c.** From privileged EXEC mode on **Firewall\_1**, save the running configuration to the startup configuration using the **copy run start** command.

**DIAGRAM:**

A diagram of a network

Description automatically generated

RESULT:

Hence, the firewall setup is configured within the network interface.

**ROUTER CONFIGURATION**

Ex.No. 4

01/11/2024

**AIM**:

Basic configuration of Router using Cisco Packet Tracer.

**PROCEDURE:**

1. **Place the Router:**

* From the **Devices menu**, go to **Routers** and select a router model (e.g., **1841 Router**). Place it on the workspace.

1. **Add Network Devices (Optional):**

* Add switches and PCs if you want to connect multiple devices to the router, creating different networks or subnets.

1. **Connect Devices:**

* Use **Copper Straight-Through Cable** to connect the router to other devices.
* Connect **Router’s FastEthernet or GigabitEthernet ports** to the switches or directly to PCs, depending on the setup.

1. **Enter Router Configuration Mode:**

* Click on the router, then go to the **CLI (Command Line Interface)** tab.
* When prompted, type no if it asks if you want to enter the initial configuration dialog.

1. **Access the Router’s Global Configuration Mode:**

* Type enable to enter **privileged EXEC mode**.
* Type configure terminal to enter **global configuration mode**.

1. **Configure Router Interfaces:**

* Enter interface configuration mode for each interface you want to configure:
  + For **FastEthernet0/0**:

config# interface FastEthernet0/0

* + Set the IP address and subnet mask:

config# ip address 192.168.10.1 255.255.255.0

* + Turn on the interface:

config# no shutdown

* + Exit the interface configuration:

config# exit

* Repeat the process for **FastEthernet0/1** (or any other interface):

config# interface FastEthernet0/1

config# ip address 192.168.11.1 255.255.255.0

config# no shutdown

config# exit

1. **Configure Routing (Optional, if using multiple networks):**

* For **static routing**, type:

config# ip route 192.168.11.0 255.255.255.0 192.168.10.2

* This step is optional if you only need basic routing between directly connected networks.

1. **Save the Configuration:**

* To save the configuration, exit global configuration mode by typing exit until you return to the privileged EXEC mode.
* Type:

config# write memory

* Alternatively, use copy running-config startup-config to save the configuration to non-volatile memory.

1. **Test Connectivity:**

* Connect PCs to the router via switches or directly.
* Assign IP addresses and default gateways to each PC in their respective network.
* Use the **Ping Tool** to test communication between devices in different networks.

**DIAGRAM:**

A diagram of a computer network

Description automatically generated

**RESULT:**

The basic router configuration is made using PCs, switches and router which connects all seamlessly.