**CORE MODULE 2**

**Computer Networking**

**PRACTICAL**

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**Module : - Core Module 2**

**Practical : - Computer Networking**

**Requirements/tools : -**

1. **Hardware: -** 
   * 1. **Working PC with Hard disk installed**
     2. **Internet connection**
2. **Software: -**
   * 1. **Windows operating system**
     2. **Cisco packet tracer**

**Question 2: - Configure a static IP address on a Windows computer. Outline the steps required to complete this task.**

**Solution: -**

**Steps:**

## 1. Access Network Settings

• Open Network and Internet Settings:  
 - Right-click the Network icon (Wi-Fi/Ethernet) located in the System Tray at the bottom-right corner of the desktop.

- Select Open Network & Internet settings from the context menu.

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• Navigate to Advanced network settings:  
 - In the Network & Internet window, scroll down to locate **Advanced network settings**.



## 2. Choose the Network Adapter

• Identify the Active Network Adapter:  
 - In the Network Connections window, identify the network adapter that is currently connected (either Ethernet or Wi-Fi) in our case its Ethernet.

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• Open more adapter options:  
 - click on edit button in more adapter options menu.

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## 3. Access IPv4 Settings

• Locate Internet Protocol Version 4 (TCP/IPv4):  
 - In the Properties window, scroll through the list of items until you find Internet Protocol Version 4 (TCP/IPv4).  
 - Select it, then click the Properties button.

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# 4. Configure Static IP Address

• Select Manual IP Configuration:  
 - In the Internet Protocol Version 4 (TCP/IPv4) Properties window, select the option Use the following IP address to switch from DHCP (automatic) to manual IP assignment.

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•Lets check our current IP address using CMD just type

**ipconfig**

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Our current IPv4 Address is 192.168.8.63

subnet mask 255.255.255.0  
And accordingly, our subnet mask is 255.255.255.0

• Input the IP Address:  
 - IP address: Enter a static IP address 192.168.8.118

- Default gateway: Enter the gateway IP address 192.168.8.1

- Subnet mask: Input the correct subnet mask 255.255.255.0

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## 5. Configure DNS Server Addresses

• Manual DNS Configuration:  
 - Preferred DNS server: Enter the preferred DNS server 8.8.8.8  
 - Alternate DNS server: Enter the alternate DNS server 8.8.4.4

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## 6. Verify Settings

• Check for Errors:  
 - Double-check all the inputs to ensure accuracy.  
• Apply Settings:  
 - Click OK to save your settings, then click Close on the adapter’s Properties window.

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## 7. Test Network Connection

• Reboot the Adapter (Optional):  
 - Right-click on the network adapter and select Disable. After a few seconds, right-click and choose Enable.  
  
• Test Connectivity:  
 - Open Command Prompt (Windows + R, type cmd, press Enter).  
 - Run: ping 192.168.1.1  
 - If the ping is successful, the connection is working.

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• Again, type ipconfig to check that the new IP has been assigned

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# Conclusion:

We have successfully configured static IP address on a windows computer

**Question 3: Set up a basic home network using a router. Describe how to connect multiple devices and ensure they can communicate with each other.**

**Solution:**

# Step 1: Open Cisco Packet Tracer

* Launch the **Cisco Packet Tracer** application on the computer.
* We can see a blank workspace where we can build our network.

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# Step 2: Add Devices to the Workspace

* **Router**: From the device list at the bottom, select a **Router**. Drag and drop it

A blue circular object with black text

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* + - let’s choose a basic router like the **PT- Router**.
* **PCs (End Devices)**: Select **End Devices** from the bottom toolbar and

drag **PCs** onto the workspace. Add at least two **PCs**.

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* **Switch (optional)**: If we plan to connect multiple devices, you can add a

**Switch** between the router and the devices to distribute the connections.

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# Step 3: Connect the Devices Using Cables

* To connect the devices, click the **Lightning Bolt** icon from the bottom toolbar

to select the appropriate cables.

* + **Connect Router to Switch**: Use a **copper straight-through cable**. Click

on the router, choose the **FastEthernet** port (e.g., **FastEthernet 0/0**),

then click on the switch and select a port (e.g., **FastEthernet 0/1**).

* + **Connect Switch to PCs**: Use a **copper straight-through cable** to connect

each **PC** to the switch. Select the **FastEthernet 0** port on the PC and

connect it to any available FastEthernet port on the switch.

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# Step 4: Assign IP Addresses to PCs

* Click on **PC0**, go to the **Desktop** tab, and select **IP Configuration**.

- Assign an **IP address** to the PC0 (20.20.20.5).

- Set the **Subnet Mask** to **255.0.0.0**.

- Set the **Default Gateway** to the router's IP address (20.20.20.1).

Repeat this process for **PC1**, assigning it a different IP address (20.20.20.6),

but using the same default gateway

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# Step 5: Configure the Router

* Click on the **Router**, go to the Config and click on Fast Ethernet 0/0 and enter

the IP address (**20.20.20.2**)

This sets the IP address for the router's interface that connects to the PCs.

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# Step 6: Verify Connectivity

* To check if the devices can communicate, use the **ping** command from the PCs:
  1. Go to **PC0**, open the **Command Prompt** from the Desktop tab.
  2. Type the following command to ping the other PC:

ping 20.20.20.6

we should receive successful ping replies if the connection is established.

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  Description automatically generatedSimilarly, ping from **PC1** to **PC0** to ensure both devices can communicate.

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**Step 7: Save the Network Configuration (Optional)**

* If you want to save your network setup for future use:
  + Click on **File** in the top menu and select **Save As** to save your project.