Revision questions

1. What protocol is used to map an IP address to a MAC address?

    a. DHCP
    b. b . ICMP
    c. HTTP
    d. ARP

2. Which of the following is a valid MAC address format?

    a. AA:AA:12:34::AA: AA
    b. AB:F1:1B:FE:12:D1:65:91
    c. c.AB:12:12:CA:1F
    d. d.AG:CA:1F: AA:11:DA

What type of data transmission allows traffic to flow in both directions at the same time?

a.   Unidirectional

b.   Simplex

c.   Half-duplex

d.   Full-duplex

Which of the following describes a network that spans a city?
a. CAN
b. LAN
c. MAN
d. WAN

An IP address that can be used locally within your network and is not routable across the internet is known as what?

a. An alternate private IP address

b. Private IP address

c. Public IP address

d. AR

Which of these commands will display the MAC addresses of your interfaces? I

a. Ipconfig /all

b. show mac

c. display mac

d. ifconfig /all

What identifier does a switch use when making a forwarding decision?

a. Destination IP address

b. Source IP address

c. Destination MAC address

d. Source MAC address

A network that covers a small geographical area is known as a _____. Fill in the blank:
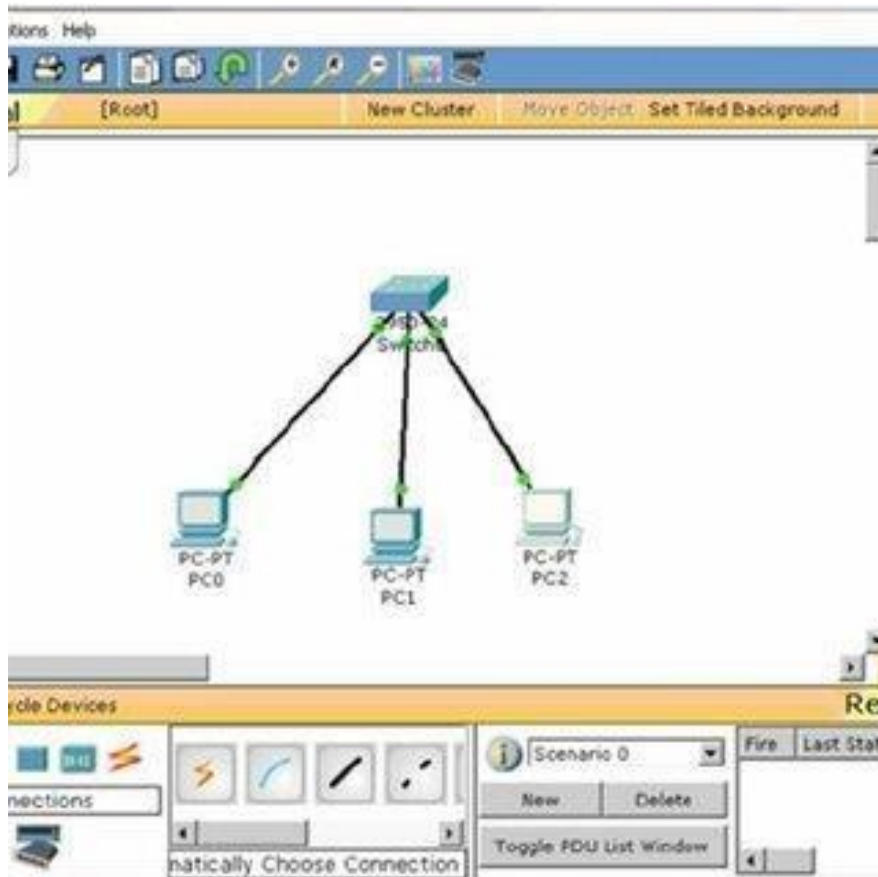
a. LAN

b. MAN

c. WAN

Which of the following is the broadcast MAC address?

a. aa:aa:aa:aa:aa:aa

b. ff:ff:ff:ff:ff:ff

c. 11:11:11:11:11:11

d. 99:99:99:99:99:9

Practical:

Install packet tracer and configure and setup a basic LAN, use the following as an example:

Step 1: Install Cisco Packet Tracer

1. Download and install Cisco Packet Tracer from the Cisco Networking Academy website.

2. Launch the Cisco Packet Tracer.

Step 2: Add Devices to the Workspace

1. **Add a Switch**:

    o Click on "Switches" in the device type selection box at the bottom of the Packet Tracer window.

    o Drag a Switch (e.g., 2960) onto the workspace.

2. **Add PCs**:

    o Click on "End Devices" in the device type selection box.

    o Drag three PCs onto the workspace.

Step 3: Connect Devices

1. **Connect PCs to the Switch**:

    o   Click on the "Connections" (lightning bolt icon) in the device type selection box.

    o   Choose Copper Straight-Through cable.

    o   Click on the first PC, choose Fast-Ethernet0.

    o   Click on the Switch, choose any available Fast-Ethernet port (e.g., Fast-Ethernet0/1).

    o   Repeat this for the other two PCs, connecting them to different Fast-Ethernet ports on the Switch (e.g., FastEthernet0/2 and FastEthernet0/3).

Step 4: Configure IP Addresses on PCs

    o   Configure each pcs IP address
    o   Click on IP Configuration.
    o   Assign an IP address (e.g., 192.168.1.2) and subnet mask (255.255.255.0).

Step 5: Verify Connectivity

    o   Go to the command prompt and use the ping command to ping each laptop connected to the network

Using packet tracer setup, the following scenario:

• **a Server**

• **2 switches**

• **2 Student desktops**

• **1 Employee Laptop**

• **2 Employee Desktops**

• **The employee and Student network need to be separate but connect to the same server**

1. Launch Cisco Packet Tracer.

2. Add Devices:

- o **Server**: Click on "End Devices" and drag a server to the workspace.

- o **Switches**: Click on "Switches" and drag two switches to the workspace.

- o **Student Desktops**: Click on "End Devices" and drag two PCs to the workspace.

- o **Employee Laptop**: Click on "End Devices" and drag one laptop to the workspace.

- o **Employee Desktops**: Click on "End Devices" and drag two PCs to the workspace.

3. Connect Devices:

- o Use the "Copper Straight-Through" cable to connect the devices.

- o Connect the **Server** to **Switch 1**.

- o Connect the **Student Desktops** to **Switch 1**.

- o Connect **Switch 1** to **Switch 2**.

- o Connect the **Employee Laptop** and **Employee Desktops** to **Switch 2**.

4. Configure VLANs:

- o Select **Switch 1** and go to the CLI tab.

- o **Enter the following commands to create and assign VLANs:**

```
plaintext
Copy code
enable
configure terminal
vlan 10
name Students
vlan 20
name Employees
```

- exit
- interface range fastEthernet 0/1-2
- switchport mode access
- switchport access vlan 10
- exit
- interface range fastEthernet 0/3-4
- switchport mode access
- switchport access vlan 20
- exit

  o Select **Switch 2** and go to the CLI tab.

5. Configure Trunk Port:

  o On **Switch 1**, configure the port connecting to **Switch 2** as a trunk port:

  o On **Switch 2**, configure the port connecting to **Switch 1** as a trunk port:

6. Assign IP Addresses:

  o Assign IP addresses to each device on the network to ensure they are in the correct subnets.

Example IP configuration:

  o **Server**: 192.168.1.1/24 (Default Gateway: 192.168.1.254)

  o **Student Desktops**: 192.168.1.2/24, 192.168.1.3/24 (Default Gateway: 192.168.1.254)

  o **Employee Laptop**: 192.168.2.2/24 (Default Gateway: 192.168.2.254)

  o **Employee Desktops**: 192.168.2.3/24, 192.168.2.4/24 (Default Gateway: 192.168.2.254)

7. Verify Connectivity:

  o Test the network by pinging from the student desktops to the server and from the employee devices to the server to ensure the VLANs are configured correctly and devices can communicate through the trunk link.

  o This setup should create two separate VLANs for the student and employee networks, allowing them to connect to the same server but remain isolated from each other.