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CYS24008

IP LAB – 4

Network Simulation using Packet Tracer

Contents

Recreating the Network Image

In this assignment, you will recreate a network based on the provided image. Follow the steps below to complete the assignment.

Overview

You will be recreating a network based on the image provided. The network consists of various devices and connections, and your task is to replicate this network using the instructions provided.

Figure 0.1
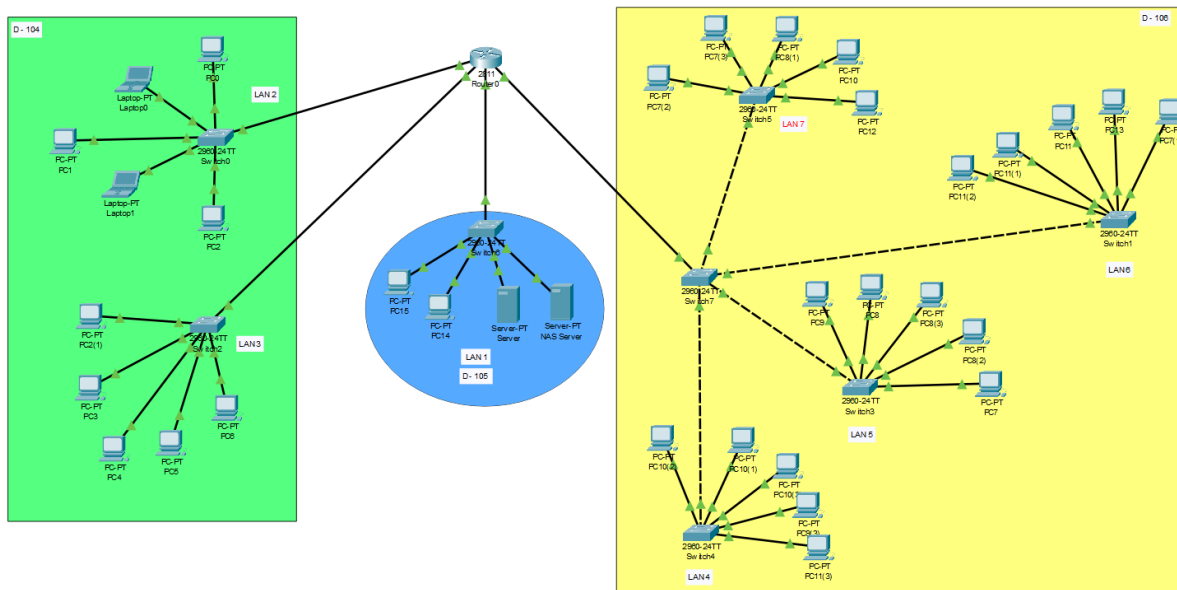
Steps

1. Review the Image: Take a close look at the provided image of the network.

2. Identify Devices: Identify each device in the network, such as routers, switches, servers, and computers. Take note of their placement and connections in the image.

3. Gather Equipment: Gather the necessary equipment to recreate the network, such as routers, switches, and cables.

4. Configure IP address: Refer to the various LANs mentioned in the diagram and provide IP address/ Subnet Mask accordingly.

5. Set Up Devices: Set up the devices according to their placement in the image. Ensure that they are powered on and ready to be connected.

6. Connect Devices: Begin connecting the devices based on the mapped connections from step 3.

7. Test Connectivity: Once the network is fully connected, test the connectivity between the devices. Verify that data can be transmitted across the network.

8. <u>Document the Network</u>: Document the recreated network, including the devices used, their connections, and any additional details. This documentation will serve as a reference for future maintenance or modifications.

DOCUMENTATION:

1. It seems that four different networks are connected to a router through switches.
2. The setup includes 28 PCs, 2 laptops, 2 servers, 8 switches, and 1 router.
3. Since there are 4 networks, with the fourth network having 20 end devices, a /24 network is chosen. This provides 256 usable IP addresses per network, offering ample room for future expansion and simplifying configuration.
4. The four networks will be:

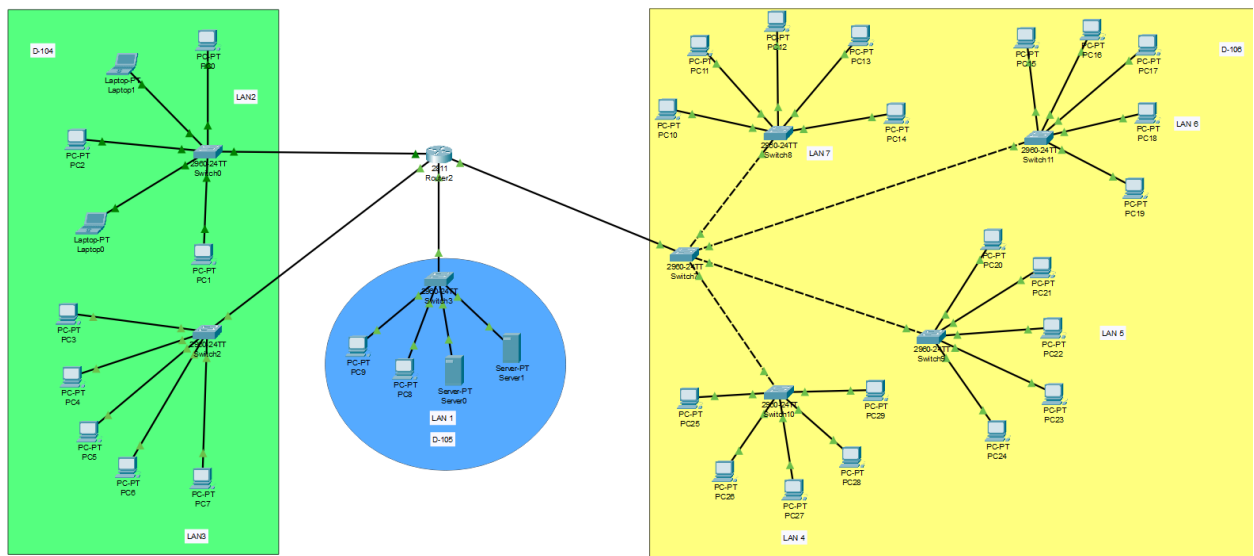   1. 192.168.1.0/24

    2. 192.168.2.0/24

    3. 192.168.3.0/24

    4. 192.168.4.0/24

5. Next, gather all the necessary equipment, connect the devices, and label them. Use crossover cables for switch-to-switch connections and straight-through cables for router-to-switch connections.

Figure 0.2

1. Now, let us configure the router. We start by grabbing an additional network interface as the default only comes with 2 and we need 4.

2. We then assign ip address to each interface. The ip address is .1 of their respective networks and the subnet mask for a /24 network is 255.255.255.0.

3. The ip address assigned to each interface is shown below:

Figure0.3

FastEthernet0/0	
Port Status	☑ On
Bandwidth	◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex	○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address	00D0.97AC.5401

IP Configuration
IPv4 Address   192.168.1.1
Subnet Mask   255.255.255.0

Tx Ring Limit   10

Figure0.4

FastEthernet0/1	
Port Status	☑ On
Bandwidth	◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex	○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address	00D0.97AC.5402

IP Configuration
IPv4 Address   192.168.2.1
Subnet Mask   255.255.255.0

Tx Ring Limit   10

Figure0.5

Port Status		✓ On
Bandwidth	⦿ 100 Mbps ◯ 10 Mbps	✓ Auto
Duplex	◯ Half Duplex ⦿ Full Duplex	✓ Auto
MAC Address	00E0.F7E4.4C01	

IP Configuration
IPv4 Address   192.168.3.1
Subnet Mask   255.255.255.0

Tx Ring Limit   10

Figure0.6

FastEthernet1/1

Port Status		✓ On
Bandwidth	⦿ 100 Mbps ◯ 10 Mbps	✓ Auto
Duplex	◯ Half Duplex ⦿ Full Duplex	✓ Auto
MAC Address	00E0.F7E4.4C02	

IP Configuration
IPv4 Address   192.168.4.1
Subnet Mask   255.255.255.0

Tx Ring Limit   10

4. We then assign the respective ip addresses to the PC's and their respective default gateways.
5. We finally test the connection by pinging the pcs. The ping from the pc with ip 192.168.4.2 to the pc with ip 192.168.2.3 Is shown below.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.4.2

Pinging 192.168.4.2 with 32 bytes of data:

Reply from 192.168.4.2: bytes=32 time=2ms TTL=128
Reply from 192.168.4.2: bytes=32 time=10ms TTL=128
Reply from 192.168.4.2: bytes=32 time=35ms TTL=128
Reply from 192.168.4.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.4.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 35ms, Average = 11ms

C:\>ping 192.168.2.3

Pinging 192.168.2.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.3: bytes=32 time=14ms TTL=127
Reply from 192.168.2.3: bytes=32 time<1ms TTL=127
Reply from 192.168.2.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 14ms, Average = 4ms

C:\>ping 192.168.2.3

Pinging 192.168.2.3 with 32 bytes of data:

Reply from 192.168.2.3: bytes=32 time<1ms TTL=127
Reply from 192.168.2.3: bytes=32 time<1ms TTL=127
Reply from 192.168.2.3: bytes=32 time=1ms TTL=127
Reply from 192.168.2.3: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.2.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```