



VIT[®]
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

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Slot: L21+L22

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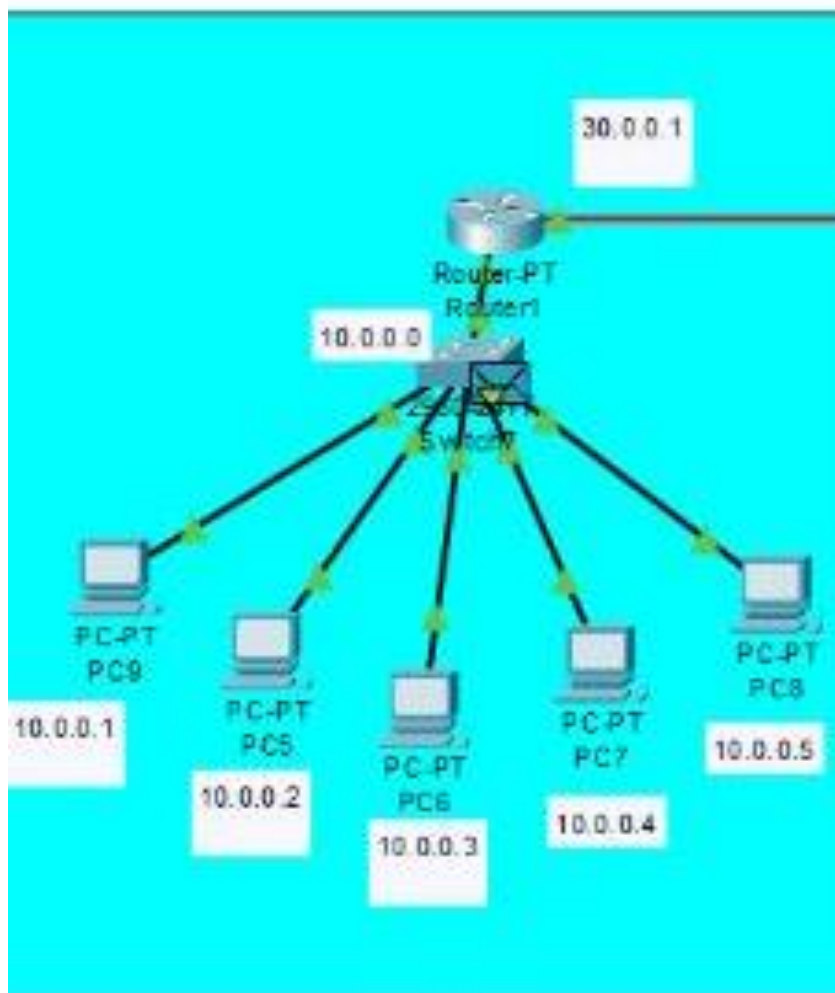
Question:

XYZ Company is a fast-growing company in Chennai with more than 2 million customers globally. The company deals with selling and buying of food items, which are basically operated from the headquarters with six departments namely Admin, IT, Finance, HR, Customer Service, and Reception. Thus, the company requires young CSE graduates to design the network for the branch. The network is intended to operate separately from the HQ network. Being a small network, the company has the following requirements during the implementation:

- a. One router and one switch to be used per department.
- b. 2 departments per floor with minimum of 5 and maximum 10 end devices. As a designer you may decide number of end devices per department according to its service.
- c. Each department is required to be in different LANs.
- d. Each department is required to use Wireless router for the users.
- e. Devices in the network must be configured manually.
- f. Devices in all the departments are required to communicate with each other.
- g. Perform static routing across all the department LANs.
- h. Perform simulation and check the packet travels across all the LANs.

Solution:**Configuration for systems(pc) for each LAN network(HR, finance,etc)**

- Select end devices and drag them(atleast 5 each for each LAN)
- Select switches(2960/PT) and drag them
- Using wire connect them with each other as shown.

Screenshot:

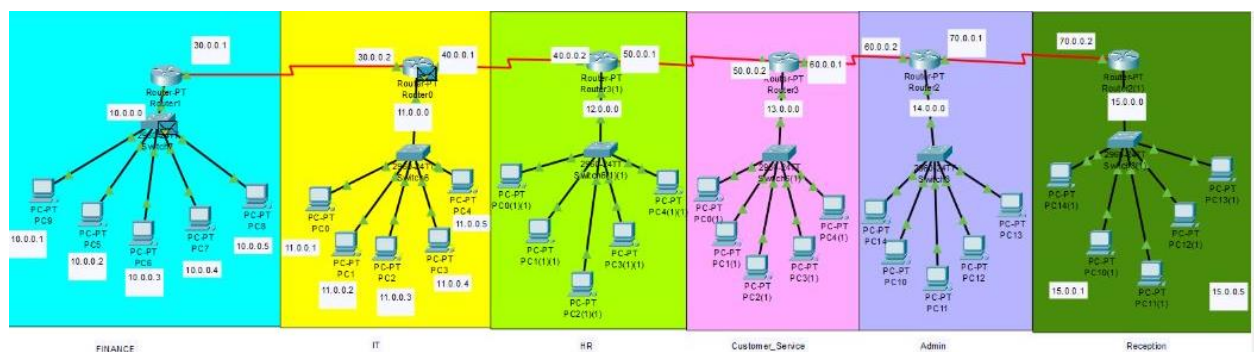
Follow the same steps for other Networks.

Step 2:**IP configurations for PCs/End devices**

- The end devices have Ip4 configuration and the LANs IP address can be the default gateway (x.x.x.0)

Step 3:**Ip configurations for routers:**

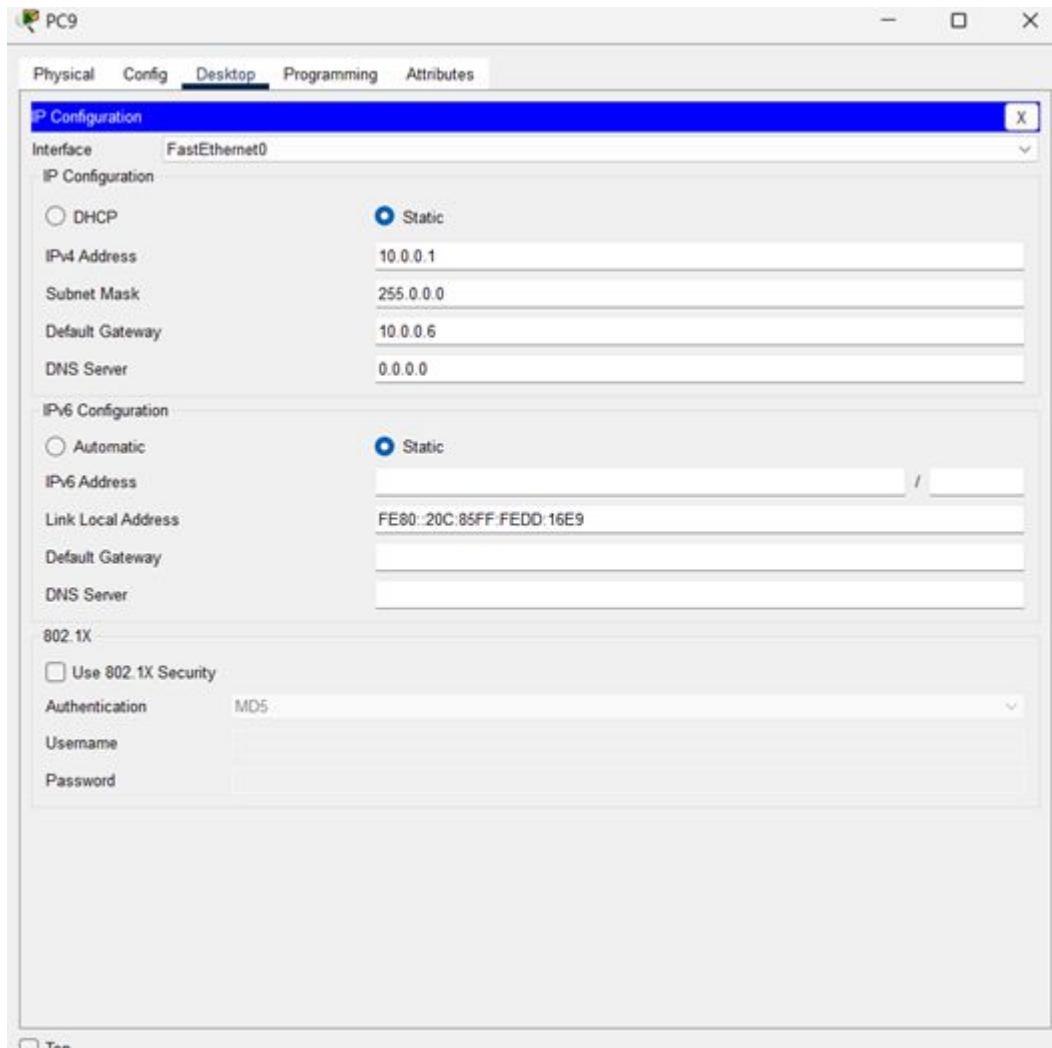
- Drag routers and place them accordingly(One for each Network).
- Each router will have atleast 2 connections. One for the switch connecting the end devices and one connecting one router with another.
- The connection of router from router can be made using SERIAL DCE and the IP connection/Default Gateway.
- The connection of router with the switch will have the IP address of the LAN.

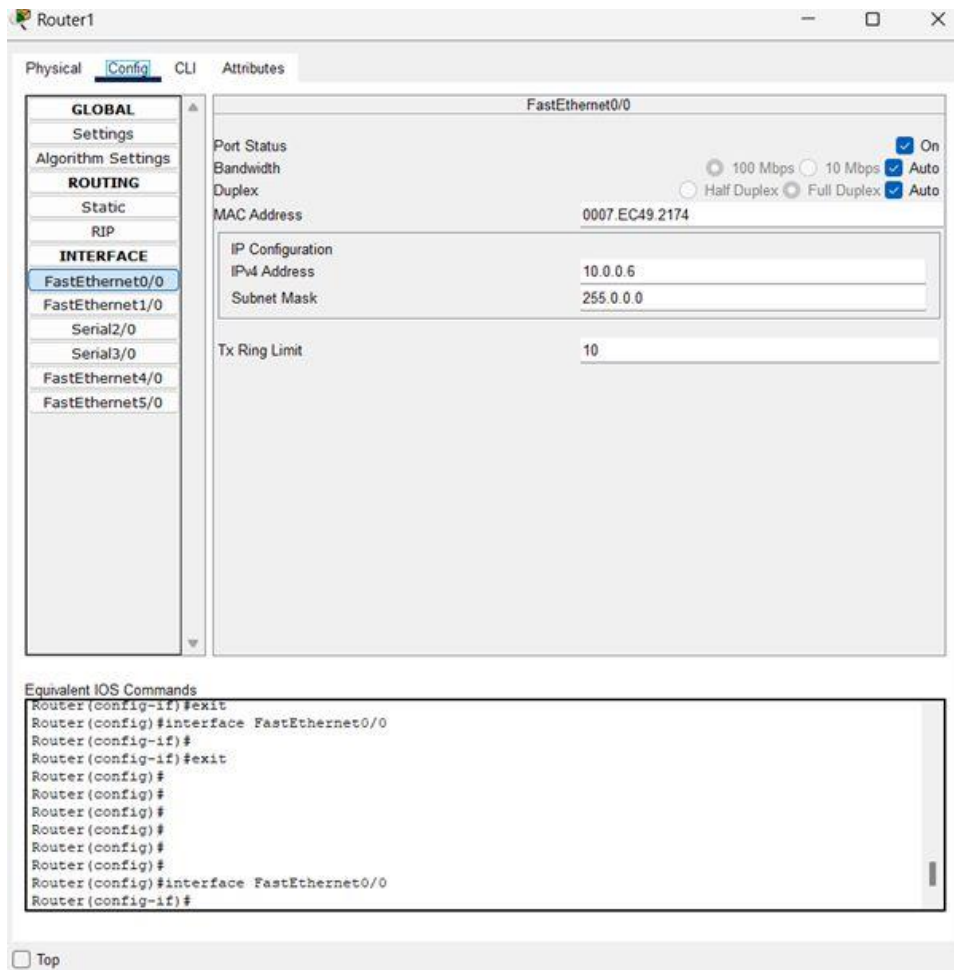
Screenshot:

Step 4: Router to router connection

First we will assign each router the Default Gateway for each LAN network from interface of FastEthernet()

Screenshot:





Next, router to router configuration involves the routing table which contains the IP address of all the destination routers and Next Hop IP.

The screenshot shows the Router0 configuration window with the 'Config' tab selected. The left sidebar contains a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), SWITCHING (VLAN Database), and INTERFACE (FastEthernet0/0, FastEthernet0/1, Serial0/0/0, Serial0/0/1). The 'Static' option under ROUTING is selected. The main area is titled 'Static Routes' and contains input fields for 'Network', 'Mask', and 'Next Hop', followed by an 'Add' button. Below these is a table of configured static routes:

Network Address
199.100.100.0/24 via 20.0.0.3
200.100.100.0/24 via 20.0.0.3
201.100.100.0/24 via 20.0.0.3
202.100.100.0/24 via 20.0.0.3
21.0.0.0/8 via 20.0.0.3
22.0.0.0/8 via 21.0.0.3
15.0.0.0/8 via 22.0.0.3

At the bottom right of the table is a 'Remove' button. Below the table is a section titled 'Equivalent IOS Commands' containing a terminal window with the following text:

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
```

At the bottom left of the window is a 'Top' button.

Step 5: We will Simulate and get the output:

FileEditOptionsViewToolsExtensionsWindowHelp

LogicalPhysical

1400, 922

Root

19:10:00

FINANCE

IT

HR

Customer_Service

Admin

Reception

Router1

Router2

Router3

Router4

Router5

Router6

PC1

PC2

PC3

PC4

PC5

PC6

PC7

PC8

PC9

PC10

PC11

PC12

PC13

PC14

PC15

PC16

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PC98

PC99

PC100

Event List

Vis	Time(sec)	Last Device
1.891	--	--
1.891	--	--
1.891	--	--
1.892	Switch7	Switch7
1.892	Switch7	Switch7
1.892	Switch7	Switch7
1.892	Switch7	Switch7
1.892	Switch7	Switch7
1.913	--	--
1.913	--	--
Visible 1.914	Router1	Router1
Visible 1.914	Router1	Router1

Reset Simulation

Constant Delay

Captured to: 1.914 s

Play Controls

100%

100%

100%

Event List Filters - Visible Events

ACL Filter, ADP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TOP, LACP, LLDP, NDP, NETFLOW, NTP, OSPF, OSPFv6, Page, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCDP, SMTP, SNMP, SSH, SIP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters

Show All/None

Time: 02:38:23.941

PLAY CONTROLS

26200M

Scenario 0

Fire

Last Status

Source

Destination

Type

Color

Time(sec)

Periodic

Num

Edit

Delete

Successful

PC8

PC14(1)

ICMP

0.000

N

0

(edit)

(delete)

Edit Filters

Show All/None

Event List

Realtime

Simulation

Fire

Last Status

Source

Destination

Type

Color

Time(sec)

Periodic

Num

Edit

Delete

Successful

PC8

PC14(1)

ICMP

0.000

N

0

(edit)

(delete)