



**L**OVELY  
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**Final Project.**

**Subject : CSE307 (INTERNETWORKING ESSENTIALS)**

Name: Vemireddy Venkatarami Reddy

Section: K23CH-(G-2)

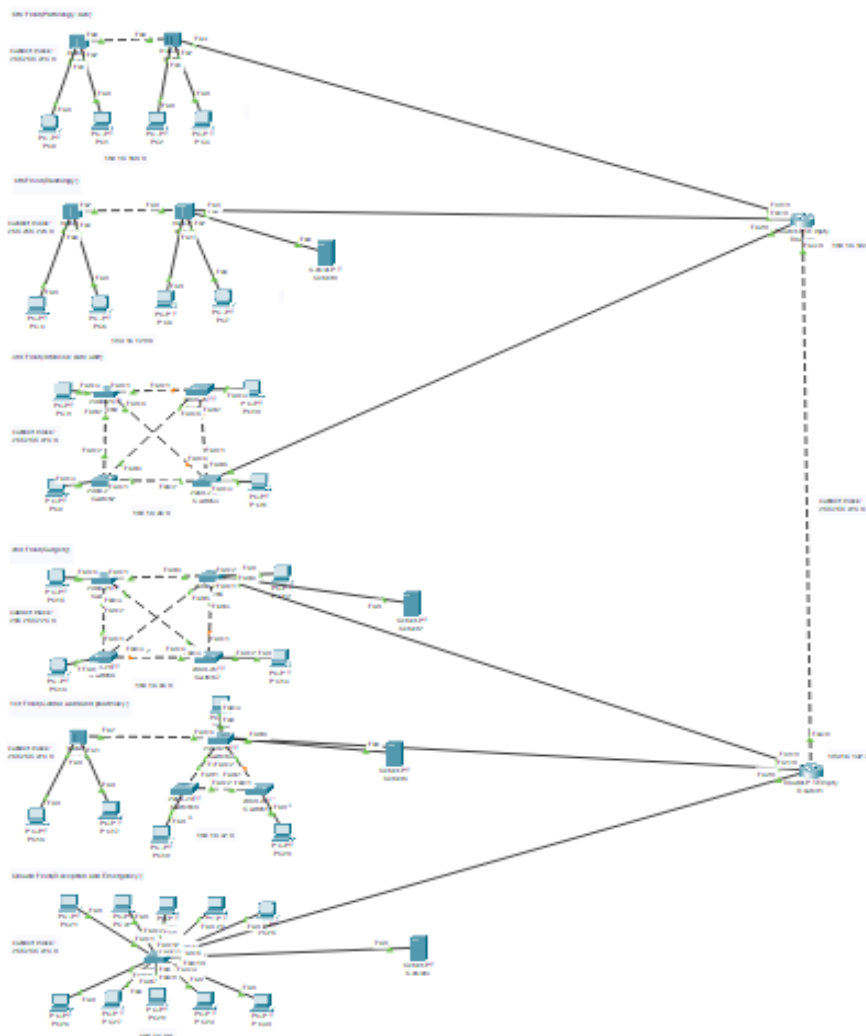
Roll No.: 60

Reg.No.: 12307726

Submitted To:

**Gagandeep Kaur**

# 1. Physical scenario:



I have created multi-story hospital consisting of different departments:

- **Ground Floor (Reception & Emergency):** 10 computers (**Star Topology** with a switch)
- **1st Floor (General Wards & Pharmacy):** 5 computers (**Hybrid Topology** with hub and switch)
- **2nd Floor and 3th (Surgery & Intensive Care Unit - ICU):** 4 computers (**Mesh Topology** with switches)
- **4th Floor and 5<sup>th</sup> (Radiology & Pathology Lab):** 4 computers (**Bus Topology** with a hub)

## 2. IP VALUES and Servers:

Server3

Physical Config Services **Desktop** Programming Attributes

**IP Configuration** X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 189.16.0.2

Subnet Mask: 255.255.224.0

Default Gateway: 189.16.0.1

DNS Server: 189.16.0.2

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:BCFF:FEAD:392C

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

Server3

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 189.16.0.1

DNS Server: 189.16.0.2

Start IP Address: 189 16 0 3

Subnet Mask: 255 255 224 0

Maximum Number of Users: 512

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	189.16.0.1	189.16.0.2	189.16.0.3	255.255.2...	512	0.0.0.0	0.0.0.0

using **FLSM**, with the **network address 189.16.0.0**.

FLSM : Fixed Length Subnet Mask.

I have total subnets are 7. So using FLSM I have created new subnet mask and subnet address.

In FLSM, subnet mask is same for all networks .

$$2^n \geq 7$$

$$2^3 \geq 7 \quad (n = 3)$$

$$8 > 7$$

Given class was B:

In class B we have 16 and 16 network and host. So we have to add 3 to network and subtract 3 from host. So the new network and host are 19 and 13.

From this , we can easily find subnet mask.

-----  
                  8      8      3      0

$$128+64+32= 224.$$

So , The new subnet mask is **255.255.224.0**

$$256-224 = 32$$

**Now** we have to find Range : Difference is 32

189.16.0.0    to    189.16.31.255

189.16.32.0   to    189.16.63.255

189.16.64.0   to    189.16.95.255

189.16.96.0   to    189.16.127.255

189.16.128.0 to    189.16.159.255

189.16.160.0 to    189.16.191.255

189.16.192.0 to    189.16.223.255

189.16.224.0 to    189.16.255.255

## DNS SERVER:

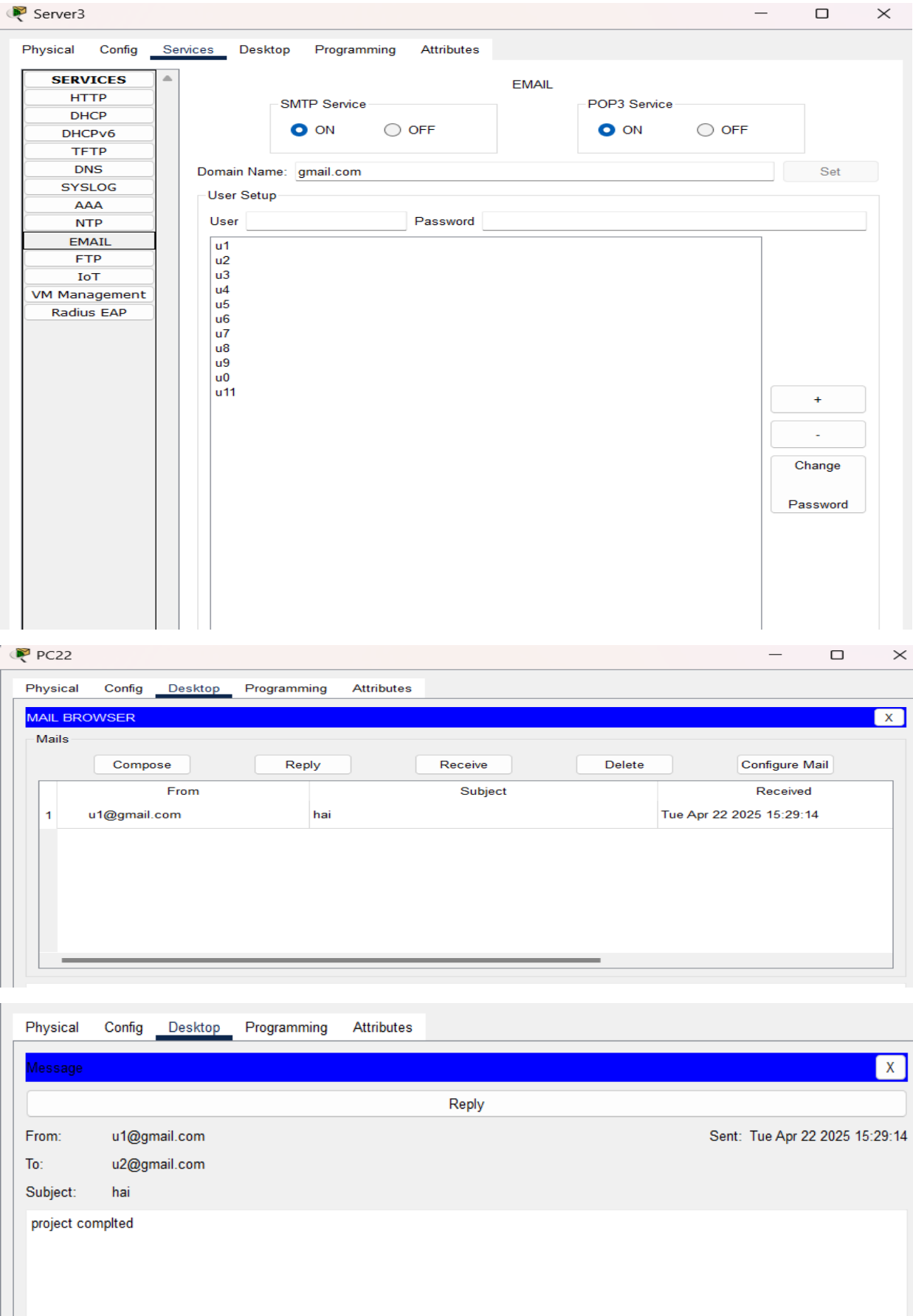
The screenshot shows the configuration window for a server named 'Server2'. The 'Services' tab is selected, and the 'DNS' service is highlighted in the left sidebar. The main area shows the DNS configuration. The 'DNS Service' is turned 'On'. Under 'Resource Records', there is a table with one record for 'venkey.com' of type 'A Record' pointing to the IP address '189.16.64.2'. The table has columns for 'No.', 'Name', 'Type', and 'Detail'. Below the table are buttons for 'Add', 'Save', and 'Remove'.

No.	Name	Type	Detail
0	venkey.com	A Record	189.16.64.2

The screenshot shows the configuration window for a PC named 'PC13'. The 'Desktop' tab is selected, and a 'Web Browser' window is open. The address bar shows the URL 'http://venkey.com'. The browser displays the 'Cisco Packet Tracer' welcome page with the text 'Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.' and a 'Quick Links' section with links to 'A small page', 'Copyrights', 'Image page', and 'Image'.

Quick Links:  
[A small page](#)  
[Copyrights](#)  
[Image page](#)  
[Image](#)

# Email:



# FTP:

The image shows two windows from the Cisco Packet Tracer application. The top window is titled 'Server0' and displays the 'Services' configuration tab. The bottom window is titled 'PC4' and displays the 'Desktop' tab with a 'Command Prompt' open.

**Server0 - Services Configuration:**

- The 'Services' list on the left includes HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, **FTP**, IoT, VM Management, and Radius EAP.
- The 'FTP' service is configured with the 'Service' status set to 'On'.
- User Setup:** A table lists five users with their respective permissions (all set to 'RWDNL').
- File List:** A list of seven files is shown, including various .bin files for different Cisco routers and switches.

	Username	Password	Permission
1	cisco	cisco	RWDNL
2	user1	123	RWDNL
3	user2	234	RWDNL
4	user3	345	RWDNL
5	user4	456	RWDNL

	File
1	asa842-k8.bin
2	asa923-k8.bin
3	c1841-advipservicesk9-mz.124-15.T1.bin
4	c1841-ipbase-mz.123-14.T7.bin
5	c1841-ipbasek9-mz.124-12.bin
6	c1900-universalk9-mz.SPA.155-3.M4a.bin
7	c2600-advipservicesk9-mz.124-15.T1.bin

**PC4 - Command Prompt:**

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ftp 189.16.128.2
Trying to connect...189.16.128.2
Connected to 189.16.128.2
220- Welcome to FT Ftp server
Username:user1
331- Username ok, need password
Password:
230- Logged in
(passive mode On)
ftp>dir

Listing /ftp directory from 189.16.128.2:
 0 : asa842-k8.bin                    5571584
 1 : asa923-k8.bin                    30468096
 2 : c1841-advipservicesk9-mz.124-15.T1.bin  33591768
 3 : c1841-ipbase-mz.123-14.T7.bin    13832032
 4 : c1841-ipbasek9-mz.124-12.bin    16599160
 5 : c1900-universalk9-mz.SPA.155-3.M4a.bin  33591768
 6 : c2600-advipservicesk9-mz.124-15.T1.bin  33591768
 7 : c2600-i-mz.122-28.bin            5571584
 8 : c2600-ipbasek9-mz.124-8.bin     13169700
 9 : c2800nm-advipservicesk9-mz.124-15.T1.bin  50938004
10 : c2800nm-advipservicesk9-mz.151-4.M4.bin  33591768
11 : c2800nm-ipbase-mz.123-14.T7.bin    5571584
12 : c2800nm-ipbasek9-mz.124-8.bin    15522644
13 : c2900-universalk9-mz.SPA.155-3.M4a.bin  33591768
14 : c2950-16q4l2-mz.121-22.EA4.bin    3058048
15 : c2950-16q4l2-mz.121-22.EA8.bin    3117390
16 : c2960-lanbase-mz.122-25.FX.bin    4414921
17 : c2960-lanbase-mz.122-25.SEE1.bin   4670455
18 : c2960-lanbasek9-mz.150-2.SE4.bin   4670455
19 : c3560-advipservicesk9-mz.122-37.SE1.bin  8662192
20 : c3560-advipservicesk9-mz.122-46.SE.bin 10713279
21 : c800-universalk9-mz.SPA.152-4.M4a.bin  33591768
22 : c800-universalk9-mz.SPA.154-3.M6a.bin  83029236
23 : cat3k_caa-universalk9.16.03.02.SPA.bin 505532849
24 : cgr1000-universalk9-mz.SPA.154-2.CG 159487552
25 : cgr1000-universalk9-mz.SPA.156-3.CG 184530138
26 : ir800-universalk9-bundle.SPA.156-3.M.bin 160968869
27 : ir800-universalk9-mz.SPA.155-3.M    61750062
28 : ir800-universalk9-mz.SPA.156-3.M    63753767
29 : ir800_yocto-1.7.2.tar              2877440
30 : ir800_yocto-1.7.2_ruthan_2.7.2.tar 6012000
```

### 3. Routing:

The image displays two screenshots of a network configuration interface, likely from a Packet Tracer or similar simulation software. The top window is for Router0, and the bottom window is for Router1. Both windows show the 'Config' tab with a sidebar on the left containing 'GLOBAL' (Settings, Algorithm Settings), 'ROUTING' (Static, RIP), and 'INTERFACE' (FastEthernet0/0 to FastEthernet5/0). The main area is titled 'Static Routes' and contains input fields for 'Network', 'Mask', and 'Next Hop', an 'Add' button, and a table of configured routes. Below the table is a 'Remove' button. The bottom window also includes a section for 'Equivalent IOS Commands'.

**Router0 Static Routes:**

Network Address
189.16.64.0/19 via 189.16.192.2
189.16.32.0/19 via 189.16.192.2
189.16.0.0/19 via 189.16.192.2

**Router0 Equivalent IOS Commands:**

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet3/0, changed state to up

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

**Router1 Static Routes:**

Network Address
189.16.160.0/19 via 189.16.192.1
189.16.128.0/19 via 189.16.192.1
189.16.96.0/19 via 189.16.192.1

Static Routing was used here:

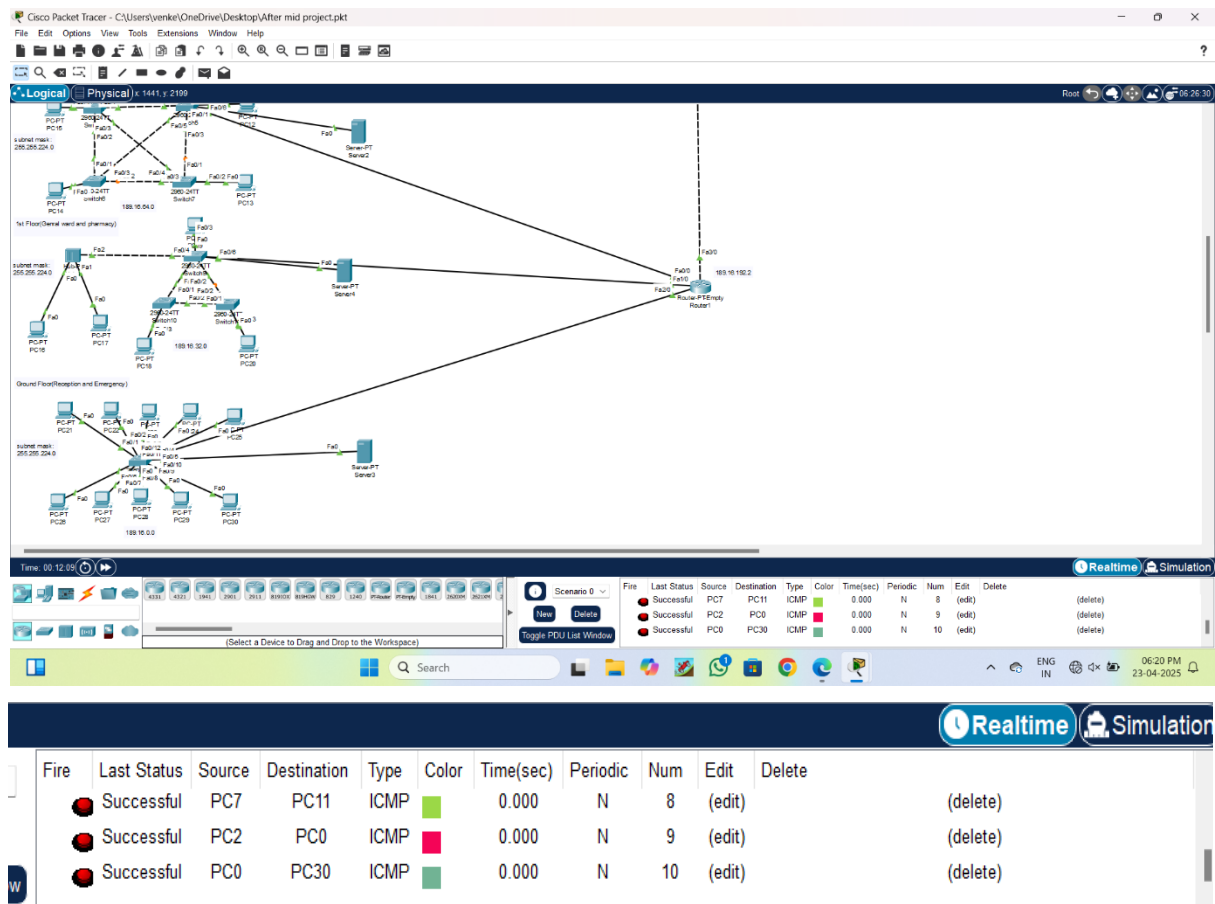
Commands for static routing : #ip route \_unknown network\_ \_subnet mask\_ \_net hope\_

Example: #ip route 189.16.160.0 255.255.224.0 189.16.191.1

#ip route 189.16.128.0 255.255.224.0 189.16.191.1



#### 4. Communication between pc:



After Routing :

You can see in above pic that all the message sent from one pc to another became successful.

Example: PC0 TO PC30:

(You can clearly see that PC0 is attached to Router 1 and PC30 is attached to Router 0. So you can confirm that message is pass through R0 TO R1 )

Finally , we can send message pc to any pc .

**GIT-HUB link:** <https://github.com/VenkeyVemireddy/CSE-307>

**\*THANK YOU\***