

INSTITUTE OF COMPUTER TECHNOLOGY

B-TECH COMPUTER SCIENCE ENGINEERING 2025-26

SUBJECT:COMPUTER NETWORKS

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ENRLL NO: 23162171020

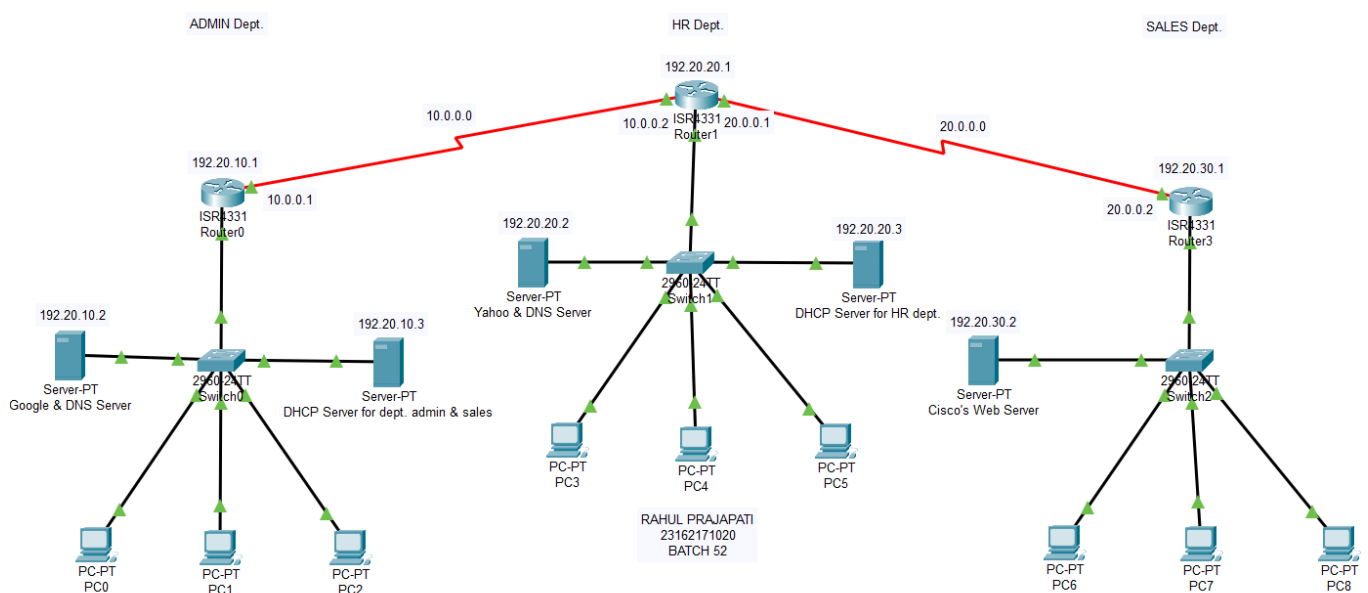
BRANCH: CYBER SECURITY

BATCH: 52

PRACTICAL_03

Aim: To Design and configure a network using Dynamic Host Configuration Protocol (DHCP).

Network Design:



ADMIN DEPARTMENT

Admin and Sales Department DHCP Server Configuration :

DHCP Server for dept. admin & sales

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: 192.20.10.1

DNS Server: 192.20.10.2

Start IP Address : 192 20 10 11

Subnet Mask: 255 255 255 0

Maximum Number of Users : 20

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
serverPool3	192.20.30.1	192.20.30.2	192.20.30.11	255.255.2...	20	0.0.0.0	0.0.0.0
serverPool	192.20.10.1	192.20.10.2	192.20.10.11	255.255.2...	20	0.0.0.0	0.0.0.0

Google Web Server :

Google & DNS Server

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.20.10.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.20.10.1

DNS Server: 192.20.10.2

Google & DNS Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP**
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL

File Name: index.html

```
<html>
  <hr>
    <center>
      <font size='+4' color='red' >
        Google Website
      </font>
    </center>
  <hr>
</html>
```

Admin Dept. DNS Server :

Google & DNS Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

DNS

DNS Service ☒ On ☐ Off

Resource Records

Name Type **A Record** ▼

Address

No.	Name	Type	Detail
0	cisco.com	A Record	192.20.30.2
1	google.com	A Record	192.20.10.2
2	yahoo.com	A Record	192.20.20.2

Router Configuration :

GigabitEthernet 0/0/0 → 192.20.10.1

Serial 0/1/0 → 10.0.0.1

RIP Configuration:

Router0

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP**
- SWITCHING**
- VLAN Database
- INTERFACE**
- GigabitEthernet0/0/0

RIP Routing

Network

Network Address
10.0.0.0
20.0.0.0
192.20.10.0

PC's IP Configuration :

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface **FastEthernet0** ▼

IP Configuration

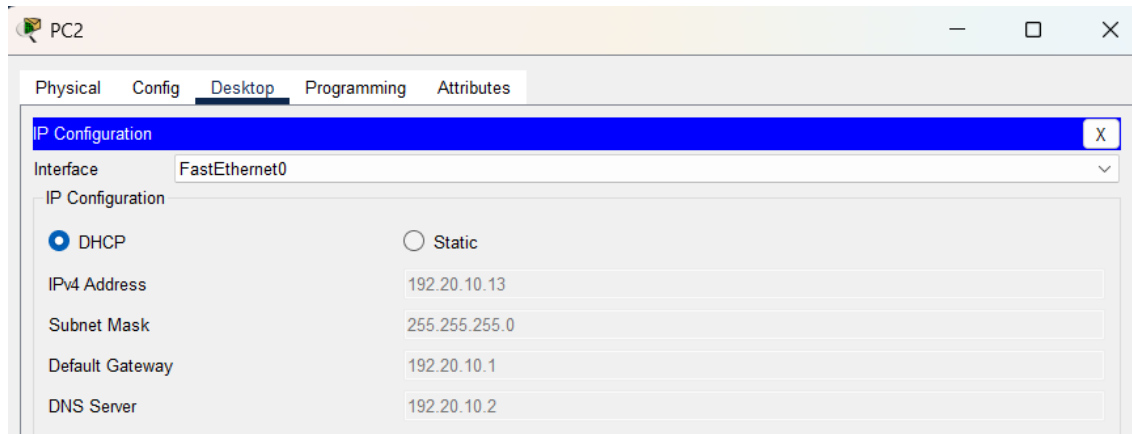
☒ DHCP ☐ Static

IPv4 Address 192.20.10.11

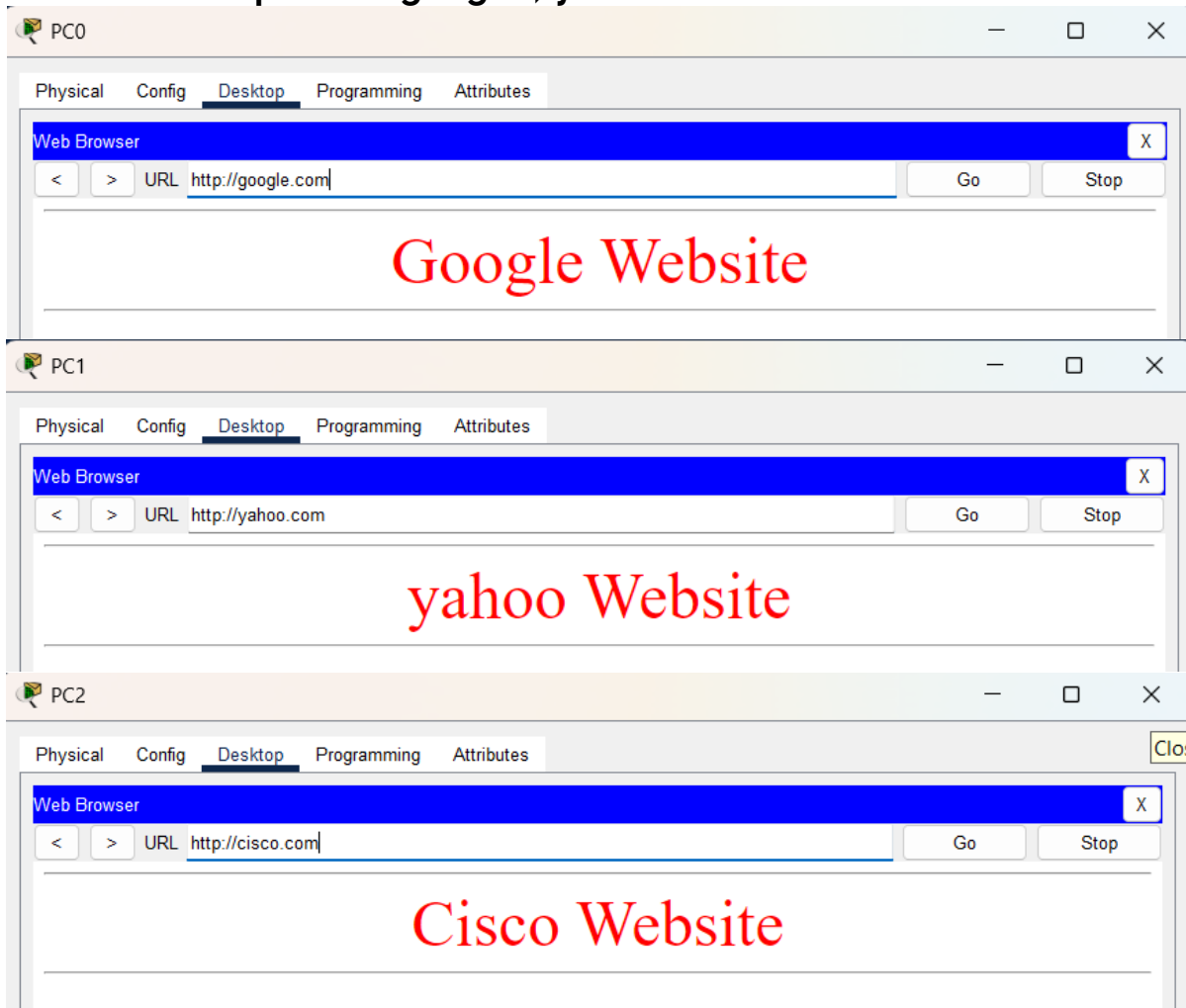
Subnet Mask 255.255.255.0

Default Gateway 192.20.10.1

DNS Server 192.20.10.2



Web Service Request to google , yahoo & cisco:



HR DEPARTMENT

HR Department DHCP Server Configuration :

DHCP Server for HR dept.

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: 192.20.20.1

DNS Server: 192.20.20.2

Start IP Address : 192 20 20 11

Subnet Mask: 255 255 255 0

Maximum Number of Users : 20

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	192.20.20.1	192.20.20.2	192.20.20.11	255.255.2... 0	20	0.0.0.0	0.0.0.0

Yahoo Web Server :

Yahoo & DNS Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

File Name: index.html

```
<html>
  <hr>
  <center>
    <font size='+4' color='red' >
      yahoo Website
    </font>
  </center>
  <hr>
</html>
```

HR Dept. DNS Server :

Yahoo & DNS Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

DNS

DNS Service: ☒ On ☐ Off

Resource Records

Name: Address: Type: A Record

Add Save Remove

No.	Name	Type	Detail
0	cisco.com	A Record	192.20.30.2
1	google.com	A Record	192.20.10.2

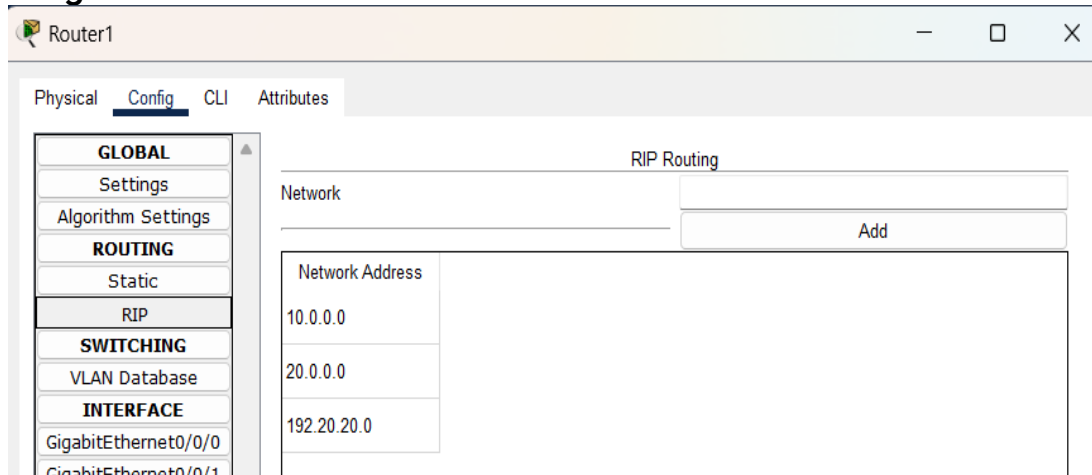
Router Configuration :

GigabitEthernet 0/0/0 → 192.20.20.1

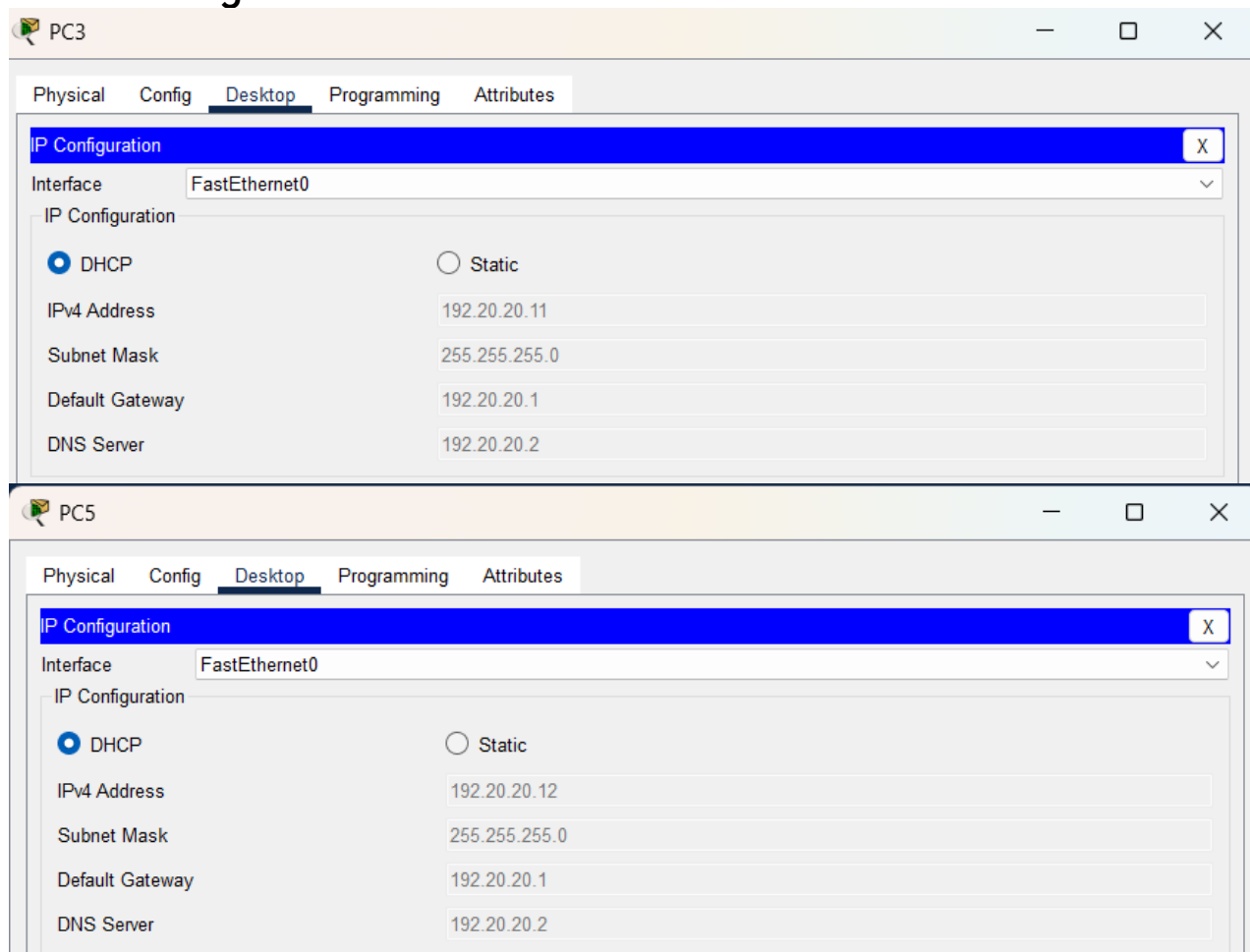
Serial 0/2/1 → 10.0.0.2

Serial 0/2/0 → 20.0.0.1

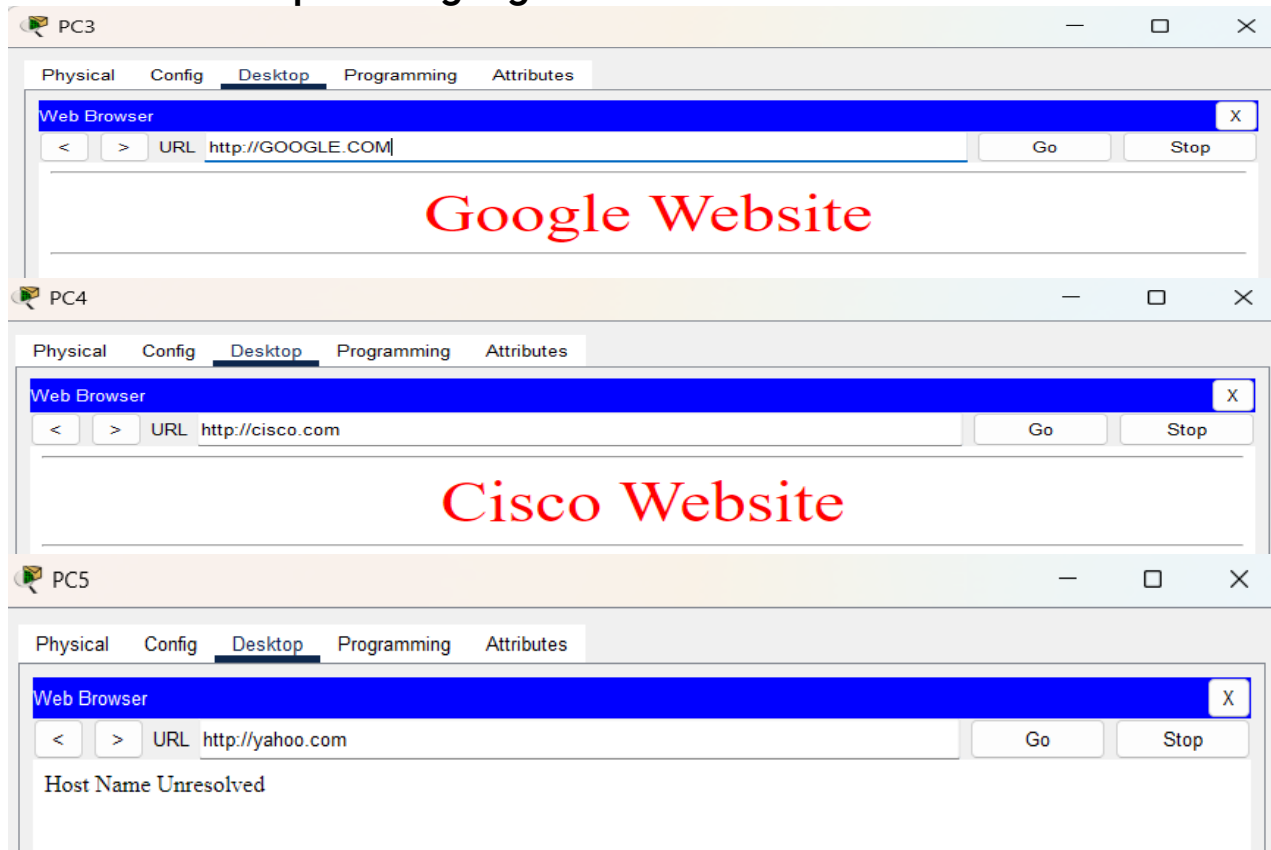
RIP Configuration:



PC's IP Configuration :

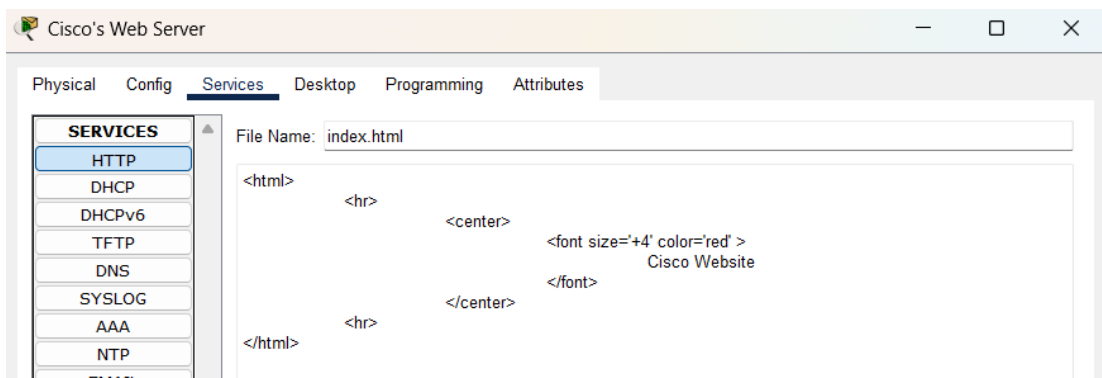


Web Service Request to google & cisco:

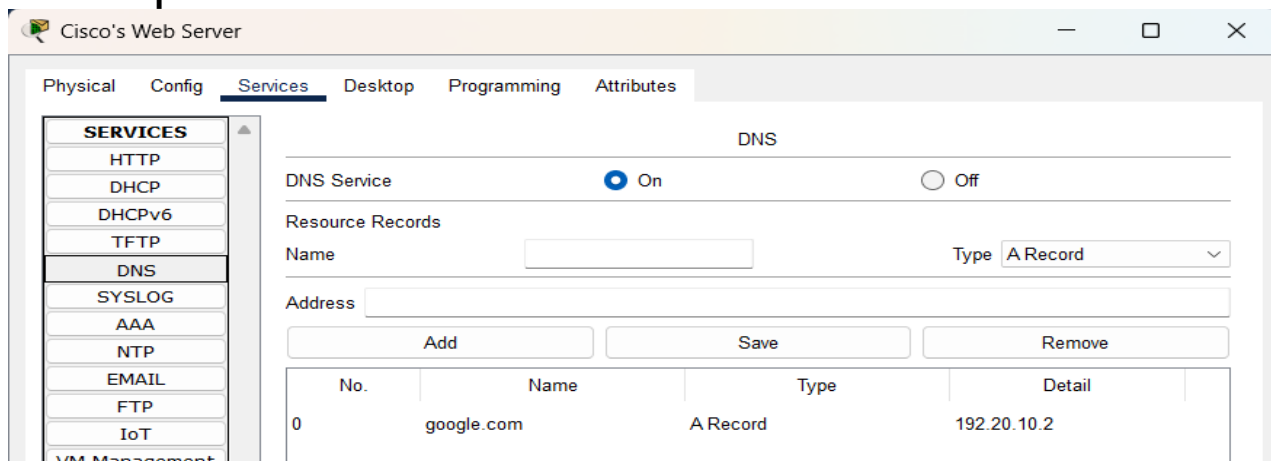


SALES DEPARTMENT

Cisco Web Server :



Sales Dept. DNS Server :

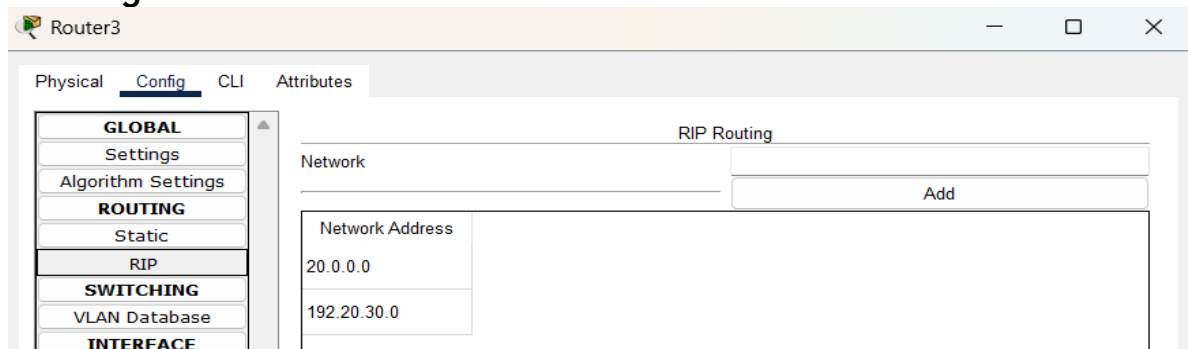


Router Configuration :

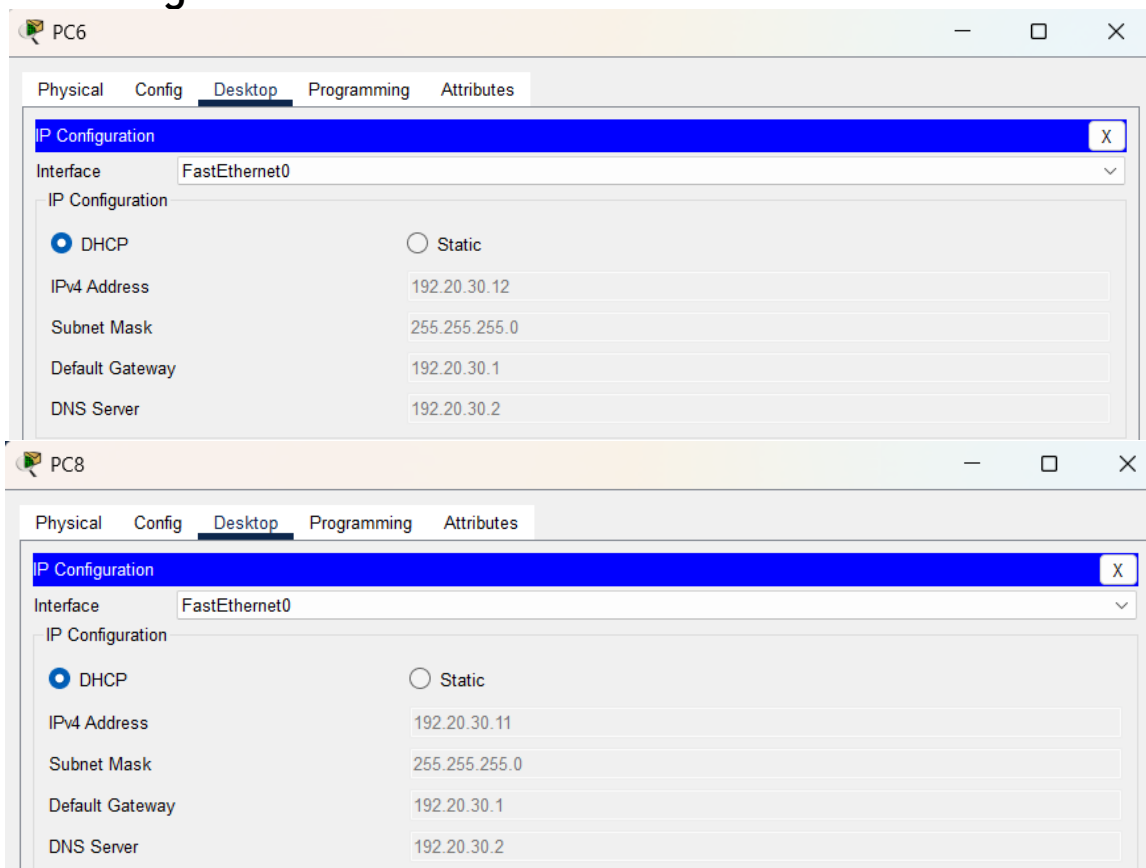
GigabitEthernet 0/0/0 → 192.20.30.1

Serial 0/1/0 → 20.0.0.2

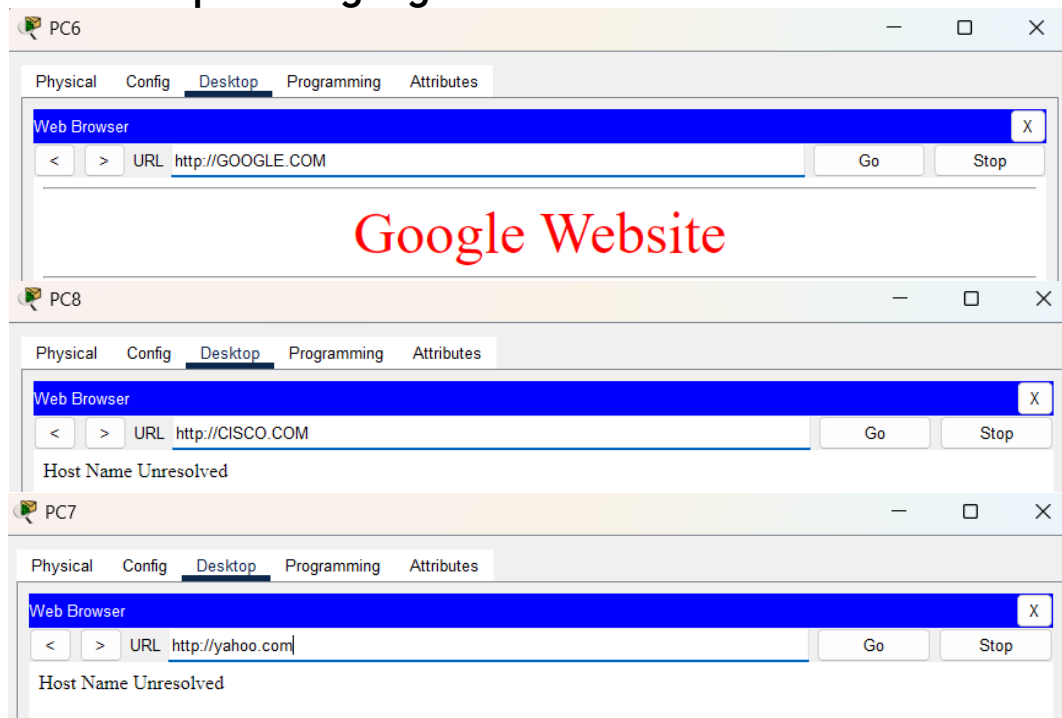
RIP Configuration:



PC's IP Configuration :



Web Service Request to google :



Conclusion: The network was successfully designed using DHCP to provide dynamic IP allocation for all departments. DNS and access control were configured to ensure users could only access authorized websites, meeting the organization's requirements efficiently.