SOUTHEAST UNIVERSITY

Meeting the Challenges of Time

Lab Report

Digital Logic Design Lab

Submitted by:

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Submitted to:

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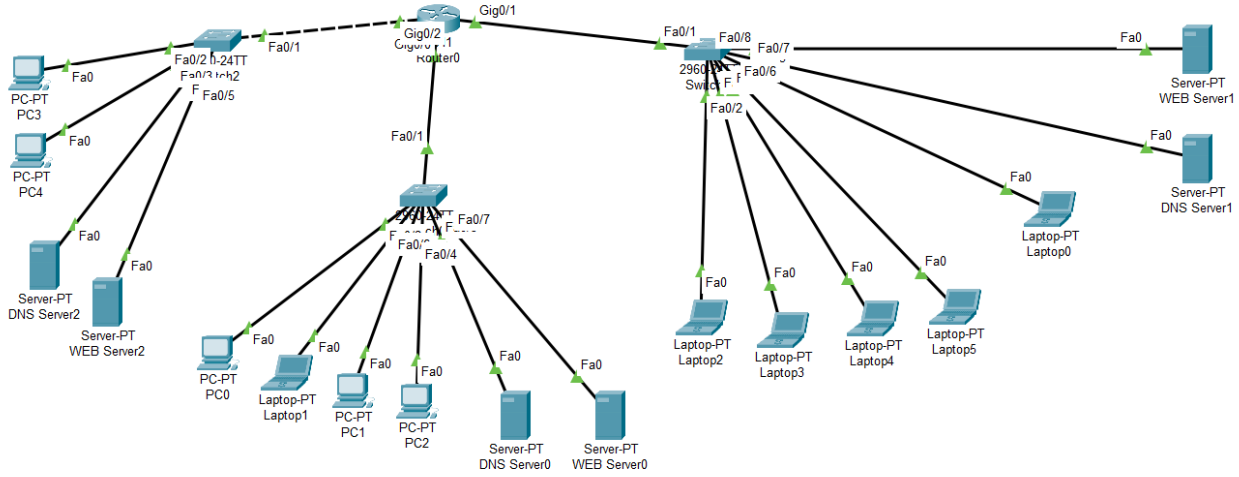
DHCP



Configuration:

Router>en

Router#config t

Switch 0:

Router(config)#ip dhcp excluded-address 192.168.1.1 192.168.1.10

Router(config-if)#ip dhcp pool DHCP_Switch0

Router(dhcp-config)#network 192.168.1.0 255.255.255.192

Router(dhcp-config)#default-router 192.168.1.1

Router(dhcp-config)#dns-server 192.168.1.62

Router(dhcp-config)#int gig0/0

Router(config-if)#ip address 192.168.1.1 255.255.255.192

Router(config-if)#no shut

Switch1:

Router(config)#ip dhcp pool DHCP_Switch1

Router(dhcp-config)#network 192.168.1.64 255.255.255.192

Router(dhcp-config)#default-router 192.168.1.65

Router(dhcp-config)#dns-server 192.168.1.125

Router(dhcp-config)#int gig0/1

Router(config-if)#ip address 192.168.1.65 255.255.255.192

Router(config-if)#no shut

Switch 2:

Router(config)#ip dhcp pool DHCP_Switch3

Router(dhcp-config)#network 192.168.1.128 255.255.255.192

Router(dhcp-config)#default-router 192.168.1.129

Router(dhcp-config)#dns-server 192.168.1.189

Router(dhcp-config)#int gig0/2

Router(config-if)#ip address 192.168.1.129 255.255.255.192

Router(config-if)#no shut

#Switch1

#with DNS Server

config: 192.168.1.125

ip_config static:

IP Address: 192.168.1.125

Subnet MaeskL: 255.255.255.0

Default Geteway: 192.168.1.65

DNS Server: 192.168.1.125

service -> DNS -> Address : 192.168.1.124

service -> DNS -> Name : http://www.ohab.com

WEB Server:

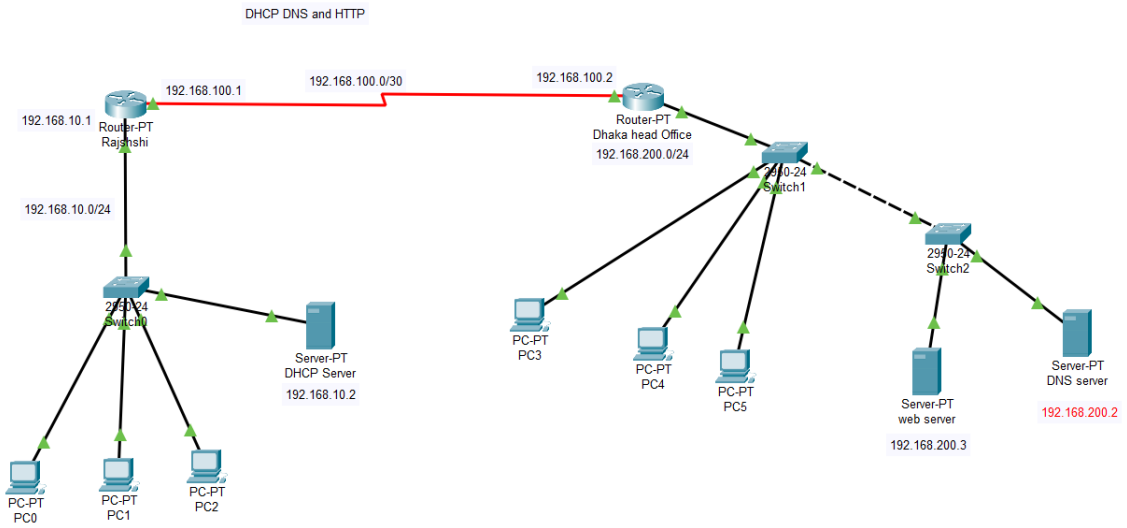
IP Address: 192.168.1.124

Subnet MaeskL: 255.255.255.0

Default Geteway: 192.168.1.65

DNS Server: 192.168.1.125

DHCP and HTTP Server



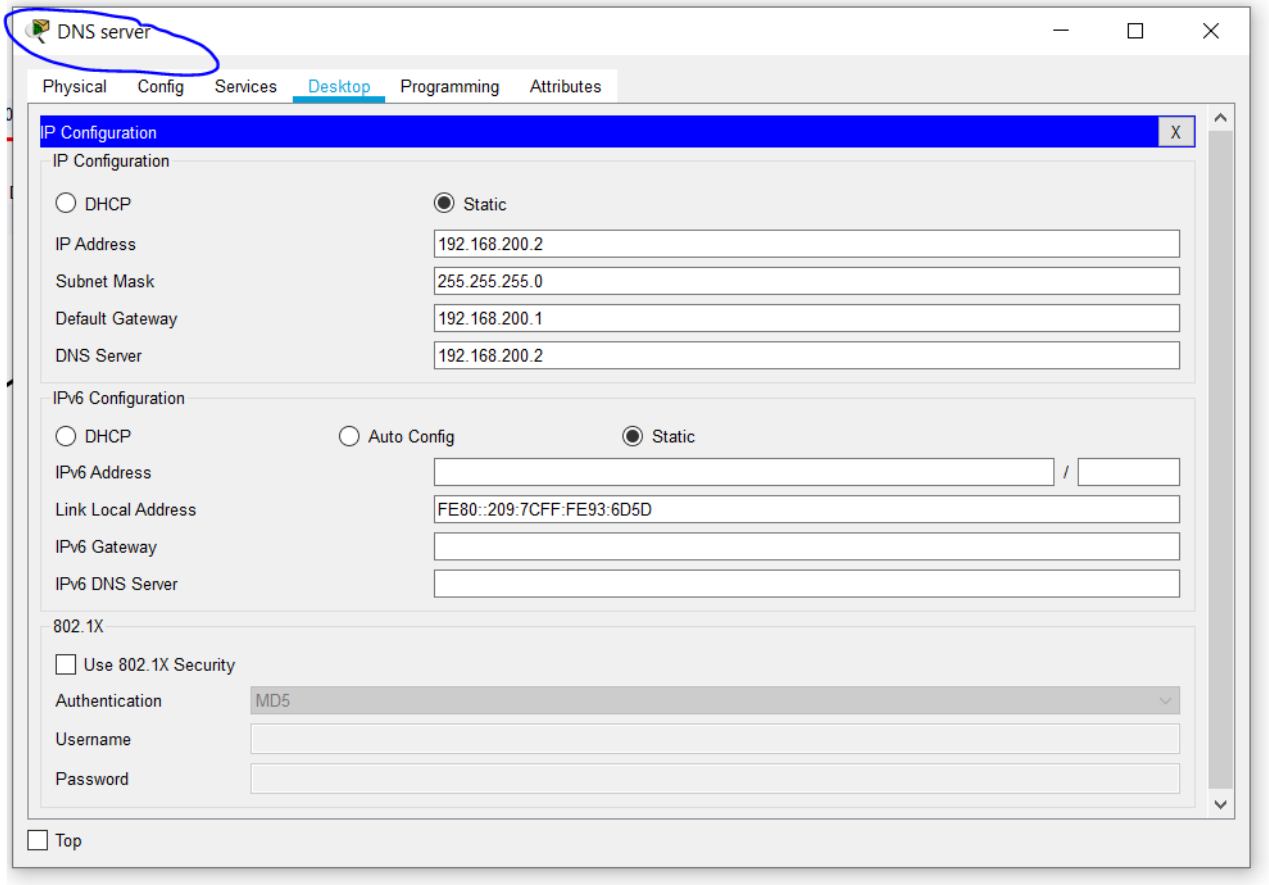

```
Router>en
Router#config t
Router(config)#hostname RAJSHAHI
RAJSHAHI(config)#int fa0/0
RAJSHAHI(config-if)#ip add 192.168.10.1 255.255.255.0
RAJSHAHI(config-if)#no shut

RAJSHAHI(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

RAJSHAHI(config-if)#int s2/0
RAJSHAHI(config-if)#ip add 192.168.100.1 255.255.255.252
RAJSHAHI(config-if)#clock rate 64000
RAJSHAHI(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
RAJSHAHI(config-if)#no shut
```

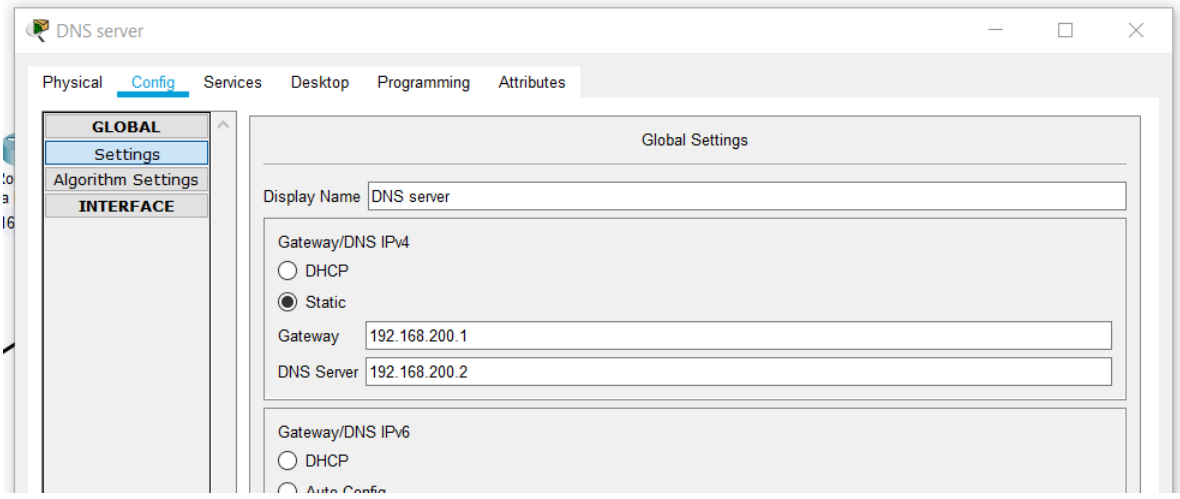
Routing Dhaka head office:

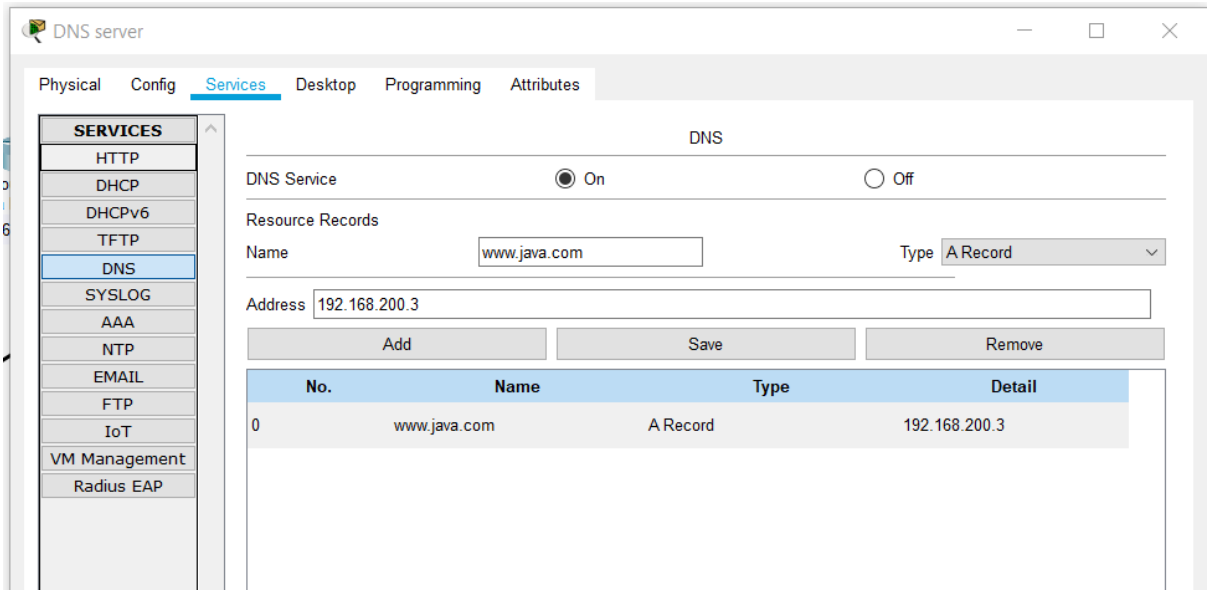
```
Router>en
Router#config t
Router(config)#hostname DHAKA
DHAKA (config)#int fa0/0
DHAKA (config-if)#ip add 192.168.200.1 255.255.255.0
DHAKA (config-if)#no shut

DHAKA (config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

DHAKA (config-if)#int s2/0
DHAKA (config-if)#ip add 192.168.100.2 255.255.255.252
DHAKA (config-if)#clock rate 64000
DHAKA (config-if)#no shut
```

```
19.
20. %LINK-5-CHANGED: Interface Serial2/0, changed state to down
21. DHAKA (config-if)#no shut
```

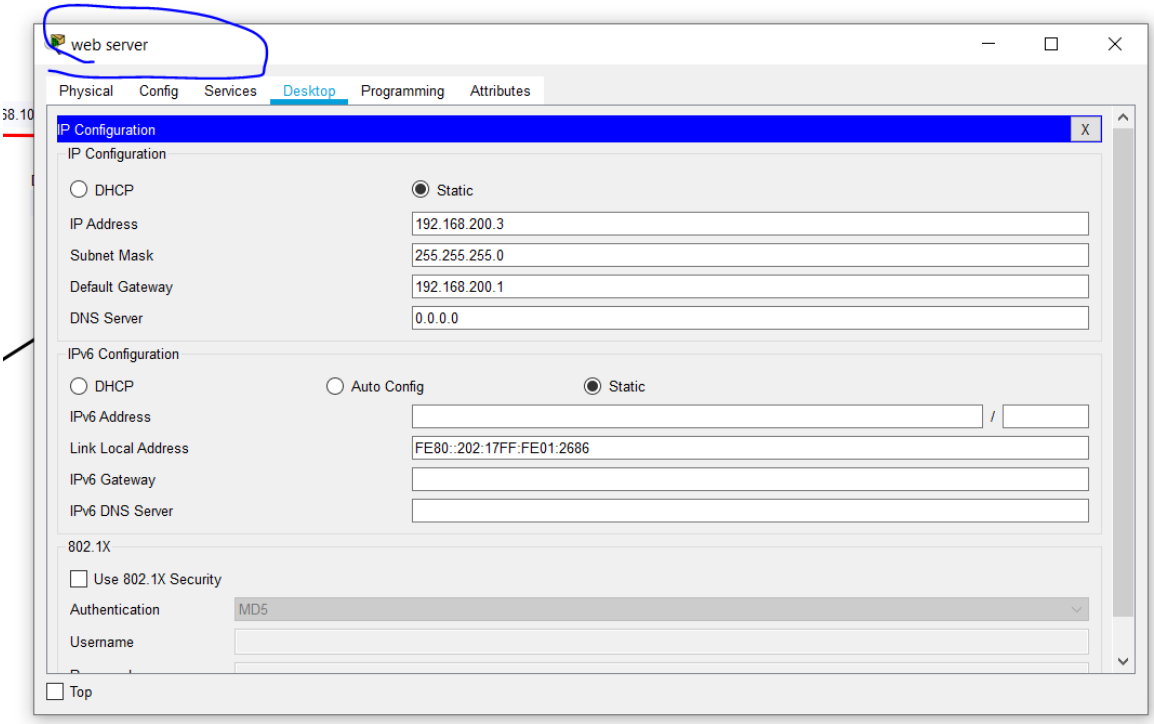
DNS and WEB Server



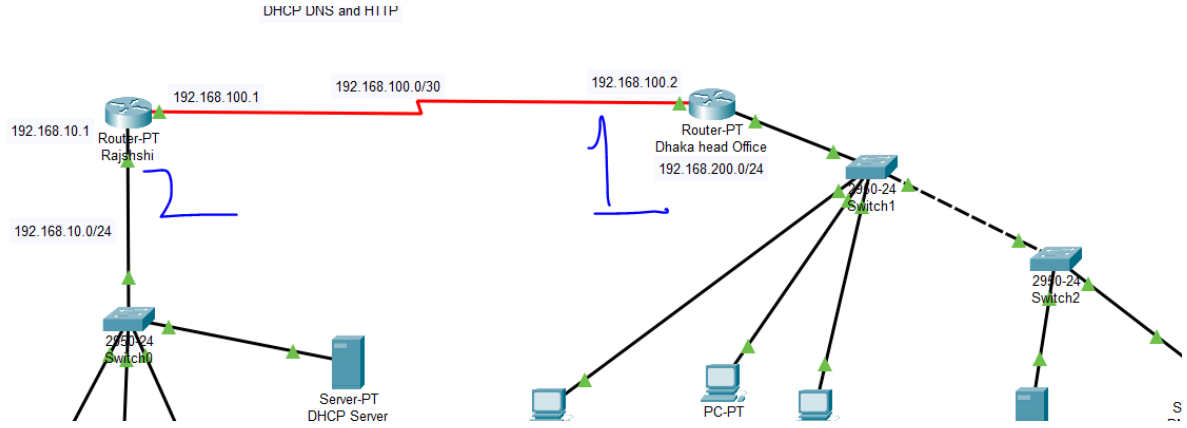



DNS server
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
www.java.com
Type
A Record
Address
192.168.200.3
Add
Save
Remove
No.
Name
Type
Detail
0
www.java.com
A Record
192.168.200.3

Web server:


web server
Physical
Config
Services
Desktop
Programming
Attributes
IP Configuration
X
IP Configuration
DHCP
Static
IP Address
192.168.200.3
Subnet Mask
255.255.255.0
Default Gateway
192.168.200.1
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::202:17FF:FE01:2686
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Top

Static routing:



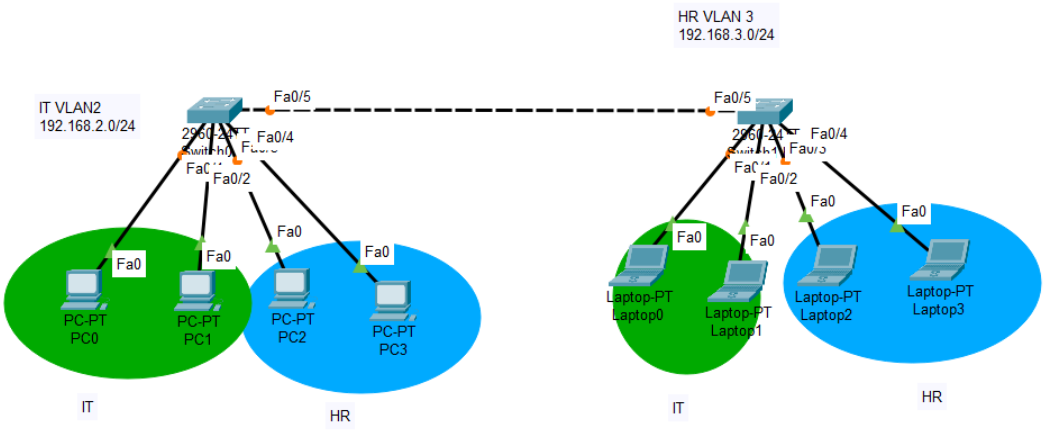
1:

```
DHAKA>
DHAKA>en
DHAKA#config t
Enter configuration commands, one per line. End with CNTL/Z.
DHAKA(config)#ip route 192.168.10.0 255.255.255.0 192.168.100.1
DHAKA(config)#^Z
DHAKA#
%SYS-5-CONFIG_I: Configured from console by console
show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

S 192.168.10.0/24 [1/0] via 192.168.100.1
192.168.100.0/30 is subnetted, 1 subnets
C 192.168.100.0 is directly connected, Serial2/0
C 192.168.200.0/24 is directly connected, FastEthernet0/0

DHAKA#
```

2:

```
RAJSHAHI>en
RAJSHAHI#config t
Enter configuration commands, one per line. End with CNTL/Z.
RAJSHAHI(config)#ip route 192.168.200.0 255.255.255.0 192.168.100.2
RAJSHAHI#sh ip route
C 192.168.10.0/24 is directly connected, FastEthernet0/0
192.168.100.0/30 is subnetted, 1 subnets
C 192.168.100.0 is directly connected, Serial2/0
S 192.168.200.0/24 [1/0] via 192.168.100.2

RAJSHAHI#
```

VLAN



Vlan For It departmanet:

Switch>en

Switch#

Switch#sh vlan brief

VLAN Name Status Ports

---- -------------------------------- --------- -------------------------------

1 default active Fa0/1, Fa0/2, Fa0/3, Fa0/4

Fa0/5, Fa0/6, Fa0/7, Fa0/8

Fa0/9, Fa0/10, Fa0/11, Fa0/12

Fa0/13, Fa0/14, Fa0/15, Fa0/16

Fa0/17, Fa0/18, Fa0/19, Fa0/20

Fa0/21, Fa0/22, Fa0/23, Fa0/24

Gig0/1, Gig0/2

1002 fddi-default active

1003 token-ring-default active

1004 fddinet-default active

1005 trnet-default active

```
Switch#config t


Switch(config)#vlan 2
Switch(config-vlan)#name IT

Switch(config-vlan)#vlan 3
Switch(config-vlan)#name HR
Switch#sh vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
2    it                                active
3    HR                                active

Switch(config)#int range fa0/1-2
Switch(config-if-range)#switchport access vlan 2
Switch(config)#int range fa0/3-4
Switch(config-if-range)#switchport access vlan 3
Switch#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
```

1 default active Fa0/5, Fa0/6, Fa0/7, Fa0/8
Fa0/9, Fa0/10, Fa0/11, Fa0/12
Fa0/13, Fa0/14, Fa0/15, Fa0/16
Fa0/17, Fa0/18, Fa0/19, Fa0/20
Fa0/21, Fa0/22, Fa0/23, Fa0/24
Gig0/1, Gig0/2
2 it active Fa0/1, Fa0/2
3 HR active Fa0/3, Fa0/4

**Administrative Mode: dynamic mode to turn into static access

Switch#config t

Switch(config)#int range fa 0/1-4

Switch(config-if-range)#switchport mode access

Switch#show interfaces switchport

Name: Fa0/1

Switchport: Enabled

Administrative Mode: static access**

Operational Mode: static access

**this stablish a Trunk ...

** inter switch connection with trank mode

Switch(config)#int fa 0/5

Switch(config-if)#switchport mode trunk

Switch#sh interfaces trunk

Port Mode Encapsulation Status Native vlan

Fa0/5 **on **802.1q trunking 1

**this another switch trunk mode on automaticly . . .

*** switch 2

==========

Switch>en

Switch(config)#vlan 2

Switch(config-vlan)#name IT

Switch(config-vlan)#vlan 3

Switch(config-vlan)#name HR

Switch(config-vlan)#int range fa0/1-2

Switch(config-if-range)#switchport access vlan 2

Switch(config-if-range)#int range fa0/3-4

Switch(config-if-range)#switchport access vlan 3

Switch(config-if-range)#^Z

Switch#sh vlan brief

VLAN Name Status Ports

---- -------------------------------- --------- -------------------------------

1 default active Fa0/6, Fa0/7, Fa0/8, Fa0/9

Fa0/10, Fa0/11, Fa0/12, Fa0/13

Fa0/14, Fa0/15, Fa0/16, Fa0/17

Fa0/18, Fa0/19, Fa0/20, Fa0/21

Fa0/22, Fa0/23, Fa0/24, Gig0/1

Gig0/2

2 IT active Fa0/1, Fa0/2

3 HR active Fa0/3, Fa0/4

Switch(config)#int range fa 0/1-4

Switch(config-if-range)#switchport mode access

Switch#show interfaces switchport

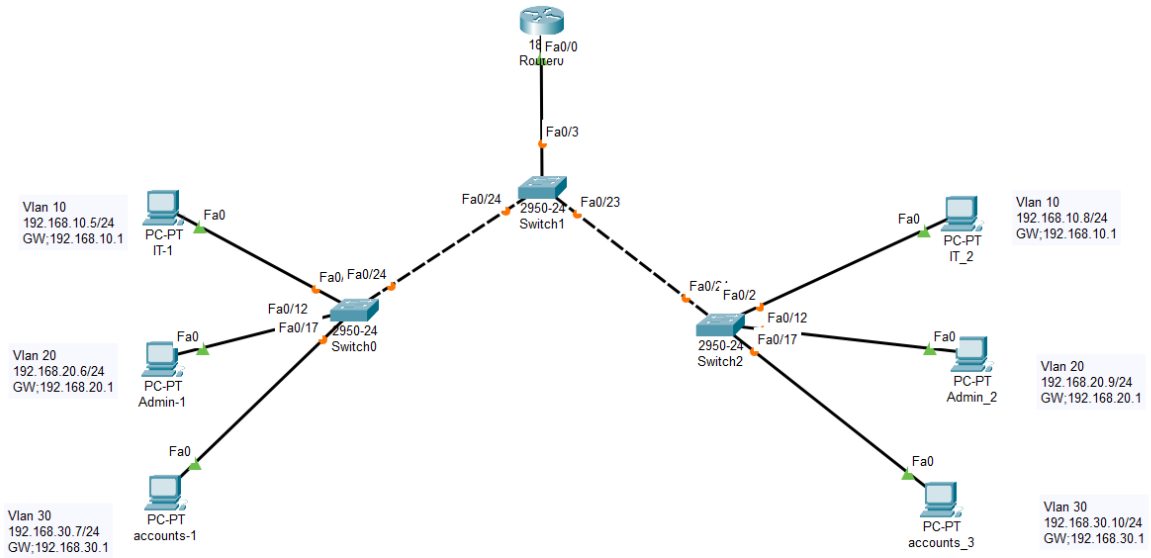
Name: Fa0/1

Switchport: Enabled

Administrative Mode: static access**

Operational Mode: static access

Inter-Vlan



Create 3 vlan in every switch:

Switch0

Switch>en

Switch#config t

```
Switch(config)#vlan 10
Switch(config-vlan)#name IT
Switch(config)#vlan 20
Switch(config-vlan)#name ADMIN
Switch(config)#vlan 30
Switch(config-vlan)#name ACCOUNTS
Switch(config)#do wr
Building configuration...
[OK]
Switch#sh vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
10   IT                                active
20   ADMIN                             active
30   ACCOUNTS                          active
1002 fddi-default                      active

Switch(config)#int range fa0/1-10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#no shut

Switch(config)#int range fa0/11-15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#no shut
```

```
Switch(config-if-range)#int range fa0/16-20
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#no shut
Switch#sh vlan brief
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/21, Fa0/22, Fa0/23, Fa0/24
10   IT                                active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10
20   ADMIN                             active    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                 Fa0/15
30   ACCOUNTS                          active    Fa0/16, Fa0/17, Fa0/18, Fa0/19
                                                 Fa0/20
1002 fddi-default                      active
1003 token-ring-default                active
Switch(config)#do wr
Building configuration...
[OK]
**Connect to another switch
Switch#sh interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/24      **auto       n-802.1q       trunking      1
Switch(config)#int fa 0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#no shut
Switch(config-if)#exit
Switch#sh interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
```

```
Fa0/24     **on          802.1q        trunking      1

*Switch 2
Switch>en
Switch#config t
Switch(config)#vlan 10
Switch(config-vlan)#name IT

Switch(config)#vlan 20
Switch(config-vlan)#name ADMIN

Switch(config)#vlan 30
Switch(config-vlan)#name ACCOUNTS

Switch(config)#do wr
Building configuration...
[OK]
Switch(config)#int range fa0/1-10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#no shut
Switch(config-if-range)#exit
Switch(config)#int range fa0/11-15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#no shut
Switch(config-if-range)#exit
Switch(config)#int range fa0/16-20
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
```

```
Switch(config-if-range)#no shut
Switch(config-if-range)#exit

Switch#sh vlan brief
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/21, Fa0/22, Fa0/23, Fa0/24
10   IT                                active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10
20   ADMIN                             active    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                 Fa0/15
30   ACCOUNTS                          active    Fa0/16, Fa0/17, Fa0/18, Fa0/19
                                                 Fa0/20

Switch#sh interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/24      **auto       n-802.1q       trunking      1

Switch(config)#int fa 0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#do wr
Building configuration...
[OK]

Switch#sh interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/24      **on         802.1q         trunking      1
```

*Switch 1

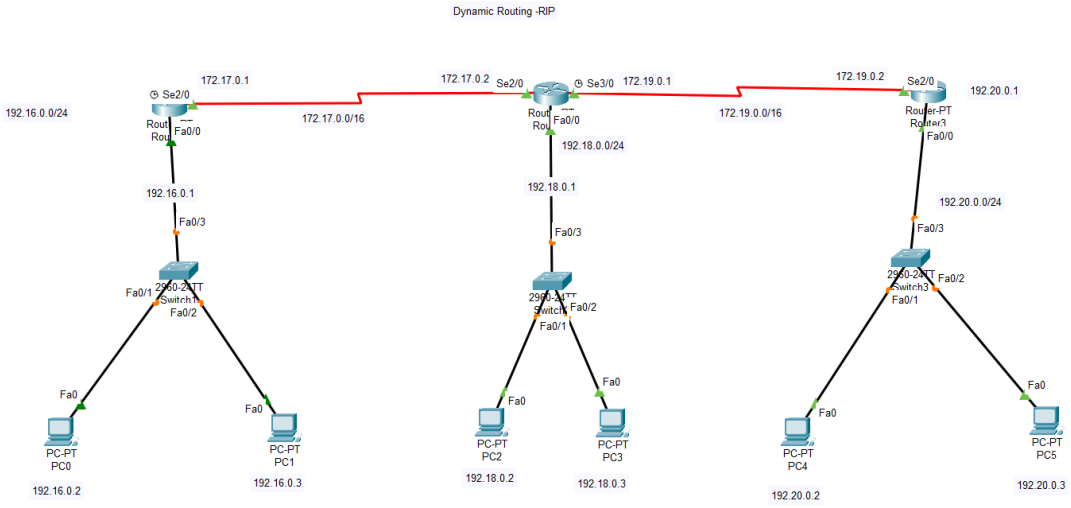
```
Switch(config)#vlan 10
Switch(config-vlan)#name IT
Switch(config)#vlan 20
Switch(config-vlan)#name ADMIN
Switch(config)#vlan 30
Switch(config-vlan)#name ACCOUNTS
Switch#sh vlan brief
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
10   IT                                active
20   ADMIN                             active
30   ACCOUNTS                          active
Switch(config)#int fa 0/24
Switch(config-if)#switchport mode trunk
Switch(config)#int fa0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#int fa 0/23
Switch(config-if)#switchport mode trunk
```

**Router 0

```
Router>en
Router#config t
Router(config)#int fa 0/0
Router(config-if)#no shut
```

```
Router(config-if)#exit
Router(config)#interface fa0/0.10
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip add 192.168.10.1 255.255.255.0
Router(config-subif)#exit
Router(config)#interface fa0/0.20
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip add 192.168.20.1 255.255.255.0
Router(config-subif)#exit
Router(config)#interface fa0/0.30
Router(config-subif)#encapsulation dot1Q 30
Router(config-subif)#ip add 192.168.30.1 255.255.255.0
Router(config-subif)#no shut
Router(config-subif)#exit
Router#show running-config
interface FastEthernet0/0.10
 encapsulation dot1Q 10
 ip address 192.168.100.1 255.255.255.0
!
interface FastEthernet0/0.20
 encapsulation dot1Q 20
 ip address 192.168.20.1 255.255.255.0
!
interface FastEthernet0/0.30
 encapsulation dot1Q 30
 ip address 192.168.30.1 255.255.255.0
```

RIP



//first router R0

IP: 192.16.0.1

configure DHCP address

Router(config)#ip dhcp pool SEU1

Router(dhcp-config)# network 192.16.0.1 255.255.255.0

Router(dhcp-config)# default-router 192.16.0.1 //gW

Router(config-if)#int fa 0/0

Router(config-if)#ip add 192.16.0.1 255.255.255.0

Router(config-if)#no shut

Router(config-if)#exit

#interface Serial2/0

ip address 172.17.0.1 255.255.0.0

R-1(config)#router rip

R-1(config-router)#network 192.16.0.0

R-1(config-router)#network 172.17.0.0

//R2

Router(config)#ip dhcp pool SEU1

Router(dhcp-config)# network 192.18.0.1 255.255.255.0

Router(dhcp-config)# default-router 192.18.0.1 //gW

Router(config-if)#int fa 0/0

Router(config-if)#ip add 192.18.0.1 255.255.255.0

Router(config-if)#no shut

Router(config-if)#exit

#interface Serial2/0

ip address 172.17.0.1 255.255.0.0

#interface Serial2/0

ip address 172.17.0.2 255.255.0.0

router rip

network 172.17.0.0

network 172.18.0.0

network 192.19.0.0

//R3

Router(config)#ip dhcp pool SEU1

Router(dhcp-config)# network 192.20.0.1 255.255.255.0

Router(dhcp-config)# default-router 192.20.0.1 //gW

Router(config-if)#int fa 0/0

Router(config-if)#ip add 192.20.0.1 255.255.255.0

Router(config-if)#no shut

Router(config-if)#exit

#interface Serial2/0

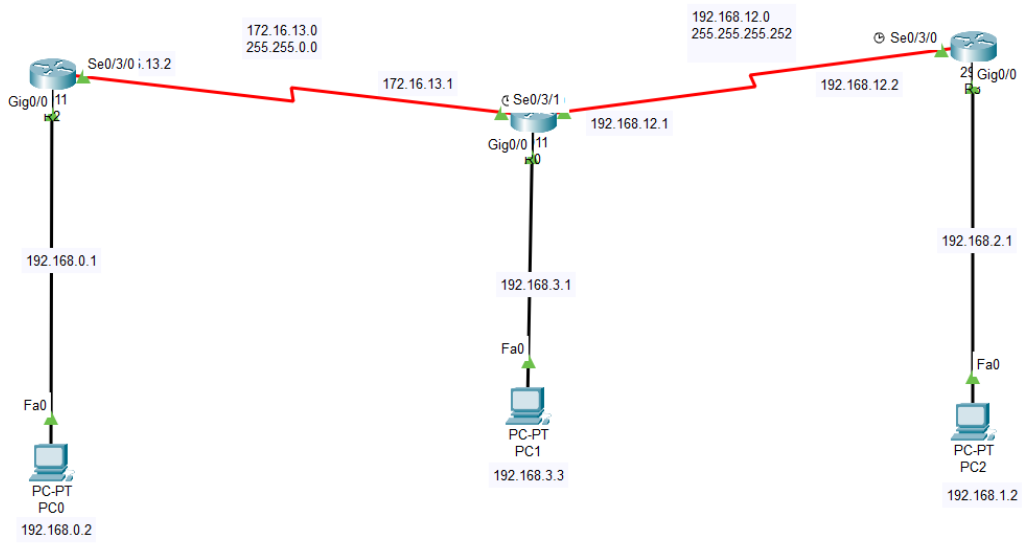
ip address 172.19.0.2 255.255.0.0

R3(config)#router rip

R3(config-router)#network 172.19.0.0

R3(config-router)#network 192.20.0.0

OSPF



R0 - area 0

router ospf 10

network 172.16.13.0 0.0.0.255 area 0

network 192.168.12.0 0.0.0.3 area 0

network 192.168.3.0 0.0.0.255 area 0

R2 - area 2

router ospf 10

network 172.16.13.0 0.0.0.255 area 0

network 192.168.0.0 0.0.0.255 area 2

R3 - area 3

router ospf 10

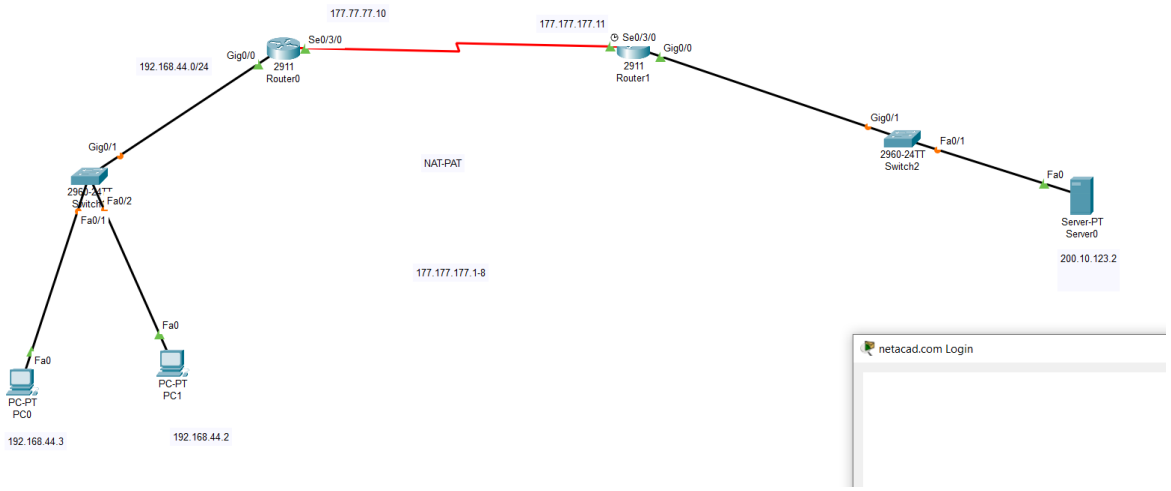
network 192.168.12.0 0.0.0.3 area 0

network 192.168.1.0 0.0.0.255 area 3

ping:

tracert 192.168.3.3

NAT/PAT



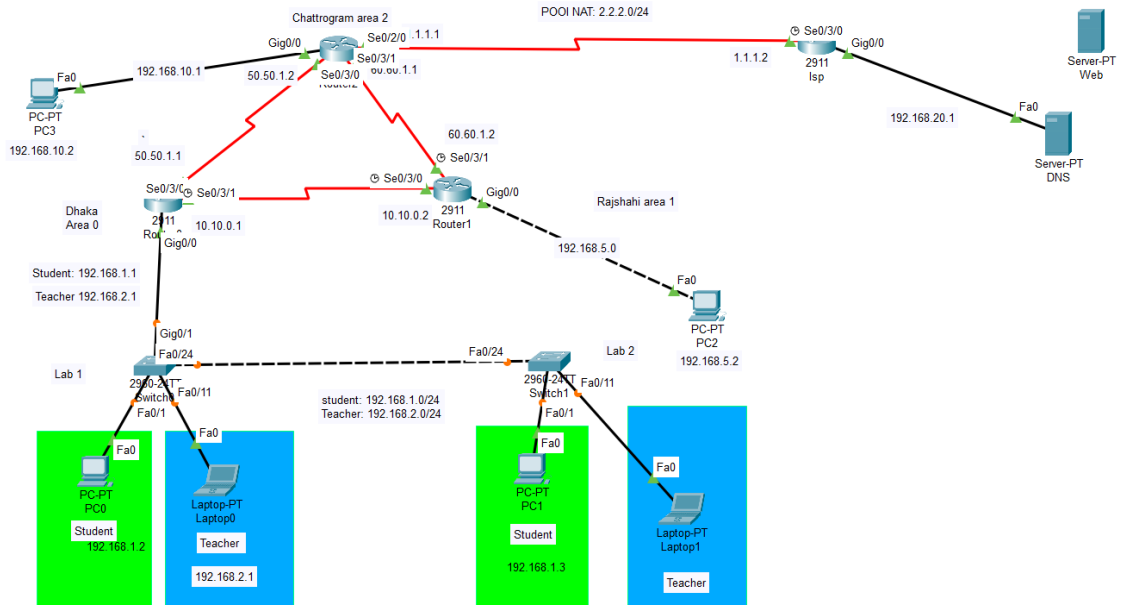
server router

Router(config)#ip route 192.168.44.0 255.255.255.0 177.77.77.10

R0:

```
R1(config)#ip route 0.0.0.0 0.0.0.0 177.77.77.11

R1(config)#access-list 1 permit 192.168.44.0 0.0.0.255

R1(config)#ip nat pool NAT-POOL 177.77.77.1 177.77.77.7 netmask 255.255.255.0

R1(config)#ip nat inside source list 1 pool NAT-POOL overload

R1(config)#int gig0/0
R1(config-if)#ip nat inside

R1(config-if)#int se0/3/0
R1(config-if)#ip nat outside
```

Final Assignment



1

DHCP IP:192.168.0.0/24

R1:

---------- not working DHCP

ip dhcp excluded-address 192.168.50.254

ip dhcp pool SEU_DHCP

network 192.168.50.0 255.255.255.0

default-router 192.168.50.1

dns-server 192.168.50.254

int gig0/0

ip add 192.168.50.1 255.255.255.0

no shut

---

sh running-config

vlan:

Switch 1 and Switch 2 in R1

==========

vlan 2

name STUDENT

vlan 3

name TEACHER

int range fa0/1-9

switchport access vlan 2

switchport mode access

int range fa0/10-20

switchport access vlan 3

switchport mode access

*this stablish a Trunk ...

int fa 0/24

switchport mode trunk

**only switch 2

int gig 0/1

switchport mode trunk

show vlan brief

sh interfaces trunk

inter-vlan:

==========

**R1 Router for config

interface gig0/0.2

encapsulation dot1Q 2

ip add 192.168.1.1 255.255.255.0

**Student

ip dhcp pool Arif

network 192.168.1.0 255.255.255.0

default-router 192.168.1.1

dns-server 8.8.8.8

exit

interface gig0/0.3

encapsulation dot1Q 3

ip add 192.168.2.1 255.255.255.0

**teacher

ip dhcp pool Mesba

network 192.168.2.0 255.255.255.0

default-router 192.168.2.1

dns-server 8.8.8.8

exit

ospf

**do sh ip protocols

R0 - area 0

router ospf 10

network 192.168.1.0 0.0.0.255 area 0

network 192.168.2.0 0.0.0.255 area 0

network 10.10.0.0 0.0.0.15 area 0

network 50.50.1.0 0.0.0.255 area 0

R1 - area 1

network 10.10.0.0 0.0.0.15 area 0

network 192.168.5.0 0.0.0.255 area 1

network 60.60.1.0 0.0.0.255 area 2

Nat - area 2

network 192.168.10.0 0.0.0.255 area 2

network 50.50.1.0 0.0.0.255 area 0

network 60.60.1.0 0.0.0.255 area 2

ping:

tracert 192.168.5.2

NAT/PAT

ip route 0.0.0.0 0.0.0.0 1.1.1.2

access-list 1 permit 50.50.0.0 0.0.0.255

access-list 1 permit 192.168.10.0 0.0.0.255

access-list 1 permit 60.60.1.0 0.0.0.255

ip nat pool NAT-POOL 2.2.2.1 2.2.2.5 netmask 255.255.255.0

ip nat inside source list 1 pool NAT-POOL ? // this is pat

  overload Overload an address translation

ip nat inside source list 1 pool NAT-POOL overload

int se0/2/0

ip nat outside

int se0/3/1

ip nat inside

ip route 192.168.20.0 255.255.255.0 1.1.1.2

router 1 which connect server:

ip route 50.50.1.0 255.255.255.0 1.1.1.1

ip route 192.168.10.0 255.255.255.0 1.1.1.1

ip route 60.60.1.0 255.255.255.0 1.1.1.1

==========

```
<!DOCTYPE html>
<html>

<head>
  <title>My</title>
</head>

<body>

  <h2>Md Abdul Wahab Sarker</h2>
```

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</body>
</html>
================================ R2

interface GigabitEthernet0/0
ip address 192.168.10.1 255.255.255.0
no shutdown

interface Serial0/3/0
ip address 50.50.1.2 255.255.255.0
no shutdown

interface Serial0/3/1
ip address 60.60.1.1 255.255.255.0
no shutdown

router ospf 10
network 192.168.10.0 0.0.0.255 area 2
network 50.50.1.0 0.0.0.255 area 0
network 60.60.1.0 0.0.0.255 area 2
ex

interface Serial0/2/0
ip address 1.1.1.1 255.255.255.0

no shutdown

================================ R3

interface Serial0/3/0

ip address 1.1.1.2 255.255.255.0

no shutdown