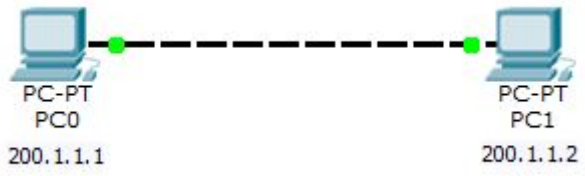
Lab 1 - IP Addressing

Question 1A



Add Network Devices

1. Add two PCs (under **`End Devices`**).
2. Add a **`Copper Cross-Over`** connection (under **`Connections`**). Click **`FastEthernet0`**. A green dot indicates successful connection.

- To make life easier, you can use **`Automatically Choose Connection Type`** (under **`Connections`**), which automatically chooses the correct connection.

Set IP Address of a PC

1. Click on a PC.
2. Go to **`Desktop`** tab.
3. Choose **`IP Configuration`**. Type in the **`IP Address`** field. Click on **`Subnet Mask`**, the default value is **`255.255.255.0`**.

- Since both PCs connect to the same network, ensure they have the same *network number* (the first three numbers) and different *host identifier* (the fourth number).

Alternatively,

1. Click on a PC.
2. Go to **`Config`** tab.
3. Choose **`FastEthernet0`** (under **`INTERFACE`**). Type in the **`IP Address`** field. Click on **`Subnet Mask`**.

Do it for both PCs.

Ping one PC from another PC

1. Click on a PC.
2. Go to **`Desktop`** tab.
3. Choose **`Command Prompt`**, type **`ping X.X.X.X`** (replace it with an IP address).

- A successful ping will show something like **`Reply from 200.1.1.2: bytes=32 time=1ms TTL=128`**; otherwise it will show **`Request timed out`**.

Alternatively,

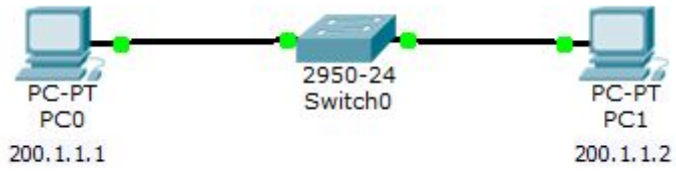
1. Use **`Add Simple PDU (P)`** on the right side. Click on a PC to ping from, and another PC to ping to. The status will be shown on the right bottom side, either **`Successful`** or **`Failed`**.

Note: A PC can also ping itself.

Misc

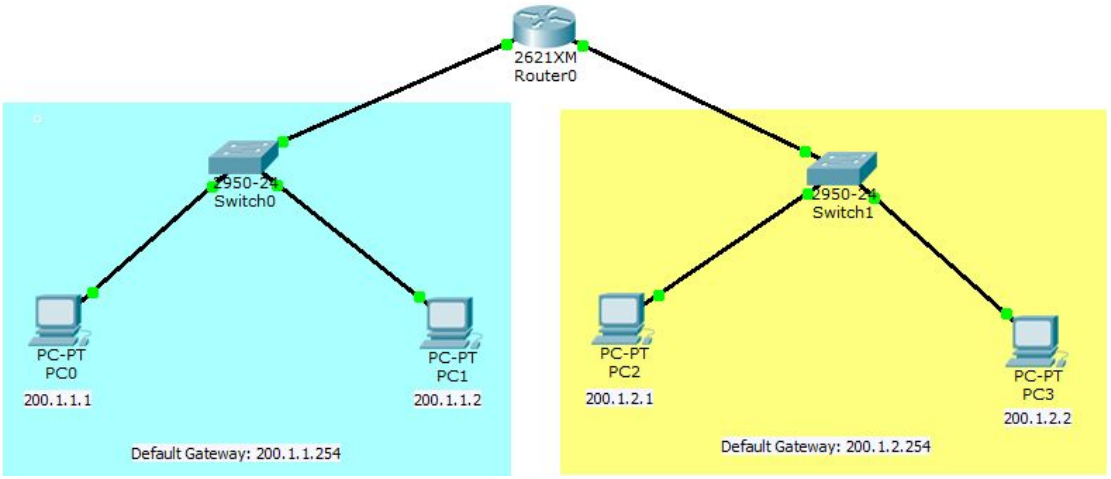
- The PC will take some time to connect to network, click **`Fast Forward Time`** at the bottom to speed up the process.
- In the **`Command Prompt`**, click **`CTRL + C`** to abort command.
- The IP address in the picture is done using **`Place Note`** on the right side.

Question 1B



Add two PCs and a switch (under **`Switches`**). Add a **`Copper Straight-Through`** connection between them.
Set IP address for both PCs.
Ping.

Question 1C



1. Add multiple PCs, switches and a **2621XM** router (under **Routers**). Connect the devices.
2. Set IP address for the PCs. Have different network number for different networks (represented as colour blocks).

Set Default Gateway of a PC

1. Click on a PC.
2. Go to **Desktop** tab.
3. Choose **IP Configuration**. Type an IP address in the **Default Gateway** field.

- Same network number but different host identifier.
- The number cannot be the IP address of the PCs.

Alternatively,

1. Click on a PC.
2. Go to **Config** tab.
3. Choose **GLOBAL** or **Settings** (under **GLOBAL**). Type in the **Gateway** field.

Do it for both networks.

Turn on Port and Set Default Gateway of a Router

1. Click on a router.
2. Go to **Config** tab.
3. Choose **FastEthernet0/0** (under **INTERFACE**).
4. Click **ON** for **Port Status**.
5. Type the same gateway of the PCs in the **IP Address** field. Click on **Subnet Mask**.

Do it for both networks; repeat the steps for **FastEthernet0/1** with gateway from second network.
Ping.

Misc

1. The colour block in the picture is done using **`Draw Rectangle`**.

Question 2 - Wireless Connection

Add two PCs and an access point (under **`Wireless Devices`**).

Change NIC card to Wireless NIC card

1. Click on a PC.
2. Go to **`Physical`** tab.
3. Turn off the PC by clicking the red button. The yellow bar above will become black.

4. Drag the NIC card (inside the red rectangle) to the module list at the left hand side.

5. Drag the wireless NIC card (at the right hand side bottom) to the empty slot (which previously have the NIC card).

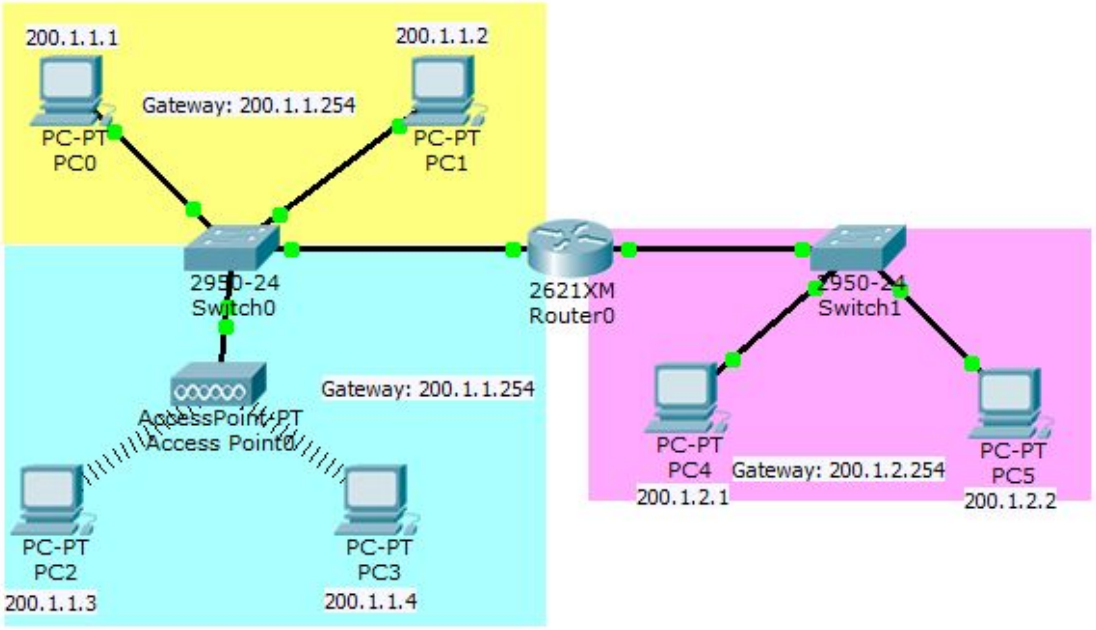
6. Power on the PC by clicking the red button.

Set IP Address of a PC

1. Click **`Static`** at **`IP Configuration`**.
2. Do the same steps as before.

Do it for both PCs.
Ping.

Question 3 - Challenge Lab



Note that yellow block and blue block belong to the same network since they connect to the same router port. So there are only two networks.

Yellow Block

1. Set IP address and default gateway of the PCs.

- Refer to Question 1A and Question 1C.

Blue Block

1. For both PCs, change the NIC card to wireless NIC card and then set IP address and default gateway. Make sure they have the same network number and gateway as yellow block.

- Refer to Question 2.

2. Since PCs in yellow block and blue block are connected to a router, turn on port and set default gateway of the router.

- Refer to Question 1C.

Purple Block

1. Set IP address and default gateway of the PCs. Make sure they have different network number and gateway than yellow/blue block.
2. Turn on port and set default gateway of the router.

Ping.

Lab 3 - IP Routing (1)

Access Cisco IOS

1. Add a router. Click the router and access the **CLI** tab.
2. Follow along by typing those in bold.
3. `Continue with configuration dialog? [yes/no]: **n**`

Question 3 to Question 6

1. You are in user exec mode.
2. Enter privileged exec mode: `Router> **enable**`

Question 3

1. Show current configuration: `Router# **show running-config**`
2. A bunch of info will come out. Press **[ENTER]** to read a line or **[SPACE]** to read multiple lines.

? Command

1. Type **?** to see a list of available commands or options.
2. Try: `Router# **show ?**`
3. `Router# **show run?**`

[TAB]

1. Press **[TAB]** to complete a partial command.
2. Try: `Router# **show run**` and press **[TAB]**

Question 4

Show startup configuration: `Router# **show startup-config**`

Question 5

Show list of interfaces in router: `Router# **show interfaces**`

Question 6

1. Save configuration. `Router# **copy running-config startup-config**`
2. `Destination filename [startup-config]?` Press **[ENTER]** to accept default file name.
3. Note: you can only save configuration in privileged exec mode.
4. Erase configuration *Info only*: `Router# **erase running-config**`

Abbreviate command

1. The router accepts unique abbreviated form of commands.
2. Try: `Router# **copy run start**`

Question 7 to Question 11

Enter global configuration mode: `Router# **configure terminal**`

Question 7

Change router name: `Router(config)# **hostname LABA**`

Back to previous mode

1. In any mode, use **exit** to back to previous mode.
2. Back to privileged mode: `LABA(config)# **exit**`

Host to IP address translation message

```
LABA#test
Translating "test"...domain server (255.255.255.255)
```

When you type an unrecognized command in user or privileged mode, the router thinks this is a hostname, thus it tries to resolve it into an IP address using IP domain lookup. It takes time to terminate. Try Q9 then Q8.

Question 8

In global mode, to forever disable translation: `LABA(config)# **no ip domain-lookup**`

Question 9

When translation is running, to manually terminate: **[SHIFT] + [CTRL] + [6]**

Question 10

1. Add login banner message: `LABA(config)# **banner login #Welcome to TSN2201 class#**`
2. Note: you cannot view login banner message, don't know why.
3. You can use any character as delimiter other than **#**.
4. *Optional* Try: `LABA(config)# **banner motd #Welcome to TSN2201 class#**` (**motd** refers to message of the day)
5. **exit** until user mode, you should be able to see the banner.

Question 11

1. Assign password to privileged mode:
    a. Password in plaintext: `LABA(config)# **enable password cisco**`
    b. Password in encrypted format: `LABA(config)# **enable secret cisco**`
2. You can view the password you store using **show running-config** in privileged mode.

Interface configuration

Use **Router-PT** (**Generic**) as it has **FastEthernet** and **Serial** interfaces.
You can check interface number using **show interfaces** in privileged mode.

Question 12

1. Enter interface configuration mode: `Router(config)# interface fastethernet 0/0`
2. Set description *Optional*: `Router(config)# description FastEthernet 0/0`
3. Set IP address and subnet mask: `Router(config-if)# ip address 200.1.1.254 255.255.255.0`
4. Turn interface on: `Router(config-if)# no shutdown`
5. Interfaces are off on startup by default.
6. *Optional: save configuration*
7. **exit** until exec mode
8. `Router# copy run start`

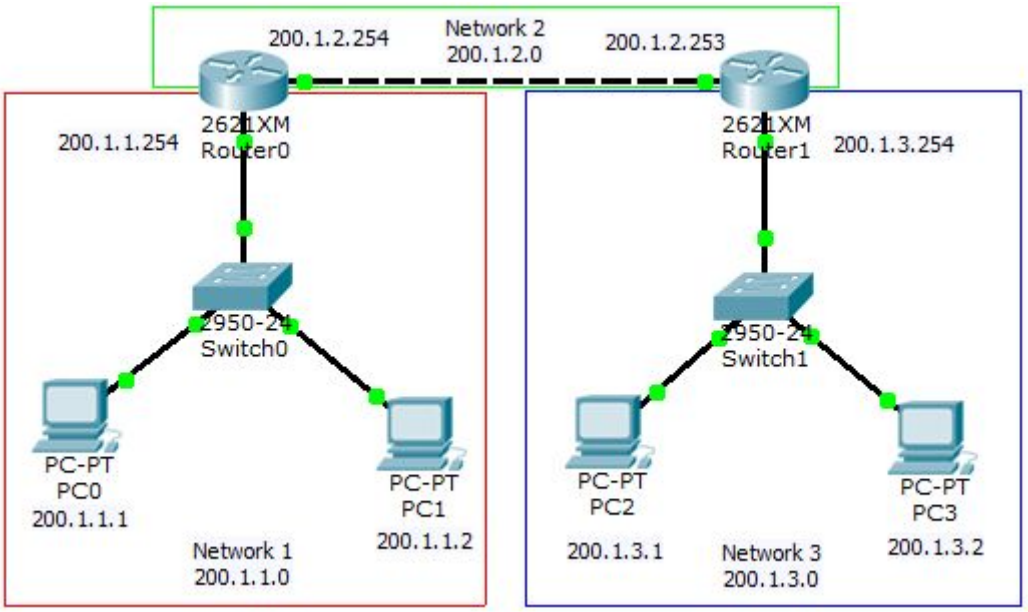
Question 13

1. `Router(config)# interface serial 2/0`
2. `Router(config-if)# description Serial 2/0`
3. `Router(config-if)# ip address 200.1.2.254 255.255.255.0`
4. Set clock rate: `Router(config-if)# clock rate 86000`
5. Set bandwidth: `Router(config-if)# bandwidth 64`
6. `Router(config-if)# no shutdown`
7. Optional: save configuration.

Question 14

1. `Router(config)# interface loopback 0`
2. `Router(config-if)# description Loopback 0`
3. `Router(config-if)# ip address 200.1.3.1 255.255.255.0`
4. `Router(config-if)# no shutdown`
5. Optional: save configuration.

Lab 4 - IP Routing (2)



Router0 is directly connected to network 1 and network 2, but not network 3. So PCs in network 1 cannot ping PCs in network 3.

Question A - Static Routing

View routing table (GUI method)

1. Use **inspect** tool on the right.
2. Click on a router.
3. Click **routing table**.
4. **C** means Connected.

View routing table (CLI method)

1. Click on a router.
2. Go to **CLI** tab.
3. `Router>` **enable** (Enter privileged mode)
4. `Router#` **show ip route**

Router0 (GUI method)

1. Click the router.
2. Go to **Config** tab.
3. Go to **Static** (under **Routing**).
4. **Network** – **200.1.3.0** (The network that router is not directly connected to.)
    a. **Mask** – **255.255.255.0**

    b. **Next Hop** – **200.1.2.253** (Next closest router for a packet to go to.)
5. Click **Add**.
6. *Info only* To remove, click a network address and click **Remove**.
7. There will be a network of type **S** (Static) when you view the **routing table**.

Router0 (CLI method)

1. `Router>` **enable**
2. `Router#` **config terminal** (Enter global mode)
3. `Router(config)#` **ip route 200.1.3.0 255.255.255.0 200.1.2.253** (<network> <mask> <next hop>)
4. *Info only* To remove, `Router(config)#` **no ip route 200.1.3.0 255.255.255.0 200.1.2.253**

Router1

1. **Network** – **200.1.1.0**
    a. **Mask** – **255.255.255.0**
    b. **Next Hop** – **200.1.2.254**

Now PCs in network 1 can ping PCs in network 3 and vice versa.

Question B - Default Routing

Remove your static routes before starting this one.

Router0 (GUI method)

1. Go to **Static**.
2. **Network** – **0.0.0.0** (Can match any address outside of local network.)
    a. **Mask** – **0.0.0.0**
    b. **Next Hop** – **200.1.2.253**

Router0 (CLI method)

1. `Router(config)#` **ip route 0.0.0.0 0.0.0.0 200.1.2.253**
2. Using `Router#` **show ip route**, there should be a network of type **S*** (Default).

Router1

1. **Network** – **0.0.0.0**
    a. **Mask** – **0.0.0.0**
    b. **Next Hop** – **200.1.2.254**

Now PCs in network 1 can ping PCs in network 3 and vice versa.

Question C - Dynamic Routing (RIP)

Remove your previous routes before starting this one.

Router0 (GUI method)

1. Go to **RIP** (under **Routing**).
2. **Network** – **200.1.1.0** (Network that router is connected to.)
3. Click **Add**.
4. Add **200.1.2.0**.
5. There will be a network of type **R** (RIP) when you view the **routing table**.

Router0 (CLI method)

1. In global mode, `Router(config)#` **`router rip`** (Enter router configuration mode)
2. `Router(config-router)#` **`network 200.1.1.0`**
3. *Info only* To remove, `Router(config-router)#` **`no network 200.1.1.0`**
4. `Router(config-router)#` **`network 200.1.2.0`**

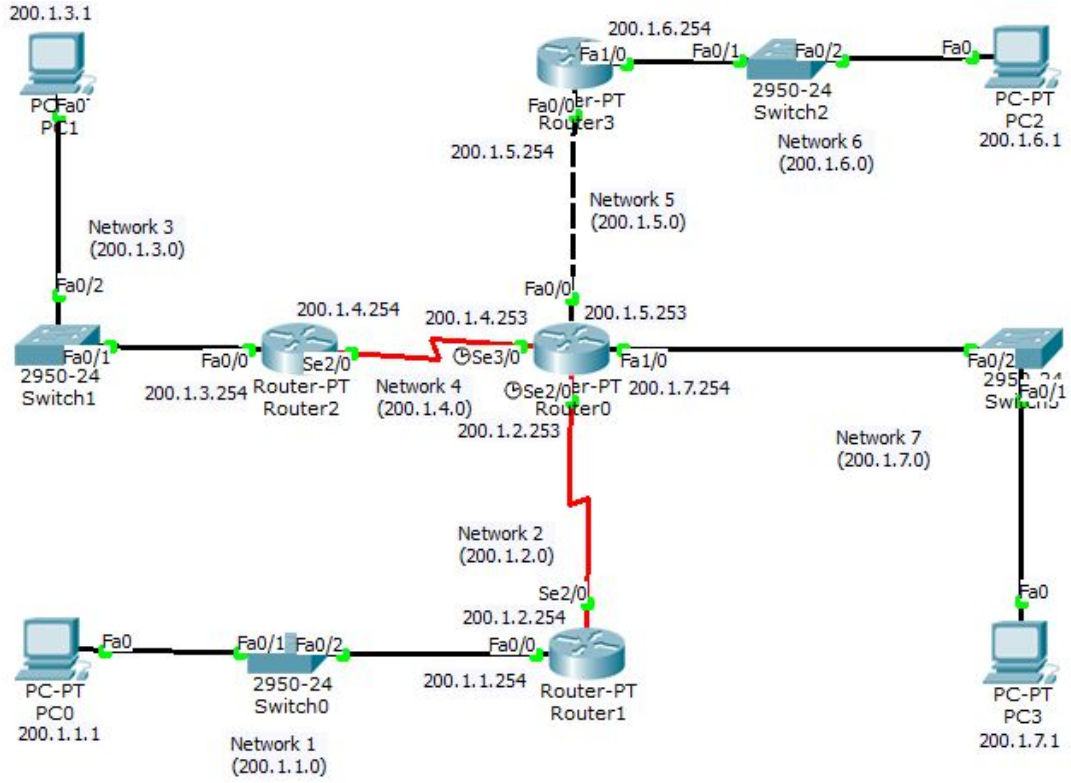
Router1

1. **Network** – **200.1.2.0**
    a. **Network** – **200.1.3.0**

Now PCs in network 1 can ping PCs in network 3 and vice versa.

Lab 5 & 6 – IP Routing (3)

1. There are 7 networks.
2. Use **`Router-PT`** (**`Generic`**) as it has more interfaces/ports.
3. **`Option`** -> **`Preferences`** -> **`Always Show Port Labels`** so that you can see a router's interfaces' number (e.g. **`Fa0/1`**).
4. **`Fa0/0`** refers to **`FastEthernet0/0`**.
5. **`Se2/0`** refers to **`Serial2/0`**.
6. Use **`Serial DTE`** connection for Serial interface.



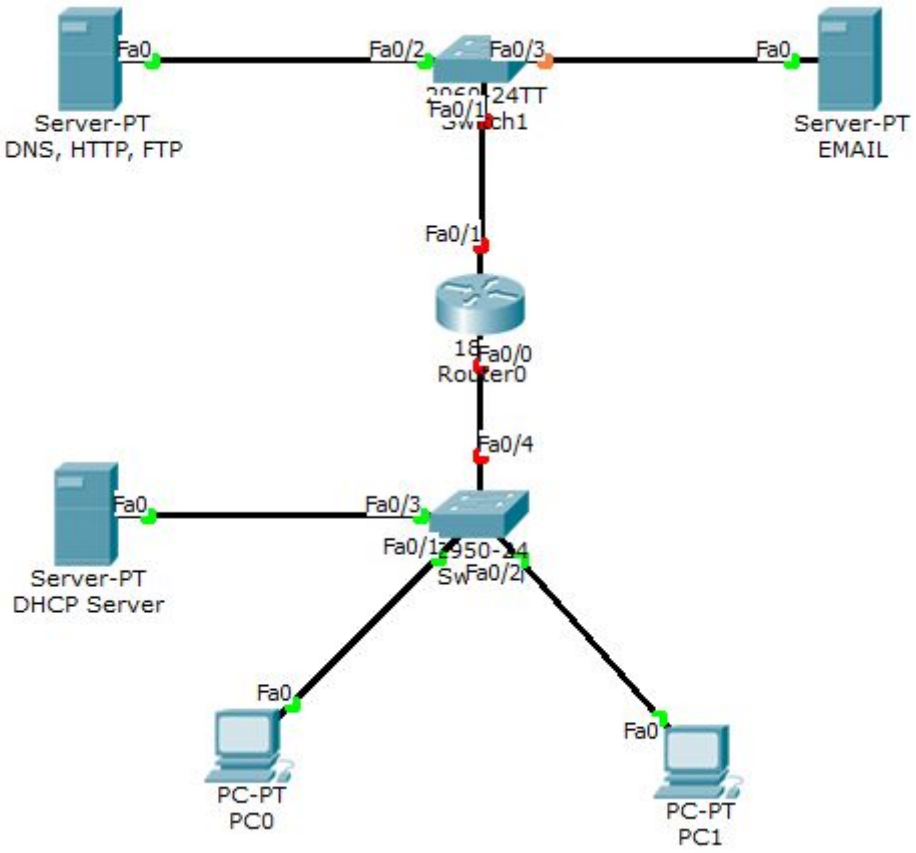
Question 1 static route. Ping.
Question 2 dynamic route (RIP). Ping.

Challenge Lab

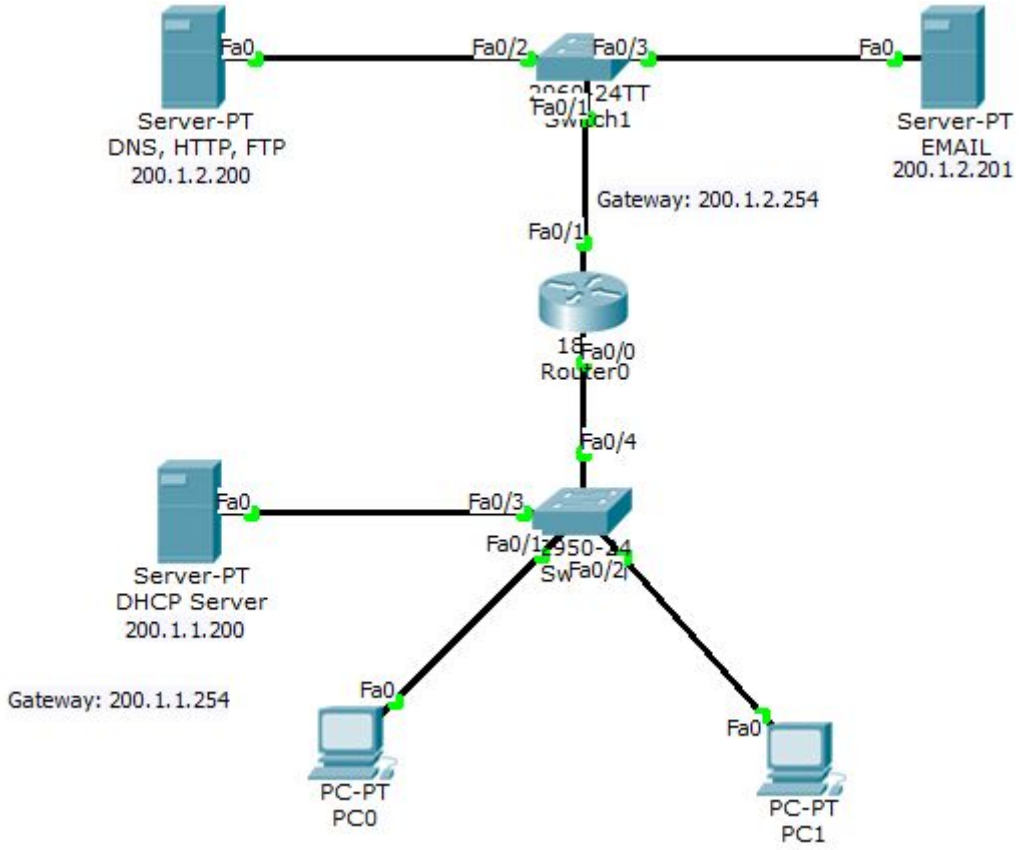
Change either router 1, 2 or 3 to using static route while the rest uses RIP. Ping.

Lab 8 - Application Layer

1. Server-PT can be found in End Devices.



2. Set IP address and default gateway of three servers. Set interface on router.

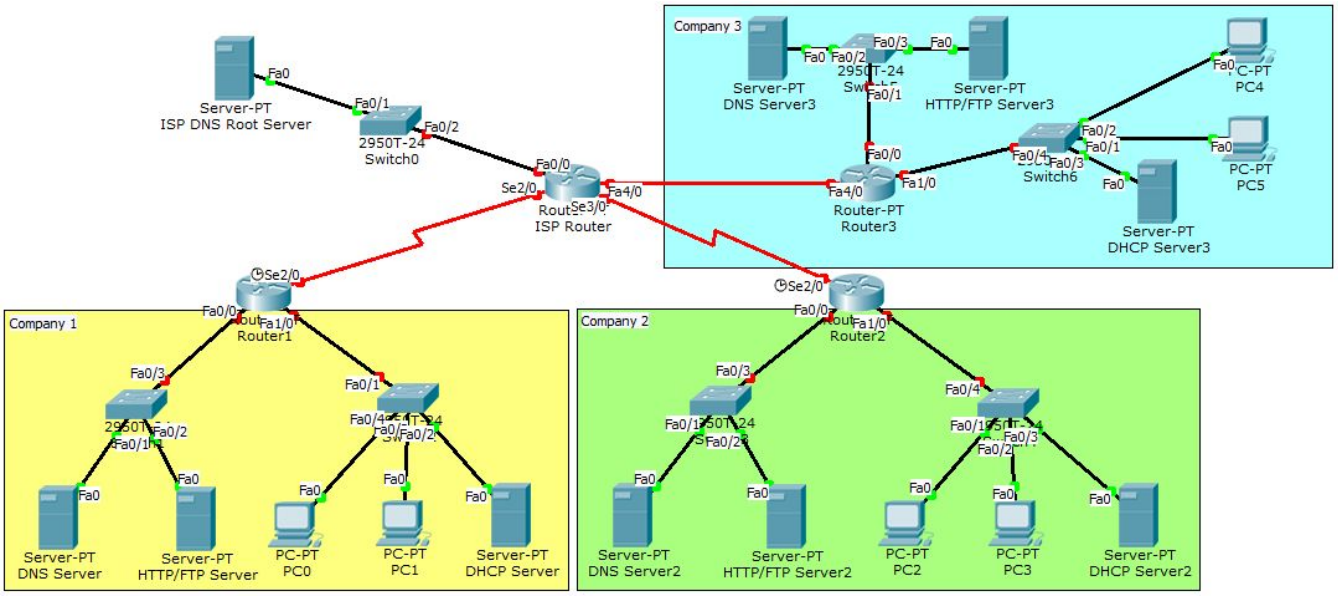


3. Click DHCP Server. Go to Config, then DHCP. Turn on DHCP service. Set default gateway as usual, DNS Server to be the IP address, then click Save.
    a. Click each PC. Go to Desktop, then IP Configuration. Click DHCP, it will automatically generate the stuff.
    b. Click DNS Server. Go to Config, then DNS. Turn on DNS service. Type the DNS name at Name and IP address of the PC at Address. Click Add.
    c. Now the PCs should be able to ping each other using domain name.
4. Click Email Server. Go to Config, then Email. Type mail.mmu.edu.my at Domain Name, click Set. User: ali, Password: ali, then click +. Same for john.
    a. Click DNS Server. Go to Config, then DNS. Type mail.mmu.edu.my as Name and the IP address of Email Server as Address. Click Add.
    b. Click each PC. Go to Desktop, then Email.
    c. E.g. for PC0 / Ali:
        i. Your Name: <anything>
        ii. Email Address: ali@ mail.mmu.edu.my
        iii. Incoming & Outcoming Mail Server: mail.mmu.edu.my
        iv. User Name & Password: <the one you set at email server>

    d. After you do for both, can start emailing. Compose for sending email, receive for receiving email. When you view an email, use Reply to reply the email.
5. Click DNS/HTTP Server. Go to Config, then HTTP. Change “Welcome to Cisco Packet Tracer” to “Welcome to MMU Network”. Go to DNS. www.mmu.edu.my as Name, and the server’s IP address as Address.
    a. Click any PC. Go to Desktop, then Web Browser. Go to the URL.

Multi-Level DNS

Question



IP Addressing = 42.43.X.X/24.

Routing Protocol = OSPF.

Company	HTTP	FTP
1	www.company.EE.com	ftp.company.EE.com
2	www.company.FF.com	ftp.company.FF.com
3	www.company.GG.com	ftp.company.GG.com

All company clients PC must be pointed to the company DNS server.

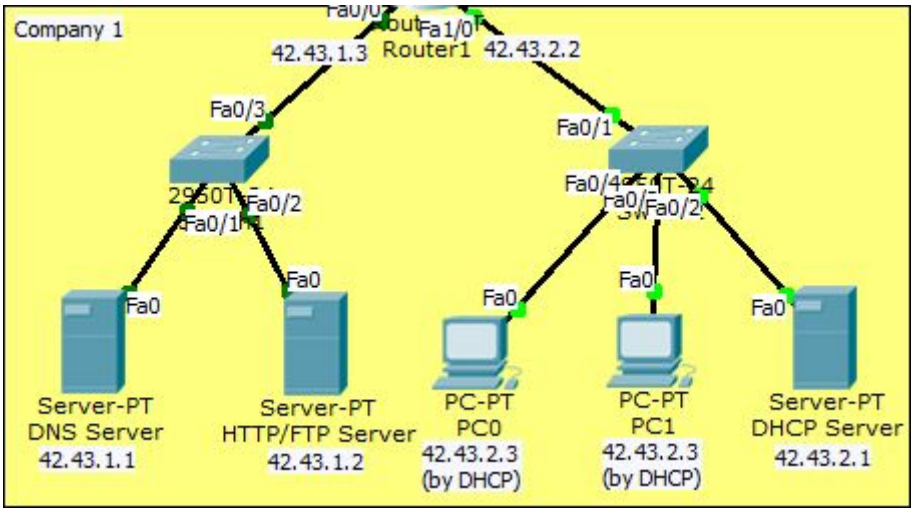
Each company has its own DNS server.

All company PCs can access other companies PC via DNS.

Solution

Company 1

A) IP Address



B) DHCP Server

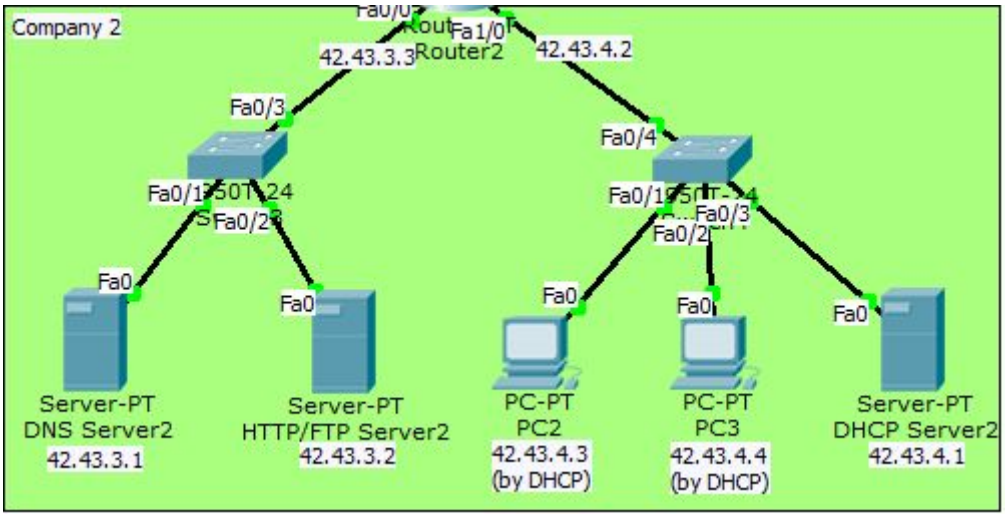
1. Turn on DHCP service.
2. Default Gateway: 42.43.2.2, DNS Server: 42.43.1.1.
3. Click Save.

C) DNS Server

1. Turn on DNS service.
2. Name: www.company.ee.com, Address: 42.43.1.2, Type: A Record.
    a. Name: ftp.company.ee.com, Address: 42.43.1.2, Type: A Record.
3. Click Add for both.

Company 2

A) IP Address



B) DHCP Server

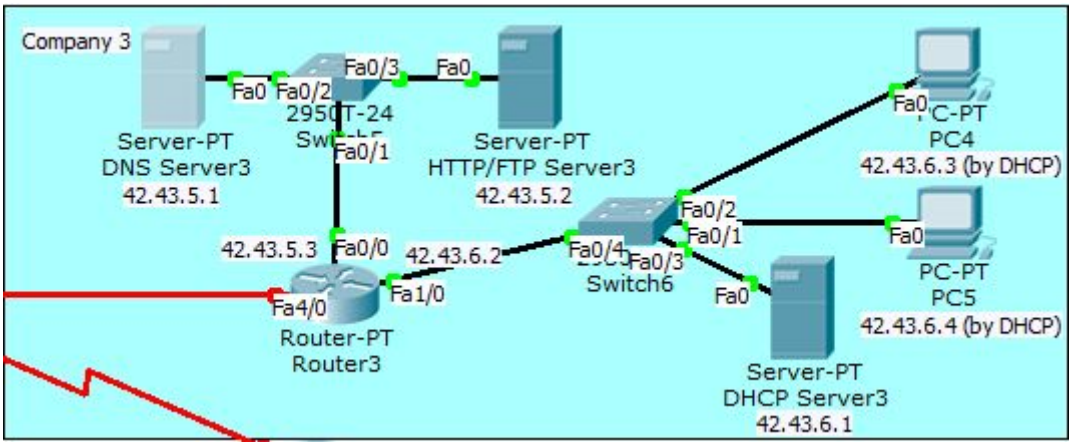
1. Turn on DHCP service.
2. Default Gateway: 42.43.4.2, DNS Server: 42.43.3.1.
3. Click Save.

C) DNS Server

1. Turn on DNS service.
2. Name: www.company.ff.com, Address: 42.43.3.2, Type: A Record.
    a. Name: ftp.company.ff.com, Address: 42.43.3.2, Type: A Record.
3. Click Add for both.

Company 3

A) IP Address



B) DHCP Server

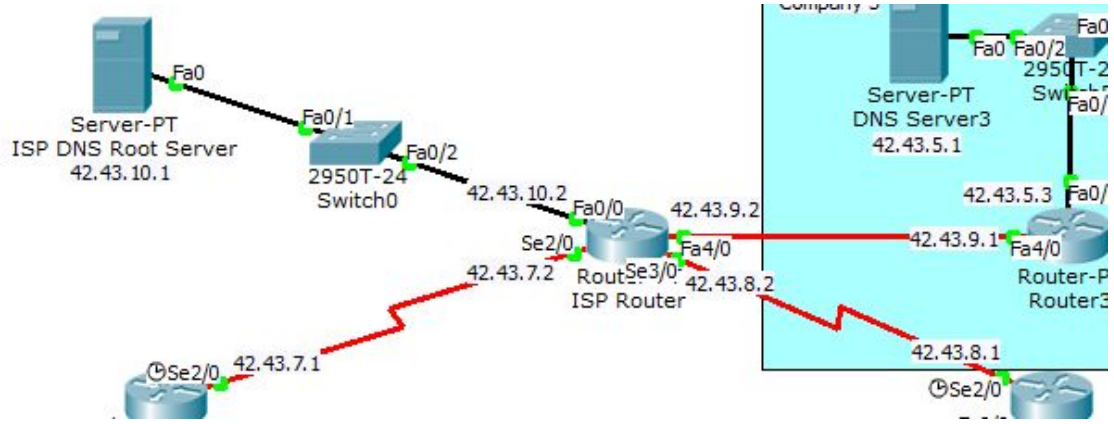
1. Turn on DHCP service.
2. Default Gateway: 42.43.6.2, DNS Server: 42.43.5.1.
3. Click Save.

C) DNS Server

1. Turn on DNS service.
2. Name: www.company.gg.com, Address: 42.43.5.2, Type: A Record.
    a. Name: ftp.company.gg.com, Address: 42.43.5.2, Type: A Record.
3. Click Add for both.

ISP and the rest

A) IP Address



OSPF Routing

A) ISP Router

```
Router> en
Router# conf t
Router(config)# router ospf 1
Router(config-router)# network 42.43.10.0 0.0.0.255 area 0
Router(config-router)# network 42.43.7.0 0.0.0.255 area 0
Router(config-router)# network 42.43.8.0 0.0.0.255 area 0
Router(config-router)# network 42.43.9.0 0.0.0.255 area 0
```

B) Router1

```
Router> en
Router# conf t
Router(config)# router ospf 1
Router(config-router)# network 42.43.1.0 0.0.0.255 area 0
Router(config-router)# network 42.43.2.0 0.0.0.255 area 0
Router(config-router)# network 42.43.7.0 0.0.0.255 area 0
```

C) Router2

```
Router> en
Router# conf t
Router(config)# router ospf 1
Router(config-router)# network 42.43.3.0 0.0.0.255 area 0
Router(config-router)# network 42.43.4.0 0.0.0.255 area 0
Router(config-router)# network 42.43.8.0 0.0.0.255 area 0
```

D) Router3

```
Router> en
Router# conf t
Router(config)# router ospf 1
Router(config-router)# network 42.43.9.0 0.0.0.255 area 0
Router(config-router)# network 42.43.5.0 0.0.0.255 area 0
```

```
Router(config-router)# network 42.43.6.0 0.0.0.255 area 0
```

Multi-Level DNS

A) ISP Root DNS Server

Method 1 (Add all websites and ftp)

1. Turn on DNS service.
2. Name: www.company.ee.com, Address: 42.43.1.2, Type: A Record.
    a. Name: ftp.company.ee.com, Address: 42.43.1.2, Type: A Record.
    b. Name: www.company.ff.com, Address: 42.43.3.2, Type: A Record.
    c. Name: ftp.company.ff.com, Address: 42.43.3.2, Type: A Record.
    d. Name: www.company.gg.com, Address: 42.43.5.2, Type: A Record.
    e. Name: ftp.company.gg.com, Address: 42.43.5.2, Type: A Record.
3. Click Add for all of them.

Method 2 (Add all local servers)

1. Turn on DNS service.
2. Name: ee.com, Server Name: server1, Type: NS Record.
    a. Name: server1, Address: 42.43.1.1, Type: A Record
    b. Name: ff.com, Server Name: server2, Type: NS Record.
    c. Name: server2, Address: 42.43.3.1, Type: A Record
    d. Name: gg.com, Server Name: server3, Type: NS Record.
    e. Name: server3, Address: 42.43.5.1, Type: A Record
3. Click Add for all of them.

B) Company 1 Local DNS Server

1. Name: ff.com, Server Name: root, Type: NS Record.
    a. Name: gg.com, Server Name: root, Type: NS Record.
    b. Name: root, Address: 42.43.10.1, Type: A Record.
2. Click Add for all of them.

C) Company 2 Local DNS Server

1. Name: ee.com, Server Name: root, Type: NS Record.
    a. Name: gg.com, Server Name: root, Type: NS Record.
    b. Name: root, Address: 42.43.10.1, Type: A Record.
2. Click Add for all of them.

D) Company 3 Local DNS Server

1. Name: ee.com, Server Name: root, Type: NS Record.
    a. Name: ff.com, Server Name: root, Type: NS Record.

b. Name: root, Address: 42.43.10.1, Type: A Record.

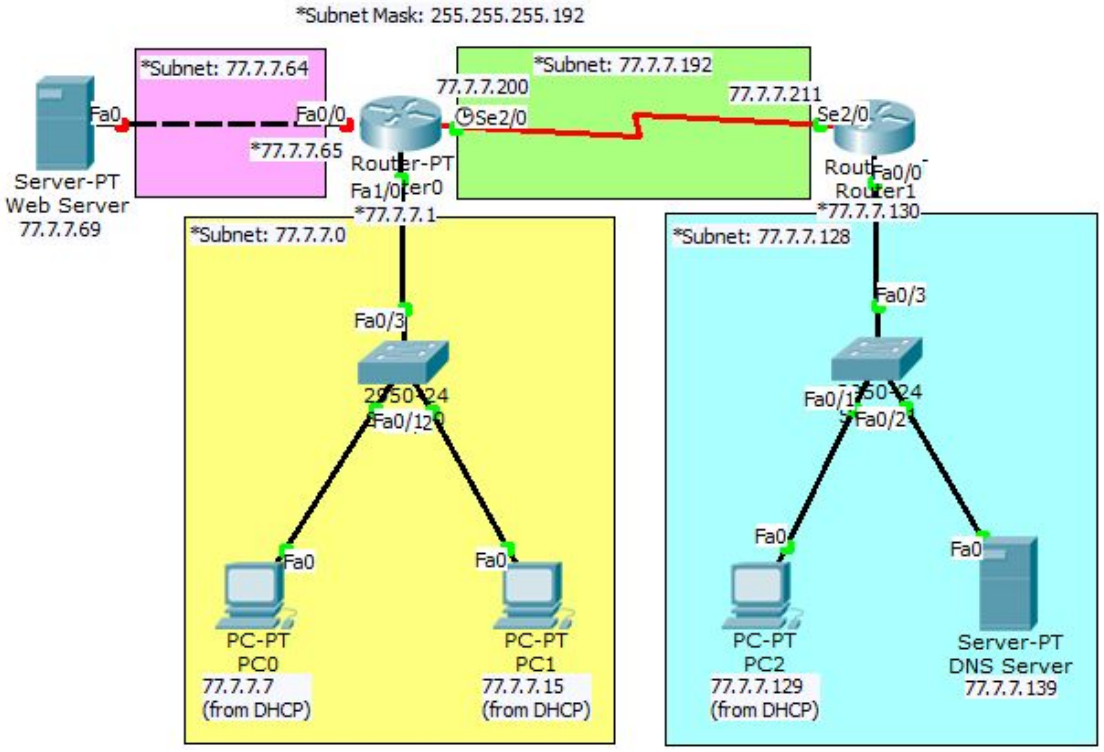
2. Click Add for all of them.

Test

All company PCs can access other companies' website and ftp.

Router as DHCP

Question



All servers' IP addresses are static.
Configure the routers to be the DHCP server.
The PCs get their IP addressing from the routers. They have to get the exact same IP address as shown.
Routing protocol is OSPF.
You have to figure out the information with * yourself.

Solution

Determine Subnets (VLSM)

There are four networks, so the fourth number of IP address has to be 1100 0000 in binary, which is 192 in decimal.
Subnet Mask = 77.7.7.192
Determine subnets ID using VLSM calculator online.

Subnet ID
0
64
128
192

Set Routers as DHCP Server

A) Router0

```
Router# en
Router# conf t
Router(config)# ip dhcp pool cisco
Router(dhcp-config)# network 77.7.7.0 255.255.255.192
Router(dhcp-config)# default-router 77.7.7.1
Router(dhcp-config)# dns-server 77.7.7.139
Router(dhcp-config)# exit
Router(config)# ip dhcp excluded-address 77.7.7.1 77.7.7.6 (So that PC0
got .7)
Router(config)# ip dhcp excluded-address 77.7.7.8 77.7.7.14 (So that PC1
got .15)
```

B) Router1

```
Router# en
Router# conf t
Router(config)# ip dhcp pool cisco
Router(dhcp-config)# network 77.7.7.128 255.255.255.192
Router(dhcp-config)# dns-server 77.7.7.139
```

OSPF Routing and Web Server

Refer to previous labs.

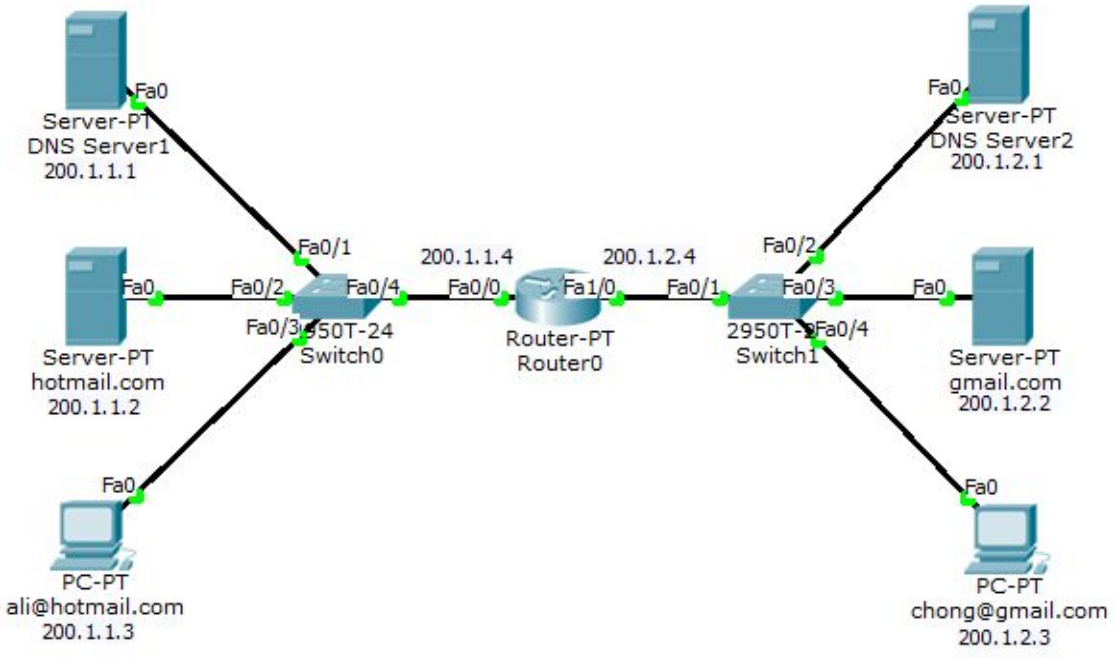
Multiple Email Domain

Question

Make sure ali@hotmail.com can send email to chong@gmail.com.

Solution

Configuration



Hotmail

A) DNS Server

1. Turn on DNS service.
2. Name: hotmail.com, Address: 200.1.1.2, Type: A Record.
3. Name: gmail.com, Address: 200.1.2.2, Type: A Record. / Name: gmail.com, Server Name: server2, Type: NS Record.
    a. Name: server2, Address: 200.1.2.1, Type: A Record.

B) Email Server

1. Domain Name: hotmail.com. Click Set.
2. User: ali, Password: ali. Click +.

Gmail

A) DNS Server

1. Turn on DNS service.
2. Name: gmail.com, Address: 200.1.2.2, Type: A Record.

3. Name: hotmail.com, Address: 200.1.1.2, Type: A Record. / Name: hotmail.com, Server Name: server1, Type: NS Record.
    a. Name: server1, Address: 200.1.1.1, Type: A Record.

B) Email Server

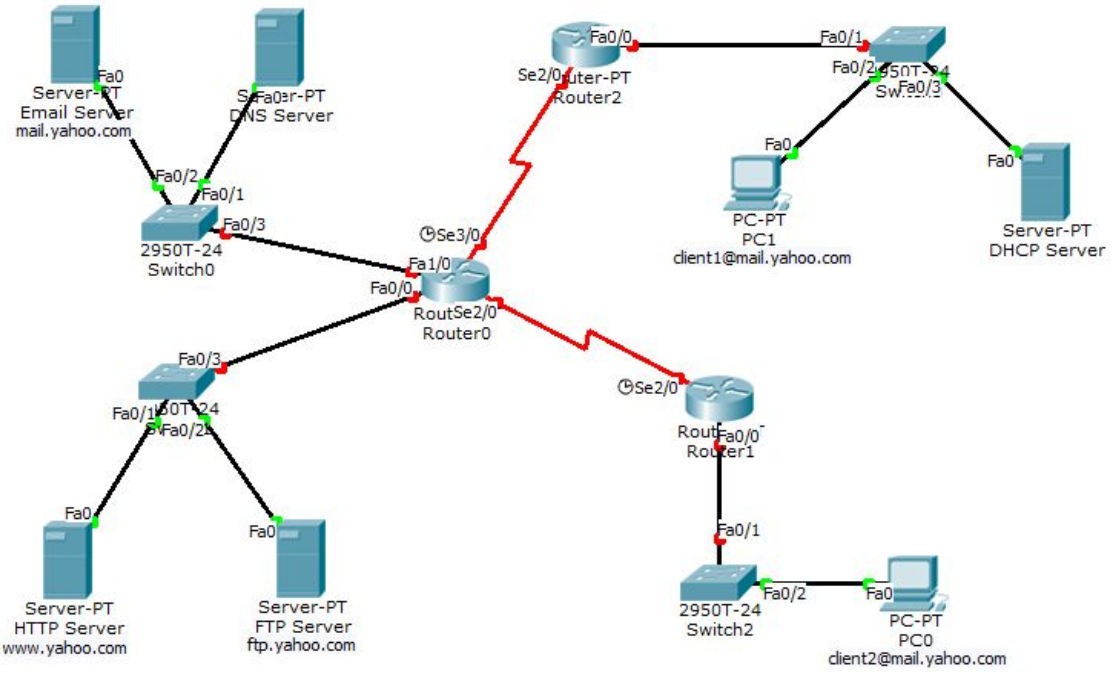
1. Domain Name: gmail.com. Click Set.
2. User: chong, Password: chong. Click +.

Test

Now they can email each other.

VLSM

Question



IP Addressing = 43.3.3.X.
Routing protocol is OSPF with process ID = 5.
All clients can send email and access the www and FTP server via DNS.

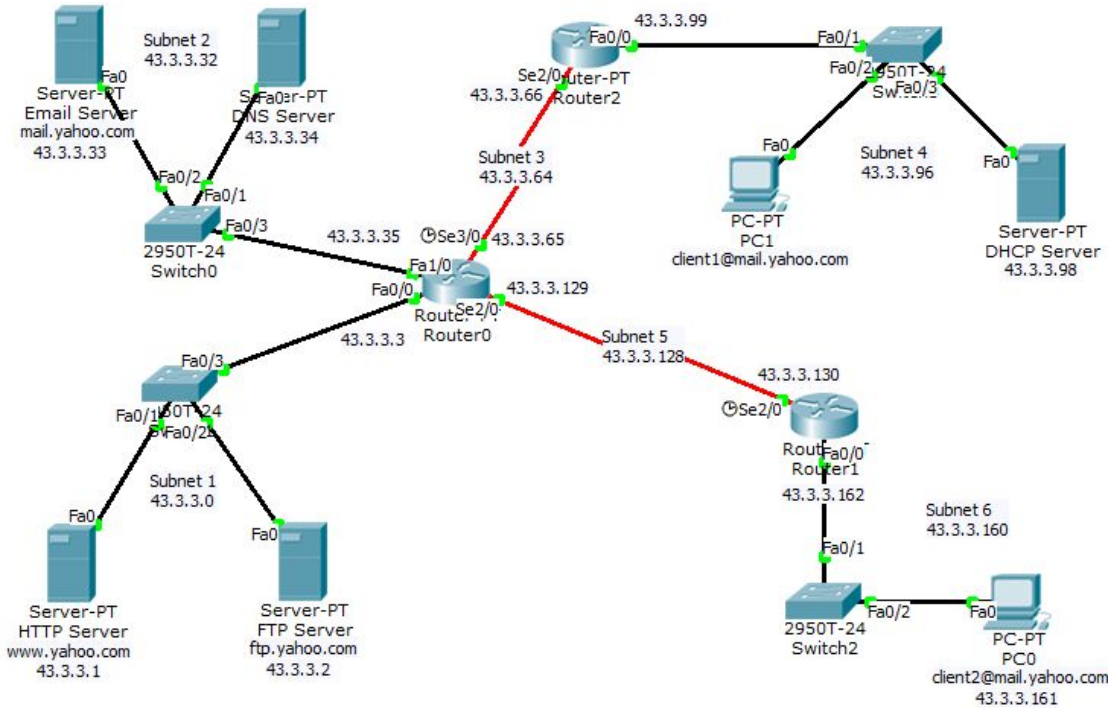
Solution

Determine Subnets (VLSM)

The first three numbers of IP address are constant, so we need to modify the fourth number to detect subnet. Since there are six networks, the fourth number of subnet mask has to be 1110 0000 in binary, which is 224 in decimal. This is because 111 in binary has 8 combinations, allowing a maximum of 8 subnets.
Subnet mask = 255.255.255.224 (Maximum of 8 subnets).
Wildcard mask = 0.0.0.31.
Determine subnets ID and their host address range using VLSM calculator online.

Subnet ID	Host Address Range
0	1 – 30
32	33 – 62
64	65 – 94
96	97 - 126
128	129 - 158
160	161 - 190

Set IP Addresses



DHCP

A) DHCP Server

1. Click DHCP server.
2. Turn on DHCP service.
3. Default Gateway: 43.3.3.99, DNS Server: 43.3.3.34.
4. Click Save.

B) PC1 / Test

1. Click PC1.
2. Go to Desktop, then IP Configuration.
3. Click DHCP.

OSPF Routing

A) Router0

1. Click Router0.
2. Go to CLI.
3. Router> en
4. Router# config t
5. Router(config)# router ospf 5
6. Router(config-router)# network 43.3.3.32 0.0.0.31 area 0
    a. Router(config-router)# network 43.3.3.0 0.0.0.31 area 0
    b. Router(config-router)# network 43.3.3.64 0.0.0.31 area 0
    c. Router(config-router)# network 43.3.3.128 0.0.0.31 area 0

B) Router1

1. Click Router1.
2. Go to CLI.
3. Router> en
4. Router# config t
5. Router(config)# router ospf 5
6. Router(config-router)# network 43.3.3.128 0.0.0.31 area 0
    a. Router(config-router)# network 43.3.3.160 0.0.0.31 area 0

C) Router2

1. Click Router2.
2. Go to CLI.
3. Router> en
4. Router# config t
5. Router(config)# router ospf 5
6. Router(config-router)# network 43.3.3.96 0.0.0.31 area 0
    a. Router(config-router)# network 43.3.3.64 0.0.0.31 area 0

D) Test

Everyone can ping each other.

Email

A) Email Server

1. Click Email server.
2. Domain Name: mail.yahoo.com. Click Set.
3. User: client1, Password: client1.
    a. User: client2, Password: client2.
4. Click + to add both users.

B) DNS Server

1. Click DNS server.
2. Turn on DNS service.
3. Name: mail.yahoo.com, Address: 43.3.3.33, Type: A Record.
4. Click Add.

C) PC1 (Client 1) / PC0 (Client 2)

1. Click PC1 (Client 1).
2. Go to Desktop, then Email.
3. Your Name: client1, Email Address: client1@mail.yahoo.com.
    a. Incoming & Outgoing Mail Server: mail.yahoo.com.
    b. User Name: client1, Password: client1. (Same as the one set at Email server.)

c. Note: first part of email address must be the same as user name.

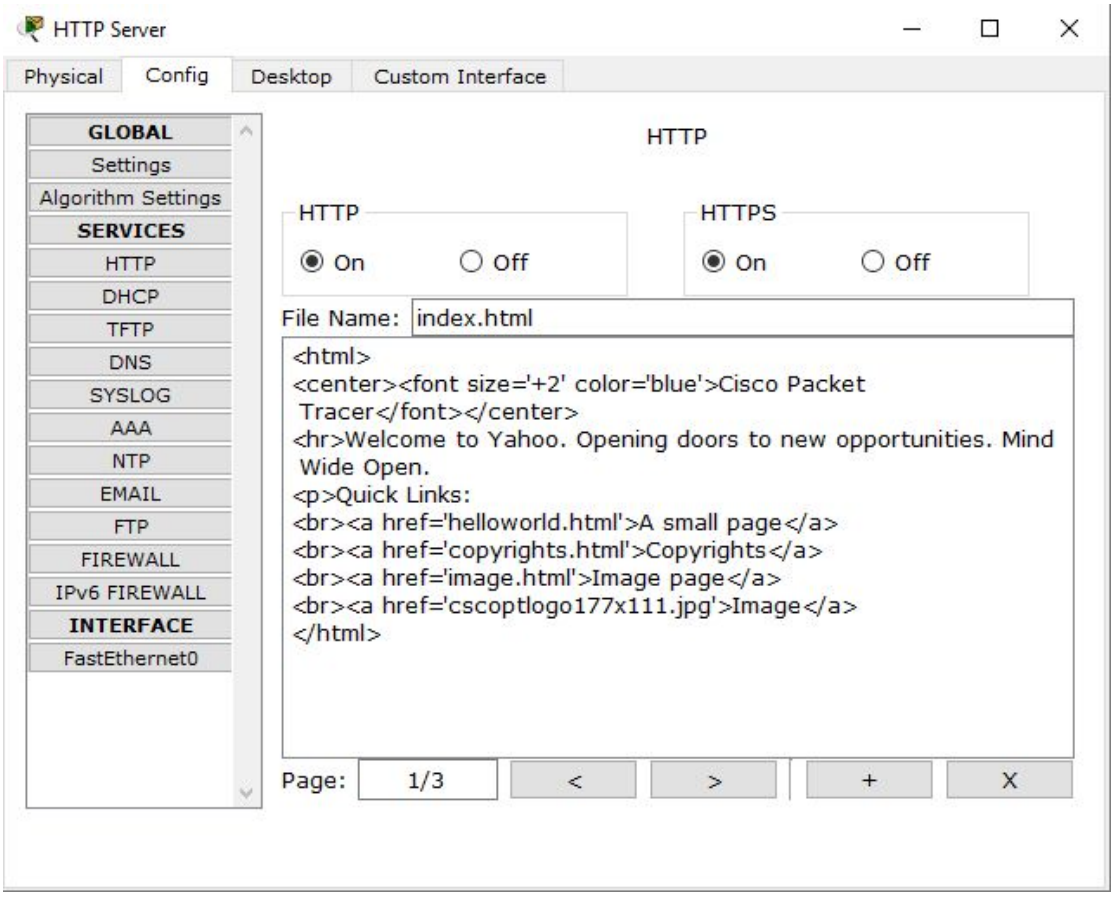
4. Click Save.
5. Repeat for PC0 (Client 2).

D) Test

Both PCs can email each other.

HTTP

A) HTTP Server



B) DNS Server

1. Click DNS server.
2. Domain Name: www.yahoo.com, Address: 43.3.3.1, Type: A Record.
3. Click Add.

C) Test

1. Click any PC.
2. Go to Desktop, then Web Browser.
3. Type in www.yahoo.com as URL.

FTP

A) FTP Server

1. Default user is cisco with all permissions enabled.
2. Optional: Create a user and enable all permissions. Click +.

B) DNS Server

1. Click DNS server.
2. Domain name: ftp.yahoo.com, Address: 43.3.3.2.
3. Click Add.

C) Test

1. Click any PC.
2. Go to Desktop, then Command Prompt.
3. PC> dir (Show files inside PC. Note there is a sampleFile.txt.)
4. PC> ftp ftp.yahoo.com / PC> ftp 43.3.3.2

(Username and password to be the one set at FTP server.)

5. ftp> ? (Show commands)
6. ftp> dir (Show files inside FTP server)
7. ftp> put <filename> (Upload file e.g. sampleFile.txt)
8. ftp> get <filename> (Download file)