

Computer Networks

CS361 Lab7

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CPT file link: <https://drive.google.com/drive/folders/1aXFXL54-TilZPEmzQ3Z-jn0LW7bRD-bd?usp=sharing>

Task1: Define and differentiate between a server and a router.

Servers:

Computers in a network that supply resources and services to other computers are called servers. They are able to host webpages, execute programmes, and store data. The computers that users directly interface with are called client computers; servers are usually more powerful and have more storage space.

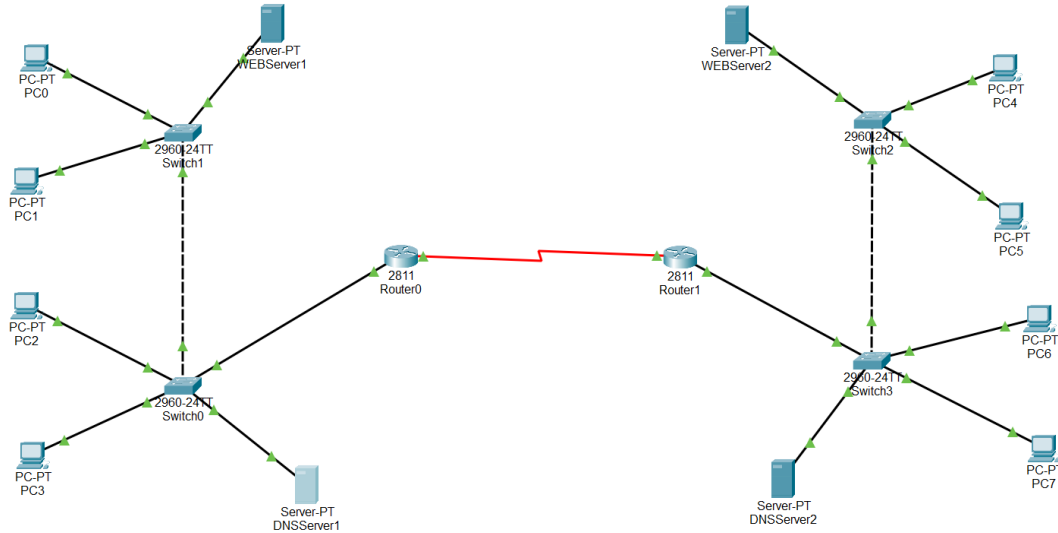
Routers:

Networking equipment called routers are used to link various networks together. They use each packet's destination IP address to determine how to route traffic between networks. In addition, routers provide various networking operations including NAT (Network Address Translation) and firewalls.

Differences:

| Characteristic | Server | Router |
|------------------------|--|--|
| Primary function | Provides resources and services to other computers on a network | Connects different networks together and routes traffic between them |
| Layer of the OSI model | Application layer and above | Network layer |
| Typical uses | Hosting websites, storing data, running applications | Connecting home networks to the Internet, connecting business networks to each other |
| Examples | Web servers, file servers, database servers, application servers | Home routers, business routers, enterprise routers |

Task2: Make a complex network (as discussed in lab) with multiple PCs, servers (HTTP and Mail), switches and routers. Each server may be in different subnet. Demonstrate transfer of emails between two different domains (eg: gmail and yahoo). Also show the response of HTTP request from a PC that is in different subnet from the HTTP server



Creating successful connection...

| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit | Delete |
|------|-------------|--------|-------------|------|-------|-----------|----------|-----|--------|----------|
| | Successful | PC0 | PC4 | ICMP | | 0.000 | N | 0 | (edit) | (delete) |
| | Successful | PC3 | PC7 | ICMP | | 0.000 | N | 1 | (edit) | (delete) |
| | Successful | WEB... | DNSServer1 | ICMP | | 0.000 | N | 2 | (edit) | (delete) |
| | Successful | WEB... | WEBServer2 | ICMP | | 0.000 | N | 3 | (edit) | (delete) |

Router Counfig...

Router 0

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 30.0.0.1
```

Router 1

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 0.0.0.0 0.0.0.0 20.0.0.1
```

DNS SERVER configure

DNSServer1

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

Add **Save** **Remove**

| No. | Name | Type | Detail |
|-----|-----------|----------|--------------|
| 0 | gmail.com | A Record | 192.168.1.10 |
| 1 | yahoo.com | A Record | 198.142.1.10 |

Web server Configure....

WEBServer1

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway

DNS Server

WEBServer2

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway

DNS Server

Configuring email...

Webserver 1

gmail

The screenshot shows the WEBServer1 configuration window with the 'Services' tab selected. The left sidebar lists various services, with 'EMAIL' highlighted. The main area is titled 'EMAIL' and contains the following settings:

- SMTP Service:** ☒ ON ☐ OFF
- POP3 Service:** ☒ ON ☐ OFF
- Domain Name:** gmail.com [Set]
- User Setup:**
 - User: [] Password: []
 - client0
 - client1
 - client2
 - client3

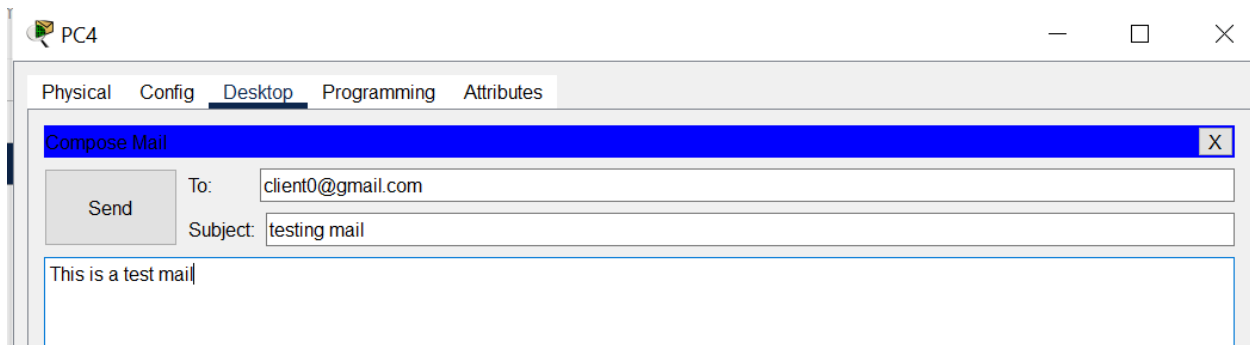
Webserver2

yahoo

The screenshot shows the WEBServer2 configuration window with the 'Services' tab selected. The left sidebar lists various services, with 'EMAIL' highlighted. The main area is titled 'EMAIL' and contains the following settings:

- SMTP Service:** ☒ ON ☐ OFF
- POP3 Service:** ☒ ON ☐ OFF
- Domain Name:** yahoo.com [Set]
- User Setup:**
 - User: [] Password: []
 - client4
 - client5
 - client6
 - client7

Email Transfer testing....



Composing email...(PC4,yahoo)

```
Sending mail to client0@gmail.com , with subject : testing mail .. Mail Server:
yahoo.com
DNS resolving. Resolving name: yahoo.com by querying to DNS Server:
198.142.1.3 DNS resolved ip address: 198.142.1.10
Send Success.
```

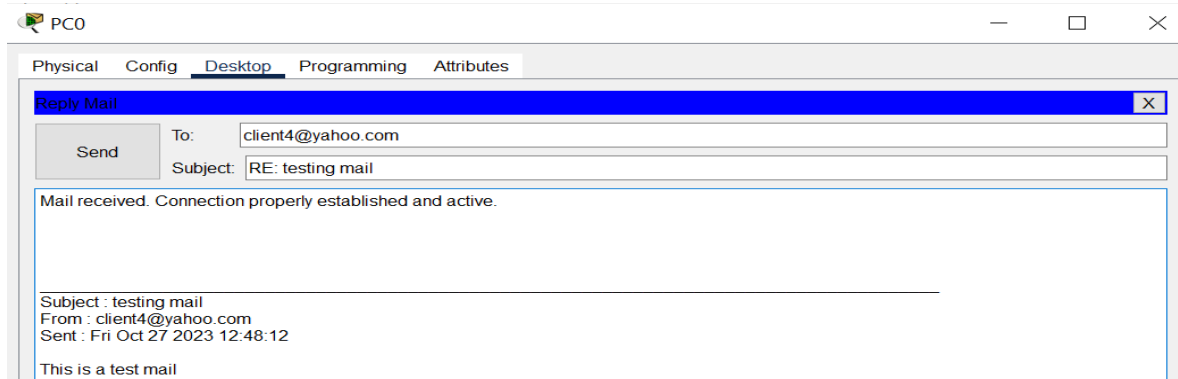
Mail sent...(PC0,gmail)

```
Receiving mail from POP3 Server gmail.com
DNS resolving. Resolving name: gmail.com by querying to DNS Server:
192.168.1.3 DNS resolved ip address: 192.168.1.10
Receive Mail Success.
```

Mail received...(PC0,gmail)

```
testing mail
client4@yahoo.com
Sent : Fri Oct 27 2023 12:48:12

This is a test mail
```



Reply from PC0gmail to PC4yahoo

RE: testing mail
client0@gmail.com
Sent : Fri Oct 27 2023 12:51:21

Mail received. Connection properly established and active.

Reply mail received by PC4yahoo

HTTP Request check...

The screenshot shows the 'WEBServer1' configuration window with the 'Services' tab selected. On the left, a list of services includes HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The 'HTTP' service is selected, and its status is 'On'. The 'HTTPS' service is also shown with a status of 'On'. Below these, a 'File Manager' table lists several files with their names, edit links, and delete links.

| | File Name | Edit | Delete |
|---|-----------------------|--------|----------|
| 1 | copyrights.html | (edit) | (delete) |
| 2 | cscoptlogo177x111.jpg | | (delete) |
| 3 | helloworld.html | (edit) | (delete) |
| 4 | image.html | (edit) | (delete) |
| 5 | index.html | (edit) | (delete) |
| 6 | testfile.html | (edit) | (delete) |

testfile.html stored in webserver 1

The screenshot shows the 'PC7' configuration window with the 'Desktop' tab selected. A 'Web Browser' window is open, displaying the URL 'http://192.168.1.10/testfile.html'. The browser shows the content of the file, which includes the name 'Dipean Dasgupta' and the ID '202151188'.

Accessing testfile.html from PC7 which is in other network.