Lab 5
Application Layer Protocols

The application layer is the seventh layer of the OSI model and the only one that **directly interacts with the end user**. The application layer provides many services, including: nine

- Simple Mail Transfer Protocol.
- File transfer.
- Web surfing.
- Web chat.
- Email clients.
- Network data sharing.
- Sockets and ports.

There are many types of application layer protocols such as:

- World Wide Web protocol (HTTP, HTTPs, FTP)
- Electronic Mail Protocols (SMTP, POP)
- Remote login to hosts: Telnet
- Networking support protocol such as Domain Name System (DNS),
- Dynamic Host Configuration Protocol (DHCP)
- Simple Network Management Protocol (SNMP)
- Secure Shell (SSH)
- Border Gateway Protocol (BGP)

Important Definitions

1. ***Hypertext Transfer Protocol*** It's a **stateless,** application-layer protocol for communicating between distributed systems, and is the foundation of the modern web. HTTP allows for communication between a variety of hosts and clients, and supports a mixture of network configurations.
2. **HTTPS** is a secure version of HTTP, inserting an additional layer between HTTP and TCP called TLS or SSL (Transport Layer Security or Secure Sockets Layer, respectively).

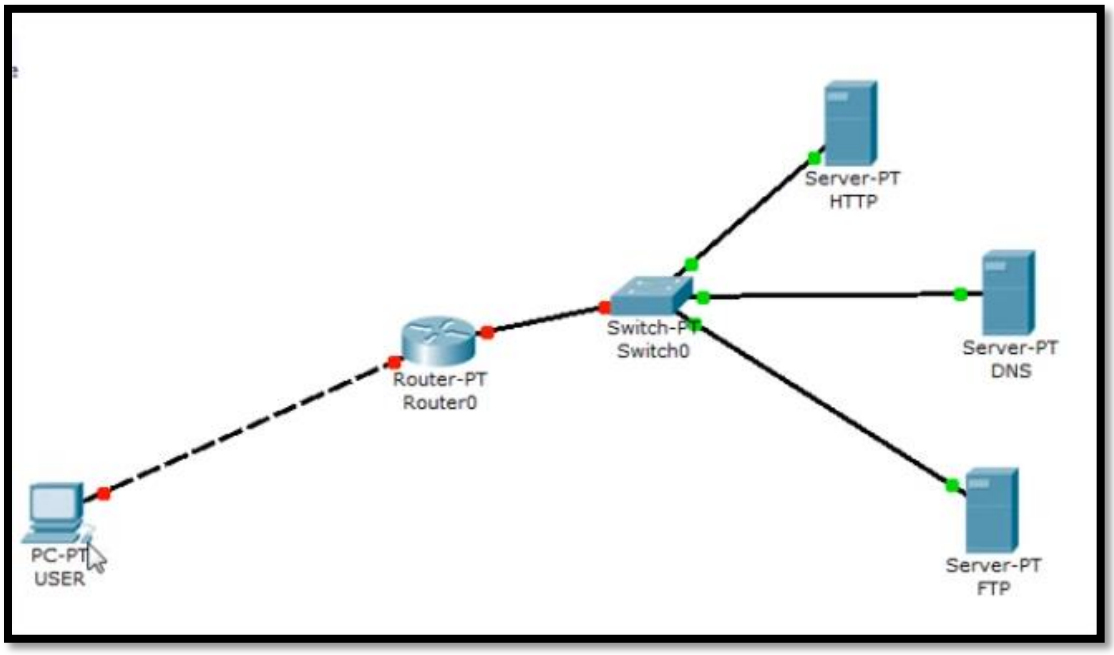
3. **File Transfer Protocol (FTP)** is an Application layer protocol. FTP was developed to allow for file transfers between a client and a server.

Aim of This Lab

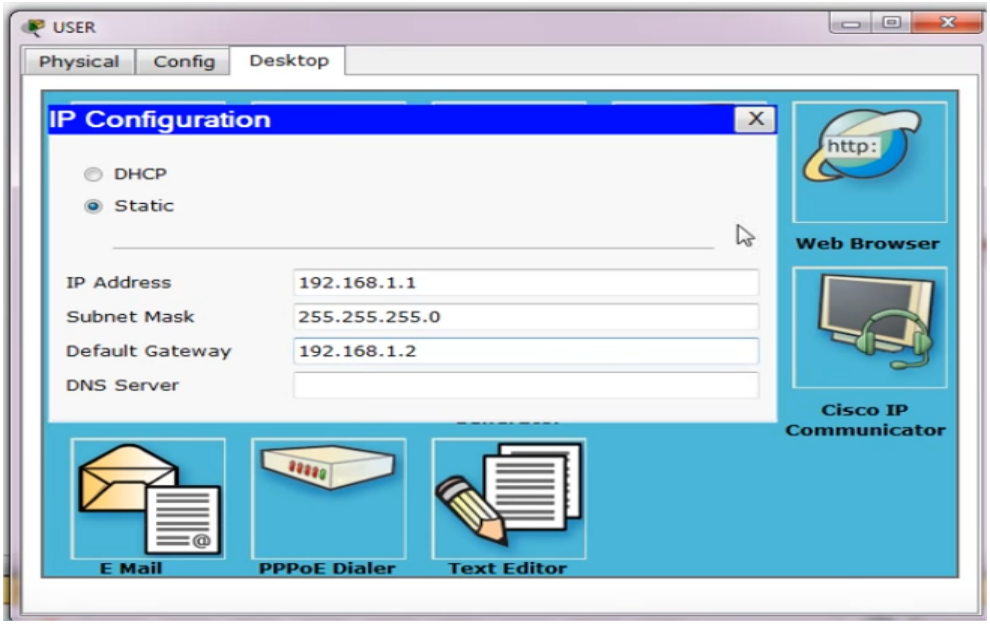
- The aim of this Lab is to show how to configure World Wide Web protocols (**HTTP, HTTPs, and FTP**) using cisco packet tracer.
- After this Lab, the Student can know how to work with World Wide Web protocol **(HTTP, HTTPs, and FTP**) using cisco packet tracer.

Experiment Procedure

1. Design the network which consist of
   a) HTTP server.
   b) FTP server.
   c) DNS server.
   d) Switch.
   e) Router.
   f) PC.



2. **Configure the IP address of PC0 as shown in figure below**.

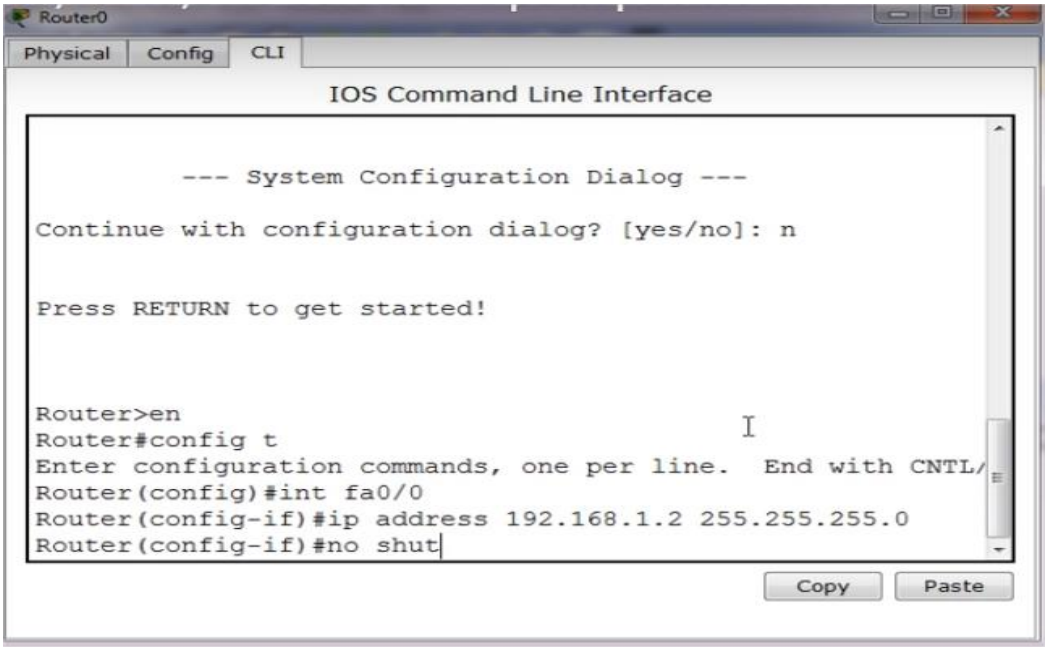


3. Configure the Router by:

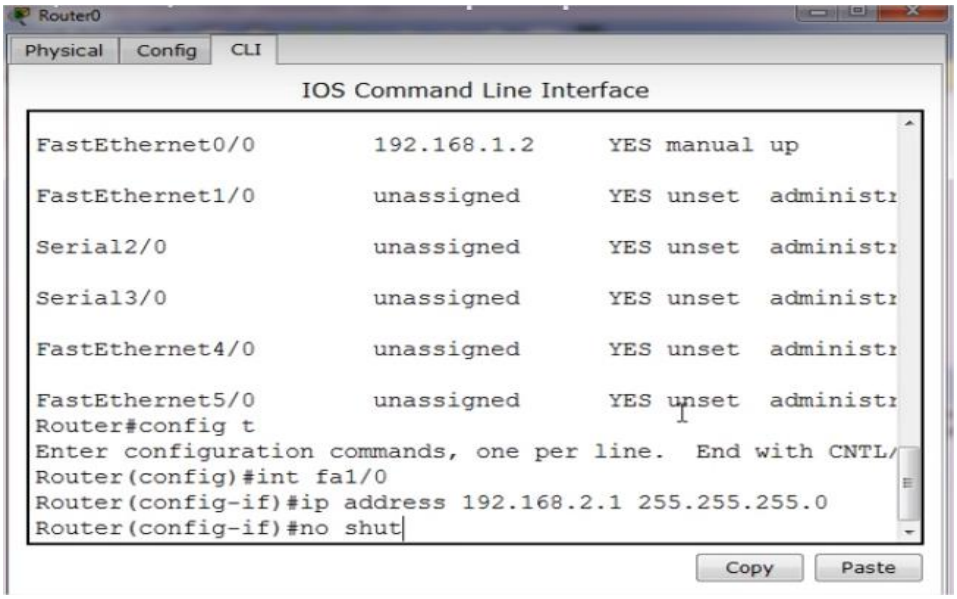
a) Click on the router.

b) Click on CLI.

c) Give the information as shown in figure below for the first interface:

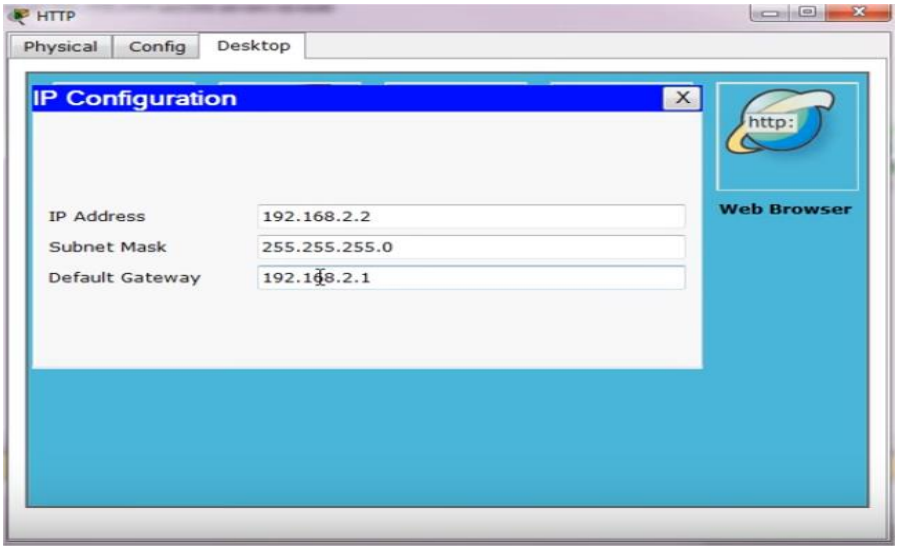


d) Give the information as shown in figure below for the second interface:



4. Configure the HTTP Server by:

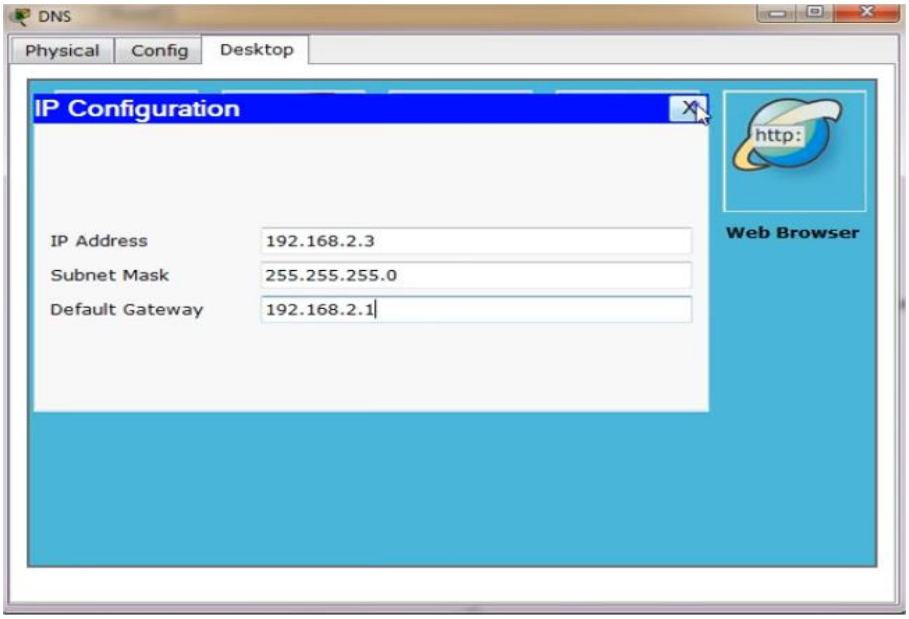
a) Click on the HTTP server.
b) Click on desktop>IP Configuration.
c) Give static IP address to the server as shown below.
d) Stop all other servers' configuration inside HTTP server.

e 

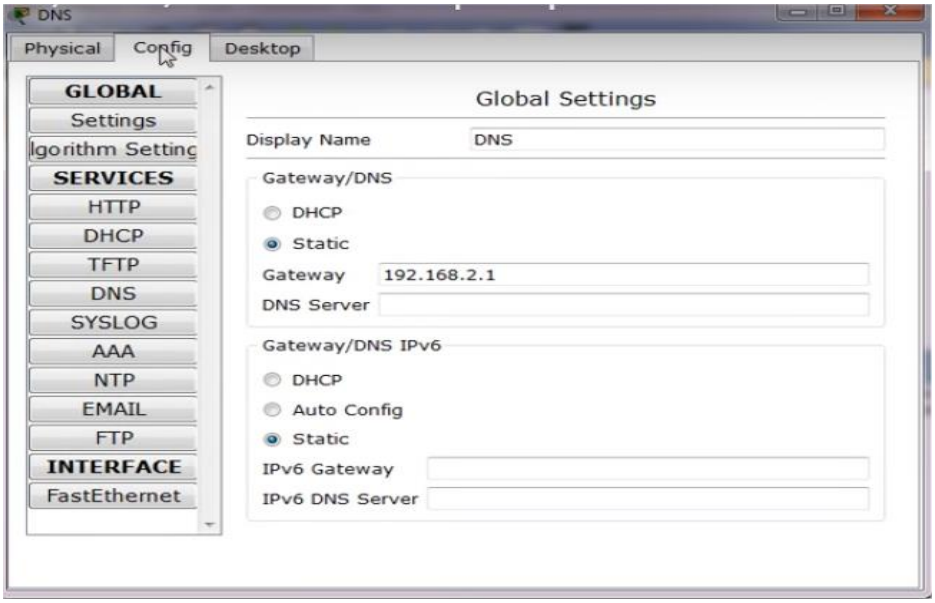
5. Configure the DNS Server by:

a) Click on the DNS server.
b) Click on desktop>IP Configuration.

c) Give static IP address to the server as shown below.



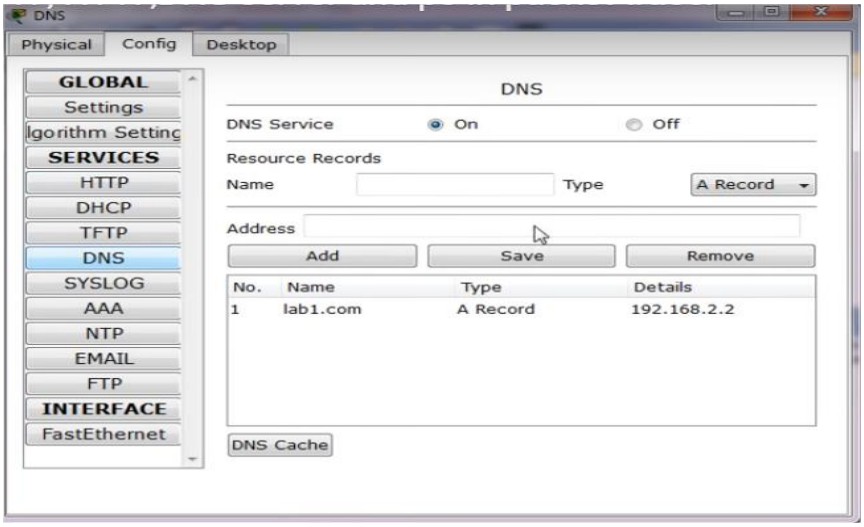
d) Select config as shown below.



e) Stop all other servers' configuration inside DNS server select them one by one from the left side list as shown in figure above.

f) Select DNS server from the left side list as shown below.

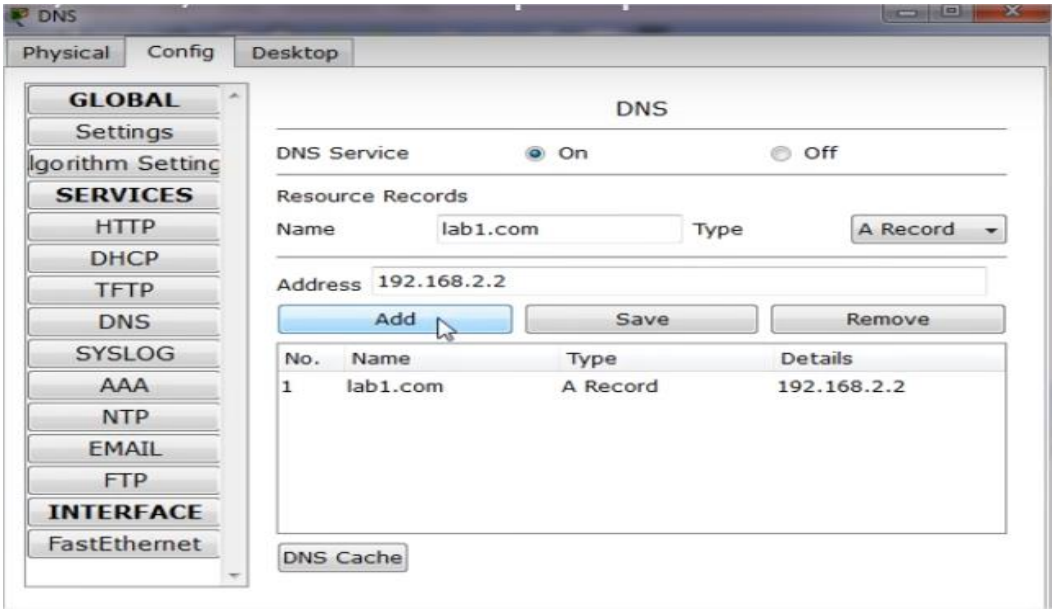
g) Make it on.



h) On name field give a name for the website of HTTP server.

i) Put the IP address of the HTTP server in address field as shown in figure below.

j) Press Add.

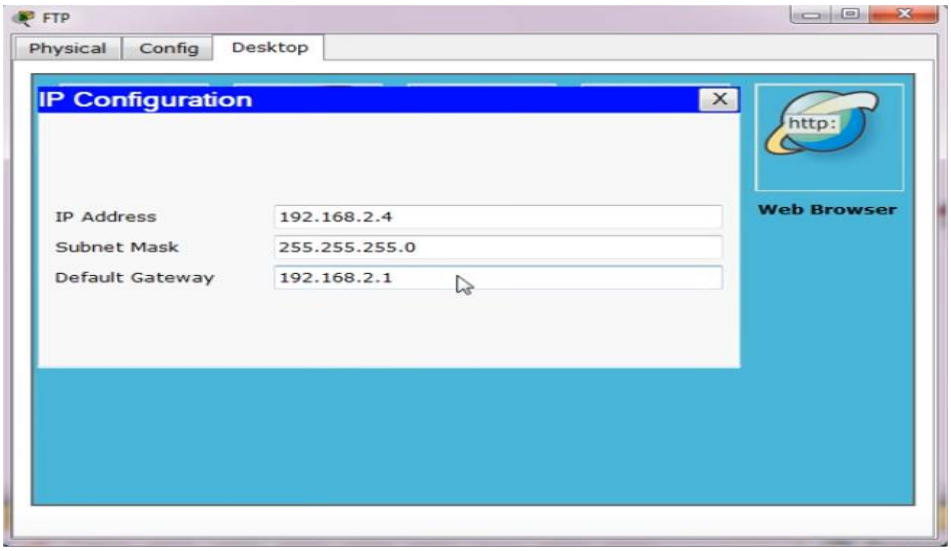


6. Configure the FTP Server by:

a) Click on the FTP server.

b) Click on desktop>IP Configuration.

c) Give static IP address to the server as shown below.



d) Click on Config.
e) Stop all other servers' configuration inside FTP server.
f) Select FTP server
g) Make it on.
h) Give username and password.
i) Select the file operation.
j) Click on + sign.

7. Go to PC and click on it.
8. Click on desktop.
9. Select command prompt.
10. Write the command ftp 192.169.2.4 and press enter.
11. Enter the user name and password.

Questions (put the answer in your report)

1. What is the main function of router?
2. What is the operation can perform on any file using FTP server?
3. Why we use static addressing for all servers?