Lab 3

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:

- 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.

R USER		
Physical Config D	esktop	
IP Configuration		
O DHCP		inttp:
Static		Web Browser
IP Address	192.168.1.1	
Subnet Mask	255.255.255.0	
Default Gateway	192.168.1.2	
DNS Server		Cisco IP
E Mail	PPPoE Dialer Text Editor	Communicator

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:

IOS Command Line Interface System Configuration Dialog Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router>en I Enter configuration commands, one per line. End with CNTL	Physical	Config	CLI						
System Configuration Dialog Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router=config t Enter configuration commands, one per line. End with CNTL				IOS Com	mand Lin	e Interfac	e		
System Configuration Dialog Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router=config t Enter configuration commands, one per line. End with CNTL									
Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#config t Enter configuration commands, one per line. End with CNTL			Syst	em Config	guration	Dialog			
Press RETURN to get started! Router>en Router#config t Enter configuration commands, one per line. End with CNTL	Contir	nue wit	h cor	ofiguratio	on dialo	g? [yes/	no]:	n	
Router>en I Router#config t Enter configuration commands, one per line. End with CNTL,	Press	RETURN	to g	get starte	ed!				
Router#config t L Enter configuration commands, one per line. End with CNTL	Router	r>en					т		
Enter configuration commands, one per line. End with CNTL,	Router	r#confi	gt				Т		
Router(config)#int fa0/0	Enter Route:	config r(confi	urati g)#ir	on comman t fa0/0	nds, one	per lin	le. E	nd wit	h CNTL/
Router(config-if)#ip address 192.168.1.2 255.255.255.0 Router(config-if)#no shut	Route: Route:	r(confi r(confi	g-if) g-if)	#ip addre	ess 192.	168.1.2	255.2	55.255	.0

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

Physical Config CLI				
I	OS Command Line In	terface		
FastEthernet0/0	192.168.1.2	YES	manual	up
FastEthernet1/0	unassigned	YES	unset	administr
Serial2/0	unassigned	YES	unset	administr
Serial3/0	unassigned	YES	unset	administr
FastEthernet4/0	unassigned	YES	unset	administr
FastEthernet5/0 Router#config t	unassigned	YES	unset I	administr
Enter configuration Router(config)#int Router(config-if)#i Router(config-if)#n	commands, one per fa1/0 p address 192.168 o shut	r line	. End 55.255.2	with CNTL/

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.

		http://
IP Address	192.168.2.2	Web Brows
Subnet Mask	255.255.255.0	
Default Gateway	192.1∯8.2.1	

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.

Configuration		A http://
IP Address	192.168.2.3	Web Browser
Subnet Mask	255.255.255.0	
Default Gateway	192.168.2.1	

d) Select config as shown below.

GLOE	BAL ^	Global Settings
Settir	ngs	
lgorithm	Setting	Display Name DNS
SERVI	ICES	Gateway/DNS
НТТ	P	O DHCP
DHC	CP	Static
TFT	P	Gateway 192.168.2.1
DN	S	DNS Server
SYSL	OG	
AA	A	Gateway/DNS IPv6
NT	P	© DHCP
EMA	AIL .	Auto Config
FT	P	 Static
INTER	FACE	IPv6 Gateway
FastEth	ernet	IPv6 DNS Server

- 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.

Physical Config	Desktop			
GLOBAL]	DNS		
Settings				
lgorithm Setting	DNS Service	On	0	Off
SERVICES	Resource Record	s		
HTTP	Name		Туре	A Record
DHCP				
TFTP	Address	L.		
DNS	Add	Save		Remove
SYSLOG	No. Name	Туре	D	etails
AAA	1 lab1.com	A Record	19	92.168.2.2
NTP				
EMAIL				
FTP				
INTERFACE				
FastEthernet				

- 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.

Physical Config	Desktop	E			
GLOBAL	~		DNS		
Settings					
lgorithm Setting	DNS S	Service	On	00	011
SERVICES	Resou	Irce Records			
HTTP	Name	lab1.	com	Туре	A Record
DHCP					
TFTP	Addre	192.168.2.	2		
DNS		Add	Save		Remove
SYSLOG	No.	Name	Туре	Det	tails
AAA	1	lab1.com	A Record	192	.168.2.2
NTP					
EMAIL					
FTP					
INTERFACE					
FastEthernet]			

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.

Connguration	•	http:
IP Address	192.168.2.4	Web Browser
Subnet Mask	255.255.255.0	
Default Gateway	192.168.2.1	

- 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 <u>ftp 192.169.2.4</u> 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?