EastWest University

Department of CSE
CSE 405
Computer Networking
SECTION: 02
Title: Design a full-Fledged network for an organization with multiple subnets.

Project Report

Submitted To:

Dr. Anisur Rahman

Asst.Professor ,

Department of CSE .

Submitted By:

Md. Sakibul Islam

- **2016-2-60-060**

Project Statement:

The purpose of my project is to create a university based network. The project based on creating complete model of the complex network by discovering the interconnectivity of the system and subnetworks, which will reflect the Apex University curriculum. This project is about configure a DHCP which is automatically assign IPv4 addresses to any host. Also DNS server ,HTTP protocol used in this project. Here I use cisco packet tracer and implemented window.

Overview of Three main services:

In my project I have used Cisco Packet Tracer for the implementation. There are three main services, one is Dynamic Host Configuration Protocol (DHCP), Second one is Hyper Transfer Protocol (HTTP), Third one is Domain Name System (DNS).

DHCP is a network protocol that enables a server to automatically assign an IP to a computer from defined range of numbers configured for a given network. DHCP allows to move a computer, such as a laptop, among various locations without reconfiguring the TCP/IP setting. For example, if a faculty member had a laptop which he wanted to take from his office to a networked classroom to present in class, DHCP will allow the laptop to hook to the network in both locations without reconfiguring the computer.

In this project's network model, there is a single server (DHCP), which is connected to a switch. That switch is connected to other five routers connected to switch that refer to Academic, Classrooms, ICS labs, faculty, employee, digital lab, and library. Each server is a sub-network. In the DHCP server there are few numbers of ports where I use only two port to connect a switch that creates sub-network. In future which can be expanded creating subnets from them? These are the wired network connections. Alongside of those, we I used 1 wireless switch so that one can connect there tablet or mobile phone and use internet service.

HTTP is designed to permit intermediate network elements to improve or enable communications between clients and servers. High-traffic websites often benefit from web cache servers that deliver content on behalf of upstream servers to improve response time. Web browsers cache previously accessed web resources and reuse them when possible to reduce network traffic. HTTP proxy servers at private network boundaries can facilitate communication for clients without a globally routable address, by relaying messages with external servers.

DNS server is the Internet's equivalent. It maintain a directory of domain names and translate them to Internet Protocol addresses.

Using this configuration I tried to create that complete model of complex network that reflects the Apex University curriculum.

Tools or components:

1.One DHCP Server

2. One DNS Server

3.One HTTP

4. Eleven Switches

5. Five routers

6. Twenty four hosts

7.One smart phone

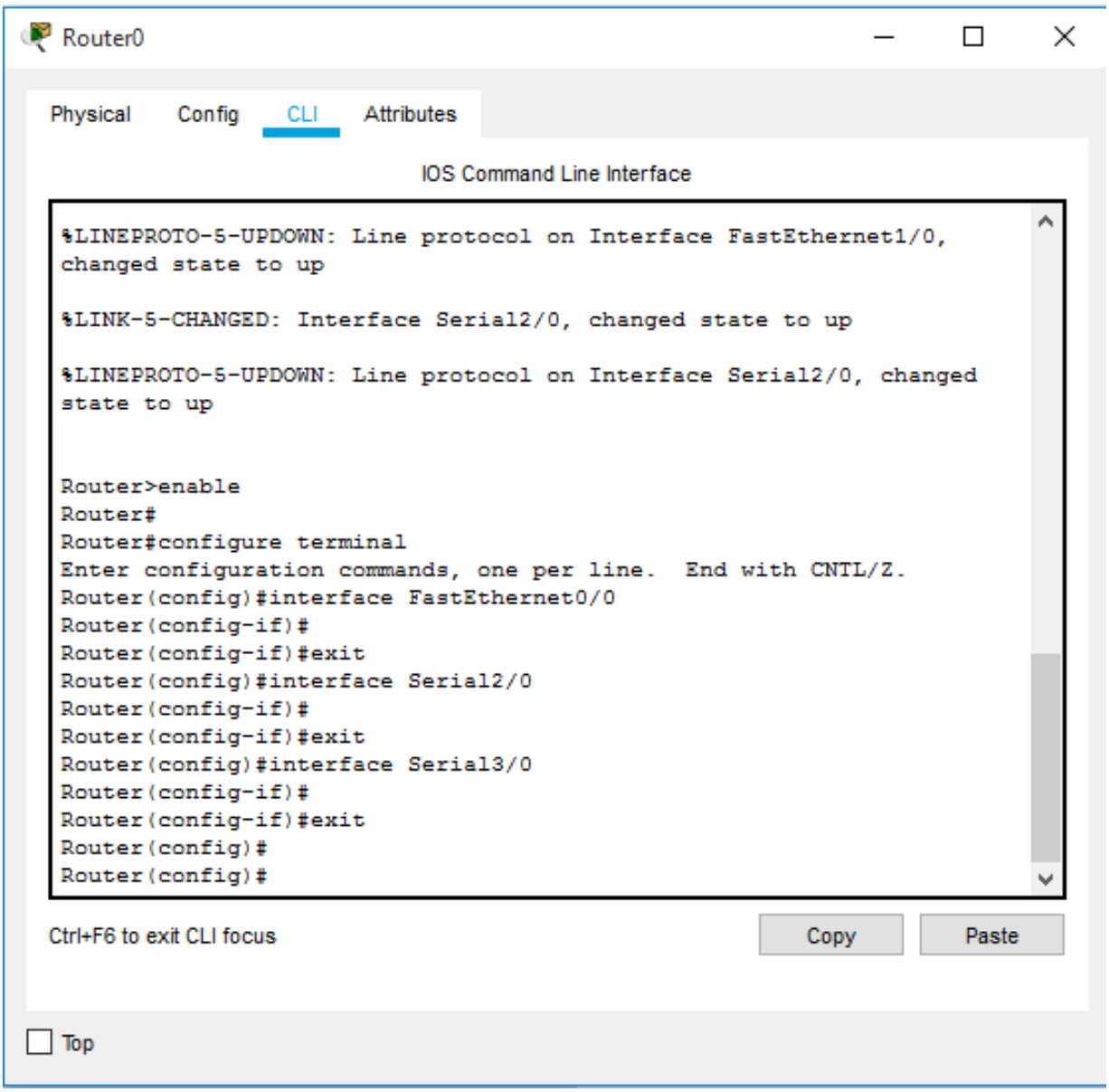
8. Connector

Procedure:

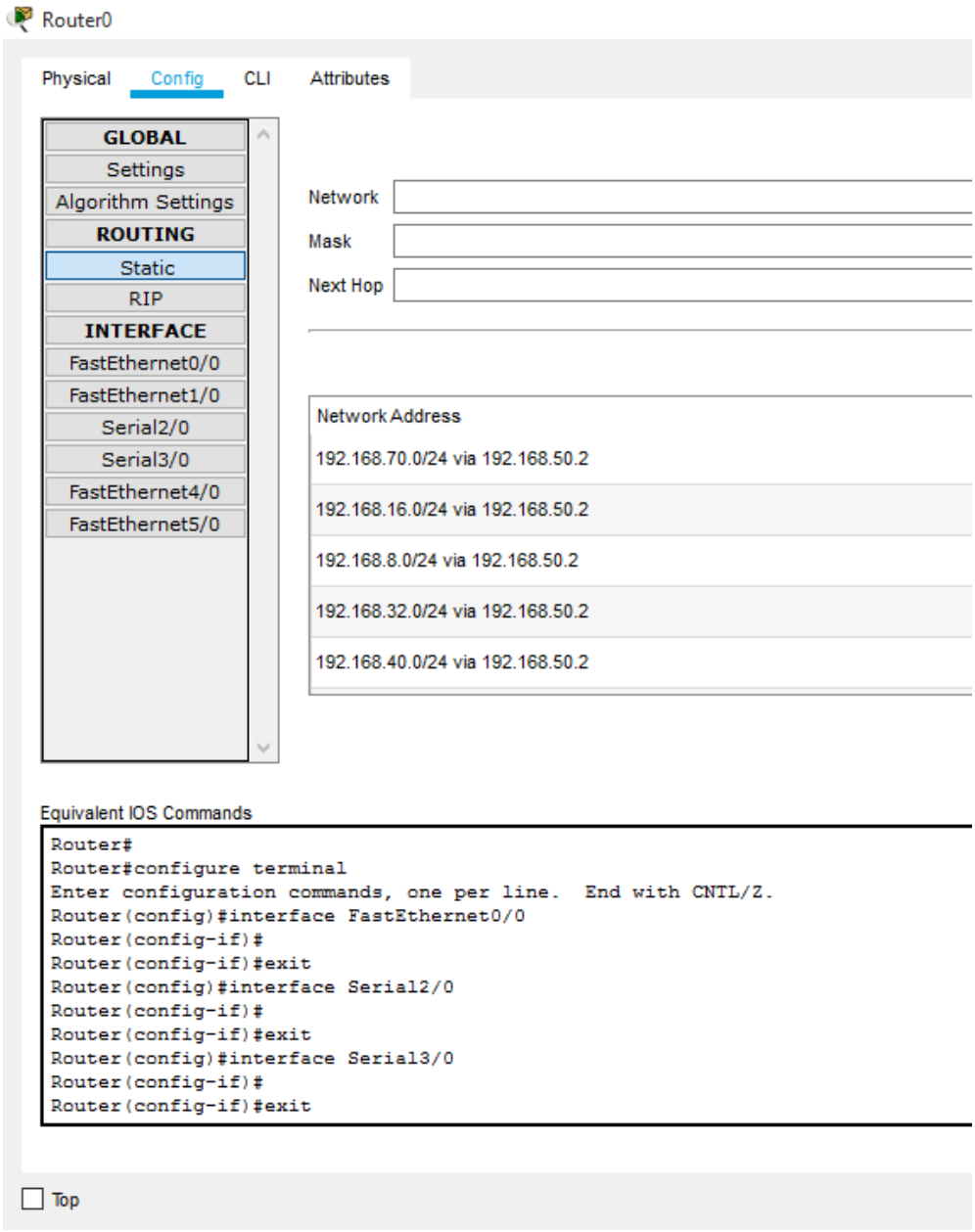
First, I take hosts from where admission, advising, lab and different types of activities are done. To interface the host I take switch. Then used router for making network. After that I take DHCP server, DNS server and HTTP server. The DNS server is for HTTP server. So, the web server can be workable. Everything ought to be associated with wire at that point. Then we will assign gateway IP in the router. The router will recognize server and switch with those gateway IP.

We assign the IP's of switch or server which will be recognizable to router. Those will be their default gateway IP. We will also assign the server IP.

Now, we make recognizable the switch side network to router.

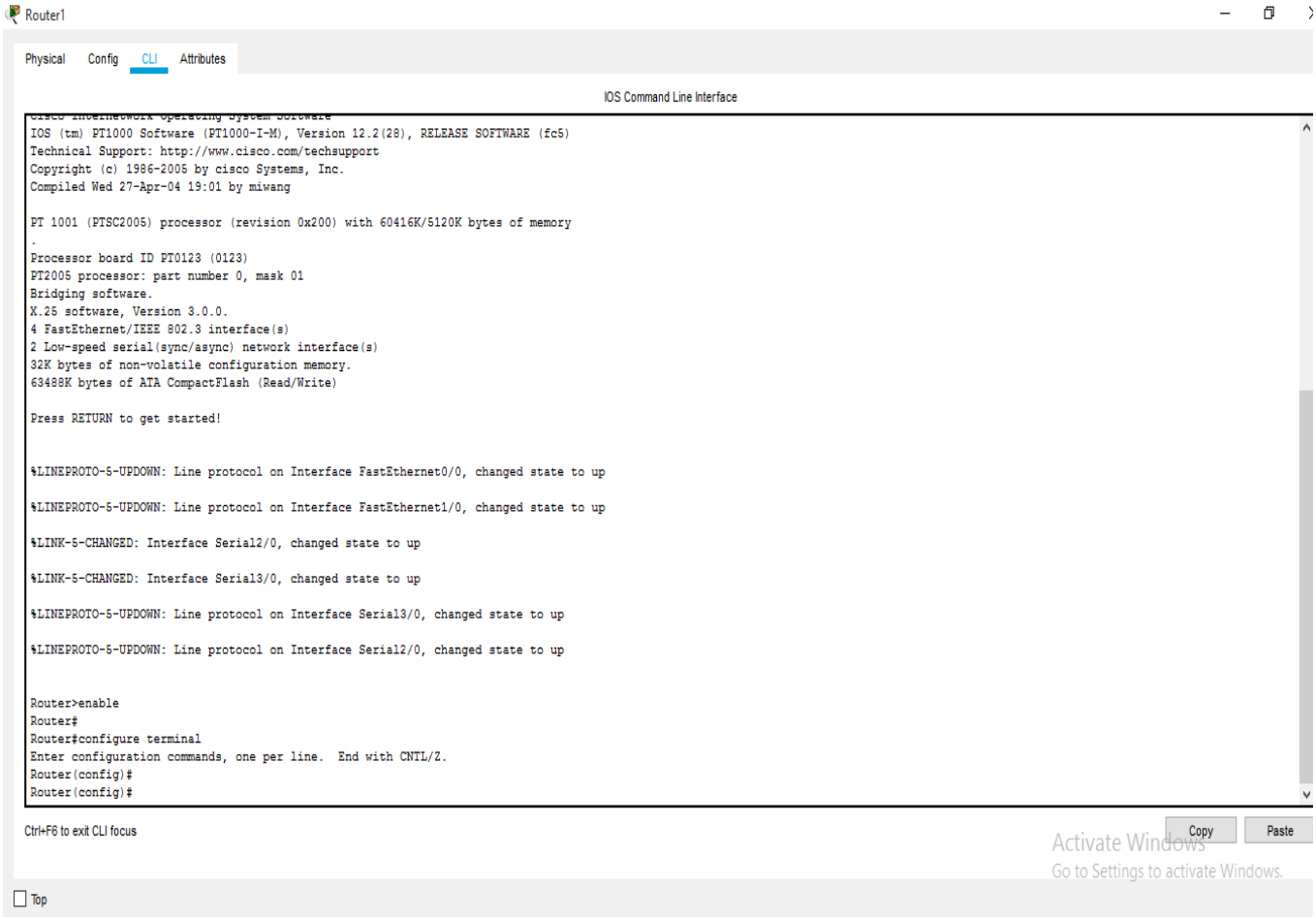

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Router0



Here is the static mode.

Similarly,


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
IOS (tm) PT1000 Software (PT1000-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang
PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)
Press RETURN to get started!
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Activate Windows
Go to Settings to activate Windows.
Top

Router1

Physical | Config | CLI | Attributes

GLOBAL
- Settings
- Algorithm Settings

ROUTING
- Static
- RIP

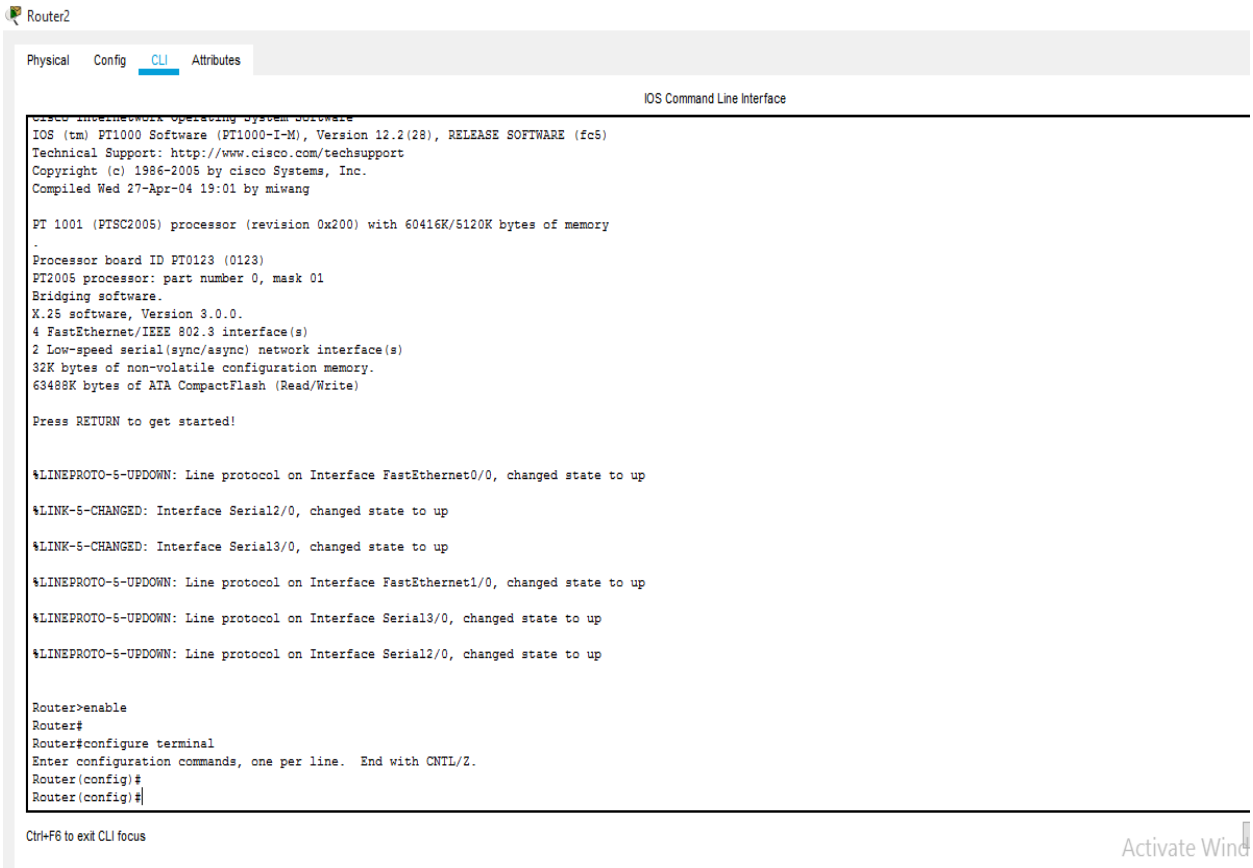
INTERFACE
- FastEthernet0/0
- FastEthernet1/0
- Serial2/0
- Serial3/0
- FastEthernet4/0
- FastEthernet5/0

Display Name	Router1
Hostname	Router
NVRAM	Erase
Startup Config	Load...
Running Config	Export...

Equivalent IOS Commands

```
Press RETURN to get started!

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
```

☐ Top


Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
IOS (tm) PT1000 Software (PT1000-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang
PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
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Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)
Press RETURN to get started!
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Ctrl+F6 to exit CLI focus
Activate Wind

Router2

Physical | Config | CLI | Attributes

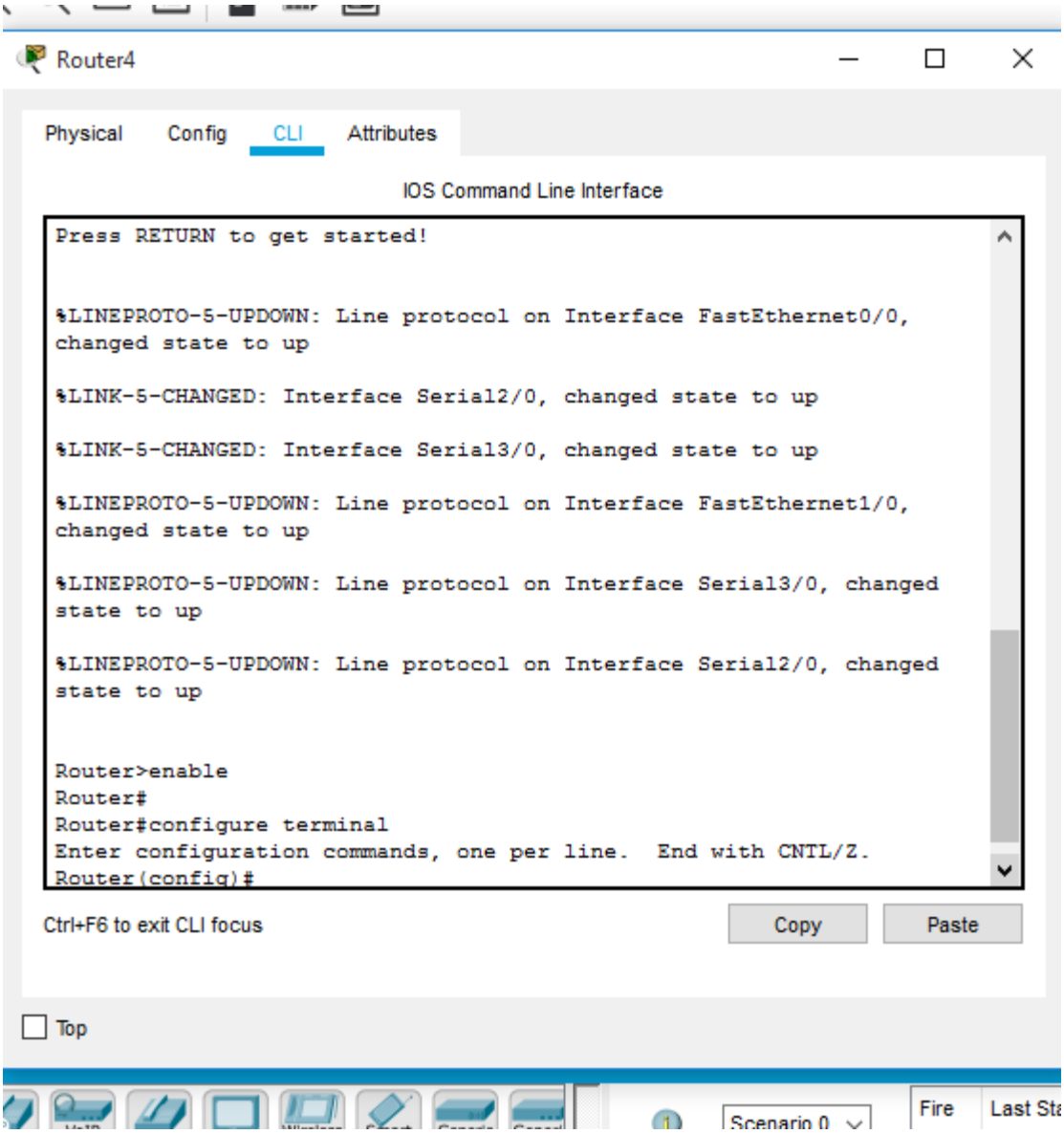
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0

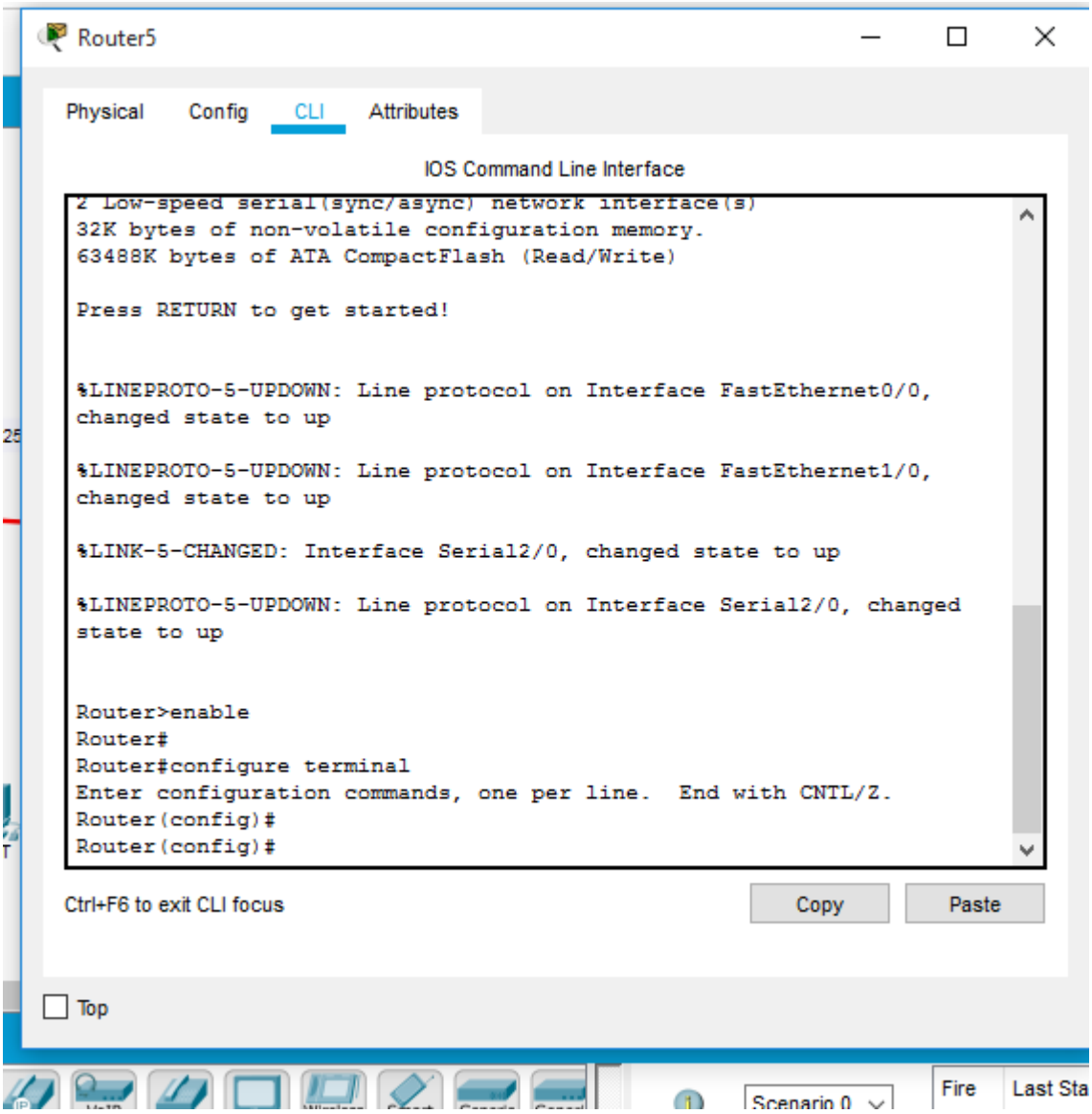
Network
Mask
Next Hop

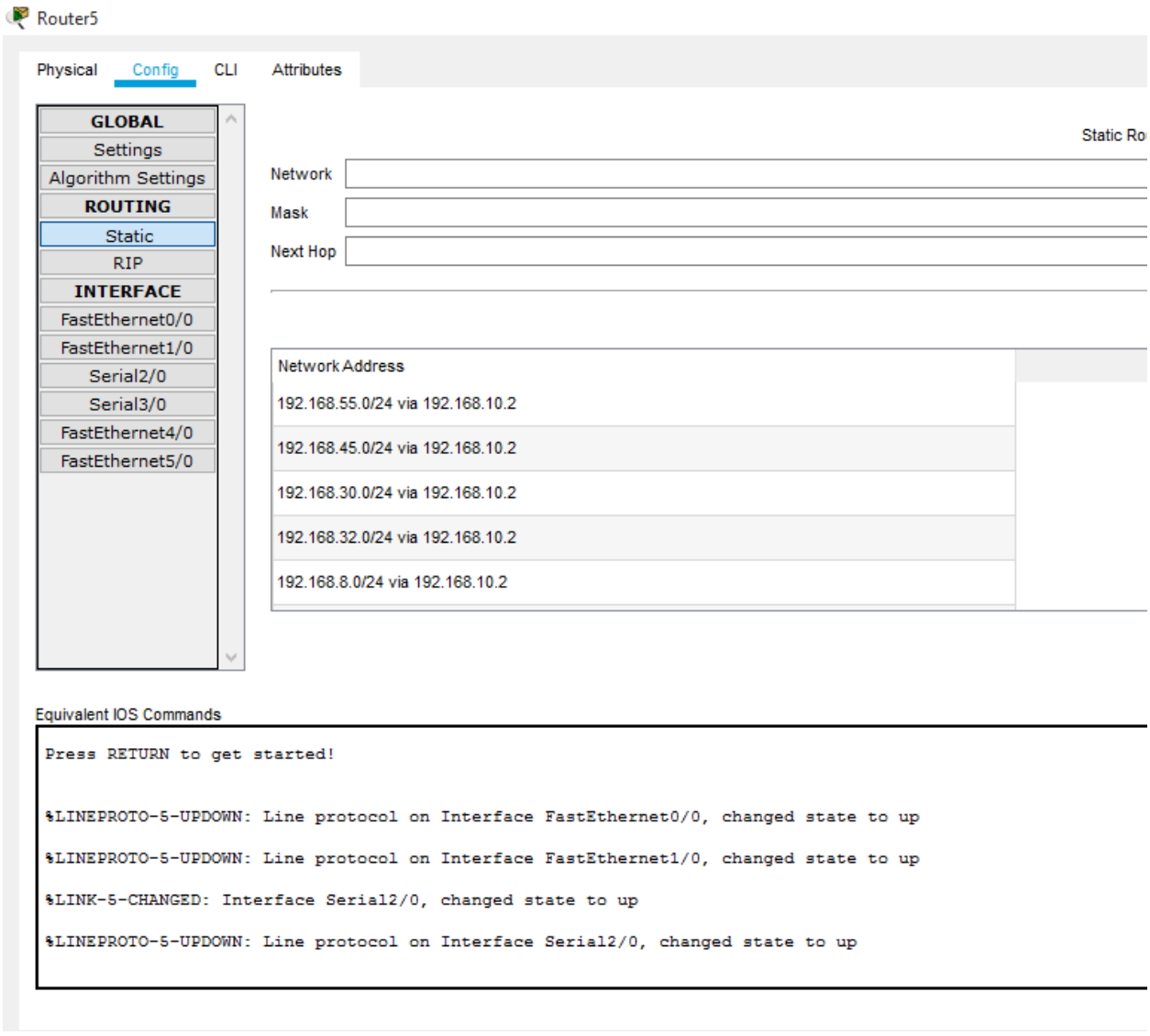
Network Address
192.168.35.0/24 via 192.168.30.1
192.168.90.0/24 via 192.168.30.1
192.168.50.0/24 via 192.168.30.1
192.168.70.0/24 via 192.168.30.1
192.168.16.0/24 via 192.168.30.1

Equivalent IOS Commands

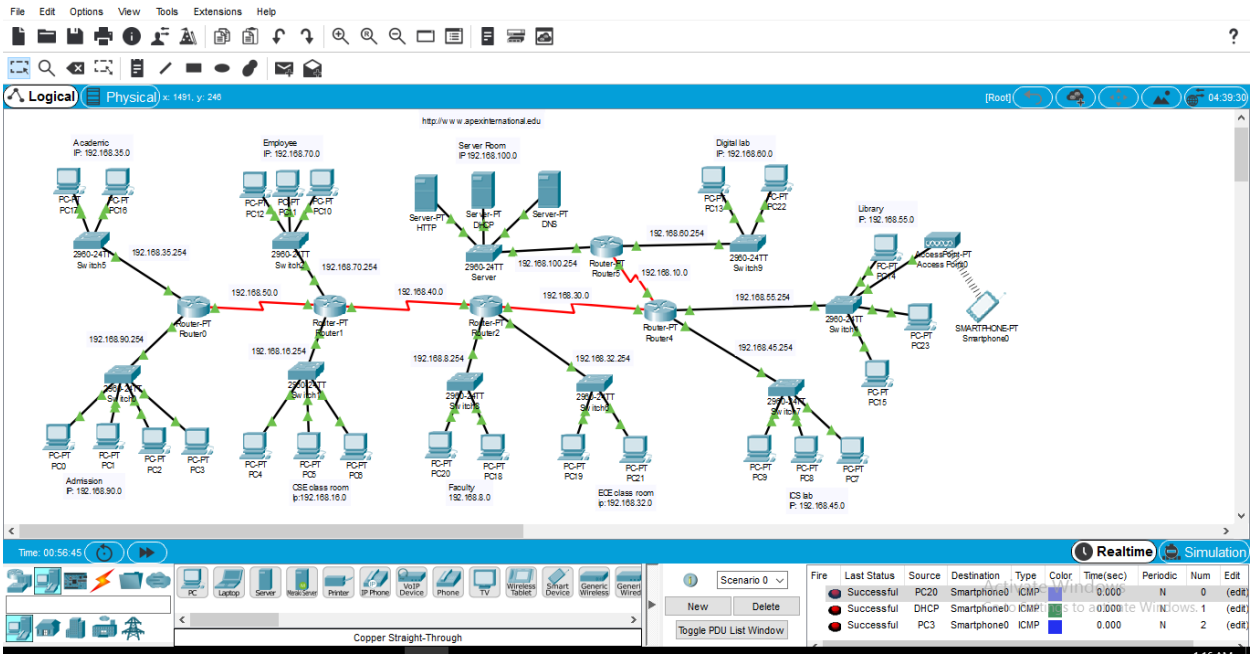
```
Press RETURN to get started!


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

%LINK-5-CHANGED: Interface Serial2/0, changed state to up

%LINK-5-CHANGED: Interface Serial3/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
```


Router4
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started!
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINK-5-CHANGED: Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top
Scenario 0
Fire
Last Sta

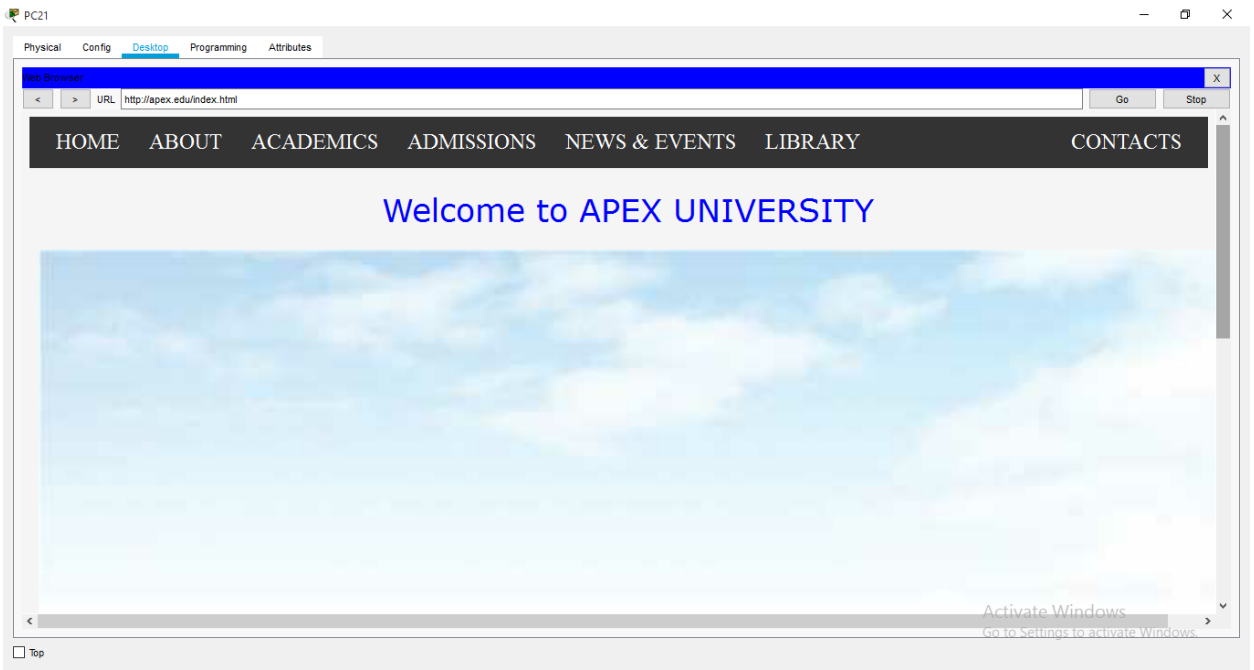

Router5
Physical
Config
CLI
Attributes
IOS Command Line Interface
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)
Press RETURN to get started!
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top
Scenario 0
Fire
Last Sta



My Entire project in cisco packet is ,



The over view of web page is ,



Conclusion:

In this project, I have implemented DHCP, DNS and HTTP in Cisco Packet Tracer, where the configuration of DHCP is automatically assign IPv4 address to any other host from the assigned IPv4 address block of the design. Also used web-server generates webpage which reflects the University profile.