Lab Task: 14

*────────────786

────────────*

Name: Muhammad Sherjeel Akhtar

Roll No: 20p-0101

Subject: Computer Networks Lab

**Submitted To Respected
Ma'am: Hurmat Hidayat**

Section: BCS-5B

**Consider the FAST NU Peshawar Campus.
Identify the requirements and design a
Network topology in packet tracer.**

Answer:

We are required to design a network topology in Packet Tracer for the FAST NUCES Peshawar Campus.

Key point:

Here in this question, we are not required anything so,
So we will identify the requirements on our own then we will Implement the strategy side-by-side.

Topology:

We've used,

- Router
- Switch
- Laptop
- PC
- Server

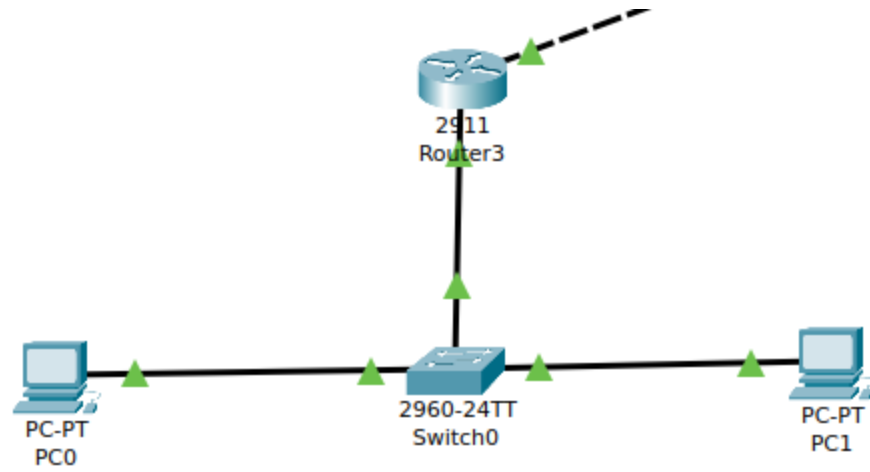These are the components that are used in our Topology.
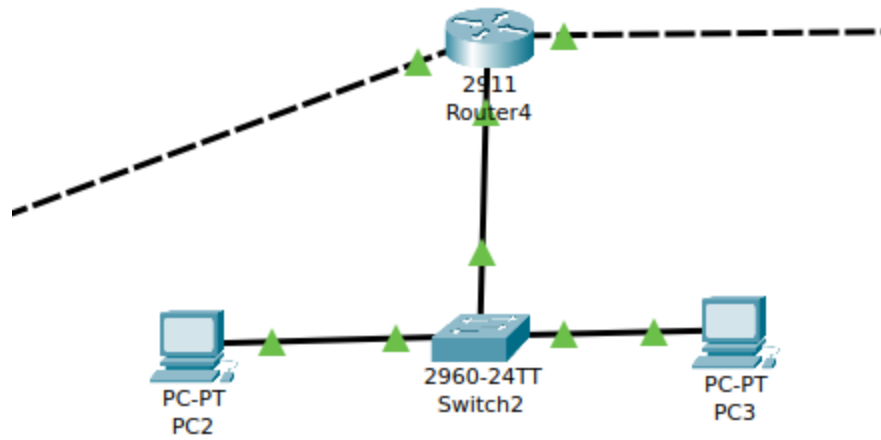
Numerical Figures:

We've used,

- 5 Routers
- 3 Switches
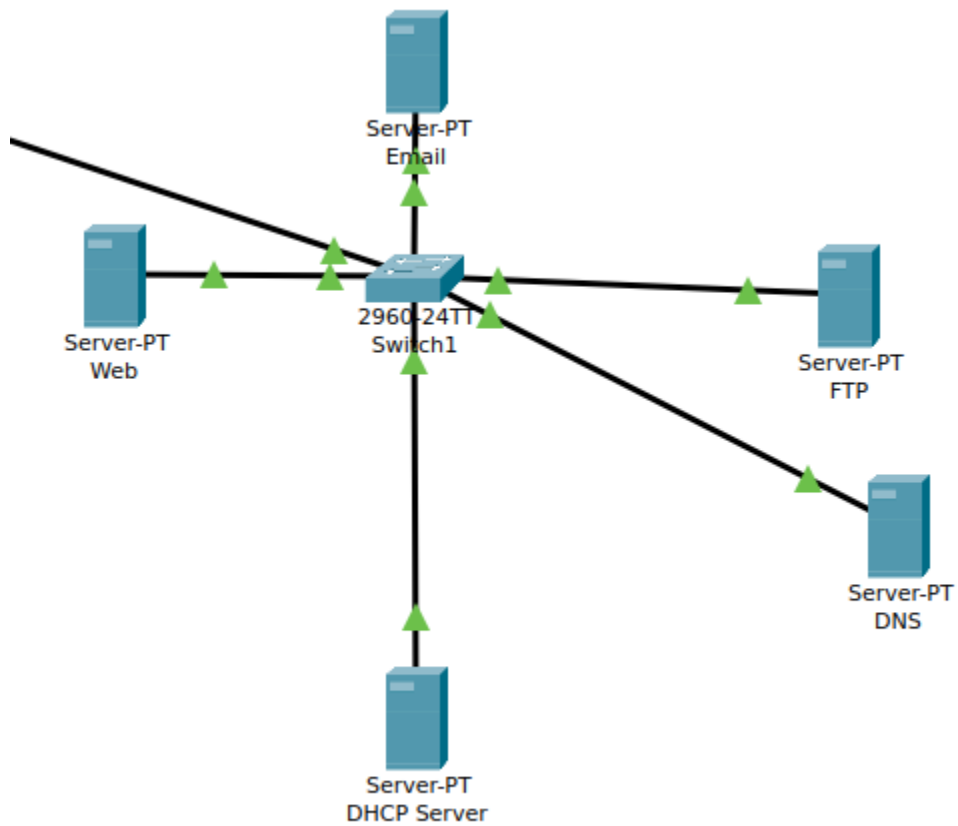- 6 of Total PC/Laptops
- 5 Servers

Visual Demonstration:

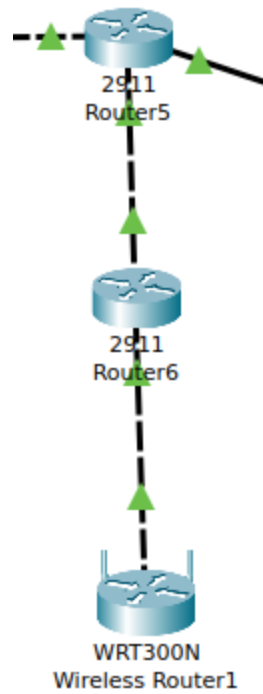## Network-1:

Network-2:

Servers:
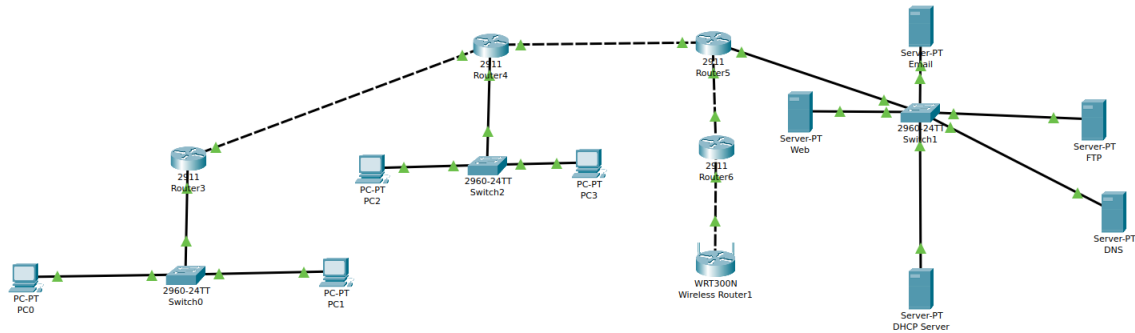
Wireless Router:

Connection:

Whole Demonstration:

The whole demonstration of our Topology is attached below:

Configurations:

First of all we will configure first Router.

First Router Configuration:

```
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.2.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip add 192.168.1.33 255.255.255.224
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
```

Second Router Configuration:

```
Router(config-if)#ip add 192.168.3.10 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.2.2 255.255.255.0
Router(config-if)#exit
```

```
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.2.2 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip add 192.168.4.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
```
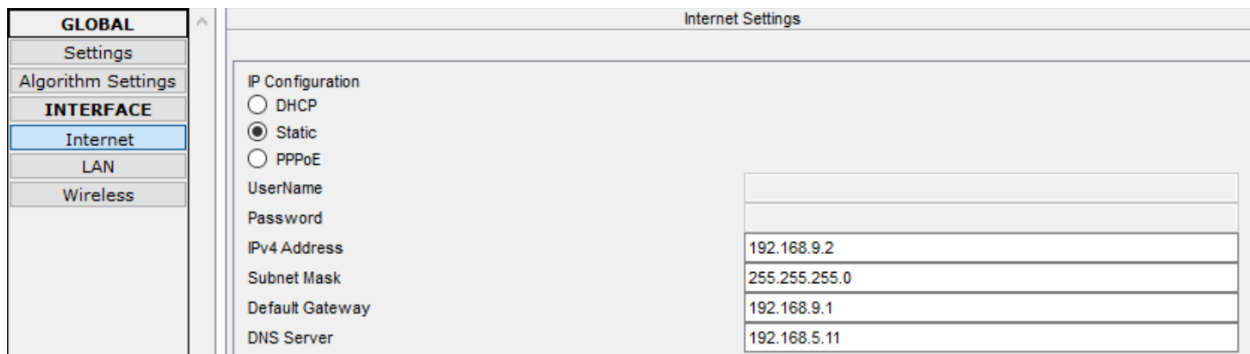
Third Router Configuration:

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip add 192.168.5.10 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1

Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.4.2 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip add 192.168.7.2 255.255.255.0
```
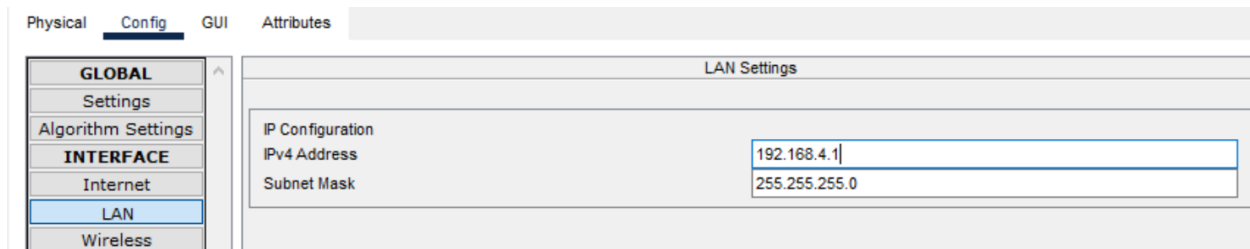
Wireless Router Configuration:

We will keep the connection of the Wireless Router Static by assigning it an IP Address.

Configuration On LAN:

After it we will do an addition of another router that will connect the Third Router and Wireless Router.

Configuration:

```
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit

Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip add 192.168.6.10 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip add 192.168.7.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
```

Server Configuration:

Our next step is to set the servers DNS FTP EMAIL WEB and DHCP servers and going to make a DHCP connection with all the computers.

EMAIL Server Config:

Email — ☐ ⃨

Physical   Config   Services   Desktop   Programming   Attributes

GLOBAL	Global Settings
Settings	
Algorithm Settings	Display Name Email
INTERFACE	
FastEthernet0	

Gateway/DNS IPv4
○ DHCP
◉ Static
Default Gateway   192.168.8.10
DNS Server   192.168.5.12

Physical   Config   Services   Desktop   Programming   Attributes

GLOBAL	FastEthernet0
Settings	
Algorithm Settings	
INTERFACE	
FastEthernet0	

Port Status   ☑ On
Bandwidth   ◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex   ○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address   0001.C7A3.6DC3

IP Configuration
○ DHCP
◉ Static
IPv4 Address   192.168.5.19
Subnet Mask   255.255.255.0

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address   /
Link Local Address: FE80::201:C7FF:FEA3:6DC3

Physical   Config   Services   Desktop   Programming   Attributes

IP Configuration   X

IP Configuration

◯ DHCP   ◉ Static

IPv4 Address   192.168.5.19

Subnet Mask   255.255.255.0

Default Gateway   192.168.5.10

DNS Server   192.168.5.12

IPv6 Configuration

Physical   Config   Services   Desktop   Programming   Attributes

Configure Mail   X

User Information

Your Name: c1

Email Address   192.168.5.1

Server Information

Incoming Mail Server   192.168.4.2

Outgoing Mail Server   192.168.6.2

Logon Information

User Name: c1

Password: •••

Save   Remove   Clear   Reset

Physical   Config   Services   Desktop   Programming   Attributes

Configure Mail   X

User Information

Your Name: c2

Email Address   192.168.5.3

Server Information

Incoming Mail Server   192.168.5.2

Outgoing Mail Server   192.168.6.2

Logon Information

User Name: c2

Password: •••

Logon Information

User Name: c2

Password: •••

FTP Server Configuration:

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0

Global Settings

Display Name FTP

Gateway/DNS IPv4

○ DHCP

◉ Static

Default Gateway 192.168.7.10

DNS Server 192.168.5.12

Physical | Config | Services | Desktop | Programming | Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0

FastEthernet0

Port Status ☑ On

Bandwidth ◉ 100 Mbps ○ 10 Mbps ☑ Auto

Duplex ○ Half Duplex ◉ Full Duplex ☑ Auto

MAC Address 00E0.F70C.0116

IP Configuration
○ DHCP
◉ Static
IPv4 Address 192.168.5.15
Subnet Mask 255.255.255.0

FTP Sub Configuration:

DNS Server Configuration:

"*Adding Names And Addresses*"

Adding Names And Addresses:

DNS IP Configuration:

Web Server Config:

Physical	Config	Services	Desktop	Programming	Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0

Global Settings

Display Name: web

Gateway/DNS IPv4
○ DHCP
◉ Static
Default Gateway 192.168.7.10
DNS Server   192.168.5.12

IP Configuration:

IP Configuration   [X]

IP Configuration

○ DHCP   ◉ Static

IPv4 Address   192.168.5.13

Subnet Mask   255.255.255.0

Default Gateway   192.168.7.10

DNS Server   192.168.5.12

Adding HTTP Services:

	File Name	Edit	Delete
	Physical	Config	Services	Desktop	Programming	Attributes	

HTTP

HTTP
- ● On   ○ Off

HTTPS
- ● On   ○ Off

File Manager

	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)

Editing .index file:

SERVICES
- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

File Name: helloworld.html

```
<html>
Hello, world!
<br><a href='index.html'>Back</a>
</html>
```
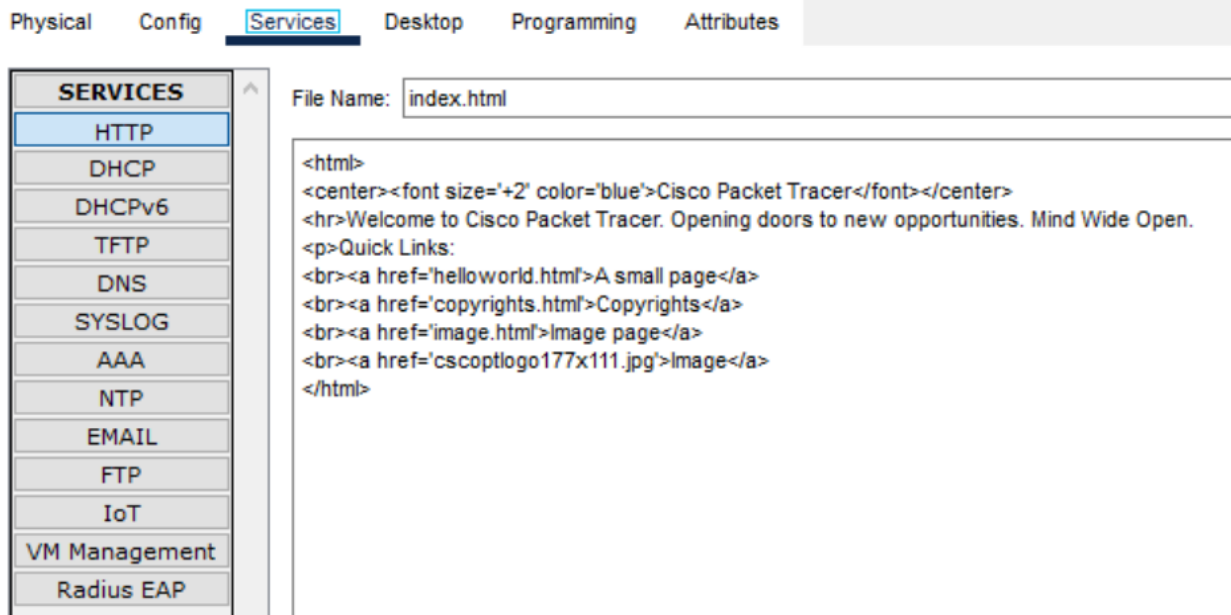
DHCP Server Configuration:
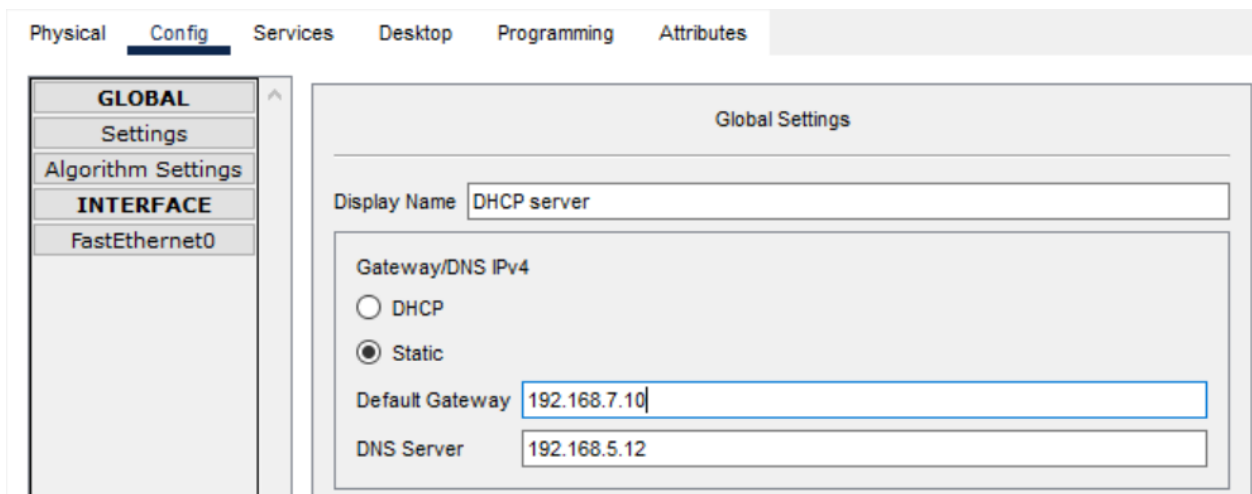
IP Config:

IP Configuration

IP Configuration

○ DHCP ● Static

IPv4 Address	192.168.5.11
Subnet Mask	255.255.255.0
Default Gateway	192.168.7.10
DNS Server	192.168.5.12

DHCP Config:

Physical | Config | Services | Desktop | Programming | Attributes

SERVICES
- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface	FastEthernet0	Service ● On ○ Off
Pool Name		serverPool
Default Gateway		192.168.5.10
DNS Server		192.168.5.12

Start IP Address : 192 | 168 | 5 | 0
Subnet Mask: 255 | 255 | 255 | 0

Maximum Number of Users :	245
TFTP Server:	0.0.0.0
WLC Address:	0.0.0.0

Physical | Config | Services | Desktop | Programming | Attributes

SERVICES
- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface	FastEthernet0	Service ● On ○ Off
Pool Name		serverPool2
Default Gateway		192.168.3.10
DNS Server		192.168.5.12

Start IP Address : 192 | 168 | 3 | 11
Subnet Mask: 255 | 255 | 255 | 0

Maximum Number of Users :	245
TFTP Server:	0.0.0.0
WLC Address:	0.0.0.0

Physical   Config   Services   Desktop   Programming   Attributes

SERVICES		DHCP

HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP

Interface   FastEthernet0 ⌄   Service ⦿ On   ◯ Off

Pool Name   serverPool3

Default Gateway   192.168.1.1

DNS Server   192.168.5.12

Start IP Address : 192   168   1   12

Subnet Mask: 255   255   255   224

Maximum Number of Users :   20

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add	Save	Remove

Physical   Config   Services   Desktop   Programming   Attributes

SERVICES		DHCP

HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP

Interface   FastEthernet0 ⌄   Service ⦿ On   ◯ Off

Pool Name   serverPool4

Default Gateway   192.168.1.33

DNS Server   192.168.5.12

Start IP Address : 192   168   1   35

Subnet Mask: 255   255   255   224

Maximum Number of Users :   29

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add	Save	Remove

PC's DHCP Routing:

PC3

IP Configuration

Interface	Wireless0	⌄

IP Configuration

○ DHCP   ○ Static

IPv4 Address	192.168.7.101
Subnet Mask	255.255.255.0
Default Gateway	192.168.7.1
DNS Server	192.168.5.11

IPv6 Configuration

○ Automatic   ● Static

Physical   Config   Desktop   Programming   Attributes

IP Configuration

Interface	FastEthernet0

IP Configuration

● DHCP   ○ Static

IPv4 Address	192.168.5.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.5.10
DNS Server	192.168.5.12

IPv6 Configuration

○ Automatic   ● Static

Final Testing:

Welcome to my Website