



Name : Ammaar Naeem Laghari

Roll No : 20P-0180

Section: BCS-5B

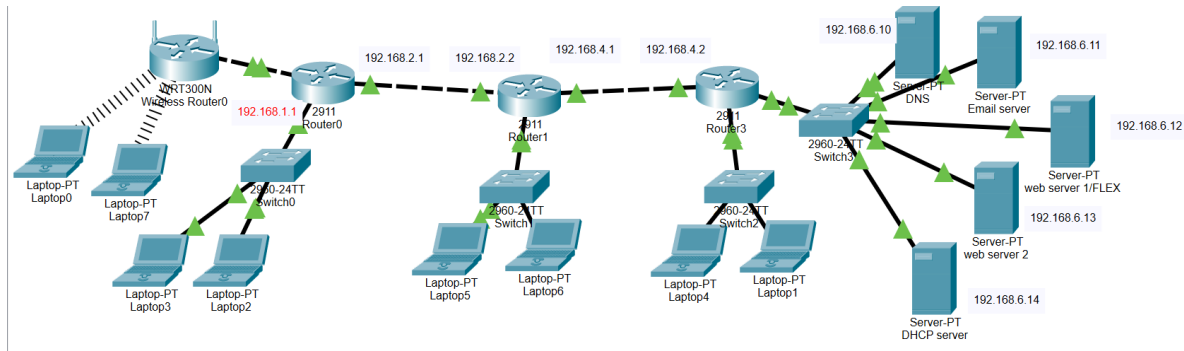
Course Name: Computer Networks LAB

Submitted to : Mam Hurmat Hidayat

Q1:

Step 1:

Build a Network topology.



Step 2

Configure the routers.

Router 1:

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0**
- GigabitEthernet0/1
- GigabitEthernet0/2

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☒ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00D0.FFCE.0501

IP Configuration

IP Address 192.168.1.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2

GigabitEthernet0/1

Port Status ☒ On

Bandwidth
☒ 1000 Mbps
☐ 100 Mbps
☐ 10 Mbps
☒ Auto

Duplex
☐ Half Duplex
☒ Full Duplex
☒ Auto

MAC Address
00D0.FFCE.0502

IP Configuration
IP Address
192.168.2.1
Subnet Mask
255.255.255.0

Tx Ring Limit
10

Router 2

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2

GigabitEthernet0/0

Port Status ☒ On

Bandwidth
☐ 1000 Mbps
☒ 100 Mbps
☐ 10 Mbps
☒ Auto

Duplex
☐ Half Duplex
☒ Full Duplex
☒ Auto

MAC Address
00E0.8F88.0701

IP Configuration
IP Address
192.168.3.1
Subnet Mask
255.255.255.0

Tx Ring Limit
10

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2

GigabitEthernet0/1

Port Status ☒ On

Bandwidth
☒ 1000 Mbps
☐ 100 Mbps
☐ 10 Mbps
☒ Auto

Duplex
☐ Half Duplex
☒ Full Duplex
☒ Auto

MAC Address
00E0.8F88.0702

IP Configuration
IP Address
192.168.2.2
Subnet Mask
255.255.255.0

Tx Ring Limit
10

| Physical | Config | CLI | Attributes |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|------------|
| <div> <div> GLOBAL <ul style="list-style-type: none"> Settings Algorithm Settings ROUTING <ul style="list-style-type: none"> Static RIP SWITCHING <ul style="list-style-type: none"> VLAN Database INTERFACE <ul style="list-style-type: none"> GigabitEthernet0/0 GigabitEthernet0/1 GigabitEthernet0/2 </div> <div> <div>GigabitEthernet0/2</div> <div> Port Status <input checked="" type="checkbox"/> On Bandwidth <input checked="" type="radio"/> 1000 Mbps <input type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto Duplex <input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto MAC Address 00E0.8F88.0703 <div> <div>IP Configuration</div> <div> IP Address 192.168.4.1 Subnet Mask 255.255.255.0 </div> </div> Tx Ring Limit 10 </div> </div> </div> | | | |

Router 3

| Physical | Config | CLI | Attributes |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|------------|
| <div> <div> GLOBAL <ul style="list-style-type: none"> Settings Algorithm Settings ROUTING <ul style="list-style-type: none"> Static RIP SWITCHING <ul style="list-style-type: none"> VLAN Database INTERFACE <ul style="list-style-type: none"> GigabitEthernet0/0 GigabitEthernet0/1 GigabitEthernet0/2 </div> <div> <div>GigabitEthernet0/0</div> <div> Port Status <input checked="" type="checkbox"/> On Bandwidth <input type="radio"/> 1000 Mbps <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto Duplex <input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto MAC Address 0002.4A33.8201 <div> <div>IP Configuration</div> <div> IP Address 192.168.6.1 Subnet Mask 255.255.255.0 </div> </div> Tx Ring Limit 10 </div> </div> </div> | | | |

| Physical | Config | CLI | Attributes |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----|------------|
| <div> <div> GLOBAL <ul style="list-style-type: none"> Settings Algorithm Settings ROUTING <ul style="list-style-type: none"> Static RIP SWITCHING <ul style="list-style-type: none"> VLAN Database INTERFACE <ul style="list-style-type: none"> GigabitEthernet0/0 GigabitEthernet0/1 GigabitEthernet0/2 </div> <div> <div>GigabitEthernet0/1</div> <div> Port Status <input checked="" type="checkbox"/> On Bandwidth <input type="radio"/> 1000 Mbps <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto Duplex <input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto MAC Address 0002.4A33.8202 <div> <div>IP Configuration</div> <div> IP Address 192.168.5.1 Subnet Mask 255.255.255.0 </div> </div> Tx Ring Limit 10 </div> </div> </div> | | | |

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2

GigabitEthernet0/2

Port Status ☒ On
Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto
Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto
MAC Address 0002.4A33.8203

IP Configuration
IP Address 192.168.4.2
Subnet Mask 255.255.255.0

Tx Ring Limit 10

Wireless router:

Network Setup
Router IP
DHCP Server Settings

IP Address: 192 . 168 . 7 . 1
Subnet Mask: 255.255.255.0

DHCP Server: ☒ Enabled ☐ Disabled

DHCP Reservation

Start IP Address: 192.168.7. 100
Maximum number of Users: 50
IP Address Range: 192.168.7. 100 - 149
Client Lease Time: 0 minutes (0 means one day)
Static DNS 1: 192 . 168 . 6 . 10
Static DNS 2: 0 . 0 . 0 . 0
Static DNS 3: 0 . 0 . 0 . 0
WINS: 0 . 0 . 0 . 0

Step 3:

Web servers Configuration.

Web server 1:

PhysicalConfigServicesDesktopProgrammingAttributes

IP ConfigurationX

IP Configuration

☐ DHCP☒ Static

IP Address

192.168.6.12

Subnet Mask

255.255.255.0

Default Gateway

192.168.6.1

DNS Server

192.168.6.10

PhysicalConfigServicesDesktopProgrammingAttributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

File Name: index.html

```
<html>
<center><font size='+2' color='blue'>FLEX STUDENTS</font></center>
<hr>Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
<p>Quick Links:
<br><a href='helloworld.html'>MARKS</a>
<br><a href='copyrights.html'>Copyrights</a>
<br><a href='image.html'>Image page</a>
<br><a href='cscoptlogo177x111.jpg'>Image</a>
</html>
```

Web server 2:

Physical Config Services **Desktop** Programming Attributes

IP Configuration [X]

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.6.13

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.6.1

DNS Server: 192.168.6.10

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

File Name: index.html

```
<html>
<center><font size='+2' color='blue'+Slate Students</font></center>
<hr>Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
<p>Quick Links:
<br><a href='helloworld.html'>A small page</a>
<br><a href='copyrights.html'>Copyrights</a>
<br><a href='image.html'>Image page</a>
<br><a href='cscoptlogo177x111.jpg'>Image</a>
</html>
```

Step 4:DNS server configuration.

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 | mail.com | A Record | 192.168.6.11 |
| 1 | www.flex.com | A Record | 192.168.6.12 |
| 2 | www.slate.com | A Record | 192.168.6.13 |

Step 5:

Email server configuration

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

EMAIL

SMTP Service

☒ ON ☐ OFF

POP3 Service

☒ ON ☐ OFF

Domain Name: mail.com

Set

User Setup

User Password

client1

client2

client3

client4

client5

client6

+

-

Change

Password

Step 6:

Check Email received and reply

Sending mail to client2@mail.com , with subject : xyz .. Mail Server: mail.com
DNS resolving. Resolving name: mail.com by querying to DNS Server: 192.168.6.10 DNS
resolved ip address: 192.168.6.11
Send Success.

Cancel
Send/Receive

☐ Top

PhysicalConfigDesktopProgrammingAttributes

MAIL BROWSERX

Mails

ComposeReplyReceiveDeleteConfigure Mail

| | From | Subject | Received |
|---|------------------|---------|--------------------------|
| 1 | client1@mail.com | xyz | Sat Nov 26 2022 21:58:51 |

xyz
client1@mail.com
Sent : Sat Nov 26 2022 21:58:51

hello world

PhysicalConfigDesktopProgrammingAttributes

Reply MailX

Send

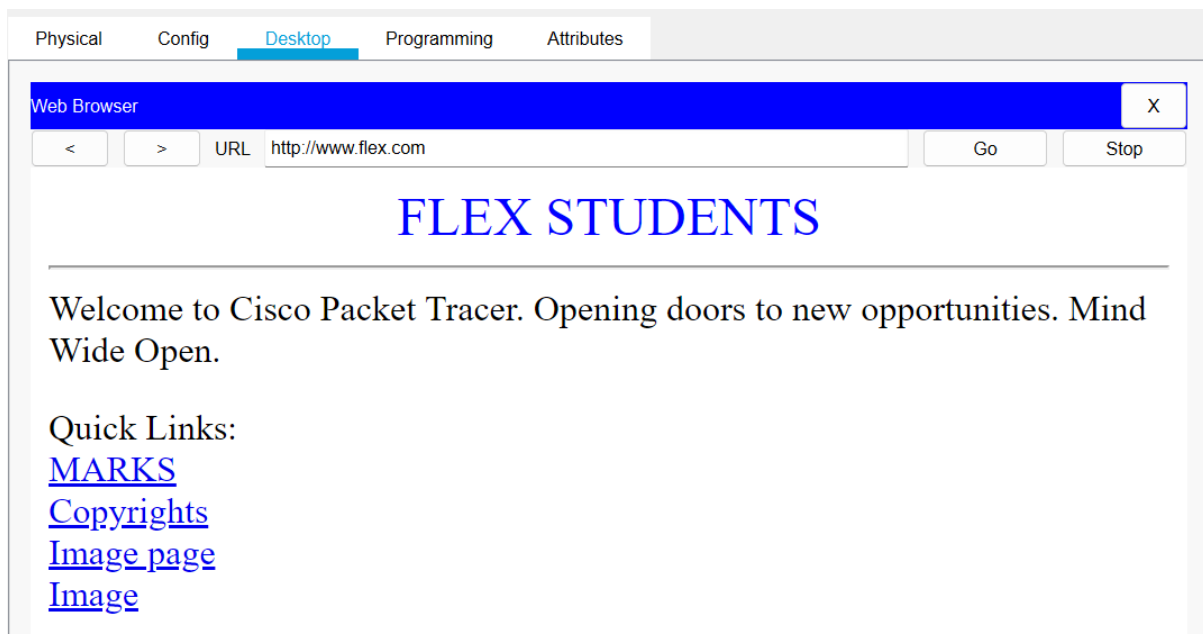
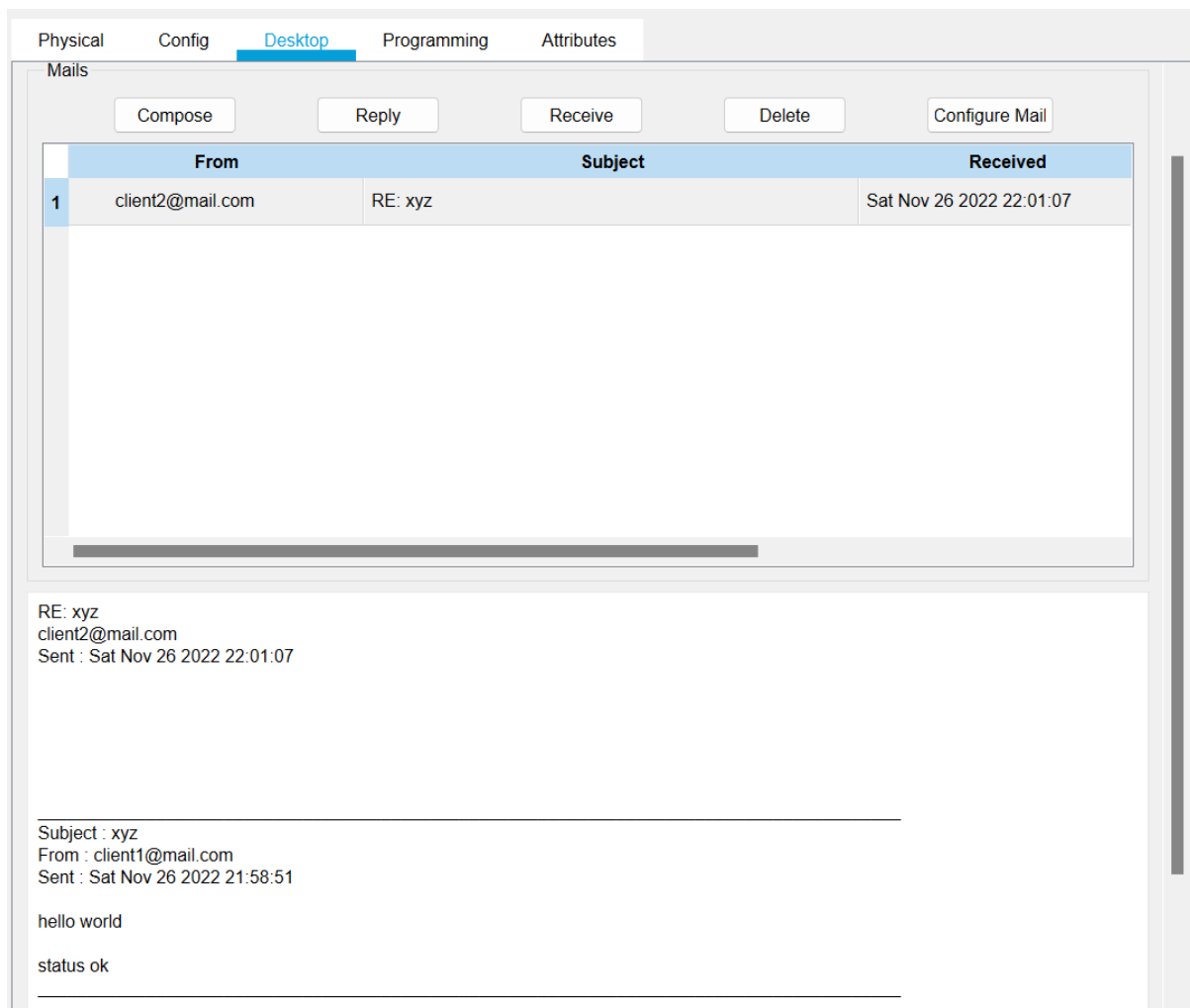
To:client1@mail.com

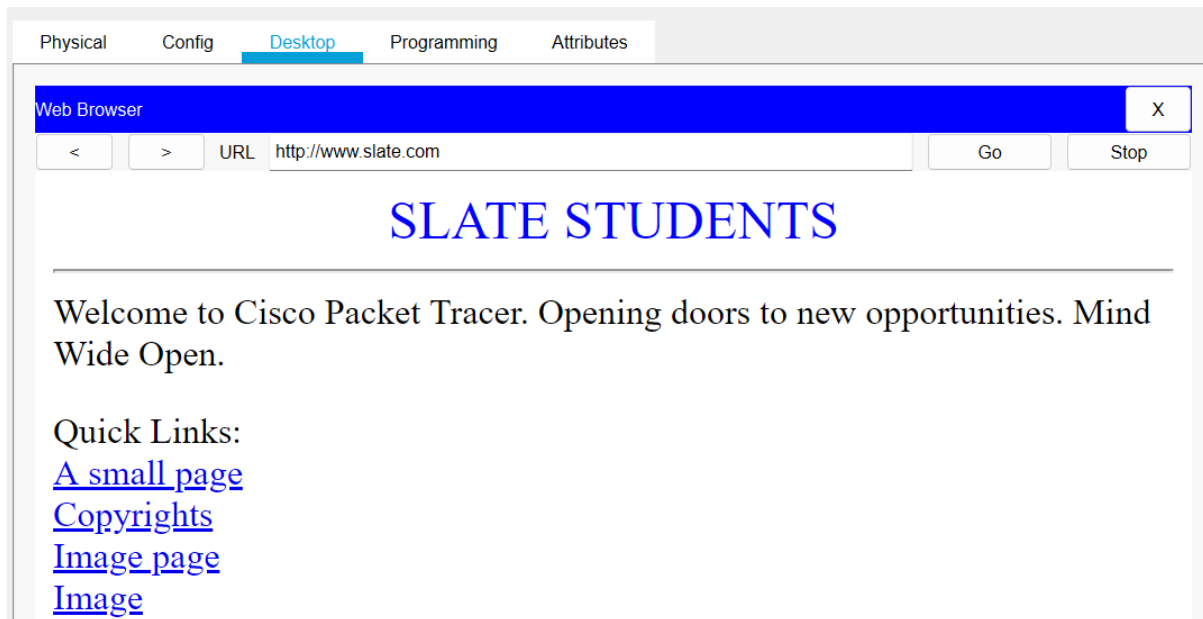
Subject:RE: xyz

Subject : xyz
From : client1@mail.com
Sent : Sat Nov 26 2022 21:58:51

hello world

status ok





Step 7:

Making DHCP pool in router for assigning ip address dynamically.

Router 1:

```
Router>
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip dhcp pool IPD
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.1.1
Router(dhcp-config)#dns-server 192.168.6.10
Router(dhcp-config)#
Router(dhcp-config)#exit
Router(config)#
Router(config)#ip dhcp excluded-address 192.168.1.1 192.168.1.10
```

DHCP Server:

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DHCP

InterfaceFastEthernet0ServiceOnOff

Pool NameserverPool1

Default Gateway192.168.5.1

DNS Server192.168.6.10

Start IP Address :192168510

Subnet Mask:2552552550

Maximum Number of Users :246

TFTP Server:0.0.0.0

WLC Address:0.0.0.0

AddSaveRemove

| Pool Name | Default Gateway | DNS Server | Start IP Address | Subnet Mask | Max User | TFTP Server | WLC Address |
|-------------|-----------------|-------------|------------------|-------------|----------|-------------|-------------|
| serverPool1 | 192.168.... | 192.168.... | 192.168.... | 255.255.... | 246 | 0.0.0.0 | 0.0.0.0 |
| serverPool | 192.168.... | 192.168.... | 192.168.... | 255.255.... | 246 | 0.0.0.0 | 0.0.0.0 |

Physical

Config

Desktop

Programming

Attributes

IP ConfigurationX

InterfaceFastEthernet0

IP Configuration

DHCP

Static

DHCP request successful.

IP Address192.168.1.11

Subnet Mask255.255.255.0

Default Gateway192.168.1.1

DNS Server192.168.6.10

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

▼

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IP Address

192.168.1.12

Subnet Mask

255.255.255.0

Default Gateway

192.168.1.1

DNS Server

192.168.6.10

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

▼

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IP Address

192.168.3.11

Subnet Mask

255.255.255.0

Default Gateway

192.168.10.1

DNS Server

192.168.6.10

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

▼

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IP Address

192.168.3.12

Subnet Mask

255.255.255.0

Default Gateway

192.168.10.1

DNS Server

192.168.6.10

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IP Address

192.168.5.12

Subnet Mask

255.255.255.0

Default Gateway

192.168.5.1

DNS Server

192.168.6.10

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

☒ DHCP

☐ Static

DHCP request successful.

IP Address

192.168.5.14

Subnet Mask

255.255.255.0

Default Gateway

192.168.5.1

DNS Server

192.168.6.10

THE END