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Course Name: Computer Networks LAB

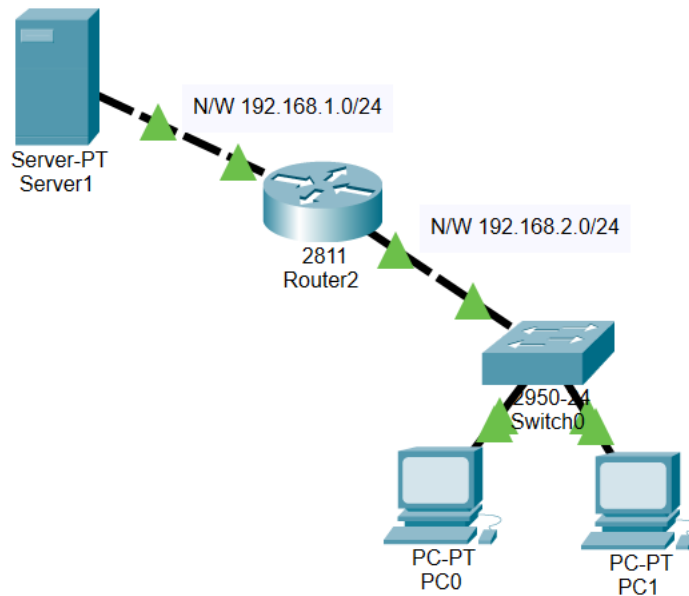
Submitted to : Mam Hurmat Hidayat

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TASK 1:

Step 1:

Build a network topology.



step 2:

Assign a static IP address to the server.

IP address: 192.168.1.2 Subnet mask: 255.255.255.0 Default gateway: 192.168.1.1

Physical Config Services Desktop Programming Attributes

IP Configuration [X]

☐ DHCP ☒ Static

IP Address: 192.168.1.2

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 0.0.0.0

IPv6 Configuration

Step 3:

Configuring the router interface.

```
Router>
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa 0/0
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

Router(config-if)#interface 192.168.1.1 255.255.255.0
^
% Invalid input detected at '^' marker.

Router(config-if)#interface fa 0/1
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

Ctrl+F6 to exit CLI focus

Copy

Paste

Step 4:

We will configure the DHCP server pool and will name the pool Sales.

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: Sales

Default Gateway: 192.168.2.1

DNS Server: 192.168.1.2

Start IP Address : 192 168 2 0

Subnet Mask: 255 255 255 0

Maximum Number of Users : 255

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
Sales	192.168....	192.168....	192.168....	255.255....	255	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.168....	255.255....	255	0.0.0.0	0.0.0.0

Step 5:

We will add command ip helper address on interface configuration mode of fa 0/0 of router.

```
Router(config)#  
Router(config)#interface fa 0/1  
Router(config-if)#ip helper-address 192.168.1.2  
Router(config-if)#
```

Ctrl+F6 to exit CLI focus

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Step 6:

We will enable DHCP on PCs in Sales lane.

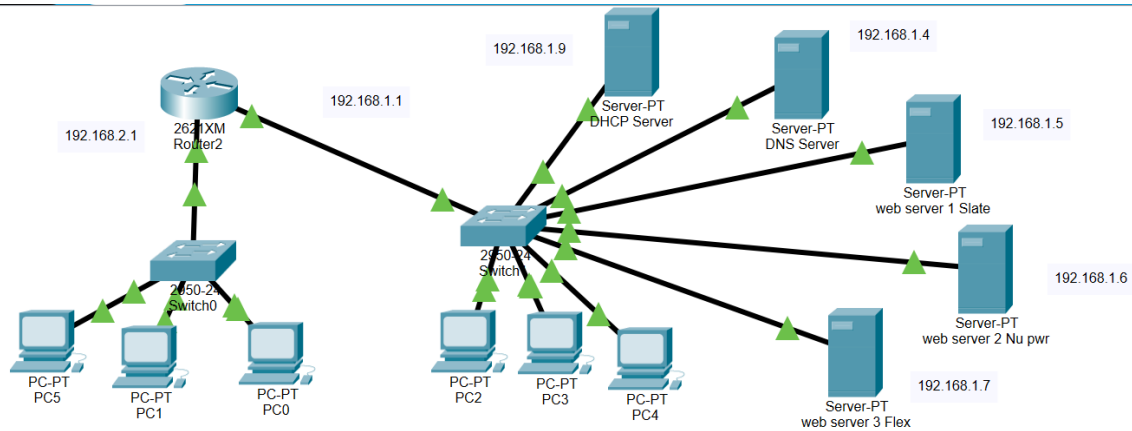
The screenshot shows a network management interface with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Desktop' tab is active, displaying the 'IP Configuration' window. The window title is 'IP Configuration' with a close button (X). The 'Interface' dropdown is set to 'FastEthernet0'. Under 'IP Configuration', the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. A message 'DHCP request successful.' is displayed. Below this, the following fields are filled in:

Field	Value
IP Address	192.168.2.2
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.0
DNS Server	192.168.1.2

Below the IP Configuration section, the 'IPv6 Configuration' section is partially visible.

TASK 2:

Step 1: Build a network topology.



Step 2: Then we will configure both interfaces of router

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- INTERFACE**
- FastEthernet0/0
- FastEthernet0/1

FastEthernet0/0

Port Status ☒ On

Bandwidth ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0009.7C09.3401

IP Configuration

IP Address 192.168.2.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- INTERFACE**
- FastEthernet0/0
- FastEthernet0/1

FastEthernet0/1

Port Status ☒ On

Bandwidth ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0009.7C09.3402

IP Configuration

IP Address 192.168.1.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Step 3: We will configure the DHCP server and add IP pools in it.

Physical Config Services **Desktop** Programming Attributes

IP Configuration [X]

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.9

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 192.168.1.4

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: 192.168.1.1

DNS Server: 192.168.1.4

Start IP Address: 192 168 1 15

Subnet Mask: 255 255 255 0

Maximum Number of Users: 241

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool2	192.168....	192.168....	192.168....	255.255....	241	0.0.0.0	0.0.0.0
serverPool	192.168....	192.168....	192.168....	255.255....	241	0.0.0.0	0.0.0.0

Step 4: Then we will configure DNS server and add Domain names in the DNS.

Physical Config **Services** Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.4

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 192.168.1.4

IPv6 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	www.dhcp.com	A Record	192.168.1.9
1	www.flex.nu.edu.pk	A Record	192.168.1.7
2	www.pwr.nu.edu.pk	A Record	192.168.1.6
3	www.slate.nu.edu.pk	A Record	192.168.1.5

Step 5: we will store each website on separate server
configure web servers and we will edit the index.html file of
every server.

The screenshot displays the Cisco Packet Tracer configuration interface. The top navigation bar includes tabs for Physical, Config, Services, Desktop, Programming, and Attributes. The 'Desktop' tab is currently selected, showing the 'IP Configuration' window. This window has a blue header with a close button (X) and a sub-header 'IP Configuration'. Below this, there are two radio buttons: 'DHCP' (unselected) and 'Static' (selected). The 'Static' configuration fields are as follows:

Field	Value
IP Address	192.168.1.5
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
DNS Server	192.168.1.4

Below the IP Configuration window, the 'Services' tab is selected. On the left, a sidebar lists various services: SERVICES, HTTP, DHCP, DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The main area on the right shows the 'File Name' field set to 'index.html' and a text area containing the following HTML code:

```
<html>
<center><font size='+2' color='blue'>Cisco Packet Tracer</font></center>
<hr>Welcome to Slate NU.
<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>
```


PhysicalConfigServicesDesktopProgrammingAttributes

IP ConfigurationX

IP Configuration

☐ DHCP

☒ Static

IP Address

192.168.1.6

Subnet Mask

255.255.255.0

Default Gateway

192.168.1.1

DNS Server

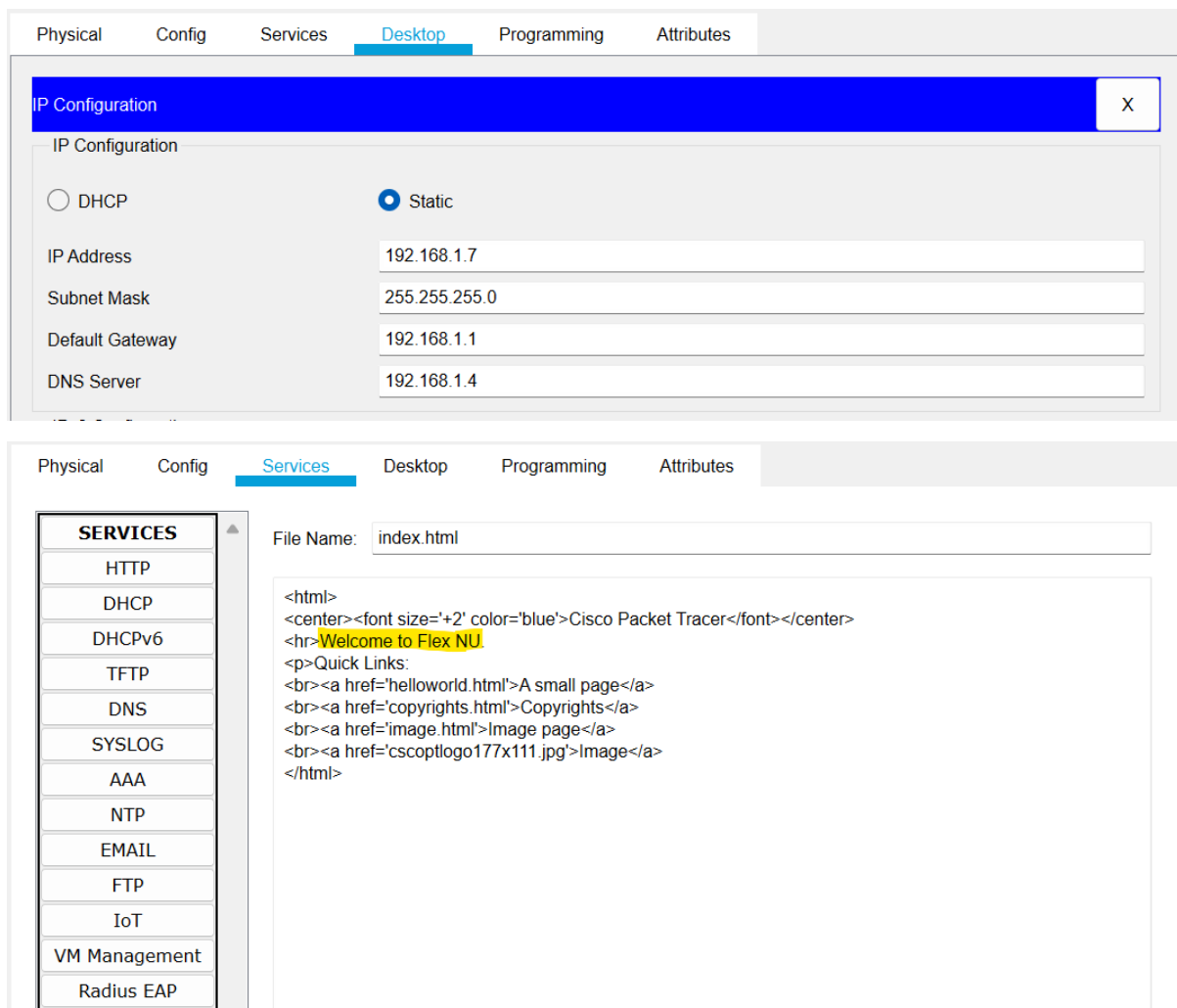
192.168.1.4

PhysicalConfigServicesDesktopProgrammingAttributes

SERVICES▲

File Name: index.html

```
<html>
<center><font size='+2' color='blue'>Cisco Packet Tracer</font></center>
<hr><b>Welcome to Nu PWR</b>
<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 6: we will add ip helper-address in router interface which is on other network.

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface fa 0/0
Router(config-if)#ip helper-address 192.168.1.9
Router(config-if)#ip helper-address 192.168.1.4
Router(config-if)#
```

Step 7: Finally we will enable DHCP on PCs and it will successfully work.

The screenshot shows the 'IP Configuration' window for the 'FastEthernet0' interface. The 'Desktop' tab is active. Under 'IP Configuration', the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The IP Address is set to 192.168.2.17, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.2.1, and DNS Server is 192.168.1.4.

The screenshot shows the 'IP Configuration' window for the 'FastEthernet0' interface. The 'Desktop' tab is active. Under 'IP Configuration', the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The IP Address is set to 192.168.1.15, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.1.1, and DNS Server is 192.168.1.4.

Step 8: we will check by pinging PCs of one LAB (network) to PCs of other LAB (network) and with the servers through there domain name.

```
C:\>ping 192.168.1.15

Pinging 192.168.1.15 with 32 bytes of data:

Reply from 192.168.1.15: bytes=32 time=2ms TTL=127
Reply from 192.168.1.15: bytes=32 time<1ms TTL=127
Reply from 192.168.1.15: bytes=32 time=1ms TTL=127
Reply from 192.168.1.15: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.1.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\>
```

```
C:\>ping www.flex.nu.edu.pk

Pinging 192.168.1.7 with 32 bytes of data:

Reply from 192.168.1.7: bytes=32 time<1ms TTL=127
Reply from 192.168.1.7: bytes=32 time<1ms TTL=127
Reply from 192.168.1.7: bytes=32 time<1ms TTL=127
Reply from 192.168.1.7: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.1.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

