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Sub - Computer Networks

Assignment no. 6
BCSE III
Group –A1

Q1) Connect two hosts back-to-back with a cross over cable. Assign IP addresses, and see whether they are able to ping each other.

RESULTS:



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Physical Config Desktop Programming Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time=16ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128
Reply from 10.10.10.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 16ms, Average = 4ms

C:\>ping 10.10.10.1

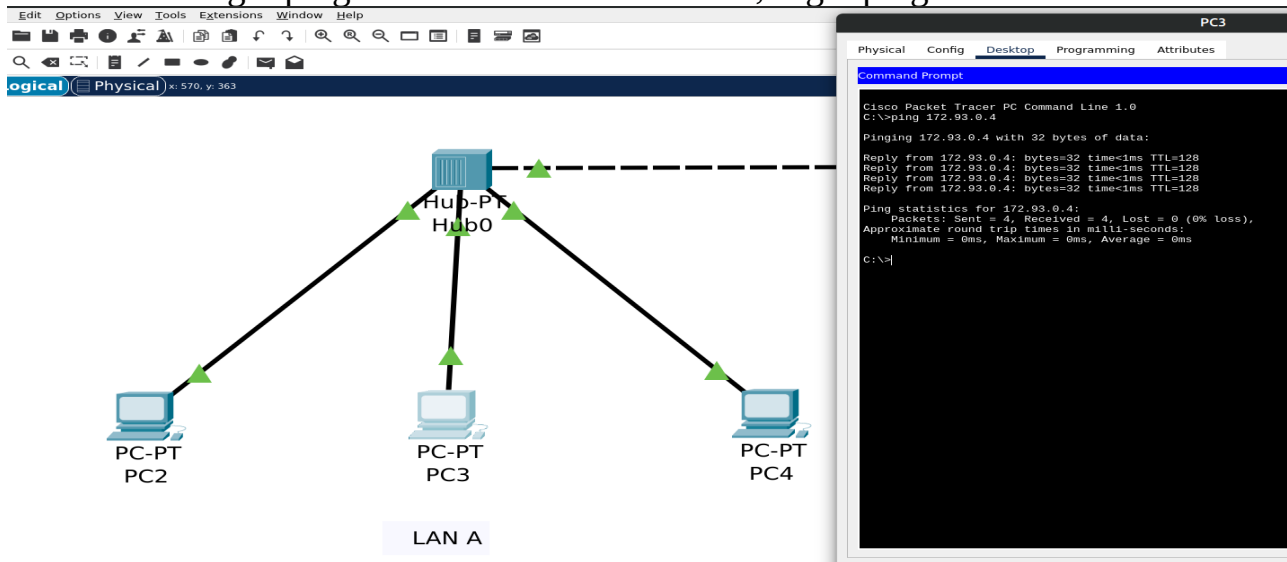
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time=12ms TTL=128
Reply from 10.10.10.1: bytes=32 time=6ms TTL=128
Reply from 10.10.10.1: bytes=32 time<1ms TTL=128
Reply from 10.10.10.1: bytes=32 time=6ms TTL=128

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 12ms, Average = 6ms

C:\>|
```

Q2) Create a LAN (named LAN-A) with 3 hosts using a hub. Ping each pair of nodes.

RESULTS: Fig1: ping from PC0 to PC1 and PC2, Fig2: ping from PC1 to PC2



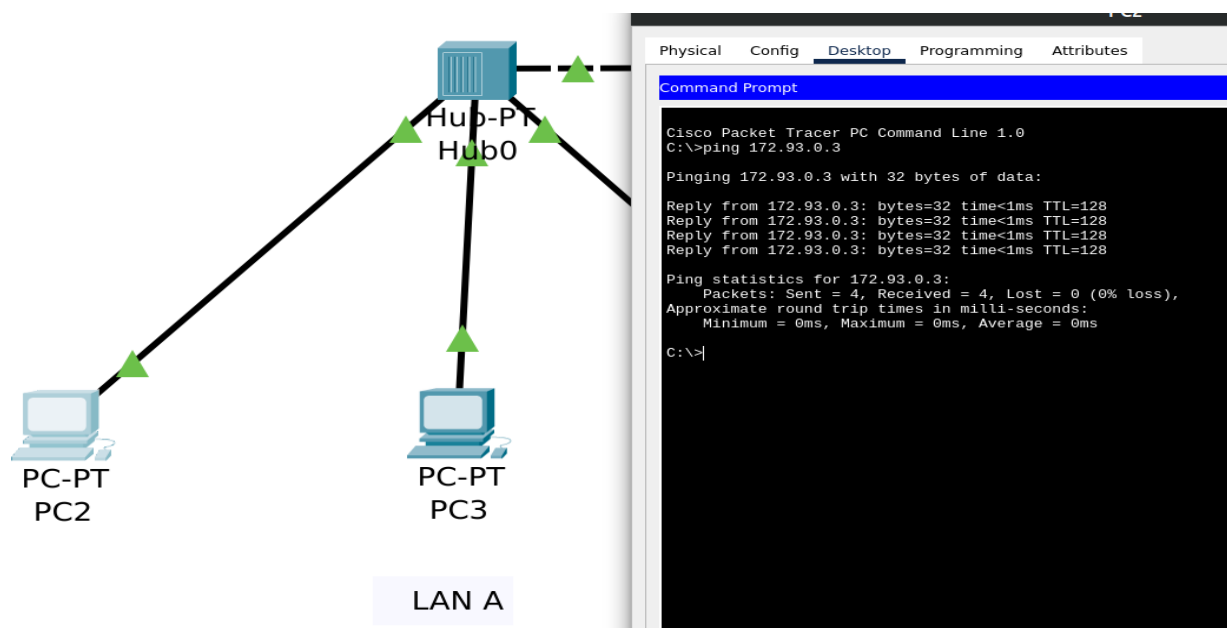
```
Physical Config Desktop Programming Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 172.93.0.4

Pinging 172.93.0.4 with 32 bytes of data:
Reply from 172.93.0.4: bytes=32 time<1ms TTL=128
Reply from 172.93.0.4: bytes=32 time<1ms TTL=128
Reply from 172.93.0.4: bytes=32 time<1ms TTL=128
Reply from 172.93.0.4: bytes=32 time<1ms TTL=128

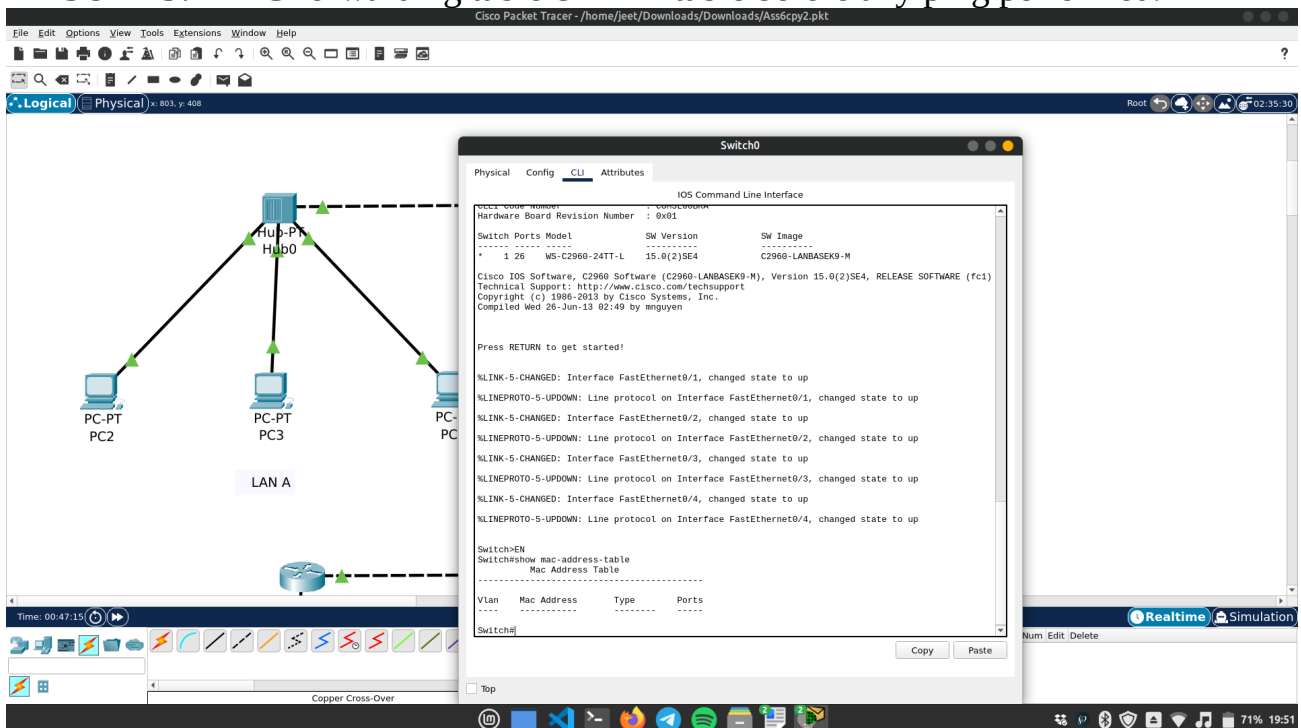
Ping statistics for 172.93.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

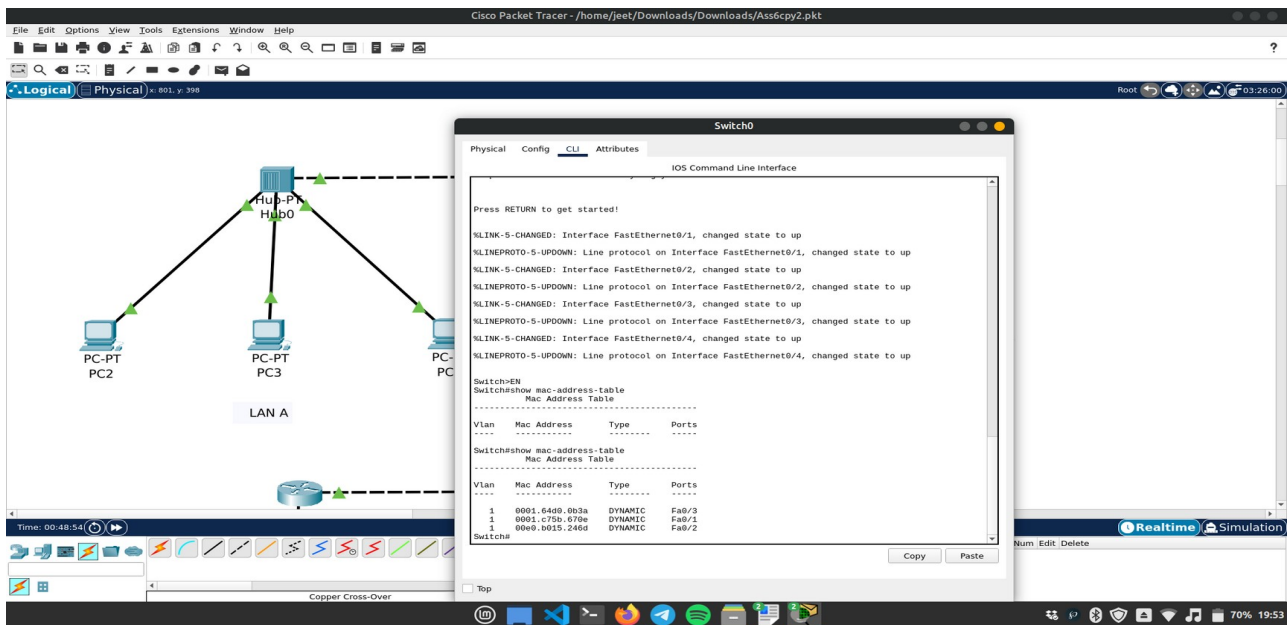
C:\>|
```



Q3) Create a LAN (named LAN-B) with 3 hosts using a switch. Record contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch. Ping each pair of nodes. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

RESULTS: MAC forwarding table & ARP table before any ping performed.





MAC forwarding table after ping

Q4) Connect LAN-A and LAN-B by connecting the hub and switch using a cross-over cable. Ping between each pair of hosts of LAN-A and LAN-B. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

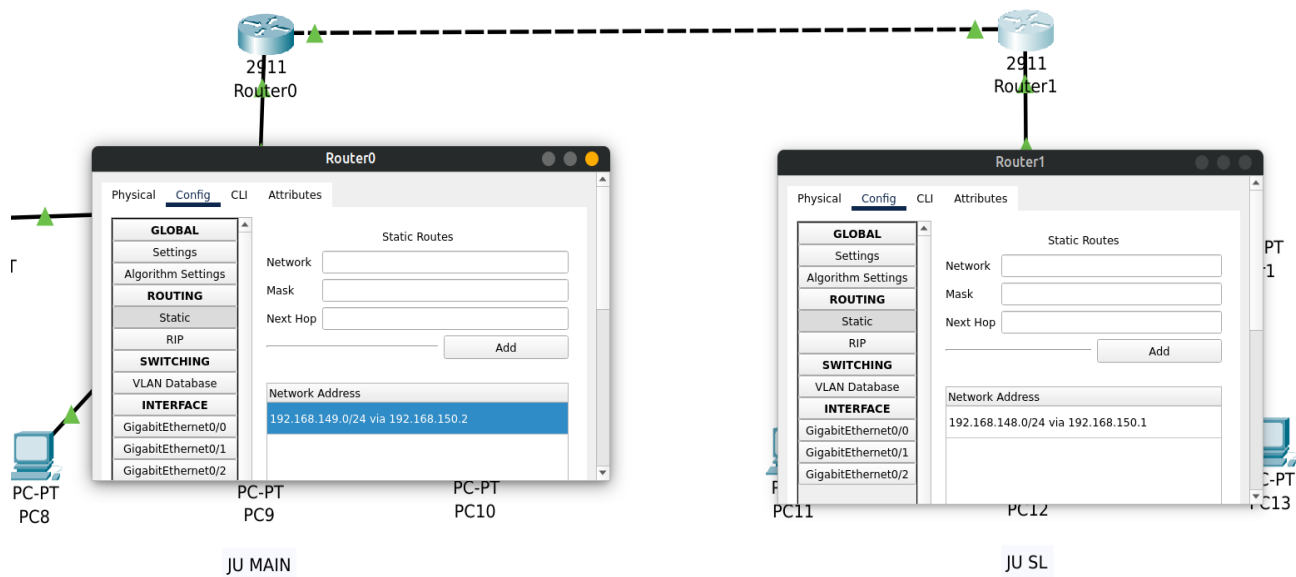
RESULTS:

```
Switch>EN
Switch#show mac-address-table
Mac Address Table
-----
Vlan    Mac Address      Type      Ports
-----
1       0001.42be.55b9    DYNAMIC   Fa0/4
1       0001.c75b.670e    DYNAMIC   Fa0/1
Switch#show mac-address-table
Mac Address Table
-----
Vlan    Mac Address      Type      Ports
-----
1       0001.42be.55b9    DYNAMIC   Fa0/4
1       0001.64d0.0b3a    DYNAMIC   Fa0/3
1       0001.c75b.670e    DYNAMIC   Fa0/1
1       0009.7c65.67c2    DYNAMIC   Fa0/4
1       00d0.bae8.8162    DYNAMIC   Fa0/4
1       00e0.b015.246d    DYNAMIC   Fa0/2
Switch#
```

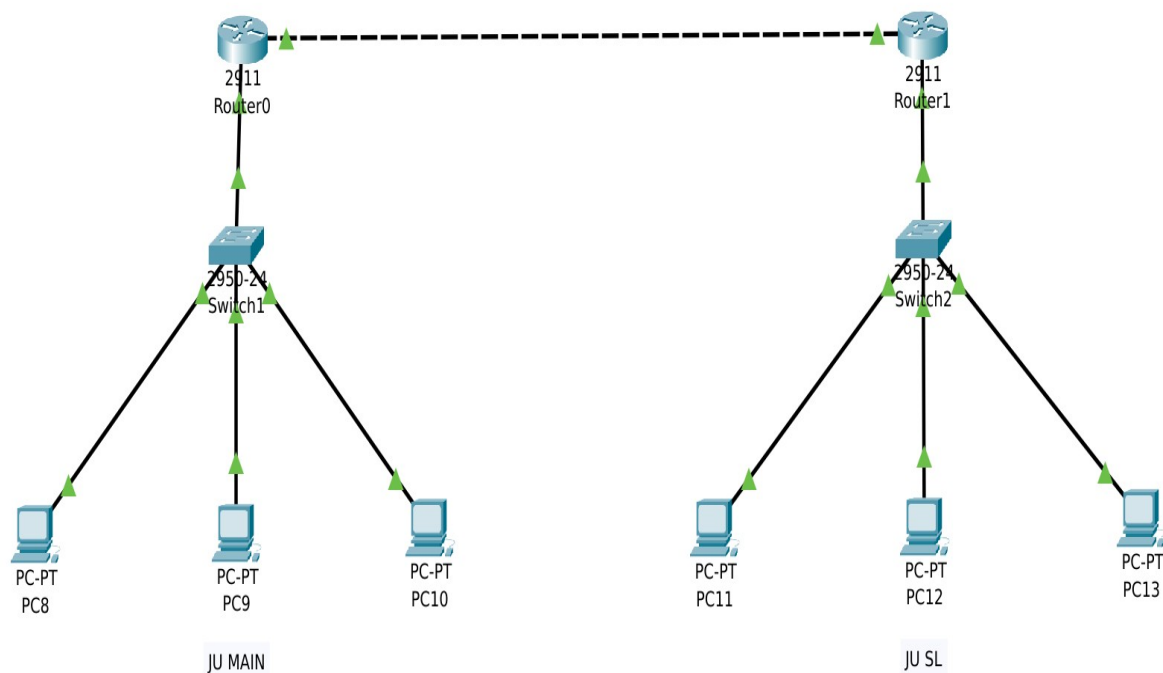
MAC forwarding table after performing ping across LAN-A and LAN-B

Q5) Create a LAN (named JU-Main) with three hosts connected via a layer-2 switch (Cisco 2950 switch PC-LAB1-Switch). Connect the switch to a router (Cisco 1818). Assign IP addresses to all the hosts and the router interface connected to this LAN from network 192.168.148.0/24. Configure default gateway of each hosts as the IP address of the interface of the router which is connected to the LAN. Create another LAN (named JU-SL) with three hosts connected via a layer-2 switch (Cisco 2950 switch PC-LAB2-Switch). Connect this switch to another router (Cisco 1818). Assign IP addresses to all the hosts and the router interface connected to this LAN from network 192.168.149.0/24. Configure default gateway of each hosts as the IP address of the interface of the router which is connected to the LAN. Connect the two routers through appropriate WAN interfaces. Assign IP addresses to the WAN interfaces from network 192.168.150.0/24. Add static route in both of the routers to route packets between two LANs.

RESULTS:



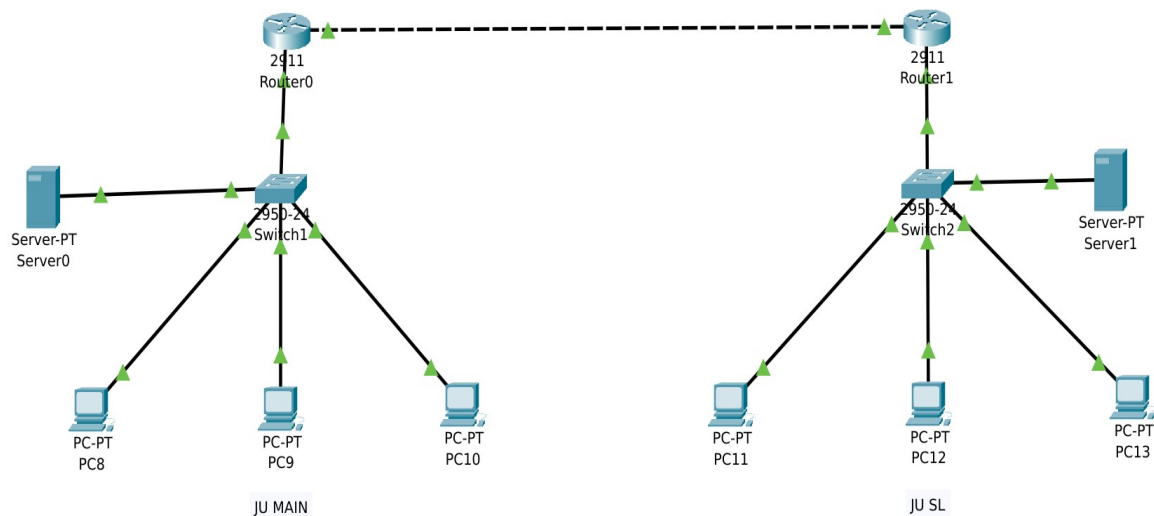
Configuration of the routers to route between 192.168.149.0/24, 192.168.148.0/24 and 192.168.150.0/24 and assigning the subnet masks.



Structure of the Network

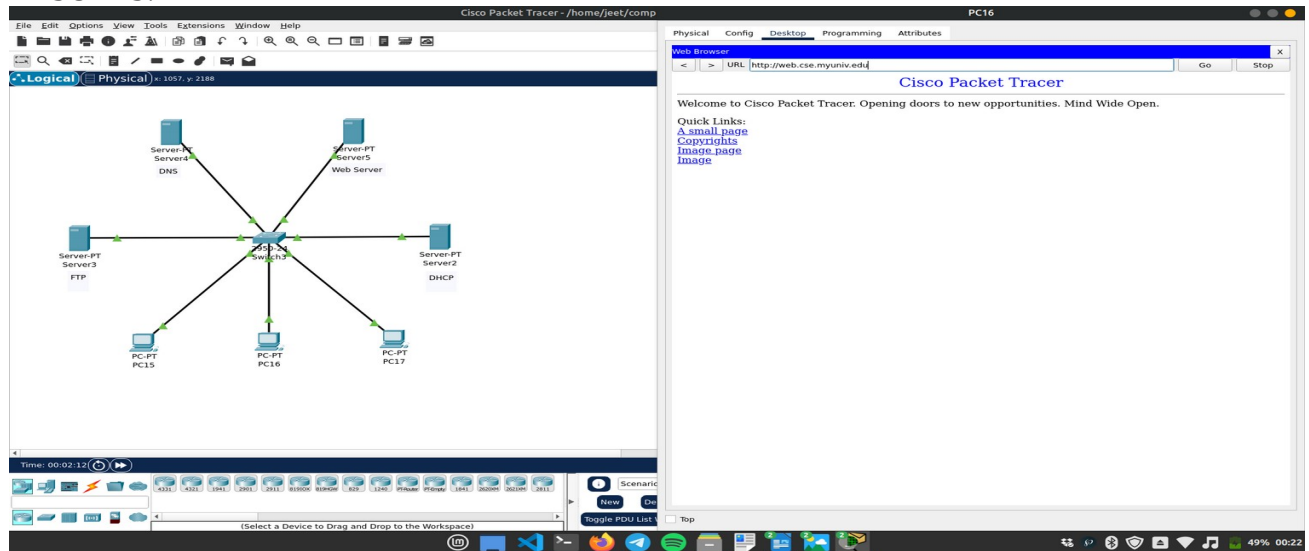
Q6) Add servers to the individual LANs (in problem 5) and configure them as a DHCP server. Configure the hosts in the individual LAN to obtain IP addresses and address of the default gateway via this DHCP server.

RESULTS:



Q7) Create a LAN (CSE) with three hosts connected via a layer-2 switch (Cisco 2950 switch CSE-Switch). Also add a web server and a ftp server to this LAN. The hosts dynamically get their IP addresses from a local DHCP server. Servers are assigned fixed IP addresses. Configure the individual hosts to use the local DNS server for name resolution. Add a Domain Name Server (DNS) to this LAN. Create appropriate records in the DNS server for the individual servers in the LAN. The domain name of the LAN is cse.myuniv.edu. Configure the individual hosts to use the local DNS server for name resolution.

RESULTS:



Server4

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

DNS Service ☒ On ☐ Off

Resource Records

Name Type **A Record**

Address

No.	Name	Type	Detail
0	ftp.cse.myuniv.edu	A Record	192.168.148.3
1	web.cse.myuniv.edu	A Record	192.168.148.5

DNS Cache

PC17

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface **FastEthernet0**

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IPv4 Address

Subnet Mask

Default Gateway

DNS Server

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address

Link Local Address

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

Username

Password

DNS entries

IPs Assigned by DHCP server

