

MODULE 3 AND 4 ASSIGNMENT SOLUTIONS

1. Simulate a small network with switches and multiple devices. Use ping to generate traffic and observe the MAC address table of the switch. Capture packets using Wireshark to analyze Ethernet frames and MAC addressing.

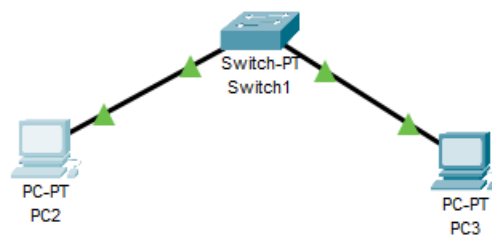
2. Capture and analyze Ethernet frames using Wireshark. Inspect the structure of the frame, including destination and source MAC addresses, Ether type, payload, and FCS Use GNS3 or Packet Tracer to simulate network traffic.

Cisco Packet Tracer:

1. Network topology setup in cpt

Devices used:

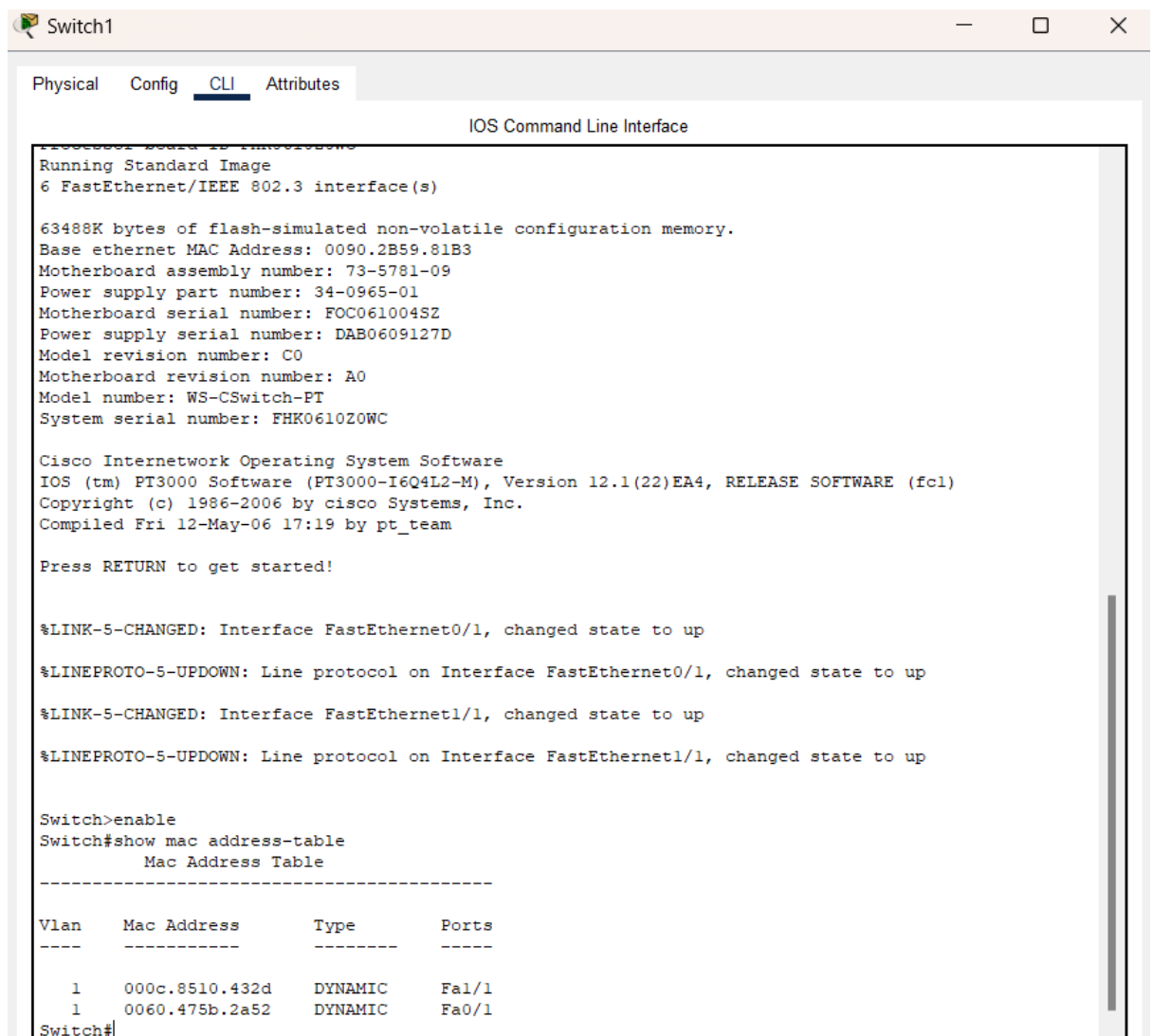
- 2 pcs (PC 2 AND PC 3) IP ADDRESS: 192.168.1.2 AND 192.168.1.3
- 1 switch (Switch – PT)



2. Ping :

```
PC2
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3
Pinging 192.168.1.3 with 32 bytes of data:
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Reply from 192.168.1.3: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

3. MAC Address table of switch:



```
Switch1
Physical Config CLI Attributes
IOS Command Line Interface
Running Standard Image
6 FastEthernet/IEEE 802.3 interface(s)
63488K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address: 0090.2B59.81B3
Motherboard assembly number: 73-5781-09
Power supply part number: 34-0965-01
Motherboard serial number: FOC061004SZ
Power supply serial number: DAB0609127D
Model revision number: C0
Motherboard revision number: A0
Model number: WS-CSwitch-PT
System serial number: FHK0610Z0WC
Cisco Internetwork Operating System Software
IOS (tm) PT3000 Software (PT3000-I6Q4L2-M), Version 12.1(22)EA4, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Fri 12-May-06 17:19 by pt_team
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/1, changed state to up
Switch>enable
Switch#show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type      Ports
----    -
1       000c.8510.432d    DYNAMIC   Fa1/1
1       0060.475b.2a52    DYNAMIC   Fa0/1
Switch#
```

4) Frame analysis:

PDU Information at Device: PC2

OSI Model [Inbound PDU Details](#)

PDU Formats

Ethernet 802.3

0 4 8 Bytes

PREAMBLE: 101010..10

SFD

DEST ADDR:0180.C200.0000

SRC ADDR:0002.17D5.D1B7

LEN:3

DATA (VARIABLE LENGTH)

FCS:0x00000000

LLC

0 8 16 Bits

DSAP:0x42

SSAP:0x42

CONTROL BYTE:3

STP BPDU

0 1 2 4 5 6 7 8 16 24 Bits

PROTOCOL ID:0

VERSION:0

MESSAGE TYPE:0

P

ROOT ID:32769 / 0090.2B59.81B3

ROOT PATH COST:0

BRIDGE ID:32769 / 0090.2B59.81B3

PDU Information at Device: PC2

[OSI Model](#) Inbound PDU Details

At Device: PC2
Source: Switch1
Destination: STP Multicast Address

In Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer 2: IEEE 802.3 Header
0002.17D5.D1B7 >> 0180.C200.0000 LLC
STP BPDU
Layer 1: Port FastEthernet0

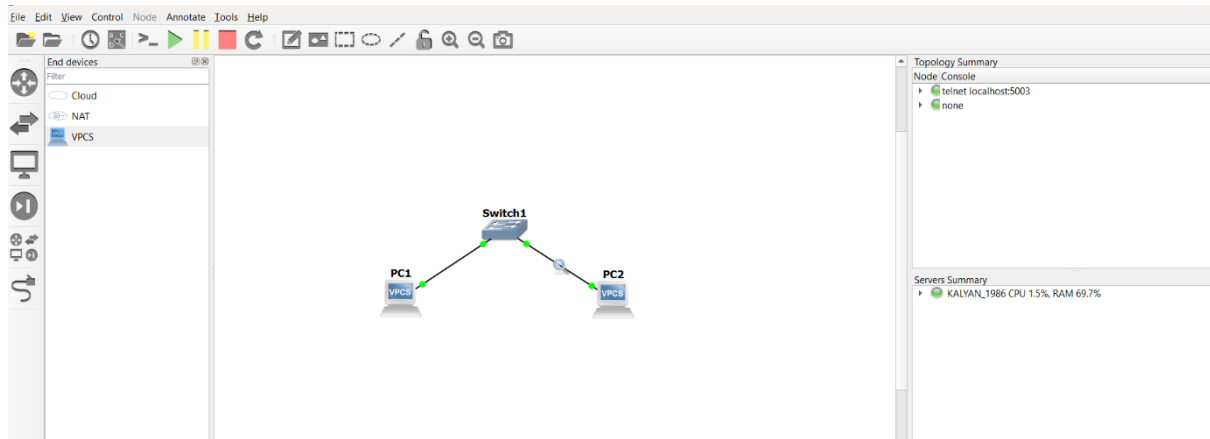
Out Layers

Layer7
Layer6
Layer5
Layer4
Layer3
Layer2
Layer1

1. FastEthernet0 receives the frame.

USING GNS 3:

1) Network topology



2) IP Setup and Ping Connection Check:

```
KALYAN_1986 - PuTTY

PC2> ip 192.168.1.5/24 192.168.1.1
Checking for duplicate address...
PC1 : 192.168.1.5 255.255.255.0 gateway 192.168.1.1

PC2> show ip

NAME       : PC2[1]
IP/MASK    : 192.168.1.5/24
GATEWAY    : 192.168.1.1
DNS        :
MAC        : 00:50:79:66:68:01
LPORT     : 10006
RHOST:PORT : 127.0.0.1:10007
MTU       : 1500

PC2> ping 192.168.1.4
84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=1.233 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=0.515 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=0.624 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=0.580 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=1.034 ms
```

For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC1> ip 192.168.1.4/24 192.168.1.1

Checking for duplicate address...

PC1 : 192.168.1.4 255.255.255.0 gateway 192.168.1.1

PC1> show ip

NAME	: PC1[1]
IP/MASK	: 192.168.1.4/24
GATEWAY	: 192.168.1.1
DNS	:
MAC	: 00:50:79:66:68:00
LPORT	: 10004
RHOST:PORT	: 127.0.0.1:10005
MTU:	: 1500

PC1> █