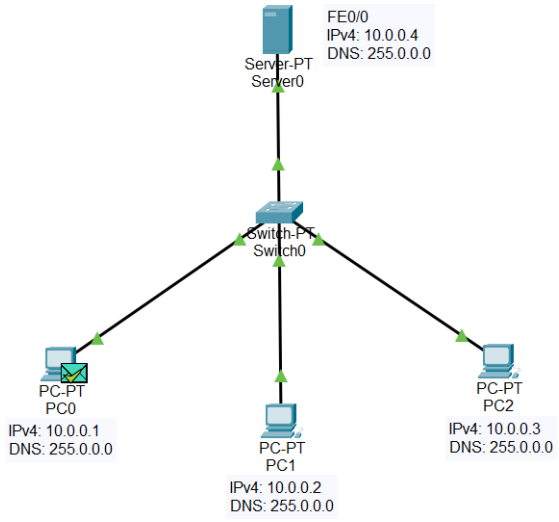
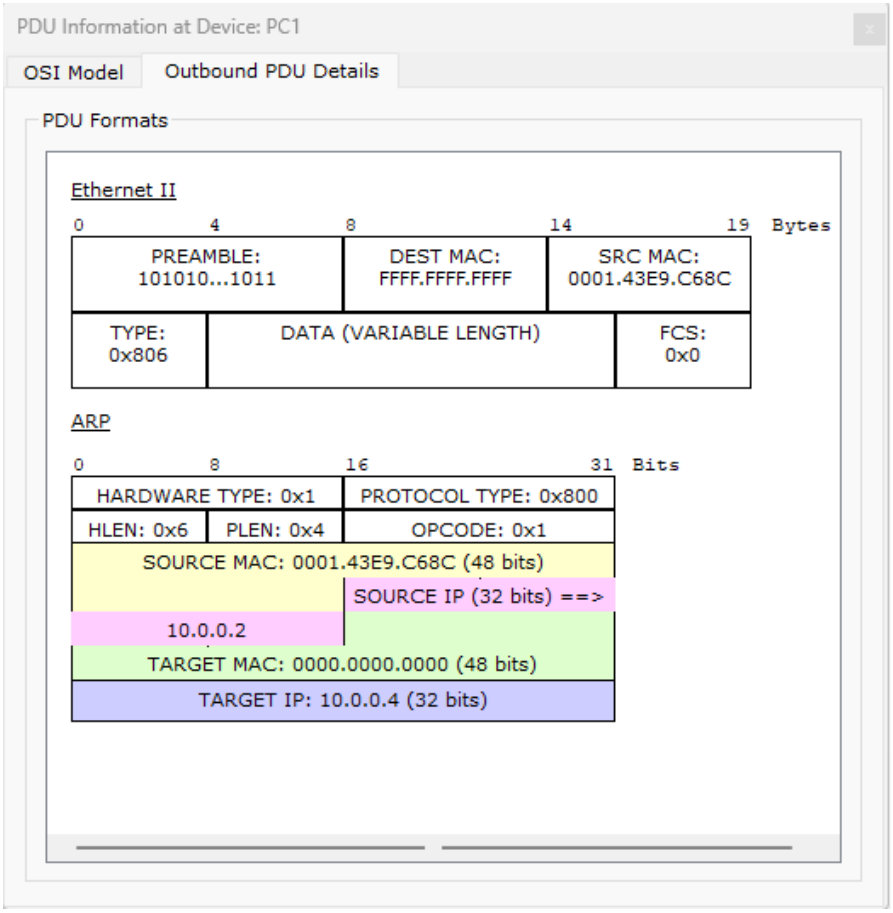
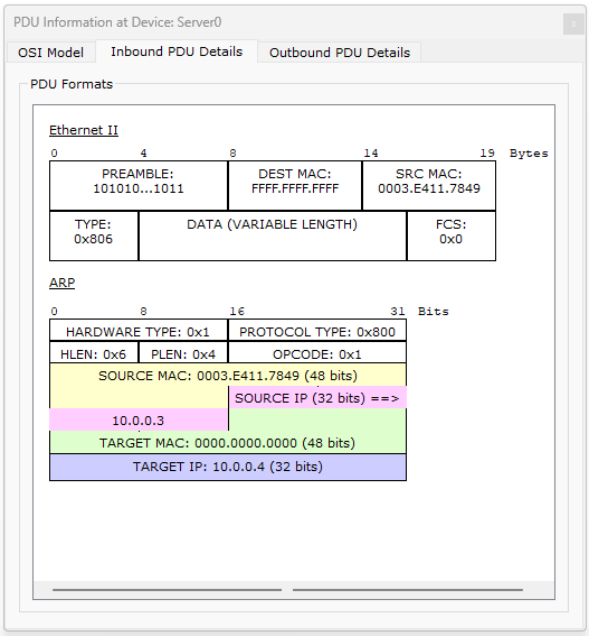
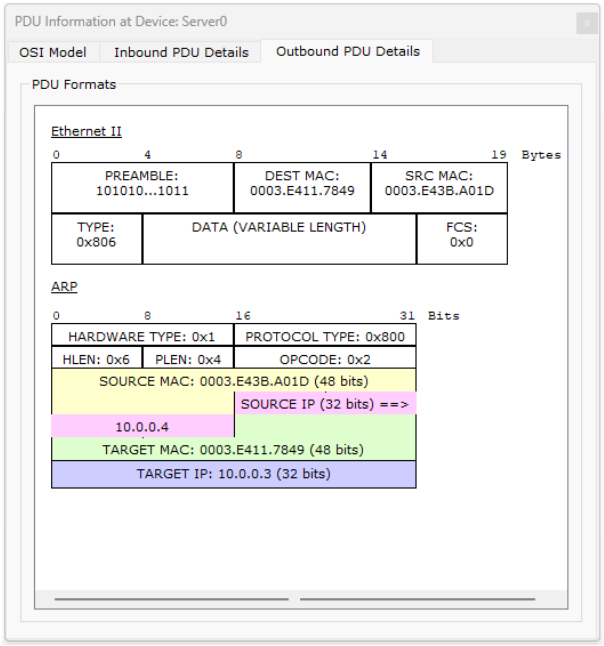
PROGRAM-10

To demonstrate the working of Address Resolution Protocol (ARP) within a LAN for communication.






PDU Information at Device: Server0
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
Ethernet II
0 4 8 14 19 Bytes
PREAMBLE: 101010...1011
DEST MAC: FFFF.FFFF.FFFF
SRC MAC: 0003.E411.7849
TYPE: 0x806
DATA (VARIABLE LENGTH)
FCS: 0x0
ARP
0 8 16 31 Bits
HARDWARE TYPE: 0x1
PROTOCOL TYPE: 0x800
HLEN: 0x6
PLEN: 0x4
OPCODE: 0x1
SOURCE MAC: 0003.E411.7849 (48 bits)
SOURCE IP (32 bits) ==>
10.0.0.3
TARGET MAC: 0000.0000.0000 (48 bits)
TARGET IP: 10.0.0.4 (32 bits)


PDU Information at Device: Server0
OSI Model
Inbound PDU Details
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PDU Formats
Ethernet II
0 4 8 14 19 Bytes
PREAMBLE: 101010...1011
DEST MAC: 0003.E411.7849
SRC MAC: 0003.E43B.A01D
TYPE: 0x806
DATA (VARIABLE LENGTH)
FCS: 0x0
ARP
0 8 16 31 Bits
HARDWARE TYPE: 0x1
PROTOCOL TYPE: 0x800
HLEN: 0x6
PLEN: 0x4
OPCODE: 0x2
SOURCE MAC: 0003.E43B.A01D (48 bits)
SOURCE IP (32 bits) ==>
10.0.0.4
TARGET MAC: 0003.E411.7849 (48 bits)
TARGET IP: 10.0.0.3 (32 bits)

ARP Table for Server0

IP Address	Hardware Address	Interface
10.0.0.1	00E0.B062.0C32	FastEthernet0
10.0.0.2	0001.43E9.C68C	FastEthernet0

ARP Table for PC1

IP Address	Hardware Address	Interface
10.0.0.4	0003.E43B.A01D	FastEthernet0

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	Server0	ICMP		0.000	N	0	(edit)	

PC0

Physical Config Desktop Programming Attributes

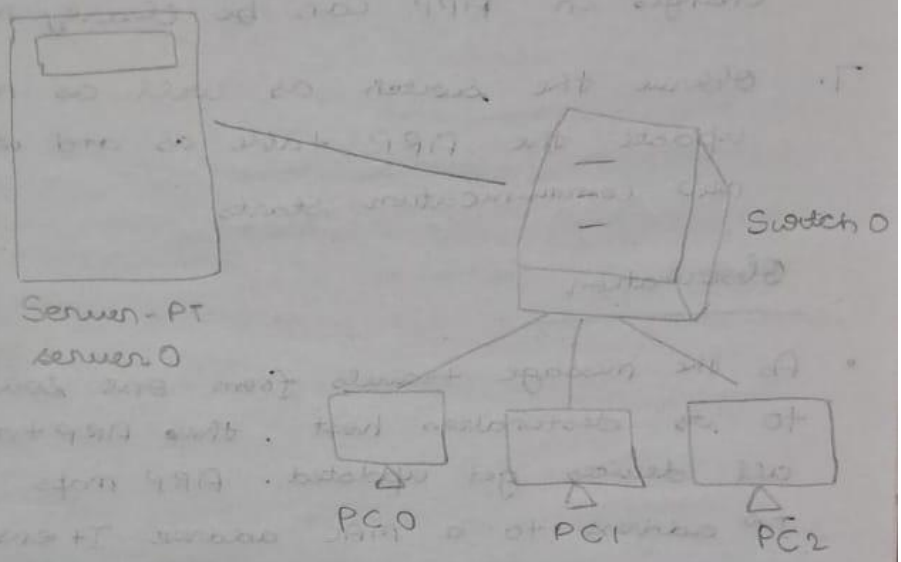
Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.4

Pinging 10.0.0.4 with 32 bytes of data:

Reply from 10.0.0.4: bytes=32 time=23ms TTL=128
Reply from 10.0.0.4: bytes=32 time<1ms TTL=128
Reply from 10.0.0.4: bytes=32 time<1ms TTL=128
Reply from 10.0.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 23ms, Average = 5ms
```

Ques:- To configure simple LAN and understand the concept and operation of Address Resolution Protocol (ARP)

AIM :- To construct simple LAN and understand the concept and operation of ARP.

Topology :-



- Switch connected to 3PCs and a server via three fastethernet interfaces and one ethernet interface respectively.
- All connection made via copper straight-through cable.

Procedure:

1. After completion of topology and connecting the devices properly, assign IP addresses and subnet mask to all the devices then connect them via a switch.
2. Use the inspect tool and, click on a PC to view ARP table.
3. Display the ARP table of all the devices
4. Initially ARP is empty for all.

5. Also in CLI of switch, the command show mac address-table can be given on every transaction to see how the switch learns from transaction and build the address table.

6. Use the capture button in the simulation panel to go to step by step so that changes in APP can be clearly noted.

7. Observe the switch as well as nodes update the ARP table as and when new communication starts.

Observation

- As the message travels from one source host to its destination host, then ARP table of all devices get updated. ARP maps an IP address to a MAC address. It ensures communication within a local network.

ARP table for PC 0 (source)

IP address	Hardware Address	Interface
10.0.0.3	0060.2F29.2CBB	FastEthernet 0

ARP table for PC2 (destination)

IP address	Hardware Address	Interface
10.0.0.1	00D0.D302.960B	Fastethernet 0

3/1/25