

Computer Networks Lab 1 Report

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1. Introduction

This report outlines the procedures undertaken to establish and analyze a basic network using Cisco Packet Tracer. The key goals include configuring devices, monitoring network traffic, and troubleshooting connection issues.

2. Network Topology Setup

The workspace was set up with two PCs and a Cisco 2950T switch. Connections were made utilizing straight-through cables:

- PC-A was connected to Switch0 Fa0/1
- PC-B was connected to Switch0 Fa0/2

3. Device Configuration

Both PCs were assigned the following IP addresses and subnet masks:

- PC-A: 192.168.10.10 / 255.255.255.0
- PC-B: 192.168.10.11 / 255.255.255.0

4. Simulation Mode Analysis

- The system was switched to Simulation Mode, applying filters for ARP and ICMP.
- A Simple PDU was generated to create ARP and ICMP requests.
- The packet flow was monitored using Auto Capture / Play.

5. Network Connectivity Verification

- The command prompt on PC-A was utilized to ping PC-B.
- All ping requests received replies, confirming successful connectivity.
- Ping statistics were as follows:
 - Sent = 4, Received = 4, Lost = 0 (0% loss)

6. ARP Table Analysis

- The `arp -a` command was executed on both PCs to examine MAC addresses.
- The correct entries in the ARP table were verified.

7. VLAN Configuration Verification

- The `show vlan brief` command on the switch was utilized to review VLAN settings.
- Confirmation of VLAN 20 assignment was achieved.

8. Conclusion

The lab effectively showcased the fundamental setup of a network, analysis of data flow, and troubleshooting techniques using Cisco Packet Tracer. All objectives were successfully accomplished, and connectivity was confirmed.

Simulation Panel

Event List

At Device
PC-A
PC-A
PC-B

Reset Simulation
☒ Constant Delay
Captured to: 0.000 s

Play Controls

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Event List Filters - Visible Events

ACL Filter, ARP, Bluetooth, CAPWAP, CDP, DHCPv6, DTP, EAPOL, EIGRPv6, FTP, H.323, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters
Show All/None

Event List
Realtime
Simulation

Type	Color	Time(sec)	Periodic	Num	Edit
ICMP		0.000	N	0	(edit)
ICMP		0.000	N	1	(edit)

2:40 am

Physical Config **Desktop** Programming Attributes

IP Configuration

X

Interface FastEthernet0

IP Configuration

☐ DHCP☒ Static

IPv4 Address

192.168.10.11

Subnet Mask

255.255.255.0

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

IPv6 Configuration

☒ Automatic☐ Static

IPv6 Address

Link Local Address

FE80::2E0:F9FF:FE04:A8DE

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

Physical Config **Desktop** Programming Attributes

IP Configuration

X

Interface FastEthernet0

IP Configuration

☐ DHCP☒ Static

IPv4 Address

192.168.10.10

Subnet Mask

255.255.255.0

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

IPv6 Configuration

☒ Automatic☐ Static

IPv6 Address

Link Local Address

FE80::202:17FF:FED9:D24A

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x: 719, y: 419

Root

Simulation Panel

Event List

Vis.	Time(sec)	Last Device
<input checked="" type="checkbox"/>	0.000	--
<input checked="" type="checkbox"/>	0.000	--
<input checked="" type="checkbox"/>	0.000	--

Reset Simulation ☒ Constant Delay Captured to: 0.000 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, Bluetooth, CAPWAP, CDP, DHCPv6, DTP, EAPOL, EIGRPv6, FTP, H.323, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPFv6, Rstp, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Time: 00:17:07.433 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Copper Straight-Through

11°C 2:39 am 23/02/2025

Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x: 524, y: 100

Root

Realtime Simulation

Time: 00:14:17

Scenario 0

New Delete

Toggle PDU List Window

Copper Straight-Through

11°C 2:28 am 23/02/2025

Simulation Panel

Event List

Device	Type
A	ICMP
A	ARP
B	ICMP

Reset Simulation

☒ Constant Delay
 Captured to: 0.000 s

Play Controls

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Event List Filters - Visible Events

ACL Filter, ARP, Bluetooth, CAPWAP, CDP, DHCPv6, DTP, EAPOL, EIGRPv6, FTP, H.323, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters

Show All/None

Event List

Realtime

Simulation

Type	Color	Time(sec)	Periodic	Num	Edit
ICMP		0.000	N	0	(edit)
ICMP		0.000	N	1	(edit)

Simulation Panel

Event List

Vis.	Time(sec)	Last Device
<input checked="" type="checkbox"/>	0.000	--
<input type="checkbox"/>	0.001	PC-A
<input type="checkbox"/>	0.002	Switch0
<input type="checkbox"/>	0.003	--
<input type="checkbox"/>	0.003	PC-B

Reset Simulation

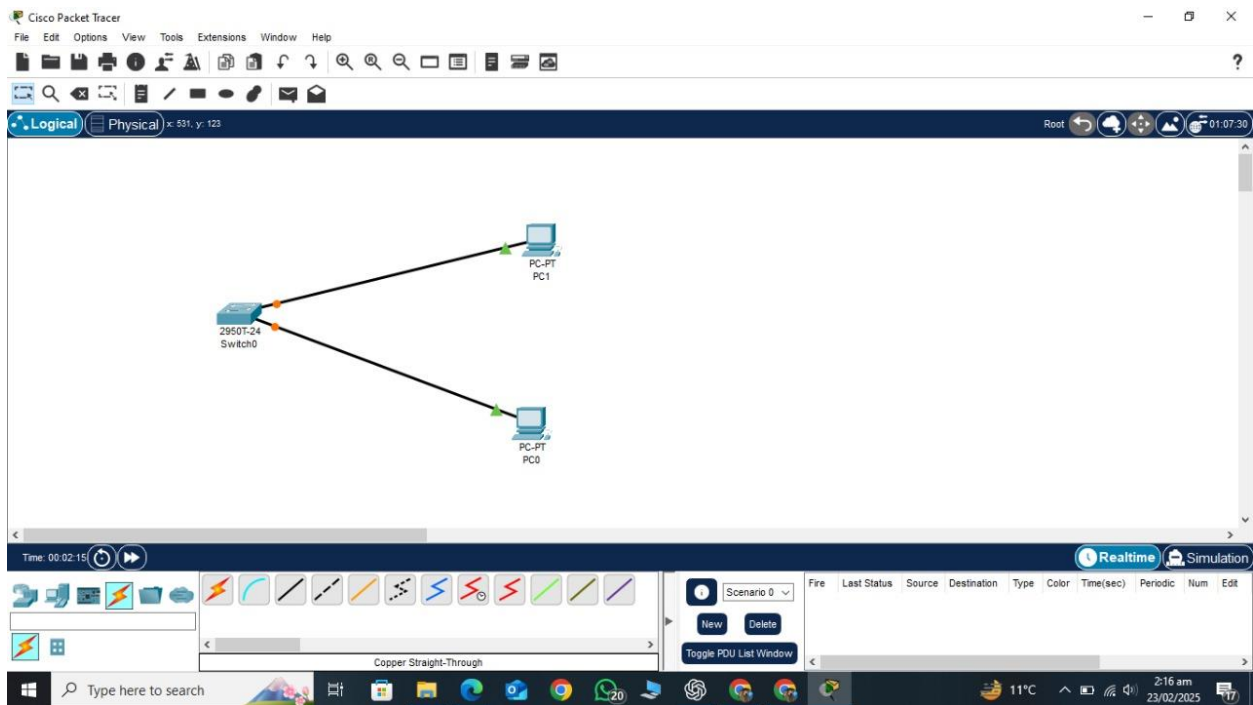
☒ Constant Delay
 Captured to: 2.994 s

Play Controls

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Simulation Panel

Event List

Vis.	Time(sec)	Last Device
	0.003	PC-B
	0.003	—
	0.004	Switch0
	0.004	—
	0.005	PC-A

Reset Simulation ☒ Constant Delay Captured to: 2.994 s

Play Controls

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Simulation Panel

Event List

Vis.	Time(sec)	Last Device
	0.005	PC-A
	0.006	Switch0
	0.007	PC-B
	0.008	Switch0
	0.009	PC-A

Reset Simulation ☒ Constant Delay Captured to: 2.994 s

Play Controls

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Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x 400 y 444

Root 16:16:30

```
graph LR; Switch0[2950T-24 Switch0] --- PC-A[PC-A]; Switch0 --- PC-B[PC-B];
```

Simulation Panel

Event List

Vis.	Time(sec)	Last Device
	0.996	Switch0
	0.996	---
	0.997	Switch0
	0.997	Switch0
	0.997	Switch0

Reset Simulation ☒ Constant Delay Captured to: 2.994 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, Bluetooth, CAPWAP, CDP, DHCPv6, DTP, EAPOL, EIGRPv6, FTP, H.323, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPFv6, PAggr, POP3, PPP, PPPoE, FTP, RADIUS, RDP, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Time: 00:17:10.427 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Copper Straight-Through

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC-A	PC-B	ICMP		0.000	N	0	(edit)
	Successful	PC-B	PC-B	ICMP		0.000	N	1	(edit)

2:47 am 23/02/2025