

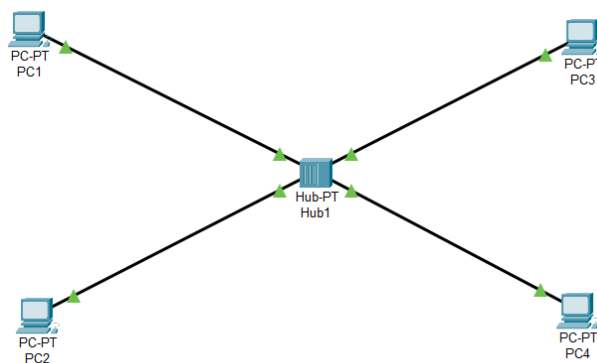
# Design a LAN network using a Single Switch.

Objectives:

1. Design a LAN using a hub with four PCs.
2. Verify the connectivity.
3. Find the subnet masks of the hosts.

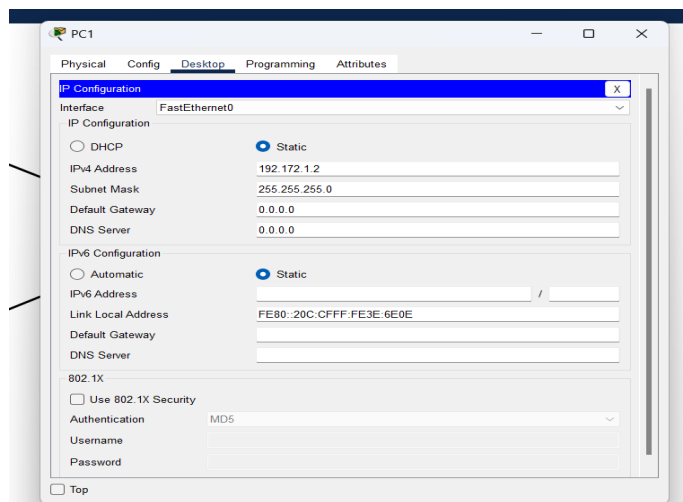
**1.**

After starting the cisco package tracker we design a LAN using a hub with 4 PCs.



Then we assign IP Addresses to all 4 PCs.

**PC1**



## PC2

PC2 configuration window showing IP Configuration for FastEthernet0. The interface is set to Static. The IPv4 Address is 192.172.1.4, Subnet Mask is 255.255.255.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. The IPv6 Configuration is set to Static, with IPv6 Address blank, Link Local Address FE80::20C:CFFF:FE79:6986, Default Gateway blank, and DNS Server blank. The 802.1X section is unchecked, with Authentication set to MD5, Username blank, and Password blank.

## PC3

PC3 configuration window showing IP Configuration for FastEthernet0. The interface is set to Static. The IPv4 Address is 192.172.1.3, Subnet Mask is 255.255.255.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. The IPv6 Configuration is set to Static, with IPv6 Address blank, Link Local Address FE80::201:42FF:FE4B:4010, Default Gateway blank, and DNS Server blank. The 802.1X section is unchecked, with Authentication set to MD5, Username blank, and Password blank.

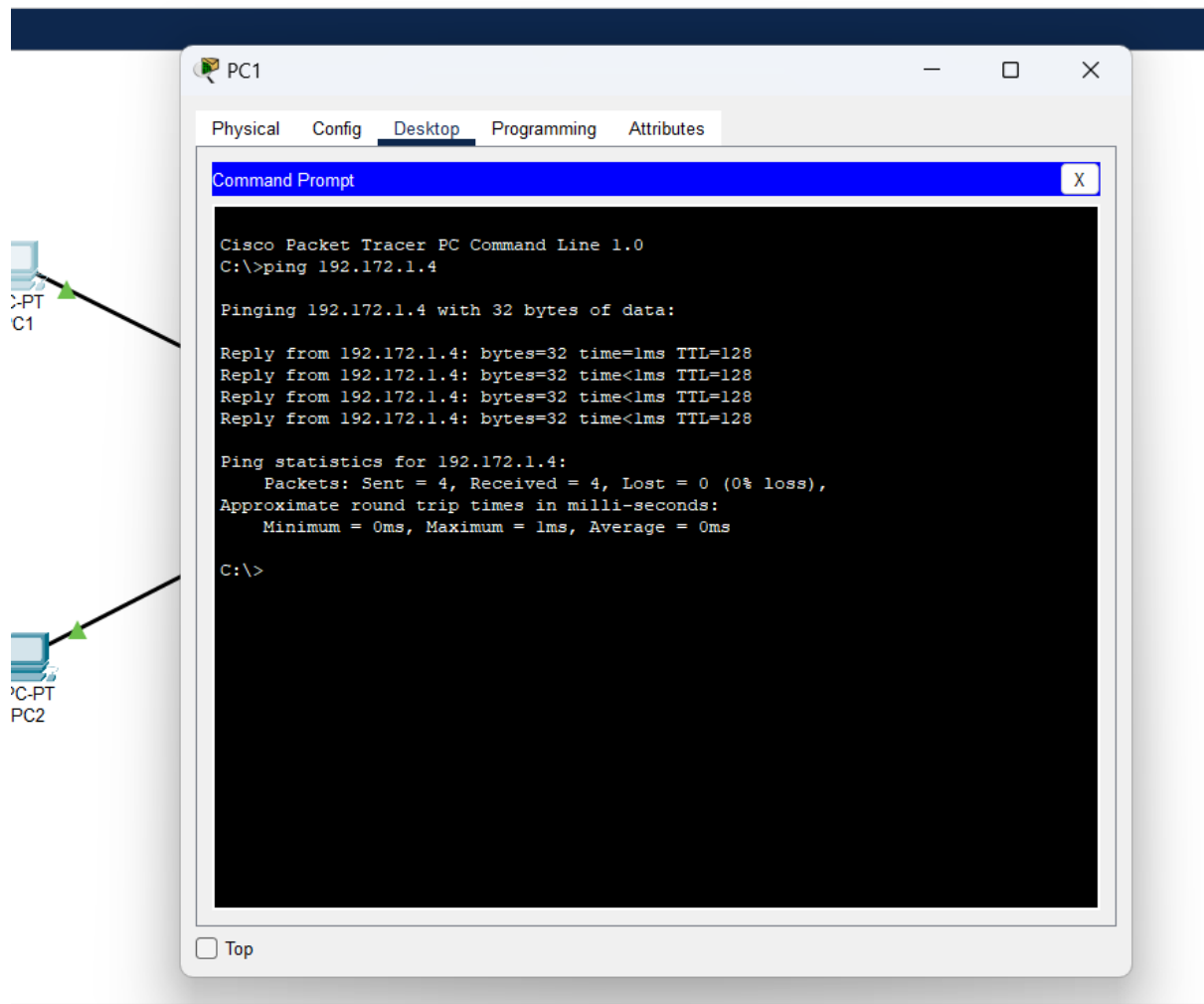
## PC4

PC4 configuration window showing IP Configuration for FastEthernet0. The interface is set to Static. The IPv4 Address is 192.172.10.10, Subnet Mask is 255.255.255.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. The IPv6 Configuration is set to Static, with IPv6 Address blank, Link Local Address FE80::20C:85FF:FE68:B70B, Default Gateway blank, and DNS Server blank. The 802.1X section is unchecked, with Authentication set to MD5, Username blank, and Password blank.

**We have created the network and assigned the IP Addresses now we need to verify the connectivity.**

## 2. Verification

For this we try sending packets from PC1 to PC3 so we open its command prompt and use ping command.

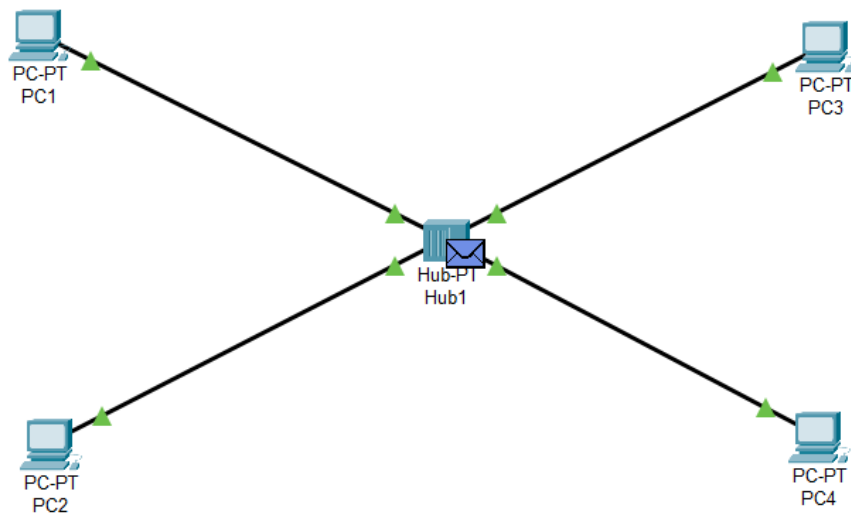


We see that package sent = 4 , received = 4 and lost = 0  
So this means the message was sent and received properly.

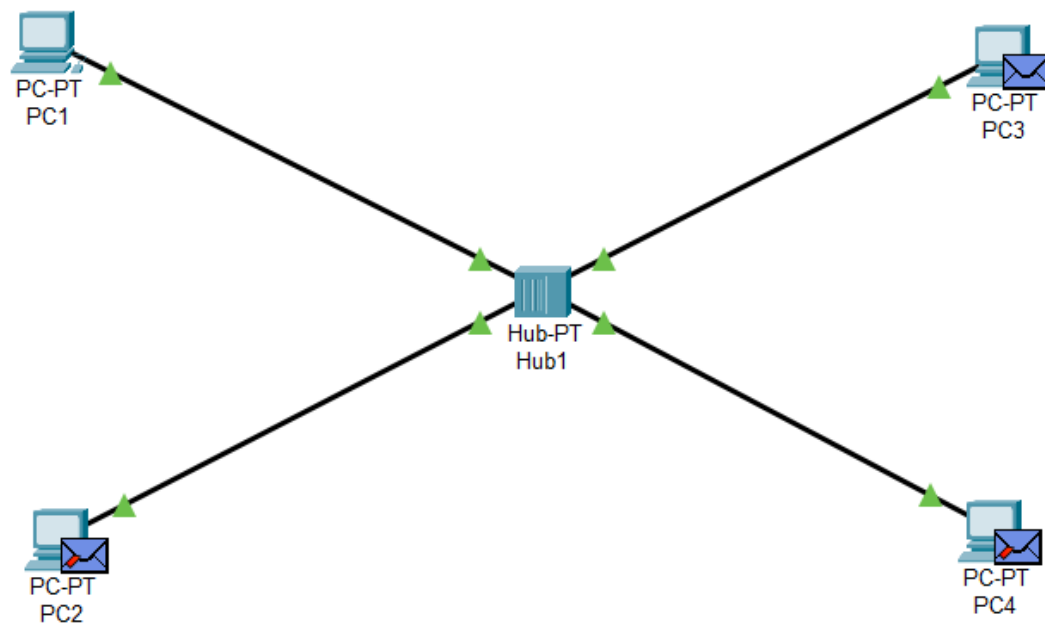
Now we start the simulation with message sent from PC1 to PC3.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	In Progress	PC1	PC3	ICMP		0.000	N	0	(edit)	

Then we see the first message is sent to the hub then to PC3

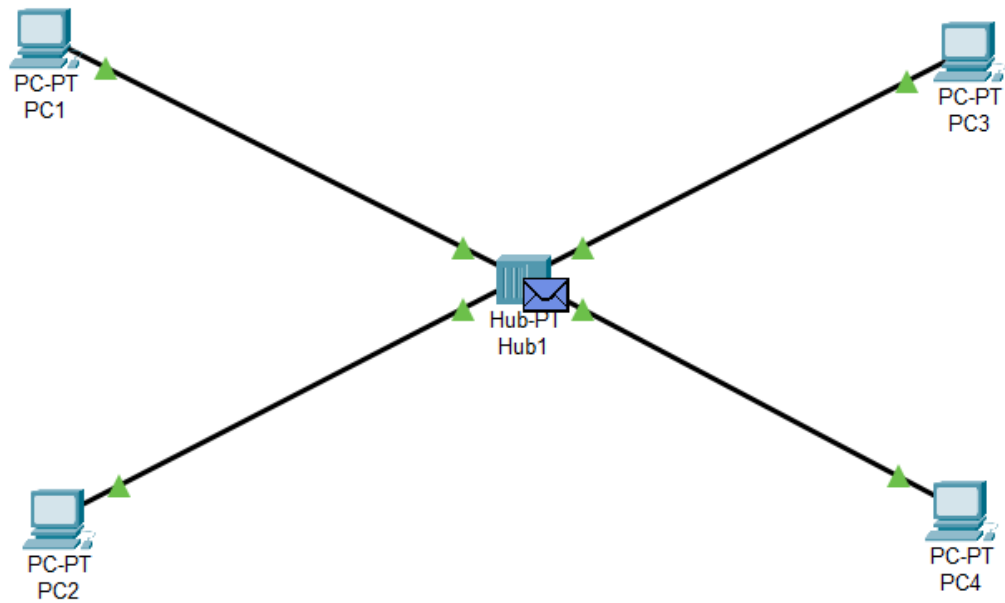


Then

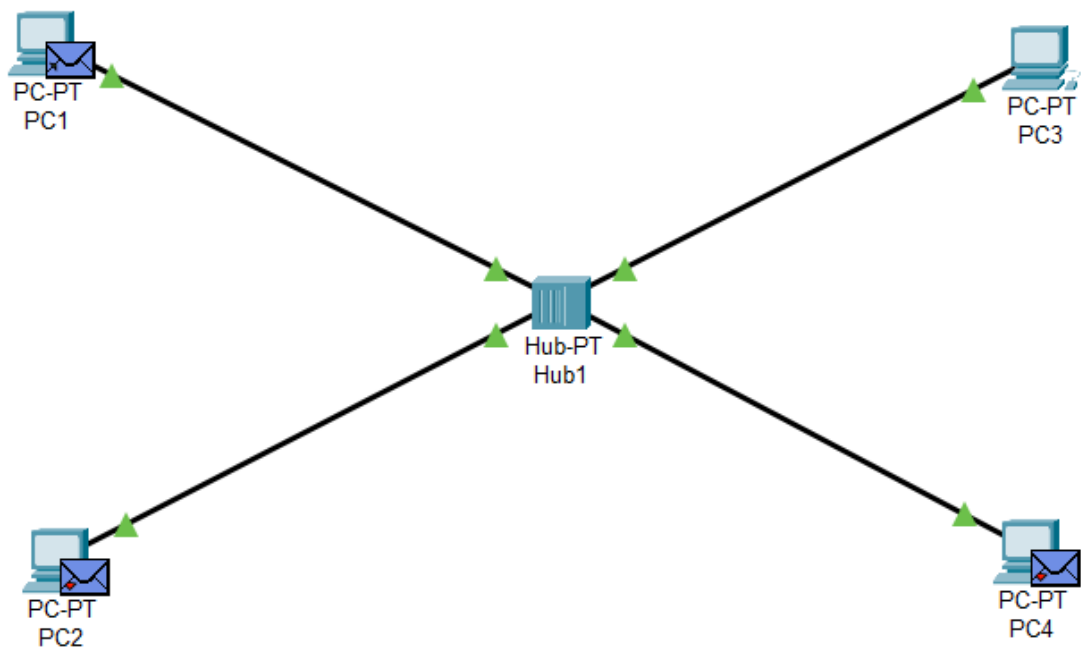


**We see that message is sent to PC3 but because it is a hub it also sends it to PC2 and PC4 to which we did not intend to send. That's why it shows red cross over there.**

Now PC3 will reply and same thing will happen again and we will again see that PC2 and PC4 are discarding the message because it was not intended for them.



Then



## SIMULATION

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC1	<input checked="" type="checkbox"/> ICMP
	0.001	PC1	Hub1	<input checked="" type="checkbox"/> ICMP
	0.002	Hub1	PC2	<input checked="" type="checkbox"/> ICMP
	0.002	Hub1	PC3	<input checked="" type="checkbox"/> ICMP
	0.002	Hub1	PC4	<input checked="" type="checkbox"/> ICMP
	0.003	PC3	Hub1	<input checked="" type="checkbox"/> ICMP
	0.004	Hub1	PC1	<input checked="" type="checkbox"/> ICMP
	0.004	Hub1	PC2	<input checked="" type="checkbox"/> ICMP
	0.004	Hub1	PC4	<input checked="" type="checkbox"/> ICMP

Reset Simulation ☒ Constant Delay

Captured to: 271.016 s

### 3. subnet masks of the hosts.

#### PC1

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.172.1.2
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0

#### PC3

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.172.1.4
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

#### PC2

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.172.1.3
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0

#### PC4

<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.172.10.10
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0

**Addressing Table:**

<b>Device</b>	<b>Interface</b>	<b>IP Address</b>	<b>Subnet Mask</b>
<b>PC1</b>	<b>NIC</b>	<b>192.172.1.2</b>	<b>255.255.255.0</b>
<b>PC2</b>	<b>NIC</b>	<b>192.172.1.3</b>	<b>255.255.255.0</b>
<b>PC3</b>	<b>NIC</b>	<b>192.172.1.4</b>	<b>255.255.255.0</b>
<b>PC4</b>	<b>NIC</b>	<b>192.172.10.10</b>	<b>255.255.255.0</b>