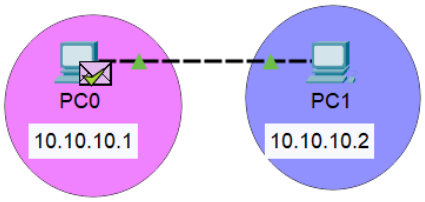
1. Set basic connection.

Simple peer-to-peer connection between same type devices using ethernet crossover cable

1. set up ip
select computer
desktop
ip configuration
set ipv4



2. check ipconfiguration

select pc
desktop
command prompt
type-in: ipconfig

3. physical address(MAC)

type-in:
ipconfig /all

4. To check connectivity(PING system)

in PC0
command prompt type: ping 10.10.10.2

the 4 packets will be send to PC1 and 4 reply/ acknowledgement will be received.

If they are connected properly in the system.

Check configuration:

PC1

Physical Config Desktop Programming Attributes

Command Prompt

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

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::207:ECFF:FE3C:D56B
   IPv6 Address.....: ::
   IPv4 Address.....: 10.10.10.2
   Subnet Mask.....: 255.0.0.0
   Default Gateway.....: ::
                         0.0.0.0

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: ::
   IPv6 Address.....: ::
   IPv4 Address.....: 0.0.0.0
   Subnet Mask.....: 0.0.0.0
   Default Gateway.....: ::
                         0.0.0.0
```

Pinging to PC0 from PC1

```
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=2ms TTL=128
Reply from 10.10.10.1: bytes=32 time=2ms TTL=128
Reply from 10.10.10.1: bytes=32 time=2ms TTL=128
Reply from 10.10.10.1: bytes=32 time=2ms 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 = 2ms, Maximum = 2ms, Average = 2ms

C:\>
```

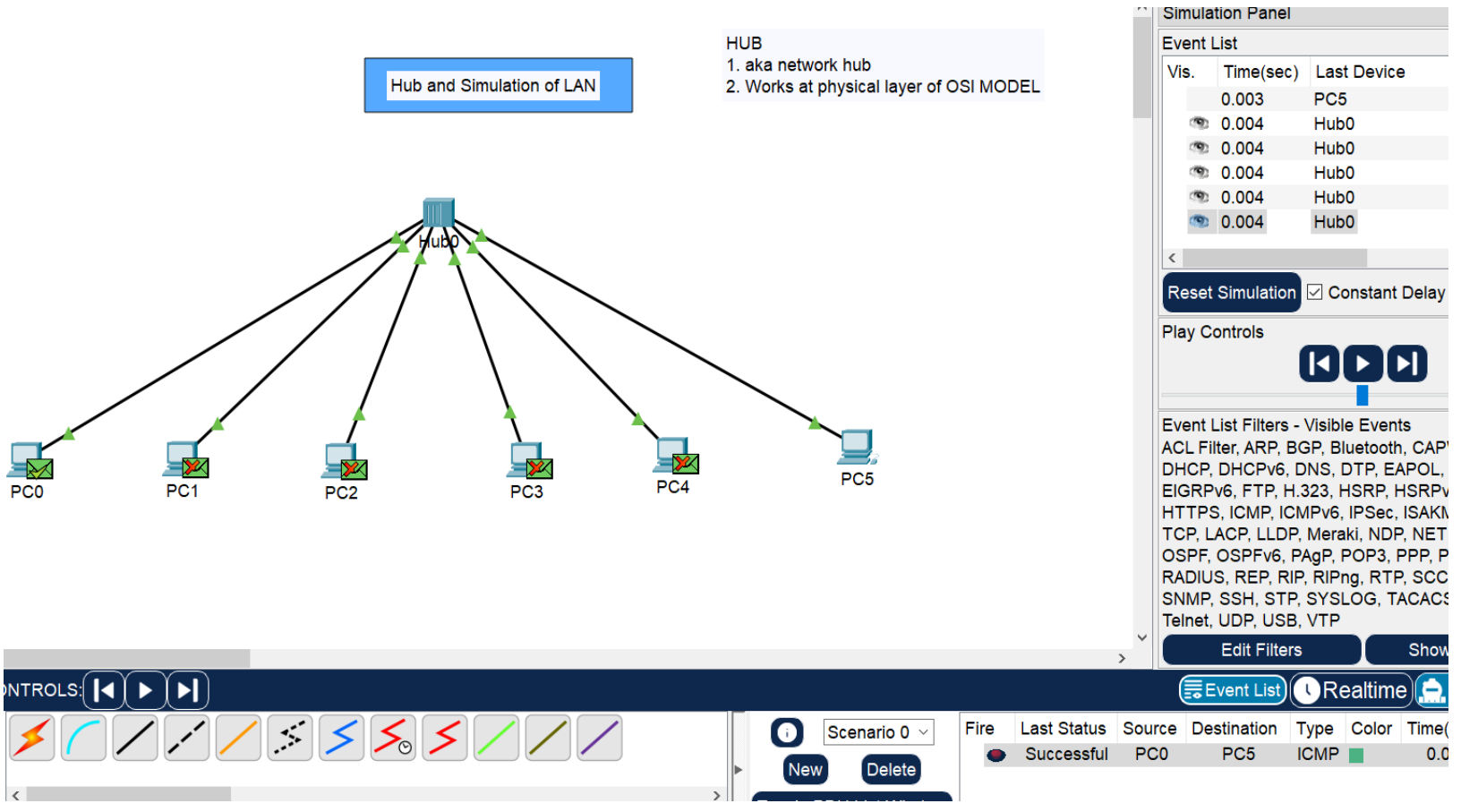
2. Hub and simulation of LAN using HUB

In Hub the there are multiple ports. When a packet arrives at one port, it is copied to other ports so that all segments of the LAN can see all packets. After that the device for which the packet was send receives the packet and the rest devices discards/ deny the packets were not intended for them. It is Layer 1(physical layer) device of OSI model.

a) The sender sends the packet to hub
b) The Hub broadcast the data to all the port except the sender device.
c) The receiver accepts the packet only, and the other devices denies the packet
d) The receiver sends an acknowledgment to hub
e) The hub broadcast the acknowledgement to all the ports except the receiver device
f) The sender receives the acknowledgement and other devices reject it.

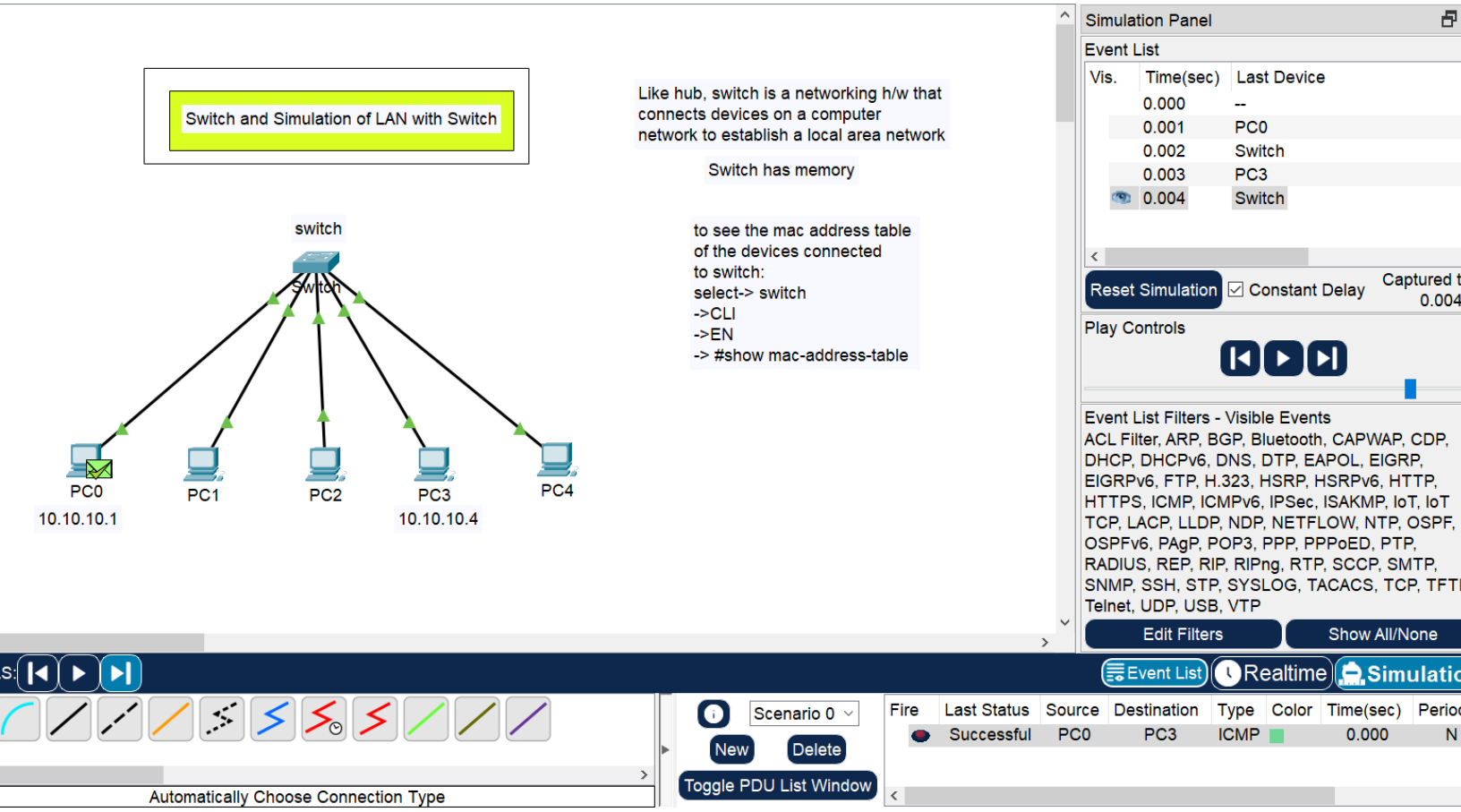
Disadvantage of HUB: For a vast no of devices broadcasting causes flood in the entire network.

Pros	Cons
Cheaper the switch	Issues with broadcast
Works good for smaller network	No memory



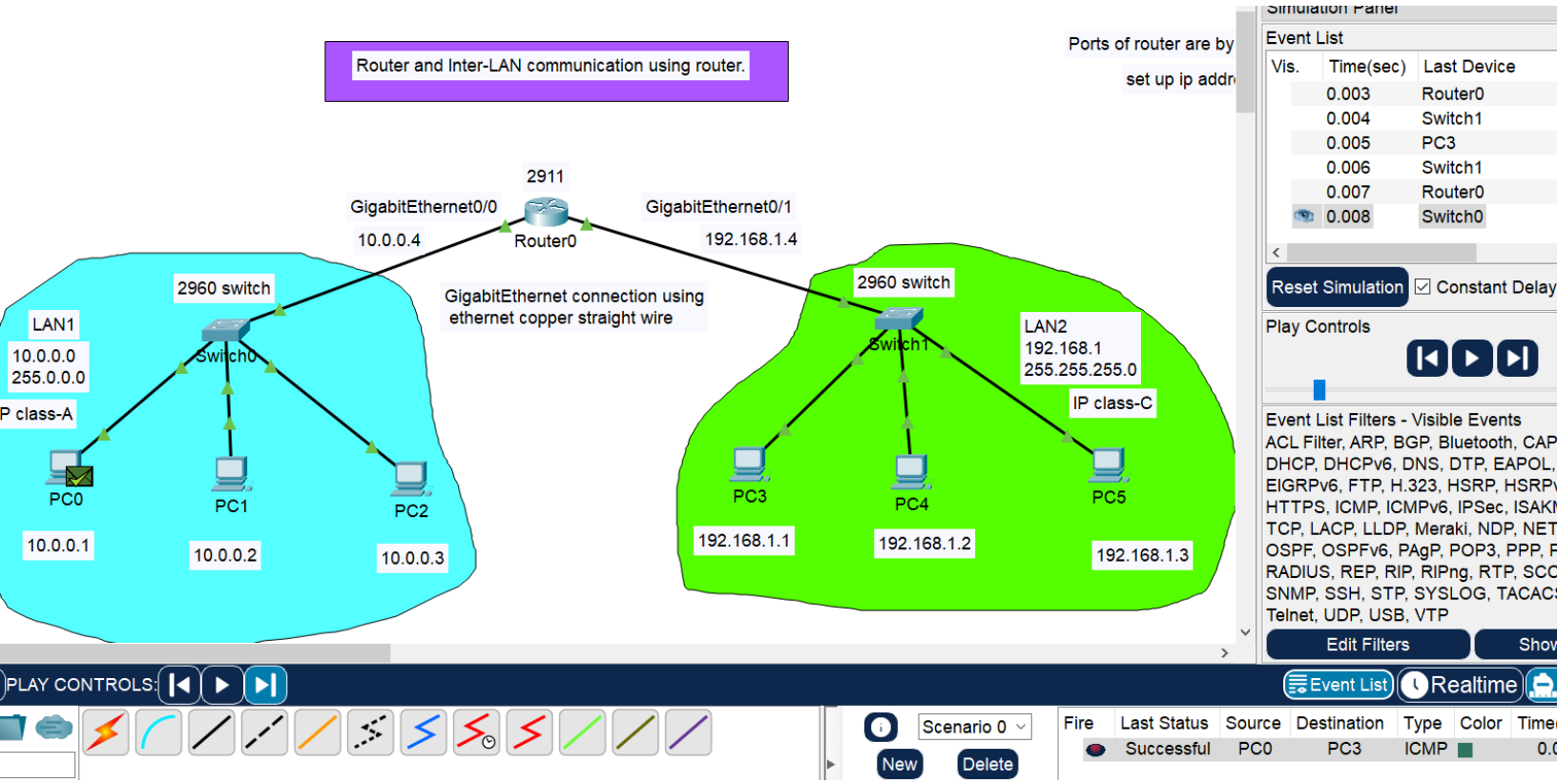
3. Switch and Simulation of LAN with Switch

Switch has memory; it saves the MAC addresses of devices in MAC ADDRESS TABLE which stores the MAC address with corresponding port number. Layer 2(Data link layer) device for setting up LAN.
Here packet is unicasted from switch to the receiver device, and acknowledgement is also unicasted from switch to sender device.

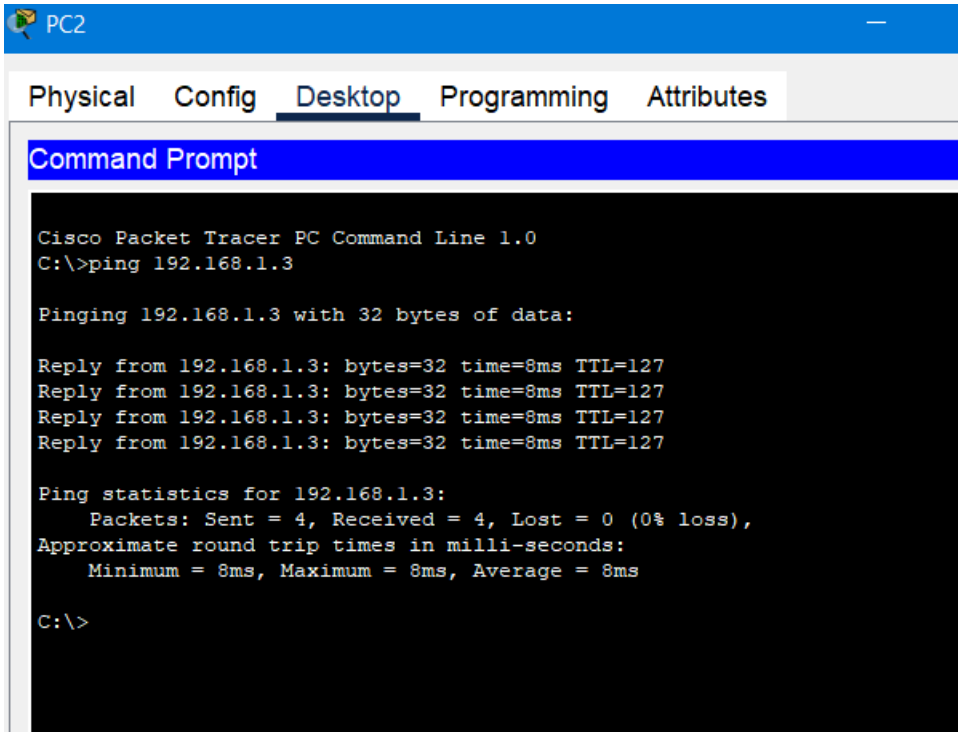


4. Router and Inter-LAN communication using router.

Router connects two or more different LANs. It is layer-3 (Network Layer) device. Router stores data in routing table. It is inevitable (unavoidable) device in the internet.

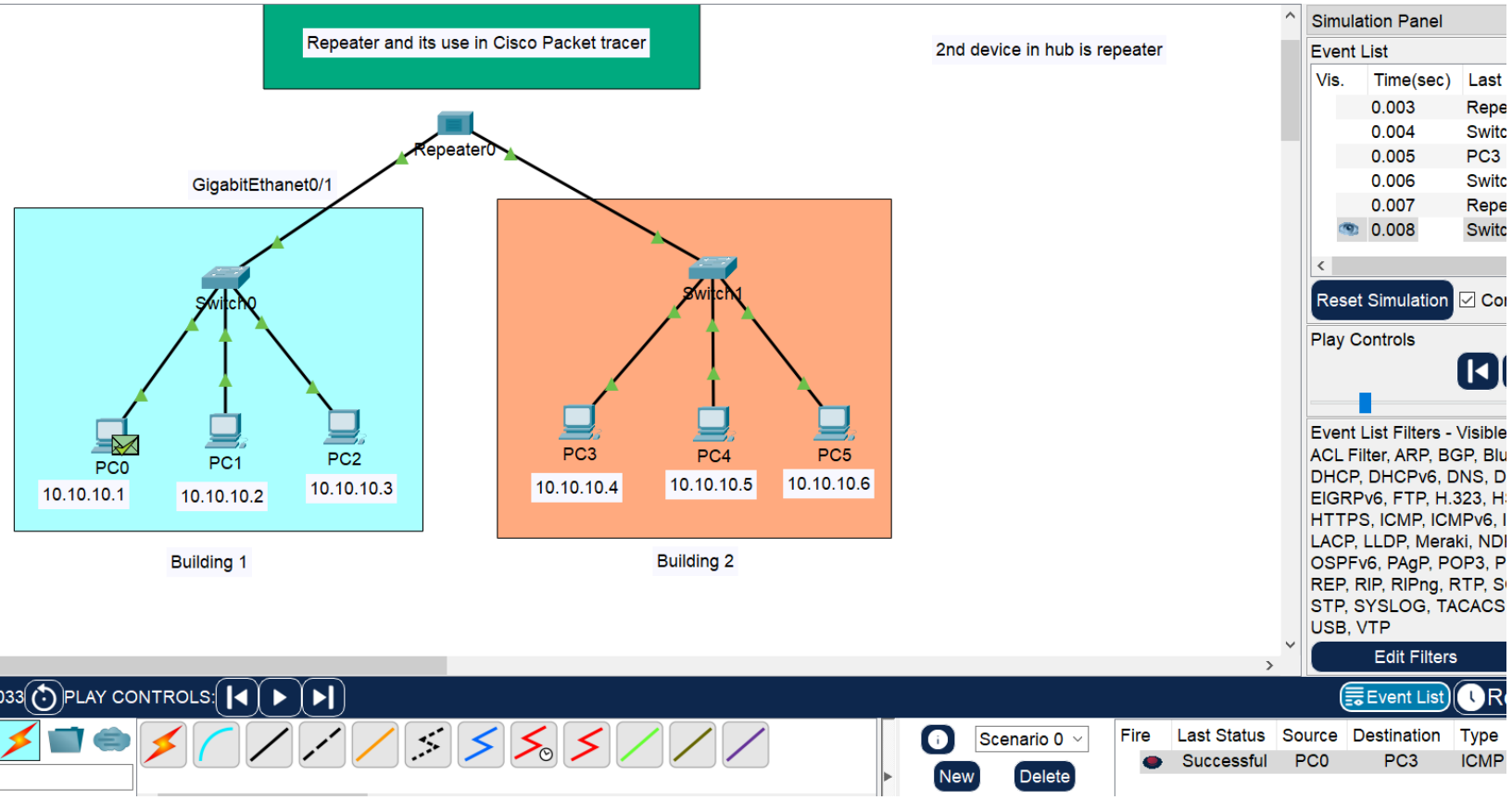


Ping from PC2 of LAN-1 to PC3 of LAN-2



5. Repeater and its use in Cisco Packet tracer

The data signals generally becomes too weak or corrupted if they tend to travel a long distance. So we use repeater to **regenerate** the signal over the **same network**. It is layer 1(physical layer) device. It does NOT amplify the signal.



Thank you