CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

FACULTY OF TECHNOLOGY AND ENGINEERING

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Subject Name: Data Communication **Semester:** III
Subject Code: IT243 **A.Y.:** 2019-20

Lab Manual

1	Study and analysis of various signals on Digital storage Oscilloscope (DSO) generated by function generator.

Appratus:-

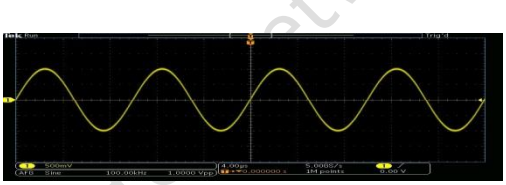
Function Generator , Digital Storage Oscilloscope(DSO),Coaxial cable(BNC).

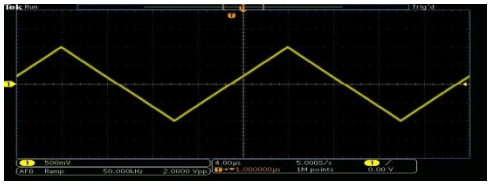
Theory:-

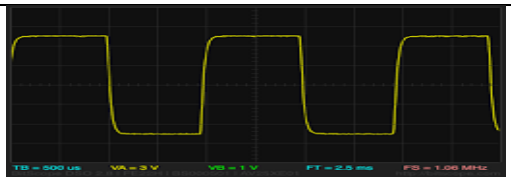
A signal is a medium that is used to transmit the data or information. In this experiment we are going to transmit the signal in the wave form using the function generator and Digital Storage Oscilloscope.

A digital storage oscilloscope is an oscilloscope which stores and analyses the signal digitally rather than using analog techniques. It is now the most common type of oscilloscope in use because of the advanced trigger, storage, display and measurement features which it typically provides.

In so many of the experiments we make use of oscilloscopes and function generators that it is useful to learn their general operation. Function generator is the signal source which provide a specifiable voltage applied over a specifiable time, such as a “sine wave” or “triangle wave” signal or “rectangle wave” signal. Oscilloscopes are a type of signal analyzer—they show us the picture of the signal, usually in the form of a voltage versus time graph. The user can then study this picture to learn the amplitude, frequency, and overall shape of the signal which may depend on the requirement being explored in the experime







Conclusion:-

Here we have the formation of different types of waves using function generator and Digital Storage Oscilloscope.

Questions & Answers.

1. What is the function of DSO and function generator? What is the full form of DSO.
2. Why do we have two channels in DSO?What kind of waves can be formed by the function generator.
3. What is the frequency range of the DSO we have used?

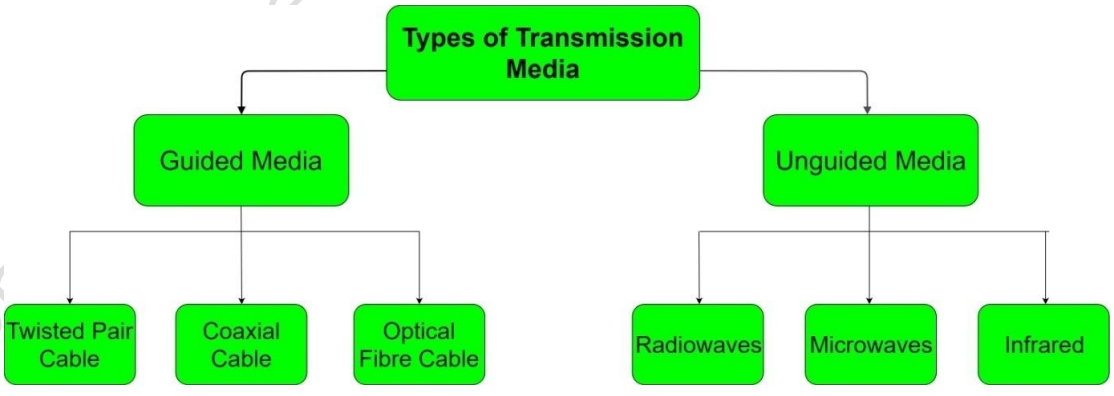
2 Study and analyses various transmission medium used in communication.

Appratus:-

Twisted Pair,Coaxial cable,Optical Fibre.

Theory:-

a transmission medium is a physical path between the transmitter and the receiver i.e it is the channel through which data is sent from one place to another.



Guided Media:-

It is also referred to as Wired or Bounded transmission media. Signals being transmitted are directed and confined in a narrow pathway by using physical links.

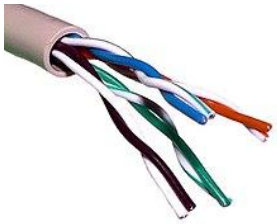
1. Twisted Pair:-

It consists of 2 separately insulated conductor wires wound about each other. Generally, several such pairs are bundled together in a protective sheath. They are the most widely used Transmission Media.

Types of Twisted Pair:-

Unshielded cable is the cable that has the ability to block interference and does not depend on a physical shield for this purpose. It is used for telephonic applications.

Shielded cable is the cable that consists of a special jacket to block external interference. It is used in fast-data-rate Ethernet and in voice and data channels of telephone lines.



2. Coaxial Cable:-

It has an outer plastic covering containing 2 parallel conductors each having a separate insulated protection cover. Coaxial cable transmits information in two modes: Baseband mode(dedicated cable bandwidth) and Broadband mode(cable bandwidth is split into separate ranges). Cable TVs and analog television networks widely use Coaxial cables.

3. Optical Fibre Cable:-

It uses the concept of reflection of light through a core made up of glass or plastic. The core is surrounded by a less dense glass or plastic covering called the cladding. It is used for transmission of large volumes of data.

Unguided media:-

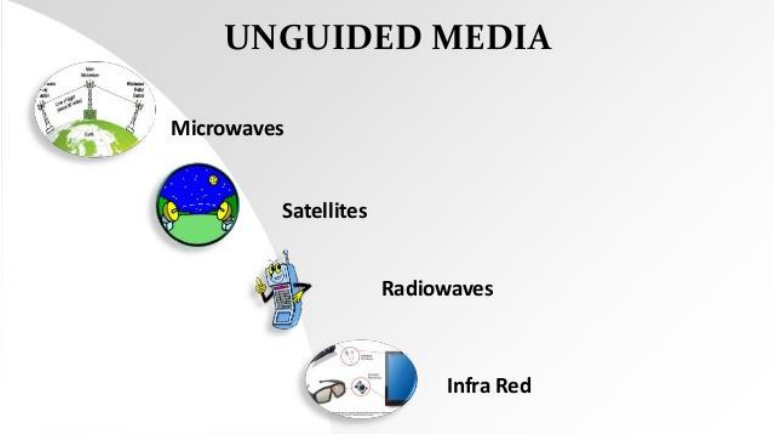
There are 3 major types of Unguided Media:

Radiowaves –
These are easy to generate and can penetrate through buildings.The sending and receiving antennas

need not be aligned. Frequency Range:3KHz – 1GHz. AM and FM radios and cordless phones use Radiowaves for transmission.
Further Categorized as: (i) Terrestrial and (ii) Satellite.

Microwaves –
It is a line of sight transmission i.e. the sending and receiving antennas need to be properly aligned with each other. The distance covered by the signal is directly proportional to the height of the antenna. Frequency Range:1GHz – 300GHz. These are majorly used for mobile phone communication and television distribution.

Infrared –
Infrared waves are used for very short distance communication. They cannot penetrate through obstacles. This prevents interference between systems. Frequency Range:300GHz – 400THz. It is used in TV remotes, wireless mouse, keyboard, printer, etc.



Questions & Answers.

1. What are the transmission media.
2. What are the guided and unguided media.
3. Where do we use of the different types of guided media.
4. Optical fibre types and brief explanation.

3 Study and implement Amplitude modulation.

Apparatus:-

Amplitude Demodulator(SC2201),DSO,Coaxial cables.

Theory:-

Modulation

The systematic alteration in the high frequency carrier wave in accordance to the low frequency Message Signal.

Why do we need Modulation.

- Actual Antenna Size
- Long distance Coverage
- Attenuation
- Noise Reduction
- Distortion

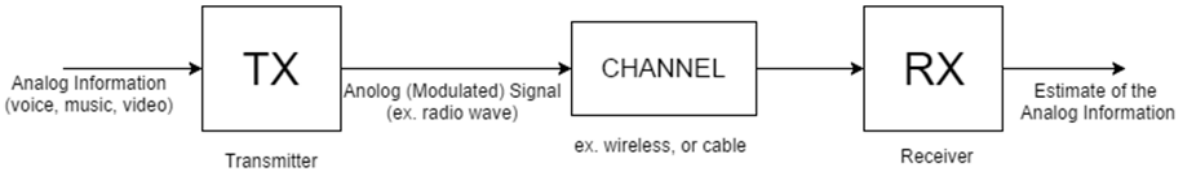
There are basically two types of modulation.

- Amplitude Modulation.

- Frequency Modulation

Amplitude Modulation

The systematic alteration in the high frequency carrier signal amplitude in accordance to the low frequency Message Signal amplitude at that instantaneous time is called Amplitude Modulation.

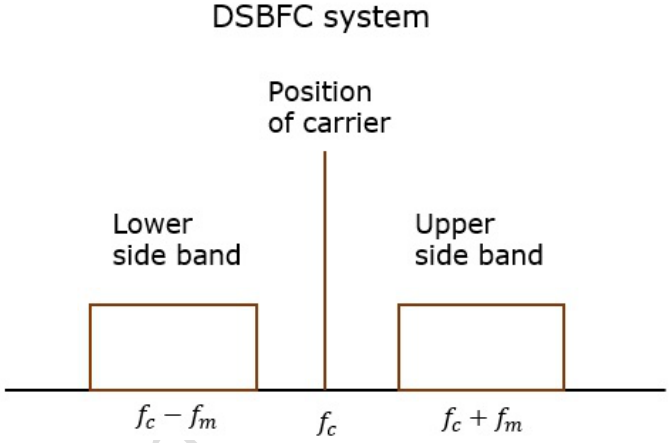


Amplitude Modulation is basically divided into three parts:-

1. DSB-FC
2. DSB-SC
3. SSB-SC

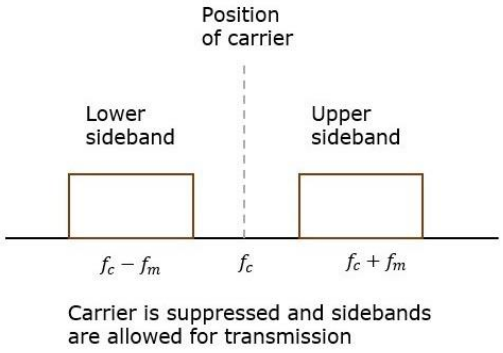
DSB-FC

In this modulation basically we deal with the carrier wave and two of the side bands that carry the information to be transmitted.with the bandwidth of 2fm.



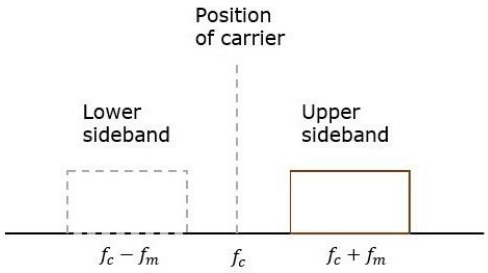
DSB-SC

In this modulation we deal with the two side bands and remove the carrier to increase the power of the bandwidth of 2fm.it is the oldest method for amplitude modulation



SSB-SC

In this modulation we eliminate the carrier as well as the one side band and total bandwidth of fm.

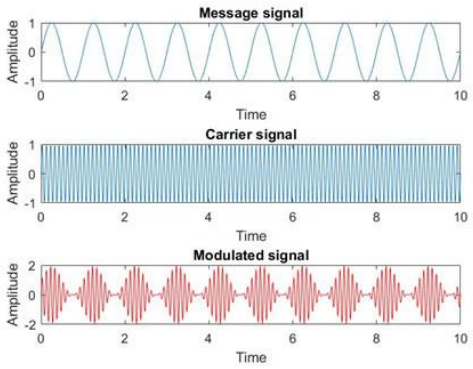


Carrier and a sideband are suppressed and a single sideband is allowed for transmission

There are mainly two types of Modulators.

- **Square law Modulator**

✓ A low level amplitude modulated signal can only be detected by using the square law detector in which a device operating in the non-linear region
✓ It is used to detect modulating signal.
✓ Usually used to detect signal below 1 volt.



Conclusion:

Here we have learned about the need for modulation and types of modulation and basically in detail of the amplitude modulation.

Questions & Answers:-

✓ What is Modulation.Why do we need modulation?
✓ How can we basically achieve amplitude modulation.
✓ What are the modulators used in Amplitude Modulation.With description.

4 Study and implement Frequency division multiplexing (FDM).

Apparatus:-

Co axial cables , Connecting wires , DSO-Digital Storage Oscilloscope , PAM-PWM-PSM modulation and demodulation trainer ST2110

Theory:-

Multiplexing

In telecommunications and computer networks, **multiplexing** (sometimes contracted to **muxing**) is a method by which multiple analog or digital signals are combined into one signal over a shared medium. The aim is to share a scarce resource.

There are basically 3 types of multiplexing:-

1. **Space-division multiplexing**
2. **Frequency-division multiplexing**
3. **Time Division multiplexing**

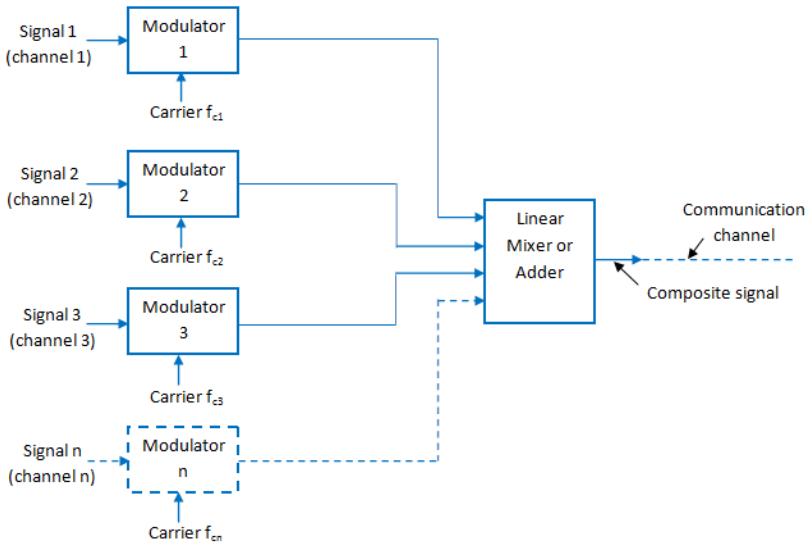
In this experiment we will learn about the frequency divison multiplexing

Frequency Division Multiplexing

In telecommunications, **frequency-division multiplexing** (**FDM**) is a technique by which the total bandwidth available in a communication medium is divided into a series of non-overlapping frequency bands, each of which is used to carry a separate signal. This allows a single transmission medium such as a cable or optical fiber to be shared by multiple independent signals. Another use is to carry separate serial bits or segments of a higher rate signal in parallel.

The most natural example of frequency-division multiplexing is radio and television broadcasting, in which multiple radio signals at different frequencies pass through the air at the same time. Another example is cable television, in which many television channels are carried simultaneously on a single cable. FDM is also used by telephone systems to transmit multiple telephone calls through high capacity trunklines, communications satellites to transmit multiple channels of data on uplink and downlink radio beams, and broadband DSL modems to transmit large amounts of computer data through twisted pair telephone lines, among many other uses.

FDM TRANSMITTER



The signals which are to be multiplexed will each modulate a separate carrier .The type of modulation can be AM, SSB, FM or PM .

The modulated signals are then added together to form a complex signal which is transmitted over a single channel .

Working Operation of the FDM Transmitter

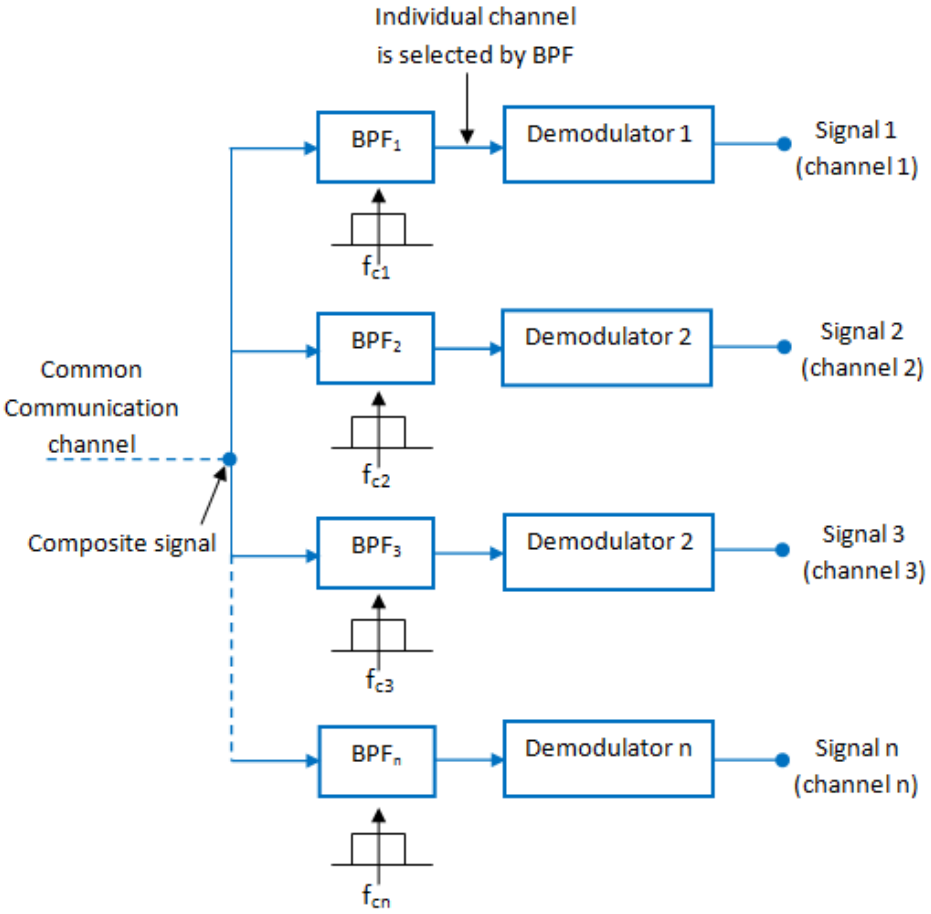
Each signal modulates a separate carrier . The modulator outputs will contain the sidebands of the corresponding signals .

The modulator outputs are added together in a linear mixer or adder .

The linear mixer is different from the normal mixers. Here the sum and difference frequency components are not produced . But only the algebraic addition of the modulated outputs will take place .

Different signals are thus added together i the time domain but they have a separate identity in the frequency domain . The composite signal at the output of mixer is transmitted over the single communication channel as shown in This signal can be used to modulate a radio transmitter if the FDM signal is to be transmitted through air .

FDM RECEIVER



The composite signal is applied to a group of bandpass filters (BPF) .

Each BPF has a center frequency corresponding to one of the carriers. The BPFs have an adequate bandwidth to pass all the channel information without any distortion .

Each filter will pass only its channel and rejects all the other channels .

The channel demodulator then removes the carrier and recovers the original signal back .

Conclusion:-

In this experiment we have learned about the frequency division multiplexing and the ways by which we can obtain frequency division multiplexing

Question & Answer:-

1. What is fdm?What is multiplexing?
2. Why do we prefer fdm over all other methods of multiplexing?
3. Describe fdm briefly?

5 Study of basic network command and Network configuration commands.

1) **ping :**

- Helps in determining TCP/IP Networks IP address as well as to verify if the device with that IP address is connected to the pc or not
- Determining issues with the network and assist in resolving them.

```
C:\Users\Admin>ping 172.16.0.1

Pinging 172.16.0.1 with 32 bytes of data:
Reply from 172.16.0.1: bytes=32 time<1ms TTL=64
Reply from 172.16.0.1: bytes=32 time<1ms TTL=64
Reply from 172.16.0.1: bytes=32 time<1ms TTL=64
Reply from 172.16.0.1: bytes=32 time<1ms TTL=64

Ping statistics for 172.16.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\Admin>ping www.google.com

Pinging www.google.com [216.58.199.132] with 32 bytes of data:
Reply from 216.58.199.132: bytes=32 time=15ms TTL=56
Reply from 216.58.199.132: bytes=32 time=14ms TTL=56
Reply from 216.58.199.132: bytes=32 time=11ms TTL=56
Reply from 216.58.199.132: bytes=32 time=16ms TTL=56

Ping statistics for 216.58.199.132:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 11ms, Maximum = 16ms, Average = 14ms
```

2) **Tracert :**

- Used to visually see a packet being sent and received and amount of hops required for that packet to get to its destination

```
C:\Users\Admin>tracert www.google.com

Tracing route to www.google.com [216.58.199.132]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms  172.16.0.1
  2     6 ms     5 ms     5 ms  172.24.195.242
  3     *       16 ms     *     218.248.235.198
  4    12 ms    13 ms    11 ms  74.125.48.138
  5     *        *        *     Request timed out.
  6    12 ms    10 ms    13 ms  bom07s01-in-f4.1e100.net [216.58.199.132]

Trace complete.
```

3) **ipconfig** :

- displays the network settings currently assigned to any or all the network adapters in the machine
- specially used to verify network connection as well as to verify network settings

```
C:\Users\Admin>ipconfig

Windows IP Configuration


Ethernet adapter Local Area Connection 2:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::9d78:5a25:73b6:ee99%14
   IPv4 Address. . . . . . . . . . . : 172.16.3.115
   Subnet Mask . . . . . . . . . . . : 255.255.240.0
   Default Gateway . . . . . . . . . : 172.16.0.1

Ethernet adapter VMware Network Adapter VMnet1:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::5e1:150b:2628:6c98%21
   IPv4 Address. . . . . . . . . . . : 192.168.154.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::e93a:11fb:2a07:914a%22
   IPv4 Address. . . . . . . . . . . : 192.168.75.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::d8b8:dc46:46c:ec5%23
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Tunnel adapter isatap.{A5CAA4C8-D1F7-4833-AB1E-A5FDF177C4AD}:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter isatap.{EF2E66F6-A99C-4F62-A316-F9EED199D470}:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter isatap.{ED558BA6-353D-4949-AF0A-4ACA592E9BED}:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter isatap.{548D23E2-6139-4A67-AE2C-207D1C2AD6AD}:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Tunnel adapter isatap.{F4A6B41A-A972-43E3-8EB3-11590F6B93D0}:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

4) **Pathping :**

- Provides information about network latency and network loss at intermediate hops between source and destination
- Calculates packet loss in every intermediate routers
- It sends echo requests via ICMP(Internet Control Message Protocol) and analyzing the result

```
C:\Users\Admin>pathping www.google.com

Tracing route to www.google.com [216.58.199.132]
over a maximum of 30 hops:
  0  4046-A-15 [172.16.3.115]
  1  172.16.0.1
  2  172.24.195.242
  3     *        *        *
Computing statistics for 50 seconds...
            Source to Here   This Node/Link
Hop  RTT    Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                                           4046-A-15 [172.16.3.115]
                                     0/ 100 =  0%   |
  1    0ms     0/ 100 =  0%      0/ 100 =  0%  172.16.0.1
                                     3/ 100 =  3%   |
  2   15ms     3/ 100 =  3%      0/ 100 =  0%  172.24.195.242

Trace complete.

C:\Users\Admin>pathping -n www.google.com

Tracing route to www.google.com [216.58.199.132]
over a maximum of 30 hops:
  0  172.16.3.115
  1  172.16.0.1
  2  172.24.195.242
  3  218.248.235.198
  4  74.125.48.138
  5     *        *        *
Computing statistics for 100 seconds...
            Source to Here   This Node/Link
Hop  RTT    Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                                           172.16.3.115
                                     0/ 100 =  0%   |
  1    0ms     0/ 100 =  0%      0/ 100 =  0%  172.16.0.1
                                     1/ 100 =  1%   |
  2   17ms     1/ 100 =  1%      0/ 100 =  0%  172.24.195.242
                                     0/ 100 =  0%   |
  3   11ms     1/ 100 =  1%      0/ 100 =  0%  218.248.235.198
                                     0/ 100 =  0%   |
  4   13ms     1/ 100 =  1%      0/ 100 =  0%  74.125.48.138

Trace complete.
```

5) **Nslookup :**

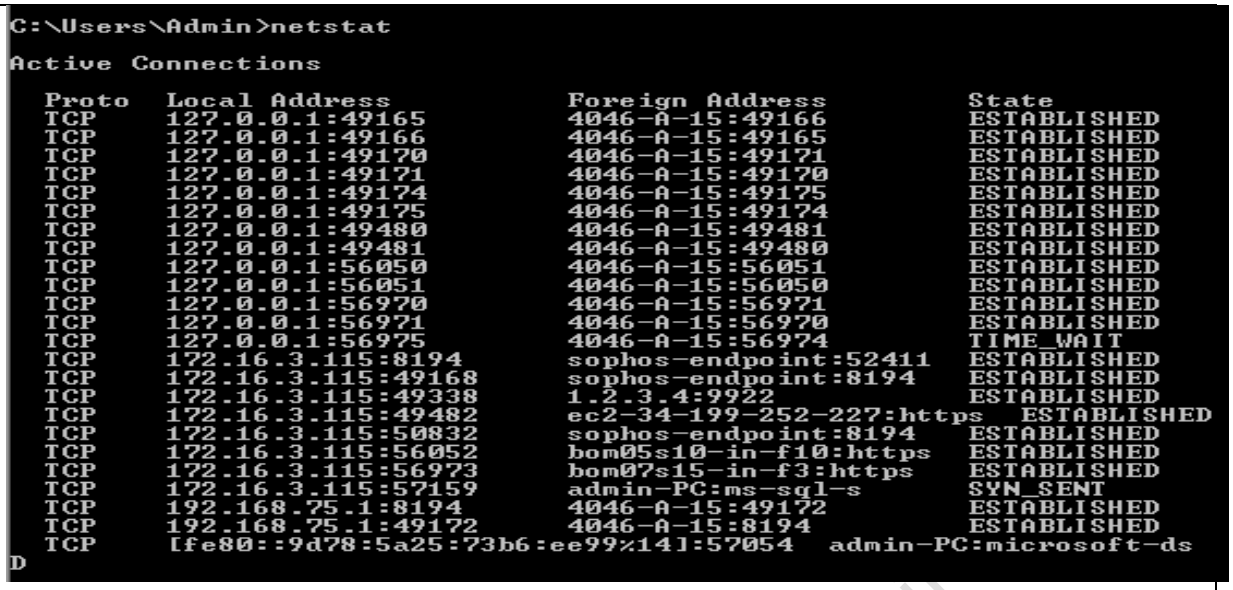
- Displays information that can be used to diagnose DNS infrastructure

```
C:\Users\Admin>nslookup 117.239.83.200
Server:  UnKnown
Address:  172.16.0.1

Name:    static.ill.117.239.83.200/24.bsnl.in
Address:  117.239.83.200
```

6) **Netstat :**

- Displays active TCP connections
- Ports on which the computer is listening
- Ethernet statistics
- IP routing Table
- IPv4 statistics
- IPv6 statistics



7) **Arp (Address Routing Protocol) :**

- Displays, adds, and removes ARP information from network devices

Arp-a

- Displays current Arp entries by interrogating the current protocol data

```
C:\Users\Admin>arp -a

Interface: 172.16.3.115 --- 0xe
  Internet Address      Physical Address      Type
  172.16.0.1            00-1a-8c-6b-76-ac     dynamic
  172.16.1.177          74-46-a0-92-fe-1d     dynamic
  172.16.2.54           6c-3b-e5-33-c4-8a     dynamic
  172.16.2.78           40-a8-f0-41-d1-e1     dynamic
  172.16.2.83           a0-d3-c1-2d-76-22     dynamic
  172.16.2.89           40-a8-f0-41-d1-97     dynamic
  172.16.2.249          6c-3b-e5-3e-c3-19     dynamic
  172.16.3.108          e0-69-95-b2-c4-a4     dynamic
  172.16.3.132          e0-69-95-b2-c5-34     dynamic
  172.16.3.138          e0-69-95-b2-c2-d3     dynamic
  172.16.3.146          e0-69-95-b2-c2-cb     dynamic
  172.16.3.148          e0-69-95-b2-c4-a0     dynamic
  172.16.3.248          6c-3b-e5-38-13-3b     dynamic
  172.16.6.166          6c-3b-e5-33-f8-9f     dynamic
  172.16.6.248          6c-3b-e5-38-12-ed     dynamic
  172.16.11.75          00-50-56-95-7f-f4     dynamic
  172.16.12.26          a0-d3-c1-15-b0-38     dynamic
  172.16.12.71          10-78-d2-52-0a-e5     dynamic
  172.16.12.215         6c-3b-e5-38-13-1f     dynamic
  172.16.12.228         6c-3b-e5-2a-74-1a     dynamic
  172.16.13.74          a0-d3-c1-2d-77-6d     dynamic
  172.16.13.103         6c-3b-e5-32-b3-8a     dynamic
  172.16.15.4           00-01-6c-44-2b-60     dynamic

Interface: 192.168.154.1 --- 0x15
  Internet Address      Physical Address      Type
  192.168.154.255       ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 192.168.75.1 --- 0x16
  Internet Address      Physical Address      Type
  192.168.75.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 192.168.56.1 --- 0x17
  Internet Address      Physical Address      Type
  192.168.56.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
```

6 Study of following Network devices in detail.

NIC	Hub	Switch	Router
Gateway	Repeater	Bridge	

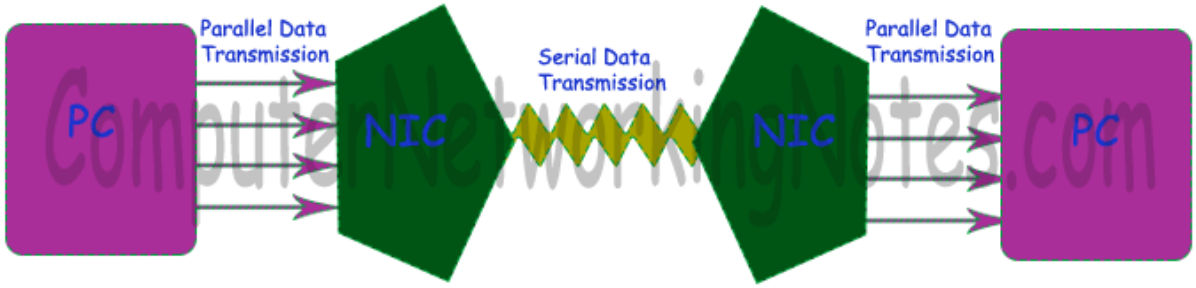
1) NIC

In the list of the networking devices, NIC stands on the first place. Without this device, networking cannot be done. This is also known as network adapter card, Ethernet Card and LAN card. NIC allows a networking device to communicate with the other networking device.

NIC converts the data packets between two different data transmission technologies. A PC uses parallel data transmission technology to transmit the data between its internal parts

while the media that provides connectivity between different PCs uses serial data transmission technology.

A NIC converts parallel data stream into the serial data stream and the serial data stream into the parallel data stream.



Typically all modern PCs have the integrated NICs in the motherboards. If additional NICs are required, they are also available as add-on devices separately.

For desktop or server system, they are available in the adapter form which can be plugged into the available slots of the motherboard. For laptop or other small size devices, they are available in the PCMCIA (Personal Computer Memory Card International Association) card form which can be inserted into the PCMCIA slot.

Types of NICs

There are two types of NICs.

Media Specific: - LAN card are used according to the media type. Different types of the NICs are used to connect the different types of media. To connect a specific media type, we must have to use a NIC which is particularly made for that type of media.

Network Design Specific: - A specific network design needs a specific LAN card. For example FDDI, Token Ring and Ethernet have their own distinctive type of NIC cards. They cannot use other types of NIC cards.

Following figure illustrates some common types of NICs.

2) Hub

A hub is basically a multiport repeater. A hub connects multiple wires coming from different branches, for example, the connector in star topology which connects different stations. Hubs cannot filter data, so data packets are sent to all connected devices. In other words, collision domain of all hosts connected through Hub remains one. Also, they do not have intelligence to find out best path for data packets which leads to inefficiencies and wastage.

Types of Hub

- **Active Hub :-** These are the hubs which have their own power supply and can clean , boost and relay the signal along the network. It serves both as a repeater as well as wiring center. These are used to extend maximum distance between nodes.
- **Passive Hub :-** These are the hubs which collect wiring from nodes and power supply from active hub. These hubs relay signals onto the network without cleaning and boosting them and can't be used to extend distance between nodes.

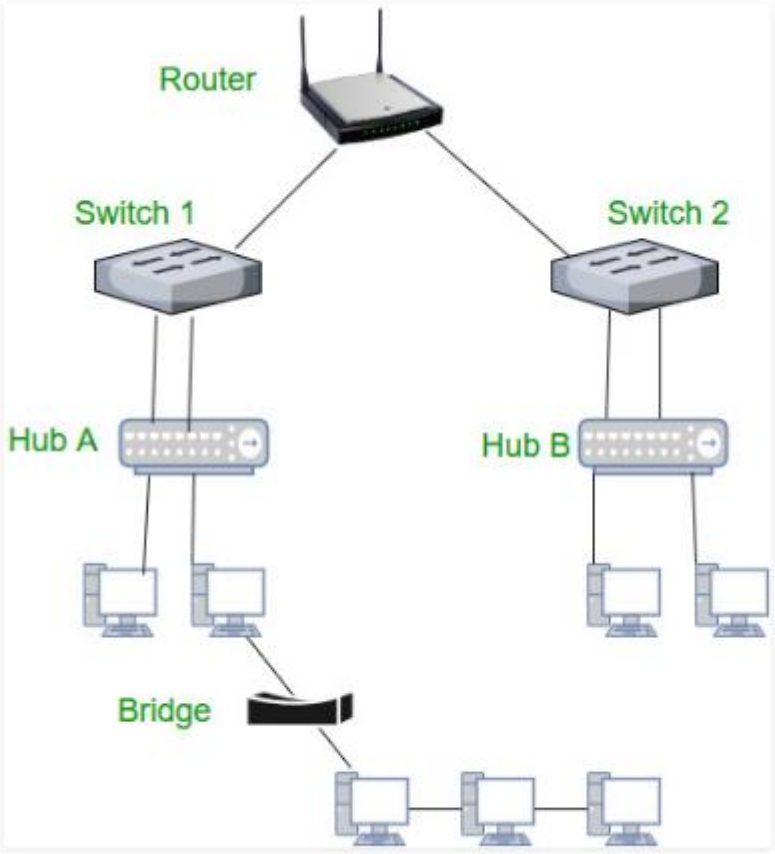
3) Switch

A switch is a multiport bridge with a buffer and a design that can boost its efficiency(large number of ports imply less traffic) and performance. Switch is data link layer device. Switch can perform error checking before forwarding data, that makes it very efficient as it does not forward packets that have errors and forward good packets selectively to correct port

only. In other words, switch divides collision domain of hosts, but broadcast domain remains same.

4) Router

A router is a device like a switch that routes data packets based on their IP addresses. Router is mainly a Network Layer device. Routers normally connect LANs and WANs together and have a dynamically updating routing table based on which they make decisions on routing the data packets. Router divide broadcast domains of hosts connected through it.



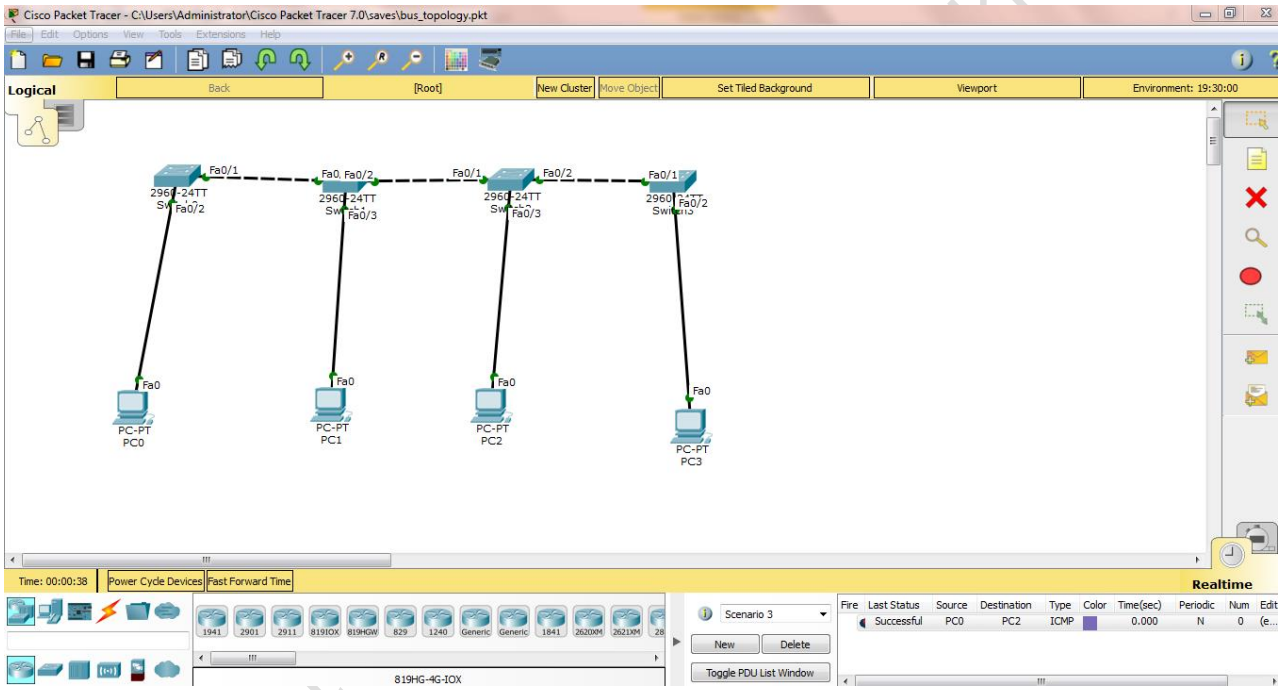
5) Gateway

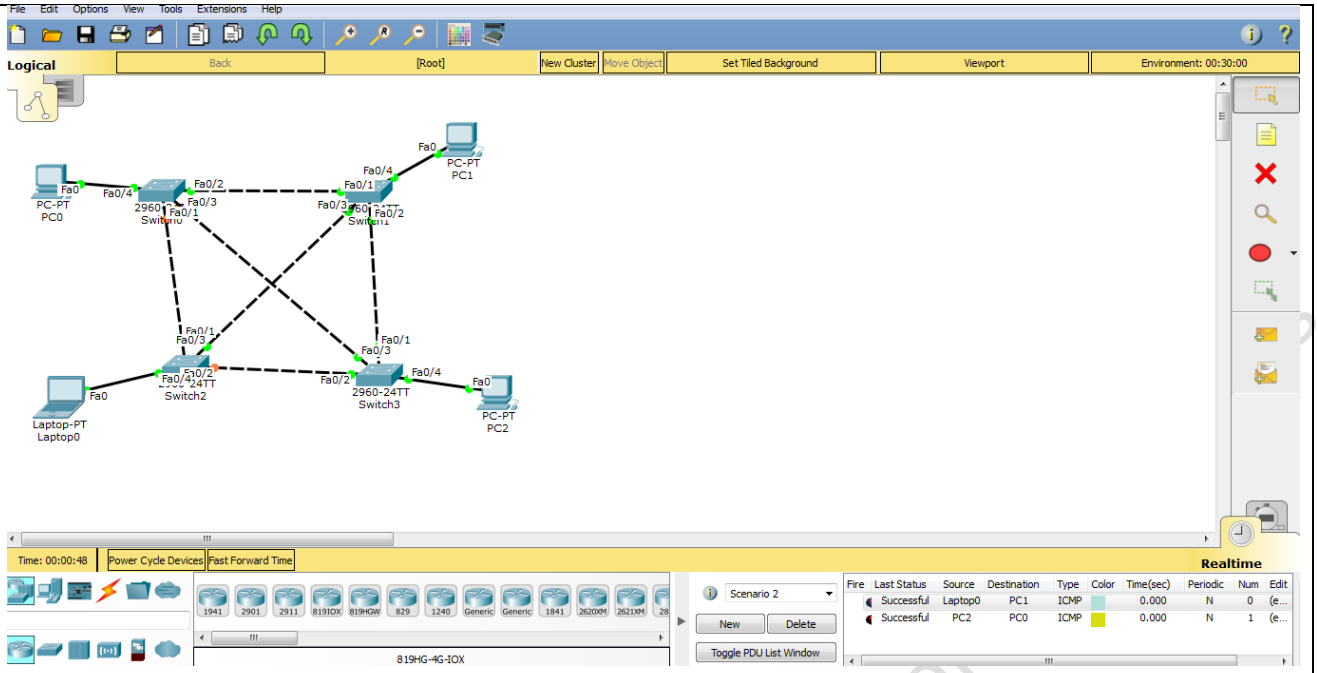
A gateway, as the name suggests, is a passage to connect two networks together that may work upon different networking models. They basically works as the messenger agents that take data from one system, interpret it, and transfer it to another system. Gateways are also called protocol converters and can operate at any network layer. Gateways are generally more complex than switch or router.

6) Brouter

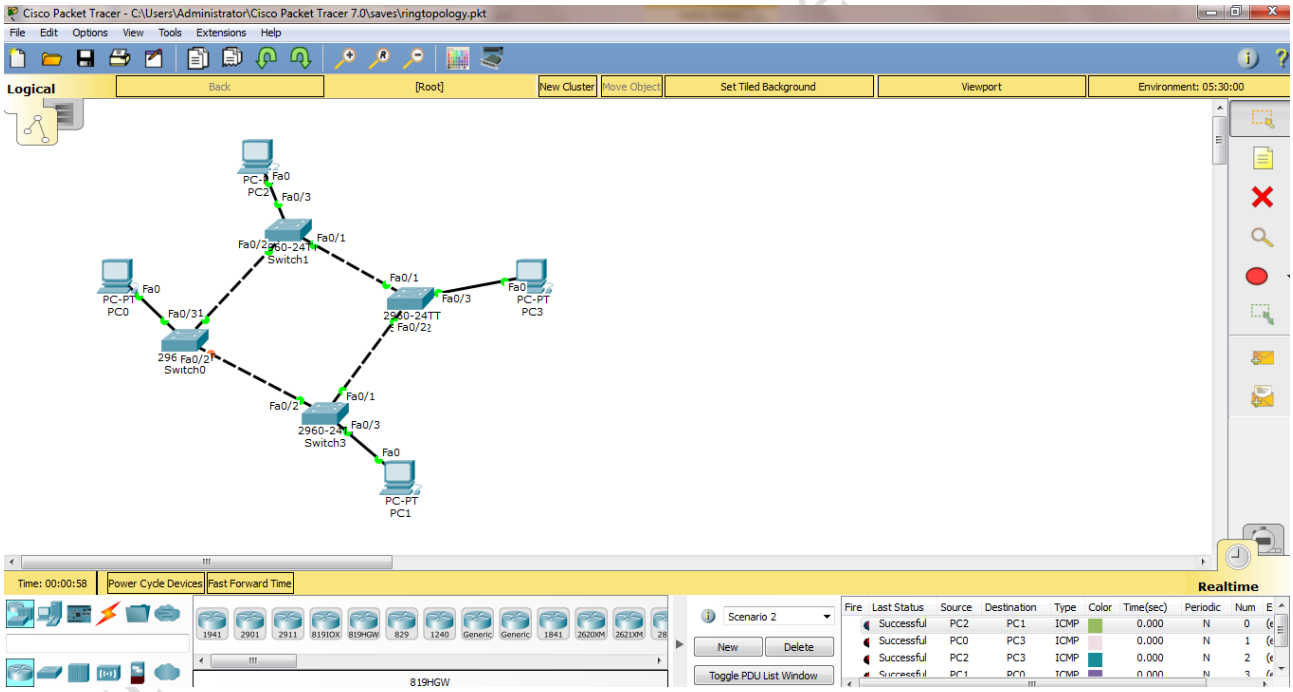
It is also known as bridging router is a device which combines features of both bridge and router. It can work either at data link layer or at network layer. Working as router, it is capable of routing packets across networks and working as bridge, it is capable of filtering local area network traffic.

7) Repeater

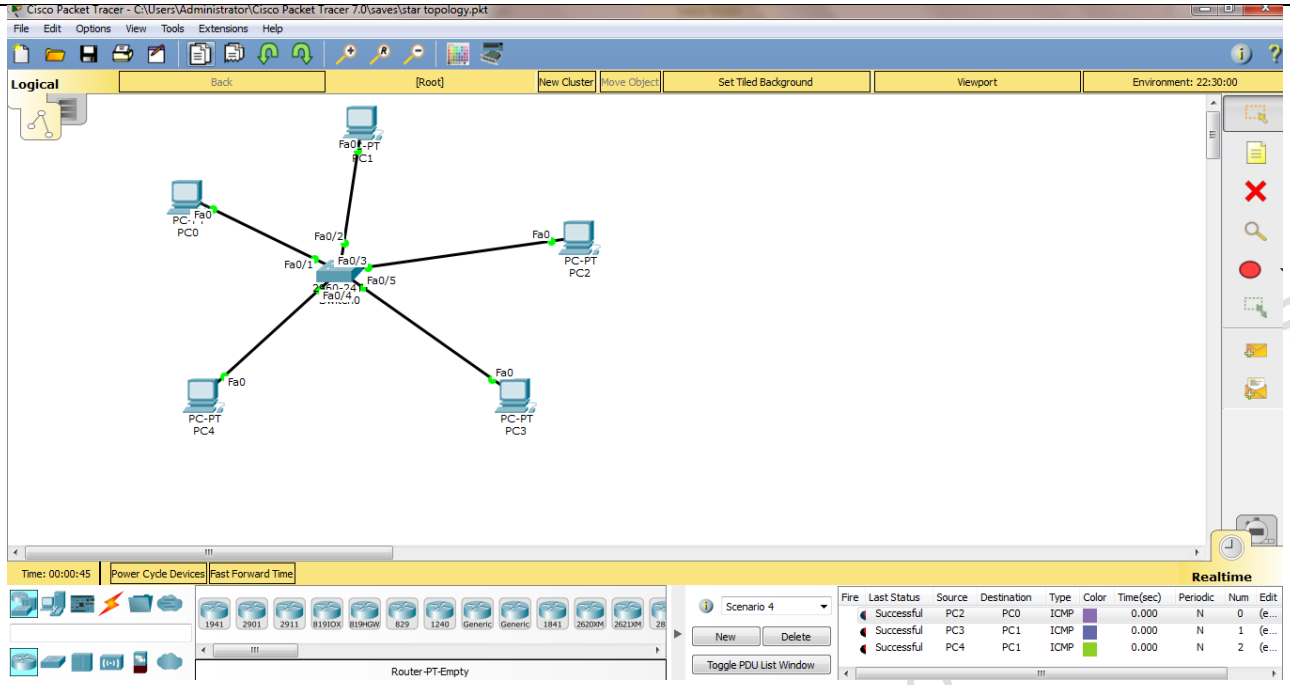
	A repeater is a network device that is used to regenerate or replicate signals that are weakened or distorted by transmission over long distances and through areas with high levels of electromagnetic interference (EMI) **8) Bridge** Bridges are used to connect two different LANs or two similar network segments, to make them operate as though they were one network. The bridge builds a bridging table of physical device addresses that is used to determine the correct bridging or MAC (Media Access Control) destination for a message. Because a bridge sends messages only to the part of the network on which the destination node exists, the overall effect of a bridge on a network is reduced network traffic and fewer message bottlenecks.
7	Configuration a networking topologies using cisco packet tracer. **1) Bus**  **2) Mesh**


File Edit Options View Tools Extensions Help
Logical
Back
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Environment: 00:30:00
PC-PT PC0
2960-24TT Switch0
PC-PT PC1
2960-24TT Switch1
2960-24TT Switch2
2960-24TT Switch3
Laptop-PT Laptop0
PC-PT PC2
Time: 00:00:48
Power Cycle Devices
Fast Forward Time
Realtime
Scenario 2
New
Delete
Toggle PDU List Window
819HG-4G-IOX
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit
Successful Laptop0 PC1 ICMP 0.000 N 0
Successful PC2 PC0 ICMP 0.000 N 1

3) Ring

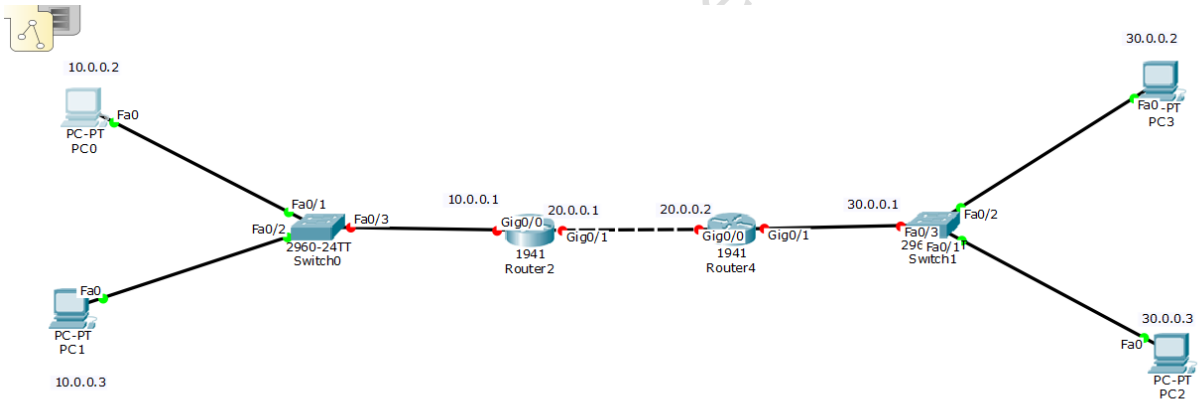

Cisco Packet Tracer - C:\Users\Administrator\Cisco Packet Tracer 7.0\saves\ringtopology.pkt
File Edit Options View Tools Extensions Help
Logical
Back
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Environment: 05:30:00
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
2960-24TT Switch0
2960-24TT Switch1
2960-24TT Switch3
Time: 00:00:58
Power Cycle Devices
Fast Forward Time
Realtime
Scenario 2
New
Delete
Toggle PDU List Window
819HGW
Fire Last Status Source Destination Type Color Time(sec) Periodic Num
Successful PC2 PC1 ICMP 0.000 N 0
Successful PC0 PC3 ICMP 0.000 N 1
Successful PC2 PC3 ICMP 0.000 N 2

4) Star

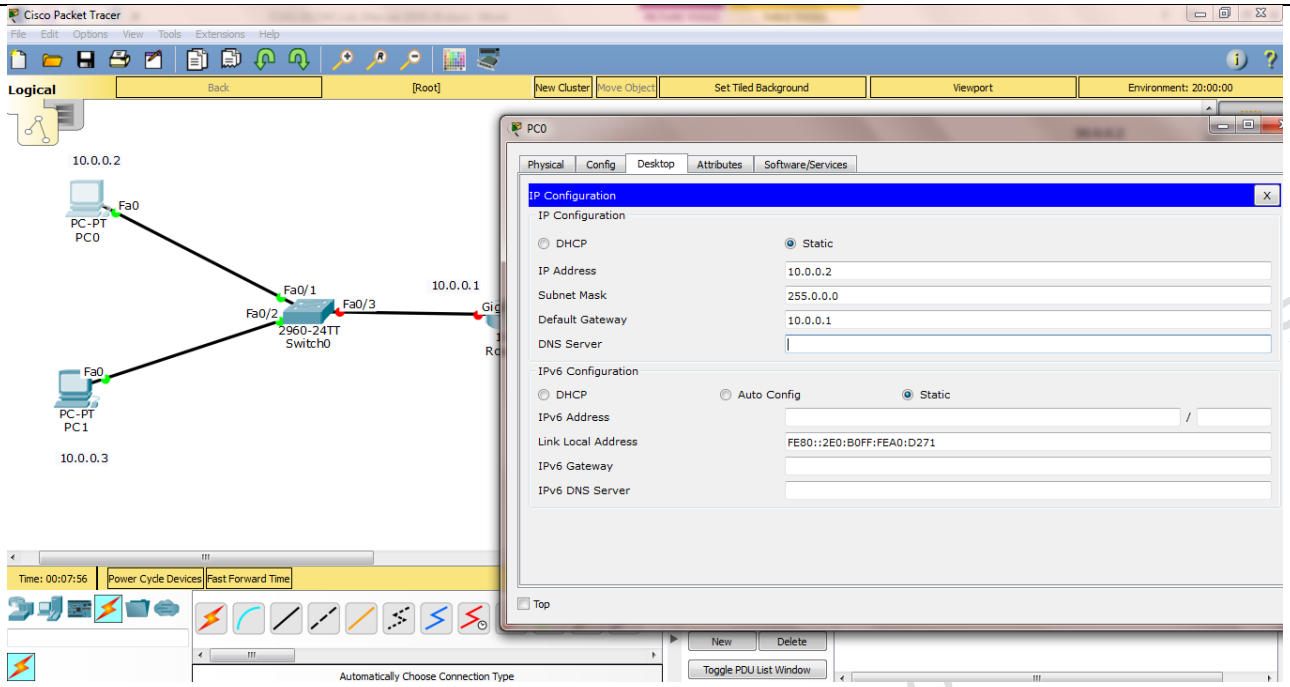


8 To configure network topology for Static Routing Protocol using packet tracer.

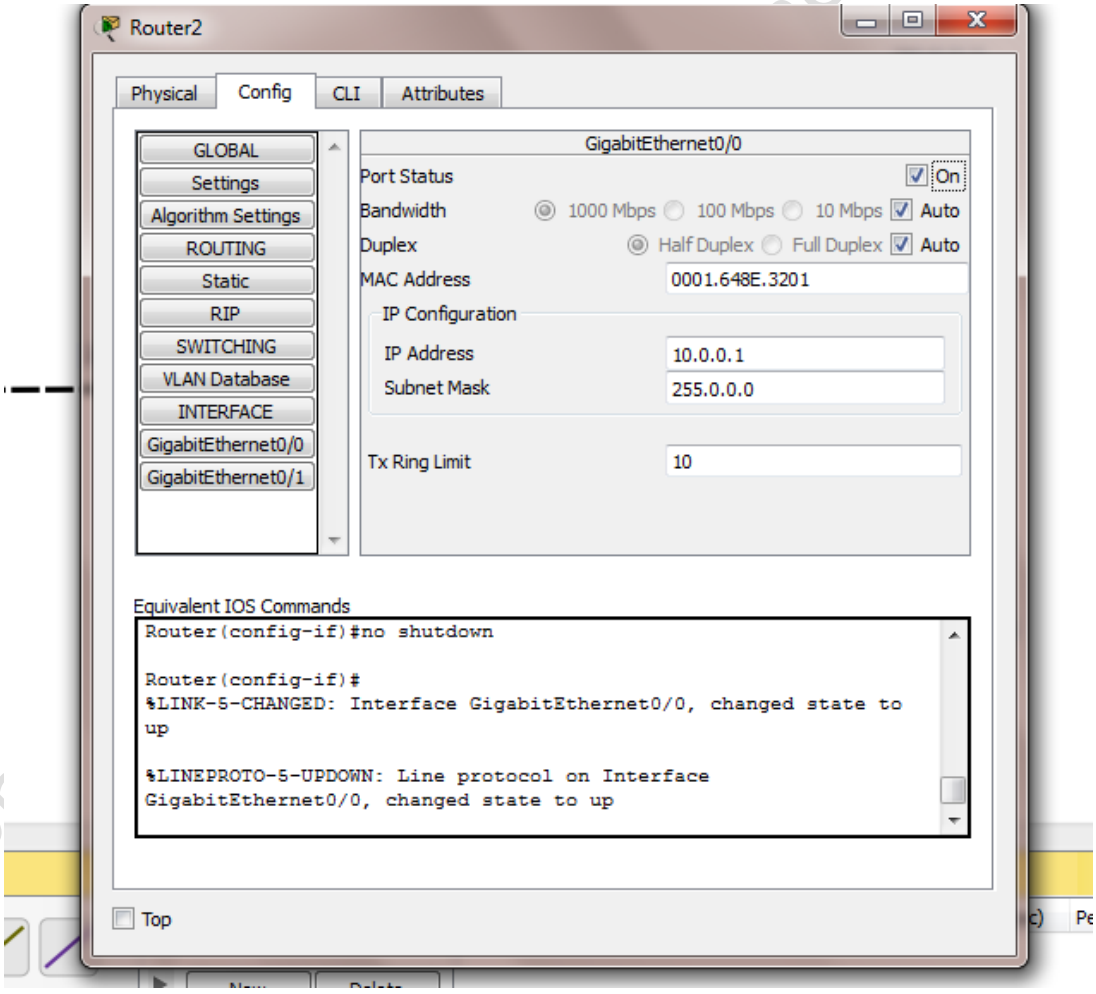
Step 1: First Create a topology like this

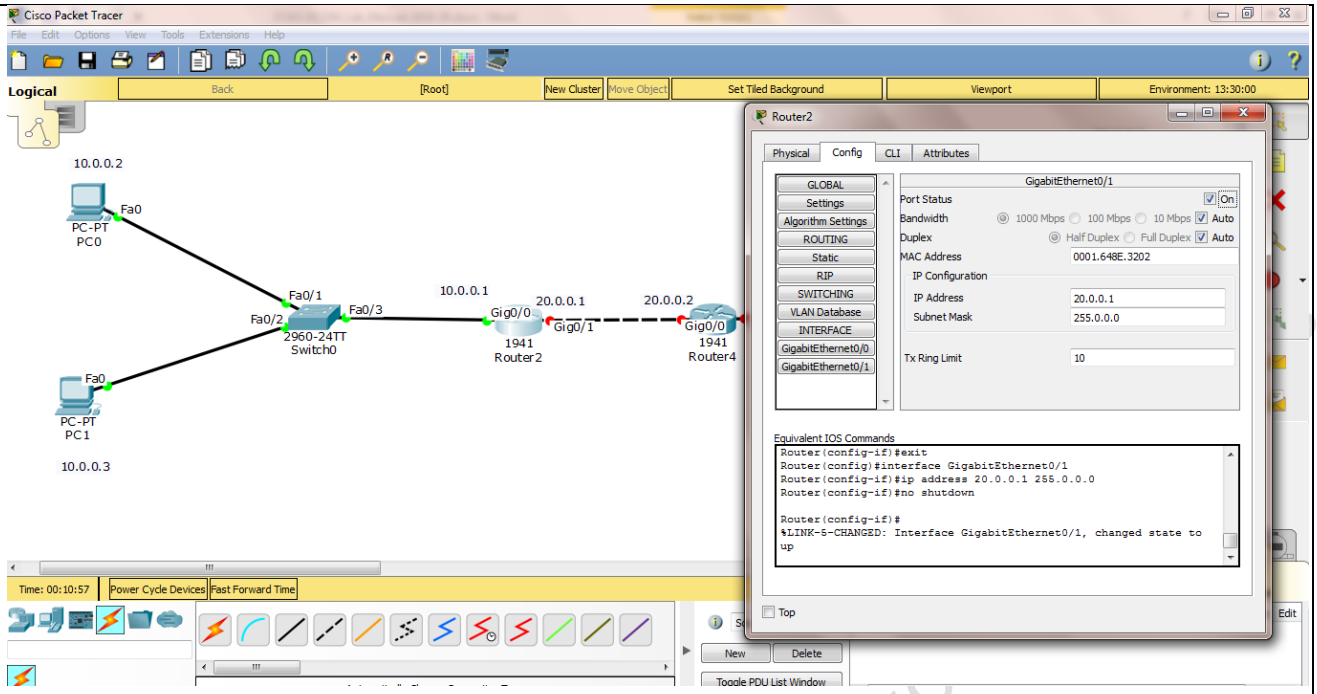


Step 2- Assign ip address for both Pc's with appropriate ip and subnet mask and default gateway

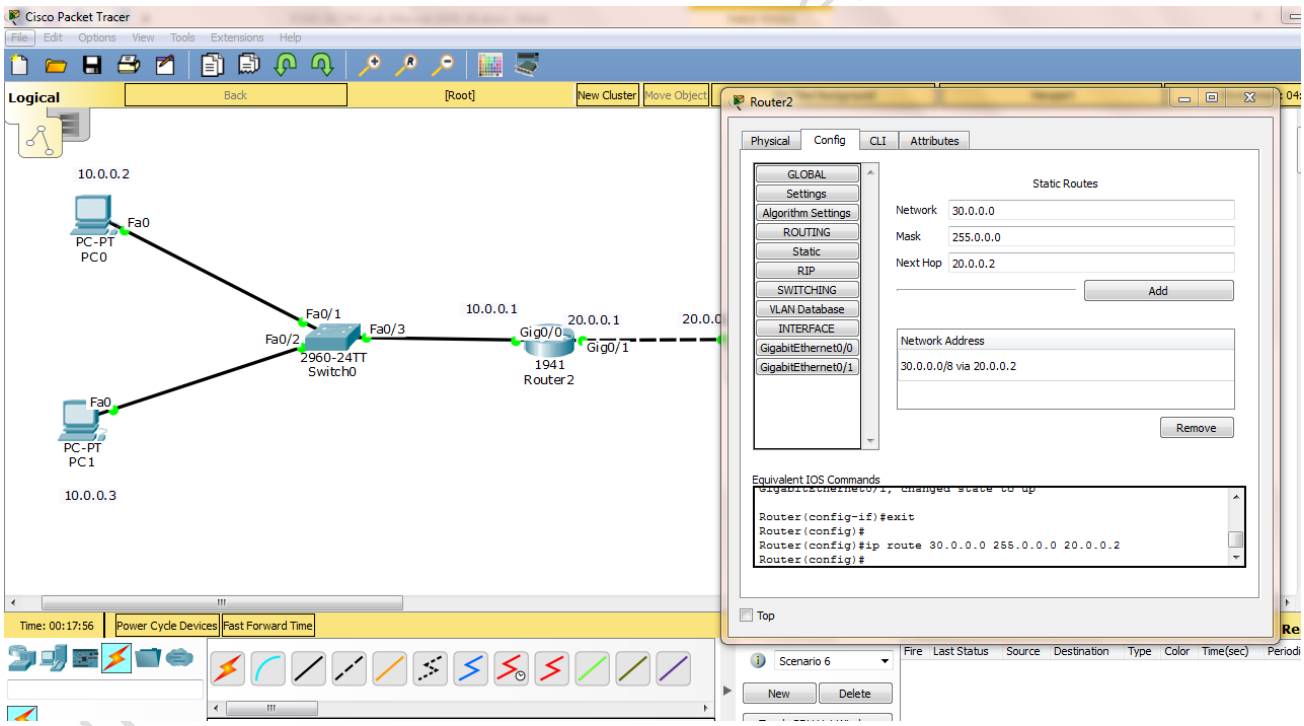


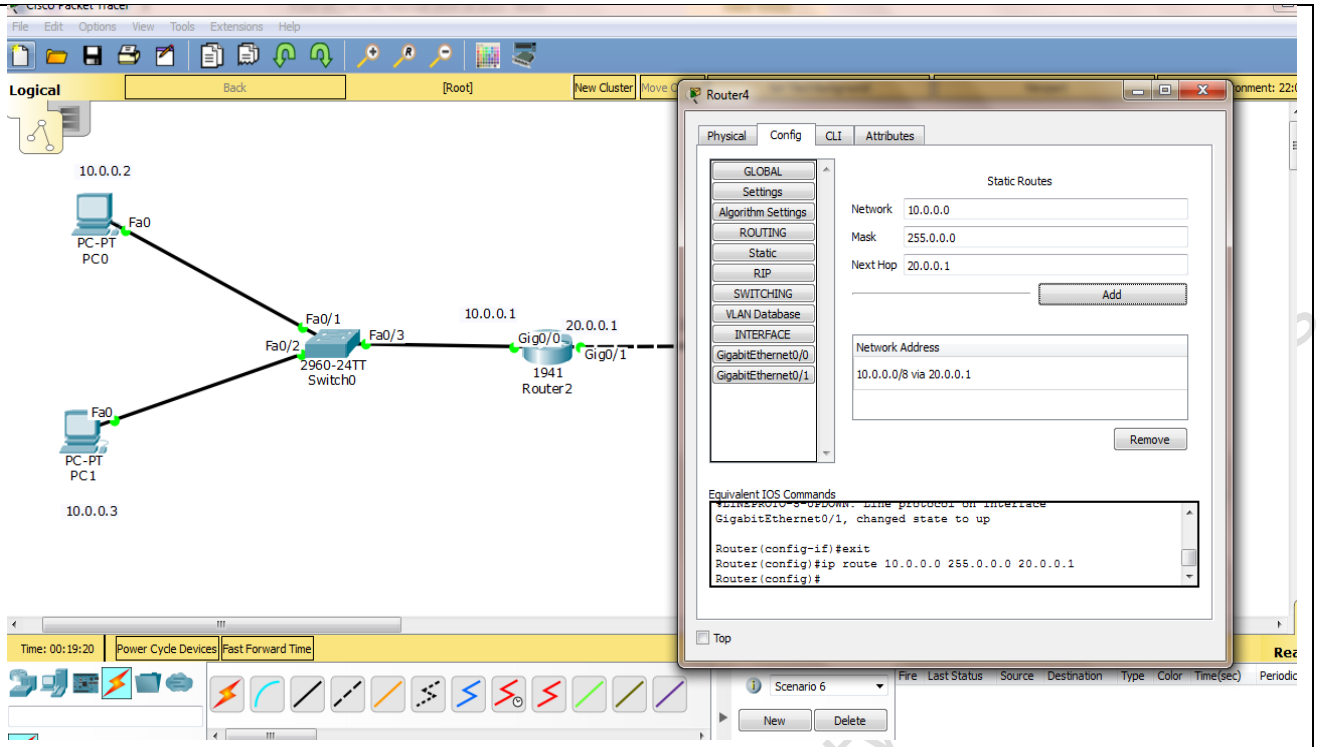
Step 3: Router Configuration and on port status

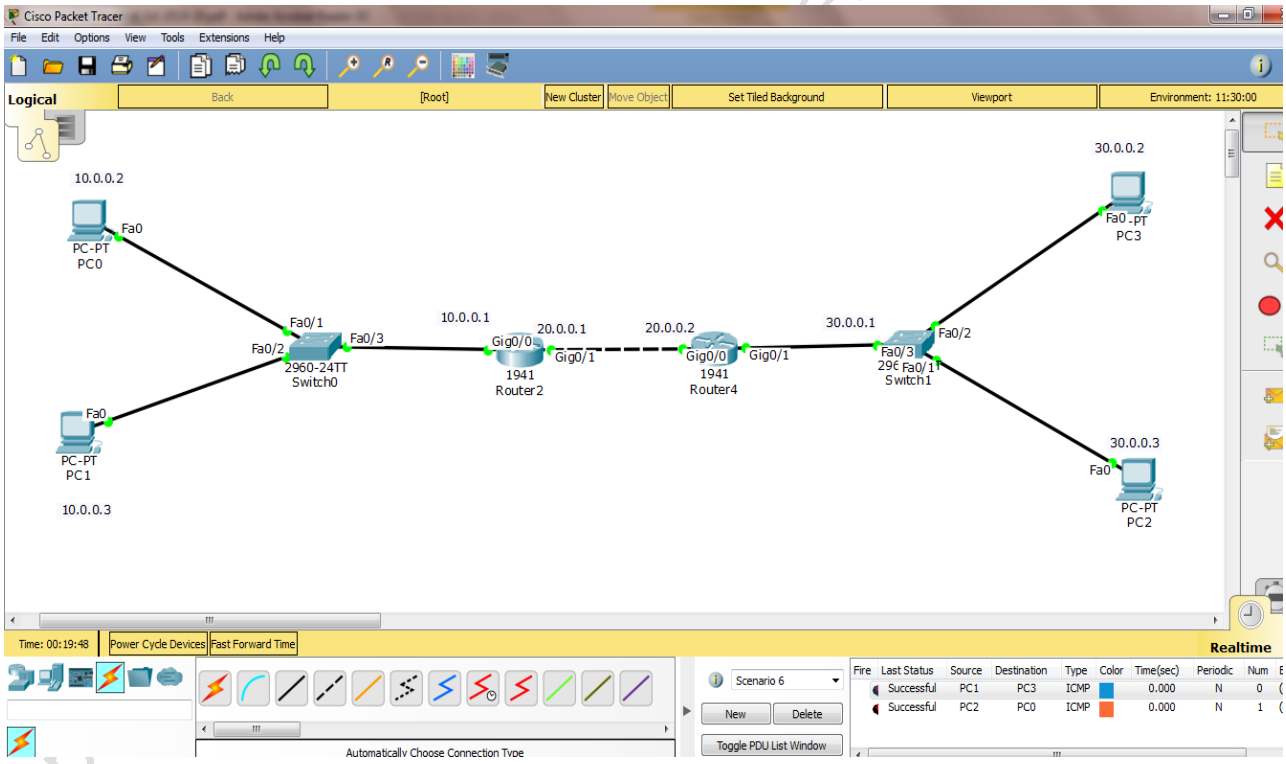




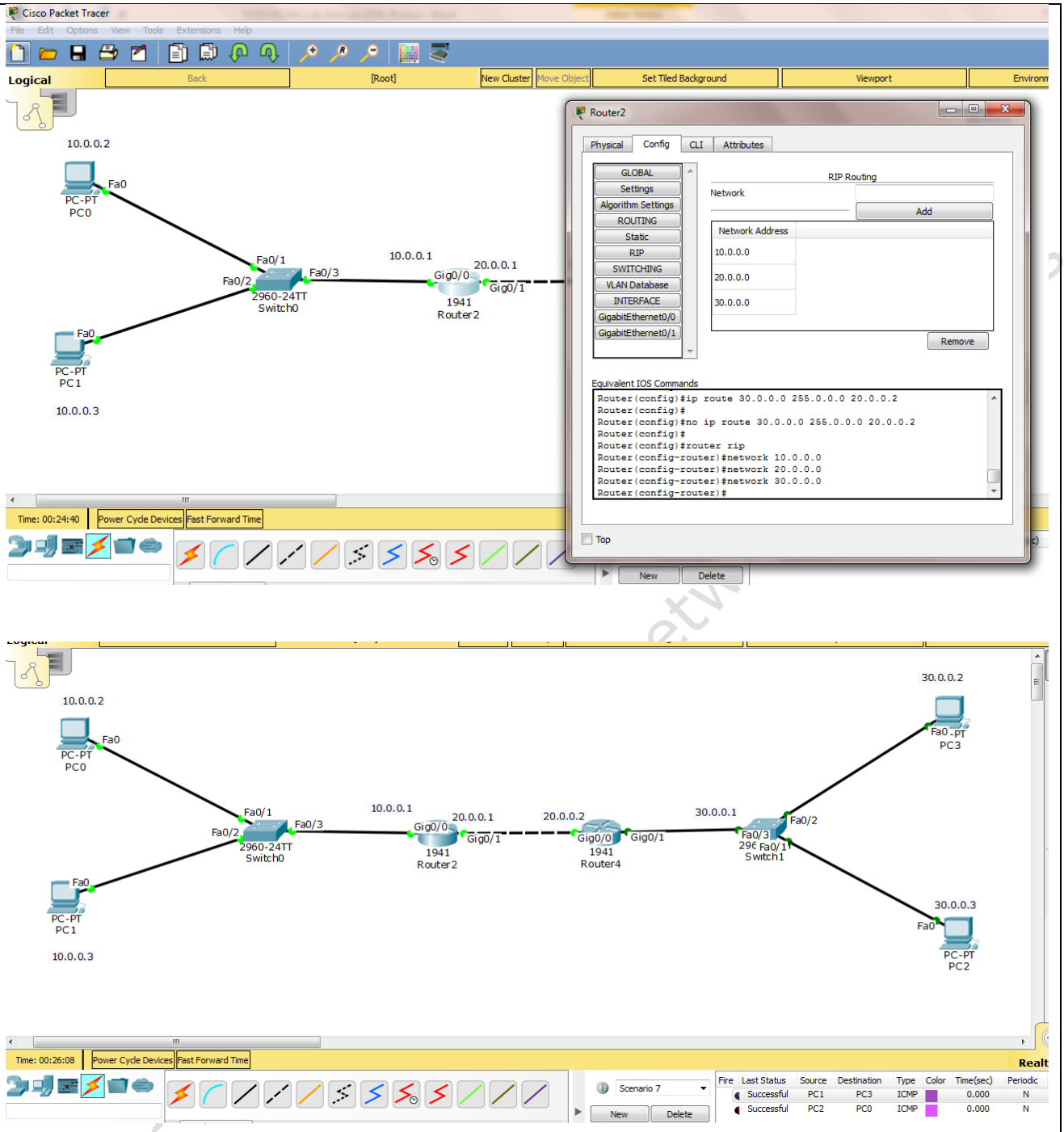
Step 4: Now configure both router with static route







9	To configure network topology for Dynamic Routing Protocol using packet tracer. **Step 1: Use same topology and add 3 network address at both router – RIP routing**

	
10	Implement sender Parity, LRC,VRC & CRC programs for input1.txt and input2.txt file.
11	Implement receiver's Parity, LRC,VRC & CRC detection programs for input1.txt and input2.txt file.

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