

OUTCOMES

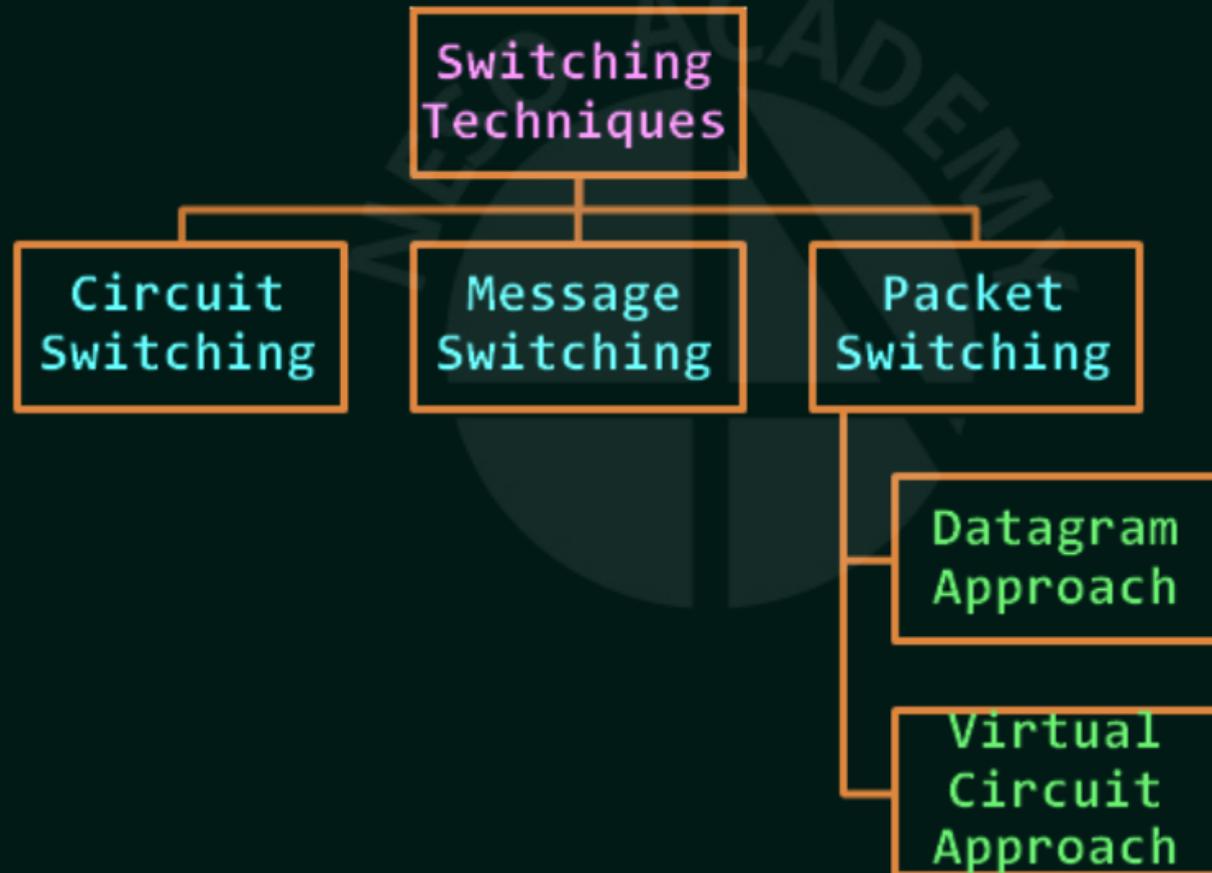
Upon the completion of this session, the learner will be able to

- ★ Understand switching.
- ★ Understand various switching techniques such as circuit switching, message switching and packet switching.

SWITCHING

- ★ Switching in computer network helps in deciding the best route for data transmission if there are multiple paths in a larger network.
- ★ One-to-One connection.

SWITCHING TECHNIQUES



CIRCUIT SWITCHING

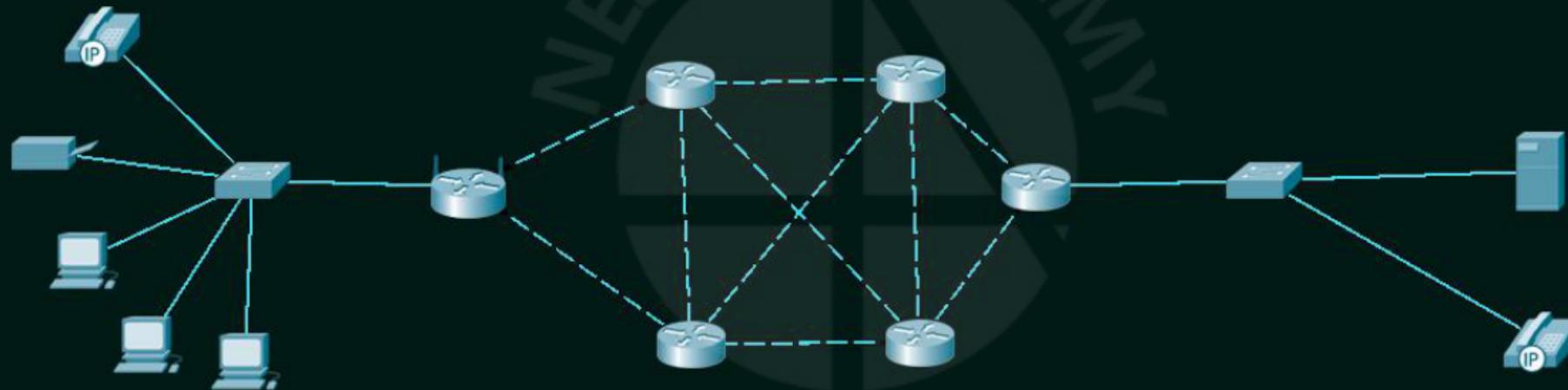
- ★ A dedicated path is established between the sender and receiver.
- ★ Before data transfer, connection will be established first.
- ★ Example: Telephone network.

3 phases in circuit switching:

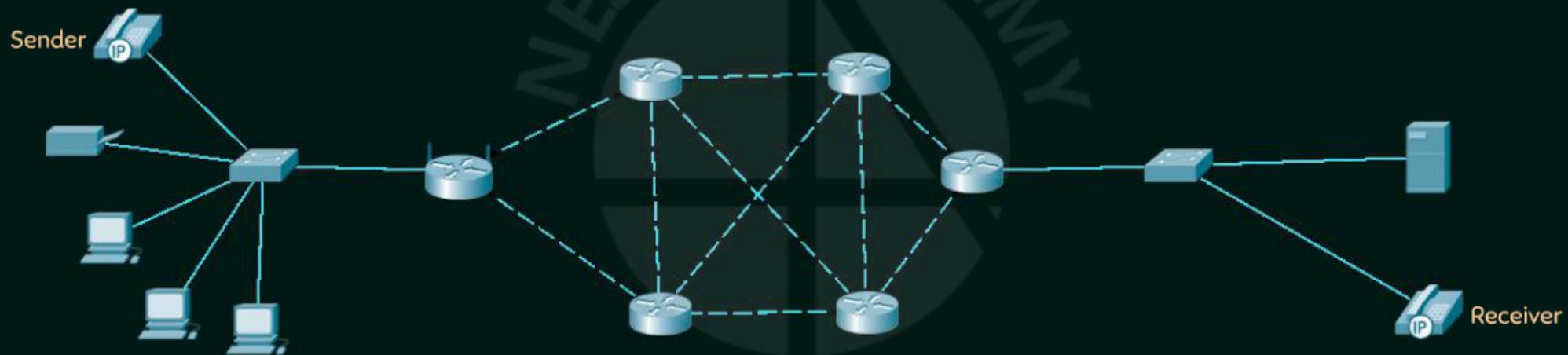
1. Connection establishment.
2. Data transfer
3. Connection Disconnection.

EXAMPLE FOR CIRCUIT SWITCHING

Phase 1: Connection establishment

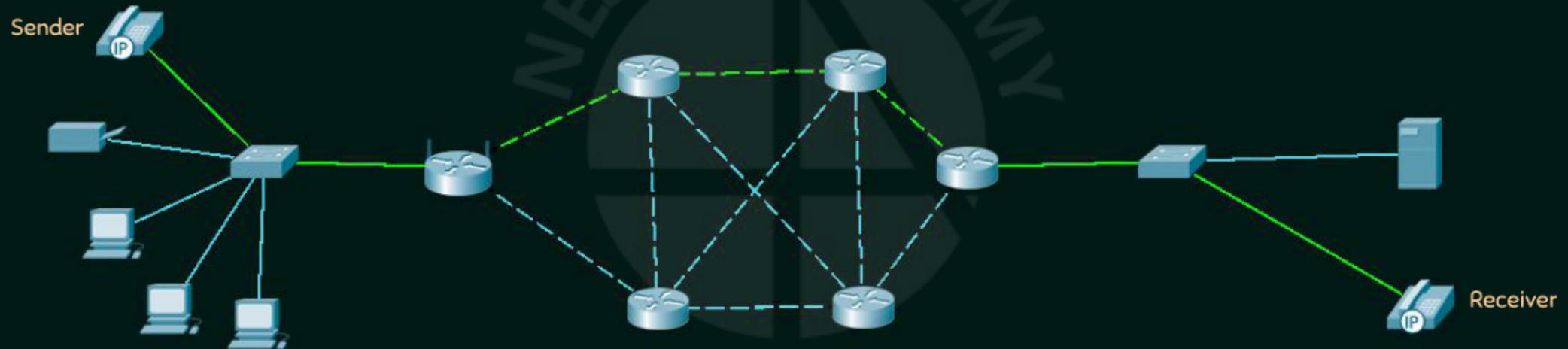


EXAMPLE FOR CIRCUIT SWITCHING

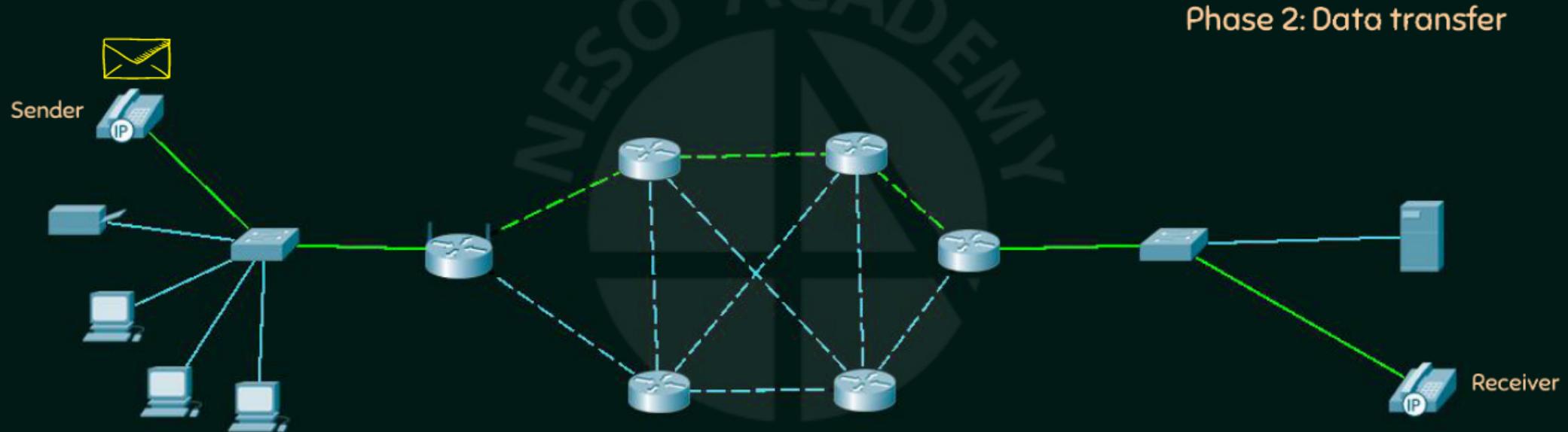


EXAMPLE FOR CIRCUIT SWITCHING

Phase 1: Connection establishment

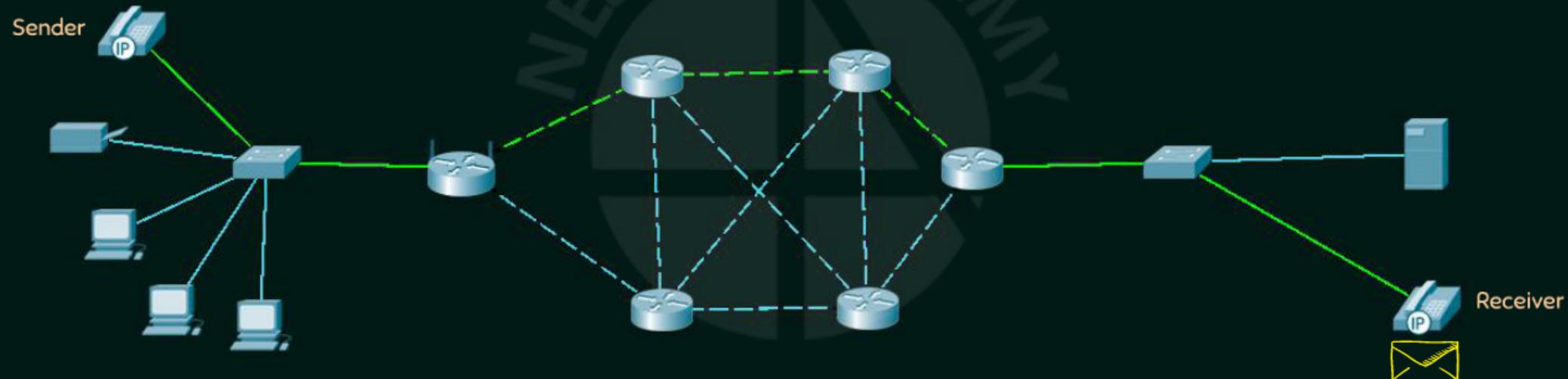


EXAMPLE FOR CIRCUIT SWITCHING



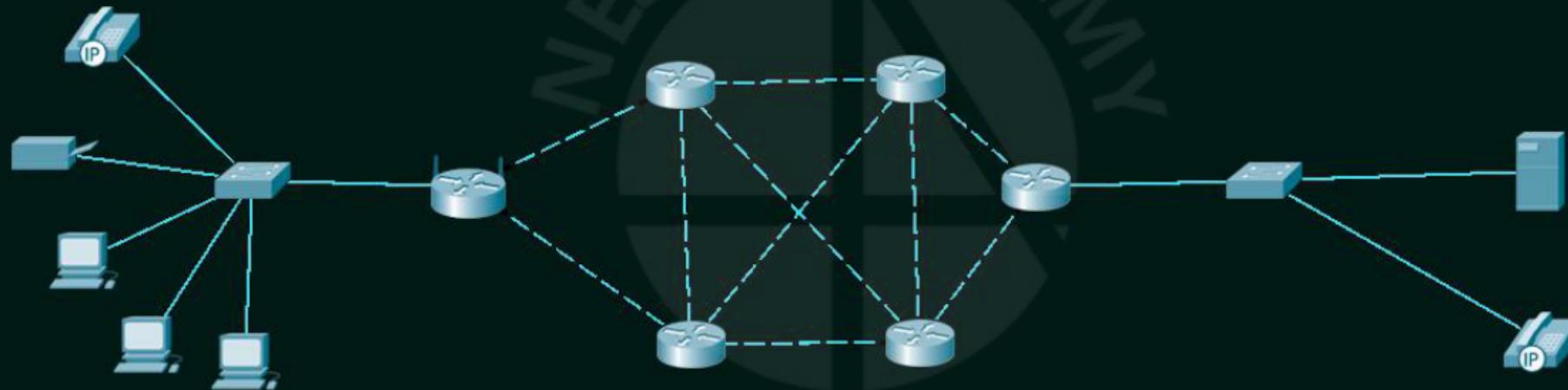
EXAMPLE FOR CIRCUIT SWITCHING

Phase 2: Data transfer



EXAMPLE FOR CIRCUIT SWITCHING

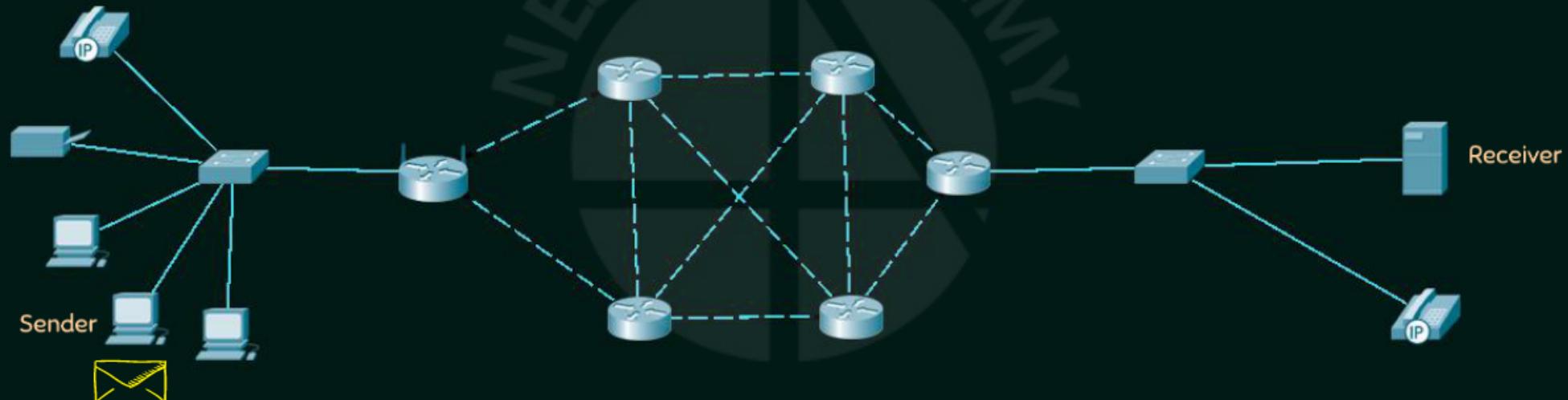
Phase 3: Connection Disconnection



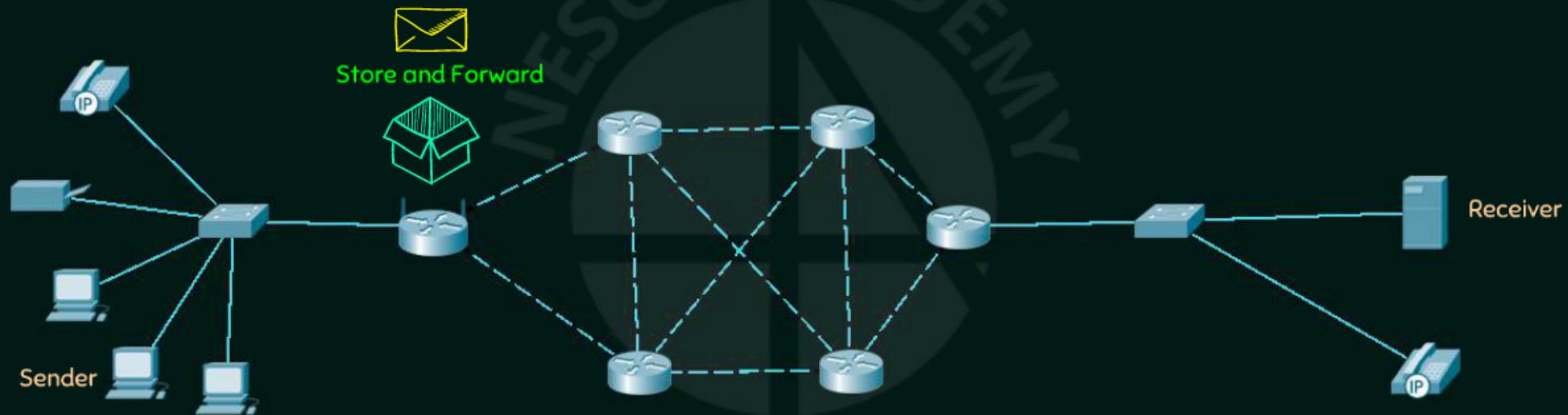
MESSAGE SWITCHING

- ★ Store and forward mechanism.
- ★ Message is transferred as a complete unit and forwarded using store and forward mechanism at the intermediary node.
- ★ Not suited for streaming media and real-time applications.

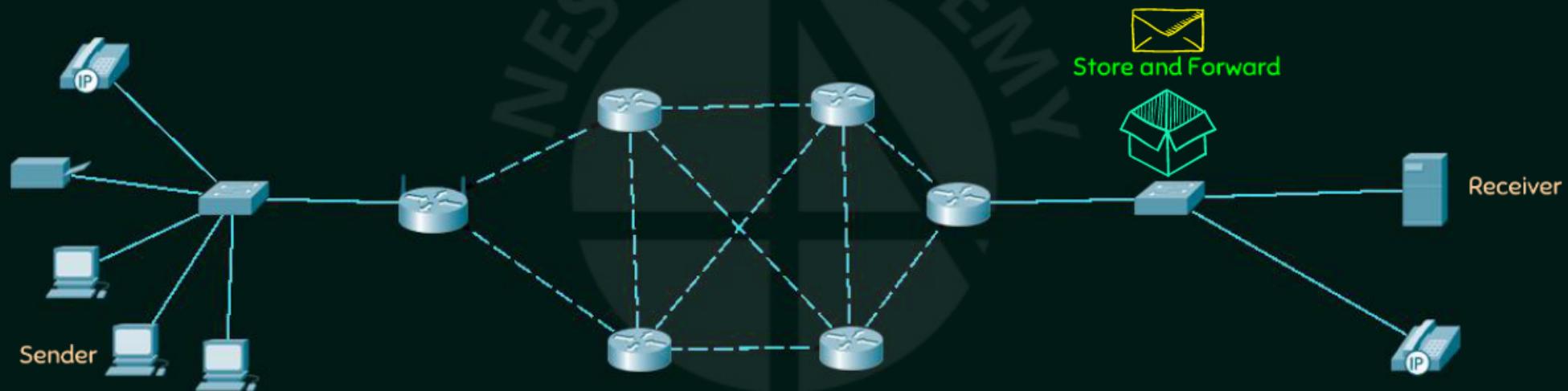
EXAMPLE FOR MESSAGE SWITCHING



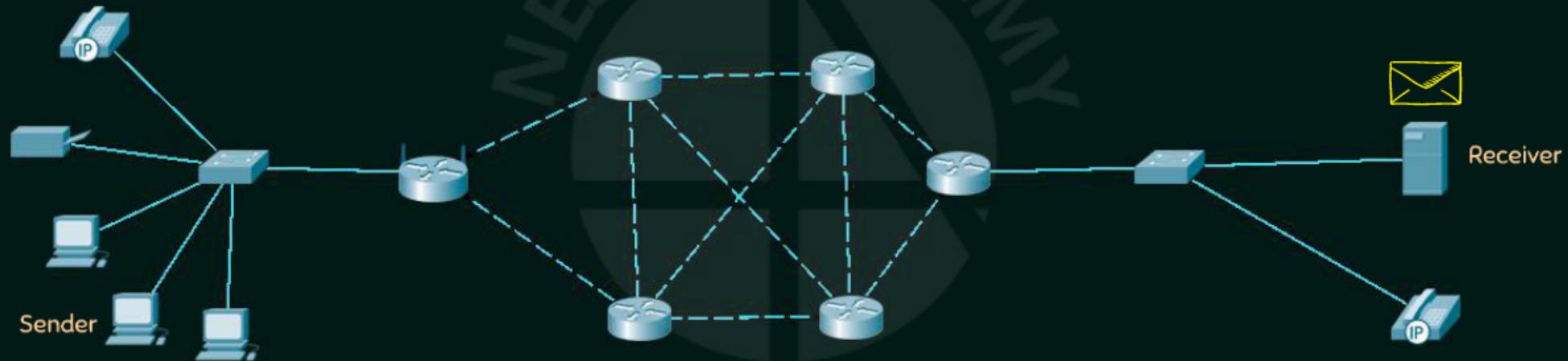
EXAMPLE FOR PACKET SWITCHING



EXAMPLE FOR MESSAGE SWITCHING



EXAMPLE FOR MESSAGE SWITCHING



PACKET SWITCHING

- ★ The internet is a packet switched network.
- ★ Message is broken into individual chunks called as **packets**.
- ★ Each packet is sent individually.
- ★ Each packet will have **source and destination IP address** with sequence number.
- ★ Sequence numbers will help the receiver to
 - Reorder the packets.
 - Detect missing packets and
 - Send acknowledgments.

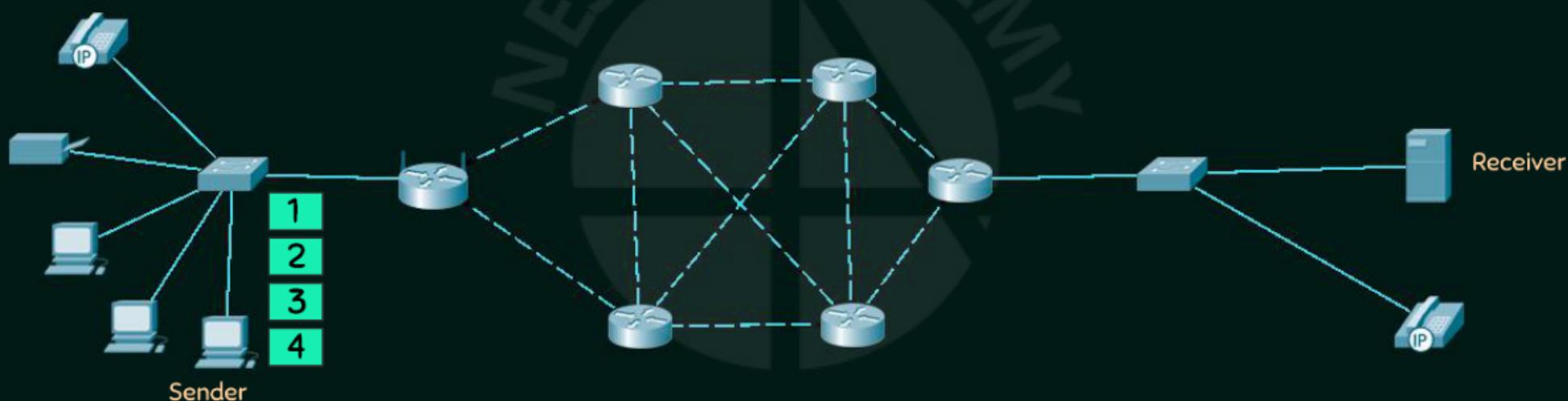
TWO APPROACHES TO PACKET SWITCHING

1. Datagram Approach.
2. Virtual Circuit Approach.

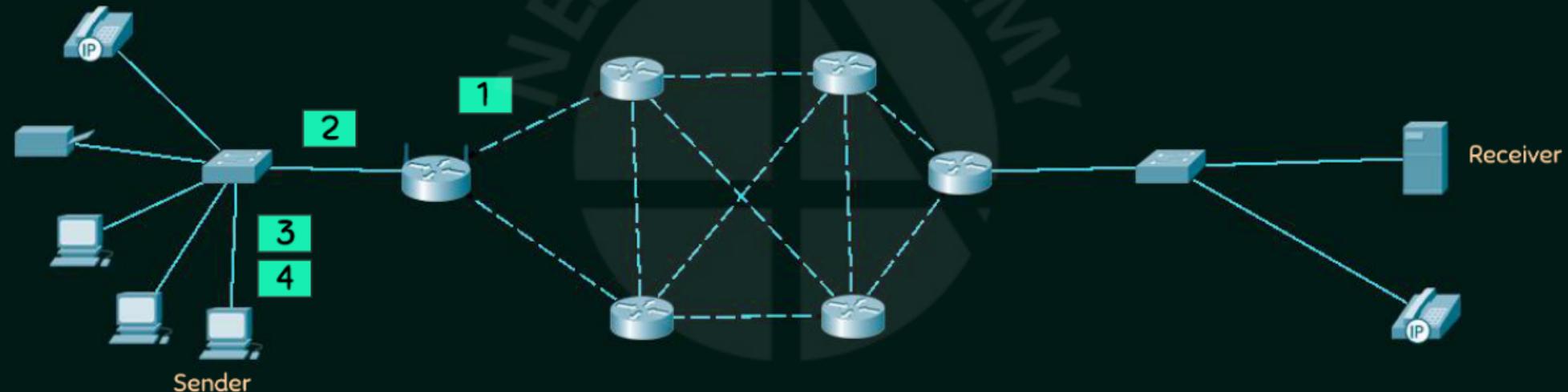
PACKET SWITCHING – DATAGRAM APPROACH

- ★ Datagram Packet Switching is also known as **connectionless switching**.
- ★ Each independent entity is called as datagram.
- ★ Datagrams contain destination information and the intermediary devices uses this information to forward datagrams to right destination.
- ★ In Datagram Packet Switching approach, the path is not fixed.
- ★ Intermediate nodes take the routing decisions to forward the packets.

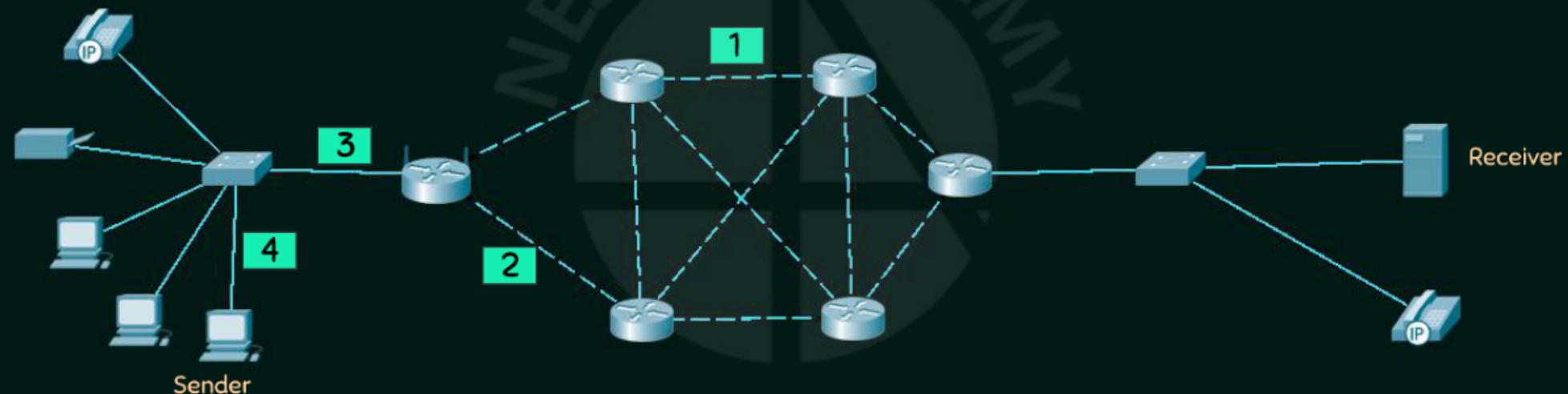
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



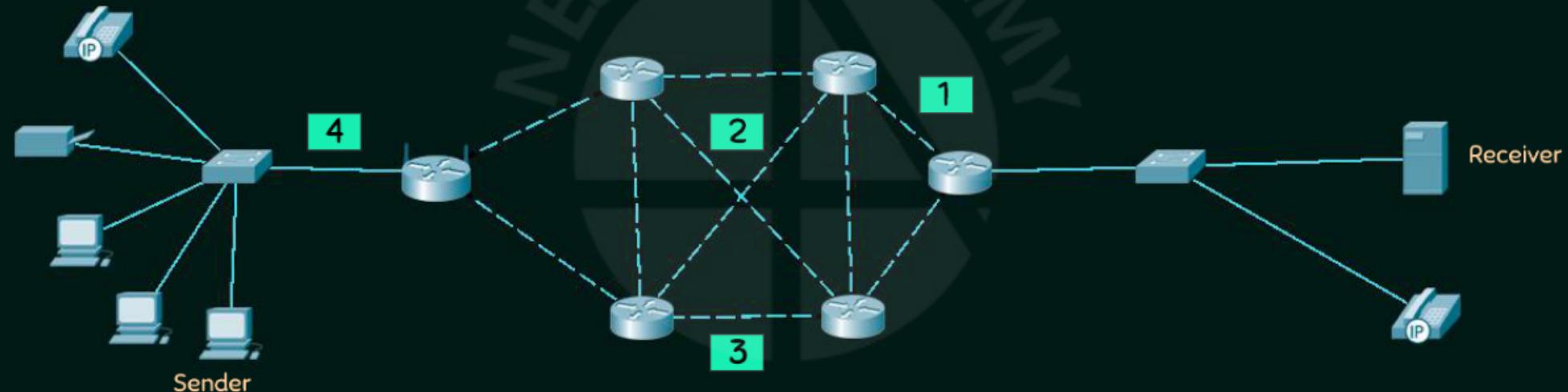
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



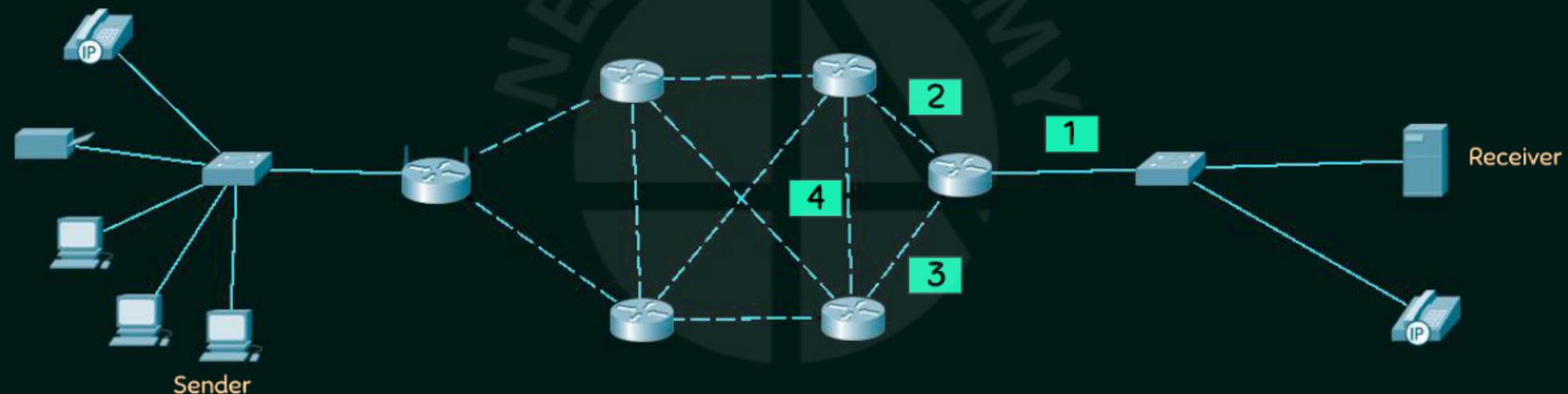
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



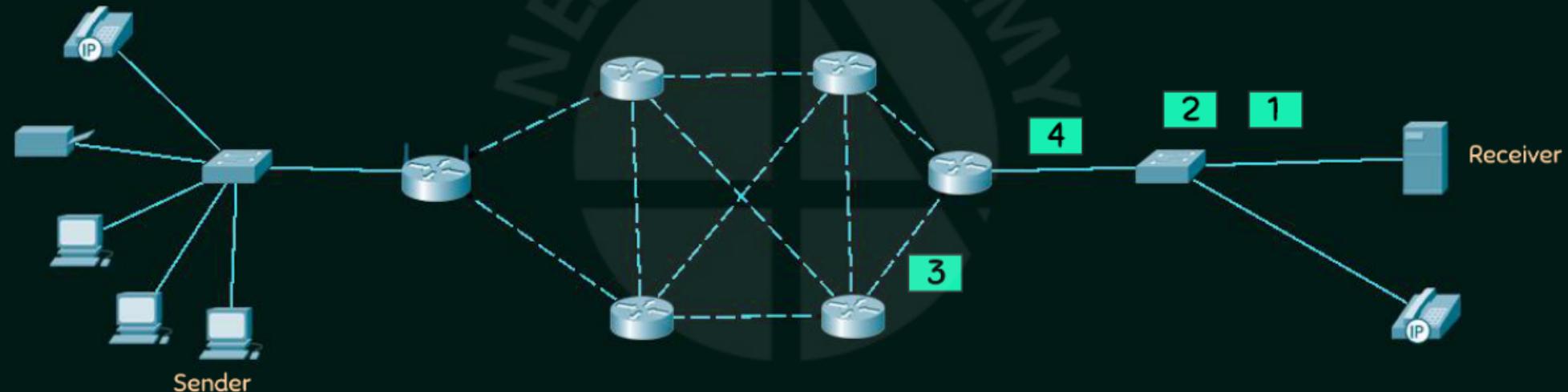
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



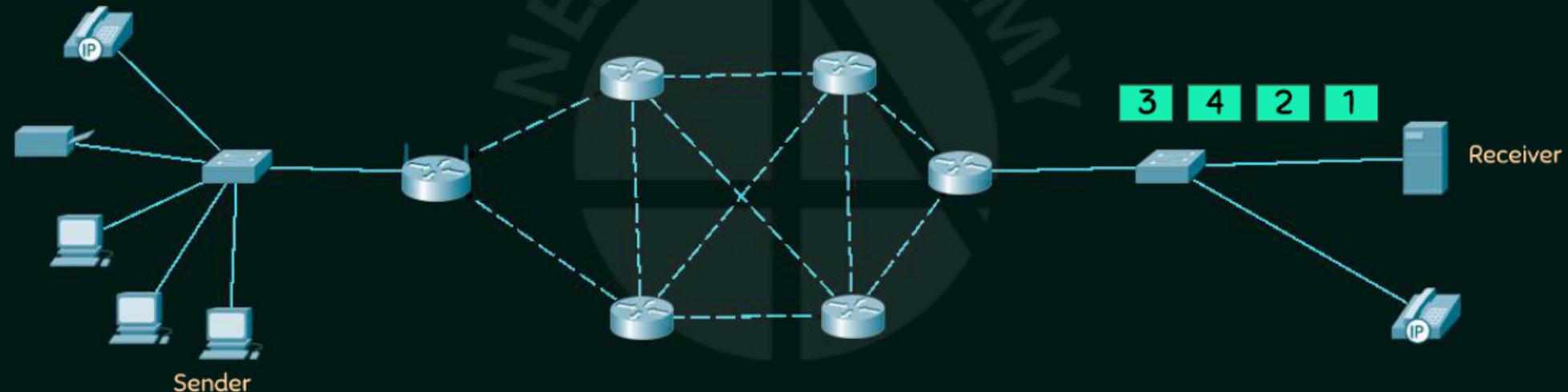
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



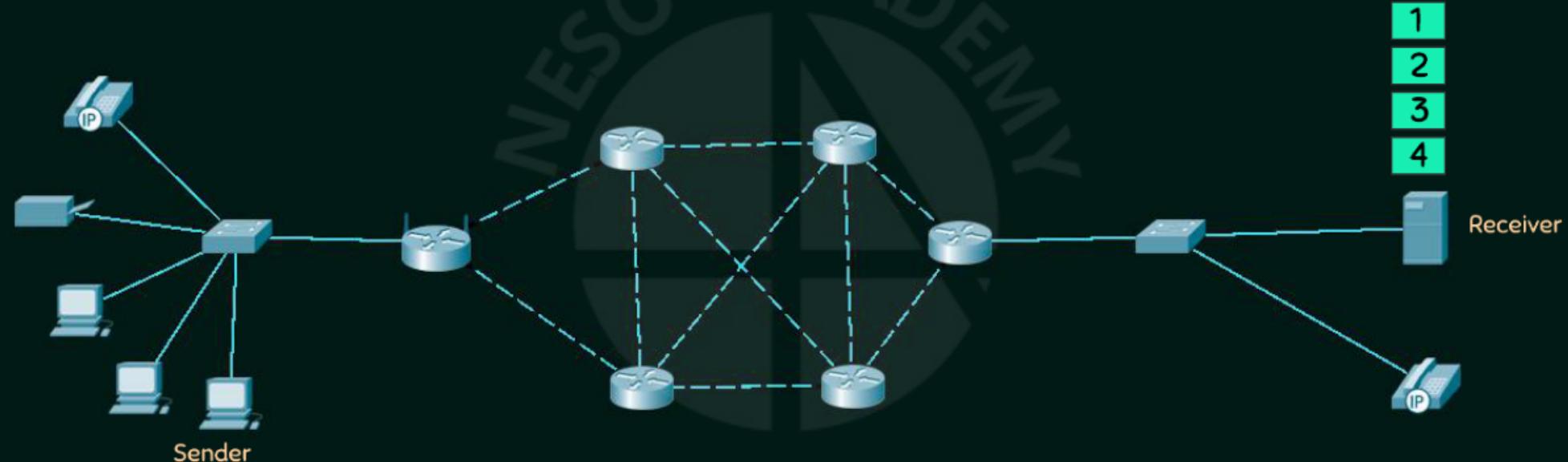
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



EXAMPLE FOR PACKET SWITCHING – DATAGRAM



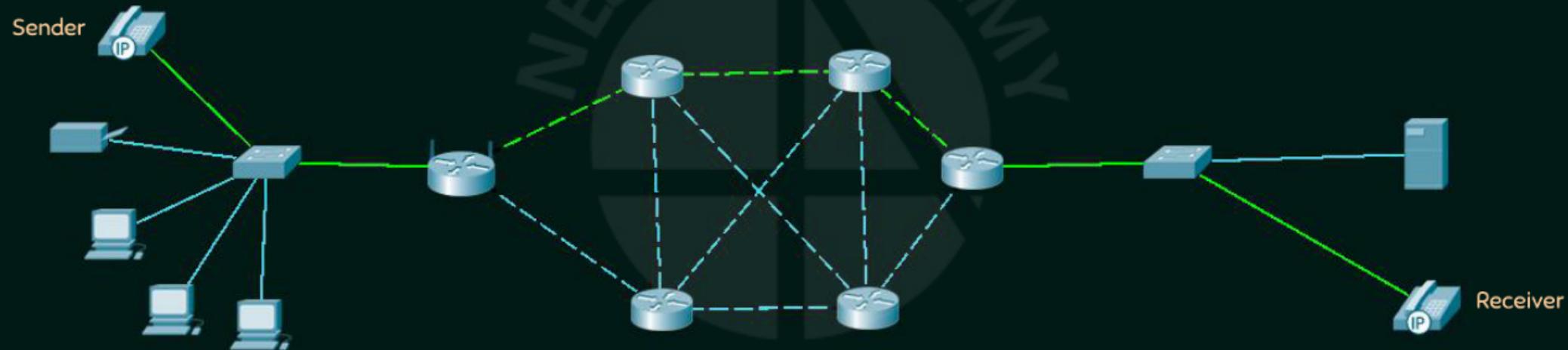
EXAMPLE FOR PACKET SWITCHING – DATAGRAM



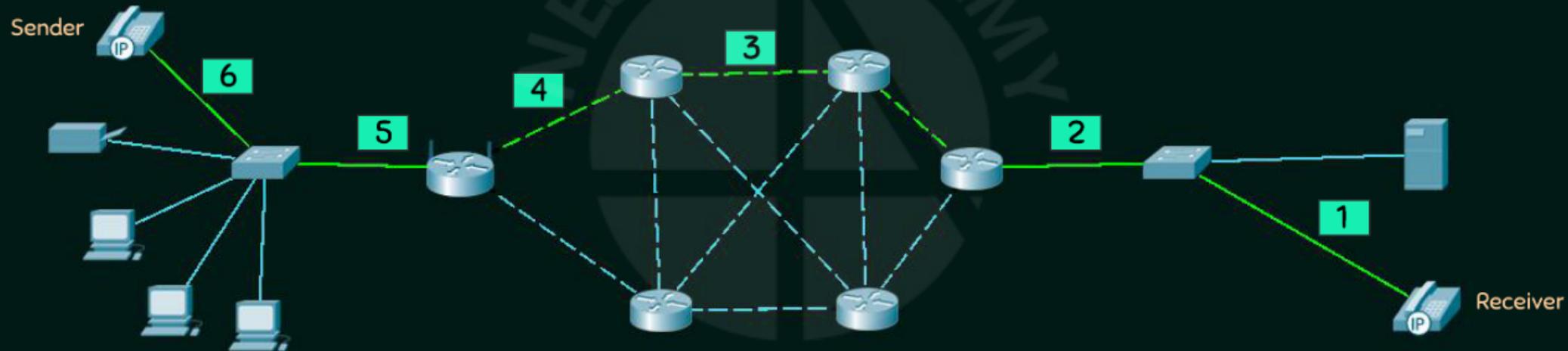
PACKET SWITCHING – VIRTUAL CIRCUIT APPROACH

- ★ Virtual Circuit Switching is also known as **connection-oriented switching**.
- ★ In the case of Virtual circuit switching, a preplanned route is established before the messages are sent.
- ★ Call request and call accept packets are used to establish the connection between sender and receiver.
- ★ In this approach, the path is fixed for the duration of a logical connection.

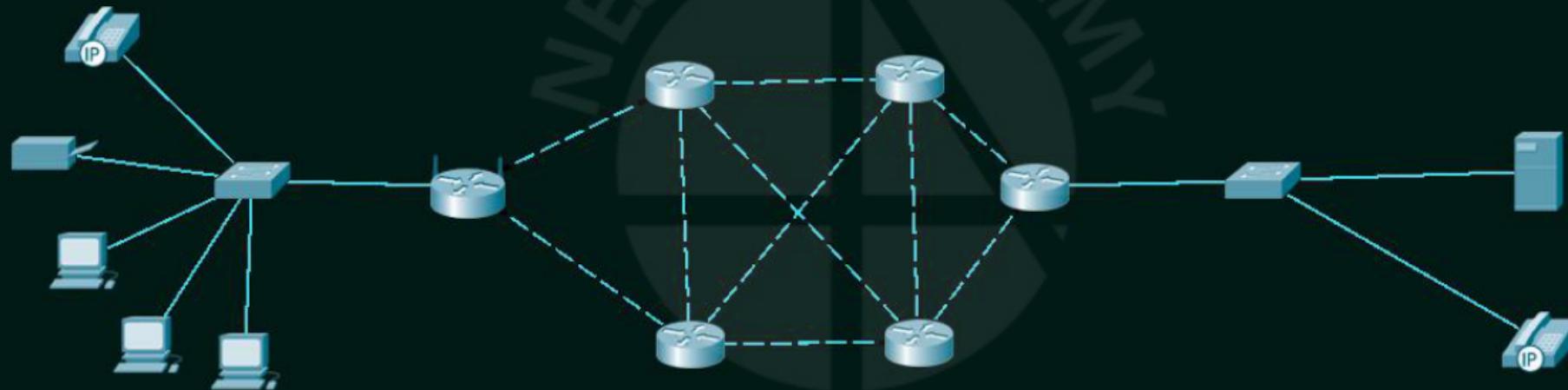
EXAMPLE FOR PACKET SWITCHING – VIRTUAL CIRCUIT



EXAMPLE FOR PACKET SWITCHING – VIRTUAL CIRCUIT



EXAMPLE FOR PACKET SWITCHING – VIRTUAL CIRCUIT



SWITCHING TECHNIQUES

