

OUTCOMES

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

- ★ Know “What is Data Communication?”.
- ★ Understand data flow.
- ★ Understand the importance of protocols in computer network.
- ★ Know the elements of protocol.

DATA COMMUNICATION

- ★ Data communications are the exchange of data between two nodes via some form of link (transmission medium) such as a cable.



DATA FLOW

- ★ Simplex.
- ★ Half Duplex.
- ★ Full Duplex.



DATA FLOW – SIMPLEX

Communication is always unidirectional.

One device can transmit and the other device will receive.

Example : Keyboards, Traditional monitors.

DATA FLOW – HALF DUPLEX

Communication is in both directions but not at the same time.

If one device is sending, the other can only receive, and vice versa.

Example : Walkie-Talkies.

DATA FLOW – DUPLEX OR FULL DUPLEX

Communication is in both directions simultaneously.

Device can send and receive at the same time.

Example : Telephone line.

DATA FLOW



PROTOCOLS

All communication schemes will have the following things in common:

- ★ Source or sender
- ★ Destination or receiver
- ★ Channel or media

Rules or protocols govern all methods of communication.

IF THERE ARE NO PROTOCOLS...



PROTOCOLS

Protocol = Rule.

It is a set of rules that govern data communication.

Protocol determines:

- What is communicated?
- How it is communicated?
- When it is communicated?

PROTOCOLS – HUMAN COMMUNICATION

Protocols are necessary for human communication and include:

- ★ An identified sender and receiver
- ★ Common language and grammar
- ★ Speed and timing of delivery
- ★ Confirmation or acknowledgment requirements



PROTOCOLS – NETWORK COMMUNICATION

Protocols used in network communications also define:

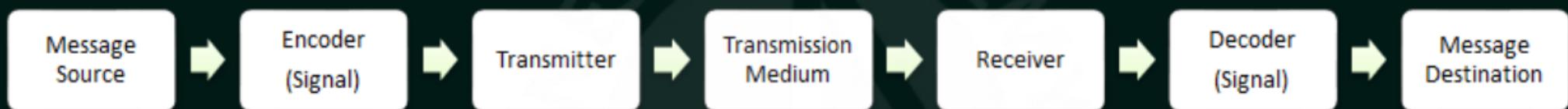
- ★ Message encoding
- ★ Message formatting and encapsulation
- ★ Message timing
- ★ Message size
- ★ Message delivery options



ELEMENTS OF A PROTOCOL

1. Message encoding
2. Message formatting and encapsulation
3. Message timing
4. Message size
5. Message delivery options

1. MESSAGE ENCODING



2. MESSAGE FORMATTING AND ENCAPSULATION

Agreed format.

Encapsulate the information to identify the sender and the receiver
rightly.

3. MESSAGE SIZE

Humans break long messages into smaller parts or sentences.

Long messages must also be broken into smaller pieces to travel across a network.



4. MESSAGE TIMING

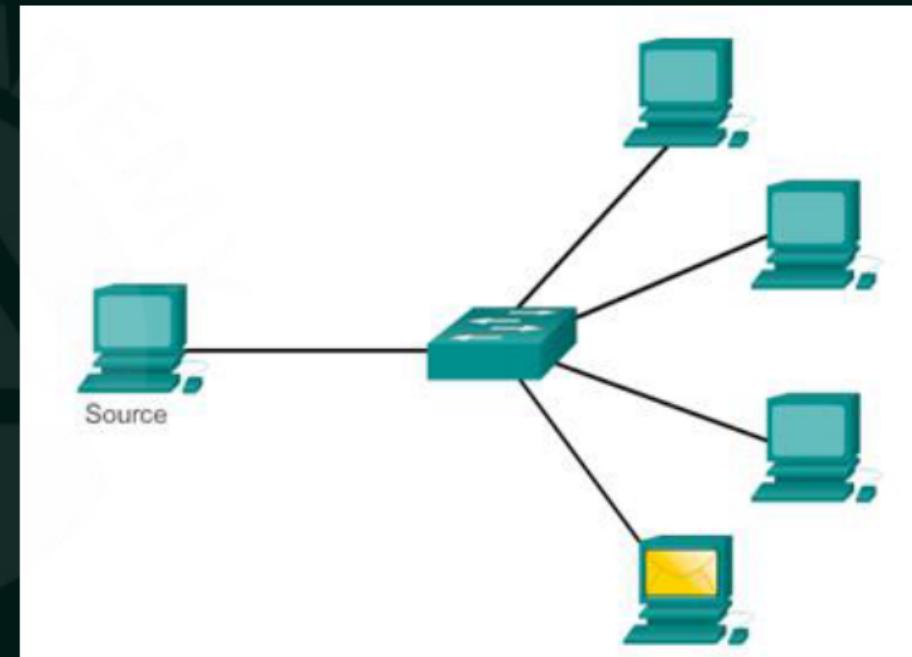
Flow Control.

Response Timeout.



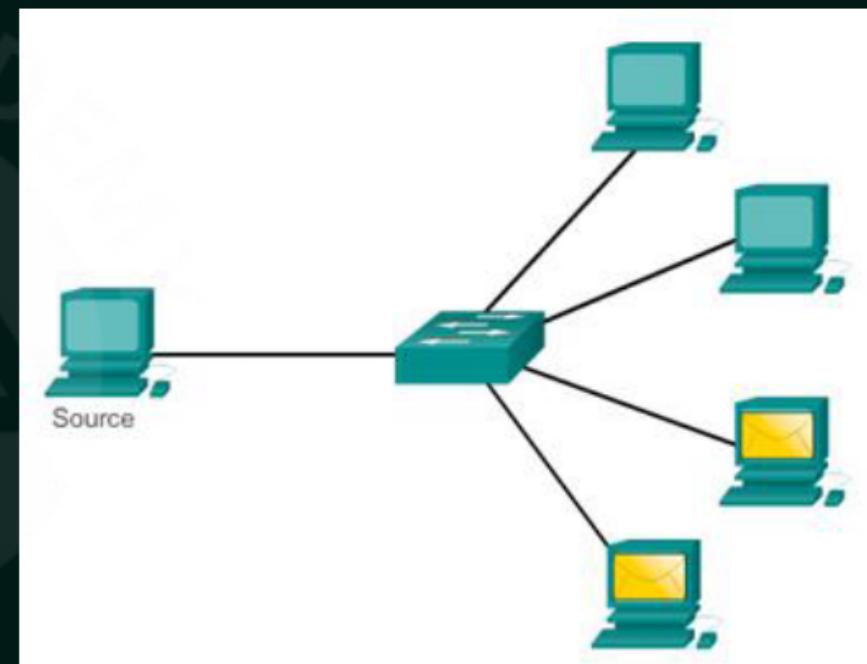
5. MESSAGE DELIVERY OPTIONS

- ★ Unicast
- ★ Multicast
- ★ Broadcast



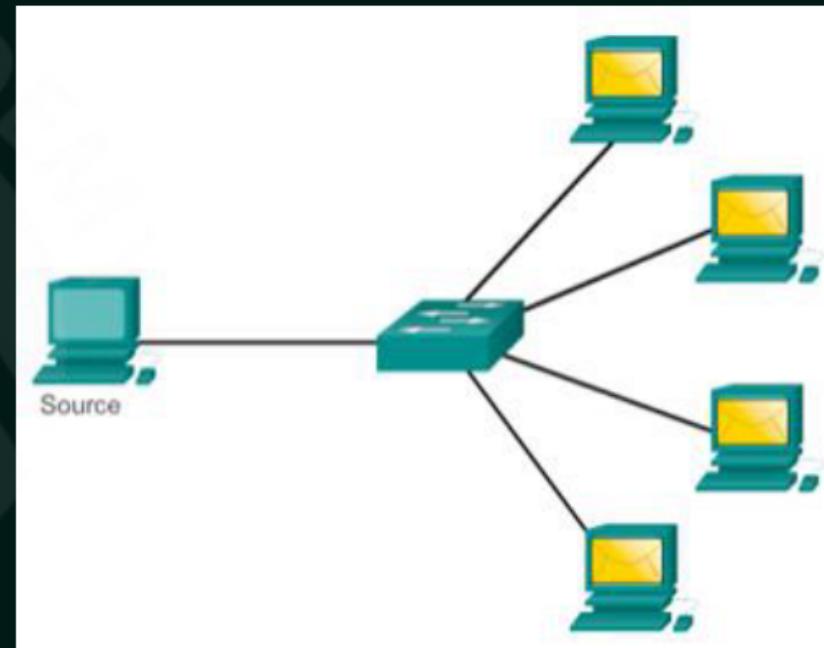
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OUTCOMES

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

- ★ Understand protocols and its role in computer networks.
- ★ Understand Peer-to-Peer networks and Client-Server networks.

PROTOCOLS

Protocol = Rule.

It is a set of rules that govern data communication.

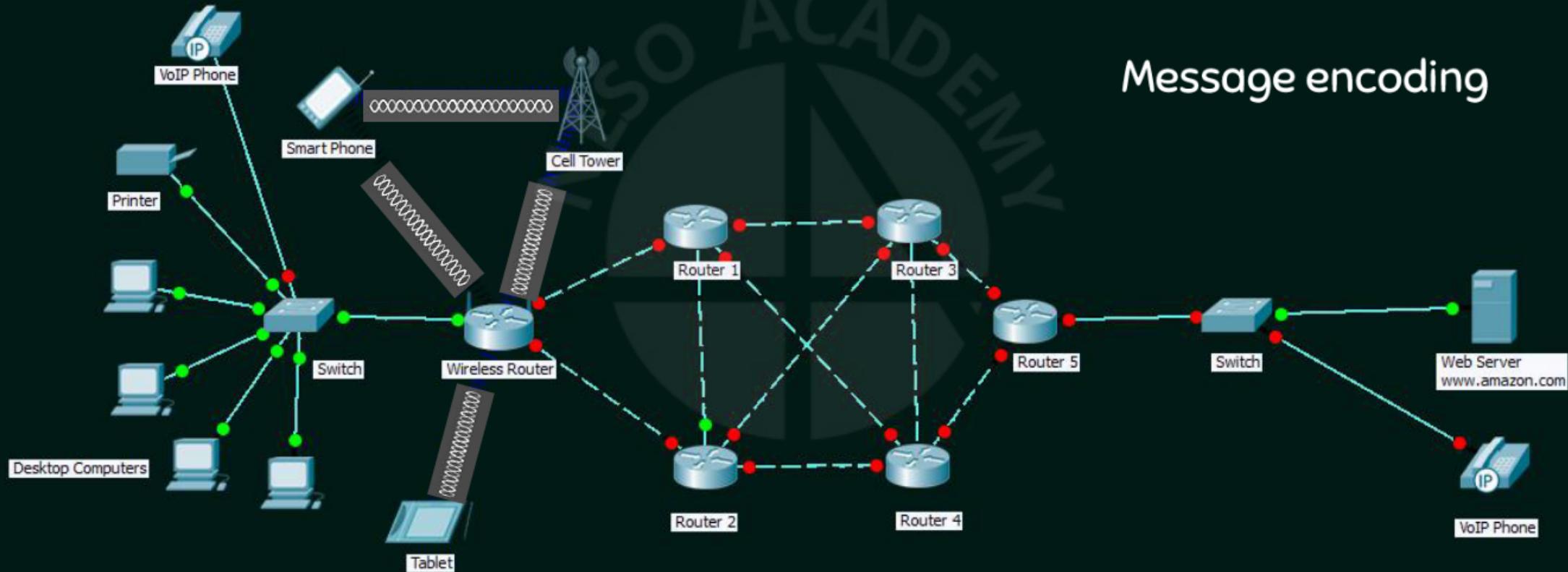
Protocol determines:

- What is communicated?
- How it is communicated?
- When it is communicated?

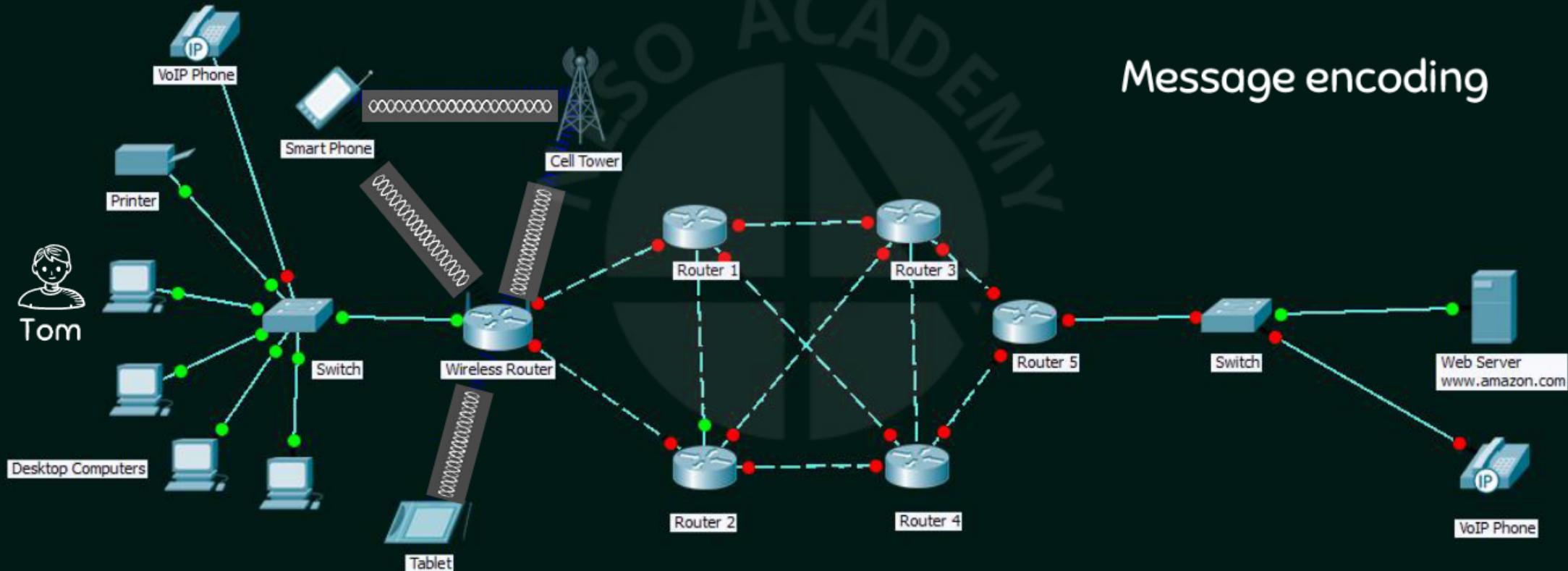
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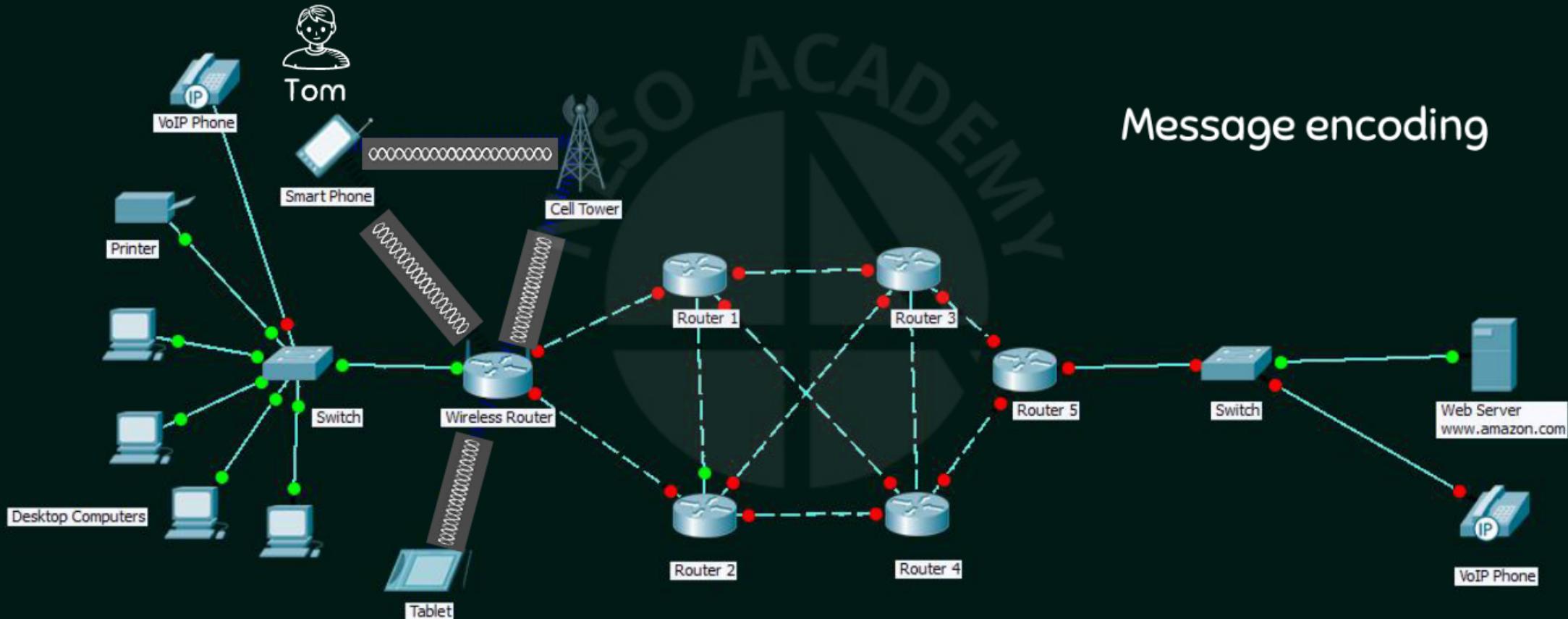
ELEMENTS OF PROTOCOL IN COMPUTER NETWORK



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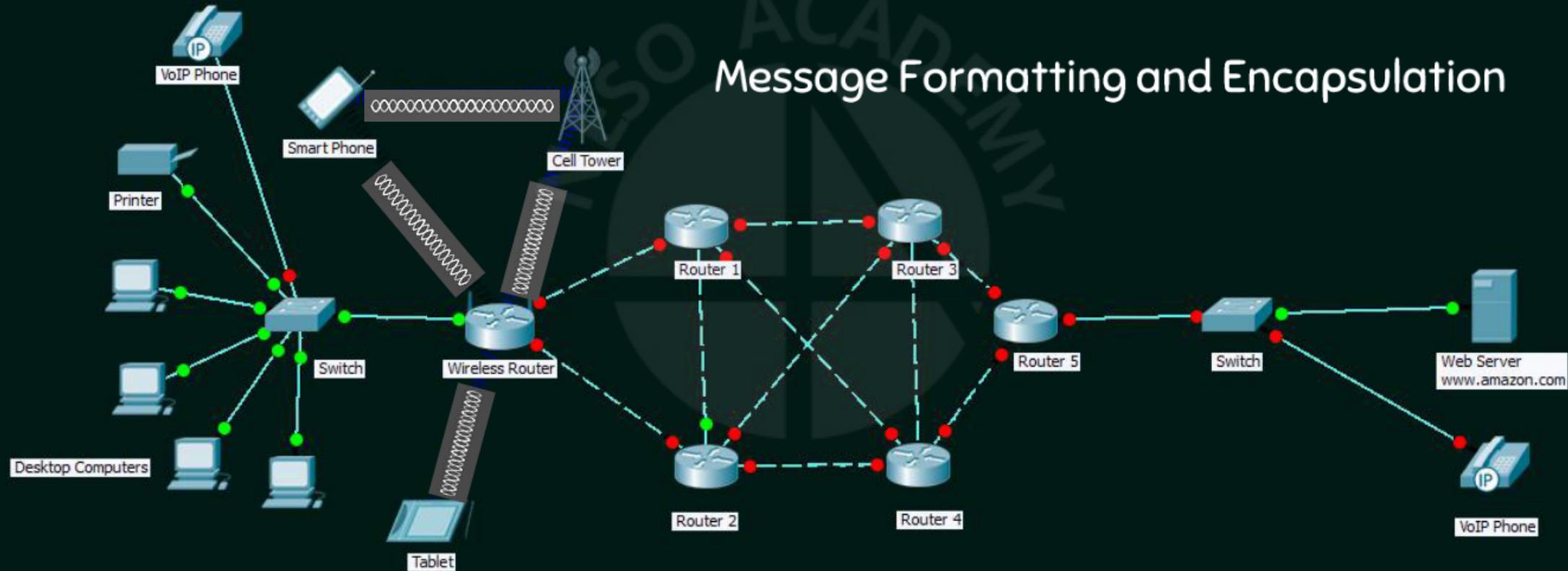


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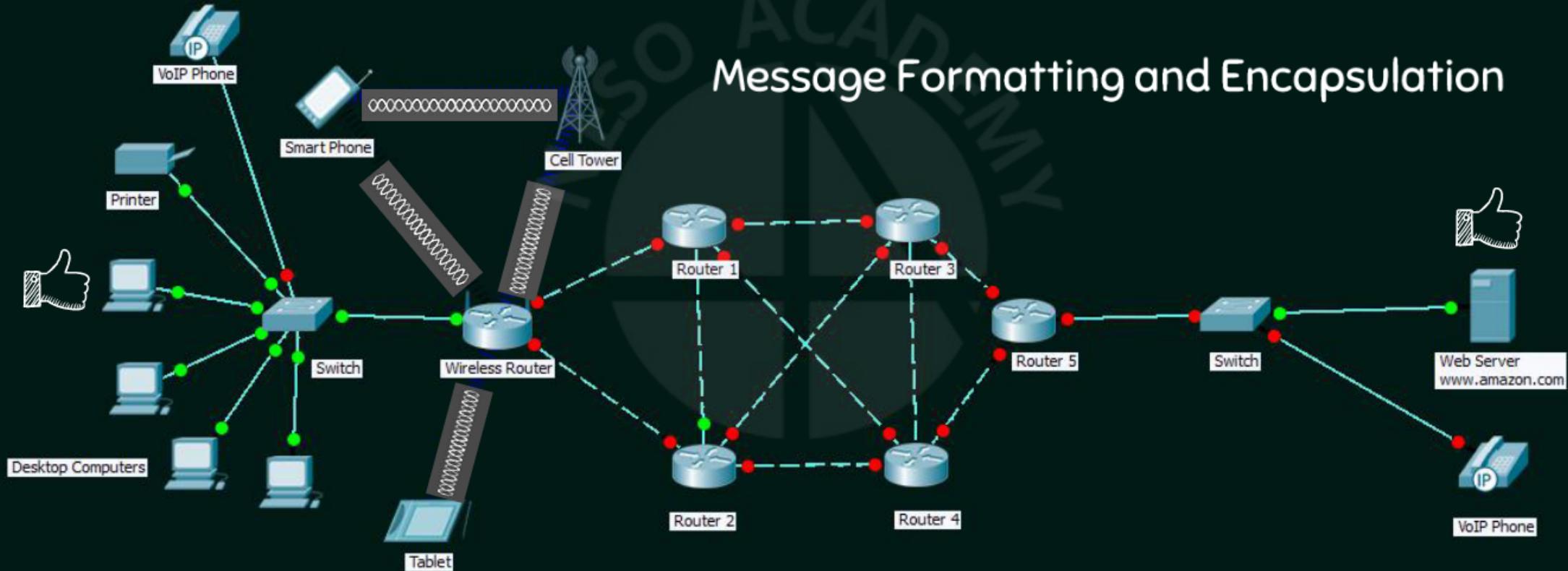
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Message Formatting and Encapsulation



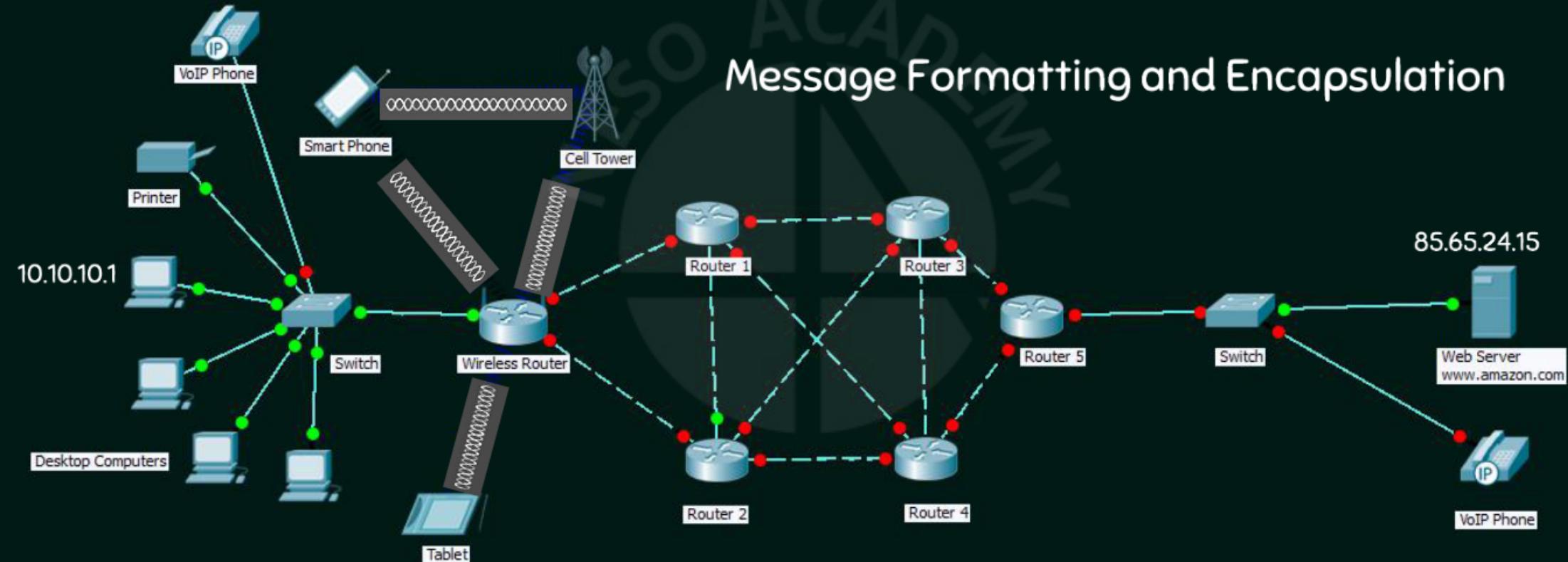
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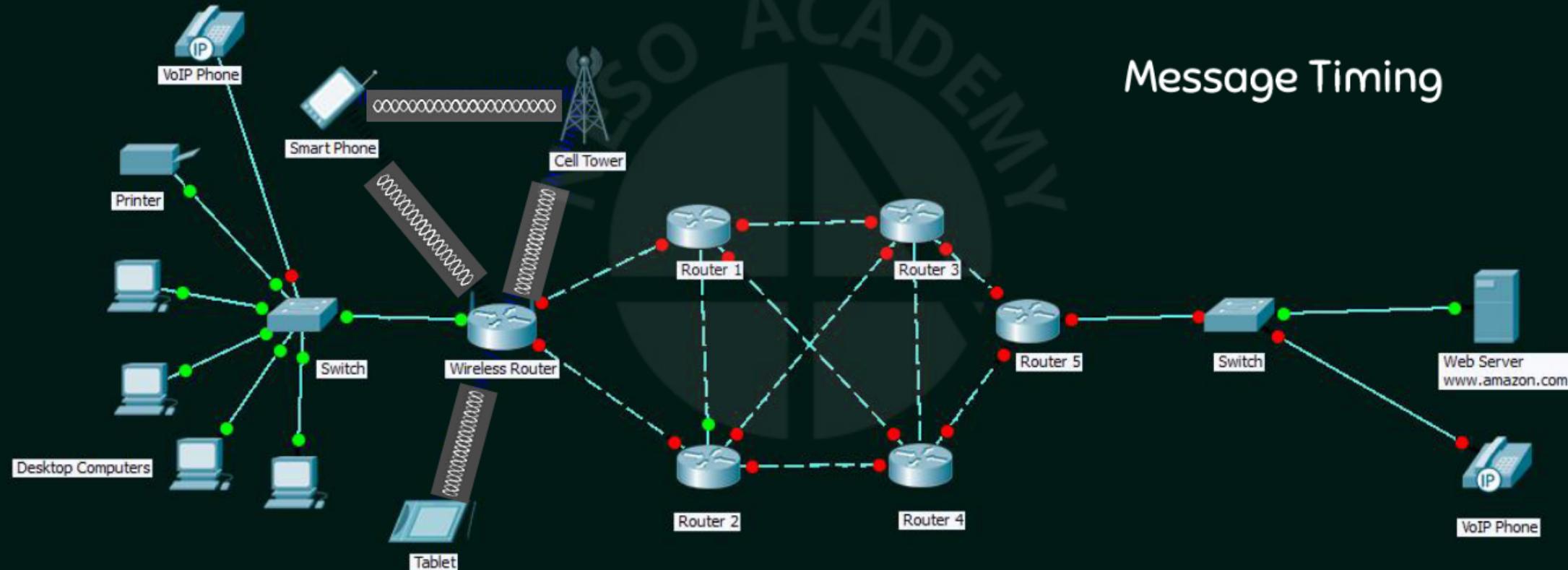
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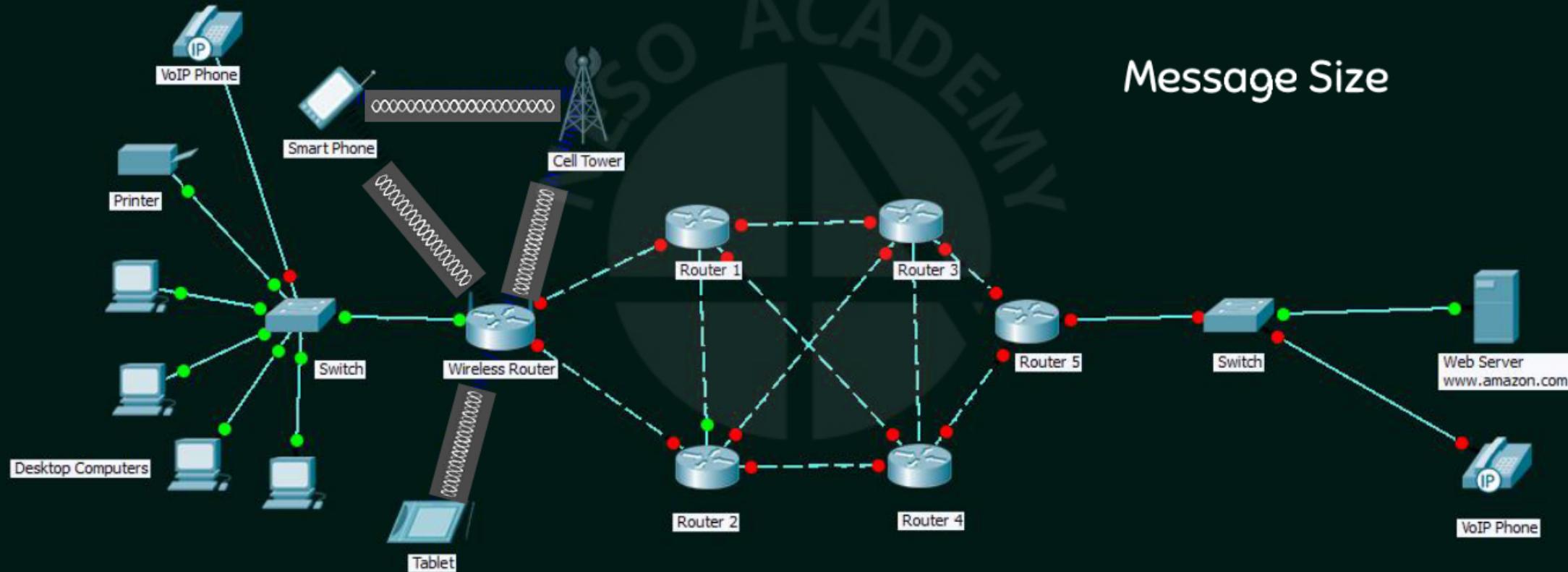
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Message Timing



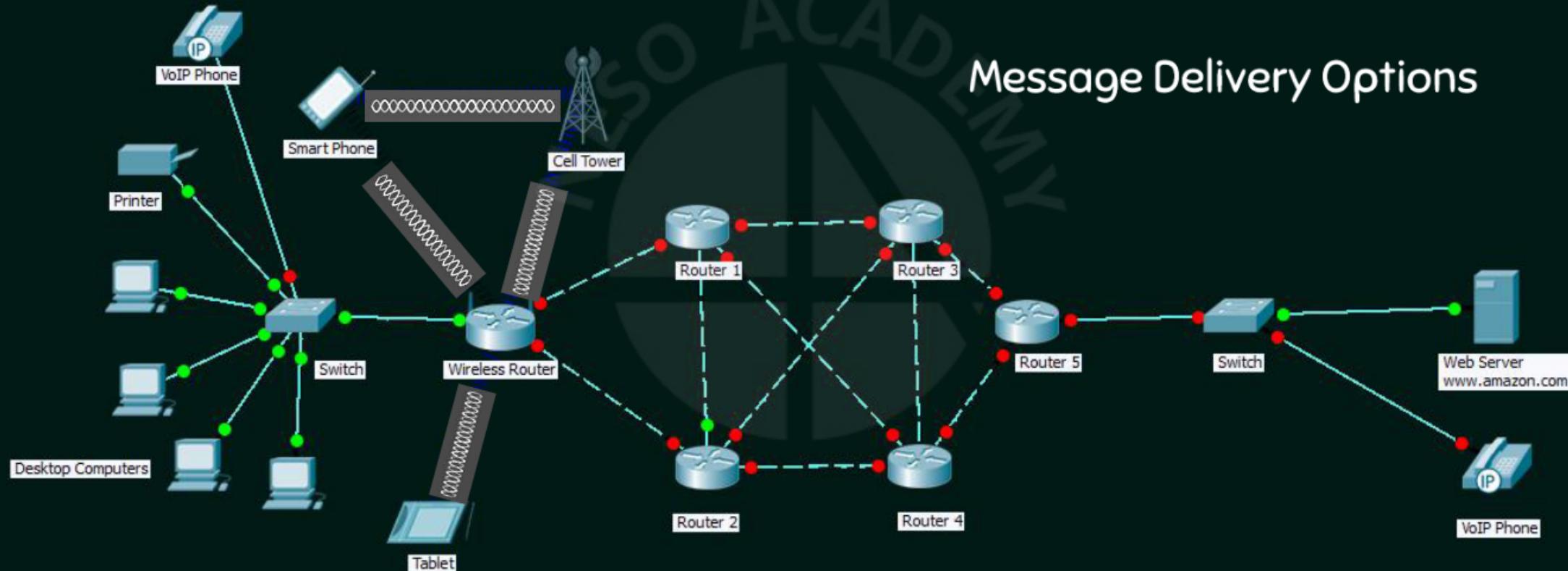
ELEMENTS OF PROTOCOL IN COMPUTER NETWORK

Message Size



ELEMENTS OF PROTOCOL IN COMPUTER NETWORK

Message Delivery Options



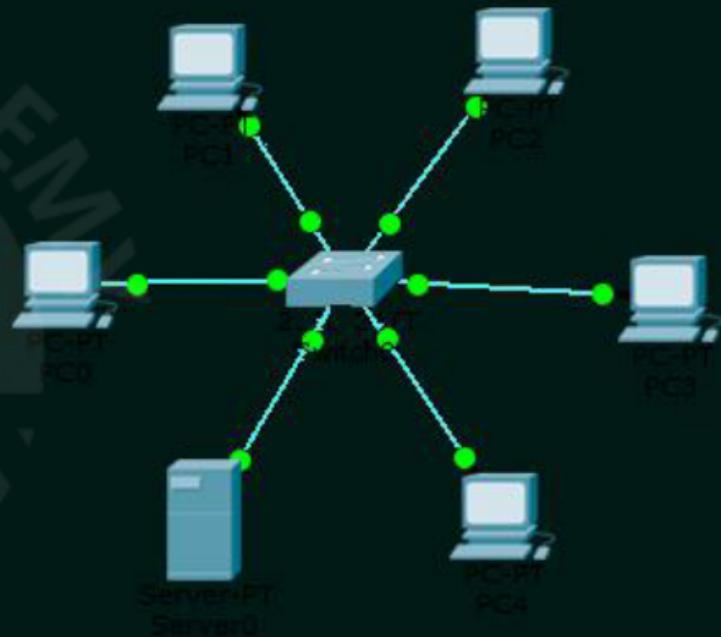
PEER-TO-PEER NETWORK

- ★ No Centralized administration.
- ★ All peers are equal.
- ★ Simple sharing applications.
- ★ Not scalable.



CLIENT SERVER NETWORK

- ★ Centralized administration.
- ★ Request-Response model.
- ★ Scalable.
- ★ Server may be overloaded.



OUTCOMES

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

- ★ Understand nodes in computer network.
- ★ Understand different media in computer network.
- ★ Understand various services offered by computer network.