Lecture 12a - Transport Layer TCP

Type: Lecture

Materials: Empty

Reviewed: ☑

1. TCP – Transmission Control Protocol

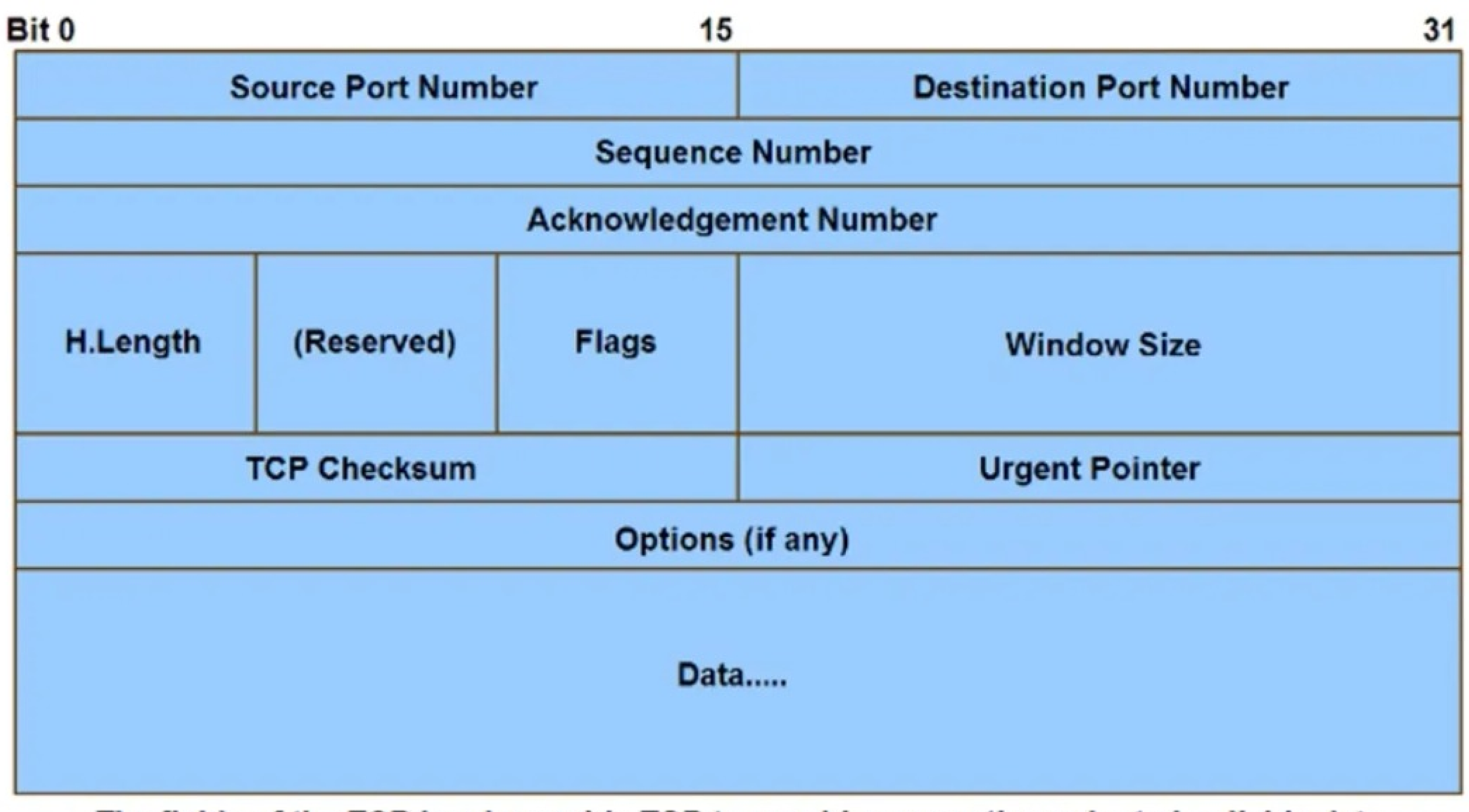
- RFC 793
- **Connection Oriented: ⇒ 3-way handshake**
  - Establish the session before sending the data
  - Initiate the conversation and make sure the other end is listening and be able to reply
- **Guaranteed Delivery ⇒** ACK
  - Keep track of segments.
- **In-order delivery ⇒** SEQ
  - Assure same order delivery by using the **sequence number** in the segments.
- **Flow Control ⇒ congestion window**
  - Keep track of the status of the connection.
  - If the network is **congested**, TCP requests the sending note to slow the sending rate.

💡 Since **IP** is **best effort**, this extra functionality must be **incorporated** into TCP.

2. TCP Header Format

- **Larger** than **UDP** Header
- **Increased** overhead

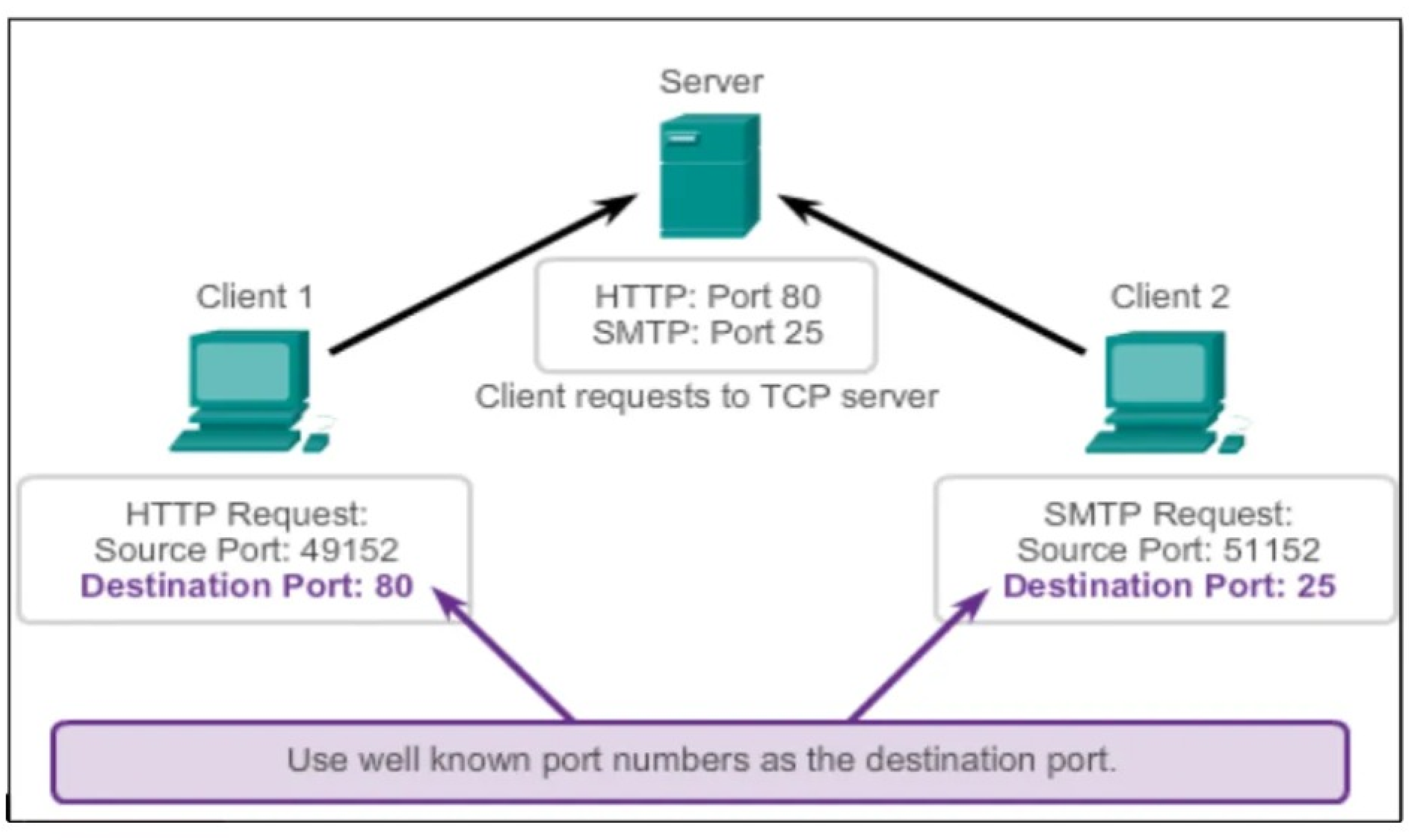
TCP Segment Header Fields

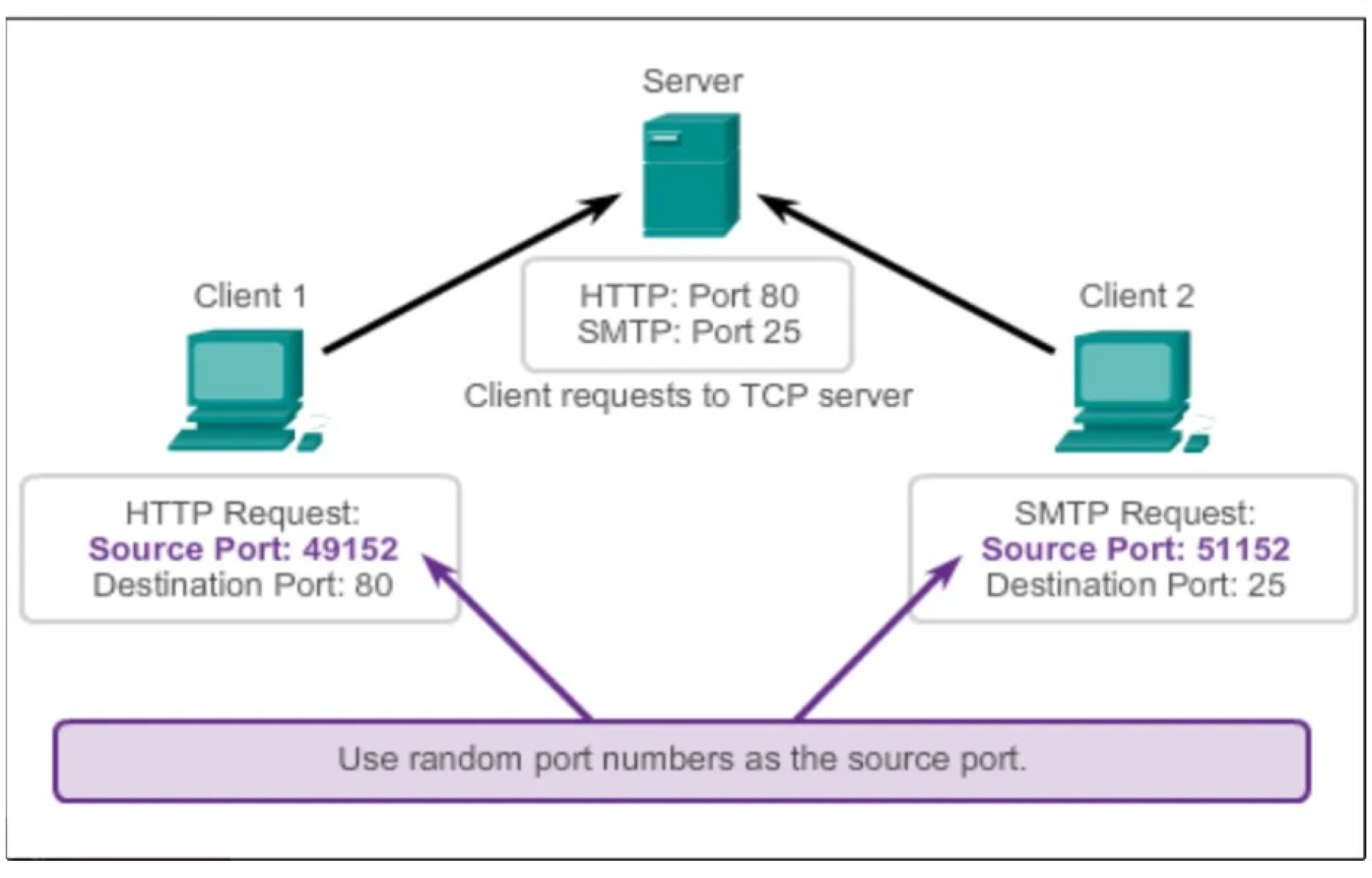


The fields of the TCP header enable TCP to provide connection-oriented, reliable data communications.

3. TCP Application Processes

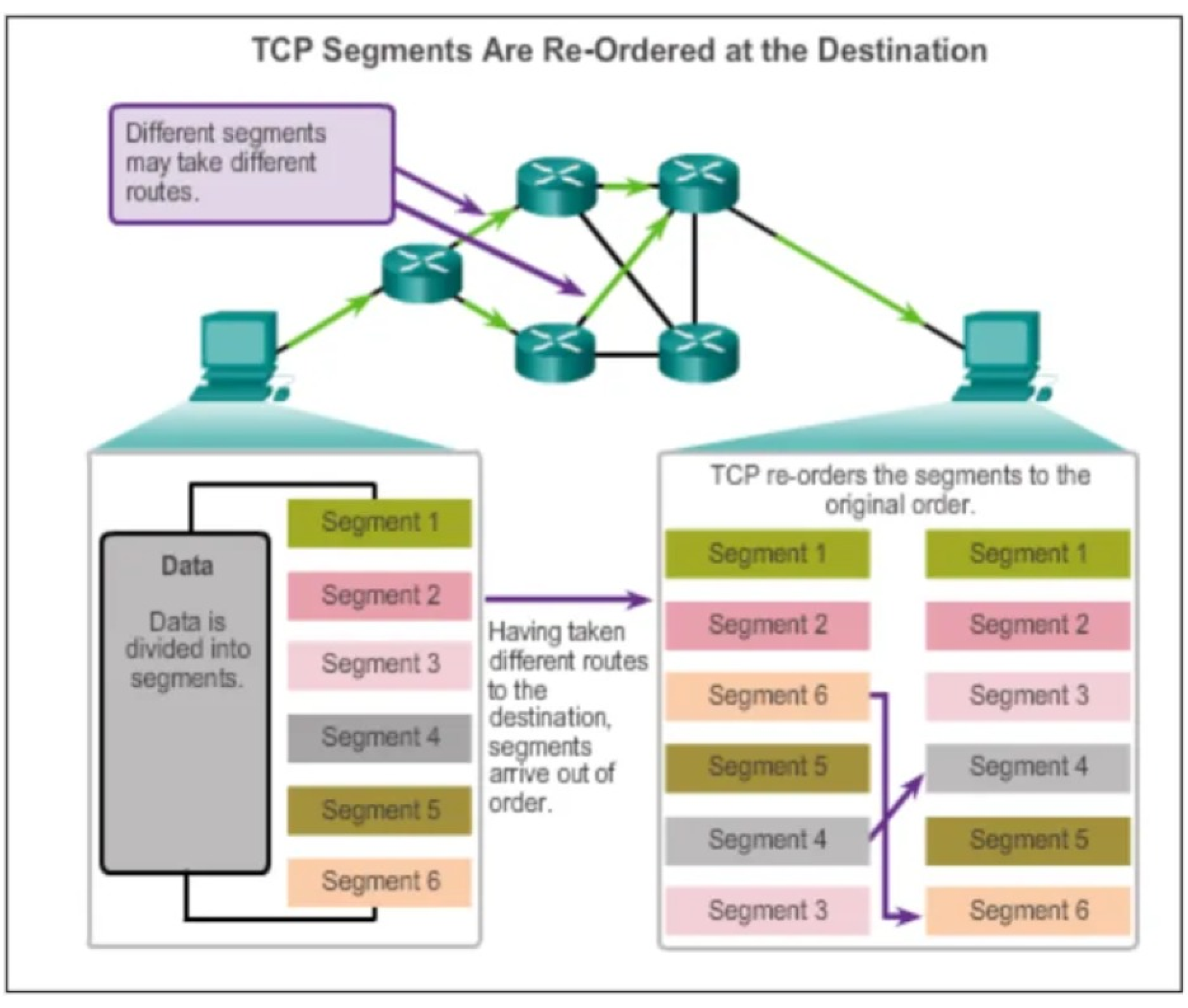
Request Destination Ports





4. TCP Characteristics

- TCP Reliability – Ordered Delivery
  - Sequence numbers are used to reassemble segments into their original order



- TCP Reliability – Acknowledgements