



# TNE10006/TNE60006: Networks and Switching



## Transport Layer

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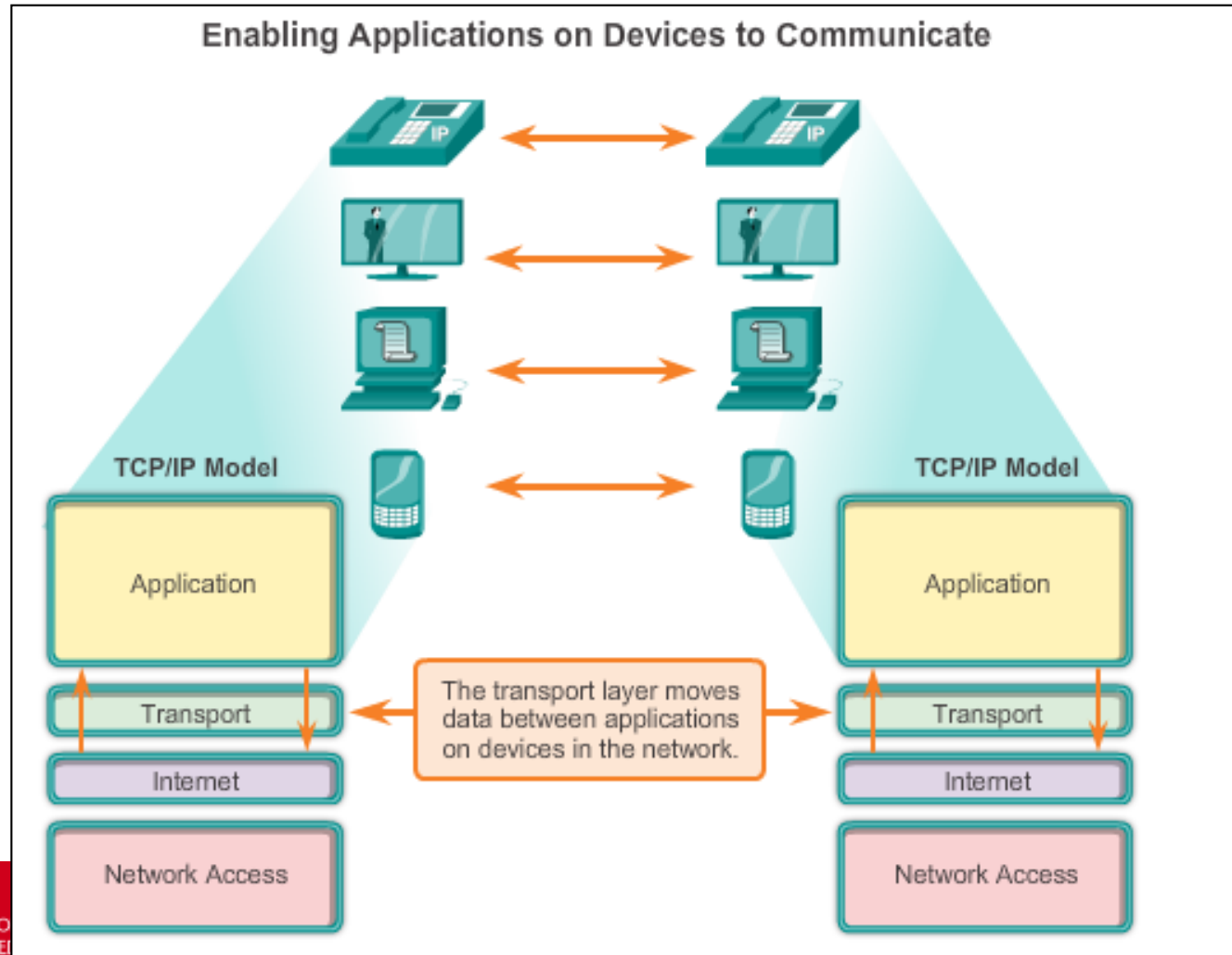
# Outline

- Role of the Transport Layer
- Characteristics
- Supporting Concurrent Applications
- Port Numbers



## Transport Layer

# The Role of the Transport Layer

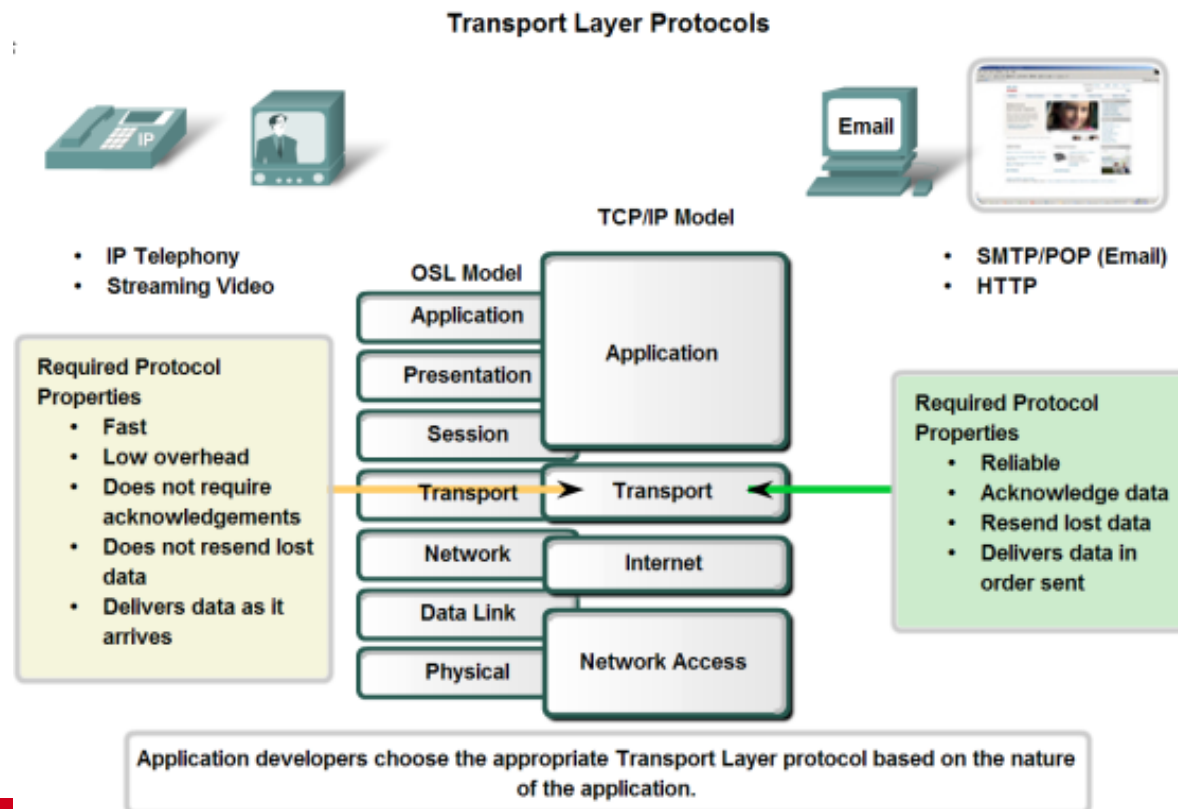


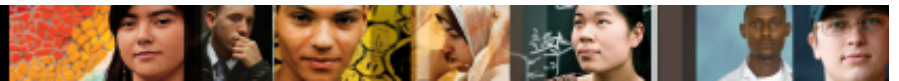


# Transport Layer

## Basic Characteristics

- Primary role – Allow applications to communicate
- Different categories of applications





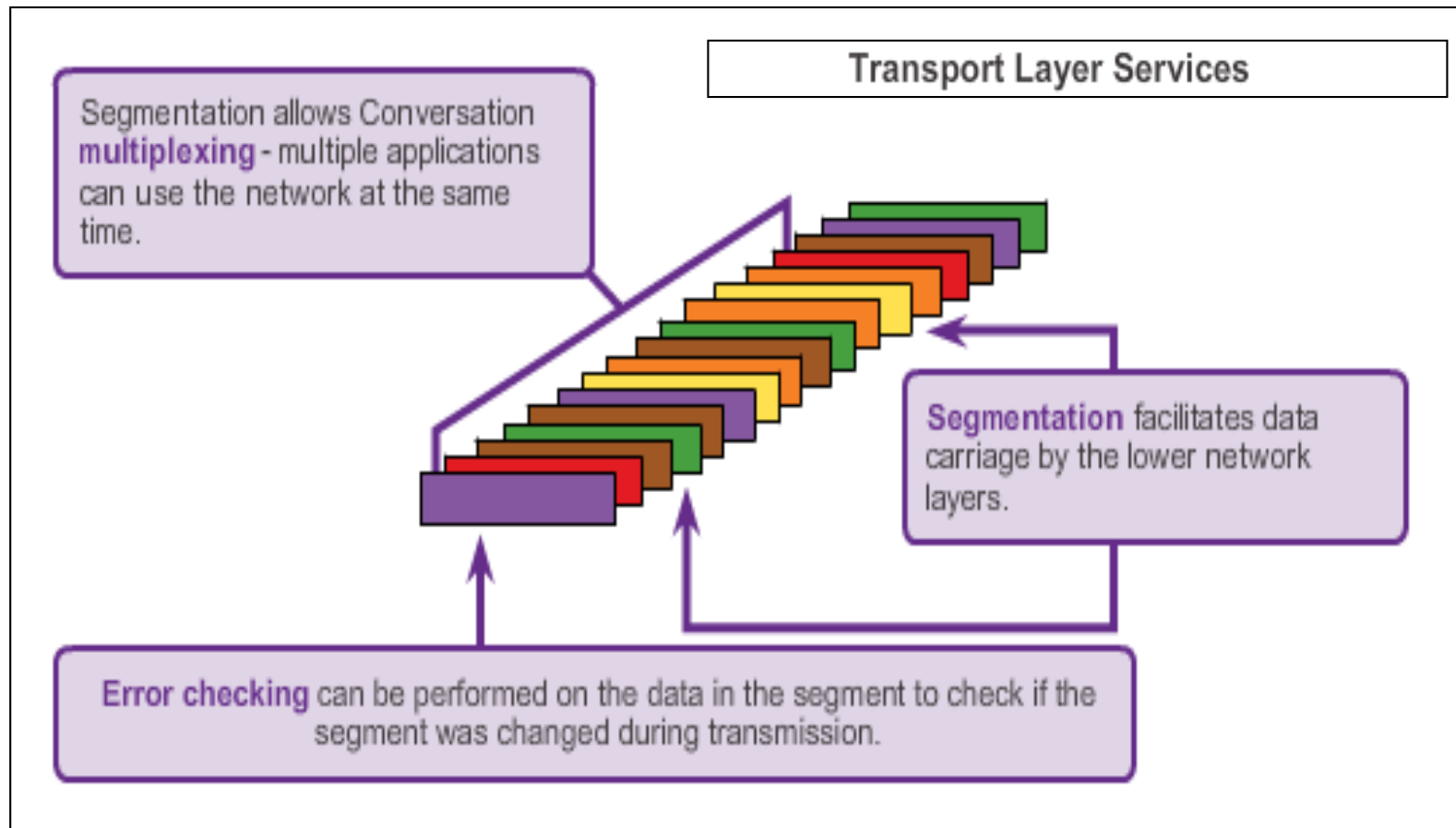
## Transport Layer

# Basic Characteristics

- Application categories serviced by TCP or UDP
  - UDP – Real-time applications
  - TCP – Reliability required
- Has an impact on
  - How these protocols behave under varying network conditions
  - Subsequent impact on applications
- Other Transport Layer Protocols exist



# Transport Layer Supporting Concurrent Applications



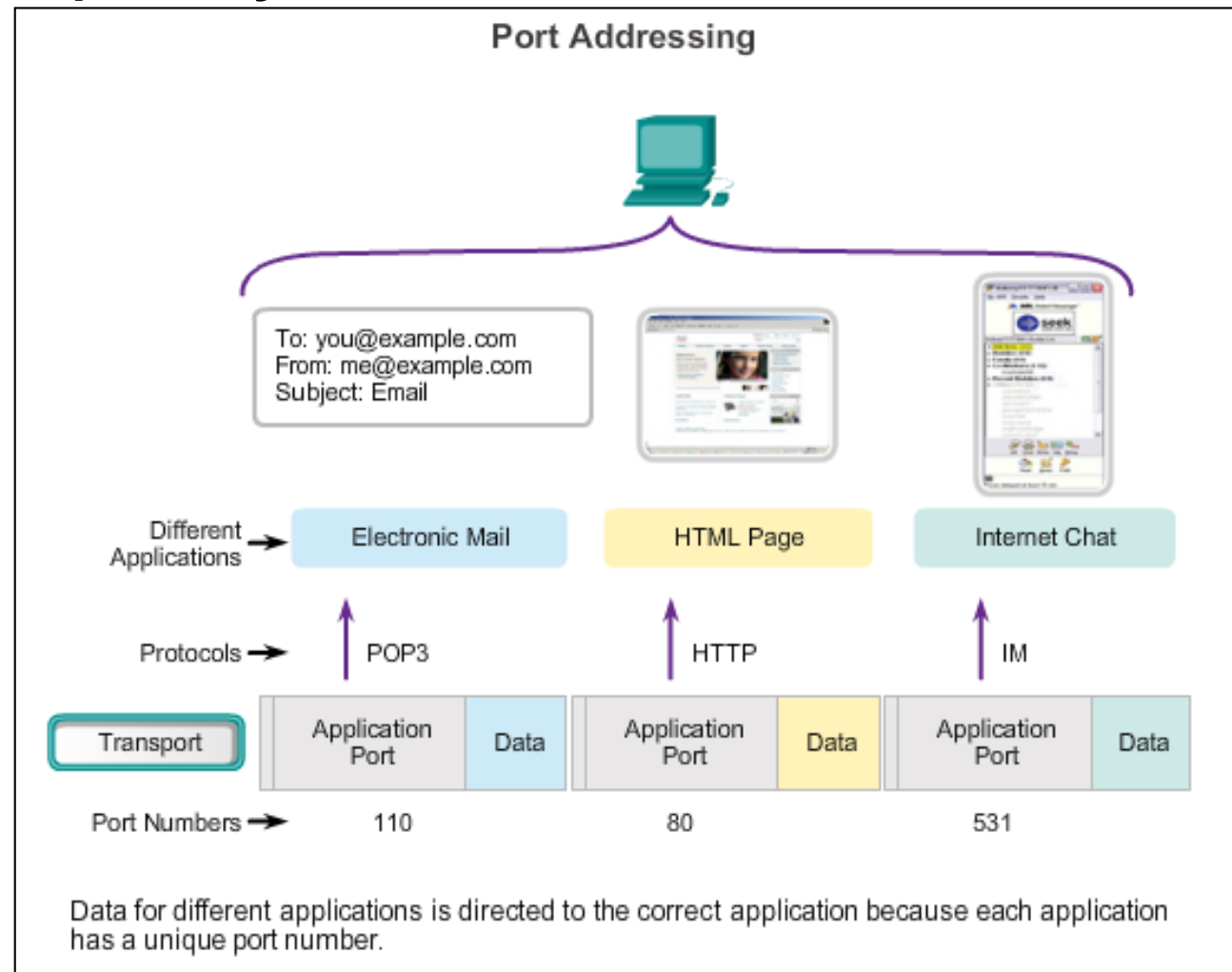


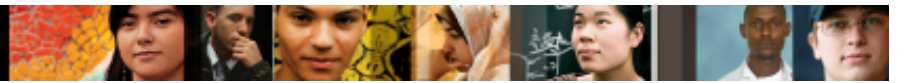
# Transport Layer

## Supporting Concurrent Applications

- Port Numbers

### The Transport Layer Address





## Transport Layer

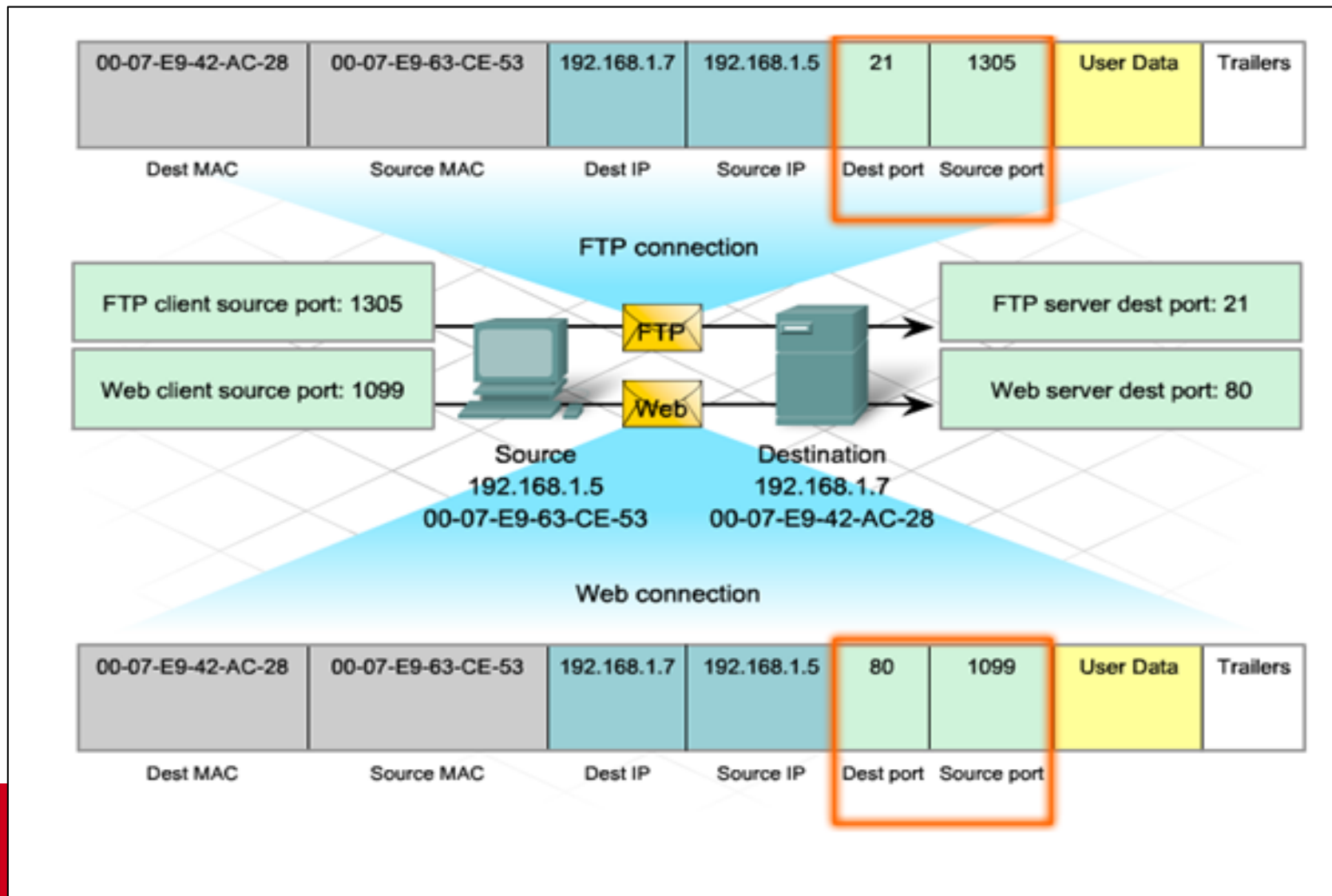
# Supporting Concurrent Applications

- Define a tuple (source/destination IP-address/port-number pairs)
- Uniquely identify separate flows
- For server-type applications
  - Server-side port standardised
  - Client-side port random





# Transport Layer Port Numbers





# Transport Layer

## Port Numbers

### Port Numbers

Port Number Range	Port Group
0 to 1023	Well Known (Contact) Ports
1024 to 49151	Registered Ports
49152 to 65533	Private and/or Dynamic Ports

#### Registered TCP Ports:

1863 MSN Messenger  
 2000 Cisco SCCP (VoIP)  
 8008 Alternate HTTP  
 8080 Alternate HTTP

#### Well Known TCP Ports:

21 FTP  
 23 Telnet  
 25 SMTP  
 80 HTTP  
 110 POP3  
 194 Internet Relay Chat (IRC)  
 443 Secure HTTP (HTTPS)



# Transport Layer Port Numbers

## Registered UDP Ports:

1812	RADIUS Authentication Protocol
5004	RTP (Voice and Video Transport Protocol)
5040	SIP (VoIP)

## Well Known UDP Ports:

69	TFTP
520	RIP

## Registered TCP/UDP Common Ports:

1433	MS SQL
2948	WAP (MMS)

## Well Known TCP/UDP Common Ports:

53	DNS
161	SNMP
531	AOL Instant Messenger, IRC



## Transport Layer Summary

In this lecture, we covered:

- Role of the Transport Layer
- Characteristics
- Supporting Concurrent Applications
- Port Numbers