

Lecture 11a - Transport Layer

Type

Lecture

Materials

Empty

Reviewed

✓

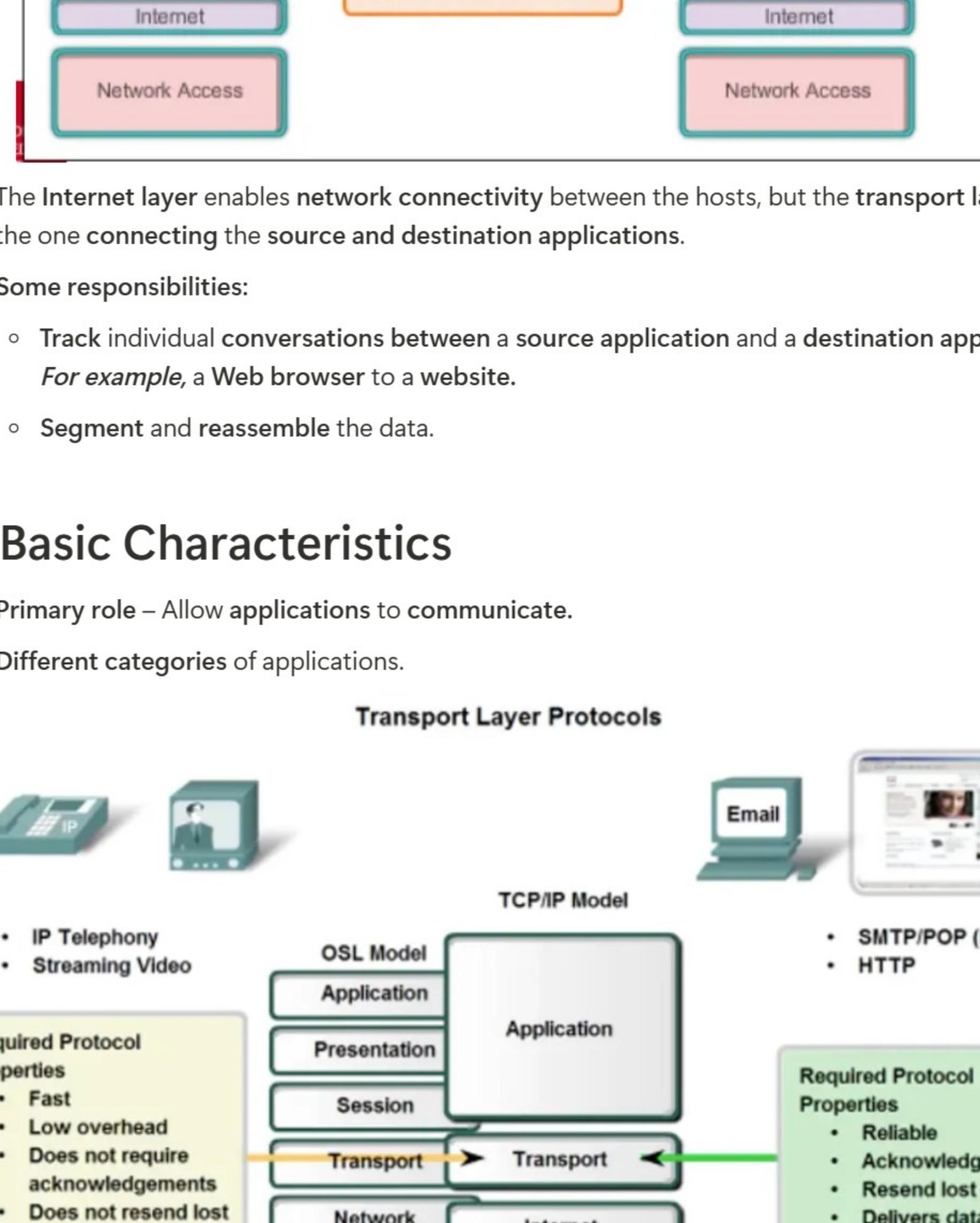
1. The Role of the Transport Layer

2. Basic Characteristics

3. Supporting Concurrent Applications

1. The Role of the Transport Layer

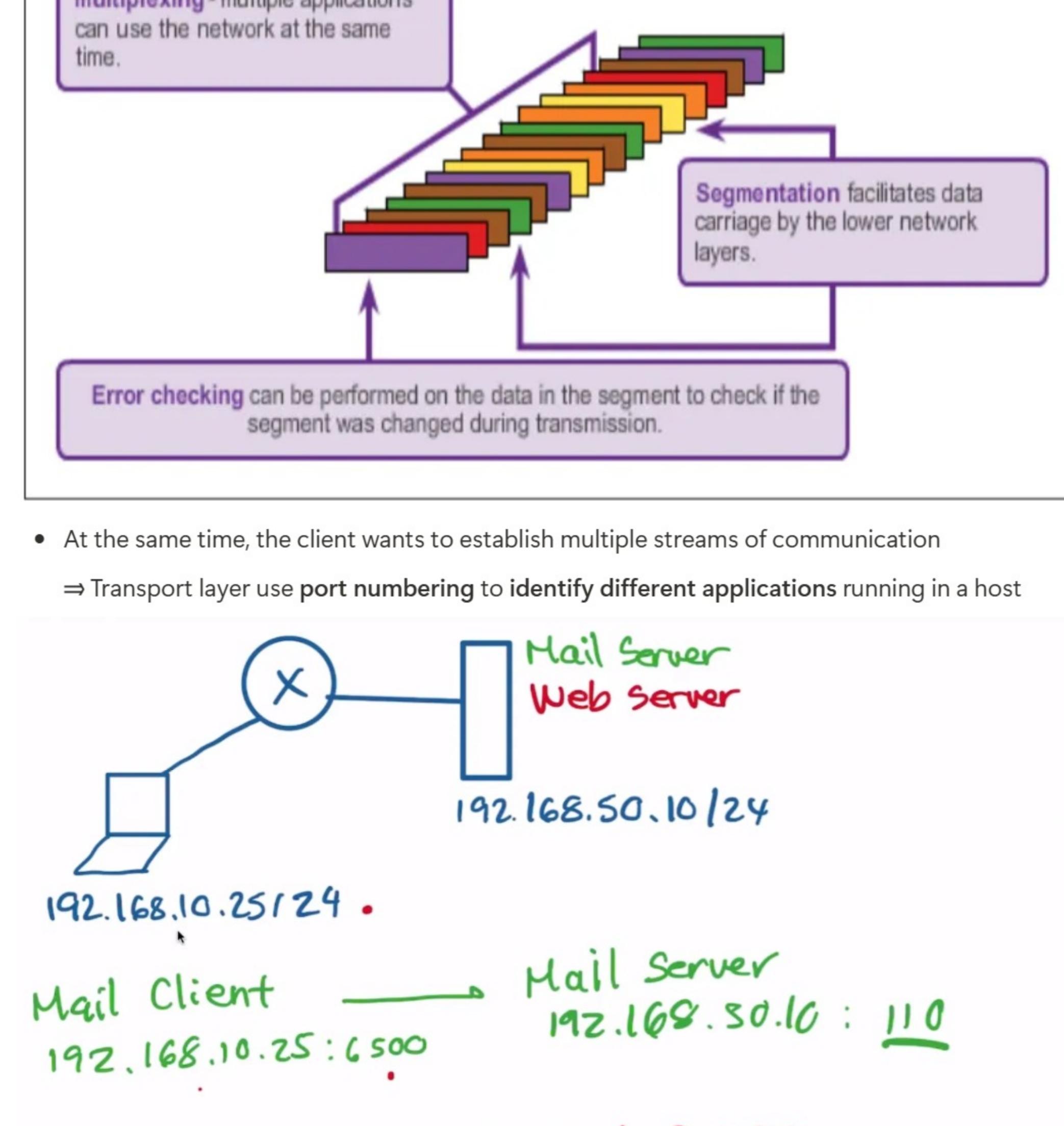
- The main role of the transport layer is to establish a conversation between two applications running on two network devices.



- The Internet layer enables network connectivity between the hosts, but the transport layer is the one connecting the source and destination applications.
- Some responsibilities:
 - Track individual conversations between a source application and a destination application. For example, a Web browser to a website.
 - Segment and reassemble the data.

2. Basic Characteristics

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

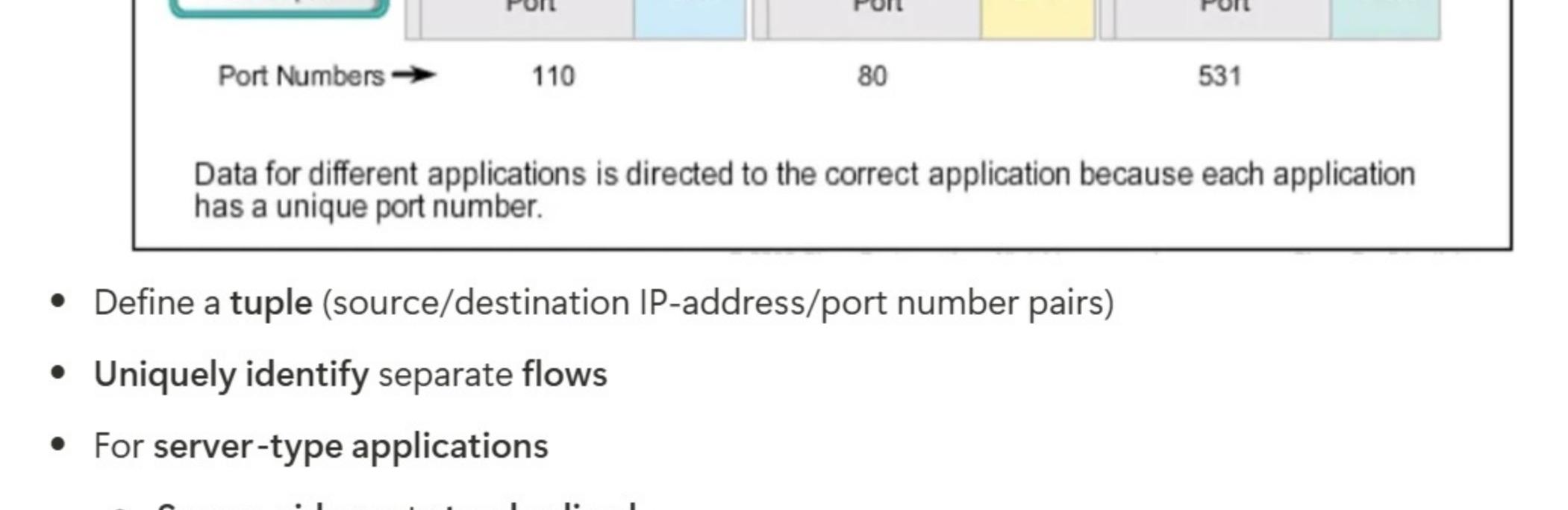


- Application categories serviced by TCP or UDP
 - UDP – Real-time applications (streaming, phone call, etc)
 - TCP – Reliability required (email, etc)

- Has an impact on
 - How these protocols behave under varying network conditions
 - Subsequent impact on applications

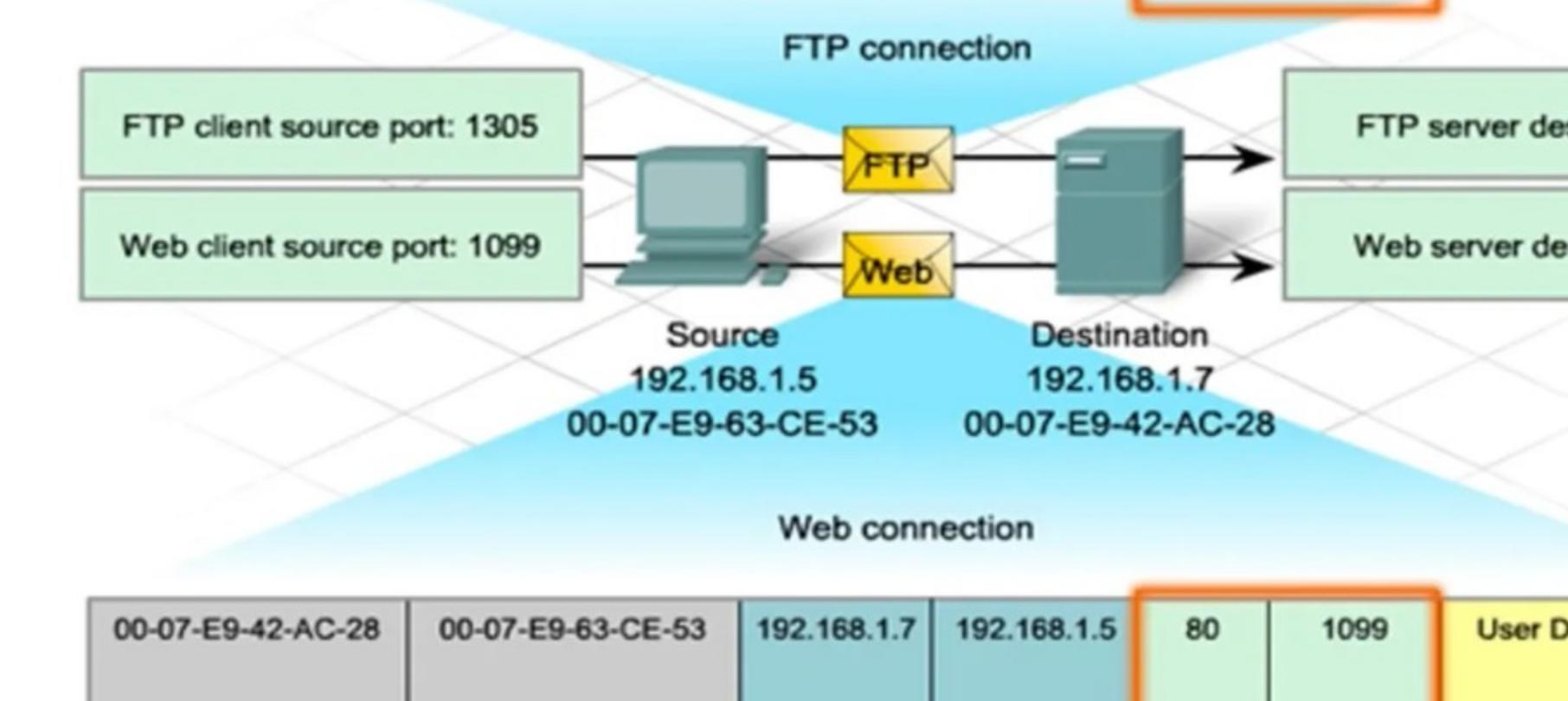
- Other Transport Layer Protocols exist

3. Supporting Concurrent Applications



- At the same time, the client wants to establish multiple streams of communication

⇒ Transport layer use port numbering to identify different applications running in a host



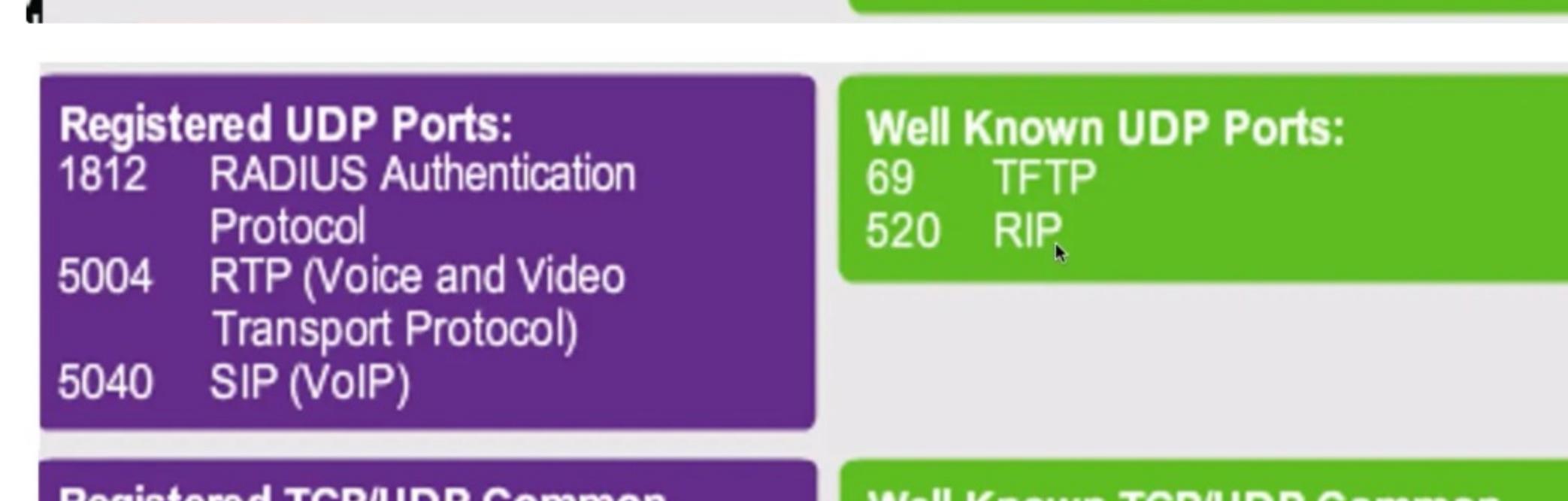
- Port Numbers
 - The Transport Layer Address



- Define a tuple (source/destination IP-address/port number pairs)

- Uniquely identify separate flows

- For server-type applications
 - Server-side port standardized
 - Client-side port random



- Some port numbers:

Port Numbers

Port Number Range	Port Group
0 to 1023	Well Known (Contact) Ports
1024 to 49151	Registered Ports
49152 to 65535	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)

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