



Introduction to UDP and TCP

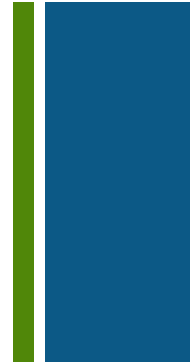
End-to-end process mapping, reliable
transmission and end-to-end congestion control

+ Chapter structure

1. Refresher about reliable transmission and the end-to-end principle
2. Intro to UDP



+ Supplement the Internet Service Model



- IP Service Model
 - Host-to-host (End-to-end)
 - Packets may not arrive in order
 - Packets may not arrive on time or not arrive at all
 - Packets can be corrupted
 - Packets can be duplicated by the network
- Applications need a reliable process-to-process channel
 - As though we were writing a file within an operating system (Unix, Windows...)
 - In order
 - No duplicates
 - No errors
 - With delivery guarantees

+ Properties of transport protocols



- Guarantees message delivery
- Delivers messages in the same order they were sent
- Delivers at most one copy of each message
- Supports arbitrarily large messages
- Supports synchronization between the sender and the receiver
- Allows the receiver to apply flow control to the sender
- Supports multiple application processes on each host

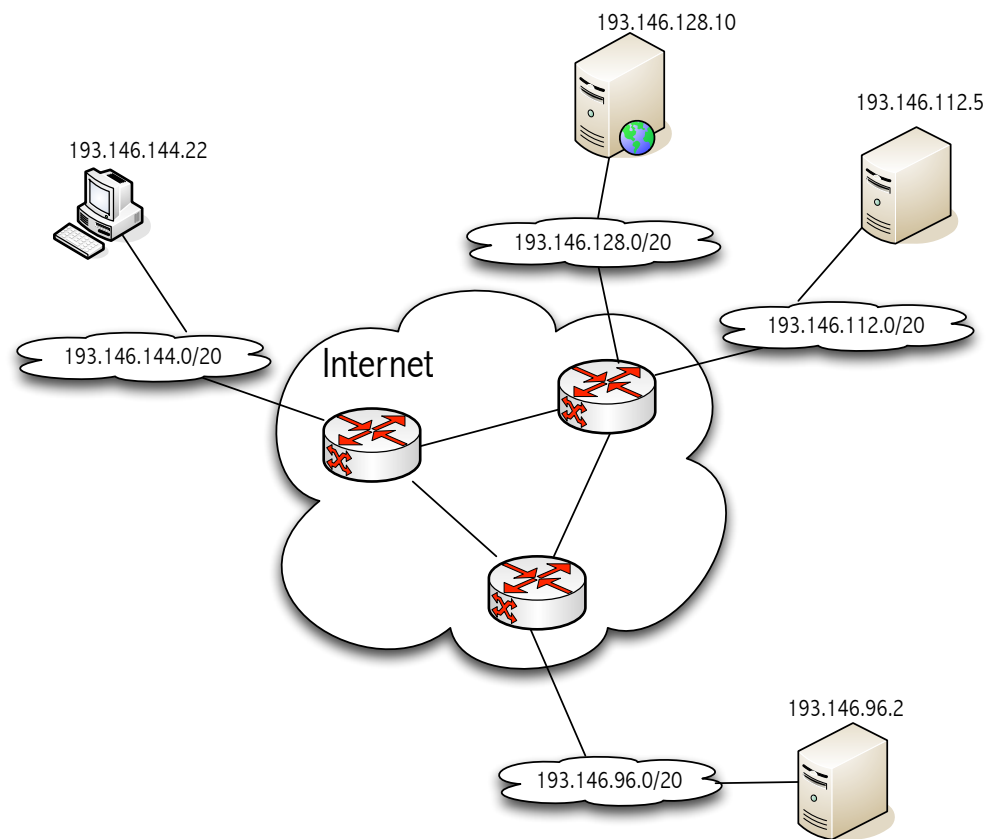


UDP: User Datagram Protocol

End-to-end unreliable packet delivery
(Process-to-process)

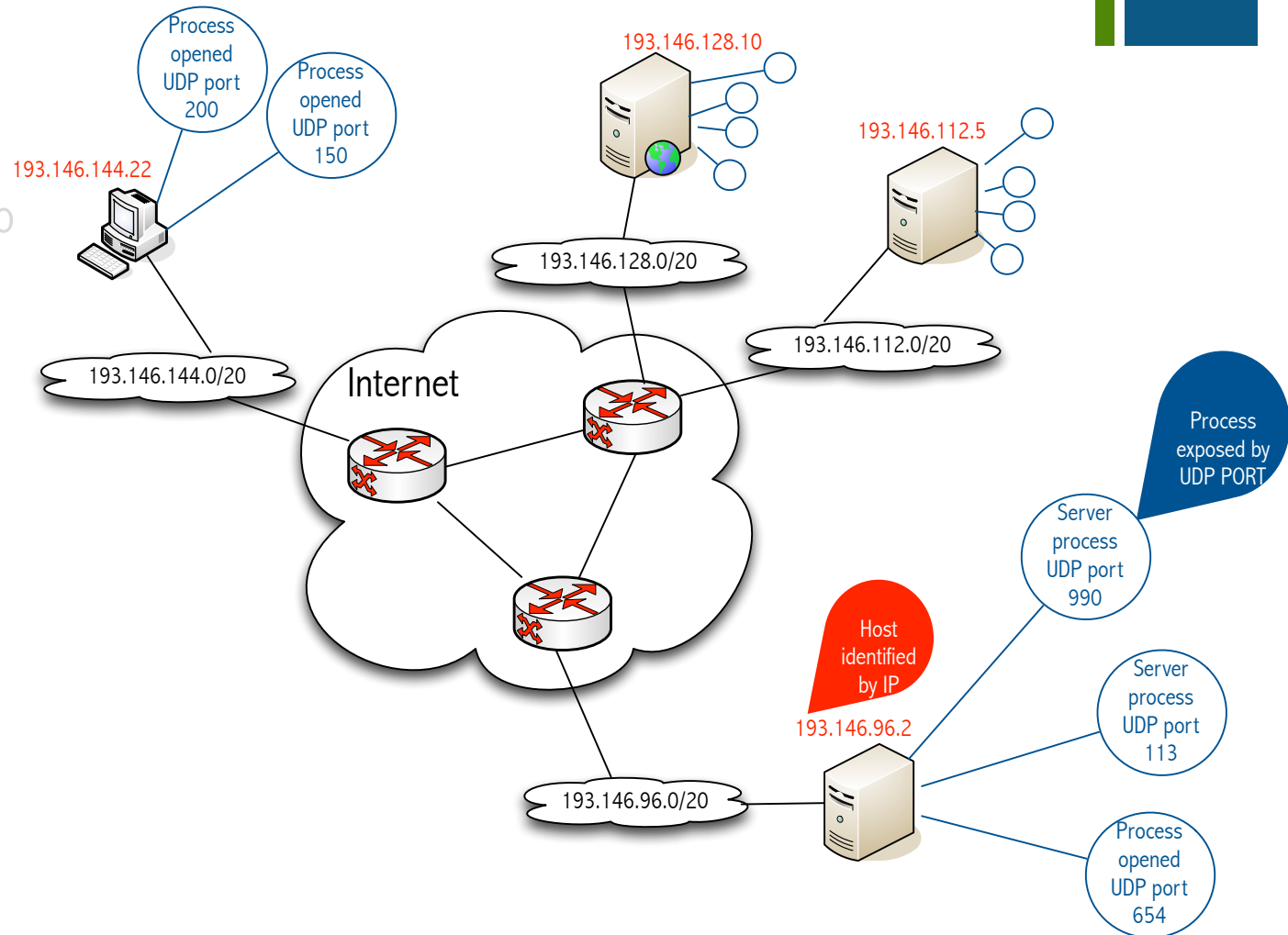
+ UDP: The simple application multiplexer

- Extends host-to-host delivery service of the underlying network into a process-to-process communication service
- Adds a level of demultiplexing which allows multiple application processes on each host to share the network

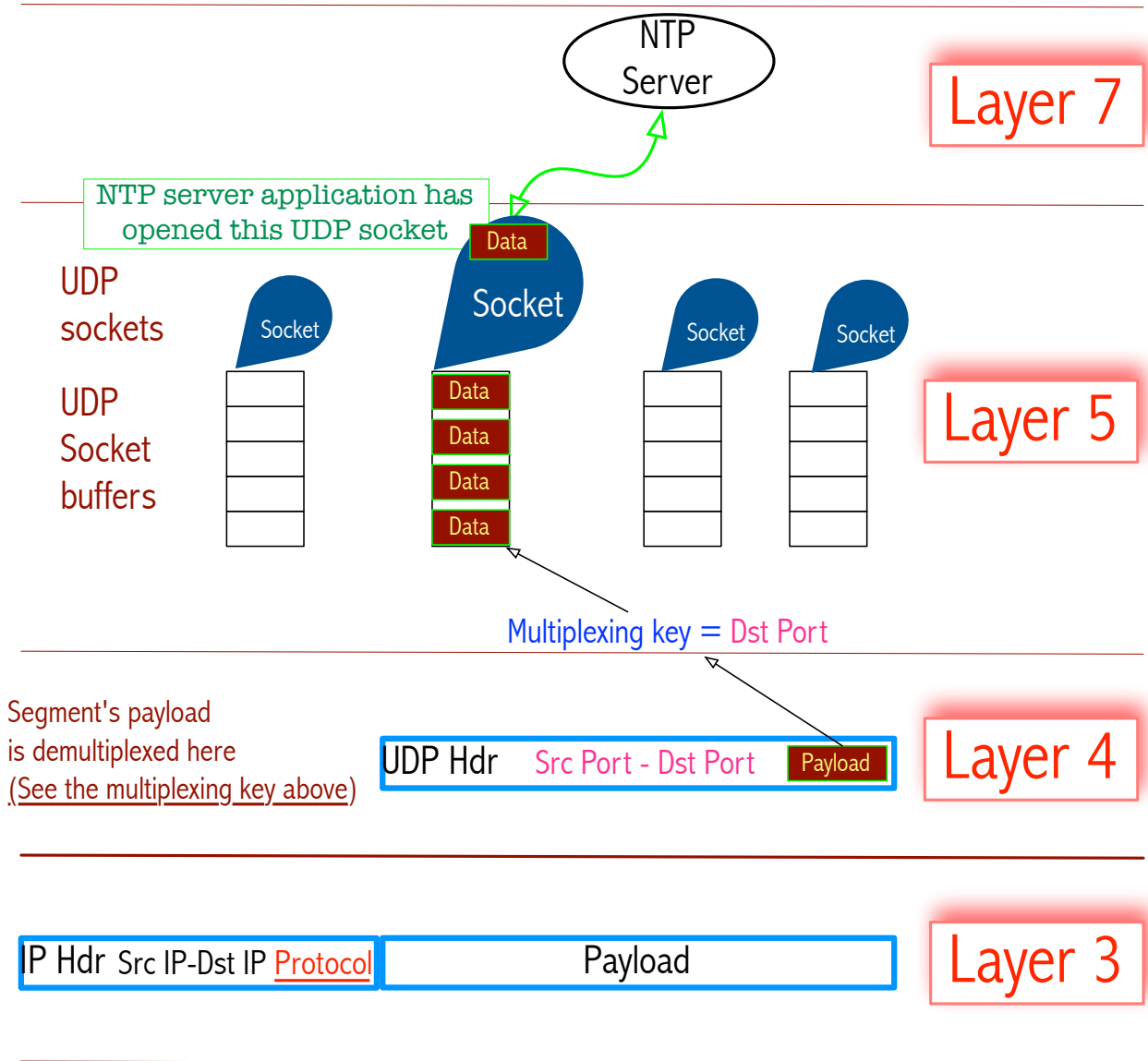


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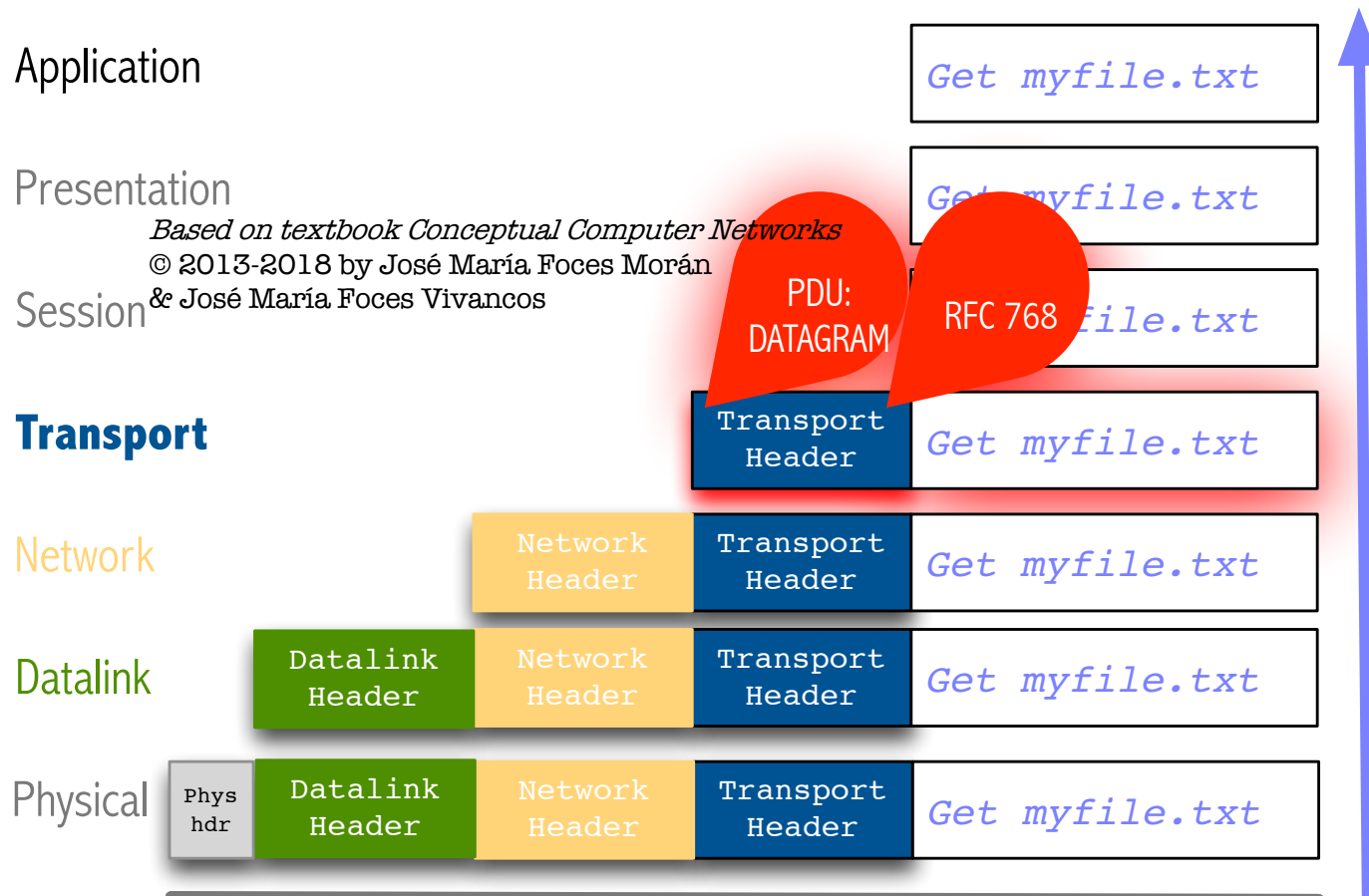


+ UDP: The Simple Demultiplexer



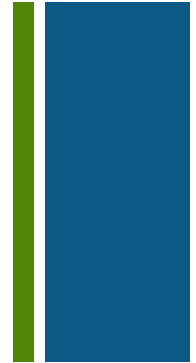
+ UDP: The simple application multiplexer

Demultiplex

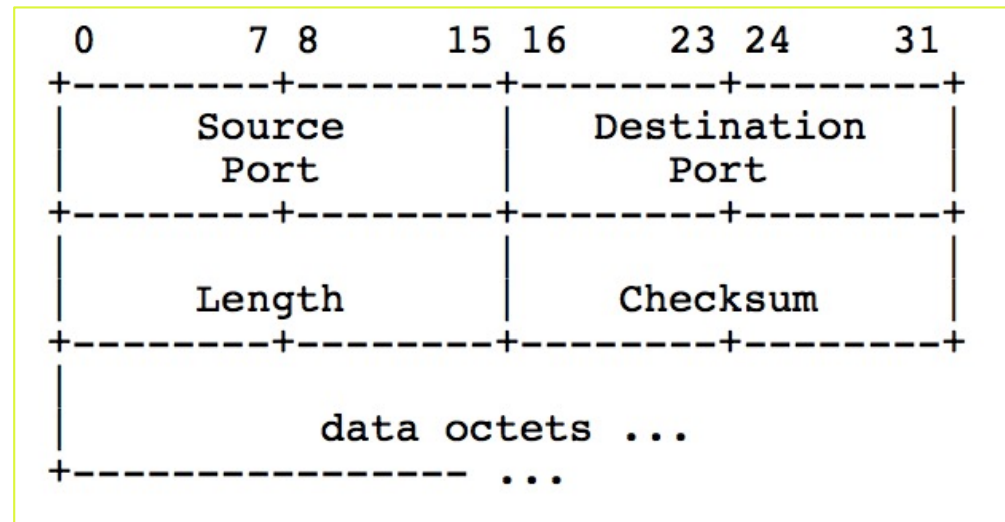


+ UDP Protocol Data Unit: Datagram

RFC 768

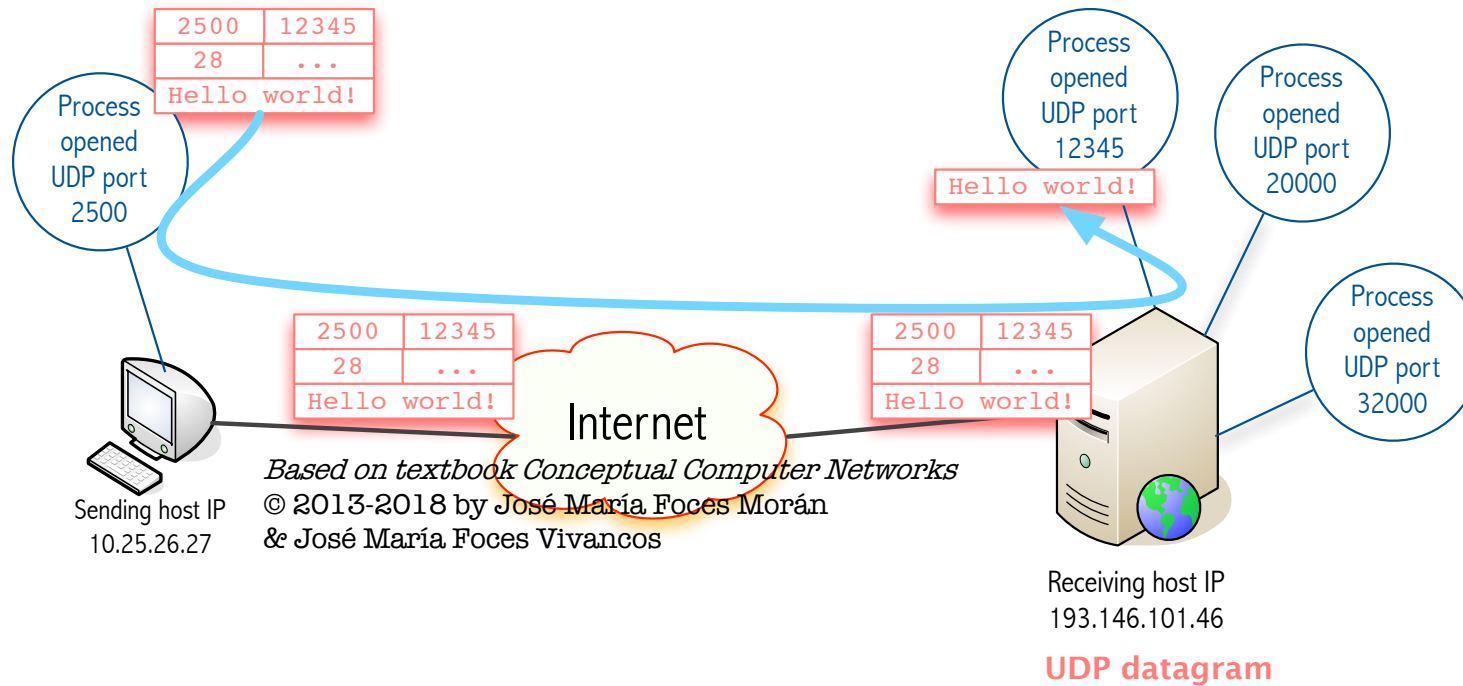


- Source port:
The port number opened by the sending process within the sending host
- Destination port:
Port number opened by the receiving process within the receiving host
- Length: Number of bytes occupied by the whole datagram (Header + payload)
- Checksum: Internet checksum of the IP pseudoheader + datagram

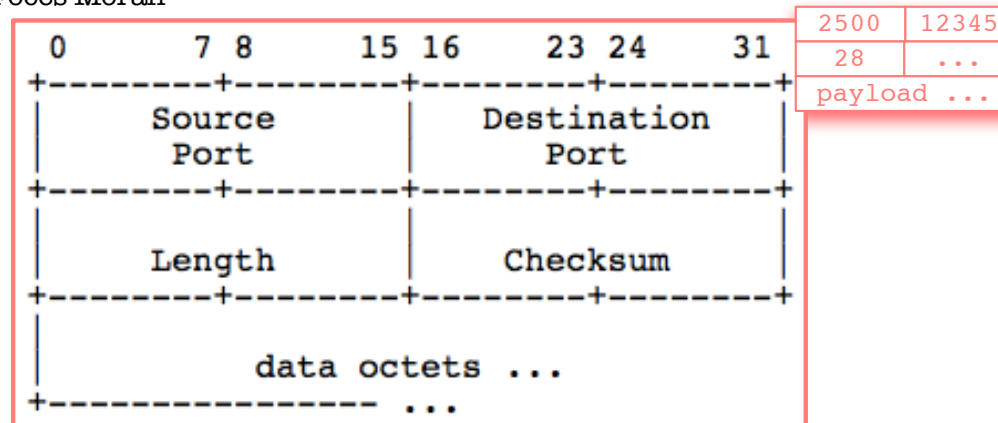


UDP Segment (RFC 768 by Jon Postel, august 1980)

+ UDP multiplexing example



Based on textbook *Conceptual Computer Networks*
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 & José María Foces Vivancos



We used the following references in the composition of the present work (In order of importance):

1. Peterson and Davie, Computer Networks, MKP Elsevier 2012
2. Conceptual Computer Networks © 2013-2018 by José María Foces Morán & José María Foces Vivancos

