CS 725/825 & T 725Lecture 17 Transport Layer

November 1, 2023

TCP Header

Offsets		0									1							2							3									
Octet	Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	7 18	19	20	21	22	23	24	2	26	5 27	1 :	28 2	9 3	0	31
0	0	Source port													Destination port																			
4	32		Sequence number																															
8	64		Acknowledgment number (if ACK set)																															
12	96	Data offset Reserved N C E U A P R S F Data offset Reserved N S C R C S S Y I O O O N C E U A P R S F Image: Note of the state of the s																																
16	128		Checksum													Urgent pointer (if URG set)																		
20	160				(Opt	ion	s (if	Da	ta C	Offs	set	> 5	i, p	ado	dec	at	the	e e	end	wit	h "(0" k	oyte	es i	fn	ec	cess	aŋ	y)				
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Another image appropriated from Wikipedia...

TCP Header

TCP SEQ & Ack #'s





TCP buffering and data flow





(*) many APIs call the read() operation "receive" (eg: recv()), read is used here to avoid confusion with receiving data on an interface

TCP Sliding Window



TCP Sliding Window



TCP Sliding Window



TCP session management

Offsets Octet Octet Bit Source port 96 Data offset Reserved N 0 0 0 Checksum

Another image appropriated from Wikipedia...



3-WA) KANDSHAKE







