CS 240	#14: Netw	orking and	OSI Layer 5, 0, and /.			
Computer Systems		ctober 1, 2020 Ulmschneider				
Network Q: What d	•	t out of netwo	orking?			
making	this happen	is insanely	complex:		OSI Layer 4:	
Host Route Link Applicat	ers s	Protocols Hardware Software Bit Errors	Packet Errors Link Failures Node Failures Message Delays	Out-of-Order Packets Eavesdropping and more		
	common _ nging messa	ges. You kno	a message fo ow many protocols	ormat and rules already:	OSI Layer 3:	
Network Data At the core, network data is simply a series of o s and 1 s. How do we translate those os and 1s into meaningful data in a way we can understand and make sense of?					OSI Layer 2:	
OSI Mod	_	ntoreonnostic	on (OSI) model is a	7 layer view of		

OSI Layer 5, 6, and 7:

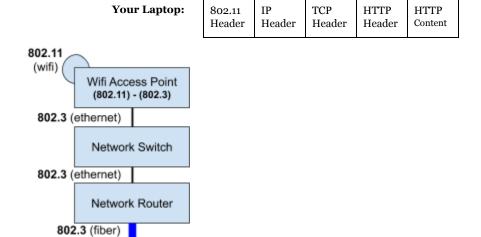
OSI Layer 1:

The Open Systems Interconnection (OSI) model is a 7-layer view of networking that abstracts and encapsulates the functionality of each component of networking.

- Layer 1 ("Physical") is the lowest layer and sees every bit.
- Layer 2 ("Data Link") sits above Layer 1 and does not concern itself with any Layer 1 concerns or Layer 1 data.
- Likewise, this continues up to the "Upper Layers" (Layers 5-7) and does not concern itself with lower layers.

Full Packet Journey

Consider an HTTP request you are making from your browser to illinois.edu. Suppose you are on the campus network (802..11/wifi).



Network Layer (Layer 3) Protocol: Internet Protocol (IP)

- The network layer provides "host-to-host" communication.
- When on the Internet, every host relies on the IP protocol.
 - o IP (IPv4) Address:

Network Router

Illinois.edu web server

802.3 (ethernet)

• IPv6 Addresses:

Transport Layer (Layer 4) Protocols:

Unlike Layer 3, there are two major Layer 4 protocols that are widely used throughout the Internet (and more exist that are less used):

1.

2.

Features of TCP and UDP:

Feature	ТСР	UDP