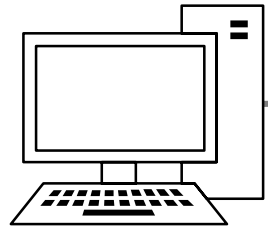


Layer 2 – The Data Link Layer



- Frames are encoded and decoded into bits at Layer 2.
- Error detection and correction for the Physical Layer can be provided here.
- Ethernet is the Layer 2 medium used on Local Area Networks.
- [https://en.wikipedia.org/wiki/List_of_network_protocols_\(OSI_model\)](https://en.wikipedia.org/wiki/List_of_network_protocols_(OSI_model))

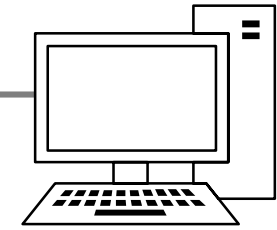
OSI Reference Model - Encapsulation



Sender



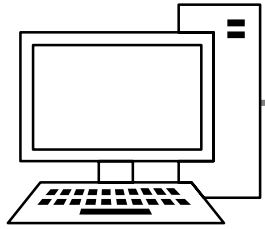
Layer	Name	Terminology
7	Application	Data
6		
5		
4		
3		
2		
1		



Receiver

L7

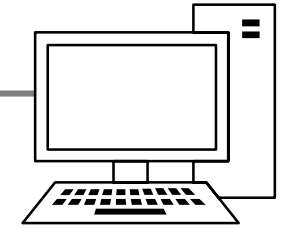
OSI Reference Model - Encapsulation



Sender



Layer	Name	Terminology
7	Application	Data
6	Presentation	
5		
4		
3		
2		
1		

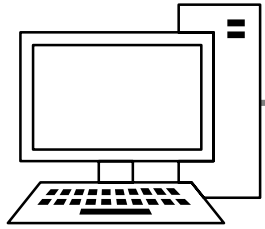


Receiver

L6

L7

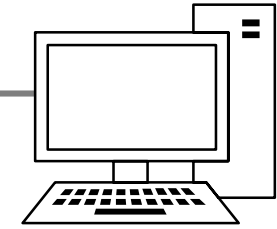
OSI Reference Model - Encapsulation



Sender



Layer	Name	Terminology
7	Application	Data
6	Presentation	
5	Session	
4		
3		
2		
1		



Receiver

L5

L6

L7

OSI Reference Model - Encapsulation



Sender

Receiver



Layer	Name	Terminology
7	Application	Data
6	Presentation	
5	Session	
4	Transport	Segment
3		
2		
1		

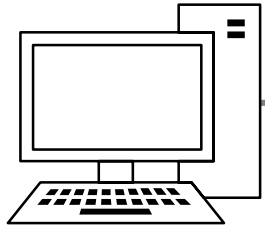
L4

L5

L6

L7

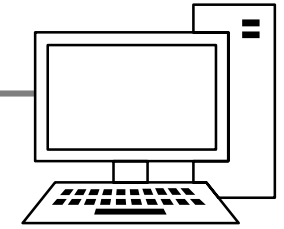
OSI Reference Model - Encapsulation



Sender



Layer	Name	Terminology
7	Application	Data
6	Presentation	
5	Session	
4	Transport	Segment
3	Network	Packet
2		
1		



Receiver



OSI Reference Model - Encapsulation



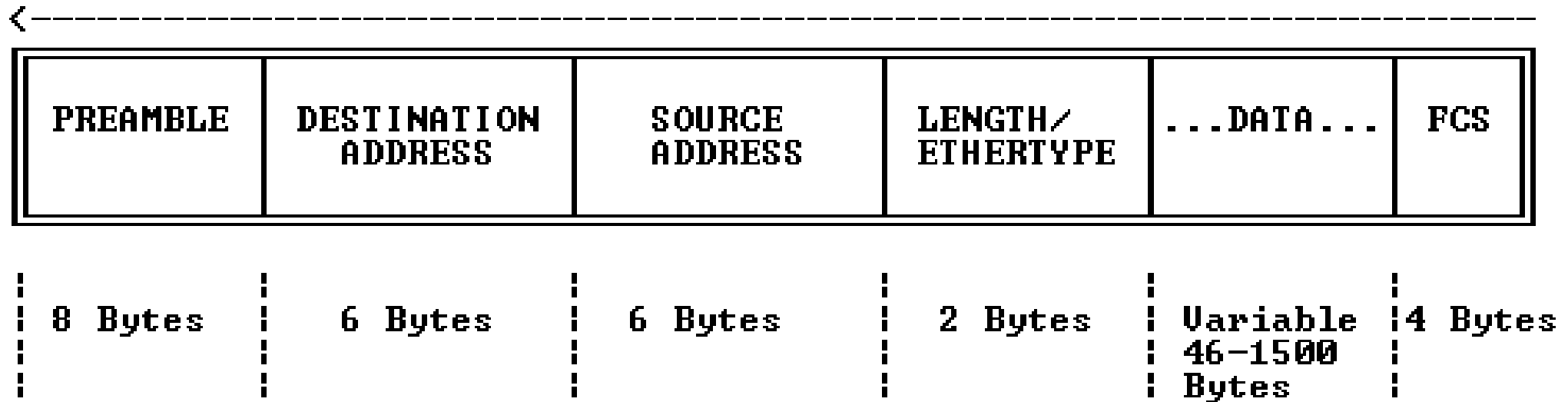
Sender

Receiver

Layer	Name	Terminology
7	Application	Data
6	Presentation	
5	Session	
4	Transport	Segment
3	Network	Packet
2	Data-Link	Frame
1		



The Ethernet Header



FCS: Frame Check Sequence

The Media Access Control MAC Address

- Ethernet uses a 48-bit hexadecimal MAC Address.
- The first 24 bits is the OUI (Organizationally Unique Identifier) which uniquely identifies the manufacturer of the Ethernet port. The OUI is assigned by the IEEE.
- The last 24 bits is vendor assigned.
- The burned in MAC address on every NIC port in the world is globally unique.
- Example - 00:50:56:C0:00:08



The 48-bit address space contains potentially 2^{48} or **281,474,976,710,656** possible MAC addresses.