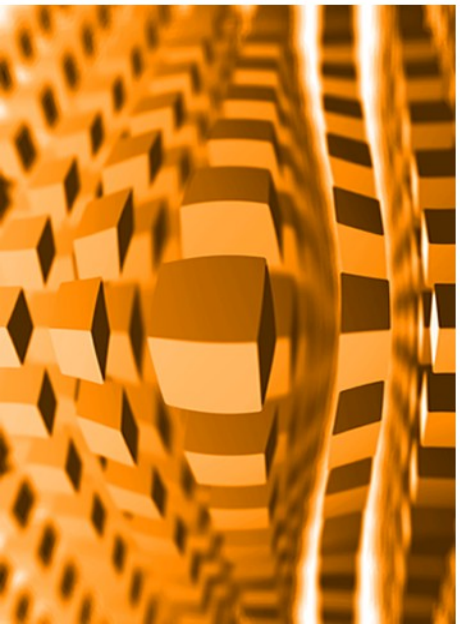
Providing Solutions for the World of Data Communications

OSI Model



The OSI Model

Open Systems Interconnection

- Standard Model for Data Communications
- Specified by International Standards Organization (ISO)
- Adopted by CCITT/ITU
- Official Model Explained in X.200 Series

The OSI Model

Layered Approach to Communications

- Seven Layers Altogether
- Each Layer Performs a Unique Function
- Each Layer Has Its Own Protocol
- Protocol Messages in Upper Layer is Data to Layer Below

The Seven Layers

Layer Name	Description	Examples
Application	User Level Processing	Telnet, FTP, Mail
Presentation	Data Representation & Syntax	ISO Presentation
Session	Sync Points and Dialogs	ISO Session
Transport	Reliable End to End	TCP
Network	Unreliable Thru Multi-Node Network	X.25 Pkt, IP
Link	Reliable Across Physical Line	LAPB, HDLC
Physical	Unreliable Wire, Telco Line	RS232, T1, 802.x

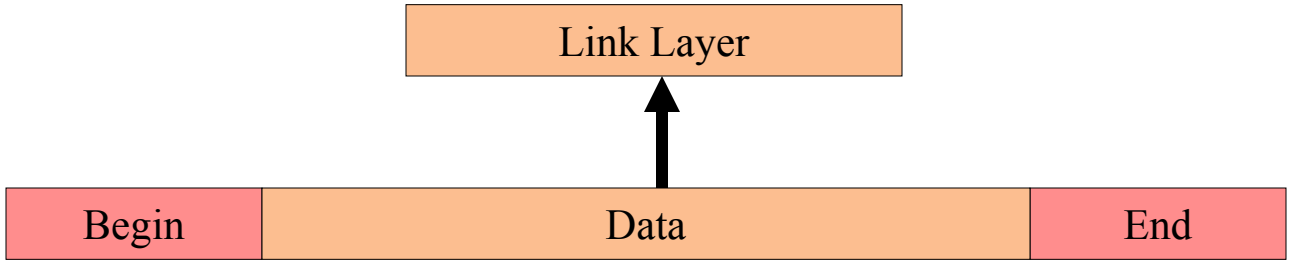
The Standards

Layer Name	Standards
Application	X.400, Telnet, FTP, Mail
Presentation	ASN.1, X.409
Session	X.225
Transport	X.224, TCP
Network	X.25 Pkt, Q.931, IP
Link	X.25 LAPB, Q.921 LAPD, ISO 3309 HDLC
Physical	RS232, V.35, EIA530, X.21, T1, E1

The OSI Model

Physical Layer

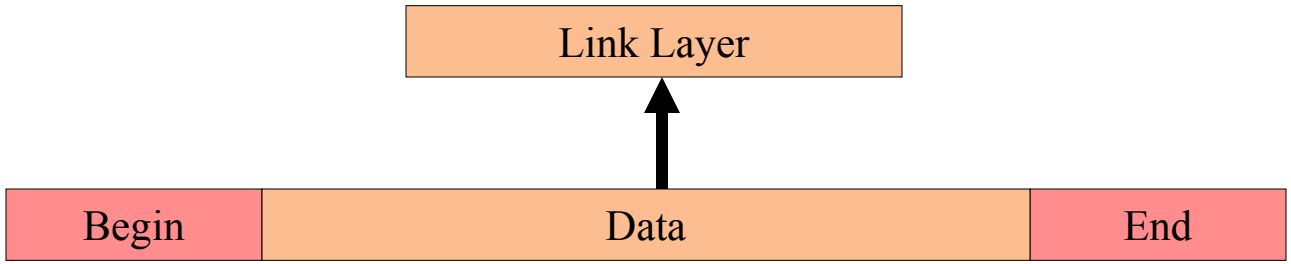
- Message Has Begin and End
- Data in between
- Data Passed up to Link Layer



The OSI Model

Physical Layer

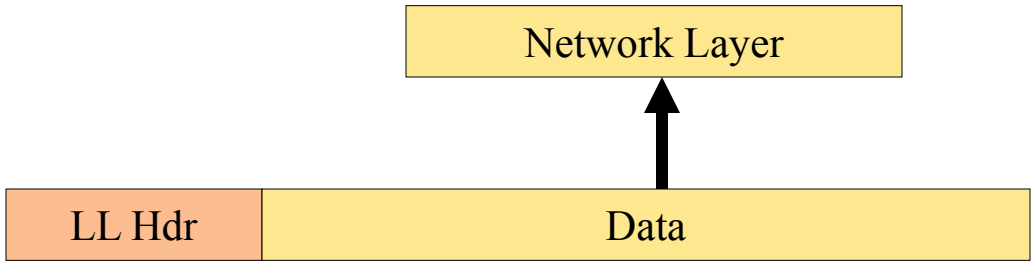
- Begin Can Be Flag or STX
- End Can Be Flag or ETX
- End May Include Check Sum (CRC)
- Data Transparency



The OSI Model

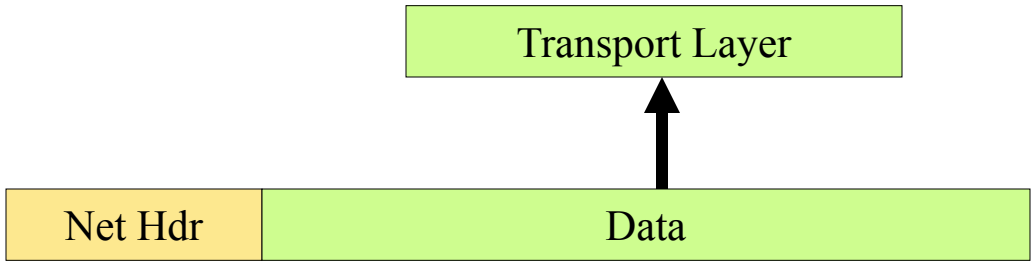
Link Layer

- Link Layer Header Has Frame Type
- Sequence and Acknowledgement Numbers
- Error Recovery Procedures
- Limited to Local Wire or Circuit



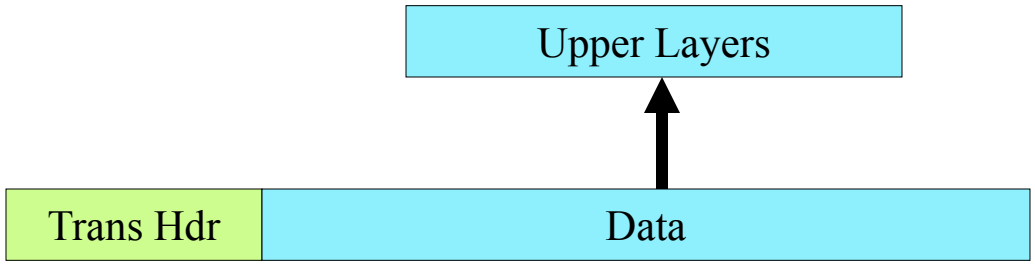
Network Layer

- Network Header Has Packet Type
- Sequence and Acknowledgement Numbers
- No Error Recovery -- Data Can Be Lost
- Addressing across Multi-Node Network



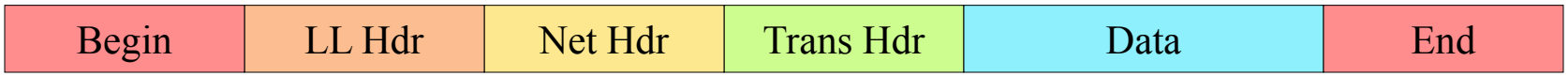
Transport Layer

- Transport Header Has Packet Type
- Sequence and Acknowledgement Numbers
- Error Recovery Is End to End
- Upper Layers Can Count on Reliability



Complete Picture

- A Message with All Headers
- Session, Presentation, Application Omitted



End of Presentation