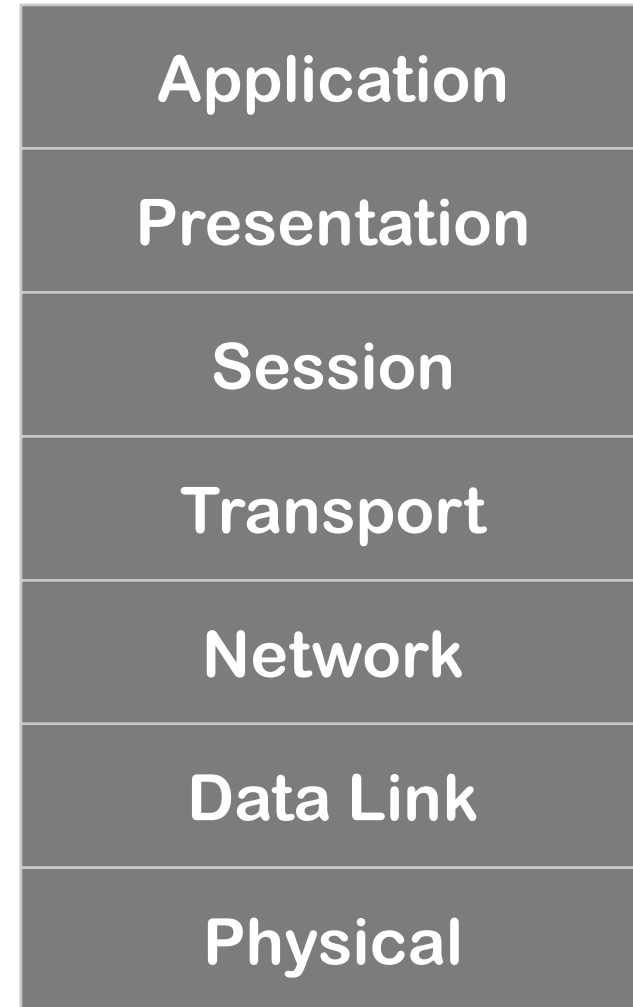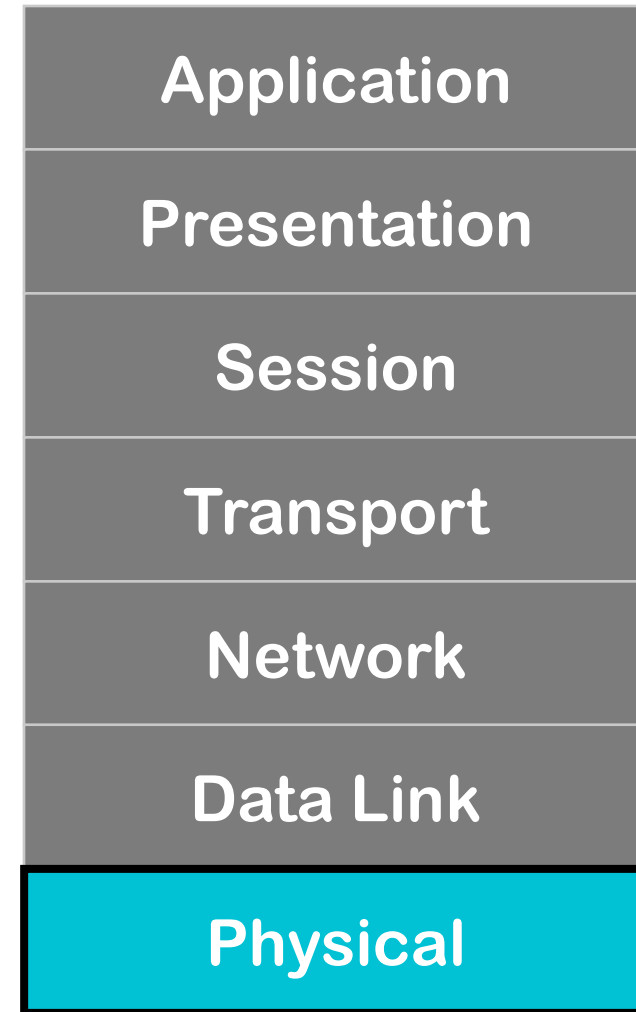# Networking

## OSI Model

# OSI Model

- Conceptual framework
  - Controlled by the International Standards Organization
- 7 Layers
  - From bit level to human readable
- A tool created to visualize how data moves on a network

| Application |
|:---:|
| Presentation |
| Session |
| Transport |
| Network |
| Data Link |
| Physical |

# Physical Layer

- Concerned with signal propagating from "here" to "there"
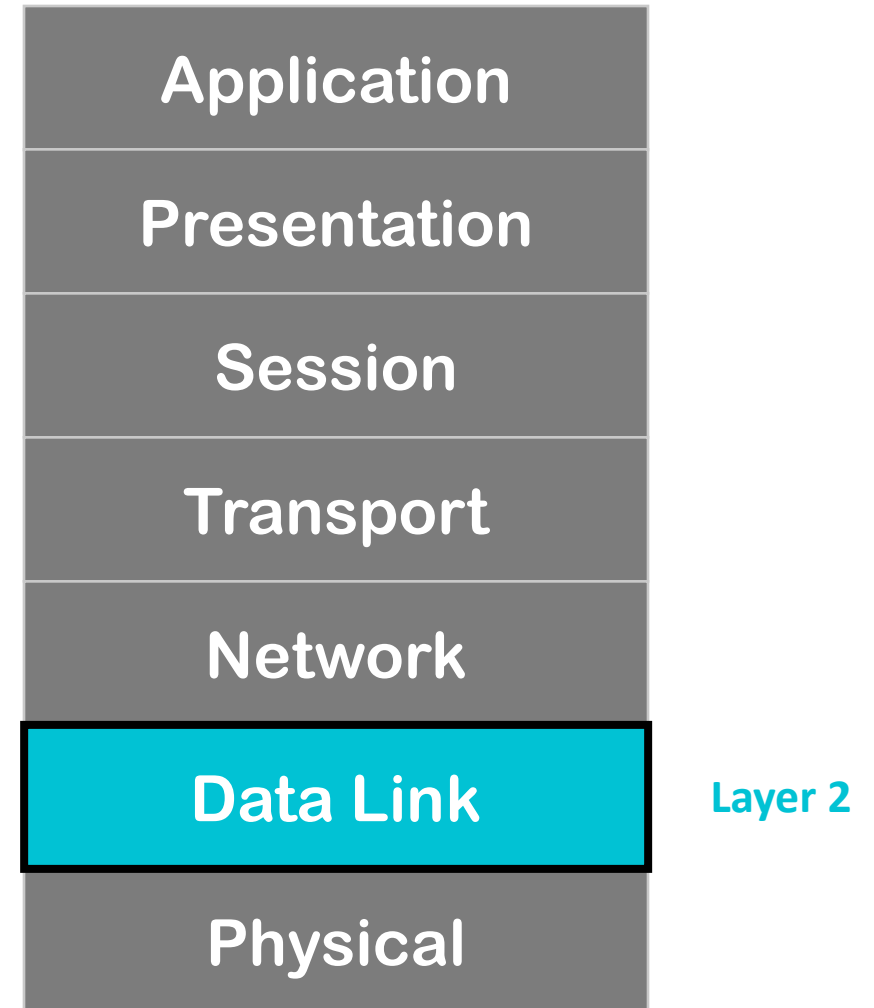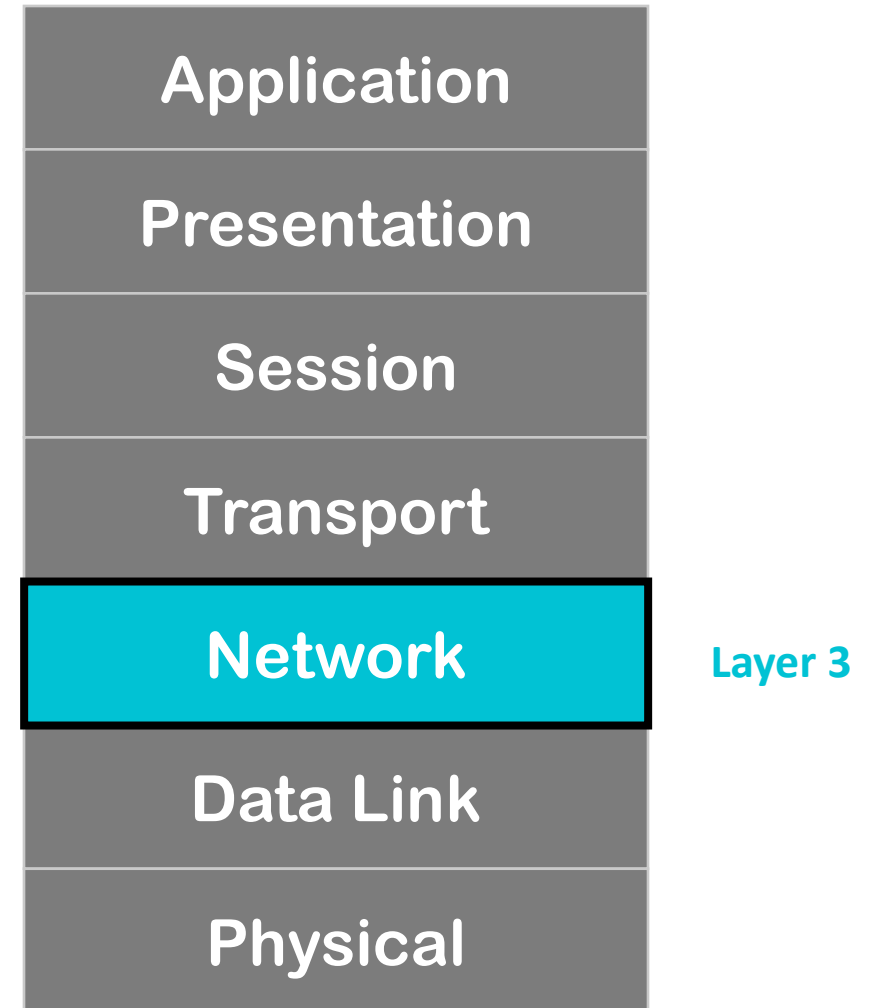- 1 and 0 – however that may be expressed
  - Light, voltage, radio wave

| |
|---|
| **Application** |
| **Presentation** |
| **Session** |
| **Transport** |
| **Network** |
| **Data Link** |
| **Physical** |

Layer 1

# Data Link Layer

- Makes sense of pulses, the 1s and 0s
- Recombines the pulses into collections of data

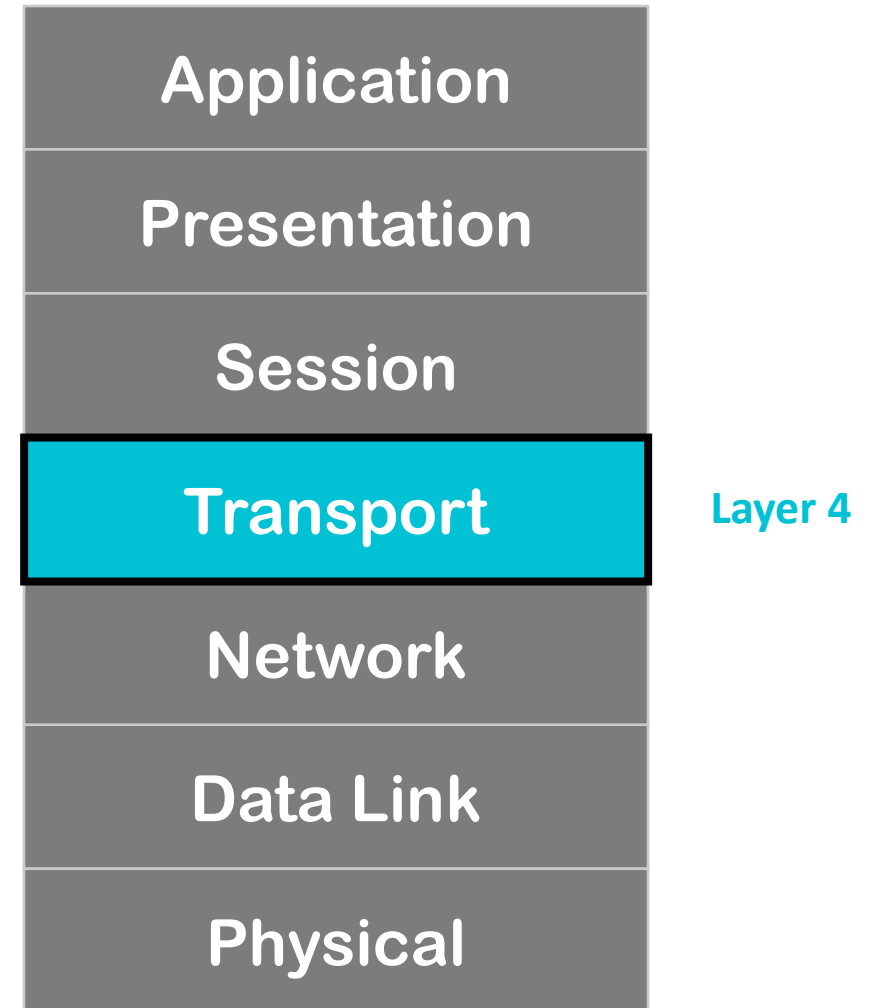| |
|---|
| Application |
| Presentation |
| Session |
| Transport |
| Network |
| **Data Link**   Layer 2 |
| Physical |

# Network Layer

- Addressing, routing, path finding, collision detection/avoidance
- Which *path* the data takes from here to there

| |
|---|
| Application |
| Presentation |
| Session |
| Transport |
| Network |
| Data Link |
| Physical |

**Layer 3**

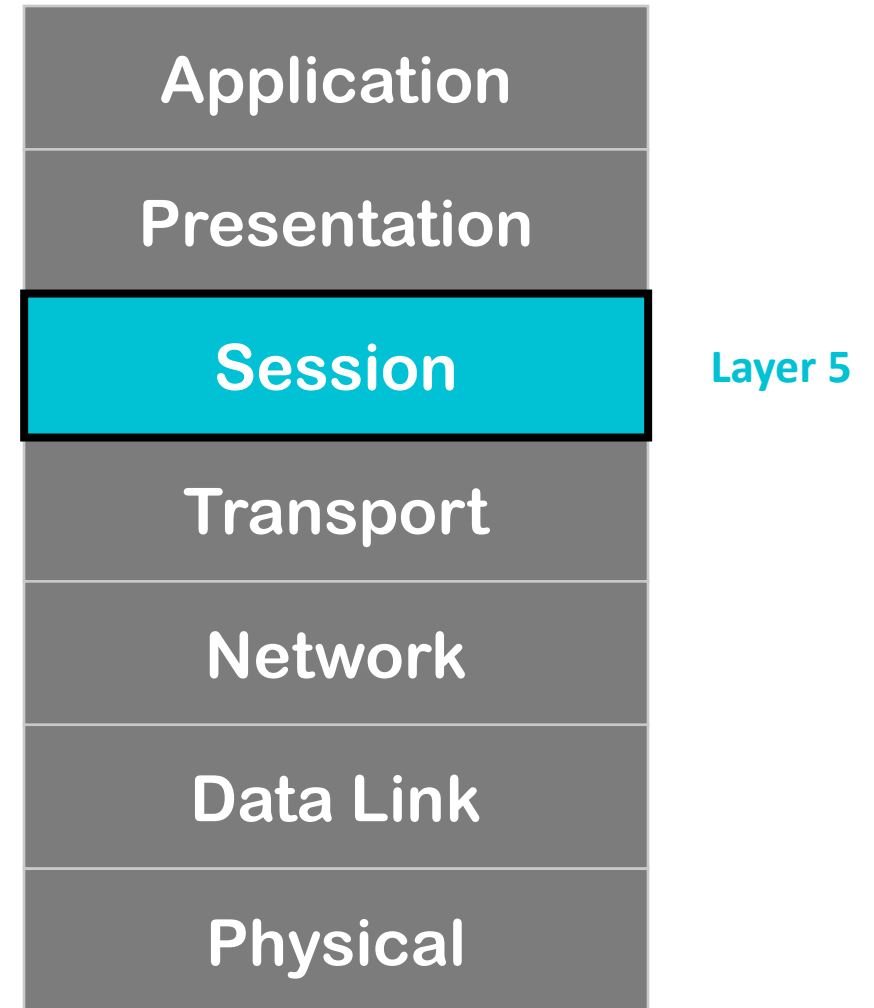# Transport Layer

- Supports reliable communication over unreliable medium*
- Synchronization, acknowledgement of sending/receiving

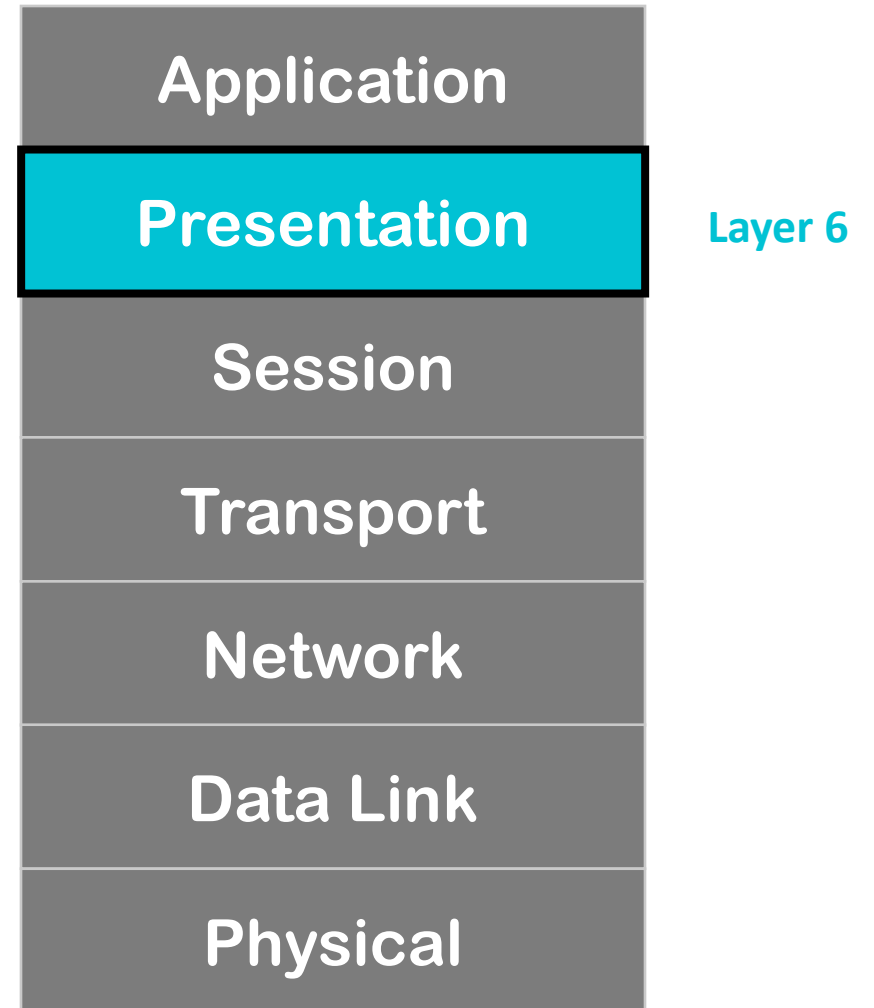| |
|---|
| **Application** |
| **Presentation** |
| **Session** |
| **Transport** |
| **Network** |
| **Data Link** |
| **Physical** |

**Layer 4**

# Session Layer

- Breaks data into "chunks" to be transmitted or received across several sessions.
- Phone book through tube

| | |
|---|---|
| Application | |
| Presentation | |
| **Session** | Layer 5 |
| Transport | |
| Network | |
| Data Link | |
| Physical | |

# Presentation Layer

- Converts data from compressed, encrypted, encoded form into digestible "plain text" form

| Application |
|:---:|
| **Presentation** |
| Session |
| Transport |
| Network |
| Data Link |
| Physical |

**Layer 6**

# Application Layer

- Links the user and the information
- Provides meaning and visualization of data for human (or device) use

| | |
|---|---|
| **Application** | **Layer 7** |
| **Presentation** | |
| **Session** | |
| **Transport** | |
| **Network** | |
| **Data Link** | |
| **Physical** | |