Protocols Continued

- **Physical Protocols**: describe the medium (wiring), the connections (RJ-45 port), and the signal (voltage level on a wire).
- **Logical Protocols**: software controlling how and when data is sent and received to computers, supporting physical protocols.
- Computer networks depend on many different types of protocols in order to work properly.
- Example Common TCP/IP Suite of Protocols:
  - **Web Communication**: HTTP
  - **E-mail**: POP3, SMTP, IMAP
  - **File Transfers**: FTP

The OSI Model

What is it?

The *Open Systems Interconnection (OSI) Reference Model*

- A **conceptual** framework showing us how data moves throughout a network.
- Developed by the International Organization for Standardization (ISO) in 1977.

It's Purpose

- Gives us a guide to understanding how networks operate.

It's only a **reference model**, so don't get wrapped up in the details.

- Wasn't implemented in the **real world**, TCP/IP is.

The OSI Model Stack

The OSI Model breaks down the complex task of computer-to-computer network communications into seven layers.

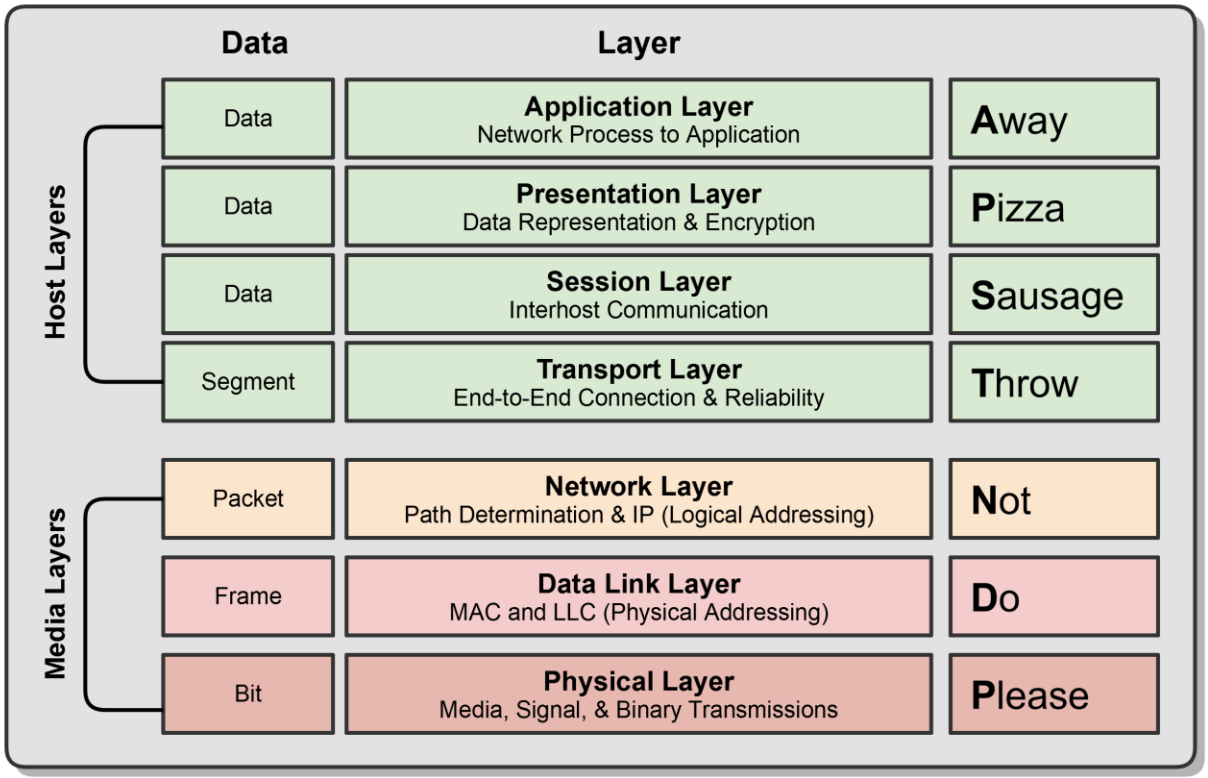
Upper Layers (Host Layers)

- Handled by the host computer and performs application-specific functions, such as data formatting, encryption, and connection management.

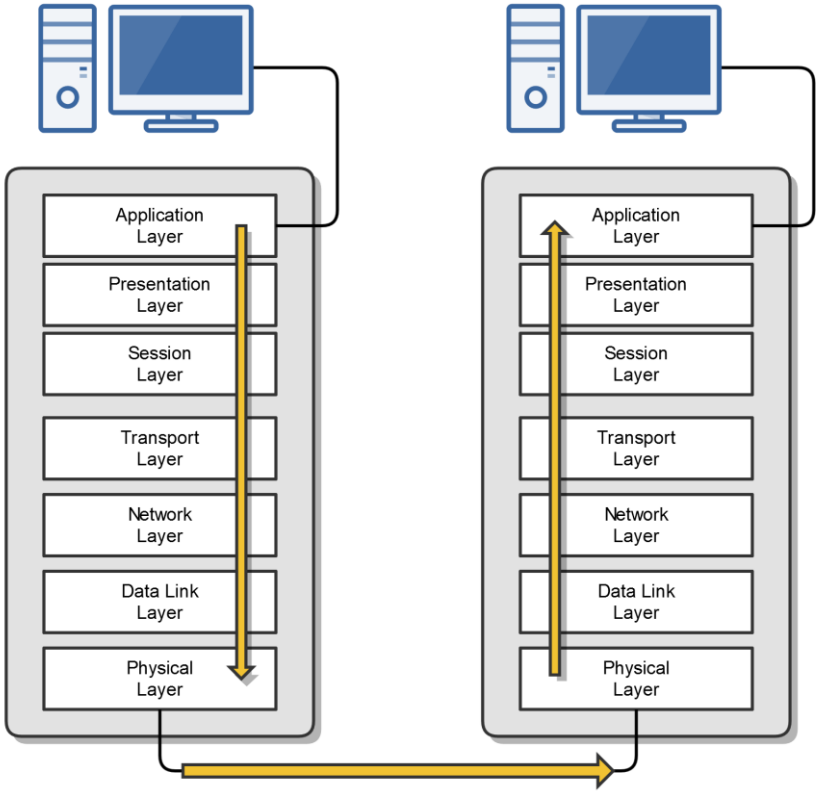
Lower Layers (Media Layers)

- Provide network-specific functions, such as routing, addressing, and flow control.

The OSI Model Visualized

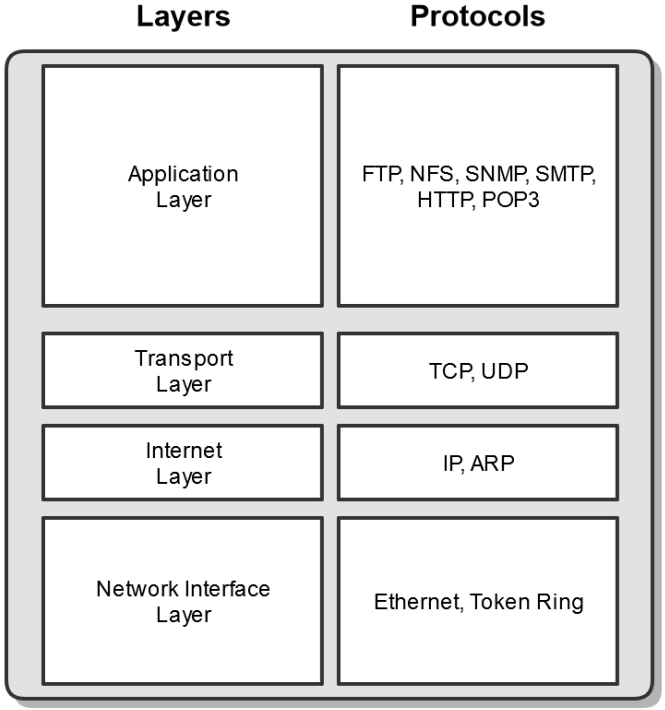


OSI Communication



The TCP/IP Model

- The TCP/IP suite is the most commonly used protocol suite in the networking world.
- It's essentially the protocol suite in which the Internet was built.
- It's the standard for computer networking.
- It is based on a 4-layer model that is similar to the OSI model.
- History of TCP/IP:
  - Developed by the United States Department of Defense (DoD) in the early 1970s.
  - In 1982, the DOD declared TCP/IP as the standard for all military computer networking.
  - In 1984, broad adoption of TCP/IP began (IBM, AT&T, etc.).



TCP/IP & OSI Models Side-by-Side