Layered Model

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1 Layered Model

1.1 Physical Layer

Responsible for the transmission of raw bits over a physical medium from point A to B.

- Ethernet, bluetooth, wifi, etc.
- No addressing required

1.2 Link Layer

Responsible for local network communication, how data is packaged into frames, and ensuring error-free data transfer between nodes.
Protocols around Ethernet / Wi-Fi are in this layer.
Typically, MAC addressing is used.

1.3 Internetork Layern

Responsible for logical addressing, routing, and forwarding data between networks.

1.4 Transport Layer

Ensures reliably communication between applications across networks. Uses UDP Datagrams or Segments. Typically used with ports.

> How are we delivering the data to/from the application?

1.5 Application Layer

Provides protocols for end-user applications. Application layer is like an API for the transport layer.

1.5.1 Client-Server Model

- A client is a host that sends requests to a server to get data.
- A server is a host that provides data to clients.

Any host on a network could act as either a client or server.
For clients to be able to connect to servers, they need to know its server address.

Servers	Clients
Operate continuously	Request services
Provide services to many clients	Operate intermittently
At a known location	Don't need to be at a known location

1.5.1.1 Load Balancing Use multiple machines, with a server forwarding data to other machines.

1.5.1.2 Proxy Cache

1.5.1.3 Client Cache

2 Socket API

Originally developed for Berkley Unix (1983) Acts like a 2-way pipe, with two services supported:

Stream reliably send a sequence of bytes

Datagram unreliably send messages