What is the Web?

An introduction to the basic structure of the Internet and how your web application fits into it.

The web, simply put, is a network spread across the globe that connects a multitude of devices and allows them to communicate with one another. Websites on the Internet are hosted on devices referred to as **servers**, and when you're interacting with a webpage on the Internet, what you're essentially doing is exchanging data with the server that the website is hosted on. The device that you're accessing the webpage using is referred to as the **client** in the context of the web. In short, the web enables the exchange of data between clients and servers through several elaborate mechanisms that we will be discussing in this chapter.

Network layers

Since the web is an immensely intricate and widespread network, machines within the network are typically divided into abstract layers, each of which performs a specific task that aids in the overall communication process. The layers are enumerated below:

1. Application Layer
2. Transport Layer

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3. Network Layer

4. Data Link Layer

5. Physical Layer

Each layer is built on top of the previous layer and has protocols that implement specific functionalities that are involved in the data exchange process.

Layers Within End-systems
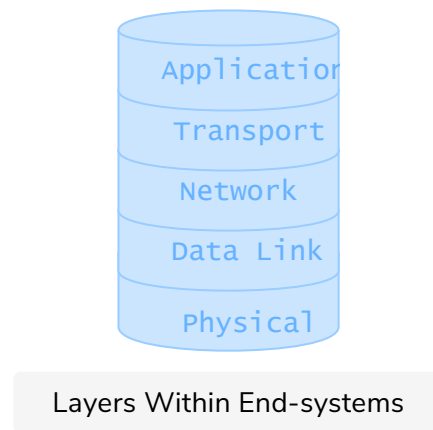
In the remaining lesson, we will briefly outline the purpose of each layer, starting from the bottom layer and building up to the topmost layer.

Physical layer

The physical layer of a machine refers to the physical wiring and circuits that go into making the machine available on the network.

Data link layer

The data link layer is responsible for transmitting data from any given machine to a device or machine that is exactly one link away.

Network layer

The network layer is responsible for connecting any two machines on the Internet. It provides global connectivity and allows for end-systems to communicate with one another on a large scale, beyond what the data link layer has to offer.

Transport layer

The transport layer is responsible for connecting applications on the Internet.

It demultiplexes data coming in from a single source and transmits it to the application it is intended for. The basic purpose of the transport layer in the context of the web is that it provides process-to-process communication; it allows two individual processes on either the same machine or separate machines to send messages to each other. To do so, it uses **sockets**, which are essentially just the gateway to a process. In other words, sockets are the means through which messages are received and sent out by a process.

Application layer

The application layer is responsible for process-to-process communication across the Internet. It is the topmost layer in the hierarchy, and the application itself is built on top of this. The application layer provides a communication interface and end-user services to the application for its communication with single processes.

Quick quiz!

<table>
<tr><td>1</td><td>The world wide web and the Internet are the same</td></tr>
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That covers the basic idea of what the web is and what abstractions it imposes on the machines that are connected to form it. In the next lesson, we will be looking into how the protocols defined on these abstractions aid the functionality of the Internet.