**Network Protocols**

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**IP**

Stands for Internet Protocol. This network protocol outlines how almost all machine-to-machine communications should happen in the world. Other protocols like TCP, UDP and HTTP are built on top of IP.

**TCP**

Network protocol built on top of the Internet Protocol (IP). Allows for ordered, reliable data delivery between machines over the public internet by creating a connection.

TCP is usually implemented in the kernel, which exposes sockets to applications that they can use to stream data through an open connection.

**HTTP**

The HyperText Transfer Protocol is a very common network protocol implemented on top of TCP. Clients make HTTP requests, and servers respond with a response.

Requests typically have the following schema:

host: string ( example: algoexpert.io)

port: integer ( example: 80 or 443)

method: string ( example: GET, PUT, POST, DELETE, OPTIONS or PATCH)

headers: pair list ( example: "Content- Type" => "application/json")

body: opaque sequence of bytes

Responses typically have the following schema:

status code: integer ( example: 200, 401)

headers: pair list ( example: "Content-Length" => 1238)

body: opaque sequence of bytes

**IP Packet**

Sometimes more broadly referred to as just a (network) packet, an IP Packet is the smallest unit used to describe data being sent over IP, aside from bytes. An IP packet consists of:

* an IP header, which contains the source and destination IP addresses as well as other information related to the network
* a payload, which is just the data being sent over the network