**Definition of HTTP:**

The **Hypertext Transfer Protocol** (**HTTP**) is an application layer protocol in the Internet. HTTP is the foundation of data communication for the World Wide Web. **HTTP** functions as a request–response protocol in the client–server model. The client submits an HTTP request message to the server. The server, which provides resources such as HTML files and other content or performs other functions on behalf of the client, returns a response message to the client

Diagram

Description automatically generated

**HTTP1.1 Evolution:**

HTTP/1.1, the first standardized version of HTTP, was introduced in 1997

*Key features:*

* It can persist the connections. It allowed multiple requests/responses per TCP connection.
* The header of the request provides more details
* HTTP/1.1 provided support for chunk transfers that allowed streaming of content
* Other features are that reinforced its stability were introduced such as:
  + pipelining
  + content negotiation
  + cache control

**HTTP2 Key features:**

* It introduces the concept of a server push where the server sends more resources that will be required by the client in later by using some algorithm

Diagram

Description automatically generated

Server push

* Provides the concept of multiplexing that leaves the requests and responses without blocking and that help to transfer the data through a single TCP connection.
* It is binary controlled with 0’s and 1’s.

**Difference between the HTTP1.1 and HTTP 2**

|  |  |  |
| --- | --- | --- |
| Description | HTTP 1.1 | HTTP 2 |
| Introductory Year | 1997 | 2015 |
| Key features | It can persist the single connection after the response. for every TCP connection there could be multiple requests and responses, and pipelining | Uses multiplexing, where over a single TCP connection resource to be delivered are interleaved and arrive at the client almost at the same time. |
| Status code | Can define 24 status codes, error reporting is quicker and more efficient | Underlying semantics of HTTP such as headers, status codes remain the same. |
| Security level | Secured | More secured than HTTP1.1 |
| Caching | Expands on the caching support by using additional headers like cache-control, conditional headers like If-Match and by using entity tags. | With the server push feature if the client finds the resources are already present in the cache, it can cancel the pushed stream. |
| Performance | Faster transfer of data | Faster compared to |