Introduction[1]

Hyper Text Transfer Protocol or more commonly known as 'HTTP' is an application layer protocol by which web based application communicate with each other. This is also TCP/IP model based protocol. It is used to share/ deliver contents such as documents, images, audios, videos, etc. Essentially, HTTP enables various intermediate elements of the networks to communicate with each other via a set of rules defined by Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C).

HTTP came into use in 1990 by World Wide Web global information initiative. Initially, it has got only 'GET' method that retrieved an html page in response. In May 1996, finally the HTTP/1.0 was published. In January 1997, HTTP/1.1 was officially release, although, its elements were already in use by the time got it released through the information available from HTTP/1.1 draft. Later on in March 2012, HTTP/2 was released and consequently HTTP/3 was released in June 2022.

Brief Details of HTTP Version [2]

HTTP 1.0 was markedly different from its earlier version, as it added utilities such as Header, Versioning, Status Code, Content Type, and New Methods such as POST & HEAD.

HTTP 1.1 which was released just a year later included relevant enhancements like:

Host header: HTTP 1.0 does not officially require the host header. HTTP 1.1 requires it by the specification. The host header is especially important to route messages through proxy servers, allowing to distinguish domains that point to the same IP

Persistent connections: in HTTP 1.0, each request/response pair requires opening a new connection. In HTTP 1.1, it is possible to execute several requests using a single connection

Continue status: to avoid servers refusing un processable requests, now clients can first send only the request headers and check if they receive a continue status code (100)

New methods: besides the already available methods of HTTP 1.0, the 1.1 version added six extra methods: PUT, PATCH, DELETE, CONNECT, TRACE, and OPTIONS

In addition to the above mentioned enhancements, there are many others introduced in version 1.1 of HTTP, such as compression and decompression, multi-language support, and byte-range transfers. In addition to the highlighted enhancements, there are many others introduced in version 1.1 of HTTP, such as compression and decompression, multi-language support, and byte-range transfers.

Specifically, the new methods represented a real improvement in using HTTP. The PUT methods got in charge of replacing already existing resources. The PATCH method updates particular data of an already existing resource. On the other hand, DELETE removes an already existing resource.

The HTTP CONNECT can create a tunnel through a proxy server. TRACE executes a loopback test in the path from a client to the destination server. Finally, OPTIONS returns information about the available communications options with the server.

HTTP 2.0 was released 18 years after the previous version and it focussed on improving protocol performance.

HTTP 2.0 implemented several features to improve connections and data exchange. Let's see some of them:

Request multiplexing: HTTP 1.1 is a sequential protocol. So, we can send a single request at a time. HTTP 2.0, in turn, allows to send requests and receive responses asynchronously. In this way, we can do multiple requests at the same time using a single connection

Request prioritization: with HTTP 2.0, we can set a numeric prioritization in a batch of requests. Thus, we can be explicit in which order we expect the responses, such as getting a webpage CSS before its JS files

Automatic compressing: in the previous version of HTTP (1.1), we must explicitly require the compression of requests and responses. HTTP 2.0, however, executes a GZip compression automatically

Connection reset: a functionality that allows closing a connection between a server and a client for some reason, thus immediately opening a new one

Server push: to avoid a server receiving lots of requests, HTTP 2.0 introduced a server push functionality. With that, the server tries to predict the resources that will be requested soon. So, the server proactively pushes these resources to the client cache

Furthermore, HTTP 2.0 became a binary protocol, replacing the previous HTTP plain text versions. In summary, we can see HTTP 2.0 as a patch of enhancements to solve the problems and limitations of the last HTTP versions.

Quick Comparison between HTTP 1.1 and HTTP 2.0[3]

HTTP/1.1	HTTP/2
It works on the textual format.	It works on the binary protocol.
There is head of line blocking that blocks all the requests behind it until it doesn't get its all resources.	It allows multiplexing so one TCP connection is required for multiple requests.
It uses requests resource Inlining for use getting multiple pages	It uses PUSH frame by server that collects all multiple pages
It compresses data by itself.	It uses HPACK for data compression.

Bibliography:

1) https://en.wikipedia.org/wiki/HTTP

2) https://www.baeldung.com/cs/http-versions

3) https://www.geeksforgeeks.org/difference-between-http-2-and-http-1-1/