**Difference between HTTP1.1 vs HTTP2**

***Introduction***

As soon as a user opens their web browser, they are indirectly using HTTP. **Hypertext Transfer Protocol** (**HTTP**) is the set of rules for transferring files - such as text, images, sound, video and other multimedia files - over the web. Development of HTTP was initiated by [Tim Berners-Lee](https://en.wikipedia.org/wiki/Tim_Berners-Lee) at [CERN](https://en.wikipedia.org/wiki/CERN) in 1989.

HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access, for example by a mouse click or by tapping the screen in a web browser.

***Evolution***

The first version of HTTP protocol soon evolved into a more elaborated version that was the first draft toward far future versions. During the time when ‘www’ was spreading like wildfire by the humongous growth of personal computers in living rooms and bedrooms across the globe, the commonly used version was HTTP/1.1.

The latest to occupy its space is HTTP/2. Published in 2015, it provides a more efficient expression of HTTP's semantics "on the wire". Even though it is succeeded by HTTP/3, its still used in most existing PC’s.

**HTTP/1.1**

In HTTP/1.0 a separate connection to the same server is made for every resource request. In HTTP/1.1 instead a TCP connection can be reused to make multiple resource requests (i.e. of HTML pages, frames, images, scripts, stylesheets, etc.). So the **HTTP/1.1** communications therefore experience less latency as the establishment of TCP connections presents considerable overhead, especially under high traffic conditions.

It was introduced as the evolved version of HTTP/1.1 in 1997 and then its specifications were updated in 1999, 2014, and 2022. Its secure variant named HTTPS is used by more than 80% of websites.

**HTTP/2**

HTTP/2 is a revision of previous HTTP/1.1 in order to maintain the same client–server model and the same protocol methods but with these differences in order:

* to use a compressed binary representation of metadata (HTTP headers) instead of a textual one, so that headers require much less space;
* to use a single TCP/IP (usually encrypted) connection per accessed server domain instead of 2 to 8 TCP/IP connections;
* to use one or more bidirectional streams per TCP/IP connection in which HTTP requests and responses are broken down and transmitted in small packets to almost solve the problem of the HOLB (head of line blocking).
* to add a push capability to allow server applications to send data to clients whenever new data is available (without forcing clients to periodically request new data to server by using polling methods).

HTTP/2 communications therefore experience much less latency and, in most cases, even more speed than HTTP/1.1 communications.

***Future***

Both HTTP 1.1 and HTTP2 will obviously be replaced by newer and improved versions. The change has already begun with the introduction of HTTP3 which would revise the existing HTTP2 in order to use QUIC + UDP transport protocols instead of TCP/IP connections also to slightly improve the average speed of communications and to avoid the occasional (very rare) problem of TCP/IP connection congestion that can temporarily block or slow down the data flow of all its streams.