## HTTP2 Vs. HTTP1.1 or HTTP1.1 Vs. HTTP2

## Let’s Understand The Two Protocols :

HTTP/1.1 (1997) has been around for more than a decade. With Google’s SPDY leading the way in 2015, the IETF (Internet Engineering Task Force) gave us HTTP/2 (2015), which introduces several features to reduce page load times. Let’s compare HTTP2 Vs. HTTP1.1 in detail.

HTTP/2 achieves faster webpage loading without performance optimizations that require extensive human efforts in terms of development. It significantly reduces the complexities that had crept into HTTP/1.1 and gives us a robust protocol.

The Beginnings of HTTP & The Internet

Our story begins in 1969, with a program called Advanced Research Projects Agency Network (ARPANET). ARPANET used packet switching and allowed multiple computers to communicate with each other on a single network. However, this was just a by-product. The original intention behind ARPANET was to design a time-sharing system that allowed research institutes to share their computer resources for effective utilization of processing power.

## Evolution of HTTP

HTTP (Hypertext Transfer Protocol) is a set of rules that runs on top of the TCP/IP suite of protocols and defines how files are to be transferred between clients and servers on the world wide web.

Key Features of HTTP/1.1:

* It was no longer required for each connection to be terminated immediately after every request was served with a response; instead, with the keep-alive header, it was possible to have persistent connections. It allowed multiple requests/responses per TCP connection.
* The Upgrade header was used to indicate a preference from the client that made it possible to switch to a more preferred protocol if found appropriate by the server.
* HTTP/1.1 provided support for chunk transfers that allowed streaming of content dynamically as chunks and for additional headers to be sent after the message body. This enhancement was particularly useful in cases where values of a field remained unknown until the content had been produced. For example, when the content had to be digitally signed, it was not possible to do so before the entire content gets generated.

The Protocol Designed to Speed Up Today’s Complex Web pages: HTTP/2

At the beginning of 2010, Google introduced an experimental protocol, SPDY, which supported multiplexing (multiple requests/responses sent and received asynchronously over a single TCP connection) but as it gained traction IETF’s HTTP Working Group came up with HTTP/2 in 2015, which is based on the SPDY protocol.

Key Features of HTTP/2:

* It introduces the concept of a server push where the server anticipates the resources that will be required by the client and pushes them prior to the client making requests. The client retains the authority to deny the server push; however, in most cases, this feature adds a lot of efficiency to the process.
* Introduces the concept of multiplexing that interleaves the requests and responses without head-of-line blocking and does so over a single TCP connection.
* It is a binary protocol i.e. only binary commands in the form of 0s and 1s are transmitted over the wire. The binary framing layer divides the message into frames that are segregated based on their type – Data or Header. This feature greatly increases efficiency in terms of security, compression and multiplexing.
* HTTP/2 uses HPACK header compression algorithm that is resilient to attacks like CRIME and utilizes static Huffman encoding.

*HTTP – Hyper Text Transfer Protocol*

*TCP – Transmission Control Protocol*

*IETF – Internet Engineering Task Force*

*ARPANET - Advanced Research Projects Agency Network*

*SPDY – Speed (Pronounced)*