Differences between HTTP1.1 and HTTP2

**Author : Anupama K**

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# History of HTTP

Hyper Text Transfer Protocol is an application layer communication protocol that allows exchange of data on the world wide web. Tim Berners Lee began developing the HTTP in 1989.

The term HTTP was introduced by Ted Nelson.

HTTP follows the client server model wherein a request originates at the client end and is responded to by the server. This is achieved by client side by sending a connection request to the server. The server responds likewise with the data requested.

This relies on the network layer protocols such as Transmission Control Protocol (TCP) or occasionally the User Datagram Protocol (UDP).

# Versions and Timelines

**HTTP0.9**: 1991

This was a simple protocol for transmission of raw data over the internet.

**HTTP1.0**: 1996

A new connection was opened and closed for each request adding to the overhead

**HTTP1.1**: 1997, HTTPS (secure) was introduced as well.

**HTTP2.0**: 2014

# HTTP1.1

* This version was released in 1997.
* A single connection remains available for multiple requests from the application layer to be pipelined into a single transport layer segment. This reduces the overhead which was observed in HTTP1.0
* In HTTP1.1 resources are loaded in sequence that they arrive. If one response is delayed the subsequent arrivals are also delayed, known as Head of Line blocking.
* Also, compression mechanism for the data is incorporated which allows substantial improvement in network traffic.
* Maintained text format for data.

# HTTP2

* This upgraded version was released in 2014.
* **Multiplexing :** HTTP2offers higher speed and multiplexing of multiple requests over single connection. This allows new requests to be issued over the same connection without awaiting the old requests to complete. Thus it overcomes **Head of Line** **blocking**.

Data is in binary format and numbered so as to identify the stream to which each chunk of data belongs to.

* **Server push:** Client side requests are responded to with exact response from the server in earlier HTTP version. But the server push concept in HTTP 2 performs a server push along with an indication of the additional information response. This prevents multiple to and from requests and responses.
* **Header Compression:** HTTP 2 uses a more advanced header compression technique HPACK, which further speedens up the loading of web pages.
* Data is sent in binary format.

# Differences

|  |  |
| --- | --- |
| **HTTP1.1** | **HTTP2** |
| Text format of data exchange | Binary format of data exchange |
| Single request over one TCP connection, leads to creation of multiple TCP connections. | Multiple requests are combined over a single TCP connection. Reduces network overload. |
| Header compression available | HPACK header compression technique is more effective than the earlier technique. |
| Every response from the server corresponds to a request from the client | Server pushes additional information for every request that consequently reduces overhead. |

# Advantages of HTTP2

* It is more efficient reduces network congestion
* Page loading time is reduced.
* Avoids head-of-line blocking
* It is backward compatible with HTTP1.1.