HTTP1.1 vs HTTP2

**What is HTTP?**

The Hypertext Transfer Protocol is a base for any data transfer in the web world. It is an application layer protocol used to transmit docs like HTML. This Protocol is used by world wide web (www). HTTP development was started by Tim Berners-Lee at CERN in 1989. In simple words when Server Transmits any data to client’s browser, this transferring of data occurs in some specific format. This format of transferring is called HTTP. HTTP browser can understand HTML format.

**HTTP - Hyper Text Transfer Protocol**

PROTOCOL - A set RULES

HYPER- a special txt.

TEXT TRANSFER PROTOCOL - transferring a text with certain rules.

We got many updates in HTTP. The first version is named 0.9 in 1991.

Later in 1997 HTTP1.1 was introduced and used as a standard version for two decades. After in 2015 HTTP2 became standardized.

**HTTP1.1**

It gave persistent connection, cache control mechanisms, chunked transfer encoding & etc.., It is low in latency and good efficiency of web communications.

Http1.1 preformed well in simple tasks but struggles with newly developed modern web applications which is linked to numerous resources that is to be loaded quickly. It lacks of multiplexing and other performance, which makes it less efficient for modern complex web pages of that time during 2010 to 2015.

**Key features of HTTP1.1:**

1. **Persistent Connections:** HTTP1.1 introduced persistent connections, allowing multiple request and responses to be transferred over a single Transmission Control Protocol connection (TCP - i.e. a common protocol used to deliver data in digital network communications). So, this reduces the creations of new connections.
2. **Chunked Transfer Encoding:** This method allows data to be sent in chunks, creating it possible to start sending a response before transmitting the whole size of data. It improves the responsiveness of web applications.
3. **Pipelining:** This feature allows a client to send multiple requests without waiting for each response. But has its limitations.

**HTTP2**

It is the recent upgrade to on HTTP protocol. This was developed to overcome the limitations of HTTP1.1. It has improved performance, efficiency, and security to survive around the new technologies.

Http2 has various new features such as multiplexing, server push, header compression, etc. which makes browsing faster and more efficient.

Http2 has less latency, improved page load times, and optimizing resource usage.

**Key features of HTTP1.1:**

1. **Binary Protocol:** This are read by machine not by humans.

http1.1 is a text-based protocol but http2 is a binary protocol. This allows more efficient processing of data.

1. **Multiplexing:** Multiple requests and responses can be transmitted concurrently over a single connection, replacing an issue in http1.1 knowns as head-of-line blocking.
2. **Header Compression:** Http2 uses HPACK compression to reduce the size of headers. This is helpful in websites with large and repetitive headers, as it reduces the amount of data transmitted over the network.
3. **Server Push:** It is a feature that allows the server to send resources to client proactively, without waiting for request from the client.

**HTTP1.1 vs HTTP2**

1. **Connections:**

HTTP1.1 use multiple connections to handle multiple requests, leading to inefficiency.

Whereas HTTP2 uses a single connection for multiple requests &responses using multiplexing, which improves performance and reduces latency.

1. **Data Format:**

HTTP1.1 is a text-based protocol, which is less efficient and slower to parse (a resolver).

Whereas HTTP2 uses binary protocol, which allows for more efficient data processing and reduces errors.

1. **Performance:**

HTTP1.1 has an issue from head - of – line blocking and inefficient use of network resources.

HTTP2 overcomes the head of line blocking, improves network utilization, and offers better performance through features like multiplexing and server push.

1. **Security:**

In HTTP1.1 security is not inherent but can be added via HTTPS

(HTTPS – secured connection).

HTTP2 is designed to work seamlessly with HTTPS, which promotes more secure connections by default.

**Why HTTP2!**

1. **Faster Load Times:**

Because of multiplexing, header compression, and server push all contribute to faster page load times, improving the user experience.

1. **Reduced Latency:**

More efficient use of network resources and reduced overhead lead to less latency.

1. **Better Resource usage:**

Single connections for multiple requests reduce resource consumption and improve scalability.

1. **Improved Security:**

Stronger integration with Https ensures more secure data transfers.

**Conclusion**

Http1.1 is used as standardversion and served the web for two decades, but Http2 offers more improvements and overcomes the limitations faced on Http1.1 which is needed in the modern web applications. By reducing latency, increasing data transfer efficiency, enhancing security, Http2 provides strong base for the new web applications. As the technology is evolving, adaptation of the advancement is becoming necessary to survive in web development and network management.