**HTTP1.1 VS HTTP2**

The Hypertext Transfer Protocol, or HTTP, is an application protocol that has been the de facto standard for communication on the World Wide Web since its invention in 1989. From the release of HTTP/1.1 in 1997 until recently, there have been few revisions to the protocol. But in 2015, a reimagined version called HTTP/2 came into use, which offered several methods to decrease latency, especially when dealing with mobile platforms and server-intensive graphics and videos.

HTTP/2 began as the SPDY protocol, developed primarily at Google with the intention of reducing web page load latency by using techniques such as compression, multiplexing, and prioritization. This protocol served as a template for HTTP/2.

From a technical point of view, one of the most significant features that distinguishes HTTP/1.1 and HTTP/2 is the binary framing layer, which can be thought of as a part of the application layer in the internet protocol stack. As opposed to HTTP/1.1, which keeps all requests and responses in plain text format, HTTP/2 uses the binary framing layer to encapsulate all messages in binary format, while still maintaining HTTP semantics, such as verbs, methods, and headers. An application level API would still create messages in the conventional HTTP formats, but the underlying layer would then convert these messages into binary. This ensures that web applications created before HTTP/2 can continue functioning as normal when interacting with the new protocol.

The conversion of messages into binary allows HTTP/2 to try new approaches to data delivery not available in HTTP/1.1, a contrast that is at the root of the practical differences between the two protocols. The next section will take a look at the delivery model of HTTP/1.1, followed by what new models are made possible by HTTP/2.

HTTP/1.1 transfers requests and responses traveling between the server and client in plain-text messages, HTTP/2 encodes these into binary, allowing for significantly different delivery model possibilities.

The first response that a client receives on an HTTP GET request is often not the fully rendered page. Instead, it contains links to additional resources needed by the requested page. The client discovers that the full rendering of the page requires these additional resources from the server only after it downloads the page. Because of this, the client will have to make additional requests to retrieve these resources. In HTTP/1.0, the client had to break and remake the TCP connection with every new request, a costly affair in terms of both time and resources.

HTTP/1.1 takes care of this problem by introducing persistent connections and pipelining. With persistent connections, HTTP/1.1 assumes that a TCP connection should be kept open unless directly told to close. This allows the client to send multiple requests along the same connection without waiting for a response to each, greatly improving the performance of HTTP/1.1 over HTTP/1.0.

Unfortunately, there is a natural bottleneck to this optimization strategy. Since multiple data packets cannot pass each other when traveling to the same destination, there are situations in which a request at the head of the queue that cannot retrieve its required resource will block all the requests behind it. This is known as head-of-line (HOL) blocking, and is a significant problem with optimizing connection efficiency in HTTP/1.1. Adding separate, parallel TCP connections could alleviate this issue, but there are limits to the number of concurrent TCP connections possible between a client and server, and each new connection requires significant resources.

HTTP/2 developers use binary framing layer to fix these issues.

In HTTP/2, the binary framing layer encodes requests/responses and cuts them up into smaller packets of information, greatly increasing the flexibility of data transfer.

HTTP/2 establishes a single connection object between the two machines. Within this connection there are multiple streams of data. Each stream consists of multiple messages in the familiar request/response format. Finally, each of these messages split into smaller units called frames:

At the most granular level, the communication channel consists of a bunch of binary-encoded frames, each tagged to a particular stream. The identifying tags allow the connection to interleave these frames during transfer and reassemble them at the other end. The interleaved requests and responses can run in parallel without blocking the messages behind them, a process called multiplexing. Multiplexing resolves the head-of-line blocking issue in HTTP/1.1 by ensuring that no message has to wait for another to finish. This also means that servers and clients can send concurrent requests and responses, allowing for greater control and more efficient connection management.

Since multiplexing allows the client to construct multiple streams in parallel, these streams only need to make use of a single TCP connection. Having a single persistent connection per origin improves upon HTTP/1.1 by reducing the memory and processing footprint throughout the network. This results in better network and bandwidth utilization and thus decreases the overall operational cost.

A single TCP connection also improves the performance of the HTTPS protocol, since the client and server can reuse the same secured session for multiple requests/responses. In HTTPS, during the TLS or SSL handshake, both parties agree on the use of a single key throughout the session. If the connection breaks, a new session starts, requiring a newly generated key for further communication.

Note that, though HTTP/2 specifications do not make it mandatory to use the TLS layer, many major browsers only support HTTP/2 with HTTPS.

1. Write a blog about objects and its internal representation in Javascript

**Write a blog about objects and its internal representation in Javascript?**

Objects are complex and each object may contain a combination of primitive data-types as well as reference data-types.  
An object is a reference data type. Variables that are assigned a reference value are given a reference or a pointer to that value. That reference or pointer points to the location in memory where the object is stored. The variables don’t actually store the value.

Otherway around, objects in JavaScript may be defined as an unordered collection of related data, of primitive or reference types, in the form of “key: value” pairs. These keys can be variables or functions and are called properties and methods, respectively, in the context of an object.  
An object can be created with figure brackets {} with an optional list of properties. A property is a “key: value” pair, where a key is the property name value can be anything.