HTTP/2

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| **HTTP/2** | |
| **International standard** | [RFC](https://en.wikipedia.org/wiki/RFC_(identifier)) [7540](https://tools.ietf.org/html/rfc7540) |
| **Developed by** | [IETF](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force) |
| **Introduced** | May 14, 2015; 5 years ago |

**HTTP/2** (originally named **HTTP/2.0**) is a major revision of the [HTTP](https://en.wikipedia.org/wiki/HTTP) network protocol used by the [World Wide Web](https://en.wikipedia.org/wiki/World_Wide_Web). It was derived from the earlier experimental [SPDY](https://en.wikipedia.org/wiki/SPDY) protocol, originally developed by [Google](https://en.wikipedia.org/wiki/Google).[[1]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-1)[[2]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-:1-2) HTTP/2 was developed by the HTTP Working Group (also called httpbis, where "[bis](https://en.wiktionary.org/wiki/bis)" means "second")[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia:Citation_needed)] of the [Internet Engineering Task Force](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force) (IETF).[[3]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-HTTPbis-draft-3)[[4]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-charter-4)[[5]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-5) HTTP/2 is the first new version of HTTP since HTTP 1.1, which was standardized in [RFC 2068](https://tools.ietf.org/html/rfc2068) in 1997. The Working Group presented HTTP/2 to the [Internet Engineering Steering Group](https://en.wikipedia.org/wiki/Internet_Engineering_Steering_Group) (IESG) for consideration as a Proposed Standard in December 2014,[[6]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-http2hist-6)[[7]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-ms1-7) and IESG approved it to publish as Proposed Standard on February 17, 2015 (and was updated in Feb. 2020 in regard to [TLS 1.3](https://en.wikipedia.org/wiki/TLS_1.3)).[[8]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-approval-8)[[9]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-approval2-9) The HTTP/2 specification was published as [RFC 7540](https://tools.ietf.org/html/rfc7540) on May 14, 2015.[[10]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-rfc7540-10)

The standardization effort was supported by [Chrome](https://en.wikipedia.org/wiki/Google_Chrome), [Opera](https://en.wikipedia.org/wiki/Opera_(web_browser)), [Firefox](https://en.wikipedia.org/wiki/Firefox),[[11]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-11) [Internet Explorer 11](https://en.wikipedia.org/wiki/Internet_Explorer_11), [Safari](https://en.wikipedia.org/wiki/Safari_(web_browser)), [Amazon Silk](https://en.wikipedia.org/wiki/Amazon_Silk), and [Edge](https://en.wikipedia.org/wiki/Microsoft_Edge) browsers.[[12]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-12) Most major browsers [had added HTTP/2 support](https://en.wikipedia.org/wiki/Comparison_of_web_browsers#Protocol_support) by the end of 2015.[[13]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-browser_support-13) About 98% of web browsers used have the capability,[[14]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-14) while according to W3Techs, as of August 2020, 48% of the top 10 million websites supported HTTP/2.[[15]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-15)

Its proposed successor is [HTTP/3](https://en.wikipedia.org/wiki/HTTP/3), a major revision that builds on the concepts established by HTTP/2.[[16]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-16)[[2]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-:1-2) Support for HTTP/3 was added to [Chrome](https://en.wikipedia.org/wiki/Google_Chrome) in September 2019 (and [Cloudflare](https://en.wikipedia.org/wiki/Cloudflare) has also added support for it), and while HTTP/3 is not yet on by default in any browser, in 2020, HTTP/3 has non-default support in stable versions of Chrome and Firefox and can be enabled.[[17]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-17)[[18]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-18)[[19]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-19)



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Goals[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=1)]

[](https://en.wikipedia.org/wiki/File:Http2-explained-en.pdf)

*HTTP/2 Explained* by [Daniel Stenberg](https://en.wikipedia.org/wiki/Daniel_Stenberg)

The working group charter mentions several goals and issues of concern:[[4]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-charter-4)

* Create a negotiation mechanism that allows clients and servers to elect to use HTTP 1.1, 2.0, or potentially other non-HTTP protocols.
* Maintain high-level compatibility with HTTP 1.1 (for example with [methods](https://en.wikipedia.org/wiki/HTTP_method), [status codes](https://en.wikipedia.org/wiki/HTTP_status_code), [URIs](https://en.wikipedia.org/wiki/URI), and most [header fields](https://en.wikipedia.org/wiki/List_of_HTTP_header_fields)).
* Decrease [latency](https://en.wikipedia.org/wiki/Latency_(engineering)) to improve page load speed in [web browsers](https://en.wikipedia.org/wiki/Web_browser) by considering:
  + [data compression](https://en.wikipedia.org/wiki/Data_compression) of [HTTP headers](https://en.wikipedia.org/wiki/HTTP_header)
  + [HTTP/2 Server Push](https://en.wikipedia.org/wiki/HTTP/2_Server_Push)
  + [pipelining](https://en.wikipedia.org/wiki/HTTP_pipelining) of requests
  + fixing the [head-of-line blocking](https://en.wikipedia.org/wiki/Head-of-line_blocking) problem in HTTP 1.x
  + [multiplexing](https://en.wikipedia.org/wiki/Multiplexing) multiple requests over a single [TCP](https://en.wikipedia.org/wiki/Transmission_Control_Protocol) connection
* Support common existing use cases of HTTP, such as desktop web browsers, mobile web browsers, web APIs, [web servers](https://en.wikipedia.org/wiki/Web_server) at various scales, [proxy servers](https://en.wikipedia.org/wiki/Proxy_server), [reverse proxy](https://en.wikipedia.org/wiki/Reverse_proxy) servers, [firewalls](https://en.wikipedia.org/wiki/Firewall_(computing)), and [content delivery networks](https://en.wikipedia.org/wiki/Content_delivery_network).

Differences from HTTP 1.1[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=2)]

The proposed changes do not require any changes to how existing web applications work, but new applications can take advantage of new features for increased speed.[[20]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Chapter_12._HTTP_2.0-20) HTTP/2 leaves all of HTTP 1.1's high-level semantics, such as [methods](https://en.wikipedia.org/wiki/HTTP_method), [status codes](https://en.wikipedia.org/wiki/HTTP_status_code), [header fields](https://en.wikipedia.org/wiki/List_of_HTTP_header_fields), and [URIs](https://en.wikipedia.org/wiki/URI), the same. What is new is how the data is framed and transported between the client and the server.[[20]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Chapter_12._HTTP_2.0-20)

Websites that are efficient minimize the number of requests required to render an entire page by [minifying](https://en.wikipedia.org/wiki/Minify) (reducing the amount of code and packing smaller pieces of code into bundles, without reducing its ability to function) resources such as images and scripts. However, minification is not necessarily convenient nor efficient and may still require separate HTTP connections to get the page and the minified resources. HTTP/2 allows the server to "push" content, that is, to respond with data for more queries than the client requested. This allows the server to supply data it knows a web browser will need to render a web page, without waiting for the browser to examine the first response, and without the overhead of an additional request cycle.[[21]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Pratt-21)

Additional performance improvements in the first draft of HTTP/2 (which was a copy of SPDY) come from [multiplexing](https://en.wikipedia.org/wiki/Multiplexing) of requests and responses to avoid some of the [head-of-line blocking](https://en.wikipedia.org/wiki/Head-of-line_blocking) problem in HTTP 1 (even when [HTTP pipelining](https://en.wikipedia.org/wiki/HTTP_pipelining) is used), header [compression](https://en.wikipedia.org/wiki/Data_compression), and prioritization of requests.[[22]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-22) However, as HTTP/2 runs on top of a single TCP connection there is still potential for head-of-line blocking to occur if TCP packets are lost or delayed in transmission.[[23]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-23) HTTP/2 no longer supports HTTP 1.1's [chunked transfer encoding](https://en.wikipedia.org/wiki/Chunked_transfer_encoding) mechanism, as it provides its own, more efficient, mechanisms for data streaming.[[24]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-24)

Genesis in and later differences from SPDY[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=3)]

[SPDY](https://en.wikipedia.org/wiki/SPDY) (pronounced like "speedy") was a previous HTTP-replacement protocol developed by a research project spearheaded by [Google](https://en.wikipedia.org/wiki/Google).[[25]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-extremetech-25) Primarily focused on reducing latency, SPDY uses the same TCP pipe but different protocols to accomplish this reduction. The basic changes made to HTTP 1.1 to create SPDY included: "true request pipelining without FIFO restrictions, message framing mechanism to simplify client and server development, mandatory compression (including headers), priority scheduling, and even bi-directional communication".[[26]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Grigorik-26)

The HTTP Working Group considered Google's SPDY protocol, [Microsoft](https://en.wikipedia.org/wiki/Microsoft)'s [HTTP Speed+Mobility](https://en.wikipedia.org/wiki/HTTP_Speed%2BMobility) proposal (SPDY based),[[25]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-extremetech-25) and Network-Friendly HTTP Upgrade.[[27]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-27) In July 2012, [Facebook](https://en.wikipedia.org/wiki/Facebook) provided feedback on each of the proposals and recommended HTTP/2 be based on SPDY.[[28]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-28) The initial draft of HTTP/2 was published in November 2012 and was based on a straight copy of SPDY.[[29]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-29)

The biggest difference between HTTP/1.1 and SPDY was that each user action in SPDY is given a "stream ID", meaning there is a single TCP channel connecting the user to the server. SPDY split requests into either control or data, using a "simple to parse binary protocol with two types of frames".[[26]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Grigorik-26)[[30]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-:2-30) SPDY showed evident improvement over HTTP, with a new page load speedup ranging from 11.81% to 47.7%.[[31]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-31)

The development of HTTP/2 used SPDY as a jumping-off point. Among the many detailed differences between the protocols, the most notable is that HTTP/2 uses a fixed [Huffman code](https://en.wikipedia.org/wiki/Huffman_code)-based header compression algorithm, instead of SPDY's dynamic stream-based compression. This helps to reduce the potential for [compression oracle attacks](https://en.wikipedia.org/wiki/Compression_oracle_attack) on the protocol, such as the [CRIME](https://en.wikipedia.org/wiki/CRIME) attack.[[30]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-:2-30)

On February 9, 2015, Google announced plans to remove support for SPDY in Chrome in favor of support for HTTP/2.[[32]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-32) That took effect, starting with Chrome 51.[[33]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-33)[[34]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-34)

Encryption[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=4)]

HTTP/2 is defined both for HTTP URIs (i.e. without [encryption](https://en.wikipedia.org/wiki/Encryption)) and for HTTPS URIs (over TLS using [ALPN](https://en.wikipedia.org/wiki/ALPN) extension[[35]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-rfc7301-35) where [TLS 1.2](https://en.wikipedia.org/wiki/TLS_1.2) or newer is required).[[36]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-36)

Although the standard itself does not require usage of encryption,[[37]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-HTTP/2_Frequently_Asked_Questions-37) all major client implementations (Firefox,[[38]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-mozillawiki-38) Chrome, Safari, Opera, IE, Edge) have stated that they will only support HTTP/2 over TLS, which makes encryption [de facto](https://en.wikipedia.org/wiki/De_facto) mandatory.[[39]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-39)

Criticisms[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=5)]

HTTP/2's development process and the protocol itself have faced criticism.

The [FreeBSD](https://en.wikipedia.org/wiki/FreeBSD) and [Varnish](https://en.wikipedia.org/wiki/Varnish_(software)) developer [Poul-Henning Kamp](https://en.wikipedia.org/wiki/Poul-Henning_Kamp) asserts that the standard was prepared on an unrealistically short schedule, ruling out any basis for the new HTTP/2 other than the SPDY protocol and resulting in other missed opportunities for improvement.[[40]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-phk-queue-40) Kamp criticizes the protocol itself for being inconsistent and having needless, overwhelming complexity.[[40]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-phk-queue-40) He also states that the protocol violates the [protocol layering principle](https://en.wikipedia.org/wiki/Internetwork_protocol#Protocol_layering),[[40]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-phk-queue-40) for example by duplicating flow control that belongs in the transport layer (TCP). Most concerns, however, have been related to encryption issues.

**Encryption**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=6)]

**Mandatory encryption computational cost and certificate availability**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=7)]

Initially, some members[[*who?*](https://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style/Words_to_watch#Unsupported_attributions)] of the Working Group tried to introduce an encryption requirement in the protocol. This faced criticism.

Critics stated that encryption has non-negligible computing costs and that many HTTP applications have actually no need for encryption and their providers have no desire to spend additional resources on it. Encryption proponents have stated that this encryption overhead is negligible in practice.[[41]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-41) [Poul-Henning Kamp](https://en.wikipedia.org/wiki/Poul-Henning_Kamp) has criticised IETF for following a particular political agenda with HTTP/2.[[40]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-phk-queue-40)[[42]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-phk-42)[[43]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-43) The criticism of the agenda of mandatory encryption within the existing certificate framework is not new, nor is it unique to members of the open-source community – a [Cisco](https://en.wikipedia.org/wiki/Cisco) employee stated in 2013 that the present certificate model is not compatible with small devices like routers, because the present model requires not only annual enrollment and remission of non-trivial fees for each certificate, but must be continually repeated on an annual basis.[[44]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Cisco2013-44) Working Group finally did not reach consensus over the mandatory encryption,[[37]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-HTTP/2_Frequently_Asked_Questions-37) although most client implementations require it, which makes encryption a *de facto* requirement.

**Lack of opportunistic encryption**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=8)]

The HTTP/2 protocol also faced criticism for not supporting [opportunistic encryption](https://en.wikipedia.org/wiki/Opportunistic_encryption), a measure against [passive monitoring](https://en.wikipedia.org/wiki/Passive_monitoring) similar to the STARTTLS mechanism that has long been available in other Internet protocols like [SMTP](https://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol). Critics have stated that the HTTP/2 proposal goes in violation of IETF's own [rfc:7258 RFC7258 "Pervasive Monitoring Is an Attack"], which also has a status of [Best Current Practice](https://en.wikipedia.org/wiki/Best_Current_Practice) 188.[[45]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-Murenin20150109-45) RFC7258/BCP188 mandates that passive monitoring be considered as an attack, and protocols designed by IETF should take steps to protect against passive monitoring (for example, through the use of opportunistic encryption). A number of specifications for opportunistic encryption of HTTP/2 have been provided,[[46]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-46)[[47]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-47)[[48]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-48) of which draft-[nottingham](https://en.wikipedia.org/wiki/Mark_Nottingham)-http2-encryption was adopted as an official work item of the working group, leading to the publication of [RFC 8164](https://tools.ietf.org/html/rfc8164) in May 2017.

**TCP head-of-line blocking**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=9)]

Although the design of HTTP/2 effectively addresses the HTTP-transaction-level [head-of-line blocking](https://en.wikipedia.org/wiki/Head-of-line_blocking) problem by allowing multiple concurrent HTTP transactions, all those transactions are multiplexed over a single TCP connection, meaning that any packet-level head-of-line blocking of the TCP stream simultaneously blocks all transactions being accessed via that connection. This head-of-line blocking in HTTP/2 is now widely regarded as a design flaw, and much of the effort behind [QUIC](https://en.wikipedia.org/wiki/QUIC) and [HTTP/3](https://en.wikipedia.org/wiki/HTTP/3) has been devoted to reduce head-of-line blocking issues.[[49]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-49)[[50]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-50)

Development milestones[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=10)]

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| **Date** | **Milestone**[[4]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-charter-4) |
| December 20, 2007[[51]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-mont1-51)[[52]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-52) | First HTTP 1.1 Revision Internet Draft |
| January 23, 2008[[53]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-53) | First HTTP Security Properties Internet Draft |
| Early 2012[[54]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-54) | Call for Proposals for HTTP 2.0 |
| October 14 – November 25, 2012[[55]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-55)[[56]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-56) | Working Group Last Call for HTTP 1.1 Revision |
| November 28, 2012[[57]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-57)[[58]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-58) | First WG draft of HTTP 2.0, based upon draft-mbelshe-httpbis-spdy-00 |
| Held/Eliminated | Working Group Last Call for HTTP Security Properties |
| September 2013[[59]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-59)[[60]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-60) | Submit HTTP 1.1 Revision to [IESG](https://en.wikipedia.org/wiki/Internet_Engineering_Steering_Group) for consideration as a Proposed Standard |
| February 12, 2014[[61]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-61) | IESG approved HTTP 1.1 Revision to publish as a Proposed Standard |
| June 6, 2014[[51]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-mont1-51)[[62]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-62) | Publish HTTP 1.1 Revision as [RFC](https://en.wikipedia.org/wiki/RFC_(identifier)) [7230](https://tools.ietf.org/html/rfc7230), [7231](https://tools.ietf.org/html/rfc7231), [7232](https://tools.ietf.org/html/rfc7232), [7233](https://tools.ietf.org/html/rfc7233), [7234](https://tools.ietf.org/html/rfc7234), [7235](https://tools.ietf.org/html/rfc7235) |
| August 1, 2014 – September 1, 2014[[7]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-ms1-7)[[63]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-63) | Working Group Last call for HTTP/2 |
| December 16, 2014[[6]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-http2hist-6) | Submit HTTP/2 to IESG for consideration as a Proposed Standard |
| December 31, 2014 – January 14, 2015[[64]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-64) | [IETF](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force) Last Call for HTTP/2 |
| January 22, 2015[[65]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-65) | IESG telechat to review HTTP/2 as Proposed Standard |
| February 17, 2015[[8]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-approval-8) | IESG approved HTTP/2 to publish as Proposed Standard |
| May 14, 2015[[66]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-66) | Publish HTTP/2 as [RFC](https://en.wikipedia.org/wiki/RFC_(identifier)) [7540](https://tools.ietf.org/html/rfc7540) |
| February 2020 | [RFC](https://en.wikipedia.org/wiki/RFC_(identifier)) [8740](https://tools.ietf.org/html/rfc8740): HTTP/2 with TLS 1.3 |

Server-side support[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=11)]

*Main article:*[*Comparison of web server software*](https://en.wikipedia.org/wiki/Comparison_of_web_server_software)

**Server software**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=12)]

* [Apache](https://en.wikipedia.org/wiki/Apache_HTTP_Server) 2.4.12 supports HTTP/2 via the module mod\_h2,[[67]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-67) although appropriate patches must be applied to the source code of the server in order for it to support that module. As of Apache 2.4.17 all patches are included in the main Apache source tree, although the module itself was renamed mod\_http2.[[68]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-68) Old versions of SPDY were supported via the module mod\_spdy,[[69]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-69) however the development of the mod\_spdy module has stopped.[[70]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-70)
* [Apache Tomcat](https://en.wikipedia.org/wiki/Apache_Tomcat) supports HTTP/2 with version 8.5 and newer with a configuration change.[[71]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-71)
* [Apache Traffic Server](https://en.wikipedia.org/wiki/Traffic_Server) supports HTTP/2.[[72]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-72)
* [Caddy](https://en.wikipedia.org/wiki/Caddy_(web_server)) supports HTTP/2.[[73]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-73)
* [Charles Proxy](https://en.wikipedia.org/wiki/Charles_Proxy) supports HTTP/2 since version Charles 4.[[74]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-74)
* Citrix NetScaler 11.x supports HTTP/2.[[75]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-75)
* [Sucuri](https://en.wikipedia.org/wiki/Sucuri) Supports HTTP/2.[[76]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-76)
* [F5](https://en.wikipedia.org/wiki/F5_Networks) BIG-IP Local Traffic Manager 11.6 supports HTTP/2.[[77]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-77)
* [Barracuda Networks](https://en.wikipedia.org/wiki/Barracuda_Networks) WAF (Web Application Firewall) supports HTTP/2.[[78]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-78)
* h2o was built from the ground up for HTTP/2 support.[[79]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-79)
* [HAProxy](https://en.wikipedia.org/wiki/HAProxy) 1.8 supports HTTP/2.[[80]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-80)
* [Jetty](https://en.wikipedia.org/wiki/Jetty_(web_server)) 9.3 supports HTTP/2.[[81]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-81)
* [LiteSpeed Web Server](https://en.wikipedia.org/wiki/LiteSpeed_Web_Server) 5.0 supports HTTP/2.[[82]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-82)
* [Microsoft IIS](https://en.wikipedia.org/wiki/Internet_Information_Services) supports HTTP/2 in Windows 10,[[83]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-83) [Windows Server 2016](https://en.wikipedia.org/wiki/Windows_Server_2016), and [Windows Server 2019](https://en.wikipedia.org/wiki/Windows_Server_2019).
* [Netty](https://en.wikipedia.org/wiki/Netty_(software)) 4.1 supports HTTP/2.[[84]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-84)
* [nginx](https://en.wikipedia.org/wiki/Nginx) 1.9.5 supports HTTP/2,[[85]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-85) released on September 22, 2015, using module ngx\_http\_v2\_module and [HTTP/2 Server Push](https://en.wikipedia.org/wiki/HTTP/2_Server_Push) since version 1.13.9 on February 20, 2018.[[86]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-86)
* [Node.js](https://en.wikipedia.org/wiki/Node.js) Stable support since 8.13.0.[[87]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-87) (5.0 supports HTTP/2 with a module[[88]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-88) and Node 8.4 introduced experimental built-in support for HTTP/2.[[89]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-89))
* .NET Core 2.2.0-preview 1 adds support for HTTP/2.[[90]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-90)
* OpenLiteSpeed 1.3.11 and 1.4.8 supports HTTP/2.[[91]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-91)
* [Proxygen](https://github.com/facebook/proxygen) supports HTTP/2.
* [Pulse Secure Virtual Traffic Manager](https://en.wikipedia.org/wiki/Zeus_Technology) 10.2 supports HTTP/2.[[92]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-92)
* [Radware](https://en.wikipedia.org/wiki/Radware) Alteon NG supports HTTP/2.[[93]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-93)
* [ShimmerCat](https://en.wikipedia.org/wiki/ShimmerCat) supports HTTP/2.[[94]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-94)
* Vert.x 3.3 supports HTTP/2.
* Warp ([Haskell](https://en.wikipedia.org/wiki/Haskell_(programming_language)) web server, used by default in [Yesod](https://en.wikipedia.org/wiki/Yesod_(web_framework))) supports HTTP/2.
* [Wildfly 9](https://en.wikipedia.org/wiki/WildFly) supports HTTP/2.

**Content delivery networks**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=13)]

* [Akamai](https://en.wikipedia.org/wiki/Akamai_Technologies) was the first major CDN to support HTTP/2 and [HTTP/2 Server Push](https://en.wikipedia.org/wiki/HTTP/2_Server_Push).
* [Microsoft Azure](https://en.wikipedia.org/wiki/Microsoft_Azure) supports HTTP/2.
* PageCDN supports HTTP/2 out of the box and provides user-interface to setup HTTP/2 Server Push in CDN dashboard.[[95]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-95)
* CDN77 supports HTTP/2 using nginx (August 20, 2015).
* [Cloudflare](https://en.wikipedia.org/wiki/Cloudflare) supports HTTP/2 using nginx with SPDY as a fallback for browsers without support, whilst maintaining all security and performance services.[[96]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-96) Cloudflare was the first major CDN to support [HTTP/2 Server Push](https://en.wikipedia.org/wiki/HTTP/2_Server_Push).[[97]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-97)
* [AWS CloudFront](https://en.wikipedia.org/wiki/Amazon_CloudFront) supports HTTP/2[[98]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-:0-98) since September 7, 2016.
* [Fastly](https://www.fastly.com/) supports HTTP/2 including Server Push.[[99]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-99)
* [Imperva Incapsula CDN](https://en.wikipedia.org/wiki/Incapsula) supports HTTP/2.[[100]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-100) The implementation includes support for WAF and DDoS mitigation features as well.
* KeyCDN supports HTTP/2 using nginx (October 6, 2015). [HTTP/2 Test](https://tools.keycdn.com/http2-test/) is a test page to verify if your server supports HTTP/2.
* Voxility supports HTTP/2 using nginx since July, 2016. The implementation comes in support for Cloud DDoS mitigation services.[[101]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-101)
* [StackPath](https://en.wikipedia.org/wiki/StackPath) supports HTTP/2.

**Not planned**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=14)]

* [lighttpd](https://en.wikipedia.org/wiki/Lighttpd) has no support for SPDY[[102]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-102) and HTTP/2 might come in version 1.5.[[103]](https://en.wikipedia.org/wiki/HTTP/2#cite_note-103)

**Implementations**[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=15)]

* Other implementations are collected on the [GitHub HTTP/2 wiki](https://github.com/http2/http2-spec/wiki/Implementations).

See also[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=16)]

* [gRPC](https://en.wikipedia.org/wiki/GRPC)
* [HTTP pipelining](https://en.wikipedia.org/wiki/HTTP_pipelining)
* HTTP [request](https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol#Request_message) and [response](https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol#Response_message) messages
* [HTTP/3](https://en.wikipedia.org/wiki/HTTP/3)
* [QUIC](https://en.wikipedia.org/wiki/QUIC)
* [SPDY](https://en.wikipedia.org/wiki/SPDY)
* [WebSocket](https://en.wikipedia.org/wiki/WebSocket)
* [Comparison of web browsers § Protocol support](https://en.wikipedia.org/wiki/Comparison_of_web_browsers#Protocol_support)

References[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=17)]

* 1. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-1) *Bright, Peter (February 18, 2015).*[*"HTTP/2 finished, coming to browsers within weeks"*](https://arstechnica.com/information-technology/2015/02/http2-finished-coming-to-browsers-within-weeks/)*. Ars Technica.*
  2. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-:1_2-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-:1_2-1) *Cimpanu, Catalin.*[*"HTTP-over-QUIC to be renamed HTTP/3 | ZDNet"*](https://www.zdnet.com/article/http-over-quic-to-be-renamed-http3/)*. ZDNet. Retrieved November 19, 2018.*
  3. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-HTTPbis-draft_3-0) *Thomson, M. (ed.), Belshe M. and R. Peon.*[*"Hypertext Transfer Protocol version 2: draft-ietf-httpbis-http2-16"*](https://tools.ietf.org/html/draft-ietf-httpbis-http2-16)*. ietf.org. HTTPbis Working Group. Retrieved February 11, 2015.*
  4. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-charter_4-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-charter_4-1) [***c***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-charter_4-2) [*"Hypertext Transfer Protocol Bis (httpbis)"*](https://datatracker.ietf.org/wg/httpbis/charter/)*.*[*Internet Engineering Task Force*](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force)*. 2012.*
  5. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-5) [*"IETF HTTP Working Group"*](https://httpwg.org/)*. IETF HTTP Working Group. Retrieved December 15, 2019.*
  6. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-http2hist_6-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-http2hist_6-1) [*"History for draft-ietf-httpbis-http2-16"*](https://datatracker.ietf.org/doc/draft-ietf-httpbis-http2/history/#history-404477)*. IETF. Retrieved January 3, 2015. 2014-12-16 IESG state changed to Publication Requested*
  7. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-ms1_7-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-ms1_7-1) *Raymor, Brian (August 6, 2014).*[*"Wait for it – HTTP/2 begins Working Group Last Call!"*](https://web.archive.org/web/20141006091749/https:/msopentech.com/blog/2014/08/06/wait-for-it-http2-begins-working-group-last-call/)*. Microsoft Open Technologies. Archived from*[*the original*](https://msopentech.com/blog/2014/08/06/wait-for-it-http2-begins-working-group-last-call/)*on October 6, 2014. Retrieved October 17, 2018.*
  8. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-approval_8-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-approval_8-1) *The IESG (February 17, 2015).*[*"Protocol Action: 'Hypertext Transfer Protocol version 2' to Proposed Standard (draft-ietf-httpbis-http2-17.txt)"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2015JanMar/0478.html)*. httpbis (Mailing list). Retrieved February 18, 2015.*
  9. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-approval2_9-0) *Mark Nottingham (February 18, 2015).*[*"HTTP/2 Approved"*](https://www.ietf.org/blog/2015/02/http2-approved/)*. ietf.org.*[*Internet Engineering Task Force*](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force)*. Retrieved March 8, 2015.*
  10. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-rfc7540_10-0) [*"RFC 7540 - Hypertext Transfer Protocol Version 2 (HTTP/2)"*](https://tools.ietf.org/html/rfc7540)*. IETF. May 2015. Retrieved May 14, 2015.*
  11. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-11) [*"See what's new in Firefox!"*](https://www.mozilla.org/en-US/firefox/36.0/releasenotes/)*. www.mozilla.org. Mozilla Foundation. February 2015.*
  12. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-12) [*"Can the rise of SPDY threaten HTTP?"*](https://web.archive.org/web/20140106205213/http:/blog.restlet.com/2011/10/06/can-the-rise-of-spdy-threaten-http/)*. blog.restlet.com. Restlet, Inc. October 2011. Archived from*[*the original*](http://blog.restlet.com/2011/10/06/can-the-rise-of-spdy-threaten-http/)*on January 6, 2014. Retrieved July 23, 2012.*
  13. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-browser_support_13-0) [*"HTTP2 browser support"*](https://caniuse.com/#search=http2)*. Retrieved March 9, 2017.*
  14. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-14) [*"Can I use... Support tables for HTML5, CSS3, etc"*](https://caniuse.com/#search=http2)*. caniuse.com. Retrieved August 8, 2020.*
  15. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-15) [*"Usage of HTTP/2 for websites"*](https://w3techs.com/technologies/details/ce-http2/all/all)*. World Wide Web Technology Surveys. W3Techs. Retrieved August 28, 2020.*
  16. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-16) *Bishop, Mike (July 9, 2019).*[*"Hypertext Transfer Protocol Version 3 (HTTP/3)"*](https://tools.ietf.org/html/draft-ietf-quic-http-22)*. tools.ietf.org. Retrieved July 31, 2019.*
  17. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-17) [*"Can I use... Support tables for HTML5, CSS3, etc"*](https://caniuse.com/#search=HTTP/3)*. caniuse.com. Retrieved January 19, 2020.*
  18. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-18) *Daniel, Stenberg.*[*"Daniel Stenberg announces HTTP/3 support in Firefox Nightly"*](https://twitter.com/bagder/status/1191482712739196928)*. Twitter. Retrieved November 5, 2019.*
  19. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-19) *Cimpanu, Catalin (26 September 2019).*[*"Cloudflare, Google Chrome, and Firefox add HTTP/3 support"*](https://www.zdnet.com/article/cloudflare-google-chrome-and-firefox-add-http3-support/)*. ZDNet. Retrieved 27 September 2019.*
  20. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Chapter_12._HTTP_2.0_20-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Chapter_12._HTTP_2.0_20-1) *Ilya Grigorik.*[*"Chapter 12: HTTP 2.0"*](https://hpbn.co/http2/)*. High Performance Browser Networking. O'Reilly Media, Inc. HTTP/2 does not modify the application semantics of HTTP in any way*
  21. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Pratt_21-0) *Pratt, Michael.*[*"Apiux"*](http://apiux.com/2013/07/23/http2-0-initial-draft-released)*. apiux.com. Retrieved March 19, 2014.*
  22. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-22) *Dio Synodinos (November 2012).*[*"HTTP 2.0 First Draft Published"*](https://www.infoq.com/news/2012/11/http20-first-draft)*. InfoQ.com. C4Media Inc.*
  23. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-23) *Javier Garza (October 2017).*[*"How does HTTP/2 solve the Head of Line blocking (HOL) issue"*](https://community.akamai.com/customers/s/article/How-does-HTTP-2-solve-the-Head-of-Line-blocking-HOL-issue?language=en_US)*.*
  24. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-24) *Belshe, Mike; Thomson, Martin; Peon, Roberto (May 2015).*[*"Hypertext Transfer Protocol Version 2 (HTTP/2)"*](https://tools.ietf.org/html/rfc7540)*. tools.ietf.org. Retrieved November 17, 2017. HTTP/2 uses DATA frames to carry message payloads. The "chunked" transfer encoding defined in Section 4.1 of [RFC7230] MUST NOT be used in HTTP/2*
  25. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-extremetech_25-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-extremetech_25-1) *Sebastian Anthony (March 28, 2012).*[*"S&M vs. SPDY: Microsoft and Google battle over the future of HTTP 2.0"*](https://www.extremetech.com/computing/124153-sm-vs-spdy-microsoft-and-google-battle-over-the-future-of-http-2-0)*. ExtremeTech.*
  26. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Grigorik_26-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Grigorik_26-1) *Grigorik, Ilya.*[*"Life beyond HTTP 1.1: Google's SPDY"*](https://www.igvita.com/2011/04/07/life-beyond-http-11-googles-spdy/)*.*
  27. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-27) *Willy Tarreau; Amos Jeffries; Adrien de Croy; Poul-Henning Kamp (March 29, 2012).*[*"Proposal for a Network-Friendly HTTP Upgrade"*](https://tools.ietf.org/html/draft-tarreau-httpbis-network-friendly-00)*. Network Working Group.*[*Internet Engineering Task Force*](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force)*.*
  28. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-28) *Doug Beaver (July 15, 2012).*[*"HTTP2 Expression of Interest"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2012JulSep/0251.html)*(mailing list). W3C.*
  29. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-29) *Dio Synodinos (November 30, 2012).*[*"HTTP/2 First Draft Published"*](https://www.infoq.com/news/2012/11/http20-first-draft)*. InfoQ.*
  30. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-:2_30-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-:2_30-1) *Ilya, Grigorik (2015). HTTP/2 : a new excerpt from high performance browser networking (May 2015, First ed.). Sebastopol, Calif.: O'Reilly Media. pp. 211–224.*[*ISBN*](https://en.wikipedia.org/wiki/ISBN_(identifier))[*9781491932483*](https://en.wikipedia.org/wiki/Special:BookSources/9781491932483)*.*[*OCLC*](https://en.wikipedia.org/wiki/OCLC_(identifier))[*1039459460*](https://www.worldcat.org/oclc/1039459460)*.*
  31. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-31) [*"SPDY: An experimental protocol for a faster web"*](https://www.chromium.org/spdy/spdy-whitepaper)*. The Chromium Projects.*
  32. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-32) *Chris Bentzel; Bence Béky (February 9, 2015).*[*"Hello HTTP/2, Goodbye SPDY"*](https://blog.chromium.org/2015/02/hello-http2-goodbye-spdy.html)*. Chromium Blog. Update: To better align with Chrome's release cycle, SPDY and NPN support will be removed with the release of Chrome 51.*
  33. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-33) [*"API Deprecations and Removals in Chrome 51"*](https://developers.google.com/web/updates/2016/04/chrome-51-deprecations?hl=en#remove-support-for-spdy31)*. TL;DR: Support for HTTP/2 is widespread enough that SPDY/3.1 support can be dropped.*
  34. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-34) *Shadrin, Nick (June 7, 2016).*[*"Supporting HTTP/2 for Google Chrome Users | NGINX"*](https://www.nginx.com/blog/supporting-http2-google-chrome-users/)*. NGINX. Retrieved July 10, 2017.*
  35. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-rfc7301_35-0) [*"RFC 7301 - Transport Layer Security (TLS) Application-Layer Protocol Negotiation Extension"*](https://tools.ietf.org/html/rfc7301)*. IETF. July 2014.*
  36. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-36) *Belshe, M.; Peon, R.; Thomson, M.*[*"Hypertext Transfer Protocol Version 2, Use of TLS Features"*](https://http2.github.io/http2-spec/#TLSUsage)*. Retrieved February 10, 2015.*
  37. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-HTTP/2_Frequently_Asked_Questions_37-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-HTTP/2_Frequently_Asked_Questions_37-1) [*"HTTP/2 Frequently Asked Questions"*](https://http2.github.io/faq/#does-http2-require-encryption)*. IETF HTTP Working Group. Retrieved September 8, 2014.*
  38. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-mozillawiki_38-0) [*"Networking/http2"*](https://wiki.mozilla.org/Networking/http2)*. MozillaWiki. Retrieved September 7, 2014.*
  39. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-39) [*"HTTP/2 Implementation Status"*](https://www.mnot.net/blog/2015/06/15/http2_implementation_status)*. mnot’s blog.*
  40. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-phk-queue_40-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-phk-queue_40-1) [***c***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-phk-queue_40-2) [***d***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-phk-queue_40-3) [*Kamp, Poul-Henning*](https://en.wikipedia.org/wiki/Poul-Henning_Kamp)*(January 6, 2015).*[*"HTTP/2.0 – The IETF is Phoning It In (Bad protocol, bad politics)"*](https://queue.acm.org/detail.cfm?id=2716278)*.*[*ACM Queue*](https://en.wikipedia.org/wiki/ACM_Queue)*.*
  41. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-41) *Grigorik, Ilya.*[*"Is TLS Fast Yet?"*](https://istlsfastyet.com/)*. Retrieved December 30, 2015.*
  42. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-phk_42-0) *Kamp, P. H. (2015). "Http/2.0". Communications of the ACM.****58****(3): 40.*[*doi*](https://en.wikipedia.org/wiki/Doi_(identifier))*:*[*10.1145/2717515*](https://doi.org/10.1145%2F2717515)*.*
  43. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-43) [*Kamp, Poul-Henning*](https://en.wikipedia.org/wiki/Poul-Henning_Kamp)*(January 7, 2015).*[*"Re: Last Call: <draft-ietf-httpbis-http2-16.txt> (Hypertext Transfer Protocol version 2) to Proposed Standard"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2015JanMar/0043.html)*. ietf-http-wg@w3.org (Mailing list). Retrieved January 12, 2015.*
  44. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Cisco2013_44-0) *Lear, Eliot (August 25, 2013).*[*"Mandatory encryption \*is\* theater"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2013JulSep/0909.html)*. ietf-http-wg@w3.org (Mailing list). Retrieved January 26,2015.*
  45. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-Murenin20150109_45-0) *Murenin, Constantine A. (January 9, 2015).*[*"Re: Last Call: <draft-ietf-httpbis-http2-16.txt> (Hypertext Transfer Protocol version 2) to Proposed Standard"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2015JanMar/0106.html)*. ietf-http-wg@w3.org (Mailing list). Retrieved January 12, 2015.*
  46. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-46) *Paul Hoffman.*[*"Minimal Unauthenticated Encryption (MUE) for HTTP-2: draft-hoffman-httpbis-minimal-unauth-enc-01"*](https://tools.ietf.org/html/draft-hoffman-httpbis-minimal-unauth-enc-01)*.*[*Internet Engineering Task Force*](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force)*.*
  47. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-47) *Mark Nottingham; Martin Thomson.*[*"Opportunistic Encryption for HTTP URIs: draft-nottingham-http2-encryption-03"*](https://tools.ietf.org/html/draft-nottingham-http2-encryption-03)*.*[*Internet Engineering Task Force*](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force)*.*
  48. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-48) *Mark Nottingham; Martin Thomson.*[*"Opportunistic Security for HTTP: draft-ietf-httpbis-http2-encryption-01"*](https://tools.ietf.org/html/draft-ietf-httpbis-http2-encryption-01)*.*[*Internet Engineering Task Force*](https://en.wikipedia.org/wiki/Internet_Engineering_Task_Force)*.*
  49. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-49) *Huston, Geoff (March 4, 2019).*[*"A Quick Look at QUIC"*](http://www.circleid.com/posts/20190304_a_quick_look_at_quic/)*. www.circleid.com. Retrieved August 2, 2019.*
  50. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-50) *Gal, Shauli (June 22, 2017).*[*"The Full Picture on HTTP/2 and HOL Blocking"*](https://engineering.salesforce.com/the-full-picture-on-http-2-and-hol-blocking-7f964b34d205)*. Medium. Retrieved August 3, 2019.*
  51. ^ [Jump up to:***a***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-mont1_51-0) [***b***](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-mont1_51-1) *Nottingham, Mark (June 7, 2014).*[*"RFC2616 is Dead"*](https://www.mnot.net/blog/2014/06/07/rfc2616_is_dead)*. Retrieved September 20, 2014.*
  52. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-52) [*"HTTP/1.1, part 1: URIs, Connections, and Message Parsing: draft-ietf-httpbis-p1-messaging-00"*](https://tools.ietf.org/html/draft-ietf-httpbis-p1-messaging-00)*. December 20, 2007. Retrieved September 20, 2014.*
  53. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-53) [*"Security Requirements for HTTP: draft-ietf-httpbis-security-properties-00.txt"*](https://tools.ietf.org/html/draft-ietf-httpbis-security-properties-00)*. January 23, 2008. Retrieved September 20,2014.*
  54. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-54) *Nottingham, Mark (January 24, 2012).*[*"Rechartering HTTPbis"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2012JanMar/0098.html)*. Retrieved September 20, 2014.*
  55. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-55) *Nottingham, Mark (October 14, 2012).*[*"Working Group Last Call for HTTP/1.1 p1 and p2"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2012OctDec/0103.html)*. Retrieved September 20, 2014.*
  56. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-56) *Nottingham, Mark (October 23, 2012).*[*"Second Working Group Last Call for HTTP/1.1 p4 to p7"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2012OctDec/0139.html)*. Retrieved September 20, 2014.*
  57. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-57) [*"SPDY Protocol: draft-ietf-httpbis-http2-00"*](https://tools.ietf.org/html/draft-ietf-httpbis-http2-00)*. HTTPbis Working Group. November 28, 2012. Retrieved September 20, 2014.*
  58. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-58) *Nottingham, Mark (November 30, 2012).*[*"First draft of HTTP/2"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2012OctDec/0447.html)*. Retrieved September 20, 2014.*
  59. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-59) [*"Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing"*](https://datatracker.ietf.org/doc/rfc7230/)*.*[*Archived*](https://web.archive.org/web/20140813234916/https:/datatracker.ietf.org/doc/rfc7230/)*from the original on August 13, 2014. Retrieved September 20, 2014.*
  60. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-60) [*"Last Call: <draft-ietf-httpbis-p1-messaging-24.txt> (Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing) to Proposed Standard"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2013OctDec/0247.html)*. The IESG. October 21, 2013. Retrieved September 20, 2014.*
  61. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-61) [*"Protocol Action: 'Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing' to Proposed Standard (draft-ietf-httpbis-p1-messaging-26.txt)"*](https://www.ietf.org/mail-archive/web/ietf-announce/current/msg12461.html)*. ietf-announce (Mailing list). The IESG. February 12, 2014. Retrieved January 18, 2015.*
  62. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-62) *The RFC Editor Team (June 6, 2014).*[*"RFC 7230 on Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing"*](https://www.ietf.org/mail-archive/web/ietf-announce/current/msg12871.html)*. ietf-announce (Mailing list). Retrieved January 18, 2015.*
  63. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-63) *Nottingham, Mark (August 1, 2014).*[*"Working Group Last Call: draft-ietf-httpbis-http2-14 and draft-ietf-httpbis-header-compression-09"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2014JulSep/1563.html)*. HTTP Working Group. Retrieved September 7, 2014.*
  64. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-64) [*"Last Call: <draft-ietf-httpbis-http2-16.txt> (Hypertext Transfer Protocol version 2) to Proposed Standard from The IESG on 2014-12-31"*](https://lists.w3.org/Archives/Public/ietf-http-wg/2014OctDec/0982.html)*. Internet Engineering Task Force. 2014. Retrieved January 1, 2015.*
  65. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-65) [*"IESG Agenda: 2015-01-22"*](https://web.archive.org/web/20150115201808/https:/datatracker.ietf.org/iesg/agenda/)*. IETF. Archived from*[*the original*](https://datatracker.ietf.org/iesg/agenda/)*on January 15, 2015. Retrieved January 15, 2015.*
  66. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-66) *The RFC Editor Team (May 14, 2015).*[*"RFC 7540 on Hypertext Transfer Protocol Version 2 (HTTP/2)"*](https://www.ietf.org/mail-archive/web/ietf-announce/current/msg14126.html)*. ietf-announce (Mailing list).*
  67. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-67) [*"http/2 module for apache httpd"*](https://icing.github.io/mod_h2/)*. Retrieved July 28, 2015.*
  68. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-68) [*"Apache 2.4.17 release changelog"*](https://archive.apache.org/dist/httpd/CHANGES_2.4.17)*. Retrieved August 22, 2017.*
  69. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-69) *Matthew Steele (June 19, 2014).*[*"mod\_spdy is now an Apache project"*](https://googledevelopers.blogspot.de/2014/06/modspdy-is-now-apache-project.html)*. Google Developers Blog.*
  70. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-70) [*"Log of /httpd/mod\_spdy"*](https://svn.apache.org/viewvc/httpd/mod_spdy/?view=log)*. svn.apache.org. Retrieved February 3, 2017.*
  71. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-71) [*"Apache Tomcat Migration"*](https://tomcat.apache.org/migration-9.html#HTTP/2_support_added)*. Retrieved July 29, 2016.*
  72. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-72) [*"Apache Traffic Server Downloads"*](https://trafficserver.apache.org/downloads)*. trafficserver.apache.org. September 21, 2015.*
  73. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-73) *Server, Caddy Web (March 23, 2016).*[*"Caddy 2 - The Ultimate Server with Automatic HTTPS"*](https://caddyserver.com/)*. caddyserver.com. Retrieved August 8, 2020.*
  74. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-74) *. September 29, 2019*[*https://publicobject.com/2016/08/02/charles-4-has-http2/*](https://publicobject.com/2016/08/02/charles-4-has-http2/)*.* Missing or empty |title= ([help](https://en.wikipedia.org/wiki/Help:CS1_errors#citation_missing_title))
  75. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-75) [*"3 Simple Steps to Bring HTTP/2 Performance to Legacy Web Applications"*](https://blogs.citrix.com/2015/08/06/3-simple-steps-to-bring-http2-performance-to-legacy-web-applications/)*. September 22, 2015.*
  76. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-76) [*"Sucuri += HTTP/2 — Announcing HTTP/2 Support"*](https://blog.sucuri.net/2015/11/sucuri-announcing-http2-support.html)*. Sucuri. Retrieved December 5, 2015.*
  77. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-77) *Robert Haynes.*[*"Goodbye SPDY, Hello HTTP/2"*](https://devcentral.f5.com/articles/goodbye-spdy-hello-http2)*. F5 Networks. Retrieved September 18, 2015.*
  78. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-78) *Risov Chakrabortty.*[*"New features, capabilities added to Barracuda Web Application Firewall"*](https://blog.barracuda.com/2016/07/05/new-features-capabilities-added-to-barracuda-web-application-firewall)*. Barracuda Networks.*
  79. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-79) [*"H2O - the optimized HTTP/2 server"*](https://h2o.examp1e.net/)*. h2o.examp1e.net.*
  80. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-80) [*"What's New in HAProxy 1.8"*](https://www.haproxy.com/blog/whats-new-haproxy-1-8/)*. haproxy.com. Retrieved February 9, 2018.*
  81. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-81) [*"Jetty change log"*](https://git.eclipse.org/c/jetty/org.eclipse.jetty.project.git/tree/VERSION.txt)*. Eclipse Foundation. May 28, 2015. Retrieved May 28, 2015.*
  82. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-82) [*"LSWS 5.0 Is Out – Support for HTTP/2, ESI, LiteMage Cache"*](https://blog.litespeedtech.com/2015/04/17/lsws-5-0-is-out-support-for-http2-esi-litemage-cache/)*. April 17, 2015.*
  83. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-83) *Rob Trace; David Walp (October 8, 2014).*[*"HTTP/2: The Long-Awaited Sequel"*](https://blogs.msdn.com/b/ie/archive/2014/10/08/http-2-the-long-awaited-sequel.aspx)*. MSDN IEBlog. Microsoft Corporation.*
  84. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-84) [*"Netty.news: Netty 4.1.0.Final released"*](https://netty.io/news/2016/05/26/4-1-0-Final.html)*. netty.io. Retrieved June 1, 2016.*
  85. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-85) [*"nginx changelog"*](https://nginx.org/en/CHANGES)*. www.nginx.com. September 22, 2015.*
  86. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-86) [*"Changes with nginx 1.14.2"*](https://nginx.org/en/CHANGES-1.14)*. nginx.org. December 4, 2018. Retrieved September 27, 2019.*
  87. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-87) *Foundation, Node js.*[*"Node v8.13.0 (LTS)"*](https://nodejs.org/en/blog/release/v8.13.0/)*. Node.js. Retrieved June 5, 2019.*
  88. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-88) [*"Node http2"*](https://github.com/molnarg/node-http2)*. www.github.com. July 26, 2016.*
  89. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-89) [*"Node v8.4.0 (Current)"*](https://nodejs.org/en/blog/release/v8.4.0/)*. nodejs.org. August 15, 2017.*
  90. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-90) [*"ASP.NET Core 2.2.0-preview1 now available"*](https://blogs.msdn.microsoft.com/webdev/2018/08/22/asp-net-core-2-2-0-preview1-now-available/)*. Retrieved August 22, 2018.*
  91. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-91) [*"OpenLiteSpeed 1.4.5 change log"*](https://open.litespeedtech.com/mediawiki/index.php/Release_Log/1.x#V1.4.5)*. LiteSpeed Technologies, Inc. February 26, 2015. Retrieved February 26, 2015.*
  92. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-92) [*"Pulse Virtual Traffic Manager"*](https://www.pulsesecure.net/vtm/)*. August 22, 2017.*
  93. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-93) [*"Radware Combines an Integrated HTTP/2 Gateway with its Leading Fastview Technology to Provide Web Server Platforms Increased Acceleration"*](https://www.radware.com/newsevents/pressreleases/radware-alteon-provides-fastest-website-acceleration/)*. July 20, 2015.*
  94. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-94) [*"www.shimmercat.com"*](https://www.shimmercat.com/)*. March 23, 2016.*
  95. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-95) [*"Why PageCDN, and what problem does it solve?"*](https://pagecdn.com/about/why)*. PageCDN. Retrieved January 11, 2020.*
  96. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-96) [*"HTTP/2 is here! Goodbye SPDY? Not quite yet"*](https://blog.cloudflare.com/introducing-http2/)*. CloudFlare. Retrieved December 5, 2015.*
  97. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-97) *Krasnov, Vlad (April 28, 2016).*[*"Announcing Support for HTTP/2 Server Push"*](https://blog.cloudflare.com/announcing-support-for-http-2-server-push-2/)*. CloudFlare. Retrieved May 18, 2016.*
  98. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-:0_98-0) [*"Amazon CloudFront now supports HTTP/2"*](https://aws.amazon.com/about-aws/whats-new/2016/09/amazon-cloudfront-now-supports-http2/)*. Amazon Web Services, Inc. Retrieved September 8, 2016.*
  99. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-99) [*"Announcing Limited Availability for HTTP/2"*](https://www.fastly.com/blog/announcing-limited-availability-http2)*. Retrieved August 22, 2017.*
  100. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-100) [*"HTTP/2 is here: What You Need to Know"*](https://www.imperva.com/blog/http2-is-here-what-you-need-to-know/)*. Retrieved November 1, 2015.*
  101. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-101) [*"HTTP/2 more at risk to cyber attacks?"*](https://www.information-age.com/http2-more-risk-cyber-attacks-123461771/)*. Information Age. August 3, 2016. Retrieved February 4, 2019.*
  102. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-102) *stbuehler.*[*"Feature #2322: Support for SPDY protocol"*](https://redmine.lighttpd.net/issues/2322)*. Lighttpd.*
  103. [**^**](https://en.wikipedia.org/wiki/HTTP/2#cite_ref-103) [*"Feature #2726: Support for HTTP/2 protocol"*](https://redmine.lighttpd.net/issues/2726)*, Lighttpd*

External links[[edit](https://en.wikipedia.org/w/index.php?title=HTTP/2&action=edit&section=18)]

* [Official website](https://http2.github.io/) [Edit this at Wikidata](https://www.wikidata.org/wiki/Q739120#P856)
* [RFC](https://en.wikipedia.org/wiki/RFC_(identifier)) [7540](https://tools.ietf.org/html/rfc7540) – Hypertext Transfer Protocol version 2 (HTTP/2)
* [RFC](https://en.wikipedia.org/wiki/RFC_(identifier)) [7541](https://tools.ietf.org/html/rfc7541) – HPACK: Header Compression for HTTP/2
* [SPDY Protocol](https://tools.ietf.org/html/draft-mbelshe-httpbis-spdy-00) (draft-mbelshe-httpbis-spdy-00)
* [HTTP Speed+Mobility](https://tools.ietf.org/html/draft-montenegro-httpbis-speed-mobility-01) (draft-Montenegro-httpbis-speed-mobility-01)
* [Proposal for a Network-Friendly HTTP Upgrade](https://tools.ietf.org/html/draft-tarreau-httpbis-network-friendly-00) (draft-tarreau-httpbis-network-friendly-00)
* [HTTP/2 Website Online Tester](https://ncomputers.org/h2test)