

HTTP

HyperText Transfer Protocol

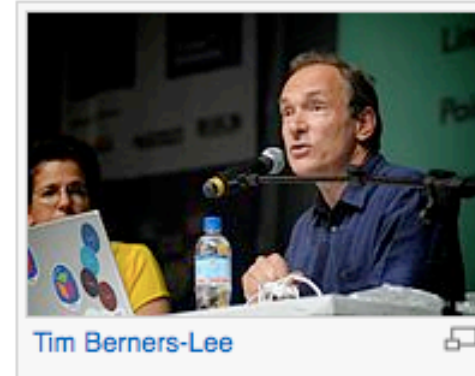
HyperText

History [[edit source](#) | [edit beta](#)]

The term [HyperText](#) was coined by [Ted Nelson](#) who in turn was inspired by [Vannevar Bush](#)'s microfilm-based "memex". [Tim Berners-Lee](#) first proposed the "WorldWideWeb" project — now known as the [World Wide Web](#). Berners-Lee and his team are credited with inventing the original HTTP along with HTML and the associated technology for a web server and a text-based web browser. The first version of the protocol had only one [method](#), namely GET, which would request a page from a server.^[3] The response from the server was always an HTML page.^[4]

The first documented version of HTTP was [HTTP V0.9](#) ^[5] (1991). [Dave Raggett](#) led the [HTTP Working Group](#) (HTTP WG) in 1995 and wanted to expand the protocol with extended operations, extended negotiation, richer meta-information, tied with a security protocol which became more efficient by adding additional methods and [header fields](#).^{[5][6]} [RFC 1945](#) ^[6] officially introduced and recognized HTTP V1.0 in 1996.

The HTTP WG planned to publish new standards in December 1995^[7] and the support for pre-standard HTTP/1.1 based on the then developing [RFC 2068](#) ^[8] (called HTTP-NG) was rapidly adopted by the major browser developers in early 1996. By March 1996, pre-standard HTTP/1.1 was supported in [Arena](#),^[8] [Netscape 2.0](#),^[8] [Netscape Navigator Gold 2.01](#),^[8] [Mosaic 2.7](#),^[citation needed] [Lynx 2.5](#)^[citation needed], and in [Internet Explorer 2.0](#)^[citation needed]. End-user adoption of the new browsers was rapid. In March 1996, one web hosting company reported that over 40% of browsers in use on the Internet were HTTP 1.1 compliant.^[citation needed] That same web hosting company reported that by June 1996, 65% of all browsers accessing their servers were HTTP/1.1 compliant.^[9] The HTTP/1.1 standard as defined in [RFC 2068](#) ^[9] was officially released in January 1997. Improvements and updates to the HTTP/1.1 standard were released under [RFC 2616](#) ^[10] in June 1999.



```
218 <h2><span class="mw-headline" id="History">History</span><span class="mw-editsection"><span class="mw-editsection-bracket">[</span><a href="/w/index.r
219 <div class="thumb tright">
220 <div class="thumbinner" style="width:192px;"><a href="/wiki/File:Tim Berners-Lee CP 2.jpg" class="image">
222 <div class="magnify"><a href="/wiki/File:Tim Berners-Lee CP 2.jpg" class="internal" title="Enlarge">Tim Berners-Lee</a></div>
224 </div>
225 </div>
226 <p>The term <a href="/wiki/HyperText" title="HyperText" class="mw-redirect">HyperText</a> was coined by <a href="/wiki/Ted Nelson" title="Ted Nelson">
227 <p>The first documented version of HTTP was <b><a rel="nofollow" class="external text" href="http://www.w3.org/pub/WWW/Protocols/HTTP/AsImplemented.ht
228 <p>The HTTP WG planned to publish new standards in December 1995<sup id="cite_ref-7" class="reference"><a href="#cite_note-7"><span>[</span>7<span>]</span></sup>
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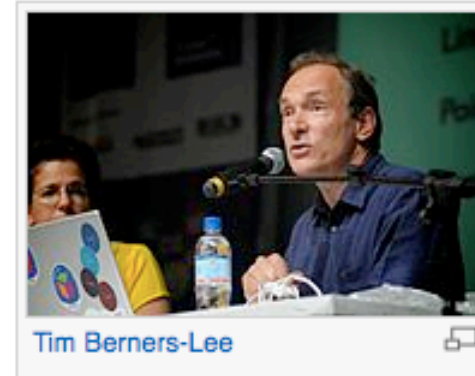
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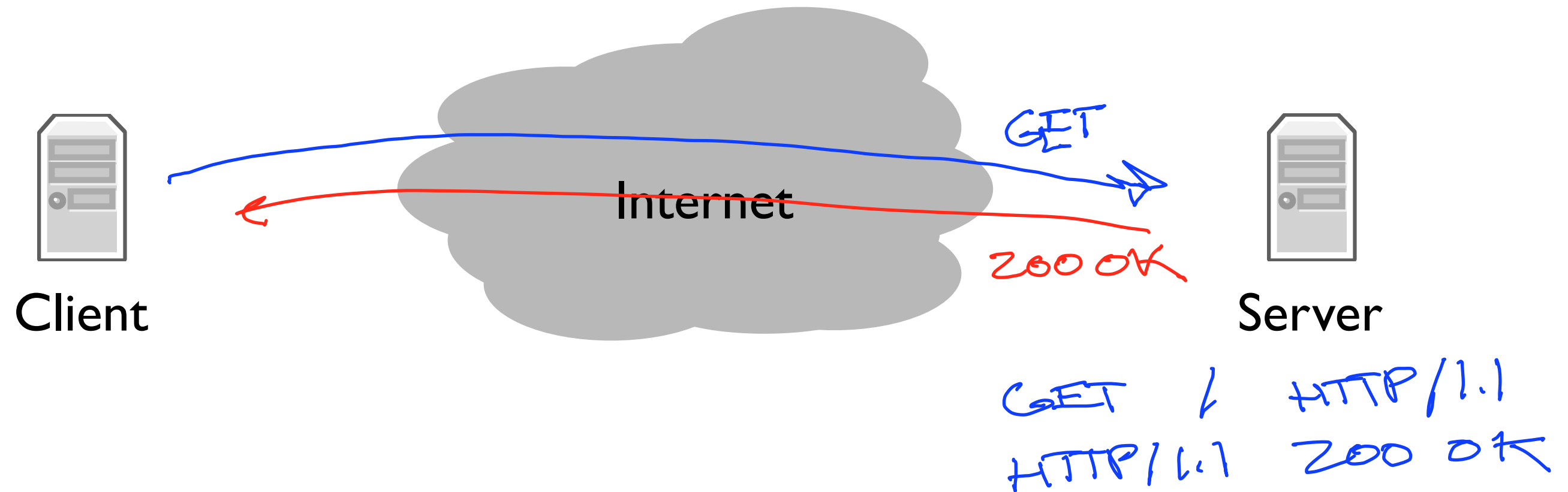
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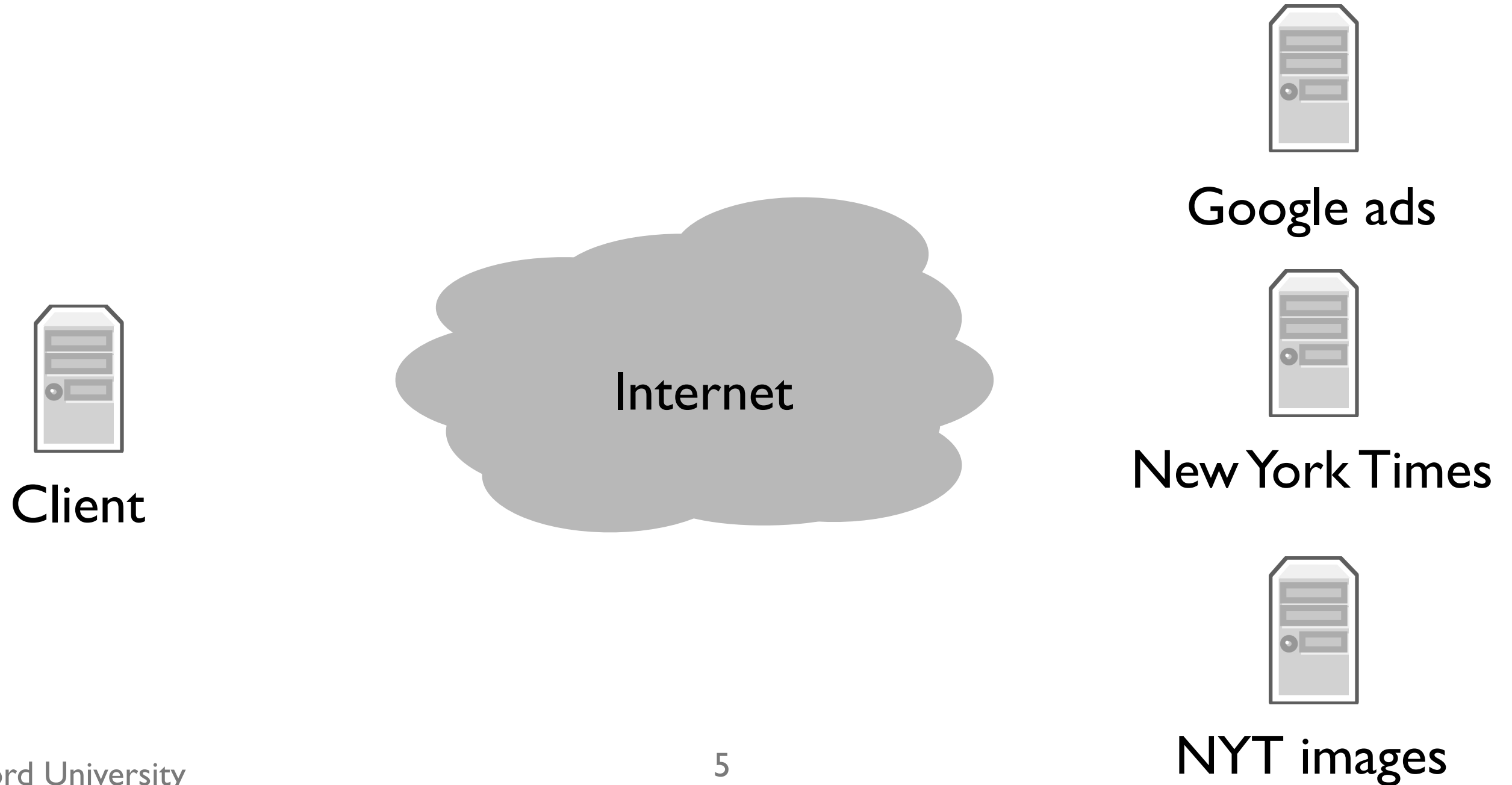


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```


World Wide Web (HTTP)



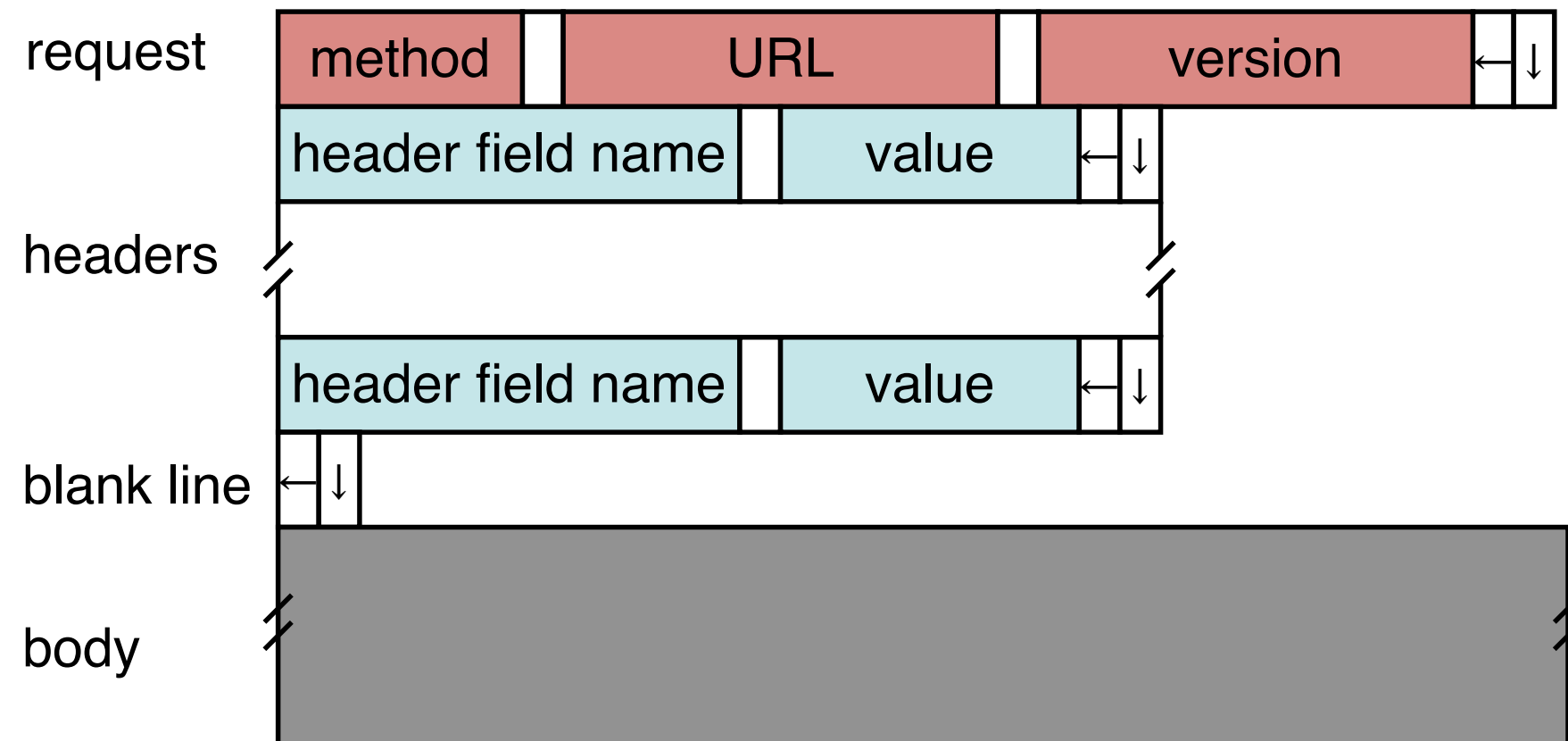
World Wide Web (HTTP)



Parsing a URL

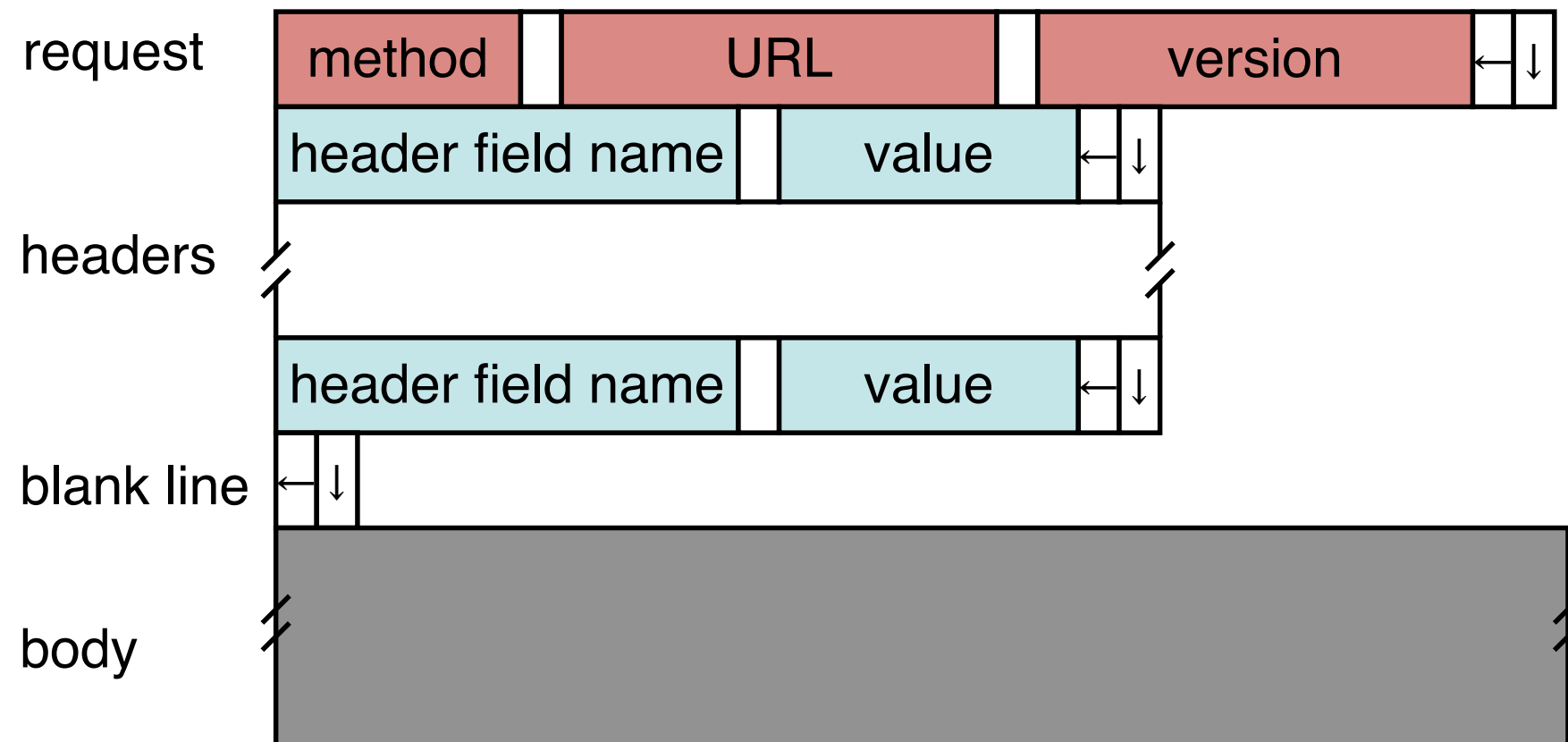
http://sing.stanford.edu/fullduplex/index.html

HTTP Request Format

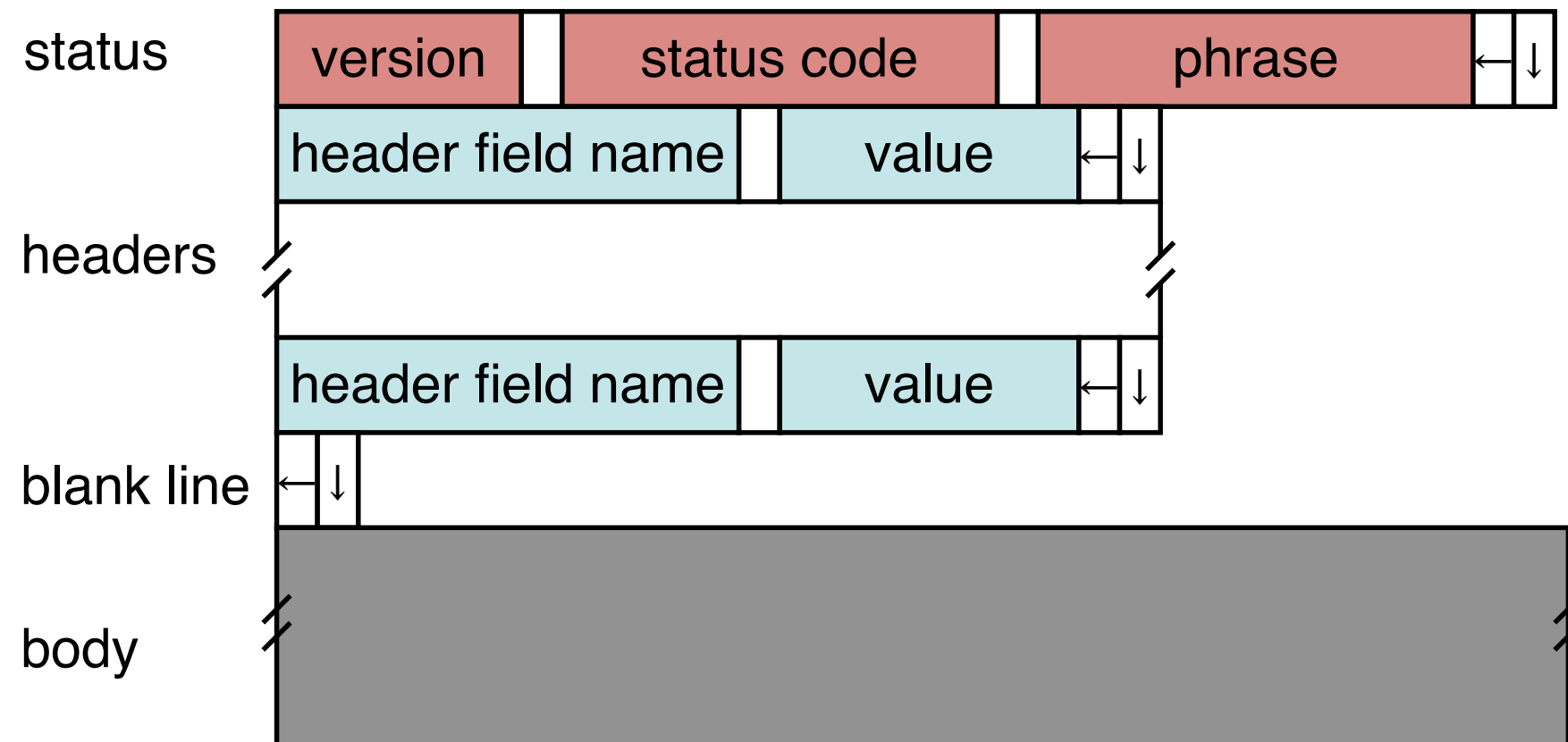


HTTP Request Format

`http://sing.stanford.edu/fullduplex/index.html`



HTTP Response



HTTP

- Cornerstone application protocol of modern Internet
- Text protocol, human readable
- Request/response API
- Document-centric

HTTP/1.0

- Open connection
- Issue GET
- Server closes connection after response

HTTP/1.0 speed

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Maximum open connections: 4

HTTP/1.0 speed

- Latency: 50ms
- Request size: 1 full segment
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- Case 1: Single page

HTTP/1.0 speed

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Maximum open connections: 4
- Case 1: Single page
 - SYN: 50ms, SYN/ACK: 50ms, ACK/request: 60ms, response: 70ms

HTTP/1.0 speed

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Maximum open connections: 4
- Case 1: Single page, 230ms
 - SYN: 50ms, SYN/ACK: 50ms, ACK/request: 60ms, response: 70ms

HTTP/1.0 speed

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Maximum open connections: 4

- Case 1: Single page, 230ms
 - SYN: 50ms, SYN/ACK: 50ms, ACK/request: 60ms, response: 70ms
- Case 2: Page that loads 2 images
 - Step 1 (page) - Setup: 100ms, request/response: 130ms
 - Step 2 (images) - 100ms, request/response: ?

Quiz

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Case 2: Page that loads 2 images
 - Step 1 (page) - Setup: 100ms, request/response: 130ms
 - Step 2 (images) - 100ms, request/response: ?

Quiz

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Case 2: Page that loads 2 images
 - ▶ Step 1 (page) - Setup: 100ms, request/response: 130ms
 - ▶ Step 2 (images) - 100ms, request/response: ?

HTTP/1.0 speed

- Latency: 50ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment packetization delay: 10ms (request and response), full duplex
- Maximum open connections: 4

- Case 1: Single page, 230ms
 - ▶ SYN: 50ms, SYN/ACK: 50ms, ACK/request: 60ms, response: 70ms
- Case 2: Page that loads 2 images: 480ms
 - ▶ Setup: 100ms, request/response: 130ms
 - ▶ Setup: 100ms, request/response: 150ms

Quiz

Given the following parameters, how long will HTTP 1.0 take to load these pages?

- Latency: 20ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment transmission time: 5ms (request and response)
- Maximum open connections: 2

- Case 1: Single page
- Case 2: Page that loads 5 images

Quiz

Given the following parameters, how long will HTTP 1.0 take to load these pages?

- Latency: 20ms
- Request size: 1 full segment
- Response size: 2 full segments (size of slow start window)
- Segment transmission time: 5ms (request and response)
- Maximum open connections: 2
- Case 1: Single page, 95ms ($20\text{ms} + 20\text{ms} + 25\text{ms} + 30\text{ms}$)
- Case 2: Page that loads 5 images, 400ms ($95\text{ms} + 105\text{ms} + 105\text{ms} + 95\text{ms}$)