HTTP Client Protocol

METHOD
GET request data, visible via URL
POST request data, not visible
HEAD
PUT
PATCH
DELETE
TRACE
OPTIONS
CONNECT

VERSION
HTTP/1.0
HTTP/1.1
HTTP/2
HTTP/3

sp = spaces
cr = carriage return
ln = new line

```
Request line  ->|method|sp|URL|sp|Version|cr|ln|
Header line   ->|header field name:|sp|value|cr|ln|
              -> . . .   . . .   . . .
Blank line    ->|cr|ln|
Entity body   ->|body     . . .   . . .   . . .   |
```

```
$ telnet www.frabon.de 80
Trying 208.97.177.124...
Connected to www.perdu.com.
Escape character is '^]'.

Request line ->GET[sp]/[sp]http/1.1[cr][ln]
Header line  ->Host:[sp]www.frabon.de[cr][ln]

HTTP/1.1 200 OK
Date: Sat, 17 Aug 2013 12:14:56 GMT
Server: Apache
Accept-Ranges: bytes
X-Mod-Pagespeed: 1.1.23.1-2169
Vary: Accept-Encoding
Cache-Control: max-age=0, no-cache
Content-Length: 204
Content-Type: text/html

<html>
<head><title>FraBon</title></head>
<body>
<h1>FraBon Home Page</h1>
<h2>Welcome</h2>
<strong><p>Hello World!</p></strong>
</body>
</html>

Connection closed by foreign host.
$
```

```
<html><head><title>FraBon</title></head><body><h1>FraBon Home Page</h1><h2>Welcome</h2><strong><p>Hello World!</p></strong></body></html>
```

HTTP Server Protocol

VERSION
HTTP/1.0
HTTP/1.1
HTTP/2
HTTP/3

STATUS CODE
1XX Informational
2XX Successful
3XX Redirection
4XX Client Error
5XX Server Error

PHRASE
100 **Continue**
101 **Switching Protocols**
...
200 **OK**
202 **Acceptet**
204 **No Content**
. . .
301 **Moved Permanently**
305 **Use Proxy**
. . .
400 **Bad Request**
401 **Unauthorized**
402 **Payment Required**
404 **Not Found**
408 **Request Timeout**
. . .
500 **Internal Server Error**
501 **Not Implemented**
502 **Bad Gateway**

sp = spaces
cr = carriage return
ln = new line

```
Status line  ->|version|sp|status code|sp|phrase|cr|ln|
Header line  ->|header field name:|sp|value|cr|ln|
             ->  . . .    . . .    . . .
Blank line   ->|cr|ln|
Entity body  ->|body      . . .    . . .    . . .    . . .|
```

```
$ telnet www.frabon.de 80
Trying 208.97.177.124...
Connected to www.perdu.com.
Escape character is '^]'.

GET / http/1.1
Host: www.frabon.de

status line ->HTTP/1.1[sp]200[sp]OK[cr][ln]
Header line ->Date:[sp]Sat, 17 Aug 2013 12:14:56 GMT[cr][ln]
Header line ->Server:[sp]Apache[cr][ln]
Header line ->Accept-Ranges:[sp]bytes[cr][ln]
Header line ->X-Mod-Pagespeed:[sp]1.1.23.1-2169[cr][ln]
Header line ->Vary:[sp]Accept-Encoding[cr][ln]
Header line ->Cache-Control:[sp]max-age=0, no-cache[cr][ln]
Header line ->Content-Length:[sp]204[cr][ln]
Header line ->Content-Type:[sp]text/html[cr][ln]
Blank line  ->[cr][ln]
Entity line ->&lt;html&gt;&lt;head&gt;&lt;title&gt;FraBon&lt;/title&gt;&lt;/head&gt;
Entity line ->&lt;body&gt;
Entity line ->&lt;h1&gt;FraBon Home Page&lt;/h1&gt;
Entity line ->&lt;h2&gt;Welcome&lt;/h2&gt;
Entity line ->&lt;strong&gt;&lt;p&gt;Hello World!&lt;/p&gt;&lt;/strong&gt;
Entity line ->&lt;/body&gt;
Entity line ->&lt;/html&gt;

Connection closed by foreign host.
$
```

```
<html><head><title>FraBon</title></head><body><h1>FraBon Home Page</h1><h2>Welcome</h2><strong><p>Hello World!</p></strong></body></html>
```

METHODEN

GET
The GET method requests a representation of the specified resource. Requests using GET should only retrieve data.

HEAD
The HEAD method asks for a response identical to that of a GET request, but without the response body.

POST
The POST method is used to submit an entity to the specified resource, often causing a change in state or side effects on the server.

PUT
The PUT method replaces all current representations of the target resource with the request payload.

DELETE
The DELETE method deletes the specified resource.

CONNECT
The CONNECT method establishes a tunnel to the server identified by the target resource.

OPTIONS
The OPTIONS method is used to describe the communication options for the target resource.

TRACE
The TRACE method performs a message loop-back test along the path to the target resource.

PATCH
The PATCH method is used to apply partial modifications to a resource.

Status Code - Information responses

100 Continue
This interim response indicates that everything so far is OK and that the client should continue the request, or ignore the response if the request is already finished.

101 Switching Protocol
This code is sent in response to an Upgrade request header from the client, and indicates the protocol the server is switching to.

102 Processing (WebDAV)
This code indicates that the server has received and is processing the request, but no response is available yet.

103 Early Hints
This status code is primarily intended to be used with the Link header, letting the user agent start preloading resources while the server prepares a response.

Status Code - Successful responses

200 OK
The request has succeeded. The meaning of the success depends on the HTTP method:
GET: The resource has been fetched and is transmitted in the message body.
HEAD: The representation headers are included in the response without any message body.
PUT or POST: The resource describing the result of the action is transmitted in the message body.
TRACE: The message body contains the request message as received by the server.

201 Created
The request has succeeded and a new resource has been created as a result. This is typically the response sent after POST requests, or some PUT requests.

202 Accepted
The request has been received but not yet acted upon. It is noncommittal, since there is no way in HTTP to later send an asynchronous response indicating the outcome of the request. It is intended for cases where another process or server handles the request, or for batch processing.

203 Non-Authoritative Information
This response code means the returned meta-information is not exactly the same as is available from the origin server, but is collected from a local or a third-party copy. This is mostly used for mirrors or backups of another resource. Except for that specific case, the "200 OK" response is preferred to this status.

204 No Content
There is no content to send for this request, but the headers may be useful. The user-agent may update its cached headers for this resource with the new ones.

205 Reset Content
Tells the user-agent to reset the document which sent this request.

206 Partial Content
This response code is used when the Range header is sent from the client to request only part of a resource.

Status Code - Redirection messages

300 Multiple Choice
The request has more than one possible response. The user-agent or user should choose one of them. (There is no standardized way of choosing one of the responses, but HTML links to the possibilities are recommended so the user can pick.)

301 Moved Permanently
The URL of the requested resource has been changed permanently. The new URL is given in the response.

302 Found
This response code means that the URI of requested resource has been changed temporarily. Further changes in the URI might be made in the future. Therefore, this same URI should be used by the client in future requests.

303 See Other
The server sent this response to direct the client to get the requested resource at another URI with a GET request.

304 Not Modified
This is used for caching purposes. It tells the client that the response has not been modified, so the client can continue to use the same cached version of the response.

307 Temporary Redirect
The server sends this response to direct the client to get the requested resource at another URI with same method that was used in the prior request. This has the same semantics as the 302 Found HTTP response code, with the exception that the user agent must not change the HTTP method used: If a POST was used in the first request, a POST must be used in the second request.

308 Permanent Redirect
This means that the resource is now permanently located at another URI, specified by the Location: HTTP Response header. This has the same semantics as the 301 Moved Permanently HTTP response code, with the exception that the user agent must not change the HTTP method used: If a POST was used in the first request, a POST must be used in the second request.

Status Code - Client error responses

400 Bad Request
The server could not understand the request due to invalid syntax.

401 Unauthorized
Although the HTTP standard specifies "unauthorized", semantically this response means "unauthenticated". That is, the client must authenticate itself to get the requested response.

402 Payment Required
This response code is reserved for future use. The initial aim for creating this code was using it for digital payment systems, however this status code is used very rarely and no standard convention exists.

403 Forbidden
The client does not have access rights to the content; that is, it is unauthorized, so the server is refusing to give the requested resource. Unlike 401, the client's identity is known to the server.

404 Not Found
The server can not find the requested resource. In the browser, this means the URL is not recognized. In an API, this can also mean that the endpoint is valid but the resource itself does not exist. Servers may also send this response instead of 403 to hide the existence of a resource from an unauthorized client. This response code is probably the most famous one due to its frequent occurrence on the web.

405 Method Not Allowed
The request method is known by the server but is not supported by the target resource. For example, an API may forbid DELETE-ing a resource.

406 Not Acceptable
This response is sent when the web server, after performing server-driven content negotiation, doesn't find any content that conforms to the criteria given by the user agent.

407 Proxy Authentication Required
This is similar to 401 but authentication is needed to be done by a proxy.

408 Request Timeout
This response is sent on an idle connection by some servers, even without any previous request by the client. It means that the server would like to shut down this unused connection. This response is used much more since some browsers, like Chrome, Firefox 27+, or IE9, use HTTP pre-connection mechanisms to speed up surfing. Also note that some servers merely shut down the connection without sending this message.

409 Conflict
This response is sent when a request conflicts with the current state of the server.

410 Gone
This response is sent when the requested content has been permanently deleted from server, with no forwarding address. Clients are expected to remove their caches and links to the resource. The HTTP specification intends this status code to be used for "limited-time, promotional services". APIs should not feel compelled to indicate resources that have been deleted with this status code.

411 Length Required
Server rejected the request because the Content-Length header field is not defined and the server requires it.

Status Code - Client error responses

412 Precondition Failed
The client has indicated preconditions in its headers which the server does not meet.

413 Payload Too Large
Request entity is larger than limits defined by server; the server might close the connection or return an Retry-After header field.

414 URI Too Long
The URI requested by the client is longer than the server is willing to interpret.

415 Unsupported Media Type
The media format of the requested data is not supported by the server, so the server is rejecting the request.

416 Range Not Satisfiable
The range specified by the Range header field in the request can't be fulfilled; it's possible that the range is outside the size of the target URI's data.

417 Expectation Failed
This response code means the expectation indicated by the Expect request header field can't be met by the server.

418 I'm a teapot
The server refuses the attempt to brew coffee with a teapot.

422 Unprocessable Entity (WebDAV)
The request was well-formed but was unable to be followed due to semantic errors.

425 Too Early
Indicates that the server is unwilling to risk processing a request that might be replayed.

426 Upgrade Required
The server refuses to perform the request using the current protocol but might be willing to do so after the client upgrades to a different protocol. The server sends an Upgrade header in a 426 response to indicate the required protocol(s).

428 Precondition Required
The origin server requires the request to be conditional. This response is intended to prevent the 'lost update' problem, where a client GETs a resource's state, modifies it, and PUTs it back to the server, when meanwhile a third party has modified the state on the server, leading to a conflict.

429 Too Many Requests
The user has sent too many requests in a given amount of time ("rate limiting").

431 Request Header Fields Too Large
The server is unwilling to process the request because its header fields are too large. The request may be resubmitted after reducing the size of the request header fields.

451 Unavailable For Legal Reasons
The user-agent requested a resource that cannot legally be provided, such as a web page censored by a government.

Status Code - Server error responses

500 Internal Server Error
The server has encountered a situation it doesn't know how to handle.

501 Not Implemented
The request method is not supported by the server and cannot be handled. The only methods that servers are required to support (and therefore that must not return this code) are GET and HEAD.

502 Bad Gateway
This error response means that the server, while working as a gateway to get a response needed to handle the request, got an invalid response.

503 Service Unavailable
The server is not ready to handle the request. Common causes are a server that is down for maintenance or that is overloaded. Note that together with this response, a user-friendly page explaining the problem should be sent. This response should be used for temporary conditions and the Retry-After: HTTP header should, if possible, contain the estimated time before the recovery of the service. The webmaster must also take care about the caching-related headers that are sent along with this response, as these temporary condition responses should usually not be cached.

504 Gateway Timeout
This error response is given when the server is acting as a gateway and cannot get a response in time.

505 HTTP Version Not Supported
The HTTP version used in the request is not supported by the server.

506 Variant Also Negotiates
The server has an internal configuration error: the chosen variant resource is configured to engage in transparent content negotiation itself, and is therefore not a proper end point in the negotiation process.

507 Insufficient Storage (WebDAV)
The method could not be performed on the resource because the server is unable to store the representation needed to successfully complete the request.

508 Loop Detected (WebDAV)
The server detected an infinite loop while processing the request.

510 Not Extended
Further extensions to the request are required for the server to fulfill it.

511 Network Authentication Required
The 511 status code indicates that the client needs to authenticate to gain network access.