

HTTP

Brief

- Hypertext Transfer Protocol
- Used for transmission/reception of hypermedia
- Stateless, request response protocol
- Client (user-agent) sends HTTP requests and server sends back the content to the client as response
- Usually takes place over TCP/IP connections but can work on any other **reliable** network protocol.
- Versions 0.9(raw data), 1.0(mime type), 1.1(connection reuse)

HTTP over TCP/IP

- Client establishes a TCP connection with the server by creating a socket and connecting the same to the server.
- This now establishes a connection
- Client then uses this socket as a gateway to send and receive the HTTP messages and data from the server.

HTTP Skeleton

- HTTP Message
 - Header
 - Header Field names
 - Header Field Values (Protocol Parameters)
 - Body
 - The PayLoad
- HTTP Message Types
 - Request (The message sent from the client)
 - Response (The message sent from the server)

Protocol Parameters

- HTTP Version
 - "<major>.<minor>" numbering scheme
 - HTTP-Version = "HTTP" "/" 1*DIGIT "." 1*DIGIT
 - Ex: HTTP/1.1
- URI
 - Formatted strings which identify a resource. No limit on length. 414 (Request-URI Too Long)
 - http_URL = "http:" "/" host [":" port] [abs_path ["?" query]]
 - Ex: <http://192.168.1.36:2888/index.html>
- Content coding
 - gzip, compress, deflate
- Transfer coding
 - Indicates how transfer of data occurs
 - Ex: Transfer-Encoding: chunked
- Media Types
 - Used in Content-Type and Accept Field Header
 - media-type = type "/" subtype *(";" parameter)

HTTP Message

- Message Types

- Request/Response
- Format:

<Start Line><CRLF>

<(0 – N)number of message header fields><CRLF>

<CRLF>

<Optional Message Data (Payload)>

- Message Header

- String consisting of a field name followed by a field value separated by a colon.
- field-name ":" [field-value]

- Message Body

- The Payload
- Can be transfer encoded, content encoded

Request

- Request Line
 - Method SP Request-URI SP HTTP-Version CRLF
 - Methods – OPTIONS, GET, HEAD, POST, PUT, DELETE, TRACE, CONNECT
 - URI - "*" | absoluteURI | abs_path | authority

OPTIONS * HTTP/1.1

GET http://www.w3.org/pub/WWW/TheProject.html HTTP/1.1

GET /pub/WWW/TheProject.html HTTP/1.1

Host: www.w3.org

- Request Header Fields
 - Allows the client to pass additional information to the server

Response

- Status Line
 - HTTP-Version SP Status-Code SP Reason-Phrase CRLF
 - HTTP/1.0 200 OK
- Response Header Fields
 - Allows the server to provide additional information about the response.
 - Give information about the server and about further access to the resource identified by the URI.
- Entity (The Payload)
 - Entity Header, will be part of the response header
 - Entity Body

Connections

- Persistent
- Negotiation
- Pipeline
- Proxy Servers

Methods

- OPTIONS
- GET
- HEAD
- POST
- PUT
- DELETE
- TRACE
- CONNECT
- PATCH

Refer RFC

Chunked Response Example:

HTTP/1.1 200 OK<CRLF>

Content-Type: text/plain<CRLF>

Transfer-Encoding: chunked<CRLF>

<CRLF>

25<CRLF>

This is the data in the first chunk<CRLF>

<CRLF>

1A<CRLF>

and this is the second one<CRLF>

0<CRLF>

<CRLF>