References


Reading


HTTP

Stateless (http 1.0)

Assigned port 80

Basic Server-Client Interaction (http 1.0)

Client: Open connection

Server: Accept/Reject connection

Client: Send request

Server: Send response to request

Connection closed
HTTP Message Format

HTTP-message = Simple-Request (HTTP/0.9 messages)
  | Simple-Response
  | Full-Request (HTTP/1.0 messages)
  | Full-Response

Full-Request = Request-Line
  *( General-Header | Request-Header | Entity-Header )
  CRLF
  [ Entity-Body ]

Full-Response = Status-Line
  *( General-Header | Request-Header | Entity-Header )
  CRLF
  [ Entity-Body ]

HTTP-header = field-name ":" [ field-value ] CRLF

Entity-Body = *OCTET
HTTP Full Request

Request-Line = Method SP URI SP HTTP-Version CRLF

rohan 13-→ telnet www.eli.sdsu.edu 80
Trying 130.191.226.80...
Connected to www.eli.sdsu.edu.
Escape character is "^]".
GET /courses/fall00/cs580/index.html HTTP/1.0

HTTP/1.1 200 OK
Date: Tue, 05 Sep 2000 19:31:14 GMT
Server: Apache/1.3.9 (Unix) PHP/3.0.12
Last-Modified: Mon, 04 Sep 2000 21:03:56 GMT
ETag: "14c199-7e8-39b40e3c"
Accept-Ranges: bytes
Content-Length: 2024
Connection: close
Content-Type: text/html
X-Pad: avoid browser bug

<HTML>
<HEAD>
    <TITLE>CS 580: Course Web Site</TITLE>
    ... stuff removed here...
Connection closed by foreign host.
Positional Data verses Name-Value Pairs

Which is more error prone?
Name-Value Pairs & Orderer

MIME-Version: 1.0
Server: CERN/3.0
Date: Thursday, 21-Mar-96 17:00:45 GMT
Content-Type: text/html
Content-Length: 2686
Last-Modified: Tuesday, 27-Feb-96 05:34:12 GMT

Server: CERN/3.0
Content-Type: text/html
MIME-Version: 1.0
Content-Length: 2686
Last-Modified: Tuesday, 27-Feb-96 05:34:12 GMT
Date: Thursday, 21-Mar-96 17:00:45 GMT
Adding new Fields

MIME-Version: 1.0
Server: CERN/3.0
Date: Thursday, 21-Mar-96 17:00:45 GMT
Content-Type: text/html
Forwarded: by http://rohan.sdsu.edu/ for cs.sdsu.edu
Content-Length: 2686

WhitneyInfo: Hi Mom
Last-Modified: Tuesday, 27-Feb-96 05:34:12 GMT
Name-Value Pairs are your Friends
Don't Program without them
Detecting End of a Message

Use termination sequence
Make the length of the message known

HTTP
Header ends in CRLFCRLF
Header contains length in bytes of message body

HTTP/1.0 200 Document follows
MIME-Version: 1.0
Server: CERN/3.0
Date: Thursday, 21-Mar-96 17:00:45 GMT
Content-Type: text/html
**Content-Length: 2686**
Last-Modified: Tuesday, 27-Feb-96 05:34:12 GMT
Detecting End of a Message

What happens if the terminating sequence happens to be part of the message?

What if a HTTP header contains CRLFCRLF
Post Office Protocol

Purpose: Allow PC's, Macs, etc. to download mail from server

Port number 110

Protocol uses ASCII only

Stateful protocol

Multiple requests & responses on same connection
Format of commands to server

keyword  blank  argument1  [ blank argumentk ]  CRLF

| keyword |  = 3, 4 characters, no spaces
| argument |  <= 40 characters, no spaces

keyword  and arguments are separated by single space character
Server Response

Status keyword additionalInfo

Status is either "+OK" or "-ERR0.3."

A single line response ends in CRLF

If response requires more than one line:

   Each line ends in a CRLF
   The response ends in CRLF.CRLF
   If a line starts with a "." prepend a "." to it

When Client reads the first CRLF how does it know it is at the end of message?
Timeouts

A POP3 server may have an autologout timer

A server must wait at least 10 minutes before timing out an idle client

The POP3 server on cs.sdsu.edu times out in 2 minutes
Client Connect States

Authorization
- USER/PASS success
- QUIT
- USER/PASS fail

Transaction
- QUIT

Update

Close Connection

STAT LIST RETR RSET

STAT LIST RETR RSET
Authorization State

Server acknowledges connection from client with

+OK "message"

+OK UCB Pop server (version 2.1.2-R3) at sciences.sdsu.edu starting.

Commands: USER, PASS, APOP, QUIT
Combination is used to progress to transaction state

USER must come first
PASS or QUIT must come after USER

Example
Ti 38->**telnet cs.sdsu.edu 110**
Trying 130.191.226.116...
Connected to cs.sdsu.edu.
Escape character is '^]'.
+OK QPOP (version 3.1.2) at sciences.sdsu.edu starting.
**USER whitney**
+OK Password required for whitney.
**PASS typeYourPasswordHere**
+OK whitney has 116 visible messages (0 hidden) in 640516 octets.
Transaction State

Commands: STAT, LIST, RETR, RSET, QUIT

STAT
Arguments: none
Returns "+OK" numberOfMessages SizeOfMail

STAT
+OK 22 45595

LIST
Arguments: a message-number (optional)
Returns: size of message in octets

Examples

LIST 2
+OK 2 3064

LIST
+OK 116 visible messages (640516 octets)
1 2980
2 3064 (message 3 - 116 deleted to save space)
116 1290
.
this is a test

the end

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Transaction State

DELE
Arguments: a message-number to delete
Returns: a confirmation of deletion
Marks a message to be deleted

NOOP
Arguments: none
Returns: a positive response
Does nothing

QUIT
Arguments: none
Returns: a positive response
Send POP3 server to UPDATE state
Update State

Updates mail box to reflect transactions taken during the transaction state, then logs user out.

If session ends by any method except the QUIT command during the transaction state, the update state is not entered.