Packet Trace Analysis

Yufan Zhang (NetID: yz605)

The Basic HTTP GET/response interaction

The GET message:

The response message:

1. **Is your browser running HTTP version 1.0 or 1.1? What version of HTTP is the server running?**

- Both the browser and the server are running HTTP version 1.1.

2. **What languages (if any) does your browser indicate that it can accept to the server?**

   Accept-Language: en-US,en;q=0.9,zh;q=0.8,zh-CN;q=0.7

3. **What is the IP address of your computer? Of the gaia.cs.umass.edu server?**

- My computer: `192.168.31.164`
- Server: `128.119.245.12`

4. **What is the status code returned from the server to your browser?**

   HTTP/1.1 200 OK

5. **When was the HTML file that you are retrieving last modified at the server?**

Last-Modified: Fri, 12 May 2023 05:59:01 GMT

6. **How many bytes of content are being returned to your browser?**

   Content-Length: 128

7. **By inspecting the raw data in the packet content window, do you see any headers within the data that are not displayed in the packet-listing window? If so, name one.**

- No.

The HTTP CONDITIONAL GET/response interaction

The first GET message:

The response message:

The second GET message:

The response message:

8. **Inspect the contents of the first HTTP GET request from your browser to the server. Do you see an "IF-MODIFIED-SINCE" line in the HTTP GET?**

- No.

9. **Inspect the contents of the server response. Did the server explicitly return the contents of the file? How can you tell?**

- Yes. The server returned the contents of the file because the status code is `200 OK`. The line-based text data of the response can also be seen in the window.

```
Line-based text data: text/html (10 lines)
    \n
    <html>\n
    \n
    Congratulations again!  Now you've downloaded the file lab2-2.html. <br>\n
    This file's last modification date will not change.  <p>\n
    Thus  if you download this multiple times on your browser, a complete copy <br>\n
    will only be sent once by the server due to the inclusion of the IN-MODIFIED-SINCE<br>\n
    field in your browser's HTTP GET request to the server.\n
    \n
    </html>\n
```

1. **Now inspect the contents of the second HTTP GET request from your browser to the server. Do you see an "IF-MODIFIED-SINCE:" line in the HTTP GET? If so, what information follows the "IF-MODIFIED-SINCE:" header?**

- Yes. The information following the header is `Fri, 12 May 2023 05:59:01 GMT`.

11. **What is the HTTP status code and phrase returned from the server in response to this second HTTP GET? Did the server explicitly return the contents of the file? Explain.**

- The status code is `304 Not Modified`. The server did not explicitly return the contents of the file since the local cache is up to date. The server only returned the header information.

Retrieving Long Documents

The GET message:

The response message:

12. **How many HTTP GET request messages did your browser send? Which packet number in the trace contains the GET message for the Bill or Rights?**

- 1. The packet number is 42.

13. **Which packet number in the trace contains the status code and phrase associated with the response to the HTTP GET request?**

- The packet number is 59.

14. **What is the status code and phrase in the response?**

- The status code is `200 OK`.

15. **How many data-containing TCP segments were needed to carry the single HTTP response and the text of the Bill of Rights?**

- There are 5 data-containing TCP segments, which are `#55, #56, #57, #58, #59`.

HTML Documents with Embedded Objects

The first GET message:

16. **How many HTTP GET request messages did your browser send? To which Internet addresses were these GET requests sent?**

- There are 4 GET request messages. The addresses are `128.119.245.12`, `128.119.245.12`, `178.79.137.164`, and `128.119.245.12` respectively.

17. **Can you tell whether your browser downloaded the two images serially, or whether they were downloaded from the two web sites in parallel? Explain.**

- The two images were downloaded in parallel. The response of the first image was received after the second GET request was sent.

HTTP Authentication

The first GET message:

The first response message:

18. **What is the server's response (status code and phrase) in response to the initial HTTP GET message from your browser?**

- The status code is `401 Unauthorized`.

19. **When your browser's sends the HTTP GET message for the second time, what new field is included in the HTTP GET message?**

- The `Authorization` field is included.