

Lecture 4 - Application Layer - Part 2

Overview

We will wrap up the Application Layer (Layer 7) from the Kurose / Ross book diving a bit deeper into HTTP and then looking at FTP, SMTP, P2P, and streaming video. Some of the content (particularly Netflix / CDNs) will likely stretch to Monday.

Readings

- Readings - Lecture 4 (This lecture and portions of the first lecture)
 - Browse Chapter 2 in the book. If you do not have the Kurose / Ross book yet, you can access the free Peterson / Davies book [Links to an external site.](#) and also read through Chapter 9 in that book.

Handouts

- This Overview

Key Points

- What is the general syntax for HTTP requests? What are various headers?
- What are cookies? What are the different types of cookies?
- What is web caching? What does it mean to proxy?
- Compare / contrast: FTP, SMTP, HTTP, BitTorrent
- Explain DASH
- Explain what a CDN is

Examples

Client GET	Server Response
<pre>HTTP GET /home.html HTTP/1.1 Host: developer.mozilla.org User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:50.0) Gecko/20100101 Firefox/50.0 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8 Accept-Language: en-US,en;q=0.5 Accept-Encoding: gzip, deflate, br Referer: https://developer.mozilla.org/testpage.html Connection: keep-alive Upgrade-Insecure-Requests: 1 If-Modified-Since: Mon, 18 Jul 2016 02:36:04 GMT If-None-Match: "c561c68d0ba92bbeb8b0ffff2a9199f722e3a621a" Cache-Control: max-age=0</pre>	<pre>HTTP 200 OK Access-Control-Allow-Origin: * Connection: Keep-Alive Content-Encoding: gzip Content-Type: text/html; charset=utf-8 Date: Mon, 18 Jul 2016 16:06:00 GMT Etag: "c561c68d0ba92bbeb8b0ff612a9199f722e3a621a" Keep-Alive: timeout=5, max=997 Last-Modified: Mon, 18 Jul 2016 02:36:04 GMT Server: Apache Set-Cookie: my-key=my value; expires=Mon, 17-Jul-2017 16:06:00 GMT; Max-Age=31449600; Path=/; secure Transfer-Encoding: chunked Vary: Cookie, Accept-Encoding X-Backend-Server: developer2.webapp.scl3.mozilla.com X-Cache-Info: not cacheable; meta data too large X-kuma-revision: 1085259 x-frame-options: DENY</pre>

Looking Ahead

- Monday - Lecture 5 - Overview of the Transport Layer
 - Read Chapter 3 from Kurose / Ross
- Homework 2, Brief Discussion of Coding Project 1