GSoC CernVM-FS

HTTP/2 support

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About Me

My name is **Rafayel Mkrtchyan** and I am second year undergraduate student at the University of California, Berkeley. I am majoring in *Computer Science* and *Applied Mathematics*.

Three interesting facts about me:

- I am big fan of open-source software development.
- I am actively participating in various hackathons.
- I am a co-founder of *Bookselves* - a mobile application startup based out of the San Francisco Bay Area.

You can find me at:

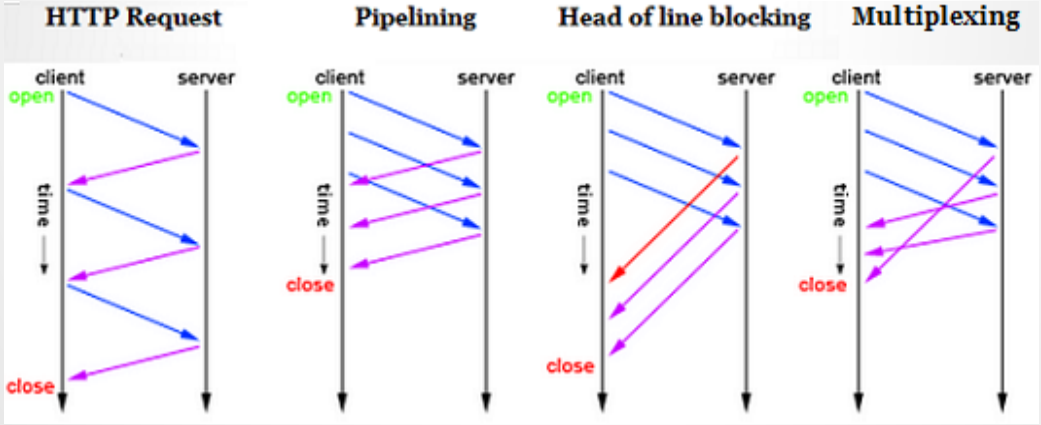
www.GitHub.com/MicBrain

www.LinkedIn.com/in/rafayelmkrtchyan

What is HTTP/2 and Multiplexing?

HTTP/2 is the newest version of HTTP network protocol. The **multiplexing of requests and responses** in HTTP/2 technology allows:

- some additional performance improvements,
- escape from head-of-line blocking, which is the biggest issue with respect to the pipelining functionality of HTTP/1.1 protocol.



Here is the visual representation of the differences between HTTP/1.1 pipelining and HTTP/2 multiplexing.

The URL of the original image is http://stackoverflow.com/questions/10480122/difference-between-http-pipeling-and-http-multiplexing-with-spdy

HTTP/2 Support in CernVM-FS

"**HTTP/2 support**" project is designed to implement some new features in CernVM File System in order to:

- reduce the latency for all data transfers
- automatically decide if parallel connections (HTTP/1.1 on the other end) or multiplexed connections (HTTP/2) should be used.

We are planning to take the implementations related to HTTP/2 from **libcurl**, which is a free client-side URL transfer library. The upcoming version 7.43.0 of libcurl (the approximate release date is June 17th, 2015) will contain:

- the multiplexing feature of HTTP/2 protocol.
- various example codes for efficient utilization of multiplexed requests and responses.

What we have done so far?

Since the official version of libcurl that supports HTTP/2 is not available yet, we are using the daily snapshots of libcurl package from:

- https://github.com/bagder/curl/tree/http2-multiplex
- http://curl.haxx.se/snapshots/

We have made a sample project called “**Download Manager**” that is an experimental software application designed to compare the speeds of three options of requesting files - *Regular*, *Pipelined* using HTTP/1.1 protocol and *Multiplexed* using HTTP/2 technology. You can find the results of our experiments by visiting our Wiki page:

https://github.com/MicBrain/GSoC_CernVM-FS/wiki/Trial-Download-Manager