CS 485/ECE 440/CS 585 Fall 2013 Homework 5

Due 11:59pm on Thursday, 7 November 2013

Homework 5 is worth 10 points

Please submit your answers for homework 5 in the body of an email with no attachments to "unmnetworkingclass@gmail.com". Do not submit your homework to any other address.

Feel free to work in groups on this homework and give each other hints, but don't copy someone else's answers. You should understand all of your own answers, meaning you either did the work yourself or were part of a group that did it.

Here is an IPv6 traceroute annotated with per-hop MTU information, using the experimental technique that Jeff Knockel gave a guest lecture about.

```
 1: 2001:48e0:203:0:20f:35ff:feb1:9880, -> 9216 ->, <- 9216 <-
 2: 2001:48e0:400:1:211:bcff:fe56:5f00, -> 9174 ->, <- 9000 <-
 3: 2001:4880:100:14::1, -> 9216 ->, <- 9216 <-
 4: 2001:4880:0:60::2 (vlan-45.elpa.layer2.nlr.net), -> 9216 ->, <-
9216 <-
 5: 2001:4880:0:6::2 (vlan-43.losa.layer2.nlr.net), -> 9000 ->, <-
1500+ <-
 6: 2001:252:0:501::1, -> 9000+ ->, <- 1500+ <-
 7: 2001:252:0:302::1, -> 8986 ->, <- 1500+ <-
 8: *
 9: 2001:252:0:1::1, -> 1500 ->, <- 1500+ <-
10: 2001:da8:1:1b::2 (pku-bj-v6.cernet2.net), -> 1500+ ->, <- 1500 <-
11: 2001:da8:1:50d::2 -> 1500+ ->, <- 1500 <-
12: 2001:da8:ac:fff1::2 (cernet2.net), -> 1500 ->, <- 1500 <-
13: 2001:da8:201:ffff::7 -> 1500 ->
14: 2001:da8:201:1129:203:baff:fe2f:163c
```

Here are some other common MTUs that can be found on the Internet: 9192, 9180, 9176, 4470, and 8166.

Feel free to also use Google (or a jumbo frame Internet connection if you happen to have one) to find some other common MTUs. Also feel free to run traceroute6's from looking glass servers and try to find the MTUs between IPv6 routers at spookyscan.cs.unm.edu, but only if you have a lot of time to kill. Another approach might be to find a looking glass server that supports jumbo frames and path mtu measurements (such as tracepath).

Write a paragraph and submit it as your homework 5. Your paragraph should discuss a few MTUs observed on the Internet that are interesting. Try to pick the most interesting MTU explanations that you can find, “An MTU of 1500 probably means Ethernet” is not that interesting. You should be looking at things like IP tunnels, MPLS tunnels, SONET, token ring networks, and Carrier Ethernet to try to find interesting explanations. If you can give a little bit of history or rationale behind an MTU, that's great, too.

Your grade will be based on how much your paragraph demonstrates that you've learned about link layer technologies and different kinds of tunnels on the Internet.