

Homework 3

Problem 3.1

Solution:

- a) The script for this part can be found in *p3-a.py*.
- b) The script for this part can be found in *p3-b.py*.
- c) To limit the mtu we need to execute the following lines after running the script:

```
r1 ip link set r1-eth1 mtu 1400  
r2 ip link set r2-eth0 mtu 1400
```

And if we were running a *tcpdump* while we are pinging from h1 to h2 we will notice that the package is being fragmented into two parts and there is also an 8 byte fragmentation header added.

- d) *tracpath* traces the path to the destination discovering MTU along this path. It uses the given UDP port or some random port. It is similar to *traceroute*, only does not require superuser privileges and has no fancy options. *tracpath* also sees if a link MTU is lower than the tried path, the ICMP(Internet Control Message Protocol) error tells the new path MTU which is used in subsequent probes.
- e) If we were to run two times a *tracpath* between h1 and h2 we would notice that the first time it will take some time until it hops to the destination, but the second time it already knows the path and give a result faster. The IP implementation of h1 is saving the path MTU for 600 seconds on the routing cache.