Advanced Networking Lab **Part 1**

1. Boot to Windows
   Verify your network configuration the same way that you did for previous labs. This time you should be using DHCP and have an address 199.17.162.xxx Any xxx is ok, even if it does not match the label on your PC.

2. Run **ping -h**

   This gives the options for the **ping** command.

   Using these options, find the minimum MTU between your PC and → 1472 bytes

   *192.145.254.**zzz***

   this address is assigned to a PC in my office, but uses HBC instead of the normal campus Internet connection.

   I will provide you with **zzz** during the lab.

   Using only **ping** find the path from your PC to *192.145.254.**zzz***

~~192.145.24~~

199.17.162.1

Part 2.

4. **Tracert** is another common IP management tool found on many IP systems.

   Tracert works by sending a packet to the remote node and adjusting the TTL. It starts the TTL at 1, which means that the first gateway (router) will return an ICMP message that the TTL has expired. It then sets the TTL to 2, which finds the second gateway. It repeats this until the destination is reached. Experiment with tracert.

   Find the route to Bemidji www.bemidjistate.edu 7 hops

   Find the route to node *192.145.254.***zzz** 14 hops

   Now try 199.17.161.32 This is a different PC in my office. ~~7 hops~~ 2 hops

   Find the route to a foreign node i.e., Norway - www.uio.no
   Try this one several times to see if you get the same route each time.

   Try www.kame.net, this site is in Japan. \8
   Try 203.178.141.194 \8

   The last 2 addresses are on the same host.

5. Go to web site www.traceroute.org \6

   From this site you can do a reverse traceroute, i.e., trace the path back to your workstation. Try these tests a couple of times in case you encounter congestion during your tests.

To begin, use your IPv4 address as the target.

Select the server at Princeton
Trace the path back to your workstation and compare it to the route you get when you trace from your workstation to that server.

Now try it from Poland - Internet Partners

Again, compare this with the route you get to Poland
Try two or three other countries

Repeat some of the inward traces using IPv6

Compare the routes for IPv4 and IPv6 in terms of the paths and number of hops