Homework 5. May 11, 2021

1. A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?
2. A large number of consecutive IP address are available starting at 198.16.0.0. Suppose that four organizations, A, B, C, and D, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in the *w.x.y.z/s* notation.
3. A router has the following (CIDR) entries in its routing table:

Address/mask	**Next hop**
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
default	Router 2

For each of the following IP addresses, what does the router do if a packet with that address arrives?

(a) 135.46.63.10
(b) 135.46.57.14
(c) 135.46.52.2
(d) 192.53.40.7
(e) 192.53.56.7

4. Use the traceroute (UNIX) or tracert (Windows) programs to trace the route from your computer to various universities on other continents. Make a list of transoceanic links you have discovered. Some sites to try are
www.mit.edu (Massachusetts)
www.ufrj.br (Rio de Janeiro)
www.vu.nl (Amsterdam)
www.iitd.ac.in (Delhi)
www.uct.ac.za (Cape Town)

5. Install “Wireshark” network/packet analyzer in one of your favored computers. Use the analyzer to catch a packet and show information about the captured packet through its PDU image.

(a) Layer-2 frame header, and what kind/brand of sender’s layer-2 interface is used?
(b) Layer-3 header and differentiated services field?