

EEL 4781 - Homework 3

Due December 3, 2009

Problem 1:

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	Interface 3
Default	Interface 4

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

- (a) 135.46.58.10
- (b) 135.46.56.14
- (c) 135.46.52.2
- (d) 192.53.41.7
- (e) 192.53.42.7

Problem 2:

Many companies have the policy of having two (or more) routers connecting the company to the internet to provide some redundancy in case one of them goes down. Is this policy still possible with NAT? Explain.

Problem 3:

Why does UDP exist? Would it not have been enough to just let processes send raw IP packets?

Problem 4:

Datagram fragmentation and reassembly are handled by IP and are invisible to TCP. Does this mean that TCP does not have to worry about data arriving in the wrong order?

Problem 5:

Suppose that the TCP congestion window is currently 4KB, and the threshold is 10KB. We have the following sequence of transmissions: success, success, success, success, timeout, success, success. Trace the size of the congestion window and the threshold.

Problem 6:

DNS uses UDP instead of TCP. If a DNS packet is lost, there is no automatic recovery. Does this cause a problem, and if so, how it is solved?

Problem 7:

A web portal keeps the user's preferences in a cookie. A disadvantage of this scheme is that cookies are limited to 4KB, so if the preferences are extensive, for example, many stocks, types of news stories, weather, etc, the 4KB limit might be reached. Design an alternative way to keep the preferences that does not have this problem.