Wireless & Mobile Networking

Homework 6

**P9.6**

MS = mobile system

BS = base station

Time-consuming operations that need to be considered:

Beacon interval = 1 second

Distance = 5km

A – beacon signal delay (between 0 and 1 second)

B – Beacon signal exchange between MS and foreign BS

C – request from MS to foreign BS to register

D – foreign BS sends authentication request to home BS

E – home BS sends foreign BS a response

F – foreign BS sending reply (reject or accept) to MS

Minimum delay =

* A = 0 (beacon is sent immediately
* B = 0 seconds (if not a ‘new’ device and has been there before)
* D, E – cannot determine – not enough information (distance, network, etc.)
* C,F – Depend on formula
  + time = distance/speed = d/s
  + d = 5km
  + s = c = 3x10^8
  + = (5/3x10^8)
  + = 1.67x10^-8

Minimum delay = A + B + C + D + E + F

= 0 + 0 + 1.67x10^-8 + D + E + 1.67x10^-8

= 2\*1.67x10^-8 + D + E

Minimum delay = 3.34x10^-8 + D + E

Maximum delay =

* A = 1 second (have to wait full time)
* D, E – cannot determine – not enough information (distance, network, etc.)
* B, C, F – Depend on formula
  + time = distance/speed = d/s
  + d = 5km
  + s = c = 3x10^8
  + = (5/3x10^8)
  + = 1.67x10^-8

Maximum delay = A + B + C + D + E + F

= 1 + 1.67x10^-8 + 1.67x10^-8 + D + E + 1.67x10^-8

= 1 + 1.67x10^-8 + D + E

Maximum delay = 1 + 5.01x10^-8 + D + E

**P9.8**

Attachment points are used to attach a user’s default/home network (such as Verizon) to a foreign network (such as T-Mobile). It is important because it allows packets to be transferred between different users on different networks (between the two networks.

**P10.3**

Interior routing protocols route data within a system. Exterior protocols route data between different systems.

Test Website: google.com

Interior: Cannot determine, they choose the interior protocol and don’t necessarily disclose it

Exterior: Cannot determine, they would have to use whatever protocol is connecting the system I’m on and their own network/system

**P10.8**

The disadvantages of using wired-line TCP over networks are that packets are lost due to colliding packets from more users. The system either slows down because of collisions or it slows down in an attempt to prevent packet loss through collision avoidance. Inter-flow contention and Intra-flow contention can both affect the network negatively by increasing delay and decreasing predictability in behavior. In contrast, wireless will usually lose packets from noise/interference in the environment.