BLG609E - Special Topics: 4G Wideband Wireless Network Architectures
(Spring 2012)

Homework - 9: Mobility Management and Interworking

1. What is the main motivation for an operator to prefer Simple IP instead of Mobile IP? In what circumstances does the use of Simple IP instead of Mobile IP poses drawbacks? (2 POINTS)

   Mobile IP protocol needs implementation of some specialized entities like Home/Foreign Agents. Even if operators may prevent from creating dedicated hardware for these entities, they need to deploy software entities (like in PMIP). Moreover, hosts also need to implement Mobile IP stack. Because of this additional cost, operators may prefer simple IP and give up the advantage of protecting IP address on the movement of mobile user.

2. Provide one of the reasons for a HCSN not to allow a VCSN to allocate the HA@/home@ for a roaming MS (2 POINTS)

   Home network service provider policy determines whether MS connects to internet via VCSN or HCSN but either way, this decision is taken on HCSN. This is because some lawful intercept. If provided address belongs to VCSN, he can join internet from there, if it belongs to HCSN it can join from HCSN. → + accounting + firewalling

3. What is the main difference between WiMAX and LTE in regards to who controls the handovers? (1 POINT)

   In WiMAX, the MS controls the handover whereas in LTE, network decides (UE assists but the eNB decides) when the handover tales place instead of UE.

4. Does WiMAX support equivalent of LTE's "Transparent Target to Source Container" (3 POINTS)

   NO ✗

   LTE's "Transparent Target to Source Container" contains Handover Preparation Information and in reverse, source to target transparent container includes the radio capability information for the source and target 3GPP RATs. In WiMAX, connection manager handles network detection selection entry and handover procedures. Example message similar to LTE's transparent containers can be: RRQ message in 3GPP2 CMIPv4 to WiMAX PMIPv4 HO that contains a PMIP access-technology type extension.

5. What technological advancement has made operators start loving WiFi and why? (2 POINTS)

   Interoperability of mobile devices with WiFi and 3G networks made operators start loving WiFi. Actual reason is that it is discovered that operators can take advantage from existing WiFi networks, that they have paid no cost neither for the deployment nor usage of these networks, via using them for serving part of their data traffics required by their customers to lighten their backbone network load. With the increasing data rate demands of the applications run on mobile devices, operators realized that their network deployment could not handle or handles difficultly these data rates if they push their subscriber for using only 3G for their data traffic.