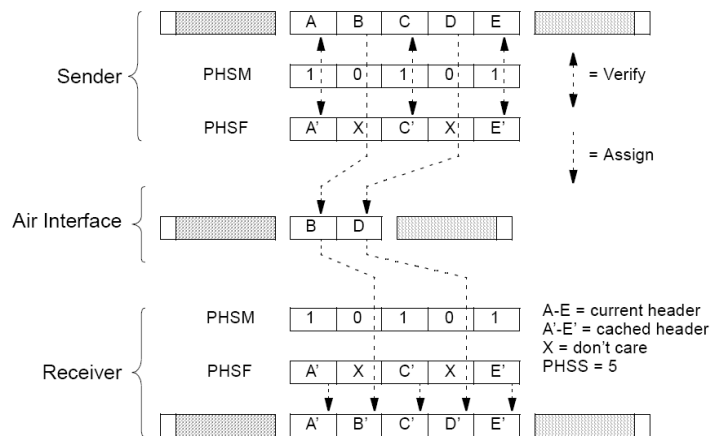Quiz 7 Solution

1. Explain five scheduling services of 802.16e briefly.

   a. UGS (unsolicited grant service): Fixed size of up-link bandwidth (for data transmission) is periodically allocated unsolicited manner. No bandwidth request/grant signaling. Suitable for CBR traffic.

   b. rtPS (real-time polling service): Variable size of up-link bandwidth (for bandwidth request transmission) is periodically allocated. Based on the bandwidth request message, the bandwidth for uplink data transmission is allocated. Suitable for periodic real-time traffic.

   c. ertPS (extended real-time polling service): UGS+ rtPS. Up-link bandwidth for "data transmission" is allocated periodically like UGS. However, the station can also request to change the size of allocated bandwidth using allocated bandwidth. This service is suitable for the periodic real-time traffic which has the variable required bandwidth, but it does not change very frequently. (VoIP with silence suppression)

   d. BE (best effort): No guarantee for the bandwidth allocation. Bandwidth is allocated based on the bandwidth request/grant operation. Non-periodic, variable size of bandwidth allocation.

2. What is packet header suppression of 802.16 for and how does it work?

   Sol) Some "common fields" in the headers of upper-layers are suppressed based on rules. Therefore the suppressed fields are not transmitted, but they are recovered at the received based on rules which are made when the connection is established.

3. A scriber station of 802.16e is running a VoIP application while downloading a file. How many connections are operating within this station? Explain each.

   Sol) Two flows can be aggregated into a single connection, or each flow can associate different connection, respectively. Moreover, CID of 802.16 std is directional, i.e., uplink and downlink flow requires separated connection Therefore, there can be 2 or 4 connections for VoIP and FTP flows, and 2 or 3 connections for management connections.

   -> 4, 5, 6, 7 connections. (Any of these answers with reasonable explanation is correct)