# Enhanced EH Format (Section 15.2.2.2)

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Purpose:
Discuss and approve the proposed text changes into IEEE802.16m/D3 document

# Introduction (1/2)

- The MAC PDU and extended header format in 16m (P802.16m/D2) is shown in Figure 1 and Figure 2 respectively
  - The EH format is variable in nature
  - The receiver can not decrypt the MAC PDU payload until it has parsed all the extended header

- In 16e, the extended sub header format contained the ‘EH Length’ which facilitated decryption of payload without parsing the extended sub headers

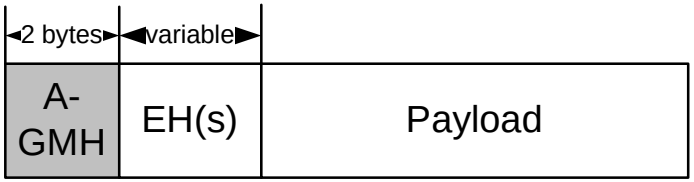


**Figure 1: MAC PDU format**

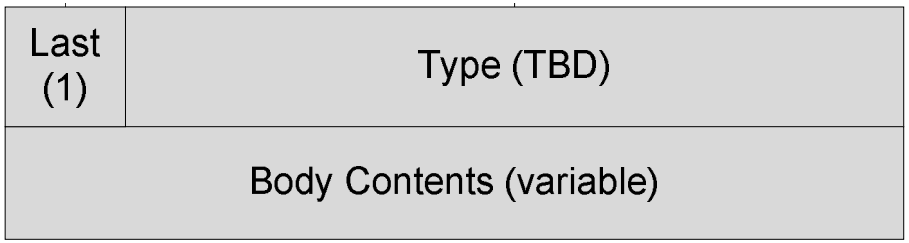


**Figure 2: EH format**

# Introduction (2/2)

- FPEH/FEH issue
  - FPEH/FEH format is different from other EH format
    - Last & Type field are not defined
  - Extended header (FPEH/FEH) is present even when EH bit is ‘0’ in AGMH

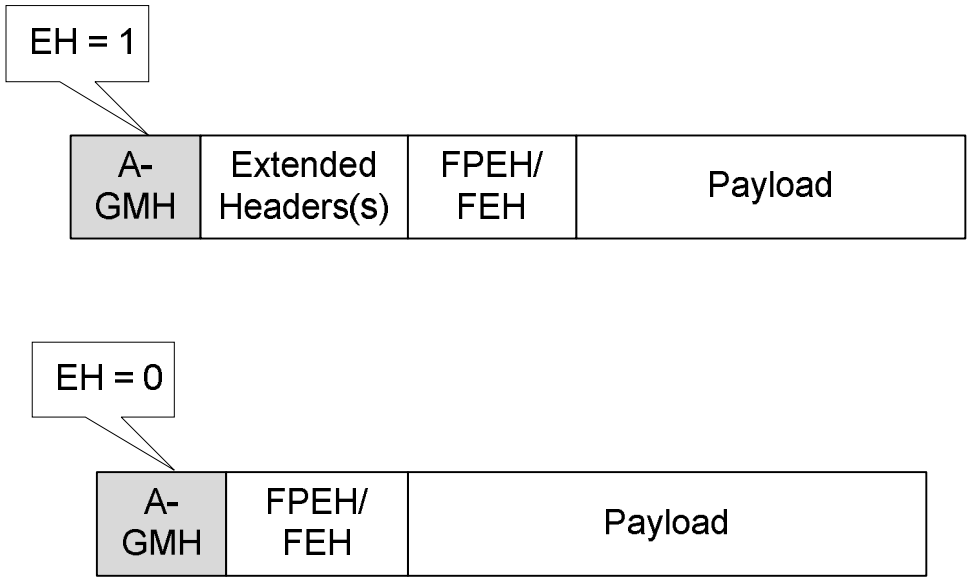


**Figure 3: EH indication and FPEH/FEH presence**

# Proposed Extended Header Format (1/2)

- The extended header format is shown in figure 5 below
  - All extended headers are of same format consisting of a type field followed by type specific fields
    - 'Last' bit is removed
  - The first extended header is preceded by 1 byte 'EH Length' field which gives the sum of length of all extended headers
  - The presence/absence of EH is indicated by 'EH' field in AGMH

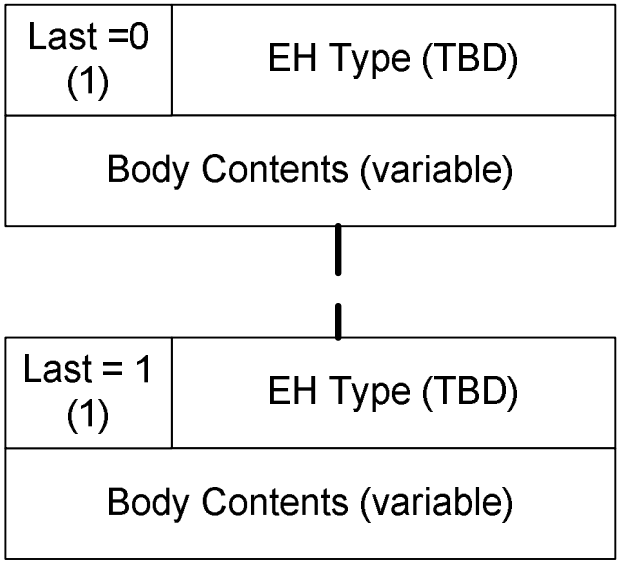


**Figure 4: Existing EH Format**

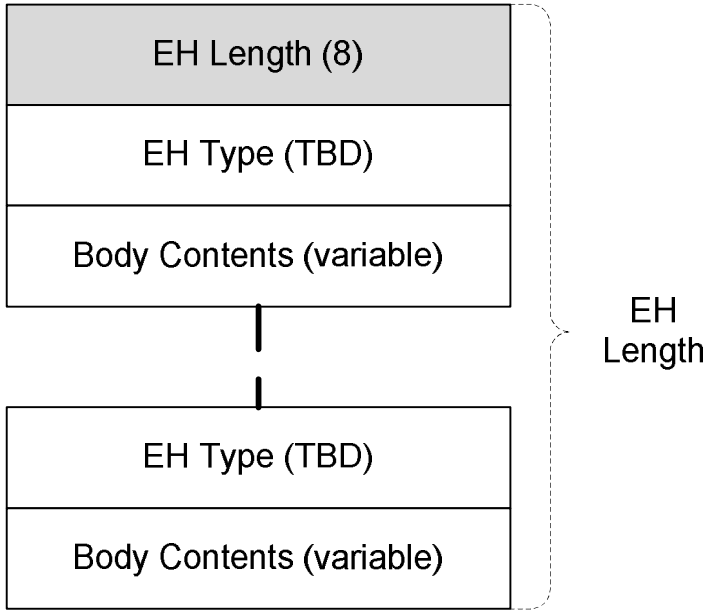


**Figure 5: Proposed EH format**

# Proposed Extended Header Format (2/2)

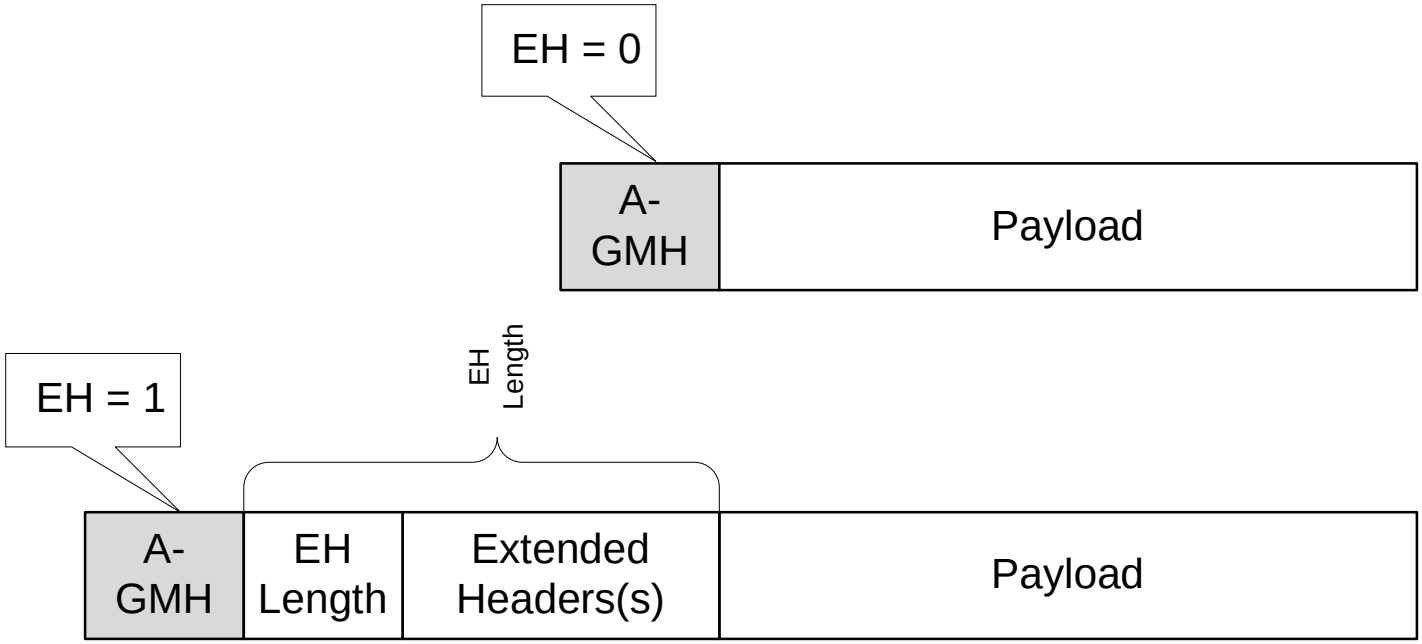


**Figure 6: Proposed EH format illustration**

# Proposed FPEH Format

- FPEH is defined as Fragmentation & Packing sub header (FPSH)
  - Fields of FPSH are same as FPEH
  - FPSH is appended before the first SDU/SDU fragment in the transport connection payload (see figure 7)

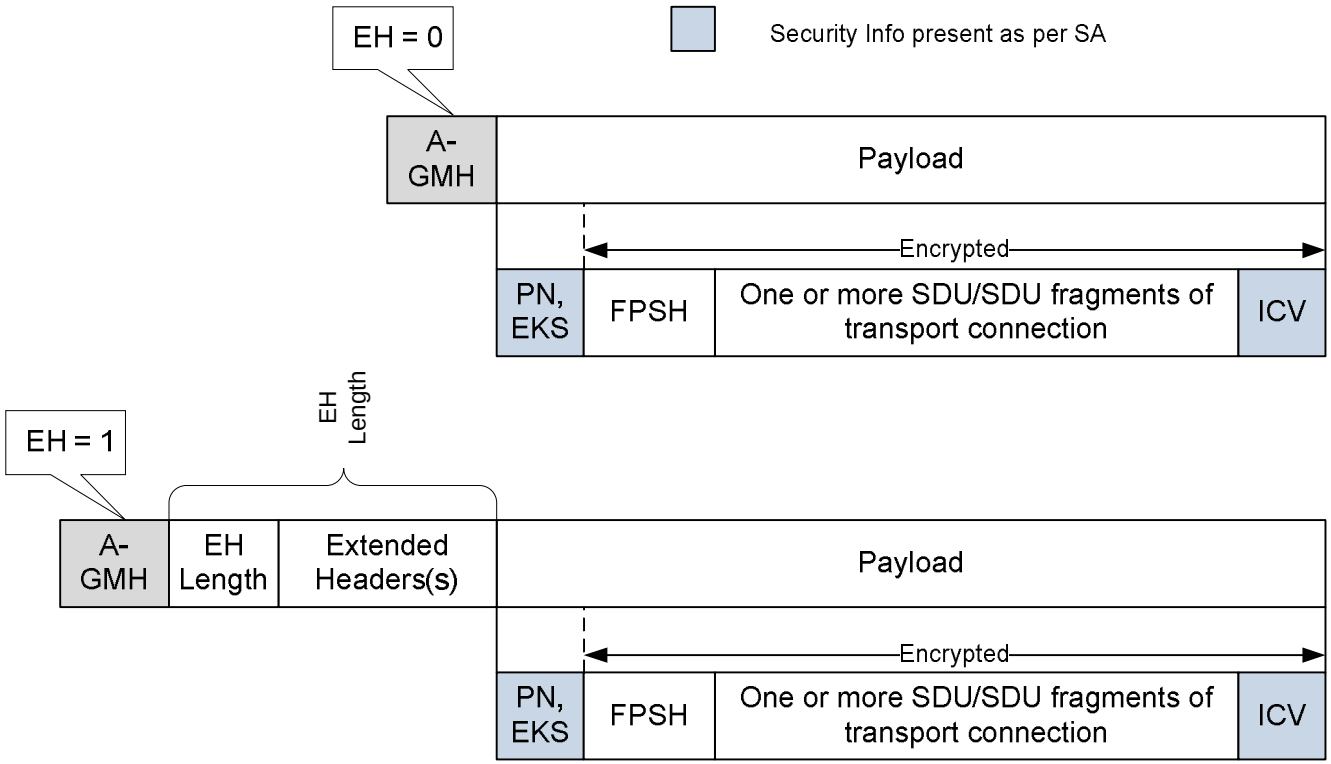


**Figure 7: FPSH and EH illustration**

# Proposed FEH Format

- FEH is defined as Fragmentation sub header (FSH)
  - FSH is appended before the control message or control message fragment in the control connection payload
  - Fields of FSH are same as FEH except the 'EC' bit
    - EC bit is removed from FSH
    - Flow ID is used to distinguish between the unencrypted and encrypted control message on the control connection
      - Only one control connection exists

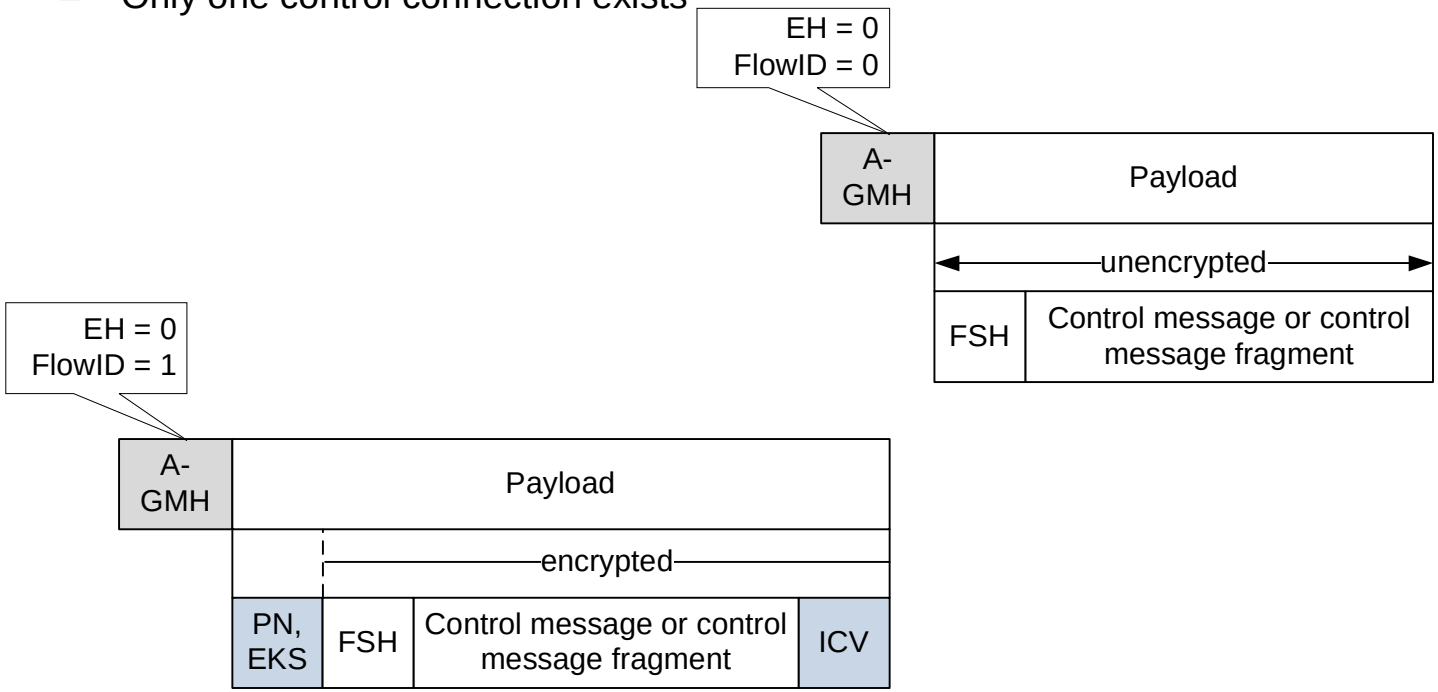


**Figure 8: FSH and FlowID illustration**

# Multiplexing Illustration

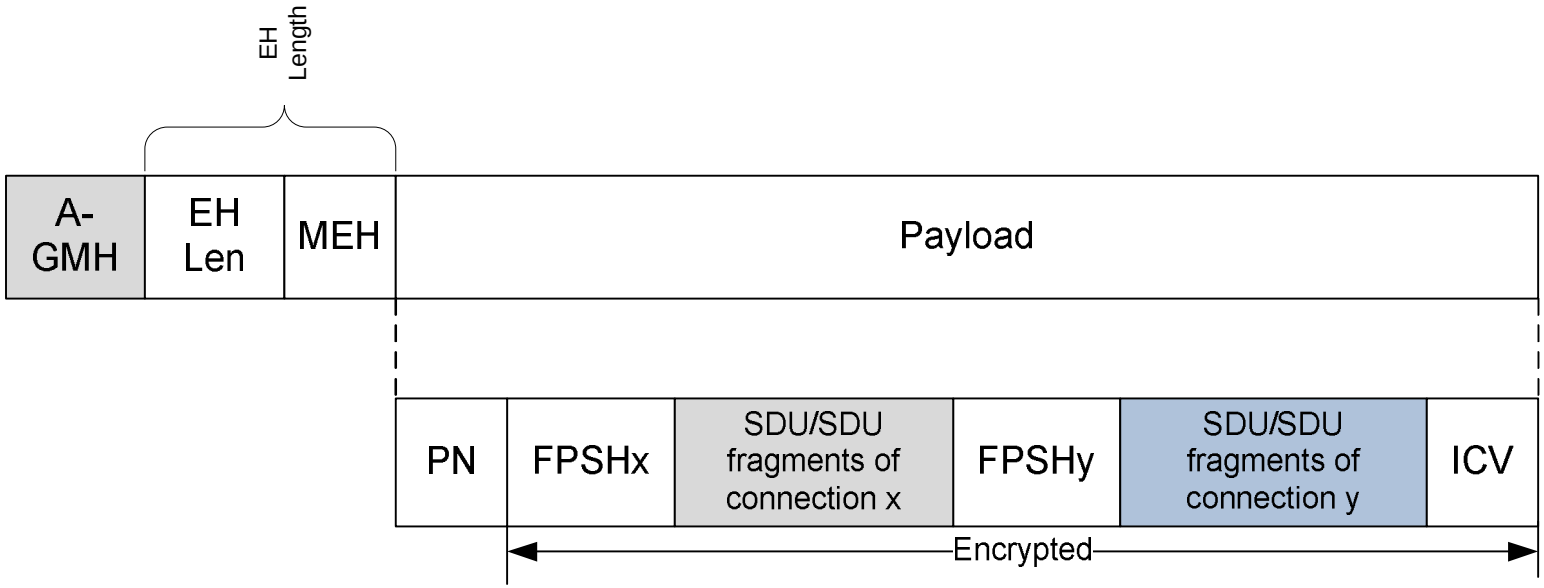


**Figure 9: Illustration of multiplexing**