

MAC trigger frame padding follow up

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Abstract

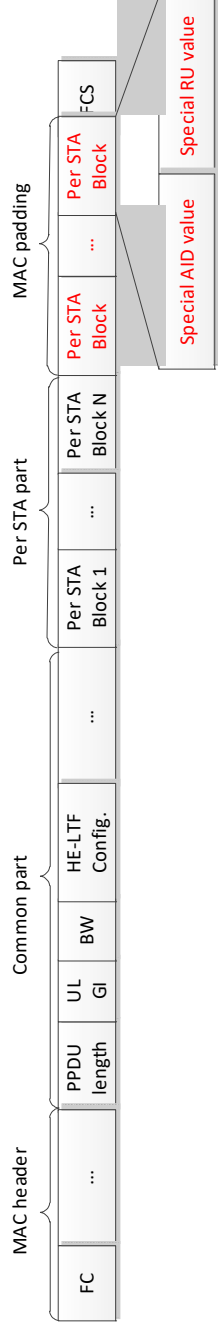
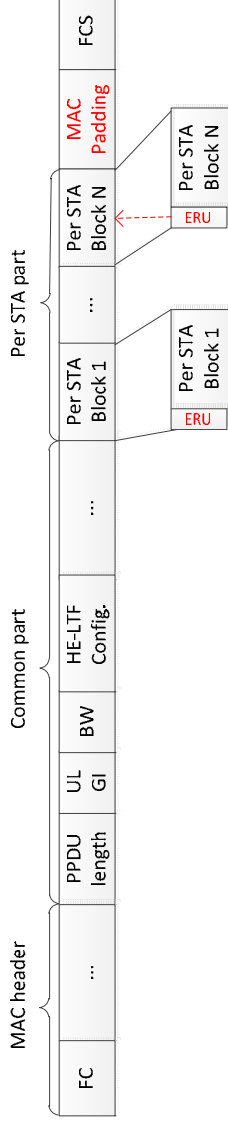
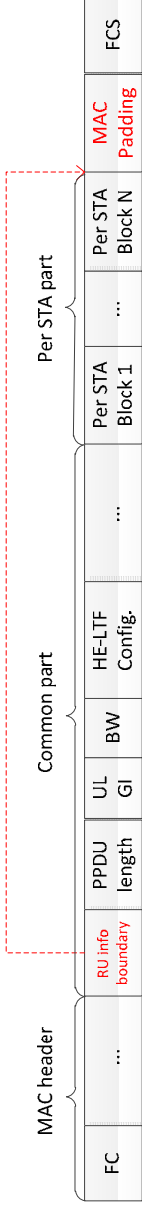
- Passed motion related with Trigger Frame padding
 - The spec shall define a MAC padding scheme (TBD) for trigger frame sent in Non-HT PPDU's (MU Motion 45, January 2016, see 16/0067r0)
 - The draft specification shall specify that when a Trigger needs to be padded to allow sufficient UL PPDU transmission preparation time, the padding shall be at the MAC layer and the padding shall not include an FCS (MAC Motion 75, March 2016, see 16/368r1)

	Frame Control	Duration	{RA}	TA	Common Info	Per User Info	...	Per User Info	Padding	FCS
Octets:	2	2	6	6	TBD	TBD		TBD	TBD	4

- This contribution attempts to conclude the TBD MAC padding scheme for Trigger Frame
- Comments that are associated
 - CID # 2890, 2896, 1643

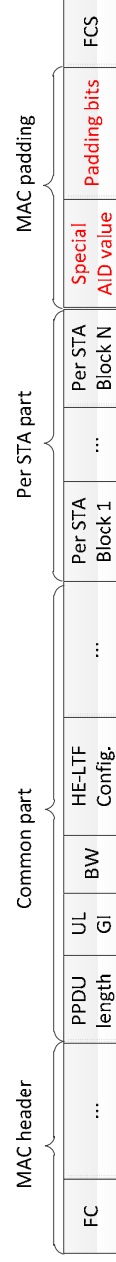
Recap: three proposed MAC padding options

- Option 1-RU length indication in Common part
- Option 2-Per STA part contains first/last Per STA part indication
- Option 3-Using a special AID value to indicate the start of padding
 - Option 3 offers least overhead and simplest implementation with the following possible enhancement
 - No need to repeat the Per STA Block
 - No need to define Special RU allocation value



Proposal: harmonized MAC padding scheme

- Option 4- an enhancement of option 3
 - MAC padding is performed with a special Per STA info
 - STAID value is set as a reserved value to indicate the Per STA info is padding and needs no processing
 - STAID[11:0] = 0xFFFF is defined as the special STAID to indicate MAC padding
 - The rest padding bits are all set to one
 - The Padding field of the Trigger frame, if present, is an integer number of bytes ≥ 2 : Padding field starts with special STAID[11:0] as 0xFFFF and the rest bits of the Padding field are all set to one.



TF MAC Padding Duration

- Propose that each STA may announce its “TF MAC Padding Duration Capability” in HE Capabilities Field.
- Possible values: [0, 8, 16] μ s.
 - In the case of HE PPDU, “16 μ s” duration results in at least one more OFDM symbol.
- AP is allowed to transmit TF with any PPDU format (11a/g/n/ac/ax).
- AP shall apply the TF MAC Padding field with length corresponding to the longest TF MAC Padding Duration Capability among all the destination STAs.

Length Calculation for TF MAC Padding Field

- Case-1: For TF in Non-HT (OFDM), HT and VHT PPDU's

$$L_{PAD,MAC} = \left\lceil \frac{N_{DBPS} \cdot m_{PAD}}{8} \right\rceil \text{ bytes}$$

- Case-2: For TF in HE PPDU's

$$L_{PAD,MAC} = \left\lceil \frac{\textcolor{red}{N}_{DBPS,SHORT} \cdot m_{PAD}}{8} \right\rceil \text{ bytes}$$

$$\text{where } m_{PAD} = \begin{cases} 0, & \text{max MAC Padding Duration} = 0\mu\text{s} \\ 2, & \text{max MAC Padding Duration} = 8\mu\text{s} \\ 4, & \text{max MAC Padding Duration} = 16\mu\text{s} \end{cases}$$

On STBC

- When transmitting a TF, the AP is free to use any PHY format, except STBC.
- Proposed to disallow using STBC in a PPDU carrying Trigger Frame.
 - For STBC, buffering every two OFDM symbols to process may cause extra processing delay at the receiver.

Straw Poll

- Do you support to direct TGax editor to adopt doc 11-16-0870r0 into TGax Draft per editing instruction in doc.11-16-0870r0 to conclude MAC trigger padding TBDs
 - Yes
 - No
 - Abstain
- Do you support to adopt the resolution text for comment CID 2890, 2896, 1634 as provided in 11-16-0870r0.
 - Yes
 - No
 - Abstain