

Multi-TID A-MPDU in MU Transmission

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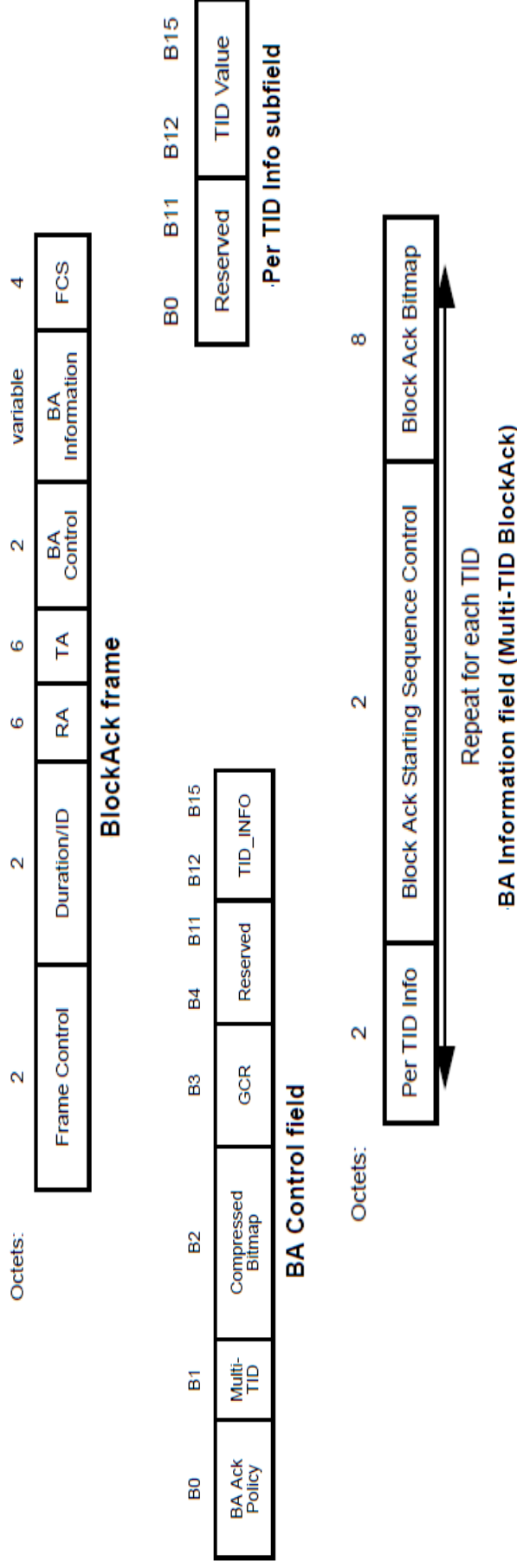
Single TID vs Multiple TIDs in an PSDU

- In 802.11 baseline, two methods are defined for TC (=TID) selection in an A-MPDU.
 - An A-MPDU in PSMP aggregates MPDUs from multiple TC.
 - An A-MPDU in other frame exchanges aggregates MPDUs from one TC.
- 11ax passed the motion about multiple TIDs in a PSDU:
 - The spec shall allow multiple TIDs in a single PSDU between AP and a STA for DL/UL OFDMA/MU-MIMO. Multiple TIDs aggregation rules are TBD if necessary.

Multi-TID BA Recap

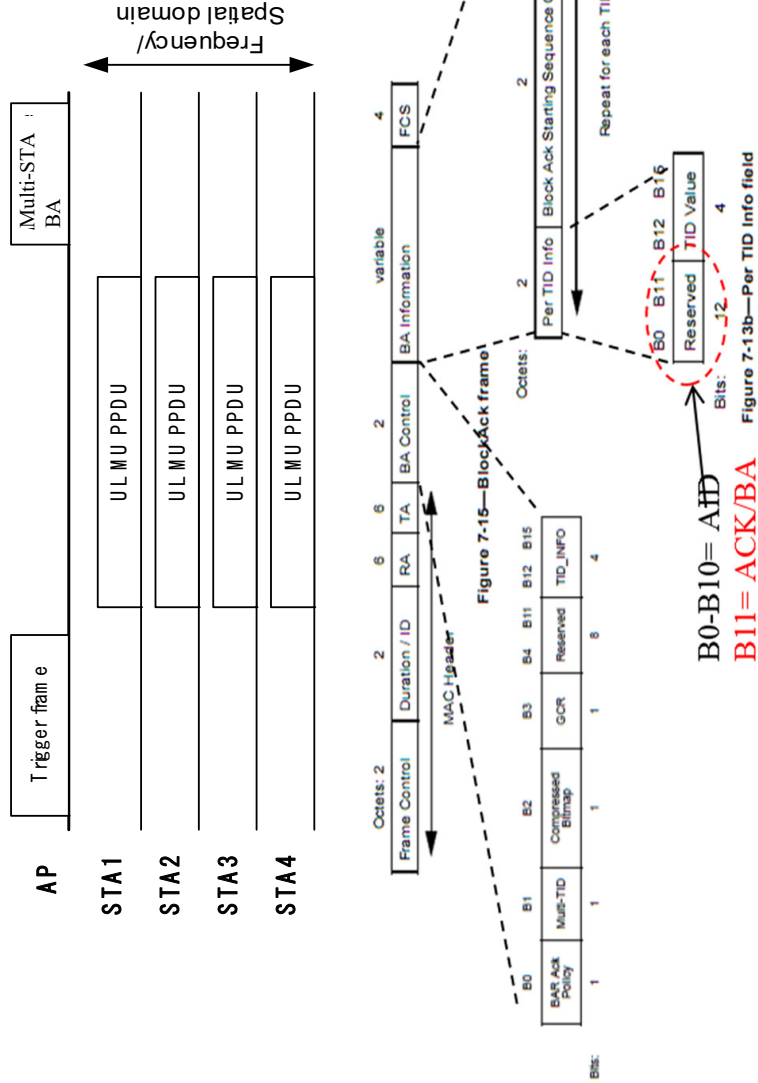
- Multi-TID BA acknowledges MPDUs of multiple TIDs from one STA.
- Frames from a TID without BA negotiation can't be acknowledged by Multi-TID BA.
- Management frame in A-MPDU can't be acknowledged by Multi-TID BA.

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Multi-STA BA Recap

- Multi-STA BA is used to acknowledge UL MU A-MPDUs from multiple STAs.
- Multi-STA BA supports BA acknowledgement and Acknowledgement for multiple TIDs of a STA.
- The management frame in A-MPDU can't ask for acknowledgement.



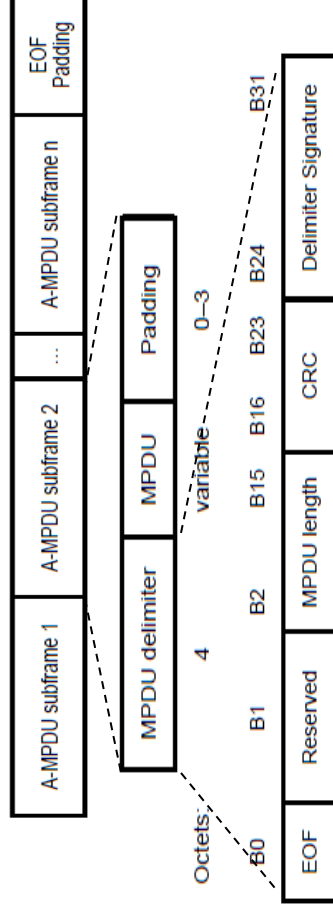
OFDMA A-MPDU Aggregation Rules

- MPDUs from multiple TIDs that need to be acknowledged by Ack or BA can be aggregated in one A-MPDU.
 - A STA doesn't need to do BA negotiation for each TID in order to aggregate MPDUs to A-MPDU.
 - MPDUs in A-MPDU should indicate whether Ack or BA is used to carry acknowledgement information.
- When EOF is 1, MPDU length is not 0 and Ack Policy of the MPDU is Normal Ack Request, the MPDU asks for acknowledgement by Ack SIFS after the OFDMA transmission.
 - At most one such data MPDU for a TID is allowed in an A-MPDU.
 - At most one such management MPDU is allowed in an A-MPDU.

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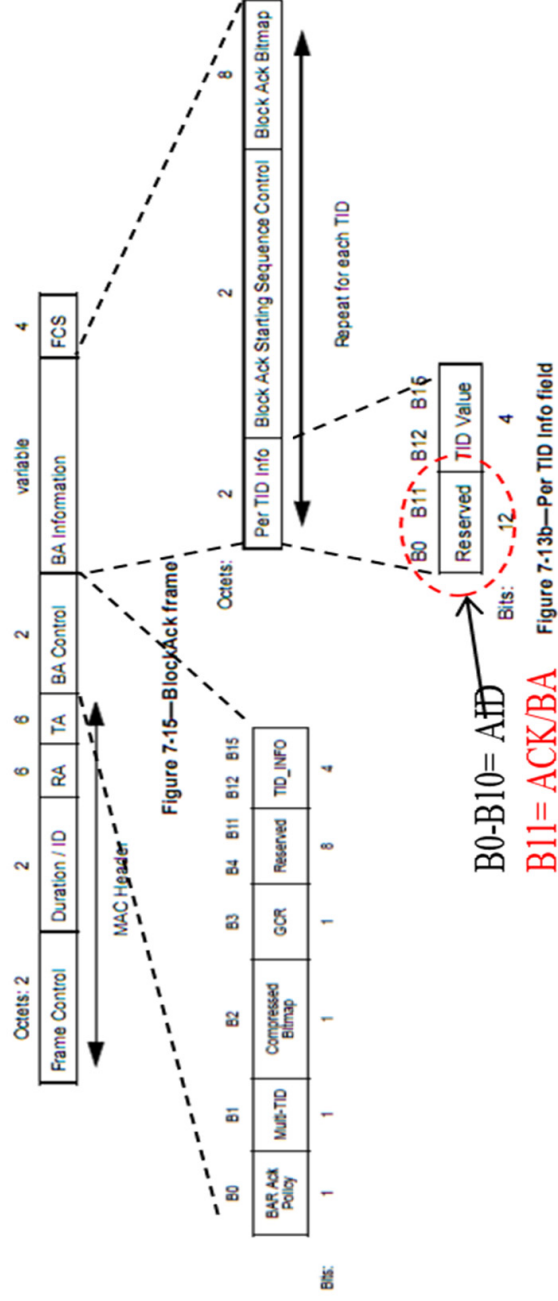
When EOF is 0 and MPDU length is not 0 and Ack Policy of the MPDU is Implicit Block Ack Request or related TID of the MPDU is indicated by Block Ack Request, the MPDU asks for acknowledgement by BA SIFS after the OFDMA transmission.

- When EOF is 0 and MPDU length is not 0, Ack Policy of the MPDU is Block Ack Request , and the related TID of the MPDU is not indicated by Block Ack Request, the MPDU asks for acknowledgement by BA in the future (no immediate response frame).



Enhanced (Single STA) Multi-TID BA

- The Multi-STA M-BA is also used for single STA acknowledgement
 - when DL MU A-MPDU includes multiple TIDs, or
 - when UL multi-TID MU A-MPDUs are acknowledged by DL OFDMA/MU PPDU.
- When Multi-STA M-BA is used for single user, RA is unicast MAC address
 - AID field is TBD.



References

- [1] Draft P802.11REVmc_D5.0
- [2] 11-15/132r13 Specification Framework for TGax

Straw Poll 1

Do you agree to add the following text to the SFD 4.1 General?

- **MPDUs from multiple TIDs that ask for Ack and/or BA acknowledgement and management frame that asks for Ack acknowledgement may be aggregated in one A-MPDU of MU transmission**

Straw Poll 2

Do you agree to add the following text to the SFD subclause 4.2 DL MU Operation:

- **The spec shall allow UL MU transmission of Multi-STA Block ACK frame in response to multi-TID A-MPDU of DL MU transmission. The value of the AID field in M-BA is TBD**