IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGax, MU Ad hoc  November 2015 Dallas TGax MU Ad hoc Meeting Minutes | | | | |
| Date: 2015-11-10 | | | | |
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Abstract

The meeting minutes from the MU Ad Hoc group meeting of TGax in the IEEE 802.11 Dallas session, November 9th – 12th, 2015.

**IEEE 802.11 Task Group ax, MU Ad hoc**

**November 2015 Bangkok Meeting**

**November 9th – 12th, 2015**

**MU Adhoc Session #1**

**Tuesday, November 10th, 2015, PM1 TGax Session (1:30 – 3:30PM)**

1. **The meeting called to order by Kaushik Josiam (Samsung), the co-chair of the TGax MU Ad hoc**
   1. At 2:25 pm, 116 people are present.
2. **Announcement**
   1. Agenda Doc.11-15/xxx on the server. Rev. 0 is the working document.
   2. Meeting Protocol: The Chair asked to state name and affiliation when speaking for the first time.
   3. Attendance reminder.
      1. The attendance server: https://imat.ieee.org/
3. **The chair reviewed the mandatory 5 slides of P&P.**
   1. Instructions from the WG Chair. [reviewed~~, did not review~~]
   2. Participants, Patents, and Duty to Inform. [reviewed~~, did not review~~]
   3. Patent Related Links. [reviewed, ~~did not review~~]
   4. Call for potentially essential patents.
      1. Chair asked if anyone is aware of potentially essential patents

[Asked. ~~Did not ask~~]

* + 1. Potentially essential patents

[None reported. ~~Reported as follows~~]

* 1. Other Guidelines for IEEE WG Meetings.

1. **The Chair identified 12 presentations assigned by the TGax chair to be treated in MU Ad hoc**
   1. No new presentations, other than those listed in the agenda, were requested.

1. **The Chair asked for approval of the agenda**
   1. No objection raised
2. **Presentation of contributions**
   1. 1280 Traffic priority for random Multi User Uplink OFDMA
      1. Strawpoll #1 (pre-motion): *The spec shall define a procedure for the data selection upon random trigger frame reception, respectful of AC priorities:*

Y/N/A: 5/2/many

SP fails

* + 1. Strawpoll #2 (pre-motion):  
       *The spec shall define a Collision Risk Factor (CRF) reflecting the probability of transmission error to be taken into account in the CWO computation according to the formula: CWO = CWOmin x 2CRF*

*The CRF can be provided by the AP (optional Randomization Parameter [4]) or computed locally by each STA based on its previous MU UL transmission status.*

*Randomization Parameter received from AP is priority compared to locally computed CRF value.*

Y/N/A: 5/7/many

SP fails

* + 1. Strawpoll #3 (pre-motion):

*A STA shall compute the CWOmin and CWOmax values upon TF-R reception. The CWOmin value shall be adapted according to the number of RU (NbRu) defined by the received TF-R, and the CWOmax shall be adapted (AC\_Priority\_Factor[] is TBD) according to the current highest priority (CurrentAC) of the data contained in AC queues.*

*The resulting formulas for the CWOmin and CWOmax shall be:*

*CWOmin=NbRu*

*CWOmax=fct (AC\_Priority\_Factor[Current AC] )*

Y/N/A: 2/5/many

SP fails

* + 1. Strawpoll #4 (pre-motion):  
       *The STA shall compute the OBO from CWO + an offset based on data AC according to the formula :*

*OBO=rand[0,CWO]+AC\_Offset[Current\_AC](TBD)*

Y/N/A: 3/5/many

SP fails

* 1. 1301 NAV Rule for UL MU Response
     1. Strawpoll #1 (pre-motion): **Do you agree to add the following underlining part to the TGax SFD:**  
        4.3 UL MU operation

A STA that is polled from a Trigger frame for UL MU transmission considers the NAV in determining whether to respond unless one of the following conditions is met

- The NAV was set by a frame originating from the AP sending the trigger frame

- The response contains ACK/BA and the duration of the UL MU transmission is below a TBD threshold

- The NAV was set by a frame originating from intra-BSS STAs

- Other condition TBD

Y/N/A: 35/0/28

SP passes

* 1. 1328 Scheduling information for UL OFDMA Acknowledgement
     1. Strawpoll #1 (pre-motion):

Scheduling information for UL OFDMA Acknowledgement from STA may be contained within the “HE variant of the HT Control Field”

Y/N/A: 19/0/26

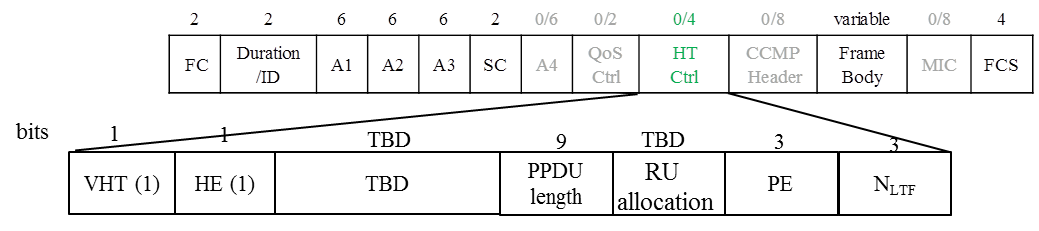
SP passes

* + 1. Strawpoll #2 (pre-motion):

HE variant of HT control field that contains scheduling information for UL MU Acknowledgement from STAs shall also include

* + number of LTF symbols, NLTF,
  + and PHY padding and packet extension signaling, PE

for UL MU transmission. The signaling format of the scheduling information for UL MU Acknowledgement is defined as



Y/N/A: 9/23/25

SP fails

* 1. 1314 I/Q Imbalance Impact to TGax OFDMA Uplink Reception

SPs deferred to TGax session

1. The Chair announced the end of the MU ad hoc session at 3:30 pm.

**MU Adhoc Session #2**

**Wednesday, November 11th, 2015, PM2 TGax Session (4:00 – 6:00PM)**

1. **The meeting called to order by Sigurd Schelstraete (Quantenna), the co-chair of the TGax MU Ad hoc**
   1. At 5 pm, 81 people are present.
2. **Announcement**
   1. Agenda Doc.11-15/1418r1 on the server. Rev. 1 is the working document.
   2. Meeting Protocol: The Chair asked to state name and affiliation when speaking for the first time.
   3. Attendance reminder.
      1. The attendance server: https://imat.ieee.org/
3. **The chair reviewed the mandatory 5 slides of P&P.**
   1. Instructions from the WG Chair. [reviewed~~, did not review~~]
   2. Participants, Patents, and Duty to Inform. [reviewed~~, did not review~~]
   3. Patent Related Links. [reviewed, ~~did not review~~]
   4. Call for potentially essential patents.
      1. Chair asked if anyone is aware of potentially essential patents

[Asked. ~~Did not ask~~]

* + 1. Potentially essential patents

[None reported. ~~Reported as follows~~]

* 1. Other Guidelines for IEEE WG Meetings.

1. **The Chair identified 8 remaining presentations assigned by the TGax chair to be treated in MU Ad hoc**
   1. No new presentations, other than those listed in the agenda, were requested.

1. **The Chair asked for approval of the agenda**
   1. No objection raised
2. **Presentation of contributions**
   1. 1312 MU BAR Frame Format
      1. Do you agree the following to be added to 11ax SFD:  
           
         7.2.X: The MU BAR frame is a Trigger frame with type BAR that carries additional BAR Control subfield in the common info and an additional BAR Information subfield in each per-STA info.  
           
         Y/N/A: 22/2/22  
         Strawpoll passes
   2. 1374 Consideration for protecting cascading MU DL/UL transmission with MU RTS/CTS
      1. Do you agree to add to the TG Specification Frame work document?  
           
         *The spec shall include a mechanism that allows MU RTS/CTS to protect both MU Downlink and MU Uplink transmission(s) within the same TXOPs.*Strawpoll withdrawn – to be combined with SP in 1325

* 1. 1325 MU-RTS/CTS Follow Up
     1. SP#1: Do you agree to add to the TG Specification Frame work document?  
          
        *x.y.z. MU-RTS/CTS frame exchange may be used for protection of MU transmissions during that TXOP*Y/N/A: 47/0/7  
        Strawpoll passes
     2. SP#2: Do you agree to add to the TG Specification Frame work document?  
          
        *x.y.z. The MAC format of MU-RTS is a variant of trigger frame format*Y/N/A:48/0/8  
        Strawpoll passes
     3. SP#3: Do you agree to add to the TG Specification Frame work document?  
          
        *x.y.z. The CTS sent in response to a frame that solicits simultaneous CTS shall be transmitted on one or more 20 MHz channels.*

Y/N/A:44/0/9  
Strawpoll passes

* + 1. SP#4: Do you agree to add to the TG Specification Frame work document?  
         
       *x.y.z. MU-RTS may request STAs to send non-HT CTS immediate response.*Y/N/A:39/0/7  
       Strawpoll passes
    2. SP#5: Do you agree to add to the TG Specification Frame work document?  
         
       *x.y.z. MU-RTS will carry signaling for each STA to indicate the 20MHz channel(s) for transmitting CTS responses when CTS is sent in (duplicate) non-HT PPDU*

*- When a STA sends CTS in response to MU-RTS, the CTS response shall be transmitted in the 20MHz channel(s) indicated in MU-RTS   
- provided other transmission conditions TBD are met (e.g. channel idleness)  
- The indicated 20 MHz channel(s) can be either Primary20, Primary40, Primary80 or 160/80+80 MHz. Other indications are TBD.  
- Exact Signaling TBD*

Y/N/A:40/3/12  
Strawpoll passes

* 1. 1326 NAV Consideration for UL MU Response Follow Up
     1. SP#5: Do you agree to add to the TG Specification Frame work document?  
          
        x.y.z. A STA maintains two NAVs

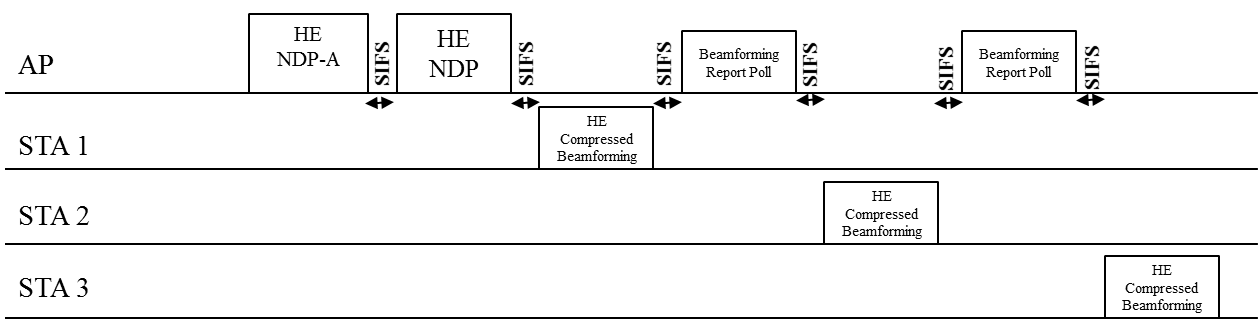
- One is the NAV for Intra-BSS frame, and another one is the NAV for Inter-BSS frame or frame that cannot be determined to be Intra-BSS or Inter-BSS

- Note that maintaining two NAVs does not imply maintaining two NAV timers

- The detailed method of maintaining two NAVs (e.g., two NAV timers or one NAV timer with difference of two NAV values, etc.) is TBD

- Mandatory or Optional TBD

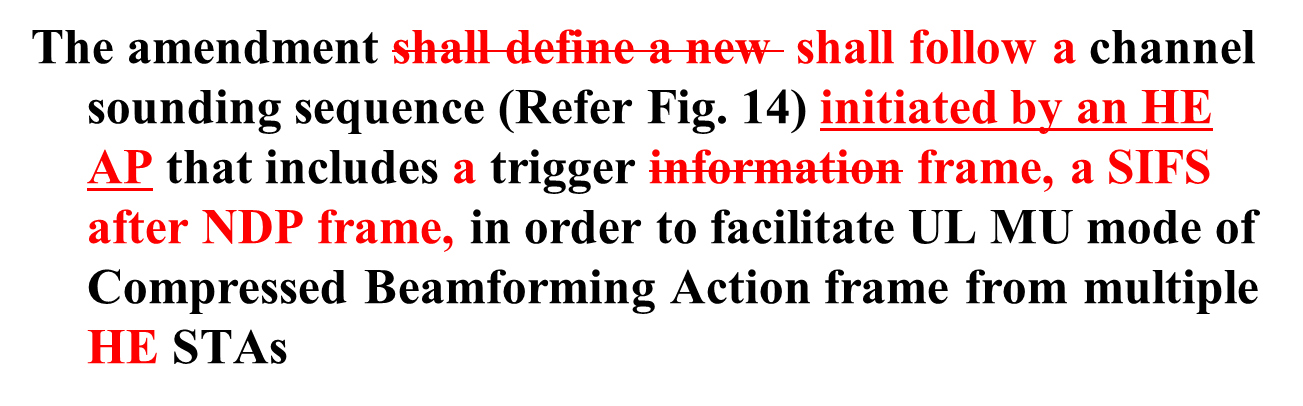
Y/N/A:30/0/14  
Strawpoll passes

* 1. 1340 NDP Announcement for HE Sequence
     1. SP#1 Do you agree to add a sequence similar to the VHT sounding sequence that does not include a trigger frame and where the sounding feedback frames are sent in SU PPDUs for HE DL sounding sequence?  
          
        

Y/N/A:8/3/33  
Strawpoll fails

* + 1. SP#2 Do you agree to amend the following text in the SFD as follows?:

4.6. Lines 47-49

**

Y/N/A:7/1/Many  
Strawpoll passes

* + 1. SP#3

Withdrawn

* 1. 1364 Signaling Trigger Information for STAs in 802.11ax
     1. Within an A-MPDU the trigger information for a STA, if present, shall be signaled either in Trigger frame(s) or in the MAC header of MPDU(s) contained in the A-MPDU but not both.  
          
        Y/N/A:28/0/14  
        Strawpoll passes

1. The Chair announced the end of the MU ad hoc session at 5:57 pm.