IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Meeting Minutes November 2019 | | | | | | Date: 2019-11-11 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Matthew Fischer | Broadcom |  |  | [Matthew.fischer@broadcom.com](mailto:Matthew.fischer@broadcom.com) | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

Minutes from TGbe full sessions during the November 2019 Plenary held at Waikoloa, Hawaii.

**REVISION NOTES:**

**R0**:

Minutes from Monday PM1

**R1**:

Added Minutes from Tuesday AM1 (second half of this time block)

**END OF REVISION NOTES**

**Session 1: Monday 11 November PM1**

**Introduction**

1. The Chair calls the meeting to order at 13:31. The agenda is found in 11-19-1722r5.
2. The Chair reviews attendance and recaps the procedures.
3. The Chair reads the patent guidelines as found on slides 6-11 on 11-19-1722r5 and asks if there is anyone who is aware of potentially essential patents. There is no response.
4. The Chair reviews the proposed agenda items
5. The Chair reviews TGbe session schedule for the week and room assignments
6. The Chair reviews the lists of existing deferred straw polls and submissions noting that due to the number of submissions in the queue, that review of some submissions will occur during conference calls, as not all will be covered during this week
7. Chair asks for comment on the proposed schedule of slide 25, no comment received.
8. The Chair asks if there is any objection of approving the agenda as found in 1722r5. No objection is noted
9. **Motion to approve TG Minutes.**  
     
   Move to approve TGbe minutes of meetings and teleconferences from the September 2019 meeting until today:

[**https://mentor.ieee.org/802.11/dcn/19/11-19-1728-01-00be-meeting-minutes-september-2019.docx**](https://mentor.ieee.org/802.11/dcn/19/11-19-1764-03-00be-telephone-conference-meeting-minutes-october-and-november-2019.docx)

[**https://mentor.ieee.org/802.11/dcn/19/11-19-1764-03-00be-telephone-conference-meeting-minutes-october-and-november-2019.docx**](https://mentor.ieee.org/802.11/dcn/19/11-19-1764-03-00be-telephone-conference-meeting-minutes-october-and-november-2019.docx)

**Move:** Srinivas Kandala **Second: Bin Tian**  
  
**Discussion:** No discussion. **Result:** Approved with unanimous consent.

**Editor’s Report**

1. 11-19-1935r0 ”TGbe Editor’s Report” – Edward Au (Huawei)  
     
   **Summary:** The author provides guidelines to members for the creation of submissions that are to be used to define the modifications to the editor-controlled documents, the SFD and Draft.  
     
   **Discussion:**  
   **C:** Chair asks if there are any questions for the editor  
   R: no questions or comments

**Deferred Straw Polls**

1. As per the agenda item, the group is directed to the agenda itme for review of deferred straw polls as found in 11-19-1722r5 on slide 15, noting that items in green had been reviewed already in the AM1 PHY adhoc of November 11, 2019  
     
   The chair reviews the ordering of the straw polls and notes the addition of two documents on the topic of joint sounding protocol to the list of deferred straw polls, suggesting that these documents be reviewed at the end of the straw polls in the list and asks for comment  
   No comment received
2. 11-19-1535r1 - Sounding for AP Collaboration – Junghoon Suh (Huawei)  
     
   C: in your straw poll, is the serial transmission of NDPs is as shown in slide 3?  
   R: Yes  
   C: we do not support the sequence shown on slide 3, so we cannot support the proposal, can you change concurrent to joint?  
   R: author modifies straw poll 1  
   C: What is meant by AP Coordintaed sounding? Does this cover all modes? Serial and joint?  
   R: CSI computation is on the non-AP side, so serial sounding is included  
   C: is it implied that joint TX coordination requires both serial and joint NDP?  
   R: to be determined  
   C: But your strawpoll says that you have both  
   R: straw poll modified  
   C: does joint TX require sequential sounding?  
   R: no comment  
   C: similar to previous, for joint TX, need joint sounding, not convinced that sequential sounding works  
   R: sequential sounding does work for joint TX  
   C: disagree, need joint sounding for joint TX, due to phase and amplitude differences  
   R: no comment  
   C: agree with previous two commenters, need joint NDP, also disagree with serial NDP in slide 3  
   R: SIFS between NDP1 and NDP2, so channel is similar  
   C: agre that for null forming and CP, this is enough  
   R: no comment  
   C: slide 3, master AP sends NDP, how do slave APs determine sequence, can AP2 hear AP3?  
   R: yes, NDPA indicates the sequence  
   C: What if slave AP2 fails to TX NDP? How will AP3 know the timing? When the sequence breaks?  
   R: details can be discussed  
    **Straw poll 1:**  
   For the AP collaboration sounding do you agree to have the Joint NDP transmission?  
   Including the Serial Sounding based on slide 3 is TBD  
   How and when to apply the Serial sounding and Joint Sounding, TBD  
     
   **Discussion:**  
   C: do not understand the straw poll, why is serial included?  
   R: AP collaboration sounding, not just joint TX  
     
   **Result:**  
   Y 11  
   N 31  
   A 75  
     
   C: I Propose to rerun straw poll with two bullets removed  
    **Straw poll 1b:**  
   For the multi-AP system, do you agree to support Joint sounding?  
     
   **Discussion:**  
   C: do not understand the straw poll, why is serial included?  
   R: AP collaboration sounding, not just joint TX  
     
   **Result:**  
   Y 66  
   N 0  
   A 46
3. 11-19-1554r1 - Data Sharing for Multi-AP Coordination – Sungjin Park (LG)  
     
   Deferred
4. 11-19-1573r0 - Channel Info. Feedback Method 4 Multi-AP Coord – Dandan Liang (Huawei)  
     
   Deferred
5. 11-19-1553r1 – Joint Sounding for Multi-AP Systems– Jianhan Liu (Mediatek)  
     
   **Straw poll 1:**  
   Do you agree that 11be shall provide a joint NDP sounding scheme as optional mode for multiple-AP systems?   
   Note: Sequential sounding scheme can also be used for multi-AP systems.  
     
   **Disucssion**  
   C: why do we need to specify sequential, but you are not going to define what it is?  
   R: Because even though it is not included, it cannot be prevented  
   C: can you instead say that individual AP sends NDP and polls feedback  
   R: we can define it, as just not sending NDP jointly, but do not want to define from the floor – in your mind, each AP sounding individually, is a sequential sounding mode, and if you agree with that, then you agree with the straw poll  
   C: I agree that that mode is present  
   R: no comment  
   C: are you saying that the difference between sequential and serial is that each AP sends NDPA and NDP  
   R No, not saying any of that, each AP is sending NDP not jointly, no comment on NDPA  
   C: if each NDP is independent, 10 ms later, there’s aging,  
   R: such sequential sounding can be used for other things, but the APs can decide to use it also for joint TX, this cannot be prevented  
   C: this mode imples that joint transmission is not going to be applied  
   R: what you do with the sequence is up to the AP, when to use any type of sounding is up to the AP  
   C: clarify joint sounding? How about when NDP packet is transmitted independently  
     
   **Result:**  
   Y 51  
   N 1  
   A 45  
     
     
   **Straw poll 2:**  
   Do you agree that joint NDP sounding scheme for multi-AP system with less or equal to total 8 antennas at AP has all antennas active on all LTF tones and uses 802.1ax P matrix across OFDM symbols?  
     
   (underlined text is addition due to discussion)  
     
   **Disucssion**  
   C: on all LTF tones means exlude 2x LTF for the sounding packet?  
   R: to make active on all LTF tones means the same as 11ax  
   C: for total exceeding 8, what is the solution?  
   R: there is no statement about that case, we do not have a scheme for more than 8  
   C: not clear to me, the number of antennas, 8 on the AP side?  
   R: in total, yes, I amend by adding ”at AP”  
     
   **Result:**  
   Y 40  
   N 2  
   A 46
6. 11-19-1594r2 - Coord. Beamforming/Null Steering Protocol in 11be – David L Perez (Nokia)  
     
   Deferred
7. 11-19-1582r0 – Coordinated AP Time/Frequency Sharing in a Transmit Opportunity in 11be – Lochan Verma (Qualcomm)  
     
   **Summary:** The author provides a proposal for sharing of resources within a TXOP among APs  
     
   **Discussion:**  
   **C:** Do all AP have to hear each other?  
   R: All Aps that participate need to hear each other  
   C: slide 7, TB PPDU is a requirement or an option?  
   R: not a requirement  
   C: allocation of TXOP can create inefficiency, no idea how much data is pending at targeted APs  
   R: TX indication and request is a phase that is used to determine the neighbor’s requirements, CTR frame can be poor or rich, level of detail of the request/response will determine  
   C: first sequence is query, second includes a long TXOP, it would be better with sequences separated in time  
   R: disagree  
   C: slide 10, sharing TDMA, each AP will start TX at given time – how do you know that the channel control will be maintained from one AP to the next?  
   R: first TX indication slide 6, lets the TXOP owner establish control with NAV  
   C: complications, at T2, could be a big gap between AP2 and AP3  
   R: good observation, have analysis for such cases, short answer, yes, because it is CSMA/CA, there are cases where time is allocated, but an AP failed to access the channel  
   C: Aps can hear each other, how does master ensure that all requested Aps can hear the request  
   R: no different than existing trigger rules – if you can hear and decode, then you respond, then master adds that AP to the target list  
   C: slide 10, do you require that AP2 and AP3 and AP4 hear each other?  
   R: no, master must hear all, but slaves only need to hear the master  
   C: ignoring details, see introduction, question on the benefits, this is coordination, have seen that latency improvement is achieved through multi-link or additional queue, how does this scheme offer latency improvement?  
   R: later presentation will show results, example, assume exposed transmitter, he never has a chance to transmit, but because of sharing, this exposed STA can be invited to participate, so worst case latency improves  
   C: but you need a specific procedure to determine which STA it is that needs this service  
   R: which applications would benefit, are AR, VR  
   C: how do you guarantee that the AP will share? AP will be greedy.  
   R: gurantee, we cannot, fair, we cannot guarantee  
   C: slide 7, is there random allocaiton? How to poll which Aps?  
   R: no predeinfed list, AP sends CTI and 25 hear, but only one succeeds in decoding and only for that AP, CCA says it can respond, so you receive only one CTR, so that is on the fly group formation, example, 25 hear the CTI, 25 are able to respond, 25 received CTRs, TXOP owner can determine the list  
   C: how can the TXOP owner separate the CTRs?  
   R: I know neighbor Aps, I can allocate some resources and use UL OFDMA to separate  
   C: that’s grouping  
   R: no  
   C: currently to do scheduling, you need to be associated with an AP  
   R: otherwise, it is random access  
   C: if an AP sends CTR, is it possible that there was a contention and one AP beat another AP?  
   R: all Aps doing EDCA, and one wins and then shares  
   C: to protect the TXOP, do slave Aps get to send CTS2SELF or something?  
   R: CTI is good enough  
   C: and then CTR as well  
   R: yes  
   C: legacy?  
   R: LSIG  
   C: slide 9, motivation, if Aps are on different primary channels, what is the benefit  
   R: AP1, AP2, using same 80, but different primary, you do not block your neighbor’s primary if you use this scheme  
   C: slide 10, master AP transmissions cause NAV to be set at slave Aps, so they cannot actually transmit  
   R: an exception would be created to allow the slave transmissions  
   C: why would the master AP share? How does the master make this determination?  
   R: if in a network that is ESS, managed, then the manager can set up sharing and force it

**Recess.**

**Session 2: Tuesday November 12 AM1 (Second half only)**

**Introduction**

1. At 09:01 the Chair, Alfred Asterjadhi (Qualcomm) calls the meeting to order.
2. The Chair reminds the group about the IPR policy and asks if there is anyone who is aware of potentially essential patents. There is no response.
3. The Chair reminds members about attendence.

The agenda for the session is found 1722r7.

**Presentations**

1. 11-19-1459r1 – HARQ Applicable A-MPDU– Lei Huang (Panasonic)  
     
   C:slide 6, one codeword is part of two MPDUs – how do you address this issue?  
   R: if one CW crosses two MPDUs from different groups, still need feedback  
   C: good point that for some code words, do not want HARQ, but not certain if this should be tied to MAC ACK  
   R: acknowledged
2. 11-19-1901r1 – TITLEEEEEEEEE – Subir Das (Perspecta Labs) copresented with An Nguyen (Department of Homeland Security)  
     
   **Summary**: recap of main points because most of audience was in the room in the previous hour during the presentation of this document as part of the WNG committee session, covering main points of a request for consideration of National Security and Emergency Preparedness Services requirements for 802.11  
     
   **Straw Poll 1**:  
   Do you support adding NS/EP priority servies access features in IEEEE 802.11be?  
     
   As amended during discussion:  
   Do you support considering NS/EP priority servicess access uses in IEEE 802.11be?  
     
   C: if we vote for this in 11be, it will be 5 years to finish 11be, and another 2 years for deployments, have you considered approaching REVmd or other venues where the schedule might be faster?  
   R: because 11be is potentially modifying the MAC and the PHY, we think it is the best group, I recognize the time schedule involved, even in 5 G, we are in the early stages of defining the mechanism, so we already accept that it might be some number of years to see the realization of this proposal  
   C: what exactly is the meaning of the straw poll? Are we approving slide 13 content which shows some specific proposals?  
   R: as mentioned, this is the introduction of the use case, so we have not reviewed detailed solutions and expect to bring those in the future, so at this point, we only want to see if there is support for the high level concept  
   C: please show the straw poll, for clarification, NS/EP is that AP to STA broadcast only, or does it include STA to AP communication?  
   R: both directions  
   C: regarding 802.11 venue, many possible directions to take within 802.11, Tgbe is one option, a study group is another choice, the group can decide, if the desire emphasizes the shortest schedule, you should come to me, the WG chair and on Friday, consider forming a study group  
   R: we should have arrived earlier, but the timing of our own efforts suggested to us that this is the best path, we are open to suggestions  
   C: want to support the statement about other possible paths than bringing this work into Tgbe, this looks to be better suited to becoming its own study group  
   R: thank you  
   C: agree with previous commenter, Tgbe is a choice, but then I would ask for a change to ”considering NS/EP priority use case”  
   R: i can modify the straw poll  
     
   **Results:**  
   Y 32  
   N 15  
   A 81
3. 11-19-1553r1 – Consideration on HARQ Feedback – Taewon Song (LG)  
     
   **Summary**: PHY level HARQ unit is best choice compared to MAC unit, higher performance, need HARQ feedback frame, propose two candidate HARQ FB Frames and review overhead of each  
     
   C:slide 3, for clarification, HARQ operates on PHY unit, you assume that each group of CW is approx same length as an MPDU and you provide FB only at the resolution of the group of CW, not individual CW  
   R: the size of HARQ PHY unit and MPDU might be similar, then FB overhead is reduced  
   C: major gain of CW retransmission is to retransmit only failing CW, so need per-CW FB information  
   R: yes, but you can have high cost of FB if you have to provide FB for every CW  
   C: in simulation, you compare HARQ block and MPDU, but did not compare with AMPDU  
   R: no, we compared with AMPDU  
   C: so CW size is similar to MPDU Size  
   R: no, CW unit is same as MPDU, but not CW itself  
   C: did you do any comparison of the complexity of different schemes? E.g. memory, processing rate, etc  
   R: cannot hear because of echo, offline discussion  
   C: one example of FB presented, CW unit == 13 CW, could make other choices, when CW unit == MPDU, FB comparison is valid, CW unit can be synchronized, it should always be syncrhonized,   
   R: no response due to end of time for the session

**Recess at 10:02**