IEEE P802.11  
Wireless LANs

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| ARC SC teleconferences minutes 09 August 2021 | | | | |
| Date: 2021-08-09 | | | | |
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Abstract

This document contains the minutes of the IEEE 802.11 ARC SC teleconferences held on 09 August 2021 13:00-15:00 h ET.

Note: Highlighted text are action items. A- precedes comments from the document’s author, C- precedes comments, R- precedes responses to comments.

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# Monday 09 August 2021 at 13:00-15:00 h ET

## Administration:

**Chair: Mark Hamilton, Ruckus/CommScope**

**Vice Chair: Joseph Levy, InterDigital**

**Secretary: Joseph Levy, InterDigital**

**Meeting called to order by the Chair 13:03 ET**

Agenda slide deck: [11-21/1292r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1292-00-0arc-arc-sc-agenda-aug-9-2021.pptx)

**Reminders to Attendees**

**Call for Patents:**

The Chair reviewed the Patent policy and called for potentially essential patents – there was no response to the call.

**IEEE SA Copyright Policy:**

The chair reviewed the Copyright policy.

**Participation:**

The chair reviewed the participation policy.

**Approval of the Agenda:**

* **Attendance, noises/recording, meeting protocol reminders**
* **Policies, duty to inform, participation rules**
* **Annex G way forward contribution/discussion:**
  + **Current plan:** 
    - Replace any references in main body text (to Annex G or “frame exchange sequence” in various spellings) with normative text in-place, add definition(s), etc.
    - Create a new and more useable Annex G with a friendly notation/style and cross-references to main body text for technical details – make it more of an introduction/overview of 802.11 frame exchanges
  + **Frame Exchange Sequence clean-up:** [**11-21/1143r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-1143-00-0arc-frame-exchange-sequence.docx) **– Graham Smith**
  + **Replace Annex G with some other notation/style –** [**11-21/0414r2**](https://mentor.ieee.org/802.11/dcn/21/11-21-0414-02-0arc-draft-examples-of-a-proposed-notation-for-frame-exchange-sequence-sequences-in-annex-g-of-802-11-2020.docx) **– Harry Bims**

The Chair reviewed the agenda and called for comments or amendments to the agenda - there was no response to the call.

The proposed agenda was accepted without comment.

**ARC other issues** (slide 16 of the agenda deck)

Were reviewed by the Chair.

## Annex G way forward contribution/discussion

**Current plan:**

Replace any references in main body text (to Annex G or “frame exchange sequence” in various spellings) with normative text in-place, add definition(s), etc.

Create a new and more useable Annex G with a friendly notation/style and cross-references to main body text for technical details – make it more of an introduction/overview of 802.11 frame exchanges

Frame Exchange Sequence clean-up: [11-21/1143r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1143-00-0arc-frame-exchange-sequence.docx) – Graham Smith

Graham Smith presenting [11-21/1143r1](https://mentor.ieee.org/802.11/dcn/21/11-21-1143-01-0arc-frame-exchange-sequence.docx)\* not currently posted. (\* posted after the meeting)

Chair – We were also discussing TXOPs and how we handle them.

A – A list of frame exchange sequences should be added based on the specification, this will allow us to define what a frame exchange sequence is.

C – Should block acks be considered?

A – Will provide list based on where frame exchange sequence used in the specification. Providing the specification text where it is stated and some context.

A – Commenting on figures: 10-13, and 10-14: the frame exchange sequence ends at the last BA. This will need to be considered in the definition.

C – Hadn’t we agreed that for MU, there were 3 frame exchange sequences in parallel.

A – A BA may be multiple frame exchanged sequences in parallel, but however we define it needs to be accounted for in the definition. (Flagged in 11-21/1143)

*The following discussion uses the shorthand of page.line (e.g., 1820.23) to reference the specification text being discussed, as is done in 11-21/1143:*

C –1820.23 – should be considered in the definition (flagged in 11-21/1143)

C – 1820.53 – want to be sure that the inverse is not true. – to allow – also why does this need to be stated.

C – 1821.23 – this gets back to how HCCA and CAP periods work. We did a lot of work on this – referencing figure 10-29

A – 1822.18 – this requirement means the SIFs definition will not work.

C – 1704.45 – This should be considered in the definition – this sequence of frames does not look the same for all STAs receiving them.   
C – This should be considered in the definition – as some STAs in MU – may not see the BAs of other STAs that share the MU transmission. (Flagged).

C – Not all instances of frame exchange sequences have been included in the document.

A – That may be true – though an effort was made to capture all the instances.

1821.25 – flagged to ensure it is the definition properly.

1908.50 – Beamforming exchange – is it a frame exchange sequence. – need to look at if SIFs are used – Check beamforming requirement.

1923.29 – seems to be a frame exchange, not a frame exchange sequence. Therefore, propose to delete “sequence”. This needs to be checked as if SIF is used it would be a frame exchange sequence.

1934.50 – is another beamforming one – need to check that beamforming uses SIFs.

2033.36 – beam tracking – is this an uninterruptable sequence? Or is it just an exchange of frames. Are there SIF between or not? Is there NAV protection? (Flagged)

2048.6 needs to be checked (flagged)  
2069.44 – should we delete “continuous” – so is this a frame exchange sequence – it is in a TXOP, need to be checked (flagged).

C – Is a frame exchange sequence – something that is protected by NAV. This is something new. To make this class work we need to consider NAV protection in the definition.

A - Also need to address sector training – may want to delete “sequence” for this case.

2183.22 – if these are frame exchange sequences – this needs to be included in the definition. If these are not frame exchanges sequences, then the term sequences should be deleted.

GAS frames – 2381.49 - these are not protected and are not frame exchange sequences. Therefore, these should be either frame exchanges, or frame sequences – or maybe something different like protocol exchange. Need to agree a term for this type of frame exchange. It is generally agreed that these exchanges are not protected and should not be called frame exchange sequences.

Fragmentation was discussed and it was agreed it should be used, but the term it applies to may need to change.

GDD – these are not frame exchange sequences.

A quick review of the PICS – looks like the use of FS seems to be correct. (Need to check – flagged.)

All the remaining references are in annex G – which will not be addressed.

Chair – Thanks you Graham for this contribution, we have generated a list of to dos, this has been productive.

Graham – will post the document – r1 with the notes and to dos.

## Next Steps:

* **Upcoming Teleconferences:**
  + **Annex G**
    - **Sept 2 (Thursday): 19:00 ET, 2 hours**
  + **TGbe multi-link architecture topic**
    - **Aug 30 (Monday): 13:00 ET, 2 hours**
    - **Sep 9 (Thursday): 19:00 ET, 2 hours**
* **Note TGbc architecture discussions, ongoing on TGbc calls**
* **Contributions requested/expected:**

## Adjourned: 14:56 h EDT

## Attendance:

|  |  |
| --- | --- |
| **Name** | **Affiliation** |
| Ansley, Carol | Cox Communications Inc. |
| Berkema, Alan\* | HP Inc. |
| Bims, Harry | Bims Laboratories, Inc. |
| Fang, Yonggang | MediaTek Inc. |
| Hamilton, Mark | Ruckus/CommScope |
| Kandala, Srinivas\* | Samsung |
| Levy, Joseph | InterDigital, Inc. |
| McCann, Stephen | Huawei Technologies Co., Ltd |
| Montemurro, Michael | Huawei Technologies Co., Ltd |
| NANDAGOPALAN, SAI SHANKAR | Infineon Technologies |
| Smith, Graham | SR Technologies |
| yi, yongjiang | Spreadtrum Communication USA Inc. |

\* Added based on Webex participants list