IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ARC SC teleconferences minutes 11 October 2021 | | | | |
| Date: 2021-10-11 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Joseph LEVY | InterDigital Communication, Inc. | 111 W 33rd Street New York, NY 10120 | +1.631.622.4139 | [jslevy@ieee.org](mailto:jslevy@ieee.org) |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This document contains the minutes of the IEEE 802.11 ARC SC teleconference held on 11 October 2021 at 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.

**Contents:**

[Monday 11 October 2021, 13:00-15:00 h ET 3](#_Toc85818754)

[Administration: 3](#_Toc85818755)

[Any architectural work remaining in TGaz (Figure 11-16)? 4](#_Toc85818756)

[Annex G way forward contribution/discussion: 4](#_Toc85818757)

[Next Steps: 6](#_Toc85818758)

[Adjourned: 14:48 h ET 6](#_Toc85818759)

# Monday 11 October 2021, 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 13:05 ET**

Agenda slide deck: [11-21/1665r1](https://mentor.ieee.org/802.11/dcn/21/11-21-1665-01-0arc-arc-sc-agenda-oct-11-2021.pptx)

**Agenda Slides 4-14:**

**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
* Any architectural work remaining in TGaz (Figure 11-16)?
* 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: [11-21/1606r4](https://mentor.ieee.org/802.11/dcn/21/11-21-1606-04-0arc-tgme-resolutions-to-cids-on-annex-g.docx) – Graham Smith
  + “Multiple Frame Transmissions”: [11-21/1616r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1616-00-0arc-multiple-frame-transmissions.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.

No amendments were provided.

The proposed agenda was accepted without objection.

The Chair reviewed the slide 16 – noting the “other” architecture items are.

## Any architectural work remaining in TGaz (Figure 11-16)?

Jonathon Segev (Chair of TGaz) noted that a couple comments in an earlier letter ballot were related to architectural topics.  Those have been resolved.  Other than that, believe there is no architectural work left.  Will confirm with the TGaz group.  ARC will drop this item; it will not be considered again until/unless TGaz finds any concerns.

## 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:** [**11-21/1606r4**](https://mentor.ieee.org/802.11/dcn/21/11-21-1606-04-0arc-tgme-resolutions-to-cids-on-annex-g.docx) **“TGme Resolutions to CIDs on Annex G”– Graham Smith**

Graham presented:

Overview:

* Written as a contribution to TGme.
* CIDs 81, 109 covered.
* Noted that CID 565 is related, and demonstrates the problem.
* Introduces the general direction that ARC is suggesting, for Annex G, for TGme’s understanding.

Reviewed the status as provided in the document:

Based on [11-21/1143r7](https://mentor.ieee.org/802.11/dcn/21/11-21-1143-07-0arc-frame-exchange-sequence.docx) – where the changes were against Draft 0.0 (Revmd), and other assumptions.

Reviewed the way forward based on ARC discussions.

Issue with Section 10.23.2.3 concerns “multiple Frame transmissions” – provided in [11-21/1616r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1616-00-0arc-multiple-frame-transmissions.docx)

[11-21/1606r4](https://mentor.ieee.org/802.11/dcn/21/11-21-1606-04-0arc-tgme-resolutions-to-cids-on-annex-g.docx) is updated to be against Draft 0.3 (Revmd).

Reviewed the Proposal

A – Asked for conformation that this is the agreed way forward and if there were any questions.

C – How was the choice of frame exchange or frame exchange sequence determined?

A – If you are protecting the whole exchange – then it is a frame exchange sequence, other wise it is just an exchange of frames.

C – There is no mention in the definition that a frame exchange sequence is between two STAs.

A – This was not added due to the problem that was noted regarding Figure 10-41 multi (in Draft 0.0)

Chair – We have gone round and round on many calls with various version of this definition. Let’s not do it again. Can you accept this definition?

C – If it is too generic – then a TXOP is a frame exchange sequence according to this definition.

C – Well we are not defining a TXOP as frame exchange sequence.

C – It is a problem that the definition of a frame exchange sequence would allow an entire TXOP frame exchange to be frame exchange sequence.

C - TXOP behavior should be constructed based on the existence of a frame exchange sequences. The special case of MU frame exchange sequences can be described and specified without using the term frame exchange sequence.

Chair – We have to stop going round in circles – We should really look at this and see if there is a real problem with this. If we put the right words in the text where this term is used – even if the definition is not crisp – we should consider if we can make it work. Is this good enough? If not, we need an alternate proposal. So, let’s move forward today assuming this can work and see if it does.

A – Continued with the proposed changes, and the clean up of terms.

The author received multiple comments expressing thanks for this work and making progress on this issue. Some of the comments expressed that there may be additional tweaks needed.

**“Multiple Frame Transmissions”:** [**11-21/1616r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-1616-00-0arc-multiple-frame-transmissions.docx) **– Graham Smith**

Graham Smith presented [11-21/1616r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1616-00-0arc-multiple-frame-transmissions.docx)**.**

C – The “multiple frame transmissions” are a problem with current definition.

A – There doesn’t seem to be a need for a list of the allowed frames in a TXOP – this seems dangerous.

C – Agreeing that this is not a good thing and that the list is not necessary.

C - It helps to go back to 10.23.2.3 – EDCA TXOPs

C – there are different types of TXOPs –

1. – legacy compatible – one frame exchange sequence
2. – “new” TXOP you don’t own the media until you do the short exchange and then own it for an extended period.

C – Aggregated packets caused all type of problems with these concepts. Does this change anything or does it change it too much.

Graham – proposed changes in red -

C – The term retains is correct and should not be changed.

A – Agreed, the change was removed, returning to “retains”.

C – Some of the text being deleted/changed is historic. The original was a data exchange, or a BAR or BA. So, you needed to do a short exchange to get to own the media. We don’t have a data burst BAR BA exchange – now we don’t have that anymore, now any exchange will do. We could probably rewrite this section to clarify things.

A – Why these requirements are required is not clear, but 802.11ax added this text so there must be some importance to this requirement.

C – Don’t put too much stock in the fact that ax added text here, it was not necessarily done to correct the section, but more to simply extend ax capabilities so this section would still be correct.

C – There are multiple frame exchange sequences in a TXOP – do we want to make it clear in the definition itself. But, instead of trying to work the definition now – but if a new or add text to the definition – please consult the document with all the definitions. [11-21/1143R7](https://mentor.ieee.org/802.11/dcn/21/11-21-1143-07-0arc-frame-exchange-sequence.docx)

Chair - Do our definitions need to be accurate and precise; both in the inclusive and restrictive sense? Please look at and review [11-21/1606](https://mentor.ieee.org/802.11/dcn/21/11-21-1606-0arc-tgme-resolutions-to-cids-on-annex-g.docx). Consider if the modification is good and going in the right direction. The definition in [11-21/1606](https://mentor.ieee.org/802.11/dcn/21/11-21-1606-0arc-tgme-resolutions-to-cids-on-annex-g.docx), is open for comment. If you have a proposal to improve it, please share it on the reflector or post a contribution. But also consider the history in [11-21/1143R7](https://mentor.ieee.org/802.11/dcn/21/11-21-1143-07-0arc-frame-exchange-sequence.docx). [11-21/1606](https://mentor.ieee.org/802.11/dcn/21/11-21-1606-0arc-tgme-resolutions-to-cids-on-annex-g.docx) should be fully reviewed and any issues or identified improvements should be worked on the reflector.

C – Regarding timing and the current document, how do we want to proceed? We should share the document with TGme before 0.4 comes out, it would be a hassle to have to redo the whole document to align to a new revision and the sooner TGme is made aware of this proposal the more eyes there will be on the proposed changes. So, the sooner we bring this to TGme the better.

Chair - However, TGme D0.4 is just about to be pushed out, before our next meeting.  Best we can do is to set a goal to complete at the next ARC meeting 19:00 h ET on 28 October. If you can’t attend the meeting, please share your inputs in on the reflector. Then we should send it to TGme for the November meeting.

The Chair – called for any other comments.

There was no additional discussion or input on what to do with Annex G

Chair – we can take this as two steps.

**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**

Not discussed.

## Next Steps:

* Upcoming Teleconferences:
  + Annex G
  + Oct 28, 17:00-19:00 ET
  + Other topics?
* Contributions requested/expected:

## Adjourned: 14:48 h ET

**Attendance:**

| **Name** | **Affiliation** |
| --- | --- |
| Fang, Yonggang\* | MediaTek |
| Hamilton, Mark | Ruckus/CommScope |
| Ibrahim, Ahmed | Samsung Research America |
| Levy, Joseph | InterDigital, Inc. |
| NANDAGOPALAN, SAI SHANKAR | Synaptics |
| Nikolich, Paul\* | 802 Chair |
| Petrick, Albert | Jones-Petrick and Associates, LLC. |
| Rosdahl, Jon | Qualcomm Technologies, Inc. |
| Segev, Jonathan | Intel Corporation |
| Smith, Graham | SR Technologies |
| Stacey, Robert | Intel Corporation |
| Taori, Rakesh | SAMSUNG |
| Torab Jahromi, Payam | Facebook |

\* Added based on Webex participants list.