IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ARC SC teleconferences minutes 3 June 2021 | | | | |
| Date: 2021-06-03 | | | | |
| 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 3 June 2021 at 19:00-21:00 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:**

[Thursday 3 June 2021, 19:00-21:00 h ET 3](#_Toc77032937)

[Administration: 3](#_Toc77032938)

[Contributions: 4](#_Toc77032939)

[Next Steps: 5](#_Toc77032940)

[Adjourned: 21:02 h EDT 5](#_Toc77032941)

# Thursday 3 June 2021, 19:00-21:00 h ET

## Administration:

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

**Vice Chair: Joseph Levy, InterDigital**

**Secretary: Joseph Levy, InterDigital**

**Meeting called to order by the Chair 19:02 ET**

Agenda slide deck: [11-21/0912r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0912-00-0arc-arc-sc-agenda-jun-3-2021.pptx)

**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.

**Core Principles:**

The Chair reviewed the IEEE Core Principles.

**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**
  + **Remove Annex G –** [**11-21/0578r1**](https://mentor.ieee.org/802.11/dcn/21/11-21-0578-01-0arc-obsolete-annex-g.docx) **– Graham Smith**
  + **Stacey’s document.**
  + **Divorce frame exchange/Annex G -** [**11-21/0833r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0833-00-0arc-frame-exchange-sequence-annenx-g-divorce.docx) **– Robert Stacey**
  + **Obsolete Annex G, part 2-** [**11-21/0921r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0921-00-0arc-obsolete-annex-g-part-2.docx) **-** this follows up on [**11-21/0833r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0833-00-0arc-frame-exchange-sequence-annenx-g-divorce.docx)
  + **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.

11-21/0921r0 added to the agenda.

The proposed agenda was accepted without comment.

Chair reviewed agenda deck slide 16 – The ARC other topics slide and discussed ongoing ARC activities.

## Contributions:

**Obsolete Annex G, part 2-** [**11-21/0921r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0921-00-0arc-obsolete-annex-g-part-2.docx) **– Graham Smith presenting.**

C – What is the understanding between the difference between a Frame Exchange sequences and a TXOP? A frame exchange sequence occurs between two STAs. There may be several frame exchange sequences happening in parallel in a TXOP.

A – A TXOP is considered a frame exchange sequence, or it could be specified for the case, or it could be parallel frame exchange sequences.

C – In response to the MU statement – when 802.11 is talking about MU there are multiple frame sequences happening in parallel – A note could be provided to make that clear.

C – Agreeing with this for a single MU/ACK exchange. But what about a TXOP.

C – A TXOP is a sequence of the frame exchange sequences. Figure - 10-26 802.11 2020 –

A – It doesn’t matter – but change PS state would not occur during one of these exchanges.

C – We are not trying to change the current specification, but there are issues with what the specification means. Well, this isn’t in Annex G – so this describing 3 frame exchange sequences.

C – Don’t want to change PS state during this exchange. Changing state during an UL MU exchange should also not be allowed.

C – The way things are going everything is going to be MU, will look for an UL MU and see what the story is.

C – For MU UL, the STA only sees the transmission between itself and the AP. But from the third party point of view the third party sees everything.

C – A frame exchange sequence should not be interrupted by someone else. So, I’m thinking a TXOP is a frame exchange sequence.

C – Do we need to go through the spec and look at where the term frame exchange sequence is used.

C – Reserving of the medium is more important aspect of a frame exchange sequence. It is a sequence of frames that cannot be interrupted by a third party. There is no reason, that it can’t be stated in the specification.

R – That may work. But how do we do it.

R – Suggestion to define it to be an exchange of frames that are not interrupted by a third party or a change of state.

R – Does it end at a backoff?

C – A request for the definition of a TXOP was made.

**From 802.11-2020:**

**transmission opportunity (TXOP):** An interval of time during which a particular quality-of-service (QoS) station (STA) has the right to initiate frame exchange sequences onto the wireless medium (WM).

NOTE—A TXOP is defined by a starting time and a maximum duration.

This was worked in TGmd –

C – We should look at where this phrase is used in the main body. And if TXOP could be used to replace it. So, the “task” is to look through the spec and find where frame exchange sequence is used, and decide if it could be replaced by TXOP, or be corrected to be frame exchange, or some other term.

A review of the spec had 578 instances, and should we look at a few?

C – An exchange of frames that is protected by a duration field.

Frame exchange sequence: A successful transmission or a sequence of frames that are protected by a duration field.

C – These are not the same thing – a TXOP contains a frame exchange sequences. But you have the first CTS duration has expired you can start a new duration and extend the TXOP.

C – This only works if you could have several frame exchanges sequences in a TXOP.

C – TXOP is a protected time –

R – Only the initiator controls the TXOP – the initiator can end it or extend it. So, it is controlled – The NAV is set for third parties at the beginning. TXOP is more about how the initiator controls this period.

Action Item Joseph Levy to find an example of how a TXOP and frame exchange sequence are different.

Long discussion on TXOP and frame exchange sequence. No firm conclusion.

## Next Steps:

This annex will be on the agenda Monday June 21 –

The next Teleconference is on June 7 and will be discussion TGbe issues

TBbc – is not on the agenda – waiting for the TGbc Chair to request ARC help.

* Upcoming Teleconferences:
  + Annex G
    - June 21: 13:00 ET, 2 hours
  + TGbe multi-link architecture topic
    - June 7: 13:00 ET, 2 hours
    - June 17: 19:00 ET, 2 hours
* Contributions requested/expected:

## Adjourned: 21:02 h EDT

**Attendance:**

| **Name** | **Affiliation** |
| --- | --- |
| Aboulmagd, Osama | Huawei Technologies Co., Ltd |
| Au, Kwok Shum | Huawei Technologies Co., Ltd |
| Bims, Harry | Bims Laboratories, Inc. |
| Hamilton, Mark | Ruckus/CommScope |
| Levy, Joseph | InterDigital, Inc. |
| Montemurro, Michael | Huawei Technologies Co., Ltd |
| Petrick, Albert | Jones-Petrick and Associates, LLC. |
| RISON, Mark | Samsung Cambridge Solution Centre |
| Roy, Richard | SRA International |
| Smith, Graham | SR Technologies |
| Stanley, Dorothy | Hewlett Packard Enterprise |
| Torab, Payam\* | Facebook |
| Wang, Lei | Futurewei Technologies |
| yi, yongjiang | Futurewei Technologies |

\* Added based on Webex participants list.