IEEE P802.11  
Wireless LANs

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| ARC SC Meeting Minutes September 2019 | | | | |
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Abstract

This document contains the minutes of the IEEE 802.11 ARC SC meeting sessions held on 17 September 2019 at 16:00 ICT, 18 September 2019 at 8:00 ICT, and 19 September 2019 at 16:00 ICT in Hanoi, Vietnam.

Note: Highlighted text are action items.

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# Tuesday, 17 September 2019, PM2

**Administration:**

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

**Vice Chair: Joseph Levy, InterDigital**

**Secretary: Joseph Levy, InterDigital**

**Meeting called to order in ARC meeting room by Chair 16:01 ICT,**

Agenda slide deck: [11-19/1419r1](https://mentor.ieee.org/802.11/dcn/19/11-19-1419-01-0arc-arc-sc-agenda-sept-2019.pptx), proposed agenda copied here for reference (will be r2 out of the meeting):

**Administration:**

The Chair reviewed the Administrative information in the agenda document, [11-19/1419r0](https://mentor.ieee.org/802.11/dcn/19/11-19-1419-00-0arc-arc-sc-agenda-sept-2019.pptx)

**Call for Patents:**

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

**Participation:**

The chair reviewed the participation policy

**Approval of the Agenda:**

**Tuesday, September 17, PM2**

* Administrative: Minutes
* IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of FTM
  + Consider a new layer in 802.11 to arbitrate the operation of multiple active sessions using 802.1ASrev.
* IETF/802 coordination
* Monitor TGbd’s activities in support of IEEE 1609.
* “What is an ESS?”: [11-18/1051r7](https://mentor.ieee.org/802.11/dcn/18/11-18-1051-07-0arc-what-is-an-ess.pptx)
  + Change 802.11 to use 802.1Q and 802.1AC terms (not 802.2/LLC)?
* “What is a STA?” (See: [11-19/0106r0](https://mentor.ieee.org/802.11/dcn/19/11-19-0106-00-000m-sta-and-ap.docx))
  + Also, off-channel TDLS architecture
* Annex G (purpose and value?, work to update or work to deprecate?)

**Wednesday, September 18, AM1**

* MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)
* Monitor/discuss architecture concepts in TGbc and TGbe

**Thursday, September 19, PM2**

* Future sessions / SC activities
* Above items continued, as needed
* AP/DS/Portal architecture and 802 and GLK concepts - [11-17/0136r2](https://mentor.ieee.org/802.11/dcn/17/11-17-0136-02-0arc-bridging-architecture-considerations.docx), [11-16/1512r0](https://mentor.ieee.org/802.11/dcn/16/11-16-1512-00-0arc-glk-802-1q-bridge.pptx), [11-16/0720r0](https://mentor.ieee.org/802.11/dcn/16/11-16-0720-00-0arc-stacked-architecture-discussion.pptx), [11-15/0454r0](https://mentor.ieee.org/802.11/dcn/15/11-15-0454-00-0arc-some-more-ds-architecture-concepts.pptx), [11-14/1213r1](https://mentor.ieee.org/802.11/dcn/14/11-14-1213-01-0arc-ap-arch-concepts-and-distribution-system-access.pptx) (slides 9-11)

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

Agenda discussion:

The proposed agenda was approved by unanimous consent.

**July 2019 face-to-face minutes:** [11-19/1303r0](https://mentor.ieee.org/802.11/dcn/19/11-19-1303-00-0arc-arc-sc-meeting-minutes-july-2019.docx)

Approved by unanimous consent.

**IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of FTM**

The Chair provided an update on the 1588 revision/802.1AS is just about done though SA Ballot. Ganesh has been tracking this, and will be in the ARC meeting Wednesday AM1.

Q – Is there any action on this for 802.11.

The Chair summarized ARC’s involvement in IEEE 1588 802.1ASrev: tutorial information was provided to them and now we are just in monitoring mode.

C - Consider a new layer in 802.11 to arbitrate the operation of multiple active sessions using 802.1ASrev.

**IETF/802 coordination**

IETF Liaison - Peter Yee – not present – he informed the Chair that there was nothing of concern for ARC from IETF.

Chair asked if anyone else knew of an issue – no response.

**Monitor TGbd’s activities in support of IEEE 1609. – not discussed**

**“What is an ESS?”:** [11-18/1051r7](https://mentor.ieee.org/802.11/dcn/18/11-18-1051-07-0arc-what-is-an-ess.pptx)

Reviewed Open items:

* Type B: needs details
* Type C: it is not agreed what to do with it or if it is interesting. (see slide 20)
* Open Concepts that need to be address are listed on slide 20.

Q – What is the preferred way forward?

Chair – Develop an input to TGm – and finish the report.

C – When we work out what an ESS is – we may want to develop an LS to provide the definitions.

Chair – Another possibility is: do we need this term or process.

C – Should we add that type of no ESS.

Chair – It wouldn’t be another type, it has been proposed that the ESS term should be removed.

Change 802.11 to use 802.1Q and 802.1AC terms (not 802.2/LLC)? This seems to be the only residual use of 802.2 terms, which has been deprecated. Hence, we should try to eliminate this use and move to 802.1Q 802.1AC terms.

Q – Is anything being held back due to this issue?

Chair – We should probably clean it up to remove the baggage.

C – People are currently ignoring it now, so it doesn’t matter.

C – If they think it matters and there is a problem – e.g. a value to fill in a field – we should solve this problem.

Chair – I think it is more important to remove the 802.2 references – we should clean this up to modern 802 terminologies. Called for contribution.

**“What is a STA?” (See:** [11-19/0106r0](https://mentor.ieee.org/802.11/dcn/19/11-19-0106-00-000m-sta-and-ap.docx)**)**

Dorothy Stanly 802.11 Chair and TGmd Chair summarized the issue: There was misunderstanding as to what an AP or STA is as most people consider it to be the box and not a logical entity. Is this a training issue or is it a problem with the standard? We should focus on what really is the problem.

Chair – What is the interesting problem to me is that the specification is does not align with how everyone else uses these terms.

Guido Hiertz – volunteered to write an explanation.

Group basically agreed if such an explanation is added to the specification – it should be in clause 4.

Chair – We should also discuss, off-channel TDLS architecture? Do we think anyone cares?

C – TDLS works fine today, and for off-channels.

Action item – to define the: off-channel TDLS architecture issue?

**Annex G (purpose and value?, work to update or work to deprecate?)**

Dorothy Stanley TGmd Chair – TGmd received comments on Annex G suggesting removing it. But TGmd fixed things instead of removing Annex G. But subsequently, ax doesn’t want to put things in the format for Annex G.

C – for ax to cover all the exchanges – we need all the state machines.

C – I was one of the commenter requesting removal of Annex G. Now that I am aware of the ax issue it adds weight to my concerns.

C – Annex G is normative, and it is references to it in the other sections. So, what would need to be done is that for older versions (e.g. N) – you would need to move the text from annex G into the main body.

C – there only 21 real references – in 17/1261r2 – I listed references to Annex G. I didn’t see anything that is Annex G that was useful. So, I think it is easy to take out. There were protests in TGmd – and it was not supported to remove it. Someone should go through it to make sure it is right. I suggest Annex G be removed. It is more work to keep it accurate.

C – Annex G provides a specific detailed language to describe frame exchanges. Also, not all references to frame exchanges in the standard make reference to Annex G.

C – The term in a frame exchange – implies look in Annex G. The thing I liked about Annex G – it forced new amendments to think about frame exchange sequences. For an example – all the MU stuff in ax – where are the frame exchange sequences – capturing it in EBNF is probably an issue.

C – Concern was expressed that the lack of support of Annex G is similar to what happened/is happening relative to STL, MIB, and PICS, these portions of the spec stopped being fully supported as they required significant time to maintain/update – this work was not supported by the TG and then once these sections were not maintained/updated they no longer were viewed as useful and were not supported. TGax is now basically doing the same thing to Annex G.

C – I benefited from the STL code – but there was inconsistency – we did it for 802.11e, it is the best precise and unambiguous description. Once the STL was not maintained – it was out of sync with the specification. It is more important to have one description.

C – maybe annex G is just passé. Current practice is interoperability is done elsewhere.

C – supported Annex G.

C – There have been times that I could only understand the spec by looking at Annex G.

C – If you don’t have someone beating people to follow the template document language. I think that Annex G doesn’t help. Having inconstant language is important. But, this is independent of Annex G.

Chair – called for contributions on how to move forward.

**Straw Poll** – Do you support removing Annex G and dealing with the references (“see Annex G”) in the body of the text, using 11-17/1261r2 as a starting point? (One intention being that any current amendments do not need to update Annex G.)

Y/N/A – 7/6/5

C – We should have vendors bring updates to Annex G to keep it up to date after plug fests.

C – If we don’t know what the exchanges are we will lose control of our specification.

C – How frame exchanges are described needs to be done consistently, and accurately, maybe a style guide update is necessary.

C – We will get volunteers to remove Annex G – but we can’t get anyone to do the work to keep up Annex G.

C – Maybe we could get outside help to maintain Annex G – e.g. Students

Chair – I worry that EBNF is adequate to describe frame exchanges. There are ways to describe it – what is the right way to describe this stuff?

**Straw Poll:** Do you support removing Annex G in principle?

Y/N/A – 7/3/4

**Straw Poll:** Do you support replacing Annex G, as it is, with some other representation?

Y/N/A – 7/3/3

**Recessed:** 18:00 ICT.

# Wednesday, 18 September 2019, AM1

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

**Vice Chair: Joseph Levy, InterDigital**

**Secretary: Joseph Levy, InterDigital**

**Meeting call to order in ARC meeting room by Chair 8:04 am ICT**

Agenda slide deck: 11-19/1419r2, proposed agenda copied here for reference:

**Wednesday, September 18, AM1**

* MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)
* Monitor/discuss architecture concepts in TGbc and TGbe
* Consider 802.11 in a Deterministic Network/Time-Sensitive Networking

**Administration:**

The Chair reviewed the Administrative information in slides 5-10 in Agenda document, 11-19/1419r2.

**Call for Patents:**

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

**Approval of the Agenda:**

The Chair reviewed the agenda and called for comments or amendments to the agenda – there was discussion yielding:

**Wednesday, September 18, AM1**

* MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)
  + IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of FTM
    - Consider a new layer in 802.11 to arbitrate the operation of multiple active sessions using 802.1ASrev.
* Monitor/discuss architecture concepts in TGbc and TGbe
* Consider 802.11 in a Deterministic Network/Time-Sensitive Networking

The agenda was approved by unanimous consent.

**MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)**

Chair went thru the agenda slide 22 reproduced here:

Topic out of REVmd:

* No apparent requirement for an “initial” MLME-RESET, in 802.11. So, what is the initial state?
* Many MIB attributes describe taking effect at next MLME-JOIN or MLME-START.
  + MLME-JOIN occurs at each BSS transition
  + MLME-START occurs at less well-defined points, seems to require an MLME-RESET first
  + Do these attributes really take effect at these points, or at the MLME-RESET?
* How about other state information, such as security association, block ack agreements, etc., etc.?
* Maybe need to consider MLME-SCAN, too?
* Is correct information provided at these primitives (and not more than needed information, and to the right primitive)?

Slide 23 has first cut considerations of the above issues copied here for reference:

* **Need either MLME\_RESET required, or something else about initial state**
* **Recognize there is state in the SME (security association, for example) that is outside “the MAC/MLME”, not reset by MLME-RESET.**
* **Does MLME-RESET “cause” MLME-DEAUTHENTICATE/DISASSOCIATE.indications?**
* **Are there some MIB attributes which, when changed, should trigger a “RESET.indication” to higher entities? (SNMP traps?)**
  + Or other .indication (MLME-SET.indication?) when some attributes are changed
* **Reassociation to same AP, (probably?) doesn’t do MLME-JOIN, does that break anything with “take affect at the next JOIN”?**
* **MLME-START and MLME-JOIN should say the MLME shall actually do the attributes’ “taking effect” stuff**

Q – MLME-RESET – has the station address and set default MIB – where default values are implementation independent. Is the purpose to make all the STAs go to the same state? What is the purpose here?

A – There is nothing set anything prior to scanning/probing – e.g. what is the MAC address. Is the way to set the MAC address to do a MLME-RESET? How is this done for a non-AP STA?

Q – what is the MAC state?

C – since it is implementation specific – there is a lot of state in the MAC – changing things in the MIB how are they apply/change the state of the STA.

C – MLME-RESET is only used in the context of the AP. – I think we can state that it is only used by an AP STA.

Way forward, wait for the MAC randomization issue to be better resolved and support that activity if anything needs to be “fixed”.

**IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of FTM**

802.1 is meeting this week, and are likely to complete comment resolution for 802.1ASrev this week, and are looking to do a clean recirc and then move to REVCOM.

1588 - - they are done with SB and are ready to go to REVCOM in November.

Discussion on the shim layer – to interface 802.11 to 802.1ASrev:

Consider a new layer above (in the SME?) (or in, at the very top?) 802.11 to arbitrate the operation of multiple active sessions using 802.1ASrev (or non-802.1ASrev locations?).

Q – Are we talking multi-link? – if so we have FTM for multi-link we have to solve this issue of timing.

A – when a FT request comes in – any existing or old request are dropped and the new request is dealt with.

C – there is this master and slave relationship – whichever clock is “better” is the master.

Q – does this apply to .11az?

A – yes, this single FT session applies to .11az

C – This should probably be dealt with in TGaz – as they need to work with this. If we need to change the PAR to put this in scope we can – but we know 1588 is there and via the .1ASrev needs timing measurement.

Ans – 1588 and .1AS are only using timing measurement and fine timing measurement. So TGaz can probably not say we don’t need to deal with this now.

C – well this will have to be dealt with eventually, so doing so now is preferred.

Action: The Chair and Ganesh Venkatesan should speak with TGaz to discuss FTM for multi-link and its interaction with the single FT session assumptions of 1588 and 802.1ASrev, with support from the 802.11 WG Chair. A discussion at the CAC may be required.

**Monitor/discuss architecture concepts in TGbc and TGbe**

TGbc preliminary discussion have occurred, but

Stephen McCann (VC TGbc) – TGbc is working on their functional requirements – there seems to be and understanding that TGbd concentrates on broadcast for unassociated, while TGbc concentrates on associated STAs – but this is just initial thoughts. The plan is to have a joint meeting in November to discuss this – we should revisit this in November after the joint meeting.

TGbe – the multi-AP stuff – at a minimum will require some language “correction” in 802.11 architecture. There have been discussions on upper MAC/lower MAC – 11-08/0949r4 may have some use.

The Chair will continue to chat with the TGbe Chair, to understand what is going on and when it may be appropriate discuss this in a joint meeting, maybe November – to establish a common terminology.

Brief discussion was had on Multi-AP (WFA) vs. Multi-AP TGbe – these seem to be orthogonal.

**Consider 802.11 in a Deterministic Network/Time-Sensitive Networking**

No discussion, but this will be carried for at least next session. TGbe may need discussion.

Slides 28/29 – future planning, completed – no changes: 3 slots.

Agreed that the ARC Chair is to provide two slides to the 802.11 WG Chair for presentation to the WG, summarizing the current MIB pattern guidelines (11-18/0052r2 slides 12, 13 can be cleaned up to address this request).

Having exhausted the agenda, the Thursday time slot is canceled.

**Adjourned: 9:59** ICT.

Note: final agenda slide deck is: [11-19/1419r3](https://mentor.ieee.org/802.11/dcn/19/11-19-1419-03-0arc-arc-sc-agenda-sept-2019.pptx) and closing report is: [11-19/1692r0](https://mentor.ieee.org/802.11/dcn/19/11-19-1692-00-0arc-arc-closing-report-september-2019.pptx)