IEEE P802.11  
Wireless LANs

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| ARC SC Meeting Minutes November 2019 | | | | |
| Date: 2019-11-15 | | | | |
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Abstract

This document contains the minutes of the IEEE 802.11 ARC SC meeting sessions held on 12 November 2019 at 16:00 HST, and 13 November 2019 at 8:00 HST, at the Hilton Waikoloa Village, Kona, HI, USA.

Note: Highlighted text are action items.

**Contents:**

[Tuesday, 12 November 2019, PM2 3](#_Toc26804561)

[Wednesday, 13 November 2019, AM1 6](#_Toc26804562)

# Tuesday, 12 November 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 16:03,**

Agenda slide deck: [11-19/1739r2](https://mentor.ieee.org/802.11/dcn/19/11-19-1739-02-0arc-arc-sc-agenda-nov-2019.pptx) proposed agenda copied here for reference (will be r3 out of the meeting):

**Administration:**

The Chair reviewed the Administrative information in the agenda document, [11-19/1739r2](https://mentor.ieee.org/802.11/dcn/19/11-19-1739-02-0arc-arc-sc-agenda-nov-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, November 12, PM2**

* **Administrative: Minutes**
  + **IETF/802 coordination**
  + **Monitor TGbd’s activities in support of IEEE 1609.**
  + **Consider 802.11 in a Deterministic Network/Time-Sensitive Networking**
    - Nendica discussion, Tues EVE (Roger Marks)
  + **Clarifying EPD/LPD**
    - (Roger Marks)
  + **“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?)
    - See slides 17-20 of this deck

**Wednesday, November 13, AM1**

* + **IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of 802.11’s FTM**
    - **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 location) - Talk to TGaz**
* **Consider IEEE 1588/802.1AS use of 802.11 TGaz**
* **MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)**
* **Monitor/discuss architecture concepts in TGbc and TGbe**

**Thursday, November 14, 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.

**September 2019 face-to-face minutes:** [11-19/1513r0](https://mentor.ieee.org/802.11/dcn/19/11-19-1513-00-0arc-arc-sc-meeting-minutes-september-2019.docx)

Approved by unanimous consent.

**IETF/802 coordination**

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

Chair asked if anyone else knew of an issue

C – no new items were brought up at the EC opening on Monday.

**Monitor TGbd’s activities in support of IEEE 1609.**

Nothing new.

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

Nendica discussion, Tues EVE (Roger Marks)

<https://mentor.ieee.org/802.1/dcn/19/1-19-0079-00-ICne.pdf>

C – This looks like T-specs – there was busty traffic – ACCA uses T specs – there have been discussions about this type of thing since the beginning.

C – The scheduling of .11 has never been used. Now that ax has scheduling – this can be used to improve scheduler performance.

C – Given the T-specs – all this can be worked out. But this has never been used.

C - Should we use the T-specs? Should we use not very used/deployed standards?

C – 3GPP is widely deployed – there are advantages in using scheduling and should be looked at.

C – Quality of service is important – scheduling can improve flow reliability and performance.

C – LBFT is not conducive for scheduling

C – 11be is looking at supporting low latency application, including industrial. So, they will be looking at these types of things and ways to serve these applications – A TSN system in a robot is one thing – there are other applications that may require low latency – in .11 we are looking at this, there are joint meetings with TSN and some common ground.

C (Nendica Chair) – There is a related Nendica activity, that is looking at this problem. Nendica is doing a study to yield direction to .11 or TSN. This doesn’t need to be a Nendica project, but it could be useful to have a Nendica project to help define things. It may make the work proceed more smoothly.

C – This seems to be talking about setting up a flow – are we talking about bridging?

A – 1) You set up a connection: making a stream. 2) Then you process the packets using the configured stream.

Q – If this is being set up for all network types, are asserting that .11 doesn’t have this?

C – This will be discussed at tonight’s Nendica meeting.

Q – Why did you contribute this to the ARC session, and not contribute this to WNG?

A – The ARC Chair asked me to present. This is putting together .11 and .1 issues.

Chair – Where do we think we fit in this discussion?

Q – How does this fit into .11, as .11 tends to be lower MAC/PHY protocol?

Chair – A roll that ARC has taken on is how .11 fits in and to determining when work needs to be done in .11 to make it fit in. So, I view this as trying to define if there is an issue and how .11 fit’s in. Tonight, we may see where the Nendica group will go with this.

C – If Nendica can identify issues to be dealt with in .11 and .1 – Nendica will generate a report to define the issues – so it is in the Nendica scope.

C – There has been work done before (e.g. 11ak), what has been deployed, market relevance is important.

C – When there is pull from industry we are very successful, where there is push from .11 we are generally not successful.

C – Nendica is an IC and hence is looking to find that pull.

C – In .11, I’m not sure if we need to worry about the bridge.

Chair – In deterministic networking ARC/.11 is concerned that .15.4 can meet the requirements and .11 can’t.

C – In the TGbe scope – “at least one mode with improved worst case latency and jitter” and “improvement in aggregate throughput and latency”.

C – The TGbe PAR included this – but it is not well defined.

802.11 Chair – I’d like the WG to be informed as to what is happening. If you plan to develop a solution and dropping it in – I don’t think it will work well – it would be better to provide information along the way.

R – We may want to participate in both TGbe and .1 to address this.

C – A comment on the two proposals: “is using address 3 really necessary - it does not seem to be needed”

A – In 802.16 there are no addresses, just carrier connections – so setting up rules for addresses are necessary to make this work.

**Clarifying EPD/LPD** (Roger Marks)

<http://www.ieee802.org/1/files/public/docs2019/maint-Marks-Finn-epd-lpd-1119-copyright.pdf>

This is proposal is to correct some specs: 802, 802.1AC

C – When we used the term EPD encoding – we meant EPD, not the encoding.

C – You can’t line up all these methods – they don’t match up.

C – If the goal is not to break anyone in this process – you may want to look at 1609.

C – In 1609 everything is point to point.

A – There should be source in 802 that determines the terminology. We weren’t trying to create something unique. Change for the sake of change is not a good thing – but if it clarifies things and sets a common lexicon – it is beneficial. Our intent was not to vary from the 802 ways.

C – We had long discussion on EPD and LPD encoding – if we need to change descriptions. I don’t want to change.

A – In 802 it says all new standards should support EPD and James Gelb translated it to be all new standards should not use LPD. There is a lot of confusion out there, things need to be clarified.

C – 802.11 made this decision to save 2 Bytes, it seemed very straight forward at the time – please see Dick Roy’s contributions.

Q – What happens if you use a type length field how is it done.

Chair – This started with Dick Roy and OCB stuff, then migrated into .11ak, all of this translation is silly. We should just send what came in through and it should be transparent.

Bottom line – Roger is going to keep digging and try to resolve things in .1, but ARC will keep .11 informed as to what is happening.

C – 802.11 should be included in this work – the 802-architecture document is supposed to cover all the 802 groups. 802.11 needs to know what the right terminology is.

C – The work .11 had done should not be ignored – there shouldn’t be a secret decoder ring. If we are tying align .1, .3, and .11, we should.

Chair – Currently, we have a decoder ring, to make things consistent.

C – The worst thing you can do to change the wording in 802.11 to appease some other lexicon. You can change the standard, but given the current implementation it may be ignored.

Q – Where is this going in 802.1, given things blew up in maintenance?

A – 802.1 may fix some things in the new PAR for 802f – so some simple fixes may be done.

Chair – We are talking about revising multiple documents.

A – The intention is to suggest how to fix 802.1Q and 802.1AC – to make things better. I will bring the problems and proposed solution into ARC to keep .11 up to date and aware on what is being proposed.

The discussion continued and <http://www.ieee802.org/1/files/public/docs2019/maint-Marks-epd-lpd-0719-v02.pdf> was reviewed.

Some additional discussion on how to proceed, looking to target additional discussion on Thursday PM2 ARC discussion.

The Chair – reminded to look at the Annex G stuff – contributions are requested.

**Recessed – 17:57**

# Wednesday, 13 November 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: [11-19/1739r3](https://mentor.ieee.org/802.11/dcn/19/11-19-1739-03-0arc-arc-sc-agenda-nov-2019.pptx), proposed agenda copied here for reference:

**Wednesday, November 13, AM1**

* **IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of 802.11’s FTM**
  + **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 location) - Talk to TGaz**
* **Consider IEEE 1588/802.1AS use of 802.11 TGaz**
* **MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)**
* **Monitor/discuss architecture concepts in TGbc and TGbe**

**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:**

* IEEE 1588 mapping to IEEE 802.11/802.1ASrev and use of 802.11’s FTM
  + - 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 location) - Talk to TGaz
  + Consider IEEE 1588/802.1AS use of 802.11 TGaz
  + MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)
  + Monitor/discuss architecture concepts in TGbc and TGbe

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

The agenda was approved by unanimous consent.

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

Chair – The understanding is that there can only be one FTM session at any given time. So, the discussion is how to have more than one running simultaneously.

C – When 802.1AS was updated there are two clients that can start sessions. The problem is if 802.1AS instantiates a FTM sessions when there is already one going one – it will kill the already running session.

C – 1588 was not designed for this purpose. Possible solution: use multiple MAC addresses or allow for multiple sessions.

Chair – a few years ago 802.1AS considered being on top of FTM.

Q - Can’t you use the same measurement, for different services? Can’t they share the data?

A – The measurement requirements may be different for the sessions and then the data may be incompatible.

C – I understand we can create another STA with a different MAC address, if you are doing one TD ranging session and then open one for your car.

C – FTM is not designed for location purposes -What is being proposed as an aggregate solution, would make things simpler, but an AP that maintains multi-station clients will require more overhead. An aggregate session would be simpler to maintain. We should look at all of these solutions and decide how to proceed.

Chair – the shim solution, is a single session, the various requirements/users of the service requirements are aggregated by the Shim layer and a single FTM session is formed. The single FTM session will provide various required output to various users. This shim layer could be a recommended practice, and therefore not require any changes to the specifications. This is also compatible with having multiple MAC sessions.

C – This entity could solve the problem, as it would translate the 1AS requests into a set of measurement requirements.

Q – Is the shim layer on the control or data path.?  
Chair – The shim layer would be on the SAP / control path.

C – We want to organize the control in layers.

Chair – we are not

C – FTM has a change or parameter capability, so you may be able to re-negotiate while maintaining the current session, this needs be revisited/verified. There may be some work to be done, but maybe not. Also, there are different instantiations of the SAP, but this may be handled by the “Shim”, not FTM itself. With FTM we are using signaling to do measurements, so there is impact of requiring more measurement, so creating multiple sessions will impact medium usage/required air time.

Chair – is AZ the proper place to have these discussions?

802.11 TGaz Chair – Yes. If we receive a comment ballot in TGax then TGaz will consider this.

C – It would be best if an 1AS expert would share the requirements that 1AS sees as being necessary.

802.11 TGaz Chair – Other folks (e.g. 1588) want to use FTM and have a specific use cases. But TGaz may want to design for both known and future applications. I don’t want to speak for the TG as we haven’t discussed this. How we achieve multiple sessions is something TGaz should discuss. Currently FTM is used as ASAP, but often 1588 is using continuous measurement. Will ARC be responding to 1588?

Chair – I need to consider where the request came from, but we will respond.

The Chair of ACR will generate a response plan.

C – This was being discussed 802.1AS, I brought it to ARC as I thought would be better solved in 802.11.

802.11 TGaz Chair – If only accuracy is the issue: there may be a small measurement change, e.g. adding some more bits into the field, but these are technical details. We are submission driven, so the TGaz will make changes to solve these issues – if it contributed and agreed. We would like to treat the response to 1588 to use FTM in general, all facilities – those existing and those being introduced in .11az. There is no MLE interface, just an enhancement of the exiting interface.

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

C – There are architecture issues in TGbc – but the concepts are not quite mature enough now to do work in ARC.

C – There are architecture issues in TGbe – but the concepts are not quite mature enough now to do work in ARC.

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

Chair – Reviewed slides 23 through 25.

The current draft in REVmd – has solved the initial MLME-RESET is now required,

Chair – At initial turn on you get the initial default values – but not all MIB values have default values. Also, there is some state in the MLME itself.

The Chair to speak to Bo Sun (chair of TGbd), Amelia Andersdotter (RCM TIG chair), Dorothy Stanley (Chair of TGmd) about how the work should be progressed.

Chair – I am planning on putting together a flow diagram to describe how these things relate. But, until we have such a diagram we can’t really have a productive discussion.

Chair - As all scheduled agenda items have been discussed, I propose to modify the agenda moving to Thursday’s Future session planning. There was no discussion or objection.

The Chair reviewed Slide 29 of [11-19/1739r3](https://mentor.ieee.org/802.11/dcn/19/11-19-1739-03-0arc-arc-sc-agenda-nov-2019.pptx), ARC future activities and sessions, there were no comments made, therefore the list was approved by mutual consent. (copied below for reference)

* *ARC SC meets when a specific focused task is requested of the SC for which the is sufficient volunteer interest.*
* *Continue work on architectural models, and liaison with TGs in development of their architecture as appropriate (e.g. TGbc, TGbe) - Perhaps updates on “STA” definition to handle TGbe concepts? Might have multiple radio/MAC address implications, too?*
* *Will also follow 802.1/802.11 activities on links, bridging, and MAC Service definition – “What is an ESS?”, for example*
* *“What is a STA?” (11-19/0106) Related: What is the (“STA(s)”) architecture of off-channel TDLS?*
* *Discuss direction for Annex G*
* *MLME-RESET, versus MLME-JOIN and MLME-START (and MLME-SCAN and MLME-STOP)*
* *Monitor/report on IETF/802 activities, as needed*
* *Monitor/report on IEEE 1588 activities and 802.1ASrev use of FTM, as needed*

*If you have ANY other topic that you would like ARC SC to consider, contact the SC chair.*

Slide 30 of [11-19/1739r3](https://mentor.ieee.org/802.11/dcn/19/11-19-1739-03-0arc-arc-sc-agenda-nov-2019.pptx), planning for January 2020 was reviewed – no objections/or comments were made, therefore the meeting plan was agreed by mutual consent. (copied below for reference)

* *Plan for three individual meeting slots*
  + *Usual slot on Wed AM1*
  + *Another 2 slots for standalone ARC work*
* *Teleconferences:*
  + *None planned.*

**Adjourned – 9:20 HST.**

Note: final agenda slide deck is: [11-19/1739r5](https://mentor.ieee.org/802.11/dcn/19/11-19-1739-05-0arc-arc-sc-agenda-nov-2019.pptx) and closing report is: [11-19/2090r0](https://mentor.ieee.org/802.11/dcn/19/11-19-2090-00-0arc-arc-closing-report-november-2019.pptx)