IEEE P802.11
Wireless LANs

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| ARC SC Mixed Mode Minutes January 2025 – Interim |
| Date: 2025-01-16 |
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Abstract

This document contains the minutes of the IEEE 802.11 ARC SC mixed mode meeting held on 14 January 2025 13:30-15:30 h JST, and 16 January 2025 10:30-12:30 h JST.

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

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# Tuesday 14 January 2025 13:30-15:30 h JST

## Administration:

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

**Vice Chair: Joseph Levy, InterDigital**

**Secretary: Joseph Levy, InterDigital**

**Meeting called to order by the Chair at 13:40 JST**

Agenda slide deck: [11-24/2095r3](https://mentor.ieee.org/802.11/dcn/24/11-24-2095-03-0arc-arc-sc-agenda-january-2025.pptx)

Agenda Slides 4-15:

Registration Reminder

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 (Slides 16)

* **Two meeting slots this week**
* **Attendance, noises/recording, meeting protocol reminders**
* **Policies, duty to inform, participation rules**
* **Approve meeting minutes (slide 18)**
* **Contribution/discussion topics:**
	+ IEEE Std 802 internal alignment work (slide 19) – Tues PM1
	+ Annex G way forward (slide 20) – Thurs AM2
	+ WBA liaison on QoS, and L4S (slide 21) – on hold pending TGbn and REVmf
* **Next steps** (slide 22)

The Chair reviewed the agenda and called for comments and additions.

Approved by unanimous consent.

## ARC - Other (slide 17)

The chair reviewed slide 17

## Approval meeting minutes (slide 18)

Motion to approve the minutes of:

**November plenary:** [**11-24/1725r0**](https://mentor.ieee.org/802.11/dcn/24/11-24-1725-00-0arc-arc-sc-mixed-mode-minutes-november-2024-plenary.docx)

Discussion none.

Result: UC

## IEEE Std 802 internal alignment work (slide 19)

**802.11 relevant topics, to continue alignment with IEEE Std 802:** [**11-25/0150r0**](https://mentor.ieee.org/802.11/dcn/25/11-25-0150-00-0arc-initial-thoughts-on-arc-misc-802-topics.docx)

* EPD and LPD terms are going away – we need to update 802.11 to align
* Review MAC address ordering discussion, and 802.11 assumptions
	+ <https://mentor.ieee.org/802.1/dcn/24/1-24-0034-00-Mntg-proposal-to-revise-bit-ordering-material-in-p802revc-d2-0.docx>
* Review 802.1AC mapping from ISS to 802.11 MAC SAP interface
* Consider any changes to remove 802.2/LLC terms?
* 802.11’s “Portal”, and mapping to/usage of IEEE Std 802 terminology
* Access Domains: “802 Access Domains”?
	+ Interconnection of Access Domains?
	+ In 802.11, Access Domain is BSS. Is that still the view, for 802.11be/MLD?
	+ Other 802s? 802.3 Multi-carrier fiber – 1 Access Domain, or many? We think it is 1. But there are multiple transmitters, in parallel.
* What if we make the DS a bridge (small ‘b’)?
* Consider adding something about VLANs (just informational?) into 802.11? Relationship (if we talk about it) to security domains (e.g., Authenticator relationship)? VLAN-aware STAs? What about GLK/non-GLK STAs? (cf 11-08/0114r0)

[**11-25/0150r1**](https://mentor.ieee.org/802.11/dcn/25/11-25-0150-01-0arc-initial-thoughts-on-arc-misc-802-topics.docx) – Presented by Mark Hamilton

C – Some implementations only support E-Type protocol Identifier and will not support O-Type.

Some discussion on O-Type not being generally supported, as it is for private networks. O-Type could be supported, but only if all hops in the network support it, which is difficult to ensure. Many 802.11 implementations have a “fixed” protocol type, so it may be difficult to support O-Type.

C – O-Type is specified in 802, so it should be supported and there is no specification requirement to stop it being used. But it is implementation limited. We could allow it in the specification, if it is a behavior we desire, even if it is not supported by some/many implementations.

C – A SNAP header can be used with both LPD or EPD.

Moving on to EPD – in 5.1.4. Concern was expressed regarding the 802.3 reference – in 802.3 EPD is “End of Packet Discriminator”. See 11-25/0150r1. This is the Type 3 PIF of an E-Type protocol Identifier.

C – Some of this OUI and CID specification was added by the RAC into the 802 specification – to expand the space, it gets pasted through without implementing.

C – As far of EPD is concerned, in .11, there is minimal deployment. The use cases should be defined, so that it is clear what needs to be corrected in the standard.

C – EPD was added to reduce the OH in 802.11p. Also, it allowed the header to be passed transparently at the MAC SAP. The incoming MSDU simply becomes the MPDU payload in networks that provide an EPD frame to the 802.11 MAC SAP (e.g., 802.3 based networks).

**Review MAC address ordering discussion, and 802.11 assumptions**

* <https://mentor.ieee.org/802.1/dcn/24/1-24-0034-00-Mntg-proposal-to-revise-bit-ordering-material-in-p802revc-d2-0.docx>

C – The test vectors are all the same: left to right and not bit reversed. This notation is in .1X.

The text vectors should be fixed and they should be consistent.

C – The definition described is the exactly the definitions of bit reversed.

C – It is too easy to make a mistake with this notation, one notation should be used, and it should be clear what it is.

C – The inputs using colons are not intended to be bit reversed. The specification already uses one ordering, but there are some colon separated hex values, 802.11 should never use colon separated hex values.

C – Before the colon separated hex is corrected to be dash separated hex, the values should be check for bit reversal

Page 2001 at the bottom of the page there is a bit reversal text, therefore this should be check throughout the specification. This way forward was agreed.

**Consider any changes to remove 802.2/LLC terms?**

and

**Review 802.1AC mapping from ISS to 802.11 MAC SAP interface**

The references are to ISO/IEC 8802-2 – so should we remove these references? And replace it with references to the new 802-2024.

There is significant work here as there are 97 location of LLC.

M\_UNITDATA and MA-UNIDATA – needs more study and probably an update of Annex B.1.3 – provided by .11.

C – 802.11 has implemented ISO/IEC 8802-2 XID null frame in subclause 7.2.3.2.4. This should be removed/corrected, this will require additional work, maybe a different example could be provided, one that does not need to reference the 8802-2 XID null frame.

Subclause 9.4.2.152 – should be pointing to IEEE Std 802. A text proposal is provided in [11-25/0150r1](https://mentor.ieee.org/802.11/dcn/25/11-25-0150-01-0arc-initial-thoughts-on-arc-misc-802-topics.docx).

## Annex G way forward (slide 20) - Overview of [11-23/0880r5](https://mentor.ieee.org/802.11/dcn/23/11-23-0880-05-0arc-revised-annex-g-containing-example-frame-exchange-sequences.docx)

A quick overview of [11-23/0880r5](https://mentor.ieee.org/802.11/dcn/23/11-23-0880-05-0arc-revised-annex-g-containing-example-frame-exchange-sequences.docx) (Harry Bims) was provided.

C – The intent to provide information for newbies is good, however the current spec is for experts, not newbies.

A – The information is not meant for a student, but for Standardization contributors – so that all contributors have the same understanding of these concepts. Based on our discussions this seems to be something needed, as there has been much discussion and clarification of these concepts in these meetings.

The Chair reminded the attendees of the agenda for Thursday,

## Recessed 15:30 JST

# Thursday 16 January 2025 10:30-12:30 h JST

## Administration:

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

**Vice Chair: Joseph Levy, InterDigital**

**Secretary: Joseph Levy, InterDigital**

**Meeting called to order by the Chair at 10:35 JST**

Agenda slide deck: [11-24/2095r6](https://mentor.ieee.org/802.11/dcn/24/11-24-2095-06-0arc-arc-sc-agenda-january-2025.pptx)

Agenda Slides 4-15:

Registration Reminder

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.

## The Chair reviewed the approved Agenda (Slides 16)

* **Two meeting slots this week**
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* **Policies, duty to inform, participation rules**
* **Approve meeting minutes (slide 18)**
* **Contribution/discussion topics:**
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	+ Annex G way forward (slide 20) – Thurs AM2
	+ WBA liaison on QoS, and L4S (slide 21) – on hold pending TGbn and REVmf
* **Next steps** (slide 22)

The Chair reviewed the agenda and called for comments and additions.

Approved by unanimous consent.

## Annex G way forward – Step 2 (slide 20)

[11-24/0880r5](https://mentor.ieee.org/802.11/dcn/23/11-23-0880-05-0arc-revised-annex-g-containing-example-frame-exchange-sequences.docx) – presented by Harry and discussed at length

Discussion summary:

When discussing when a frame exchange sequence ends, there was some discussion on reserving the media/transmitting after the sequence ends. The STA being able to do “other things” does not allow a STA to violate the NAV.

C – If this is for a novice reader, starting with beam forming does not seem prudent.

R – People joining .11 are not technically naive, just not aware of how .11 does things.

C – on IBSS – should be a BSS.

C – The need for why Frame exchanges sequence need to be defined and why the concept is important should be included in this document but may be the current document could be better organized.

A long discussion on Figure 10-14 was had, regarding what a frame exchange sequence is and how it interacts with medium protection (NAV and use of SIFS).

C – Note that that “other” technologies that might share the WM, may not “follow” the NAV and therefore the use of SIFs is critical to maintain control of the media.

Discussion on single frame, frame exchange sequences. e.g., a beacon is a single frame, frame exchange sequence. The discussion did not reach a clear consensus on single frame, frame exchange sequences.

Discussion on Figure10-14 – regarding how may frame exchanges sequences are in this figure.

The answer coalesced to there being 4. A frame exchange sequence is a commitment of a device to exchange one or more frames with one or more devices. The device commits not to change its state until the frame exchange sequence completes. This is orthogonal to media protection, which is a separate concept and has its own set of rules. These two topics (frame exchange sequences and media protection) do interact and impact STA behavior.

Discussion was stopped on time for the next topic.

The Chair requested discussion to be continued on the reflector.

## IEEE Std 802 – ARC work – (slide 19)

The Chair called attention to Roger Marks document – for offline review. [11-25/0161r0](https://mentor.ieee.org/802.11/dcn/25/11-25-0161-00-0arc-protocol-identifier-encoding-of-ethertype.pptx)

This answered the question in [11-25/0150r3](https://mentor.ieee.org/802.11/dcn/25/11-25-0150-03-0arc-initial-thoughts-on-arc-misc-802-topics.docx)

C – Is this a change or is it a clarification that this was never allowed?

R – This was “uncovered” during the revision of 802 and was clarified explicitly in IEEE Std 802-2024.

R – Does this mean that a frame that does not match the allowed format is not allowed.

R – It should be clear as to what is standardized and what is proprietary use.

R - A note may need to be added to make this clear that this applies in an 802 network and it should be clear which formats are allowed.

## Next Steps (slide 22)

**Contributions requested/expected:**

Annex G

Changes to align with IEEE Std 802 (removal of EPD/LPD, etc.)

“Other” (slide 17) – Note: this is the alignment of the “control” MLMEs.

L4S discussion if/as needed

**Mar session planning**

3 slots

Topics? Annex G, Changes to align w/IEEE 802, “Control” MLME

**Next Teleconference(s):**

Jan to Mar teleconference plan… Any/How many telecons?

Conflicts to avoid:

Continue with Monday 1PM ET (2 hours) or 2PM ET (1 hour)? Dates to avoid??

Will be coordinated with other TG chairs, and announced later

## Adjourned: 12:25 JST

Final Agenda: [11-24/2095r7](https://mentor.ieee.org/802.11/dcn/24/11-24-2095-07-0arc-arc-sc-agenda-january-2025.pptx)

Closing Report: [11-25/0182r0](https://mentor.ieee.org/802.11/dcn/25/11-25-0182-00-0arc-arc-closing-report-jan-2025.pptx)