IEEE P802.11
Wireless LANs

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| ARC SC Meeting Minutes July 2018 |
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Abstract

This document contains the minutes of the IEEE 802.11 ARC SC meeting sessions held on 10 July 2018 at 16:00 PDT, 11 July 2018 at 8:00 PDT, and 12 July 2018 at 10:30 PDT in San Diego, California, USA. The minutes for the joint ARC and TGba meeting session held 12 July at 16:00 PDT in San Diego, California, USA are provided in the TGba meeting minutes (11-18/1355r1.

Note: Highlighted text are action items.

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# Tuesday, 10 July 2018, PM2

**Administration:**

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

**Vice Chair/Secretary Joseph Levy, InterDigital**

**Meeting call to order in ARC meeting room by Chair 16:00 PDT,**

Agenda slide deck: [11-18/1049r2](https://mentor.ieee.org/802.11/dcn/18/11-18-1049-02-0arc-arc-sc-agenda-may-2018.pptx), proposed agenda copied here for reference:

Tuesday, July 10, PM2

* Administrative: Minutes
* IEEE 1588 mapping to IEEE 802.11/802.1ASrev use of FTM update - [11-17/1086r4](https://mentor.ieee.org/802.11/dcn/17/11-17-1086-04-0arc-ieee-802-1as-d5-0-review-comments.pptx)
* 802 (and 802.1) activities: 802c, 802.1CQ
* IETF/802 coordination
* Continued review of TGax approach to subclause 10.2 and Figure 10-1: [11-18/0362r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0362-01-00ax-cr-for-cids-in-10-2-6.docx)
* YANG/NETCONF modeling discussions – TIG formation discussion
* “What is an ESS?”: [11-18/1051r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1051-00-0arc-what-is-an-ess.pptx)
* 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)
* MLME-RESET, versus MLME-JOIN and MLME-START

Wednesday, July 11, AM1

* Continue the above, as needed
* TGba joint meeting preparation: [11-18/0884r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0884-01-0arc-802-11ba-architecture-discussion.pptx), [11-18/1016r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1016-00-0arc-wur-state-diagram-proposal-hamilton.vsdx), [11-18/1017r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1017-00-0arc-wur-multi-ap-reference-model.vsd), [11-18/1020r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-00-0arc-discussion-on-wur-802-11ba-states.pptx)

Thursday, July 12, AM2

* Future sessions / SC activities
* Continue the other items (previous slide), as needed
* TGba joint meeting preparation: [11-18/0884r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0884-01-0arc-802-11ba-architecture-discussion.pptx), [11-18/1016r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1016-00-0arc-wur-state-diagram-proposal-hamilton.vsdx), [11-18/1017r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1017-00-0arc-wur-multi-ap-reference-model.vsd), [11-18/1020r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-00-0arc-discussion-on-wur-802-11ba-states.pptx)

Joint session with TGba – Thursday, July 12, PM2

* Investigation of WUR architecture topics; eventually may lead into “split” PHYs (LC, 28 GHz (Phazr)): [11-17/1025r0](https://mentor.ieee.org/802.11/dcn/17/11-17-1025-00-0arc-11ba-arch-discussion.pptx), [11-18/0884r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0884-01-0arc-802-11ba-architecture-discussion.pptx), [11-18/1016r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1016-00-0arc-wur-state-diagram-proposal-hamilton.vsdx), [11-18/1017r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1017-00-0arc-wur-multi-ap-reference-model.vsd), [11-18/1020r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-00-0arc-discussion-on-wur-802-11ba-states.pptx)

**Administration:**

The Chair reviewed the Administrative information in slides 5-10 in Agenda document,

**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 no response to the call.

The proposed agenda was approved by unanimous consent.

**ARC Minutes:**

* May face-to-face minutes:
	+ [11-18/0942r0](https://mentor.ieee.org/802.11/dcn/18/11-18-0942-00-0arc-arc-sc-meeting-minutes-may-2018.docx)
	+ [11-18/0999r0](https://mentor.ieee.org/802.11/dcn/18/11-18-0999-00-00ba-meeting-minutes-may-2018.docx) (TGba minutes, capturing Thursday PM2 joint meeting)
* May teleconference minutes:
	+ [11-18/1021r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1021-00-0arc-arc-sc-teleconference-minutes-may-24-2018.docx)
* June teleconference minutes:
	+ [11-18/1098r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1098-00-0arc-arc-sc-teleconference-minutes-june-21-2018.docx)

Minutes approved by unanimous consent.

**IEEE 1588 mapping to IEEE 802.11/802.1ASrev use of FTM update -** [11-17/1086r4](https://mentor.ieee.org/802.11/dcn/17/11-17-1086-04-0arc-ieee-802-1as-d5-0-review-comments.pptx)

*Chair:* Very stable at this point, we can probably stop tracking this. Chair asked for concerns, none were provided.

**802 (and 802.1) activities: 802c, 802.1CQ**

*Chair:* 802.1Q revision published yesterday. The document is available via .1, but should be available to .11 but this is not confirmed.

*Chair:* 802.1c has also published

Report from *Stephen McCann,* 802.11 TGaq Chair, on 802.11CQ and 802.11aq:

 802.1CQ is progressing:

* 2 contributions reviewed
	+ Dynamic assignment of MAC addresses to 802.11 STAs using 802.11aq (PAD)
	+ Structured assignment of MAC addresses within data centers
* Discussions started to collect scenarios, use-cases and requirements in scope of initial version of P802.1CQ
	+ Agreement to create document on scenarios and use-cases

OmniRAN supports 802.11aq helping. 802.1CQ and .1 are working this, specially the security issues, there is a possibly to exhaust the number of MAC addresses. 1- 8/581 get reference.

**IETF/802 coordination**

*Peter Yee* the IETF Liaison – report 11-18/1280r0 (slide 5 of interest to ARC, see below), no input of on Detnet, the IETF is not doing an active cue management.



**TGax architecture topics**

* TGax approach to subclause 10.2 and Figure 10-1: [11-18/0362r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0362-01-00ax-cr-for-cids-in-10-2-6.docx)
	+ Concepts initially discussed in Sep, 2017 (see [11-17/1220r2](https://mentor.ieee.org/802.11/dcn/17/11-17-1220-02-00ax-clause-10-2-comment-resolution.docx) and [11-17/1396r1](https://mentor.ieee.org/802.11/dcn/17/11-17-1396-01-0arc-comments-on-11ax-clause-10-2.docx))
	+ In March, reviewed 11ax D2.0 comments received, and resolutions first proposed (11-18/0362r0)
	+ Review/discuss updates, formulate response

The Chair reviewed Figure 10.1 as in 802.11ax Draft 3 (copied below) also the text additions.

The Chair will check if there are any Draft 3 outstanding comments which relate to figure 10.1/architecture topics.

A short discussion on ax and md alignment, this is a function of whether md is published before or after ax. The 802.11 Editor commented: in June of next year we will know if ax/ay will slip or if md will pull in the schedule.



**Discussion on YANG/NETCONF models**

* Next steps? (Are any underway, already?)
	+ TIG?
	+ Waiting for a TIG to be kicked off or jump to SG. But, someone has to take leadership and until someone does no work will be done.
	+ ARC will drop this topic in future meetings.

**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) –**

Did not discuss – as there are no contributions or expressed interest.

**MLME-RESET, versus MLME-JOIN and MLME-START**

Did not discuss – as there are no contributions or expressed interest.

**What is an ESS?**

Chair presented [11-18/1051r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1051-01-0arc-what-is-an-ess.pptx) to recap the status of this work.

A statement was made: The reason for the mobility domain – given the key hierarchy – we couldn’t guarantee it would work across an entire ESS, but it is possible to do so within a mobility domain.

Some discussion on if IP/subnet is in scope for .11 – basically it is out of scope, but is a good short hand.

Slide 15 updated – see 11-18/1051r2

The Chair will generate a matrix of the <x>ESS variables/characteristics.

It was suggested that there are 2 “PassPoint” use cases: they are basically A and E

There was additional discussion which suggested that there are more “PassPoint” cases.

It was generally agreed that the ARC SC should also consider Network Discovery, Selection, Access.

**Recessed:** 17:58 PDT.

# Wednesday, 11 July 2018, AM1

**Call to order 8:06 PDT**

**Agenda document:** [11-18/1049r2](https://mentor.ieee.org/802.11/dcn/18/11-18-1049-02-0arc-arc-sc-agenda-may-2018.pptx)

**Agenda:**

* Administration
* Continue the above, as needed
* TGba joint meeting preparation: [11-18/0884r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0884-01-0arc-802-11ba-architecture-discussion.pptx), [11-18/1016r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1016-00-0arc-wur-state-diagram-proposal-hamilton.vsdx), [11-18/1017r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1017-00-0arc-wur-multi-ap-reference-model.vsd), [11-18/1020r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-00-0arc-discussion-on-wur-802-11ba-states.pptx)

**Administration:**

The Chair reviewed the Administrative information in slides 5-10 in Agenda document,

**Call for Patents:**

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

Proposed agenda:

**Approval of the Agenda:**

The Chair called for comments or amendments to the agenda – there was no response to the call

The proposed agenda was approved by unanimous consent.

**Prep for TGba joint session:**

Suggest:

* Review of slides 29-32 (in the agenda deck - [11-18/1049r2](https://mentor.ieee.org/802.11/dcn/18/11-18-1049-02-0arc-arc-sc-agenda-may-2018.pptx))
* Review of “802.11ba Architecture discussion” (Ganesh Venkatesan) [11-18/0884r1](https://mentor.ieee.org/802.11/dcn/18/11-18-0884-01-0arc-802-11ba-architecture-discussion.pptx)
	+ This is back ground material
* Review of “Definition of WUR Mode” ([11-17-0972r2](https://mentor.ieee.org/802.11/dcn/17/11-17-0972-02-00ba-definition-of-wur-mode.pptx))
	+ This is back ground material
* Review of Specification Framework ([11-17/0575r11](https://mentor.ieee.org/802.11/dcn/17/11-17-0575-11-00ba-spec-framework.docx))
* Review of inputs from teleconferences: [11-18/1016r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1016-00-0arc-wur-state-diagram-proposal-hamilton.vsdx), [11-18/1017r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1017-00-0arc-wur-multi-ap-reference-model.vsd), [11-18/1020r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-00-0arc-discussion-on-wur-802-11ba-states.pptx)

11-18/1020r1

Different people in TGba may have different views.

Discussion on if there is a mechanism in TGba – that would allow an AP to tell a STA to move to WUR mode. We should clarify this. This was corrected – there is no AP driven mode.

Work on terminology – WUR mode – the negotiation has happened and not suspended.

**Recessed:** 17:58 PDT.

# Thursday, 12 July 2018, AM2

**Call to order:** 10:32 AM PDT

Agenda:

* Administration
* Future Planning
* TGba joint meeting preparation – 1017r1, 1020r2
* Continue other items

Agenda is approved: [11-18/1049r3](https://mentor.ieee.org/802.11/dcn/18/11-18-1049-03-0arc-arc-sc-agenda-july-2018.pptx) – header is wrong in the document – [r4](https://mentor.ieee.org/802.11/dcn/18/11-18-1049-04-0arc-arc-sc-agenda-july-2018.pptx) coming out of meeting

**Call for Patents:**

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

**Future sessions / SC activities:**

* 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
* Consider YANG/NETCONF next steps
* Investigation of WUR architecture topics; may lead into “split” PHYs (LC, 28 GHz (Phazr))
* Will also follow 802.1/802.11 activities on links, bridging, and MAC Service definition – “What is an ESS?”, for example
* MLME-RESET, versus MLME-JOIN and MLME-START
* 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.

**Planning for September 2018**

* Plan for three individual meeting slots
	+ Usual slot on Wed AM1
	+ Another 2 slots for standalone ARC work (Monday/Tuesday?)
	+ Plus Joint sessions: Another with TGba?
* Individuals interested in ARC work are encouraged to also attend AANI SC sessions
* Teleconferences:
	+ Wednesday, Aug 22 2pm EDT 1.5 hours

**TGba joint meeting preparation –** [11-18/1017r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1017-01-0arc-wur-multi-ap-reference-model.docx)**,** [11-18/1020r3](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-03-0arc-discussion-on-wur-802-11ba-states.pptx)

Reviewed [11-18/1020r3](https://mentor.ieee.org/802.11/dcn/18/11-18-1020-03-0arc-discussion-on-wur-802-11ba-states.pptx), the following corrections were suggested:

Discovery, unAssociaded Discovery, Associated Discovery, move Inactive to be similar to not allows.

Edit slide 8 Visio – remove WUR Discovery

Slide 9 – make forked arrow form Associated to Awake/Doze. Correct WURx Awake state “receiver” to receive. Fix WUR Mode to be WUR PS Mode

Slide 10 – same corrections.

To be R4

**Recessed:** 12:32 PDT

# Thursday, 12 July 2018, PM2

Joint meeting TGba and ARC SC session Minutes are captured in the 80211 TGba minutes: [11-18/1355r1](https://mentor.ieee.org/802.11/dcn/18/11-18-1355-01-00ba-meeting-minutes-july-2018.docx)

**Adjourned**

Note: final agenda slide deck is: [11-18/1049r4](https://mentor.ieee.org/802.11/dcn/18/11-18-1049-04-0arc-arc-sc-agenda-july-2018.pptx) and closing report is: [11-18/1329r0](https://mentor.ieee.org/802.11/dcn/18/11-18-1329-00-0arc-arc-closing-report-juy-2018.pptx)