IEEE P802.11  
Wireless LANs

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| ARC SC and joint ARC SC TGak and 802.1 Meeting Minutes November 2015 | | | | |
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Abstract

Minutes of the IEEE 802.11 ARC Standing Committee meeting held on 9th and 12th of November 2015, in Dallas, TX, USA. Note: this document also includes the meeting minutes for the joint meeting with TGak and 802.1 held on 12th of July 2015.

**Monday, November 9, PM2, 16:00 (CT) ARC SC Meeting**

**Administration:**

**Chair: Mark Hamilton, Ruckus Wireless**

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

**Meeting call to order by Chair 16:00, 9 November 2015**

**Proposed Agenda slide deck:** [**https://mentor.ieee.org/802.11/dcn/15/11-15-1234-01-0arc-arc-sc-agenda-nov-2015.ppt**](https://mentor.ieee.org/802.11/dcn/15/11-15-1234-01-0arc-arc-sc-agenda-nov-2015.ppt)**, updated during the meeting to r2**

**Monday, Nov 9, PM2**

* **Administrative: Minutes**
* **Updates, no action expected:** IEEE 1588 mapping to IEEE 802.11
  + **DS-SAP and Annex R becoming normative (last review)**
    - * [11-15/0555r5](https://mentor.ieee.org/802.11/dcn/15/11-15-0555-05)
    - **IETF/802 coordination:** multicast over 802.11: [11-15/1261r2](https://mentor.ieee.org/802.11/dcn/15/11-15-1261-02-0arc-mulicast-performance-optimization-features-overview-for-ietf-nov-2015.ppt)
  + **Updates to REVmc Figure 5-1, et al -** [11-15/0540r4](https://mentor.ieee.org/802.11/dcn/15/11-15-0540-04-0arc-updates-to-revmc-5-1-5.docx)
  + **MIB attributes Design Pattern -** [11-15/0355r3](https://mentor.ieee.org/802.11/dcn/15/11-15-0355-03-0arc-mib-truthvalue-usage-patterns.docx), [11-15/0891r0](https://mentor.ieee.org/802.11/dcn/15/11-15-0891-00-0arc-delta-r2r3-of-mib-truthvalue-usage-patterns.docx)

**Wednesday, Nov 11, AM1**

* + **802.11 as a component in a (larger) system:** [11-15/0757r1](https://mentor.ieee.org/802.11/dcn/15/11-15-0757-01-0000-802-11-as-a-component-tutorial.pptx), [11-15/0593r2](https://mentor.ieee.org/802.11/dcn/15/11-15-0593-02-0arc-802-11-as-a-component.ppt), [11-15/0842r1](https://mentor.ieee.org/802.11/dcn/15/11-15-0842-01-0arc-ieee-802-11-in-5g.pptx), [11-15/1133r0](https://mentor.ieee.org/802.11/dcn/15/11-15-1133-00-0arc-existing-oam-interface-specifications.pptx)
    - **3GPP interface(s) to WLAN** [**11-15/1376r0**](https://mentor.ieee.org/802.11/dcn/15/11-15-1376-00-0arc-update-on-3gpp-ran3-multi-rat-joint-coordination.pptx)
  + **802.1AC draft review/discussion, as needed**
  + **AP/DS/Portal architecture and 802 concepts -** [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)

* + **Future sessions / SC activities**

**Joint session with TGak and 802.1, Thursday, Nov 12, AM1**

**Administration:**

The Chair reviewed the Administrative information in slides 5-9 in the Agenda document (11-15/0727r1)

**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 proposed Agenda slide 10 of the Agenda document (11-15/01234r1) - copied above was reviewed, no comments or changes were proposed, the proposed agenda was approved by unanimous consent.

**Administrative: Minutes**

Minutes approved by unanimous consent for ARC SC Meeting, September 2015, Bangkok, Thailand [11-15-1235-00-0arc-arc-sc-meeting-minutes-sep-2015](https://mentor.ieee.org/802.11/dcn/15/11-15-1235-00-0arc-arc-sc-meeting-minutes-sep-2015.docx) and the ARC SC Teleconference meeting on 28 October 2015, [11-15-1268-00-0arc-arc-sc-teleconference-meeting-minutes-28-october-2015](https://mentor.ieee.org/802.11/dcn/15/11-15-1268-00-0arc-arc-sc-teleconference-meeting-minutes-28-october-2015.docx).

**Updates, no action expected:** IEEE 1588 mapping to IEEE 802.11

Agreed no actions at this point.

**DS-SAP and Annex R becoming normative (last review)** [11-15/0555r5](https://mentor.ieee.org/802.11/dcn/15/11-15-0555-05)

Comment – is this list in sequence, as commenter thinks it should be.

Some discussion on not fixing the baseline text only fixing the addition of DSAF.

Added note to editor about an extra comma, in the base line text.

Several additional Definition format corrections – spelling out acronyms.

No objection was expressed on sending r6 to REVmc.

Recessed for 2 minutes

**IETF/802 coordination:** multicast over 802.11: [11-15/1261r2](https://mentor.ieee.org/802.11/dcn/15/11-15-1261-02-0arc-mulicast-performance-optimization-features-overview-for-ietf-nov-2015.ppt)

Dorothy Stanley (HP-Aruba networks) presenting 11-15/1261r2

Chair – we are looking for input and feedback on this presentation.

Dorothy – This document was presented last week at the IETF meeting, last Thursday afternoon, by Dan Harkens – the material was reviewed in ARC, additional material was added. Note: error found on slide 6, fixed to r3.

IETF Liaison report 11-15/1228 - has the status of the above document and the way forward in IETF.

There is other ongoing work trying to solve these issues in Layer 3.

Dorothy – there is some thought on this and there are issues with multicast in the real world. The mailing list will be established, when it is I will send it out on the 802.11 reflector. We could discuss what the use cases are. Insights – multicast is used for multiple types of traffic. Routing protocols, video applications. (Listed on LS report slide 5). Also the issue of secure neighbour discover.

Question – since it is a protocol of layer 2 – who is responsible for this.

Ans – well it’s a layer 3 protocol – looking at proxy ARP, we define the actions of the AP, so the STAs know if they can rely on the AP to provide the discovery function for the STA when the STA is in PS mode.

Question – where is this work to happen is it to educate Layer 3 or optimize layer 2?

Ans – Both, working towards useful solutions and optimal network behaviour.

Currently waiting for the e-mail list to start, before additional work/direction is known.

**PAWS –** Dorothy work is finished

**CAPWAP –** no new work or outstanding requests – see LS report above.

**Updates to REVmc Figure 5-1, et al -** [11-15/0540r4](https://mentor.ieee.org/802.11/dcn/15/11-15-0540-04-0arc-updates-to-revmc-5-1-5.docx)

The Chair – reviewed 11-15/0540r4 - focused on the AP and Mesh STA sections.

After some discussion, modifications were suggested and captured in [11-15/0540r5](https://mentor.ieee.org/802.11/dcn/15/11-15-0540-05-0arc-updates-to-revmc-5-1-5.docx), these changes agreed by unanimous consent. It was also discussed that additional work/review should be done in the Mesh Gate section of this document. Once, the changes, if any are necessary, to Mesh Gate section are agreed the work related to the REVmc draft should be complete. Additional work related to updating these sections to address the 802.11ak amendment will be done jointly with TGak.

**MIB attributes Design Pattern -** [11-15/0355r3](https://mentor.ieee.org/802.11/dcn/15/11-15-0355-03-0arc-mib-truthvalue-usage-patterns.docx), [11-15/0891r0](https://mentor.ieee.org/802.11/dcn/15/11-15-0891-00-0arc-delta-r2r3-of-mib-truthvalue-usage-patterns.docx)

**Wednesday November 11, AM1, 9:00 (CT) ARC SC Meeting**

**Call to order – 8:01**

**Call for Patents:**

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

**Reviewed Agenda: 11-15/1234r3**

**802.11 as a component:**

Is 802.11 usable as a component in a (larger?) system, or should it be:

* “It should be possible to swap implementations of the component from different sources provided those implementations are compliant to the defined functions and external interfaces.”
* How to capture data/control/management models, so 802.11 is usable as a component
  + What is the goal/who is the customer, for this effort?
    - Start with requirements… Analyze current situation, gap… Then go!

[**11-15/1376r1**](https://mentor.ieee.org/802.11/dcn/15/11-15-1376-01-0arc-update-on-3gpp-ran3-multi-rat-joint-coordination.pptx) **– update on 3GPP RAN/WLAN coordination/integration. Filip Mestanov (Ericsson) (updated to r2)**

All parameters, except UE Average data rate basically agreed. Approved WI RAN 68, during this WI, RAN2 added some work adding interworking with full network control (LWI), and Tight LET-WLAN (LWA)

WT could be implemented in multiple ways from Slide 10:

**What does this all mean for IEEE?**

**The requirement from the beginning was to not have impact on IEEE protocols**

**The WLAN Termination (WT) behavior is defined only in the minimum terms required for the 3GPP-defined functionality**

**Implementation, functional split, deployment options are up to vendor choices; e.g., WT could be implemented as:**

**- interworking function on top of an AC**

**- co-located in an AP**

**- co-located in any other node**

Question – going to slide 4 – there is a tight coordination at the protocol level. How can you integrate this tightly with implementation?

Ans – it is up to the WT provide this interface. So there is no WT specification. The “Glue Layer” is not defined/specified. The interfaces are not defined, but the function of the interfaces are. This is also true between 3GPP radios.

Question – I am struggling to deal with all the pieces

Ans – in RAN2 all information was required to be routed over Xw, legacy WLAN is also supported. Everything is the same except where it is transported.

Question – is RAN going with IP-SEC?

Ans – there are two: Either Type and IP-SEC are both available. This needs a WT for Either Type. Split bearer – the some packets over the WLAN and some over RAN.

Question – you are pointing to new metrics – this is not for rel. 13 is it.

Ans – no rel. 13 is basically done at this point. But rel14 is possible.

There were significant work on the radio integration in rel. 13. E.g. Packet delivery confirmation is key.

On slide 3 the parameters are listed and these is still working – HotSpot 2.0 certification meets these measurements.

Question – is there interworking between operators. The WLAN is deployed by the operator.

Ans – IP based continuity – if you are integrating on the core network – IP continuity – but this is Radio continuity. There is a RAN anchor.

Question – list of parameters – where does this communication happen on slide 8?

Ans – it is in the WT Status Reporting procedures.

Question – how often does this information get exchanged?

Ans – it is periodic – but it isn’t specified.

Question – I don’t see how helpful this information is, if it is delayed. I don’t see this information being terribly useful. I don’t see this as a very good solution.

Ans – well RAN3 is optimizing the network configuration. This is the reason for parameter exchange. There is the radio control channel – network management side.

Question – this is taking the WLAN as black box entity.

Ans – STAs are free to move in a mobility set, movement between mobility sets requires the e-NB to be informed.

Chair – Max (802.1CF Chair), Juan Carlos (802.1CF Vice Chair/802 Privacy) how do you see this mapping to the .1CF work?

Max – what is provided here is Xw interface – I don’t think this impacts what we are doing. It is interesting to look how the wireless measurements are reported. We are not specifying what is going on in Wi-Fi. We don’t map to this interface – we are not providing an external interface. We are working on a repository of information.

Mark – I didn’t think there was anything external in OmniRAN.

Max – we have an entity which has all the information, so you have to integrate the data into the entity. This is control plane only. There is no user plane in the OmniRAN architecture. There is no central entity that has access to all the user planes.

JC – in OmniRAN – 3GPP is providing a main link – we are providing a core of connectivity of information.

Max – it doesn’t care if the packets are going one dimension or multiple - It is interesting to see the Xw interface, signalling and real-time data. But this something systems are doing today.

Question - if you have a WLAN controller talking to eNB to the core?

Max – the path is how you get information to where it needs to go. The Wi-Fi systems have access to all the measurements. But it needs to get to the management entities. Distributed or centralized control is implementation dependent. The distributed/centralized is always traded in a network.

Mark – thank you Filip – any other thoughts on where this levers us with as a component. So it looks like we have defined “a” costumer.

**Wrap up:**

Brief comments on AP/DS/Portal Architecture and 802 concepts: Slide 20 (11-15/1234r3)

Reminder of the Joint .11 ARC, .11 TGak and 802.1 joint meeting for AM1 on Thursday

**Future meeting to address:** Slide 22 (11-15/1234r3)

* ARC SC meets when a specific focused task is requested of the SC for which there is sufficient volunteer interest.
* Continue work on architectural models
* How to capture data/control/management models, so 802.11 is usable as a component; consider standardized mgmt. accesses
* Design Pattern for “\*Implemented” and “\*Activated” MIB attributes
* Will also follow 802.1/802.11 activities on links, bridging, and MAC Service definition, Comment on 802.1AC revision project changes/proposals
* Monitor/report on IETF/802 activities, as needed
* Monitor/report on IEEE 1588 activities, as needed

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

IETF – email list agreed set up Juan Carlos Zuniga

**Conference Calls** – non-proposed, but open to as things come up.

**Recessed 9:57**.

**Joint session 802.11 TGak, 802.11 ARC SC and 802.1, Thursday, Nov 12, AM1**

**Chairs: Donald Eastlake (Huawei), Mark Hamilton (Ruckus Networks), John Messenger (Adva Optical Networking), respectively.**

**Donald Eastlake call to order – 8:01 and reviewed the slides**

**Reviewed Agenda:** [11-15/1220r5](https://mentor.ieee.org/802.11/dcn/15/11-15-1220-05-00ak-november-2015-802-11ak-agenda.pptx) – Agenda

**Reviewed General slides 7 thru 10 of 11-15/1220r5**

**Call for Patents:**

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

Agenda slide 19 of 11-15/1220r5–

* Call TGak Joint Meeting with 802.1 IWK and 802.11 ARC SC to Order
* IPR and Attendance Recording Reminder
* Approval of Agenda
* 802.11ak status
* 802.1AC and 802.1Qbz status.
* Teleconferences discussion.

**Status of 802.11 TGak**

Chair reviewed current status

**802.11 TGak Teleconferences**: Dec 3, 10, 17 at 10am EST, no objection.

**802.1AC and 802.1Qbz status - John Messenger**

**802.1AC status** ([acrev-messenger-editor-report-1115-v02](http://www.ieee802.org/1/files/public/docs2015/acrev-messenger-editor-report-1115-v02.pdf)):

LLC Encapsulation Ethertype – there is an issue getting a new either type at this time.

**Comment review:**

i-37 – agreed resolution proposed

i-38 – agreed in principle

i-40 – in section 13.2.4 – delete f), g) as they are already in appendix B and fix the translation issue

i-41 – agreed in principle

i-43 – rejected Insufficient detail in resolution.

i-44 – agreed in principle

i-51 – rejected. Long discussion on that this text only referring to the 802.1 and not services that are described in 802 standards in general.

This completed all of the outstanding .1 comments.

**Architectural Discussion– Mark Hamilton:**

Discussion on the DS “brains” starting on Slide 25 [11-14/0562r7](https://mentor.ieee.org/802.11/dcn/14/11-14-0562-07-00ak-802-11ak-and-802-1ac-convergence-function.pptx)

**Meeting recessed 10am**