IEEE P802.11  
Wireless LANs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ARC SC teleconference Minutes 15 August 2017 | | | | | |
| Date: 2017-08-15 | | | | | |
| Author(s): | | | | | |
| Name | Affiliation | Address | | Phone | Email |
| Joseph Levy | InterDigital, Inc. | | 2 Huntington Quadrangle  4th floor, South Wing Melville, NY 11747 | +1.631.622.4139 | [joseph.levy@interdigital.com](mailto:joseph.levy@interdigital.com) |

Abstract

Minutes of the IEEE 802.11 ARC Standing Committee teleconference held on 15 August 2017, at 9:00 am ET.

# Tuesday, 15 August 2017, 9:00 (ET)

**Administration:**

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

**Vice Chair: Joseph Levy InterDigital, Inc.**

**Meeting call to order by Chair 9:02, 15 August 2017**

**Proposed Agenda was verbally described by the Chair:**

Draft agenda:

1. Call to order, patent policy, attendance
2. Continue our discussions on 802.11ba (WUR) architecture topics.  Please see slides 17-20 of the Berlin ARC agenda ([11-17/0886r4](https://mentor.ieee.org/802.11/dcn/17/11-17-0886-04-0arc-arc-sc-agenda-july-2017.pptx)) for our current/latest status, also see [11-17/1246r0](https://mentor.ieee.org/802.11/dcn/17/11-17-1246-00-0arc-11ba-arch-discussion-part-2.pptx) “11ba Arch Discussion – Part 2”.  The goal is to distil a list of assumptions (or questions where don’t think we can propose assumptions) that we can use to guide the joint discussion with TGba in Kona.
3. AOB
4. Adjourn

Note that teleconferences are subject to IEEE policies and procedures, see:

–        [IEEE Patent Policy](http://standards.ieee.org/board/pat/pat-slideset.ppt)

–        [Patent FAQ](http://standards.ieee.org/board/pat/faq.pdf)

–        [Letter of Assurance Form](http://standards.ieee.org/board/pat/loa.pdf)

–        [Affiliation FAQ](http://standards.ieee.org/faqs/affiliationFAQ.html)

–        [Anti-Trust FAQ](http://standards.ieee.org/resources/antitrust-guidelines.pdf)

–        [Ethics](http://www.ieee.org/portal/cms_docs/about/CoE_poster.pdf)

–        [802 LMSC P&P](http://standards.ieee.org/board/aud/LMSC.pdf)

–        [802LMSC OM](http://grouper.ieee.org/groups/802/PNP/approved/IEEE_802_OM_v16.pdf)

–        [802 WG P&P](http://grouper.ieee.org/groups/802/PNP/approved/IEEE_802_WG_PandP_v15.pdf)

–        [IEEE802.11 WG OM](https://mentor.ieee.org/802.11/dcn/14/11-14-0629-10-0000-802-11-operations-manual.docx)

==================

**Administration:**

The Chair reminded participants that we are operating under 802.11 policies and procedures as outlined above.

**Call for Patents:**

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

**Attendance:**

The following were in attendance:

Mark Hamilton, Ruckus/Brocade, ARC Chair

Joseph Levy, InterDigital, ARC Vice Chair

Adrian Stephens (Intel Corporation)

Carl Kain (Noblis, Inc.)

Dick Roy (SRA)

Dongguk Lim (LGE)

Dorothy Stanley (HPE)

Eduard Garcia-Villegas (UPC)

Eunsung Park (LGE), TGba Vice-Chair

Jon Rosdahl (Qualcomm)

Leif Wihelmsson (Ericsson), TGba Secretary

Mike Montemurro (Blackberry)

Po-Kai Huang (Intel)

Suhwook Kim (LGE)

Taewon Song

Yunsong Yang (Huawei), TGba Vice-Chair

**Approval of the Agenda:**

The proposed Agenda was agreed

**Discussion on 802.11ba (WUR) architecture topics:** Chair presented: [11-17/1246r0](https://mentor.ieee.org/802.11/dcn/17/11-17-1246-00-0arc-11ba-arch-discussion-part-2.pptx)

The following is a summary of the discussion:

The discussion focused on slide 3 of [11-17/1246r0](https://mentor.ieee.org/802.11/dcn/17/11-17-1246-00-0arc-11ba-arch-discussion-part-2.pptx) – questions 1 and 2, the Chair provided updated notes on the results of the discussion in green on slide 3 of [11-17/1246r1](https://mentor.ieee.org/802.11/dcn/17/11-17-1246-01-0arc-11ba-arch-discussion-part-2.pptx), provided below for reference. The discussion did not move beyond these two questions on slide 3.

1. Is the WUR an independent PHY? For now, it is a fully independent PHY (on RXr) – but perhaps a “mode” of main PHY (on TXr?). Coexistence/cooperation aspects have been built-in, to allow channel sharing with traditional 802.11 PHYs.
2. Is the WUR an independent MAC? Probably/possibly (on RXr) – note that the RXr MAC is likely a (small) subset of a traditional MAC. Note, however, it is not “standalone”. The WUR MAC is a “companion” MAC/PHY that can only operate under the control of negotiation that takes place over the “main” MAC/PHY.

* TXr could be more complicated – TBD.

Some more notes of the discussion follow (note: these notes do not capture all comments made at the meeting):

Comment: Can the main and WUR radios simultaneously transmit and receive? Does the WUR send its wakeup as part of a PPDU, which contains other 802.11 content?

Ans – this is currently under discussion in TGba – there are proposals for using some tones of the 802.11 PPDU for WUR and there are proposals for a standalone WRU PPDU.

Comment: I don’t know if we know the answer to question 1 (slide 3, [11-17/1246r0](https://mentor.ieee.org/802.11/dcn/17/11-17-1246-00-0arc-11ba-arch-discussion-part-2.pptx)) For the receiver it seems to be independent PHYs, but for the transmitter it seems to be still under discussion.

Chair – I think this is important to note.

Ans – for now the understanding is that the receiver mode is two independent radios.

Chair – So for the receiver mode we have independent radios and on the transmit side we do not have an agreement on the independence of the radios. Let’s move on to question 2 (slide 3, [11-17/1246r0](https://mentor.ieee.org/802.11/dcn/17/11-17-1246-00-0arc-11ba-arch-discussion-part-2.pptx))

Comment: We should go through the roles of what the traditional MAC does and note which ones are being used by the WUR. On the receiver side the MAC is much simpler than the 802.11 MAC.

Comment: What is meant by independence – if the transmitter respects 802.11 signalling, how can it be independent?

Comment: Until the PHY for the transmitter is defined, it is too early to determine the MAC independence.

Comment: The main stack must allow for identifiers to be negotiated.

Ans – This is being discussed in TGba now.

Comment: How high up the stack do we need to go? The SME maybe generating messages down both stacks? Or is it further down the stack?

Comment: Are you talking about not going up the stack? Are you asking about direct MAC to MAC or even PHY to PHY? I guess PHY always talk to MAC first and then to the SME.

Comment: Will the PHY layers talk directly? Or, will it be required to move the information up the stack to the SME?

Comment: All that is happening in the WUR receiver is the reception of a turn on command – so you really don’t have a MAC that is passing anything up the stack for the WUR receiver. But, for the WUR transmitter, we may need to consider MAC.

Comment: I don’t know if I agree, if we have a WUR frame imbedded in a main radio PPDU. Or is it embedded in a way that requires the WUR to pull it out via the MAC?

Comment: Another thing we need to think about is time – TFS timer – is it known to the WUR MAC?

Chair – focusing in on time is an interesting approach.

Comment: Is the time synchronous with the main MAC?

Ans – For the reason of duty cycle, we designed a WUR beacon so we can agree on duty cycle. The timing is designed to be similar to the main radio.

Comment: similar but separate or integrated?

*The discussion ended here as the meeting time was used up.*

**The Chair adjourned the meeting at 10:00 EDT**