Minutes IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGbh Meeting Minutes, Interim May, 2022  Randomized and Changing MAC addresses (RCM) | | | | |
| Date: 2022-05 | | | | |
| Author(s): | | | | |
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Abstract

This document contains the minutes of the IEEE 802.11bh May Interim meeting, 2022.

Note: Highlighted text are action items.

Q- proceeds a question asked at the meeting

A- proceeds an answer

C- proceeds a comment

**Meeting May 10, 2022 13.30 to 15.30 pm ET**

**Chair: Mark Hamilton (Ruckus/CommScope)**

**Vice Chair: Peter Yee (NSA-CSD/AKAYLA)**

**Vice Chair: Stephen Orr (Cisco)**

**Secretary: Graham Smith (SRT Wireless)**

**Editor: Carol Ansley (Cox)**

**The teleconference was called to order by Chair 13.33 hrs. EDT,**

Agenda slide deck 11-22/0590r3

1. **Policies and procedures were presented by the chair. (Slides 4 to 15)**

There were no Patent declarations.

Copyright policy slides were presented (Slides 11 and 12)

1. **Agenda:**

* Attendance, noises/recording, meeting protocol
* Policies, duty to inform, participation rules
* Organization topics:
  + March Interim meetings: Tuesday, 13:30-15:30; Wednesday, 19:00-21:00; Thursday 13:30-15:30; Friday 09:00-11:00
  + Approve March plenary and March/April teleconference minutes
  + Timeline reminder/review
* Issues Tracking: [11-21/0332r30](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-30-00bh-issues-tracking.docx), new/updated use cases?
* Contributions (slide 23)
* Way forward to D1.0 (slide 24)
* Other notes and recommendations in Issues Tracking document? [11-22/0435r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0435-00-00bh-open-issues-from-issues-tracking.pptx)

Any comments, any objections to agenda, Agenda accepted.

1. **Approve Minutes**
   1. March Plenary session: [11-22/0488r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0488-00-00bh-minutes-tgbh-plenary-march-2022.docx)
   2. Teleconference minutes:
      1. Mar 29: [11-22/0604r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0604-00-00bh-802-11bh-telecon-minutes-march-29-2022.docx)
      2. Apr 7: [11-22/0633r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0633-00-00bh-802-11bh-telecon-minutes-april-7-2022.docx)
      3. Apr 12: [11-22/0639r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0639-01-00bh-802-11bh-telecon-minutes-april-12-2022.docx)
      4. Apr 21: Cancelled

Moved: Graham Smith

Seconded: Dan Harkins

Result: Unanimous Consent

1. **Officer elections/affirmation**

Chair is appointed by WG Chair and confirmed by WG motion

VChair approved by TG election, confirmed by WG motion

Secretary appointed by TG Chair, confirmed by TG motion

Editor appointed by TG Chair, no confirmation required

Chair suggested Friday meeting for motions

Q – Typically first order of business in other TGs, any reason to delay until Friday?

A – Picking a slot with better time for more participants.

1. **Timeline (**Slide 18)

PAR approved Feb 2021

First TG meeting Mar 2021

D0.1 Jan 2022 -> May 2022?

OR

Initial Letter Ballot (D1.0) Mar 2022 -> May 2022?

Recirculation LB (D2.0) Jul 2022 -> ??

Initial SA Ballot (D3.0) Nov 2022

Final 802.11 WG approval Mar 2023

802 EC approval May 2023

RevCom and SASB approval May 2023

Is May a reasonable target for D1.0 or should we have a comment round on D0.1? But Chair did not want to make a decision at this point.

Any discussion? None

1. **Issues Tracking**

Official is 21/0332r30 but other versions are posted. Not seen a new document that has not been previously discussed.

Is there any update that anyone wants to discuss.

1. **Contributions**

No contributions for presentation.

C – A contribution is planned and posted but do not wish to present today

A – Maybe present at tomorrow’s meeting?

C – Can we consider cancelling tomorrow’s meeting and presenting on Friday?

A – Will consider that at end of today’s meeting.

C – We do plan to present another scheme but not this week.

1. **Way Forward**

Current draft (D0.1) is posted,

[**https://www.ieee802.org/11/private/Draft\_Standards/11bh/index.html**](https://www.ieee802.org/11/private/Draft_Standards/11bh/index.html)

Chair – We have just the one scheme in this draft. We have one more contribution ready and another to come. Ay other comments

C – Intended to produce redline on the 22/187r2. Not ready. Need to rename some items and make some minor technical changes.

C – Is it better to make those changes in the D0.1?

C – Yes, changes to made to D0.1.

Chair - Notes and Recommendations open issues, in Issues Tracking document may need to be finalized.

Chair – There are some missing text identified in D0.11 which may need a contribution.

Chair – What do others feel about going to comments on D0.1 or do we go straight to D1.0?

A – Comment collection is suggested.

C – D0.1 has some editorial liberty identifying areas where more input is needed. So could get a lot of ‘not terribly useful’ comments.

Chair volunteered to do work by Thursday. Then cancel Wednesday meeting?

C – Agree

Chair – Cancel Wednesday meeting. Resume on Wednesday. Meet Thursday and Friday.

Any objections - none

**Out of agenda**

**Meeting recessed at 2.10pm ET.**

**Meeting May 12, 2022 13.30 to 15.30 ET**

**Chair: Mark Hamilton**

**Vice Chair: Peter Yee (NSA-CSD/AKAYLA)**

**Vice Chair: Stephen Orr (Cisco)**

**Secretary: Graham Smith (SRT Wireless)**

**Editor: Carol Ansley (Cox)**

**The teleconference was called to order by Chair 13.33 hrs. EDT,**

Agenda slide deck 11-22/0590r5

**Policies and procedures were presented by the chair. (Slides 4 to 14)**

There were no Patent declarations.

Copyright policy slides were presented (Slides 10 and 11)

1. **Agenda:**

* Attendance, noises/recording, meeting protocol
* Policies, duty to inform, participation rules
* Organization topics:
  + March Interim meetings: Tuesday, 13:30-15:30; Wednesday, 19:00-21:00; Thursday 13:30-15:30; Friday 09:00-11:00
* Issues Tracking: [11-21/0332r30](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-30-00bh-issues-tracking.docx), new/updated use cases?
* Contributions (slide 23)
* Way forward to D1.0 (slide 24)
* Other notes and recommendations in Issues Tracking document? [11-22/0435r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0435-00-00bh-open-issues-from-issues-tracking.pptx)
* Respond to Liaison from WBA: [11-21/0703r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0703-00-0000-2021-april-liaison-from-wba.docx), [11-21/1141r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1141-00-00bh-excerpts-of-wba-document-wi-fi-id-scope.pptx), [11-22/0668r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0668-00-0000-liaison-statement-from-wba-re-wi-fi-devices-identification-group.pdf), [11-22/0653r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0653-00-0000-2022-march-wba-whitepaper-re-device-identification.pdf)

The Chair reviewed the agenda.

The proposed agenda was adopted without objection approved by unanimous consent.

1. **Issues Tracking**

No updates received. Any anticipated? None

1. **Contributions**

**IRMA NEW 22/0753r1 presented by Graham Smith**

C – Brute forcing, not agree, if off line, can follow every association.

C - Could just use 2 bits for indicator.

Yes.

A - Claim to brute force the key? is a lot of work. Can’t see that this would in any way be practical.

C – Key changes each time. Uses key from last time and allocates a new key. Clarify IRM element sent in association. What about probes?

C – In every probe STA changes IRMA and Hash. Not trackable. No way to see if the same STA or track it. This is a powerful advantage to this scheme.

Q - Why OKM, what is it?

C – HKDF-expand is good but only if used as designed. The key is not being used right. Needs key to be 256 bits or so for full protection. OKM is output keying material.

A – Could the right hash be chosen, of course.

C – Clearly covers specific case not covered now. Station is recognized by probe and association frame, and station controls its address.

C – Station in control not a selling point.

C – Concept of providing identity before association. Ignoring that the pre association is the selling point. Probe is maybe a bad example, and targets multiple BSSs. GAS may be a better example. Yes, this could be made to work.

C – Could I ask for a Straw Poll? Just to see if this has legs.

C – Maybe we first ask if the TG addresses the preassociation Use Cases.

C – I don’t see anything needed to address the preassociation Use Cases. No real value.

A – They are in our Issues Document. They are definitely affected by RCM.

C – Yes there are applications, such as ranging, etc., could be behind decisions, STAs choice.

C – Agree no real need for pre-asssociation Use Cases. Focus on problem solved by the present Draft.

**Straw Poll**

Do you support a solution that addresses use cases for STA identification before association?

Result: 13/7/9

C – Disgusted that members have just decided to take it on themselves what Use Cases are important and prevent any other ideas/solutions. We should have solutions to all use cases and then leaving it up to the market or implementers. I have proposed schemes that meet all the uses cases, but this TG seems to be happy that it will end up with a solution that just meets some. The reasoning is a mystery to me, and I find it deplorable that members feel they need to stop such solutions.

C – The poll result seems to state that we will abandon the work for schemes that address pre-association.

C – Question was effectively “are we concerned with per-association?” And the answer was effectively no because it seems clear that 75% threshold would not be met.

Chair asked if the MAAD presentation was to be made? Response was that it was not worthwhile seeing that the main purpose was to address pre-association and judging by the straw poll result such schemes will never meet the 75%.

1. **Draft D.01**

Chair presented 22/0741r0

Fixes for D0.1

Chair went through document and made edits on screen.

1. **Document 22/0435r0 Open Issues in Issues Tracking Document**

Presented by Chair.

Consensus on dropping the Definitions Section 2? None.

Pre-association, splitting into 3. In view of previous do we drop this?

C – Client steering is clear. Not against discussing a clear need for this. SLA not sure is clear.

C – Had idea added to this that an AP was temporarily turned off until needed – AP power save. Don’t worry about this now? Drop the comment?

C – What is the end goal for this document?

A – We never had a good agreement. Intended to guide on randomized MAC implementations but as it went on it became clear that could not be used to published. Just use for internal tracking.

C – If intend to revisit this document then delete.

C – Originally intended for WBA response. Also, sections on the checklist??

A – Yes was intended for that, but new document needs to be clear for WBA. So, leave this 4.1 for now?

No objections

Neighbor report and ANQP - Can’t build a beacon report if not knowing who the STA is.

C – Is that deployed today? If not, then no need to solve it. No need to split this off from rest.

C – Is a service covered in this use case. Should add to this text.

C – There are implementations.

C – We seem to saying no, no all the time. The TG should be improving things and making new applications?

C – Not sure what “we” means but need to encourage .11 to improve.

C – Need protection for ANQP topics, need to make sure it is the responding AP.

C – Outside of our PAR to improve ANQP

Secretary asked if Straw Poll is a recorded vote?

Chair will enquire.

**Out of time**

**Meeting Recessed at 15:32 ET**

**Meeting May 13, 2022 9.00 to 11.00 ET**

**Chair: Mark Hamilton**

**Vice Chair: Peter Yee (NSA-CSD/AKAYLA)**

**Vice Chair: Stephen Orr (Cisco)**

**Secretary: Graham Smith (SRT Wireless)**

**Editor: Carol Ansley (Cox)**

**The teleconference was called to order by Chair 9.03 hrs. EDT,**

Agenda slide deck 11-22/590r6

**Policies and procedures were presented by the chair. (Slides 4 to 14)**

There were no Patent declarations.

Copyright policy slides were presented (Slides 10 and 11)

1. **Agenda:**

* Attendance, noises/recording, meeting protocol
* Policies, duty to inform, participation rules
* Organization topics:
  + Officer elections (slides 22,23)
  + Next meetings plan
* Issues Tracking: [11-21/0332r30](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-30-00bh-issues-tracking.docx), new/updated use cases?
* Contributions (slide 24)
* Way forward to D1.0 (slide 25)– motion(s) for text into draft (slide 26)
* Other notes and recommendations in Issues Tracking document? [11-22/0435r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0435-00-00bh-open-issues-from-issues-tracking.pptx)
* Respond to Liaison from WBA: [11-21/0703r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0703-00-0000-2021-april-liaison-from-wba.docx), [11-21/1141r0](https://mentor.ieee.org/802.11/dcn/21/11-21-1141-00-00bh-excerpts-of-wba-document-wi-fi-id-scope.pptx), [11-22/0668r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0668-00-0000-liaison-statement-from-wba-re-wi-fi-devices-identification-group.pdf), [11-22/0653r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0653-00-0000-2022-march-wba-whitepaper-re-device-identification.pdf)
* Next steps

Any Comments – None

Agenda accepted

1. **Officer elections/affirmation**

Chair appointed by WG Chair, confirmed by WG motion

VChair approved by TG election, confirmed by WG motion

Secretary appointed by TG Chair, confirmed by TG motion

Graham stated that he was not prepared to continue as secretary. He was not happy with the direction of the TG and was not prepared to put so much work into it.

**Motion #6 : Approve Peter Yee and Stephen Orr as TGbh Vice Chairs**

**Moved: Jerome Henry**

**Seconded: Jay Yang**

**Result: Unanimous consent**

Chair called for volunteer(s) for secretary

1. **Next Meeting plan**

Teleconferences through July session:

* 2 or 4??

Avoid conflicts with (TGs): TGbi, REVme, ARC, TGbe(MAC/Joint)

* Dates to avoid? Thoughts?

C – If not enough contributions, then can cancel.

Chair – Will schedule 4

* Dates to avoid? US Memorial Day., US July 4.

C – The evening call is very inconvenient for Europe.

Chair – if we stick to the early slots is that OK for Asia? Tuesday at 9am ET?

C – That’s 6am PT, would not like four 6 am meetings.

Discussion on times ensued.

10 am ET is 7am PT, 11pm Japan, 10pm China, 4am Europe

1. **Issues Tracking**

No updates or inputs seen.

1. **Contributions**

Chair asked if presentation on MAAD? No

**RSN Capabilities indication for Device ID:** [**11-22/0771r0**](https://mentor.ieee.org/802.11/dcn/22/11-22-0771-00-00bh-rsn-capability-indication-for-p802-11bh.docx)

Presented by Youni Malinen

Changes to replace unprotected capability indication with a protected one in RSNXE

AP shall not send ID if STA does not set the support.

C – If you say “set field to 1” then should also add when to set to 0.

A – Deleted “to 1”

C – Any need to define a new type of STA or define the types of STA? Just saying “non-AP STA” is not sufficient.

A – Against that. This is merged into the Standard. For this sort of upper layer not needed.

C – We only do that for a new PHY, not for relatively small features.

Discussion on need for a new STA or descriptions of STAs.

Edits carried out on-line.

Any further comments before we look at a motion to put this into the draft? None

**Material for “empty” clauses in D0.1:** [**11-22/0741r1**](https://mentor.ieee.org/802.11/dcn/22/11-22-0741-01-00bh-suggestions-for-remaining-fix-ups-in-tgbh-d0-1.docx)

Chair went through this at previous meeting. Needed PIC entry.

PIC entry proposal detailed in this revision.

Any questions or comments?

C – Is this the only text added by this document”

A – No, the document has other edits

C – I have other edit suggestions.

Edits discussed and carried out on-line and captured in revision, r2.

**Open issues from Issues Tracking document** [**11-22/0435r0**](https://mentor.ieee.org/802.11/dcn/22/11-22-0435-00-00bh-open-issues-from-issues-tracking.pptx)

Could go on forever. Does the group want to go through these at this time?

C – Should go through open issues. But can first approve the changes.

1. **Way Forward**

**Motion#7**

**Move to accept changes to the IEEE802.11bh D0.1 draft as specified in the following documents:**

* [**11-22/0741r1**](https://mentor.ieee.org/802.11/dcn/22/11-22-0741-01-00bh-suggestions-for-remaining-fix-ups-in-tgbh-d0-1.docx) **– 11-22/0771r1 RSN capability indication for P802.11bh**
* [**11-22/0741r2**](https://mentor.ieee.org/802.11/dcn/22/11-22-0741-01-00bh-suggestions-for-remaining-fix-ups-in-tgbh-d0-1.docx) **– Suggestions for remaining fix ups in TGbh D0.1**

**Moved: Jouni Malinen**

**Seconded: Amelia Andersdotter**

**Result: Unanimous consent**

Discuss status of draft and way forward, based on status as of start of session

Current draft (D0.1) is posted, on this (new) page! <https://www.ieee802.org/11/private/Draft_Standards/11bh/index.html>

Chair – How would the group like to proceed?

* Comment Collection?
* D1.0 WG Ballot?

C – Do either. To catch up with schedule better to go to LB but OK with internal comment collection. Maybe prefer comment collection.

Chair – Consensus seems to be for Comment Collection.

**Motion #8 – TGbh Comment Collection**

**Instruct editor to prepare P802.11bh/D0.2 and prepare a 30 day Comment Collection requesting comment on the draft.**

C – It is entirely up to the TG when to go to letter ballot. Procedure is to address the comments, no rule to address all or any items not part of comment collection. Just a mechanism to get a broader view of the draft.

C – Still have chance to add new features? Hence support Comment collection.

C – Any comment asking for something new would be considered.

**Moved: Jay Yang**

**Second: Jouni Malinen**

**Result: Unanimous consent**

1. **Other notes and recommendations in Issues Tracking document?** [**11-22/0435r0**](https://mentor.ieee.org/802.11/dcn/22/11-22-0435-00-00bh-open-issues-from-issues-tracking.pptx)

Chair continued looking at the open issues found, and status - 1

Also opened the Tracking Document for cross referencing.

***4.1 Pre-Association***

Leave Use Case splits for now on understanding a presentation may be coming. ANQP and Neighbor report.

C - Different ways to carry out steering, one of which is neighbor report.

C – Neighbor report is sent post association.

A – Can be sent through ANQP. That is the question.

C – Don’t think anyone has deployed it. Focus on deployed schemes.

***4.2 Post association Access Control***

Assumed link is secure. Do we want to do anything on non-secure situations.

C – Do not do anything on open networks. Drop any consideration of access control unless opt-in. Don’t like that direction. Stop any consideration on access control.

C – But parental control is common and case is that only recognized device gets access to, say, internet and printer.

C – Need a different term than Parental Control but yes not against that scenario.

C - We already have 802.1x and SAE password identifiers do do not need this.

C – Does anyone use password identifiers??

A – A large vendor did consider it was a violation, but is being considered in TGbi.

C – That may give us a timing issue with TGbi. Do we need anything to work on non .1X networks.

C – Homes do not do .1X. Need to consider home networks.

C - For the STA not supporting SAE identifiers, no solution for home network

C – Pre-association not covered with current draft, post association is.

C – Maybe “access control” is not correct term, but question is simply what do we do if not in a non-RSN network?

C – Doubt if we could work anything for a non-secure network. If using open network no expectation of privacy.

C – There are solutions that do not need support from the 802.11 MAC.

C – Small businesses using PSK need to identify device.

C – PSK is covered. Captive portal, covered by most devices using same MAC Address on re connection. If using random would need to go through portal many times, whereas a STA not using it needs only once.

C – Using same address for same ESS might not hold for long.

C – If captive portal and open network will continue into the future, maybe we need to consider.

Chair – Would welcome presentations describing realistic scenario

C – Have seen devices changing address when returning to same ESS.

C – Have already made presentation to add text to 4.2.

Chair – Is carried on agenda as group did not agree and more work was requested. Note agreed revision is still r30.

Q – When we say RSN is required this covers PSK etc. No need to refer to .1X.

A - Yes

Chair - 4.2. Returning device Consider as part of other 4.2 (captive portal/open network)

***4.2. Definition of “post-association”***

C – Present solution is part of the association not after. But is OK as described

***4.2. “Opt-in” definition***

Chair – Does anyone feel we need to define this?

No responses

***4.2. Identifying a user of a device***

Is this a topic we need capture?

C – Yes, selected devices might need to be controlled.

C- Present language is vague

Chair – Call for presentation(s)

Q – Does our existing solution address this?

1. **Respond to Liaison from WBA:** [**11-21/0703r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0703-00-0000-2021-april-liaison-from-wba.docx)**,** [**11-21/1141r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-1141-00-00bh-excerpts-of-wba-document-wi-fi-id-scope.pptx)**,** [**11-22/0668r0**](https://mentor.ieee.org/802.11/dcn/22/11-22-0668-00-0000-liaison-statement-from-wba-re-wi-fi-devices-identification-group.pdf)**,** [**11-22/0653r0**](https://mentor.ieee.org/802.11/dcn/22/11-22-0653-00-0000-2022-march-wba-whitepaper-re-device-identification.pdf)

Will carry this for now.

Out of agenda

**Meeting Adjoined at 11.00 ET**