Minutes IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGbh Meeting Minutes, April 12, 2022  Randomized and Changing MAC addresses (RCM) | | | | |
| Date: 2022-3-29 | | | | |
| Author(s): | | | | |
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Abstract

This document contains the minutes of the IEEE 802.11bh telecon meeting of May 24, 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 24, 2022 10.00 to 12.00 ET**

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

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

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

**Secretary: Peter Yee, acting**

**Editor: Carol Ansley (Cox)**

**The teleconference was called to order by Chair 10.03 hrs. EDT,**

Agenda slide deck [11-22/0819r00](https://mentor.ieee.org/802.11/dcn/22/11-22-0819-00-00bh-agenda-tgbh-2022-may-24.pptx)

1. **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 reminders
* Policies, duty to inform, participation rules
* Organization topics (see Backup slides)
* Issues Tracking: [11-21/0332r30](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-30-00bh-issues-tracking.docx)
* Contributions (slide 16)
* Next meetings:
  + June 13, 20, and 27 10:00 ET

Any comments? None

Any objections to agenda? - None

Agenda accepted unanimously.

1. **Organization topics**

The Comment Collection will start shortly and will end around June 24, depending on when the chair and editor can get that kicked off.

1. **Issues Tracking**

Chair noted that the Issues Tracking document is at r30 but there is a new contribution branch that hasn’t quite resolved.

1. **Use case further discussion and rule-based Random MAC-Identification proposal**

Okan Mutgan (Nokia) and Jay Yang presented [11-22/0818r01](https://mentor.ieee.org/802.11/dcn/22/11-22-0818-01-00bh-use-case-further-discussion-and-rule-based-random-mac-identification-proposal.pptx).

IEEE 802.11bh D0.1 provides a device ID solution, which covers some of the use cases but not all. It doesn’t cover identification on probing and identification on authentication/(re)association.

Case 4.8 (Client steering after association)

[BTW on slide 5 is really BTM.]

Case 4.26 (Virtual BSSID)

Rule-based random MAC STA Identification v1

Q – What is the role of the counter in this process? Is it incremented with each association? Presumably it has to be kept in synch?

A- It’s used in the tag (T) calculation. In this version, it is not incremented or really contributory to the tag calculation. It varies in other versions of these schemes.

Q – You mention the use of FT for when a device comes back. Does that mean that K2 can be saved instead of deleting it, to simplify the FT process?

A – Yes, K2 should be saved for FT

Q – Why are you keeping T? It seems to be recomputed in some versions.

A – Since the AP doesn’t have RMA2, it stores T instead. [T is generated from RMA2].

Rule-based random MAC STA Identification v3

C – You said this version helps to protect against tracking via frequent probes. There might still be a concern about the lifetime of RMA2\* if used for the whole of the association. You might want to generate more than one of those “throwaway” addresses used for probing.

A – Yes, we can generate multiple tags and RMAs.

Q – Is the seed value defined somewhere between the STA and AP? What is it?

A – It’s a plaintext value and it can be anything.

Q – Where does it go?

A – It could be RMA1, so both sides would know it without sending it in the frame.

C – So you will need to put the definition into your proposal.

Q – Do you see a need to update the use cases?

A – Yes, if the straw polls are accepted, we will.

Straw poll 1.1: Do you agree 11bh group should define a solution to address the identification issue in use case 4.8?

Yes 4

No 1

Abstain 5

No Response 3

Straw poll 1.2: Do you agree 11bh group should define a solution to address the identification issue in associating phase (use case 4.2)?

Yes 5

No 1

Abstain 3

No Response 4

Straw poll 1.3: Do you agree 11bh group should define a solution to address the identification issue in use case 4.26?

Yes 6

No 2

Abstain 1

No Response 4

Straw poll 2.1: Do you agree that 11bh group should continue working on the Rule-based random MAC STA Identification v1?

Yes 5

No 3

Abstain 1

No Response 4

Straw poll 2.2: Do you agree that 11bh group should continue working on the Rule-based random MAC STA Identification v2?

Yes 4

No 1

Abstain 3

No Response 5

Straw poll 2.3: Do you agree that 11bh group should continue working on the Rule-based random MAC STA Identification v3?

Yes 3

No 4

Abstain 2

No Response 5

Straw poll 2.4: Do you agree that 11bh group should continue working on the Rule-based random MAC STA Identification v4?

Yes 3

No 3

Abstain 5

No Response 3

Q – None of these solutions are being considered for use case 4.1 (pre-association steering)?

A – 4.1 is based on the ANQP solution, which is out of 11bh’s scope.

C – That doesn’t appear to be recorded in the issues tracking document that way. ANQP is one possible solution.

A – It would appear that the solutions presented could apply to 4.1.

C – The presenters might want to look at 4.1 more strongly than even 4.2

A – We can put 4.1 and 4.26 together.

1. **Open Issues in Issues Tracking document** [**11-22/0435r1**](https://mentor.ieee.org/802.11/dcn/22/11-22-0435-01-00bh-open-issues-from-issues-tracking.pptx)

We left off at “Need to consider client steering based on Neighbor Report ANQP”. Should we be using IEEE 802.11 features that are actively used in the field currently, or can we consider features that might be future use ones that could be broken if and when deployed?

Q – Do we know that there are no deployments using those features?

A – This has been claimed on a previous call by someone who should have good insight, but that was just one person’s experience. We could poll a larger audience for input.

C – Yes, that might be useful at a future meeting with a larger attendance.

C – We have used probe requests in client and band steering, but RCM made us disable that. We used Neighbor Reports too.

Q – So, is this something we should fix?

A – We did use this post-association.

C – Remember, this is a pre-association use case. We seem to have a general agreement that this would be nice to have, but it isn’t critical to solve. The question is whether anyone is doing Neighbor Report ANQP. There are also other techniques to solve 4.1.

C – I’m not aware of any such implementations.

Q – That’s the conclusion we came to during the last call. Does that mean it’s not in our scope then? Do we not bother because no one cares? Or do we fix it because it’s an IEEE 802.11 feature and we fix them all?

C – This is also somewhat related to 4.8.

Q – For features that aren’t used today, should we punt those use cases or features to IEEE 802.11bi?

A – IEEE 802.11bi’s scope is pretty broad if it’s privacy improving. One reason for splitting out IEEE 802.11bh was to get tools out there quickly. Niche features slow this down. The longer it takes to settle on IEEE 802.11bh, the more likely the market will move on without implementing it. I worry that some of these things are too small to be covered in IEEE 802.11bh as long as a lot of the bigger issues are covered.

Q – Perhaps we could prioritize the use cases and focus on the higher priority issues. What does the group think?

A – I don’t want to see us get too hung up on fine gradations between priorities. The table in the document was trying to drive us towards general prioritization.

C – You mentioned 4.8, which the group agreed to address. In this moment, we can change it to “in scope”.

C – There should be a presentation to do that. Based on the straw poll, you are hearing support in that direction.

C – We should consider features that will come out in 2023 rather than punting them to 2025 when IEEE 802.11bi comes out.

C – Different members may have different opinions of whether a feature has been implemented and thus there will be lots of argumentation.

C – We need to be careful that niche feature solutions don’t get voted down after a lot of work is invested if someone feels that the feature is unimplemented.

Straw poll: Should TGbh consider 802.11 features which are not used in current implementations (as far as we know), but are impacted by RCM?

Yes 4

No 4

Abstain 1

No response 5

C – The group continues to be split on this question. It would be helpful if someone could bring a presentation to help coalesce consensus on the topic. Otherwise, we may just fruitlessly revisit it.

C – If we considered new features that are not in current implementations, wouldn’t that impact the speed with which TGbh can solve problems that are implemented and are in scope?

C – That’s a reasonable assumption. And the group makes its best progress when there’s something concrete to talk about.

“Consider types of network security, impact on use cases”

Q – Do you get differentiation in the use cases depending on how secure a mechanism a STA has used when it associated? IEEE 802.1 authentication vs. PSKs, etc. Any thoughts?

A – I can bring a contribution on this topic for an upcoming meeting. What about pre-association?

A – We don’t seem to have a pre-association access control use case. Not a specific technology, but a use case.

“Update ‘post-association’ use case to be network access permission for a ‘returning device’ (captive portal?/open network).”

C – This seems to be merging in with a previous use case.

“Need definition/clarification of ‘post-association’”

Q – Are we clear by what mean by “post-association?”

A – I think we understand the definition.

“Need definition or other clarification of ‘opt-in’”

Q – I don’t think this is clear. And is it post-association only?

A – No, we have it in several places.

C – This needs further review. And I would like it in post-association only.

Q – Can you bring a presentation about that?

A – [Kurt Lumbatis] I’ll take that as an action item.

“Clarification (per solution?) of identification, as of user or of device”

Q – Are both identifications useful in different contexts? This came up in the home automation use case. Does the system want to identify an actual device or a user?

A – From an IEEE 802.11 perspective, I don’t think we want to do anything past the device. User identification is something more complicated, sophisticated, and “not our problem”. A home automation system may intuit an individual’s arrival by detecting particular devices, but all we can offer is device recognition. Anything to do with the user is something else.

C – But for parental controls, who is allowed to make controls is more than about a device. That may be beyond IEEE 802.11’s level.

C – I think the problems we are trying to solve are caused by MAC randomization, which makes device identification difficult. User recognition seems to be done at a higher level. We are just trying to fix MAC randomization-induced issues.

“SSIDs per band (different SSID, but really single ESS) – anything in scope for TGbh?”

Q - There are actual deployments that use different SSIDs for different bands to help steer clients from one band to another. From an IEEE 802.11 strict definition point of view, these are different ESSes that connect to the same LAN on the back end. How is device identification going to work across all of that. Is that in our scope?

C – If we can solve it, it would be useful. Some devices connect to the wrong band. Helping them to the correct band is useful. If there’s an easy way to solve it, that would be good. This could also be multiple SSIDs across the same band too. With three different bands, it might be good to provide steering.

Q – How is this different from a STA that is going between two (unrelated) APs? If you go between two APs with two different SSIDs, it’s going to rotate the MAC addresses. This comes down to whether you are recognized on one ESS on a LAN means other ESSes should recognize you.

**Out of time**

**Meeting adjoined at 12.01 ET.**

**Attendance**

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| Breakout | Timestamp | Name | Affiliation |
| TGbh | 5/24 | Andersdotter, Amelia | Sky UK group |
| TGnh | 5/24 | Ansley, Carol | Cox |
| TGbh | 5/24 | Baron, Stephane | Canon Research Centre France |
| TGbh | 5/24 | Hamilton, Mark | Ruckus/CommScope |
| TGbh | 5/24 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbh | 5/24 | Lumbatis, Kurt | CommScope, Inc. |
| TGbh | 5/24 | Mutgan, Okan | Nokia |
| TGbh | 5/24 | Nezou, Patrice | Canon Research Centre France |
| TGbh | 5/24 | Orr, Stephen | Cisco Systems, Inc. |
| TGbh | 5/24 | Sam, Harvey | Broadcom Corporation |
| TGbh | 5/24 | Sevin, Julien | Canon Research Centre France |
| TGbh | 5/24 | Thakore, Darshak | CableLabs |
| TGbh | 5/24 | Wang, Lei | Futurewei |
| TGbh | 5/24 | Yang, Jay | Nokia |
| TGbh | 5/24 | Yee, Peter | NSA-CSD |