Minutes IEEE P802.11
Wireless LANs

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| IEEE 802.11 TGbh Meeting Minutes, Plenary March, 2022Randomized and Changing MAC addresses (RCM) |
| Date: 2022-03 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Graham SMITH | SR Technologies | Sunrise, Florida |  | gsmith@srtrl.com |
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Abstract

This document contains the minutes of the IEEE 802.11bh March Plenary 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 March 8, 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 11-22/0262r3

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 Plenary meetings: Tuesday, 13:30-15:30; Wednesday, 19:00-21:00; Thursday 13:30-15:30; Friday 09:00-11:00
	+ Approve Jan interim and February/March teleconference minutes
	+ Timeline reminder/review
	+ Proposed CSD update: [11-22/0434r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0434-00-00bh-tgbh-csd-update.docx)
* 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 (slides 22 and 23)
* 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)
* New contributions
	+ MAAD MAC2:
		- [11-22/0424r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0424-00-00bh-maad-mac-2-presentation.pptx): MAAD MAC 2 presentation (not reviewed yet)
		- [11-22/0427r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0427-01-00bh-maad-mac-2-text.docx): MAAD MAC 2 text (not reviewed yet)

 Nothing yet prepared for WBA Response.

Any comments, any objections to agenda, Agenda accepted.

4 meetings at this Plenary.

1. **Approve Minutes**
	* 1. Jan Interim session: [11-22/0165r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0165-00-00bh-tgbh-minutes-interim-meeting-january-2022.docx)
		2. Teleconference minutes:
			+ Feb 8: [11-22/0320r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0320-00-00bh-minutes-tgbh-feb-8-2022.docx)
			+ Feb 17: [11-22/0375r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0375-01-00bh-802-11bh-telecon-minutes-feb-17-2022.docx)
			+ Feb 22: [11-22/0376r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0376-01-00bh-802-11bh-telecon-minutes-feb-22-2022.docx)
			+ Mar 3: [11-22/0447r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0447-00-00bh-802-11bh-telecon-minutes-march-3-2021.docx)

Any concerns, discussion? None

Moved: Graham Smith

Seconded: Stephen McCann

Result: Unanimous Consent

1. **Timeline (**Slide 18)

PAR approved Feb 2021

First TG meeting Mar 2021

D0.1 Jan 2021

Initial Letter Ballot (D1.0) Mar 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

Chair pointed out we are behind for D0.1. Hopefully D0.1 can be started this week. Maybe end of March ready to start LB with D1.0. Will be a challenge.

Any discussion? None

1. **CSD Update**

Chair presented 22/0434r0

Only proposed change is to 1.1.2 Coexistence. Chair has discussed with WG Chair and agreed that this does not need a Coexistence Assessment document.

C – Applies mostly to PHYs, so agree do not need this

C – Also agree perfectly reasonable. The CA document was often blank.

C – Yes this is sufficient and 1.1.2 takes place of the CA document.

Chair – Can we confirm the text is acceptable?

C – Could add that existing PHYs take care of the need for co-existence.

Chair edited on screen with suggestions from others.

C – Need only say “existing PHYs are used”

Chair – Will post and prepare a motion

1. **Issues tracking Document now at Rev 30**

Chair – described the document and its use.

Chair asked if any new use case additions? None

1. **Contributions**

**MAAD MAC-2 presentation**, 22/424r0 presented by Graham Smith

C – Do not use new address for reassociation or FT.

C – Address used on association, but not on reassociations

C – Uniqueness to the Network?

A – Yes, network assigns, but STA initiates.

C – Slide 5, STA does indicate support. Basically STA should indicate support, STA agrees to be assigned, can that be indicated. But can opt out.

A – STA could indicate in m4 that it is using it. But must STA indicate support?

C – That was the idea with action frames, when STA initiates the exchange. If STA does not send request, then it can use any random MAC at next association.

C – STA can use the MAC or not, is not necessarily something the STA need to agree to. Not sure we need the level of control. No real encumberment for STA to use it. STA can decide if to use the MAC address or not.

A – Yes STA may use the allocated MAC or not.

C – Only STA and network know this address, no other use for it. No privacy issues.

C – Is it useful for AP to indicate it? But must have been previously attached to get an address.

C – If the STA wants to use the MAAD MAC it does if not it just appears with a new

Straw poll

Comments on making this similar to the previous straw polls on all the presented schemes. Chair explained the basis for those polls. Presenter explained simply trying to be same as used for the previous criteria.

“How much priority do you put on the MAAD MAC proposal (11-22/0424)?”

Vote: 5/16/7

C – Not sure how to interpret this.

C – There is a big difference if assigning MAC address, may have limit on STA performance.

C – This is complementary solution to those earlier. Is this a compromise etc.

A – Yes this is a compromise and is only one that is a direct TGbh solution in that it uses the TA as the identifier.

1. **Way Forward**

Chair – What do we do?

C – Why not just get authors of presentations to see if they would merge?

C - Have feelings on some that we should not be doing. For ones I do care, maybe merge, but basically no merge. Might have one network generated and one STA generated, maybe merged. But no consensus yet, not really clear but would like to have minimal set. Don’t do same thing in different ways.

C – Happy for forced merging by motions. For example, make motions for draft text to be included,

Chair – have produced document 22/459 where some merged.

C – If we vote contributions, see if they conflict, then that gives us something to work on.

C - Not sure what you mean by merging. To me it’s take best of each and merge. That is what MAAD MC 2 specifically tries to do.

Chair – Any objection to adding 22/0459 to the agenda? – None

1. **Chair presented 22/0459r0**

Idea is to merge three proposals. Use a network or network side – negotiation required.

C – Ideally would like to confirm the features we need. This is viable and might be the best option we have, but would remind that our requirement was supposed to be a quick fix.

C – Not sure that only 4-way HS solutions the best way forward. Poll results do not actually support that. MAAD=- 1 did better. Also agree quick fix idea is better orientated to MAAD MAC 1. Very easy to implement and uses the TA as identifier which is what the “problem” use cases all do.

C – Agree polls seem to indicate MAAD-1 did better than MAAD-2.

C - Do we want an action frame or 4-way HS? that may par down the solutions. Then maybe easier to work on text and what was actually exchanged.

C – If we asked do you want to use actions frames? then need to distinguish between the STA ID and MAAD MAC -1 choices.

C – Reservation on MAAD 1 is how much security there could be, could the STA be spoofed.

A – Exchange MAAD MAC is robust. STA will request new MAC and AP allocates. STA cannot be spoofed.

C – If STA does not request new MAC and AP does not flush its list, then a spoof STA could copy the MAC

A – No, the text does not allow that, and for a spoof STA to try it would not succeed. Both AP and STA have to be wrong. Copying the MAC address will not work.

C – Always was an option that allocation must be only when encrypted. Consider that a safe option.

1. **Document 22/435 Open Issues from Issues Tracking**, Presented by Chair

List of open issues.

Chair went through outstanding comments in the Issues Document.

Pre-association steering, Neighbour Report usage?

C – Are these practical or theoretical questions? If it’s used, it should count.

C – Maybe WFA Spec and see what it says about this.

C – Clause 3.5.1 STA can request list of neighbours

C – But does infrastructure know anything about this

C – This should not break with RCM. STA can look at RSSIs but AP can’t track the STA. Don’t think the mechanism is broken.

C – Steering over different bands and can’t tell if same STA sending the requests then does not work.

C – This is not in the spec.

C – Nothing is broken so nothing to fix.

**Out of time**

**Meeting recessed at 3.30pm ET.**

**Meeting March 9, 2022 19.00 to 21.00 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 19.03 hrs. EDT,**

Agenda slide deck 11-22/0262r4

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 Plenary meetings: Tuesday, 13:30-15:30; Wednesday, 19:00-21:00; Thursday 13:30-15:30; Friday 09:00-11:00
* Issues Tracking updates: [11-21/0332r31](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-31-00bh-issues-tracking.docx)
* Solution contributions (slides 22, 23)
* 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)
* Way forward to D1.0
* 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)

Nothing drafted on WBA Liaison and nothing to review today.

Issues Tracking document has been updated since last meeting.

Any comments, any objections to agenda - None - Agenda accepted.

Solutions updates:

* MAAD MAC2:
	+ [11-22/0424r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0424-00-00bh-maad-mac-2-presentation.pptx): MAAD MAC 2 presentation
	+ [11-22/0427r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0427-01-00bh-maad-mac-2-text.docx): MAAD MAC 2 text
* [11-22/0459r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0459-00-00bh-merged-solutions-concept.pptx) : Merged solutions concept
* MAAD MAC updates:
	+ [11-22/0301r2](https://mentor.ieee.org/802.11/dcn/22/11-22-0301-02-00bh-maad-mac-text.docx): MAAD MAC (1) text
	+ [11-22/0424r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0424-01-00bh-maad-mac-2-presentation.pptx): MAAD MAC 2 presentation
	+ [11-22/0427r3](https://mentor.ieee.org/802.11/dcn/22/11-22-0427-03-00bh-maad-mac-2-text.docx): MAAD MAC 2 text
* [11-22/0470r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0470-00-00bh-combined-proposal.docx): Combined proposal
1. **Issues Tracking Document** 21/0332r31

Proposed updates. Okan Mutgan presented and went through changes to case 4.8 and added two new use cases, 4.27 and 4.28.

* Passive scanning sentence at end of 4.8.

C – Active scanning for this particular use case actually is useful.

Chair - Any objection to deleting that sentence – none

* Use Case 4.27 Identification in Database.

C - Why don't SAE password identifiers solve this problem? Obviously privacy is not an issue for the use case (everything is based on a static MAC) so password identifiers would work fine.

A – Assumed identity is based on MAC Address. Hence problem if using random MAC

C – Random MAC works fine with SAE password identifiers.

Chair – This is a use case that is effected by RCM but in this case there may be a solution already in the Standard. Could add to the Use Case

C – This is a valid but poor use case as we need to discourage using MAC addresses as IDs.

C – Agree adding a note is good idea.

C – But TGbh was formed to overcome the problem of RCM, we can’t say ‘you should not have done that in the first place’. TGbh is looking for a ‘simple’ solution to these apps where the MAC address is used.

C – Does not hurt to put it here.

C – No need to say anything, when we have a solution we should then look and see if it solves the problem.

C - It is not our job of telling others to not use MAAC addresses

Chair – Any objection of adding Password identifiers may be used? – none.

Presenter undertook to add note to that effect

* 4.28 Deny/Allow List

C – Sounds familiar, Parental controls. MAC addresses can so easily be spoofed so RCM. Not an effective way to organize a network. Bad practice.

C – Struggle to distinguish from 4.2 Use Case. Understand allow/deny other than limited access. Personal thoughts are could add to 4.2. Don’t feel it is different enough to be separate.

A – In 4.2 is just a single sentence. Could add something.

C – No discussion on management, do we want to address this in this group? Late on schedule and need to solve the problems from RCM. This function is not in the 802.11 spec, so need to keep it out.

A – We have 4.2 as one of our main use cases.

C – Specification does not cover how AP and STA interact when used to deny services.

C – we are to produce hooks in the standard that will allow these use cases to be simply and quickly solved.

Presenter agreed to edit 4.2

1. **Combined Proposal 22/470r0** presented by Mark Hamilton

Proposal to combine STA and Network IDs plus MAAD-2.

Note, does not have the latest fixes as posted on MAAD-2

C – Close to inventing a camel. Are these exclusive or not. Need more description on behaviour. If using MAAD network identifies you but might want to do the STA ID as well. Not sure we need the Network ID and MAAD. Can use the capability bits to distinguish.

C – Yes agree, might need to describe cases. Can’t see STA and Network ID at same time

1. **Way Forward**

What does TG think is way forward?

C – I don’t mind if solutions if either STA or AP can initiate, but don’t think it is efficient for the market place to specify three solutions. Very few would adopt all three. Don’t think that 3 that are not interoperable is the way to go.

C – Take away is that we should select one solution?

C – Off top of head, MAAD and STA ID could be combined. Not sure the network ID and STA ID combine.

C – Could do it by comment process.

C – Did have discussion about how problems arose. Network assigning some importance to the STA. Network needs to own the identity space. Network needs an identity to assign. Must be a network assigned ID.

C – Agree network should assign, but also support comment resolution way ahead. Also support we should not have too many solutions.

C- - Support network ID. Service that the network supplies.

C – People maybe converging towards a network assigned ID, reasonable, but need to preserve STA rights.

C – Client must be able to opt –in is a basic requirement.

C – A network supplied ID can assign SLAP address.

C – First step is network or client provided. Making it the MAC address brings requirement on how random they are.

C – If higher up the stack, APs can use that identifier.

C – Allocated MAC as against using an ID, think STA should control its RCM but network generates the ID. No pre-steering though, that maybe a problem. That’s a big decision.

C – Not good idea network does allocate the MAC address. What if a poor choice by AP?

C - The argument that someone would have a poorly implemented identity selection policy is spurious. What if the STA has a poorly implemented policy to select its own random MAC? That argument cuts many ways

C – The techniques using the MAC as ID may not be liked but they are there and purpose was to find quick and easy fix. So concept to use predetermined MAC that is secret but identified seems to be a straight fix.

C – Problem of using AP assigned MAC Address. Why insert a new way? Idea is to enable services; we can do that other ways. STA needs to be in control.

C – I don’t think you understand the scheme, the STA opts in and wants to be identified. The MAC address is allocated by the AP and STA uses it next time it associates.

C – STA needs to know if network is going to track it.

C – All the solutions have this.

C – Impossible to create a situation where a STA is never tracked. If you associate you are tracked. Implementations in the AP not being correct? APs should allocate ID and can use the DS to communicate.

Chair – can we come up with a set of questions to ask and get some feel for the direct. Do we want to combine techniques?

* Network allocated or STA generated
* Use MAC address or not
* How many Issues Tracking criteria are addressed?

C – too early to make decision

C – When will we ever be able to make a decision?

C – If do not want to use an assigned MAC address then don’t. Should not prevent use of technologies we invent.

C – I just want pre-knowledge before first association.

C –That’s not a problem. All solutions have opt-in.

C – MAC address has a bit that says globally unique or local administered. That is the network assigned address. If STA assigns using locally administered bit it is not correct as it is not really assigned. We should recognize that MAC addresses were designed to be assigned. MAC addresses should be globally or locally (network) allocated.

C – We have device to device networks without an administrator. Idea was to identify a STA using a RCM.

Chair – Need to come up with questions and proposals. Either one solution or a combination.

C – Maybe develop straw polls.

Chair – Yes, that is intention.

C – Do we as a group need to select something or send out for comment solution?

A – That comes down to having a combined cohesive solution.

**Out of agenda and time**

Meeting recessed at 9.00 p.m. EST.

**Meeting March 10, 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 11-22/262r6

**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 Plenary 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), pending updated use cases: [11-21/0332r31](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-31-00bh-issues-tracking.docx)
* Solution contributions (slides 23, 24)
* Way forward to D1.0
	+ [11-22/0474r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0474-01-00bh-tgbh-way-ahead.pptx): TGbh way ahead
	+ Straw polls (slides 25-27)
* 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)

The Chair reviewed the agenda.

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

1. **Issues Tracking**

Document is still r30. Have had update proposals not yet inserted.

1. **Way Forward, 22/0474r1** presented by Graham Smith

Network Generated ID (NGID) and MAC Address designation (MAAD). Covers all use cases, application can select the scheme that suits it the best.

C – A lot better in that the opt-in is clear. Need to look independently.

C – Not independent as such, both cover the use cases completely.

C – Claim is correct, I think I am in favor in this direction. Fixed length action frame would note it is in use.

C – Not sure dismiss Client generated, IoT area may be good. MAAD needs to be linked to MAC generation - Note 802.1cq.

C – Generally a good idea, recognition pre or post then that is covered. Echo if MAAD could STA propose a MAC address. Could add a suggestion of an address in the STA MAAD request.

C – Have secure way of presenting the blob, but generating the blob need not be fixed, idea was to have as annex. Original idea was to generate a network ID example. But could generate Identifiers any way it felt. Should there be a description of how to generate the MAC?

C – There is text covering this. Could use SLAP.

C – We have merged proposal 22/470 maybe try to take that forward.

C – We need to have a unified proposal, give a lot of options will be a problem.

A – If we have 1 solution that only covers some use cases, is that ok?

C – There are set of cases and significant discussion, based on bad idea to track user by the MAC. User privacy.

C – No the MAC is random, under control of the STA. Only uses it if it wants to be recognized. Read the description and understand it.

1. **Straw Polls**

Should the way forward for TGbh solution support Network-generated or STA-generated identifiers, or options to support both?

* + Network
	+ STA
	+ Both

No comments

Should the way forward for TGbh solution be precluded from any network control over the non-AP STA’s MAC address (TA/used over the air)?

* + Yes – The non-AP STA uses a locally generated random MAC, independent of ID
	+ No – The solution might be based on management of the non-AP STA’s MAC address, or the solution might have an option to provide or impact the non-AP STA’s MAC address depending on how it’s used/deployed

C – Seems to be MAAD or not.

A – There are other schemes with MAC

C – Not really, IRMA did but I thought we had pared down to 3 or 4, so only MAAD does this.

C - Don’t like the words but could live with it.

C – Support yes option if we do touch MAC addresses.

C – Maybe “Is there support for a network generated MAC address.”

C – Way forward a combination? This should be the first SP.

C – Confused where we are going. Had four proposals from Straw polls. Then looking at fitting them together. Now seem to be going backwards.

Chair – I made attempt to glue them together but fair bit of push back.

C – How do I interpret SP #3? is the MAC address used all the time? How does STA know what to use?

C – Whatever the STA wants to use. Only use the assigned MAC if the STA wants to be identified. Only scheme that has pre-association.

Chair scripted on screen changes to the Straw Polls and comments on each went back and forth in trying to make sure all understood exactly was being asked.

Did suggest “Should the way forward include (be allowed to include) more than one solution”

Chair – inclined to remove this. In the end back to the original poll texts.

“Should the decision about our way forward consider how many Issues Tracking criteria/use cases are addressed (broad solutions are preferred), or should we focus on solving 1 or 2 highest priority criteria/use cases (focused solutions are preferred)?”

* + Broad solution
	+ Focused solution

C – We should not be the ones to decide what Use Case is good or not. We should not assume we know best and what use cases are more important.

C – Could add “need more information”, just ask the question

C – Want to know that these are useful and see what the TG wants to do. A lot of need more info would not help.

Straw Poll #1

1. **Should the way forward for TGbh solution support Network-generated or STA-generated identifiers, or options to support both?**
	* Network
	* STA
	* Both

9/4/11 (23 no answer)

**2 Should the way forward for TGbh solution be precluded from any network control over the non-AP STA’s MAC address (TA/used over the air)?**

* + Yes – The non-AP STA uses a locally generated random MAC, independent of ID
	+ No – The solution might be based on management of the non-AP STA’s MAC address, or the solution might have an option to provide or impact the non-AP STA’s MAC address depending on how it’s used/deployed.

10/11 (26 no answer)

1. **Should the decision about our way forward consider how many Issues Tracking criteria/use cases are addressed (broad solutions are preferred), or should we focus on solving 1 or 2 highest priority criteria/use cases (focused solutions are preferred)?**
	* Broad solution
	* Focused solution

8/15 (24 no answer)

1. **SP#1: Given the list of solutions, which are the top three that you could support, or tolerate/accept?**

**<List all options>, everyone votes for 3**

C – Including the combination solutions is difficult.

C – Then down select from the top 3 or 4

C – Forced to pick one with combinations in play

C – Group wanted a focused solution, so that excludes combinations

C – to be clear I support focused but also combination.

C – Run #1 repeatedly with smaller and smaller list.

A to L



Result 1,1,3,2,0,5,7,3,9,3,8,7

Removed the low counts



Result: 6,8,16,7,12

Same but now vote for 1. Prefer to drop to 3 or 2.

C – Suggest merging Opaque and Network generated.

Vote for 1 only



Result: 5/10/5/3

C - I am lost, are we still having down selection? is this the final call? Shouldn’t we eliminate the lowest and re-vote?

Chair –thought the vote was clear.

C – unclear that there are 2 selections that win.

C – Supposed to be just one. First Opaque was described then text produced. So is a single proposal.

C – Worried that the result and subsequent comments show that too many people had no real knowledge on the details of the proposals.

C – Should also have STA ID and a combination with just STA ID and Network ID.

A – Unless text in front of us can’t decide.

C – Need to make motion to produce text.

**Out of time**

**Meeting Recessed at 15:30 ET**

**Meeting March 11, 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 11-22/262r7

**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
* CSD update motion (slide 28)
* Issues Tracking: [11-21/0332r30](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-30-00bh-issues-tracking.docx), pending updated use cases: [11-21/0332r31](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-31-00bh-issues-tracking.docx)
* Solution contributions (slides 23, 24)
	+ [11-22/0473r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0473-00-00bh-rule-based-random-mac-sta-identification.pptx): Rule-based random MAC STA identification
	+ [11-22/0187r2](https://mentor.ieee.org/802.11/dcn/22/11-22-0187-02-00bh-network-generated-device-id.docx): Network generated Device ID (updated)
	+ [11-22/0482r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0482-00-00bh-annex-for-opaque-device-id.docx): Annex Text for Opaque Device ID
* Motion to approve incorporating text into a Draft (slide 29)
* Motion to approve Draft 1.0 and Letter Ballot? (slide 30)
* Next Steps:
	+ Timeline review/update, May plan, Teleconferences (slides 18, 32, 33)
* 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)

C – Can we talk about update to Issues tracking?

A – needs to be posted for us to discuss. Do that and we can add link to the agenda.

Any Comments – None

Agenda accepted

1. **CSD update motion**

**Motion**

**“Approve the TGbh CSD, as updated in 11-22/0434r1, and forward to the WG for approval.”**

Any discussion on change in 1.1.2 Coexistence. Removing need for a Coexistence Assessment.

Moved: Amelia Andersdotter

Seconded: Peter Yee

Result: 17/1/2 (no answer 10) Passes

1. **Issues Tracking Document 332/32**

Updated to r32. Originally proposed two new cases. These are now covered by additions in 4.2

Updates presented by Jay Yang.

C – In general pre-association STA not identifiable. Therefore, cannot have access control. Deny lists are outside .11. Not sure we need these updates

A – Implementations exist. Current solution limited to post association.

C – We are very worried to use a fixed address

C - this is the issues document, not the solutions document

C – Looking for something to solve that does need solving.

C – May be doing 4-way HS and association is not complete. Not sure note is clear.

A – Note says exchange procedure not started. Do you have different wording?

C -At this point do not have wording.

C - Post-association means the STA has a limited service after association (such as parental control). Pre-association means the STA will not be authorized to be associated at all.

C – 4.27 not sure about the use of Password Identifier. Sent email to reflector. Had a response.

A – Password identifier can be shared among a group.

C – STA user databases, what kind are allowed? Add some regulation guidance. Legislation requirements.

C – Not interested in legislators, can ignore.

C – This is just a Use Case. Not solution.

C – It was noted that already solution and thought we had agreed that we should just add a note.

C – Work off line to get the right words and understand use of password identifiers

C – ID of a particular user in a database without consent is dangerous and should not be allowed, especially at layer 2. STA ID database should be out-of-scope.

Chair – please take off line for example is Opt-In covered.

C - Have no idea what previous are talking about. There are massive databases of users and passwords around the world (accessible by RADIUS). We have never worried about any legislation on them.

Chair – Keep Use Case but add text on possible use of Password Identifier. If anyone has any concern on databases, then we need a contribution.

1. **Rule Based random MAC STA identification**, 22/0473r0 presented by Okan Mutgan

Proposal to reduce overhead

* + AP designates the **rule** of generating RMA to the STA instead of sending any form of RMA/ID/KEY itself.
	+ Afterwards, whenever STA with RMA establishes a new connection with AP, because both AP and STA generates the RMA based on the **same rule**, AP can recognize STA with RMA

C – Not sure overhead is that bad. Adding to existing frames is simply extra octets. No real impact. Not sure what the rule is and that would increase computation on the STA.

C – Can’t compare overhead.

A – Emphasis on overhead issue and can add some calculations to show this.

C – I can see that the rule can be a key, and then STAs carries out the rule each time they come back, calculating a MAC address, and the AP does same calculation- is that correct? but how to make sure they keep in synch?

A – Yes that is correct. Synchronization does need thinking about, leaving some time. MAC address in the database

C – Need to define timers to age out addresses so as to prevent huge data base. Also what happens in a multi AP environment? Pick a time-out and communicate to STA.

A – Timer can be added simply. Easy solution is controller AP keeps the database.

C – High number of STAs might be a problem. Moving from one AP to another AP in same ESS MAC stays the same.

A - APs in ESS must share the same database

C – If AP assigns MAC Address we are concerned.

A – Can done in the STA side, i.e. STA generates the rule.

C – Need to understand the overheads and compare

C – How detailed should this generation be? Could be simple random function.

A – Suggest you check the issue document and check the criteria. Whatever encryption is needed to make sure no-one can track STA.

1. **22/0187r2 Network Generated Device ID**, presented by Journi Malinen

Updates to text,

No comments

1. **Opaque Device ID 22/0482r0** presented by Dan Harkins

Proposal is to add as an informative annex.

C – This is very detailed. Is this really needed for TGbh.

A – Not a requirement that Network generated ID actually uses it.

C – Padding tweaking AES, is this standard?

A – Just my suggestion.

C – Our deployment should be independent. The Network Generated ID does not require this at all.

C – The device ID element uses ID Blob and then calls it the opaque identifier. Needs to be sorted out and the wording made clear. Don’t like the term ‘blob’

A – Yes free to select any construction

C – Need to get the names right.

C – Maybe need to bind the two documents together?

A – Add “example” to the Opaque text.

Text changes done on screen. New text will be uploaded.

1. **Motion 1**

**Move to instruct the TGbh Editor to create IEEE802.11bh draft by incorporating the following documents:**

* [**11-22/0187r2**](https://mentor.ieee.org/802.11/dcn/22/11-22-0187-02-00bh-network-generated-device-id.docx) **Network generated Device ID**
* [**11-22/0482r1**](https://mentor.ieee.org/802.11/dcn/22/11-22-0482-00-00bh-annex-for-opaque-device-id.docx) **Annex Text for Opaque Device ID**

**Moved: Journi Malinen**

**Seconded: Dan Harkins**

**Discussion:**

C – Need for TGbh has been discussed and I think no real use case for it. Aps could be requiring STAs to use this service to get an ID form an AP. Should have a clear way to opt out. Don’t support this. Difficult to ask for user content. I do not think we need this.

C – The need is very clear, WBA for example. Process has had clear support. We have a schedule goal which we have been missing, we need a quick solution. The STA opts in it is very clear, there should not be any debate about that. No way the AP can force STA to use it.

**Result: 22/8/1** (13 no answer) 73% **Fails** (tentative - subject to Voter list check)

Discussion:

Chair – What further work should we do?

C – In general we have higher layer protocols for working between networks, maybe better solutions

Chair – That was a discussion taken to form the TG so now struggling to halt the process.

C – PAR was approved, case for market need came from WBA and other members, very surprised to hear this comment now. Strange to hear that argument. Maybe off line can validate the voter list in parallel.

C – Absolute privacy may never work.

Chair – any suggestions for Straw Polls to proceed?

C – Less than half wanted STA ID. Could consider combinations, would that make any difference?

C – Maybe Straw Poll if the TG would accept any text to create an TGbh draft. Are they against TGbh completely or just the text proposed?

C – Can a No voter re-consider?

C – If someone on the prevailing side changes vote, can make a motion to re-consider.

**Motion 2 – Motion to Reconsider**

**Move to reconsider Motion 1**

Moved: Stephane Baron

Seconded Dan Harkins

**Result: 28/6/0** Passes

Reconsider Motion 1

**Move to instruct the TGbh Editor to create IEEE802.11bh draft by incorporating the following documents:**

* [**11-22/0187r2**](https://mentor.ieee.org/802.11/dcn/22/11-22-0187-02-00bh-network-generated-device-id.docx) **Network generated Device ID**
* [**11-22/0482r1**](https://mentor.ieee.org/802.11/dcn/22/11-22-0482-00-00bh-annex-for-opaque-device-id.docx) **Annex Text for Opaque Device ID**

**Moved: Journi Malinen**

**Seconded: Dan Harkins**

Q – Does this preclude any other text to be included?

A – No this just starts the Draft, we can vote other text in.

**Result: 22/11/2 Fails 66%**

Out of time

**Meeting Adjoined at 11.30 ET**