Minutes IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGbh Meeting Minutes, April 12 2021  Randomized and Changing MAC addresses (RCM) | | | | |
| Date: 2021-04-12 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
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Abstract

This document contains the minutes of the IEEE 802.11 bh telecom meeting 12 April 2021 at 10.00 hrs EDT,

Note: Highlighted text are action items.

Q- proceeds a question asked at the meeting

A- proceeds an answer given by the presenter

C- proceeds a comment

**Meeting April 12, 2021 10.00 to 12.00 noon ET**

**Chair: Mark Hamilton**

**Secretary: Graham Smith**

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

Agenda slide deck 11/21/0617r1

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

There were no Patent declarations.

Copyright policy slides were presented (Slides 11 and 12)

1. **Agenda:**

* Attendance, noises/recording, meeting protocol reminders
* Policies, duty to inform, participation rules
* Organization topics (see also Backup slides):
  + PAR/CSD: [https://development.standards.ieee.org/myproject-web/public/view.html#pardetail/8770](https://development.standards.ieee.org/myproject-web/public/view.html); [11-20/1117r5](https://mentor.ieee.org/802.11/dcn/20/11-20-1117-05-0rcm-rcm-sg-proposed-rcm-csd-draft.docx)
  + Timeline estimate
* Issues Tracking: [11-21/0332r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0332-04-00bh-issues-tracking.docx)
* Contributions: [11-21/0646r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0646-00-00bh-mac-address-randomization-in-android-devices.pptx)
* Next meetings: Interim session, May 11 and 13

The Chair reviewed the agenda.

The proposed agenda was approved without objection.

1. **Work Organization** (slide 16)

**Issues Tracking document** 21/0332r4

Chair displayed document.

New Section 3 created to capture brainstorming items.

Section 4 – Use cases. So far Use Cases are from TIG report.

Section 5 – examine issues and analyze.

Chair – Should we cut and paste the Use Case descriptions from the TIG report?

To be re-visited after Contribution.

1. **Contribution** “MAC Address randomization in Android devices” Boon Loong NG (Samsung)

11-21/0646r0

The MAC address randomization features in current Android devices are described.

All this information is public and references provided.

“Since Android 10 MAC Randomization is enabled by default. In Android 10, randomized MAC addresses are generated per SSID and are persistent.”

Q – Even if I delete the network, it will still remember?

A – Yes, unless a factory reset.

Android 11, introduced “Enhanced Wi-Fi MAC randomization” (aka “aggressive MAC randomization”). It can change/randomize MAC address each time it connects to a SSID, provided MAC address type in setting is set to be “Randomized MAC”, but has rules. The randomized MAC expiration time is based on the DHCP lease duration. It is updated every time DHCP lease information is obtained.

Q – If DHCP lease information not obtained how does it update the expiration time?

A – Not sure of details, but maximum is 24 hours.

MAC addresses are randomized for Wi-Fi Aware operation, Wi-Fi Direct and Wi-Fi RTT.

Q – Do we need to document this and discuss if this is enough?

A – Good to consider if this is enough, and if sufficient. Also what other Use cases may arise.

C – Implications of changing address based on time needs to be looked at further.

C - Reference Slide 3, not clear what to do if associated.

A – Need to investigate further.

No further comments or questions.

1. **Issues Tracking document** 21/0332r4

Q - Any comments on the organization? None.

Looked at Use Case 4.1 “Initial infrastructure connection steering”.

Q - Is it useful to cut and paste from TIG document?

C - Better to have a single document. Also allows for changes and additions.

General agreement on this. Use cases will be pasted and then edited.

Chair read through use case 4.1 and edits carried out.

Q – Written from view of having a controller? What if no controller?

A – Feature of APs, some do it and others may not.

Q – Do we stick to technical details? E.g. opening description is marketing orientated.

On screen editing and discussion on APs’ capabilities.

Q – First para seems to indicate that we know the network? Is this true, is there a case when we do not know the network? Is this possibly 2 use cases?

C – Discovering network for first time, as against returning? If never seen before will generate a new address.

C – Difference if probes are directed or broadcast, as to what address is used.

C - This is for an infrastructure that can do multi-AP steering. A singe multiband AP might do this.

Q – Steering before associating, is there anything in Spec on this?

A – There are implementations that do this but may not be standardized.

C – This is purely pre-association. Not responding to probes is not allowed. If this is implementation specific, do we need to solve it? If not in Spec, we can’t solve it.

C – Need to study further. Not sure about probe statement.

C – Scope of work. Critical we come to consensus that we address use cases that are specified or maybe real world cases that are enabled by the spec.

C – Would struggle if restricted to cases that are specific to the spec.

C – Can we be very specific and just describe what used to happen and now does not because of RCM?

Chair asked if anyone willing to look at this? No response, but Chair may try.

Use Case 4.2. Post Association and Access Control

Copied text from TIG document.

C – Problem is that MAC address is used for authorization. That is not secure any more.

A – Need something that does not rely on MAC addresses.

C – Could simply refuse association to home network for any MAC address with local bit set. Nothing for 802.11 to be concerned with. It’s up to the company that is selling this product.

A – This group does not want to reproduce any privacy issues that randomization has been introduced to solve.

C – Group need not solve the problem but can add to protocol something that allows the device to be identified.

C – A new unique identifier, may still run afoul of those who do not want to be traced.

Q – Question is privacy from whom?

C – If at home, what privacy?

C – What is problem statement? Don’t see a problem.

A – Depends if home network has controls.

C – Device still has SSID credentials (PSK) but from network standpoint it is a new device.

C – Could be seen as a higher layer problem. May not be within our scope.

C – If all working and then I buy a new phone, then if it stops working is that the case?

C – Hotel context may be a better example. (May be covered elsewhere).

C – I want to see a real world product/problem – not sure what actually happens.

Chair – is there anyone who will look into this as a product/problem?

A – I have a router with parental control.

C – Would like description of a real world product. Then decide if a problem.

C – Was there any background to the Android MAC randomization as to why it was changed from 8, 9, 10 and 11.

A – Google controlled. Somethings still being tested, i.e. not yet default settings. All done for privacy.

C - 5G is seen as more secure than Wi-Fi and hence Google wanted to improve Wi-Fi privacy.

Use Case 4.3 “Post association home automation (including arrival detection)”

Recognize person’s arrival and do something. Tends to use MAC address.

C – An “opt-in” situation.

C - Handheld devices could send vendor specific action frames with a “blob” that is recognized.

C – Must not mess up the recognition that you have arrived and associated with your home network.

C – This is post association. Do not want to be pre-association. Is that true?

C – Does this Use Case care? Post or pre-association. If sufficiently cryptographically protected?

**Out of time**

**Chair asked for Contributions.**

**Meeting Adjoined at 12 noon ET.**

|  |  |  |  |
| --- | --- | --- | --- |
| ATTENDEES  Breakout | Timestamp | Name | Affiliation |
| TGbh | 4/12 | Ansley, Carol | Cox Communications Inc. |
| TGbh | 4/12 | Beg, Chris | Cognitive Systems Corp. |
| TGbh | 4/12 | Carney, William | Sony Group Corporation |
| TGbh | 4/12 | DeLaOlivaDelgado, Antonio | InterDigital, Inc. |
| TGbh | 4/12 | Dong, Xiandong | Xiaomi Inc. |
| TGbh | 4/12 | Goto, Fumihide | DENSO |
| TGbh | 4/12 | Hamilton, Mark | Ruckus/CommScope |
| TGbh | 4/12 | Harkins, Daniel | Hewlett Packard Enterprise (Aruba Networks) |
| TGbh | 4/12 | Henry, Jerome | Cisco Systems, Inc. |
| TGbh | 4/12 | Hervieu, Lili | Cable Television Laboratories Inc. (CableLabs) |
| TGbh | 4/12 | Huang, Po-Kai | Intel Corporation |
| TGbh | 4/12 | Kneckt, Jarkko | Apple, Inc. |
| TGbh | 4/12 | Levy, Joseph | InterDigital, Inc. |
| TGbh | 4/12 | Lu, Liuming | Guangdong OPPO Mobile Telecommunications Corp.,Ltd |
| TGbh | 4/12 | Lumbatis, Kurt | CommScope, Inc. |
| TGbh | 4/12 | McCann, Stephen | Huawei Technologies Co., Ltd |
| TGbh | 4/12 | Montemurro, Michael | Huawei Technologies Co., Ltd |
| TGbh | 4/12 | Morioka, Hitoshi | Koden Techno Info K.K. |
| TGbh | 4/12 | Ng, Boon Loong | Samsung Research America |
| TGbh | 4/12 | Orr, Stephen | Cisco Systems, Inc. |
| TGbh | 4/12 | RISON, Mark | Samsung Cambridge Solution Centre |
| TGbh | 4/12 | Rosdahl, Jon | Qualcomm Technologies, Inc. |
| TGbh | 4/12 | Shafin, Rubayet | Samsung Research America |
| TGbh | 4/12 | Smith, Graham | SRT Wireless |
| TGbh | 4/12 | Stacey, Robert | Intel Corporation |
| TGbh | 4/12 | Sun, Bo | ZTE Corporation |
| TGbh | 4/12 | Yee, Peter | NSA-CSD |