IEEE P802.11  
Wireless LANs

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| AANI SC Plenary Minutes March 2021 | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Graham SMITH | SR Technologies | Sunrise, Florida |  | gsmith@srtrl.com |
| Harry WANG | Tencent | Beijing, China |  | [harryhwang@tencent.com](mailto:harryhwang@tencent.com) |
| Joseph LEVY | InterDigital, Inc. | 111 W 33rd Street New York, NY 10120 | +1.631.622.4139 | [joseph.levy@interdigital.com](mailto:joseph.levy@interdigital.com) |

Abstract

This document contains the minutes of the IEEE 802.11 AANI SC teleconference held on 9 March 2021, 11:15-13:15 h ET, 10 March 2021 19:00-21:00 h ET, 11 March 2021 11:15-13:15 h ET, 15 March 2021 19:00-21:00 h ET.

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

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# Tuesday 9 March 2021, 11:15 h ET:

**Chair: Joseph Levy, InterDigital**

**Acting Secretary: Graham Smith**

1. **The teleconference was called to order by Chair 11:15 hrs. EDT,**

Graham Smith (SRT) volunteered to be acting secretary.

Agenda slide deck 11-21/0214r0

**2. The Chair reminded everyone to sign attendance and reminded attendees of the AANI Operating rules.**

See attendance list at the bottom of this document.

**3. Approval of the Agenda(s):**

1. Call for Secretary
2. Administrative: Reminders, Rules, Guidelines, Resources, Participation, Motions/Discussion, Approval of Minutes, General Status [10 min.]
3. WBA Report/LS -[11-21-0170r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0170-00-0000-2021-jan-liaison-from-wba-re-convergence.docx)
   1. Review of WBA Report/LS – (note: WBA presentation was provided, Monday AM2 in WNG)
   2. Contributions regarding 802.11ax capabilities that address the specific challenges identified in the WBA Report/LS
   3. Discussion/contributions reply LS text proposals

**Wednesday 10 March 2021 19:00 – 21:00 h ET**

* 1. Call for Secretary/Admin/Status [5 min.]
  2. Technical Report Status – Way Forward Discussion
     1. Status of [11-20/0013r11](https://mentor.ieee.org/802.11/dcn/20/11-20-0013-11-AANI-draft-technical-report-on-interworking-between-3gpp-5g-network-wlan.docx)
     2. Discussion on way forward (contributions?)
        1. Technical Report
        2. Liaison/Public Announcement
  3. Continue WBA Discussions

**Thursday 11 March 2021 11:15 – 13:15 h ET**

* 1. Call for Secretary/Admin [5 min]
  2. Continue discussions:
     1. WBA
     2. Technical Report

**Monday 15 March 2021 19:00 – 21:00 h ET**

* 1. Call for Secretary/Admin [5 min]
  2. Continue discussions:
     1. Technical Report
     2. WBA
  3. Future Sessions Planning [10 min.]

The Chair reviewed the agendas. The proposed agenda was approved without objection.

**4. Guidelines, Resources, Policies and Participation were presented by the chair.**

Slides 7 – 11 of 21/0214

1. **Approval of Minutes**

**Minutes from the January 2021 Interim Telecons:**[**11-21/0148r0**](https://mentor.ieee.org/802.11/dcn/21/11-21-0148-00-AANI-ieee-802-11-aani-standing-committee-january-2021-interim-meeting-minutes.docx)“IEEE 802.11 AANI Standing Committee January 2021 Interim Meeting Minutes”

Chair called for any Comments or objections?

Minutes approved without objection.

1. **Status on Proposal on Interworking**

Chair went through Slides 13 and 14 of 21/0214 covering the Proposal from July 2020 to now.

At January Interim, the WG did not approve the Interworking Report.

1. **WBA Report/Liaison Statement**

Chair went through Slide 15 of 21/0214

Review of WBA Report/LS [11-21-0170r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0170-00-0000-2021-jan-liaison-from-wba-re-convergence.docx)

21/0408r0 “Wi-Fi and 5G RAN Convergence: Fine Grain and QoS differentiation in WLAN” – Binita Gupta (Intel), with Nigel Bird (Orange) and others from WBA – presented Monday March 8, AM2 in WNG

Liaison document received from WBA has been assigned to AANI. Would have been assigned to 11ax but that is now finished. No contributions have been received to date.

The Chair briefly presented the Liaison Statement from the WBA. Includes a call for further study within 802.11 on how fine grain QoS for 5G flows can be provided.

Chair asked if any discussion or comments regarding the WBA request?

What is our relationship with WBA regarding copyright?

No special relationship between IEEE and WBA. IEEE copyright rules apply.

The liaison does not indicate copyright. WBA confirmed that the Report was not subject to copyright.

Any comments on 11ax features addressing the WBA?

Looking for contributions on 11ax features addressing the fine grain QoS for 5G flows.

Osama Aboul-Magd volunteered to look at this.

C - TCLAS work was carried out in 11md (i.e., outside of 11ax), a contribution will be provided (Thomas Derham)

Q – Anything related not 11be should be brought to AANI? - Yes.

Chair – any other comments or volunteers? No further response

Chair - Anyone from WBA on call who would like to comment? No response.

Chair – Assume that the WG will handle the co-ordination of the response statement. Will a person be allocated?

Chair – Please review the report and provide technical feedback.

A – Not looking for a liaison out of this meeting. WBA knows we are looking at it. If we can summarize 11ax features and document it, then this may be sent to WBA. We will look at formal response when we have something to say.

C – Regarding 11be piece of this. There is work going on with TSPEC parameters and scheduling, would we want to talk about that work?

A – We have experts on this call but 11be aspects are to be handled within 11be (assigned by WG Chair).

C – Statement asks for further study, we first need to collect information, then develop responses to QoS related issues.

Chair – is it useful to look at the report?

A – a brief summary and look may be useful.

Chair then went briefly through the report “5G and Wi-Fi RAN Convergence”.

With no further contributions do we have any further discussions?

C - Seems that a lot of 802.11 is unclear and the request is somewhat vague. Should we go back with more specific questions, e.g., timescales, 11ax details? Some information seems to be above 802.11.

A - True requirements are coming from higher level point of view; goal is to explain how 80211 features can be used to support these higher level features.

C – Very detailed report, 50 odd pages. If recommendations here that we might want to have more details, then we can go back and ask for more detail. Some parts may not even be within 802.11 scope. There is certainly enough here to get started.

Given details there is significant work that can be identified.

Please post any contribution to Mentor so that this discussion can be moved forward.

C - Support for Wi-Fi devices asks for support from 3GPP. Not sure that 3GPP would know enough.

C – If not in cellular network, can connect with 5G with signaling over the Wi-Fi.

C - Concept is that device has no USIM so how does it get service? Access to 5G core without using a USIM?

C - WBA is asking 3GPP to look into this.

C – This may be an area 802.11 may be interested in, Wi-Fi access to 5G core.

C – Would need 3GPP agreement for any access mechanism.

1. **Any Other Business**

None

Please let Chair know if you have any contribution. May not need all the scheduled meetings.

1. **Meeting recessed at 12.35am ET**

# Wednesday 10 March 2021, 19:00 h ET:

**Chair: Joseph Levy, InterDigital**

**Acting Secretary: Harry Wang, Tencent**

1. **The teleconference was called to order by Chair 19:00 h ET,**
2. **Agenda slide deck** [**11-21/0214r1**](https://mentor.ieee.org/802.11/dcn/21/11-21-0214-01-AANI-aani-sc-teleconference-agenda-march-2021-plenary.pptx)

The Chair reminded everyone to sign attendance and reminded attendees of the AANI Operating rules.

See attendance list at the bottom of this document.

1. **Approval of the Agenda:**

Chair reviewed the agenda of the meeting, and Doc. IEEE 802.11-21/0438r1 (<https://mentor.ieee.org/802.11/dcn/21/11-21-0438-00-AANI-interworking-report-way-forward.pptx>) was added to the agenda (see below).

* 1. Call for Secretary/Admin/Status [5 min]
  2. Technical Report Status – Way Forward Discussion
     1. Status of [11-20/0013r11](https://mentor.ieee.org/802.11/dcn/20/11-20-0013-11-AANI-draft-technical-report-on-interworking-between-3gpp-5g-network-wlan.docx)
     2. Discussion on way forward (contributions?)
        1. Technical Report
        2. [11-21/0438r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0438-00-AANI-interworking-report-way-forward.pptx) “Interworking report way forward” – Robert Stacey
        3. [11-21/0413r0](https://mentor.ieee.org/802.11/dcn/21/11-21-0413-00-AANI-aani-sc-technical-report-11-20-0013-way-forward.pptx) “AANI SC Technical Report 11-20/0013 - Way Forward” Joseph Levy
        4. Liaison/Public Announcement
  3. Continue WBA Discussions
  4. Future Sessions Planning

The amended agenda was approved without objection.

1. **Guidelines, Resources, Policies and Participation were presented by the chair.**

Slides 7 – 11 of 21/0214

1. **Chair asked if anyone has any questions about the IEEE SA copyright policy, IEEE SA patent policy, participation in IEEE 802 meetings, logistics or reminders**.

No questions.

1. **Chair provided a status review on the Technical Report on Interworking, Doc. IEEE 802.11-20/0013r11**.

Question was raised regarding the objections of the WG motion during January Interim. Chair indicated that the topic will be explained and discussed later at the meeting.

1. **Robert Stacey, Intel, presented Doc. IEEE 802.11-21/0438r0 on his proposed way forward of the WLAN/5G interworking report.**

Q: what is the purpose to approve the report by the whole working group?

A: the thought is to use this tool to correspond to other organization who has interest in 802.11 view of WLAN technology. It intends to provide 802.11 centric view on a 3GPP 5G environment. It would need WG approval to liaison to other organization. We also want to use it to stimulate internal work to address the issues raised by this report.

Q: My suggestion maybe compatible with what is suggested by Robert. Treat this document as a contribution and focus on what we would say to others and what we would suggest task groups in 802.11 and WFA to do. Maybe it would be easier to get consensus rather to approve this large and complex document.

A: Thanks for the suggestion.

Q: More of comment collection would help to fix the issues and correct the accuracies?

A: Possibly, but the fundamental issue is the motivation to fix the problems. If we run it as a ballot and the ballot require technical input from the membership of the WG, people may be motivated to contribute to this document. I'm sure this document has value internally and a good baseline for future change on the standard, but I'm not sure it has value external to 802.11.

Q: The comments are objected because of nonspecific resolution and contribution, and the commentors refuse to further input. The report is seeking WG approval just following the way of other AANI document.

A: You can't dismiss the document; I think it's the means that authors get approval by the WG.

Chair: Objection, not agree with the statement that the comments are dismissed.

Comment: From an administrative point of view, I would agree with Harry that the comments are general and specific problems are not identified. But the list of comments on Slide 5 is specific and helpful. These comments should be addressed to update the document regardless of whether the report is going forward.

1. **Chair went through Doc. IEEE 802.11-21/0413r0 providing more information on the development of the report.**

Q: what is the value to approve this document regarding how to use this document for the WG?

A: It is open for discussion.

Q: I have similar concerns, what does it mean when we approve it? Regarding the option of possible way forward, suggest adding Robert proposal that to proceed this document and work out a specific contribution internally towards the improvement to current standard. I am not in favor of option 2 and 3 on slide 7.

Chair: how you view of taking this report to task groups to resolve and work on specification amendments.

A: I would prefer to more specific changes.

Comment: I don't suggest going for another long process of comment resolution. It's not a standard. Instead, I suggest anyone and authors to think about the actions after the approval.

The Chair add the following option on slide 7, 'invite the authors and others to suggest action based on the report.'

Comment: I'm speaking in support of what Andrew suggested. It would be better to turn the report into some more concrete and actionable. When I check the texts which are commented on, there seems to be some disconnections between the descriptions and current standard.

Comment: I support item 2 and 4 on slide 7. Resolving the issues would help to clarify the purpose of the report.

Comment: The interworking topic is complex. With whatever conclusion or contents, we draw from this report and put into a liaison, we would need this report as a backup material. I support item 2,3 and 4 for going forward.

Comment: I don't have a strong opinion on any of the options. The way I saw the first motion results is that it is good enough to proceed. I would support the authors to come back again with the report changed to address the concerns.

Q: I want to circle back to the purpose again. I don't understand the implication about approving the report. But the conclusion is vague and not specific to a specification change either for 802.11 or for 3GPP.

A: My understanding is that WG approval is necessary prior to liaison this document to other organizations.

Q: Is it a marketing document or a document motivated to change on specification? What we want to achieve with this document?

A: My view is that this is a technical document worked by a group of 802.11 participants. There are a lot of contributions from the group. I believe there are significant technical contents in this report representing 802.11 view on this topic, not WFA or WBA view.

Q: I could dispute the completeness of the report, but my main issue is how to do with this document.

A: It is a WG decision.

Q: I think this document could be used as an input to 802.11ax or 11be. It points out QoS mapping and scheduling to improve the QoS and interworking in WLAN spec. It will need further study on how to address the issues in current standard, so it is difficult to decide at this point.

Comment: for a concrete next step, I think item 2 should be addressed and it will provide additional insight. I also want to see gap analysis on Section 6 compared to WBA presentation. Do we cover the relevant area which has been addressed in WBA document? I don't think item 3 should be on the agenda with current version R11.

Q: what do you think of this document? We should do a comprehensive document on current status of WLAN and 5G interworking?

A: I think it is a tool to document the interworking model, the QoS mapping and gap analysis within 25 pages. I might take the gap analysis portion and liaison to other organization to open a dialog.

Q: I suspect it would be tricky and difficult, there is fundamental difference between the way of 802.11 and 3GPP. There might be a lot of opinions on the gap analysis.

A: Sure, but I don't expect this document resolve all issues. This document is one piece of the puzzle to solve the problem.

Comment: I agree with the idea that this document could be a tool which allows 802.11 to think about the issues. But in this case, this document is not an outcome, it will take too long to get all comments sort out. The real goal is to influence activities within 802.11 and outside. My preference is to focus on this goal.

Comment: I think we can identify gaps that we are aware of but it's difficult to be complete or comprehensive. I agree with the previous commenters, but I don't know how to satisfy those requests. When I go through process of this document, I do find some useful contents and it pointed some area which worth looking at.

Comment: My intent to pursue approval to the document is not that it would be another one-year effort. It is very bounded that we should address the four items identified by Robert, and we should do the gap analysis with the WBA report. The intent is to do a high level standard check and make sure the issues brought by the WBA report are all covered. I hope the next version of the document can be approved and its conclusion helps to clarify the actions within 802.11.

Comment: I object to remove item 3. Regarding item 4 and 5, it means another new report generated by the working group.

Chair provided a wrap up the 5 options listed on slide 7 regarding the way forward and called for contribution on item 2 and 5.

1. Chair reviewed the remaining agenda during the plenary week.
2. The meeting recessed at 20:49pm ET.

# Thursday 11 March 2021, 11:15 h ET:

**Chair: Joseph Levy, InterDigital**

**Acting Secretary: Graham Smith**

1. The teleconference was called to order by Chair 11:17 hrs. EDT,

Graham Smith (SRT) volunteered to be acting secretary.

Agenda slide deck 11-21/0214r3

1. The Chair reminded everyone to sign attendance and reminded attendees of the AANI Operating rules.

See attendance list at the bottom of this document.

1. Guidelines, Resources, Policies and Participation were presented by the chair.

Slides 7 – 11 of 21/0214

Copyright policy slides were presented, slides 9 and 10.

1. Approval of the Agenda:

**Thursday 11 March 2021 11:15 – 13:15 h ET**

* 1. Call for Secretary/Admin [5 min]
  2. AANI SC Quick Status
  3. Continue discussions:
     1. WBA
     2. Technical Report

The Chair reviewed the agenda. The proposed agenda was approved without objection.

1. AANI SC Quick Status

Slide 23

Review of meeting on 9 March.

Future contributions promised on grain QoS for fine grain flows and TCLAS work done in TGmd.

Any questions? None

Slide 24

Review of meeting on 10 March.

Two documents (11-21/438 and 11- 21/413) presented on way forward and options discussed. SP on Monday meeting March 15.

1. **WBA Report/Liaison Statement**

Chair called for Contributions on:

* 802.11ax capabilities:
* Discussion/contributions reply LS text proposals:

None were forthcoming.

1. **Any Other Business**

None

Having no further business

**Meeting recessed at 11:30 am ET**

# Monday, 15 March 2021, 19:00 - 21:00 h ET

**Chair: Joseph Levy, InterDigital**

**Acting Secretary: Harry Wang, Tencent**

1. **Call to Order**

The AANI Standing Committee meeting was called to order by the Chair, Joseph Levy (InterDigital), at 19:00 ET.

1. **Call for secretary**

Harry Wang (Tencent) volunteered to serve as secretary.

1. **Approval of the Agenda**

Doc. IEEE 802.11-21/0214r4 (<https://mentor.ieee.org/802.11/dcn/21/11-21-0214-04-AANI-aani-sc-teleconference-agenda-march-2021-plenary.pptx>).

The agenda is approved by unanimous consent.

1. Administration:

Chair asked if anyone has any questions about the IEEE SA copyright policy, IEEE SA patent policy, participation in IEEE 802 meetings, logistics or reminders.  No questions.

1. **Status Review:**

The Chair review the status and previous discussion during the week on the Technical Report on Interworking, Doc. IEEE 802.11-20/0013r11.

1. **Hyun Seo OH presented document 802.11/21/0459r1**

‘Review on comments of ‘WLAN/5G interworking report Proposed Way Forward’’

Q: Are these models on slide 3 currently in 3GPP spec or something new? If any terms or concept is new to current spec, it would be better to add a note to avoid confusion.

A: These models intend to harmonize the architecture from 3GPP and WBA.

Comment: I can confirm that 3GPP doesn’t have these models in 23.501. By concept, the 3GPP core network is access agnostic and all access network interworking through core network. There is a connection between 3GPP access and WLAN access, but the interworking still works through the core network.

Comment: I think the terms like ‘tightly (or loosely) coupled’ and ‘convergence model’ should be deleted because the interworking needs the core network. I would suggest sticking with the interface, for example ‘Y2’ interface for untrusted WLAN access used IPsec for protection, and ‘Ta’ interface for trusted WLAN access doesn’t use encryption at all.

Chair: The concept is described in this way because we do not simply explain the concept defined by 3GPP. What is going on inside the STA terminal box hasn’t been well specified by 3GPP. We are discussing the issues from 802.11 perspective. The implication of the report is about how 802.11 could form an opinion on the interworking.

Q: Do you intend to change the title of the figures and related texts?

A: This report intends to provide 802.11 view of interworking. I proposed the model to harmonize different views. But 3GPP uses terminology like ‘tightly (loosely) integration’. In figure 2, it shows 3GPP domain functionality and concept. In this figure, WLAN access only sends data request to 3GPP UE and control path is set to 3GPP access network. In figure 3, there are two types of terminal, i.e., UE and STA, connecting to the core network through different access networks.

Chair: 3GPP specification provides a generic interface to other radio access network. However, for WLAN, the implication on how WLAN access work and integrate with 3GPP domain leads to the tightly/loosely couple case description. There are differences on the interfaces of the two coupling models. These are different implementation options for WLAN integration that are not necessarily defined by 3GPP.

Q: When you talk about the coupling, it sounds like the function inside the terminal directing traffic and control over the wireless network?

A: It would be in the 5G access network, terminal could direct WLAN interface there and monitor the two interfaces.

Q: It shows two possible ways for integration. But there will be a third option that the integration is above the core.

A: Agree. But the intention of the report is to describe how to integrate with the 5G core.

Comment: The model in figure 2 hasn’t be defined in 3GPP yet. It is a new model. Key establishment is required between WLAN AP and TNGF for tight coupling. There are differences between carrier based VoLTE and VoIP, one is connected to the LTE core and the other is over the top. I think 3GPP spec addresses the carrier based services. Even for LTE, the WLAN integration still relies on a function inside the core, called EPDT.

Q: slide 5, registration and authentication are not done by N3IWF to establish connection. Perhaps STA terminal should be doing these functions to AMF?

A: 802.11 STA doesn’t include higher layer functions. In this model, TEC is responsible for the control path signals.

Q: slide 8, it seems no changes have been made and there is some confusion in the terminology. I think the registration and authentication goes through N3IWF into AMF.

A: In 3GPP UE case, UE supports the control signaling and functions. If necessary, I will define STA terminal in the report.

Q: Do you suggest changing anything to slide 5?

A: I think we need to define STA terminal.

Q: STA terminal seems to mean an 802.11 STA plus some functions in SME.

A: I don’t think it means 802.1X authentication is being discussed here. It’s higher layer authentication defined in 5G.

Comment: UE level authentication and registration to access 5G services is happened between UE and AMF. And other functions in core are also involved, for example UDM. In case of setting up IPSec tunnel to support Wi-Fi calling, there is a carrier based certificate implemented in UE and N3IWF, and LTE equivalent EPDG.

Q: We should clarify the definition of registration and authentication.

Comment: Same comments on slide 6. The peer to peer link is running over WLAN ANC. It should be clear that ANC has nothing to do with NAS signaling.

Comment: The IPSec over Wi-Fi is between the device and N3IWF or TNGF. It is assumed that WLAN is untrusted, so everything needs encryption. To me, WLAN AP just relay packets.

1. **Chair clarify the purpose behind the report and call for contribution to progress the report.**
2. **Chair reviewed the schedule of future meetings.**

802.11 WG May Interim Teleconferences (TBC) – the AANI SC - is requesting 4 meeting slots:

* + Tuesday 11 May 2021 11:15-13:15 h ET
  + Wednesday 12 May 2021 19:00-21:00 h ET
  + Thursday 13 May 2021 11:15-13:15 h ET
  + Monday 17 May 2021 19:00-21:00 h ET

AANI SC Teleconference Plan (TBC) – Agenda to be announced on the reflector:

* + Tuesday 6 April 2021 9:00-10:00 h ET
  + Tuesday 13 April 2021 9:00-10:00 h ET
  + Wednesday 21 April 2021 9:00-10:00 h ET
  + Wednesday 28 April 2021 9:00-10:00 h ET
  + Tuesday 4 May 2021 9:00-10:00 h ET

1. **The meeting adjourned at 21:00pm ET.**