IEEE P802.11  
Wireless LANs

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| Draft LS from 802.11 to 3GPP RAN and SA on IMT-2020 | | | | |
| Date: 2016-09-15 | | | | |
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* Abstract

This document contains draft text for a possible liaison by IEEE 802.11 to 3GPP RAN and SA in relation to the inclusion of 802.11 radio interfaces in the 3GPP proposal to IMT-2020.

Rev 1 – Target this LS to be at the 802.11 level. Remove all references to the 802.11 air interface. Clarify that 802.11 would be using unlicensed spectrum. State that 802.11 would like to work with 3GPP to improve how WLAN and LTE/NR can work together to provide an improved wireless networking experience for IMT-2020. Request 3GPP RAN’s thoughts on how 802.11 and 3GPP RAN can work together.

Rev 2 – Add additional relevant use cases. Add references to WLAN integration with 3GPP core network (in addition to RAN aggregation). Request response from SA (in addition to RAN). Typo fixes. Provided by Thomas Derharm (Broadcom),   
*Note by Joseph Levy: The comments and edits provided in Rev 2 are greatly appreciated. The Rev 2 version was provided in parallel with the generation of Rev 3, in the author’s opinion most of the suggested changes are implemented in version Rev 3 and hence the exact changes made in Rev 2 proposed were not implementing in Rev3.*

Rev 3 – As updated based on discussions during the September 1 AANI SC teleconference and on the email reflector.

Rev 4 – Propagate some edits from Rev 2 into Rev 3; fix typos; propose wording for 5G use case applicability. Provided by Thomas Derharm (Broadcom),

Rev 5 – All changes made in Rev 3 have been accepted and some additional editorial changes to clean up the document have been made, as well as some additional alignment with the suggestions provided in Rev 2 and Rev 4. All changes from Rev 3 are shown as red lines.

Rev 6 – The document with edits and corrections made during the AANI SC F2F meeting Tuesday Eve 19:30-21:30 CET. Note: this document contains some text that has not been fully updated. In particular the concluding paragraph contains a hanging phrase, which needs to be integrated into the document proper. Rev 7 will provide a cleaner version of the document and will be posted prior to the 802.11 mid-week Plenary. Redlines have been turned off on this version,

Rev 7 – accept changes in Rev 6, clean-up the document based on inputs from the F2F meeting Tues 9/12 Eve session. All changes from Rev 6 are shown as red lines.

Rev 8 – updated based on 11-16/1269r0, 11-16/1274r0, and e-mail editorial changes from Mark Rison

Rev 9 – as updated in AANI AM 2 meeting, red lined

Rev 10 – Rev 9 clean version.

To: 3GPP RAN TSG, 3GPP SA TSG

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CC: IEEE 802 EC, IEEE 802.1 WG

Subject: IEEE 802.11 Working Group Liaison on the role of WLAN in IMT-2020

Date: 2016-09-16

**Discussion:**

The IEEE 802.11 Working Group (WG) invites 3GPP RAN TSG and 3GPP SA TSG to consider that WLAN (802.11) in unlicensed spectrum provides a practical complimentary low cost means of meeting the performance requirements for some IMT-2020 use cases. IMT-2020 use cases [1] that may benefit from the use of WLAN are Enhanced Mobile Broadband (high data rate hotspots use case for areas with high user density where very high traffic capacity is needed) and some aspects of Ultra-Reliable and Low Latency Communication (e.g. low latency uplink transmission) and Massive Machine Type Communications (e.g. high device density with low-volume traffic).

WLAN currently provides 3GPP users with high data rate offload capability in many existing 3GPP networks. Recently completed 3GPP RAN WIs on LWA and LWIP and the currently active WI on eLWA will provide improvements in the way WLAN resources can be aggregated with the 3GPP radio interface resources in the 3GPP network. IEEE 802.11 believes that it is possible to further improve on the way WLAN and 3GPP LTE and NR can be aggregated to meet the performance goals of IMT-2020 and that improving the aggregation of WLAN will be mutually beneficial to both 3GPP and IEEE 802.11.

In addition to considering improvements in WLAN aggregation anchored in the 3GPP RAN, IEEE 802.11 would also like to explore the possibility of improvements in standalone WLAN integration in the Evolved Packet System (EPS) and the future NextGen System. The recently completed 3GPP SA WI on NBIFOM will provide improvements in the way WLAN integrates with the EPC core network. IEEE 802.11 believes that it is possible to further improve on the way standalone WLAN is integrated into the 3GPP EPC and the NextGen System. We also believe that improving the way standalone WLAN integrates with the NextGen System will be mutually beneficial to both 3GPP and IEEE 802.11.

Some areas of possible improvement include: metrics for discovery and selection of WLAN, data flow management, QoS, and security, leading towards improved aggregation and integration of WLAN in the 3GPP network.

The IEEE 802.11 WG would like to investigate ways that the 3GPP RAN, 3GPP SA, and IEEE 802.11 WG can work together towards the goal to further enable WLAN in unlicensed spectrum to support some of the IMT-2020 use cases, potentially leading towards inclusion in an IMT-2020 submission. The IEEE 802.11 WG invites 3GPP RAN and 3GPP SA to provide their suggestions on how 3GPP RAN, 3GPP SA, and the 802.11 WG can work together to accomplish these proposed goals.

**Actions:**

To 3GPP RAN TSG:

The IEEE 802.11 WG respectfully asks 3GPP RAN TSG to:

* Provide 3GPP RAN TSG’s opinion on the desirability of improving WLAN aggregation to assist 3GPP in providing complimentary ways of meeting some IMT-2020 use case requirements, potentially leading towards inclusion in an IMT-2020 submission.
* Provide suggestions on how 3GPP RAN TSG and the IEEE 802.11 WG can work together to improve WLAN aggregation and overall network performance.

To 3GPP SA TSG:

The IEEE 802.11 WG respectfully asks 3GPP SA TSG to:

* Provide 3GPP SA TSG’s opinion on the desirability of improving WLAN integration in the EPS and NextGen System to assist 3GPP in providing complimentary ways of meeting some IMT-2020 use case requirements, potentially leading towards inclusion in an IMT-2020 submission.
* Provide suggestions on how 3GPP SA TSG and the IEEE 802.11 WG can work together to improve WLAN integration and overall network performance.

**Date of Next IEEE 802.11 WG Meetings:**

802 Plenary - November 6-11 2016 in San Antonio, TX, USA

802 Interim - January 15-20 2017 in Atlanta, GA, USA

Sincerely,

Adrian Stephens  
IEEE 802.11 Working Group Chair

**References:**

1. Recommendation ITU-R M.2083-0 (09/2015), “IMT Vision – Framework and overall objectives of the future development of IMT for 2020 and beyond”, M Series, Mobile, radiodetermination, amateur and related satellite services

**List of Abbreviations and Acronyms:**

3GPP – 3rd Generation Partnership Project

802.1 WG – Higher Layer LAN Protocols Working Group

802.11 WG – Wireless LAN Working Group

802 EC – LAN/MAN Standards Committee Executive Committee

eLWA - Enhanced LTE WLAN Aggregation

EPC – Evolved Packet Core

IEEE – Institute of Eclectic and Electronic Engineers

IMT-2020 – International Mobile Telecommunications System for 2020 and beyond

LAN – local area network

LWA – LTE WLAN Aggregation

LWIP – LTE WLAN Radio Level Integration with IPsec Tunnel

LTE – Long-Term Evolution

MAN – metropolitan area network

NBIFOM – Network based IP Flow Mobility

NR – New Radio

QoS – Quality of Service

RAN – Radio Access Network

RAT – Radio Access Technology

SA – Service and System Aspects

TSG – Technical Specifications Group

WG – Working Group

WI – Work Item

WLAN – wireless local area network