IEEE P802.11  
Wireless LANs

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| Press Release for AANI: Interworking between 3GPP 5G Network & WLAN | | | | |
| Date: 2021-09-14 | | | | |
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Abstract

This document contains the draft press release announcing a technical report on the interworking between 3GPP 5G network & WLAN.

Rev.0 January 2020, Draft technical report on interworking between 3GPP 5G network and WLAN was presented by Hyun Seo Oh.

Rev.1 April 2020, Draft technical report on interworking between 3GPP 5G network and WLAN was updated by Hyun Seo Oh.

Rev.2 June 3, 2020, Harry Hwang added comments on 3.1 WLAN interworking type and N1 signaling forwarding.

Rev.3 June 23, 2020, Joseph Levy added editorial comments and updated to clarify the technical report. 3 types of TSN bridges were described.

Rev. 4 July 14, 2020, comments were made on the technical report by Binita Gupta and Necati Canpolat.

Revision on the tightly coupled and loosely coupled interworking and the terminal types (UE (User Equipment) and STA(Station)) was made.

Rev. 5 July 28, 2020, rev. 4 of the document was reviewed on the AANI SC teleconference, all changes were discussed. This document accepted the changes and provided some minor editorial changes (spelling/grammar) to align the draft with the 802.11 editorial style (US English – based on the latest edition of Merriam-Webster’s New Collegiate Dictionary), noted that additional edits may be necessary. The document was also converted to PDF format, with line numbers, to support comment collection.

Rev.6. October 20, 2020, rev. 5 of the document was changed according to the comment resolution process from August 21 to October 12 AANI meeting. The update was based on comment resolution sheet: DCN 11-20-1262-05 “CC32-AANI-Report-Comments” by chair Joseph Levy.

Rev. 7. November 1, 2020, rev. 6 of the document was updated to clarify the terminal types: UE and STA. Figure 1 was added and figures 3 and 4 were modified. The figures were renumbered with editorial update by Harry Hwang.

Rev. 8. January 4, 2021, rev. 7 of the document was editorially updated by AANI SC chair Joseph Levy, Stephen McCann, Graham Smith, and reviewed by co-authors.

Rev. 9. January 4, 2021, clean version of Revision 8 (marked version).

Rev. 10. January 11, 2021, rev. 9 of the document was editorially updated to clarify terminals related to STA and UE: Figure 4, 5, 6, 10, 13 were updated to use STA and UE terminals.

Rev. 11 March 15, 2021, clean version of Rev 10 – all redlines removed, some cross references fixed.

Rev. 12 April 28, 2021, terminal types and interworking model were updated by contribution (11-21/0580r0).

Rev. 13 June 22, 2021, Clause 4 “registration and authentication” is added by contribution (11-21/0950r0).

Rev. 14 July 14, 2021, Subclause 2.1 overview and subclause 4.3 are updated by contribution (11-21/1102r0).

Rev. 15 August 31, 2021, edits made during an ad hoc discussion with Hyun Seo OH (ETRI), Hanbyeog

Cho (ETRI), Younggang Fang (MediaTek), and Joseph Levy (InterDigital) (11-21/1410r1).

Rev. 16 September 13, 2021, Conclusion is updated by Hyun Seo Oh.

# Process

This press release was authored by the IEEE marketing department (represented by Jeff Pane) after interviewing 802.11 subject-matter experts Joseph Levy, Harry Whang and Hyunseo Oh. The press release is being notified to the WG and will be notified to the IEEE 802 EC for comment/approval.

# Press Release:

# DRAFT: NOT FOR IMMEDIATE RELEASE

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# IEEE 802.11aani™Reports on Interworking between 3GPP 5G Network & WLAN

*IEEE 802.11aani provides a report on interworking between 3GPP 5G network & WLAN*

PISCATAWAY, NJ, XX September 2021 – IEEE, the world's largest technical professional organization dedicated to advancing technology for humanity, and the [IEEE Standards Association (IEEE SA)](http://standards.ieee.org/) announce report

“Interworking between 3GPP 5G networks and WLAN provides an opportunity to seek interworking reference models, improve the data throughput and QoS management as well as the exponential growth of mobile wireless device utilization,” said Dorothy Stanley, IEEE 802.11 Working Group chair.

AANI have developed a technical report on interworking between 5G networks and WLAN

This report provides an overview of the IEEE 802.11 Working Group’s understanding of how Wireless Local Area Networks (WLAN), based on IEEE Std 802.11, can interwork with the 3rd Generation Partnership Project (3GPP) 5th Generation (5G) core network. This report describes the terminologies and architectural models from 3GPP (TS 23.501, etc.), IEEE 802.1CF, and IEEE 802.11 standards and attempts to clarify how they relate.

The high-level interworking reference model consists of a terminal, an access network, the 3GPP 5G core network and a data network.

Interworking model between 5G core network and WLAN consists of data network, 3GPP core network, two independent access networks (3GPP 5G access network and WLAN access network), and two types of terminals (UE and TE). A TE can only support WLAN access to interwork with 5G core network. A UE can support both 3GPP access and WLAN access to interwork with 5G core network.

This report explains 5G core network connection over an untrusted WLAN.

1. Registration and authentication with a 5G core network via a WLAN

* WLAN connection with password authentication, 802.1X authentication, FT authentication, etc.
* 5G core network connection over an untrusted WLAN

1. Untrusted/Trusted WLAN interworking function and procedures

* WLAN connection

1. 5GS QoS management

* 5GS QoS model
* ATSSS function support

1. Gap analysis and recommendations

* TSN topics

The IEEE Std 802.11 based WLANs can and do support interworking with the 3GPP 5G network and are able to support high data rates to meet the performance goals of the 5G network vision in a low mobility scenario. This report identifies the functional entities and signaling procedures necessary to provide interworking:

• Registration and authentication

• NAS signaling messages

• Packet session initiation/modification/termination

• Packet data QoS management

As for QoS management, IEEE Std 802.11 provides many features that may be used to support QoS management. While the IEEE Std 802.11 does not specify how a WLAN implementation uses these features to achieve QoS mapping and MAC scheduling, WLAN implementations by various vendors provide some QoS management with QoS identification and profiles to control QoS in terms of bounded packet delay, low PER and data rate. The WLAN interfaces R8 and R9, described in IEEE Std 802.1CF-2019 [18], can provide QoS profiles between 5G CN (N3IWF, TNGF) and a WLAN TE to support QoS management. It should be noted that additional features to enhance WLAN QoS performance are currently under development in the IEEE 802.11 Working Group.

Regarding TSN applications, the IEEE 802.11 WG should consider enhancing capabilities that support timing synchronization, to enhance WLAN operation in the TSN domain, and improve WLAN implementations ability to support TSN translation in WLAN TEs interworking with the 3GPP 5G CN.

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