IEEE P802.11
Wireless LANs

CSD update for P802.11bh
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Abstract

This document contains updates to the Criteria for Standards Development (CSD) for IEEE 802.11bh, Random and Changing Mac Addresses (RCM). Changes are shown as deltas from the body of document 11-20/1117r5.

r0 – Initial presentation
r1 – Added another sentence in 1.1.2 stating that the coexistence of existing 802.11 PHYs is unchanged with this amendment.

1. IEEE 802 criteria for standards development (CSD)

The CSD documents an agreement between the WG and the Sponsor that provides a description of the project and the Sponsor's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

1.1 Project process requirements

1.1.1 Managed objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

    a) The definitions will be part of this project.

       Yes

    b) The definitions will be part of a different project and provide the plan for that project or anticipated future project.

    c) The definitions will not be developed and explain why such definitions are not needed.

1.1.2 Coexistence

A WG proposing a wireless project shall prepare a Coexistence Assessment (CA) document unless it is not applicable.

    a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13?

       No

    b) If not, explain why the CA document is not applicable.

    The amendment will use existing PHYs of IEEE Std 802.11, including the same channel assessment methods, modulation, protection and reservation methods, and same spectral mask of the PHYs it uses. The coexistence of existing 802.11 PHYs is unchanged with this amendment.

1.2   5C requirements

1.2.1 Broad Market Potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

f) Broad sets of applicability.

- User privacy has been an increasing area of focus in the wireless marketplace. Most smartphones, for example, have implemented at least randomly changing MAC addresses before associating with an access point. This trend is not confined to smartphones, other client devices such as laptops have also implemented this feature.

- The set of interested parties is not confined to client device manufacturers and users. At the same time, access points and the infrastructure that uses them have been increasing their capabilities to provide personalized services, as well as other tracking services, that are not necessarily compatible with privacy goals. Random and changing MAC addresses can impede the capabilities of access points and support infrastructure to provide services to the end users.

g) Multiple vendors and numerous users.

A wide variety of vendors currently build systems and products that are affected by random and changing MAC addresses on both the client and access point sides. Based upon the variety of companies that participated in the RCM TIG it is anticipated that a substantial proportion of those vendors, and others, will participate in subsequent activities for improving RCM-related behaviors.

1.2.2 Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

     h)   Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?

          Yes

     i)   If the answer to a) is no, supply the response from the IEEE 802.1 WG.

The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

1.2.3 Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one, describe why the proposed project is substantially different.

This amendment defines modifications to the medium access control layer (MAC) to improve user or end device experiences in environments where IEEE 802.11 STAs (both AP and non-AP STAs) use random or changing MAC addresses. These modifications will address operational challenges resulting from the use of random or changing MAC addresses with at least three use cases.

The use cases to be addressed include at least initial infrastructure connection steering, customer support and troubleshooting and arrival detection in a home environment, or other trusted environments.

There is no other WLAN standard focusing on enhancing the performance of IEEE 802.11 networks in regards to random and changing MAC addresses other than this amendment.

This amendment will ensure coexistence and backward compatibility with legacy IEEE 802.11 devices and will not compromise current levels of privacy protection afforded by the IEEE 802.11 standard or the best understanding of current practices in RCM implementations.

1.2.4 Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

j) Demonstrated system feasibility.

There are already proprietary solutions available in the market to handle random and changing MAC addresses. However, there are a number of areas where standards support can enhance the overall user experience when operating devices with RCM features.

k) Proven similar technology via testing, modeling, simulation, etc.

IEEE Std. 802.11 technology is very mature and has a wide variety of legacy devices and a proven track record, with several billions of devices shipping each year. The principle of extending the IEEE 802.11 PHYs and MAC with new capabilities is also well established by previous amendments within IEEE 802.11.

The increased capabilities envisioned for the MAC necessary to implement the proposed amendment are in line with the current progress in technology and not expected to impinge testability.

1.2.5 Economic Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

l) Known cost factors.

Support of the proposed standard will likely require a manufacturer to develop modified firmware on AP STAs and non-AP STAs. The cost factors for these transitions are well known.

m) Balanced costs.

WLAN equipment is accepted as having balanced costs. The development of features to support RCM features in WLAN network deployments will not disrupt the established balance.

n) Consideration of installation costs.

The proposed amendment has no known impact on installation costs.

o) Consideration of operational costs (e.g., energy consumption).

This amendment is not expected to change today's operation costs.

References: