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**IEEE P802.11
Wireless LANs**

A CSD Proposal for Enhanced Broadcast Services (eBCS)				
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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 demonstrate coexistence through the preparation of a Coexistence Assurance (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.
A CA document is not necessary for this amendment. It will change neither the IEEE 802.11 channel access mechanism nor physical layer operation in such a fashion to impact coexistence with other IEEE 802 standards specifying unlicensed operation.

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:

- a) Broad sets of applicability.

The number of IEEE 802.11 enabled end-consumer mobile devices is continuously increasing and the demand for wireless local area network (WLAN) mobile communications is expected to increase at nearly 50% per year according to the Cisco Visual Networking Index [1]. The outdoor WLAN market is expected to grow 14% according to the Mordor Intelligence report [2] and broadcast traffic, such as video dissemination, has a major share of this market. In line with that, a recent Gartner Report states that the “proliferation of smartphones and increasing availability of high-speed ... networks ... are driving increased usage of video and other applications. Customer Service Profiles (CSPs) are looking to improve the customer experience ... [including] ... Wi-Fi equipment to improve ... network capacity” [3].

Several intelligent transport system (ITS) use cases either require that the sender of MAC frames containing broadcast information is authenticated, and that the integrity of the contents is

1 assured. These ITS use cases may not be able to accommodate authentication and association
2 phases prior to receiving broadcast information.
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4 In addition, the reception of data coming from sensors, which mainly reside without association
5 in their deployments, requires that other IEEE 802.11 enabled end-consumer mobile devices
6 receive unsolicited data at the MAC level and then decide to accept the incoming frames,
7 possibly based on an authenticated source. For similar use cases, a Gartner Report predicts 20.4
8 billion connected devices with an associated “spending on end points services [reaching] almost
9 \$2 trillion” [4]. Furthermore, these use cases, for example live stream video distribution from
10 surveillance devices may require link level encryption.
11

12 Broadcasting to IEEE 802.11 mobile devices entails resolving privacy issues, such as the ability
13 of end-user devices to choose if or how to register to receive alerts, warnings, advertisements or
14 other broadcast streams. Regulatory attention to security and privacy around the world not only
15 requires robust authentication and encryption mechanisms for broadcast frames, but also calls for
16 assistance to broadcasters in ensuring that they are compliant with privacy and security
17 expectations. [10]
18

19 Broadcast providers (i.e. public providers) are evaluating current technologies operating in the
20 unlicensed band to provide a low cost means for broadcasting public TV and especially radio
21 channels. Providing means for IEEE 802.11 stations to receive broadcast without establishing
22 bidirectional association and authentication with the transmitter allows digital video broadcasting
23 (DVB) technologies to be replaced with IEEE 802.11.
24

25 The increasing number of IEEE 802.11 devices cause channel congestion, especially in high-
26 density areas. Enhancing broadcast service will benefit all IEEE 802.11 devices, as it might
27 reduce traffic on a channel by replacing unicast traffic containing frequently accessed
28 information with broadcast traffic.
29

30 b) Multiple vendors and numerous users.
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32 A wide variety of vendors currently build numerous products for the Wireless Local Area
33 Network marketplace such as enabled end-consumer mobile devices, APs, tablets and PCs. They
34 are expected to implement the IEEE 802.11 eBCS.
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36 **1.2.2 Compatibility**

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38 Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE
39 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly
40 disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.
41

42 a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std
43 802.1Q? **YES**

44 b) If the answer to a) is no, supply the response from the IEEE 802.1 WG.
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46 The review and response is not required if the proposed standard is an amendment or revision to
47 an existing standard for which it has been previously determined that compliance with the above

1 IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the
2 case.

3 **1.2.3 Distinct Identity**

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

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9 The proposed amendment is an amendment to the IEEE 802.11 specification. There are no
10 approved IEEE 802 projects addressing enhanced broadcast services for IEEE 802.11 devices.

11 **1.2.4 Technical Feasibility**

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

16 a) Demonstrated system feasibility.

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18 Hardware components, such as IEEE 802.11 chipsets, are available today. Modifications to the
19 existing IEEE 802.11 MAC are implemented by modifying driver software. Possible solutions on
20 how to achieve the envisioned functionality have been presented in the IEEE 802.11 BCS SG. [5,
21 6, 7, 8, 9]

22
23 b) Proven similar technology via testing, modeling, simulation, etc.

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25 The main components of the technology and signaling are in use today. Hence, the involved
26 testing overhead associated with a commercial development undertaken by manufacturers is
27 reasonable.

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29 The amendment will use modeling and simulation as tools for evaluating performance metrics as
30 necessary.

31 32 **1.2.5 Economic Feasibility**

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

38
39 a) Balanced costs (infrastructure versus attached stations).

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41 The amendment will not significantly change the existing balance of cost (infrastructure versus
42 attached stations). It is envisioned that the majority of the changes for the new technology will
43 have balanced cost implications, however there is the possibility of receive-only devices that
44 may enable a new class of lower cost IEEE 802.11 mobile devices.

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46 b) Known cost factors.

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This amendment will not significantly change the existing IEEE 802.11 known cost factors.

c) Consideration of installation costs.

Installation costs are unchanged from those for existing IEEE 802.11 devices.

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

eBCS may reduce energy consumption at both IEEE 802.11 access points and mobile devices, and therefore reduce operating costs.

e) Other areas, as appropriate.

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- [2] Outdoor Wi-Fi Market - by Products and Services, by Implementation models, by End-user Industry, and Geography - Growth, Trends and Forecasts (2018 - 2023), available <https://www.mordorintelligence.com/industry-reports/outdoor-wi-fi-market>
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- [7] Reason Why L2 Per Frame Authentication Is Required, <https://mentor.ieee.org/802.11/dcn/18/11-18-1090-00-0bcs-reason-why-l2-per-frame-authentication-is-required.pptx>
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