IEEE P802.11  
Wireless LANs

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| A PAR Proposal for BCS | | | | |
| Date: 2018-05-07 | | | | |
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Abstract

This submission is the PAR proposal from the IEEE 802.11 BCS Study Group.

# PAR

**P802.11**

**Submitter Email:**   
**Type of Project:** Amendment to IEEE Standard 802.11  
**PAR Request Date:**   
**PAR Approval Date:   
PAR Expiration Date:   
Status:** Unapproved PAR, PAR for an amendment to an existing IEEE Standard

**1.1 Project Number:** P802.11bc  
**1.2 Type of Document:** Standard   
**1.3 Life Cycle:** Full Use

**2.1 Title:** Standard for Information technology--Telecommunications and information exchange between systems Local and metropolitan area networks--Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications-- Amendment: Broadcast Service

**3.1 Working Group:** Wireless LAN Working Group (C/LM/WG802.11)   
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**3.2 Sponsoring Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee (C/LM)   
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**4.1 Type of Ballot:** Individual  
**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:**July 2021   
**4.3 Projected Completion Date for Submittal to RevCom:**March 2022

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 50.

**5.2.a. Scope of the complete standard:**The scope of this standard is to define one medium access control (MAC) and several physical layer (PHY) specifications for wireless connectivity for fixed, portable, and moving stations (STAs) within a local area.

**5.2.b. Scope of the project:**

This amendment specifies modifications to the IEEE 802.11 medium access control (MAC) and physical layer (PHY) specifications that enable operation of Broadcast Service (BCS).

The Broadcast Service is a unidirectional service from one transmitter to multiple receivers. The frames for the Broadcast Service are expected to be transmitted unidirectionally from one transmitter to multiple receivers before or after Authentication/Association.

Expected modifications to IEEE 802.11 PHY are limited to error correction mechanism.

**5.3 Is the completion of this standard dependent upon the completion of another standard:** No.

**5.4 Purpose:**This amendment defines mechanisms that may provide enhanced IEEE 802.11 broadcast services, which may include enhanced security for the frames destined to group address.

**5.5 Need for the Project:**

Location specific information, e.g. timetable/floor map at an airport, is currently provided by signboard.

This type of information is considered useful to many people at the location.

Although the information can be distributed by unicast, broadcast is better by the following reasons.

* While unicast traffic consumes air time propotional to the number of users, broadcast traffic is not related to the number of users. This means when many users get the same information, air time consumption can be reduced.
* Broadcast is unidirectional traffic. The overhead, such as authentication and association, can be skipped. This will enhance user experience by omitting enter password.

To avoid fake-AP (transmitter) attack, broadcast frames must be authenticated by receivers.

Current IEEE 802.11 standard has GTKSA security framework for multicast. GTKSA uses symmetric algorithm and all stations share the same key. This means any station in the GTKSA can spoof as a fake-AP. The GTKSA works well only if the all stations in the GTKSA are trusted.

New security mechanisms are required for the expected use cases, public use, because the current GTKSA does not provide enough security.

The number of mobile devices incorporating IEEE 802.11 is steadily growing.

Broadcast service through IEEE802.11 creates new market.

It provides low cost, unlicensed broadcast method.

By this new standard, the user experience will be enhanced, and the market will grow

**5.6 Stakeholders for the Standard:**

Stakeholders include chip makers, set makers, system integrators, telecom operators, transportation industries and store operators.

**Intellectual Property**

**6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No**

**6.1.b. Is the Sposor aware of possible registration activity related to this project?: No**

**7.1 Are there other standards or projects with a similar scope?: No**

**7.2 Joint Development**

**Is it the intent to develop this document jointly with another organization?: No**

**8.1 Additional Explanatory Notes (Item Number and Explanation):**

5.5) Need for the Project

RTP (IETF RFC3550) for live streaming and FLUTE (IETF RFC6726) for unidirectional file transfer are expected to use as application layer protocols. These protocols are expected to use mainly by multicast data transfer and do not provide source authentication mechanism by themselves. IEEE 802.11 Broadacst Service should specify one or more source authentication mechanisms.

Example use cases are following,

* Audio/video live streaming at a stadium (live streaming)
* Audio explanation at a musium (live streaming/file transfer)
* Timetable at a station (file transfer)
* Floor map at a shopping mall (file transfer)
* Coupon distribution at a store (file transfer)
* Entertainment in a airplane (live streaming/file transfer)