

P802.11ai

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Type of Project: Amendment to IEEE Standard 802.11-2007

PAR Request Date: 13-Oct-2010

PAR Approval Date: 08-Dec-2010

PAR Expiration Date: 31-Dec-2014

Status: PAR for an Amendment to an existing IEEE Standard

Root Project: 802.11-2007

1.1 Project Number: P802.11ai

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: IEEE 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- Fast Initial Link Setup

3.1 Working Group: Wireless LAN Working Group (C/LM/WG802.11)

Contact Information for Working Group Chair

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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)

Contact Information for Sponsor Chair

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Contact Information for Standards Representative

None

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 03/2013

4.3 Projected Completion Date for Submittal to RevCom: 02/2014

5.1 Approximate number of people expected to be actively involved in the development of this project: 30

5.2 Scope: This amendment defines modifications to the IEEE 802.11 Medium Access Control Layer (MAC) to enable a fast initial link set-up of IEEE 802.11 stations (STAs).

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

5.4 Purpose: This amendment defines mechanisms that provide IEEE 802.11 networks with fast initial link set-up methods which do not degrade the security offered by Robust Security Network Association(RSNA)already defined in IEEE 802.11.

5.5 Need for the Project: The number of mobile devices incorporating IEEE 802.11 is steadily growing. Applications that are continuously running on those devices benefit from the high data rates of the IEEE 802.11 interface.

The project's primary need comes from an environment where mobile users are constantly entering and leaving the coverage area of an existing extended service set (ESS). Every time the mobile device enters an ESS, the mobile device has to do an initial link set-up to establish wireless local area network (LAN) connectivity. This requires efficient mechanisms that

(a) scale with a high number of users simultaneously entering an ESS

(b) minimize the time spent within the initial link set-up phase

(c) securely provide initial authentication.

The current IEEE 802.11 specification does not meet these requirements in some usage scenarios. An optimization of the link set-up is desirable. Optimizations may include improvements to

- * access point / network discovery,
- * secure authentication,
- * mechanisms to support concurrency in the exchange of higher layer protocol messages during the authentication phase (for example assignment of IP addresses).

5.6 Stakeholders for the Standard: Manufacturers and users of mobile devices, personal computer, enterprise networking devices, consumer electronic devices.

Intellectual Property

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

6.1.b. Is the Sponsor 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

7.3 International Activities

a. Adoption

Is there potential for this standard (in part or in whole) to be adopted by another national, regional or international organization?: No

b. Harmonization

Are you aware of another organization that may be interested in portions of this document in their standardization development efforts?: No

8.1 Additional Explanatory Notes (Item Number and Explanation):

5.2)Scope:
The project intends to amend the MAC only, thereby providing a fast initial link service to all IEEE 802.11 devices. The project does not intend to remove any existing mechanisms of IEEE 802.11 but to add additional, coexisting functionality enabling fast initial link set-up.

5.4)Purpose:

The amendment will not deprecate existing security mechanisms of IEEE 802.11.

5.5)Need for Project:

IEEE 802.11 STAs may spend several seconds in secure initial link establishment including the time required to sequentially transmit messages for IP address assignment. Amending schemes to improve access point/network discovery and secure authentication may reduce this time to less than 100 ms in certain circumstances. Reducing the number of messages transmitted over the air per user during link set-up frees airtime and increases the number of users that may simultaneously enter an ESS.