

P802.11ac

This PAR is valid until 31-Dec-2012.

PAR Extension Request Date: 15-Jul-2012

Extension Request Submitter Email: bkraemer@marvell.com

Why is an extension required?: An extension is needed to complete the balloting and publication process on the document. We have completed balloting on Draft 3.0 which has received 90.6% approval rate. The first sponsor ballot is currently expected to start in March 2013 and submission to REVCOM in March 2014.

Do the title, scope and purpose match that of the current draft?: Yes

Number of Previous Extensions Requested: 0

Number of Years Being Requested: 2

Document Development Information

a. What date did you begin writing the first draft?: 01-Nov-2010

b. How many people are actively working on the project?: 120

c. How many times a year does the working group meet?

In person?: 6

Via teleconference?: 20

d. How many times a year is a draft circulated to the working group via electronic means?: 3

e. What percentage of the Draft is stable?: 90%

f. How many significant work revisions has the Draft been through?: 3

Project Plan

When will IEEE sponsor balloting begin?: 01-Mar-2013

When do you expect to submit the proposed standard to RevCom?: 01-Feb-2014

Has this document already been adopted by another source?: No

For an extension request, the information on the original PAR below is not open to modification.

Submitter Email: eldad.perahia@intel.com

Type of Project: Amendment to IEEE Standard 802.11-2007

PAR Request Date: 23-Jul-2008

PAR Approval Date: 26-Sep-2008

PAR Expiration Date: 31-Dec-2012

Status: PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.11ac

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: Enhancements for Very High Throughput for operation in bands below 6GHz

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

Contact Information for Working Group Chair

Name: Bruce Kraemer

Email Address: bkraemer@marvell.com

Phone: 321-751-3988

Contact Information for Working Group Vice-Chair

Name: Jon Rosdahl

Email Address: jrosdahl@ieee.org

Phone: 801-492-4023

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

Contact Information for Sponsor Chair

Name: Paul Nikolich

Email Address: p.nikolich@ieee.org

Phone: 857.205.0050

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: 12/2011

4.3 Projected Completion Date for Submittal to RevCom: 12/2012

5.1 Approximate number of people expected to be actively involved in the development of this project: 100

5.2.a. Scope of the complete standard: This amendment defines standardized modifications to both the 802.11 physical layers (PHY) and the 802.11 Medium Access Control Layer (MAC) that enable modes of operation capable of supporting: o A maximum multi-station (STA) throughput (measured at the MAC data service access point), of at least 1 Gbps and a maximum single link throughput (measured at the MAC data service access point), of at least 500 Mbps. o Below 6 GHz carrier frequency operation excluding 2.4 GHz operation while ensuring backward compatibility and coexistence with legacy IEEE802.11 devices in the 5 GHz unlicensed band.

Changes in scope: This scope amendment defines this standardized standard modifications is to define both on the medium 802.11 access physical control layers (MACPHY) and several the physical 802.11 layer Medium Access Control Layer (PHYMAC) specifications that forenable wireless modes connectivity of for operation fixed, capable portable of supporting: o A maximum multi-station (STA) throughput (measured at the MAC data service access point), of at least 1 Gbps and moving a stations maximum single link throughput (STAs measured at the MAC data service access point), within of at least area 500 Mbps. o Below 6 GHz carrier frequency operation excluding 2.4 GHz operation while ensuring backward compatibility and coexistence with legacy IEEE802.11 devices in the 5 GHz unlicensed band.

5.2.b. Scope of the project:

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes

If yes please explain: IEEE 802.11n. In order to provide higher throughput than IEEE 802.11n it is foreseen that the multi-input multiple-output (MIMO) feature of IEEE 802.11n to IEEE 802.11 may be required.

5.4 Purpose: The purpose of the amendment is to improve the 802.11 wireless local area network (LAN) user experience by providing significantly higher basic service set (BSS) throughput for existing WLAN application areas and to enable new market segments for operation below 6 GHz including distribution of multiple multimedia/data streams.

Changes in purpose: The purpose of this the standard amendment is to provide improve wireless connectivity to automatic machinery, equipment, or STAs that require rapid deployment, which may be portable or hand held, or which may be mounted on moving vehicles within a local area. This standard also offers regulatory bodies a means of standardizing access to one or more frequency bands for the purpose of local area communication. Specifically, this standard — Describes the functions and services required by an IEEE 802.11(TM) compliant device to operate within ad hoc and infrastructure networks as well as the aspects of STA mobility (transition) within those networks. — Defines the MAC procedures to support the asynchronous MAC service data unit (MSDU) delivery services. — Defines several PHY signaling techniques and interface functions that are controlled by the IEEE 802.11 MAC. — Permits the operation of an IEEE 802.11 conformant device within a wireless local area network (WLAN LAN) that may coexist with multiple overlapping IEEE 802.11 WLANs. — Describes the requirements and procedures to provide data confidentiality of user information experience being by transferred providing over significantly the higher wireless basic medium service set (WMBSS) and throughput authentication of IEEE 802.11 conformant devices. — Defines mechanisms for dynamic existing frequency WLAN selection application (DFS) areas and transmit power control (TPC) that may be used to satisfy enable regulatory new requirements market segments for operation in below the 6 5 GHz band. The regulations and conformance tests are listed in Clause 2 — Defines the MAC procedures to support local area network (LAN) applications with quality of service (QoS) requirements, including the distribution transport of voice, multiple audio, multimedia/data and video streams.

5.5 Need for the Project: As wireless networks are deployed, users are able to transition applications from fixed, non-wireless links to the convenience, freedom and versatility of wireless links. These transitions create an evolutionary demand to enhance the capacity of wireless networks in order to support new classes of applications with higher bandwidth requirements. Moreover as WLAN usage grows, the wireless medium is being inherently shared among users motivating the need to achieve higher multi-STA aggregated throughput. This project will meet that evolving need for higher bandwidth in the projected completion timeframe and enable the transition of the next class of applications

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

8.1 Additional Explanatory Notes (Item Number and Explanation): 5.2)

- The project may include the capability to handle multiple simultaneous communications.
- The multi-STA throughput is defined as the sum of the MAC SAP throughputs across all active transmissions within a set of STAs.
- The 1 Gbps maximum multi-STA throughput may be achieved when considering multiple simultaneously actively-communicating STAs, e.g., a BSS with 1 access point (AP) and 3 or more STAs.
- Though the primary metric used in the scope of the project deals with MAC SAP throughput, the intent is to provide enhancements over IEEE802.11n on the following inter-dependent performance indicators: throughput at the MAC data SAP, range of operation, aggregate network capacity (spectrum efficiency), power consumption (peak and average).

1.1) This is an amendment to the then current revision of the IEEE standard 802.11