

# P802.11be

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**Submitter Email:** [jrosdahl@ieee.org](mailto:jrosdahl@ieee.org)

**Type of Project:** Amendment to IEEE Standard 802.11-2016

**PAR Request Date:** 18-Jan-2019

**PAR Approval Date:** 21-Mar-2019

**PAR Expiration Date:** 31-Dec-2023

**Status:** PAR for an Amendment to an existing IEEE Standard

**Root Project:** 802.11-2016

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**1.1 Project Number:** P802.11be

**1.2 Type of Document:** Standard

**1.3 Life Cycle:** Full Use

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**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: Enhancements for Extremely High Throughput (EHT)

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

**Contact Information for Working Group Chair**

**Name:** Dorothy Stanley

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

**Contact Information for Sponsor Chair**

**Name:** Paul Nikolich

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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:** 07/2022

**4.3 Projected Completion Date for Submittal to RevCom**

**Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 02/2023**

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**5.1 Approximate number of people expected to be actively involved in the development of this project:** 200

**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 defines standardized modifications to both the IEEE Std 802.11 physical layers (PHY) and the Medium Access Control Layer (MAC) that enable at least one mode of operation capable of supporting a maximum throughput of at least 30 Gbps, as measured at the MAC data service access point (SAP), with carrier frequency operation between 1 and 7.250 GHz while ensuring backward compatibility and coexistence with legacy IEEE Std 802.11 compliant devices operating in the 2.4 GHz, 5 GHz, and 6 GHz bands. This amendment defines at least one mode of operation capable of improved worst case latency and jitter.

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

**If yes please explain:** P802.11ax

**5.4 Purpose:** The purpose of this standard is to provide wireless connectivity for fixed, portable, and moving stations 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.

**5.5 Need for the Project:** Wireless LAN (WLAN) continues its growth and is more and more important for providing wireless data services in many environments such as home, enterprise and hotspots.

In particular video traffic will continue to be the dominant type of traffic in many WLAN deployments. The throughput requirements of these applications are in constant evolution due to the emergence of 4k and 8k video (uncompressed rate of 20 Gbps). New high-throughput, low latency applications will proliferate such as virtual reality or augmented reality, gaming, remote office and cloud computing (e.g., latency lower than 5 ms for realtime gaming).

With the high throughput and stringent real-time delay requirements of these applications, users expect enhanced throughput, enhanced reliability, reduced latency and jitter, and improved power efficiency in supporting their applications over WLAN.

Users expect improved integration with Time Sensitive Networks (TSN) to support applications over heterogeneous Ethernet and Wireless LANs. This amendment aims to build on the current and emerging WLAN technologies by providing further improvement of aggregate throughput and latency to ensure competitiveness of IEEE Std 802.11 in coming years.

**5.6 Stakeholders for the Standard:** Manufacturers and users of semiconductors, personal computers, enterprise networking devices, consumer electronic devices, home networking equipment, mobile devices, and cellular operators.

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### 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

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**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

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### 8.1 Additional Explanatory Notes: Item 5.2b:

The focus of this amendment is on WLAN indoor and outdoor operation with stationary and pedestrian speeds in the 2.4, 5 and 6 GHz frequency bands.

The main candidate features that have been discussed are:

- 320 MHz bandwidth and more efficient utilization of non-contiguous spectrum,
- Multi-band/multi-channel aggregation and operation,
- 16 spatial streams and Multiple Input Multiple Output (MIMO) protocols enhancements,
- Multi-Access Point (AP) Coordination (e.g. coordinated and joint transmission),
- Enhanced link adaptation and retransmission protocol (e.g. Hybrid Automatic Repeat Request (HARQ)),
- If needed, adaptation to regulatory rules specific to 6 GHz spectrum.

Item 5.3:

P802.11ax amendment: 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 High Efficiency Wireless LAN