IEEE P802.11
Wireless LANs

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| 802.11 AP Power Save PAR addition proposal |
| Date: 2023-03-13 |
| Author(s): |
| Name | Affiliation | Phone | email |
| Amelia Andersdotter | Sky Group/Comcast |  | amelia.ieee@andersdotter.cc |
| Carol Ansley | Cox Communications |  | carol@ansley.com |
| Patrice Desmoulin | Orange |  | patrice.desmoulin@orange.com |
| Massinissa Lalam | Sagemcom |  | massinissa.lalam@sagemcom.com |
| Michael Grigat | Deusche Telekom |  | m.grigat@telekom.de |
| Juan Carlos Zuniga | Cisco Systems |  | juzuniga@cisco.com |
| Gaurav Patwardhan | HPE |  | gaurav.patwardhan1@gmail.com |
| Mark Hamilton | Ruckus/Commscope |  | mark.hamilton2152@gmail.com |
| ‍Kurt Lumbatis | ARRIS/Commscope |  | kurt.lumbatis@commscope.com |

Abstract

PAR document for UHR. This document proposes to place AP Power Save features in the priority list for UHR. Possible KPIs and metrics TBD. Proposed changes highlighted in green.

Revisions:

* Rev 0: Based on 11/23-0078r2
* r1: editorial

# PAR

**P802.11**

**Submitter Email:**
**Type of Project:** Amendment to IEEE Standard 802.11
**PAR Request Date:** TBD
**PAR Approval Date: May 2023
PAR Expiration Date: May 2027
Status:** Unapproved PAR, PAR for an amendment to an existing IEEE Standard

**1.1 Project Number:** P802.11bx?
**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: Enhancements for Ultra High Reliability WLAN

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

**Contact Information for Working Group Chair**

**Name: Dorothy Stanley**

**Email Address:** dstanley@ieee.org
**Phone:** +1 (630) 363-1389

**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**

**Name:** James Gilb
**Email Address:** gilb@ieee.org
**Phone:** 858-229-4822

**4.1 Type of Ballot:** Individual
**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:**July 2026
**4.3 Projected Completion Date for Submittal to RevCom:
Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.:** March 2027

**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:**

**Objectives/KPI part (first draft in January):**

* **This amendment defines standardized modifications to both the 802.11 physical layers (PHY) and the 802.11 Medium Access Control (MAC) that enhance Wireless Local Area Network (WLAN) reliability by enabling:**
	+ at least one mode of operation capable of increasing throughput, as measured at the MAC data service Access Point (SAP), at different Signal to Interference and Noise Ratio (SINR) levels (Rate-vs-Range), compared to 802.11be
	+ at least one mode of operation capable of improving tail latency and jitter compared to 802.11be including scenarios of overlapping Basic Service Sets (BSSs) and mobility between BSSs
	+ more efficient use of the medium compared to 802.11be
	+ at least one power save mode for each AP in an AP device with one or more APs and for an AP-MLD that reduces overall power consumption during periods of low utilization while maintaining low latency

Additionally, the amendment will also provide mechanisms for enhanced power save for clients and improved Peer-to-Peer (P2P) operation compared to 802.11be.

Note: quantifying target values and corresponding metrics (units) are TBD

**Band support/coex part (will be adjusted based on mmWave support decision in March):**

TBD

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

 **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), based on IEEE 802.11 technology, has steadily seen a significant increase in the achievable data rates. It is now possible to find WLAN devices that support rates in the range of a few gigabits per second (Gbits/s). WLAN usage continues to grow and find new applications demanding additional capacity.

Emerging applications like metaverse [1], AR and VR [2], and emerging usages like robotics, industrial automation for industrial IoT, logistics and smart agriculture [3] provide a spectrum of digitally enhanced worlds, realities and business models poised to revolutionize life and enterprises in the next decade. Those new applications are characterized by large throughput requirements combined with low delay and high reliability requirements [1]. With the high throughput and stringent real-time delay requirements of these applications, users expect enhanced throughput, enhanced reliability, reduced worst case delay and jitter, and improved power efficiency in supporting their applications over WLAN. WLAN technologies already provide technical solutions for this challenge but are mostly looking at a single isolated network (Basis Service Set). This amendment aims to build on these by providing further improvement considering scenarios with multiple overlapping networks.

Another trend is the increased proliferation of Peer-to-Peer communications and usages over WLAN on a large variety of deployment scenarios, competing for the medium resources with infrastructure WLAN usages, calling for better coordination not only between neighboring APs but also with and between P2P networks.

Residential and enterprise users are increasingly looking to improve the power efficiency of their household appliances and generic electrical equipment to reduce their total electricity consumption, both in response to global environmental concerns as well as to increasing electricity prices. WLAN is already a power-efficient way of supplying ubiquitous connectivity, but further improvements are required especially on AP side.

**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.

**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):**

**References:**

[1] [11-22/1790](https://mentor.ieee.org/802.11/dcn/22/11-22-1790-00-0uhr-green-ap-and-resilience-requirements-for-home-networks.pptx) Green AP and resilience requirements for home networks

[2] [11-22/1809](https://mentor.ieee.org/802.11/dcn/22/11-22-1809-00-0uhr-a-perspective-on-uhr-features-for-operator-residential-deployments.pptx) A Perspective on UHR Features for Operator Residential Deployments

[3] [11-23/0010](https://mentor.ieee.org/802.11/dcn/23/11-23-0010-00-0uhr-considerations-for-enabling-ap-power-save.pptx) Considerations for enabling AP power save

[4] [11-23/0015](https://mentor.ieee.org/802.11/dcn/23/11-23-0015-00-0uhr-ap-mld-power-management.pptx) AP MLD power management

[5] 11-23/0225 Considering Unscheduled AP Power Save