IEEE P802.11
Wireless LANs

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| 802.11 Post Quantum Cryptography Proposed PAR |
| Date: 2025-03-11 |
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Abstract

This document contains the draft Project Authorization Request document for a new project, Enhancements for Post-Quantum Cryptography.

# PAR

**P802.11**

**Type of Project:** Amendment to IEEE Standard 802.11-2024
Project Request Type: Initiation/Amendment
**PAR Request Date:** TBD
**PAR Approval Date: [Populated after PAR approval]
PAR Expiration Date: [Populated after PAR approval]
PAR Status:** Draft
**Root Project**: 802.11-2024
**1.1 Project Number:** P802.11xx
**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 Post-Quantum Cryptography

**3.1 Working Group:** Wireless LAN Working Group (C/LAN/MAN/802.11 WG)

**3.1.1Contact Information for Working Group Chair**

**Name: Robert Stacey**

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**3.1.2Contact Information for Working Group Vice-Chair**

**Name:** Jon Rosdahl
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**3.2 Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee (C/LAN/MAN)

**3.2.1 Contact Information for Standards Committee Chair:
Name:** James Gilb **Email Address:** gilb\_ieee@tuta.com  **3.2.2 Contact Information for Standards Committee Vice Chair:
Name:** David Halasz **Email Address:** dave.halasz@ieee.org  **3.2.3 Contact Information for Standards Representative:
Name:** George Zimmerman **Email Address:** george@cmephyconsulting.com

**4.1 Type of Ballot:** Individual
**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Standards Committee Ballot:** November 2027 **4.3 Projected Completion Date for Submittal to RevCom:** March 2029

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

**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 Std 802.11 medium access control (MAC) to add post-quantum cryptography (PQC) algorithms to enhance current 802.11 wireless security protocols. The modifications are limited to (a) defining authenticated key management suites for PQC-enabled protocols, (b) specifying the use of PQC digital signature and key establishment algorithms to existing 802.11 security protocols, (c) defining a PQC-enabled password authenticated key exchange, and (d) changes to symmetric key handshaking to support PQC-enabled protocols. **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:** Current public key cryptography key exchanges based on Diffie-Hellman (both finite field and elliptic curve) are vulnerable to compromise from a quantum adversary. There is a strong market need to add support of post-quantum protocols to the standard to address this anticipated vulnerability. As an example, the United States National Institute of Science and Technology (NIST) has disallowed use of key establishment and digital signatures based on Finite Field or Elliptic Curve algorithms after 2035. NIST has published new post-quantum algorithms for use in key establishment and digital signature protocols.

**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 Standards Committee aware of any copyright permissions needed for this project?:** No
**6.1.b. Is the Standards Committee aware of possible registration activity related to this project?:** No

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

* 1. **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 The algorithms published by NIST are
FIPS 203, [Module-Lattice-Based Key-Encapsulation Mechanism Standard](https://csrc.nist.gov/pubs/fips/203/final)
FIPS 204, [Module-Lattice-Based Digital Signature Standard](https://csrc.nist.gov/pubs/fips/204/final), and
FIPS 205, [Stateless Hash-Based Digital Signature Standard](https://csrc.nist.gov/pubs/fips/205/final).

**References:**