P802.11az

This PAR is valid until 31-Dec-2021. The original PAR was approved on 03-Sep-2015. It was modified on 15-Feb-2018 and then extended on 07-Nov-2019.

PAR Extension Request Date:
PAR Extension Approval Date:
Extension Request Submitter Email:
Number of Previous Extensions Requested: 1

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1. Number of years that the extension is being requested: 2
2. Why an Extension is Required (include actions to complete): An extension is needed to complete Working Group and IEEE-SA balloting of the draft amendment. P802.11az D3.0 completed WG recirculation ballot in February 2021 with an 88% approval rate and 476 comments received. Comment resolution is underway.

The plan is to have the draft standard submitted to IEEE-SA ballot in September 2021. Prior to Covid, the WG met 6 times per year, with additional in-person ad-hoc meetings. Work is continuing via weekly teleconferences, as no in-person meetings are possible at this time.
3.1. What date did you begin writing the first draft: 05 Feb 2018
3.2. How many people are actively working on the project:60
3.3. How many times a year does the working group meet?
In person: 6
Via teleconference: 6
3.4. How many times a year is a draft circulated to the working group: 1
3.5. What percentage of the Draft is stable: 98%
3.6. How many significant work revisions has the Draft been through: 12
4. When will/did initial Standards Association Balloting begin: Mar 2022

When do you expect to submit the proposed standard to RevCom: Sep 2023
Has this document already been adopted by another source? (if so please identify) No

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

Submitter Email: jrosdahl@ieee.org
Type of Project: Amendment to IEEE Standard 802.11-2020
Project Request Type: Modify / Amendment
PAR Request Date: 12 Nov 2017
PAR Approval Date: 15 Feb 2018
PAR Expiration Date: 31 Dec 2021
PAR Status: Active
Root PAR: P802.11az
Root PAR Approved on: 03 Sep 2015
Root Project: 802.11-2020

1.1 Project Number: P802.11az
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project 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 - Enhancements for Positioning

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3.1 Working Group: Wireless LAN Working Group(C/LM/802.11 WG)
3.1.1 Contact Information for Working Group Chair:
Name: Dorothy Stanley
Email Address: dstanley1389@gmail.com
3.1.2 Contact Information for Working Group Vice Chair:
Name: Jon Rosdahl
Email Address: jrosdahl@ieee.org
3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LM)

3.2.1 Contact Information for Standards Committee Chair:
Name: Paul Nikolich
Email Address: p.nikolich@ieee.org
3.2.2 Contact Information for Standards Committee Vice Chair:
Name: James Gilb
Email Address: gilb@ieee.org
3.2.3 Contact Information for Standards Representative:
Name: James Gilb
Email Address: gilb@ieee.org

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: Jan 2020
Change to Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: ~~Sep~~ Jan ~~2018~~ 2020
4.3 Projected Completion Date for Submittal to RevCom: Feb 2021
Change to Projected Completion Date for Submittal to RevCom: ~~Oct~~ Feb ~~2019~~ 2021

5.1 Approximate number of people expected to be actively involved in the development of this project: 100
Change to Approximate number of people expected to be actively involved in the development of this project: ~~40~~ 100
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 modifications to both the IEEE 802.11 medium access control layer (MAC) and physical layers (PHY) of High Throughput (HT), Very High Throughput (VHT), Directional Multi Gigabit (DMG) and PHYs under concurrent development (e.g. High Efficiency WLAN (HEW), Next Generation 60GHz (NG60)) that enables determination of absolute and relative position with better accuracy than the Fine Timing Measurement (FTM) protocol executing on the same PHY-type, while reducing existing wireless medium use and power consumption and is scalable to dense deployments. This amendment also defines modifications that enable secured exchange of measurement and positioning information.
This amendment requires backward compatibility and coexistence with legacy devices. Backward compatibility with legacy 802.11 devices implies that devices implementing this amendment shall (a) maintain data communication compatibility and (b) support the Fine Timing Measurement (FTM) protocol.
Change to scope of the project: This amendment defines modifications to both the IEEE 802.11 medium access control layer (MAC) and physical layers (PHY) of High Throughput (HT), Very High Throughput (VHT), Directional Multi Gigabit (DMG) and PHYs under concurrent development (e.g. High Efficiency WLAN (HEW), Next Generation 60GHz (NG60)) that enables determination of absolute and relative position with better accuracy ~~with respect to~~ than the Fine Timing Measurement (FTM) protocol executing on the same PHY-type, while reducing existing wireless medium use and power consumption and is scalable to dense deployments. This amendment also defines modifications that enable secured exchange of measurement and positioning information .This amendment requires backward compatibility and coexistence with legacy devices. Backward compatibility with legacy 802.11 devices implies that devices implementing this amendment shall (a) maintain data communication compatibility and (b) support the Fine Timing Measurement (FTM) protocol.

5.3 Is the completion of this standard contingent upon the completion of another standard? Yes
Explanation: The P802.11ax HEW and P802.11ay NG60 task groups are also amending the IEEE Std. 802.11. It is anticipated that the P802.11az NGP, P802.11ax HEW and P802.11ay NG60 amendments will coordinate their drafts in accordance with their expected completion dates.
Change to Explanation: The P802.~~11~~ 11ax HEW and P802.~~11~~ 11ay NG60 task groups are also amending the IEEE Std. 802.11. It is anticipated that the P802.~~11~~ 11az NGP, P802.~~11~~ 11ax ~~HE~~ HEW and P802.~~11~~ 11ay NG60 amendments will coordinate their drafts in accordance with their expected completion dates.
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: With the introduction of accurate location support to IEEE Std 802.11, a broad set of mass market applications and Use Cases have been enabled.
However, as the technology penetrates the market, user expectations are for positioning services to be made available anytime, any place at increasing level of performance.
According to market research the year over year market till 2018 for 802.11 based positioning technology is expected to grow by roughly 15% for AP to STA usages and 50% for peer to peer usages year over year for the same period [2]. Thus the opportunity arises for 802.11 based systems to extend their location capabilities

to new use case scenarios.
Current standardized technology already enables 802.11 based navigation for pedestrians, yet other usages and use cases are in need of additional positioning services:
* A more robust, accurate and precise location such as guidance to a product on a specific shelf [1,5] while retaining the existing infrastructure deployment density.
* A highly scalable indoor positioning system for crowded metro stations and stadiums [3,4,5].
* Non-AP STA to non-AP STA positioning such as support for peer to peer connectivity and decision making [5].
A secured exchange of ranging and positioning information for security related applications (such as financial transaction, unlocking door and accessing personal computer)[6].
Change to Need for the Project: With the introduction of accurate location support to IEEE Std 802.11, a broad set of mass market applications and Use Cases have been enabled.However, as the technology penetrates the market, user expectations are for positioning services to be made available anytime, any place at increasing level of performance.According to market research the year over year market till 2018 for 802.11 based positioning technology is expected to grow by roughly 15% for AP to STA usages and 50% for peer to peer usages year over year for the same period [2]. Thus the opportunity arises for 802.11 based systems to extend their location capabilities to new use case scenarios.Current standardized technology already enables 802.11 based navigation for pedestrians, yet other usages and use cases are in need of additional positioning services:* A more robust, accurate and precise location such as guidance to a product on a specific shelf [1,5] while retaining the existing infrastructure deployment density.* A highly scalable indoor positioning system for crowded metro stations and stadiums [3,4,5].* Non-AP STA to non-AP STA positioning such as support for peer to peer connectivity and decision making [5]. A secured exchange of ranging and positioning information for security related applications (such as financial transaction, unlocking door and accessing personal computer)[6].
5.6 Stakeholders for the Standard: Manufacturers and users of semiconductors, personal computers, enterprise networking devices, consumer electronic devices, home networking equipment, mobile wearable devices, test and measurement equipment providers.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?
No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?
No

7.1 Are there other standards or projects with a similar scope? Yes
Explanation: Sponsor Organization: IEEE 802
Project Number: IEEE P802.15.7r1
Projected Date: 2017-05 (projected)
Project Title: P802.15.7 IEEE Standard for Local and Metropolitan Area Networks--Part 15.7: Short-Range Wireless Optical Communication Using Visible Light.
7.2 Is it the intent to develop this document jointly with another organization? No

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8.1 Additional Explanatory Notes: Par Modification explanation:
4.2 and 4.3 - updated new projected completion dates.
5.2b - Clarify the scope to indicate that in addition to ranging methods, it also adds that the project will enable secured exchange of measurement and positioning information.
5.3 - Update references to dependent projects.
5.5 adds sentence to indicate the need for the secured exchange methods.
8.1 update note for 5.2b and add Reference for security document for 5.5

5.2.b: IEEE Std 802.11(TM)-2016 includes a ranging protocol named Fine Timing Measurement
5.3: IEEE Std. 802.11: 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

5.5: References for Clause 5.5:
[1] "Indoor Location Positioning Technology: Research, Start-ups and Predictions", by Grizzly Analytics Market Research, March 2013.
[2] "Smartphone Indoor Location Technologies", by ABI Research, June 2013
[3] 11-14/1235r0, "Scalable Location", by Brian Hart (Cisco Systems) et al., https://mentor.ieee.org/802.11/dcn/14/11-14-1235-00-0wng-scalable-location.pptx
[4] 11-13/72r1, "Client Positioning using Timing Measurements between Access Points,", by Erik Lindskog (CSR Technology) et al., https://mentor.ieee.org/802.11/dcn/13/11-13-0072-01-000m-client-positioning-using-timing-measurements-between-access-points.pptx
[5] 11-14/1464r2, "Next Generation Positioning Overview and Challenges", by Jonathan Segev (Intel) et al., https://mentor.ieee.org/802.11/dcn/14/11-14-1464-02-0wng-ng-positioning-overview-and-chalanges.pptx

[6] 13 11-17/120r2, "Secured Location Threat Model", by Benny Abramovsky (Intel) et al., https://mentor.ieee.org/802.11/dcn/17/11-17-0120-02-00az-secured-location-threat-model.pptx

Change to Additional Explanatory Notes: Par Modification explanation: 4.2 and 4.3 - updated new projected completion dates. 5.~~2~~ 2b - Clarify the scope to indicate that in addition to ranging methods, it also adds that the project will enable secured exchange of measurement and positioning information. 5.3 - Update references to dependent projects. 5.5 adds sentence to indicate the need for the secured exchange methods .~~b:~~ 8.1 update note ~~P802~~ for 5 .~~11~~ 2b and add ~~task~~ Reference ~~group~~ for ~~REVmc~~ security ~~is~~ document ~~standardizing~~ for 5.5 ---------- 5.2.b: IEEE Std 802.11(TM)-2016 includes a ranging protocol named Fine Timing Measurement5.3: IEEE Std. 802.11: 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) Specifications5.5: References for Clause 5.5:[1] "Indoor Location Positioning Technology: Research, Start-ups and Predictions", by Grizzly Analytics Market Research, March 2013.[2] "Smartphone Indoor Location Technologies", by ABI Research, June 2013[3] 11-14/1235r0, "Scalable Location", by Brian Hart (Cisco Systems) et al., https://mentor.ieee.org/802.11/dcn/14/11-14-1235-00-0wng-scalable-location.pptx[4] 11-13/72r1, "Client Positioning using Timing Measurements between Access Points,", by Erik Lindskog (CSR Technology) et al., https://mentor.ieee.org/802.11/dcn/13/11-13-0072-01-000m-client-positioning-using-timing-measurements-between-access-points.pptx[5] 11-14/1464r2, "Next Generation Positioning Overview and Challenges", by Jonathan Segev (Intel) et al., https://mentor.ieee.org/802.11/dcn/14/11-14-1464-02-0wng-ng-positioning-overview-and-chalanges.pptx

~~7.1: P802.15.7~~ [6] ~~and~~ 13 ~~P802.~~11 -17/120r2, ~~are~~ "Secured ~~different~~ Location ~~network~~ Threat ~~technologies with~~ Model", ~~different~~ by ~~physical layers that both need positioning specifications~~ Benny ~~specific~~ Abramovsky ~~to~~ (Intel) ~~their~~ et ~~network~~ al., ~~technology~~ https://mentor.ieee.org/802.11/dcn/17/11-17-0120-02-00az-secured-location-threat-model . pptx