IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolution of Comment Received from IEEE 802.11ai errata ISO ballot | | | | |
| Date: 2017-09-08 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Dan Harkins | HPE | 3333 Scott blvd  Santa Clara, California, United States of America | +1 408 555 1212 |  |
|  |  |  |  |  |

Abstract

Errata for IEEE 802.11ai-2016 was submitted to ISO/IEC JTC1/SC6 by IEEE 802 for fast-track adoption under the ISO/IEEE PSDO Agreement as 6N16663. The results of the ballot and the single comment received were presented in document 6N16697.

This submission proposes resolutions to the comment in that document.

The 60-day ballot on the errata to IEEE 802.11ai, which was conducted to satisfy the processes of the PSDO agreement between ISO and IEEE-SA, ran from 2017-07-04 to 2017-09-01 and asked the following questions:

1. “Do you support the need for an ISO International Standard on the subject?” and,
2. “Do you support the submission of this second printing, which the errata has been reflected, as an IS?”

The results of the ballot were: Q1—9 yes, 1 no, 11 abtain; Q2—9 yes, 1 no, 11 abstain.

The following multi-part comment, marked both technical and general, was received and IEEE 802’s proposed resolutions follow.

Comment CN1:

*IEEE 802.11ai itself has the following security problems: 1) In FILS shared key authentication, the shared key is generated between STA and AS and stored in these two devices, the key needs to be delivered by AS to AP through network when Link setup, so, a secure channel should be provided, but the security channel is not specified in the standard. 2) In FILS public key authentication, Subclause 12.12.1 mentioned that "when FILS Public Key authentication is used, each STA has a means to trust the public key of the other STA", but the standard does not provide specific means on how STA trust public key of other STAs.*

Proposed IEEE 802 resolution:

Reject

The scope of the IEEE 802.11-2016 base standard, and the IEEE 802.11ai amendment including its errata, are the PHY and MAC layers of the OSI network model. As such, the protocols defined in these documents are limited to the PHY and MAC layers. The China NB’s comments refer to need for protocols defined at higher layers that are outside the scope of the document being balloted. The need for additional higher layer protocols that are defined outside the scope of the document being balloted do not amount to “*security problems*” because numerous examples of suitable protocols exist.

Specifically:

1. The document under ballot does not need to specify the protocol used to securely transfer the shared key from the AS to the AP, it only needs to state the requirements such a protocol would have. FILS is an RSNA protocol and is therefore bound to the existing requirements of RSNA as defined in IEEE 802.11-2016. Section 12.2.6 sub d) explicitly states *“The AP and AS have a trustworthy channel between them that can be used to exchange cryptographic keys without exposure to any intermediate parties.”* Provided the secure channel, established by means outside the scope of the document under ballot, satisfies the requirements in 12.2.6 there is no security problem.

Although outside the scope of IEEE 802.11ai, IEEE 802 note that examples of such channels are widely deployed and are considered to satisfy these requirements, such as DIAMETER [RFC 6733] secured by TLS [RFC 5246] or IPsec [RFC 4303] using IKE [RFC 7296]. Any of these can be used with FILS Shared Key Authentication to create the trustworthy channel through which cryptographic keys can be exchanged.

1. The document under ballot does not need to specify the means by which trust can be obtained in a public key, it just needs to mandate that trust in the public key exist prior to initiating FILS Public Key Authentication.

The public key used in FILS Public key authentication is conveyed using the element described in 9.4.2.181 of IEEE 802.11ai, which refers to documents which can be used to help establish necessary trust. Although outside the scope of IEEE 802.11ai, IEEE 802 note the existence of widely deployed technology for the establishment of such trust based on a public key infrastructure (PKI) as defined by ISO/IEC 9594-8:2014, with enrollment into a PKI using techniques such as EST (RFC 7030) or CMC (RFC 5272).

**References:**