IEEE P802.11
Wireless LANs

|  |
| --- |
| Proposed draft 11be Spec text for MLME SAP - Authentication |
| Date: 2020-10-09 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yonggang Fang | ZTE (TX) |  |  | yfang@ztetx.com |
| Bo Sun | ZTE |  |  |  |
| Zhiqiang Han | ZTE |  |  |  |
| Liuming Lu | ZTE |  |  |  |
| Po-Kai Huang | Intel |  |  |  |
| Rojan Chitrakar | Panasonic |  |  |  |
| Jay Yang | Nokia |  |  |  |

Abstract

This contribution proposes the draft specification text of MLME SAP for TGbe draft.

Revisions:

* Rev 0: Initial version of the document.

The texts is prepared for the following motions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Layer management | MLME SAP interface\* | Yonggang Fang | Basics (R1) | Po-Kai Huang, Rojan Chitrakar,Abhishek Patil, Jay Yang, Xiandong Dong,Subir Das | Motion 115, #SP88, [12] and [123]Motion 115, #SP91, [10] and [93]Motion 115, #SP89, [10] and [106] |

802.11be defines a multi-link setup signaling exchange executed over one link initiated by a non-AP MLD with an AP MLD as follows:

* Capability for one or more links can be exchanged during the multi-link setup.
* The AP MLD serves as the interface to the DS for the non-AP MLD after successful multi-link setup.

NOTE 1 – The link identification is TBD.

NOTE 2 – Details for non-infrastructure mode of operation TBD.

[Motion 25, [5] and [120]]

Propose to amend the existing MLME SAP interface 6.3.5 Authenticate and 6.3.6 Deauthenticate according to this motion.

802.11be supports the following:

* Reuse disassociation frame for multi-link teardown.
* Reuse authentication frame for multi-link SAE exchange and multi-link Open System authentication.

[Motion 115, #SP88, [12] and [123]]

Propose to amend the existing MLME SAP interface 6.3.5 Authenticate according to this motion.

802.11be defines mechanism(s) to include MLO information that a STA of an MLD provides in its mgmt. frames, during discovery and ML setup, as described below:

* MLD (common) Information
	+ Information common to all the STAs of the MLD.
* Per-link information
	+ Capabilities and Operational parameter of other STAs of the MLD other than the advertising STA.

[Motion 115, #SP91, [10] and [93]]

Propose to amend the existing MLME SAP interface 6.3.5 Authenticate according to this motion.

802.11be supports the following:

* An AP that is part of an AP MLD that supports SAE authentication shall include the MLD address in beacon and probe response frames it transmits.
* EHT MLD shall indicate its MLD MAC address during authentication request/response exchange.

[Motion 115, #SP89, [10] and [106]]

Propose to amend the existing MLME SAP interface 6.3.5 Authenticate according to this motion.

**Proposed spec text:**

The baseline for this text is 802.11 REVmd draft 5.0.

**6.3 MLME SAP interface**

***TGbe editor: Modify the following subclaus as follows***

**6.3.1 Introduction**

In clause 6.3 MLME SAP interface, the reference of a “STA” means the non-EHT “STA” unless specified otherwise, and the reference of an “AP” means the non-EHT AP unless specified otherwise. When referring to MLD management, the “SME” is the entity that manages the MLD, The peer MAC entity can be with a non-EHT STA or a MLD depending on the context.

The services provided by the MLME to the SME are specified in this subclause. These services are described in an abstract way (following the model described in ITU-T Recommendation X.210 [B47]) and do not imply any particular implementation or exposed interface. MLME SAP primitives are of the general form ACTION.request primitive followed by ACTION.confirm primitive (for an exchange initiated by the SAP client) and ACTION.indication primitive followed by ACTION.response primitive (for an exchange initiated by the MLME). The SME uses the services provided by the MLME through the MLME SAP.

**6.3.5 Authenticate**

**6.3.5.1 Introduction**

This mechanism supports the process of establishing an authentication relationship with a peer MAC entity.

**6.3.5.2 MLME-AUTHENTICATE.request**

***TGbe editor: Modify the following subclause as follows***

**6.3.5.2.1 Function**

This primitive requests authentication with a specified peer MAC entity.

**6.3.5.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-AUTHENTICATE.request( PeerSTAAddress,

…

Multi-Link,

VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process.  |
| …. |  |  |  |
| Multi-Link | Multi-Link element | As defined in 9.4.2.247b (Multi-Link element) | Indicates the Multi-Link parameters of the MLD. This parameter is present if dot11MultiLinkActivated is true and is absent otherwise. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.25(Vendor Specific element) | Zero or more elements. |

**6.3.5.2.3 When generated**

This primitive is generated by the SME for a STA to establish authentication with a specified peer MAC entity in order to permit Class 2 frames, or mesh peering Management frames for AMPE utilizing SAE authentication, to be exchanged between the two STAs; or for a MLD to establish authentication with a specified peer MAC entity in order to permit Class 2 frames to be exchanged between the two MLDs. During the authentication procedure, the SME might generate additional MLME-AUTHENTICATE.request primitives.

(11ah)(#2366)If dot11S1GCentralizedAuthenticationControlActivated is true and a STA’s MAC variable AuthenticationRequestTransmission is false, then the STA shall not invoke this primitive.

**6.3.5.2.4 Effect of receipt**

This primitive initiates an authentication procedure. In the case that a response is received from the responder STA or MLD, the MLME subsequently issues an MLME-AUTHENTICATE.confirm primitive that reflects the results.

**6.3.5.3 MLME-AUTHENTICATE.confirm**

***TGbe editor: Modify the following subclause as follows***

**6.3.5.3.1 Function**

This primitive reports the results of an authentication attempt with a specified peer MAC entity.

**6.3.5.3.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-AUTHENTICATE.confirm( PeerSTAAddress,

…

Multi-Link,

VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process.  |
| …. |  |  |  |
| Multi-Link | Multi-Link element | As defined in 9.4.2.247b (Multi-Link element) | Indicates the Multi-Link parameters of the MLD. This parameter is present if dot11MultiLinkActivated is true and is absent otherwise. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.25(Vendor Specific element) | Zero or more elements. |

**6.3.5.3.3 When generated**

This primitive is generated by the MLME as a result of an MLME-AUTHENTICATE.request primitive to authenticate with a specified peer MAC entity.

**6.3.5.3.4 Effect of receipt**

The SME is notified of the results of the authentication procedure.

**6.3.5.4 MLME-AUTHENTICATE.indication**

***TGbe editor: Modify the following subclause as follows***

**6.3.5.4.1 Function**

This primitive indicates receipt of a request from a specific peer MAC entity to establish an authentication relationship with the STA or MLD processing this primitive.

**6.3.5.4.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-AUTHENTICATE.indication( PeerSTAAddress,

….

Multi-Link,

VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process.  |
| …. |  |  |  |
| Multi-Link | Multi-Link element | As defined in 9.4.2.247b (Multi-Link element) | Indicates the Multi-Link parameters of the MLD. This parameter is present if dot11MultiLinkActivated is true and is absent otherwise. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.25(Vendor Specific element) | Zero or more elements. |

**6.3.5.4.3 When generated**

This primitive is generated by the MLME as a result of the receipt of an authentication request from a specific peer MAC entity.

**6.3.5.4.4 Effect of receipt**

The SME is notified of the receipt of the authentication request.

**6.3.5.5 MLME-AUTHENTICATE.response**

***TGbe editor: Modify the following subclauses as follows***

**6.3.5.5.1 Function**

This primitive is used to send a response to a specific peer MAC entity that requested authentication with the STA, or MLD that issued this primitive.

**6.3.5.5.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-AUTHENTICATE.response(

PeerSTAAddress,

…

Multi-Link,

VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process.  |
| …. |  |  |  |
| Multi-Link | Multi-Link element | As defined in 9.4.2.247b (Multi-Link element) | Indicates the Multi-Link parameters of the MLD. This parameter is present if dot11MultiLinkActivated is true and is absent otherwise. |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.25(Vendor Specific element) | Zero or more elements. |

**6.3.5.5.3 When generated**

This primitive is generated by the SME of a STA or MLD as a response to an MLME-AUTHENTICATE.indication primitive.

**6.3.5.5.4 Effect of receipt**

This primitive initiates transmission of a response to the specific peer MAC entity that requested authentication.

**6.3.6 Deauthenticate**

***TGbe editor: Modify the following subclauses as follows***

**6.3.6.1 Introduction**

This mechanism supports the process of invalidating an authentication relationship with a peer MAC entity.

**6.3.6.2 MLME-DEAUTHENTICATE.request**

**6.3.6.2.1 Function**

This primitive requests that the authentication relationship with a specified peer MAC entity be invalidated.

**6.3.6.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DEAUTHENTICATE.request(

PeerSTAAddress,

ReasonCode,

VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process. |
| …. |  |  |  |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.25(Vendor Specific element) | Zero or more elements. |

**6.3.6.2.3 When generated**

This primitive is generated by the SME for a STA to invalidate authentication with a specified peer MAC entity in order to prevent the exchange of Class 2 frames, or mesh peering Management frames for AMPE utilizing SAE authentication, between the two STAs; or for a MLD to invalidate authentication with a specified peer MAC entity in order to prevent the exchange of Class 2 frames between the two MLDs. During the deauthentication procedure, the SME might generate additional MLME-DEAUTHENTICATE.request primitives.

**6.3.6.2.4 Effect of receipt**

This primitive initiates a deauthentication procedure. The MLME subsequently issues an MLME-DEAUTHENTICATE.confirm primitive that reflects the results.

**6.3.6.3 MLME-DEAUTHENTICATE.confirm**

**6.3.6.3.1 Function**

This primitive reports the results of a deauthentication attempt with a specified peer MAC entity.

**6.3.6.3.2 Semantics of the service primitive**

The primitive parameter is as follows:

MLME-DEAUTHENTICATE.confirm(

PeerSTAAddress

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process.  |

**6.3.6.3.3 When generated**

This primitive is generated by the MLME as a result of an MLME-DEAUTHENTICATE.request primitive to invalidate the authentication relationship with a specified peer MAC entity.

**6.3.6.3.4 Effect of receipt**

The SME is notified of the results of the deauthentication procedure.

**6.3.6.4 MLME-DEAUTHENTICATE.indication**

**6.3.6.4.1 Function**

This primitive reports the invalidation of an authentication relationship with a specific peer MAC entity.

**6.3.6.4.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DEAUTHENTICATE.indication(

PeerSTAAddress,

ReasonCode,

VendorSpecificInfo

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress  | MacAddress  | Any valid individual MAC address | Specifies the address of the peer MAC entity with which to perform the authentication process.  |
| …. |  |  |  |
| VendorSpecificInfo | A set of elements | As defined in 9.4.2.25(Vendor Specific element) | Zero or more elements. |

**6.3.6.4.3 When generated**

This primitive is generated by the MLME as a result of the invalidation of an authentication relationship with a specific peer MAC entity.

**6.3.6.4.4 Effect of receipt**

The SME is notified of the invalidation of the specific authentication relationship.

**Straw Poll: Do you support to incorporate the proposed draft text in this document to the TGbe Draft 0.1?**

**Result: Yes/No/Abstain**