IEEE P802.11
Wireless LANs

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| MAC Address Change |
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Background

This contribution defines primitives for the SME to update the STA MAC Address. These primitives support MAC Privacy Enhancements.

### Background

Prior to this proposal, the only mechanisms available for changing a MAC address in IEEE 802.11 STA involve changing a MIB variable or using the MLME-reset primitive.

In IEEE Std1609.4, an UpdateSTAAddress MLME primitive for the IEEE 802.11 MAC was specified to allow an IEEE 802.11 STA to update its MAC address while operating in OCB mode. The rationale in defining the UPDATEMACADDRESS primitive was to preserve all the backoff timers for channel access and all frames queued in the MAC.

*Insert the following subclauses at the end of 6.3*

6.3.xxx MAC Address Update

6.3.xxx.1 MLME-UPDATEMACADDRESS.request

6.3.xxx.1.1 Function

The primitive indicates that a MAC address change is required.

6.3.xxx.1.2 Semantics of the service primitive

The primitive parameters are as follows:

MLME-UPDATEMACADDRESS.request(

STAAddress)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| STAAddress | MAC Address | Any valid individual MAC address | Specifies the MAC address that is to be used by the MAC entity.  |

6.3.xxx.1.3 When generated

This primitive is generated by the SME when a MAC address change is needed.

6.3.xxx.1.4 Effect of receipt

Receipt of this primitive causes the MAC to change the MAC address.

6.3.xxx.2 MLME-UPDATEMACADDRESS.confirm

6.3.xxx.2.1 Function

The primitive is generated by the MAC to indicate the result of a MAC address change.

6.3.xxx.2.2 Semantics of the service primitive

The primitive parameters are as follows:

MLME-UPDATEMACADDRESS.confirm(

ResultCode
)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| ResultCode | Enumeration | SUCCESS, FAILURE | Indicates the result of the MAC address change. |

6.3.xxx.2.3 When generated

This primitive is generated by the MLME in response to a request to change the MAC address. If the result of the MLME-UPDATEMACADDRESS.request primitive is FAILURE, either changing the MAC address is not supported, or the MAC address specified was not accepted.

6.3.xxx.2.4 Effect of receipt

The SME is notified of the result of the MAC address change.

*Modify the following subclause as follows:*

12.2.10 Effect of receipt Requirements for support of MAC privacy enhancements

MAC privacy enhancements are enabled on a non-AP STA when dot11MACPrivacyActivated is set to true. The STA shall periodically change its MAC address to a random value while not associated to a BSS. The STA shall construct the randomized MAC address from the locally administered address space as defined in IEEE Std 802®-2014 and IEEE Std 802c™-2017. However, the non-AP STA shall not change its MAC address during a transactional exchange, for example, transmitting Public Action frames for preassociation discovery, or during the creation of state on an AP using preassociation capabilities, for example, RSN preauthentication or FT over-the-DS. The smaller the period of MAC address change, down to a single transmitted frame per MAC address, the greater the privacy these enhancements afford. The actual period used when changing a MAC address is implementation dependent and outside the scope of this standard.

If such a non-AP STA starts any transaction that establishes state bound to a MAC address and might elect to establish an association or establish transaction state with a discovered BSS, it shall check the value of dot11LocallyAdministeredMACConfig and shall configure its MAC address according to the rules of the local address space prior to the start of the transaction. State created with an AP using a prior MAC address, for instance, RSN preauthentication state or FT state established over-the-DS, is bound to the MAC address used when that state was created. Prior to establishing an association to the AP, the non-AP STA shall change its MAC address to the MAC address used when the state was created.

The SME of the non-AP STA may change the MAC address by generating an MLME-UPDATEMACADDRESS.request primitive containing the new MAC address.  On receipt of an MLME-UPDATEMACADDRESS.request primitive, the MLME shall attempt to update the MAC address that is to be used by the MAC entity and shall generate an MLME-UPDATEMACADDRESS.confirm primitive to notify the SME whether the MAC address has been changed to the new value.