IEEE P802.11
Wireless LANs

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| TGbi Text Changes for MAC Privacy Enhancements section |
| Date: 2023-07-09 |
| Author(s): |
| Name | Company | Address | Phone | email |
| Carol Ansley | Cox Communications |  |  | carol@ansley.com |
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**Abstract**

This document contains proposed text for Section 4.5.4.10 MAC privacy enhancements and Section 9.2.4.3 Address Fields.

The text below is based on REVme D3.0 text and P802.11beD3.1 text.

4.5.4.10 MAC privacy enhancements

When a non-AP STA searches for, and connects to, an infrastructure BSS, IBSS, or PBSS or attempts to discover services on a network preassociation, it defines the addressing of its MAC layer for the particular connection, if Enhanced Data Privacy (EDP) is not used. If the STA uses a fixed MAC address it is trivial to track the STA. An MSDU transmitted by a STA is assigned a sequence number that, if never reset, can also be used to track a device irrespective of the MAC address. If OFDM is used, the PHY DATA scrambler used can enable tracking of a device irrespective of the MAC address if it is not reseeded. The dynamic nature of BSS membership combined with this tracking information allows for construction of a network of connections, locations, and behavior.

This network can be used to glean private and sensitive information regarding the individual behind the device. Furthermore, even without establishing a connection, a mobile or portable STA that gratuitously transmits Probe Request frames containing SSIDs of favored infrastructure BSS networks, or announces the existence of IBSS networks, can reveal potentially sensitive information about its location and location history. To mitigate this sort of traffic analysis a STA can support the ability to periodically and randomly change its MAC addresses and reset counters and seeds prior to association. A STA or MLD STA can support EDP features that enable OTA identifying information to be altered while a STA or MLD STA is associated and when it reassociates. APs as well as non-AP STAs can use EDP features to restrict OTA transmission of identifying parameters in management frames as well as data frames. AP MLDs as well as non-AP MLDs can use EDP features to restrict OTA transmission of identifying parameters. While discovering networks, a STA can refrain from gratuitously transmitting Probe Request frames containing SSIDs of favored BSS networks.

9.2.4.3 Address fields

9.2.4.3.1 General

There are four address fields in the MAC frame format. These fields are used to indicate the basic service set identifier (BSSID), source address (SA), destination address (DA), transmitting address (TA), and receiving address (RA). Certain frames might not contain some of the address fields. Certain address field usage is specified by the relative position of the address field (1–4) within the MAC header, independent of the type of address present in that field. Specifically, the Address 1 field always identifies the intended receiver(s) of the frame, and the Address 2 field, where present, always identifies the transmitter of the frame.

NOTE—In the case of a bandwidth signaling TA the Address 2 field is not equal to the MAC address of the transmitter.

NOTE—In the case of a device utilizing Enhanced Data Privacy (EDP) on the WM, the Address 1 and Address 2 fields can be randomized MAC addresses that are different from the OTA MAC address(es) used at association.

[note that this assumes viewing OTA content versus within/after processing – or a separate subsection for EDP]

9.2.4.3.2 Address representation

Each Address field contains a 48-bit address as defined in Clause 8 of IEEE Std 802-2014.

9.2.4.3.3 Address designation

A MAC sublayer address is one of the following two types:

1. Individual address. The address assigned to or chosen by a particular STA on the network.
2. Group address. A multidestination address, which might be in use by one or more STAs on a given network. The two kinds of group addresses are as follows:
3. Multicast-group address. An address associated by higher level convention with a group of logically related STAs.
4. Broadcast address. A distinguished, predefined group address that always denotes the set of all STAs on a given LAN. All 1s are interpreted to be the broadcast address. This group is predefined for each communication medium to consist of all STAs actively connected to that medium; it is used to broadcast to all of the active STAs on that medium.

9.2.4.3.7 RA field

The RA field contains a (#1893)MAC address that identifies the intended immediate recipient STA(s), on the WM, for the information contained in the frame body field.

NOTE—In the case of a device utilizing Enhanced Data Privacy (EDP), the RA field can be a randomized MAC address that is not equal to the OTA MAC address used at association or to the STA’s DS MAC address.

9.2.4.3.8 TA field

The TA field contains a (#1893)MAC address that identifies the STA that has transmitted, onto the WM, the MPDU contained in the frame body field. If the Individual/Group bit is 0, then the TA field is the individual address of the STA; otherwise, the TA field is a bandwidth signaling TA, indicating that the PPDU carries the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and, in some cases, DYN\_BANDWIDTH\_IN\_NON\_HT (see 17.2.2 (TXVECTOR parameters)).

NOTE—In the case of a device utilizing Enhanced Data Privacy (EDP), the TA field can be a randomized MAC address that is not equal to the OTA MAC address used at association or to the STA’s DS MAC address.