IEEE P802.11 Wireless LANs

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| Proposed Text Changes in 10.44.2 for TGai Comment Resolution |
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Abstract

This submission proposes text changes in subclause 10.44.2, as proposed resolutions to some comments of the TGai Working Group Technical Letter Ballot 198 on 802.11ai Draft 1.0.

# Introduction

As a response to IEEE 802.11 Working Group Technical Letter Ballot 198 for 802.11ai Draft 1.0[Ref-2], about 26 comments have been submitted on Subclause 10.44.2. Those comments were assigned to Lei Wang.

This contribution proposes resolutions to some of the assigned comments on 10.44.2, as discussed in the contribution 13/1215r3 [Ref-5].

# Conventions

In this contribution, the proposed 802.11ai Specification Document text will be presented as changes to the current TGai draft specification, 11ai/D1.1[Ref-3]. The following format conventions are used:

1. The newly added text is marked as blue underline text;
2. The deleted text is marked as ~~red strikethrough text~~;
3. The unchanged text stays in black text;
4. The editorial instruction is marked as *italic text highlighted by Yellow*; and
5. The corresponding comments are included by square bracketed green text like [CID nnnn], where nnnn is the CID number as given in the TGai WGLB comment database, 11-13-1076-04-00ai-tgai-lb-198-comments-for-d1-0.

# Proposed Changes to 802.11ai/D1.1 Specification Text

*Instructions to the editor: Make the following Changes in subclause 10.44.2:*

**10.44.2 FILS Discovery Frame Generation and Usage**

The FILS Discovery (FD) frame is a Public Action frame that contains the information to support a quick AP/Network Discovery for a FILS ~~fast initial link setup~~ [CID 2738]. The FD frame may be transmitted by an AP STA that ~~transmits Beacon frames and~~ [CID 2110, 2076, 3171] has dot11FILSActivated equal to true. If transmitted, the FD frame shall be transmitted at a data rate of 6Mbps or higher.

The FD ~~FILS Discovery~~ frame [CID 2116] may be transmitted as non-HT duplicate PPDUs ~~at 20MHz of the 20, 40, 80 and 160 MHz~~ [CID 2108] (given the DFS ownership of the transmitter) at 5GHz band. When an FD frame is transmitted as non-HT duplicate PPDUs, the primary channel is indicated by its Primary Channel field. [CID 2856]

The FD ~~FILS Discovery~~ frame [CID 2116] may be transmitted between Beacon frame instances. The interval between Beacon frame and the FD ~~FILS Discovery~~ frame [CID 2116] and the interval between two FD ~~FILS Discovery~~ frames [CID 2116] shall be no less than dot11FILSFDframeBeaconMinimumInterval.

During scanning, when a STA with dot11FILSActivated equal to true receives an FD frame, if the SSID in the FD frame matches the SSID parameter or one of the SSIDs in the SSID List parameter in the MLMESCAN. request primitive, and if the ReportingOption in the MLMS-SCAN.request is IMMEDIATE, the MLME shall issue an MLME-SCAN.confirm primitive with the information obtained from the received FD frame immediately after the reception of each FD frame. [CID 2940]

~~The~~ ~~format of the FILS Discovery (FD) frame is defined in 8.5.8.35.~~ [CID 2117, 2374, 3172]

A FD ~~FILS Discovery~~ frame [CID 2116] shall contain the SSID of the transmitting AP STA, to advertise the existence of the BSS on the channel.

A FD ~~FILS Discovery~~ frame [CID 2116] may contain a 2-octet FD Capability field as defined in Figure 8-502k in 8.5.8.35, [CID 2112] which provides the receiving STAs capability information of the AP. The purpose of the FD Capability field is to assist a fast AP selection process.

A FD ~~FILS Discovery~~ frame [CID 2116] may contain a 1-octet FD AP's Next TBTT Offset (ANTO) field that indicates the time offset, in number of TUs, between the transmission of the FD ~~FILS Discovery~~ frame [CID 2116] and the next TBTT. After receiving a FD ~~FILS Discovery~~ frame [CID 2116] with the ANTO field, if a STA needs further information from the AP for its initial link setup, the STA should use the information provided by the FD ANTO field to decide whether or not to wait for the next Beacon transmission, to probe the AP, or to switch to other channels. ~~For example, if the FD ANTO field indicates a long waiting time for next TBTT, the STA may switch to scan another channel and come back to this channel to receive the next Beacon frame, or the STA may send a Probe Request frame.~~ [CID 2113]

A FD ~~FILS Discovery~~ frame [CID 2116] may contain a 7-bit ~~1-octet~~ AP-CSN ~~CCC~~ [2784,3203, 3229] subfield that is set to the current version number of AP ~~C~~configuration ~~I~~information ~~S~~set [CID 2308], as defined in 10.1.4.3.10. If a non-AP STA retains AP ~~C~~configuration ~~I~~information ~~S~~sets [CID 2308] of the preferred APs which the STA has previously obtained, the non-AP STA shall use the received FD AP-CCC information as follows:

* + The STA checks if it has the AP's configuration information set in its retained configuration information sets;
	+ If yes, the STA compares the AP-CSN ~~CCC~~ [2784,3203, 3229] value in the received FD frame to that in its record;
	+ if the values are equal, then the non-AP STA has ~~the information of~~ [CID 2530] the AP's current configuration information set that enables the non-AP STA to initiate the FILS ~~fast initial link setup~~ [CID 2738] procedure, without waiting for next Beacon frame or Probe Response frame;
	+ Otherwise, the non-AP STA does not have valid information of the AP's configuration information set. It needs to wait for Beacon frame or conduct active scanning to obtain the AP's configuration information set. [CID 2958, 3344]

A FD ~~FILS Discovery~~ frame [CID 2116] may contain a 1-octet FD Access Network Options (ANO) field as specified in Figure 8-352 in 8.4.2.94. The ANO field in the FD ~~FILS Discovery~~ frame [CID 2116] provides information about the access network that the AP is connected to, which is intended to assist the receiving STAs with its AP/Network selections.

A FD ~~FILS Discovery~~ frame [CID 2116] may contain a Reduced Neighbor Report Information Element (IE) as defined in Figure 8.4.2.176 and specified in Figure 10.44.3. The Reduced Neighbor Report IE in the FD ~~FILS Discovery~~ frame [CID 2116] provides the receiving non-AP STAs the information about Neighbor APs for a fast AP discovery.

A FD frame may contain a FILS Indication element to provide non-AP STAs the information about FILS Authentication service and FILS Higher Layer setup methods. [CID 2857]

# References

1. IEEE Std 802.11mc/D1.5
2. IEEE Std 802.11ai/D1.0
3. IEEE Std 802.11ai/D1.1
4. 11-13-1076-04-00ai-tgai-lb-198-comments-for-d1-0
5. 11-13-1215-03-00ai-proposed-resolution-to-assigned-tgai-lb-198-comments