IEEE P802.11
Wireless LANs

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| Resolution for CIDs related to TDLS |
| Date: February 16, 2023 |
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 Abstract

This submission proposes resolutions for the following 7 CIDs received against REVme D2.0 during LB270:

3002 3003 3004 3013 3012 3020 3021

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: minor revision based on offline feedback from Mark R.

***TGm editor: Please note baseline for this document is REVme D2.1***

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGm Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGm Draft (i.e., they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGm Editor: Editing instructions preceded by “TGm Editor” are instructions to the TGm editor to modify existing material in the TGm draft. As a result of adopting the changes, the TGm editor will execute the instructions rather than copy them to the TGm Draft.***

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| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 3002 | Abhishek Patil | 982.35 | 9.4.2.26 | Clarify that bits 29 & 30 are reserved for an AP and are set to 0. In other words, these fields are valid only for a non-AP STA that supports TDLS. | As in comment | **Revised**Agree with the comment. The ‘Notes’ column for bits 29 and 30 are updated to clarify that the subfield applies only for non-AP STA and is reserved for an AP. A few editorial fixes were made along the way.**TGm editor, please make changes as shown in 11-23/0236r1 tagged 3002** |
| 3003 | Abhishek Patil | 983.20 | 9.4.2.26 | The usage of TDLS Support field is not clear. There is no corresponding text in clause 11.20 or anywhere else in the spec explaining the behavior associated with this field. In addition, since TDLS is transparent to an AP, if this field is indeed in use, clarify that this field is reserved for an AP and is set to 0. If the field is not in use, perhaps remove it from the spec and release bit 37 (mark as Reserved for future use). | As in comment | **Revised**Agree with the comment. Based on offline discussions with a few members, it was decided to keep the subfield (for legacy compliance). The description is updated to clarify that the subfield is valid only for a non-AP STA and is reserved for an AP. Furthermore, a sentence is added to clause 11.20 which says that a non-AP STA that supports this feature sets the bit to 1.**TGm editor, please make changes as shown in 11-23/0236r1 tagged 3003** |
| 3004 | Abhishek Patil | 983.25 | 9.4.2.26 | Clarify that bits 38 & 39 are reserved for non-AP STA and are set to 0. In other words, these fields are valid only for an AP. | As in comment | **Revised**Agree with the comment. The ‘Notes’ column for bits 38 and 39 are updated to clarify that the subfield applies only for an AP STA and is reserved for a non-AP AP. A few editorial fixes were made along the way.**TGm editor, please make changes as shown in 11-23/0236r1 tagged 3004** |
| 3013 | Abhishek Patil | 1563.58 | 9.6.7.16 | HE 6 GHz Capabilities IE is missing in TDLS Discovery Response frames. | Add HE 6 GHz Capabilities element to Table 9-457. | **Revised**Agree with the comment. A non-AP HE STA, that supports operating in 6 GHz, must be able to provide its 6 GHz band capabilities during discovery and setup. HE 6 GHz Band Capabilities element is included in TDLS Discovery Response frame and TDLS Setup (Req/Resp) frames but missing in TDLS Discovery Request frame. Table under TDLS Discovery Response frame is updated to include this element.**TGm editor, please make changes as shown in 11-23/0236r1 tagged 3013** |
| 3012 | Abhishek Patil | 1563.23 | 9.6.7.16 | RSN Extension element is missing in TDLS discovery/setup frames | TDLS setup/discovery frames that include RNSE need to be updated to also include RSN Extension IE. | **Revised**Agree with the comment. A non-AP HE STA, that supports extended RSN capabilities must be able to provide its advance security capabilities during TDLS Discovery and Setup. The tables under TDLS Discovery Req/Resp and TDLS Setup Req/Resp/Confirm are updated to include RSNX element.**TGm editor, please make changes as shown in 11-23/0236r1 tagged 3012** |
| 3020 | Abhishek Patil | 2561.36 | 11.20.6.2 | Operating on a 6 GHz channel requires regulatory considerations (e.g., check with AFS system to ensure the channel is OK to use). A non-AP STA that wants to establish off channel TDLS direct link needs to ensure that the off-channel is safe to be used (e.g. there are no licensed users operating on the channel etc). | Provide a mechanism for a non-AP STA to determine the regulatory requirements on a 6 GHz channel before establishing off-channel TDLS direct link on that channel. | **Revised**Agree with the comment. Operating in 6 GHz requires additional considerations as described in clause E.2.7. A TDLS STA that intends to operate on an off-channel must determine and meet the regulatory requirements to operate on that channel. The STA can consult its associated AP by following the existing Channel Usage procedures. **TGm editor, please make changes as shown in 11-23/0236r1 tagged 3020** |
| 3021 | Abhishek Patil | 2563.04 | 11.20.6.5.1 | Support for HT and HE seems to be missing this subclause. | As in comment | **Revised**Agree with the comment. Text in subclause 11.20.6.5.1 is updated to cover HT. The HE STA case is covered since an HE STA is also a VHT STA, and the spec already provides rules for VHT STA. Fixed a bug (Operating Class “field” not “element”).**TGm editor, please make changes as shown in 11-23/0236r1 tagged 3021** |

* Extended Capabilities element

***TGm editor: Please update the rows identified below in Table 9-190 as shown below:***

|  |
| --- |
| * Extended Capabilities field
 |
| Bit | Information | Notes |
| 29 | TDLS Peer PSM Support | [3002]The TDLS Peer PSM Support subfield indicates support for TDLS peer PSM, as defined in 11.2.3.12 (TDLS peer power save mode). A non-AP STA that has dot11TDLSPeerPSMActivated equal to true indicates support for TDLS peer PSM by setting the TDLS Peer PSM Support subfield to 1. Otherwise, the TDLS Peer PSM Support subfield is set to 0 to indicate that this capability is not supported on this link.This subfield is reserved for an AP. |
| 30 | TDLS channel switching | [3002]A non-AP STA that has dot11TDLSChannelSwitchingActivated equal to true indicates support for TDLS with TDLS channel switching as described in 11.20 (Tunneled direct link setup) by setting the TDLS Channel Switching subfield to 1. Otherwise, the TDLS Channel Switching subfield is set to 0 to indicate that this capability is not supported on this link.This subfield is reserved for an AP. |
| … | … | … |
| 37 | TDLS Support | [3003]The TDLS Support subfield indicates support for TDLS, as defined in 11.20 (Tunneled direct link setup). A non-AP STA that has dot11TunneledDirectLinkSetupImplemented equal to true sets this subfield to 1 to indicate support for TDLS and is set to 0 to indicate that TDLS is not supported.This subfield is reserved for an AP. |
| 38 | TDLS Prohibited | [3004]The TDLS Prohibited subfield indicates whether the use of TDLS is prohibited. An AP sets this subfield to 1 to indicate that TDLS is prohibited and to 0 to indicate that TDLS is allowed.This subfield is reserved for a non-AP STA. |
| 39 | TDLS Channel Switching Prohibited | [3004]The TDLS Channel Switching Prohibited subfield indicates whether the use of TDLS Channel Switching is prohibited. An AP sets this subfield to 1 to indicate that TDLS Channel Switching is prohibited and to 0 to indicate that TDLS Channel Switching is allowed.This subfield is reserved for a non-AP STA. |

* Tunneled direct link setup
* General

***TGm editor: Please add the following as the 3rd paragraph (after NOTE 1) in this subclause shown below:***

[3003]A non-AP STA that has dot11TunneledDirectLinkSetupImplemented equal to true shall set the TDLS Support subfield to 1 in the Extended Capabilities element that it transmits.

* TDLS Discovery Response frame format

***TGm editor: Please add the following new rows to Table 9-458 as shown below:***

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| * TDLS Discovery Response frame Action field format
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| Order | Information | Notes |
| [3013]<ANA> | HE 6 GHz Band Capabilities | The HE 6 GHz Band Capabilities element is present if dot11HEOptionImplemented and dot11HE6GOptionImplemented are true; otherwise, it is not present. |
| [3012]<ANA> | RSN Extension | The RSNXE is present if any subfield of the Extended RSN Capabilities field in this element is nonzero, except the Field Length subfield. |

* TDLS Setup Request Action field format

***TGm editor: Please add the following new row to Table 9-498 as shown below:***

|  |
| --- |
| * Information for TDLS Setup Request Action field
 |
| Order | Information | Notes |
| [3012]<ANA> | RSN Extension | The RSNXE is present if any subfield of the Extended RSN Capabilities field in this element is nonzero, except the Field Length subfield. |

* TDLS Setup Response Action field format

***TGm editor: Please add the following new row to Table 9-499 as shown below:***

|  |
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| * Information for TDLS Setup Response Action field
 |
| Order | Information | Notes |
| [3012]<ANA> | RSN Extension | The RSNXE is present if any subfield of the Extended RSN Capabilities field in this element is nonzero, except the Field Length subfield. |

* TDLS Setup Confirm Action field format

***TGm editor: Please add the following new row to Table 9-500 as shown below:***

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| * Information for TDLS Setup Confirm Action field
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| Order | Information | Notes |
| [3012]<ANA> | RSN Extension | The RSNXE is present if any subfield of the Extended RSN Capabilities field in this element is nonzero, except the Field Length subfield. |

11.20.6.2 General behavior on the off-channel

***TGbe editor: Please add the following paragraph as the last paragraph of this subclause as shown below:***

[3020]A non-AP STA shall not establish an off-channel TDLS direct link on a 6 GHz channel unless it meets all the regulatory requirements for operating on that channel (see E.2.7 (6 GHz band)).

NOTE – A non-AP STA that intends to establish an off-channel TDLS direct link on a 6 GHz channel can follow the procedures described in 11.21.15 (Channel usage procedures) to seek guidance from its associated AP. A non-AP STA can have other means to determine the regulatory requirements for establishing the link. If a non-AP STA is unable to determine or meet the requirements, then it can establish a TDLS direct link on the channel(s) that overlap with the ones used by its AP.

11.21.15 Channel usage procedures

***TGbe editor: Please add the following paragraph after the 12th paragraph of this subclause as shown below:***

[3020]A non-AP STA that intends to start on a 6 GHz channel an off-channel noninfrastructure network or an off-channel TDLS direct link and had sent a Channel Usage element containing at least one 6 GHz channel to its associated AP shall use the information that is received in the Channel Usage Response frame from the AP during the 6 GHz channel selection process.

* **Setting up a wide bandwidth off-channel TDLS direct link**
* **General**

[3021]A wideband TDLS off-channel TDLS direct link is a 40 MHz, 80 MHz, 160 MHz, or 80+80 MHz off-channel TDLS direct link for VHT STAs or 40 MHz off-channel TDLS direct link for HT STAs or a 2 MHz, 4 MHz, 8 MHz, or 16 MHz off-channel TDLS direct link for S1G STAs.

[3021]A wideband off-channel TDLS direct link may be started if both TDLS peer STAs indicated wideband support in the VHT Capabilities element, wideband support in the HT Capabilities element or S1G Capabilities element included in the TDLS Setup Request frame or the TDLS Setup Response frame.

Switching to a wideband off-channel TDLS direct link is achieved by including any of the following information in the TDLS Channel Switch Request frame:

* An Operating Class [3021]field indicating 40 MHz Channel spacing and a Secondary Channel Offset element indicating SCA or SCB
* A Wide Bandwidth Channel Switch element indicating 80 MHz, 160 MHz, or 80+80 MHz channel width for VHT STAs
* A Wide Bandwidth Channel Switch element indicating 4 MHz, 8 MHz, or 16 MHz channel width for S1G STAs