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| LB271 CR on TDLS | | | | |
| Date: 2023.04.20 | | | | |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11be D3.0. The following 17 CIDs are resolved:

15059 16174 16281 16294 16463 18313 15477 15156 15568 15569 16979 16980 16982 16983 16984 16985 16987

Revisions:

- Rev 0: Initial version of the document.

- Rev 1: Adding green tags and updates per TGbe chair’s suggestions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | Clause | Page.  Line | Comment | **Proposed Change** | **Resolution** |
| 15059 | Michail Koundourakis | 35.3.21 | 0.00 | TDLS direct link using an NSTR link can result in highly inefficient usage of the link pair; the NSTR AP MLD does not know when the non-AP STA uses a link for the direct link and may transmit on the other link. Add ML information in the TDLS Discovery/Setup frames so that the STAs can at least choose to not establish a direct path when the peer STA uses the link in an NSTR link pair. | As per comment, add sufficient ML information in the TDLS Discovery/Setup frames so that STAs can identify an NSTR link pair. | Rejected  This has been discussed in the last comment resolution period of the Working Group letter ballot but cannot reach consensus. Please refer to DCN11-22/1586r3. |
| 16174 | Rojan Chitrakar | 35.3.21.2 | 577.05 | Between two MLDs, TDLS direct link setup and transmissions should be supported on multiple links. | Expand the TDLS direct link setup and transmissions to multiple links between two MLDs. | Rejected  This has been discussed in the comment resolution period of the last Working Group letter ballot but cannot reach consensus. Based on the discussion, it’s not easy to define the specification for multiple TDLS direct links. Please refer to DCN11-22/1796r0  Note to the commenter: Additional discussion is provided in this document. |
| 16281 | Ryuichi Hirata | 35.3.21 | 576.40 | TDLS direct link over multiple links is missing. | as in the comment. | Rejected  This has been discussed in the comment resolution period of the last Working Group letter ballot but cannot reach consensus. Based on the discussion, it’s not easy to define the specification for multiple TDLS direct links. Please refer to DCN11-22/1796r0  Note to the commenter: Additional discussion is provided in this document. |
| 16294 | Pascal VIGER | 35.3.21.1 | 582.46 | TDLS procedure in multi-link operation is not defined but shall be in order to offer great benefits of ML feature for direct streams. TDLS is important as it offloads traffic for AP, so AP MLD can benefit of this also on several links. Multiple single-link TDLS is too heavy process. | Please define the specification for multiple link TDLS in a new section. The Multi-link IE is already present in the single-link TDLS framing, and can be extended to support multiple links. | Rejected  This has been discussed in the comment resolution period of the last Working Group letter ballot but cannot reach consensus. Based on the discussion, it’s not easy to define the specification for multiple TDLS direct links. Please refer to DCN11-22/1796r0  Note to the commenter: Additional discussion is provided in this document. |
| 16463 | Qing Xia | 35.3.21.1 | 576.53 | Current standard lacks a mechanism to establish multi-link TDLS direct links with a peer non-AP MLD over a single link. Add a mechanism to establish multi-link TDLS direct links with a peer non-AP MLD over a single link. | As in comment | Rejected  This has been discussed in the comment resolution period of the last Working Group letter ballot but cannot reach consensus. Based on the discussion, it’s not easy to define the specification for multiple TDLS direct links. Please refer to DCN11-22/1796r0  Note to the commenter: Additional discussion is provided in this document. |
| 18313 | Yusuke Tanaka | 35.3.21.2 | 577.05 | TDLS setting only over single link is inefficient and causes overhead for starting TDLS operation. | Please define TDLS setting considring multiple links such as configuring TDLS setting for multiple links with one TDLS configuration. | Rejected  This has been discussed in the comment resolution period of the last Working Group letter ballot but cannot reach consensus. Based on the discussion, it’s not easy to define the specification for multiple TDLS direct links. Please refer to DCN11-22/1796r0  Note to the commenter: Additional discussion is provided in this document. |
| 15477 | Xiandong Dong | 35.3.21 | 576.40 | The multiple TDLS links discovery/setup between two non-AP MLD should be added. | As in comment | Rejected  This has been discussed in the comment resolution period of the last Working Group letter ballot but cannot reach consensus. Based on the discussion, it’s not easy to define the specification for multiple TDLS direct links. Please refer to DCN11-22/1796r0  Note to the commenter: Additional discussion is provided in this document. |
| 15156 | Po-Kai Huang | 35.3.21.2 | 577.05 | Use non-AP STA affiliated with a non-AP MLD in the clause | Do the change for the descirptions related to the following figures: 35-37, 35-38, 35-39, 35-40, 35-41, 35-42, 35-43 | Rejected  Since STA1 and STA 2 are clearly described, there is no need to emphasize they are non-AP STAs. The current text is more concise than the proposed ones. |
| 15568 | Chaoming Luo | 35.3.21.1 | 576.48 | It's not clear whether another affiliated STA can negotiate another TDLS with the peer MLD over that single link. | Change to: A non-AP MLD shall only establish a single link TDLS direct link with a peer non-AP MLD. | Revised  Agree in principle. Delete this sentence to keep the door open for a future amendment to define a multi-link TDLS direct links. In addition, move NOTE1 after the next paragraph.  TGbe editor, please apply the changes with the CID tag (#15568) in 11/23-696r1 |
| 15569 | Chaoming Luo | 35.3.21.2 | 577.60 | Part of this paragragh duplicates with the paragraph at P577L43 | Merge the two and remove the redundant part. | Rejected  These two paragraphs describe different frames, namely one is about the TDLS Discovery Request/Response frame, and the other is about TDLS Setup Request frame. There is no redundancy. |
| 16979 | Mark RISON | 35.3.21.2 | 577.32 | "the link(s) on which the peer STA or non-AP MLD is operating on" -- too many ons | Delete the second "on" | Revised  TGbe editor, please apply the changes with the CID tag (#16979) in 11/23-696r1 |
| 16980 | Mark RISON | 35.3.21.2 | 577.40 | "the link where the intended peer STA is operating on" should be "the link on which the intended peer STA is operating" | As it says in the comment | Revised  Replace “where” with “on which”  TGbe editor, please apply the changes with the CID tag (#16980) in 11/23-696r1 |
| 16982 | Mark RISON | 35.3.21.2 | 577.53 | "After TDLS peer is successfully discovered" missing article | As it says in the comment | Accepted |
| 16983 | Mark RISON | 35.3.21.2 | 578.05 | "the frame carries TDLS Multi- Link element" missing article. Also line 11 | As it says in the comment | Revised  Add an article “the” before “TDLS Multi- Link element”  TGbe editor, please apply the changes with the CID tag (#16983) in 11/23-696r1 |
| 16984 | Mark RISON | 35.3.21.2 | 578.17 | "When at least one of the STAs that are involved in a single link TDLS setup, does not include TDLS Multi-Link element, in the frames exchanged during TDLS setup phase, the STAs shall derive the TPK as defined in Equation (12-1)." spurious commas and missing article | Delete the commas and add the missing article | Revised  Agree with the comment. Delete the commas and add an article “the” before “TDLS Multi-  Link element”  TGbe editor, please apply the changes with the CID tag (#16984) in 11/23-696r1 |
| 16985 | Mark RISON | 35.3.21.2 | 578.52 | "of Link Identifier element" missing article | As it says in the comment | Accepted |
| 16987 | Mark RISON | 35.3.21.2 | 578.38 | "In the example," -- there are two examples | Change to "In the examples," | Accepted |

**Discussion:**

For the multiple TDLS direct link setup, the following two scenarios may also be considered. In the following scenarios, TDLS direct link 1 should be allowed to establish.



Figure Scenario 1



Figure Scenario 2

TGbe editor: Change the following subclause as follows:

###### 

###### 21 TDLS procedure in multi-link operation

* + - 1. **General**

When the frames that are exchanged during TDLS discovery or setup do not include a TDLS Multi-Link element or include a TDLS Multi-Link element containing only the Common Info field carrying only the AP MLD MAC Address, then the TDLS direct link discovery or setup respectively, is for a single link. (#15568)

A non-AP MLD that intends to establish a single link TDLS direct link with a peer STA on one of its links follows the procedures defined in 11.20 (Tunneled direct-link setup), with additional rules as defined in

* + - 1. [(TDLS direct link over a single link)](#bookmark106).

(#15568)NOTE 1—The single link TDLS direct link can be established between a non-AP STA affiliated with a non-AP MLD and another non-AP STA that might not be affiliated with a non-AP MLD.

TDLS discovery and setup (typically discovery frame exchange followed by setup frame exchange) between a non-AP MLD and a peer STA involves frames that are sent and received via an intermediate AP (MLD) or sent and received through direct communication (see Table 11-13a (Frame type and their pathway in a TDLS setup)).

NOTE 2—As an alternative to transmitting a TDLS Discovery Request frame, a non-AP MLD can discover a TDLS peer by sending an unsolicited TDLS Discovery Response frame or a TDLS Setup Request frame without exchanging TDLS discovery frames (see 11.20.3 (TDLS discovery)).

**35.3.21.2 TDLS direct link over a single link**

When a non-AP MLD that has performed multi-link setup with an AP MLD establishes a single link TDLS direct link on one of its links, it shall set the context (i.e., security, SN/PN, BA) for the TDLS direct link with respect to the MLD MAC address of the non-AP MLD. For ease of description in the rest of this subclause, the single link TDLS context is described with respect to a TDLS non-AP STA affiliated with the non-AP MLD. The TDLS non-AP STA affiliated with the non-AP MLD shall be able to receive frames sent over the direct link with RA field set to the MLD MAC address of the non-AP MLD. When a TDLS non-AP STA affiliated with the non-AP MLD initiates TDLS discovery or TDLS setup, it shall set the TA field of frames sent over the TDLS direct link to the MLD MAC address of the non-AP MLD.

Frames that traverse the intermediate AP (MLD) are sent or received by a non-AP STA affiliated with a non- AP MLD. Frames sent over the direct link are sent or received by a TDLS non-AP STA affiliated with the non-AP MLD. The TDLS direct link, when successfully established, is between the TDLS non-AP STA affiliated with the non-AP MLD and a TDLS peer STA at the other end of the direct link.

If the TDLS initiator is a non-AP MLD, then the TDLS initiator STA Address field contained in the Link Identifier element of the TDLS frames shall be set to the MLD MAC address of the non-AP MLD.

When a non-AP MLD initiates a TDLS discovery operation, it may need to transmit more than one TDLS Discovery Request frame with the BSSID field of the Link Identifier element set to a different BSSID in each attempt. In each instance, the attempted BSSID corresponds to a different AP affiliated with the AP MLD. Since the TDLS Discovery Response frame is received over the direct link, the initiating non-AP MLD shall be able to determine the link(s) on which the peer STA or non-AP MLD is operating(#16979).

NOTE 1—Due to the nature of multi-link operation, when a Data frame traverses an AP MLD, it can be relayed on any available link. Furthermore, when a frame that was transmitted by a STA of a non-AP MLD traverses an AP MLD, the AP MLD sets the SA field to the transmitting STA’s non-AP MLD MAC address. Therefore, when a non-AP STA affiliated with a non-AP MLD receives a frame from its corresponding associated AP that is affiliated with an AP MLD, it cannot determine the link where the frame originated from and it cannot determine if the initiating STA is affiliated with a non-AP MLD or not. Consequently, the non-AP MLD initiating a TDLS discovery does not know the BSSID of the link (#16980)on which the intended peer STA is operating on.

When attempting to establish a TDLS direct link over a single link, a TDLS non-AP STA affiliated with a non-AP MLD shall include a TDLS Multi-Link element containing only the Common Info field carrying only the AP MLD MAC Address field (see 9.4.2.312.5 (TDLS Multi-Link element)) in the TDLS Discovery Request frame and TDLS Discovery Response frame that it transmits. A TDLS non-AP STA affiliated with a non-AP MLD shall not respond to a TDLS Discovery Request frame if the frame carries TDLS Multi-Link element and the MLD MAC address carried in the AP MLD MAC Address field of the TDLS Multi-Link element does not match the MLD MAC address of the AP MLD with which the non-AP MLD has performed multi-link setup.

After (#16982)the TDLS peer is successfully discovered, the non-AP MLD shall set the BSSID field contained in the Link Identifier element of the subsequent TDLS frames to the BSSID of the corresponding AP affiliated with the AP MLD that is operating on the link on which the TDLS direct link is established or being established.

When attempting to establish a TDLS direct link over a single link, a TDLS non-AP STA affiliated with a non-AP MLD shall include the TDLS Multi-Link element containing only the Common Info field carrying only the AP MLD MAC Address field (see 9.4.2.312.5 (TDLS Multi-Link element)) in the TDLS Setup Request frame. A TDLS non-AP STA affiliated with a non-AP MLD shall not respond to a TDLS Setup Request frame if the frame carries TDLS Multi-Link element and the MLD MAC address carried in the AP MLD MAC Address field of the TDLS Multi-Link element does not match the MLD MAC address of the AP MLD with which the non-AP MLD has performed multi-link setup. A TDLS non-AP STA affiliated with a non-AP MLD shall include the TDLS Multi-Link element in the TDLS Setup Response frame if the soliciting TDLS Setup Request frame included (#16983)the TDLS Multi-Link element. A TDLS non-AP STA affiliated with a non-AP MLD shall not respond to a TDLS Setup Response frame if the frame carries TDLS Multi- Link element and the MLD MAC address carried in the AP MLD MAC Address field of the TDLS Multi- Link element does not match the MLD MAC address of the AP MLD with which the non-AP MLD has performed multi-link setup. A TDLS non-AP STA affiliated with a non-AP MLD shall include the TDLS Multi-Link element in the TDLS Setup Confirm frame if the preceding TDLS Setup Response frame included (#16983)the TDLS Multi-Link element.

When both STAs that are involved in a single link TDLS setup include a TDLS Multi-Link element carrying the AP MLD MAC Address field in the frames exchanged during the TDLS setup phase, the TDLS TPK generation shall include the AP MLD MAC address in addition to the MAC address of the affiliated AP where the TDLS direct link is being established, as defined in Equation (12-2). (#16984)When at least one of the STAs that are involved in a single link TDLS setup does not include the TDLS Multi-Link element, in the frames exchanged during TDLS setup phase, the STAs shall derive the TPK as defined in Equation (12-1).

After a TDLS direct link is successfully established between the TDLS non-AP STA affiliated with a non- AP MLD and a TDLS peer STA at the other end of the TDLS direct link, STAs affiliated with the non-AP MLD shall cease transmitting MSDUs to the TDLS peer, at the other end, through their associated AP that is affiliated with the AP MLD to which the non-AP MLD has performed multi-link setup.

NOTE 2—The non-AP STAs affiliated with the non-AP MLD can transmit/receive frames to/from other STAs or the DS via the AP MLD.

[Figure 35-37 (Example A of TDLS discovery initiated by a non-AP MLD)](#bookmark107) and [Figure 35-38 (Example B of](#bookmark108) [TDLS discovery initiated by a non-AP MLD)](#bookmark108) illustrate the scenario where the TDLS discovery is initiated by a non-AP MLD (MLD\_S). MLD\_S has performed multi-link setup with an AP MLD (MLD\_A). MLD\_S has two affiliated STAs, STA1 and STA2. STA3 is not capable of performing multi-link operation and is not affiliated with a non-AP MLD. MLD\_A has two affiliated APs, AP1 and AP2, where AP1 operates on link 1 and AP2 operates on link 2. STA1 and STA3 operate on link 1 and are associated with AP1. STA2 operates on link 2 and is associated with AP2. In the (#16987)examples, MLD\_S initiates TDLS discovery by transmitting two TDLS Discovery Request frames (which are Data frames) as it does not know which link STA3 is operating on and whether STA3 is an MLD or a STA not affiliated with an MLD. The first TDLS Discovery Request frame (shown in [Figure 35-37 (Example A of TDLS discovery initiated by a non-AP MLD)](#bookmark107)) has the BSSID field in the Link Identifier element set to the BSSID of AP1 and the second TDLS Discovery Request frame has this field set to the BSSID of AP2 (shown in [Figure 35-38 (Example B of TDLS discovery initiated by a](#bookmark108) [non-AP MLD)](#bookmark108)). Both the frames have their A3 (DA) set to the STA3 MAC address and the To DS subfield of the Frame Control field set to 1. The TDLS Discovery Request frame can be transmitted over either link 1 (through STA1 as represented by solid line) or link 2 (through STA2 as represented by dotted line). When the TDLS Discovery Request frame is received at the AP MLD (i.e., through AP1 or AP2), it routes the frame to STA3, through AP1 by setting the From DS subfield of the Frame Control field to 1 and A3 (SA) to the non-AP MLD Address (i.e., MLD\_S). STA3 discards the TDLS Discovery Request frame that had the BSSID field of (#16985)the Link Identifier element set to BSSID of AP2 as it does not recognize the BSSID. STA3 recognizes the BSSID set to AP1 and responds with a TDLS Discovery Response frame, which is a Management frame, with the RA set to the MLD\_S and both To DS and From DS subfields set to 0. STA3 ignores the TDLS Multi-Link element as it does not recognize this element. The TDLS STA affiliated with MLD\_S receives the TDLS Discovery Response frame, which is sent on the TDLS direct link (see Table 11- 13a (Frame type and their pathway in a TDLS setup)). The TDLS initiator STA Address field and the TDLS responder STA Address field contained in the Link Identifier element (denoted as LI in the figure) are carried in the TDLS Discovery Request frame and in the TDLS Discovery Response frame and are set to MLD\_S and STA3, respectively.



Mgmt frame [ TDLS Disc Resp

{ A1 (RA)=MLD\_S, A2 (TA)=STA3, A3 (BSSID)=AP1 },

{LI (MLD\_S, STA3, AP1)} ]

Link 1

STA1

Data frame [ TDLS Disc Req

{ A1 (RA)=AP1, A2 (TA)=STA1, A3 (DA) = STA3 },

{ LI (MLD\_S, STA3, AP1) } ]

AP1

Data frame [ TDLS Disc Req

{ A1 (RA)=STA3, A2 (TA)=AP1, A3 (SA)=MLD\_S } ,

{ LI (MLD\_S, STA3, AP1) } ]

STA3

Link 2

STA2

Data frame [ TDLS Disc Req

{ A1 (RA)=AP2, A2 (TA)=STA2, A3 (DA) = STA3 },

{ LI (MLD\_S, STA3, AP1) } ]

AP2

STA3 processes the frame since the value

carried in the BSSID field of Link Identifier element matches AP1 and TDLS responder STA

Address field matches STA3's MAC address

MLD\_S

MLD\_A

**A)**

**Figure 35-37—Example A of TDLS discovery initiated by a non-AP MLD**



Link 1

STA1

Data frame [ TDLS Disc Req

{ A1 (RA)=AP1, A2 (TA)=STA1, A3 (DA) = STA3 },

{ LI (MLD\_S, STA3, AP2) } ]

AP1

Data frame [ TDLS Disc Req

{ A1 (RA)=STA3, A2 (TA)=AP1, A3 (SA)=MLD\_S } ,

{ LI (MLD\_S, STA3, AP2) } ]

X

STA3

Link 2

STA2

Data frame [ TDLS Disc Req

{ A1 (RA)=AP2, A2 (TA)=STA2, A3 (DA) = STA3 },

{ LI (MLD\_S, STA3, AP2) } ]

AP2

STA3 discards the frame since the

value carried in the BSSID field of Link Identifier element doesn’t match AP1

MLD\_S

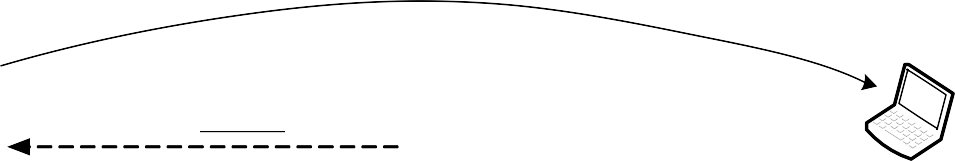
MLD\_A

**B)**

**Figure 35-38—Example B of TDLS discovery initiated by a non-AP MLD**

The same considerations apply for setting the fields in the Link Identifier element when the TDLS discovery is initiated by STA3 to establish a single link TDLS direct link with the non-AP MLD. In this scenario, since STA3 is not affiliated with a non-AP MLD and is not aware of MLD, the BSSID field of the Link Identifier element is set to the BSSID of AP1 and the TDLS Discovery Request frame does not carry a TDLS Multi- Link element.

Due to the nature of multi-link operation, it is possible that a Data frame sent by a STA is relayed on a different link when it traverses the AP MLD. As a result, it is possible that the TDLS Discovery Request frame (which is a Data frame) sent by STA3 is received on link 2. [Figure 35-39 (Example of TDLS](#bookmark109) [discovery initiated by a STA to a non-AP MLD)](#bookmark109) illustrates this case. The capabilities of each device are the same as described in [Figure 35-37 (Example A of TDLS discovery initiated by a non-AP MLD)](#bookmark107) and [Figure 35-38 (Example B of TDLS discovery initiated by a non-AP MLD)](#bookmark108).



Link 1

Mgmt. frame [TDLS Disc Resp

{ A1 (RA)=STA3, A2 (TA)=MLD\_S, A3 (BSSID)=AP1 },

{ LI (BSSID=AP1) } ]

Data frame [ TDLS Disc/Setup Req

{ A1 (RA)=STA1, A2 (TA)=AP1, A3 (SA)=STA3},

{ LI (BSSID=AP1) } ]

AP1

Data frame [ TDLS Disc/Setup Req

{ A1 (RA)=AP1, A2 (TA)=STA3, A3 (DA)=MLD\_S },

{ LI (BSSID=AP1) } ]

STA3

Link 2

Data frame [ TDLS Disc/Setup Req

{ A1 (RA)=STA2, A2 (TA)=AP2, A3 (SA)=STA3},

{ LI (BSSID=AP1) } ]

AP2

STA2

STA1

MLD\_S MLD\_A

**Figure 35-39—Example of TDLS discovery initiated by a STA to a non-AP MLD**

In [Figure 35-39 (Example of TDLS discovery initiated by a STA to a non-AP MLD)](#bookmark109), the TDLS Discovery Request frame transmitted by STA3 has the To DS subfield of the Frame Control field set to 1 and A3 (DA) set to non-AP MLD address (MLD\_S) since STA3 is only aware of MLD\_S and not the link addresses of STA1 or STA2 as the AP MLD sets the SA to non-AP MLD’s MAC address. In this example, when the TDLS Discovery Request frame (which is a Data frame) is received by AP1 and routed to the non-AP MLD, the AP MLD sets the From DS subfield of the Frame Control field to 1 and the A3 (SA) to STA3 and transmits the frame either on link 2 (solid line) or link 1 (dotted line). The non-AP MLD receives the TDLS Request Discovery frame and identifies the intended TDLS direct link using the BSSID field of the Link Identifier element. In this case, the BSSID is set to AP1 (i.e., link 1), so the non-AP MLD enables the TDLS non-AP STA affiliated with the non-AP MLD on link 1. The TDLS non-AP STA affiliated with the non-AP MLD responds by transmitting a TDLS Discovery Response frame on the direct link to STA3 with the To DS and From DS subfields of the Frame Control field set to 0, and A1 set to STA3 (i.e., RA = STA3, TA = MLD\_S, A3 = AP1). In both the TDLS Discovery Request and TDLS Discovery Response frames, the BSSID, the TDLS initiator STA Address, and the TDLS responder STA Address fields in the Link Identifier element (represented as LI in the figure) are set to AP1, STA3, and MLD\_S, respectively.

[Figure 35-40 (Transmission of TDLS Setup Request frame between two STAs each affiliated with a](#bookmark110) [different non-AP MLD)](#bookmark110) and [Figure 35-41 (Transmission of TDLS Setup Response frame between two STAs](#bookmark111) [each affiliated with a different non-AP MLD)](#bookmark111) illustrate the case where a single link TDLS direct link is set up between two non-AP MLDs that have performed multi-link setup with the same AP MLD. The example assumes that the two non-AP MLDs have performed TDLS discovery and that the initiating non-AP MLD (in this example, MLD\_S) has decided to perform single link TDLS setup for link 1. As shown in the figures, the TDLS Setup Request frame is transmitted by the non-AP MLD, MLD\_S, through affiliated STA1 to MLD\_R through affiliated STA3. The BSSID field in the Link Identifier element identifies the intended link for establishing the TDLS direct link.

MLD\_S



MLD\_A

MLD\_R



STA1

Data frame

[ TDLS Setup Req

{ A1 (RA)=AP1, A2 (TA)=STA1, A3 (DA)=MLD\_R },

{ LI (BSSID=AP1) } ]

AP1

Data frame

[ TDLS Setup Req

{ A1 (RA)=STA3, A2 (TA)=AP1, A3 (SA) = MLD\_S },

{ LI (BSSID=AP1) } ]

STA2

Data frame

[ TDLS Setup Req

{ A1 (RA)=AP2, A2 (TA)=STA2, A3 (DA)=MLD\_R },

{ LI (BSSID=AP1) } ]

AP2

Data frame

[ TDLS Setup Req

{ A1 (RA)=STA4, A2 (TA)=AP2, A3 (SA) = MLD\_S },

{ LI (BSSID=AP1) } ]



STA3

STA4

**TDLS Setup Request**

**Figure 35-40—Transmission of TDLS Setup Request frame between two STAs each affiliated with a different non-AP MLD**

MLD\_S



STA1

STA2



MLD\_A

MLD\_R

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | AP1  AP2 |  |  | STA3  STA4 |
| Data frame  [ TDLS Setup Resp  { A1 (RA)=STA1, A2 (TA)=AP1, A3 (SA)=MLD\_R },  { LI (BSSID=AP1) } ]  Data frame  [ TDLS Setup Resp  { A1 (RA)=STA2, A2 (TA)=AP2, A3 (DA)=MLD\_R },  { LI (BSSID=AP1) } ] |  |  | Data frame  [ TDLS Setup Resp  { A1 (RA)=AP1, A2 (TA)=STA3, A3 (SA) = MLD\_S },  { LI (BSSID=AP1) } ]  Data frame  [ TDLS Setup Resp  { A1 (RA)=AP2, A2 (TA)=STA4, A3 (SA) = MLD\_S },  { LI (BSSID=AP1) } ] |

**TDLS Setup Response**



**Figure 35-41—Transmission of TDLS Setup Response frame between two STAs each affiliated with a different non-AP MLD**

[Figure 35-42 (TDLS direct link involving a STA affiliated with a non-AP MLD and a non-AP STA that is](#bookmark112) [not affiliated with a non-AP MLD)](#bookmark112) and [Figure 35-43 (TDLS direct link involving non-AP STAs affiliated](#bookmark113) [with different non-AP MLDs)](#bookmark113) provide examples of a single link TDLS direct link where at least one of the peer STAs is a TDLS non-AP STA affiliated with a non-AP MLD. The TA field of Data frames transmitted

by the TDLS STA that is affiliated with an MLD over the direct link is set to its non-AP MLD’s MAC address. The To DS and From DS subfields of the Frame Control field of the Data frame are set to 0.

MLD\_S MLD\_A



Data frame

{ A1 (RA)=MLD\_S, A2 (TA)=STA3, A3 (BSSID)=AP1 }

Data frame

{ A1 (RA)=STA3, A2 (TA)=MLD\_S, A3 (BSSID)=AP1 }

AP2

AP1

STA2

STA1



**Figure 35-42—TDLS direct link involving a STA affiliated with a non-AP MLD and a non-AP STA that is not affiliated with a non-AP MLD**