IEEE P802.11  
Wireless LANs

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| 11be D2.0 CR for 11714 | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Po-Kai Huang | Intel |  |  |  |

Abstract

This submission proposes resolutions for the following CIDs:

11714

Revisions:

* Rev 0: Initial version of the document.

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 TGbe D2.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D2.0 Draft. (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 11714 | Gaurav Patwardhan | 35.3.2.1 | 406.01 | "A STA" and "A non-AP STA" is used interchangeably many times during Clause 35. Need to replace all the relevant occurences of "A STA" with "A non-AP STA". Commenting on this particular line as a placeholder. | as in comment | Revised –  Agree in principle with the commenter. Search instances of non-AP MLD through clause 35.3 and try to fix all the relevant instances.  TGbe editor to make the changes shown in 11-22/1779r0 under all headings that include CID 11714 |

**Discussion: None**

---------------------------------------------------resolution for 11714 track change on-------------------------------------------------------------

***TGbe editor:*****Change “STA x” in Figure 35-3—Example of Basic Multi-Link element in an Association Request  
frame to “non-AP STA x”.**

***TGbe editor:*****Change “STA x” in Figure 35-3—Example of Basic Multi-Link element in an Association Request  
frame to “non-AP STA x”.**

**35.3.3.3 Advertisement of complete or partial per-link information**

In Figure 35-3 (Example of Basic Multi-Link element in an Association Request frame(#13608)(#12587)), a  
(#12242)non-AP STA affiliated with a non-AP MLD transmits an Association Request frame which  
includes a Basic Multi-Link element that carries the complete profile of two other non-AP STAs affiliated with its  
non-AP MLD (non-AP STA x and non-AP STA y). The figure expands the Per-STA profile for (#13611)non-AP STA x. The Type  
subfield of the Multi-Link Control field is set to 0 to indicate that the Multi-Link element is a Basic MultiLink element. The Common Info field carries information that applies to the MLD level as described in  
9.4.2.312.2 (Basic Multi-Link element). In this example, only the (#13611)Common Info Length and MLD  
MAC Address fields are shown. However, there can be other fields present in the Common Info field whose  
presence is signaled via the subfields (#13611)carried within the Presence Bitmap subfield of the Multi-Link  
Control field. Each Per-STA Profile subelement in the Link Info field carries the complete profile, with  
inheritance applied, of a reported (#12242)non-AP STA affiliated with the non-AP MLD. Each Per-STA  
Profile subelement carries the STA Control field followed by the STA Info field and the STA Profile field.  
In this example, only the (#13608)STA Info Length and STA MAC Address fields are shown. However,  
there can be other subfields present in the STA Info field whose presence is signaled via the subfields in the  
STA Control field. The STA Profile field carries variable number of fields and elements in the order defined  
in Table 9-62 (Association Request frame body(#10532)) with inheritance applied (see 35.3.3.6 (Inheritance  
in a per-STA profile)). The Non-inheritance element (if present) lists the elements that are not inherited by  
the reported STA.

**35.3.3.5 Processing of Per-STA Profile subelement of Multi-Link element(#10600)**

(#13979)A non-AP STA (non-AP STA 1) affiliated with a non-AP MLD shall follow the procedures (if any) that are  
applicable to a field carried (#13257)(directly or within an element) in a Management frame received on  
another link(#13259), from an AP (AP 2), as if it (non-AP STA 1) had received that field in the corresponding frame  
transmitted by a reported AP (AP 1) operating on the same link as the non-AP STA (non-AP STA 1), if all of the  
following conditions are satisfied:  
— The transmitting AP (AP 2) is affiliated with the same AP MLD as the reported AP (AP 1).  
— The field is carried within the STA Info field or STA Profile field of a Per-STA Profile subelement  
of a Multi-Link element, corresponding to the reported AP (AP 1).  
— The corresponding frame is received by another non-AP STA (non-AP STA 2) that is affiliated with the same  
non-AP MLD as the non-AP STA (non-AP STA 1).  
— One of the conditions is true:  
• The Management frame is a Beacon frame, a Probe Response frame or a (Re)Association  
Response frame and the transmitting AP (AP 2) does not belong to a multiple BSSID set or is the  
transmitted BSSID in the multiple BSSID set

The Management frame is a (Re)Association Response frame, and the transmitting AP (AP 2)  
corresponds to a nontransmitted BSSID in a multiple BSSID set.

(#13979)NOTE—In a multiple BSSID set, an AP corresponding to the nontransmitted BSSID responds to a  
(Re)Association Request frame by transmitting a (Re)Association Response frame that does not include the Multiple  
BSSID element.

(#13979)A non-AP STA (non-AP STA 1) affiliated with a non-AP MLD shall follow the procedures (if any) that are  
applicable to a field carried (directly or within an element) in a Beacon frame or a Probe Response frame  
received on another link, from an AP (AP 3), as if it had received that field in the corresponding frame  
transmitted by a reported AP (AP 1) that is operating on the same link as the non-AP STA (non-AP STA 1), if all of the  
following conditions are satisfied:  
— The transmitting AP (AP 3) is the transmitted BSSID in the same multiple BSSID set as an AP  
(AP 2) that corresponds to a nontransmitted BSSID and the AP (AP 2) is affiliated with the same AP  
MLD as the reported AP (AP 1).  
— The corresponding frame is received by another non-AP STA (non-AP STA 2) affiliated with the same non-AP MLD as the non-AP STA (non-AP STA 1).  
— The field is carried within the STA Info field or STA Profile field of a Per-STA Profile subelement  
of a Multi-Link element, corresponding to the reported AP (AP 1).

(#13600)(#13601)An AP (AP 1) affiliated with an AP MLD shall follow the procedures (if any) that are  
applicable to a field carried (directly or within an element) in a (Re)Association Request frame received on  
another link, from a non-AP STA (non-AP STA 2), as if it (#13259)(AP 1) had received that field in the  
corresponding frame transmitted by a reported non-AP STA (#13259)(non-AP STA 1) operating on the same link as  
the AP (AP 1), if all of the following conditions are satisfied:  
— The transmitting non-AP STA (non-AP STA 2) is affiliated with the same non-AP MLD as the reported non-AP STA (non-AP STA 1).  
— The corresponding frame is received by another AP (AP 2) affiliated with the same AP MLD as the  
AP (AP 1).  
— The field is carried within the STA Info field or STA Profile field of a Per-STA Profile subelement  
of a Multi-Link element, corresponding to the reported non-AP STA (non-AP STA 1).

***TGbe editor:*****Change “STA 1”, “STA2”, “STA3” in Figure 35-8—Possible frame exchange sequences during MLO discovery and multi-link setup when the AP operating on the channel does not correspond to a nontransmitted BSSID to “non-AP STA1”, “non-AP STA2”, “non-AP STA3”, respectively**

**35.3.4.6 Frame exchange sequences during MLO discovery and multi-link setup**

(…existing texts….)

(#13008)In the following, contents of Management frames transmitted by a non-AP STA affiliated with a non-AP  
MLD during MLO discovery and multi-link setup are illustrated as follows:  
— A Beacon frame or a Probe Request frame that is not a multi-link probe request in Figure 35-9a  
(Contents of a Beacon frame or Probe Request frame that is not a multi-link probe request  
transmitted by a non-AP STA affiliated with a non-AP MLD during MLO discovery and multi-link  
setup(#13008)),  
— A multi-link probe request in Figure 35-9b (Contents of a multi-link probe request transmitted by a  
STA affiliated with a non-AP MLD during MLO discovery and multi-link setup(#13008)),

— An Authentication frame in Figure 35-9c (Contents of an Authentication frame transmitted by a non-AP STA  
affiliated with a non-AP MLD during MLO discovery and multi-link setup(#13008)), and  
— A (Re)Association frame in Figure 35-9d (Contents of a (Re)Association Request frame transmitted  
by a non-AP STA affiliated with a non-AP MLD during MLO discovery and multi-link setup(#13008)).

(…existing texts….)

***TGbe editor:*****Change the title of the following figures (track change on):**

**Figure 35-9a—Contents of a Beacon frame or Probe Request frame that is not a multi-link  
probe request transmitted by a non-AP STA affiliated with a non-AP MLD during MLO discovery  
and multi-link setup(#13008)**

**Figure 35-9b—Contents of a multi-link probe request transmitted by a non-AP STA affiliated with a  
non-AP MLD during MLO discovery and multi-link setup(#13008)**

**Figure 35-9c—Contents of an Authentication frame transmitted by a non-AP STA affiliated with a  
non-AP MLD during MLO discovery and multi-link setup(#13008)**

**Figure 35-9d—Contents of a (Re)Association Request frame transmitted by a non-AP STA affiliated  
with a non-AP MLD during MLO discovery and multi-link setup(#13008)**

***TGbe editor:*****Change “STA 1”, “STA2”, “STA3” in Figure 35-11—Possible frame exchange sequences during MLO discovery and multi-link setup when the AP operating on the channel corresponds to a nontransmitted  
BSSID(#13359)(#12343)(#13358)(#12994)** **to “non-AP STA1”, “non-AP STA2”, “non-AP STA3”, respectively**

**35.3.4.6 Frame exchange sequences during MLO discovery and multi-link setup**

(…existing texts….)

The Authentication frame and (Re)Association Request/Response frame exchange occurs between the non-AP STA  
affiliated with the non-AP MLD and the AP in the multiple BSSID set (corresponding to either the  
transmitted BSSID or the nontransmitted BSSID) that is affiliated with the AP MLD with which the non-AP  
MLD intends to perform multi-link setup. This is shown in Figure 35-12d (Contents of an Authentication  
frame transmitted by an AP affiliated with an AP MLD that is a member of multiple BSSID set during MLO  
discovery and multi-link setup(#13008)) and Figure 35-12e (Contents of a (Re)Association Response frame  
transmitted by nontransmitted BSSID corresponding to index 5 during MLO discovery and multi-link  
setup(#13008)).

(…existing texts….)

**35.3.7.1.1 General**

(…existing texts….)

NOTE 3—Operation with non-AP STAs affiliated with a non-AP MLD in power save mode are defined in 35.3.12.4 (Traffic  
indication).

**35.3.7.1.4 Power state after enablement**When a link becomes enabled for a non-AP STA that is affiliated with a non-AP MLD after (#10270)successful  
association with an AP MLD with (Re)Association Request/Response frames transmitted on that link  
(#11910)or after successful TID-to-link mapping negotiation with TID-To-Link Mapping Request/Response  
frames transmitted on that link, the power management mode of the non-AP STA, immediately after the acknowledgement of the (Re)Association Response frame or of the TID-To-Link Mapping Response frame,  
is active mode.

When a link becomes enabled for a non-AP STA that is affiliated with a non-AP MLD after (#10270)successful  
association with an AP MLD with (Re)Association Request/Response frames transmitted on another link or  
after successful TID-to-link mapping negotiation with TID-To-Link Mapping Request/Response frames  
transmitted on another link, the power management mode of the non-AP STA, immediately after the  
acknowledgement of the (Re)Association Response frame or of the TID-To-Link Mapping Response frame,  
is power save mode, and its power state is doze.

(#11764)When a link becomes enabled for a non-AP STA that is affiliated with a non-AP MLD at the end of an  
advertised TID-to-link mapping (see 35.3.7.1.7 (Advertised TID-to-link mapping in Beacon and Probe  
Response frames(#14054))), the power management mode of the non-AP STA, immediately after the end of the  
advertised TID-to-link mapping, is power save mode, and its power state is doze.

**35.3.7.1.5 Power state and TWT schedules after disablement(#12927)**

(…existing texts….)

A non-AP STA (#11610)affiliated with a non-AP MLD that has transmitted a frame to the AP affiliated with its  
associated AP MLD on a disabled link, if allowed by the rules defined in 35.3.7.1.1 (General) and from  
which it expects a response, shall remain in the awake state until such a response is received or until the  
procedure has timed out.

**35.3.7.2 Dynamic link transitions**

A non-AP MLD may use the power states of its (#11430)affiliated non-AP STAs (#12482)(see 35.3.12  
(Multi-link power management)) to dynamically change the link(s) on which it operates. Figure 35-14  
(Example of link transition operation by a single radio non-AP MLD using power states) provides an  
illustration of operation of a single radio non-AP MLD with default mapping (all TIDs mapped to all setup links), where the non-AP MLD transitions from operating on link 1 with non-AP STA 1 to operating on link 2 with  
non-AP STA 2(#11431), where both non-AP STA 1 and non-AP STA 2 are affiliated with the non-AP MLD.

***TGbe editor:*****Change “STA 1”, “STA2”, “STA3” in Figure 35-14—Example of link transition operation by a single radio non-AP MLD using power states** **to “non-AP STA1”, “non-AP STA2”, “non-AP STA3”, respectively**

(#11913)In this example, while operating on link 1:  
— non-AP STA 1 affiliated with the non-AP MLD might use active mode or power save mode with the awake state to  
retrieve BUs from the AP MLD or to send frames to the AP MLD and might use doze state when  
there is no buffered BUs or no frames to send to the AP MLD.  
— non-AP STA 2 and non-AP STA 3 stay in doze state.

(#11913)In this example, while operating on link 2:  
— non-AP STA 2 affiliated with the non-AP MLD might use active mode or power save mode with the awake state to  
retrieve BUs from the AP MLD or to send frames to the AP MLD and might transition to doze state  
when there is no buffered BUs or no frames to send to the AP MLD.  
— non-AP STA 1 and non-AP STA 3 stay in doze state.  
(#11913)The link transition from link 1 to link 2 is achieved in this example by having non-AP STA 1 transition to  
doze state and non-AP STA 2 transition to active mode or awake state.

**35.3.12 Multi-link power management  
35.3.12.1 General**

(…existing texts….)

Figure 35-19 (Each non-AP STA affiliated with a non-AP MLD maintains its own power state(#10649))  
illustrates the power save operation for each (#10649)non-AP STA affiliated with a non-AP MLD during  
multi-link operation. (#13918)The example assumes all TIDs are mapped to all or a subset of links. As  
depicted in the figure, during the initial portion of the illustration, both non-AP STAs affiliated with the non-AP  
MLD are in active mode and are involved in frame exchange with the respective APs on the links. Each  
(#10649)non-AP STA affiliated with the non-AP MLD indicates that it is in active mode by setting to 0 the  
Power Management subfield (namely PM bit in the figure) in the Frame Control field of a transmitted frame.  
At some point in time, non-AP STA 2 affiliated with the non-AP MLD operating on Link 2 indicates to AP 2 that it is entering power save mode (i.e., sets PM bit to 1) and transitions to doze state after the successful frame  
exchange. Non-AP STA 2 remains in doze state for the rest of the illustration. After a period of time, non-AP STA 1 enters  
power save mode (i.e., sets PM bit to 1) after the successful frame exchange. While operating in power save  
mode, non-AP STA 1 wakes up to receive the Beacon frame transmitted by AP 1 and determines that AP MLD has  
BUs (#13918)for the non-AP MLD. Based on this determination, non-AP STA 1 indicates to AP 1 that it has  
transitioned to awake state by transmitting a PS-Poll or U-APSD trigger frame on Link 1. Non-AP STA 1 participates  
in frame exchange with AP 1 while in awake state.

***TGbe editor:*****Change “STA 1”, “STA2”in Figure 35-19—Each non-AP STA affiliated with a non-AP MLD maintains its own power state(#10649)** **to “non-AP STA1”, “non-AP STA2”, respectively**

**35.3.12.2 Basic BSS operation**

(…existing texts….)

All non-AP STAs affiliated with a non-AP MLD shall set each of the ACs U-APSD Flag subfields in the QoS Info  
field to the same value across all setup links (see 35.3.5 (Multi-link (re)setup)).

**35.3.12.4 Traffic indication**

(…existing texts….)

An AP MLD shall buffer a BU with a TID at the AP MLD if the TID is not mapped to any link on which the  
corresponding non-AP STA of a non-AP MLD is in active mode, and it shall set the bit in the partial virtual bitmap  
of the TIM element that corresponds to the AID of the non-AP MLD to 1. The traffic indication for a nonAP MLD shall be consistent across the Beacon frames transmitted by APs affiliated with an AP MLD,  
which are operating on the links that are part of the multi-link setup (i.e., the bit in the partial virtual bitmap  
of the TIM element that matches the AID of the non-AP MLD is set to a value that reflects the status of the  
BUs at the AP MLD for that non-AP MLD).

(…existing texts….)

An AP MLD shall buffer an MMPDU (#10581)(see Table 11-3 (Bufferable/nonbufferable classification of  
MMPDUs)) and intended for receipt by a (#12242)non-AP STA affiliated with a non-AP MLD in the AP  
MLD when all non-AP STAs affiliated with the non-AP MLD are in power save mode. In this case, the bit in the  
partial virtual bitmap of the TIM element that corresponds to the AID of the non-AP MLD shall be set to 1.  
An AP MLD shall not buffer a a TPC Request frame or a Link Measurement Request frame.

(…existing texts….)

If a non-AP  
MLD has successfully negotiated a TID-to-link mapping with an AP MLD with a nondefault mapping, the  
bit position *i* of the Per-Link Traffic Indication Bitmap subfield that corresponds to the link with the link ID  
that is equal to *i* on which a non-AP STA of the non-AP MLD is operating shall be set to 1 if the AP MLD has  
buffered BU(s) with TID(s) that are mapped to that link or MMPDU(s) for that non-AP MLD, otherwise the  
bit shall be set to 0.

(…existing texts….)

When an AP affiliated with an AP MLD receives a PS-Poll frame or a U-APSD trigger frame from a non-AP STA  
affiliated with an associated non-AP MLD that is in power save mode, it shall transmit buffered BU(s) to the  
STA, if one is available and not discarded for implementation dependent reasons, otherwise it may transmit  
a QoS Null frame.

If a buffered BU is an MMPDU that is intended for one (#12242)non-AP STA affiliated with a non-AP  
MLD (#10581)(see Table 11-3 (Bufferable/nonbufferable classification of MMPDUs)), and if it is  
transmitted on a link where another non-AP STA (other than the intended non-AP STA) affiliated with the same non-AP  
MLD is operating on, following the procedure above, the MMPDU shall carry information to determine the  
intended destination (#12242)non-AP STA affiliated with the non-AP MLD (see 35.3.14.2 (Identification of  
the Intended STA))

(#12808)An AP affiliated with an AP MLD may also schedule for transmission a Link Recommendation  
frame to provide link recommendation for a set of non-AP MLDs as follows:  
— The bit corresponding to the AID of a non-AP MLD shall be set to 1 in the Partial AID Bitmap  
subfield of the AID Bitmap element in the Link Recommendation frame if the AP intends to provide  
a link recommendation for this non-AP MLD.  
— The Multi-Link Traffic Indication element includes Per-Link Traffic Indication Bitmap subfield(s),  
in the Per-Link Traffic Indication Bitmap List field, which correspond(s) to the AID(s) of the nonAP MLD(s), starting from the bit number *k* of the AID bitmap of the AID Bitmap element carried in  
the Link Recommendation frame. The AID Offset subfield of the Multi-Link Traffic Control field of  
the Multi-Link Traffic Indication element contains the value *k*. The order of the Per-Link Traffic  
Indication Bitmap subfield(s) follows the order of the bits that are set to 1 in the Partial AID Bitmap  
subfield of the AID Bitmap element carried in the Link Recommendation frame that corresponds to  
the AID(s) of the non-AP MLD(s). The bit position *i* of the Per-Link Traffic Indication Bitmap  
subfield in the Multi-Link Traffic Indication element that corresponds to the link with the link ID  
equal to *i* on which a non-AP STA affiliated with the non-AP MLD is operating shall be set to 1 to indicate to  
the non-AP MLD that it should exchange frames on this link both in DL and UL, while following the  
rules defined in 35.3.7.1.1 (General).  
— A link shall not be recommended by the AP MLD for a non-AP MLD if the link is disabled for the  
non-AP MLD (see 35.3.7.1.1 (General)).  
— The Address 1 field of the Link Recommendation frame shall be set to the broadcast address.

(…existing texts….)

**35.3.12.6 Operation for MLD listen interval**

(…existing texts….)

If all non-AP STAs affiliated with the non-AP MLD and operating on enabled links are in power save mode, at least  
one of these non-AP STAs shall wake up to receive at least one Beacon frame scheduled for transmission within the  
interval of duration equal to the listen interval indicated by the non-AP MLD in its (Re)Association Request  
frame, starting from the last TBTT for which another non-AP STA or the same (#12242)non-AP STA affiliated with  
the non-AP MLD was (#12644)in awake state.

**35.3.15.2 Group addressed frame reception**

(…existing texts….)

If an indication of buffered group addressed frames in the TIM element about an AP affiliated with an AP  
MLD is received by any non-AP STA affiliated with a non-AP MLD, the (#12242)non-AP STA affiliated with the  
non-AP MLD that is associated with the AP and that stays awake to receive group addressed BUs shall elect  
to receive all group addressed frames that are scheduled for delivery on the link that the non-AP STA is operating on.

**35.3.16.3 Simultaneous transmit and receive (STR) operation**

(…existing texts….)

igure 35-23 (Channel access of two MLDs over an STR link pair) shows an example of an AP MLD and a  
non-AP MLD that are operating over an STR link pair and that are contending for access to the WM and  
subsequent frame exchanges between two MLDs on those links. After the AP MLD has performed a multilink setup with the non-AP MLD to set up link 1 and link 2 successfully and the links are enabled, then AP 2  
may receive data frames from non-AP STA 2 on link 2, while AP 1 contends for the WM and then transmits data  
frames to non-AP STA 1 on link 1 after it obtains a TXOP.

***TGbe editor:*****Change “STA 1”, “STA2”in Figure 35-23—Channel access of two MLDs over an STR link pair** **to “non-AP STA1”, “non-AP STA2”, respectively35.3.16.4 Nonsimultaneous transmit and receive (NSTR) operation**

(…existing texts….)

(#11443)A non-AP STA (#10005)affiliated with (#11443)a non-AP MLD (#10358)operating on a link of an NSTR  
link pair that has gained the right to initiate transmission of a frame of an AC on a link through the rules for  
EDCA backoff in 10.23.2.4 (Obtaining an EDCA TXOP) may choose (#11576)not to transmit any frame  
corresponding to that AC due to expected (#10358)interference caused by the transmission at the non-AP STA  
operating on the other link of the NSTR link pair within the (#11443)non-AP MLD and due to lack of  
availability of an alternative frame in the queue that would not introduce the opportunity for such  
interference.

(…existing texts….)

(#12659)An AP affiliated with an AP MLD should not transmit a frame that solicits an immediate response  
to a non-AP STA that is affiliated with a non-AP MLD on a link that is a member of one or more NSTR link pairs for  
that non-AP MLD, if the immediate response is expected to overlap in time with group addressed MPDUs  
scheduled on a link that is a member of any of those NSTR link pairs and any of the other non-AP STA(s) affiliated  
with the non-AP MLD is expected to be receiving those group addressed MPDUs.

If a non-AP STA that is affiliated with a non-AP MLD successfully obtains a TXOP on one link of one of its NSTR  
link pairs before the TBTT of the other link of the NSTR link pair, then it should end its TXOP before the  
TBTT of the other link if the other non-AP STA affiliated with the same non-AP MLD intends to receive the Beacon  
frame scheduled at that TBTT on that link.  
NOTE—The non-AP STA might not do so if it is not aware of the TSF of the other link.

**35.3.16.5 PPDU end time alignment  
35.3.16.5.1 General**In this subclause “simultaneously transmit” means more than one PPDU is transmitted on more than one  
link, where each PPDU is transmitted over one link, and those transmissions overlap in time. Likewise,  
“simultaneously trigger” means more than one TB PPDU is triggered on more than one link, where each  
PPDU is triggered over one link, and those transmissions overlap in time. If a non-AP MLD that is receiving  
a PPDU on a link that is part of an NSTR link pair for that MLD concurrently transmits another PPDU on  
another link that is part of the same NSTR link pair for that MLD, then the non-AP MLD might fail to  
receive the PPDU on the link because of the interference caused by its transmission on the other link. This  
subclause specifies a mechanism to align the end time of PPDUs that are simultaneously transmitted to the  
(#11444)non-AP STAs affiliated with a non-AP MLD operating on a pair of NSTR links for that MLD, which helps  
to reduce the chances of the occurrence of such self-interference among non-AP STAs affiliated with the same MLD.

(#12660)When more than one AP affiliated with an AP MLD simultaneously transmits to the non-AP STAs  
(#11444)affiliated with a non-AP MLD operating on a pair of NSTR links for that MLD and at least one of  
the PPDUs carries a frame that is soliciting an immediate response, then  
— The AP shall align the end time of the PPDUs soliciting an immediate response per the rules defined  
in this subclause, except if the PPDU carries a high priority frame.

(…existing texts….)

When an AP MLD simultaneously solicits one or more TB PPDU transmissions from a pair of non-AP STAs  
affiliated with a non-AP MLD and operating on a pair of NSTR links for that MLD, each AP affiliated with  
the AP MLD shall independently solicit a PPDU following the mechanisms defined in 26.5.2 (UL MU  
operation) with the following exceptions:  
— An AP affiliated with the AP MLD shall not transmit a Trigger frame with the CS Required subfield  
set to 1 to a (#12242)non-AP STA affiliated with a non-AP MLD and operating on a link that is part  
of NSTR link pair for that MLD, when at least one PPDU from other STAs operating on the other  
link that is part of the same NSTR link pair is scheduled for transmission before a timer with a value  
of 12 μs (see NOTE 4) has expired after the PPDU containing the Trigger frame.  
— If the AP MLD allows the frames in the TB PPDUs to solicit control response frames from the AP  
MLD, then the UL Length subfield values in the soliciting Basic Trigger frames shall be set to the  
same value.

(…existing texts….)

**35.3.16.5.2 End time alignment of response PPDUs using SRS Control field**

(…existing texts….)

If non-AP STAs affiliated with a non-AP MLD operating on a pair of NSTR links simultaneously transmit PPDUs to  
the respective APs affiliated with an AP MLD that has dot11SRSOptionImplemented equal to true, the  
transmitted PPDUs solicit control response frames and the non-AP MLD intends to align the end times of  
the PPDUs sent in response by the peer APs, then at least one of the PPDUs soliciting a control response  
frame shall carry an MPDU with SRS Control subfield. The non-AP STA shall set the PPDU Response Duration  
subfield of the SRS Control subfield to a value that is equal to or longer than the maximum of the expected  
duration of the response PPDUs on all links, where the expected duration of the response PPDU is  
calculated based on the following parameters:

(…existing texts….)

**35.3.16.8 Medium access recovery procedure  
35.3.16.8.1 General**

(…existing texts….)

When a non-AP MLD is operating in the EMLSR mode, a (#12242)non-AP STA affiliated with a non-AP  
MLD that is operating on one of the EMLSR links is considered to have lost medium synchronization if it is  
not able to perform CCA during frame exchanges that includes the link switch delays between an AP  
affiliated with an AP MLD and one of the other non-AP STAs operating on the other EMLSR links, which are  
affiliated with the same non-AP MLD. The non-AP STA that has lost medium synchronization shall start a  
MediumSyncDelay timer (#10422)and begin counting down immediately after returning to the listening  
operation if the duration of the loss of medium synchronization is longer than aMediumSyncThreshold;  
otherwise, the non-AP STA may not start the MediumSyncDelay timer.

**35.3.16.8.3 AP assisted medium synchronization recovery procedure**

(…existing texts….)

Each of the other assisting AP(s) affiliated with the AP MLD should schedule for a transmission a Trigger  
frame to the assisted non-AP STA that is associated with it and affiliated with the non-AP MLD to solicit an UL  
frame(s) after the AP affiliated with the same AP MLD successfully received the AAR Control subfield in a  
frame if it does not have frame exchanges already scheduled with another non-AP STA.

(…existing texts….)

**35.3.17 Enhanced multi-link single radio operation**The enhanced multi-link single radio (EMLSR) operation defined in this subclause allows a non-AP MLD  
with multiple receive chains to listen on the EMLSR links when the corresponding non-AP STAs affiliated with the  
non-AP MLD are in awake state as defined below for an initial Control frame sent by an AP affiliated with  
an AP MLD in a non-HT (duplicate) PPDU(#10508), followed by frame exchanges on the link on which the  
initial Control frame was received.

(…existing texts….)

When a non-AP MLD is operating in EMLSR mode on the EMLSR links, the (#13409)non-AP STAs operating on  
the EMLSR links and affiliated with the non-AP MLD shall not operate in dynamic SM power save mode  
(11.2.6 (SM power save)) on the EMLSR links.

(…existing texts….)

When a non-AP MLD with dot11EHTEMLSROptionImplemented equal to true intends to (#12675)enable  
the EMLSR mode on the EMLSR links, a (#12242)non-AP STA affiliated with the non-AP MLD shall  
transmit an EML Operating Mode Notification frame with the EMLSR Mode subfield of the EML Control  
field of the frame set to 1 to an AP affiliated with an AP MLD with dot11EHTEMLSROptionImplemented  
equal to true. An AP affiliated with the AP MLD that received the EML Operating Mode Notification frame  
from the (#12242)non-AP STA affiliated with the non-AP MLD should transmit an EML Operating Mode  
Notification frame (#11456)with the EML Control field set to the same value as the EML Control field in  
the received EML Operation Mode Notification frame, after the AP MLD is ready to serve the non-AP MLD  
in the EMLSR mode operation, to one of the (#12242)non-AP STAs affiliated with the non-AP MLD within  
the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of the  
Basic Multi-Link element starting at the end of the PPDU transmitted by the AP affiliated with the AP MLD  
(#11582)carrying the immediate acknowledgement to the EML Operating Mode Notification frame  
transmitted by the non-AP STA affiliated with the non-AP MLD. After the successful transmission of the EML  
Operating Mode Notification frame (#13411)(#11454)(#14000)by the (#12242)non-AP STA affiliated with  
the non-AP MLD, the non-AP MLD shall operate in the EMLSR mode and the other non-AP STAs operating on the  
corresponding EMLSR links shall transition to active mode after the transition delay indicated in the  
Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link element or  
immediately after receiving an EML Operating Mode Notification frame from one of the APs operating on  
the EMLSR links and affiliated with the AP MLD. Any of the other non-AP STAs operating on the corresponding  
EMLSR link shall not transmit a frame with the Power Management subfield set to 1 before receiving the  
EML Operating Mode Notification frame from (#13415)one of the APs operating on the EMLSR links and  
affiliated with the AP MLD or before the end of the timeout interval.

When a non-AP MLD with dot11EHTEMLSROptionImplemented equal to true intends to disable the  
EMLSR mode, a (#12242)non-AP STA affiliated with the non-AP MLD shall transmit an EML Operating Mode Notification frame with the EMLSR Mode subfield of the EML Control field of the frame set to 0 to  
an AP affiliated with an AP MLD with dot11EHTEMLSROptionImplemented equal to true. An AP  
affiliated with the AP MLD that received the EML Operating Mode Notification frame from the  
(#12242)non-AP STA affiliated with the non-AP MLD should transmit an EML Operating Mode  
Notification frame (#11456)with the EML Control field set to the same value as the EML Control field in  
the received EML Operation Mode Notification frame, after the AP MLD is no longer serving the non-AP  
MLD in the EMLSR mode operation, to one of the (#12242)non-AP STAs affiliated with the non-AP MLD  
within the timeout interval indicated in the Transition Timeout subfield in the EML Capabilities subfield of  
the Basic Multi-Link element starting at the end of the PPDU transmitted by the AP affiliated with the AP  
MLD (#11582)carrying the immediate acknowledgement to the EML Operating Mode Notification frame  
transmitted by the (#12242)non-AP STA affiliated with the non-AP MLD. After the successful transmission  
of the EML Operating Mode Notification frame (#13416)(#11455)(#14000)by the (#12242)non-AP STA  
affiliated with the non-AP MLD, the non-AP MLD shall disable the EMLSR mode and the other non-AP STAs  
operating on the corresponding EMLSR links shall transition to power save mode after the transition delay  
indicated in the Transition Timeout subfield in the EML Capabilities subfield of the Basic Multi-Link  
element or immediately after receiving an EML Operating Mode Notification frame from one of the APs  
operating on the EMLSR links and affiliated with the AP MLD. Any of the other non-AP STAs operating on the  
corresponding EMLSR link shall not transmit a frame with the Power Management subfield set to 0 before  
receiving the EML Operating Mode Notification frame from (#13415)one of the APs operating on the  
EMLSR links and affiliated with the AP MLD or before the end of the timeout interval.

(…existing texts….)

When a non-AP MLD is operating in the EMLSR mode with an AP MLD supporting the EMLSR mode, the  
following applies:  
— The non-AP MLD shall be able to listen on the (#11457)EMLSR link(s), by having its affiliated  
non-AP STA(s) corresponding to those links in awake state. The listening operation includes CCA and  
receiving the initial Control frame of frame exchanges that is initiated by the AP MLD.  
(#12677)NOTE 2—A non-AP STA operating on one of the EMLSR links can change its power management mode and  
follows the procedure in 11.2 (Power management). A non-AP STA can listen on one of the EMLSR links in active  
mode or in PS mode when it is in awake state.

(…existing texts….)

— After receiving the initial Control frame of frame exchanges and transmitting an immediate response  
frame as a response to the initial Control frame, a (#12242)non-AP STA affiliated with the non-AP  
MLD that was listening on the corresponding link shall be able to transmit or receive frames on the  
link (#13814)on which the initial Control frame was received and shall not transmit or receive on the  
other EMLSR link(s) until the end of the frame exchanges, and subject to its spatial stream  
capabilities, operation mode, (#10088)and the minimum MAC padding duration of the Padding field  
of the initial Control frame, the non-AP STA affiliated with the non-AP MLD shall be capable of receiving a  
PPDU that is sent using more than one spatial stream on the link (#13814)on which the initial  
Control frame was received a SIFS after the end of its response frame transmission solicited by the  
initial Control frame. During the frame exchanges, the other AP(s) affiliated with the AP MLD shall  
not transmit frames to the other (#12242)non-AP STA(s) affiliated with the non-AP MLD on the  
other EMLSR link(s).

—The non-AP MLD shall be switched back to the listening operation on the EMLSR links after the  
time indicated (#10100)by the non-AP MLD in the EMLSR Transition Delay subfield of the EML  
Capabilities subfield in the Common Info field of the Basic Multi-Link element if any of the  
following conditions is met and this is defined as the end of the frame exchanges:  
• The MAC of the non-AP STA affiliated with the non-AP MLD that received the initial Control frame  
does not receive a PHY-RXSTART.indication primitive during a timeout interval of aSIFSTime  
+ aSlotTime + aRxPHYStartDelay starting at the end of the PPDU transmitted by the non-AP STA  
(#11461)affiliated with the non-AP MLD as a response to the most recently received frame from  
the AP affiliated with the AP MLD or starting at the end of the reception of the PPDU containing  
a frame for the non-AP STA from the AP affiliated with the AP MLD that does not require immediate  
acknowledgement.

• The MAC of the (#12242)non-AP STA affiliated with the non-AP MLD that received the initial  
Control frame receives a PHY-RXSTART.indication primitive during a timeout interval of aSIFSTime + aSlotTime + aRxPHYStartDelay starting at the end of the PPDU transmitted by the  
non-AP STA (#11461)affiliated with the non-AP MLD as a response to the most recently received frame  
from the AP affiliated with the AP MLD or starting at the end of the reception of the PPDU containing a frame for the non-AP STA from the AP affiliated with the AP MLD that does not require immediate acknowledgement and the (#12242)non-AP STA affiliated with the non-AP MLD does not  
detect, within the PPDU corresponding to the PHY-RXSTART.indication any of the following  
frames:

(…existing texts….)

***TGbe editor:*****Change “STA 1” in Figure 35-25—An example of a frame exchange sequence starting with the MU-RTS Trigger  
frame as the initial Control frame between an AP affiliated with an AP MLD and a non-AP  
STA affiliated with a non-AP MLD that is in the EMLSR mode(#10926)(#12242)** **to “non-AP STA1”**

***TGbe editor:*****Change “STA 1” in Figure 35-26—An example of a frame exchange sequence starting with the BSRP Trigger  
frame as the initial Control frame between an AP (AP 1) affiliated with an AP MLD and *n* different STAs affiliated with *n* different non-AP MLDs that are in the EMLSR** **to “non-AP STA1”**

***TGbe editor:*****Change title of Figure 35-26 as follows**

**Figure 35-26—An example of a frame exchange sequence starting with the BSRP Trigger  
frame as the initial Control frame between an AP (AP 1) affiliated with an AP MLD and *n* different non-AP STAs affiliated with *n* different non-AP MLDs that are in the EMLSR**

**35.3.18 Enhanced multi-link multi-radio operation**A non-AP MLD may operate in the EMLMR mode on a specified set of the enabled links as defined in  
9.4.1.74 (EML Control field) between the non-AP MLD and its associated AP MLD. The specified set of the  
enabled links in which the EMLMR mode is applied is called EMLMR links. A non-AP STA of the non-AP MLD  
that is on an eMLMR link is an eMLMR STA. The EMLMR links shall be indicated in the EMLMR Link  
Bitmap subfield of the EML Control field of the EML Operating Mode Notification frame (see 9.6.35.8  
(EML Operating Mode Notification frame details)) by setting the bit positions of the EMLMR Link Bitmap  
subfield to 1.

(…existing texts….)

After the end of the frame exchange sequence, each non-AP STA of the non-AP MLD in the EMLMR mode shall be  
able to transmit or receive PPDU, subject to its per-link spatial stream capabilities and operating mode  
defined by the exchanged Operating Mode Notification frame, (EHT) OM control and subject to any  
switching delay indicated by the non-AP MLD.

(…existing texts….)

**35.3.19 NSTR mobile AP MLD operation  
35.3.19.1 General**

(…existing texts….)

Non-AP STAs affiliated with a non-AP MLD that is associated with an NSTR mobile AP MLD and APs affiliated  
with an NSTR mobile AP MLD shall follow the procedure defined in 35.3.16.6 (Start time sync PPDUs  
medium access) when intending to transmit in the nonprimary link with the following additional constraints:  
— A (#12242)non-AP STA affiliated with the non-AP MLD may initiate a PPDU transmission to its  
associated AP affiliated with the NSTR mobile AP MLD in the nonprimary link only if the other  
(#12242)non-AP STA affiliated with the same (#13851)non-AP MLD in the primary link is also  
initiating the PPDU as a TXOP holder to its associated AP with the same start time.  
— An AP affiliated with the NSTR mobile AP MLD may initiate a PPDU transmission to its associated  
non-AP STA in the nonprimary link only if the other AP affiliated with the same NSTR mobile AP  
MLD in the primary link is also initiating the PPDU as a TXOP holder with the same start time.

(…existing texts….)

If non-AP STAs affiliated with a non-AP MLD or its associated NSTR mobile AP MLD simultaneously transmit  
PPDUs to a STA affiliated with an MLD that has dot11SRSOptionImplemented equal to true, and the  
transmitted PPDUs solicit control response frames and the MLD intends to align the end times of the PPDUs  
sent in response by the peer STAs, then at least one of the PPDUs soliciting a control response frame shall  
carry an MPDU with SRS Control subfield following the procedure defined in 35.3.16.5.2 (End time  
alignment of response PPDUs using SRS Control field).

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

(…existing texts….)

(#12230)TDLS discovery and setup (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)). 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 (#12242)non-AP STA  
affiliated with the non-AP MLD. The TDLS direct link, when successfully established, is between the TDLS  
(#12242)non-AP STA affiliated with the non-AP MLD and a TDLS peer STA at the other end of the direct  
link.

(…existing texts….)

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

**35.3.22 Proxy ARP service in AP MLDs**

(…existing texts….)

In this example, the AP MLD has two affiliated APs: AP1 operates on channel 1 in the 5 GHz band an AP2  
operates on channel 2 in the 6 GHz band. The AP MLD, AP1 and AP2, are connected to the DS, which is  
connected to the LAN via a portal (e.g., via Ethernet interface(s)). Two non-AP MLDs, Non-AP MLD1 and  
Non-AP MLD2, each with two affiliated STAs operating on channel 1 and channel 2, respectively, are  
associated with the AP MLD. The MLD MAC address of Non-AP MLD1 is MLD1-M, while IPv4 address  
MLD1-IPv4 and IPv6 address MLD1-IPv6 are assigned to Non-AP MLD1. STA5, which is a STA that is  
not affiliated with a non-AP MLD, is associated with AP1. The MAC address of STA5 is STA5-M, while  
IPv4 address STA5-IPv4 is assigned to STA5. STA6 is a device connected to the AP-MLD via the DS.  
When the AP MLD receives from STA6, via the DS, an ARP request with the target IP address set as the  
Non-AP MLD1’s IPv4 address, MLD1-IPv4, the proxy ARP service in AP MLD responds to STA6 with an  
ARP response packet with the Sender’s MAC Address set as MLD1-M. When the AP MLD receives from  
STA5, on channel 1, an ARP request with the target IP address set as MLD1-IPv4, the proxy ARP service in  
AP MLD responds to STA5 with an ARP response packet with the Sender’s MAC Address set as MLD1-M.  
When the AP MLD receives from Non-AP MLD2, on channel 2, a Neighbor Solicitation message with the  
target IP address set as the Non-AP MLD1’s IPv6 address, MLD1-IPv6, the proxy ARP service in AP MLD  
responds to Non-AP MLD2 with a Neighbor Advertisement message with the target link layer address set as  
MLD1-M. It is not shown in the figure, but when an ARP request is received by AP1 from non-AP STA3 affiliated  
with Non-AP MLD2, on channel 1, with the target IP address set as STA5’s IPv4 address, STA5-IPv4, the  
proxy ARP service in AP1 responds to non-AP STA3 with an ARP response packet with the Sender’s MAC Address  
set as STA5-M. However, if the ARP request with the target IP address set as STA5’s IPv4 address is  
received by AP2 from non-AP STA4 affiliated with Non-AP MLD2, on channel 2, the ARP request is forwarded to  
AP1 (e.g., via the DS) and the proxy ARP service in AP1 responds to non-AP STA4 (e.g., via the DS and AP2) with  
an ARP response packet with the Sender’s MAC Address set as STA5-M.

***TGbe editor:*****Change “STA 1”, “STA2”, “STA3”, “STA4” in Figure 35-37—Example of proxy ARP service by an AP MLD** **to “non-AP STA1”, “non-AP STA2”, “non-AP STA3”, “non-AP STA4”, respectively**