IEEE P802.11
Wireless LANs

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| 11be D3.0 CR for 35.3.19 |
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Abstract

This submission proposes resolutions for the following CIDs:

16957, 18169, 16956, 16958, 15227, 15228, 15727, 15728, 15887, 16107, 17359, 15565

15566, 18171, 18243, 15626, 15920, 16427, 16959, 16960, 16961, 16962, 18170, 17918, 18061

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: add more CIDs
* Rev 2: add CID 17918, 18061
* Rev 3: modifications based on comments during the presentation. Deferred CID 15626.
* Rev 4: change the comment resolution for CID 15626

16957

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 D3.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D3.0 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** |
| 16957 | Mark RISON | 35.3.19.1 | 573.14 | " Each AP affiliated with an NSTR mobile AP MLD may" -- this is not a restriction  | De-bullet-ify | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 16957 |
| 18169 | Abhishek Patil | 35.3.19.1 | 573.23 | The last bullet is not needed since we have a definition for NSTR Mobile AP MLD. | Delete the last bullet | AcceptedTGbe editor to delete the sentence shown in 11-23/0395r3 under all headings that include CID 18169 and 16956 |
| 16956 | Mark RISON | 35.3.19.1 | 573.23 | "The NSTR mobile AP MLD is in a mobile device that is typically battery powered" -- this is not a restriction | Change to a NOTE | RevisedTGbe editor to delete the sentence shown in 11-23/0395r3 under all headings that include CID 18169 and 16956 |
| 16958 | Mark RISON | 35.3.19.1 | 573.24 | "the same rules defined in 35.3.2" -- not clear: same as what? | Delete "same" | Accepted.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 16958 |
| 15227 | Akira Kishida | 35.3.19.1 | 573.27 | It should be clarified that the primary link is common to each non-AP MLD. If different primary links are established to each non-AP MLD, the AP MLD will have multiple primary links. | As in the comment. | RevisedClarify that the primary link is designated by the NSTR mobile AP MLD to all the associated non-AP MLD.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15227. |
| 15228 | Akira Kishida | 35.3.19.1 | 573.33 | The primary link is so important that management frames, such as Beacon frames, are transmitted on the link. Therefore, non-AP MLD should be able to request to switch the primary link to receive such management frames. | As in the comment. | Revised.Clarify that the primary link is designated to all associated non-AP MLDs. It should not be allowed for a non-AP MLD to request to change the designation of primary link.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15228. |
| 15727 | KENGO NAGATA | 35.3.19.1 | 573.27 | "An NSTR mobile AP MLD shall designate one link of an NSTR link pair as the primary link. The other link of the NSTR link pair is the nonprimary link. When the NSTR mobile AP MLD intends to change the channel/operating class for the primary link, it shall perform channel switch procedure. The NSTR mobile AP MLD shall schedule for transmissions of Beacon and Probe Response frames and group addressed Data frames only on the primary link."The primary link and the nonprimary link are unique concepts for an NSTR mobile AP MLD, compared to general muti-link features. Therefore, it shoud be clarified whether the primary link and the non-primary link are commonly used for all non-AP MLD, or they might be negotiable between an NSTR mobile AP MLD and each non-AP MLD. | If the primary link and the nonprimary link are commonly used for any non-AP STAs, please add the following language, "The primary link and the non-primary link shall be common for all the non-AP MLDs associating to the NSTR mobile AP MLD." | RevisedClarify that the primary link is designated by the NSTR mobile AP MLD to all the associated non-AP MLD.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15727. |
| 15728 | KENGO NAGATA |  |  | "NOTE 2--An NSTR mobile AP MLD that intends to switch its primary and nonprimary links performs a simultaneous channel switch on the primary link and nonprimary link following procedures defined in 11.8.8 (Selecting and advertising a new channel), 11.8.9 (Channel Switch Announcement element operation), 11.9 (Extended channel switching (ECS)), and 35.3.19.3 (NSTR mobile AP MLD multi-link procedures for channel switching, extended channel switching, and channel quieting)."This language can be read as the simultaneous channel switching is always initiated by an NSTR mobile AP MLD. However, non-AP MLDs should be able to request the channel switching, since Beacon and Probe Response frames and group addressed Data frames are transmitted only on the primary link. | Please add the following language."A non-AP MLDs associating to a NSTR mobile AP MLD may request to switch the primary and nonprimary links." | Revised.Clarify that the primary link is designated to all associated non-AP MLDs. It should not be allowed for a non-AP MLD to request to change the designation of primary link.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15728. |
| 15887 | Chunyu Hu | 35.3.19.1 | 573.27 | Rephrase the description to make it clear about how to designate a link as primary link, esp how a non-AP STA decides it. If it's implicitly determined by the beaconing link, can the AP MLD change it at any time? | Describe how a primary link is determined. | Revised.Clarify that the primary link is a common link that is designated to all associated non-AP MLDs. How to determine the primary link is implementation related.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15887. |
| 16107 | Insun Jang | 35.3.19.1 | 574.29 | Need to change "MLD Capabilities" to MLD Capabilities and Operations" | As in the comment | AcceptedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 16107. |
| 17359 | Alfred Asterjadhi | 35.3.19.1 | 586.11 | "Regarding "The NSTR mobile AP MLD shall operate with one or two affiliated APs including the AP operating on the primary link". Better to clarify when the NSTR mobile AP MLD is operating in one link. See suggested text | Replace" The NSTR mobile AP MLD shall operate with two affiliated APs, with one AP operating on the primary link, and the other AP operating on the nonprimary link, where the nonprimary link may be disabled". | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 17359. |
| 15565 | Chaoming Luo | 35.3.19.1 | 573.08 | It is confusing why a mobile AP MLD has only one link could be called NSTR mobile AP MLD. | Change to: "An NSTR mobile AP MLD shall have two links and shall follow the restrictions below"And add text to clarify when the nonprimary link of an NSTR mobile AP MLD is disabled/removed, the MLD is no longer an NSTR mobile AP MLD. | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15565. |
| 15566 | Chaoming Luo | 35.3.19.1 | 573.10 | Change "the links shall be part of an NSTR link pair" to "the links shall form an NSTR link pair" | As in comment. | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 15566. |
| 18171 | Abhishek Patil | 35.3.19.1 | 574.29 | The first sentence implies that the NSTR Mobile AP MLD cannot indicate value 3. While the 2nd sentence implies that the MLD cannot indicate value greater than 1. Therefore, the two sentences can be replaced with a single simple sentence as: "An NSTR mobile AP MLD shall set the value of TID-To-Link Mapping Negotiation Supported subfield of MLD Capabilities field of Basic Multi-Link element to at most 1." | As in comment. | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 18171. |
| 18243 | Li-Hsiang Sun | 35.3.19.1 | 513.39 | in 35.3.7.1.1 that TID-To-Link Mapping Negotiation Support subfield of MLD Capabilities field of the Basic Multi-Link element shall not be to set to 3 and value 2 is reservedHowever, there are multiple places in the draft indicates otherwise, such as in p541L23Need to resolve the inconsistency, either delete this sentence or delete other places indicating not all TIDs are mapped to all enabled links | As in comment | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 18243. |
| 15626 | Xiangxin Gu | 35.3.19.1 | 573.34 | "switch its primary and nonprimary links" is not clear. Does it mean that the primary link STA to be nonprimary link STA? | Please clarify it. | Revised.TGbe editor to make the changes shown in 11-23/0395r4 under all headings that include CID 15626. |
| 15920 | Zhou Lan | 35.3.19.1 | 573.01 | There is no definition of NSTR mobile AP MLD, please add the definition or clarify the usage of this term. | As in comment. | Rejected.The definition of NSTR mobile AP MLD has been defined as “nonsimultaneous transmit and receive (NSTR) mobile access point (AP) multi-link device (MLD):” in subclause “3.2 Definitions specific to IEEE 802.11”. |
| 16427 | Morteza Mehrnoush | 35.3.19 | 573.01 | There is no definition of NSTR mobile AP MLD, please add the definition or clarify the usage of this term. | As in comment | Rejected.The definition of NSTR mobile AP MLD has been defined as “nonsimultaneous transmit and receive (NSTR) mobile access point (AP) multi-link device (MLD):” in subclause “3.2 Definitions specific to IEEE 802.11”. |
| 16959 | Mark RISON | 35.3.19.1 | 573.29 | "channel switch procedure" missing article | As it says in the comment | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 16959. |
| 16960 | Mark RISON | 35.3.19.1 | 573.39 | "TSF timers" missing article | As it says in the comment. Also at line 41 | RevisedTGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 16960. |
| 16961 | Mark RISON | 35.3.19.1 | 573.39 | I'm not sure TSF has timers. I think maybe the TSF (the function) provides a time(base) | As it says in the comment | Rejected.This term has been used in many texts in D3.0  |
| 16962 | Mark RISON | 35.3.19.1 | 574.22 | "an MPDU with SRS Control subfield" missing article | As it says in the comment | Revised.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 16962. |
| 18170 | Abhishek Patil | 35.3.19.1 | 573.04 | There are several instances of 'in the (non)primary link'. A STA is not on a link, it operates on the link. | Replace all instances of 'in the (non)primary link' with 'operating on the (non)primary link' in this subclause. | Accepted.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 18170. |
| 17918 | Kazuto Yano | 35.3.19.1 | 573.48 | A period is missing at the end of this NOTE. | As it says in the comment | Accepted.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 17918. |
| 18061 | Albert Petrick | 35.3.19.1 | 573.48 | Missing period. | Add period after "link alone. " | Accepted.TGbe editor to make the changes shown in 11-23/0395r3 under all headings that include CID 17918. |

*TGbe editor: Change Clause 35.3.19.1 as follows (track change on):*

**35.3.19 NSTR mobile AP MLD operation**

**35.3.19.1 General**

An AP MLD that is an NSTR mobile AP MLD shall set dot11EHTNSTRMobileAPMLDImplemented to true, otherwise it shall set dot11EHTNSTRMobileAPMLDImplemented to false. An NSTR mobile AP MLD shall have at most two links, and the two links shall be operating on an NSTR link pair. . (#16957)

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(#16957) If an NSTR mobile AP MLD operates with two affiliated APs, one AP shall be operating on the primary link of the NSTR link pair, and the other AP shall be operating on the nonprimary link of the NSTR link pair. The primary link shall not be disabled and the nonprimary link may be disabled (#17359, 15565, 15566).

(#16957)Each AP affiliated with an NSTR mobile AP MLD may optionally support the following features in addition to the optional features supported by an AP affiliated with an AP MLD which is not an NSTR mobile AP MLD:

•Support of DL and UL OFDMA operation

•Support of two or more spatial streams

•Support for 160 MHz operating channel width in the 6 GHz band

•Support for MRU for DL/UL OFDMA if DL/UL OFDMA operation is supported

NOTE 1—An NSTR mobile AP MLD follows the (#16958) rules defined in 35.3.2 (Multi-link device addressing). The NSTR mobile AP MLD is in a mobile device that is typically battery powered. (#18169, 16956)

An NSTR mobile AP MLD shall designate one of the links of an NSTR link pair as the primary link. The other link of the NSTR link pair is the nonprimary link. When the NSTR mobile AP MLD intends to change the channel/operating class for the primary link, it shall perform the (#16959) channel switch procedure. The NSTR mobile AP MLD shall schedule for transmissions of Beacon and Probe Response frames and group addressed Data frames only on the primary link.

NOTE 2—The primary link is the same for all non-AP MLD (#15227, 15727, 15228, 15728). (#15887)How to determine a primary link is implementation related. (#15626) An NSTR mobile AP MLD can change the operating channel for either the primary or nonprimary link by following the procedures described in 11.8.8, 11.8.9 and 35.3.19.3. An NSTR mobile AP MLD that intends to swap the operating channel used for its primary and nonprimary links respectively must simultaneously perform the (extended) channel switch operation on both the links.

TSF timers of all APs affiliated with an NSTR mobile AP MLD shall be the same.

NOTE 3—Since the(#16960) TSF timers of all APs affiliated with an NSTR mobile AP MLD are the same, a non-AP MLD that is associated with an NSTR mobile AP MLD only needs to maintain one TSF timer for all the links.

A non-AP MLD shall perform frame exchanges during the authentication, (re)association, and 4-way handshake procedures only on the primary link of the NSTR mobile AP MLD.

NOTE 4—No frame exchange is allowed to be initiated through EDCA channel access on the nonprimary link alone.(#17918)

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 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 operating on(#18170) the nonprimary link only if the other non-AP STA affiliated with the same non-AP MLD operating on(#18170) 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 operating on(#18170) the nonprimary link only if the other AP affiliated with the same NSTR mobile AP MLD operating on(#18170) the primary link is also initiating the PPDU as a TXOP holder with the same start time.

APs affiliated with an NSTR mobile AP MLD that are simultaneously transmitting PPDUs to the associated non-AP STAs shall align the end time of PPDUs following the same rules that are defined for an AP MLD in 35.3.16.5 (PPDU end time alignment on a NSTR link pair).

Non-AP STAs affiliated with a non-AP MLD that are simultaneously transmitting PPDUs to the associated APs affiliated with an NSTR mobile AP MLD shall align the end time of PPDUs following the same rules that are defined for an AP MLD in 35.3.16.5 (PPDU end time alignment on a NSTR link pair).

NOTE 5—The end time alignment of PPDUs carrying the response frames follow the same rules as those for the soliciting PPDUs.

An NSTR mobile AP MLD shall set the SRS Support subfield in the Common Info field of the Basic Multi-Link element it transmits to 1 to indicate support for the reception of a frame that carries an SRS Control subfield if its dot11SRSOptionImplemented is true; otherwise, the MLD shall set it to 0.

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 the(#16962) SRS Control subfield following the procedure defined in 35.3.16.5.2 (End time alignment of response PPDUs using SRS Control field).

(#17359)An NSTR mobile AP MLD shall set the TID-To-Link Mapping Negotiation Support subfield of MLD Capabilities and Operations (#16107)field of the Basic Multi-Link element to at most 1. The TID-to-link mapping between the non-AP MLD and NSTR mobile AP MLD shall bedefault mapping mode or all TIDs shall be mapped to the primary link(#18171, 18243).