IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CR for CIDs related to NSTR Capability signaling | | | | |
| Date: 2021-02-21 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Dibakar Das | Intel |  |  | [Dibakar.das@intel.com](mailto:Dibakar.das@intel.com) |
| Laurent Cariou | Intel |  |  | [Laurent.cariou@intel.com](mailto:Laurent.cariou@intel.com) |
| Minyoung Park | Intel |  |  | Minyoung.Park@intel.com |
| Dmitry Akhmetov | Intel |  |  | Dmitry.akhmetov@intel.com |
| Dan Bravo | Intel |  |  |  |

Abstract

This document proposes to resolve the following CIDs: 1078, 1475, 2981.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Line** | **Clause Number** | **Comment** | **Proposed Change** | **Resolution** |
| 1078 | 142 | 29 | 35.3.13.4 | Fix the TBD | Add a (sub)field in the common portion of multi-link element (basic variant) to signal the MLD's STR capabilities with respect to a pair of links | **Revised.**  We added a subfield in the Link Info field of Multi-Link element described in 9.4.2.295b Multi-Link elementto signal whether each NSTR link pair is STR/NSTR. We also updated the text in 35.3.13.4 Capability signaling to describe usage of this new field.  TGbe editor to make the changes with the CID tag (#1078, 1475, 2981) in doc.: IEEE 802.11-21/0222r0  John Doe, Some Company |
| 1475 | 142 | 29 | 35.3.13.4 | In R1 timeframe an EHT non-AP STA MLD just needs to signal which of its STA/link pairs are STR/NSTR | Allow a non-AP MLD to signal its STR/NSTR capabilities as a bitmap in the Per STA profile of an ML element. | **Revised.**  We added a subfield in the Link Info field of Multi-Link element described in 9.4.2.295b Multi-Link elementto signal whether each NSTR link pair is STR/NSTR. We also updated the text in 35.3.13.4 Capability signaling to describe usage of this new field.  TGbe editor to make the changes with the CID tag (#1078, 1475, 2981) in doc.: IEEE 802.11-21/0222r0  John Doe, Some Company |
| 2981 | 142 | 29 | 35.3.13.4 | To provide information on NSTR link pair, I think the Multi-Link element is the right place. And to minimize the field length, it may be better to set the maximum number of NSTR link pairs. | As in comment. | **Revised.**  We added a subfield in the Link Info field of Multi-Link element described in 9.4.2.295b Multi-Link elementto signal whether each NSTR link pair is STR/NSTR. We also updated the text in 35.3.13.4 Capability signaling to describe usage of this new field.  TGbe editor to make the changes with the CID tag (#1078, 1475, 2981) in doc.: IEEE 802.11-21/0222r0  John Doe, Some Company |

**Discussion:**

All the comments are related about how to signal the NSTR/STR link pair capability which is currently missing in draft 0.3. We propose the following simplified signaling:

1. Have a bit in Common Info field to signal if there is at least one pair of NSTR link pairs among the set of STA profiles signaled in the Basic variant ML element when the MLD is a multi-radio MLD.
2. If that bit is set to 1, include a bitmap inside STA info of the ML element that contains the STR/NSTR link pair signaling. Essentially, if there are 3 STA profiles included, inside the STA-profile #2, the bitmap position 0 signals if link pairs (1,2) are STR/NSTR, the bitmap position 1 signals if link pairs (2,3) are STR/NTSTR and so on.
3. The signaling is symmetric that is, if link pairs (1,2) are NSTR, then (2,1) is clearly NSTR as well.
4. The bitmap has a semi-fixed size. That is, if there are less than 10 STA-profiles included, then the bitmap has size of 1 octet, otherwise it has a size of 2 octets. Note that per the format of Link ID field, there can be upto 16 STA-profiles overall.
5. Optimize the signaling in Comon Info field by including some MLD-specific info in a separate field inside the Common Info field of the ML element.

***TGbe editor: Revise Figure 9-788eg and the text starting in P74L20 of draft 0.3 as follows:***

B0 TBD TBD TBD TBD 15

|  |  |  |  |
| --- | --- | --- | --- |
| Type | MLD MAC Address Present | MLD Information Present | Reserved |

Bits: TBD 1 1 TBD

**Figure 9-788eg—Multi-Link Control field** (#1078, 1475, 2981)

The MLD MAC Address Present subfield is set to 1 if the MLD MAC Address field is present in the Common Info field. Otherwise the subfield is set to 0.

The MLD Information Present subfield is set to 1 if the MLD Information subfield is present in the Common Info field. Otherwise the subfield is set to 0 (#1078, 1475, 2981).

***TGbe editor: Revise Figure 9-788eh and the text starting in P74L59 of draft 0.3 as follows:***

**9.4.2.295b.2 Basic variant Multi-Link element** (#1078, 1475, 2981)

|  |  |  |
| --- | --- | --- |
| MLD MAC Address | MLD Information | TBD |

Octets: 0 or 6 2 TBD

**Figure 9-788eg—Multi-Link Control field**

The condition for the presence of the MLD Information subfield in the Common Info field is defined in 35.3.13.4 (Capability signaling). The format of the MLD Information field is defined in Figure 9-788ex (MLD Information field).

B0 B2 B3 B4 B7 B8 B15

|  |  |  |  |
| --- | --- | --- | --- |
| Number of Radios | NSTR Link-Pair Present | Number of STA Profiles | Reserved |

Bits: 3 1 4 8

**Figure 9-788ex- MLD Information field**

The MLD Information subfields are defined in Table 9-322xy (MLD Information subfields)

**Table 9-322xy- MLD Information subfields**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Number of Radios | Number of radios at the MLD | Set to the number of radios at the MLD minus 1. |
| NSTR Link-Pair Present | Indicates if at least one NSTR link pair is present at the MLD | Set to 1 if the value of the Number of Radios field is greater than 0 and the MLD contains at least one NSTR link pair.  Set to 0 otherwise. |
| Number of STA Profiles | Number of Per-STA Profiles Indicator | Set to the number of Per-STA Profile subfields present in the Link Info field minus 1. |

Other fields are TBD.

***TGbe editor: Add Figure 9-788eh and modify the text starting in P74L56 of draft 0.3 as follows:***

The Complete Profile subfield is set to 1 when the Per-STA Profile subelement of the Multi-Link element is complete as defined in 35.3.2.2 (Complete or partial per-STA profile). Otherwise the subfield is set to 0.

If the Complete Profile subfield is set to 1 and the NSTR Link-Pair Present subfield is set to 1 in the MLD Information field, then the second subfield in the Per-STA Profile field is the NSTR Indication Bitmap defined in Figure 9-788ey (NSTR Indication Bitmap). Otherwise, the NSTR Indication Bitmap field is not present. When the NSTR Indication Bitmap field is present its length is 2 octets if the Number of STA-Profiles subfield value in the MLD Information field is greater than 8; otherwise, its length is 1 octet. Each bit Bj (where 0 ≤*j*≤ Number of STA Profiles subfield value -1) in the NSTR Indication Bitmap included in the *i*-th Per-STA Profile (where 0 ≤*i*≤ Number of STA Profiles subfield value) is set to 1 to signal the link pair corresponding to the *i*-th Per-STA Profile and the *k*-th Per-STA Profile is NSTR where

and is set to 0 otherwise.

B0 B7 or B15

|  |
| --- |
| NSTR Indication Bitmap |

Octets: 1 or 2

**Figure 9-788ey- NSTR Indication Bitmap**

Other subfields are TBD.

***TGbe editor: Revise Figure 35-1 in P128L6 of draft 0.3 as follows:***



**Figure 35-1—Illustration of Basic variant Multi-Link element carrying a complete per-STA profile**

***TGbe editor: Add the following text before the paragraph starting in P142L38 of draft 0.3 as follows:***

**35.3.13.4 Capability signaling** (#1078, 1475, 2981)

An MLD shall set the MLD Information Present subfield in the Multi-Link Control field of the Basic variant Multi-Link element to 1. The MLD shall set the Number of STA Profiles subfield value in the MLD Information field to the number of Per-STA Profile subfields that are included in the Link Info field of the Multi-Link element minus 1.

A non-AP MLD shall set the NSTR Link-Pair Present field value to 1 only if it’s a multi-radio MLD and contains at least one NSTR link pair. An AP MLD shall set the NSTR Link-Pair Present field value to 0 if it’s not a soft AP MLD. An MLD that sets the NSTR Link-Pair Present field to 1 may optionally include additional information to describe the NSTR constraints for link pairs that are signaled to be NSTR, details are TBD.

**Straw Poll: Do you support to incorporate the proposed draft text in document 11-21/0222r0 to the next versioin of TGbe Draft?**

**Result: Yes/No/Abstain**