IEEE P802.11
Wireless LANs

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| Resolution for CIDs related to 35.11.3.1 (CC 36) |
| Date: April 10, 2021 |
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 Abstract

This submission proposes resolutions for following 21 CIDs received for TGbe CC36: 4176, 4449, 4450, 5627, 5870, 5871, 7547, 4177, 4178, 4179, 4338, 5628, 6516, 6747, 7863, 5629, 5621, 5626, 7864, 5624, 5619

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

***Editing instructions formatted like this are intended to be copied into the TGbe 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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Section** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 4176 | 35.11.3.1 | 307.32 | I'm a bit confused. NSEP request/responses are at MLD level but priority access is at link level, but EDCA parameter set (which is at link level) is included in the NSEP response (which is at MLD level). But then which link does EDCA parameter set applies to? all of them, or the one where response is sent? Please clarify. | As in comment. | Note: per clarification with the commenter, the page/line numbers should be 309/61.**Revised**Agree in principle with the comment. The NSEP priority access is at MLD level.The AP affiliated with the NSEP AP MLD should indicate the EDCA parameter sets, if present, corresponding to the links in the NSEP priority access setup procedure. See the discussion and revised text labelled as #4176.**TGbe editor please implement changes labelled as #4176 in this doc.** |
| 5870 | 35.11.3.1 | 309.59 | In the first setence of Section 35.11.3.1, why the text "or a non-AP EHT STA" is needed if the negotiation to enable NSEP priority access between an AP MLD and a non-AP MLD is successful? Note that the negotiation is at the MLD level.." | Delete the text "or a non-AP EHT STA" in the first setence of Section 135.11.3.1. | **Accepted**  |
| 5627 | 35.11.3.1 | 310.01 | Requirement for AP MLD to ensure that only authorized non-AP MLDs can invoke NSEP priority access is redundant. | Revise text to reflect that non-AP MLD shall only make use of NSEP priority access when authorized by the AP MLD. | **Revised**Agree in principle with the comment and revise the text accordingly. **TGbe editor please implement changes labelled as #5627 in this doc.** |
| 7547 | 35.11.3.1 | 310.01 | "The AP MLD shall ensure that only authorized non-AP MLDs can invoke NSEP priority access." One way to ensure is to disassociate violating STAs. It may be described here. A new Status Code value may be introduced for this purpose. | As in comment. | **Rejected**The authentication and authorization for using NSEP priority service is at higher layer management, which is out of the scope of this specification.Regarding disassociation of un-authorized non-AP MLD which is using NSEP priority access, it would be difficult for the NSEP AP MLD to verify whether it is using NSEP priority access or not as the non-NSEP non-AP MLDs are also permitted to share the medium.  |
| 4449 | 35.11.3.1 | 310.06 | The sentence does not clarify whether it is required that at least one of the affiliated APs shall have a value of true for dot11EHTNSEPPriorityAccessActivated or all the affiliated APs shall have a value of true for dot11EHTNSEPPriorityAccessActivated. | Please clarify if the requirement for having a value of true for dot11EHTNSEPPriorityAccessActivated is required for \*all\* affiliated APs or \*for at least one\* of the affiliated APs | **Revised**Agree in principle with the comment. The NSEP priority access is at MLD level and applies to all affiliated APs. The corresponding text is revised accordingly.**TGbe editor please implement changes labelled as #4449 in this doc.** |
| 5871 | 35.11.3.1 | 310.06 | "Can STAs affiliated with an MLD have different values for dot11EHTNSEPPriorityAccessActivated?If not, why not? It is a per STA attribute.If yes, then the text in line 6 to line 11 on page 310 does cover the case of STAs in an MLD with different vaues for dot11EHTNSEPPriorityAccessActivated." | Please address the questions asked in this comment and clarify the text in line 6 to line 11 on page 310. | **Revised**Agree in principle with the comment. The NSEP priority access is at MLD level and applies to all affiliated APs. The MIB variable dot11EHTNSEPPriorityAccessActivated is at the MLD level.Please refer to CR of CID #4450. **TGbe editor please implement changes labelled as #5871 in this doc.** |
| 4450 | 35.11.3.1 | 310.09 | The sentence does not clarify whether it is required that at least one of the affiliated non-AP STAs shall have a value of true for dot11EHTNSEPPriorityAccessActivated or all the affiliated non-AP STAs shall have a value of true for dot11EHTNSEPPriorityAccessActivated. | Please clarify if the requirement for having a value of true for dot11EHTNSEPPriorityAccessActivated is required for \*all\* affiliated non-AP STAs or \*for at least one\* of the affiliated non-AP STAs | **Revised**Agree in principle with the comment. The NSEP is enabled at MLD level and applies to all affiliated non-AP STAs.The corresponding text is resolved in conjunction with #5871.**TGbe editor please implement changes labelled as #4450 in this doc.** |
| 7863 | 35.11.3.2 | 310.19 | Please change "NSEP MLD" in following sentence "the STA affiliated with NSEP MLD shall update its CWmin[AC], CWmax[AC], AIFSN[AC], and TXOP[AC] state variables to the values provided in the EDCA Parameter Set element for the corresponding AP in the NSEP Priority Access Enable Request Action frame or NSEP Priority Access Enable Response Action frame" to "NSEP non-AP MLD". | See the comment | **Accepted**  |
| 4338 | 35.11.3.2 | 310.20 | The state variable "TXOP[AC]" should be replaced with "TXOP\_Limit[AC]" state variable to reflect the value of the TXOP Limit field. | As in comment. | **Accepted**  |
| 6516 | 35.11.3.2 | 310.16 | "It is not clear how the NSEP priority access procedure functions. Typically, what is/are the AC(s)- used for frames invoking the NSEP priority access,- to be limited during a NSEP priority access- to be used as emergency during a NSEP priority access ?" | See the comment | **Revised**Agree in principle with the comment.NSEP priority access is for the authorized NSEP device and enabled through the NSEP priority access setup process (see 35.15.2.2). It cannot be used for other emergency service.The resolution is in conjunction with #4176 in Clause 35.15.3.2 about the procedures for using the EDCA parameters and corresponding ACs for NSEP AP MLDs and NSEP non-AP MLDs. ACs for enabling the NSEP priority access are defined in Clause 11.24.1.2**TGbe editor please implement changes labelled as #6516 in this doc.** |
| 5626 | 35.11.2.2.3.2 | 309.22 | Priority access treatment procedure defined in 35.11.3 requires non-AP MLD to accept EDCA parameters to sent by AP MLD in the NSEP Priority Access Enable Request frame. Need to describe that behavior here. | Add text to capture EDCA-related requirements. | **Revised**Agree in principle with the comment and revise the text accordingly. **TGbe editor please implement changes labelled as #5626 in this doc.** |
| 4177 | 35.11.3.2 | 310.19 | These updates apply to for all Acs. Please apply throughout. | As in comment. | **Revised**Agree in principle with the comment. Add text “of all access categories”.**TGbe editor please implement changes labelled as #4177 in this doc.** |
| 4178 | 35.11.3.2 | 310.28 | A note is needed here to specify that the NSEP STA continues to follow the MU EDCA operation rules that are defined in 26.smth since the NSEP STA is also an HE STA. | As in comment. | **Revised**Agree in principle with the comment. When the NSEP priority access is enabled or torn down, an NSEP non-AP MLD should follow the rule to update MU EDCA parameters. **TGbe editor please implement changes labelled as #4178 in this doc.** |
| 6747 | 35.11.3.2 | 310.36 | Why mandate lowering of priority for non-NSEP STAs? The priority of NSEP traffic has already been increased, lowering should be optional for the AP. | Change " ... shall announce EDCA parameters..." to "... should shall announce EDCA parameters" | **Revised**Agree in principle with the comment.The AP shall lower the priority for the non-NSEP devices’ channel access only when their priority is equal to or higher than the NSEP EDCA priority. **TGbe editor please implement changes labelled as #6747 in this doc.** |
| 4179 | 35.11.3.2 | 310.38 | This is something along either increase priority for NSEP or lower for non-SEP. So just remove the refernce subclause in this sentence. That way it does not matter how the prioritized access is achieved. If needed just add anote mentioning both cases. | As in comment. | **Rejected**The text already says “ that leads to lower priority for all non-NSEP STAs”. The reference indicates the procedure for an AP affiliated with the NSEP AP MLD to follow when NSEP PA is enabled.  |
| 5628 | 35.11.3.2 | 310.39 | "Grammatical errors:- ""leads"" should be ""lead""- ""parameters are being"" should be ""parameters being""" | As in comment. | **Accepted** |
| 5621 | 35.11.2.2.2.3 | 307.41 | Priority access treatment procedure defined in 35.11.3 requires AP MLD to transmit EDCA parameters to target non-AP MLD in the NSEP Priority Access Enable Request frame. Need to describe that behavior here. | Add text to capture EDCA-related requirements. | **Revised**Agree in principle with the comment. Add the text “the NSEP EDCA parameter set may be included in NSEP Priority Access Enable request to the NSEP non-AP MLD”.See text change labelled as #5621.**TGbe editor please implement changes labelled as #5621 in this doc.** |
| 5629 | 35.11.3.2 | 311.40 | Revise requirement to distribute updated EDCA parameters to non-NSEP STAs: to "Each AP affiliated with an NSEP AP MLD that has NSEP priority access for at least one associated NSEP STA shall announce EDCA parameters in Management frames it transmits (see 10.2.3.2 (HCF contention based channel access (EDCA))) that lead to lower priority for all STAs without NSEP priority access enabled compared to the EDCA parameters being used by associated NSEP STAs on that link that have NSEP priority access enabled." | As in comment | **Revised**Agree in principle with the comment and revise the text accordingly. **TGbe editor please implement changes labelled as #5629 in this doc.** |
| 7864 | 35.11.3.2 | 310.25 | The procedure of EDCA operation using NSEP EDCA parameters is not efficient and effective for the NSEP AP MLD to control NSEP non-AP devices to perform EDCA based channel access when multiple NSEP non-AP devices contend to media at same time and cause access congestion. | Please define a method to allow an NSEP AP MLD to update NSEP EDCA parameters in broadcast way to control NSEP enabled non-AP devices' priority access when experiencing NSEP priority access congestion. | **Revised**Agree in principle with the comment. Revise text to allow an NSEP AP MLD to update EDCA parameter set in a unsolicited broadcast NSEP Priority Access Enable response to NSEP non-AP MLD with NSEP Priority Access state set to enabled. **TGbe editor please implement changes labelled as #7864 in this doc.** |
| 5624 | 35.11.2.2.3.1 | 308.33 | Priority access treatment procedure defined in 35.11.3 requires AP MLD to transmit EDCA parameters to requesting non-AP MLD in the NSEP Priority Access Enable Response frame. Need to describe that behavior here. | Add text to capture EDCA-related requirements. | **Revised**Agree in principle with the comment and add the text for the AP MLD to carry NSEP EDCA parameter sets in the NSEP Priority Access Enable response. See the text change labelled as #5624. **TGbe editor please implement changes labelled as #5624 in this doc.** |
| 5619 | 35.11.2.2.2.1 | 306.58 | Priority access treatment procedure defined in 35.11.3 requires non-AP MLD to accept EDCA parameters to sent by AP MLD in the NSEP Priority Access Enable Response frame. Need to describe that behavior here. | Add text to capture EDCA-related requirements. | **Revised**Agree in principle with the comment. Suggest adding the text to update EDCA parameter set to the NSEP EDCA parameter sets received in NSEP Priority Access Enable response. Please refer to the text change labelled as #5619.**TGbe editor please implement changes labelled as #5619 in this doc.** |

**Discussion**

**Discussion**: NSEP priority access is a special service for NSEP authorized devices. When an NSEP non-AP MLD and an NSEP AP MLD exchange NSEP Priority Access Enable Request and Response messages on a setup link and succeed, the NSEP priority access service is enabled at MLD level. The NSEP priority access enabled non-AP MLD is allowed to gain NSEP priority access on all setup links.

Based on the discussion and SP result in the contribution of 11-21-1862-00-00be-NSEP priority access treatment, it is preferred to Option B to distribute the dedicated EDCA parameter set to NSPE non-AP MLD.

Option B: Using dedicated NSEP EDCA Parameters in Request/Response Frames as described shown in slide #5

***TGbe editor: Please note baseline is 11be D1.3.***

**9.4.2.312 Multi-Link element**

**9.4.2.312.1 General**

***TGbe editor: Add a new row to Table 9-401b (Type subfield encoding) in numerical order, and update the Reserved row:***

**Table 9-401b—Type subfield encoding (#4176)**

|  |  |
| --- | --- |
| **Type subfield value**  | **Multi-Link element variant name**  |
|
| 0 | Basic (see 9.4.2.312.2 (Basic Multi-Link element)) |
| 1 | Probe Request (see 9.4.2.312.3 (Probe Request Multi-Link element)) |
| 2 | Priority Access (see 9.4.2.312.5 (Priority Access Multi-Link element)) |
| 3-7 | Reserved  |

***TGbe editor: Add the following new subclause:***

**9.4.2.312.5 Priority Access Multi-Link element (#4176)**

The Priority Access Multi-Link element carries EDCA Parameter sets used by NSEP priority access (see 35.15 (NSEP priority access)).

The format of the Presence Bitmap subfield of the Priority Access Multi-Link element is defined in Figure 9-1002f1 (Presence Bitmap subfield of the Priority Access Multi-Link element format).

|  |  |  |
| --- | --- | --- |
|  | B0 | B1 B11 |
|  | AP MLD MAC Address Present | Reserved |
| Bits: | 1 | 11 |

**Figure 9-1002f1—Presence Bitmap subfield of the Priority Access Multi-Link element format**

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

The format of the Common Info field of the Priority Access Multi-Link element is defined in Figure 9-1002f2 (Common Info field of the Priority Access Multi-Link element format).

|  |  |
| --- | --- |
|  | AP MLD MACAddress |
| Octets: | 0 or 6 |

**Figure 9-1002f2—Common Info field of the Priority Access Multi-Link element format**

The AP MLD MAC Address subfield specifies the MAC Address of the AP MLD which the AP transmitting the Priority Access Multi-Link element is affiliated with.

The Link Info field contains zero or more subelements of Per-STA Profile. The subelement format and ordering of subelements are defined in 9.4.3 (Subelements).

The Subelement ID field values for the defined subelements of the Priority Access Multi-Link element are shown in Table 9-1002f3 (Optional subelement IDs for Priority Access Multi-Link element).

**Table 9-1002f3— Optional subelement IDs for the Priority Access Multi-Link element**

|  |  |  |
| --- | --- | --- |
| **Subelement ID** | **Name** | **Extensible** |
| 0 | Per-STA Profile  | Yes |
| 1-220 | Reserved  |  |
| 221 | Vendor Specific | Vendor defined |
| 222-255 | Reserved  |  |

Each Per-STA Profile subelement starts with a STA Control field, followed by a variable number of fields and elements.

The format of a Per-STA Profile subelement is defined in Figure 9-1002f4 (Per-STA Profile subelement format for the Priority Access Multi-Link element).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | SubelementID | Length | STA Control | STA Profile |
| Octets: | 1 | 1 | 2 | variable |

**Figure 9-1002f4—Per-STA Profile subelement format for the Priority Access Multi-Link element**

The format of the STA Control field is defined in Figure 9-1002f5 ([STA Control field format for the Priority Access Multi-Link element](#bookmark46)).

|  |  |  |
| --- | --- | --- |
|  | B0 B3 | B4 B15 |
|  | Link ID | Reserved |
| Bits: | 4 | 12 |

**Figure 9-1002f5—STA Control field format for the Priority Access Multi-Link element**

The Link ID subfield specifies a value that uniquely identifies the link that the AP affiliated with the AP MLD is operating on.

The STA Profile subfield only contains the EDCA Parameter Set element defined in 9.4.2.28 (EDCA Parameter Set element) which carries the EDCA parameter information used for priority access on the link identified by the Link ID in the STA Control field.

The Vendor Specific subelements have the same format as their corresponding elements (see 9.4.2.25 (Vendor Specific element)). Zero or more Vendor Specific subelements are included in the list of optional subelements.

*TGbe editor: Change 35.15.3 as follows (track change on):*

* + 1. **NSEP priority access procedure**
			1. **General(#1709)**

(#1470)(#2306)(#1709)(#2171) (#4176) (#4450) NSEP priority access procedure allows NSEP non-AP MLDs with NSEP priority access state set to enabled to gain priority access to medium. If the negotiation to enable NSEP priority access between an AP MLD and a non-AP MLD over an enabled link is successful, then both the AP MLD and the non-AP MLD shall apply NSEP priority access to their respective NSEP traffic on all enabled links using the procedure

 (#4176) (#4450).

An NSEP non-AP MLD shall perform NSEP priority access only when its NSEP priority access state is set to enabled. (#5627) An NSEP AP MLD may apply NSEP priority access to NSEP traffic using the procedure described below prior to completion of the negotiation to enable NSEP priority access.

An NSEP AP MLD is an AP MLD with dot11EHTNSEPPriorityAccessActivated set to true (#4449).

An NSEP non-AP MLD is a non-AP MLD with dot11EHTNSEPPriorityAccessActivated set to true (#5871) (#4450).

* + - 1. **EDCA operation using NSEP EDCA parameters(#1709)(#2171)**

As part of the NSEP priority access procedure, a STA affiliated with an NSEP non-AP (#5626) MLD shall manage its EDCA parameter sets as follows:

— During the process of enabling NSEP priority access, the STA affiliated with NSEP non-AP (#7863) MLD shall update its CWmin[AC], CWmax[AC], AIFSN[AC], and TXOP Limit(#4338) [AC] state variables of all access categories to: (#6516) (#4177)

* the values provided in the Priority Access Multi-Link element for the corresponding AP affiliated with the NSEP AP MLD when present in the NSEP Priority Access Enable Request Action frame or NSEP Priority Access Enable Response Action frame (#6747)(#5626)(#5619)(#4176) or,
* the default EDCA parameter values found in Table 9- 155 (Default EDCA Parameter Set element parameter values if dot11OCBActivated is false or the STA is a non-sensor STA) otherwise.

— While NSEP priority access is enabled,

* a STA affiliated with the NSEP non-AP MLD with its NSEP priority access state set to enabled shall use the latest EDCA parameter set corresponding to the link in the Priority Access Multi-Link element received in NSEP Priority Access Enable request or NSEP Priority Access Enable response for NSEP priority access. (#5626)(#5619)(#4176)
* the STA affiliated with NSEP non-AP MLD with its NSEP priority access state set to enabled shall ignore EDCA parameters that are sent by the corresponding AP in its Beacon and Probe Response frames using the procedures in 10.2.3.2 (HCF contention based channel access (EDCA)),
* Note: the STA affiliated with NSEP non-AP MLD follows the rules of MU EDCA operation defined in 26.2.7 (EDCA operation using MU EDCA parameters.(#4178)

— After the NSEP priority access is torn down,

* the STA affiliated with an NSEP non-AP MLD with its NSEP priority access state set to torn down (#5626)(#5619) shall update its CWmin[AC], CWmax[AC], AIFSN[AC], and TXOP Limit [AC] state variables following the procedures in 10.2.3.2 (HCF contention based channel access (EDCA)).
* Note: the STA affiliated with NSEP non-AP MLD follows the rules of MU EDCA operation defined in 26.2.7 (EDCA operation using MU EDCA parameters.(#4178)

As part of the NSEP priority access procedure, an AP affiliated with an NSEP AP MLD shall manage its EDCA parameter sets as follows (#5624)(5621):

— (#5624) An NSEP AP MLD shall follow the procedure defined in 35.15.2.2.4 Procedure at the receiving AP MLD to enable NSEP priority access for the requesting non-AP MLD with the NSEP priority access state set to torn down.

* If the NSEP AP MLD responds to the requesting non-AP MLD with the Status Code set to SUCCESS, it may include the Priority Access Multi-Link element in the NSEP Priority Access Enable response frame to allow the requesting NSEP non-AP MLD to employ priority access using the included EDCA parameter set on the corresponding links.

— (#5621) An NSEP AP MLD shall follow the procedure defined in 35.15.2.2.3 Procedure at the originating AP MLD to enable the destinating NSEP non-AP MLDs with NSEP priority access in the torn down state for NSEP priority access.

* The NSEP AP MLD may include the Priority Access Multi-Link element in the NSEP Priority Access Enable request to the destinating NSEP non-AP MLDs to enable NSEP priority access with the included EDCA parameter set on the corresponding link.

— (#5629) If the NSEP priority access state is set to enabled by at least one associated NSEP non-AP MLD, then

* if the EDCA parameters previously sent out by an AP affiliated with an NSEP AP MLD in Management frames (see 10.2.3.2 (HCF contention based channel access (EDCA))) do not result in higher priority for STAs that are affiliated with NSEP non-AP MLDs that have NSEP priority access enabled, (#6747) that AP shall announce EDCA parameters in Management frames that result in higher priority for those STAs with NSEP priority access enabled; (#5628).
* the NSEP AP MLD may update the NSEP EDCA parameters by transmitting unsolicited broadcast NSEP Priority Access Enable response frame that include a Priority Access Multi-Link element to NSEP non-AP MLDs with the NSEP priority access state set to enabled. (#4176) (#7864)

 Otherwise,

* an AP affiliated with an NSEP AP MLD with its NSEP priority access state set to torn down should announce the EDCA parameter set corresponding to the link in Management frames (e.g. Beacon or Probe Response) that it transmits following the procedure in 10.2.3.2 (HCF contention based channel access (EDCA)). (#5629)