IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB271 CR for Clause 35.16.2 | | | | |
| Date: 2023-06-02 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Arik Klein | Huawei | Huawei TLV Research Center |  | [arik.klein@huawei.com](mailto:arik.klein@huawei.com) |
| Michael Montemurro | Huawei | Huawei Ottawa Research Center |  | [michael.montemurro@huawei.com](mailto:michael.montemurro@huawei.com) |
| Stephen McCann | Huawei | Huawei Ottawa Research Center |  | stephen.mccann@huawei.com |
| John Wullert  Subir Das | PERATON LABS |  |  | <jwullert@peratonlabs.com>  <sdas@peratonlabs.com> |
| Peshal Nayak | Samsung USA |  |  | [p.nayak@samsung.com](mailto:p.nayak@samsung.com) |
|  |  |  |  |  |

Abstract

This submission proposes CR for 8 CIDs: 16572, 18342, 15440, 16703, 16704, 16707, 16573, 18338 (LB271) regarding clause 35.16.2 - EPCS priority access operation

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.***

*Part 1*

| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 16572 | Arik Klein |  | 35.16.2 | In the case of MLO, when the EPCS priority access is established - it applies for all setup links, though it might not be suitable to be used on all the setup links.  Need to add the capability for EPCS priority access to be optionally enabled only on a specific subset of the MLD setup links (or alternatively to be prohibited on a specific subset of setup links). | The commenter will provide a contribution on this issue, as pointed in the comment | **Revised**  Agree with the comment. Add a text to support different mapping of links for EPCS priority access service.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16572.** |
| 18342 | Peshal Nayak | 646/50 | 35.16.2 | EPCS operation currently applies to all links of the MLD. However, some of the links may not be suitable for EPCS operation. Consequently, a link level EPCS operation needs to be defined. | As in the comment | **Revised**  Agree in principle with the comment.  Add a text to support different mapping of links for EPCS priority access service  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 18342.** |

*TGbe editor: Please note baseline is 11be D3.2 and REVme D**2.1*

\*\*\*\*\* Resolution of CIDs 16572, 18342 \*\*\*\*\*\*

* + - 1. **MLME-EPCSPRIACCESSENABLE.request**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

* + - * 1. **Function**

This primitive initiates a request to a peer MAC entity to enable EPCS priority access.

* + - * 1. **Semantics of the service primitive**

The primitive parameters are as follows:

MLME-EPCSPRIACCESSENABLE.request(

PeerSTAAddress, Dialog Token,

(#10199)PriorityAccessMultiLink

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the peer MAC entity with which the EPCS priority access procedure is performed. |
| Dialog Token | Integer | 0–255 | The dialog token to identify the EPCS priority access procedure. |
| (#10199)PriorityA ccessMultiLink | Priority Access Multi-Link element | As defined in 9.4.2.312.6 (Priority Access Multi-Link element) | (#16572, 18342)Specifies the parameters used by EPCS priority access. (#11793)This parameter is optionally present if the primitive is generated by an AP MLD, and not present otherwise (see 35.16.2.2 (Setup procedures for EPCS priority access)). |

* + - 1. **MLME-EPCSPRIACCESSENABLE.confirm**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

* + - * 1. **Function**

This primitive reports the response to a request to enable EPCS priority access with a peer MAC entity.

* + - * 1. **Semantics of the service primitive**

The primitive parameters are as follows:

MLME-EPCSPRIACCESSENABLE.confirm(

PeerSTAAddress, Dialog Token,

Status Code,

(#10199)PriorityAccessMultiLink

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the peer MAC entity with which the EPCS priority access procedure is performed. |
| Dialog Token | Integer | 0–255 | The dialog token to identify the EPCS priority access procedure. |
| Status Code | As defined in frame format | As defined in 9.4.1.9 (Status Code field) | Indicates the status of the request procedure |
| (#10199)PriorityA ccessMultiLink | Priority Access Multi-Link element | As defined in 9.4.2.312.6 (Priority Access Multi-Link element) | (#16572, 18342)Specifies the parameters used by EPCS priority access. |

* + - 1. **MLME-EPCSPRIACCESSENABLE.indication**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

* + - * 1. **Function**

This primitive indicates that a request to enable EPCS priority access has been received from a peer MAC entity.

* + - * 1. **Semantics of the service primitive**

The primitive parameters are as follows:

MLME-EPCSPRIACCESSENABLE.indication(

PeerSTAAddress, Dialog Token,

(#10199)PriorityAccessMultiLink

)

| **Name** | **Type** | **Valid range** | **Description** |
| --- | --- | --- | --- |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the peer MAC entity with which the EPCS priority access procedure is performed. |
| Dialog Token | Integer | 0–255 | The dialog token to identify the EPCS priority access procedure. |
| (#10199)PriorityA ccessMultiLink | Priority Access Multi-Link element | As defined in 9.4.2.312.6 (Priority Access Multi-Link element) | (#16572, 18342)Specifies the parameters used by EPCS priority access. |

* + - 1. **MLME-EPCSPRIACCESSENABLE.response**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

* + - * 1. **Function**

This primitive is generated by the MLME to send a response to a peer MAC entity that sent a request to ena- ble EPCS priority access.

* + - * 1. **Semantics of the service primitive**

The primitive parameters are as follows:

MLME-EPCSPRIACCESSENABLE.response(

PeerSTAAddress, Dialog Token,

Status Code,

(#10199)PriorityAccessMultiLink

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the peer MAC entity with which the EPCS priority access procedure is performed. |
| Dialog Token | Integer | 0–255 | The dialog token to identify the EPCS priority access procedure. |
| Status Code | As defined in frame format | As defined in 9.4.1.9 (Status Code field) | Indicates the status of the request procedure |
| (#10199)PriorityA ccessMultiLink | Priority Access Multi-Link element | As defined in 9.4.2.312.6 (Priority Access Multi-Link element) | (#16572, 18342) Specifies the parameters used by EPCS priority access. (#11793)This parameter is optionally present if the primitive is generated by an AP MLD, and not present otherwise (see 35.16.2.2 (Setup procedures for EPCS priority access)). |

# Management and Extension frame body components

* + 1. **Fields that are not elements**

(#16572, 18342)

***TGbe editor: Please insert a new subclause after 9.4.1.71, as follows:***

**9.4.1.X EPCS Control field**

The EPCS Control field is defined in [Figure 9-XXX (EPCS Control field format)](#bookmark94)

|  |  |  |
| --- | --- | --- |
|  | B0 | B1 B15 |
|  | Maintain Negotiated TID-To-Link mapping | Reserved |
| Bits: | 1 | 15 |

**Figure 9-XXX—EPCS Control field format**

When carried in the EPCS Priority Access Enable Request frame or EPCS Priority Access Enable Response frame, the Maintain Negotiated TID-To-Link mapping subfield indicates the non-AP MLD whether to retain the current successfully negotiated TID-To-Link mapping with the AP MLD before applying the EPCS TID-to-link mapping. If the Maintain Negotiated TID-To-Link mapping subfield is set to 1, the non-AP MLD shall retain the current successfully negotiated TID-To-Link mapping with the AP MLD before applying the EPCS TID-to-link mapping.

When carried in the EPCS Priority Access Teardown frame the Maintain Negotiated TID-To-Link mapping subfield indicates the peer MLD whether to retrieve the previous successfully negotiated TID-To-Link mapping after the EPCS priority access service is torn down. If the Maintain Negotiated TID-To-Link mapping subfield is set to 1, the non-AP MLD (and the AP MLD) will retrieve the negotiated TID-To-Link mapping when the established EPCS Priority Access service is torn down. Otherwise, the non-AP MLD (and the AP MLD) will set the default mapping when the established EPCS Priority Access service is torn down.

* + 1. **Elements**
       - 1. **Priority Access Multi-Link element**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

The Priority Access Multi-Link element carries EDCA Parameter sets used by EPCS priority access (see 35.16 (EPCS priority access)).

(#16572, 18342) The format of the Presence Bitmap subfield of the Multi-Link Control field in a Priority Access

Multi-Link element is defined in Figure 9-1002aa0 (Presence Bitmap subfield of the Priority Access Multi-Link element format).

|  |  |  |
| --- | --- | --- |
|  | B0 | B1 B11 |
|  | TID-To-Link Mapping Present | Reserved |
| Bits | 1 | 11 |

**Figure 9-1002ad0—****Presence Bitmap subfield of the Priority Access Multi-Link element format(#12696)**

(#16572, 18342) The TID-To-Link Mapping Present subfield is set to 1 if the TID-To-Link Mapping Control field is present in the Common Info field. Otherwise, it is set to 0.

The format of the Common Info field of the Priority Access Multi-Link element is defined in [Figure 9-](#bookmark177) [1002aa (Common Info field of the Priority Access Multi-Link element format(#10569))](#bookmark177).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | Common Info Length | AP MLD MAC Address | TID-To-Link Mapping Control | Link Mapping of TID 0 (Optional) | …. | Link Mapping of TID 7 (Optional) |
| Octets | 1 | 6 | 0 or 1 or 2 | 0 or 2 |  | 0 or 2 |

**Figure 9-1002aa—Common Info field of the Priority Access Multi-Link element format (#10569) (#16572, 18342)**

(#10569) The Common Info Length subfield indicates the number of octets in the Common Info field, including one octet for the Common Info Length subfield.

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.

(#16572, 18342) The TID-To-Link Mapping Control field is defined in 9.4.2.314 (TID-To-Link Mapping element).

It is present in case that a specific TID-To-Link mapping is applied between the AP MLD and the non-AP MLD for the established EPCS priority access service using the EPCS Priority Access Enable Request frame or EPCS Priority Access Response frame.

Otherwise – it is not present.

(#16572, 18342) The Link Mapping of TID n field is defined in 9.4.2.314 (TID-To-Link Mapping element)

* + - 1. **TID-To-Link Mapping Teardown frame format**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

The TID-to-link Mapping Teardown frame is sent by a STA affiliated with an MLD to request the teardown of an existing TID-to-link mapping that has been negotiated with the peer MLD. The Action field of the TID-to-link Mapping Teardown frame contains the information shown in [Table 9-628f (TID-To-Link Map-](#_bookmark300) [ping Teardown frame Action field format)](#_bookmark300).

**Table 9-628f—TID-To-Link Mapping Teardown frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 0 | Category |
| 1 | Protected EHT Action |
| 2 | EPCS Control (#16572, 18342) |

The Category field is defined in [9.4.1.11 (Action field)](#_bookmark105).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](#_bookmark296).

(#16572, 18342) The EPCS Control field is defined in 9.4.1.X (EPCS Control field)

* + - 1. **EPCS Priority Access Enable Request frame format**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

The EPCS Priority Access Enable Request frame is an Action frame of category Protected EHT. It is trans- mitted by a requesting MLD to request that EPCS priority access be enabled. The Action field of the EPCS Priority Access Enable Request frame contains the information shown in [Table 9-623g (EPCS Priority](#bookmark233) [Access Enable Request frame Action field format)](#bookmark233).

**Table 9-623g—EPCS Priority Access Enable Request frame Action field format**

| **Order** | **Meaning** |
| --- | --- |
| 1 | Category |
| 2 | Protected EHT Action |
| 3 | Dialog Token |
| 4 | EPCS Control (#16572, 18342) |
| 5 | Priority Access Multi-Link element |

The Category field is defined in [9.4.1.11 (Action field)](#bookmark81).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](#bookmark228).The Dialog Token field is defined in 9.4.1.12 (Dialog Token field) and set by the requesting MLD.

(#16572, 18342) The EPCS Control field is defined in 9.4.1.X (EPCS Control field)

The Priority Access Multi-Link field is defined in [9.4.2.312.6 (Priority Access Multi-Link element)](#bookmark172).

* + - 1. **EPCS Priority Access Enable Response frame format**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

The EPCS Priority Access Enable Response frame is an Action frame of category Protected EHT. It is transmitted in response to an EPCS Priority Access Enable Request frame. The Action field of the EPCS Priority Access Enable Response frame contains the information shown in [Table 9-623h (EPCS Priority Access](#bookmark234) [Enable Response frame Action field format)](#bookmark234).

**Table 9-623h—EPCS Priority Access Enable Response frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Meaning** |
| 1 | Category |
| 2 | Protected EHT |
| 3 | Dialog Token |
| 4 | Status Code |
| 5 | EPCS Control (#16572, 18342) |
| 6 | Priority Access Multi-Link element |

The Category field is defined in [9.4.1.11 (Action field)](#bookmark81).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](#bookmark228).

The Dialog Token field value is copied from the Dialog Token field in the corresponding EPCS Priority Access Enable Request frame.

The Status Code field values are defined in [Table 9-78 (Status codes)](#bookmark80).

(#16572, 18342) The EPCS Control field is defined in 9.4.1.X (EPCS Control field)

The Priority Access Multi-Link field is defined in [9.4.2.312.6 (Priority Access Multi-Link element)](#bookmark172).

##### Setup procedures for EPCS priority access 35.16.2.2.1 General

***TGbe editor: Please update the contents of the last paragraph in this subclause as shown below:***

As illustrated in [Figure 35-38 (Enabling EPCS priority access)](#bookmark125), an MLD supporting EPCS priority access capability invokes EPCS priority access on demand when instructed to do so by a higher layer function. After successful invocation of EPCS priority access, both the originator and the responder apply the priority access treatment to EPCS traffic. The AP MLD and non-AP MLD may send a request on any enabled link between them and, if authorized, EPCS priority access treatment will be applied (#16572, 18342) between the MLDs, on the links indicated in the TID-To-Link mapping if it is present in the Priority Access Multi-Link element carried in the EPCS Priority Access Enable Request frame or EPCS Priority Access Enable Response frame. Otherwise – the EPCS priority access treatment will be applied between the MLDs on all setup links.

## Procedures at the initiating EPCS AP MLD

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

When instructed to do so by a higher layer function triggered via an external interface, and upon receipt of an MLME-EPCSPRIACCESSENABLE.request primitive, an EPCS AP MLD shall follow the procedure below to request the change of the EPCS priority access for an associated EPCS non-AP MLD to the enabled state.

NOTE 1—The definition of the external interface is out of the scope of this standard.

An EPCS AP MLD with dot11SSPNInterfaceActivated equal to true shall verify if the dot11EPCSPriorityAccessAuthorized for the EPCS non-AP MLD in the dot11InterworkingEntry is set to true.

NOTE 2—Successful verification is defined when the dot11EPCSPriorityAccessAuthorized for the EPCS non- AP MLD in the dot11InterworkingEntry is set to true. The verification of EPCS priority access authorization by an EPCS AP MLD with dot11SSPNInterfaceActivated equal to false is out of scope of this standard.

If the verification is successful (see NOTE 2 above), the initiating EPCS AP MLD shall transmit an EPCS Priority Access Enable Request frame (9.6.35.5 (EPCS Priority Access Enable Request frame format)) via an affiliated STA to the corresponding non-AP STA affiliated with an associated EPCS non-AP MLD, with EPCS priority access in the torn down state for that non-AP MLD.

The initiating EPCS AP MLD may include the (#17965)EPCS Priority Access Multi-Link element in the EPCS Priority Access Enable Request frame to provide EDCA parameter set(s) and/or MU EDCA parameter set(s) that the destination EPCS non-AP MLD (#17371)employs on the corresponding setup links if EPCS priority access is successfully enabled (#16572, 18342) and the EPCS Priority Access Multi-Link element does not include TID-To-link mapping for the ECPS priority access service.

(#16572, 18342) The EPCS Priority Access Multi-Link element shall include a TID-To-link mapping for the ECPS priority access service if the TID-To-Link Mapping Present subfield is equal to 1 in the Presence Bitmap subfield of the Priority Access Multi-Link element. In this case, the destination EPCS non-AP MLD employs the EDCA parameter set(s) and/or MU EDCA parameter set(s) provided in the EPCS Priority Access Enable Request frame only on the links indicated in the Common Info field. In case of non-default mapping the Common Info field shall include Link Mapping of TIDn fields for each of the TIDs (n=0..7).

If the initiating EPCS AP MLD receives an EPCS Priority Access Enable Response frame (9.6.35.6 (EPCS Priority Access Enable Response frame format)) via an affiliated STA with a matching dialog token and a value of SUCCESS in the Status Code field, then the initiating EPCS AP MLD shall issue an MLME-EPCSPRIACCESSENABLE.confirm primitive with a value of SUCCESS in the Status Code field indicating successful transition of EPCS priority access to the enabled state. The initiating EPCS AP MLD shall change EPCS priority access to the enabled state so that subsequently transmitted traffic receives EPCS priority access treatment using the procedure defined in [35.16.3 (EPCS priority access procedure)](#_bookmark116).

If the initiating EPCS AP MLD receives an EPCS Priority Access Enable Response frame (9.6.35.6 (EPCS Priority Access Enable Response frame format)) via an affiliated STA with a matching dialog token and a value not equal to SUCCESS in the Status Code field, then the initiating EPCS AP MLD shall issue an MLME-EPCSPRIACCESSENABLE.confirm primitive with the status code from the response frame indicating the failure to change EPCS priority access to the enabled state. The initiating EPCS AP MLD shall not apply the EPCS priority access procedure. The external interface that triggers the EPCS priority access is responsible for managing reattempts after receiving responses with a value other than SUCCESS.

## Procedure at the receiving AP MLD

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

Upon receipt of an EPCS Priority Access Enable Request frame (9.6.35.5 (EPCS Priority Access Enable Request frame format)), an EPCS AP MLD shall use the following procedure to enable EPCS priority access for the requesting non-AP MLD.

The receiving AP MLD shall issue an MLME-EPCSPRIACCESSENABLE.indication primitive.

Upon receipt of the MLME-EPCSPRIACCESSENABLE.response primitive, the receiving AP MLD shall reply to the initiating non-AP MLD with an EPCS Priority Access Enable Response frame (9.6.35.6 (EPCS Priority Access Enable Response frame format)) using the following procedure:

For an AP MLD with dot11SSPNInterfaceActivated equal to true, if the dot11EPCSPriorityAccessAuthorized for the requesting non-AP MLD in the dot11InterworkingEntry is set to true indicating the requesting non-AP MLD is verified for EPCS priority access, the AP MLD shall set the Status Code field to a value of SUCCESS.

For an AP MLD with dot11SSPNInterfaceActivated equal to true, if the dot11EPCSPriorityAccessAuthorized for the requesting non-AP MLD in the dot11InterworkingEntry is set to false, the AP MLD shall set the Status Code field to a value of EPCS\_DENIED\_UNAUTHORIZED.

If the receiving AP MLD cannot support EPCS priority access for the initiating non-AP MLD for any other reason, the receiving AP MLD shall set the Status Code field with a value of EPCS\_DENIED(#16367) as defined in 9.4.1.9 (Status Code field).

NOTE 1—The verification for AP MLD with dot11SSPNInterfaceActivated equal to false is out of scope of this standard.

If the receiving AP MLD is unable to verify that the non-AP MLD is authorized for any reason, such as a communication failure or overload condition, the receiving AP MLD shall set the Status Code field with a value of EPCS\_DENIED\_VERIFICATION\_FAILURE as defined in 9.4.1.9 (Status Code field).

NOTE 2—Given temporary nature of this condition, higher layer function might attempt to invoke the enable operation again after a suitable delay.

If the Status Code in the MLME-EPCSPRIACCESSENABLE.response primitive is equal to SUCCESS, the receiving AP MLD STA shall set the state of the EPCS priority access to enabled for the requesting non-AP MLD.

The receiving AP MLD may include the (#17965)EPCS Priority Access Multi-Link element in the EPCS Priority Access Enable Response frame to provide the EDCA parameter set(s) and/or the MU EDCA parameter set(s) that the initiating EPCS non-AP MLD will employ on the corresponding links (#16572, 18342) if the EPCS Priority Access Multi-Link element does not include TID-To-link mapping for the ECPS priority access service..

(#16572, 18342) The EPCS Priority Access Multi-Link element shall include a TID-To-link mapping for the ECPS priority access service if the TID-To-Link Mapping Present subfield is equal to 1 in the Presence Bitmap subfield of the Priority Access Multi-Link element. In this case, the destination EPCS non-AP MLD employs the EDCA parameter set(s) and/or MU EDCA parameter set(s) provided in the EPCS Priority Access Enable Response frame only on the links indicated in the Common Info field. In case of non-default mapping the Common Info field shall include Link Mapping of TIDn fields for each of the TIDs (n=0..7).

If the Status Code in the MLME-EPCSPRIACCESSENABLE.response primitive is equal to a value other than SUCCESS, the receiving AP MLD shall keep EPCS priority access in the torn down state for the requesting non-AP MLD.

## EPCS priority access procedure

* + - 1. **General**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

(#15434)EPCS priority access procedure allows EPCS non-AP MLDs with priority access in the enabled state to gain priority access to medium. (#15435)If EPCS priority access is in the enabled state for an EPCS non-AP MLD (#16572, 18342) and the EPCS Priority Access Multi-Link element has not included TID-To-link mapping during the enabling of the ECPS priority access service, then each non-AP STA affiliated with the non-AP MLD applies EPCS priority access to traffic on its enabled link using the procedure described below. (#16572, 18342) If EPCS priority access is in the enabled state for an EPCS non-AP MLD and the EPCS Priority Access Multi-Link element has included TID-To-link mapping during the enabling of the ECPS priority access service in the Common Info field, then only the affiliated non-AP STAs that are operating on the links indicated in the Link Mapping of TIDn apply the EPCS priority access to traffic of that TID.

An EPCS non-AP MLD shall apply EPCS priority access procedures only when its EPCS priority access state is set to enabled. An EPCS AP MLD may apply EPCS priority access to EPCS traffic using the procedure described below prior to completion of the negotiation to enable EPCS priority access.

***TGbe editor: Please add the following subclause as shown below:***

##### EDCA operation using EPCS TID-To-Link mapping parameters (#16572, 18342)

As part of EPCS priority access procedure, the AP MLD may uniquely map the EPCS traffic to any of the links that were setup between the AP MLD and the non-AP MLD during the ML setup procedure (or subset of thereof). The AP MLD may apply the default mapping or a specified mapping of each TID to one or more links.

In that case, the AP MLD shall set the following values in the Priority Access Multi-Link element carried either in the EPCS Priority Access Enable Request frame or EPCS Priority Access Enable Response frame:

* The TID-To-Link Mapping Present subfield is set to 1 in the Presence bitmap of the Multi-Link control field.
* The Direction subfield value of the TID-To-Link Mapping Control field is set to 2.
* The Mapping Switch Time Present subfield value of the TID-To-Link Mapping Control field is set to 0.
* The Expected Duration Present subfield value of the TID-To-Link Mapping Control field is set to 0.
* If the default TID-To-Link mapping is applied, the Default Link Mapping value of the TID-To-Link Mapping Control field is set to 1.
* If the non-default TID-To-Link mapping is applied, the Default Link Mapping value of the TID-To-Link Mapping Control field is set to 0 and the Link Mapping Presence Indicator subfield is set to 1 in each of its bits. Moreover, each of the Link Mapping of TID n fields indicates which of the setup links is mapped for each TID n.

If the TID-To-Link Mapping Present subfield is set to 1 in the Priority Access Multi-Link element carried either in the EPCS Priority Access Enable Request frame or EPCS Priority Access Enable Response frame, the following shall be applied:

* During the process of enabling EPCS priority access, the EPCS AP MLD and the EPCS non-AP MLD:
  + Shall, if the Maintain Negotiated TID-To-Link mapping subfield is equal to 1 in the EPCS Control field carried in the EPCS Priority Access Enable Request frame or EPCS Priority Access Enable Response frame and if there is a successfully negotiated TID-To-Link mapping with the other peer ECPS MLD, retain that TID-To-Link mapping, as defined in 35.3.7.1.3 (Negotiation of TID-to-link mapping).
  + Shall update their TID-To-Link mapping with the parameters set in the TID-To-Link Mapping Control field and in any of the Link Mapping of TID n (if present).
* While EPCS priority access is enabled, the EPCS AP MLD and the EPCS non-AP MLD shall apply the TID-To-Link mapping on EPCS traffic both in UL and DL, unless the AP MLD advertises a mandatory TID-to-link mapping as defined in 35.3.7.1.7 (Advertised TID-to-link mapping in Beacon and Probe Response frames).
* When the EPCS priority access is being torn down:
  + If the AP MLD does not advertise a mandatory TID-to-link mapping as defined in 35.3.7.1.7 (Advertised TID-to-link mapping in Beacon and Probe Response frames) and if the Maintain Negotiated TID-To-Link mapping subfield is equal to 1 in the EPCS Control field carried in the EPCS Priority Access Teardown frame , each of the EPCS AP MLD and EPCS non-AP MLD shall retrieve its TID-To-Link mapping using the saved values of the most recent TID-To-Link mapping successfully negotiated between them, as defined in 35.3.7.1.3 (Negotiation of TID-to-link mapping).
  + If the AP MLD does not advertise a mandatory TID-to-link mapping as defined in 35.3.7.1.7 (Advertised TID-to-link mapping in Beacon and Probe Response frames) and if the Maintain Negotiated TID-To-Link mapping subfield is equal to 0 in the EPCS Control field carried in the EPCS Priority Access Teardown frame, each of the EPCS AP MLD and EPCS non-AP MLD shall apply a default TID-to-link mapping (as defined in 35.3.7.2.2)

NOTE: In case the AP MLD advertises a mandatory TID-to-link mapping, this mapping is applied by the non-AP MLD according to the rules specified in 35.3.7.1.7.

\*\*\*\*\* End of Resolution of Part 1 \*\*\*\*\*\*

*Part 2*

| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 15440 | John Wullert | 652.47 | 35.16.2 | The first sub-bullet describing EPCS AP behavior relies on management frames to distribute EDCA parameters to non-AP STAs that do not have EPCS enabled. This is the only mechanism currently defined to adjust the relative priority between devices that have EPCS enabled and those that do not after the enable request/response procedure. APs would have much greater flexibility if they could change the EDCA and/or MU EDCA parameters of devices with EPCS in the enabled state. | Add a mechanism by which the EPCS AP MLD can send an EPCS Enable Request frame to EPCS non-AP MLDs with EPCS Priority Access in the enabled state in order to update the EDCA and/or MU EDCA parameters | **Revised**  Agree with comment on need for a mechanism to update EDCA parameters.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16573.** |
| 16573 | Arik Klein |  | 35.16.2 | Need to add an option of unsolicited update of EPCS Parameters concurrently during the service duration, such as: EDCA Parameter set, enabled link set, etc. | The commenter will provide a contribution on this issue, as pointed in the comment | **Revised**  Agree in principle with the comment.  Add a text to support unsolicited mode of the EPCS Priority Access Enable Response frame for the purpose of maintaining EPCS service parameters during an operating EPCS priority access service between EPCS AP MLD and EPCS non-AP MLD.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16573.** |
| 16703 | Yonggang Fang | 647.50 | 35.16.2 | The spec needs to clarify the enablement procedure if an EPCS non-AP MLD with EPCS priority access NOT in the torn down state. | See in the comment | **Revised**  Conversation with commenter clarified that this comment was asking for means to update EDCA parameters after EPCS has been enabled.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16573.** |
| 16704 | Yonggang Fang | 648.55 | 35.16.2 | The spec needs to clarify the enablement procedure if an EPCS non-AP MLD with EPCS priority access NOT in the torn down state. | See in the comment | **Revised**  Conversation with commenter clarified that this comment was asking for means to update EDCA parameters after EPCS has been enabled.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16573.** |
| 16707 | Yonggang Fang | 650.04 | 35.16.2 | The EPCS priority access operation should allow the EPCS enabled AP MLD to update EPCS EDCA parameters in an efficient way when access congestion is caused by many EPCS enabled non-AP MLDs, especially using high priority access EDCA parameters. The current spec does not allow EPCS AP MLD to update EPCS prioirty access EDCA parameters in the enabled state. In addition, the EPCS enabled AP MLD does not know which EPCS enabled non-AP MLDs are contending or will contend the media. | Please define a method to allow an AP MLD to update EPCS EDCA parameters in groupcast/broadcast way to control EPCS enabled non-AP MLDs priority access. | **Revised**  Agree with comment on need for a mechanism to update EDCA parameters. Use of broadcast/multicast would eliminate any assurance of delivery, reducing reliability. Defined solution is single-message, unicast approach.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16573.** |
| 18338 | Peshal Nayak | 646.50 | 35.16.2.2 | There should be a mechanism for enabling EPCS parameters (e.g., EDCA parameters) after EPCS is setup. This is necessary as the EPCS parameter design depends on a number of network conditions which could change with time. Consequently, there can be a need to update the parameters. | as in the comment | Revised  Agree with comment. Added text to provide a means for EPCS AP MLD to update EDCA parameters for EPCS non-AP MLDs with EPCS in the enabled state.  **TGbe editor please implement changes as shown in doc 11-23/0965r0 tagged as 16573.** |

## MLME-EPCSPRIACCESSENABLE.response

## Function

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

This primitive is generated by the MLME to send a response. (#16573) This may in response to a (#16573) MLME-EPCSPRIACCESSENABLE.indication primitive or an unsolicited response to modify the parameters of an existing EPCS priority access service.

## Semantics of the service primitive

The primitive parameters are as follows:

MLME-EPCSPRIACCESSENABLE.response(

PeerSTAAddress, Dialog Token, Status Code, EDCAParameterSet

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the peer MAC entity with which the EPCS priority access procedure is performed. |
| Dialog Token | Integer | 0–255 | The dialog token to identify the EPCS priority access procedure. |
| Status Code | As defined in frame format | As defined in 9.4.1.9 (Status Code field) | Indicates the status of the request procedure |
| EDCAParameterSe t | EDCA Parameter Set element | As defined in  9.4.2.28 (EDCA  Parameter Set element) | Specifies service parameters for the EPCS EDCA parameter set. |

## When generated

This primitive is generated by the SME as a response to an MLME-EPCSPRIACCESSENABLE.indication primitive (#16573) or a request to transmit a response in an unsolicited mode (i.e. unsolicited response).

## Effect of receipt

This primitive initiates transmission of an EPCS Priority Access Enable Response frame to the peer MAC entity that requested the change to EPCS priority access (#16573) or to a peer MAC entity with a EPCS priority access service to modify the parameters of the service.

* + - 1. **EPCS Priority Access Enable Response frame format**

***TGbe editor: Please update the contents of the following paragraph in this subclause as shown below:***

The EPCS Priority Access Enable Response frame is an Action frame of category Protected EHT. It is trans- mitted in response to an EPCS Priority Access Enable Request frame. (#16573) It can also be transmitted in an unsolicited mode by the AP MLD to modify parameters used by an EPCS non-AP MLD with EPCS Priority Access in the enabled state. The Action field of the EPCS Priority Access Enable Response frame contains the information shown in [Table 9-623h (EPCS Priority Access](#bookmark234) [Enable Response frame Action field format)](#bookmark234).

**Table 9-623h—EPCS Priority Access Enable Response frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Meaning** |
| 1 | Category |
| 2 | Protected EHT |
| 3 | Dialog Token |
| 4 | Status Code |
| 5 | Priority Access Multi-Link element |

The Category field is defined in [9.4.1.11 (Action field)](#bookmark81).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](#bookmark228).

(#16573) When the EPCS Priority Access Enable Response frame is sent as a response to the EPCS Priority Access Enable Request frame, the Dialog Token field value is copied from the Dialog Token field in the corresponding EPCS Priority Access Enable Request frame.

(#16573) When EPCS Priority Access Enable Response frame is sent in unsolicited mode, the Dialog Token field is set to 0.

The Status Code field values are defined in [Table 9-78 (Status codes)](#bookmark80). (#16573) When EPCS Priority Access Enable Response frame is sent in unsolicited mode, the Status Code field is set to 0 (Success)

The Priority Access Multi-Link field is defined in [9.4.2.312.6 (Priority Access Multi-Link element)](#bookmark172).

***TGbe editor: Please add the following subclause and its contents as shown below:***

(#16573)

##### Maintenance procedures for EPCS priority access

##### Procedures at the initiating AP MLD

When instructed to do so by a higher layer function triggered via an external interface, and upon receipt of an MLME-EPCSPRIACCESSENABLE.response primitive, an EPCS AP MLD that supports this functionality shall follow the procedure below to update the parameters used by an EPCS non-AP MLD with EPCS Priority Access in the enabled state with an associated non-AP MLD.

An AP that is operating on any of the setup links with the non-AP MLD and is affiliated with the initiating EPCS AP MLD shall transmit an EPCS Priority Access Enable Response frame (9.6.35.6 (EPCS Priority Access Enable Response frame format)) to the corresponding non-AP STA affiliated with an associated EPCS non-AP MLD, containing updated values carried in Priority Access Multi-Link element.

##### 35.16.3.4.2 Procedures at the receiving non-AP MLD

Upon receipt of an EPCS Priority Access Enable Response frame (9.6.35.6 (EPCS Priority Access Enable Response frame format)) (#10326, #12695, #12696), an EPCS non-AP MLD with EPCS priority access in the enabled state (#10326, #12695) shall use the following procedure to update the EPCS parameters used by the EPCS non-AP MLD.

The non-AP MLD shall update the EDCA parameters according to the rules in 35.16.3.2.

(#16572, 18342) If the TID-To-Link Mapping Present subfield is set to 1, the non-AP MLD shall update TID-to-link mapping according to the rules in 35.16.3.3

\*\*\*\*\* End of Part 2 \*\*\*\*\*\*

Straw Poll:

Do you support to incorporate the proposed draft text in this document 11-23/0965r0 to the next revision of TGbe Draft 3.2, for addressing the following CIDs: 16572, 18342, 15440, 16703, 16704, 16707, 16573, 18338 (LB271)?

Result: Yes/No/Abstain