IEEE P802.11
Wireless LANs

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| PDT MAC UHR SCS Procedure |
| Date: 2024-11-10 |
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Abstract

This document contains Proposed Draft Text (PDT) for the SCS operation of the proposed TGbn (UHR, Ultra High Reliability) amendment to the 802.11 standard.

Some relevant IEEE contributions:

<https://mentor.ieee.org/802.11/dcn/24/11-24-1899-00-00bn-uhr-scs-enhancements.pptx>

<https://mentor.ieee.org/802.11/dcn/23/11-23-0069-01-0uhr-considerations-on-latency-improvement.pptx>

<https://mentor.ieee.org/802.11/dcn/24/11-24-0463-02-00bn-qos-enhancements-for-uhr.pptx>

Revisions:

R1: change title to align with Chair’s guidelines.

1. **Introduction**

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 TGbn Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

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

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

**Relevant passing motions:**

**[Motion #235]**

**Move to add to the TGbn SFD the following:**

* An AP MLD may optionally include a QoS Map element within the SCS Response frame transmitted by the AP MLD to update the DSCP-to-UP mapping for UL if the following conditions are true
	+ the TID and the User Priority subfields of the Control Info field in the associated QoS Characteristics element are set to different values within 0~7
	+ the AP MLD and the non-AP MLD supports the QoS map operation

**[Motion #276]**

**Move to add to the TGbn SFD the following:**

UHR should allow more than two TIDs to be mapped to high priority ACs (i.e., VO or VI)?

* Up to one TID for each AC currently assigned to BE and BK are remapped.
* Those TIDs may be used dynamically (e.g., following an SCS flow setup).
1. **Proposed spec text**

**9.4.2.x UHR Capabilities element**

**9.4.2.x.2 UHR MAC Capabilities Information field**

***TGbn editor: Please insert the following field to the Figure 9-xxx and add it to the 802.11bn draft D0.1:***

 **B0 B1 B7**

|  |  |
| --- | --- |
| **Additional TID Support** | **Reserved** |

**Bits: 1 7**

**Figure 9-xxx UHR MAC Capabilities Information field format**

***TGbn editor: Please add the following entry to Table 9-xxx and add it to the 802.11bn draft D0.1:***

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Additional TID Support | Indicates whether the STA supports setting the User Priority field and the TID field values in a QoS Characteristics element to different values.  | For an UHR STA that has set the SCS Traffic Description Support subfield in the EHT Capabilities element to 1: Set to 1 to indicate that the STA is supports an SCS stream corresponding to a QoS Characteristics element in which the User Priority and TID fields are set to different values (see 37.x UHR SCS procedure).  Set to 0 otherwise.  |

**9.4.2.326 QoS Characteristics element**

- The TID subfield contains the TID value of the data frames that are described by this element. The TID subfield is set to the same value as the User Priority field by a non-UHR STA (see 35.17 EHT SCS Procedure). The TID subfield ~~is~~ can be set to the same or a different value than that of ~~as~~ the User Priority field by an UHR STA (see 37.x UHR SCS Procedure). The values 8–15 are reserved.

***TGbn editor: Please add the following new subclause UHR SCS procedure to the 802.11bn draft D0.1:***

**37.x UHR SCS procedure**

An UHR STA that supports an SCS stream corresponding to a QoS Characteristics element in which the User Priority and TID fields are set to different values shall set the SCS Traffic Description Support subfield value and the Additional TID Support subfield value in the EHT Capabilities element and the UHR MAC Capabilities element respectively that it transmits to 1. An UHR non-AP STA shall not send an SCS Request containing a QoS Charactetistics element in which the User Priority and TID fields are set to different values to an AP from which it has not received an UHR MAC Capabilities element in which the Additional TID Support subfield value is set to 1. If a QoS Characteristics element contains a TID field value that is not equal to the User Priority field value, then that TID is referred to as an *additional TID* in this subclause.

An UHR non-AP STA that has set the Additional TID Support subfield value in the UHR MAC Capabilities element that it transmits to 1 and that intends to use an additional TID for a SCS stream may send an SCS Request with a QoS Characteristics element according to the following rules:

* The additional TID shall be in the range 0 through 3 inclusive.
	+ The TID subfield is set to the additional TID value.
	+ The UP subfield is set to a value that corresponds to the access cateogory to be used by that stream and is set to a value between 4 and 7 (inclusive).
	+ The Direction subfield is set to indicate Uplink or Downlink direction.

A STA should attempt to use an additional TID from AC\_BK before attempting to use an additional TID from AC\_BE access cateogory. All traffic that gets mapped to the same additional TID shall belong to the same access category.

The STA shall not request concurrent activation of both TIDs 0 and 3 as additional TIDs for SCS stream, or concurrent activation of both TIDs 1 and 2 as additional TIDs.

An AP may optionally include a QoS Map element within the SCS Response frame transmitted to update the DSCP-to-UP mapping for UL at a non-AP STA if both the following conditions are true:

* + The SCS Request frame received from the non-AP STA has a QoS Characteristics element with the Direction subfield set to indicate Uplink and the TID and the User Priority subfields of the Control Info field are set to different values within 0~7.
	+ Both the AP and STA has dot11QosMapActivated equal to true.