IEEE P802.11
Wireless LANs

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| PDT MAC UHR SCS Procedure |
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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:***

 **Bx 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 the mapping of up to one TID from AC BE and up to one TID from AC BK to AC\_VO and AC\_VI access categories for an SCS stream.  | For a 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 supports mapping additional TIDs (more than the two allowed TIDs) within the TID range 0 to 3 (inclusive) to AC\_VO and AC\_VI access categories for an SCS stream(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 subfield by a non-UHR STA (see 35.17 EHT SCS Procedure) and by a UHR STA that does not support the Additional TID feature (see 37.x UHR SCS Procedure). The TID subfield is set either to the same value as the User Priority subfield or to a different value by a UHR STA that supports the Additional TID feature. 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**

A UHR STA that supports mapping additional TIDs (more than the two allowed TIDs) in the range 0 to 3 (inclusive) to AC\_VO and AC\_VI access categories for an SCS stream shall set the SCS Traffic Description Support subfield value in the EHT Capabilities element to 1 and shall set the Additional TID Support subfield value in the UHR MAC Capabilities field of the UHR Capabilities element to 1; otherwise, it shall set to 0.

A UHR non-AP STA shall not send an SCS Request frame containing a QoS Characteristics element in which the User Priority subfield is not equal to the value of the TID subfield to an AP from which the UHR non-AP STA has not received a UHR Capabilities element in which the Additional TID Support subfield value is set to 1. If a QoS Characteristics element contains a TID subfield value that is not equal to the User Priority subfield value, then that TID is referred to as an *additional TID* in this subclause.

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

* The additional TID shall be in the range 0 to 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 category to be used by that stream and is set to a value in the range 4 to 7 inclusive (see Table 10-1 UP-to-AC mappings).
	+ The Direction subfield is set to indicate Uplink or Downlink direction.

A UHR non-AP STA should give first preference to select an additional TID from the AC\_BK access category, and second preference to select an additional TID from the AC\_BE access category. All traffic that concurrently use the same additional TID shall belong to the same access category.

A UHR non-AP 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.

A UHR AP that is affiliated with an AP MLD may optionally include a QoS Map element within an SCS Response frame transmitted to a UHR non-AP STA that is affiliated with a non-AP MLD to update the DSCP-to-UP mapping for UL at the non-AP STA if all the following conditions are true:

* + The SCS Request frame received from the UHR 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 between 0 and 7 inclusive.
	+ The AP MLD has dot11QosMapActivated equal to true.
	+ The non-AP MLD has the QoS Map field set to 1 in the Extended Capabilities element.