IEEE P802.11
Wireless LANs

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| Channel Access - High Priority EDCAs |
| Date: 2024-11-14 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Dmitry Akhmetov |  |  |  |  |
| Kiseon Ryu |  |  |  |  |
| Peshal Nayak |  |  |  |  |
| Mingyu Lee |  |  |  |  |
| Yue Qi |  |  |  |  |
| Yonggang Fang |  |  |  |  |
| Alfred Asterjadhi |  |  |  |  |

Abstract

This document contains detailed text proposal for High Priority EDCA.

The authors prepared this document to further clarify our proposals related to Channel Access – High Priority EDCA in text format. The authors look forward to working with all interested participants to prepare an official proposal for specification text on Channel Access – High Priority EDCA.

Revisions:

* Rev 0: Initial version of the document.

Th texts is prepared for the following motions and straw polls.

SP1

[Motion 123, doc #11-24/0171r19 ,SP2 – Channel Access, doc 11-24/1667r13]

**Do you agree to improve EDCA to reduce tail access delay of Low Latency traffic in multi-BSS dense scenarios in presence of best effort traffic?**

* The solution to improve EDCA is distributed
* The impact on legacy device has to be balanced
* Low Latency traffic is treated as AC\_VO traffic. Other cases are TBD

SP2:, doc 11-24/1144r1

[Motion XXX, #SPYYY]

**Do you agree to define HIP EDCA in UHR where a STA with Low Latency traffic may be allowed, based on TBD conditions, to send a Defer Signal (e.g. CTS frame or RTS) to start a protected short contention for pending LL data**

* Conditions to be allowed to send a Defer Signal is TBD
* STA in HiP EDCA always use RTS/CTS as initial frame exchange and retry.
* Duration of protected short contention is TBD.
* Access parameters (AIFSN, CW and the expansion rules) used to transmit the Defer Signal are TBD.
* The retry count where the Defer Signal is allowed to be sent is TBD
* Contention parameters for the protected short contention are TBD. The STAs that transmitted a Defer Signal but did not win the protected short contention will initiate a new retry.
* Low Latency traffic is treated as AC\_VO traffic. Other cases are TBD.
* The solution would provide control on the degree of collisions that may occur while using it and, allows for autonomous randomness or/and controlled by the AP
* No new synchronization requirement on STA side

**High Priority EDCA**

High Priority EDCA (HIP EDCA) is an extension of the baseline EDCA procedure that aims at improving the tail latency for traffic buffered to a VO Access Category. It is TBD whether to extend this mechanism for the traffic buffered to AC other than AC\_VO. The HIP EDCA allows transmission of a TBD control frame prior to the start of the baseline EDCA contention, which start a short contention period exclusively for those STAs that had transmitted the TBD control frame. The parameters of HIP EDCA and the frequence of use are controlled to preserve fairness and to minimize impact to STAs using baseline EDCA mechanism

A STA with a traffic buffered into HIP EDCA enabled AC and that has dot11HIPEDCAOptionImplemented set to 1 may become HIP EDCA eligible STA based on TBD conditions. A HIP EDCA eligible STA may transmit a TBD control frame to start HIP EDCA contention period. The transmission of TBD frame occurs at TBD AIFSN slot boundary after detecting medium IDLE using both PHY and virtual CS mechanisms.

The TBD frame has the Duration/ID field set to TBD value, Multiple HIP EDCA eligible STAs may transmit TBD frame at the same time,

The HIP EDCA contention period start following the end of transmission of the TBD frame and follows procedure described in 10.23.2.4 Obtaining an EDCA TXOP with the following modifications:

* Only EDCAF[VO] and other TBD AC are permitted for contention during HIP EDCA contention period
* The value for HIP EDCA AIFSN[VO] is TBD
* at the start of HIP EDCA contention, an eligible STA set HIP EDCA backoff counter to an integer value chosen randomly with a uniform distribution taking values in the range 0 to HIP EDCA CW[VO]. The value of HIP EDCA CW[VO] is TBD.

A HIP STA that has sent the TBD frame to start protected short HIP EDCA contention, shall precede frame exchanges with an RTS/CTS in an TXOP obtained in HIP EDCA contention period.

A HIP EDCA eligible STA that decremented HIP EDCA backoff counter to zero and successfully obtained a TXOP become non-eligible HIP EDCA STA and shall not use HIP EDCA mechanism until TBD conditions arise.

A HIP EDCA eligible STA that did not obtain a TXOP during HIP EDCA contention period may initiate transmission of TBD frame up to TBD attempts (retries). If a STA initiated TBD number of HIP EDCA contentions but did not obtain a TXOP, it become non-eligible HIP EDCA STA and shall not use HIP until TBD conditions arise.