**IEEE P802.11  
Wireless LANs**

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| --- | --- | --- | --- | --- |
| 11bn PDT MAC Dynamic Bandwidth Expansion (DBE) | | | | |
| **Date**: March 19, 2025 | | | | |
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**Abstract**

This document contains Proposed Draft Text (PDT) for the Dynamic Bandwidth Expansion (DBE) feature of 11bn/UHR amendment to the 802.11 standard.

Revisions:

* Rev 0: Initial version of the document.

**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 TGbe Draft. The abstract, revision information, introduction, explanation of the proposed changes and references sections are 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).***

***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 #334, [1]]

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

* 11bn defines a mechanism for dynamic bandwidth expansion (DBE) that enables a UHR AP to modify (expand/reset) its Dynamic UHR operating BSS bandwidth for UHR STAs that support the DBE operation
  + The dynamic bandwidth change is signaled using management frames and is announced for multiple beacon intervals in advance, and the AP shall stay on the expanded bandwidth until a subsequent dynamic bandwidth change occurs
  + The primary channel does not change as part of the dynamic BW expansion.
  + TBD on DBE signaling details

**Text to be adopted begins here.**

* UHR Capabilities element
* General
* UHR MAC Capabilities Information field

***TGbn editor: Please update UHR MAC Capabilities in 11bn D0.1 to add DBE Support field as below***

The format of the UHR MAC Capabilities Information field is defined in Figure9-aa5 (UHR MAC Capabilities Information field format). [TBD]

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 | | B1 | B2 | B4 | B5 | B6 | B7 Bx |
|  | DPS Support | | DPS Assisting Support | Multi-Link Power Management | NPCA Supported | BSR Enhancement Support | DBE Support | Reserved |
| Bits: | 1 | | 1 | 1 | 1 | 1 | 1 | x |
|  | | * UHR MAC Capabilities Information field format | | | | | | |

|  |  |  |
| --- | --- | --- |
| * Subfields of the UHR MAC Capabilities Information field (continued) | | |
| Subfield | Definition | Encoding |
| … | … | … |
| DBE Support | Indicates whether or not the DBE operation is supported | Set to 1 if dot11DBEOptionImplemented is equal to true (see 37.x (Dynamic bandwidth expansion (DBE))).  Set to 0 otherwise. |

***TGbn editor: Please add the following new subclause 37.x Dynamic Bandwidth Expansion (DBE) to the 802.11bn draft***

37. Ultra high reliability (UHR) MAC specification

**37.x Dynamic bandwidth expansion (DBE)**

Dynamic Bandwidth Expansion (DBE) is a mode of operation that allows a UHR AP to operate with an expanded operating bandwidth that is greater than its BSS operating bandwidth. The DBE operation enables a UHR AP to modify (expand/change/reset) its operating BSS bandwidth for the UHR STAs that support the DBE operation. When operating in DBE mode with an expanded bandwidth, the UHR AP continues to serve STAs that do not support DBE operation within the BSS operating bandwidth.

﻿An AP that supports DBE operation has dot11DBEOptionImplemented equal to true, shall set the DBE Support field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1, and is called a DBE AP. A non-AP STA that supports DBE operation has dot11DBEOptionImplemented equal to true, shall set the DBE Support field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1, and is called a DBE non-AP STA.

A DBE AP announces a bandwidth change (expand/change/reset) using TBD Management frames. The bandwidth change is announced for multiple beacon intervals in advance before the bandwidth change takes effect. After a bandwidth change, the DBE AP shall continue operating with the updated bandwidth until a subsequent bandwidth change occurs. While an AP is operating in DBE mode, any expanded operating BW will be greater than the BSS operating BW.

﻿**Annex C**

**C.3 MIB Detail**

***TGbn editor: Please add the following new MIB variable***

dot11DBEOptionImplemented OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute, when true, indicates that the STA implementation is capable of supporting DBE operation.”

::= { dot11UHRStationConfigEntry <ana> }

**Text to be adopted ends here.**

**References:**

1. [11-25-0014r13](https://mentor.ieee.org/802.11/dcn/25/11-25-0014-13-00bn-tgbn-motions-list-part-2.pptx): 11-25-0014-13-00bn-tgbn-motions-list-part-2, Alfred Asterjadhi (Qualcomm Inc.)
2. [11-24-0088r1](https://mentor.ieee.org/802.11/dcn/24/11-24-0088-01-00bn-maximizing-channel-bandwidth-in-dense-ap-deployments.pptx): “Maximizing channel bandwidth in dense AP deployments”,Malcolm Smith *et al* (Cisco Systems)
3. [11-24-0815r1](https://mentor.ieee.org/802.11/dcn/24/11-24-0815-01-00bn-dynamic-bandwidth-selection-signaling-details.pptx): “Dynamic Bandwidth Selection Signaling Details”, Binita Gupta *et al* (Cisco Systems)