### IEEE P802.11 Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 11ax D7.0 Capability Indication for HE SM Power save | | | | |
| Date: 2020-09-30 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Po-Kai Huang | Intel Corporation | 2200 Mission College Blvd, Santa Clara, CA 950542200 |  | po-kai.huang@intel.com |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes a fix for HE Capability Indication.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Editorial revision based on the feedback received offline.
* Rev 2: Further revision based on the feedback received offline.

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 TGax D7.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D7.0 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

**Discussion:**

The SM Power Save subfield in the HE 6 GHz Band Capabilities element is supposed to be a replicate of the SM Power save subfield in HT capabilities element (spec text shown below) to indicate operation for legacy SM power save.

***9.4.2.263 HE 6 GHz Band Capabilities element***

*The SM Power Save subfield is defined in defined in Table 9-184 (Subfields of the HT Capabilities Information field)*

However, various places in the spec treats the SM Power Save subfield in the HE 6 GHz Band Capabilities element as the capability indication for HE SM power save, which is then not correct.

Baseline description to use the the SM Power Save subfield in the HE 6 GHz Band Capabilities element for legacy SM power save mode indication should also be added.

We propose fix for this.

**Propose:**

***TGax editor: Change 11.2.6 SM power save as follows (track change on):***

* SM power save

Insert the following after the 2nd paragraph:

The basic rules for a STA are defined below. Additional rules for an HE STA that sets the HE Dynamic SM Power Save subfield to 1 in the HE MAC Capabilities Information field in(#Ed) the HE Capabilities element it transmitsare defined in 26.14.4 (HE dynamic SM power save).

Change the 6th paragraph as follows:

The STA may use the SM Power Save frame to communicate its SM power save state. The STA may also use SM Power Save subfield in the HT Capabilities element of its (Re)Association Request frame or the SM Power Save subfield in the HE 6 GHz Band Capabilities element of its (Re)Association Request frame to achieve the same purpose. The latter allows the STA to use only a single receive chain immediately after (re)association.

Change the 8th paragraph as follows:

Changes to the number of active receive chains are made only after the SM power save mode indication has been successfully delivered (i.e., by acknowledgment of a frame carrying the HT Capabilities element or by acknowledgment of a frame carrying the HE 6 GHz Band Capabilities element or by acknowledgment of a SM Power Save frame). The SM power save mode indication shall be transmitted using an individually addressed frame.

***TGax editor: Change 26.14.4 HE dynamic SM power save as follows (track change on):***

* HE dynamic SM power save

A STA that supports HE dynamic SM power save has dot11HEDynamicSMPowerSaveOptionImplemented set to true and shall set the HE Dynamic SM Power Save subfield in the HE MAC Capabilities Information field in(#Ed) the HE Capabilities element it transmits to 1(#24054).

A non-AP HE STA in dynamic SM power save mode (see 11.2.6 (SM power save)) that sets the HE Dynamic SM Power Save subfield in the HE MAC Capabilities Information field in(#Ed) the HE Capabilities element it transmits to 1shall follow the dynamic SM power save procedures defined in 11.2.6 (SM power save) and shall also enable its multiple receive chains if it responds to a Trigger frame that starts a frame exchange sequence that satisfies the following conditions:(#24054)

* The Trigger frame is transmitted with a single spatial stream.
* The Trigger frame is from the associated AP or from the AP corresponding to the transmitted BSSID if the non-AP HE STA is associated with an AP corresponding to a nontransmitted BSSID(#24108) and has indicated support for receiving Control frames with TA set to the transmitted BSSID by setting the Rx Control Frame To MultiBSS subfield to 1 in the HE Capabilities element that the non-AP HE STA transmits.
* The Trigger frame is an MU-RTS Trigger frame, BSRP Trigger frame or BQRP Trigger frame that includes a User Info field with the AID12 subfield equal to the 12 LSBs of the AID of the non-AP HE STA (see 26.5.2.2.1 (General)).

The non-AP HE STA shall, subject to its spatial stream capabilities (see 9.4.2.55.4 (Supported MCS Set field), 9.4.2.157.3 (Supported VHT-MCS and NSS Set field) and 9.4.2.248 (HE Capabilities element)) and operating mode (see 11.41 (Notification of operating mode changes) and 26.9 (Operating mode indication)), be capable of receiving a PPDU that is sent using more than one spatial stream a SIFS after the end of the PPDU that it sends in response(#24054). The STA switches to the multiple receive chain mode if it responds to the Trigger frame addressed to it and switches back immediately after the frame exchange sequence ends.(#24044)

NOTE 1—A Trigger frame always solicits an immediate response.

NOTE 2—A non-AP HE STA that is in dynamic SM power save mode and that sets the HE Dynamic SM Power Save subfield in the HE MAC Capabilities Information field in(#Ed) the HE Capabilities element it transmits to 1 cannot distinguish between a Trigger frames that precedes a MIMO transmission and a Trigger frames that does not precede a MIMO transmission and, therefore, always enables its multiple receive chains if it responds to an MU-RTS Trigger frame, BSRP Trigger frame, or BQRP Trigger frame that has a User Info field addressed to it.

NOTE 3—The STA determines the end of the frame exchange sequence as described in 11.2.6 (SM power save).