IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| [Draft text for SM Power Save for 11ay] | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Cheng Chen | Intel |  |  | cheng.chen@intel.com |
| Carlos Cordeiro | Intel |  |  | carlos.cordeiro@intel.com |
| Oren Kedem | Intel |  |  | oren.kedem@intel.com |
| Solomon Trainin | Qualcomm |  |  | strainin@qti.qualcomm.com |

Abstract

This document proposes draft changes to include SM power save for EDMG STAs.

**11.2.6 SM power save**

*Change the first paragraph as follows:*

A STA consumes power on all active receive chains, even though they are not necessarily required for the actual frame exchange. The SM power save feature allows a non-AP HT, or a non-AP and non-PCP EDMG STA in an infrastructure BSS or PBSS to operate with only one active receive chain for a significant portion of time.

*Change the third paragraph as follows:*

In dynamic SM power save mode, the HT STA enables its multiple receive chains when it receives the start of a frame exchange sequence addressed to it~~.~~, while the EDMG STA enables its multiple receive chains only when the frame it receives indicates the following transmission requires the activation of multiple receive chains. Such a frame exchange sequence shall start with a single-spatial stream individually addressed frame that requires an immediate response and that is addressed to the STA in dynamic SM power save mode. An RTS/CTS sequence may be used for this purpose for HT STAs. For EDMG STAs in dynamic SM power save mode, a Grant/Grant Ack sequence shall be used for this purpose. The STA shall, subject to its spatial stream capabilities (see 9.4.2.56.4 and 9.4.2.158.3) and operating mode (see 11.42), be capable of receiving a PPDU that is sent using more than one spatial stream a SIFS after the end of its response frame transmission. The HT STA switches to the multiple receive chain mode when it receives the frame addressed to it and switches back immediately when the frame exchange sequence ends. The EDMG STA switches to the multiple receive chain mode when it receives the frame addressed to it and the frame indicates the following transmission requires multiple receive chains (see 10.36.11.4); the EDMG STA switches back immediately when the frame exchange sequence ends.

*Change the NOTE after the third paragraph as follows:*

NOTE—An HT STA in dynamic SM power save mode cannot distinguish between an RTS/CTS sequence that precedes a MIMO transmission and any other RTS/CTS and, therefore, always enables its multiple receive chains when it receives the RTS addressed to it.

*Change the sixth 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 or EDMG 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 eighth 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 EDMG 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.

*Change Table 2 as follows:*

|  |  |
| --- | --- |
| Capability | Capabilities ID |
| Beamforming | 0 |
| Multi-BF | 1 |
| Antenna Polarization Capability | 2 |
| PHY Capability | 3 |
| Supported Channels | 4 |
| MAC Capability | 5 |

*Insert the following subclause at the end of 9.4.2.250.5*

**9.4.2.250.6 Power Save field**

The MAC Capability field is defined in Figure x.

|  |  |  |
| --- | --- | --- |
|  | B0 B1 | B2 B7 |
|  | SM Power Save | Reserved |
| Bits: | 2 | 6 |

Figure x—MAC Capability field format

The SM Power Save subfield indicates the support for spatial multiplexing power save for an EDMG STA (see 11.2.6). It also indicates the spatial multiplexing power save mode that is in operation immediately after (re)association. This field is set to 0 for static SM power save mode, 1 for dynamic SM power save mode, 3 for SM power save disabled or not supported. The value of 2 is reserved.

It is only valid in a (Re)Association Request frame sent to an AP or a PCP. Otherwise this subfield is set to 0 or 3 upon transmission and it ignored upon reception.

NOTE-This subfield indicates the operational state immediately after (re)association as well as (if not set to 3) a capability.