IEEE P802.11
Wireless LANs

|  |
| --- |
| Awake window access fixes in DMG network  |
| Date: 2016-05-01 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Trainin, Solomon  | Intel Corporation |  | 972547885738 | solomon.trainin@intel.com |
| Carlos Cordeiro  | Intel Corporation |  |  | carlos.cordeiro@intel.com |
| Mordechay Aharon | Qualcomm |  |  | maharon@qti.qualcomm.com |
| Rony Gutierrez | Qualcomm |  |  | ronyg@qti.qualcomm.com |
| Gaius Yao Huang Wee  | Panasonic  |  |  | yaohuang.wee@sg.panasonic.com |

Abstract

Link access during awake window that is scheduled as part of CBAP interval is not properly defined in current text. Proposed fixes resolve the issue

Discussion:

An awake window plays a central role in power management of DMG network. The awake window is used to allow devices that are in low power mode to connect each other and synchronize awake periods. The awake window is dedicated for transmissions of very short ATIM frames used for power management (PM) purposes. The awake window is scheduled as part of CBAP interval there the CBAP interval may be of CBAP only BI allocation or may be allocated in a scheduled BI. Beeing part of wider CBAP interval makes link access of the awake window very special that is not covered by any other link access rules defined in DMG networks however awake window link access rules are presented only in general, for example: “ATIM frames shall be transmitted only during the … awake window”, “NOTE—Transmission rules during the awake window are the same as the transmission rules for the CBAP that the awake window belongs to.(#6816)”, “During the awake window(#3261), a STA shall transmit only ATIM frames.” Lack of specified backoff rules may result in capturing effect that multiple STA will release non-ATIM frames at end of awake window causing excessive collisions.

Here are few fixes that resolve the issue.

**10.3.4.3 Backoff procedure for DCF**

*P1316L45*

*Add new text after last paragraph that starts with “In an IBSS the backoff timer …”*

At the start of an awake window, a DMG STA shall suspend decrementing its backoff timer(s) for any transmission of non-ATIM frames for the duration of the awake window as indicated in the most recently received Awake Window element for each BSS the STA discovers. At the end of the awake window, the DMG STA shall resume the backoff timer(s) for non-ATIM frames.

A DMG STA shall not transmit an ATIM frame in an awake window that is scheduled in a BSS different than the BSS that the STA is associated with.

To transmit ATIM frames in an awake window, a DMG STA shall follow the backoff procedure defined in 10.3.3 Random backoff time using AC\_VO parameters. The DMG STA shall start or resume decrementing of the backoff timer for any pending ATIM frame transmission at the start of an awake window and shall suspend decrementing the backoff timer for any pending ATIM frame transmission at the end of the awake window.

**References:**

1. IEEE P802.11-REVmc/D5.3, April 2016