IEEE P802.11
Wireless LANs

|  |
| --- |
| Resolution to 11ad CIDs |
| Date: 2015-01-06 |
| Author(s): |
| Name | Company | Address | Phone | email |
| Carlos Cordeiro | Intel |  |  | Carlos.Cordeiro@intel.com |

Abstract

Proposes resolution to CIDs 3232, 3499, and 3692.

The proposed changes are in reference to Draft P802.11REVmc\_D3.2.

R2: CID 3692 agreed resolution.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3692 | 1525.13 | 10.1.4.3.3 | "perform the basic access procedure defined ... prior to the transmission": as if we didn't know the definition was prior to the transmission. It also is unclear whether this procedure is to be followed just once or each time a Probe Request frame is to be transmitted, and exactly why there may be more than one transmission of a Probe Request frame. | Since "prior to the transmission" is not part of the procedure defined in 9.3.4.2, this really is a run-on sentence. Replace "9.3.4.2 (Basic access) prior to the transmission of each of one or more Probe Request frames, each with an SSID indicated in the SSID List and the BSSID from the MLME-SCAN.request primitive." with "9.3.4.2 (Basic access). Perform this procedure prior to each transmission of a Probe Request frame. Each of these transmitted Probe Request frames shall contain an SSID that was included in the SSID List parameter and the BSSID from the BSSID parameter of the received MLME-SCAN.request primitive. One Probe Request frame shall be transmitted for each SSID included in the received SSID List parameter.". |

**Proposed resolution:** Revised

**Discussion**: Language can be improved in certain places. Also, need to align the language for both DMG and non-DMG. Finally, note that the last sentence in the proposed change “One Probe Request frame shall be transmitted for each SSID included in the received SSID List parameter” is not a mandatory requirement and hence should not be added.

**10.1.4.3.2 Active scanning procedure for a non-DMG STA**

*Change the noted paragraph under item (c) as follows, renumbering the bullets as appropriate*

c) Send a probe request to the broadcast destination address. The probe request is sent with the SSID and BSSID from the received(#3680) MLME-SCAN.request primitive.

d) When the SSID List is present in the MLME-SCAN.request primitive, send zero or more probe requests to the broadcast destination address. Each probe request is sent with an SSID indicated in the SSID List and the BSSID from the MLME-SCAN.request primitive. The basic access procedure (9.3.4.2) is performed prior to each probe request transmission.

**10.1.4.3.3 Active scanning procedure for a DMG STA**

*Change the noted paragraph under item (f) as follows*

f) If an SSW-Feedback frame is transmitted or received in (#3408)step d), then:

1) Send a probe request to the broadcast destination address or:

* Following the transmission of an SSW-Feedback frame, send a probe request to the MAC address of the STA addressed by the SSW-Feedback frame.(#3690)
* Optionally, following the reception of an SSW-Feedback frame, send a probe request to the MAC address of the STA that transmitted the SSW-Feedback frame.

In all these cases, the probe request is sent with the SSID and BSSID from the received(#3680) MLME-SCAN.request primitive and includes the DMG Capabilities element. The basic access procedure (9.3.4.2) is performed prior to the probe request transmission.

2) When the SSID List is present in the MLME-SCAN.request primitive, send zero or more probe requests to the broadcast destination address. Each probe request is sent with an SSID indicated in the SSID List and the BSSID from the received(#3680) MLME-SCAN.request primitive and includes the DMG Capabilities element. The basic access procedure (9.3.4.2) is performed prior to each probe request transmission.

*Change the noted paragraph under item (g) as follows*

g) If an SSW-Feedback frame is neither transmitted nor received in (#3408)step d), then :

1) Optionally send a probe request to the broadcast destination address. The probe request is sent with the SSID and BSSID from the received(#3680) MLME-SCAN.request primitive and includes the DMG Capabilities element. The basic access procedure (9.3.4.2) is performed prior to the probe request transmission.

2) When the SSID List is present in the MLME-SCAN.request primitive, send zero or more probe requests to the broadcast destination address. Each probe request is sent with an SSID indicated in the SSID List and the BSSID from the MLME-SCAN.request primitive and includes the DMG Capabilities element. The basic access procedure (9.3.4.2) is performed prior to each probe request transmission.

**Discussion**: There is no MAC address in the DMG TSPEC element. Instead, it should be the Source AID field. This issue was discovered as part of CID3097 assigned to Adrian.

**Proposed change**:

**8.6.3.2.2 DMG ADDTS Request frame variant**

*Change the third paragraph as follows*

The DMG TSPEC element contains the parameters that define an allocation. The allocation is uniquely identified by the ~~s~~Source AID ~~DMG STA MAC Address~~, Allocation ID, and Destination AID fields(#3097) within the DMG TSPEC element.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3286 | 91.08 | 4.3.19 | This standard does not provide any justification for the following sentence "A DMG STA is not a mesh STA." | Delete the sentence "A DMG STA is not a mesh STA." |

**Proposed resolution:** Reject

**Resolution**: A DMG STA does not support the mesh functions and cannot operate in a mesh BSS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3288 | 109.48 | 4.7 | The sentence "There can be no more than 254 STAs associated with a DMG AP or with a PCP." leaves the reader asking himself what about non-DMG APs? The sentence neither sets an upper limit nor does it explain any differences to non-DMG BSSs or where these differences would come from. | Delete the sentence "There can be no more than 254 STAs associated with a DMG AP or with a PCP." as it does not add any relevant information. |

**Proposed resolution:** Accept

**Discussion**: The restriction on the number of STAs that can be associated with a PCP/AP in a DMG BSS is specified in the third paragraph of (**8.4.1.8 AID field**). Therefore, removal does not impact behaviour.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3249 | 2382.54 | 21.3.6.1 | Preamble is common to OFDM and SC PHY | Retitle the figure to "SC and OFDM preamble" |

**Proposed Resolution**: Revised

**Discussion**: The preamble of OFDM is not the same because there are different sequences in the channel estimation field. However, the text could be more clearly written to note this.

**Proposed changes**:

**21.3.6.1 General**

*Change the first and second paragraphs as follows*

The preamble is the part of the PPDU that is used for packet detection, AGC, frequency offset estimation, synchronization, indication of modulation (SC or OFDM) and channel estimation. The format of the preamble is common to both OFDM packets and SC packets and consists of a Short Training field followed by a Channel Estimation field. The content of the Short Training field is the same between SC and OFDM packets (see 21.3.6.2), but the content of the Channel Estimation field is not the same between such packets (see 21.3.6.3). Figure 21-4 (SC preamble) illustrates the SC packet preamble and Figure 21-YY (OFDM preamble) illustrates the OFDM packet preamble.

~~The preamble is composed of two parts (Figure 21-4 (SC preamble(11ad)(#2069))): the Short Training field and the Channel Estimation field.~~



Figure 21-YY – OFDM preamble

**Discussion**: The MIB variable “dot11MultiDomainCapabilityEnabled” does not exist. It should be replaced by “dot11MultiDomainCapabilityActivated”

**Proposed change**:

**10.9.2.2 Providing supported channels upon association in a DMG BSS(11ad)**

*Change the first paragraph as follows*

An AP or PCP may advertise the regulatory domain in which it is located via a Country element in the DMG Beacon, Announce, or Information Response frame if ~~dot11MultiDomainCapabilityEnabled~~ dot11MultiDomainCapabilityActivated is true.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3232 | 1009.01 | 8.4.2.136 | It is not stated anywhere which frame(s) are used to carry the Awake Window element. | Add AwakeWindow to DMG Beacon and Announce frame body (Table 8-49 and Table 8-401), or state in 8.4.2.136 that the element can be carried in DMG Beacon and Announce frames, or other solution. |

**Proposed resolution:** Revised

**Discussion**: Make changes to indicated frames. In addition, the Request element is included in Information Request and Information Response frames, but that is not indicated in 8.4.2.10 – hence, need to fix that too.

**Proposed changes:**

**8.3.4.1 DMG Beacon**

*Insert the following row in (****Table 8-49—DMG Beacon frame body****), renumbering as appropriate*

|  |  |  |
| --- | --- | --- |
| 15 | Awake Window | The Awake Window element is optionally present. If present, this element specifies the characteristics of the awake window of a CBAP (see 10.2.6). |

**8.4.2.10 Request element**

*Change the first paragraph as follows*

This element is placed in a Probe Request frame or Information Request frame to request that the responding STA include the requested information in the Probe Response frame or Information Response frame, respectively. The format of the element is as shown in Figure 8-132 (Request element).

*Change the third paragraph as follows*

The Requested Element IDs are the list of elements that are requested to be included in the Probe Response frame or Information Response frame. The Requested Element IDs are listed in order of increasing element ID.

**8.6.22.2 Announce frame format**

*Change (***Table 8-401—Announce frame Action field format***) as follows*

|  |  |  |
| --- | --- | --- |
| Order | Information | Notes |
| 1 | Category | The Category field is defined in 8.4.1.11 (Action field) |
| 2 | Unprotected DMG Action | The Unprotected DMG Action field is defined in 8.6.22.1 |
| 3 | Timestamp | The Timestamp field is defined in 8.4.1.10. |
| 4 | Beacon Interval | The Beacon Interval field is defined in 8.4.1.3 and specifies the duration of the beacon interval of the BSS |
| 5 | SSID (optional) | The SSID element is defined in 8.4.2.2. If present, the SSID element specifies the SSID of the BSS |
| 6 | Extended Schedule (optional) | The Extended Schedule element is defined in 8.4.2.131. If present, the Extended Schedule element specifies the schedule of the BSS |
| 7 | DMG Capabilities (optional) | The DMG Capabilities element is defined in 8.4.2.127. If present, the DMG Capabilities element specifies capabilities of the transmitting STA |
| 8 | RSN (optional) | The RSN element is defined in 8.4.2.24. If present, the RSN element indicates that security is required in the BSS |
| 9 | Multiple BSSID (optional) | The Multiple BSSID element is defined in 8.4.2.45. If present, the Multiple BSSID element signals all the BSSIDs in use by the BSS. |
| 10 | DMG Operation (optional) | The DMG Operation element is defined in 8.4.2.128. If present, the DMG Operation element specifies the operational parameters of the BSS. |
| 11 | Next DMG ATI (optional) | The Next DMG ATI element is defined in 8.4.2.134. If present, the Next DMG ATI element specifies the start time of the next ATI at a subsequent beacon interval. |
| 12 | Multi-band (optional) | The Multi-band element is defined in 8.4.2.137 and is optionally included. |
| 13 | Awake Window (optional) | The Awake Window element is defined in 8.4.2.136 and is optionally included. |
| 14 | DMG BSS Parameter Change (optional) | The DMG BSS Parameter Change element is defined in 8.4.2.126 and is optionally included. |
| 15 | BeamLink Maintenance (optional) | The BeamLink Maintenance element is defined in 8.4.2.151 and is optionally included. |
| 16 | Multiple MAC Sublayers (optional) | The Multiple MAC Sublayers element is defined in 8.4.2.152 and is optionally included. |
| 17 | ECAPC Policy (optional) | The ECAPC Policy element is defined in 8.4.2.154 and is optionally included. |
| 18 | Cluster Report (optional) | The Cluster Report element is defined in 8.4.2.146 and is optionally included. |
| 19 | Next PCP List (optional) | The Next PCP List element is defined in 8.4.2.139 and is optionally included. |
| 20 | PCP Handover (optional) | The PCP Handover element is defined in 8.4.2.140 and is optionally included. |
| 21 | STA Availability (optional) | The STA Availability element is defined in 8.4.2.132 and is optionally included. |

**10.30.1 Information Request and Response**

*Insert the following at the end of the fifth paragraph*

If there was a Request element in the Information Request frame, then:

* Each element requested in the Request element shall be included in the Information Response frame if the responding STA supports that element and shall not be included otherwise.
* Elements that would not have been included otherwise shall be included after all the elements that would have been included even in the absence of the Request element.
* Elements that would have been included even in the absence of the Request element shall be included in their normal position, and may be included again after all the elements that would have been included even in the absence of the Request element.
* Elements after all the elements that would have been included even in the absence of the Request element shall be included in the same order as in the Request element.
* If dot11RadioMeasurementActivated is true and the RCPI element was requested, an RCPI element containing the RCPI of the Information Request frame shall be included. If no measurement result is available, the RCPI value shall be set to indicate that a measurement is not available (see 8.4.2.37).

The Requested Element IDs field within a Request element transmitted in an Information Request frame should not include an element ID that corresponds to an element that will be included in the Information Response frame even in the absence of the Request element, or will be excluded from the Information Response frame even in the presence of the Request element. A given element ID is included at most once among the Requested Element IDs.

*Change the first sentence of the sixth paragraph as follows*

A STA shall send an Information Response frame with an empty payload in response to a received Information Request frame that solicits information about a single target STA, as identified by the Subject Address field within the Information Request frame, if

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3499 | 1211.28 | 8.6.22.2 | "Multiple elements can appear in this frame." Like what? Anything? This is underconstrained. List what can, and makes sense, to put here; or something | Clarify what elements are sensible or expected in this frame. |

**Proposed resolution:** Revised

**Discussion**: resolved as part of CID3232