IEEE P802.11
Wireless LANs

|  |
| --- |
| Resolutions to CIDs 1293, 1294 & 1298 |
| Date: April 10, 2018 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |
| Jouni Malinen | Qualcomm Inc. |  |  | jouni@qca.qualcomm.com |

Abstract

This submission proposes resolutions for following CID received for TGax LB232 (3):

1293, 1294, 1298

Revisions:

* Rev 0: Initial version of the document.

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 TGm Draft. This introduction is not part of the adopted material.

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

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Pg / Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 1293 | Abhishek Patil | 1944.09 | 11.1.3.8 | The spec allows an AP to advertise a partial or complete list of profiles. A receiving STA is left guessing as it has no way to know if the mgmt frame it received carried a complete list or a partial list of profiles. Some form of signaling is required to indicate if the list if partial or complete | Provide a mechanism for the AP to signal if the current mgmt frame is advertising a complete or partial list of nontransmitted BSSIDs | **Revised**Agree with the comment. A new bit field in Extended Capabilities element is used to signal if the list is complete. Further AP may also advertise the number of nontransmitted BSSIDs active on the device. See resolution to CID 1294**TGm Editor, please make changes as shown in document 11-18/0675r1 having a tag [1293]** |
| 1294 | Abhishek Patil | 1944.09 | 11.1.3.8 | MaxBSSID Indicator field in Multiple BSSID element provides a maximum number of possible BSSIDs hosted on the device. The spec doesn't provide a mechanism to signal the actual number of BSS hosted on the device. Further, the spec permits an AP to advertise a partial list of profiles. Therefore, a non-AP STA, even after receiving several mgmt frames, has no way to figure out if it has received information about all the BSSIDs active on the device. | Spec should provide a mechanism for AP to signal a count or a bitmap of active BSSIDs hosted on the AP device. Further, spec should clarify the action on the non-AP STA side after it has received a partial list of profiles (for example, the STA could send a probe request to the AP in an attempt to obtain a complete list (or additional list of nontransmitted profiles)). | **Revised**Agree with the comment. A element is defined to carry information on the total number of BSSIDs active on the device. With this information, a non-AP STA can determine if it has received information about all the active BSSID hosted on the device. Also see resolution to CID 1293**TGm Editor, please make changes as shown in document 11-18/0675r1 having a tag [1294]** |
| 1298 | Abhishek Patil | 1944.24 | 11.1.3.8 | The spec does not provide the ability to not inherit certain elements. For example, if a particular nontransmitted BSSID doesn't want to support or enable a particular feature that is supported by the transmitted BSSID, it cannot do so. For example, let's say the transmitted BSSID supports TWT but a particular nontransmitted BSSID doesn't want to enable TWT (for whatever reason - let's say because the number of STAs associated with that BSSID is small and manageble without enabling TWT), the spec doesn't allow this. As a result, STAs associated with that nontransmitted BSSID beleive the feature is enabled and the (TWT) element values are inherited from the transmitted BSSID. This can lead to unexpected behavior or unwanted signaling (such a request/reject) frames being exchanged between the AP and STAs. Further, STA may select and associate with a particular nontransmitted BSSID expecting certain features are (inherited and hence) supported. | Spec should provide a mechanism for a nontransmitted BSSID profile to indicate elements that this BSSID doesn't inherit from the transmitted BSSID and hence the corresponding feature is not support for STAs associated to that BSSID. | **Revised**Agree with the comment. AP can indicate that a particular nontransmitted BSSID does not inherit (i.e., conditional inheritance) an element by including a corresponding ‘null’ element. STAs associated with that nontransmitted BSSID do not inherit the corresponding element from the transmitted BSSID.**TGm Editor, please make changes as shown in document 11-18/0675r1 having a tag [1298]** |

*
* **Multiple BSSID procedure**

***TGm Editor: Please add the following at the end of the 2nd paragraph in this section (REVmd D1.0, P1944L8):***

[1293, 1294]An AP advertising a complete list of nontransmitted BSSID profiles shall set the Complete List Of NonTxBSSID Profiles field of Extended Capabilities element to 1. An AP may include Active BSSID Count element (see 9.4.2.217a (Active BSSID Count element)) in its Beacon frame or DMG Beacon frame or Probe Response frame to indicate the number of active BSSIDs in the multiple BSSID set.

Note – A non-AP STA can send a Probe Request frame to an AP to gather information about all BSSIDs in the multiple BSSID set.

***TGm Editor: Please add the following at the end of the 3rd paragraph in this section (REVmd D1.0, P1944L24):***

[1298]An exception to this is when the AP has indicated that a nontransmitted BSSID does not inherit an element from the transmitted BSSID by including a corresponding null element in the nontransmitted BSSID profile for that BSS. A null element is an element in which the Information field is absent (see 9.4.2.1 (General)) and the Length field is set to 0 when the Element ID Extension field is absent or set to 1 when the Element ID Extension field is present.

* Multiple BSSID element

***TGm Editor: Please add a new bullet to the paragraph below Table 9-173 (REVmd D1.0, P1076L60):***

The Nontransmitted BSSID Profile subelement contains a list of elements for one or more APs or DMG STAs that have nontransmitted BSSIDs and is defined as follows:

*
* Any element not inherited from the transmitted BSSID is included in the Nontransmitted BSSID Profile subelement with its Information field absent (see 9.4.2.1 (General)) and Length field set to 0 when Element ID Extension field is absent or set to 1 if the Element ID Extension field is present.[1298]
* Extended Capabilities element [1293, 1294]

***TGm Editor: Please add the following row to Table 9-146:***

***Insert the following rows into Table 9-146 (Extended Capabilities element) (header row shown for convenience):***

|  |
| --- |
| * Extended Capabilities field
 |
| **Bit** | **Information** | **Notes** |
| <ANA> | Complete List Of NonTxBSSID Profiles | This field is reserved for a non-AP STA or when the AP has dot11MultiBSSIDActivated set to false.When set to 1, indicates that the frame carrying this element includes a complete list of nontransmitted BSSID profiles. When set to 0 by an AP or PCP, there is no indication about the completeness of the list of the nontransmitted BSSID profiles in the frame.Also see 11.1.3.8 (Multiple BSSID procedure) |

***TGm Editor: Please add a new section after 9.4.2.217 as follows:***

9.4.2.217a Active BSSID Count element [1293, 1294]

The Active BSSID Count element is used to indicate the number of active BSSIDs in a multiple BSSID set.

The format of the Active BSSID Count element is shown in Figure 9-709aa (Active BSSID Count element format)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | BSSID Count |
| Octets: | 1 | 1 | 1 | 1 |
|  | **Figure 9-709aa –Active BSSID Count element format** |

The Element ID, Length, and Element ID Extension fields are defined in 9.4.2.1 (General).

The BSSID Count field carries the total number of active BSSIDs in the multiple BSSID set.

* **Elements**
* **General** [1293, 1294]

***TGm Editor: Please add a new row to Table 9-87 as follows:***

***Insert the following new rows into Table 9-87 (Element IDs) (header row shown for convenience):***

|  |
| --- |
| **Table 9-87 – Element IDs** |
| **Element** | **Element ID** | **Element ID Extension** | **Extensible** | **Fragmentable** |
| Active BSSID Count (see 9.4.2.217a (Active BSSID Count element)) | 255 | <ANA> | Yes | No |

* **Management frames**
* **Beacon frame format** [1293, 1294]

***TGm Editor: Please add a new row to Table 9-31 as follows:***

***Insert the following new rows into Table 9-31 (Beacon frame body):***

|  |
| --- |
| **Table 9-31 – Beacon frame body** |
| **Order** | **Information** | **Notes** |
| <ANA> | Active BSSID Count | The Active BSSID Count element is optionally present when dot11MultiBSSIDActivated is set to true. |

* **Probe Response frame format** [1293, 1294]

***TGm Editor: Please add a new row to Table 9-38 as follows:***

***Insert the following new rows into Table 9-38 (Probe Response frame body):***

|  |
| --- |
| **Table 9-38 – Probe Response frame body** |
| **Order** | **Information** | **Notes** |
| <ANA> | Active BSSID Count | The Active BSSID Count element is optionally present when dot11MultiBSSIDActivated is set to true. |

* DMG Beacon [1293, 1294]

***TGm Editor: Please add a new row to Table 9-45 as follows:***

***Insert the following new rows into Table 9-45 (DMG Beacon frame body):***

|  |
| --- |
| * DMG Beacon frame body
 |
| Order | Information | Notes |
| <ANA> | Active BSSID Count | The Active BSSID Count element is optionally present when dot11MultiBSSIDActivated is set to true. |