IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SA1 Bugfix | | | | |
| Date: May 9, 2024 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Technologies Inc. |  |  | appatil@qti.qualcomm.com |
| Gaurang Naik |  |  |  |
| Alfred Asterjadhi |  |  |  |
| Liwen | NXP |  |  |  |
| Insun | LGE |  |  |  |
| Laurent | Intel |  |  |  |
| Po-Kai |  |  |  |
| Binita | Cisco |  |  |  |

Abstract

This submission fixes bugs found in TGbe D5.0 without having associated comments.

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1:
  + Updated discussion sections based on offline feedback from various members.
  + Updated the co-author list to include folks who provide feedback.
* Rec 2:
  + fixed header
  + Added Binita as a co-author

***TGbe editor: Baseline for this document is 11be D5.1***

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

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

**Fix 1: Reference to TIM element does not apply when reported AP is a nonTxBSSID**

Reference: TGbe D5.1 page 258 line 12.

Discussion: The DTIM Count and DTIM Period subfields for an AP corresponding to a nonTxBSSID are not carried in the TIM element. The text in 9.4.2.312.4 needs to be fixed to point to the correct location based on the type of AP.

Proposed fix:

**9.4.2.321.2.4 Link Info field of the Basic Multi-Link element**

***TGbe editor: Please update the following paragraph in this subclause as shown below:***

The DTIM Count subfield and the DTIM Period subfield carry the DTIM count and DTIM period, respectively, for the reported AP. The subfields are as defined in 9.4.2.5 (TIM element) if the reported AP does not correspond to a nontransmitted BSSID or as defined in 9.4.2.72 (Multiple BSSID-Index element) if the reported AP corresponds to a nontransmitted BSSID.

**Fix 2: Text in 9.4.2.72 missing the case when ML probe carries complete profile**

Reference: TGbe D5.1 page 225 line 47

Discussion: The description in the last paragraph of 9.4.2.72 also applies to the case when an ML Probe Response frame carries Basic ML IE which provides information of a reported AP that corresponds to a nonTxBSSID. This was missed when CID 20068 was resolved (note, when a co-located AP on a lower band reports an AP on 6 GHz that is a nontransmitted BSSID and affiliated with the same AP MLD reported AP information in RNR IE will have the MLD ID set to 0 – which doesn’t provide information about the BSSID index). Therefore, the statement in 9.4.2.72 needs to be generalized so that it also applies to ML Probe Response, along with Association Response and Reassociation Response frames.

Proposed fix:

**9.4.2.72 Multiple BSSID-Index element**

***TGbe editor: Please update the last paragraph in this subclause as shown below:***

The Multiple BSSID-Index element is included in the nontransmitted BSSID profile carried in a Multiple BSSID element, as described in 11.1.3.8 (Multiple BSSID procedure). The Multiple BSSID-Index element is included in the Per-STA Profile subelement, corresponding to a reported AP, of a Basic Multi-Link element if the reported AP corresponds to a nontransmitted BSSID and the Complete Profile subfield is set to 1. ~~The use of the Multiple BSSID element and frames is described in~~Also see 11.10.14 (Multiple BSSID set).

**Fix 3: Per-STA profile provides incomplete information when reported AP is a nonTxBSSID.**

Reference: TGbe D5.1 9.4.2.312.4

Discussion: Per 11ax out-of-band scanning rules (please see 11.53 pg 2962 line 19 of REVme D5.0), only one AP in a co-hosted BSSID set is required to report an AP on the 6 GHz channel. As a result, the RNR element transmitted by a 2.4 GHz or a 5 GHz co-hosted AP that is affiliated with the same AP MLD as a 6 GHz nonTxBSSID will not report the AP corresponding to TxBSSID on 6 GHz. Consequently, a scanning non-AP STA will be able to identify the TxBSSID in the set. Therefore, the STA Info field needs to include MaxBSSID Indicator to help a non-AP identify the TxBSSID.

Proposed fix:

**9.4.2.321.2.4 Link Info field of the Basic Multi-Link element**

***TGbe editor: Please update Figure 9-1072n in this subclause as shown below:***

B0 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B15

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Link ID | Complete Profile | STA MAC  Address Present | Beacon Interval Present | TSF  Offset Present | DTIM  Info Present | NSTR  Link Pair Present | NSTR  Bitmap Size | BSS  Parameters Change Count Present | MaxBSSID Indicator Present | Reserved |

Bits: 4 1 1 1 1 1 1 1 1 1 3

**Figure 9-1072n—STA Control field format of the Basic Multi-Link element**

***TGbe editor: Please add the following paragraph before the paragraph that starts as “The format of the STA Info field is defined in Figure 9-1072o ...” in this subclause as shown below:***

The MaxBSSID Indicator Present subfield indicates the presence of the MaxBSSID Indicator subfield in the STA Info field. It is set to 1 if the MaxBSSID Indicator subfield is present in the STA Info field. Otherwise, it is set to 0. A non-AP STA sets this subfield to 0 in the Basic Multi-Link element that it transmits. An AP sets this subfield to 1 in the Basic Multi-Link element only if the reported AP corresponds to a nontransmitted BSSID in a multiple BSSID set and the Complete Profile subfield is set to 1.

***TGbe editor: Please update Figure 9-1072o in this subclause as shown below:***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| STA Info Length | STA MAC  Address | Beacon Interval | TSF Offset | DTIM Info | NSTR  Indication Bitmap | BSS  Parameters Change Count | MaxBSSID Indicator |

Octets: 1 0 or 6 0 or 2 0 or 8 0 or 2 0 or 1 or 2 0 or 1 0 or 1

**Figure 9-1072o—STA Info field format of the Basic Multi-Link element**

***TGbe editor: Please add the following paragraph before the paragraph that starts as “The BSS Parameters Change Count subfield of the STA Info field ...” in this subclause as shown below:***

The MaxBSSID Indicator subfield is as defined in 9.4.2.44 (Multiple BSSID element) and carries the same value as advertised in the Multiple BSSID element included in the Beacon frame of the AP corresponding to the transmitted BSSID in the same multiple BSSID set as the reported nontransmitted BSSID.