IEEE P802.11  
Wireless LANs

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| **Comment Resolution for Subclause 8.2** | | | | |
| **Date:** 2013-07-01 | | | | |
| **Author(s):** | | | | |
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Abstract

This document provides comment resolution for TGah Draft 0.1 Comment Collection 9 with these CIDs: 12, 560, 561, and 563.

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

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

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 561 | 34.29 | 8.3.1.20c | "The STACK frame format defined in the subclause 8.3.1.20c does not match the general frame format defined in 8.2.3 (802.11mc D1.4), as it does not have Duration/ID field and its TA field is not 6 octets MAC address. The STACK frame format also does not match the short frame format (8.7), as the short frame format does not support control frames.  The STACK frame shall be defined as a variation of the short frame format." | "1) Modify the Table 8-3a (subclause 8.2.4.1.3) by replacing STACK by Reserved.  2) Move subclause 8.3.1.20c STACK frame format to 8.7.5.  3) Modify the Table 8-301a to assign STACK frame to Type = 2." | Revised –  TGah editor to make changes shown in 11-13-0824-01-00ah under the heading for CID 561. |

**Discussion:** *The commenter is correct that the STACK frame does not match the general frame format defined in 8.2.3. Proposed resolution is inline with commenter’s suggestion to move STACK frame under Short frame subclause (8.7). Note that by doing so we also free 2 bits in the Frame Control for STACK frames which can be used to allocate the required bit for Flow Control that is included in the SFD but is missing in D0.1: “The draft specification shall define a 1-bit field in FC in one of the S1G control response frame which includes a time field for Relay flow control signalling.”*

**Instruction to Editor: *Modify Table 8-3a (S1G Control Frame Extension) after Table 8-3(Control Frame Extension):***

|  |  |  |  |
| --- | --- | --- | --- |
| * **S1G Control Frame Extension** | | | |
| **Type value b3 b2** | **Subtype value b7 b6 b5 b4** | **S1G Control Frame**  **Extension value**  **b14 b15** | **Description** |
| 01 | <ANA> | 00 | TACK |
| 01 | <ANA> | 01 | Reserved |
| 01 | <ANA> | 10 | BAT |
| 01 | <ANA> | 11 | Reserved |

* **Frame Control field**

**Instruction to Editor: *Please add the following row in Table 8-301a (Short frame types):***

|  |  |
| --- | --- |
| * **Short frame types** | |
| Type | Type description |
| … |  |
| <ANA> | Control |
| … |  |

**Instruction to Editor: *Please add the following rows immediately before and after the following sentence of subclause 8.7.3.1:***

Short frames with type field value set to <ANA> define short control frames. All other values of the type field are reserved.The PTID/Subtype field for Short Control frames (type field set to <ANA>) is used to indicate short control frame subtypes as described in 8.7.3b (Short Control frames).

**Instruction to Editor: *Please add the following subclause immediately after subclause 8.7.3:***

**8.7.3b Short Control frames**

The subfields within the Frame Control field of short Control frames are set as illustrated in Figure 8-532c2 (Frame Control field subfield values within Short Control frames).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0     B1 | B2  B4 | B5      B7 | B8 B10 | B11 | B12 | B13 | B14 | B15 |
|  | Protocol  Version | Type  (Control) | PTID/  Subtype | Bandwidth  Indication | Dynamic Indication | Next TWT Present | More  Data | Flow Control | Reserved |
| Bits: | 2 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 |

* **Frame Control field subfield values within Short Control frames**

Table 8-532a1 (Short Control frame subtypes) defines the different short Control frame subtypes.

**Table 8-532a1 – Short Control frame subtypes**

|  |  |
| --- | --- |
| **PTID/Subtype value b8 b7 b6** | **Subtype description** |
| <ANA> | STACK |
| <ANA>-111 | Reserved |

The Bandwidth Indication field which is 3 bits in length and the Dynamic Indication field which is 1 bit in length are described in 8.2.4.11 (Bandwidth Indication and Dynamic Indication fields).

The Next TWT Present field is 1 bit in length and is set to 1 if the Next TWT field is present in Short Control

frames. Otherwise, it is set to 0.

The More Data field is 1 bit in length and is described in 8.2.4.1.8 (More Data field).

The Flow Control field is 1 bit in length and is used for flow suspend signaling as described in 9.32n.3.3 (Flow Control for relay).

The Reserved field is 1 bit in length and is set to 0.

**Instruction to Editor: *Please move subclause 8.3.1.20c STACK frame format immediately after subclause 8.7.3b.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 563 | 139.36 | 9.32f.2 | The STACK frame format defined in the subclause 8.3.1.20c does not contain Next TWT field. The STACK frame cannot be used to transmit a Next TWT field. | Remove the STACK from the 1st paragraph of 9.32f.2 and the 3rd paragraph of 9.32f.3. | Revised –  TGah editor to make changes shown in 11-13-0824-01-00ah under the heading for CID 563. |

**Discussion:** *The commenter is correct that the STACK frame does not contain the Next TWT field. Proposed comment resolution is to use the Next TWT present bit in the FC to indicate whether the Timestamp field can be reinterpreted as a Next TWT value which allows STACK be used for what it was created (TWT operation).*

**8.3.1.20c STACK frame format**

**Instruction to Editor: *After moving the contents of 8.3.1.20c to the new subclause 8.7.3.b.1, please modify the newly added subclause 8.7.3b.2 as follows:***

The frame format of the STACK frame is defined in Figure 8-29p (STACK frame format):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Octets: | 2 | 2 | 2 | 4 | 4 |
|  | FC | AID (RA) | TA | Partial  Timestamp/Next TWT | FCS |
| **Figure 8-29p -- STACK frame format** | | | | | |

If the Next TWT Present field in the FC is set to 0, the Partial Timestamp/Next TWT field contains the least significant four octets of the value of the transmitting STA’s TSF timer at the time that the data symbol containing the first bit of the Partial Timestamp is transmitted to the PHY plus the transmitting STA’s delays through its local PHY from the MAC-PHY interface to its interface with the WM [e.g. antenna, light emitting diode (LED) emission surface].

If the Next TWT field in the FC is set to 1, the partial Timestamp field contains the next TWT value for the intended recipient of the frame given as the lowest four bytes of the TSF time for the next TWT.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 560 | 33.13 | 8.3.1.20a | "The Figure 8-29m and 2nd paragraph of subclause 8.3.1.20a defines RA as AID (2 octets). The RA field containing an AID does not match the general frame format defined in 8.2.3 (802.11mc D1.4). It also does not match the short frame format (8.7), as the short frame format does not support control frames.  An amendment for allowing RA field of BAT frame to contain AID is needed." | "1) Add the modification to Figure 8-1 in subclause 8.2.3 as length of Address 1 field to ""2 or 6"".  2) Modify the 1st paragraph of subclause 8.2.4.3.2 as following.  ---  Except the RA field of BAT frame (8.3.1.20a), each Address field contains a 48-bit address as defined in 9.2 of IEEE Std 802-2001. The RA filed of BAT frame contains a 2 octets AID as defined in 8.4.1.8.  ---  3) Modify the 1st paragraph of 8.2.4.3.7 as following.  ---  Except the BAT frame (8.3.1.20a), the RA field contains an IEEE MAC individual or group address that identifies the intended immediate  recipient STA(s), on the WM, for the information contained in the frame body field. In the BAT frame (8.3.1.20a), the RA field contains an AID of the intended immediate recipient STA." | Revised –  TGah editor to make changes shown in 11-13-0824-01-00ah under the heading for CID 560. |

**Discussion:** *The commenter is correct that the BAT frame has an A1 that does not match the general frame format defined in 8.2.3. An alternative comment resolution is proposed to address this comment with the following benefits: 1) Allows increase the BlockAck bitmap size for BAT frames from 12 to 32 bits, increasing achievable throughput. Cleaner standard description and design given that inclusion of BAT as Short Control frame does not require any amendment to existing standard (quite significative given that currently all frames with protocol version set to 0 shall have an A1 of 6 bytes (for all types and subtypes including reserved combinations of type/subtype values).*

**Instruction to Editor: *Modify Table 8-3a (S1G Control Frame Extension) after Table 8-3(Control Frame Extension):***

|  |  |  |  |
| --- | --- | --- | --- |
| * **S1G Control Frame Extension** | | | |
| **Type value b3 b2** | **Subtype value b7 b6 b5 b4** | **S1G Control Frame**  **Extension value**  **b14 b15** | **Description** |
| 01 | <ANA> | 00 | TACK |
| 01 | <ANA> | 01 | STACK |
| 01 | <ANA> | 10 | Reserved |
| 01 | <ANA> | 11 | Reserved |

**Instruction to Editor: *Please move subclause 8.3.1.20a BAT frame format immediately after subclause 8.7.3b.***

**Instruction to Editor: *Please add BAT subtype in table 8-532a1 (once this table is created with CID 563):***

**Table 8-532a1 – Short Control frame subtypes**

|  |  |
| --- | --- |
| **PTID/Subtype value b8 b7 b6** | **Subtype description** |
| <ANA> | BAT |
| <ANA>-111 | Reserved |

**8.3.1.20a BAT frame format**

**Instruction to Editor: *After moving the contents of 8.3.1.20a to the new subclause 8.7.3.b.1, please modify the newly added subclause as follows:***

The frame format of the BAT frame is defined in Figure 8-29m (BAT frame format):

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Octets: | 2 |  | 2 | 6 | 1 | 5 | 0 or 6 | 2 | 4 | 4 |
|  | FC |  | RA  (AID) | TA | Beacon  Sequence | Partial  Timestamp | Next  TWT  (Optional) | Starting  Sequence  Control | BAT  Bitmap | FCS |
| **Figure 8-29m -- BAT frame format** | | | | | | | | | | |

The Starting Sequence Control field contains the sequence number of the first MSDU and the TID for which this BAT frame is sent and is defined in Figure 8.29n (Starting Sequence Control field):

|  |  |  |
| --- | --- | --- |
|  | B0 B3 | B4 B15 |
|  | BAT TID | Starting Sequence Number |
| Bits: | 4 | 12 |
| * **Starting Sequence Control field** | | |



The BAT Bitmap subfield is 32 bits in length and is used to indicate the received status of up to 32 MSDUs and A-MSDUs. Each bit that is equal to 1 in the BAT Bitmap acknowledges the successful reception of a single MSDU or AMSDU in sequentially increasing sequence number order, with the first bit of the BAT Bitmap corresponding to the MSDU or A-MSDU with the sequence number that matches the value of the Starting Sequence Number subfield of the BAT frame.

* Setup and modification of the Block Ack parameters

**Instruction to Editor: P*lease modify the following paragraph as follows:***

When the recipient STA accepts, it indicates the type of Block Ack, the type of BlockAck frames and the number of buffers that it shall allocate for the support of this Block Ack agreement within the ADDBA Response frame. Each Block Ack agreement that is established by a STA may have a different buffer allocation. If the intended recipient STA rejects the request, then the originator shall not use the Block Ack mechanism. When the recipient STA accepts an Immediate Block Ack session, it shall indicate which type of BlockAck frames it will use, by transmitting an NDP ADDBA Response for NDP BlockAck frames, by transmitting a BAT ADDBA Response for BAT frames and by transmitting an ADDBA Response for BlockAck frames. The value indicated in the Buffer Size field of the NDP ADDBA Response shall not be greater than the maximum number of MSDUs and A-MSDUs that can be acknowledged with the selected NDP BlockAck frame. This value is 8 for NDP BlockAck (1MHz) frames as described in 8.3.4a.1.5 (NDP Block ACK) and 16 for NDP BlockAck (1MHz) frames as described in 8.3.4a.1.5 (NDP Block ACK). The value indicated in the Buffer Size field of the BAT ADDBA Response shall not be greater than 32.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 12 | 25.1 | 8.2 | General frame format requirements for procotol version set to 0 frames indicate that FC Duration.ID and Address 1 constitute the minimal frame format and are present in all frames, including reserved types and subtypes. Certain frames defined for S1G do not fullfill this requirement, e.g., BAT, STACK, short Probe Response, RA frame etc. | Protocol version 1 frames with PV 1 have been defined in 8.7 for S1G frames (do not have duration and may use AID for address 1). Define frames that are not compatible with PV-0 format as PV-1 frames. Some improvements are also possible with this mapping for STACK, BAT. Will submit a document with the resolution. | Revised –  TGah editor to make changes shown in 11-13-0824-01-00ah under the heading for CID 12. |

**Discussion:** *Agree with the commenter. Proposed comment resolution is to move add to Short Probe response under subclause 8.7 as it does not have a Duration field (compatible with short frames format but incompatible with normal frames format). In addition, once BAT and STACK frames are defined as short frames (above resolution of CIDs 560 and 563) the only frame identified by the SIG Control Extension field is the TACK frame which has a frame format compatible with normal frames. Hence, proposed comment resolution for this case is to assign the <ANA> subtype value previously assigned to S1G Control extension to TACK only. And, in a similar way with BAT and STACK frames, we can use one of the freed bits in the frame control field to allocate the required bit for Flow Control that is included in the SFD but is missing in D0.1: “The draft specification shall define a 1-bit field in FC in one of the S1G control response frame which includes a time field for Relay flow control signalling.*

* **Frame Control field**
* **General**

**Instruction to Editor: P*lease modify the following paragraph as follows:***

When the value of the Type subfield is equal to 1 and the value of the Subtype subfield is equal to <ANA>, the remaining subfields within the Frame Control field of S1G control frames are the following: Bandwidth Indication, Dynamic Indication, Next TWT Present, More Data, Flow Control, Reserved. In this case, the format of the Frame Control field is illustrated in Figure 8-3b (Frame Control field when Type is equal to 1 and Subtype is equal to <ANA>).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0     B1 | B2   B3 | B4      B7 | B8 B10 | B11 | B12 | B13 | B14 | B15 |
|  | Protocol  Version | Type | Subtype | Bandwidth  Indication | Dynamic  Indication | Next  TWT  Present | More  Data | Flow Control | Reserved |
| Bits: | 2 | 2 | 4 | 3 | 1 | 1 | 1 | 2 |  |
| **Frame Control field when Type is equal to 1 and Subtype is equal to <ANA>** | | | | | | | | | |

The Next TWT Present field is 1 bit in length and is set to 1 if the Next TWT field is present in the TACK frame. Otherwise, it is set to 0.

The Flow Control field is 1 bit in length and is used for flow suspend signaling as described in 9.32n.3.3 (Flow Control for relay).

The Reserved field is 1 bit in length and is set to 0.

* **Type and Subtype fields**

**Instruction to Editor: P*lease modify the table as follows:***

|  |  |  |  |
| --- | --- | --- | --- |
| * **Valid type and subtype combinations** | | | |
| **Type value b3 b2** | **Type description** | **Subtype value b7 b6 b5 b4** | **Subtype description** |
| 01 | Control | 0000–~~0011~~<ANA> | Reserved |
| 01 | Control | <ANA> | TACK |
| 01 | Control | 0100 | Beamforming Report Poll |

**Instruction to Editor: P*lease modify the table as follows:***

|  |  |  |  |
| --- | --- | --- | --- |
| * **Valid type and subtype combinations** | | | |
| **Type value b3 b2** | **Type description** | **Subtype value b7 b6 b5 b4** | **Subtype description** |
| 01 | Control | 0000–0110 | Reserved |
| 11 | Extension | 0000 | DMG Beacon |
| 11 | Extension | <ANA> | Short Beacon |
| 11 | Extension | <ANA> | Resource Allocation |
| 11 | Extension | <ANA>–1111 | Reserved |

**Instruction to Editor: P*lease remove the following paragraphs and table as follows:***



**Instruction to Editor: P*lease add the following to the Table 8-301b1 (Short Management frame subtypes) (once created by CID 27).***

**Table 8-301b1 – Short Management frame subtypes**

|  |  |
| --- | --- |
| **PTID/Subtype value b8 b7 b6** | **Subtype description** |
| <ANA> | Short Probe Response |
| <ANA>-111 | Reserved |

|  |  |
| --- | --- |
| * **Short frame types** | |
| Type | Type description |
| 0 | Data   * A1 or A2 is an SID (defined in 8.7.3.2), as determined by the From DS subfield in the FC field |
| 1 | Management   * A1 or A2 is an SID (defined in 8.7.3.2), as determined by the From DS subfield in the FC field * Management subtypes are encoded in the TID subfield in the FC field * Both A1 and A2 fields contain MAC addresses for Short Probe Response frames. |
| 2-14 | Reserved |
| 15 | Extension (currently reserved) |

**Instruction to Editor: P*lease move subclause 8.3.4.15c (Short Probe Response Frame format ) under subclause 8.7.3a (Short Management frames) as 8.7.3a.2 (Short Probe Response Frame format).***

**Instruction to Editor: P*lease modify Figure 8-37k (Frame Control field of Short Probe Response frame format) in subclause 8.7.3a.2 (Short Probe Response Frame format as follows:***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |
|  | Protocol  Version | Type | PTID/Subtype | Next TBTT  Present | Full SSID  Present | Interworking  Present | BSS  BW | Security | Reserved |
| Bits: | 2 | 3 | 3 | 1 | 1 | 1 | 3 | 1 | 1 |
| * **Frame Control field of Short Probe Response frame format** | | | | | | | | | |