IEEE P802.11
Wireless LANs

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| LB 203 Comment Resolution for 9.56 |
| Date: 2014-09-01 |
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Abstract

This submission proposes resolutions for comments in clauses 9.56 of TGah Draft 2.0 with the following CIDs: 3067, 3111, 3112, 3144,3145,3684, 3685,3808,4154,4165

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Change the comment resolution for CID3808,3111.

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 “TGah 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.***

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| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3067 | 313.57 | 9.56 | "with a unicast or broadcast address in the RA field"Apart from the change in terminology (to individually addressed and group addressed), is this supposed to say anything about the addressing? Was it intended to exclude multicast-but-not-broadcast addresses? | delete cited text or reword in in new terminology.Ditto at 314.25. | Revised –It is not supposed to say anything about the addressing. Any kind of address in the RA field should be allowed here.TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3067. |
| 3111 | 313.44 | 9.56 | It is not stated where and how flow-controlling and flow-controlled STAs are declared. | State how STAs declare that they are capable of being a flow-controlled STA. | Revised –See discussion for CID 3808 as below. TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3111. |
| 3112 | 313.44 | 9.56 | It seems there is no limit on the flow-control scenarios; shouldn't there be a time or total MPDU size limit for the flow-controlled/flow-controlling STAs? | Time of total-MPDU-size limits should be specified for flow-control situations. | Rejected –It is an implementation issue. The commenter does not propose a change in sufficient detail. |
| 3144 | 313.54 | 9.56 | The normative statement should not be in this sentence because the flow instructions depend on whether the flow controlled STA is a TWT STA or not. Replace "shall not" with "does not" in P313L53. Replace "is not allowed to transmit" with "shall not transmit" in P314L5, in P314L11, and P315L16. Also there is a duplicate TACK in P315L22. Replace one of them with "STACK". | As in comment | Accepted –TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3144. |
| 3145 | 314.30 | 9.56 | with a BSSID that matches the BSSID of the BSS... The flow controlling STA is not an AP only anymore. So this condition does not hold. Please clarify. | As in comment | Revised –Agree in principle. Add the condition for the case where non-AP STA is the flow controlling STA.TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3145. |
| 3684 |  313.56 | 9.56 | Have a concern with sending a Flow Suspension action frame with a broadcast address in the RA field, as it could cause network congestion, particularly, sent by an AP STA to suspend the non-AP STAs transmission for the same time duration. | don't allow any flow-control instructions to send to a broadcast address. Change the text accordingly. | Revised –The commenter’s concern is ture in some scenarios. However AP can make decision how to efficiently use this function. For example, for TWT STAs, they will resume transmission only within their TWT SP. Refer the resolution for CID 3067.TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3684. |
| 3685 | 313.63 | 9.56 | Is the flow control only used for Relay frames? Or more generally, is the flow control only used as part of the Relay function? | Please clarify. | Revised –Flow control is not limited to relay frames. Subclause 9.56 can also be used for relay operation.TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3685. |
| 3808 | 313.52 | 9.56 | "A flow-controlled STA shall not transmit any data frames to the flow-controlling STA that transmitted the flow-control instruction, for the amount of time indicated in the flow-control instruction."This mandatory behavior make non-AP STAs implementation complicate. In 802.11 a/b/g/n/ac, there is no such thing of flow control, and the APs work fine. | Make flow control in non-AP STAs optional or add a capability bit for a STA to notify whether it supports flow control or not. The AP can decide whether to accept the association request or not per the capability indication. | Revised –Add one S1G capability bit for flow control support indication. Also add status code to give the reason for disassociation or (re)association refused.TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID 3808. |
| 4154 | 313.56 | 9.56 | P313L56 and P313L25: The purpose and procedure of Flow suspension/resumption action frame with <broadcast> address in the RA field is not clear. It seems that when used <broadcast> address, whole STAs in the BSS have to suspend/resume to send data frame. But in that case, when considering various traffic/service category (eg. Small length but Jitter sensitive traffic, emergency service traffic or STA...) can be existed within the BSS, we should have a mechanism to control flow according to the characteristics of traffic in detail. | add a mechanism to control flow according to the characteristics of traffic in detail. | Rejected –The commenter identified an issue but did not propose a change in sufficient detail. |
| 4165 | 314.42 | 9.56 | Flow control is one of relay operations. Suggest to clearly indicate that the relay operation uses the flow control mechanism described in subclause 9.56. | Add a new sentence such as "The relay operation uses the flow control mechanism described in this subclause to prevent from the overflow condition" | Revised –Flow control is not limited to relay frames. Subclause 9.56 can also be used for relay operation.TGah editor to make the changes shown in 11-14/1195r1 under all headings that include CID4165. |

**Discussion:** *None.*

***TGah Editor: Change the paragraph below as follows (#3685,#4165):***

9.56 Flow control

This subclause describes flow control operation for an S1G STA. The relay operation uses the flow control mechanism described in this subclause to prevent from the overflow condition.

***TGah Editor: Change the paragraph below as follows (#3111 ,#3144,#3808):***

A STA that supports flow control shall set the Flow Control Supported subfield to 1 in the S1G Capabilities element it transmits. An S1G AP may refuse (re) association or can disassociate a STA that sets the Flow Control Supported subfield to 0 in the S1G Capabilities element. The S1G AP that refuses (re) association or disassociates a STA shall set the Status code field in the (Re) Association Response or in the Disassociation frame to FLOW\_CONTROL\_OPERATION\_NOT\_ SUPPORTED.

A STA that sets the Flow Control Supported subfield to 1 in the S1G Capabilities element that it transmits may instruct a second STA to stop sending data frames using a flow-control instruction. The STA ~~or AP~~ sending the flow-control instruction is called the flow-controlling STA. A STA that sets the Flow Control Supported subfield to 0 in the S1G Capabilities element that it transmits shall not instruct a second STA to stop sending data frames using a flow-control instruction as described in this subclause. A STA that is the intended recipient of a flow-control instruction and that correctly receives that instruction is called a flow-controlled STA. A flow-controlled STA ~~shall~~ does not transmit any data frames to the flow-controlling STA that transmitted the flow-control instruction, for the amount of time indicated in the flow-control instruction. A flow-control instruction is any of the following:

***TGah Editor: Change the paragraph below as follows (#3067,#3684):***

—a Flow Suspension action frame ~~with a unicast or broadcast address in the RA field~~

—a BAT frame with the Flow Control bit in the Frame Control field equal to 1

—a TACK frame with the Flow Control bit in the Frame Control field equal to 1

—a STACK frame with the Flow Control bit in the Frame Control field equal to 1

—an NDP Ack frame with the Relayed Frame field equal to 1 and the Idle Indication field equal to 1 and

the Duration field equal to a nonzero value

***TGah Editor: Change the paragraph below as follows (#3144):***

NOTE-The transmission of BAT, STACK, TACK frames is only permitted within TWT SP as described in 9.42 (Target wake time (TWT)) and 9.23 (Block acknowledgment (block ack)) and 9.3.2.9 (Ack procedure).

The Suspend Duration field of the Flow Suspension action frame listed above indicates the length of time during which a flow-controlled STA ~~is~~ shall not ~~allowed to~~ transmit Data frames to the flow-controlling STA identified by the TA field of the Flow Suspension action frame.

The Suspend Duration field of the TACK/BAT/STACK frame listed above indicates the length of time during which a flow-controlled TWT STA ~~is~~ shall not ~~allowed to~~ transmit Data frames to the flow-controlling STA identified by the TA field of the TACK/BAT frame and the RA field of the frame that elicited the STACK frame.

The Duration field of the NDP Ack frame listed above indicates the length of time during which a flow-controlled STA ~~is~~ shall not ~~allowed to~~ transmit Data frames to the flow-controlling STA identified by the RA field of the frame that elicited the NDP Ack frame.

A flow-controlled STA may resume transmission of data frames addressed to the flow-controlling STA that had previously suspended transmission after the expiration of the time indicated in the Suspend Duration field of a Flow Suspension, TACK, BAT, or TACK frame or in the Duration field of an NDP Ack frame.

***TGah Editor: Change the paragraph below as follows (#3067, #3684):***

A flow-controlling STA may send a Flow Resumption action frame ~~with a unicast or broadcast address in the RA field~~ to cancel any outstanding flow suspension time for the flow-controlling STA identified by the TA field of the Flow Resumption action frame.

***TGah Editor: Change the paragraph below as follows (#3145):***

A flow-controlled STA that receives a Flow Resumption action frame with a BSSID that matches the BSSID of the BSS address of which the flow-controlled STA is a member or with an RA field that matches the address of the flow-controlled STA shall cancel any outstanding flow suspension time, and may resume transmission of data frames to the flow-controlling STA identified by the TA field of the Flow Resumption action frame.

A STA should send a next TWT value in the Next TWT Info/Suspend Duration field of the response frame it transmits to a TWT STA if the More Data bit is equal to 0 in the eliciting frame. A STA may send a suspend time value in the Next TWT Info/Suspend Duration field of a response frame it transmits to a TWT STA if the More Data bit is equal to 1 in the eliciting frame.

***TGah Editor: Change the figure 8-401ag as follows (#3111, #3808):***

8.4.2.170j.2 S1G Capabilities info field

 B64 B65 B66 B68 B69 B70 B71

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| TWT Grouping Support | BDT Capable | COLOR | ~~Reserved~~Flow ControlSupported | Reserved | Reserved |

**Figure 8-401ag – S1G Capabilities Info field**

***TGah Editor: Add one row in the Table 8-240f as follows (#3111, #3808):***

**Table 8-240f—Subfields of the S1G Capabilities Info field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Flow Control Supported |

|  |
| --- |
| Indicates support for flow control operation. |

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|  |
| --- |
| Set to 0 if not supported.Set to 1 if supported. |

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***TGah Editor: Change the Table 8-45 as follows (#3111, #3808):***

8.4.1.9 Status Code field

Insert the following rows (ignoring the header row) into Table 8-45:

Table 8-45 Status code

|  |  |  |
| --- | --- | --- |
| Status Code | Name | Meaning |
| <ANA> | ENERGY\_LIMITED\_OPERATION\_NOT\_SUPPORT | Re (association) refused or disassociated because energy limited operation is not supported at the AP. |
| <ANA> | REJECTED\_NDP\_BLOCK\_ACK\_SUGGESTED | BlockAck negotiation refused because, due to buffer constraints and other unspecified reasons, the recipient prefers to generate only NDP BlockAck frames. |
| <ANA> | FLOW\_CONTROL\_OPERATION\_NOT\_ SUPPORTED | Re (association) refused or disassociated because flow control operation is not supported by the non-AP STA. |