IEEE P802.11
Wireless LANs

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| LB 203 Comment Resolution for 9.3.2.9 |
| Date: 2014-08-01 |
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Abstract

This submission proposes resolutions for comments in 9.3.2.9 of TGah Draft 2.0 with the following CIDs (TOT 4 CIDs):

* 3346, 3680, 3681, 4123

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 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** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3346 | Alfred Asterjadhi | 231.00 | 9.3.2.9 | In item 4) the Ack ID extension case is missing. | Insert: ", and Ack ID extension if present, " after "Ack ID field" | Revised –Agree with the commenter. Proposed resolution accounts for the suggested change. TGah editor to make the changes shown in 11-14/1046r0 under all headings that include CID 3346. |
| 3680 | Lei Wang | 231.00 | 9.3.2.9 | The specification text in line 18 to line 33 on page 231 seems redundant, due to two major reasonse below:1) which type of ACK frames should be used is actually specified in the corresponding sections, e.g., 9.42; 9.43; 9.29, etc, and2) for those cases where either NDP ACK or "normal" ACK can be use, there is no reason to mandate one or other, as either one will work fine, i.e., no difference in protocol/procedure viewpoint. | Delete the text from line 18 to 33 on page 231. | Rejected –The comment fails to identify an issue (actually the proposed change opens new issues).As a response to the commenter: please note that the issue of mandating one type of frame has been discussed many times within TGah. For instance, among several other documents that discuss the same, this paragraph is inline with this motion: “8.2.5. Motion 2: Move to include in the Specification Framework Document, that an AP and associated STAs shall know preferred frame format for ACK, CTS, and BA (normal vs. NDP) of each other by defining a mandatory rule “to use NDP unless other frame is needed”.8.2.5.1. Move: Young Hoon Second: Li Chia8.2.5.2. Discussions: none.8.2.5.3. Motion PASSES by unanimous consent.” For more information please refer to <https://mentor.ieee.org/802.11/dcn/13/11-13-0296-00-00ah-response-frame-indication.pptx> |
| 3681 | Lei Wang | 231.00 | 9.3.2.9 | Similarly, why do we have to specify non-S1G STA shall not use NDP Ack and NDP PS-Poll-Ack frames? Any forward compatibility concerns? | delete the paragraph in line 35 page 231. | Rejected –The comment fails to identify a specific issue to be addressed.  As a response to the comment: NDP Ack and NDP PS-Poll-Ack frames are carried within S1G PPDUs and are identified by setting the NDP\_Indication field in the SIG field of these frames to 1. Hence, these types of sentences were added to ensure backward compatibility. In addition the TGah group does not believe there are forward compatibility concerns because in the future these issues (if needed) are going to be taken care by the TG that will be formed in the future and eventually have the concerns mentioned by the comment.  |
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| 4123 | Stefan Aust | 230.00 | 9.3.2.9 | Ack frame generation is refered to Annex G. However, Annex G is not included in the document | Correct the reference to Annex G | Revised –TGah editor to insert the heading for Annex G in the draft and make sure this reference points to Annex G. |
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**Discussion:** *None.*

* **Ack procedure**

The cases when an Ack frame can be generated are shown in the frame exchange sequences listed in Annex G. During a TWT SP, either the STACK or TACK frame is used in place of the Ack frame, according to the procedure described in 9.42 (Target wake time (TWT)) and otherwise, shall not be used. During a TWT SP, the BAT frame is used in place of the BlockAck frame, as described in 9.23 (Block acknowledgment (block ack)) and otherwise, is not used.

***Change the last paragraph of sub-clause 9.3.2.9 as follows:***

After transmitting an MPDU that requires an Ack frame as a response (see Annex G), the STA shall wait for an ACKTimeout interval, with a value of aSIFSTime + aSlotTime + aRxPHYStartDelay, starting at the PHY-TXEND.confirm primitive. If a PHY-RXSTART.indication primitive does not occur during the ACKTimeout interval, the STA concludes that the transmission of the MPDU has failed, and this STA shall invoke its backoff procedure upon expiration of the ACKTimeout interval. If a PHY-RXSTART.indication primitive does occur during the ACKTimeout interval, the STA shall wait for the corresponding PHYRXEND.indication primitive to determine whether the MPDU transmission was successful. The recognition of a valid Ack frame sent by the recipient of the MPDU requiring acknowledgment, corresponding to this PHY-RXEND.indication primitive, shall be interpreted as successful acknowledgment, permitting the frame sequence to continue, or to end without retries, as appropriate for the particular frame sequence in progress. The recognition of anything else, including any other valid frame except as defined below, shall be interpreted as failure of the MPDU transmission. In this instance, the STA shall invoke its backoff procedure at the PHY-RXEND.indication primitive and may process the received frame. An exception is that recognition of a valid ~~data~~ Data frame sent by the recipient of a PS-Poll frame shall also be accepted as successful acknowledgment of the PS-Poll frame.

***Insert the following paragraphs at the end of subclause 9.3.2.9 as follows:***

Additional exceptions exist for S1G STAs for accepting a valid frame as successful acknowledgment as described in the following three paragraphs:

Under TXOP sharing relay operation as described in 9.49.5 (Procedures of TXOP sharing for relay operation):

* If an MPDU is transmitted by a STA associated with a relay-AP under TXOP sharing relay operation, and the PARTIAL\_AID in the PHY-RXSTART.indication primitive that occurs within aRxPHYStartDelay is identical to the PARTIAL\_AID corresponding to the BSSID of the root AP then the reception shall be accepted as a successful acknowledgment of the MPDU transmission. If the PARTIAL\_AID is equal to 0 then the STA shall consider the MPDU as successful acknowledgement only if it is an RTS frame with RA frame equal to the BSSID of the root AP.
* In addition, when an AP transmits an MPDU to a relay-STA under TXOP sharing relay operation and the PARTIAL\_AID in the PHY-RXSTART.indication primitive that occurs within aRxPHYStartDelay is identical to the PARTIAL\_AID corresponding to the DA of the transmitted MPDU shall be accepted as a successful acknowledgmentof the MPDU transmission. If the PARTIAL\_AID is equal to 0 then the STA shall consider the MPDU as successful acknowledgement only if it is an RTS frame with RA frame equal to the DA.

Under bi directional TXOP operation as described in 9.45 (Bi directional TXOP): If a data frame is sent as an immediate response to an MPDU requiring acknowledgment,the successful reception of the data frame shall be accepted as successful acknowledgmentof the eliciting MPDU.

The recognition of a valid S1G RTS frame, sent by the recipient of a PS-Poll frame or of a PS-Poll+BDT frame shall be accepted as successful acknowledgment of the PS-Poll or of the PS-Poll+BDT frame.

An S1G STA shall transmit NDP Ack frames for acknowledgmentwith the following exceptions:

* transmission of an Ack frame is required if link adaptation procedure is negotiated as described in 9.29 (Link adaptation).
* transmission of a TACK or a STACK frame is required if target wake time is negotiated as described in 9.42 (Target wake time (TWT))
* transmission of a TACK is required as a response to a PS-Poll frame with the Poll Type subfield equal to 1 as described in 9.43.2 (Rescheduling of awake/doze cycle)
* transmission of an NDP PS-Poll-Ack is required as a response to an NDP PS-Poll

The S1G STA that satisfies any of the first three exceptions above shall transmit an Ack, TACK, or STACK frame instead of an NDP Ack frame as a response to an eliciting PPDU for which the RXVECTOR parameter RESPONSE\_INDICATION is equal to Normal Response.

A non-S1G STA shall not transmit NDP Ack and NDP PS-Poll-Ack frames.

An S1G STA that transmits or receives an NDP Ack or NDP PS-Poll-Ack frame shall follow the same rules described above for Ack frames with the following exceptions that apply only to NDP Ack and NDP PS-Poll-Ack frames:

* An S1G STA that transmits an NDP Ack frame for acknowledgment shall generate the Ack ID field of the NDP Ack frame as described in 8.9.1.4 (NDP Ack).
* An S1G AP that transmits an NDP PS-Poll-Ack frame for acknowledgment of an NDP PS-Poll frame shall generate the Ack ID field of the NDP PS-Poll-Ack frame as described in 8.9.1.5 (NDP PS-Poll-Ack). In addition, if the eliciting NDP PS-Poll is an NDP\_1M PS-Poll frame the Duration field of the NDP\_1M PS-Poll-Ack is set as follows:
* If the eliciting NDP\_1M PS-Poll frame has a value of the Preferred MCS field equal to “No Preference” the Duration field should indicate an idle period (i.e., the Idle Indication field should be set to 1 as described in 8.9.1.5 (NDP PS-Poll-Ack)).
* Otherwise, the Duration field should indicate an Ack ID extension (i.e., the Idle Indication field should be set to 0 as described in 8.9.1.5 (NDP PS-Poll-Ack).
* An S1G STA that expects an NDP Ack frame as a response, shall consider a received NDP Ack frame as a successful response if the Ack ID field of the NDP Ack frame equals the bit sequence generated from the Scrambler Initialization value and the FCS field of its immediately previously transmitted PSDU as described in 8.9.1.4 (NDP Ack).

***TGah Editor: Change the paragraph below as follows (#3346):***

* An S1G STA that expects an NDP PS-Poll-Ack frame as a response to an NDP PS-Poll, shall consider a received NDP PS-Poll-Ack frame as a successful response if the Ack ID field, together with the extension of the Ack ID if present in the Duration field, of the frame equals the bit sequence generated from the RA, TA and CRC fields of its immediately previously transmitted NDP PS-Poll frame as described in 8.9.1.5 (NDP PS-Poll-Ack).

Upon successful reception of a Short frame that requires acknowledgment with the From DS field equal to 1, an S1G STA shall generate an acknowledgment frame in response if the AID subfield of A1 field is equal to the AID of the S1G STA and the A2 field is equal to the MAC address of its associated AP. Upon successful reception of a Short frame that requires acknowledgment with the From DS field equal to 0, an S1G STA shall generate an acknowledgment frame in response if A1 field is equal to the MAC address of the S1G STA.

In an S1G BSS, the ACKTimeout interval is varied by the TXVECTOR parameter PREAMBLE\_TYPE. When the TXVECTOR parameter PREAMBLE\_TYPE is equal to S1G\_SHORT\_PREAMBLE or S1G\_LONG PREAMBLE, the ACKTimeout interval is calculated with aRxPHYStartDelay value for >= 2 MHz short/long preamble except when the receiving STA has indicated use of 1 MHz control responses as described in 9.7.6.6 (Channel Width selection for Control frames) in which case the ACKTimeout interval is calculated with aRxPHYStartDelay value for S1G\_1M preamble. When the TXVECTOR parameter PREAMBLE\_TYPE is equal to S1G\_1M preamble, the ACKTimeout interval is calculated with aRxPHYStartDelay value for S1G\_1M preamble.