IEEE P802.11
Wireless LANs

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| LB 203 Comment Resolution for Miscellaneous part 4 |
| Date: 2014-09-01 |
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Abstract

This submission proposes resolutions for comments in different subclauses of TGah Draft 2.0 with the following CIDs (TOT 12 CIDs):

* 3767, 3810, 4144
* 3637
* 3575, 3579, 3678, 3911, 4134, 4175
* 3748
* 4002

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** |
| 3767 | Liwen Chu | 231.00 | 9.3.2.9 | When a S1G STA wants to protect the TXOP, normal data MPDU and normal Ack can be selected. The reasons are that TXOP initiator may not select RTS/CTS protection and the following short frame and NDP Ack can't provide Rid protection and NAV protection. | As proposed | Rejected –Note that both Short Data frames and NDP Ack frames provide RID protection, with the latter one also providing NAV protection. And as per D2.0 a S1G STA has the choice to transmit either normal data or Short data frames. And the NDP Ack that is sent as a response can set either the NAV or the RID. |
| 3810 | Liwen Chu | 231.00 | 9.3.2.9 | "An S1G STA shall transmit NDP Ack frames for acknowledgment with the following exceptions:..."The improvement of NDP Ack frame compared with normal Ack frame is less when the BSS operation bandwidth is >=2MHz. The STA that works in >=2MHz BSS should be able to indicate whether it support NDP Ack or not. | As proposed in comment. | Revised –The benefits of this NDP frame has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this NDP frame as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3810. |
| 4144 | Yan Zhang | 231.00 | 9.3.2.9 | The gain of using normal Ack frames over NDP Ack frames decreases when operation bandwidth is wider than 2MHz. Hence supporting NDP ACK frame should be an optional feature. STAs operating in bandwidth wider than 2MHz BSS are required to indicate if this feature can be supported or not. | As proposed in Comment | Revised –The benefits of this NDP frame has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this NDP frame as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation.TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 4144. |
| 3637 | Jianhan Liu | 204.8 | 8.9 | NDP short MAC frames are madatory for both 1MHz and 2MHz BSS. Using short frames in 2MHz does not enhance much effeciency but increase the immplementation complexity. | Make short frame support and NDP frame support optional in >=2MHz BSS. | Revised –The benefits of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have a subset of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. Regarding Short MAC frames: In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3637. |
| 3575 | Hongyuan Zhang | 142.19 | 8.4.2.170j.2 | Short MAC Header and NDP ACK/BA/CTS are useful mainly in an 1MHz BSS, for significant overhead reduction. On the other hand, for >=2MHz BSSs the overhead reduction is marginal and cannot justify the complexity increase for devices that intended to operate always in >=2MHz BSS. | Add capabilities for short MAC header and NDP ACK/BA/CTS in >= 2MHz BSS, therefore allowing these features to be optional to implement when a device is operated in >=2MHz BSSs. | Revised –The benefits of this set of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this set of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. Regarding Short MAC frames: In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3575. |
| 3579 | Hui-Ling Lou | 143.38 | 8.4.2.170j.2 | Short Frames are introduced in 11ah to improve MAC frame encoding efficiency, which helps in the 11ah systems with small channel bandwdith, e.g., 1MHz channels. However, the improvement becomes less significant when using a larger channel, e.g., >=2MHz, while it pays the cost of implementation complexity and processing complexity. Suggest using a capability indicator in S1G Capabilities info field to signal the support of short frames. | Make the following changes:1). in Figure 8-401ag--S1G Capabilities Info field, change B69 from "Reserved" to "Short Frame Support Indicaator".2).page 149, line 18, append the following row after the last row:Short Frame Support IndicatorThis bit indicates whether the Short Frames as specified in Section 8.8 are supported .Set to 1 if supportedSet to 0 otherwise. | Revised –In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3579. |
| 3678 | Lei Wang | 143.18 | 8.4.2.170j.2 | NDP MAC control and management frames are introduced in 11ah to improve MAC frame efficiency, particularly for the 11ah systems with small channel bandwdith, e.g., 1MHz channels. However, the improvement becomes less significant when using a larger channel, e.g., >=2MHz. On the other hand, the "normal" control frames / management frames are still implemented and used, so the introduction of NDP control/management frames bring in addtional implementation complexity and processing complexity. Suggest having all the NDP control / management frames optioanls and using capability indicators in S1G Capabilities info field to signal the support of NDP control/management frames. | Make the following changes:1). in Figure 8-401ag--S1G Capabilities Info field, change B50 from "NDP PS-Poll Supported" to "NDP Control Frame Supported".2). in Figure 8-401ag--S1G Capabilities Info field, change B60 from "NDP Beamforming Report Poll Supported" to "NDP Management Frame Supported".3). page 147, line 50, chage the row to the following:NDP Control Frame SupportedThis bit indicates support for NDP Control framesSet to 0 if not supportedSet to 1 if supported4). page 148, line 38, change the row to the follwoing:NDP Management Frame SupportedIndicates support for NDP Management framesSet to 0 if not supportedSet to 1 if supported | Revised –The benefits of this set of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this set of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3678. |
| 3911 | Mingguang Xu | 142.18 | 8.4.2.170j.2 | In contrast to a BSS with channel bandwidth of 1MHz, in a BSS with channel bandwidth of greater than or equal to 2MHz, the overhead reduction due to short MAC header and NDP ACK/BA/CTS is marginal, thus it is not worthy to implement such mechanisms because of the complexity increase. | Make the features of short MAC and NDP ACK/BA/CTS to be optional in a BSS with channel bandwidth of greater than or equal to 2MHz. | Revised –The benefits of this set of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this set of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. Regarding Short MAC frames: In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3911. |
| 4134 | Sudhir Srinivasa | 142.27 | 8.4.2.170j.2 | If BSS operating BW is 2MHz or higher, there is not much advantage to implement short MAC header and NDP ACK/BA provisions. These features should be made optional, through the capability fields. | Include separate capability fields to make the following features optional for BSSs that operate in >= 2MHz modes:1. Short MAC header2. NDP ACK, BA, CTS and Probe Request | Revised –The benefits of this set of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this set of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. Regarding Short MAC frames: In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 4134. |
| 4175 | Zhipei Chi | 142.21 | 8.4.2.170j.2 | Using new features such as "short MAC header" and NDP ACK/BA/CTS frames reduces transmission overhead significantly when BSS bandwidth is 1MHz. For >=2MHz BSS, the benefit is not as significant and therefore cannot justify the additional complexity introduced by implementing the aforementioned new features. | Consider introducing entries in Figure 8-401ag to provide capabilities for supporting short MAC header and NDP ACK/BA/CTS features in >= 2MHz BSS. This way the above features can be optionally implemented on devices operating in >=2MHz BSSs. | Revised –The benefits of this set of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this set of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. Regarding Short MAC frames: In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 4175. |
| 3748 | Liwen Chu | 191.33 | 8.8 | The improvement of short frame is less when >=2MHz BSS operation bandwidth is used. It is reasonable to make the transmitting and receiving of short frame optional. | As in comment. | Revised –In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 3748. |
| 4002 | Paul Lambert |  | 8.4.2 | NDP MAC and Short MAC header should be mandatory only for 1MHz BSS | NDP MAC and Short MAC header should be mandatory only for 1MHz BSS | Revised –The benefits of this set of NDP frames has been thoroughly discussed in TGah and during the previous LB 200 it was unanimously decided to have this set of NDP frames as mandatory for 11ah. See discussion below.However, to simplify the response logic for an intended receiver we clarify that the transmitter cannot elicit a normal control response frame unless the receiver has explicitly indicated that it supports their generation. Regarding Short MAC frames: In 802.11ah there is a concept of non-sensor only BSS and proposed resolution is to allow STAs associated to this type of BSS indicate that it wants to receive one type of frame rather than the other. The normative behaviour for third party STAs (NAV/RID) does not change. TGah editor to make the changes shown in 11-14/1090r0 under all headings that include CID 4002. |

**Discussion:** *Related to CIDs 3810, 4144, 3637, 3575, 3678, 3911, 4134, 4175, 4002: These comments are very similar to some comments that have already been resolved during the previous LB200 and their resolution was unanimously accepted by the TGah group. For example the proposed resolution for one of these CIDs was as follows:*

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** |
| 2019 | Hongyuan Zhang | 50.61 | 8.3.5 | It is not necessary to support all the NDP MAC frames for all S1G applications. For example, for neworking operated in wider BW like 8/16MHz, NDP control frames won't bring any meaningful throughput gain but just additional complexity. However, we should mandate some basic NDP formats for better interop between high rate device and sensors. | Except NDP-ACK, NDP-BA and NDP-CTS, all the other NDP formats are optional. Add capability fields correspondingly. |

*was as follows:*

*“Agree with the commenter of CID 2019. NDP ACK, NDP CTS, and NDP BlockAck frames are mandatory as control response frames for S1G STAs. NDP frames are not only shorter but also more robust than their regular counterparts (widely discussed in TGah). NDP PS-Poll frames are already specified as optional (signaled by the NDP PS-Poll Supported field in the S1G Capabilities field. NDP Modified Ack frames are sent as a response to NDP PS-Poll frames and as such are optional as well. NDP Paging frames are also optional as they can be sent only after negotiating TWT. NDP Probe Request is mandatory at reception because the transmitter cannot know the capability of the receiver during active scanning. Normative text for NDP Beamforming Report Poll frames is missing in D1.0 and proposed resolution is to specify that their support is optional as well. “*

*Short frames (2313,2020)*

*The following Short frames are already specified as optional:*

*STACK and TACK frames are optional and are transmitted after TWT negotiation (see 9.3.2.8 and 9.44): “transmission of TACK or STACK frame is required if Target Wake Time is negotiated 9.41 (Target Wake Time (TWT))” and may be sent under Flow Control procedure to TWT STAs as described in 9.48.4.*

*BAT frame is optional and is transmitted after TWT negotiation (proposed resolution for this part is included in resolutions for subclause 9.22 BlockAcknowledgment (Block Ack)).*

*TGah editor to make the changes shown in doc 14/083r1 (related to subclause 9.22 Block Ack).*

*TGah editor to make the changes shown in doc 14/0308r0 (related to subclause 9.48.4 Flow Control).”*

* **Response Indication procedure**

**TGah Editor: *Insert the following paragraphs immediately after the first paragraph of subclause 9.3.2.15 (Response indication procedure)(#3810, et al):***

An S1G STA shall not cause its intended receiver to generate a normal control response frame except as specified below:

1. If the intended receiver has indicated that it supports generating +HTC Control frames then the S1G STA can solicit +HTC Control frames of the types described in 9.31 (Link Adaptation)
2. If the intended receiver has negotiated with the S1G STA the generation of TACK or STACK frames then the S1G STA can solicit TACK or STACK frames as described in 9.42a (Target Wake Time)
3. If the intended receiver has indicated that it supports generating TACK frames then the S1G STA can solicit a TACK frame as described in 9.42c.2 (Rescheduling of awake/doze cycle)

4) If the intended receiver has negotiated with the S1G STA the use of either BlockAck or BAT frames then the S1G STA can solicit either BlockAck or BAT frames as described in 9.24.6 (Selection of BlockAck and BlockAckReq variants).

5) If the intended receiver has negotiated with the S1G STA the generation of control response frames with different MCSs than the primary MCS as described in 9.7.6.5.4b (Control Response MCS Negotiation).

**TGah Editor: *Replace “Reserved” in B69 of S1G Capabilities Info field with “PV1 Frame Support”:***

**TGah Editor: *Insert the following row at the end of Table 8-240f:***

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| PV1 Frame Support | Indicates support for PV1 MPDUs | Set to 0 if not supported. Set to 1 if supported. |

**TGah Editor: *Change the heading of this subclause as follows (#3637, et al):***

* **Generation of PV1 MPDUs and header compression procedure**

**TGah Editor: *Insert the two paragraphs below as follows (#3637, et al):***

An S1G STA that sets the STA Type Support subfield in a transmitted S1G Capabilities element to 0 or 1, as described in 10.48 (Sensor only BSS), shall set the PV1 Frame Support subfield in the S1G Capabilities element to 1. An S1G STA that sets the STA Type Support subfield in a transmitted S1G Capabilities element to 2 may set the PV1 Frame Support subfield in the S1G Capabilities element to 0.

An S1G STA shall not transmit PV1 MPDUs with the Type subfield equal to 0, 1 or 3 to a peer STA unless the PV1 Frame Support subfield of the S1G Capabilities element received from the peer STA contained a value of 1. An S1G STA with dot11ShortMACHeaderOptionImplemented equal to true should transmit PV1 MPDUs with the Type subfield equal to 0, 1 or 3, to a peer STA from which it has received an S1G Capabilities element with PV1 Frame Supported subfield equal to 1.

**TGah Editor: *Change the paragraph below as follows (#3637, et al):***

A STA that has previously transmitted PV1 frames of a given TID/ACI to a peer STA and that receives a Header Compression response from the peer STA relative to that TID/ACI with the Store A3, Store A4, and the CCMP Update present fields all equal to 0 shall transmit a Header Compression request to the transmitter of the Header Compression response. The Header Compression request shall include all the addresses and security information that the transmitting STA requests to be stored at the receiver for the indicated TID.

9.21.5.7 RAW Operation with Resource Allocation frame

**TGah Editor: *Change the paragraph below as follows (#3637, et al):***

The AP transmits the RA frame to non-AP STAs belonging to the RAW group allocated to access the RAW as specified in the previously transmitted RPS element. A non-AP STA that does not belong to the RAW group may ignore the RA frame.