IEEE P802.11
Wireless LANs

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| Comment Resolution for Miscellaneous |
| Date: 2013-08-01 |
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Abstract

This document provides comment resolution for TGah Draft 0.1 Comment Collection 9 with these CIDs: 1, 2, 6, 100, 627, 922, 935, and 963.

Revisions:

- Rev 0: Initial comment resolution document.

- Rev 1: Changed instruction to editor for adding the sentence on NDPPS-PollSupport from S1G BSS Operation clause to Power Management subclause (10.2.2.1). Also added CID 627 which is also addressed by the existing comment resolution in this document.

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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.***

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| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 1 | 121.1 | 9.3 | Current draft does not specify how the transmitter sets the NAV duration, and the ACK indication for different frame exchange sequences. | Clearly define rules for NAV, EIFS, Ack timeout, ACK indication settings for different frames (with/without duration, same/lower BW, NDP/Normal) sequences. | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 1, and 6. |
| 6 | 122.62 | 9.3.2.6 | Rules for selecting NDP control responses (ACK, BA and CTS) or normal control responses need to be clearer. | Need to clearly define rules on when normal frames can be used. | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 1, and 6. |

**Discussion:** *None.*

* **CTS procedure**

**Instruction to Editor: *Please modify the last paragraph of subclause 9.3.2.6 as follows:***

An S1G STA shall transmit NDP CTS frames instead of CTS frames. A non-S1G STA shall not transmit NDP CTS frames.

The RA Address field of the NDP CTS shall be generated as described in 8.3.4a.1.1 (NDP CTS). The Duration field in the NDP CTS frame shall be set to the same value as the Duration field from the received RTS frame, adjusted by subtraction of aSIFSTime and the NDPTxTime required to transmit the NDP CTS frame, where NDPTxTime is calculated according to 9.3.2.4a (Setting and resetting the RID).

**9.3.2.7.1 Dual CTS protection procedure**

**Instruction to Editor: *Please insert as the 1st paragraph:***

An S1G STA shall not support the Dual CTS Protection procedure as defined in 9.3.2.7 (Dual CTS Protection).

* **ACK procedure**

**Instruction to Editor: *Please change the following paragraph of this subclause as follows:***

After transmitting an MPDU that requires an (NDP) ACK frame as a response (see Annex G), the STA shall wait for an ACKTimeout interval, with a value of aSIFSTime + aSlotTime + aPHY-RX-START-Delay, 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 (NDP) ACK frame sent by the recipient of the MPDU requiring acknowledgment, corresponding to this PHYRXEND.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, 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 frame sent by the recipient of a PS-Poll frame shall also be accepted as successful acknowledgment of the PS-Poll frame. Another exception exists under TXOP sharing 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 aPHY-RX-START-delay is identical to the PARTIAL\_AID corresponding to the BSSID of the root AP then the reception shall be accepted as a successful acknowledgement of the MPDU transmission. Another exception is 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 aPHY-RX-START-delay is identical to the PARTIAL\_AID corresponding to the DA of the transmitted MPDU shall be accepted as a successful acknowledgement of the MPDU transmission.

**Instruction to Editor: *Please change the following paragraph of this subclause as follows:***

* An S1G STA shall transmit NDP ACK frames for acknowledgement with the following exceptions: transmission of ACK frame is required if link adaptation procedure is negotiated as described in 9.28 (Link adaptation)
* transmission of TACK or STACK frame is required if Target Wake Time is negotiated 9.32f (Target Wake Time)
* transmission of NDP Modified ACK is required as a response to an NDP PS-Poll

A non-S1G STA shall not transmit NDP ACK frames.

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| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 922 | 169.31 | 10.2.1.1 | NDP PS-Poll frame may be used on behalf of normal PS-Poll frame. However, current power management scheme mentions normal PS-Poll frame only. | Add the following text modificaiton after modification of the 5th paragraph:"Modify the 6th paragraph of subclause 10.2.1.1 as follows:In a BSS operating under the DCF, or during the CP of a BSS using the PCF, upon determining that a BU is currently buffered in the AP, a STA operating in the PS mode shall transmit a short (NDP) PS-Poll frame to the AP, which shall respond with the corresponding buffered BU immediately, or acknowledge the PS-Poll and respond with the corresponding BU at a later time. ..." | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 922. |

**Discussion:** *None.*

**10.2.2.1 General**

**Instruction to Editor: *Please change the following paragraph of this subclause (@REVmc D1.1) as follows:***

In a BSS operating under the DCF, or during the CP of a BSS using the PCF, upon determining that a BU is currently buffered in the AP, a STA operating in the PS mode shall transmit a (NDP) PS-Poll frame to the AP, which shall respond with the corresponding buffered BU immediately, or acknowledge the (NDP) PS-Poll and respond with the corresponding BU at a later time. If the TIM indicating the buffered BU is sent during a CFP, a CF-Pollable STA operating in the PS mode does not send a (NDP) PS-Poll frame, but remains active until the buffered BU is received (or the CFP ends). An S1G STA may transmit NDP PS-Poll frames instead of PS-Poll frames to an S1G AP from which it has received a frame containing an S1G Capabilities element with the NDP PS-Poll Supported field set to true; otherwise the S1G STA shall not transmit NDP PS-Poll frames. A non-S1G STA shall not transmit NDP PS-Poll frames.

**10.2.2.1 General**

**Instruction to Editor: *Please add the following sentence immediately after the 3rd paragraph of this subclause as follows:***

An S1G AP with dot11NDPPSPollSupport equal to true shall set the NDP PS-Poll Supported field in the S1G Capabilities element to 1. Otherwise it shall set the NDP PS-Poll Supported field in the S1G Capabilities element to 0.

* **S1G Capabilities info field**

**Instruction to Editor: *Please change the following subclause as follows:***

The structure of the S1G Capabilities Info field is defined in Figure 8-401dg (S1G Capabilities Info field).

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 | B5 | B6 B7 | B8 |
|  | UplinkSynchCapable | DynamicAID | BATSupport | TIM ADESupport | Non-TIMSupport | TWTSupport | STATypeSupport | NDP PS-Poll Supported |
| Bits: | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| * **S1G Capabilities Info field**
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The subfields of the S1G Capabilities Info field are defined in Table 8-191d (Subfields of the S1G Capabilities Info field).

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| * **Subfields of the S1G Capabilities Info field**
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| Subfield | Definition | Encoding |
| … |  |  |
| NDP PS-Poll Supported | This bit indicates support for NDP PS-Poll frames | Set to 1 if dot11NDPPSPollSupport is true.Set to 0 otherwise. |

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| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 2 | 121.1 | 9.3 | There is no clear mapping between the ACK policy and the ACK indication field per PPDU. | Clearly specify mapping of different values of ACK policy and ACK indication fields. | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 2. |
| 100 | 31.4 | 8.2.5.2 | It is not clear which ACK, the normal or Short ACK, is used in setting the Duration/ID for single protection under EDCA | Clarify | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 2. |
| 935 | 31.4 | 8.2.5.2 | NDP ACK frame as the response frame to PS-Poll should be considered | "For PS-Poll frames as the initial frame of SF exchange from S1G STAs, the Duration/ID fieldis set to the estimated time required for the transmission of one (NDP) ACK frame, plus the estimated time required for the transmission of the following uplink MPDU and its response if required, plus applicable IFS durations." | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 2. |
| 627 | 31.4 | 8.2.5.2 | It is unclear whether the STA or AP is supposed to transmit "the following MSDU to be transmitted" | Change to "the Duration/ID field is set to the estimated time required for the transmission of one ACK frame, plus the estimated time required for the transmission by the STA of the following MPDU and its response if required, plus applicable IFS durations." | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 2. |

**Discussion:** *None.*

**Instruction to Editor: *Please add the following subclause immediately after subclause 9.3.2.12a:***

**9.3.2.12a Response Indication procedure**

An S1G STA needs to distribute RID information in order to protect the response frame expected SIFS time after the frame that elicits that response. The TXVECTOR’s parameter RESPONSE\_INDICATION of transmitted S1G PPDUsshall be set based on the expected response type, as described in Table 9.3.2.12b (Setting the TXVECTOR’s parameter RESPONSE\_INDICATION).

**Table 9.3.2.12b – Setting the TXVECTOR’s parameter RESPONSE\_INDICATION**

|  |  |
| --- | --- |
| **RESPONSE\_INDICATION** | **Solicited Immediate Response** |
| No Response | No immediate response. The Ack Policy subfield in any included QoS Control field or in the Frame Control field of the first MPDU in the PPDU is equal to No Ack or Block Ack (see 8.2.4.5.4 (Ack Policy subfield) and 8.7.3.1 (Frame Control field)). In any NDP response frame (NDP CTS, NDP (Modified) ACK, NDP BlockAck). |
| NDP Response  | The addressed recipient returns an individual NDP MAC frame:* NDP ACK frame, as described in 9.3.2.8 (ACK procedure),
* NDP CTS frame, as described in 9.3.2.6 (CTS procedure),
* NDP BlockAck frame, as described in 9.21.7 (HT-immediate Block Ack extensions) and 9.3.2.9a (Fragment BA procedure).

The Ack Policy subfield (if any) in the QoS Control field or in the Frame Control field is set to Normal Ack or Implicit Block Ack Request. |
| Normal Response | The addressed recipient returns an individual control response frame:* ACK frame or QoS +CF-Ack frame, as described in 9.3.2.8 (ACK procedure) and 9.19.3.5 (HCCA transfer rules),
* BlockAck or BAT frame, as described in 9.3.2.9 (Block Ack procedure).
* TACK or STACK frame as described in 9.32f (Target Wake Time).

The Ack Policy subfield (if any) in the QoS Control field or in the Frame Control field is set to Normal Ack or Implicit Block Ack Request. |
| Long Response | The addressed recipient may return a response frame which is not an individual control response frame. More details are provided in 9.32i (Speed Frame Exchange), 9.25 (Reverse Direction Protocol), and 9.29.3 (Explicit feedback beamforming). |

An S1G STA transmitting a PPDU that expects a NDP Response shall calculate the Duration/ID field of the transmitted PPDU as described in 8.2.5.2 (Setting for single and multiple protection under enhanced distributed channel access (EDCA)) where the estimated duration of “CTS frame”, “Ack frame”, “BlockAck frame” is equal to NDPTxTime. NDPTxTime depends on the TXVECTOR parameter PREAMBLE\_TYPE and is equal to the time in microseconds, required to transmit either a 1MHz NDP MAC frame if PREAMBLE\_TYPE is a 1MHz preamble or a >=2MHz NDP MAC frame if PREAMBLE\_TYPE is a >= 2MHz short/long preamble.The S1G STA that expects a Normal Response that is a BAT or TACK frame shall calculate the Duration/ID field of the PPDU as described in 8.2.5.2 (Setting for single and multiple protection under enhanced distributed channel access (EDCA)) using the same estimated duration of a BlockAck frame. The S1G STA that expects a Normal Response that is a STACK frame shall use the estimated duration of an ACK frame.

An S1G STA that expects a Long Response shall calculate the Duration/ID field of the PPDU as described in 8.2.5.2 (Setting for single and multiple protection under enhanced distributed channel access (EDCA)) for multiple protection settings.

* **Setting for single and multiple protection under enhanced distributed channel access (EDCA)**

**Instruction to Editor: *Add the following immediately after the 1st paragraph of this subclause:***

For S1G STAs, Duration/ID field determination rules are further specified in 9.3.2.12a (Response Indication procedure).

* **Setting for control response frames**

**Instruction to Editor: *Add the following paragraphs at the end of this subclause:***

For an NDP CTS frame transmitted in response to an RTS frame, the Duration field is set to the value obtained from the Duration/ID field of the RTS frame that elicited the response minus the time, in microseconds, between the end of the PPDU carrying the RTS frame and the end of the NDP CTS frame.For an NDP ACK frame with Duration Indication field set to 0, the Duration field is set to the value obtained from the Duration/ID field of the frame that elicited the response minus the time, in microseconds between the end of the PPDU carrying the frame that elicited the response and the end of the NDP ACK frame.

For a TACK frame, the Duration/ID field is set to the value obtained from the Duration/ID field of the frame that elicited the response minus the time, in microseconds between the end of the PPDU carrying the frame that elicited the response and the end of the PPDU carrying the TACK frame.

An S1G AP sending an NDP (Modified) ACK with the More Data field set to 1 as a response to an eliciting (NDP) PS-Poll may set the Duration field of the NDP (Modified >=2MHz) ACK to the estimated duration of the BU frame that the S1G AP has buffered for the polling STA, plus SIFS, plus the duration of the response from the S1G non-AP STA, if required.

* **Setting for other response frames**

**Instruction to Editor: *Add the following paragraph at the end of this subclause:***

For any frame that includes a Duration/ID (or Duration field), transmitted by a S1G STA as a response to Short frames, the Duration/ID (or Duration field) of the frame is set to 0.

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| **CID** | **P.L** | **SC** | **Comment** | **Proposed Change** | **Resolution** |
| 963 | 122.45 | 9.3.2.4 | Need to consider (Modified) NDP ACK that also includes Duration field | Change to "A STA that receives at least one valid frame within a received PSDU or (Modified) NDP ACK with Duration Indication is set to 0 and Duration is a valid NAV value for S1G shall update its NAV with the information received in any valid Duration field from within that PSDU or Duration field of (Modified) NDP ACK for S1G for all frames where the new NAV value is greater than the current NAV value, except for those where the RA is equal to the MAC address of the STA or there is a matching ACK ID for S1G STA. If the received frame is (Modified) NDP ACK frame, a S1G STA shall its NAV setting based on the TU of the received frame. Upon receipt of a PS-Poll frame with its Duration/ID field set to AID, a STA shall update its NAV settings as appropriate under the data rate selection rules using a duration value equal to the time, in microseconds, required to transmit either one ACK frame or one NDP ACK frame for S1G plus one SIFS interval dependent on RXVECTOR parameter ACK\_INDICATION, but only when the new NAV value is greater than the current NAV value. If the calculated duration includes a fractional microsecond, that value is rounded up to the next higher integer. Various additional conditions may set or reset the NAV, as described in 9.4.3.3. When the NAV is reset, a PHY-CCARESET.request primitive shall be issued. This NAV update operation is performed when the PHYRXEND.indication primitive is received." | Revised – TGah editor to make changes shown in 11-13-1022-01-00ah under the heading for CIDs 963. |

**Discussion:** *The commenter is correct. Regarding the NDP Modified Ack the NAV can be set only for the 2MHz frame.*

* **Setting and resetting the NAV**

**Instruction to Editor: Please *modify the first paragraph as follows*:**

A STA that receives at least one valid frame within a received PSDU shall update its NAV with the information received in any valid Duration field from within that PSDU for all frames where the new NAV value is greater than the current NAV value, except for those where the RA is equal to the MAC address of the STA. An S1G STAs shall update its NAV with the information received in the Duration field of a received NDP CTS, NDP ACK and NDP Modified ACK (≥2MHz) with Duration Indication field set to 0, except for those NDP MAC frames that are addressed to the STA as described in 9.3.2.6 (CTS procedure) for NDP CTS frames and in 9.3.2.8 (ACK procedure) for NDP (Modified) ACK frames. Upon receipt of a PS-Poll frame with its Duration/ID field set to AID, a STA, except for a S1G STA for which the RXVECTOR parameter’s RESPONSE\_INDICATION of the received PS-Poll frame is set to NDP Response, shall update its NAV settings as appropriate under the data rate selection rules using a duration value equal to the time, in micro-seconds, required to transmit one ACK frame plus one SIFS interval, but only when the new NAV value is greater than the current NAV value. Upon receipt of a PS-Poll frame with its Duration/ID field set to AID and with RXVECTOR’s parameter RESPONSE\_INDICATION set to NDP Response, a S1G STA, shall update its NAV settings using a duration value equal to NDPTxTime - calculated depending on additional RXVECTOR’s parameters as described in 9.3.2.4a (Setting and resetting the RID) - plus one SIFS interval, but only when the new NAV value is greater than the current NAV value. If the calculated duration includes a fractional microsecond, that value is rounded up to the next higher integer. Various additional conditions may set or reset the NAV, as described in 9.4.3.3. When the NAV is reset, a PHY-CCARESET.request primitive shall be issued. This NAV update operation is performed when the PHYRXEND.indication primitive is received.

**Instruction to Editor: Please *modify the 4th paragraph (@REVmc D1.1) as follows*:**

A STA that used information from an RTS frame as the most recent basis to update its NAV setting is permitted to reset its NAV if no PHY-RXSTART.indication primitive is detected from the PHY during a period with a duration of (2  aSIFSTime) + (CTS\_Time) + aPHY-RX-START-Delay + (2  aSlotTime) starting at the PHY-RXEND.indication primitive corresponding to the detection of the RTS frame. For a non-S1G STA, the “CTS\_Time” shall be calculated using the length of the CTS frame and the data rate at which the RTS frame used for the most recent NAV update was received. For a S1G STA, the “CTS\_Time” shall be calculated using the time required to transmit an NDP CTS frame that is equal to NDPTxTime as calculated in 9.3.2.4a (Setting and resetting the RID).