### IEEE P802.11Wireless LANs

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| 11ax D6.0 NAV |
| Date: 2020-02-10 |
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Abstract

This submission proposes resolutions for the following CIDs:

24119, 24120, 24225, 24226, 24232, 24269, 24270

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revision based on the offline feedback from Mark.
* Rev 2: Revision based on the offline feedback from Mark.
* Rev 3: Revision based on the discussion in the teleconference call. Check 24270. Alfred mentions that Ps-Poll can be aggregated with other MPDU.
* Rev 4: Revise resolution for CID 24232
* Rev 5: further revision for CID 24232
* Rev 6: Revision for 24269

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 TGax D6.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D6.0 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 24119 | Rolfe, Benjamin | 251.26 | 10.3.2.4 | The sentence structure is awkward enough to obscure the technical meaning. I \*think\* the meaning is that the NAV is updated ONLY if the conditions listed are met, and not updated when the conditions are not met. The structure of the paragraph makes it ambiguous. Also I am not sure the "shall not be updated" is needed. | Change to: An HE AP that is not a TXOP holder shall update the NAV with the duration information indicated by theRXVECTOR parameter TXOP\_DURATION for an HE PPDU if the following conditions are met:[List of conditions]When these conditions are not met, the NAV shall not be updated. | Revised – The commenter has the right understanding of the meaning. We replace “otherwise” with “if not all of the following conditions are met” at 251.29.The “shall not” statement is needed due to the following reasons:* Update NAV when receiving a frame with duration field conflict with the NAV update from the duration field
* Update NAV when receiving something smaller than the current NAV value defeats the purpose of NAV mechanism

TGax editor to make the changes shown in 11-20/0304r5 under all headings that include CID 24119 |
| 24120 | Rolfe, Benjamin | 251.38 | 10.3.2.4 | The sentence structure is awkward enough to obscure the technical meaning. I \*think\* the meaning is that the NAV is updated ONLY if the conditions listed are met, and not updated when the conditions are not met. | Change to: An HE AP that is a TXOP holder shall update the NAV with the duration information indicated by the RXVECTOR parameter TXOP\_DURATION for an HE PPDU if all of the following conditions are met:[list of conditions]and shall not update the NAV with the duration information indicated by the RXVECTOR parameter TXOP\_DURATION otherwise: | Revised – The commenter has the right understanding of the meaning. We replace “otherwise” with “if not all of the following conditions are met” at 251.42.The “shall not” statement is needed due to the following reasons:* Update NAV when receiving a frame with duration field conflict with the NAV update from the duration field
* Update NAV when receiving something smaller than the current NAV value defeats the purpose of NAV mechanism
* Update NAV when the BSS color is equal to the BSS color of the AP forces the AP to update NAV from its own solicited frame, which is not allowed in baseline. Note that baseline use the received address as a definite indicator. In HE preamble, we use the BSS color as the indicator.

TGax editor to make the changes shown in 11-20/0304r5 under all headings that include CID 24120 |
| 24225 | Wilhelmsson, Leif | 249.54 | 10.3.2.1 | "The NAV maintains a prediction of future traffic". I guess the NAV does not really relate to traffic, but rather to channel occupancy | replace "traffic" by "channel occupancy" | Rejected – The cited text is copied from revmd D3.0. The comment shoud be submitted to revmd. |
| 24226 | Wilhelmsson, Leif | 251.11 | 10.3.2.4 | Unclear what a "STA(11ah)" means? Does it mean that it is only 11ah or what? | Clarify along the lines in the comment | Revised – The cited text is copied from revmd D3.0. The “(11ah)” is an inline description to indicate change from 11ah. It will be removed in revmd in the final version. This is likely a copy paste error, and we just remove “(11ah)”.TGax editor to make the changes shown in 11-20/0304r5 under all headings that include CID 24226 |
| 24232 | Wilhelmsson, Leif | 360.25 | 26.5.2.5 | Basically it is stated that the NAV is not considered if NAV = 0. First, it seems that to determine NAV = 0, NAV must be considered. Second, NAV = 0 does not seem to prevent a transmission? | Remove the second condition NAV = 0, and change "unless one of the following conditions is met:" to "unless the following condition is met:" | Revised - We revise as suggested. We also remove “*if the counter of the basic NAV is not 0*” in the following paragraph “*The basic NAV is considered in virtual CS by a non-AP STA in determining whether to respond to a Trigger frame sent by the AP with which the non-AP STA is associated if the counter of the basic NAV is not 0*.”Finally, we add “If all NAV(s) that are considered have the NAV counter(s) equal to 0, then the virtual CS indicates idle.” after “If no NAV is considered or each NAV, then the virtual CS indicates idle.”TGax editor to make the changes shown in 11-20/0304r5 under all headings that include CID 24232 |
| 24269 | Fischer, Matthew | 431.05 | 26.11.5 | Lines at P431L5 and P431L19 contradict each other. The first reference says that the TXOP\_DURATION for an HE TB PPDU shall be set to UNSPECIFIED if blah and the second reference says never set the HE TB PPDU TXOP\_DURATION to blah if bloy. Or, is this a misreading, because if the received trigger is not in an HE PPDU, then the RXVECTOR TXOP\_DURATION of the Trigger is not UNSPECIFIED, but instead, the parameter is simply not present? | Resolve the contradiction by modifying the cited text. | Revised – There is no conflict for the two sentences. If the Trigger frame is not in HE PPDU, then TXOP\_DURATION in RXVECTOR is not present. As a result, the first sentence does not hold anyway. Note that TXOP\_DURATION needs to be present to have value UNSPECIFIED.*A STA that is a TXOP responder that transmits an HE SU PPDU, HE ER SU PPDU, or HE TB PPDU shallset the TXVECTOR parameter TXOP\_DURATION to UNSPECIFIED if the RXVECTOR parameter TXOP\_DURATION of the soliciting PPDU is UNSPECIFIED.**A STA that transmits an HE TB PPDU shall not set the TXVECTOR parameter TXOP\_DURATION toUNSPECIFIED if any one of the following condition is met:— The RXVECTOR parameter TXOP\_DURATION of the soliciting PPDU is not UNSPECIFIED— The soliciting PPDU is not an HE PPDU*We simply revise “*— The RXVECTOR parameter TXOP\_DURATION of the soliciting PPDU is not UNSPECIFIED*“ as — The RXVECTOR parameter TXOP\_DURATION is present for the PPDU that solicits a response from the STA and is not UNSPECIFIED”We revise “soliciting PPDU” as “PPDU that solicits a response from the” based on the context in 26.11.5 TXOP\_DURATION.We revise “shall set the TXVECTOR parameter TXOP\_DURATION to the duration information indicated by the Duration field if the value of the Duration field is smaller than 8448.Otherwise, the STA shall set the TXVECTOR parameter TXOP\_DURATION to 8448.” as “shall set the TXVECTOR parameter TXOP\_DURATION to the smaller of the duration information indicated by the Duration field and 8448”TGax editor to make the changes shown in 11-20/0304r6 under all headings that include CID 24269 |
| 24270 | Fischer, Matthew | 431.26 | 26.11.5 | P431L26, P431L35, is it possible that an HE TB PPDU contains both a PS POLL and another MPDU that contains a DUR field? If so, then the two cited paragraphs provide conflicting information as to what value should be placed in the TXVECTOR paramater TXOP\_DURATION. | Resolve the contradiction by modifying the cited text. | Rejected – A PS-Poll frame can not be aggregated with other frame with duration field. Specficially, 9.7.3 A-MPDU contents does not have a context table that allows PS-Poll except S-MPDU context.  |

**Discussion:** *None.*

**Propose:**

***TGax editor: Change 10.3.2.4 Setting and resetting the NAV as follows: (Track change on)***

(..existing texts…)

A STA that receives at least one valid frame in a PSDU can update its NAV with the information from any
valid Duration field in the PSDU. When the received frame’s RA is equal to the STA’s own MAC address,
the STA shall not update its NAV. Further, when the received frame is a DMG CTS frame and its TA is
equal to the STA’s own MAC address, the STA shall not update its NAV. For all other received frames the
STA shall update its NAV when the received Duration is greater than the STA’s current NAV value. Upon
receipt of a PS-Poll frame, a STA(#24226), except for an S1G STA for which the RXVECTOR parameter
RESPONSE\_INDICATION of the received PS-Poll frame is NDP Response, 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 one Ack frame plus one SIFS, 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. When the NAV is reset, a PHY-CCARESET.request primitive shall be issued. This
NAV update operation is performed when the PHY-RXEND.indication primitive is received, except when
the PHY-RXEND.indication primitive is received before the end of the PPDU, in which case the NAV
update is performed at the expected end of the PPDU.

***Insert the following after the 4th paragraph:***An HE AP that is not a TXOP holder shall update the NAV with the duration information indicated by the
RXVECTOR parameter TXOP\_DURATION for an HE PPDU if all of the following conditions are met,
and shall not update the NAV with the duration information indicated by the RXVECTOR parameter TXOP\_DURATION if not all of the following conditions are met: (#24119)
— The RXVECTOR parameter TXOP\_DURATION is not UNSPECIFIED
— The HE AP does not receive a frame with a Duration field in the PPDU
— The duration indicated by the RXVECTOR parameter TXOP\_DURATION is greater than the current NAV value of the HE AP

An HE AP that is a TXOP holder shall update the NAV with the duration information indicated by the
RXVECTOR parameter TXOP\_DURATION for an HE PPDU if all of the following conditions are met,
and shall not update the NAV with the duration information indicated by the RXVECTOR parameter TXOP\_DURATION if not all of the following conditions are met : (#24120)
— The RXVECTOR parameter TXOP\_DURATION is not UNSPECIFIED
— The HE AP does not receive a frame with a Duration field in the PPDU
— The duration indicated by the RXVECTOR parameter TXOP\_DURATION is greater than the current NAV value of the HE AP
— The RXVECTOR parameter BSS\_COLOR is not equal to the BSS color of the HE AP
NOTE 1—A non-AP HE STA maintains two NAVs, but an HE AP might only maintain one NAV (see 26.2.4 (Updating
two NAVs)).
NOTE 2—If a STA receives an HE PPDU with the duration information indicated by both frame with a Duration field
and the RXVECTOR parameter TXOP\_DURATION, then the duration information indicated by the RXVECTOR
parameter TXOP\_DURATION is ignored.

***TGax editor: Change 26.11.5 TXOP\_DURATION as follows: (Track change on)***

(…existing texts…)

A STA that is a TXOP responder that transmits an HE SU PPDU, HE ER SU PPDU, or HE TB PPDU shall set  the  TXVECTOR  parameter  TXOP\_DURATION  to  UNSPECIFIED  if  the  RXVECTOR  parameter TXOP\_DURATION of the HE PPDU that solicits a response from the STA is UNSPECIFIED.(#24269)

(…existing texts…)

A STA that transmits an HE TB PPDU shall not set the TXVECTOR parameter TXOP\_DURATION to
UNSPECIFIED if any one of the following condition is met:
— The RXVECTOR parameter TXOP\_DURATION is present for the PPDU that solicits a response from the STA and is not UNSPECIFIED
— The PPDU that solicits a response from the STA is not an HE PPDU(#24269)

A STA that transmits a frame with a Duration field in an HE PPDU with the TXVECTOR parameter TXOP\_DURATION not set to UNSPECIFIED shall set the TXVECTOR parameter TXOP\_DURATION to the
smaller of the duration information indicated by the Duration field and 8448.(#24269)

NOTE—For a TXOP responder, the Duration field in a frame carried in a response PPDU is set based on the Duration field in a frame carried in the PPDU that solicits a response from the TXOP responder as described in 9.2.5.7 (Setting for control response frames) or 9.2.5.8 (Setting for other response frames).(#24269)

(…existing texts…)

***TGax editor: Change 26.5.2.5 UL MU CS mechanism as follows: (Track change on)***

(…existing texts…)

The basic NAV is considered in virtual CS by a non-AP STA in determining whether to respond to a Trigger frame sent by the AP with which the non-AP STA is associated.(#24232)

A NAV is considered in virtual CS by a non-AP STA in determining whether to respond to a Trigger frame sent by an AP with which the non-AP STA is not associated, through the UORA procedure (see 26.5.4 (UL OFDMA-based random access (UORA))) unless the following condition is met: (#24232)
— The NAV was set by a frame originating from the AP sending the Trigger frame.(#24232)

(…existing texts…)

For a non-AP STA that is solicited by a Trigger frame for transmission, the indication of the virtual CS is described as follows. If no NAV is considered, then the virtual CS indicates idle. If all NAV(s) that are considered have the NAV counter(s) equal to 0, then the virtual CS indicates idle.(#24232) Otherwise, the virtual CS indicates busy.