### IEEE P802.11Wireless LANs

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| 11ax D0.1 Comment Resolution for TXOP Truncation |
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Abstract

This submission proposes resolutions for comments in clause 10.22.2.9 of TGax Draft 0.1 with the following 15 CIDs:

 18, 204, 626, 673, 737, 738, 810, 1440, 1660, 2193, 2283, 2447, 2613, 2614, 992

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 TGax D0.1 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D0.1 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** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 18 | 46.25 | 10.22.2.9 | The language of this clause seems to be unnecessarly complicated: "An HE STA that receives a CF-End frame should not reset its NAV if:--The CF-End did not originate from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to and the most recent NAV update was due to a PPDU originating from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to.--The CF-End originated from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to and the most recent NAV update was not due to a PPDU originating from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to." | Revise the textbased on the intra-BSS and inter-BSS terminology. | REVISED.Agreed to the comment. As the definition for Inter-BSS frame and Intra-BSS frame is made in the Draft Spec., it’s better to use these terms for better understanding.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 18. |
| 204 | 64.26 | 10.22.2.9 | CF-End rule: When the STA doesn't know whether the latest NAV was updated due to its BSS or not (say, it was set by recepton of CTS/Ack), then the rule is not clear. To be on the safe side, STA should pretend that the NAV was set by inter-BSS | As in comment. | REVISED.Agreed to the comment. In case the STA doesn’t know where the latest NAV was updated due to its BSS or not, conventional TXOP truncation rule needs to be applied. For this purpose, scenarios for not resetting NAV when a STA receives a CF-end frame shall be limited to the case that the latest NAV was known to be updated due to its BSS or not.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 204. |
| 626 | 46.25 | 10.22.2.9 | In case that BSS color collision happened, inter-BSS frame may set intra-BSS NAV of a STA (or for one NAV case, it may be recognized that the most recent NAV update was due to the intra-BSS). Then although the STA receives CF-End frame from the inter-BSS, the STA cannot reset its NAV. | We need discussions to solve this problem. | REJECTED.This comment is more on inter-BSS/intra-BSS classification rule. And, even in case color collision happens, a receiving STA can still classify inter-BSS/intra-BSS frame based on MAC address of the received frame. Therefore, rule for truncation of TXOP shall not be mixed together with inter-BSS/intra-BSS frame classification rule. |
| 673 | 46.27 | 10.22.2.9 | Simply the wording on NAV reset rules by receiving a CF-End frame, based on whether it is from a BSS node, or a OBSS node | Rephrase the two paragraphs to clearly state that: if the CF-End is from a BSS node, then it should not reset the OBSS NAV; and if the CF-End is from a OBSS node, then it should not reset the BSS NAV | REVISED.Agreed to the comment. As the definition for Inter-BSS frame and Intra-BSS frame is made in the Draft Spec., it’s better to use these terms for better understanding.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 673. |
| 737 | 46.27 | 10.22.2.9 | There is currently 3 different NAV types defined, intra, inter and regular. CF-End should address all these 3 options. | Please add rules for regular NAV reset and ensure that legacy standards are supported in the clause. It would be good to rename the legacy NAV as regular NAV or to some other more descriptive name. | REVISED.Agreed to the comment. As there are multiple NAV types available, TXOP truncation rule should be clearly defined for all cases. As current text is more focused on TXOP truncation rule for legacy NAV, it needs to be extended to intra-NAV and regular-NAV cases. TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 737. |
| 738 | 46.26 | 10.22.2.9 | The NAV Reset is written in should not form. Still in these situations the STA sometimes resets the NAV? | Please, use shall, not should. | REJECTED.In baseline REVmc\_D6.0, TXOP truncation rule is in “shall” text. However, the rules added in this sub-clause are cases that give exception on baseline TXOP truncation rule, to give somewhat benefit to 3rd party STAs. In this sense, use of “should” text looks reasonable. |
| 810 | 46.22 | 10.22.2.9 | In order to reset NAV setting by failed Trigger frame, AP STA needs to transmit a CF-END frame in HE-SU-PPDU format after detecting no response to the Trigger frame. | Insert the following at the 10.22.2.9 line 22"A STA that transmitted Trigger Frame transmits a CF-END frame in HE-SU-PPDU format to reset NAV of recipients if no PHY-RXSTART.indication primitive is received from the PHY during a period with a duration of aSIFSTime + aRxPHYStartDelay + nΓêÖaSlotTime, n is TBD"(n=2 is usual, but n=1 is preferred because it is similar to PIFS recovery procedure) | REJECTED.If an AP’s Trigger frame transmission is in failure, the AP is allowed to initiate retransmission process. Therefore, we cannot mandate the AP to send CF-END frame in this case.  |
| 1440 | 46.26 | 10.22.2.9 | What is "a multi-BSSID set"? | Define the term | REVISED.Agreed to the comment. As the definition for Inter-BSS frame and Intra-BSS frame is made in the Draft Spec., it’s better to use these terms for better understanding.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 1440. |
| 1660 | 46.26 | 10.22.2.9 | The usage of two NAVs, Intra-BSS NAV and Regular NAV, and the text in the section requesting HE STAs to "not reset its NAV" is not clear. The method does not clarify whether the most recent NAV update was due to a PPDU originating from the STA's associated BSS or the multi-BSSID set that the STA's associated BSS belongs to, or not. For exampe, a CTS sent from an HE AP to a non-AP HE STA will set the Regular NAV. If the other HE PPDU frames received are determined to be from the same BSS, the CTS frame caused the most recent NAV update for the Regular NAV. However, according to the text in this subclause, it won't be reset by the CF-End originated from the STA's associated BSS, it poses a disadvantage for the STAs that manage two NAVs. | Clarify.Reconsider the NAV resetting condition to not have STAs managing two NAVs at a disadvantage. | REVISED.Agreed to the comment. However as the definition for Inter-BSS frame and Intra-BSS frame is made in the Draft Spec., it’s better to use these terms for better understanding, and in this case the issue raised by the commenter can also be resolved.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 1660. |
| 2193 | 46.20 | 10.22.2.9 | How will the Intra-BSS and Inter-BSS NAVs be treated is not clear. What will happen when it is not clear whether the most recent NAV update was or was not due to a PPDU originating from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs? For exampe, when the CTS sent from an AP to a non-AP STA can be the case. Such CTS will set the Inter-BSS NAV and if all the other received MAC frames or HE PPDUs can be determined to be from the same BSS, the CTS frame will be the one that caused the most recent NAV update for the Inter-BSS NAV and won't be reset by the CF-End originated from the STA's associated BSS. This will be a disadvantage for STAs that manage two NAVs. | Clarify.Reconsider the NAV resetting condition not to have STAs managing two NAVs disadvantage. I that can't be done, remove the opration of two NAVs. | REVISED.Agreed to the comment. In case the STA doesn’t know where the latest NAV was updated due to its BSS or not, conventional TXOP truncation rule needs to be applied. For this purpose, scenarios for not resetting NAV when a STA receives a CF-end frame shall be limited to the case that the latest NAV was known to be updated due to its BSS or not.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 2193. |
| 2283 | 46.25 | 10.22.2.9 | This procedure does not seem to clearly include the concept inter- and intra-BSS NAV and how it is implemented; while the concept of Inter-BSS and Intra-BSS NAV are included in the SFD. please clarify how this being handled? | please clarify | REVISED.Agreed to the comment. As there are multiple NAV types available, TXOP truncation rule should be clearly defined for all cases. As current text is more focused on TXOP truncation rule for legacy NAV, it needs to be extended to intra-NAV and regular-NAV cases. TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 2283. |
| 2447 | 46.25 | 10.22.2.9 | When an HE STA supports two NAVs (Intra-BSS NAV and Regluar NAV), the NAV update rule from the received CF-END is not specified.Please specify the TXOP truncation rule for two NAVs (Intra-BSS NAV and Regluar NAV). | As per comment | REVISED.Agreed to the comment. As there are multiple NAV types available, TXOP truncation rule should be clearly defined for all cases. As current text is more focused on TXOP truncation rule for legacy NAV, it needs to be extended to intra-NAV and regular-NAV cases. TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 2447. |
| 2613 | 46.32 | 10.22.2.9 | It is not clear if the STA reset NAV when the CF-End originated from the STA's associated BSS and the most recent NAV update was due to a PPDU that BSS is unknown. | Clarify the operaion when the most recent NAV update was due to a PPDU that BSS is unkown. | REVISED.Agreed to the comment. In case the STA doesn’t know where the latest NAV was updated due to its BSS or not, conventional TXOP truncation rule needs to be applied. For this purpose, scenarios for not resetting NAV when a STA receives a CF-end frame shall be limited to the case that the latest NAV was known to be updated due to its BSS or not.TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 2613. |
| 2614 | 46.37 | 10.22.2.9 | TXOP truncation rule for two NAV case is missing. | Add explanation on the operation for two NAV case. | REVISED.Agreed to the comment. As there are multiple NAV types available, TXOP truncation rule should be clearly defined for all cases. As current text is more focused on TXOP truncation rule for legacy NAV, it needs to be extended to intra-NAV and regular-NAV cases. TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 2614. |
| 992 | 46.36 | 10.22.2.9 | Truncation of TXOP should be further clarified | Comment resolution and supporting PPT will be provided | REVISED.Agree to the comment. As there are multiple NAV types available, TXOP truncation rule should be clearly defined for all cases. As current text is more focused on TXOP truncation rule for legacy NAV, it needs to be extended to intra-NAV and regular-NAV cases. TGax editor to make the changes shown in 11-16/1177r0 under all headings for CID 992. |

**Discussion:** *None.*

***TGax editor: Modify the paragraph of sub-clause 10.22.2.9 on Page 46 Line 25 as the following CIDs 18, 204, 626, 673, 737, 738, 810, 1440, 1660, 2193, 2283, 2447, 2613, 2614, 992:***

**10.22.2.9 Truncation of TXOP**

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An HE STA that receives a CF-End frame should not reset its NAV if any of following conditions is met, otherwise it resets its NAV (#204, #2193, #2613):

* The received CF-End frame is an inter-BSS frame ~~did not originate from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to~~ and the most recent NAV update was due to an intra-BSS frame (see 25.2.1 (Intra-BSS and inter-BSS frame detection)) (#18, #673, #1440, #1660) ~~a PPDU orig­inating from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to~~.
* The received CF-End frame is an intra-BSS frame ~~originated from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to~~ and the most recent NAV update was ~~not~~ due to an inter-BSS frame (see 25.2.1 (Intra-BSS and inter-BSS frame detection)) ~~a PPDU originat­ing from the STA's associated BSS or any BSS of a multi-BSSID set that the STA's associated BSS belongs to~~.

NOTE1 – For HE STAs with two NAVs, TXOP truncation rule applies to each NAV separately. (#737, #2283, #2447, #2614, #992)