IEEE P802.11
Wireless LANs

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| CR for NFRP |
| Date: 2018-07-09 |
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Abstract

This document provides CR for CIDs 20364

1. **Introduction**

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 Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax 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** | **Clause Number(C)** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 20364 | Laurent Cariou | 26.5.6.4 | 350.14 | As described in 26.5.6.5, the transmission of a response to an NFRP trigger frame is a solution to indicate that the STA transitioned to the awake state. Following the transmission of a beacon frame, an AP wants to know the STAs that are awake and for which it has DL BUs to deliver. The NFRP trigger frame is a very efficient solution for this. However, the NFRP concept is currently used only to make a request for UL traffic, and together with that indicate that the STA is awake. As in many cases, STAs in power save don't have UL traffic to send and just want to indicate to the AP that they are awake to receive their buffered DL BUs, the NFRP concept should define a new type of feedback, so that a STA can respond to indicate that it transitioned to the awake state, disregard whether it has traffic in UL or not. | Define a new type "power save" for NFRP trigger frame, so that the response to that trigger is an indication that the STA transitioned to the awake state, disregard whether this STA has UL traffic or not. | Revised – agree with the commenter. Define a new Feedback type entry, and add a new subclause describing the behavior when the Feedback type is set to this new type. Apply the changes in this document. |

1. **Proposed changes**

***TGax editor: Change the following section 9.3.1.22.9 NDP Feedback Report Poll (NFRP) variant as follows:***

* NDP Feedback Report Poll (NFRP) variant

[…]

The Feedback Type subfield encoding is defined in Table 9-31i (Feedback Type subfield encoding).

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| * Feedback Type subfield encoding
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| Value | Description |
| 0 | Resource request |
| 1 | Power save |
| 2-15 | Reserved |

***TGax editor: Change the following section 26.5.6.2 STA behavior***

* STA behavior

A non-AP STA(#16592) shall set the NDP Feedback Report Support subfield in the HE Capabilities element to 1 if it supports NDP feedback report and set it 0, otherwise.

A non-AP STA(#16592) shall not transmit an NDP feedback report response unless it is explicitly enabled by an AP in one of the operation modes described in this subclause. The inter frame space between a PPDU that contains an NFRP Trigger frame and the NDP feedback report poll response is SIFS. A non-AP STA(#16592) shall commence the transmission of an NDP feedback report response at the SIFS time boundary after the end of a received PPDU, if(#15354) all the following conditions are met:

* The received PPDU contains an NFRP Trigger frame
* The non-AP STA(#16592) is scheduled by the NFRP Trigger frame
* The NDP feedback report support subfield in HE MAC Capabilities Information field is set to 1
* The non-AP STA(#16592) intends to provide a response to the type of the NDP feedback contained in the NFRP Trigger frame, as described in 26.5.6.4 (NDP feedback report with resource request type) and in 26.5.6.5 (NDP feedback report with power save type). (#20364)

A non-AP STA(#16592) that does not satisfy all of the above conditions shall not respond to the NFRP Trigger frame.

A non-AP STA(#16592) is scheduled to respond to the NFRP Trigger frame if all the following conditions are met:

* The non-AP STA(#16592) is associated with the BSSID indicated in the TA field of the NFRP Trigger frame or the non-AP STA(#16592) (19/0028r4)is associated with a nontransmitted BSSID of a multiple BSSID set and the TA field of the NFRP Trigger frame is set to the transmitted BSSID of that multiple BSSID set.
* The non-AP STA’s(#16592) AID is greater than or equal to the starting AID and less than starting AID + *NSTA*, using the Starting AID subfield in the eliciting Trigger frame, and with *NSTA* the total number of non-AP STAs(#16592) that are scheduled to respond to the NFRP Trigger frame. *NSTA* is calculated by the following equation, with UL BW subfield and Multiplexing Flag subfield from the eliciting Trigger frame:
*NSTA* = 18 × 2*BW* × (*Multiplexing Flag + 1*)

A non-AP STA(#16592) shall obtain NDP feedback report parameter values from the most recently received NDP Feedback Report Parameter Set element carried in a Beacon, Probe Response, or (Re)Association frame from its associated AP unless the non-AP STA(#16592) is associated with a nontransmitted BSSID of a multiple BSSID set, in which case it shall follow the rules in 11.1.3.8 (Multiple BSSID procedure) to determine the NDP feedback parameter values.(19/0028r4) If the NDP Feedback Report Parameter Set element is not received in a Management frame with a TA equal to the BSSID of the associated AP or to the transmitted BSSID of the multiple BSSID set, the non-AP STA(#16592) shall use default values for the NDP Feedback Report parameters.

***TGax editor: Change the following section 26.5.6.5 Power save operation with NDP feedback report procedure***

 (#17126)

* Power save operation with NDP feedback report procedure

(#15830)An HE AP that sends an NFRP Trigger frame with the Feedback Type subfield in the User Info field set to 0 or 1 (#20364) to a non-AP STA and receives an NDP Feedback Report response from the STA shall assume the STA to be or to have transitioned to the awake state and follow the rules defined in 11.2.3 (Power management in a non-DMG infrastructure network) and 26.8 (TWT operation) to deliver DL BUs to the STA.

NOTE—After receiving the NDP Feedback Report response the AP delivers DL BUs to the STA as defined in 11.2.3.1 (General) when the STA operates in non-APSD PS mode, as defined in 11.2.3.5 (Power management with APSD) when the STA operates in APSD PS mode, and as defined in 26.8 (TWT operation) when the STA operates within TWT SPs.

***TGax editor: Add the following new section 26.5.6.5 (NDP feedback report with power save type), between section 26.5.6.4 (NDP feedback report with resource request type) and section 26.5.6.5 (Power save operation with NDP feedback report procedure) which becomes 26.5.6.6 (Power save operation with NDP feedback report procedure) (#20364)***

**26.5.6.5 NDP feedback report with power save type**

If the Feedback Type subfield in the User Info field of the NDP Feedback Report Poll Trigger frame is set to 1 for "Power save", a PS STA that is scheduled may send an NDP feedback report response in order to signal to the AP that it is in the awake state.

Each STA that is scheduled is assigned a STARTING\_STS\_NUM and an RU\_TONE\_SET\_INDEX to transmit a FEEDBACK\_STATUS bit.(18/149r3)

The meaning of the values of that bit *b* is defined in Table 27-xxx:

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| Table 27-xxx Meaning of the values for FEEDBACK\_STATUS with the Power save” type |
| Value | Description |
| 0 | Reserved |
| 1 | Indicates that the PS STA is in the awake state. |