### IEEE P802.11 Wireless LANs

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| **REVmd Assorted Comment Resolutions** | | | | |
| Date: 2020-03-11 | | | | |
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Abstract

This document contains proposed resolutions for several REVmd comments (4):

* 4441, 4269, 4166, 4443

Revisions:

* Rev 0: Initial version of the document
* Rev 1: Incorporates suggestions received during the presentation of the CIDs and amended resolutions for CIDs 4441 and 4443. Changes highlighted in green.

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 REVmd Draft. This introduction is not part of the adopted material.

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

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

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| 4441 | RISON, Mark | 2096.4 | "The UL-Sync capable AP should use (M101)an NDP CTS frame as a sync frame.  When a STA receives an NDP CTS frame" -- so what about if the AP does not use an NDP CTS as a sync frame? What does the STA do? | Change "should" to "shall" in the cited text | Revised—  Proposed resolution provides the other cases for sync frame transmission, namely a CTS2self frame and a reverse direction grant.  REVmd editor to make the changes shown in 11-20/0446r1 under all headings that include CID 4441. |
| 4269 | RISON, Mark | 2166.39 | "before the ProbeTimer reaches  MinChannelTime" -- there is no ProbeTimer | Change the cited text to "before the ProbeDelay time reaches MinChannelTime" | Revised—  Agree in principle that there is no ProbeTimer. Proposed resolution accounts for the suggested change while noting that NDP Probe Request frames, are sent instead of Probe Request frames under this protocol, and that the timer used in this case is the ActiveScanningTimer.  REVmd editor to make the changes shown in 11-20/0446r1 under all headings that include CID 4269. |
| 4166 | Patil, Abhishek | 1398.16 | It is not clear what is the value set in the TWT Channel field by STAs that do not support SST. | Specify that the field is set to 0 when transmitted by a TWT Requesting STA that doesn't support SST operation. | Revised—  Agree with the comment. A STA that does not support SST operation is not expected to receive or send a TWT element that has a nonzero value for the TWT channel field. Hence, proposed resolution is to explicitly specify that this is the case.  REVmd editor to make the changes shown in 11-20/0446r1 under all headings that include CID 4166. |
| 4443 | RISON, Mark | 2095.11 | There is no actual definition of what a "sync frame" is. "The UL-Sync capable AP should use (M101)an NDP CTS frame as a sync frame." is just a serving suggestion | As it says in the comment | Revised—  Proposed resolution provides a definition of a sync frame, being a frame that triggers a Data frame, if any is available, from the receiving STA.  REVmd editor to make the changes shown in 11-20/0446r1 under all headings that include CID 4443. |

**Discussion: *None.***

### 10.49 Sync frame operation

**REmd Editor: *Change the paragraph below of this subclause as follows (#CID 4441, 4443):***

This subclause describes a sync frame transmission procedure for uplink traffic, which minimizes the time for medium synchronization for a STA that is changing from doze state to awake state in order to transmit. The sync frame is a frame that triggers a Data frame, if any is available, from the receiving STA.  *(#4441, 4443)*

When a STA is requesting for a sync frame transmission, a STA may also request an AP to protect a RAW slot in a RAW defined in the Slot Duration field (9.4.2.191 (RPS element)) or a time duration at a TWT defined in the Nominal Minimum TWT Wake Duration field (9.4.2.199 (TWT element)), or by setting the Time Slot Protection Request field in the Sync Control field to 1. A STA may also request an AP protection for a TXOP duration after the expiration of a wakeup timer as described in 10.48.2 (Rescheduling of awake/doze cycle). The time slot protection is not requested if the Time Slot Protection Request field is equal to 0. When an AP receives a Sync Control frame from a STA with the Time Slot Protection Request field equal to 1, the AP shall protect a time slot that is assigned for the STA in a RAW, or a time duration that is assigned for the STA at a TWT, or a TXOP duration after the expiration of a wakeup timer of the STA with NAV-setting frame exchanges. Note that NAV-setting frame exchanges refer to any frame that can set NAV to other third-party stations, and an AP has the flexibility to choose any NAV-setting frame exchanges for protection.

For a STA that requested for a sync frame transmission, the UL-Sync capable AP shall schedule a sync frame at the slot boundary of the STA in the RAW if the Time Slot Protection Request field is equal to 1 or the Cross Slot Boundary field is equal to 1, or at the TWT of the STA, or at the expiration of the wakeup timer, as the next frame for transmission according to the medium access rules specified in Clause 10 (MAC sublayer functional description).

If the medium is busy at the slot boundary of a STA in the RAW or at the TWT of the STA, or at the expiration of the wakeup timer, or if the UL-Sync capable AP determines that the remaining time in the RAW slot or the TWT SP, or the TXOP duration to be too short to transmit a sync frame, the UL-Sync capable AP shall cancel the scheduled sync frame transmission. When the STA is changing from doze state to Awake state in order to transmit, the STA shall follow the rules defined in 11.2.3.2 (Non-AP STA power management modes). *(#4441, 4443)*

**REmd Editor: *Change the paragraph below of this subclause as follows (#CID 4441, 4443):***

The UL-Sync capable AP should use an NDP CTS frame as a sync frame. The AP may also use a CTS-to-self frame, with the RA field equal to the MAC address of the receiving STA, or a reverse direction grant as a sync frame.*(#4441, 4443)*

When a STA receives an NDP CTS frame with the RA/Partial BSSID field equal to the S1G partial AID of the STA or a CTS-to-self with RA field equal to the MAC address of the STA that is sent from the UL-Sync capable AP with which the STA is associated, then the STA shall transmit a Data frame to the AP a SIFS after the reception of the NDP CTS frame if the STA has a Data frame to transmit to the AP and has requested the AP for a sync frame transmission. When a STA receives an NDP CTS frame with the RA/Partial BSSID field not equal to the S1G partial AID of the STA or a CTS-to-self with RA field not equal to the MAC address of the STA, then the STA shall follow the NAV setting rules defined in 10.3.2.4 (Setting and resetting the NAV). After transmitting the NDP CTS frame, the AP shall wait for an AckTimeout interval (as defined in 10.3.2.11 (Acknowledgment procedure)), starting at the PHY-TXEND.confirm primitive. If a PHY-RXSTART.indication primitive does not occur during the AckTimeout interval, the AP may transmit a CF-End frame or an NDP CF-End frame to reset the NAV provided that the remaining duration is long enough to transmit this frame. *(#4441, 4443)*

**REmd Editor:** ***Change "State" in Figure 10-34—Backoff procedure for restricted channel access control to "state" (2x), "Doze to Awake" to "doze state to awake state" in 10.49 and "Awake times" to "awake state times" in 10.50.1.***

### 11.1.4.3.6 NDP Probing

**REmd Editor: *Change the paragraph below of this subclause as follows (#CID 4269):***

An NDP probing procedure is used to reduce the energy consumption during the scanning procedure. Upon receipt of the MLME-SCAN.request primitive with ActiveScanType parameter indicating an NDP, a STA for which dot11NDPProbingActivated is true shall transmit an NDP Probe Request frame, instead of a Probe Request frame, that has either a compressed SSID or an access network option. The NDP probing procedure is allowed when an S1G STA knows the operating frequency bands and regulatory domains. A non-S1G STA shall not transmit an NDP Probe Request frame.*(#4269)*

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**REmd Editor: *Change the paragraph below of this subclause as follows (#CID 4269):***

If PHY-CCA.indication (busy) primitive has not been detected before the ActiveScanningTimer reaches MinChannelTime, then set NAV to 0 and scan the next channel. Otherwise, if it receives a PV1 Probe Response frame, the STA may transmit an Association Request frame, or may transmit a Probe Request frame or listen to a full Beacon frame for obtaining the more information. If it receives a Probe Response frame, the STA may transmit an Association Request frame.*(#4269)*

### 9.4.2.199 TWT element

**REmd Editor: *Change the paragraph below of this subclause as follows (#CID 4166):***

When transmitted by a TWT requesting STA that is negotiating SST operation, the TWT Channel field contains a bitmap indicating the channel the STA requests to use as a temporary primary channel during a TWT SP. When transmitted by a TWT responding STA that is negotiating SST operation, the TWT Channel field contains a bitmap indicating which channel the TWT requesting STA is allowed to use as a temporary channel during the TWT SP. When transmitted by a STA that is not negotiating SST operation, the TWT Channel field is reserved.*(#4166)*

Each bit in the bitmap corresponds to one minimum width channel for the band in which the TWT responding STA’s associated BSS is currently operating, with the least significant bit corresponding to the lowest numbered channel of the operating channels of the BSS. The minimum width channel is equal to the SST Channel Unit field of the SST Operation element if such an element has been previously received or is equal to 1 MHz for a BSS with a BSS primary channel width of 1 MHz and 2 MHz for a BSS with a BSS primary channel width of 2 MHz if no such element has been previously received from the AP to which the SST STA is associated. Setting a position in the bitmap transmitted to 1 by a TWT requesting STA means that operation with that channel as the primary channel is requested during a TWT SP. Setting a position in the bitmap transmitted to 1 by a TWT responding STA means that operation with that channel as the primary channel is allowed during the TWT SP.

**10.47 Target wake time (TWT**)

### 10.47.1 TWT overview

**REmd Editor: *Change the paragraph below of this subclause as follows (#CID 4166):***

A TWT requesting STA that is negotiating SST operation indicates which single channel it desires to use as a temporary primary channel during a TWT SP by setting a single bit to 1 within the TWT Channel field of the TWT element, according to the mapping described for that field. A TWT responding STA that is negotiating SST operation indicates which single channel the TWT requesting STA is permitted to use as a temporary primary channel during a TWT SP by setting a single bit to 1 within the TWT Channel field of the TWT element, according to the mapping described for that field. During a TWT SP that was negotiated as part of SST operation, access to a channel that is not the primary channel of the BSS shall be performed according to the procedure described in 10.52 (Subchannel selective transmission (SST).*(#4166)*