IEEE P802.11
Wireless LANs

|  |
| --- |
| Resolution for comments received for CC on D0.1 for subclause 37.11.4 |
| Date: 2025-07-11 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Sherief Helwa | Qualcomm |  |  | shelwa@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm |  |  |  |

Abstract

This document contains proposed resolutions to comments received on 802.11bn D0.1.

1293 3775 3771 1301 1815 3769 268 3664 3770 3665 3772 1307 3666

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1293 | Hong Won Lee | 83.27 | The preceding paragraphs do not include the full form of the term "AP PUO" | Change from "AP PUO mode" to "AP Periodic Unalienability Operation(PUO) mode" to align with another term such as "Non-AP STA Periodic Unavailability Operation (PUO) mode " |  RevisedChange applied as suggested by the commenter and marked as #1293 |
| 3775 | Yongho Seok | 83.28 | Please specify how the STA can associate with the AP operating in PUO mode. | As in the comment |  RevisedA note is added clarifying that the the Beacon frames are transmitted outside of the unavailability periods. Also, the expectation is that when a STA sends either a probe request or an association request frame and doesn’t get a response due to the APPUO AP being unavailable, then the STA will retry sending the request frame. The note is marked with the tag #3775  |
| 3771 | Yongho Seok | 83.30 | The enablement/disablement procedure of AP PUO mode is missing. Please clarify the enablement/disablement procedure. | As in the comment |  Transfer to enablement/disablement PDTThe enablement/disablement procedure will be addressed in a different PDT covering a generic enablement/disablement signaling framework for all UHR modes of operation. |
| 1301 | Hong Won Lee | 83.36 | UHR Capabilities element can be one of the good option for the AP PUO Supporting non-AP STA field | The AP PUO Supporting non-AP STA field should be defined in the UHR Capabilities |  RevisedChange made following commenter’s suggestion and marked with the tag #1301 |
| 1815 | Guogang Huang | 83.39 | For using TWT element (i.e. periodic availability SPs) to indirectly indicate non-AP STA or AP periodic unavailability SPs, there is some ambiguity on the starting time of the first unavailability SP. Because there are two possible cases, which are listed as follows. This part should be clarify. Case 0. Starting Time of the first unenviability SP = Target Wake Time - (TWT Wake Interval-TWT Wake Duration) Case 1. Starting Time of the first unenviability SP = Target Wake Time + TWT Wake Duration | There are two options. Option 1 is to use one bit to indicate which case it is. Option 2 is to add a rule or the formula to clarify the starting time of the first unavailability SP, e.g. Starting time of the first Unavailable window = Target Wake Time + TWT Wake Duration. | RevisedA clarification note is added. There’s no need to include a special formula for this. The STA already has the capability to identify the statting time of every service period within a TWT schedule since this schedule is a long-term schedule and does not need additional indications. |
| 3769 | Yongho Seok | 83.39 | "To be unavailable outside of broadcast TWT SPs, a TBD AP shall ensure that all associated STAs support the mechanism"If a STA that does not support the AP PUO mode is associated, the AP shall disable the AP PUO mode. | As in the comment |  RejectSuggested statement is already captured in the first sentence explaining the AP’s normative behavior. |
| 268 | Zhanjing Bao | 83.44 | When an AP is unavailable, one or more STAs may have transmission demands. To avoid transmission failures of low-latency traffic due to the inability to serve associated STAs in the AP PUO mode, seamless roaming opportunities should be provided for its associated STAs after the AP PUO notification. | As in comment. The commenter will bring a contribution to address this comment and provide more detailed solutions. |  RejectCommentor didn’t bring the contribution hence closing this comment and the commentor can resubmit the comment on D1.0 when having the contribution ready. |
| 3664 | Alfred Asterjadhi | 83.45 | Suggest adding two figures for this mode of operation, one that shows how a periodic operation is signaled and one that shows how a one time event operation is signaled. And describe the settings of the B-TWT element and parameter sets that aid STAs determine the expected behaviors. | As in comment. |   |
| 3770 | Yongho Seok | 83.45 | "A (name TBD) Supporting non-AP STA that intends to exchange frames with the (name TBD) AP shall follow the rules defined in 26.8.3.3 (Rules for TWT scheduled STA)."Please specify how the DUO and AP PUO can work together. | As in the comment |  RejectedAP PUO and non-AP STA DUO are two independent modes of operation. The non-AP STA DUO mode of operation allows a DUO STA to indicate its future unavailability which is expected to be taken into consideration by the AP which is also required to initate every TXOP with the DUP STA with an ICF soliciting its unavailability information. All of this assumes the AP’s availability which emphasizes that ther will be no overlap between AP PUO and non-AP STA DUO. |
| 3665 | Alfred Asterjadhi | 83.47 | Are there any interdependencies between this mode of operaiton and multilink operation? E.g, how do other APs of the same MLD signal that another AP is in scheduled PS mode? Perhaps add a paragraph exemplifying this too. | As in comment. |   |
| 3772 | Yongho Seok | 83.47 | "NOTE--If the STA transmits PPDUs containing frames addressed to the AP during the AP's unavailability period, then the expectation is that the STA does not take into account the failed reception of the frames contained in the PPDUs forits rate selection algorithm nor for its EDCA function for the AC used to transmit these frames, unless required by regulatory rules.""The statement should not be presented as a NOTE. To apply the different EDCA rules, the specification should explicitly state that there is an exception. " | As in the comment |  RejectA similar note is included in 37.12.2 mentioning the expected behavior of the AP when the STA is in DUO. So, it is better to keep it consistent across subclause 37.12. |
| 1307 | Hong Won Lee | 83.52 | Enhancements to the AP PUO procedure should be provided for multiple AP PUO and/or AP PSM schedules | As in the comment.The commenter can provide a resolution proposal for this comment(The enhancements may be covered by the contribution, DCN 24/1777) |  RevisedChange made as commentor’s suggestion which is marked with the tag #1307 |
| 3666 | Alfred Asterjadhi | 84.33 | Finalize the TBD parameters, focusing on parameters that can today, for example, be signaled in OM Control (avoids sending both) and be signaled cross link/multilink (avoids sending multiples). | As in comment. | Resolved in AOM so transfer to that CR PDT |

* AP PUO mode

AP periodic unavailability operation (PUO) [#1293] mode allows a UHR AP to manage activity in the BSS, composed of associated [#2611] STAs that support this feature, by defining service periods, and to either save power or use internal resources elsewhere by allowing the [#3093]AP to be unavailable to all associated [#3093] STAs outside of these service periods. A UHR AP supporting AP periodic unavailability operation mode is called an APPUO [#1294] AP and shall set the AP Periodic Unavailability Operation Support[#1294] field in the UHR MAC Capabilities Information field of the UHR [#1294] Capabilities element it transmits to 1. An APPUO AP shall have dot11TWTOptionActivated equal to true and shall set the Broadcast TWT Support field in the HE Capabilities element it transmits to 1. [#1294] A UHR STA supporting operation with an APPUO[#1294] AP is called an APPUO Assisting [#1294]non-AP STA and shall set the APPUO Assisting[#1294] field of the UHR MAC Capabilities Information field of the UHR[#1294, 1301] Capabilities element that it [#1294]transmits to 1. An APPUO Assisting non-AP STA shall have dot11TWTOptionActivated equal to true and shall set the Broadcast TWT Support field in the HE Capabilities element it transmits to 1. [#1294]

To be unavailable outside of broadcast TWT SPs, an APPUO [#1294]AP shall ensure that all associated STAs support the mechanism and shall follow the rules defined in 26.8.3.2 (Rules for TWT scheduling AP) by advertising a TWT element that carries one or more Broadcast TWT Parameter Set fields with a Broadcast TWT ID field set to 0, a Responder PM Mode subfield set [#3094] to 1. The NDP Paging Indicator/Unavailability Mode subfield is set to 0 to indicate that the AP is unavailable outside of these broadcast TWT SPs, except within any other TWT SP that is setup with the AP or advertised by the AP and indicates availability. The NDP Paging Indicator/Unavailability Mode subfield is set to 1 to indicate that the AP is unavailable outside of these broadcast TWT SPs, even if that time falls within any other TWT SP that is setup with the AP or advertised by the AP and indicates availability. [#3095, 1307] An APPUO Assisting [#1294] non-AP STA that intends to exchange frames with the APPUO [#1294] AP shall follow the rules defined in 26.8.3.3 (Rules for TWT scheduled STA).

NOTE—If an APPUO Assisting non-AP [#1305] STA transmits PPDUs containing frames addressed to an APPUO [#1305] AP during the AP's unavailability period, then the expectation is that the STA does not take into account the failed reception of the frames contained in the PPDUs for its rate selection algorithm nor for its EDCA function for the AC used to transmit these frames, unless required by regulatory rules.

NOTE— The Beacon frames are transmitted within the service eperiods of availability to ensure that the BSS is discoverable to unassociated STAs. Also, the expectation is that when a STA sends pre-association frames and doesn’t get a response due to the APPUO AP being unavailable, then the STA may retry sending these frames during the availability service periods. [#3775]

NOTE—The STA always assumes the AP to be unavailable outside the TWT service periods whose starting points can be clauclated based on the TWT Target Wake time and TWT Wake Interval. Once the STA has this schedule, it knows all the unavailability periods for all service periods that occur after receiving the beacon (including the service eperiod that contains the management frmae that contains the TWT parameter set) that contain the TWT parameter set.