IEEE P802.11  
Wireless LANs

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| LB 203 Bidirectional TXOP comment resolution | | | | |
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Abstract

This submission proposes comment resolutions of MAC comments from TGah Draft 2.0.

* CIDs: 4148, 3823, 3040, 3822, 3821, 3820, 3662, 3522, 3824, 3664, 3663, 3107, 3105, 3104 (14 CIDs)

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

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

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

| **CID** | **Commenter** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 4148 | Yangseok Jeong |  | 9.45 | There is no clean explanation about the exit procedure when BDT procedure has broken in the middle of the burst chain. Eg. Retransmission procedure in both side: If not receiving the expected data frame within ACKTimeout, what does the STA have to do? or BDT closing procedure: Both STAs have to notify to other STAs that medium is now free because the current BDT has been stopped unexpectedly. | as comments | Revised-  The error recovery procedure of the BDT is explained as the following:  “NOTE 2- For error recovery, a STA participating in a BDT may transmit the next frame when the medium is idle at TxPIFS slot boundary.”  However, for additional clarification, add the related references in that sentence.  TGah editor to make changes shown in 11-14/1094r1 under the heading for CID 4148. |
| 3823 | Liwen Chu | 285.00 | 9.45.2 | Change the title of the subclause to Bi directional exchange (BDE). Add the following text in the subcaluse: "in a TXOP, the following frame exchange may be included: Bi directional exchange(s), normal frame exchange(s)". The reason to do such change is that, in a bi directional TXOP, when the BDT initiator has more frames to transmit than the BDT responder, the frames in BDT initiator may not be able to transmitted. | As proposed in comment. | Rejected-  Please refer the following text.  “NOTE 1 -A BDT Initiator can include multiple BDT sequences, separated by SIFS, within a single TXOP.”  When the BDT Initiator has more frames to transmit than the BDT Responder, the BDT Initiator can continue another BDT sequence for transmitting the remaining buffered PPDU.  Also, regarding the title of the sub-clause, we follow the same syntax defined in the RD protocol of the IEEE 802.11 REVmc 3.0.  We could not find any reason to change the sub-clause title as proposed. |
| 3040 | Adrian Stephens | 285.00 | 9.45 | I don't see why TGah needed to invent what seems to me to be pretty close to the existing RD protocol. OK, the signalling is contained in different fields, but the exchange sequences shown could equally well have been used to describe RD. | Either justify why it's different from RD, or replace this subclause with modification to the RD protocol, e.g. by renaming fields for the S1G case. | Rejected-  We agree that the frame exchange sequence of the BDT protocol is very similar with that of the RD protocol.  The main usage of the BDT is that a power saving station receives multiple buffered BUs with the SIFS interval after transmitting a trigger frame (such as a PS-Poll).  Surely, we can extend the RD protocol by allowing a trigger frame as the RD Initiator initial PPDU. But, because the signaling of the BDT protocol is significantly different with the RD protocol, a separate sub-clause of the BDT protocol description is more appropriate. |
| 3822 | Liwen Chu | 286.00 | 9.45.2 | This should not be the reason that disallows NDP PS-Poll to initiate a BDT exchange. | Change NDP PS-Poll definition to allow NDP PS-Poll to initiate a BDT exchange. | Rejected-  The NDP PS-Poll can not be used to initiate a BDT frame exchange.  Because it does not have any duration field, it can not protect the frame exchange sequence from the BDT Responder.  However, after transmitting the NDP PS-Poll frame, the NDP PS-Poll-Ack can be used to initiate a BDT frame exchange.  Also, because there is no available bit in the NDP PS-Poll frame, we could not change the definition of the NDP PS-Poll frame for allowing the NDP PS-Poll frame as the BDT initial PPDU. |
| 3821 | Liwen Chu | 286.00 | 9.45.2 | This makes BDT complicate since either TXOP initiator STA or Responder STA may start BDT. The protocol should be changed so that only the TXOP initiator will start the BDT operation. | As proposed in comment. | Rejected-  Because the NDP PS-Poll can not be used to initiate a BDT frame exchange, the NDP PS-Poll-Ack is allowed to initiate a BDT frame exchange.  If we accept a proposed restriction, the NDP PS-Poll never initiate the BDT frame exchange. |
| 3820 | Liwen Chu | 286.00 | 9.45.2 | "The STA shall not initiate the BDT with a PS-Poll+BDT frame if it does not have BUs for the BDT Responder."This sentence is not needed since if PS-Poll+BDT with More Data field equal to 1 means have Bus. | Remove the cited sentence. | Accetped-  Agree in principle. |
| 3662 | kaiying Lv | 286.00 | 9.45.2 | A BDT Initiator can include multiple BDT sequences within a single TXOP as shown in Figure 9-33, but none initial BDT sequences do not need to include a transmission of one PPDU that follows the same rule as the initial frame for TXOP. | Please add a limit under the condition 2) as below:2) follows the same rule as the initial frame for TXOP as defined in 9.21.2 (HCF contention based channel access (EDCA)) for initial BDT sequence | Revised-  Agree in principle.  TGah editor to make changes shown in 11-14/1094r1 under the heading for CID 3662. |
| 3522 | Dorothy Stanley | 286.00 | 9.45.2 | Use of "ensure" is discouraged" | In line 59, change to "The total duration of the BDT initiator PPDUs shall not exceed the TXOP limit... and on line 60 change to "The BDT responder PPDU transmission(s)..shall fit entirely | Revised-  Agree in principle.  TGah editor to make changes shown in 11-14/1094r1 under the heading for CID 3522. |
| 3824 | Liwen Chu | 287.00 | 9.45.2 | The rules about when to start a BDT response burst is not clear. | add the rules. | Rejected-  The rules about when to start a BDT response burst are clear.  Please see the following:  “An BDT sequence comprises the following:  a)The transmission of one PPDU that is either an NDP PS-Poll-Ack frame or that satisfies the following conditions:  ...  b)The transmission of one or more PPDUs (BDT response burst) by the S1G STA addressed in the PPDUs transmitted by the BDT Initiator, separated by SIFS.  ...”  After receiving one PPDU from the BDT Initiator, the BDT response bust is started. |
| 3664 | kaiying Lv | 287.00 | 9.45.2 | Response Indication should be 2 for Normal Ack | Please change the text to "Response Indication 2 (Normal Ack)" | Revised-  It is a typo.  TGah editor to make changes shown in 11-14/1094r1 under the heading for CID 3664. |
| 3663 | kaiying Lv | 287.00 | 9.45.2 | In P286L44, we define the rule that"All the other PPDUs in the BDT response burst (if there are any) except the last one shall indicate "No Response" in the response indication field." Therefore it is confused here to say"...shall set the Response Indication to Long Response for each PPDU in the BDT response burst." | Please modify the text to "A BDT Responder sending an BDT response burst which has only one PPDU containing an immediate response to an eliciting PPDU that had the More Data field equal to 1 shall set the Response Indication to Long Response for the PPDU inthe BDT response burst." | Revised-  I agree in principle.  Two sentences are conflicted.  TGah editor to make changes shown in 11-14/1094r1 under the heading for CID 3663. |
| 3107 | Ahmadreza Hedayat | 287.00 | 9.45.2 | This note is important and perhaps should appear beside other general TXOP constraints that are addressed in P256L58. | As in comment. | Revised-  Agree in principle.  TGah editor to make changes shown in 11-14/1094r1 under the heading for CID 3107. |
| 3105 | Ahmadreza Hedayat | 287.00 | 9.45.2 | In this subclause, mostly BDT is used in place of bi ditrectional TXOP, which is fine. But sometimes, like in this location the abbreviation is not used. | It'd be better if the BDT abbreviation is used throught this succlause. | Revised-  Agree in principle.  TGah editor to replace “bi directional TXOP” with “BDT”, in Page 289 Line 3 and Page 290 Line 16. |
| 3104 | Ahmadreza Hedayat | 287.00 | 9.45.2 | Regarding "... that is sent by the AP", could two non-AP STAs be in a BDT? E.g. IBSS? If so then this should change to "... that is sent by the BDT Initiator"? | If BDT between two STAs is possible, then generalize this case as suggeste din the commnet. | Rejected-  Currently BDT protocol supports only an infrastructure mode. |

**Propose:**

Revised for CID 4148, 3662, 3522, 3664, 3663, 3107, per discussion and editing instructions in 11-14/1094r1.

***TGah editor: Change these subclauses (9.42d) as follows:*** *(CID 4148)*

**9.42d Bi directional TXOP**

**9.42d.2 Rules for BDT**

NOTE 2- For error recovery, a STA participating in a BDT can ~~may~~ transmit the next frame when the CS mechanism (see 9.3.2.1(CS mechanism)) indicates that the medium is idle at TxPIFS slot boundary (defined in 9.3.7 (DCF timing relationships)).

***TGah editor: Change these subclauses (9.42d) as follows:*** *(CID 3662)*

**9.42d Bi directional TXOP**

**9.42d.2 Rules for BDT**

A BDT sequence comprises the following:

1. The transmission of one PPDU that is either an NDP PS-Poll-Ack frame or that satisfies the following conditions:
2. contains a Response Indication of Long Response
3. follows the same rule as the initial frame for TXOP as defined in 9.22.2 (HCF contention based channel access (EDCA)) for initial frame sent by BDT Initiator
4. contains a Duration/ID field that sets the NAV

***TGah editor: Change these subclauses (9.42d) as follows:*** *(CID 3522, 3107)*

**9.42d Bi directional TXOP**

**9.42d.2 Rules for BDT**

The total duration of the BDT Initiator PPDUs shall not exceed the TXOP limit ~~The BDT initiator is responsible to ensure that the total duration of the BDTs does not exceed the TXOP limit~~ as described in 9.22.2.3 (EDCA TXOPs)(#3287). The BDT responder ~~shall ensure that its~~ PPDU transmission(s) and any expected responses shall fit entirely within the remaining TXOP or SP duration, as indicated in the Duration/ID field of the latest MPDU transmitted by the BDT initiator(#Ed). A BDT is subject(#3106) to TXOP duration limits for the current AC.

…

~~NOTE 1- A BDT is subject(#3106) to TXOP duration limits for the current AC.~~

***TGah editor: Change these subclauses (9.42d) as follows:*** *(CID 3664)*

**9.42d Bi directional TXOP**

**9.42d.2 Rules for BDT**

Figure 9-92 (Example of BDT sequence) illustrates an example of BDT signaling. STA A initiates the bi directional TXOP by setting the Response Indication to Long Response in the PS-Poll+BDT frame and in the preamble of two PV0 PPDUs to allow STA B to transmit its BUs. At the end, STA B sends a PPDU with the Response Indication 2 ~~3~~ (Normal Response~~Ack~~) and STA A will terminate the BDT by sending a PPDU with the Response Indication equal to 0 (No response).

***TGah editor: Change these subclauses (9.42d) as follows:*** *(CID 3663)*

**9.42d Bi directional TXOP**

**9.42d.2 Rules for BDT**

The S1G STA that transmits this PPDU is known as the BDT Initiator.

1. The transmission of one or more PPDUs (BDT response burst) by the S1G STA addressed in the PPDUs transmitted by the BDT Initiator, separated by SIFS. Only the last (or only) PPDU of the BDT response burst may contain any MPDU requiring an immediate response. All the other PPDUs in the BDT response burst (if there are any) except the last one should ~~shall~~ indicate "No Response" in the response indication field. The S1G STA that transmits the BDT response burst is known as the BDT Responder.