IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Proposed Draft Text for  TWT for MLD | | | | |
| Date: 2021-01-04 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Ming Gan | Huawei |  |  |  |
| Jason Yuchen Guo | Huawei |  |  |  |
| Yunbo Li | Huawei |  |  |  |
| Guogang Huang | Huawei |  |  |  |
| Yiqing Li | Huawei |  |  |  |
| Mengyao Ma | Huawei |  |  |  |
| Hongjia Su | Huawei |  |  |  |

Abstract

This submission proposes draft text for TWT for MLD

Revisions:

* Rev 0: Initial version of the document.

**The texts are based on the following motion**

Individual TWT agreement(s) could be set up on a setup link for more than one setup link.

[Motion 115, #SP60, [16] and [231]]

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

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

***Discussion for the motion***

A TWT requesting STA affiliated with a TWT requesting MLD may negotiate individual TWT agreements with a TWT responding STA affiliated with a TWT responding MLD

* STA1 of STA MLD and AP1 of AP MLD operating on link 1 can exchange TWT setup frames (in a single negotiation) to negotiate
  + A TWT agreement on link1 between STA1 and AP1

* + A TWT agreement on link2 between STA2 and AP2

* + 2 TWT agreements, one on link1 between STA1 and AP1, one on link1 between STA2 and AP2
    - These agreements can have same start time and end time, same parameters
    - These agreements can also have different ones as well (specifically ensure no overlap for instance)

***TGbe Editor: please insert Clause 35.5 as follows:***

35. Extremely High Throughput (EHT) MAC specification

35.5 TWT operation

35.5.1 Individual TWT agreements

An EHT STA may negotiate individual TWT agreements with another EHT STA as defined in 10.47.1 (TWT overview) and 26.8.2 (Individual TWT agreements).

An EHT non-AP STA of a non-AP MLD may negotiate individual TWT agreements with an EHT AP of an AP MLD as defined in 10.47.1 (TWT overview) and 26.8.2 (Individual TWT agreements) except the following

* The EHT non-AP STA may indicate the link(s) that are requested for a TWT agreement setup in the TWT element of the management frame (such as TWT Setup frame) with a value of Request TWT, Suggest TWT or Demand TWT in the TWT Command field and with the TWT Request field equal to 1
* The EHT AP may indicate the link(s) in the TWT element of the management frame (such as TWT Setup frame) with a value of Accept TWT, Alternate TWT, Dictate TWT or Reject TWT in the TWT Command field and with the TWT Request field equal to 0 as a response

During the negotiation of TWT agreements, an EHT non-AP STA of a non-AP MLD may indicate different link(s) in each TWT element if there are more than one TWT element in the management frame.

During the negotiation of TWT agreements, an EHT AP of an AP MLD may indicate different link(s) in each TWT element if there are more than one TWT element in the management frame.

An example of TWT agreements negotiation between two MLDs is shown in Figure 35-x (Example of TWT agreements negotiation).



Figure 35-x – Example of TWT agreements negotiation

In this example, AP MLD has three affiliated APs: AP 1 operates on 2.4 GHz band, AP 2 operates on 5 GHz band, and AP 3 operates on 6 GHz band. Non-AP STA 1 affiliated with the non-AP MLD sends a TWT element in a TWT setup frame to AP 1 affiliated with the AP MLD. The TWT element sent by non-AP STA 1 indicates the links of AP 1, AP 2, and AP 3 to request three links to be setup TWT agreements (one link between AP 1 and non-AP STA 1, one link between AP 2 and non-AP STA 2, and one link between AP 3 and non-AP STA 3), and is with a value of Request TWT in the TWT Command field and with the TWT Request field equal to 1. AP 1 affiliated with the AP MLD sends a TWT element in a TWT setup frame to non-AP STA 1 affiliated with the non-AP MLD and the TWT element sent by AP 1 indicates the links of AP 1, AP 2, and AP 3 with a value of Accept TWT in the TWT Command field and with the TWT Request field equal to 0. After successful TWT agrements setup on three links, these three links share the same TWT SP (link 1 between AP 1 and non-AP STA 1, link 2 between AP 2 and non-AP STA 2, and link 3 between AP 3 and non-AP STA 3).

Another example of TWT agreements negotiation between two MLDs is shown in Figure 35-y (Another Example of TWT agreements negotiation).



Figure 35-y – Another Example of TWT agreements negotiation

In this example, AP MLD has three affiliated APs: AP 1 operates on 2.4 GHz band, AP 2 operates on 5 GHz band, and AP 3 operates on 6 GHz band. Non-AP STA 1 affiliated with the non-AP MLD sends a TWT element in a TWT setup frame to AP 1 affiliated with the AP MLD. The TWT element sent by non-AP STA 1 indicates the link of AP 2 to request one link to be setup TWT agreement (one link between AP 2 and non-AP STA 2), and is with a value of Request TWT in the TWT Command field and with the TWT Request field equal to 1. AP 1 affiliated with the AP MLD sends a TWT element in a TWT setup frame to non-AP STA 1 affiliated with the non-AP MLD and the TWT element sent by AP 1 indicates the links of AP 2 with a value of Accept TWT in the TWT Command field and with the TWT Request field equal to 0. A successful TWT agrement is setup on one link (link 2 between AP 2 and non-AP STA 2). In another instance, the link 2 in this TWT negotiation can be replaced by link 1, then a successful TWT agrement is setup on link 1 (link 1 between AP 1 and non-AP STA 1)