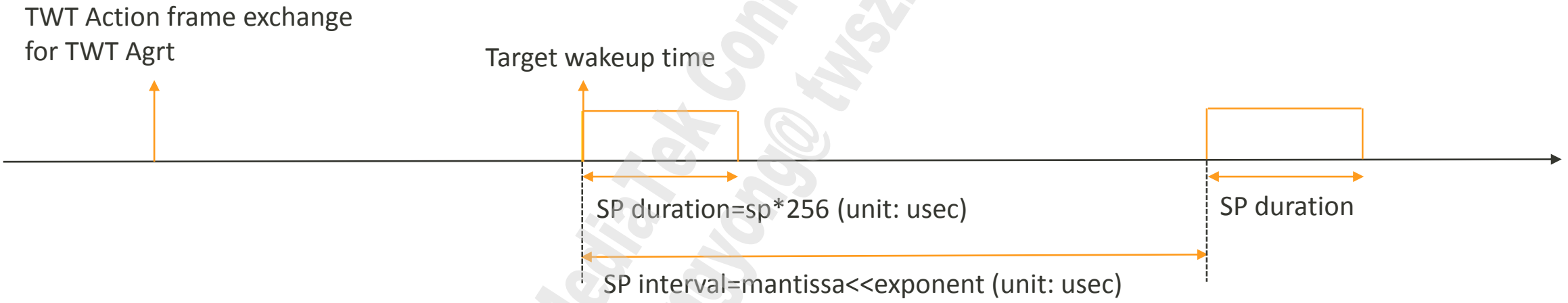


MEDIA TEK

MT7986 TWT Debug Application Note

Owen Li

TWT Overview



TWT parameters

Announcement	Trigger-enabled	Action for this TWT parameters
0	0	DL: DL data to STA at SP start UL: STA UL data by contention
1	0	DL: DL data to STA when get announcement from STA at SP start UL: STA UL data by contention
0	1	DL: DL data to STA at SP start UL: AP send trigger frame to get HE TB PPDU from STA
1	1	DL: DL data to STA when get announcement from STA at SP start UL: AP send trigger frame to get HE TB PPDU from STA when get announcement from STA at SP start

TWT Driver Related

- Profile**

- TWTSupport

- Driver compiler flag**

- WIFI_TWT_SUPPORT

- Files**

- twt.h: denifntion/data structure related to sepc.
- twt core.c/h: twt action frame process
- twt_ctrl.c/h: twt node mgmt.

TWTRequired	Dot11TWTOptionActivated	AP	STA	TWTSupport
0	0	Not to support TWT	Not to support TWT	0: TWT disable (STA/AP) Individual TWT on
0	1	Need to support TWT	Need to support TWT	1: TWT enable (STA/AP)
1	0	N/A	N/A	N/A
1	1	AP informs STA to have to create TWT if STA supports TWT	STA has to create TWT with AP if it supports TWT	N/A

Agrt. Status dump for debug

- **CMD: iwpriv ra0 set twt=2 to show twt node and link status**

- **Node status: (all twt node resource)**

- `i_idx=%d,p=%p,tbl_i=%d,ste=%d,o_i=%d,b_i=%d,wcid=%d,spd=%d,f_i=%d,sp=%d,m=%d,e=%d,para=0x%x,tsf_sch=(%x,%x)`
 - `i_idx`: node index
 - `p`: node memory address
 - `tbl_i`: agrt. Table index
 - `ste`: 1: occupied, 0: not occupied
 - `o_i`: own mac index
 - `wcid`: wlan index
 - `spd`: suspend/resume
 - `f_i`: flow type
 - `sp`: service period
 - `m`: mantissa
 - `e`: exponent
 - `para`: bit 0 trigger, bit 1 announcement, bit 2 protect
 - `tsf_sch`: scheduled tsf

- **Link status (occupied twt node status=current twt connection status)**

- `twt_node:tbl_i=0,s=1,wcid=1,spd=0,f_i=0,tsf_t=0,tsf_sch=(0,0),sp=255,align=0,tsf_info=(0,0),tsf_wish(8826f6b,0)`
 - `tbl_i`: agrt. table index
 - `s`: state(0: not used, 1: used)
 - `wcid`: wlan index
 - `spd`: suspend/resume
 - `f_i`: flow id
 - `tsf_t`: tsf type (0: request/1: suggest/2: demand/3: twt information frame)
 - `tsf_sch`: scheduled start tsf
 - `sp`: service period (=sp*256us)
 - `align`: is 16 TU alignment
 - `tsf_info`: tsf from twt information frame
 - `tsf_wish`: tsf from peer action frame

Agmt. Status dump for debug

- **Link status log examples:**

- **Explanation of TWT LINK**

- twt_link[0]: scheduled twt link
 - For tsf_type=request or suggest
 - Driver will reduce SP_duration overlap as possible for different twt agreeemnts
- twt_link[1]: unscheduled twt link
 - For tsf_type=demand or twt information frame
 - Driver won't reduce SP_duration overlap for different twt agreeemnts since tsf start time is decided by non-AP STA

- **TWT Link Example**

- [447.050366] *** twt_link[0],len=2 *** → **scheduled twt link, len=2 (two twt agreements exist)**
- [447.054029] **twt_node:tbl_i=0,s=1,wcid=1,spd=0,f_i=0,tsf_t=0,tsf_sch=(0,0),sp=255,align=0,tsf_info=(0,0),tsf_wish(8826f6b,0)
- [447.065419] **twt_node:tbl_i=1,s=1,wcid=2,spd=0,f_i=0,tsf_t=0,tsf_sch=(10000,0),sp=255,align=0,tsf_info=(0,0),tsf_wish(8ae02f3,0)
- [447.077153] *** twt_link[1],len=0 *** → **unscheduled twt link (no twt agrt. exist)**

Thank you

Questions and Discussions

MediaTek Confidential
For Jiangdingyong@twsh.com Use Only

MediaTek Proprietary and Confidential

© 2021 MediaTek Inc. All rights reserved. The term “MediaTek” refers to MediaTek Inc. and/or its affiliates.

This document has been prepared solely for informational purposes. The content herein is made available to a restricted number of clients or partners, for internal use, pursuant to a license agreement or any other applicable agreement and subject to this notice. THIS DOCUMENT AND ANY ORAL INFORMATION PROVIDED BY MEDIATEK IN CONNECTION WITH THIS DOCUMENT (COLLECTIVELY THIS “DOCUMENT”), IF ANY, ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE. MEDIATEK DOES NOT WARRANT OR MAKE ANY REPRESENTATIONS OR GUARANTEE REGARDING THE USE OR THE RESULT OF THE USE OF THIS DOCUMENT IN TERMS OF CORRECTNESS, ACCURACY, TIMELINESS, RELIABILITY, OR OTHERWISE. MEDIATEK SPECIFICALLY DISCLAIMS ALL WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT AND FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTIES ARISING OUT OF COURSE OF PERFORMANCE, COURSE OF DEALING OR USAGE OF TRADE. This Document must be held in strict confidence and may not be communicated, reproduced, distributed or disclosed to any third party or to any other person, or being referred to publicly, in whole or in part at any time except with MediaTek’s prior written consent, which MediaTek reserves the right to deny for any reason. You agree to indemnify MediaTek for any loss or damages suffered by MediaTek for your unauthorized use or disclosure of this Document, in whole or in part. If you are not the intended recipient of this document, please delete and destroy all copies immediately.



MEDIA TEK

everyday genius

MediaTek Confidential
For Jiangdingyong@msz.com Use Only