

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Resolution of Session 14 Time Management Comments for TG3/4 MAC	
Date Submitted	2001-07-12	
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Re:	Task Group Review of IEEE 802.16ab-01/01 IEEE 802.16 Task Groups 3 and 4 PHY and MAC Layers for IEEE P802.16a/P802.16b	
Abstract	Presents results of ad hoc meeting to resolve comments related to the time-base employed by the TG3/4 MAC.	
Purpose	Provides basis for resolution of session 14 comment #49 (et al). These results were accepted by the joint TG3/TG4 MAC/PHY session and remanded to the joint MAC/PHY interface ad hoc for text generation.	
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Results of TG3/4 Time Management Ad Hoc

Bob Nelson

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Met after the Tuesday (7/10) evening TG3/4 MAC session and came to the following conclusions:

- The fundamental unit of time is considered to be a “Physical Slot”
- The definition of a Physical Slot is PHY dependent:
 - OFDM – 4 * Sample Time
 - Single Carrier – 4 * Symbol Duration
- The definition of mini-slots is defined in terms of Physical Slots:
 - OFDM – (4 * Sample Time) * 2^m (m=0...7)
 - Single Carrier – (4 * Symbol Duration) * 2^m (m=0...7)
- The fundamental timer for MAC operations is a 32-bit counter that counts elapsed time in terms of the duration of a Physical Slot. The counter is initialized during base station startup, and is free-running from that time forward.
- All time fields appearing in MAC messages
 - Synchronization Time
 - Allocation Start Time
 - Last Ack Time
 - et al ...

are defined as 32-bit counter values that hold values derived from the fundamental timer.
- As is currently defined in the 01/01 working document, offsets in both upstream and downstream maps are expressed in units of mini-slots.

Editor Note:

There has been discussion as to whether a continuous time reference is appropriate in all cases. The alternate suggestion is that offset values from the beginning of the frame holding the message with the time reference be used.

However, the discussion may be moot. With the synchronization time included in each downlink map, implementations requiring synchronization with the start of the current frame can obtain the offset information by subtracting that synchronization time value from the time-related message field of interest.