

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Prescribing the timing for MAC PDU transmission	
Date Submitted	2007-07-05	
Source(s)	Rakesh Taori, Ki-Sun Oh, Mi-Sun Do Samsung Advanced Institute of Technology	Voice: +82 31 280 9635 E-mail: rakesh.taori@samsung.com
	Hyunjeong Kang and Jungje Son Samsung Electronics	*< http://standards.ieee.org/faqs/affiliationFAQ.html >
	Mary Chion, Jerry Chow, Hongyun Qu ZTE	mchion@zteusa.com
Re:	In response to the call for comments and contributions on the IEEE 802.16j baseline draft (802.16j-06/26r4).	
Abstract	[Description of document contents.]	
Purpose	Discussion and Adoption in the IEEE 802.16j baseline draft	
Notice	<i>This document does not represent the agreed views of the IEEE 802.16 Working Group or any of its subgroups. It represents only the views of the participants listed in the "Source(s)" field above. It is offered as a basis for discussion. It is not binding on the contributor(s), who reserve(s) the right to add, amend or withdraw material contained herein.</i>	
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.	
Patent Policy	The contributor is familiar with the IEEE-SA Patent Policy and Procedures: < http://standards.ieee.org/guides/bylaws/sect6-7.html#6 > and < http://standards.ieee.org/guides/opman/sect6.html#6.3 >. Further information is located at < http://standards.ieee.org/board/pat/pat-material.html > and < http://standards.ieee.org/board/pat >.	

Prescribing the timing for MAC PDU transmission

Rakesh Taori, Ki-Sun Oh and Mi-Sun Do
Samsung Advanced Institute of Technology

Hyunjeong Kang and Jungje Son
Samsung Electronics

Introduction to the problem

In the current TGj baseline draft (802.16j-06/26r4) the following shortcomings can be observed in the case of centralized scheduling:

- (1) The BS does not tell the RS exactly when it should transmit the MAC PDUs.
- (2) The specification does not prescribe how the RS should relate the bursts to the MAP.
- (3) The specification does not provide mechanisms to the RS for handling the situation when the MAP and the related data bursts arrive asynchronously.

Suggested Remedy

The foregoing problems can be overcome by letting the BS specifically prescribe the time when and where the RS should transmit the MAC PDUs. In 802.16 j, the simplest way to include timing information is by means of Frame Number, i.e. when sending a relay MAC PDU to the RS, the BS can instruct the RS in which frame the MPDU should be transmitted.

~~Efficiency can be obtained by prescribing only the last 4 LSBs of the frame number.~~

Proposed Text

Modify Table 7a – Relay MAC PDU Header on page 7, as follows:

Table 7a – Relay MAC PDU header

Syntax	Size	Notes
Relay MAC header(){		
HT	1bit	
If(HT==0){		
Reserved	1bit	
RMI	1bit	Relay mode indication is used to indicate whether this MAC header is GMH or Relay MAC header RMI=0; use GMH RMI=1; use Relay MAC header
<u>ALC</u>	<u>1 bit</u>	<u>Indicate the inclusion of Allocation Subheader</u>
Reserved	6 7 bits	Currently reserved. Content is subject to further discussion
Priority	3bits	Priority of the associated tunneled MPDU
LEN	11bits	
CID	16bits	May be tunnel CID or basic CID of the RS
HCS	8bits	Header check sequence
}		
Else{		
Use legacy 802.16e or 802.16j format	39bits	
HCS	8bits	
}		
}		

Modify Figure 22a as shown below:

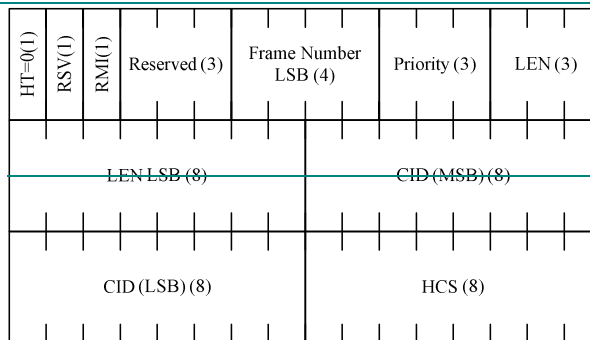
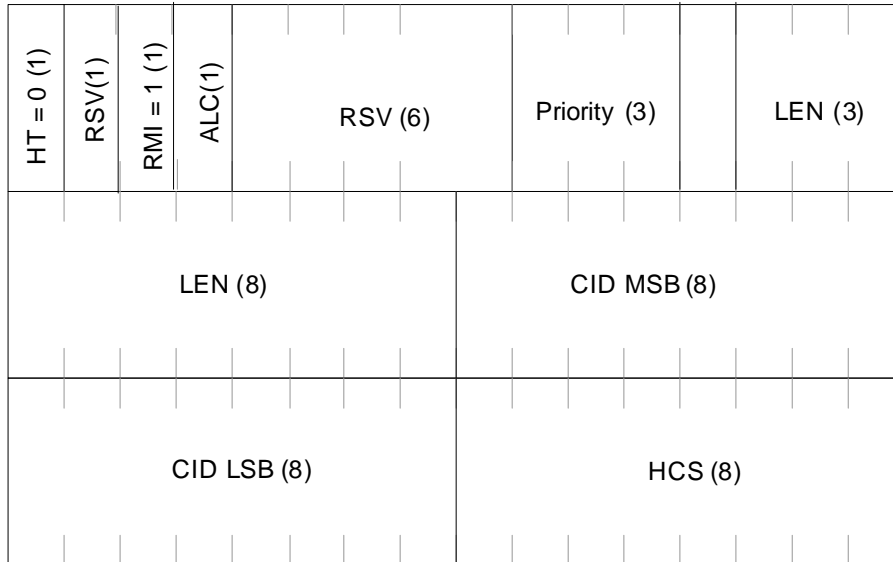


Figure 22a: Header format of relay MAC PDU with payload

Insert the following text at the end of section 6.3.3.8 (on page 66 of the current draft).

[Insert new section 6.3.2.2.8 on Page 14.]

6.3.2.2.8.1 Allocation Subheader

The MR-BS may include the Allocation Subheader in a relay MAC PDU to instruct the RS when to relay the MAC PDU.

When included, the MR-BS shall use one Allocation Subheader per RS for the relay link, and one or more Allocation Subheader for the access link. The Allocation Subheaders corresponding to the relay link shall precede the ones for access link. The access RS shall use the continuation bit in the Allocation Subheader to

detect whether there is a subsequent Allocation Subheader. The Allocation Subheader shall be the last subheader before the payload.

Table XXX Allocation Subheader

<u>Syntax</u>	<u>Size</u>	<u>Notes</u>
<u>Allocation Subheader{</u>	-	-
<u> Target Transmission Frame</u>	<u>6 bits</u>	<u>LSB 6 bits of frame number of the frame that RS shall transmit the MAC PDU</u>
<u> Allocation Index</u>	<u>6 bits</u>	<u>Allocation Index pointing to DL-MAP-IE in the MAP message</u>
<u> Number of MAC PDUs</u>	<u>3 bits</u>	<u>Number of MAC PDUs in this allocation</u>
<u> Continuation</u>	<u>1 bits</u>	<u>1: Another Allocation Subheader follows</u> <u>0: This is the last Allocation Subheader for the RS.</u>
<u>}</u>	-	-

~~In case of centralized scheduling, the MR-BS uses the frame number to instruct the RS exactly when it should relay the payload contained in the MAC PDU with the relay MAC header. The MR-BS uses 4 LSBs of the frame number to specify the frame in which the payload must be forwarded.~~

[Insert following to section 6.3.3.8.1 on Page 66 at the end of first paragraph, page35.]

The MR-BS may include the Allocation Subheader in a relay MAC PDU to instruct the RS when to relay the MAC PDU. When Tunnel Packet Mode is used with centralized scheduling, the Allocation Subheaders shall be included in relay MAC PDUs on the downlink to enable the receiving RS to match the MAC PDUs with the corresponding allocation in the MAP messages for transmission.