
Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
---------	-----------------------------------------------------------------------------------------------------------------------------	--

Title	MAC Header Format Modifications	
-------	----------------------------------------	--

Date Submitted	2001-03-07	
----------------	-------------------	--

Source(s)	Subir Varma Aperto Networks 1637 South Main Street Milpitas, CA 95035	Voice: (408) 719 9977 Fax : (408) 719 9970 mailto:svarma@apertonet.com
-----------	--------------------------------------------------------------------------------	------------------------------------------------------------------------------

Re:	This document is submitted in response to 802.16 Letter Ballot #3	
-----	-------------------------------------------------------------------	--

Abstract	This document proposes (1) The addition of a Type field to the Bandwidth Request Header field	
----------	-----------------------------------------------------------------------------------------------	--

Purpose	The author wants 802.16 to consider this document within a process of comments resolution for the document IEEE 802.16/D2-2001	
---------	-----------------------------------------------------------------------------------------------------------------------------------	--

Notice	This document has been prepared to assist IEEE802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.	
--------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Release	The contributor grants a free, irrevocable license to the IEEE to incorporate text 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 and
Procedures

The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures (Version 1.0) <<http://ieee802.org/16/ipr/patents/policy.html>>, including the statement “IEEE standards may include the known use of patent(s), including patent applications, if there is technical justification in the opinion of the standards-developing committee and provided the IEEE receives assurance from the patent holder that it will license applicants under reasonable terms and conditions for the purpose of implementing the standard.”

Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <<mailto:r.b.marks@ieee.org>> as early as possible, in written or electronic form, of an patents (granted or under application) that may cover technology that is under consideration by or has been approved by IEEE 802.16. The Chair will disclose this notification via the IEEE 802.16 web site <<http://ieee802.org/16/ipr/patents/notices>>.

MAC Header Format Modifications

Subir Varma

Aperto Networks

1.0 Comment

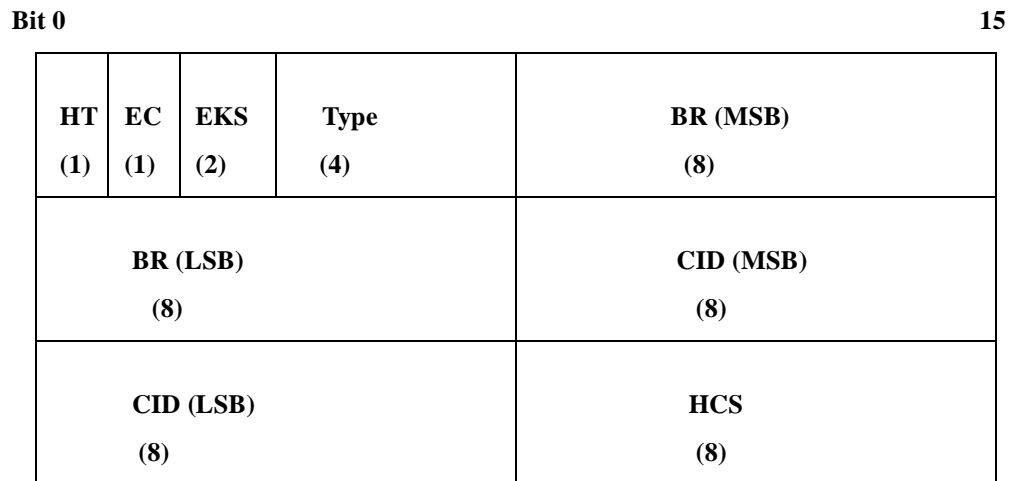


FIGURE 1. Bandwidth Request Header Format

1.1 Page 51, Line 13, Section 6.2.2

Replace Figure 20 in IEEE 802.16/D2-2001 by Figure 1 in this contribution.

1.2 Discussion

Currently the 802.16 MAC protocol allows for two types of MAC headers, which are distinguished by the Header Type (HT) field. When HT = 1, then the MAC Header is used for Bandwidth Request packets, which are special packets containing the header only, with no payload. Currently the protocol does not define any other packet which shares this characteristic.

The addition of ARQ functionality into the MAC protocol, leads to the situation in which there are additional MAC packets required in uplink direction, which share similar properties with the Bandwidth Request packets, i.e., they are defined using the header alone with no payload. A specific instance of such a packet is the Uplink ACK packet (which acks

downstream data packets). It is necessary to have a separate Uplink ACK packet (in addition to piggybacked uplink ACKs), for the following reasons:

- For the case in which there is no uplink data, it is not possible to piggyback uplink ACKs
- When the uplink ACK is sent piggybacked, then it is forced to use the same burst profile as uplink data, which may not be the most robust one. In order to make sure that the ACK always makes it to the BS, even in a degraded channel (in order to have any utility as a feedback mechanism), it is preferable to use a more robust burst profile for uplink ACKs as compared to uplink data. This necessitates that the uplink ACK be sent as a separate burst.

It is possible to slightly modify the Bandwidth Request packet, in order to define the uplink ACK packet, as shown in Figure 1. There is a 4 bit Type field that can be used to identify other kind of control packets. Thus Bandwidth Requests and Uplink Acks can be assigned different Types.