

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Bandwidth Usage Reporting in 802.16 MAC	
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Re:	Letter Ballot announcement for IEEE P802.16-REVd/D1-2003	
Abstract	The document contains suggestions for Bandwidth Usage Reporting in 802.16 MAC	
Purpose	The document is contributed to be discussed in 802.16 in the process of comments resolution	
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Bandwidth Usage Reporting in 802.16 MAC

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1. Incentive

In certain cases BS needs to get a report on number of bytes actually received by SS to get to a conclusion on link quality and to compare the report to QoS contract as specified for the subscriber. For ARQ enabled connections this information may be derived from ACK messages, but for connections where ARQ is not enabled, there is no functional replacement. This information can be used, for example, for estimation whether requested minimum traffic rate value is followed. Another examples are decision on rate change and/or for decision on deletion of the connection for relevant data services in the case SDUs' loss ratio is too high.

It is suggested to redefine the second reserved bit in Generic MAC Header (6.4.2.1.1) as "BW Report Request". Setting it to '1' in an arbitrary MAC message sent at DL connection to an SS, means that a bandwidth usage report from the SS is requested.

Additionally, it is suggested to use a short BW Usage Report MAC message similar to Bandwidth Request Header structure (6.4.2.1.2) but with new Type value.

2. Specific changes in IEEE P802.16-REVd/D1-2003

[Change in 6.4.2.1.1, Table 4—MAC header format]

EKS	2 bits	
Rsv BURR	1 bit	Reserved; set to 0 1 = Bandwidth usage report requested at the connection specified by CID

[Change in Figure 22, second appearance of Resv(1)]

Resv(1) to BURR

[Insert before section 6.4.2.2 new heading]

6.4.2.2. Bandwidth usage MAC PDU

The Bandwidth Usage MAC PDU shall consist of bandwidth usage report header alone and shall not contain a payload. The bandwidth usage report header is illustrated in Figure NNN.

HT(1)	EC(1)	Type = 000002	BWRPT msb (8)
BWUR lsb (8)			CID msb (8)
CID lsb (8)			HCS (8)

Figure NNN – bandwidth usage report header

The value of BWUR (bandwidth usage report) field is the total accumulated amount of data correctly received at the connection with given CID. This amount is expressed in units of ARQ block size if the latter was negotiated at connection creation; otherwise default value of 1000 bytes is used. This number starts from 0 at the creation of the connection and wraps around after reached the value 2^{16} ; interval between reports should be small enough to resolve ambiguity of this value.

[Change in 11.4.9.18.8]

This value of this parameter specifies the size of ARQ block. **The same value may be used as a measurement unit for bandwidth usage reporting.** This parameter is established by negotiation during the connection creation and connection change dialogs.