

Project	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
Title	<b>Reliable MBS Scheme</b>	
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Re:	Re: MAC aspects of enhanced MBS; in response to the TGM Call for Contributions and Comments 802.16m-08/033 for Session 57	
Abstract	This contribution proposes the text for E-MBS Scheme in 802.16m SDD	
Purpose	For discussion and approval by IEEE 802.16 TGM	
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# Reliable MBS Scheme

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## Introduction

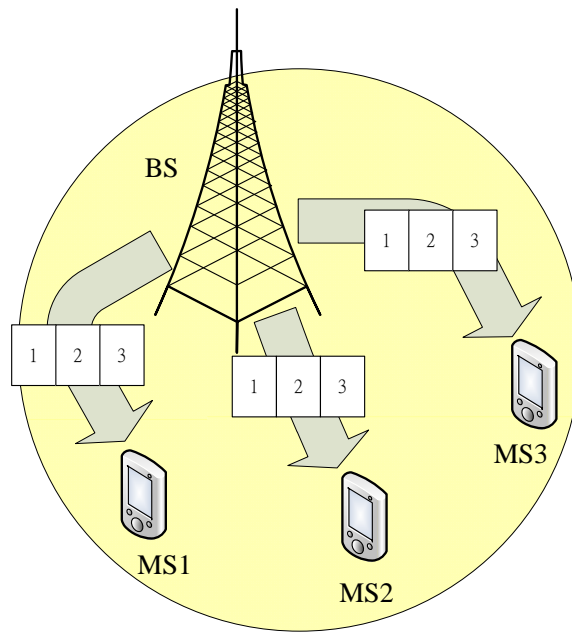
The IEEE 802.16e system does not support the retransmission scheme for multicast and broadcast services. In order to provide high quality MBS in 16m system, the reliable transmissions of critical MBS data shall be achieved. For example, if the multilayer video coding scheme is used in MBS, the information of base layer should be transmitted in a more reliable way. This contribution proposes a reliable MBS scheme to protect the critical information of MBS.

## Reliable MBS Scheme

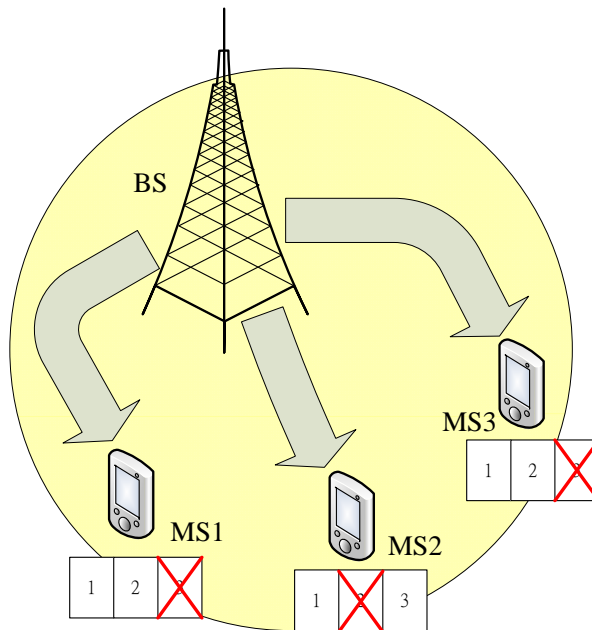
Considering the retransmission overhead and the real-time requirement of MBS, only the critical information of MBS should be particularly handled. In order to minimize the retransmission overhead, the critical MBS information is partitioned as a number of data blocks with error detection codes, and the BS allocates the uplink resources to MSs involved in the multicast group. Information about the indication of critical MBS data blocks and the location and region of uplink resource may be broadcasted via the MBS map. If an MS fails to receive a critical MBS data block, it will issue the NACK signal on the uplink resource to the BS to request the retransmission of the data block. To avoid ambiguity, the number of distinct NACK signals shall be larger than or equal to the number of critical MBS data blocks in a transmission. If the BS detects the NACK signal from the MS, it will schedule the bandwidth for retransmitting the requested MBS data block.

## Example of reliable MBS

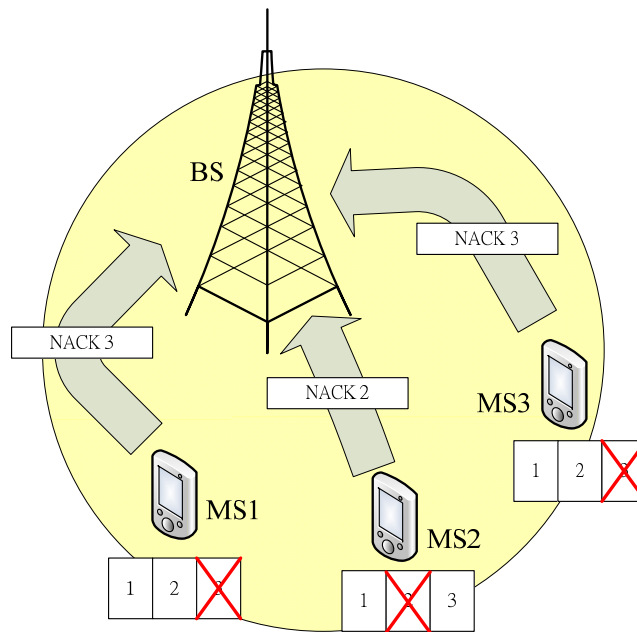
As illustrated in Figure 1(a), the BS first transmits three critical MBS data blocks to three MSs, denoted as MS1, MS2 and MS3. If the MS1 and MS3 fail to receive the third data block and the MS2 fails to receive the second data block, then the MS1, M2 and MS3 will issue the NACK3, NACK2 and NACK3 to the BS via the allocated uplink resources, as portrayed in Figure 1(b) and Figure 1(c). Afterward, the BS detects the NACK2 and NACK3 from MSs and then it transmits the new data blocks (the fourth and fifth data blocks) with the previously erroneous data blocks (the second and the third data blocks) indicated by the MSs.



(a) The BS sending MBS data blocks to MSs

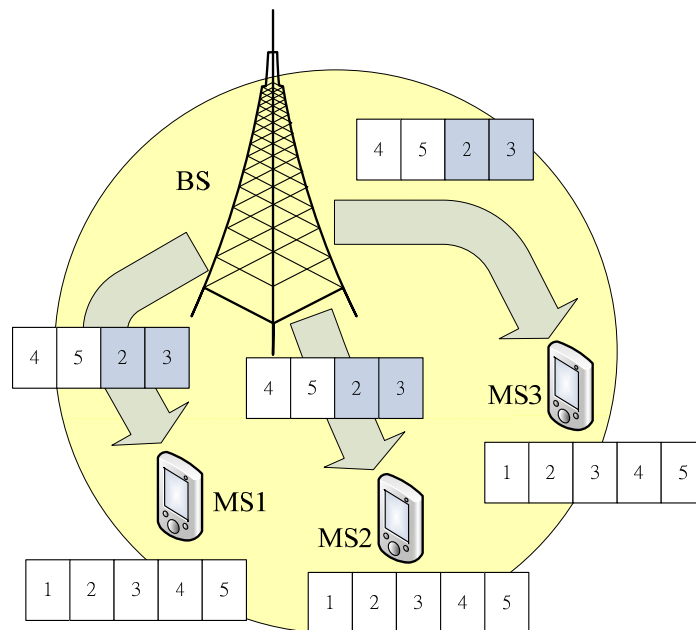


(b) Each MS failing to receive all MBS data blocks



(c) MS sending the NACK signal to the BS according to the reception status.

A



(d) The BS transmitting the new data blocks and the data blocks requested by MSs.

**Proposed Text Changes:**

[\[Add the following section 11.9.1.6 “E-MBS feedback”\]](#)

[11.9.1.6 E-MBS feedback](#)

[In order to provide reliable transmissions of critical MBS data blocks, the BS may allocate uplink](#)

resources to MSs involved in the multicast group to request retransmission. Upon an MS failing to receive the critical MBS data block, it may send a NACK signal to BS. When the BS receives the NACK signal, it should retransmit the corresponding MBS data block

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