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Re:	Re: MAC: Data/Control Plane; in response to the TGM Call for Contributions and Comments 802.16m-08/040 for Session 58	
Abstract	This contribution proposes the elimination of the MAC Management Basic connection	
Purpose	To be discussed and adopted by TGM for use in the IEEE 802.16m SDD	
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Single MAC Management Control Channel

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1. Introduction

As specified in IEEE 802.16-2005, “At SS initialization, two pairs of management connections, basic connections (UL and DL) and primary management connections (UL and DL), shall be established between the SS and the BS”. Messages carried on the basic connection can not be packed or fragmented, whereas, messages carried on the primary connection can be packed or fragmented. This limitation restricts the efficiency and flexibility of the MAC management messaging system.

2. Problem Definition

Originally there were two reasons for having distinct and separate Basic and Primary Management Control Message Identifiers in 802.16.

The first reason was that control traffic on the Basic Connection was intended to have higher processing priority in the Scheduler than control traffic on the Primary Management Connection.

The second reason was that control traffic on the Basic Connection was not allowed to be packed, or more importantly could not be fragmented, to remove the possibility that critical control traffic be spread over multiple frames, thus delaying timely processing. Traffic on the Primary Management Connection was allowed to be packed and fragmented.

In reality the differentiation of ‘priority’ between Basic and Primary connections has been substantially reduced, even eliminated. Many messages transmitted on the Primary connection that have substantial importance--even equal importance to message on the Basic connection--many of these messages use the Primary connection to have access to necessary fragmentation. The lines have been blurred. In any event, using the connection identifier to make such processing distinction was never really necessary. Implementations are completely able to make control messaging priority distinction based on the type value of the message, which provides a finer degree of differentiation granularity regardless.

Similarly, implementations are completely able to make similar fragmentation decisions based on the type value of the control message. Limiting by virtue of the mandated connection type for the message removed important fragmentation flexibility. It is just unnecessary and injurious.

Having this limitation eliminated would improve the efficiency and operations of the MAC management messaging system.

3. Remedies

3.1 Remedy #1 Basic connection: allow packed and fragmentation messages

Allowing the Basic connection to have packed and fragmented messages, making it identical to the Primary connection, would afford the same efficiency and flexibility as the Primary connection. But having two identical channels for MAC management messaging with no constructive purpose is unnecessarily duplicative.

3.2 Remedy #2 Reduce the list of messages that use the Basic Connection

Reducing the list of messages that use the Basic connection and reassigning them to the Primary connection, especially those messages that would benefit from access to packing and fragmentation, would offer efficiency and flexibility for those messages that are reassigned. But the remaining messages on the Basic connection would still be limited. This solution does not totally resolve the problem. And in any event, a cursory examination reveals that only a single message assignment to the Basic connection, RNG-REG/RSP, is the likely result. Retaining the Basic connection for this management message alone seems excessive.

3.3 Remedy #3 Eliminate the Basic connection

Eliminating the Basic connection and reassigning all the Basic connection messages to the Primary connection simplifies the MAC management messaging system and affords some efficiency on network entry.

Reducing the number of MAC management connections down to one connection, a connection that affords packing and/or fragmentation of messages, simplifies the MAC management messaging process and offers the greatest flexibility.

On SS network entry, only one pair of MAC management connections needs to be established, saving time and resources.

4. Proposed text

Modify Section 10.1.2.2 Flow Identifier as:

Each MS connection is assigned a “Flow Identifier” that uniquely identifies the connection within the MS. “Flow Identifiers” identify the DL and UL unicast control connection and DL and UL transport connections. Each MS shall have a single unicast ‘Control Flow Identifier’ that is used to identify the unicast control connection and associated control traffic in the DL and UL.