Project	IEEE 802.16 Broadband Wireless Access Working Group <***http://ieee802.org/16***>
Title	Construction of MAC PDU with Shared Management Message
Date Submitted	2007-03-05
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Re:	This contribution is a response to ” IEEE 802.16j-07/007r2 Call for Technical Comments and Contributions regarding IEEE Project 802.16j” (2007-02-19) .
Abstract	This contribution describes a method for construction of MAC PDU with shared management message.
Purpose	This document is provided in response for Call for Technical Comments and Contributions regarding IEEE Project 802.16j .
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Construction of MAC PUD with Shared Management Message

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1. Introduction

This contribution describes a method to construct a MAC PDU with shared management message and how to transfer the MAC PDU with defined structure.

2. Problem Statement

In a centralized MR system with distributed scheduling, it is the MR-BS and MS which determine to perform the system procedures, for example: create/modify/delete service flow, handover, sleep mode and so on, while the RS and MR-BS allocate the bandwidth on the relay and access link. In some cases, it's desirable that the messages sent by the MR-BS can be read by the RS on the multi-hop link, so that the RS can allocate the bandwidth more efficiently based on the information from the management messages sent by the MR_BS. We call this kind of message shared management message.

However, in the 16e system, although the management messages are not encrypted, they are protected by the CMAC/HMAC Tuple to validate their integrity, so the message can't be authenticated by the nodes except the sender and receiver. To solve this problem, one way is to let the sender send duplicate messages to each node on the multi-hop link. Obviously, this way reduces available bandwidth and can't ensure these duplicate messages are all received successfully, which may further lead to the information inconsistency among the receivers. So [1] defines a method how a shared management message can be sent by the MR-BS only once while it can be read and authenticated by each node on the multi-hop link in a centralized MR system with distributed scheduling. This contribution proposes one method to construct MAC PDU with shared management message to assure that the message can be transferred efficiently.

3. Suggested Method

3.1 MAC PDU with Shared Management Message

MAC PDU with shared management message in MR system has the same format with that in 16e system, while the CID in the generic header shall be the Connection ID belonging to the last hop node.

3.2 Procedure of the MAC PDU with Shared Management Message Transfer

For the non-transparent RS knows all the Connection ID belonging to its children nodes and itself, when it receives a MAC PDU , it will determine the message type based on the CID in the generic MAC header and Message Type in the payload and validate this message's integrity based on the key shared with the MR-BS. If

the message is legal, the RS reads the message, deletes the last HMAC/CMAC Tuple in the HMAC/CMAC Tuple Sequence and relays the shared management message to its subordinate node. At last, when the message is received by the MS, the message has the same format as that in the 16e system, so there is no change for the MS.

Figure 2 is an example of transferring the MAC PDU with shared management message.

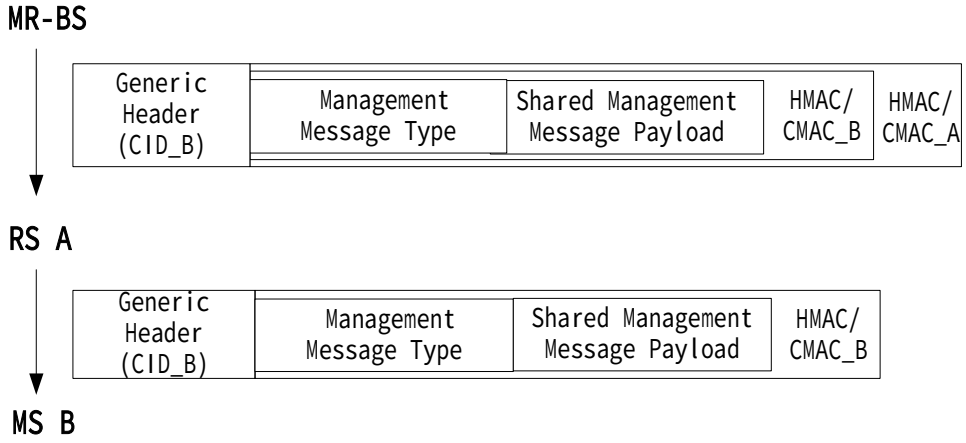

Figure-2 An example of transferring the MAC PDU with shared management message..

4. Proposed text

6.1 PMP

6.1.1 Relay extension

6.1.1. Shared Management Message format

[Insert the following sentence at the end of this subclause:]

The CID in the generic header of MAC PDU with shared management message shall be the Connection ID belonging to the last hop node on the multi-hop link.

When the RS receives a MAC PDU, it will only process the payload of the MAC PDU.

References

[1] IEEE 802.16j-07/188, “Shared Management Message: Format, Transfer and Security”, Shulan Feng, Yanling Lu, Ting Li, Liangliang Zhang, Hisilicon Technologies.