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Title	Encapsulation of CID	
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Re:	This is a response to Call for Technical Proposals issued by IEEE 802.16j.	
Abstract	The encapsulation of CID is required to prevent the drop of performance.	
Purpose	The objective of this contribution is to suggest the necessity of encapsulation in MMR system.	
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Encapsulation of CID

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Introduction

An MS can receive and process the duplicate packet, the one through weak path and the other through strong path. The duplicate processing is not necessary to an RS and consumes the battery of MS. So, we have to prevent the wasteful processing.

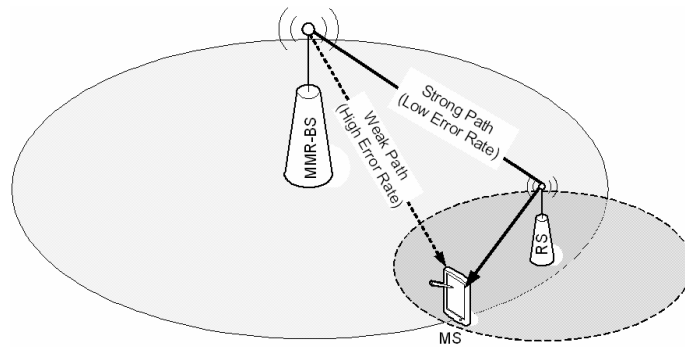


Figure 1. Receiving the duplicate packet

Cheating CID

Cheating CID is the simple solution for that problem, but it is too slow.

Cheating CID is to change the CID of PDU. For example, in the case of Figure 1, a BS sends a PDU with CID of an RS to the RS. When the RS receive the PDU from a BS, an RS exchange the own CID with the one of an MS and sends the modified PDU to the MS. Finally, the MS receives the unique PDU. Figure 2 simply describes cheating CID.



Figure 2. Cheating CID

When the PDU has no CRC, this method is fast and efficient. But in the case that the PDU has a CRC, the processing time of this method can be so long. So the delay of relaying PDUs will be increasing.

If an RS change a CID, an RS have to regenerate an HCS and a CRC, too. The processing time of generating an HCS is relatively short, but the processing time of generating a CRC is proportional to the length of the PDU and it is relatively long.

Encapsulation

Encapsulation is redundant processing, but it is so fast.

Encapsulation is to attach additional header to the head of the original PDU, and decapsulation is to remove additional header from the received PDU. The PDU from an MS to a BS should be encapsulated, and the PDU from a BS to an MS should be decapsulated.

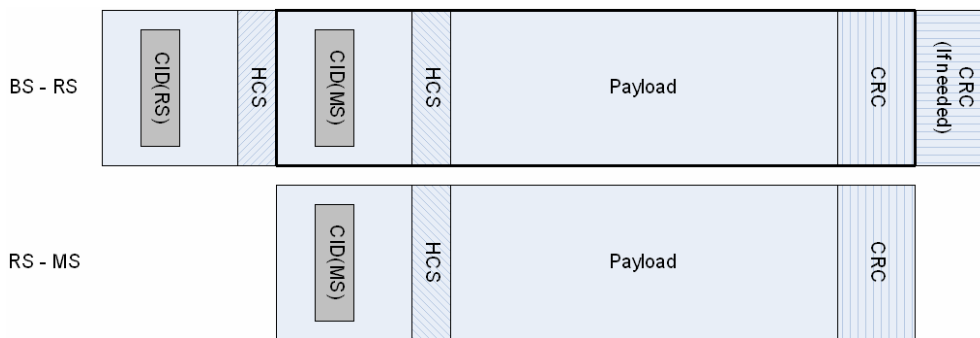


Figure 3. Encapsulation

In the encapsulation, generating a CRC is not required. (if needed, an RS can generate a new CRC.) It just attaches additional header. So, its additional header is redundant, but its processing time is very short, so it can minimize the delay of relaying PDUs.

Proposed Text

6.3.2.1 MAC header formats

Insert the following at the end of 6.3.2.1:

The MAC header of the PDU from an MS to a BS via RS is encapsulated, and the MAC header of the PDU from a BS to an MS via RS is decapsulated.