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Title	**Tunnel Convergence sub-layer function of RS in moving BS mode**	
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Re:	IEEE 802.16j-07/019: "Call for Technical Comments Regarding IEEE Project 802.16j"	
Abstract	In this contribution, the required functions in an access RS in moving BS mode and the required functions in a MR-BS supporting such a RS are addressed.	
Purpose	To incorporate the proposed text into the P802.16j Baseline Document (IEEE 802.16j-06/026r4)	
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Tunnel Convergence sub-layer function of RS in moving BS mode

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1 Introduction

In current baseline document, a moving RS can work in moving RS mode or in a moving BS mode (refer to 6.3.22.4.1.1). The corresponding data forwarding protocol is described in section 1.4.3, where the access RS needs to implement a simple convergence sub-layer function. In this contribution, the required functions in an access RS in moving BS mode and the required functions in a MR-BS supporting such a RS are addressed.

2 Proposal

The key benefits of this operation mode of moving RS are to reduce the complexity caused by handover of a moving RS and all of associated MSs, to reduce encryption overhead of MS traffic and message forwarding and to eliminate the unnecessary MS unicast messages forwarding (RS can locally process most of unicast message). In order to enable this operation, the connections between MR-BS and the moving RS is managed by MR-BS. The connections of MSs associated with a RS in moving BS mode are managed by the RS and informed to the MR-BS.

2.1 MR-BS CS sub-layer function

When a MR-BS works with an access RS in moving BS mode, at each service flow setup, MR-BS establishes a binding between the SFID, L-CID and forwarding connection identity F-CID. The upper layer header suppression, if implemented, is performed on an end-to-end basis.

For DL traffic forwarding, for each of received upper layer packets, the classification in CS on the R-link results in an output {F-CID, L-CID}. The tuple {SDU, F-CID and L-CID} shall be then provided to CPS sub-layer through the SAP. For UL, when a short-version of MAC PDU is received by the CPS sub-layer in R-link of MR-BS, the CPS sub-layer shall send tuple {SDU, F-CID, L-CID} to the CS sub-layer. The CS sub-layer uses F-CID and L-CID to perform the un-suppression. The resulting packet then is delivered to the upper layer.

2.2 RS CS cub-layer function

For DL traffic forward, when a short-version MAC PDU is received by CPS sub-layer on R-link of an access RS in moving BS mode, the CPS sub-layer on R-link shall send the tuple {SDU, L-CID} to the CS sub-layer. CS sub-layer shall simply provide the tuple to the CS sub-layer on access like where the SDU is delivered to CPS sub-layer on access link of the RS with the CID identified by L-CID. The CPS sub-layer then creates MAC PDU to be delivered to MS.

For UL data forwarding, when a MAC PUD is received on access link of an access RS in moving BS mode, the MAC PDU is delivered to the CS sub-layer with the CID. The SDU and CID are simply sent to the CPS sub-layer on R-link of this RS. The CPS sub-layer then creates a short-version of MAC PDU and sends the short-version MPDU to R-MAC sub-layer for forwarding purpose.

3. Proposed text change

[Add the following section 5.3 CS functions supporting access RS in moving BS mode]

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5.2.3 CS function supporting access RS in moving BS mode

5.2.3.1. MR-BS CS functions supporting access RS in moving BS mode

When a MR-BS works with an access RS in moving BS mode, at each service flow setup, MR-BS establishes a binding between the SFID, L-CID and forwarding connection identity F-CID. The upper layer header suppression, if implemented, is performed on an end-to-end basis.

For DL traffic forwarding, for each of received upper layer packets, the classification in CS on the R-link results in an output {F-CID, L-CID}. The tuple {SDU, F-CID and L-CID} shall be then provided to CPS sub-layer through the SAP. For UL, when a short-version of MAC PDU is received by the CPS sub-layer in R-link of MR-BS, the CPS sub-layer shall send tuple {SDU, F-CID, L-CID} to the CS sub-layer. The CS sub-layer uses F-CID and L-CID to perform the un-suppression. The resulting packet then is delivered to the upper layer.

5.2.3.2 CS functions of access RS in moving BS mode

For DL traffic forward, when a short-version MAC PDU is received by CPS sub-layer on R-link of an access RS in moving BS mode, the CPS sub-layer on R-link shall send the tuple {SDU, L-CID} to the CS sub-layer. CS sub-layer shall simply provide the tuple to the CS sub-layer on access like where the SDU is delivered to CPS sub-layer on access link of the RS with the CID identified by L-CID. The CPS sub-layer then creates MAC PDU to be delivered to MS.

For UL data forwarding, when a MAC PUD is received on access link of an access RS in moving BS mode, the MAC PDU is delivered to the CS sub-layer with the CID. The SDU and CID are simply sent to the CPS sub-layer on R-link of this RS. The CPS sub-layer then creates a short-version of MAC PDU and sends the short-version MPDU to R-MAC sub-layer for forwarding purpose.

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