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Title	A Proposal for Construction and transmission of Relay MAC PDU in 16j network	
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Re:	IEEE 802.16j-07/007r2:“Call for Technical comments and contributions regarding IEEE Project P802.16j”	
Abstract	This document presents a relay MAC PDU format for IEEE 802.16j.	
Purpose	Propose the relay MAC PDU construction/transmission for IEEE 802.16j	
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## A Proposal for Relay MAC PDU Format in 16j Network

### Introduction

As described in current 16j baseline, relay MAC PDU can be transmitted by using the tunnel or station ID. Here we propose a relay MAC PDU format which is transmitted on relay link.

A multihop relay network is illustrated as Figure 1. MR-BS receives PDUs from the network for mobile stations. MR-BS shall create relay MAC PDUs (R-PDUs) for transmission on relay link to the designated RS by encapsulating MS's MAC PDUs to a relay MAC PDU (R-PDU). RS receives the relay MAC PDU and decodes it to regular MAC PDU for its MS.

For multihop relay network, MR-BS encapsulates subordinate R-PDU and MS MAC PDU into a superordinate R-PDU. MR-BS always first create R-PDUs for RS of the last hop and encapsulates the created R-PDU and MS MAC PDUs, if exist and necessary, into a superordinate R-PDU. The above process is repeated until the R-PDU for the RS of the first hop is created. RS of the first hop receives and decodes the R-PDU into regular MS MAC PDUs and R-PDUs, and transmits them to MS and its subordinate RS on access link and relay link respectively.

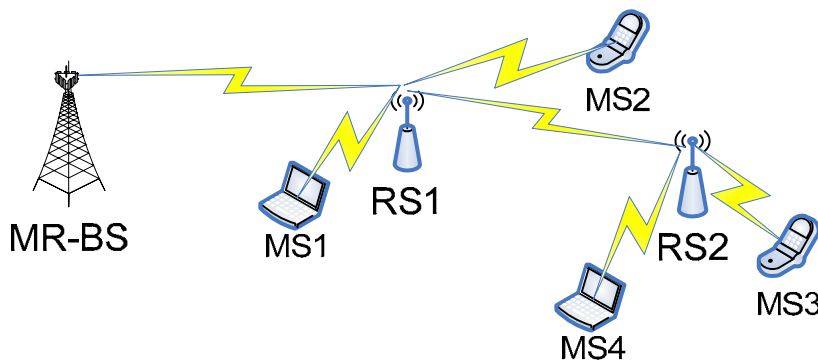


Figure 1

The exemplary format of relay MAC PDU (R-PDU) is illustrated in Figure 2. The R-PDU for RS1 is created by MR-BS and transmitted on relay link to RS1. After RS1 receives this R-PDU, RS1 decodes the R-PDU to R-PDU for RS2 and MAC PDUs for MS1 and MS2. RS1 transmits MAC PDUs for MS on access link and transmits R-PDU to RS2 on relay link. CRC fields can be included in R-PDUs. The PHY burst allocation on which R-PDU is transmitted is addressed to the designated RS which is respected to receive the R-PDU.

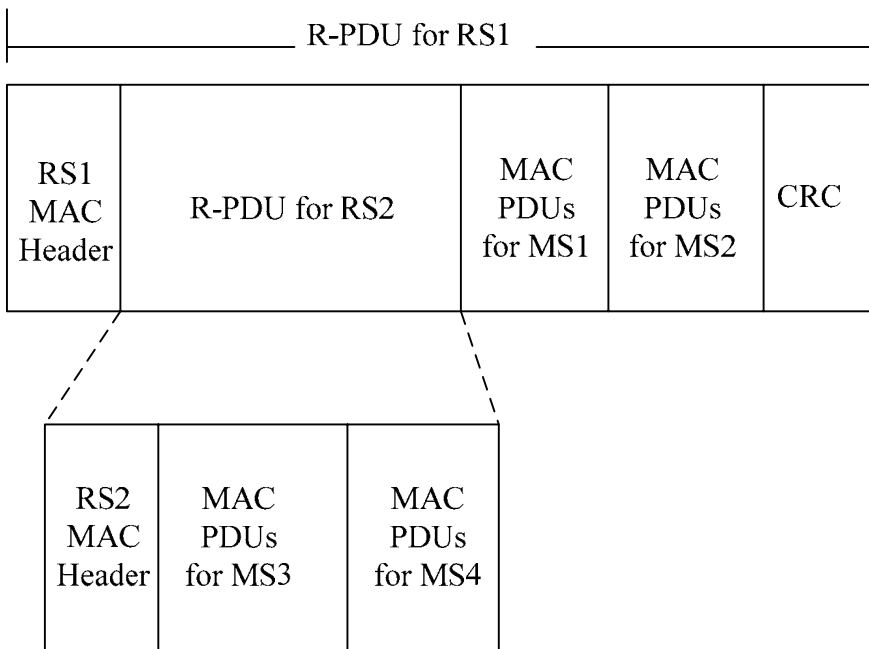


Figure 2

## Specific Text change

[Insert the following paragraph at the end of section 6.3.3.8.1 ]

When the CID encapsulation scheme is used as defined in section 6.3.25.1, a Relay MAC PDU may traverse through multiple tunnels before reaching access station. MR-BS shall be responsible for creating relay MAC PDU with complete routing information by including a T-CID in each nested relay MAC headers. When a Relay MAC PDU traverses through multiple tunnels, the relay MAC PDU is relayed depending on the T-CID in its outermost relay MAC header. Once the MAC PDU arrives at the egress of the tunnel, the station at the egress shall remove the outermost relay MAC header and relays the payload. The payload of MAC PDU may contain one or more relay MAC PDUs and/or one or more 16e MAC PDUs. The Relay MAC PDUs shall be relayed according to T-CID included in the relay MAC headers. In addition, the station at the egress may calculate and attach CRC at the end of the payload before the payload is relayed.

## References

[1] IEEE802.16j-06/026r2 Baseline Document for Draft Standard for 16j