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Re:	A response to a Call for Technical Proposal, http://wirelessman.org/relay/docs/80216j-06_034.pdf	
Abstract	R-MAP in RS_Zone is used for a parent station (MR-BS or RS) to signal the resource assignment in the RS_Zone. This contribution is addressing the format of R-MAP in RS_Zone.	
Purpose	To incorporate the proposed text into the P802.16j Baseline Document (IEEE 802.16j-06/026r1)	
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R-MAP Within RS_Zone

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1. Introduction

R-MAP in RS_Zone is used for a parent station (MR-BS or RS) to signal the resource assignment in the RS_Zone. This contribution is addressing the format of R-MAP in RS_Zone.

2. Proposal

As agreed in the session #46, resource assignment will be done by R-MAP. Theoretically, we can use the similar format of DL-MAP/UL-MAP as defined in IEEE802.16e-2005 for R-MAP. However, this is not very efficient resource assignment for relay station due to the following difference between the assignment to RS and to MS:

- In general, one MR-BS or parent BS serves small number of RS(s), therefore, it is not necessary to have a long CID for resource assignment. Each RS may be addressed by RSID (e.g., 8 bits) which is shorter id than CID used for MS to reduce MAC overhead.
- RS traffic is less burst and amount of traffic is larger than that of a MS due to the fact that the traffic of a RS is the aggregated traffic of multiple MS(s) – Resource granularity could be larger than a slot.
- The link between MR-BS and RS are usually more reliable, so adaptive Modulation/coding rate instead of fixed rate could be used for R-MAP. The coding/modulation could be signaled by R-FCH [1].
- The assignment to a RS could include both DL and UL assignments due to the same fact in bullet 2

Based on above, we propose the following design principles for R-MAP:

- R-MAP is used for the following purposes
  - Unicast resource assignment (unicast RSID)
  - Broadcast resource assignment (broadcast RSID)
- Resource assigned by using basic resource unit BRU (combining multiple slots) or region
  - BRU definition can be broadcast using a R-MAP IE – RS_Zone BAU config IE
  - Region definition can be broadcast using R-MAP IE- RS_Zone region config IE
  - Resource assignment is on BRU level or region level
- For most frequently used unicast resource assignment IE a format as concise as possible shall be defined to reduce unnecessary overhead – we propose a fixed length IE for this.
- Vaiable R-MAP length

- Adaptive coding/modulation for R-MAP
- Only define R-MAP without distinguishing DL R-MAP and UL R-MAP

3. Proposed text change

++++++++++++++++++++++ Start Text ++++++++++++++++++++++++++++++++

3.1 R-MAP message

[Modify the last row in Table 14 in page 46 as follows]

Type	Message name	Message description	Connection
~~62~~ ~~255~~ 67	RS_MAP	Resource assignment message transmitted in RS_Zone	Broadcast
68-255		Reserved	

[Add new sections 6.3.2.3.62 and 6.3.2.3.63 after section 6.3.2.3.61 in page 172]

6.3.2.3.62 R-MAP message

This massage is used for a parent station (MR-BS or RS) to signal the resource assignments to its child RS(s). This message shall be sent within DL RS_Zone. The length and modulation and coding rate are indicated in R-FCH. The message format is shown in Table xxx

Table XXX. R-MAP Message Format.

Syntax	Size	Notes
R-MAP format {		
_Management message type = 67	8 bits	
_Number of IEs	4 bits	Indicates the number of IEs included
_For (i = 0; i<Number of IEs; i++) {		
__R-MAP_IE	Variable	
_}		
}		

[Add new sections 8.4.5.9]

8.4.5.9 R-MAP IE

In this section, various R-MAP IE formats are described.

8.4.5.9.1 RS_Zone BAU configuration IE

This IE is used for a parent RS to broadcast to its child RS the RS_Zone related configurations valid from N th frame count from the current frame. These configurations include the locations of DL RS_Zone and UL RS_Zone and the BRU definition within each of DL and UL RS_Zone. The corresponding BAU assignment IE uses BAU as basic RS resource assignment unit.

Table XXX. RS_Zone BAU_Configuation IE format.

Syntax	Size	Notes
RS_Zone_BAU_Configuration_IE {		
Type	4 bits	0x00
Length	4 bits	Length in byte
OFDM symbol index for DL RS_Zone	8 bits	Indicate the OFDM symbol index starting a DL RS_Zone
Number of OFDM symbols	4 bits	Indicate the number of OFDM symbols a DL RS_Zone occupies
DL BAU	4 bits	Indicate the number of subchannels a DL BRU includes
OFDM symbol index for UL RS_Zone	8 bits	Indicate the OFDM symbol index starting a UL RS_Zone
Number of OFDM symbols	4 bits	Indicate the number of OFDM symbols a UL RS_Zone occupies
UL BRU	4 bits	Indicate the number of slots a UL BRU includes
Number of frames before effective	4 bits	Indicates the number of frames before the configuration takes effect (starting from the current frame)
}		

8.4.5.9.2 RS_Zone region configuration IE

This IE is used for a parent RS to broadcast to its child RS the RS_Zone related configurations valid from N^{th} frame count from the current frame. These configurations include the locations of DL RS_Zone and UL RS_Zone and the region definition within each of DL and UL RS_Zone.

Table XXX. RS_Zone region_Configuation IE format.

Syntax	Size	Notes
RS_Zone_region_Configuration_IE {		
Type	4 bits	0x00
Length	4 bits	Length in byte
OFDM symbol index for DL RS_Zone	8 bits	Indicate the OFDM symbol index starting a DL RS_Zone
Number of OFDM symbols	4 bits	Indicate the number of OFDM symbols a DL RS_Zone occupies
Number of DL region	6 bits	Indicates the number of regions defined in DL RS_zone
For (i =0;i<Number of region;i++) {		
Number of subchannels }	4 bits	Indicate the number of subchannels the region includes
OFDM symbol index for UL RS_Zone	8 bits	Indicate the OFDM symbol index starting a UL

		RS_Zone
Number of OFDM symbols	4 bits	Indicate the number of OFDM symbols a UL RS_Zone occupys
Number of UL region	6 bits	
For (i =0;i<Number of region;i++) {		
Number of slots }	4 bits	Indicate the number of slots the region includes
Number of frames before effective	4 bits	Indicates the number of frames before the configuration takes effect (starting from the current frame)
}		

8.4.5.9.3 BAU Resource assignment IE

This IE is used for resource assignment to a RS or multiple RS using BAU as RS resource assignment unit.

Table XXX. RS_assignment IE format.

Syntax	Size	Notes
RS BAU assignment IE {		
Type	4 bits	0x01
RSID	8 bits	
Number of DL BRU	6 bits	
DL MCS	4 bits	
Number of UL BRU	6 bits	
UL MCS	4 bits	
}		

The BAU size referred in this IE is a system parameter broadcast in RS zone BAU configuration IE.
This IE is length of 4 bytes and no length field is needed.

8.4.5.9.4 Region resource assignment IE

This IE is used for resource assignment to a RS or multiple RS using region as RS resource assignment unit.

Table XXX. RS_Assignment IE Format.

Syntax	Size	Notes
RS assignment IE {		
Type	4 bits	0x01
RSID	8 bits	
DL region ID	6 bits	
DL MCS	4 bits	
UL region ID	6 bits	
UL MCS	4 bits	
}		

The region referred by this IE is defined and broadcast in RS zone region configuration IE.

This IE is length of 4 bytes and no length field is needed.

Reference

[1] IEEE C80216j-06/233: “Frame Structure to Support Relay Node Operations”,