Project	**IEEE 802.16 Broadband Wireless Access Working Group**
Title	**DL and UL Access Zone Allocation for Semi-Distributed RS**
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Re:	This document is in response to IEEE 802.16 Working Group Letter Ballot #28, as specified in IEEE 802.16-07/043. This document proposes text regarding signaling to enable DL and UL access zone allocation for insertion into IEEE P802.16j/D1.
Abstract	This contribution proposes text regarding signaling to enable DL and UL access zone allocation for semi-distributed RS.
Purpose	Text is included for insertion in the IEEE 802.16j amendment to the standard.
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DL and UL Access Zone Allocation for Semi-Distributed RS

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Introduction

In Section 6.3.2.1.2.2.2.6 of IEEE P802.16j/D1, an RS UL size request header is specified by which a distributed RS may request a region of the UL access zone of a certain size under its control. However, in IEEE P802.16j/D1, no means of allocating such a region to a distributed RS is specified. In this contribution, it is proposed to include this allocation in the RS configuration description message (RS-CD) specified in Section 6.3.2.3.73 of the document. Also, means of allocating a region of the DL access zone to a distributed RS is also proposed.

Proposed text changes

Modify subclause 6.3.2.3.73 as follows:

This message may be used by MR-BS to broadcast RS operation configurations to all associated RSs or used by MR-BS or RS to multicast configuration to its child RSs. This message can also be unicast to a RS during initial network entry to inform the configuration parameter to this RS. This message also contains allocations for regions of the DL and UL access zones where an access RS may perform distributed scheduling. The RS UL size request header (Section 6.3.2.1.2.2.2.6) may be used to request a region of the UL access zone of a certain size.

Modify Table 183n in Section 6.3.2.3.73 as follow:

Syntax	Size	Notes
RS-CD_Message_Format{}		
Management Message Type = 79	8 bits	
Configuation_para_type	8 bits	b0 = 1, Frame structure configuration is included b1 = 1, R-amble transmission/monitoring parameters are included b2 =1, Allocation for a region of the DL access zone is included for distributed scheduling b3 =1, Allocation for a region of the UL access zone is included for distributed scheduling b4 – b7: reserved
If(b0 of Configuration_para_type == 1){		
Frame number	4 bits	Frame number to take effect
DL indicator	1 bit	1: indicates DL subframe configuration is included
UL indicator	1 bit	1: indicates UL subframe configuration is included
Reserved	2 bits	
if(DL indicator == 1) {		
Number of frames	8 bits	

for(i=0; i<Number of frame; i++){		
Number of relay zones	2 bits	
reserved	6 bits	
for(j = 0; j<Number of relay zone; j++){		
Transceiver mode	2 bits	00: Tx mode 01: Rx mode 11: Idle mode
OFDMA Symbol Offset	8 bits	
Frame_Config_Duration	6 bits	
}		
}		
}		
if(UL indicator == 1){		
Number of frame	8 bits	
for(i =0; i<Number of frame; i++){		
Number of relay zone		
reserved	6 bits	
for(j = 0; j<Number of relay zone; j++){		
Transceiver mode		
OFDMA Symbol Offset		
Frame_Config_Duration		
}		
}		
}		
If(b1 of Configuration_para_type == 1){		
Start Frame Number	8 bits	8 LSB bits of the frame number at MR-BS
Monitoring_Duration	8 bits	Units are frame
Prefix	2 bits	00: The R-amble transmission and measurement is instructed by MR-BS. 01: The R-amble transmission and measurement

		shall be performed autonomously 10: The RSs shall report its neighbor measurement results 11: reserved
if(Prefix == 00) {		
Interleaving Interval\	8 bits	Units are frame
Iteration Number	8 bits	Units are frame
N_stations	8 bits	Number of stations received this message
For(i=0; i<Iteration; i++){		
Amble Index	8 bits	The RS with the amble index in this list shall transmit the R-amble
}		
for(j=0;j<N_stations - N_Transmitter; j++){		
Amble index	8 bits	The RS with the amble index in this list shall receive the R-amble
}		
}		
}		
If(Prefix = 01){		
Config_type	3 bits	Bit [0] = 1: R-amble for synchronization is present. Bit [0] = 0: R-amble for synchronization is not transmitted. Bit [1] = 1: R-amble for random monitoring is present; Bit [1] = 0: any current monitoring operation is to be stopped by all RSs. Bit [2] = 1: any RS which does not support subordinate RSs should transmit the R-amble for advertisement purpose Bit [2] = 0: any RS which does not support subordinate RSs should not transmit the R-amble
if(Config_type[0] == 1){		
Synchronization cycle	8 bits	N, Units are frame (see subsection 8.4.6.1.1.3.1)

Synchronization frame offset	4 bits	Ks, Units are frame (see subsection 8.4.6.1.1.3.1)
}		
If(Config_type[1] == 1){		
Neighbor monitoring cycle	4 bits	M, Units are frame (see subsection 8.4.6.1.1.3.2)
Neighbor monitoring frame offset	4 bits	Km, Units are frame (see subsection 8.4.6.1.1.3.1)
Neighbor monitoring frame repetition	8 bits	L, Units are frame (see subsection 8.4.6.1.1.3.1)
}		
}		
Report Request	1 bit	0:RSSI 1:CINR
}		
If (b2 of Configuration_para_type == 1){		
OFDMA symbol offset	8 bits	
OFDMA subchannel offset	8 bits	
Number of OFDMA symbols	7 bits	A value of zero indicates no region of the DL access zone is allocated or current region allocation is revoked
Number of subchannels	6 bits	
Reserved	3 bits	Shall be set to zero
}		
If (b3 of Configuration_para_type == 1){		
OFDMA symbol offset	8 bits	
OFDMA subchannel offset	7 bits	
Number of OFDMA symbols	7 bits	A value of zero indicates no region of the UL access zone is allocated or current region allocation is revoked
Number of subchannels	7 bits	
Reserved	3 bits	Shall be set to zero
}		

Encoded TLV	variable	
}		

Modify subclause 6.3.2.1.2.2.2.6 as follows:

Under distributed scheduling, an RS may request size for its region of the UL access zone from the superordinate RS/MR-BS by sending the RS UL Size Request Header. The header specifies the requested size of the RS region of the uplink access zone in ODFMA slots. The header format is illustrated in Figure 35f and Table 19g. The superordinate RS/MR-BS may signal the allocated region of the uplink access zone in the RS-CD message (Section 6.3.2.3.73).

Insert new subclause 6.3.6.7.1.2.3:

UL access region request and allocation in distributed mode with non-transparent RS

It is beneficial to allocate a region of an UL access zone to a distributed non-transparent RS for serving its UL access traffic. Non-overlapping regions may be allocated to the RSs deployed in the same sector, thereby minimizing interference. Each RS performs frame-by-frame scheduling in its UL access region, with longer term allocation of these regions controlled by the superordinate RS/MR-BS. A distributed RS may estimate the required size of its access region based on the MS BW requests and signal this request via the RS UL Size Request Header (Section 6.3.2.1.2.2.2.6). The superordinate RS/MR-BS may signal the allocated region in the RS-CD message (Section 6.3.2.3.73).