Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**	
Title	RS Configuration Description ~~Broadcast~~ Message	
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Re:	A response to a Call for Technical Proposal, http://www.ieee802.org/16/relay/docs/80216j-07_007r2.pdf	
Abstract	With relay station introduced, some configuration parameters specific for normal operation of RS may be required. This contribution introduces a new broadcast message used to broadcast configuration parameters specific for RS operation.	
Purpose	To incorporate the proposed text into the P802.16j Baseline Document (IEEE 802.16j-	

	06/026r2)
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RS Configuration Description Message

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Nortel

1. Introduction

With relay station introduced, some configuration parameters specific for normal operation of RSs ~~may be~~ are required. There are some examples, such as, ranging back-off, radio environment report threshold, HARQ related parameters, frame structure configuration, and so on. In current baseline documents, the configuration for frame structure is sent through Relay frame configuration message (6.3.2.3.77) and the RS-amble transmission/monitoring configuration is sent in RS_Config-REQ message (6.3.2.3.66). The contents included in Relay frame configuration message and contents of RS-amble transmission/monitoring parameters shall be considered as RS system operation parameter configuration.

This contribution suggests to introduce a message called "RS Configuration Description message" dedicated to ~~broadcast~~ declare configuration parameters specific for RS operation thus reducing the types of the 802.16j MAC management messages.

2. Introduction of RS configuration description management messages

In fact, 802.16e DCD and UCD massages can be modified to include those new configurations. However, there are following disadvantages using DCD/UCD for this purpose:

The DCD/UCD would include new TLVs which are not related to the operation of 802.16e MSs. It is not efficient for a MS to decode a lengthy DCD/UCD message

In addition, the change/update of MS related configuration and that of RS related configuration are not

synchronized. Even though a DCD/UCD may only contain updated RS related configuration parameters, an MS has to decode this message.

In current baseline documents, the configuration for frame structure is sent through Relay frame configuration message (6.3.2.3.77) and the RS-amble transmission/monitoring configuration is sent in RS_Config-REQ message (6.3.2.3.66). The contents included in Relay frame configuration message and contents of RS-amble transmission/monitoring parameters shall be considered as RS system operation parameter configuration. We propose to use RS Configuration Description (RS-CD) message to send those configurations to reduce the types of the 802.16j MAC management messages.

The RS-CD message includes configuration parameters for both DL and UL.

3. Proposed text change

[Modify the last row in Table 14 in page 4 as follows]

Type	Message name	Message description	Connection
~~68-255~~ 68	RS~~_CD~~ Configuration Description (RS_CD)	RS specific configuration description sent by ~~M~~MR-BS and forwarded by intermediate RSs	Broadcast to all associated RS of a ~~M~~MR-BS
69-255		Reserved	

[Replace 6.3.2.3.77 by the following]

6.3.2.3.77 RS configuration description message

This massage is used by MR-BS to broadcast RS operation configurations to all associated RSs or used by MR-BS or RS to ~~a broadcast~~ multicast configuration to ~~message among~~ its ~~associated~~ child RSs~~ of a MMRBS~~. ~~This message is transmitted by a MMRBS and forwarded by intermediate RSs. This massge is used by a MMRBS to broadcast description of configuration specific to all of its associated RSs to enable RSs' operations, such as network entry, initialization, and 802.16e traffic forwarding.~~ This message can also be unicast to a RS during

initial network entry to inform the configuration parameter to this RS.

Table XXX. RS_configuration description (RS-CD) message format.

Syntax	Size	Notes
RS_CD format {		
Management message type = 67	8 bits	
Configuration_para_type	8 bits	b0 = 1, Frame Structure-Configuration is included. b1 = 1, R-amble transmission/monitoring parameters are included. b2 - b7: reserved
If (b0 of Configuration_para_type == 1) { TLVs	~~Variable~~	~~Configuration TLV~~
Type of frame}	1 bits	0: single frame approach 1: multiframe approach
Frame Number	4 bits	Frame number to take effect
DL indicator	1 bit	1: indicates DL subframe configuration are included
UL indicator	1 bit	1: indicates UL subframe configuration is included
Reserved	1 bit	
If(Type of frame ==0){		
If (DL indicator ==1){		
Number of relay zones	8 bits	
for (i=0; i< Number of Relay zones; i++) {		
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 relay zones	8 bits	
for (i=0; i< Number of Relay_zones; i++) {		
Transceiver mode	2 bits	
OFDMA Symbol Offset	8 bits	
Frame_Config_Duration	6 bits	
}		
}		
}		
If(Type of frame ==1){		
If (DL indicator ==1){		
Number of frame	8 bits	
for (i=0; i< Number of frame; i++) {		
Transceiver mode	2 bits	00: Tx mode, 01:Rx mode, 11:Idle mode
OFDMA Symbol Offset	8 bits	
Reserved	6 bits	
}		
}		
If (UL indicator ==1){		
Number of frame	8 bits	
for (i=0; i< Number of frame; i++) {		
Transceiver mode	2 bits	00: Tx mode, 01:Rx mode, 11:Idle mode
OFDMA Symbol Offset	8 bits	
Reserved	6 bits	
}		
}		
}		
}		
If (b1 of Configuration_para_type == 1) {		
Start Frame_Number	8 bits	8 LSB bits of the frame number
Monitoring_Duration	8 bits	Units are frames
Prefix	2 bits	00: The R-amble transmission and reception 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 frames
Iteration Number	8 bits	Units are frames
N_stations	8 bits	Number of stations received this message
For (i=0, i< Iteration, i++){		
N_Transmitter	8 bits	Number of stations to transmit the R-amble
For (j=0, j< N_Transmitter , j++){		
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
}		
}		
Encoded TLV	Variable	
}		

Type of frame:

This field indicates whether a single frame approach or multi frame approach is being used.

Frame number:

This is the frame number for the frame configuration to take effect. The system applies the frame configuration in the message starting from the frame number.

DL indicator:

1 indicates that the message include DL subframe configuration.

UL indicator:

1 indicates that the message include UL subframe configuration.

Transceiver mode:

Transceiver mode in the relay zone is one of either Tx mode, Rx mode, or Idle mode. When the transceiver mode is idle mode, it does not transmit nor receive.

OFDMA symbol Offset :

The relay zone starts at the OFDMA symbol Offset.

Duration:

The relay zone ends after the duration starting from the OFDMA symbol offset. The unit of duration is OFDMA symbol.

Number of frame :

This field indicates the number of frames in a multi-frame.

Start Frame Number

The RS shall start transmitting/receiving the R-amble from this designated frame number

Monitoring_Duration

Duration (in units of frames) of the measurement/monitoring/transmission process. If the Monitoring_Duration value is set to 0x00 and prefix is 0b01 monitoring is to be continued until further notice

Interleaving Interval

The period (in units of frames) which is interleaved between the consecutive R-amble transmission/reception opportunity

Iteration

The requested number of iterating intervals

N_Transmitter

Number of stations instructed to transmit R-amble, the station may be RS or MR-BS.

N_Receiver_RS

Number of RSs instructed to receive R-amble

Amble index

R-amble means preamble, midamble or postamble transmitted in relay zone. It will be determined by R-amble location in downlink relay zone.

Synchronization Cycle Length, N

This field is used to indicate the synchronization R-amble period if present

Synchronization Frame Offset, Ks

The offset of the second R-amble in the synchronization cycle

Neighbor Monitoring Frame Repetition Rate, L

This field is used to indicate the neighbor monitoring R-amble period if present

Neighbor Monitoring Frame Offset, Km

The offset of the R-amble in the neighbor monitoring cycle

Neighbor Monitoring Cycle Length, M

This defines the number of neighbor monitoring R-amble frames in an R-amble monitoring cycle

[Insert the text from Page 26, Line 37 until Page 27, line28, and modify as indicated below and insert at the end of Section 6.3.2.3.77. Changes to the existing text is marked using track changes]

~~The MR-BS can send a RS_Config-REQ message to instruct the RSs to transmit or receive the R-amble in relay zone. This message can be sent by either unicast, multicast or broadcast CID of the RSs. An 8 LSB bits of the frame number index will indicate the starting point of the subsequent R-amble transmission/reception opportunities. In order to instruct the stations in different MR-cell to transmit/receive the R-ambles at the same time, a coordinator in backhaul network is needed to ensure the Start Frame Number in the message sent by different MR-BSs will align to the same time.~~

When the Prefix is set as "00", the configuration message as per above (b) is sent, i.e. t~~t~~he RS shall follow the pattern instructed by MR-BS to transmit/receive the R-amble in relay zone. The pattern is composed by the amble index, and the RS shall transmit/receive the R-amble according to the field where its amble index is. Start Frame Number is the 8 LSB bits of frame number index used to indicate the starting point of subsequent R-amble transmission/reception opportunities. In order to coordinate the R-amble transmission/reception in different MR-cell, a coordinator in backhaul network is needed to ensure the Start Frame Number parameters sent in different MR-cell will align to the same time. The transmission opportunities are identified by Monitoring Duration and Interleaving Interval for each iteration. An example is given in Figure x, where the Duration = 2, Interleaving Interval = 3 and the Iteration = 2. When the Iteration is more than one, the pattern for each iteration will be carried in this message. After the last iteration, the RSs shall report the measurement results by RS_NBR-MEAS-REP message defined in 6.3.2.3.63.

[Move Lines 24-28 on Page 27 to the following paragraph as indicated below and insert at the end of Section 6.3.2.3.77.
Changes to the existing text is marked using track changes]

If the Prefix is set "01", the configuration message as per above (c) is sent, i.e., the RS will autonomously transmit/receive the R-amble ~~in relay zone~~ without periodic instruction from MR-BS by defining R-amble repetition patterns and monitoring patterns. The deactivation or activation of the functionalities of individual RSs can be done by sending (unicast) this message during initial entry of an RS. In the case of conflict, broadcast message parameters shall supersede the unicast message parameters except for the case of the parameter M which shall be set only by the unicast message. ~~.~~The detail design of the associated parameters is stated in 8.4.6.1.1.4~~6.3.x.x. The RS is instructed to report its measurement results if the Prefix is set as "10" .~~ When the RS is instructed to transmit/receive the R-amble transmission autonomously, the MR-BS shall send the measurements using standard measurement reporting mechanisms already defined in this document. Alternatively, MR-BS can instruct the RS to report its measurement results by this message with the prefix set as "10".

~~This message is transmitted (unicast or broadcast) by a MMR-BS for the purpose of RS configuration. A MMR-BS can use this message to set operation parameters for a RS. This also can be used to choose the R-amble repetition pattern and to activate or deactivate these monitoring/synchronization processes for a specified period.~~

~~The deactivation or activation of the functionalities of individual RSs can be done by sending (unicast) this message during initial entry of an RS. In the case of conflict, broadcast message parameters shall supersede the unicast message parameters except for the case of the parameter M which shall be set only by the unicast message.~~

[Delete the text of Section 6.6.2.3.66 from Page 26, Line 37 until the end of the Section]