Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**MR_NBR_INFO message enhancement**
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Re:	
Abstract	The document proposes to enhance the MR_NBR_INFO message with the offset of the first RS-zone of the neighbor RSs. The information is useful for fast mobile RS handover.
Purpose	Review and adopt
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Introduction

This contribution proposes to enhance the MR_NBR_INFO [1], [2, section 6.3.2.3.63] message with fields that provide information about the offset of the first RS transmission zone, which usually carries the FCH, DL-MAP and UL-MAP pertaining to RS-to-RS radio link.

This information is useful for fast handover, for establishing multiple paths, as well as neighbor discovery.

A new parameter “RS zone offset” is introduced, which provides the location of the RS zone, which has FCH and MAPs, in terms of the number of OFDMA symbols after the preamble.

Note that the table proposed in [1] has not been properly introduced in the body text as Table 3 in [2, section 6.3.2.3.63].

References

[1] IEEE C80216j-07/139, “Reduced Neighbor Information Generation and Customized Delivery”, Jan. 2007

[2] IEEE C80216j-06/026r2, “Air Interface for Fixed and Mobile Broadband Wireless Access Systems”

Specification Changes

[In section 6.3.2.3.63 replace the Table 3 with the following one]

Table xxx – MR_NBR-INFO message format

Syntax	Size	Notes
MR_NBR-INFO_Message_format(){	-	-
Management Message Type=TBD	8 bits	-
Action Type bitmap	4 bits	Bit [0]: if set to 1, information about all the neighboring stations is present Bit [1]: if set to 1, the neighbors listed here should be appended to the existing neighbor list. Bit [2]: if set to 1, neighbors listed here should be deleted from the existing neighbor list. Bit [3]: if set to 1, information about neighbors listed here should be updated as indicated.
If (Action Type bitmap [0]= =1){	-	-
Skip-optional-files bitmap	8 bits	Bit [0]: if set to 1, omit Operator ID field. Bit [1]: if set to 1, omit NBR BS ID field. Bit [2]: if set to 1, omit HO process optimization field. Bit [3]: if set to 1, omit QoS related fields. Bit [4]: if set to 1, omit RS zone offset Bit [5]–[7]: Reserved.
If (Skip-optional-fields-[0]=0){	-	-
Operator ID	24 bits	Unique ID assigned to the operator.
}	-	-
Fragmentation Index	4 bits	Indicates the current fragmentation index.

Total Fragmentation	4 bits	Indicates the total number of fragmentations.
N_NEIGHBORS	8 bits	Number of neighbors for this RS
For (j=0; j< N_NEIGHBORS;j++){	-	-
Length	8 bits	Length of message information within the iteration of N_NEIGHBOR in bytes.
PHY Profile ID	8 bits	Aggregated IDs of Co-located FA Indicator, FA Configuration Indicator, FFT size, Bandwidth, Operation Mode of the starting subchannelization of a frame and Channel Number.
If (FA Index Indicator = =1){	-	-
FA index	8 bits	This field, Frequency Assignment Index, is present only the FA Index Indicator in PHY Profile ID is set. Otherwise, the neighbor Station has the same FA Index or the center frequency is indicated using the TLV encoded information.
}	-	-
If (Station EIRP Indicator = =1){	-	-
Station EIRP	8 bits	Signed Integer from –128 to 127 in unit of dBm This field is present only if the Station EIRP indicator is set in PHY Profile ID. Otherwise, the Station has the same EIRP as the serving Station.
}	-	-
If (Skip-optional-fields[1]=0){	-	-
Neighbor BSID	24 bits	This is an optional field for OFDMA PHY and it is omitted or skipped if Skip optional fields Flag = 1.
}	-	-
Preamble Index/Subchannel Index	8 bits	This parameter defines the OFDMA PHY specific preamble.
If (Skip-optional-field[2]=0){	-	-

HO Process Optimization	8 bits	HO Process Optimization is provided as part of this message is indicative only. HO process requirements may change at time of actual HO. For each Bit location, a value of '0' indicates the associated reentry management messages shall be required, a value of '1' indicates the reentry management message may be omitted. Regardless of the HO Process Optimization TLV settings, the target Station may send unsolicited SBC-RSP and/ or REGRSP management messages: Bit #0: Omit SBC-REQ/RSP management messages during reentry processing Bit #1: Omit PKM Authentication phase except TEK phase during current re-entry processing Bit #2: Omit PKM TEK creation phase during re-entry processing Bit #3: Omit REG-REQ/RSP management during current re-entry processing Bit #4: Omit Network Address Acquisition management messages during current re-entry processing Bit #5: Omit Time of Day Acquisition management messages during current reentry processing Bit #6: Omit TFTP management messages during current re-entry processing Bit #7: Full service and operational state transfer or sharing between serving station and target station (ARQ, timers, counters, MAC state machines, etc…)
}	-	-
If (Skip-optional-field[3]=0){	-	-
Scheduling Service Supported	8 bits	Bitmap to indicate if Station supports a particular scheduling service. 1 indicates support, 0 indicates not support: Bit #0: Unsolicited Grant Service (UGS) Bit #1: Real-time Polling Service (rtPS) Bit #2: Non-real-time Polling Service (nrtPS) Bit #3: Best Effort Bit #4: Extended real-time Polling Service (ertPS) If the value of bit 0 through bit 4 is 0b00000, it indicates no information on service available. Bits #5–7: Reserved; shall be set to zero.
}	-	-
If (Skip-optional-field[4]==0){	-	-
RS zone offset	8 bits	The offset of the RS zone that has the FCH, DL-MAP and UL-MAP, offset measured in number of symbols after the preamble.
}		
DCD Configuration Change Count	4 bits	This represents the 4 LSBs of the Neighbor Station current DCD configuration change count.
UCD Configuration Change Count	4 bits	This represents the 4 LSBs of the Neighbor Station current DCD configuration change count.
TLV Encoded Neighbor information	variable	TLV specific
}	-	-
}	-	-
If (Action Type bitmap [1]= =1){	-	-

Skip-optional-files bitmap	8 bits	Bit [0]: if set to 1, omit Operator ID field. Bit [1]: if set to 1, omit NBR BS ID field. Bit [2]: if set to 1, omit HO process optimization field. Bit [3]: if set to 1, omit QoS related fields. Bit [4]: if set to 1, omit RS zone offset Bit [5]–[7]: Reserved.
If (Skip-optional-fields-[0]=0){	-	-
Operator ID	24 bits	Unique ID assigned to the operator.
}	-	-
Fragmentation Index	4 bits	Indicates the current fragmentation index.
Total Fragmentation	4 bits	Indicates the total number of fragmentations.
New_N_NEIGHBORS	8 bits	Number of new neighbors for this RS
For (j=0;j<New_N_NEIGHBORS;j++){	-	-
Length	8 bits	Length of message information within the iteration of New_N_NEIGHBOR in bytes.
PHY Profile ID	8 bits	Aggregated IDs of Co-located FA Indicator, FA Configuration Indicator, FFT size, Bandwidth, Operation Mode of the starting subchannelization of a frame and Channel Number.
If (FA Index Indicator = =1){	-	-
FA index	8 bits	This field, Frequency Assignment Index, is present only the FA Index Indicator in PHY Profile ID is set. Otherwise, the neighbor Station has the same FA Index or the center frequency is indicated using the TLV encoded information.
}	-	-
If (Station EIRP Indicator = =1){	-	-
Station EIRP	8 bits	Signed Integer from –128 to 127 in unit of dBm This field is present only if the Station EIRP indicator is set in PHY Profile ID. Otherwise, the Station has the same EIRP as the serving Station.
}	-	-
If (Skip-optional-fields[1]=0){	-	-
Neighbor BSID	24 bits	This is an optional field for OFDMA PHY and it is omitted or skipped if Skip optional fields Flag = 1.
}	-	-
Preamble Index/Subchannel Index	8 bits	This parameter defines the OFDMA PHY specific preamble
If (Skip-optional-field[2]=0){	-	-

HO Process Optimization	8 bits	HO Process Optimization is provided as part of this message is indicative only. HO process requirements may change at time of actual HO. For each Bit location, a value of '0' indicates the associated reentry management messages shall be required, a value of '1' indicates the reentry management message may be omitted. Regardless of the HO Process Optimization TLV settings, the target Station may send unsolicited SBC-RSP and/ or REGRSP management messages: Bit #0: Omit SBC-REQ/RSP management messages during reentry processing Bit #1: Omit PKM Authentication phase except TEK phase during current re-entry processing Bit #2: Omit PKM TEK creation phase during re-entry processing Bit #3: Omit REG-REQ/RSP management during current re-entry processing Bit #4: Omit Network Address Acquisition management messages during current re-entry processing Bit #5: Omit Time of Day Acquisition management messages during current reentry processing Bit #6: Omit TFTP management messages during current re-entry processing Bit #7: Full service and operational state transfer or sharing between serving station and target station (ARQ, timers, counters, MAC state machines, etc…)
}	-	-
If (Skip-optional-field[3]=0){	-	-
Scheduling Service Supported	8 bits	Bitmap to indicate if Station supports a particular scheduling service. 1 indicates support, 0 indicates not support: Bit #0: Unsolicited Grant Service (UGS) Bit #1: Real-time Polling Service (rtPS) Bit #2: Non-real-time Polling Service (nrtPS) Bit #3: Best Effort Bit #4: Extended real-time Polling Service (ertPS) If the value of bit 0 through bit 4 is 0b00000, it indicates no information on service available. Bits #5–7: Reserved; shall be set to zero.
}	-	-
If (Skip-optional-field[4]==0){	-	-
RS zone offset	8 bits	The offset of the RS zone that has the FCH, DL-MAP and UL-MAP, offset measured in number of symbols after the preamble.
}		
DCD Configuration Change Count	4 bits	This represents the 4 LSBs of the Neighbor Station current DCD configuration change count.
UCD Configuration Change Count	4 bits	This represents the 4 LSBs of the Neighbor Station current DCD configuration change count.
TLV Encoded Neighbor information	variable	TLV specific
}	-	-
}	-	-
If (Action Type bitmap[2] = =1){	-	-

Delete_N_NEIGHBORS	8 bits	Number of neighbors shall be deleted for this RS
For (j=0; j<Delete_N_NEIGHBORS;j++){	-	-
Preamble Index	8 bits	Indicates the deleted neighbors
}	-	-
}	-	-
If (Action Type bitmap [3]= =1){	-	-
Skip-optional-files bitmap	8 bits	Bit [0]: if set to 1, omit RS zone offset Bit [2]–[7]: Reserved.
Update_N_NEIGHBORS	8 bits	Number of updated neighbors for this RS
For (j=0; j< Update_N_NEIGHBORS;j++) {	-	-
Length	8 bits	Length of message information within the iteration of Update_N_NEIGHBOR in bytes
Preamble Index	8 bits	Indicates the updated neighbor
If (Skip-optional-field[0]==0){	-	-
RS zone offset	8 bits	The offset of the RS zone that has the FCH, DL-MAP and UL-MAP, offset measured in number of symbols after the preamble.
}		
TLV Encoded Information	variable	TLV specific
}	-	-
}	-	-

[In section 6.3.2.3.63 below the Table 3 insert the following]

RS zone offset

The offset of the RS zone that has the FCH, DL-MAP and UL-MAP, offset measured in number of symbols after the preamble.