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Re:	IEEE P802.16e/D6-2004
Abstract	This contribution proposes some changes of MAC management messages for a byte alignment.
Purpose	Discuss and adopt proposed text.
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Some changes of MAC management messages for a byte alignment

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1 Problem Statement

In IEEE P802.16e/D6 and IEEE P802.16REVd/D5, the length of MAC PDU is presented in unit of byte with LEN field in generic MAC header which is included in MAC Frame. As a result, MAC SDU following the generic MAC header shall have the length in unit of byte. But, Some of MAC Management messages do not observe the rule of byte alignment. Therefore, they need some changes for a byte alignment. It would be helpful for developer to implement the system of IEEE P802.16e/D6 and IEEE P802.16REVd/D5.

2 Proposed Text

We propose some changes of MAC management message for a byte alignment.

[Modify the table 108c – Sleep-Request (MOB_SLP-REQ) message format in Line 13, Page 77 of IEEE802.16e/D6 document as follows]

Table 108c—Sleep-Request (MOB_SLP-REQ) message format

Syntax	Size	Notes
MOB_SLP-REQ_Message_Format () {		
Management message type = 51	8 bits	
Number of Classes	8 bits	Number of power saving classes.
for (i=0; i< Number of Classes; i++) {		
Definition	1 bit	
Operation	1 bit	
Power_Saving_Class_ID	6 bits	
if (Operation = 1) {		
Start_frame_number	6 bits	
Reserved	2 bits	
}		
if (Definition = 1) {		
Power_Saving_Class_Type	2 bits	
Direction	2 bits	
Traffic_triggered_wakening_flag	1 bit	
reserved	3 bits	

initial-sleep window	8 bits	
listening-window	~~4~~ 8bits	
final-sleep window base	10 bits	
final-sleep window exponent	3 bits	
Number_of_CIDs	3 bits	
for (i=0; i<Number_of_Sleep_CIDs; i++ {		
CID	16 bits	
}		
}		
~~**HMAC Tuple**~~	~~21 bytes~~	
}		
HMAC Tuple	21 bytes	
}		

[Modify the table 108d – Sleep-Response (MOB_SLP-RSP) message format in Line 4, Page 80 of IEEE802.16e/D6 document as follows]

Table 108d—Sleep-Response (MOB_SLP-RSP) message format

Syntax	Size	Notes
MOB_SLP-RSP_Message_Format() {		
Management message type = 51	8 bits	
Number of Classes	8 bits	Number of power saving classes.
for (i = 0; i < Number_of_Classes; i++) {		
Length of Data	8 bits	
Definition	1 bit	
Operation	1 bit	
Power_Saving_Class_ID	6 bits	
if (Operation = 1) {		
Start_frame_number	6 bits	
Reserved	2 bits	
if (SHO or FBSS capability enabled) {		
Maintain Active Set and Anchor BSID	1 bit	
if (Active Set and Anchor BS ID BSID maintained) {		
SHO/FBSS duration (s)	3 bits	
}		
}		
} else {		
REQ-duration	8 bits	
}		
if (Definition = 1) {		
Power_Saving_Class_Type	2 bits	

Direction	2 bits	
if (Sleep-approved == 0) {		
REQ-duration	8 bits	
}		
initial-sleep window	8 bits	
listening window	8 bits	
final-sleep window base	10 bits	
final-sleep window exponent	3 bits	
TRF-IND required	1 bit	
Traffic_triggered_wakening_flag	1 bit	
Reserved	1 bit	
if(TRF-IND required) {		
SLPID	10 bits	
Reserved	2 bits	
}		
Number_of_CIDs	4 bits	
for (i = 0; i < Number_of_CIDs; i++) {		
CID	16 bits	
}		
~~if (SHO or FBSS capability enabled) {~~		
~~**Maintain Active Set and Anchor BS ID BSID**~~	~~1 bit~~	
~~if (Active Set and Anchor BS ID BSID main-tained) {~~	~~3 bits~~	
~~**SHO/FBSS duration (s)**~~		
~~}~~		
~~}~~		
}		
Padding	Variable	If needed for alignment to byte boundary
if (Operation = 1) {		
Power Saving Class TLV encoded information		
}		
~~**Padding**~~	~~Variable~~	~~If needed for alignment to byte boundary~~
}		
TLV encoded information		
}		

[Modify the table 108f – MOB_NBR-ADV message format in Line 3, Page 86 of IEEE802.16e/D6 document as follows]

Table 108f—MOB_NBR-ADV message format

Syntax	Size	Notes
MOB_NBR-ADV_Message_Format() {		
Management Message Type = 53	8 bits	
Skip-Optional-Fields 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]-[7]: reserved
If (Skip-Optional-Fields-[0]=0) {		
Operator ID	24 bits	Unique ID assigned to the operator
}		
Configuration Change Count	8 bits	Incremented each time the information for the associated neighbor BS has changed.
Fragmentation Index	4 bits	This field indicates the current fragmentation index.
Total Fragmentation	4 bits	This field indicates the total number of fragmentations.
N_NEIGHBORS	8 bits	
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, Band-width, Operation Mode of the starting sub-channelization 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 BS has the same FA Index or the center frequency is indicated using the TLV encoded information.
}		
if (BS EIRP Indicator == 1) {		
BS EIRP	8 bits	Signed Integer from -128 to 127 in unit of dBm This field is present only if the BS EIRP indicator is set in PHY Profile ID. Otherwise, the BS has the same EIRP as the serving BS.
}		
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	The index for the PHY profile specific pre-amble. Preamble Index is PHY specific for SCa and OFDMA. The value of Preamble Index shall be ignored and a value of '0x00' shall be used for OFDM PHY For the SCa and OFDMA PHY this parameter defines the PHY specific preamble. For the OFDM PHY the 5 LSB contain the active DL subchannel index. The 3 MSB shall be Reserved and set to '0b000'.
if (Skip-Optional-Fields[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 targetBS may send unsolicited SBC-RSP and/ or REG-RSP management messages Bit #0: Omit SBC-REQ/RSP management messages during current re-entry processing Bit #1: Omit PKM-REQ/RSP management message during current re-entry processing Bit #2: Omit REG-REQ/RSP management during current re-entry processing Bit #3: Omit

		Network Address Acquisition management messages during current re-entry processing Bit #4: Omit Time of Day Acquisition management messages during current reentry processing Bit #5: Omit TFTP management messages during current re-entry processing Bit #6: Full service and operational state transfer or sharing between servingBS and target BS (ARQ, timers, counters, MAC state machines, etc…) Bit #7: Reserved
}		
if (Skip-Optional-Fields-[3]=0) {		
Scheduling Service Supported	4 bits	Bitmap to indicate if BS 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 value of '0000' indicates no information on service available
Available Radio Resource	4 bits	Percentage of reported average available subchannels and symbols resources per frame 0000: 0% 0001: 20% 0010: 40% 0011: 60% 0100: 80% 0101: 100% 0110-1110: reserved 0110-1110: reserved value of '1111' indicates no information on service available
~~*Reserved*~~	~~8 bits~~	~~Shall be set to zero~~
}		
DCD Configuration Change Count	4 bits	This represents the 4 LS bits of the Neighbor BS current DCD configuration change count
UCD Configuration Change Count	4 bits	This represents the 4 LS bits of the Neighbor BS current UCD configuration change count
Padding bits	Variable	If needed for alignment to byte boundary
TLV Encoded Neighbor information	Variable	TLV specific
}		
}		

[Modify the table 108k – MOB_SCN-RSP message format in Line 49, Page 94 of IEEE802.16e/D6 document as follows]

Table 108k—MOB_SCN-RSP message format

Syntax	Size	Notes
MOB_SCN-RSP_Message_Format() {		
Management Message Type = 55	8 bits	
Scan duration	8 bits	in frames
if (Scan Duration ==0) {		
HMAC Tuple	21 bytes	
} else {		
Start frame	4 bits	
Scan_type	1 bit	0: Scanning 1: Association
~~**Reserved**~~	~~7 bits~~	~~Shall be set to zero.~~
Interleaving interval	8 bits	Duration in frames
Scan iteration	8 bits	
Report mode	2 bits	0b00 : no report 0b01 : periodic report 0b10 : event triggered report 0b11 : reserved

Scan report period	8 bits	Available when the value of Scan Report is set to 0b01. Scan report period in frames.
reserved	~~2~~ 1 bits	Shall be set to zero.
N_Recommended_BS_String	4 bits	
For (j=0; j<N_Recommended_BS_Scanning; j++) {		N_Recommended_BS can be derived from the length field in the MAC header of the message
Recommended BS ID Scanning	48 bits	BS IDs of Available BS for Association
}		
If (Scan type = 1) {		
N_Recommended BS_Association	4 bits	
For (j=0; j<N_Recommended_BS_Associations; j++) {		
Recommended BS ID Association	48 bits	
Rendevouz_time	16 bits	
}		
~~**HMAC Tuple**~~	~~16 bits~~	
}		
HMAC Tuple	**21 bytes**	
}		
}		

[Modify the table 108l – MOB_SCAN-REPORT message format in Line 4, Page 97 of IEEE802.16e/D6 document as follows]

Table 108l—MOB_SCAN-REPORT message format

Syntax	Size	Notes
MOB_SCAN-REPORT_Message_Format() {		
Management Message Type = 60		
Report Mode	1 bit	00 0: Event-triggering 1: reserved
Reserved	6 bits	
Comp_NBR_BSID_IND	1 bit	
if (Comp_NBR_BSID_IND == 1){		
Configuration Change Count for MOB_NBR_ADV	8 bits	Configuration Change Count value of referring MOB_NBR_ADV message
}		
N_NEIGHBORS	8 bits	
for (i=0; i<N_NEIGHBORS; i++) {		
if (Comp_NBR_BSID_IND == 1){		
Neighbor BS index	8 bits	
}		

else{		
Neighbor BSID	24 bits	The least significant 24 bits of the Neighbor BSID
}		
BS CINR mean	8 bits	
BS RSSI mean	8 bits	
}		
}		

[Modify the table 108m – MOB_BSHO-REQ message format in Line 37, Page 98 of IEEE802.16e/D6 document as follows]

Table 108m—MOB_BSHO-REQ message format

Syntax	Size	Notes
MOB_BSHO-REQ_Message_Format() {		
Management Message Type = 56	8 bits	
Network Assisted HO supported	1 bit	Indicates that the BS supports Network Assisted HO
Mode	3 bits	000: HHO request 001: SHO/FBSS request: Anchor BS update with CID update 010: SHO/FBSS request: Anchor BS update without CID update 011: SHO/FBSS request: Active Set update with CID update 100: SHO/FBSS request: Active Set update without CID update 101: SHO/FBSS request: Active Set update with CID update for newly added BS 110: SHO/FBSS request: Active Set update with CID update and CQICH allocation for newly added BS 111: reserved
If (Mode == 000) {		
N_Recommended	8 bits	
for (j=0 ; j<N_Recommended ; j++) {		N_Recommended can be derived from the known length of the message
Neighbor BSID	48 bits	
Service level prediction	~~8~~ 7 bits	
HO_ID_included_indicator	1 bit	To indicate if the field HO_IND is included
If (HO_ID_included_indicator == 1) {		
HO_ID	8 bits	ID assigned for use in initial ranging to the target BS once this BS is selected as the target BS
}		
}		
}		
else if (Mode == 001) {		
Reserved	*1bit*	
TEMP_BSID	3 bits	TEMP_BS_ID of the recommended Anchor BS
N_CIDs	8 bits	Number of CIDs needed to be reassigned. For SHO, N_CIDs shall be set to zero.

for (i= 0;i<N_CIDs;i++) {		
New CID	16 bits	New CID to be used after Active Set is updated
}		
}		
else if (Mode == 010) {		
Reserved	*1bit*	
TEMP_BS_ID	3 bits	TEMP_BS_ID of the recommended Anchor BS
}		
else if (Mode == 011) {		
N_new_BSs	4~~3~~ bits	Number of new BSs which are recommended to be added to the Active Set of the MS
for (j=0; j<N_new_BSs ; j++) {		
Neighbor BSID	48 bits	
Temp BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1bit*	
}		
N_current_BSs	~~3~~ 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (j=0 ; j<N_current_BSs ; j++) {		
Temp BS-ID BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1bit*	
}		
TEMP_BS_ID_Anchor	~~3~~ 4 bits	Temp BSID for Anchor BS
N_CIDs	8 bits	Number of CIDs needed to be reassigned
for (j=0 ; j<N_CIDs ; j++) {		
New_CID	16 bits	New CID to be used after Active Set is updated
}		
}		
else if (Mode == 100) {		
N_new_BSs	4~~3~~ bits	Number of new BSs which are recommended to be added to the Active Set of the MS
for (j=0 ; j<N_new_BSs ; j++) {		
Neighbor BSID	48 bits	
Temp BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1bit*	
}		

N_current_BSs	~~3~~ 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (j=0 ; j<N_current_BSs ; j++) {		
Temp_ BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1bit*	
}		
TEMP_BS_ID_Anchor	3 bits	Temp_ BSID for Anchor BS
Reserved	*1bit*	
}		
else if (Mode == 101) {		
N_new_BSs	~~3~~ 4 bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8 bits	Number of CIDs needed to be reassigned
for (i= 0; i < N_new_BSs; i++) {		
Neighbor BS_ID	48 bits	
TEMP_BS_ID	3 bits	Active Set member ID assigned to this BS
Reserved	*1bit*	
for (j= 0;j<N_CIDs;j++) {		
New CID for BS_i	16 bits	New CID to be used for new BS_i
}		
}		
N_current_BSs	~~3~~ 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (i=0;i< N_current_BSs;i++) {		
TEMP_BS_ID	3 bits	Active Set member ID assigned to this BS
Reserved	*1bit*	
}		
TEMP_BS_ID_Anchor	3 bits	Temp_BSID for Anchor BS
Reserved	*1bit*	
}		
else if (Mode == 110) {		
N_new_BSs	~~4~~ 3 bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8 bits	Number of CIDs needed to be allocated
for (i= 0; i < N_new_BSs; i++) {		
Neighbor BS_ID	48 bits	

TEMP_BS_ID	3 bits	Active Set member ID assigned to this BS	
Reserved	*1bit*		
~~**Service level prediction**~~	~~8 bits~~		
for (j= 0;j<N_CIDs;j++) {			
New CID for BS_i	16 bits	New CID to be used for new BS_i	
}			
CQICH_ID	Variable	Index to uniquely identify he CQICH resource assigned to the MS after the MS switched to the new anchor BS	
Feedback channel offset	6 bits	Index to the fast feedback channel region of the new Anchor BS marked by UIUC	
Period (=p)	2 bits	A CQI feedback is transmitted on the CQICH every 2^p frames	
Frame offset	3 bits	The SS starts reporting at the frame of which the number has the same 3 LSB as the specified frame offset. If the current frame is specified, the SS should start reporting in 8 frames	
Duration (=d)	3 bits	A CQI feedback is transmitted on the CQI channels indexed by the CQICH_ID for 10 x 2^d frames. If d == 0, the CQI-CH is de-allocated. If d == 111, the SS should report until the BS com-mand for the SS to stop	
MIMO_permutation_feedback_cycle	2 bits	00 = No MIMO and permutation mode feedback 01 = the MIMO and permutation mode indication shall be transmitted on the CQICH indexed by the CQICH_ID every 4 frames. The first indication is sent on the 8thCQICH frame. 10 = the MIMO mode and permultation mode indi-cation shall be transmitted on the CQICH indexed by the CQICH_ID every 8 frames. The first indica-tion is sent on the 8thCQICH frame. 11 = the MIMO mode and permultation mode indi-cation shall be transmitted on the CQICH indexed by the CQICH_ID every 16 frames. The first indi-cation is sent on the 16thCQICH frame 灬ㅇ	
}			
N_current_BSs	~~3~~ 4bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set	
for (i=0;i< N_current_BSs;i++) {			
TEMP_BS_ID	3 bits	Active Set member ID assigned to this BS	
Reserved	*1bit*		
}			
TEMP_BS_ID_Anchor	3 bits	Temp BSID for Anchor BS	
Reserved	*1bit*		
}			

Action time	8 bits	
padding	variable	Padding bits to ensure byte aligned
HMAC Tuple	21 bytes	See 11.1.2
}		

[Modify the table 108n – MOB_MSHO-REQ message format in Line 1, Page 104 of IEEE802.16e/D6 document as follows]

Table 108n—MOB_MSHO-REQ message format

Syntax	Size	Notes
MOB-_MSHO-REQ_Message_Format() {		
Management Message Type = 57	8 bits	
Comp_NBR_BSID_IND	1 bit	
if (Comp_NBR_BSID_IND == 1){		
Configuration Change Count for MOB_NBR_ADV	8 bits	Configuration Change Count value of refer-ring MOB_NBR_ADV message
}		
N_new_BSs	3 bits	Number of new BSs which are recommended by the MS
for (j=0; j<N_New_BSs; j++){		N_Recommended can be derived from the known length of the message
if (Comp_NBR_BSID_IND == 1){		
Neighbor BS index	8 bits	
}		
else{		
Neighbor BSID	48 bits	
}		
Preamble index/ Preamble Present & Sub-channel Index	8 bits	For the SCa and OFDMA PHY this parame-ter defines the PHY specific preamble for the neighbor BS. For the OFDM PHY the 5 LSB contain the active DL subchannel index for the neighbor BS. The 3 MSB shall be Reserved and set to '0b000'.
BS CINR mean	8 bits	
Service level prediction	3 bits	
Arrival Time Difference Indication	1 bit	If the MS is transmitting this message to request HHO or SHO/FBSS is not supported by either BS or MS, this bit shall be set to '0'
If (Arrival Time Difference Indication == 1) {		

Arrival Time Difference (t)	4 bits	Relative difference in arrival time between the neighbor BS and the anchor BS, in terms of fraction of CP
}		
}		
if (SHO/FBSS support indication == 1)		
Temp BS-ID BSID	4 bits	
BS CINR mean	8 bits	
}		
Estimated HO start	8 bits	The estimated HO time shall be the time for the recommended target BS.
Padding	variable	Padding bits to ensure byte aligned.
HMAC Tuple	21 bytes	See 11.1.2
~~Padding~~	~~variable~~	~~Padding bits to ensure byte aligned.~~
}		

[Modify the table 108o – MOB_BSHO-RSP message format in Line 24, Page 106 of IEEE802.16e/D6 document as follows]

Table 108o—MOB_BSHO-RSP message format

Syntax	Size	Notes
MOB-_BSHO-RSP_Message_Format() {		
Management Message Type = 58	8 bits	
Reserved	*1 bit*	
Mode	3 bits	0b000: HHO request 0b001: SHO/FBSS request: Anchor BS update with CID update 0b010: SHO/FBSS request: Anchor BS update without CID update 0b011: SHO/FBSS request: Active Set update with CID update 0b100: SHO/FBSS request: Active Set update without CID update 0b101: SHO/FBSS request: Active Set update with CID update for newly added BS 0b110: : SHO/FBSS request: : Active Set update with CID update and CQICH allocation for newly added BS 0b111: *reserved*
If (Mode == 0b000) {		
N_Recommended	8 bits	
For (j=0 ; j<N_Recommended ; j++) {		Neighbor base stations shall be presented in an order such that the first presented is the one most recommended and the last presented is the least recommended.
Neighbor BSID	48 bits	

Preamble index/ Preamble Present & Subchannel	8 bits	For the SCa and OFDMA PHY this parameter defines the PHY specific preamble for the neighbor BS. For the OFDM PHY the 5 LSB contain the active DL subchannel index for the neighbor BS. The 3 MSB shall be Reserved and set to '0b000'.
Service level prediction	8 7 bits	
HO process optimization	8 bits	
HO_ID_included_indicator	1 bit	Iindicates if the field HO_IND is included
If (HO_ID_included_indicator == 1) {		
HO_ID	8 bits	ID assigned for use in initial ranging to the target BS once this BS is selected as the target BS
}		
}		
}		
else if (Mode == 0b001) {		
Reserved	*1 bit*	
Temp BSID	3 bits	TEMP_BSID of the recommended Anchor BS
N_CIDs	8 bits	Number of CIDs needed to be reassigned. For SHO, N_CIDs shall be set to zero.
for (i= 0;i<N_CIDs;i++) {		
New CID	16 bits	New CID to be used after Active Set is updated
}		
}		
else if (Mode == 0b010) {		
Temp BSID	3 bits	TEMP_BSID of the recommended Anchor BS
Reserved	*1 bit*	
}		
else if (Mode == 0b011) {		
N_new_BSs	4 3 bits	Number of new BSs which are recommended to be added to the Active Set of the MS
for (j=0; j<N_new_BSs ;j++){		
Neighbor BSID	48 bits	
Temp BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
}		

N_current_BSs	3 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (j=0 ; j<N_current_BSs ; j++) {		
Temp BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
}		
TEMP_BS_ID_Anchor	3 bits	Temp BSID for Anchor BS
Reserved	*1 bit*	
N_CIDs	8 bits	Number of CIDs needed to be reassigned
for (j=0; j<N_CIDs ; j++) {		
New_CID	16 bits	New CID to be used after Active Set is updated
}		
}		
else if (Mode == 0b100) {		
N_new_BSs	4 3 bits	Number of new BSs which are recommended to be added to the Active Set of the MS
for (j=0; j<N_new_BSs ;j++){		
Neighbor BSID	48 bits	
Temp BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
}		
N_current_BSs	3 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (j=0 ; j<N_current_BSs ; j++) {		
Temp BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
Service level prediction	8 bits	
}		
TEMP_BSID_Anchor	3 bits	Temp BSID for Anchor BS
Reserved	*1 bit*	
}		
else if (Mode == 101) {		
N_new_BSs	4 3 bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8 bits	Number of CIDs needed to be reassigned

for (i= 0; i < N_new_BSs; i++) {		
Neighbor BSID	48 bits	
TEMP_BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
for (j= 0;j<N_CIDs;j++) {		
New CID for BS_i	16 bits	New CID to be used for new BS_i
}		
}		
N_current_BSs	3 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (i=0;i< N_current_BSs;i++) {		
TEMP_BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
}		
TEMP_BSID_Anchor	3 bits	Temp BSID for Anchor BS
Reserved	*1bit*	
}		
else if (Mode == 110) {		
N_new_BSs	3 4 bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8 bits	Number of CIDs needed to be reassigned
for(i= 0; i < N_new_BSs;i++) {		
Neighbor BSID	48 bits	
TEMP_BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
for (j= 0;j<N_CIDs;j++) {		
New CID for BS_i	16 bits	New CID to be used for new BS_i
}		
CQICH_ID	Variable	Index to uniquely identify he CQICH resource assigned to the MS after the MS switched to the new anchor BS
Feedback channel offset	6 bits	Index to the fast feedback channel region of the new Anchor BS marked by UIUC
Period (=p)	2 bits	A CQI feedback is transmitted on the CQICH every 2^p frames
Frame offset	3 bits	The SS starts reporting at the frame of which the number has the same 3 LSB as the specified frame offset. If the current frame is specified, the SS should start reporting in 8 frames

Duration (=d)	3 bits	A CQI feedback is transmitted on the CQI channels indexed by the CQICH_ID for 10 x 2^d frames. If d == 0, the CQI-CH is de-allocated. If d == 111, the SS should report until the BS com-mand for the SS to stop
MIMO_permutation_feedback_cycle	2 bits	00 = No MIMO and permutation mode feedback 01 = the MIMO and permutation mode indication shall be transmitted on the CQICH indexed by the CQICH_ID every 4 frames. The first indication is sent on the 8thCQICH frame. 10 = the MIMO mode and permultation mode indi-cation shall be transmitted on the CQICH indexed by the CQICH_ID every 8 frames. The first indica-tion is sent on the 8thCQICH frame. 11 = the MIMO mode and permultation mode indi-cation shall be transmitted on the CQICH indexed by the CQICH_ID every 16 frames. The first indi-cation is sent on the 16thCQICH frame
}		
N_current_BSs	3 4 bits	Number of BSs currently in the Active Set of the MS, which are recommended to be remained in the Active Set
for (i=0;i< N_current_BSs;i++) {		
TEMP_BSID	3 bits	Active Set member ID assigned to this BS
Reserved	*1 bit*	
}		
TEMP_BSID_Anchor	3 bits	Temp BSID for Anchor BS
Reserved	*1 bit*	
}		
Action time	8 bits	
Resource Remain Type	1 bit	0: MS resource release 1: MS resource retain
padding	variable	Padding bits to ensure byte aligned.
TLV encoded information	Variable	TLV specific
HMAC Tuple	21 bytes	See 11.1.2
}		

[Modify the table 108p – MOB_HO-IND message format in Line 37, Page 111 of IEEE802.16e/D6 document as follows]

Table 108p—MOB_HO-IND message format

Syntax	Size	Notes
MOB_HO-IND_Message_Format() {		

Management Message Type = 59	8 bits	
reserved	4~~6~~ bits	Reserved; shall be set to zero
Mode	2 bits	0b00: HHO request 0b01: SHO/FBSS request: Anchor BS update 0b10: SHO/FBSS request: Active Set update 0b11: reserved
if (Mode == 0b00) {		
HO_IND_type	2 bits	0b00: servingBS release 0b01: HO cancel 0b10: HO reject 0b11: reserved
if (HO_IND_type == 0b00) {		
Target_BS_ID	48 bits	Applicable only when HO_IND-type is set to 0b00.
}		
}		
if (Mode == 0b01) {		
SHOFBSS_IND_Type	2 bits	0b00: confirm Anchor BS update 0b01: Anchor BS update cancel 0b10: Anchor BS update reject 0b11: reserved
if (SHOFBSS_IND_Type == 0b00) {		
Reserved	*1 bit*	
Anchor BSID	3 bits	TEMP_BSID of the Anchor BS
Action time	8 bits	Action time when the Anchor BS shall be updated
}		
}		
if (Mode == 0b10) {		
SHOFBSS_IND_Type	2 bits	0b00: confirms Active Set update 0b01: Active Set update cancel 0b10: Active set update reject 0b11: reserved
if (SHOFBSS_IND_Type == 0b00) {		
Reserved	*1 bit*	
Active Set Included Indicator	1 bit	1: Final decision of Active Set members included in the message 0: Active Set members are as specified in MOB_xxHO_RSP message. No Active Set information included in this message.
if (Active Set Included Indicator == 1) {	~~3 bits~~	
Anchor BSID	3 bits	TEMP_BSID of the Anchor BS
N_BSs	3 bits	Number of BS in the Active Set, excluding the Anchor BS
for (j=0 ; j<N_BSs ; j++) {		

Temp BSID	3 bits	Active Set member ID assigned
Reserved	*1 bit*	
}		
}	8 bits	
Action time	8 bits	Action time when the Anchor BS shall be updated
}		
}		
Preamble index/ Subchannel Index	8 bits	For the SCa and OFDMA PHY this parameter defines the PHY specific preamble for the target BS. For the OFDM PHY the 5 LSB contain the active DL subchannel index for the target BS. The 3 MSB shall be Reserved and set to '0b000'.
Padding	0 or 4 bits variable	Padding bits to ensure byte alignment. Shall be set to zero.
HMAC Tuple	21 bytes	See 11.1.2
}		

[Modify the table 108q – BS Broadcast Paging (MOB_PAG-ADV) message format in Line 35, Page 113 of IEEE802.16e/D6 document as follows]

Table 108q—BS Broadcast Paging (MOB_PAG-ADV) message format

Syntax	Size	Notes
MOB_PAG-ADV_Message_Format() {		
Management Message Type=62	8 bits	
Num_Paging_Group_IDs	8 bits	Number of Paging Group IDs in this message
for (i=0; i<Num_Paging_Group_IDs; i++) {		
Paging Group ID	8 bits	
}		
Num_MACs	8 bits	Number of MS MAC addresses
for (j=0; j<Num_MACs; j++) {		
MS MAC Address hash	24 bits	The hash is obtained by computing a CRC24 on the MS 48-bit MAC address. The polynomial for the calculation is 0x864CFB

Action Code	2 bit	Paging action instruction to MS 00=No Action Required 01=Perform Ranging to establish location and acknowledge message 10=Enter Network 11=reserved	
Reserved	6 bits		
}			
TLV Encoded Information	variable	TLV specific	
padding	variable	Padding bits to ensure octet aligned	
}			