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Title	**SAID Update on SHO/FBSS**
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Re:	IEEE P802.16e/D6
Abstract	This contribution proposes SAID update through HO MAC management message during SHO/FBSS operation.
Purpose	Discussion and Adoption in IEEE 802.16e
Notice	
Release	
Patent Policy and Procedures	

SAID Update on SHO/FBSS

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Problem Statement

When CIDs need to be reassigned during SHO/FBSS operation, serving BS notifies MS of updated CIDs through MOB-BSHO-REQ message and MOB-BSHO-RSP message. In addition to CIDs, SAIDs may also need to be reallocated during SHO/FBSS operation. These updated SAIDs should be included in MOB_BSHO-REQ/RSP.

Suggested Remedy

6.3.2.3.51 BS HO Request (MOB_BSHO-REQ) message

[Modify Table 108m]

Syntax	Size	Notes
MOB_BSHO-REQ_Message_Format() {		
Management Message Type = 56	8 bits	
Network Assisted HO supported	1bit	Indicates that the BS supports Network Assisted HO
Mode	3bits	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	8bits	
For(j=0; j<N_Recommended; j++){		N_Recommended can be derived from the known length of the message
Neighbor BSID	48bits	

Syntax	Size	Notes
Service level prediction	8bits	
HO_ID_included_indicator	1bit	To indicate if the field HO_ID is included
If(HO_ID_included_indicator ==1){		
HO_ID	8bits	ID assigned for use in initial ranging to the target BS once this BS is selected as the target BS
}		
}		
}		
else if(Mode == 001){		
TEMP_BSID	3bits	TEMP_BSID of the recommended Anchor BS
N_CIDs	8bits	Number of CIDs needed to be reassigned.
For(i=0; i<N_CIDs; i++){		
New CID	16bits	New CID to be used after Anchor BS is updated
}		
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_SAIDs; i++){		
New SAID	16bits	New SAID to be used after Anchor BS is updated
}		
}		
else if(Mode == 010){		
TEMP_BSID	3bits	TEMP_BSID of the recommended Anchor BS
}		
else if(Mode == 011){		
N_new_BSs	3bits	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	48bits	
TEMP_BSID	3bits	Active Set member ID assigned to this BS
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP BSID for Anchor BS
N_CIDs	8bits	Number of CIDs needed to be reassigned
For(j=0;j<N_CIDs; j++){		
New_CID	16bits	New CID to be used after Active Set is updated
}		
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_SAIDs; i++){		
New SAID	16bits	New SAID to be used after Active Set is updated
}		
}		
else if(Mode == 100){		
N_new_BSs	3bits	Number of new BSs which are recommended to be added to the Active Set of the MS

Syntax	Size	Notes
For(j=0; j<N_new_BSs; j++){		
Neighbor BSID	48bits	
TEMP BSID	3bits	Active Set member ID assigned to this BS
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP_BSID for Anchor BS
}		
else if(Mode == 101){		
N_new_BSs	3bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8bits	Number of CIDs needed to be reassigned
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_new_BSs; i++){		
Neighbor BSID	48bits	
TEMP_BSID	3bits	Active Set member ID assigned to this BS
Service level prediction	8bits	
For(j=0; j<N_CIDs; j++){		
New CID for BS_i	16bits	New CID to be used for new BS_i
}		
For(i=0; i<N_SAIDs; i++){		
New SAID for BS_i	16bits	New SAID to be used for new BS_i
}		
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP_BSID for Anchor BS
}		
else if(Mode == 110){		
N_new_BSs	3bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8bits	Number of CIDs needed to be reassigned
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_new_BSs; i++){		
Neighbor BSID	48bits	
TEMP_BSID	3bits	Active Set member ID assigned to this BS
For(j=0; j<N_CIDs; j++){		
New CID for BS_i	16bits	New CID to be used for new BS_i
}		
For(i=0; i<N_SAIDs; i++){		
New SAID for BS_i	16bits	New SAID to be used for new BS_i

Syntax	Size	Notes
}		
CQICH_ID	Variable	Index to uniquely identify the CQICH resource assigned to the MS after the MS switched to the new Anchor BS
Feedback channel offset	6bits	Index to the fast feedback channel region of the new Anchor BS marked by UIUC
Period (=p)	2bits	A CQI feedback is transmitted on the CQICH every 2^p frames
Frame offset	3bits	The SS starts reporting at the frame of which the number has the same 3LSB as the specified frame offset. If the current frame is specified, the SS should start reporting in 8frames
Duration (=d)	3bits	A CQI feedback is transmitted on the CQI channels indexed by the CQICH_ID for 10 x 2^d frames. If d==0, the CQICH is de-allocated. If d==111, the SS should report until the BS command for the SS to stop
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP BSID for Anchor BS
}		
Action Time	8bits	
Padding	Variable	Padding bits to ensure byte aligned.
HMAC Tuple	21bytes	See 11.1.2
}		

[Add the followings at line 48 page 103]

N_SAIDs – Number of SAIDs need to be assigned
New SAID – New SAIDs are enumerated by the ascending order of corresponding current SAIDs. The MS shall store the SAIDs associated with the newly added BS and using the SAIDs when the newly added BS becomes the anchor BS.

6.3.2.3.53 BS HO Response (MOB_BSHO-RSP) message

[Modify Table 108o]

Syntax	Size	Notes
MOB_BSHO-RSP_Message_Format() {		
Management Message Type = 58	8 bits	
Mode	3bits	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	8bits	
For(j=0; j<N_Recommended; j++){		N_Recommended can be derived from the known length of the message
Neighbor BSID	48bits	
Preamble Index/Preamble Present & Subchannel Index	8bits	For the SCa and OFDMA PHY this parameter defines the PHY specific preamble for the neighbor BS. For the OFDM PHY the 5LSB contain the active DL subchannel index for the neighbor BS.The 3 MSB shall be Reserved and set to '0b000'.
Service level prediction	8bits	
HO process optimization	8bits	
HO_ID_included_indicator	1bit	Indicates if the field HO_ID is included
If(HO_ID_included_indicator ==1){		
HO_ID	8bits	ID assigned for use in initial ranging to the target BS once this BS is selected as the target BS
}		
}		
}		
else if(Mode == 0b001){		
TEMP_BSID	3bits	TEMP_BSID of the recommended Anchor BS
N_CIDs	8bits	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	16bits	New CID to be used after Anchor BS is updated
}		
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_SAIDs; i++){		
New SAID	16bits	New SAID to be used after Anchor BS is updated
}		
}		
else if(Mode == 0b010){		

Syntax	Size	Notes
TEMP_BSID	3bits	TEMP_BSID of the recommended Anchor BS
}		
else if(Mode == 0b011){		
N_new_BSs	3bits	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	48bits	
TEMP_BSID	3bits	Active Set member ID assigned to this BS
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP BSID for Anchor BS
N_CIDs	8bits	Number of CIDs needed to be reassigned
For(j=0;j<N_CIDs; j++){		
New_CID	16bits	New CID to be used after Active Set is updated
}		
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_SAIDs; i++){		
New SAID	16bits	New SAID to be used after Active Set is updated
}		
}		
else if(Mode == 0b100){		
N_new_BSs	3bits	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	48bits	
TEMP BSID	3bits	Active Set member ID assigned to this BS
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
Service level prediction	8bits	
}		
TEMP_BSID_Anchor	3bits	TEMP_BSID for Anchor BS
}		
else if(Mode == 0b101){		
N_new_BSs	3bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8bits	Number of CIDs needed to be reassigned
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_new_BSs; i++){		
Neighbor BSID	48bits	

Syntax	Size	Notes
TEMP_BSID	3bits	Active Set member ID assigned to this BS
For(j=0; j<N_CIDs; j++){		
New CID for BS_i	16bits	New CID to be used for new BS_i
}		
For(i=0; i<N_SAIDs; i++){		
New SAID for BS_i	16bits	New SAID to be used for new BS_i
}		
}		
N_current_BSs	3bits	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	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP_BSID for Anchor BS
}		
else if(Mode == 0b110){		
N_new_BSs	3bits	Number of new BSs which are recommended to be added to the Active Set of the MS
N_CIDs	8bits	Number of CIDs needed to be reassigned
N_SAIDs	8bit	Number of SAIDs need to be reassigned.
For(i=0; i<N_new_BSs; i++){		
Neighbor BSID	48bits	
TEMP_BSID	3bits	Active Set member ID assigned to this BS
For(j=0; j<N_CIDs; j++){		
New CID for BS_i	16bits	New CID to be used for new BS_i
}		
For(i=0; i<N_SAIDs; i++){		
New SAID for BS_i	16bits	New SAID to be used for new BS_i
}		
CQICH_ID	Variable	Index to uniquely identify the CQICH resource assigned to the MS after the MS switched to the new Anchor BS
Feedback channel offset	6bits	Index to the fast feedback channel region of the new Anchor BS marked by UIUC
Period (=p)	2bits	A CQI feedback is transmitted on the CQICH every 2^p frames
Frame offset	3bits	The SS starts reporting at the frame of which the number has the same 3LSB as the specified frame offset. If the current frame is specified, the SS should start reporting in 8frames
Duration (=d)	3bits	A CQI feedback is transmitted on the CQI channels indexed by the CQICH_ID for 10 x 2^d frames. If d==0, the CQICH is de-allocated. If d==111, the SS should report until the BS command for the SS to stop
}		
N_current_BSs	3bits	Number of BSs currently in the Active Set of the

Syntax	Size	Notes
		MS, which are recommended to be remained in the Active Set
For(i=0; i<N_current_BSs; i++){		
TEMP_BSID	3bits	Active Set member ID assigned to this BS
}		
TEMP_BSID_Anchor	3bits	TEMP BSID for Anchor BS
}		
Action Time	8bits	
Resource Remain Type	1bit	0: MS resource release 1: MS resource retain
Padding	Variable	Padding bits to ensure byte aligned.
TLV encoded information	Variable	TLV specific
HMAC Tuple	21bytes	See 11.1.2
}		