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Re:	IEEE 802.16h-06/015 – Working Group Review
Abstract	Provides the MAC Messages and clarifications of CP general format
Purpose	
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MAC support and the general structure of the Coexistence Protocol messages

Mariana Goldhamer (Alvarion)

Introduction

The basic format for the CP messages intends the encapsulation of the messages over the MAC or over the Internet Protocol. The CP are defined as MAC Management messages, using the generic MAC header. However, no MAC Messages were yet defined. This contribution provides the MAC messages definition and clarification to the text presenting the general CP Message format.

Coexistence Protocol Messages – MAC Encapsulation

The existing WD mentions:

"The Coexistence Protocol employs two MAC message types: CP Request (CP-REQ) and CP Response (CPRSP), as described in Table h 7.

Table h7—CP MAC messages

Type Value	Message name	Message description
0	CP-REQ	Coexistence Resolution and Negotiation Request
1	CP-RSP	Coexistence Resolution and Negotiation Response

These MAC management messages are exchanged between peers, e.g. BS and BSIS or BS and BS or BS and SS., and distinguish between CP requests (BS -> BS/BSIS/SS or SS-> BS) and CP responses (BS/BSIS/SS -> BS or SS->BS). Each message encapsulates one CP message in the Management Message Payload."

We recognize that MAC messages can be transmitted only between SS←> BS, while the Internet Protocol can provide the above-mentioned connectivity. However, the "Control time-slot "to be used for CSI, CMI and eventually BS-BS communication can be used for extending the achievable connectivity with MAC messages.

Proposed changes to the Working Document – sect. 6

Add after 6.3.2.3.68

6.3.2.3.69 Coexistence Protocol Request message (CP-REQ)

This message encapsulates the Coexistence Protocol Request messages.

CP-REQ is a broadcast message and shall include the following parameters:

Requesting BSID: the BSID of the BS requesting an action through the Coexistence Protocol

Target BSID: the BSID of the BS that should receive the message or the BSID of the Base Station Identification Server
CP_Message: this is a TLV described in the paragraph 15.5.2

CP-REQ has the following format:

Syntax	Size	Notes

CP-REQ_Message_Format () {		
Management Message Type = 69	**8 bits**	
CP_Message	**variable**	**See the description of the Coexistence Protocol messages in 15.5.2**
}		

6.3.2.3.70 Coexistence Protocol Response message (CP-RSP)

This message encapsulates the Coexistence Protocol Response messages.

CP-RSP is a broadcast message and shall include the following parameters:

CP_Message: this is a TLV described in the paragraph 15.5.2

CP-RSP has the following format:

Syntax	**Size**	**Notes**
CP-REQ_Message_Format () {		
Management Message Type = 70	8 bits	
CP_Message	variable	See the description of the Coexistence Protocol messages in 15.5.2
}		

Proposed changes to the Working Document – sect. 15.5.2 - Coexistence Protocol (CP) messages CP-REQ/CP-RSP

Change the text below:

Coexistence Protocol employs two ~~MAC~~ message types: CP Request (CP-REQ) and CP Response (CP-RSP), as described in Table h7.

Table h7 - CP ~~MAC~~ messages

CP - Type Value	Message name	Message description
0	CP-REQ	Coexistence Resolution and Negotiation Request
1	CP-RSP	Coexistence Resolution and Negotiation Response

These CP messages can be encapsulated as MAC Messages, over the 802.16 air interface, or as Internet Protocol messages (TCP/IP or UDP). The CP~~MAC~~ management messages are exchanged between peers, e.g. BS and BSIS or BS and BS or BS and SS., and distinguish between CP requests (BS -> BS/BSIS/SS or SS-> BS) and CP responses (BS/BSIS/SS -> BS or SS->BS). Each MAC/IP message encapsulates one CP message in the Management Message Payload. Coexistence Protocol messages exchanged between the BS and BS or between BS and BSIS or between BS and SS shall use the form shown in CP message format.

Change Table h8 and its description:

CP -message format

Syntax	Size	Notes
CP _Message_Format() {		
Version of protocol in use	*4* bits	1 for current version
Code	8 bits	See
Management Message Type	16 bits	0-CP-REQ 1-CP-RSP
Length of Payload	16 bits	
Confirmation Code (only for CP-RSP)	8 bits	0-OK/success 1-Reject-other 2-Reject-unrecognized-configuration-setting 3-Reject-unknow-action 4-Reject-authentication-failure 5-255 Reserved
Source BSID	48 bits	
Destination BSID	48 bits	
Alignment	4 bits	
AssociationID	16 ~~??~~bits	
CP Message Seq_ID	8 bits	
TLV Encoded Attributes	variable	TLV specific
}		

Modify:

CP Message Sequence Identifier (CP Message Seq_ID)
The CP Message Sequence Identifier field is one byte. A BS/BSIS uses the identifier to match a BS/BSIS response to the BS's requests. The BS shall increment (modulo 256) the Identifier field whenever it issues a new CP message. The retransmission mechanism relies on TCP, if the message is sent over the IP backbone. The Identifier field in a BS/BSIS's CP-RSP message shall match the Identifier field of the CP-REQ message the BS/BSIS is responding to.

Add:

Source BSID: A 48bit field indicating the ID of the entity sending the CP message. This entity may be a Base Station or a BSIS.

Destination BSID: A 48bit field indicating the ID of the entity that is the destination of the CP message. This entity may be a Base Station or a BSIS.

Modify:

The following Type-Length-Value (TLV) types may be present in the CP payload depending on the Message_Type:

TTLV types for CP payload

Type	Parameter Description	Length (bits)	Comment
01	Operator ID	16	ASCII stream, max. 40 bytes long
02	BS-ID	8	

03	~~BS~~ GPS coordinates	16	
04	BS IP Address	8	
05	MAC Frame duration	8	
06	Type of sub-frame allocation	8	
07	MAC Frame number ~~chosen for the Master sub-frame~~	8	
08	Sub-frame number ~~chosen for the Master sub-frame~~	8	
09	Repetition interval between two Master sub-frames, measured in MAC-frames	8	
10	Time shift from the ~~Master~~ MAC Frame start ~~sub-frame start of the Base Station radio-signature transmission~~	16	(in microsec)
11	Duration ~~information for~~ of the ~~Base Station radio-signature transmission~~time-slot	16	(in microsec)
12	Repetition ~~information for~~of the Base Station radio-signature transmission	16	In MAC Frames number
	~~Time shift from the Master sub-frame start of the Subscriber Station radio-signature transmission~~		
	~~Duration information for the Subscriber Station radio-signature transmission~~		
13	Repetition ~~information for~~ of the Subscriber Station radio-signature transmission	16	In MAC Frames number
14	List of other used sub-frames, in the interval between two Master sub-frames		
	~~Slot position~~		
15	Country Code	8	(in ASCII – bytes)

16	Operator contact - phone	8	(in ASCII – bytes)
17	Operator contact – E-mail	8	(in ASCII – bytes)
18	PHY mode	16	Coding ?
19	Maximum coverage at Max. power		
20	~~Current~~ Tx power	8	In dBm
21	[illegible]	8	In MHz
22	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	
26	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	
28	[illegible]	[illegible]	[illegible]
29	[illegible]	8	
30	[illegible]	8	[illegible]
31	[illegible]	8	
32	[illegible]	8	[illegible] < 20 Number of SSs < 200
33	[illegible]	16	Each element in the structure is coded with 8 bits)

34		8	