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Source(s)	Eunkyung Kim, Sungcheol Chang, Won-Ik Kim, Seokki Kim, Sungkyung Kim, Miyoung Yun, Hyun Lee, Chulsik Yoon, Kwangjae Lim ETRI	Voice: +82-42-860-5415 E-mail: ekkim@etri.re.kr scchang@etri.re.kr
Re:	“IEEE 802.16n-11/0029,” in response to Call for Comments on GRIDMAN AWD	
Abstract	Multicast parameter in DSx on GRIDMAN Amendment Draft Standard	
Purpose	To discuss and adopt the proposed text in the draft amendment document on GRIDMAN	
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Service Parameter in DSx message supporting multicast over IEEE 802.16.1a

Eunkyung Kim, Sungcheol Chang, Won-Ik Kim, Seokki Kim, Sungkyung Kim, Miyoung Yun, Hyun Lee, Chulsik Yoon, Kwangjae Lim
ETRI

1. Introduction

In IEEE 802.16n[2], HR multicast service is described in 11.13.47 to indicate whether multicast service is providing in DSA-REQ and to accept or reject the request of multicast service in DSA-RSP. In addition, to be consistent with 802.16n, multicast service shall be included in DSx message in IEEE 802.16.1a[3].

Thus, this contribution provides multicast service parameter in DSx message.

2. References

- [1] IEEE 802.16n-10/0048r3, 802.16n System Requirement Document including SARM annex, November 2011.
- [2] IEEE 802.16n-11/0032, P802.16n Draft AWD, November 2011.
- [3] IEEE 802.16n-11/0033, P802.16.1a Draft AWD, November 2011.
- [4] IEEE P802.16Rev3/D3, IEEE Draft Standard for Local and metropolitan area networks; Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems,” November 2011.
- [5] IEEE P802.16.1TM/D3, IEEE Draft for WirelessMAN-Advanced Air Interface for Broadband Wireless Access Systems, November 2011.

3. Proposed Text on the IEEE 802.16.1a Amendment Draft Standard

[-----Start of Text Proposal-----]

[Remedy1: Change 6.2.3.47.1 AAI-DSA-REQ in page 43 on 802.16.1a AWD as follows:]

6.2.3.47.1 AAI-DSA-REQ

[Change last paragraph in section 6.2.3.47.1 AAI-DSA-REQ as indicated:]

When an ABS commences multicast service, the following parameters shall be included in the AAI-DSA-REQ message.

- [Multicast Service: Indicates whether multicast service is being requested or provided for the connection that is being successfully setup.](#)
- [Multicast Group Zone ID: Indicates multicast group zone IDs for the connection that is associated with the service flow in AAI-DSA-REQ in HR-Network.](#)
- [Multicast Indication cycle: Indicates multicast indication cycle for the multicast in HR-Network](#)
- Multicast Group ID: Indicates multicast group for the connection that is associated with the service flow in AAI-DSA-REQ.

[Change Table 83 as indicated:]

Table 83—AAI-DSA-REQ message field description

Field	Size (bits)	Value/Description	Condition
.....
For($i=0$; $i<N$ -FIDs-Coupled-Noncommon; $i++$) {		N-FIDs-Coupled-Noncommon is the number of non-common coupled service flow IDs The maximum value of N-FIDs-Coupled-Noncommon is 32.	
FID	4		Shall be present if NFIDs-Coupled-Noncommon is not zero
Non-common for Coupled Group	<i>variable</i>	Non-common service flow encodings that are specific to individual service flows specified in Coupled FID Parameter List Service flow/convergence sublayer parameters in Table 131, except FID, SFID, E-MBS service related information, Group Parameter Create/Change related information and Coupled Group Create/Change related information, may be encapsulated in this field.	Shall be present if NFIDs-Coupled-Noncommon is not zero
}			
}			

<u>Multicast Service</u>	<u>2</u>	<u>Indicates whether multicast service is being requested or provided for the connection that is being successfully setup. 1 indicates support, 0 indicates not support.</u> <u>Bit0: Multicast in S-BS only</u> <u>Bit1: Multicast in a multi-BS zone supporting</u> <u>If all Bit0-Bit1 are set to 0, it indicates no multicast is supported.</u>	<u>Present if needed in HR-Networks</u>
<u>if (Multicast is supported)</u> <u>{</u>			
<u>Multicast Group Zone ID</u>	<u>12</u>	<u>Indicates a multicast group zone to add where the connection for associated service flow is valid.</u>	<u>Present if needed in HR-Network</u>
<u>Multicast Indication cycle</u>	<u>8</u>	<u>Start of multicast indication cycle.</u> <u>The first superframe is the multicast available interval and rest superframes are the multicast unavailable interval.</u> <u>8 LSB of superframe number</u>	<u>Shall be present if Multicast Group Zone is included in this message and the Multicast indication cycle is different from that in AAI-SCD in HR-Network.</u> <u>If the value is the same as that in AAI-SCD, this may not be included in this message</u>
<u>For (i=0; i<Num of Multicast Group ID and FID (M); i++) {</u>		<u>Num of Multicast Group ID and FID (M) is the number of Multicast Group IDs to add [1..16]</u>	<u>Present when ABS initiates AAI-DSA-REQ</u>
<u> Multicast Group ID</u>	<u>12</u>	<u>ID of a group to which the flow is added</u>	<u>Present only if Num of Multicast Group ID and FID (M)> 0</u>
<u> FID</u>	<u>4</u>	<u>Multicast specific FID that is associated with Multicast Group ID</u>	<u>Present only if Num of Multicast Group ID and FID (M)> 0</u>
<u> }</u>			
<u>} // End if (Multicast is supported)</u>			
<u>If (sleep cycle setting is included) {</u>			

Operation	2	This indicates operation request type 0b00~0b01: <i>Reserved</i> 0b10: Change sleep cycle setting 0b11: Switch sleep cycle setting	
.....
.....
<u>DC</u>	<u>1</u>	<u>00 – normal request</u> <u>01 – DC request</u>	<u>When direct communication is turned on</u>
<u>if (DC == 01) {</u>			
<u> TWDC</u>	<u>12</u>	<u>TWDC assigned to HR-MS to identify the direct communication link</u>	<u>When direct communication is turned on</u>
<u> TWDC</u>	<u>12</u>	<u>TWDC assigned to peer HR-MS to identify the direct communication link</u>	<u>When direct communication is turned on</u>
<u>}</u>			

[Remedy2: Change 6.2.3.47.2 AAI-DSA-RSP in page 45 on 802.16.1a AWD as follows:]

6.2.3.47.2 AAI-DSA-RSP

[Change last paragraph in section 6.2.3.47.2 AAI-DSA-RSP as indicated:]

When an AMS commences multicast service, the ABS shall include the following parameters in the AAI-DSA-RSP message:

- [Multicast Service: Indicates whether multicast service is being requested or provided for the connection that is being successfully setup.](#)
- [Multicast Group Zone ID: Indicates multicast group zone IDs for the connection that is associated with the service flow in AAI-DSA-RSP in HR-Network.](#)
- [Multicast Indication cycle: Indicates multicast indication cycle for the multicast in HR-Network](#)
- [Multicast Group ID: Indicates multicast group for the connection that is associated with the service flow in AAI-DSA-RSP.](#)

[Change Table 84 in section 6.2.3.47.2as indicated:]

Table 84—AAI-DSA-RSP message field description

Field	Size (bits)	Value/Description	Condition
Carrier Switching Mode	1	0b0: carrier switching method based on Unicast Available Interval in the AAI-DSA message 0b1: carrier switching method using AAI-E-MBS-REP/RSP message	Present if ABS indicates carrier switching when receiving AMS-initiated DSA
If(Carrier Switching Mode == 0b0) {			
Unicast Available Interval Bitmap	<i>variable</i>	Indicates when the AMS should be available in the primary carrier using N bits $b0b1b2...bN-1$ If $b_i=0$, then AMS is available for E-MBS data scheduling in secondary carrier If $b_i=1$, then AMS is available for unicast scheduling in primary carrier $NMSI = 4$ superframes: $N = 4$ bits $NMSI = 8$ superframes: $N = 8$ bits $NMSI = 16$ superframes: $N = 16$ bits $NMSI = 32$ superframes: $N = 32$ bits Depending on the $NMSI$, the number of bits per subframe changes, 4 frames per bit	
}			
<u>Multicast Service</u>	<u>2</u>	<u>Indicates whether multicast service is being requested or provided for the connection that is being successfully setup. 1 indicates support, 0 indicates not support.</u> <u>Bit0: Multicast in S-BS only</u> <u>Bit1: Multicast in a multi-BS zone supporting</u> <u>If all Bit0-Bit1 are set to 0, it indicates no multicast is supported.</u>	<u>Present if needed in HR-Networks</u>
<u>if (Multicast is supported) {</u>			

<u>Multicast Group Zone ID</u>	<u>12</u>	<u>Indicates a multicast group zone to add where the connection for associated service flow is valid.</u>	<u>Present if needed in HR-Network</u>
<u>Multicast Indication cycle</u>	<u>8</u>	<u>Start of multicast indication cycle.</u> <u>The first superframe is the multicast available interval and rest superframes are the multicast unavailable interval.</u> <u>8 LSB of superframe number</u>	<u>Shall be present if Multicast Group Zone is included in this message and the Multicast indication cycle is different from that in AAI-SCD in HR-Network.</u> <u>If the value is the same as that in AAI-SCD, this may not be included in this message</u>
For ($i=0$; $i<$ Num of Multicast Group ID <u>and FID (M); $i++$) {</u>		Num of Multicast Group ID <u>and FID (M)</u> is the number of Multicast Group IDs to add [1..16]	
Multicast Group ID	12	ID of a group to which the flow is added	Present only if Num of Multicast Group ID <u>and FID (M)</u> > 0
FID	4	Multicast specific FID that is associated with Multicast Group ID	Present only if Num of Multicast Group ID <u>and FID (M)</u> > 0
}			
<u>} // End if (Multicast is supported)</u>			
If (sleep cycle setting is included) {			May be present when sleep cycle setting needs to be changed or switched
Response_Code	2	This indicates response type of AAI-SLP-RSP message. 0b00: Request by ABS in Unsolicited manner 0b01: Approval of AAI-SLP-REQ 0b10: Rejection of AAI-SLP-REQ 0b11: <i>Reserved</i>	This parameter shall be included only when ABS transmit this control message.

Operation	2	This indicates operation request type 0b00~0b01: <i>Reserved</i> 0b10: Change sleep cycle setting 0b11: Switch sleep cycle setting	
.....

[-----End of Text Proposal-----]