<table>
<thead>
<tr>
<th>Project</th>
<th>IEEE 802.16 Broadband Wireless Access Working Group <a href="http://ieee802.org/16">http://ieee802.org/16</a></th>
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<tr>
<td>Title</td>
<td>Clarification on MAC control messages and ASN.1 coding for multicast in IEEE 802.16.1a</td>
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<tr>
<td>Date Submitted</td>
<td>2012-09-12</td>
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<td>Source(s)</td>
<td>Eunkyung Kim, Jaesun Cha, Anseok Lee, Wooram Shin, Kwangjae Lim &lt;br&gt; ETRI &lt;br&gt; Voice: +82-42-860-5415 &lt;br&gt; E-mail: <a href="mailto:ekkim@etri.re.kr">ekkim@etri.re.kr</a></td>
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<tr>
<td>Re:</td>
<td>In response to Sponsor Ballot on P802.16.1a</td>
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<tr>
<td>Abstract</td>
<td>Comments on MAC control message and ASN.1 coding for multicast in GRIDMAN Draft Standard</td>
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<tr>
<td>Purpose</td>
<td>To discuss and adopt the proposed text in the draft amendment document on GRIDMAN</td>
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Clarification on MAC control messages and ASN.1 coding for multicast in IEEE 802.16.1a

Eunkyung Kim, Jaesun Cha, Anseok Lee, Wooram Shin, Kwangjae Lim
ETRI

1. Introduction
This document provides some comment on MAC control messages and ASN.1 encoding in P802.16.1a.

2. References

3. Proposed Text on the IEEE 802.16.1a Amendment Draft Standard
[-----------------------------Start of Text Proposal-----------------------------------------------]

[Remedy1: change text in line#2 - line#17, page 105, P802.16.1a/D5 as follows:]  

6.2.3.65.55 AAI-HR-DSC-CMD message

An HR-BS may use AAI-HR-DSC-CMD message to change a service flow (identified by a combination of MGID and FID) to all the HR-MSs with multicast command in the HR multicast group zone during the HR multicast group service.

When the AAI-HR-DSC-CMD message is used, it shall be encrypted with the current MTEK for confidentiality, and contain the MCMAC attribute for MCMAC verification which is computed from MCMAC_KEY.
6.2.3.65.56 AAI-HR-DSD-CMD message

An HR-BS may use AAI-HR-DSD-CMD message to delete a service flow (identified by a combination of HR MGID and FID) to all the HR-MSs with multicast command in the HR multicast group zone during the HR multicast group service.

When the AAI-HR-DSD-CMD message is used, it shall be encrypted with the current MTEK for confidentiality, and contain the MCMAC attribute for MCMAC verification which is computed from MCMAC_KEY.

Table 106ccc AAI-HR-DSC-CMD message field description

<table>
<thead>
<tr>
<th>Field</th>
<th>Size (bits)</th>
<th>Value/Description</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current <strong>HR</strong> Multicast Group ID</td>
<td>12</td>
<td>Message Digest Calculated using MCMAC Key by HR-BS</td>
<td></td>
</tr>
<tr>
<td>Current FID</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New <strong>HR</strong> Multicast Group ID</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New FID</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCMAC Digest</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Remedy2: change text in line#43 - line#61, page 236, P802.16.1a/D5 as follows:]

```c
-- **HR** Multicast message
aaIHrMgInd  AAI-HR-MG-IND,
aaIHrMtInd  AAI-HR-MT-IND,
aaiHrDscCmd  AAI-HR-DSC-CMD,
aaiHrDsdCmd  AAI-HR-DSD-CMD
```

[Remedy3: change text in line#16, page 238 - line#8, page 239, P802.16.1a/D5 as follows:]

```c
SuccessOfLocationUpdate ::= SEQUENCE {
  paginggroupidupdate  BIT STRING (SIZE (32)) OPTIONAL,
```
pagingoffsetupdate BIT STRING (SIZE (24)) OPTIONAL,
newPagingCycle PgCycle OPTIONAL,
newPagingGroupID PGID OPTIONAL,
newPagingOffset PgOffset OPTIONAL,
deregistrationID DID OPTIONAL,
newPagingControllerID PCID OPTIONAL,
embsZoneInfo SEQUENCE (SIZE (1..8)) OF EMBSZoneInfoItem OPTIONAL,
newMulticastGroupZoneId HMulticastGroupZoneID OPTIONAL,
newMulticastIndicationCycle HMulticastIndicationCycle OPTIONAL,
multicastInfo SEQUENCE (SIZE (1..16)) OF SEQUENCE {
currentMulticastGroupID MulticastGroupID,
currentFID FID,
newMulticastGroupID MulticastGroupID,
newFID FID
}
hrmulticastInfo SEQUENCE (SIZE (1..15)) OF SEQUENCE {
currentHRMulticastGroupID HMulticastGroupID,
currentFID FID,
newHRMulticastGroupID HMulticastGroupID,
newFID FID
}
hrmulticastKeyUpdate SEQUENCE (SIZE (1..16)) OF SEQUENCE {
currentHRMulticastGroupId HMulticastGroupID,
currentFId FID,
mNonce MulticastNonce,
counterMtek CounterTEK,
mekey EKS
}
smsMessage SMS OPTIONAL
}
}
RngRspForHoReentryInfo ::= SEQUENCE {
newHRMulticastGroupZoneId HMulticastGroupZoneID OPTIONAL,
newHRMulticastIndicationCycle HMulticastIndicationCycle OPTIONAL,
multicastInfo SEQUENCE (SIZE (1..15)) OF SEQUENCE {
currentMulticastGroupID MulticastGroupID,
currentFID FID,
newMulticastGroupID MulticastGroupID,
newFID FID
}
hrmulticastInfo SEQUENCE (SIZE (1..15)) OF SEQUENCE {
currentHRMulticastGroupID HMulticastGroupID,
currentFID FID,
newHRMulticastGroupID HMulticastGroupID,
newFID FID
}
hrmulticastKeyUpdate SEQUENCE (SIZE (1..16)) OF SEQUENCE {
currentHRMulticastGroupId HMulticastGroupID,
currentFId FID,
mNonce MulticastNonce,
counterMtek CounterTEK,
mekey EKS
}
smsMessage SMS OPTIONAL
}

[Remedy4: change text in line#41-56, page 243, P802.16.1a/D5 as follows:]

PKM-HMulticastKeyRequest ::= SEQUENCE {
hMulticastGroupID HMulticastGroupID,
fid FID,
cmacIndicator CMACI,
PKM-HRMulticastKeyReply ::= SEQUENCE {
    hrMulticastGroupID HRMulticastGroupID,
    fid FID,
    mcNonce MulticastNonce,
    counterMtek CounterTEK,
    meks EKS,
    cmacIndicator CMACI,
    ...
}

[Remedy5: change text in line#46, page244 - line#19, page 245, P802.16.1a/D5 as follows:]

AAI-PKM-REQ ::= SEQUENCE {
    pkmid PKMID,
    pkmMessage CHOICE {
        reauthRequest PKM-ReauthRequest,
        eapTransfer PKM-EAPTransfer,
        keyAgreementMsg2 PKM-KeyAgreementMsg2,
        tekRequest PKM-TEKRequest,
        tekInvalid PKM-TEKInvalid,
        peerKeyAgreementMsg2 Peer-KeyAgreementMsg2,
        multicastKeyRequest PKM-HRMulticastKeyRequest,
        ...
    },
    ...
}

AAI-PKM-RSP ::= SEQUENCE {
    pkmid PKMID,
    pkmMessage CHOICE {
        eapTransfer PKM-EAPTransfer,
        keyAgreementMsg1 PKM-KeyAgreementMsg1,
        keyAgreementMsg3 PKM-KeyAgreementMsg3,
        tekReply PKM-TEKReply,
        tekInvalid PKM-TEKInvalid,
        peerKeyAgreementMsg1 Peer-KeyAgreementMsg1,
        peerKeyAgreementMsg3 Peer-KeyAgreementMsg3,
        multicastKeyReply PKM-HRMulticastKeyReply,
        ...
    },
    ...
}

[Remedy6: change text in line#11-line#29, page246, P802.16.1a/D5 as follows:]

NeighborABSInfo ::= SEQUENCE {
    bsID BSID,
    macVersion MacProtocolVersion,
    cplLength CPLength,
    hrMultimodeIndication HRMultimodeIndication OPTIONAL,
    neighborHRMulticastGroupZoneId HRMulticastGroupZoneID OPTIONAL,
    neighborHRMulticastIndicationCycle HRMulticastIndicationCycle OPTIONAL,
    neighborHRMulticastInfo SEQUENCE (SIZE (1..16)) OF SEQUENCE {
        ...
    }
currentHRMulticastGroupID FID
neighborHRMulticastGroupID FID

} OPTIONAL,

} OPTIONAL,
carrierInfoList SEQUENCE (SIZE (1..maxCarriers)) OF CarrierInfo,
nbrSpecificTrigger Triggers OPTIONAL

[Remedy7: change text in line#12-line#23, page263, P802.16.1a/D5 as follows:]

FullMgInd ::= SEQUENCE {
  hrMulticastGroupID FID,
  actionCode BIT STRING {
    networkEntryOrExitSleep [0],
    performRanging [1],
    receiveMulticast [2]
  } (SIZE(3)),
  offsetOfMulticastTraffic INTEGER (0..16) OPTIONAL, -- if performRanging bit is set to 1
}

[Remedy8: Add the following text in line#60, page263, P802.16.1a/D5]

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- HR DSC CMD Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
AAI-HR-DSC-CMD ::= SEQUENCE {
  currentHRMulticastGroupID hrMulticastGroupID,
currentFid FID,
newHRMulticastGroupID hrMulticastGroupID,
newFid FID,

}

-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
-- HR DSD CMD Message
-- +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-
AAI-HR-DSD-CMD ::= SEQUENCE {
  currentFid FID,

}

END

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