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Re:	IEEE 802.16j-07/019: "Call for Technical Comments Regarding IEEE Project 802.16j"	
Abstract	For an access RS working in moving BS mode, the connections between MR-BS and this RS is managed by MR-BS. The connections of MSs associated with this RS are managed by the RS and informed to the MR-BS. In the similar way, the encryption/decryption of traffic and authentication of MAC messages of MSs serviced by this type of RS are performed by the RS.	
Purpose	To incorporate the proposed text into the P802.16j Baseline Document (IEEE 802.16j-06/026r4)	
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Network Entry through an RS in moving BS mode

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1. Introduction

In current baseline document, an RS can work in moving RS mode or in a moving BS mode (refer to 6.3.22.4.1.1). The corresponding data forwarding protocol is described in section 1.4.3. In this contribution, the MS initial network entry procedure through an RS in moving BS mode is proposed.

2. Proposal

For an access RS working in moving BS mode, the connections between MR-BS and this RS is managed by MR-BS. The connections of MSs associated with this RS are managed by the RS and informed to the MR-BS. In the similar way, the encryption/decryption of traffic and authentication of MAC messages of MSs serviced by this type of RS are performed by the RS. By implementing this mode of RS, significant MS signaling relaying overhead can be reduced since many MAC messages of MSs can be locally processed. For information carried in MAC messages that need to be informed to or determined by MR-BS, the information can be exchanged between a MR-BS and the RS using RS_MSG_Relay-REQ/RSP messages (please refer to contribution “Relaying of Messages of MSs served by RS in Moving BS mode”).

For MS initial network entry, some messages such as RNG-REQ/RSP and SBC-REQ/RSP can be locally processed first then the attachment of a MS is informed to the MR-BS. The information carried in messages such as PKM-REQ/RSP and REG-REQ/RSP need to be forwarded to MR-BS and the corresponding response of MR-BS needs to be forwarded to MS. The MS initial network entry through an RS in moving BS mode is illustrated in Figure 1.

The procedures are described as followings:

- DL/UL synchronization
 - For DL synchronization, no any additional requirement for an access RS in moving BS mode
 - During MS UL synchronization, the RS shall locally assign a basic CID and a primary CID to the MS
 - After the MS DL/UL synchronization, the RS may send RS_MSG_Relay-REQ message to MR-BS which include the TLVs of RNG-REQ/RSP (those TLVs may be transmitted to MR-BS after SBC-REQ/RSP exchange)
 - SS MAC Address
 - Basic CID and primary CID (locally assigned to the MS)
 - The MR-BS shall response with RS_MSG_Relay-RSP message
 - No TLV of RNG-RSP TLV is included
 - After the MS DL/UL synchronization, the MR-BS establishes a binding between the MS ID and the basic CID and primary CID locally assigned by the RS
- Basic capability negotiation
 - A MS and an access RS negotiate the basic capability locally through SCB-REQ/RSP messages without involvement of MR-BS
 - After the negotiation between the MS and the RS, the RS shall send RS_MSG_Relay-REQ message to MR-BS. The following TLVs of SBC-REQ message may be included
 - Security Negotiation Parameters

- MR-BS shall send RS_MSG_Relay response message to the access RS as a response to RS_MSG_Relay-REQ sent from the access RS
 - No TLV of SBC-REQ/RSP TLV is included
- The RS_MSG_Relay-RSP message may includes the TLVs of RNG-REQ/RSP messages if the access RS decides to combine those information together
-

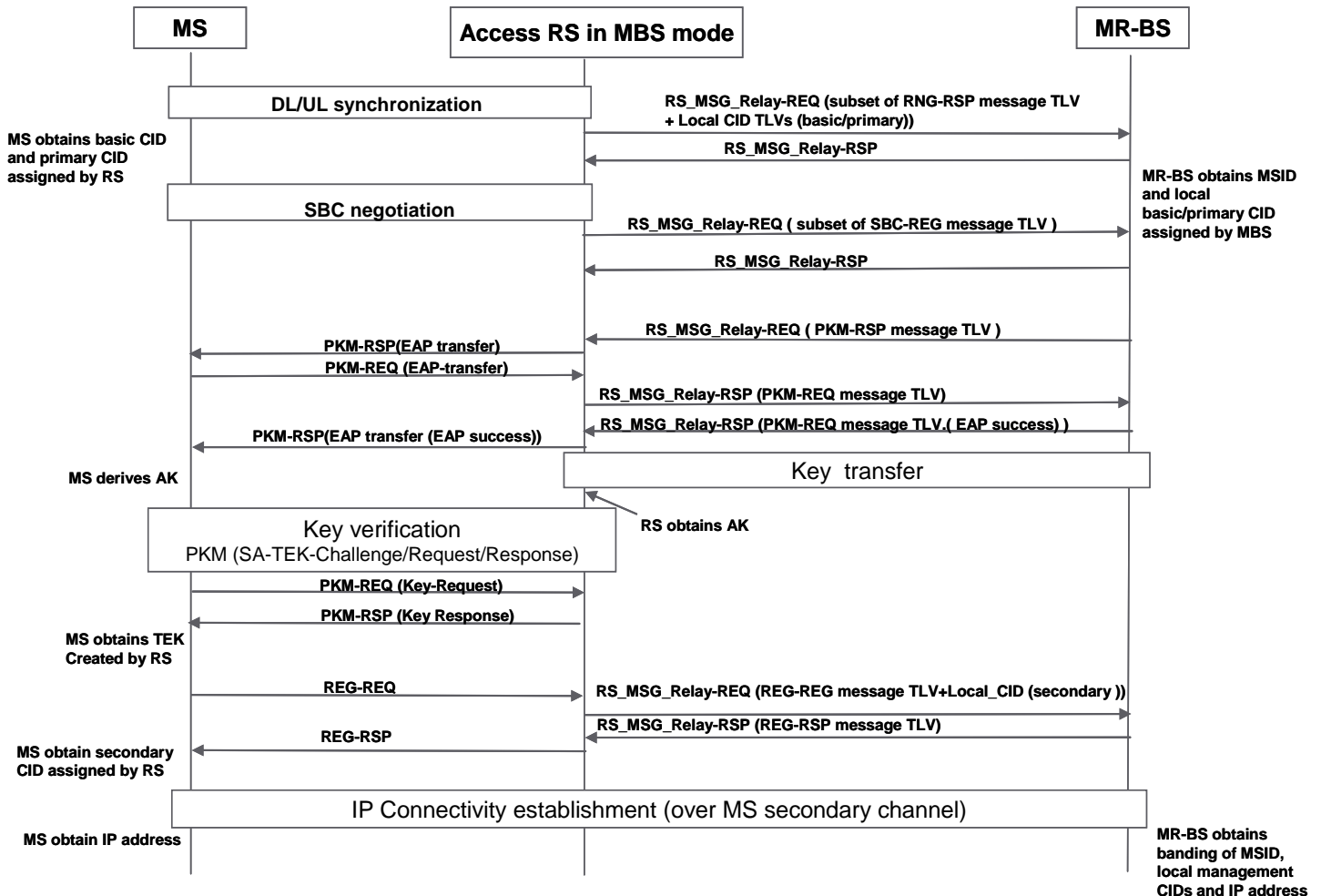


Figure 1. An example of MS initial network entry through an RS in moving BS mode.

- MS authorization/authentication (EAP case) and key establishment
 - The MR-BS may trigger the MS authorization/authentication by sending RS_MSG_Relay-REQ message to an access RS including the fields of PKM-RSP and
 - EAP transfer attributes of PKMv2 EAP Transfer message
 - The access RS creates PKM-RSP message by including the above contents and sends to the MS
 - The MS sends the PKM-REQ (PKMv2 EAP Transfer) message to the access RS
 - The access RS then creates RS_MSG_Relay message by including following
 - fields of PKM-REQ (PKMv2 EAP Transfer) received from the MS
 - EAP transfer attributes of PKMv2 EAP Transfer message received from the MS
 - After the AK of the MS is available by MR-BS, the MR-BS shall deliver the AK through AK transfer

- The access RS and the MS then shall use PKMv2 3-way handshake to verify the AK and use PKMv2 Key-request/Reply exchange to make the MS obtain valid TEK keys. These message exchanges happen between the access RS and MS only without MR-BS involvement
- MS registration to the network
 - MS sends the REG-REQ message to the access RS. The RS shall include the following TLVs from the received REG-REQ message in RS-MSG_Relay-REQ and send this RS_MSG_Relay-REQ to MR-BS:
 - IP version
 - Vendor ID encodings
 - Vendor-specific information
 - Secondary CID locally assigned by the access RS
 - MR-BS creates RS_MSG_Relay-RSP message by including the following TLVs of REG-RSP message:
 - IP version
 - Vendor ID encodings
 - Vendor-specific information
 - Access RS creates the REG-RSP message to the MS
- MS IP connection establishment
 - All MS IP connection related protocol messages are viewed as a type of service flow with an assigned QoS class. Those messages are exchanged between the MR-BS and the MS though the MS's local secondary connection over the forwarding transport connection (F-CID) between the access RS and the MR-BS (please refer to contribution "Forwarding of Traffic of MSs served by RS in Moving BS mode")

3. Proposed text change

3.1 Description of MS initial network entry

[Add the section 6.3.9.16.5 as followings]

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6.3.9.16.5 Network entry of MS through an access RS in moving BS mode (MBS)

For MS initial network entry though an access RS in moving BS mode, some messages such as RNG-REQ/RSP and SBC-REQ/RSP can be locally processed first then the attachment of a MS is informed to the MR-BS. The information carried in messages such as PKM-REQ/RSP and REG-REQ/RSP need to be forwarded to MR-BS and the corresponding response of MR-BS needs to be forwarded to MS. The MS initial network entry through an RS in moving BS mode is illustrated in Figure XXX.

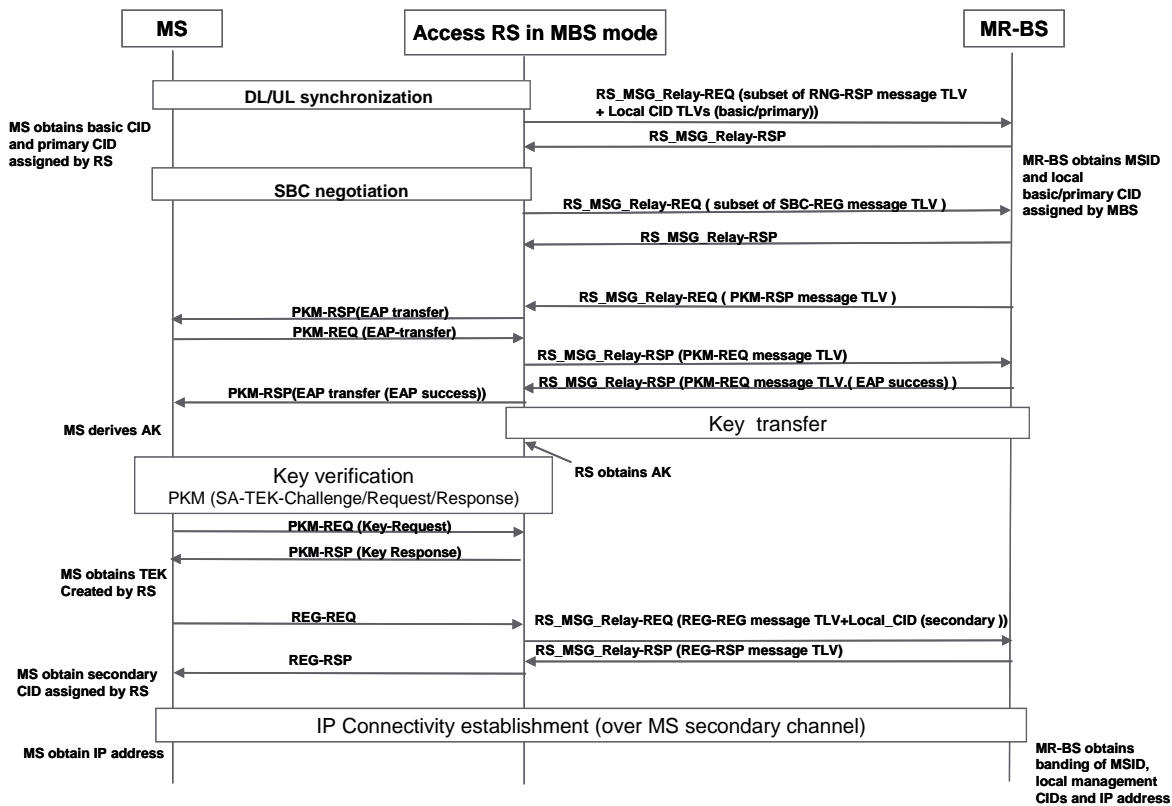


Figure xxx. An example of MS initial network entry through an RS in moving BS mode.

The procedures are described as follows:

- DL/UL synchronization
 - For DL synchronization, no any additional requirement for an access RS in moving BS mode
 - During MS UL synchronization, the RS shall locally assign a basic CID and a primary CID to the MS
 - After the MS DL/UL synchronization, the RS may send RS_MSG_Relay-REQ message to MR-BS which include the following TLVs of RNG-REQ/RSP (those TLVs may be transmitted to MR-BS after SBC-REQ/RSP exchange)
 - SS MAC Address
 - Basic CID and primary CID (locally assigned to the MS)
 - The MR-BS shall response with RS_MSG_Relay-RSP message
 - No TLV of RNG-RSP TLV is included
 - After the MS DL/UL synchronization, the MR-BS establishes a binding between the MS ID and the basic CID and primary CID locally assigned by the RS
- Basic capability negotiation
 - A MS and an access RS negotiate the basic capability locally through SCB-REQ/RSP messages without involvement of MR-BS
 - After the negotiation between the MS and the RS, the RS shall send RS_MSG_Relay-REQ message to MR-BS. The following TLVs of SBC-REQ message may be included
 - Security Negotiation Parameters
 - MR-BS shall send RS_MSG_Relay response message to the access RS as a response to RS_MSG_Relay-REQ sent from the access RS

- No TLV of SBC-REQ/RSP TLV is included
 - RS MSG Relay-RSP message may includes the TLVs of RNG-REQ/RSP messages if the access RS decides to combine those information together with those of SBC-REQ/RSP
- MS authorization/authentication (EAP case) and MS key establishment
 - The MR-BS may trigger the MS authorization/authentication by sending RS MSG Relay-REQ message to an access RS including the fields of PKM-RSP and
 - EAP transfer attributes of PKMv2 EAP Transfer message
 - The access RS creates PKM-RSP message by including the above contents and sends to the MS
 - The MS sends the PKM-REQ (PKMv2 EAP Transfer) message to the access RS
 - The access RS then creates RS MSG Relay message by including following
 - fields of PKM-REQ (PKMv2 EAP Transfer) received from the MS
 - EAP transfer attributes of PKMv2 EAP Transfer message received from the MS
 - After the AK of the MS is available by MR-BS, the MR-BS shall deliver the AK through AK transfer to the access RS
 - The access RS and the MS then shall use PKMv2 3-way handshake to verify the AK and use PKMv2 Key-request/Reply exchange to make the MS obtain valid TEK keys. These message exchanges only happen between the access RS and MS without the involvement of MR-BS
- MS registration to the network
 - MS sends the REG-REQ message to the access RS. The RS shall include the following TLVs from the received REG-REQ message in RS-MSG Relay-REQ and send this RS MSG Relay-REQ to MR-BS:
 - IP version
 - Vendor ID encodings
 - Vendor-specific information
 - Secondary CID locally assigned by the access RS
 - MR-BS creates RS MSG Relay-RSP message by including the following TLVs of REG-RSP message:
 - IP version
 - Vendor ID encodings
 - Vendor-specific information
 - Access RS creates the REG-RSP message and sends the message to the MS
- MS IP connection establishment
 - All MS IP connection related protocol messages are viewed as a type of service flow with an assigned QoS class. Those messages are exchanged between the MR-BS and the MS though the MS's local secondary connection over the forwarding transport connection (F-CID) between the access RS and the MR-BS

+++++++ End text ++++++

3.2 RS_MSG_Relay-REQ message encodings

[Please insert the following to the end of 11.27 RS_MSG_Relay-REQ/RSP message encodings]

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11.27 RS_MSG_Relay-REQ/RSP message encodings

The RS-MSG_Relay-REQ/RSP message encodings are shown in Table XXX.

Table XXX. RS-MSG Relay-REQ/RSP message encodings

<u>Name</u>	<u>Type</u>	<u>Length</u>	<u>Value</u>	<u>Scope</u>
<u>Locally assigned basic/primary connection CIDs</u>	<u>1</u>	<u>4</u>	<u>Bytes 0-1: basic connection CID locally assigned by an access RS</u> <u>Bytes 2-3: Primary connection CID locally assigned by an access RS</u>	<u>RS MSG Relay-REQ/RSP</u>
<u>Locally assigned secondary connection CID</u>	<u>2</u>	<u>2</u>	<u>Secondary connection CID locally assigned by an access RS</u>	<u>RS MSG Relay-REQ/RSP</u>

11.27.1 Locally assigned basic/primary connection CIDs

This TLV is used for an access RS in moving BS mode to inform MR-BS its locally assigned basic connection CID and primary connection CID to a MS.

11.27.2 Locally assigned secondary connection CID

This TLV is used for an access RS in moving BS mode to inform MR-BS its locally assigned secondary connection CID to a MS.

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