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Title	**Fix for Location Update use with MBS**
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Re:	LB26b, Working Group Letter Ballot on P802.16REV2/D3
Abstract	
Purpose	Modify the text to fix problems for Location Update use with MBS
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Fix for Location Update use with MBS

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Problem 1

There is no language in the Idle Mode section that clearly specifies that transport CIDs are removed from non-MBS flows upon entry into Idle Mode, but that MBS flows retain their CIDs.

Remedy 1

In P802.16REV2/D3, section 6.3.24.1 MS idle mode initiation, page 458, line 44, modify the paragraph as:

6.3.24.1 MS idle mode initiation

For MS terminating normal operation with the serving BS and entering idle mode, the paging controller i.e., the serving BS or other network entity administering idle mode activity for the MS, may retain certain MS service and operational information useful for expediting a future MS network reentry from idle mode. The MS may request the paging controller (refer to subclause 11.1.9.2) to retain ~~of~~ specific MS service and operational information for idle mode management purposes through inclusion of the Idle Mode Retain Information element in the DREG-REQ management message. While retained MS service and operational information may include service flow management encodings definitions as per 6.3.14 and 11.13, retained information shall not include service flow CID values of unicast transport CIDs. Retained information shall include service flow CID values of Multicast CIDs for mutli-BS-MBS flows. Retained information shall not include management CIDs. The serving BS shall report the likely effect on expedited future MS network reentry due to paging controller retention of MS service and operational context by reporting the indicative Idle Mode Retain Information element in a DREG-CMD message. Similarly, the BS may also include Idle Mode Retain Information element in the unsolicited DREG-CMD message.

Problem 2

802.16 use of the CID_update TLV feature to support use of Location Update during Idle Mode operation as a means to update MBS service flow management parameters (just as it does for handover) is unclear.

Delete superfluous and contradictory text from Compressed_CID_Update description. Language contradicts the language on page 1078, line 23.

Remedy 2

In P802.16REV2/D3, section 6.3.2.3.8 REG-RSP (registration response) message, page 97, line 1, modify the identified paragraphs as:

6.3.2.3.8 REG-RSP (registration response) message

For mobile stations, when the information is available to create CID update TLV, the target BS shall include the CID_update and SAID_update TLVs in the REG-RSP for an MS recognized by the target BS as performing HO, or network reentry from idle mode, or location update for MBS update. BS may include the Compressed CID Update TLV instead of the CID_update TLV in REG-RSP message if CID update procedure is required.

The target BS recognizes an MS performing network reentry from idle mode by the presence of a serving BSID or paging controller ID and ranging purpose indication with Bit #0 set to 1 in the RNG-REQ message. The target BS recognizes an MS performing location update for MBS zone update by the presence of a paging controller ID, ranging purpose indication with Bit#1 set to 1, and an MBS update in the RNG-REQ.

CID_update

The CID_update is a compound TLV value that provides a shorthand method for replacing the active connections used by the MS in its previous serving BS. Each CID_update TLV specifies a CID in the target BS that shall replace a CID used in the previous serving BS. Multiple instances of CID_update may occur in the REG-RSP to facilitate recreating and reassigning admitted or active service flows for the MS from its previous serving BS. If any of the service flow parameters change (including target SAID, see 11.13.17), then those service flow parameter encoding TLVs that have changed will be added. If the BS cannot reestablish a particular service flow, it shall not include an instance of CID_update for that service flow.

These TLVs enable the target BS to renew connections used in the previous serving BS, but with different ~~QoS~~ service flow management encodings settings.

Compressed CID_update

The Compressed CID_update TLV also provides a method for replacing the active connections used by the MS in its previous serving BS as CID update TLV. It can diminish the length of REG-RSP message. ~~CID update and Compressed CID update TLVs shall be exclusively included in REG-RSP message. (See 11.7.10.1.)~~[PEB1]

Problem 3

Inclusion of a dedicated TLV in RNG-REQ with Location Update to signal MS need to receive CID_Update for its MBS service flows in LU RNG-RSP can disambiguate the purpose of the Location Update and improve network behavior in providing updated parameters. Without the presence of such a dedicated TLV, the network cannot know if the MS has received previous update, for instance upon detected MS transition across MBS Zone boundary, and the network will likely exhibit costly procedure like transmitting such CID_update in EVERY MS Location Update, to assure that MS receives the updated MBS service flow management parameters.

Add some language to the Idle Mode section to define the behavior for use of this TLV

Remedy 3a

In P802.16REV2/D3, section 6.3.2.3.5 RNG-REQ (ranging request) message, page 89, line 42, insert as:

6.3.2.3.5 RNG-REQ (ranging request) message

The following TLV parameter shall be included in the RNG-REQ message when the MS is attempting to perform location update due to MBS update:

MBS update

Indicates the MS is currently attempting to perform location update due to a need to update service flow management encodings for MBS flows.

Remedy 3b

In P802.16REV2/D3, section 6.3.24.8.1 Location update conditions, page 462, line 18,modify the text as:

6.3.24.8.1 Location update conditions

An MS in idle mode shall perform a location update process operation if any location update condition is met. There are ~~four~~ five location update evaluation conditions: paging group update, timer update, power down update, ~~and~~ MAC hash skip threshold update, and MBS udpate. MS may also perform location update process at will.

Remedy 3c

In P802.16REV2/D3, page 462, line 18, insert as:

6.3.24.8.1.5 MBS update

An MS in idle mode shall perform a location update process when the MS with multi-BS-MBS flows detects a change in MBS Zone. The MS shall detect the change of MBS Zone by monitoring the MBS zone identifier list which is transmitted by the Preferred BS in the DCD message. If the MBS zone identifier list detected does not include the MBS zone identifiers for all multi-BS-MBS flows to which the MS belongs, the MS shall determine that the MBS Zone has changed.

Remedy 3d

In P802.16REV2/D3, section 6.3.24.8.2.1 Secure location update process, page 463, line 5, modify the text as:

6.3.24.8.2.1 Secure location update process

If the MS shares a valid security context with the target BS so that the MS may include a valid HMAC/CMAC Tuple in the RNG-REQ, then the MS shall conduct initial ranging with the target BS by sending a RNG-REQ including Ranging Purpose Indication TLV with Bit #1 set to 1, Location Update Request and Paging Controller ID TLVs (11.1.9.2) and HMAC/CMAC Tuple. If the MBS Zone has changed, then the MS shall include MBS update TLV in RNG-REQ. If the target BS evaluates the HMAC/CMAC Tuple as valid and can supply a corresponding authenticating HMAC/CMAC Tuple, then the target BS shall reply with a RNG-RSP including the Location Update Response TLV and HMAC/CMAC Tuple completing the location update process. If the paging group has changed, then target BS shall include Paging Group ID TLV in the RNG-RSP. If the target BS responds with a successful Location Update Response = 0x00 (Success of Location Update), the target BS shall notify the paging controller via the backbone network of the MS new location information, the MS shall assume the Paging Group ID of the target BS, and the paging controller may send a message over the backbone network to inform the BS at which the MS entered idle mode that the MS has transitioned to a different Paging Group. If the MBS Zone has changed, then the BS shall include CID_Update TLV in RNG-RSP and shall include at least the SFID, Multicast CID, MBS Zone Identifier Assignment parameter, and may include MBS contents IDs, for any multi-BS-MBS service flow for which the MBS Zone has changed. If the target BS evaluates the HMAC/CMAC Tuple as invalid, cannot supply a corresponding authenticating HMAC/CMAC Tuple, or otherwise elects to direct the MS to use unsecure location update, then the target BS shall instruct the MS to continue network reentry using the unsecure location update process by inclusion of Location Update Response TLV in RNG-RSP with a value of 0x01 (Failure of Location Update).

Problem 4

The language in section 6.3.22.2.8.1.6.1 expressly contradicts the feature and language for CID_update. Modify the language in 6.3.22.2.8.1.6.1 to be consistent with the language in 6.3.2.3.6, 11.6 and 11.7.10.

Remedy 4

In P802.16REV2/D3, section 6.3.22.2.8.1.6.1 Service flows ñ static context, page 440, line 24, modify the text as:

6.3.22.2.8.1.6.1 Service flows ñ static context

When service flow parameters at the target BS are different than the serving BS, the target BS shall use CID_update and or SAID_update as part of REG-RSP encodings TLV in RNG-RSP, or DSC-REQ messages upon HO completion, to change the configuration of the connections, as required.