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Re:	IEEE 802.16j-07/019: "Call for Technical Comments regarding IEEE Project P802.16j"
Abstract	This proposal clarifies the MRS PG_ID Update.
Purpose	Discuss and adopt proposed text.
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Clarification on MRS PG_ID Update

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1. Introduction

This contribution proposes some editorial and technical fixing for MRS PG Update contained in subclause 6.3.24.10. Major points are:

- Removing confusing text so as to clarify that the MRS PG Update is not location update.
- Renaming the procedure to MRS PG_ID Update so as to avoid confusion with the MS Paging Group Update.

Proposed text changes are shown in revision marked format in section 2. This is, followed by a clean version of 6.3.24.10 in section 3.

2. Specific Text Change

[insert following text in sub clause 6.3.2.3.75 (Page 50 line 57)]
MRS Paging Group ID (16 bit)
　　　One or more logical affiliation grouping of MRS (see 6.3.2.3.56).

[Change sub-clause 6.3.24.10 as follows]

6.3.24.10 MRS ~~Paging Group~~PG_ID Update

When MRS moves along with its sub-ordinate MSs from one paging group area to another paging group area, all the sub-ordinate MSs in idle mode would detect the change in paging group and would perform location update procedure almost simultaneously. This would increase the signaling load, congestion and contention on the access link and relay link. In order to efficiently handle the MS location update, MRS PG_ID update procedure is described in this sub-clause.

This ~~process~~ procedure is only applicable to MRS. MRS is allocated a MRS PG_ID during initial network entry using RS_CD message. When MS initiates location update procedure or enters into idle mode via MRS, MR-BS may allocate the MRS PG_ID to the MS.
MRS monitors PG_ID list from the MR-BS.
~~In principle, triggers and process for MRS Paging Group Update is~~
~~similar to MS location update. However, MS location update is performed in idle mode where as MRS does~~
~~not have idle mode.~~ MRS shall perform the MRS PG_ID ~~paging group~~ update procedure with MR-BS to request the addition of RS PG ID when the MRS
detects that its MRS PG_ID is not transmitted by the MR-BS. ~~a change in paging group. MRS shall detect the change of paging~~
~~group by monitoring the paging~~
~~group identifier, PG_ID, which is transmitted by the preferred BS in the DCD message or MOB_PAG-ADV~~
~~broadcast message. If the PG_ID detected does not match the Paging Group to which MRS belongs, the RS~~
~~shall perform the Paging Group update process with MR-BS.~~

[Change sub-clause 6.3.24.10.1 as follows]

~~6.3.24.10.1 Paging Group Update process~~
~~If MRS determines to update its location, depending on the security association the MRS shares with the target~~
~~MMR-BS, the MRS shall use one of the two processes: Secure MRS Paging Group Update Process or~~
~~Unsecured MRS Paging Group Update Process.~~
~~Insert new subclause 6.3.24.10.1.1:~~
~~6.3.24.10.1.1 Secure Paging Group Update process~~
~~If the MRS shares a valid security context with the target BS such that the MRS may include a valid HMAC/~~
~~CMAC Tuple in the RNG-REQ, then t~~The MRS shall conduct initial ranging with the target MR-BS by sending a
RNG-REQ including Ranging Purpose Indication TLV with Bit #2 set to 1, Paging Group Update Request

and MRS Paging Group ID TLVs and HMAC/CMAC Tuple. If tThe target MR-BS evaluates the HMAC/CMAC Tuple as valid and can supply a corresponding authenticating HMAC/CMAC Tuple, and wants to adds MRS PG_ID to its PG_ID list, based on the policy out of the scope of standard, target The MR-BS may exchange initiate backbone messages with the other BSs in its PG to requestthe Paging Controller for the addition of MRS PG_ID in the to their PG_ID list of all the MR-BS in its own PG. Upon successful response from all of the BSs, tThe target MR-BS shall reply with the RNG-RSP including the Paging Group Update Response TLV and HMAC/CMAC Tuple completing the Paging Group Update process. If the target BS responds with a successful Paging Group Update Response=0x01, Success of Paging Group Update, the target BS shall notify the Paging Controller via the backbone of the MRS new location information, and the Paging Controller may send a backbone message to inform the BSs to which the MRS was earlier attached that the MRS has transitioned to a different Paging Group. 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 MRS to use Unsecured Paging Group Update, then the target BS shall instruct the MRS to continue network reentry using the Unsecured Paging Group Update process by inclusion of Paging Group Update Response TLV in RNG-RSP with a value of 0x00= Failure of Paging Group Update. Insert new subclause 6.3.24.10.1.2:
6.3.24.10.1.2 Unsecured Paging Group Update process
For an MRS and target BS that do not share current, valid security context, they shall process Paging Group Update using the Network Re-Entry.

[Change sub-clause 6.3.24.10.2 as follows and move it after "MRS PG_ID Update during handover" sub-clause]

6.3.24.10.2 Network Re-Entry for MRS Paging GroupPG_ID Update
For the Network Re-Entry, the MRS shall initiate network re-entry with the target MR-BS by sending a RNG-REQ including Ranging Purpose Indication TLV with Bit #2 set to 1, Paging Group Update Request and MRS Paging Group ID TLVs.
If the MRS shares a valid security context with the target BS such that the MRS may include a valid HMAC/CMAC Tuple in the RNG-REQ, then the MRS shall conduct initial ranging with the target BS by sending a RNG-REQ including HMAC/CMAC Tuple.
If MRS RNG-REQ, from MRS, includes a Ranging Purpose Indication TLV with Bit #2 set to 1 and Paging Group ID TLVs, and target MR-BS had not previously received MRS information over the backbone, then target MR-BS mayshall make an request MRS information request to Paging Controller from the serving MR-BS over the backbone network and Paging Controller may respond. Regardless of having received MRS information from Paging Controller, target BS may request MRS information from another network management entity via the backbone network. Network re-entry proceeds per 6.3.9.5 except as may be shortened by target BS possession of MRS information obtained from Paging Controller or other network entity over the backbone network. Rest of the network entry procedure for MRS is similar to MS as defined in section 6.3.24.9. If the target MR-BS responds with a successful Paging Group Update Response=0x01, Success of Paging Group Update, the target MR-BS shall update the MRS location to Paging Controller via the backbone messages. Paging Controller may send a backbone message to inform the MR-BSs to which the MRS was attached previously that the MRS has transitioned to a different Paging Group and may request the addition of MRS PG_ID in the PG_ID list of the MR-BSs in the new PG.

[Change sub-clause 6.3.24.10.3 as follows]

6.3.24.10.3 1 MRS Paging GroupPG_ID Update during handover
When MRS enters into the coverage of a new MR-BS and decides to make perform handover, it may send the MOB_–MSHO-REQ message with Paging Group ID parameter to serving MR-BS. The serving MR-BS may exchange backbone messages with the other MR-BSs in new PG to request the addition of MRS PG_ID to their PG_ID list. Upon successful receiving response from all of the MR-BSs, the target MR-BS shall reply with the MOB_–BSHO-RSP message, which contain the Paging Group Response parameter TLV informing whether the Paging Group Update request is accepted. If the MRS can't finish the whole HO initiation process, or this update request is refused, the MRS needs to perform Paging Group Update procedure while during network re-entry (as defined in section 6.3.24.10).

[Insert new subclause 11.25.x]

11.25.1 Preamble indexes reserved for moving relay station

This field may be used by an MR-BS for configuring MRS PG_ID in an MRS.

Type	Length	Value	Scope
TBD	2	MRS Paging Group ID	RS_CD, RNG-REQ

3. Clean 6.3.24.10

[The following is clean text for 6.3.24.10 for better readability]

6.3.24.10 MRS PG_ID Update
When MRS moves along with its sub-ordinate MSs from one paging group area to another paging group area, all the sub-ordinate MSs in idle mode would detect the change in paging group and would perform location update procedure almost simultaneously. This would increase the signaling load, congestion and contention on the access link and relay link. In order to efficiently handle the MS location update, MRS PG_ID update procedure is described in this subclause.

This procedure is only applicable to MRS. MRS is allocated a MRS PG_ID during initial network entry using RS_CD message. When MS initiates location update procedure or enters into idle mode via MRS, MR-BS may allocate the MRS PG_ID to the MS.

MRS monitors PG_ID list from the MR-BS. MRS shall perform the MRS PG_ID update procedure with MR-BS to request the addition of RS PG ID when the MRS detects that its MRS PG_ID is not transmitted by the MR-BS.

The MRS shall conduct initial ranging with the target MR-BS by sending a RNG-REQ including Ranging Purpose Indication TLV with Bit #2 set to 1, Paging Group Update Request and MRS Paging Group ID TLVs. The MR-BS adds MRS PG_ID to its PG_ID list. The MR-BS may initiate backbone messages with the Paging Controller for the addition of MRS PG_ID in the PG_ID list of all the MR-BS in its own PG. The MR-BS shall reply with the RNG-RSP including the Paging Group Update Response TLV.

6.3.24.10.1 MRS PG_ID Update during handover
When MRS enters into the coverage of a new MR-BS and decides to perform handover, it may send the MOB_MSHO-REQ message with Paging Group ID parameter to serving MR-BS. serving MR-BS may exchange backbone messages with the other MR-BSs in new PG to request the addition of MRS PG_ID to their PG_ID list. Upon receiving response from the MR-BSs, the target MR-BS shall reply with the MOB_BSHO-RSP message, which contain the Paging Group Response TLV informing whether the Paging Group Update request is accepted. If the MRS can't finish the whole HO preparation procedure, or this update request is refused, the MRS needs to perform Paging Group Update procedure during network re-entry.

6.3.24.10.2 Network Re-Entry for MRS PG_ID Update
For the Network Re-Entry, the MRS shall initiate network re-entry with the target MR-BS by sending a RNG-REQ including Ranging Purpose Indication TLV with Bit #2 set to 1, Paging Group Update Request and MRS

Paging Group ID TLVs.

If RNG-REQ, from MRS, includes a Ranging Purpose Indication TLV with Bit #2 set to 1 and Paging Group ID
TLVs, and target MR-BS had not previously received MRS information over the backbone, then target MR-BS
shall request MRS information from the serving MR-BS over the backbone network. If the target MR-BS
responds with a successful Paging Group Update Response=0x01, Success of Paging Group Update, the target
MR-BS shall update the MRS location to Paging Controller via the backbone messages. Paging Controller may
send a backbone message to inform the MR-BSs to which the MRS was attached previously that the MRS has
transitioned to a different Paging Group and may request the addition of MRS PG_ID in the PG_ID list of the
MR-BSs in the new PG.