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Re:	IEEE 802.16j-06/027: “Call for Technical Proposals regarding IEEE Project P802.16j”	
Abstract	In MR networks, RS could have more flexibility for scheduling, if it can obtain MS sleep mode information.	

Purpose	Discuss and adopt proposed text.
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Obtaining Sleep Mode Information in RS with Distributed Scheduling

This revision of contribution propose a harmonization text proposal on sleep mode.

1. Problem Statement

In MR networks, distributed scheduling RS shall allocate resources to this sleep-mode MS to properly perform the event-based actions. However, if the RS does not decode MOB_SLP-RSP messages, it may not allocate proper resources to MSs on time, thus the event-based actions may failed.

Moreover, if RS, in distributed case, can know that an MS has switched to sleep mode by decoding the MOB_SLP-RSP message, it shall avoid sending management message to this MS. Also, an RS, in distributed case, can cancel the bandwidth resources allocated to this MS during the sleep period, thus saving bandwidth.

In order to facilitate the centralized management of sleep mode in distributed MR networks, text is required to clarify how the RS and MR-BS shall synchronize the sleep-mode information between MR-BS and RS.

MR-BS can instruct the MS sleep mode by sending MOB_SLP-RSP, RNG-RSP, or DL sleep control extended subheader. If the RS could share the security key (HMAC, CMAC) with MR-BS, it can obtain the sleep mode information by decoding these received message (as shown in figure 1).

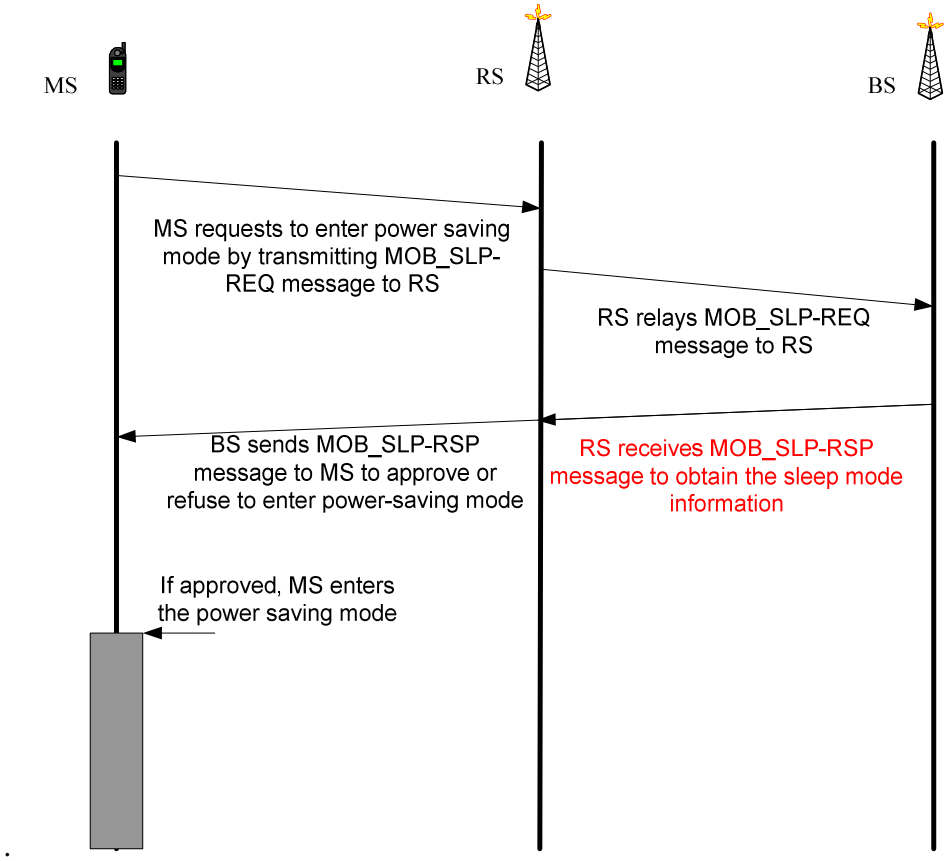

Fig. 1. RS decodes the MOB_SLP_RSP message for further scheduling

3. Specific Text Change

[**The proposed text depends on the latest version of C802.16j-07/010. If the latest version of C802.16j-07/010 could be accepted, then we propose the following text for the baseline document.**]

6.3.21 Sleep mode for mobility-support MS

[Insert a new subclause after 6.3.21.7]
6.3.21.7.x MS sleep mode support for distributed scheduling

In MR networks, the sleep mode shall be centrally controlled by MR-BS in the presence distributed scheduling.

If security models are implemented which allows RS to authenticate the relayed management messages, RS should receive and decode the relevant sleep-mode messages, such as MOB_SLP-RSP, RNG-RSP, sent by MR-BS to obtain sleep mode information, so as to be aware of MSs being in sleep state.

If DL sleep control extended subheader is used by MR-BS to active/deactive power saving class, before sending DL sleep control extended subheader, the MR-BS shall send an MR_SLP-INFO message to the access RS on the RS's basic CID to inform the RS the corresponding change of MS sleep mode. After receiving this MR_SLP-INFO message, the access RS shall send SLP_INF-ACK message to MR-BS to acknowledge it. The MB-RS shall retransmit the MR_SLP-INFO message to the access RS on the RS's basic CID, if it does not receive the SLP_INF-ACK message from the corresponding access RS within the T49 timer. MR-BS may do retransmission for a maximum of SLP-INFO Retry Count. Once MR-BS receives the SLP_INF-ACK message, it should send DL sleep control extended subheader to the RS' subordinate MS.

[**The proposed text depends on the latest version of C802.16j-07/010. If the latest version of C802.16j-07/010 could not be accepted, then we propose the following text for the baseline document.**]

6.3.21 Sleep mode for mobility-support MS

[Insert a new subclause after 6.3.21.7]
6.3.21.7.x MS sleep mode support for distributed scheduling

In MR networks, the sleep mode shall be centrally controlled by MR-BS in the presence distributed scheduling.

If the implemented security models allow RS to authenticate the relayed management messages, RS should receive and decode the relevant sleep-mode messages, such as MOB_SLP-RSP, RNG-RSP, sent by MR-BS to obtain sleep mode information, so as to be aware of MSs being in sleep state. MR-BS should not use DL sleep control extended subheader to instruct MS of sleep mode operations.