# Sleep Mode Operations in MR Network for Centralized Scheduling Approach

Document Number: S802.16j-07/044r1
Date Submitted: 2007-01-14
Source:
Shiao-Li Tsao, Fang-Ching Ren, I-Kang Fu, Wern-Ho Sheen, NCTU/ ITRI, No. 195,Sec. 4, Chung Hsing Rd., Chutung, Hsinchu, Taiwan 310
Voice:+886-3-5712121-54717, Fax:+886-3-5721490, E-mail:sltsao@cs.nctu.edu.tw, frank_ren@itri.org.tw

Yuefeng Zhou; Sunil Vadgama, Fujitsu Laboratories of Europe Ltd, Hayes Park Central, Hayes End Road, Hayes, Middlesex, UB4 8FE, UK
Voice: +44 (0) 20 8573 4444, FAX: +44 (0) 20 8606 4539, Email: Yuefeng.zhou@uk.fujitsu.com, Sunil.vadgama@uk.fujitsu.com
Keiichi Nakatsugawa, Fujitsu Laboratories Ltd. Kamikodanaka 4-1-1, Kawasaki, 211-8588
Voice: +81-44-754-2811, Fax:+81-44-754-2786, Japan Email: nakatsugawa@jp.fujitsu.com

Yousuf Saifullah, Shashikant Maheshwari, Haihong Zheng, Nokia, 6000 Connection Drive, Irving, TX
Voice: +1 (0) 972 894 5000, Email: Yosuf.saifullah@nokia.com, Shashikant.maheshwari@nokia.com, Haihong.1.zheng@nokia.com

Kanchei (Ken) Loa, Yi-Hsueh Tsai, Shiann-Tsong Sheu, Hua-Chiang Yin, Chih-Chiang Hsieh, Yung-Ting Lee, Frank C.D. Tsai, Heng-Iang Hsu, Youn-Tai LeeInstitute for Information Industry, 8F., No. 218, Sec. 2, Dunhua S. Rd., Taipei City, Taiwan.
Voice: +886-2-27399616, FAX: +886-2-23782328, Email: Loa@nmi.iii.org.tw

Venue: Session #47: 15-18 January 2007 in London, UK
Base Document: IEEE 802.16j-06/027:“Call for Technical Proposals regarding IEEE Project P802.16j”
Purpose: This document suggests the usages of IEEE 802.16e messages and introduces new parameters in these messages to facilitate the sleep mode and idle mode operations in IEEE 802.16j

# Relay support for MS sleep mode

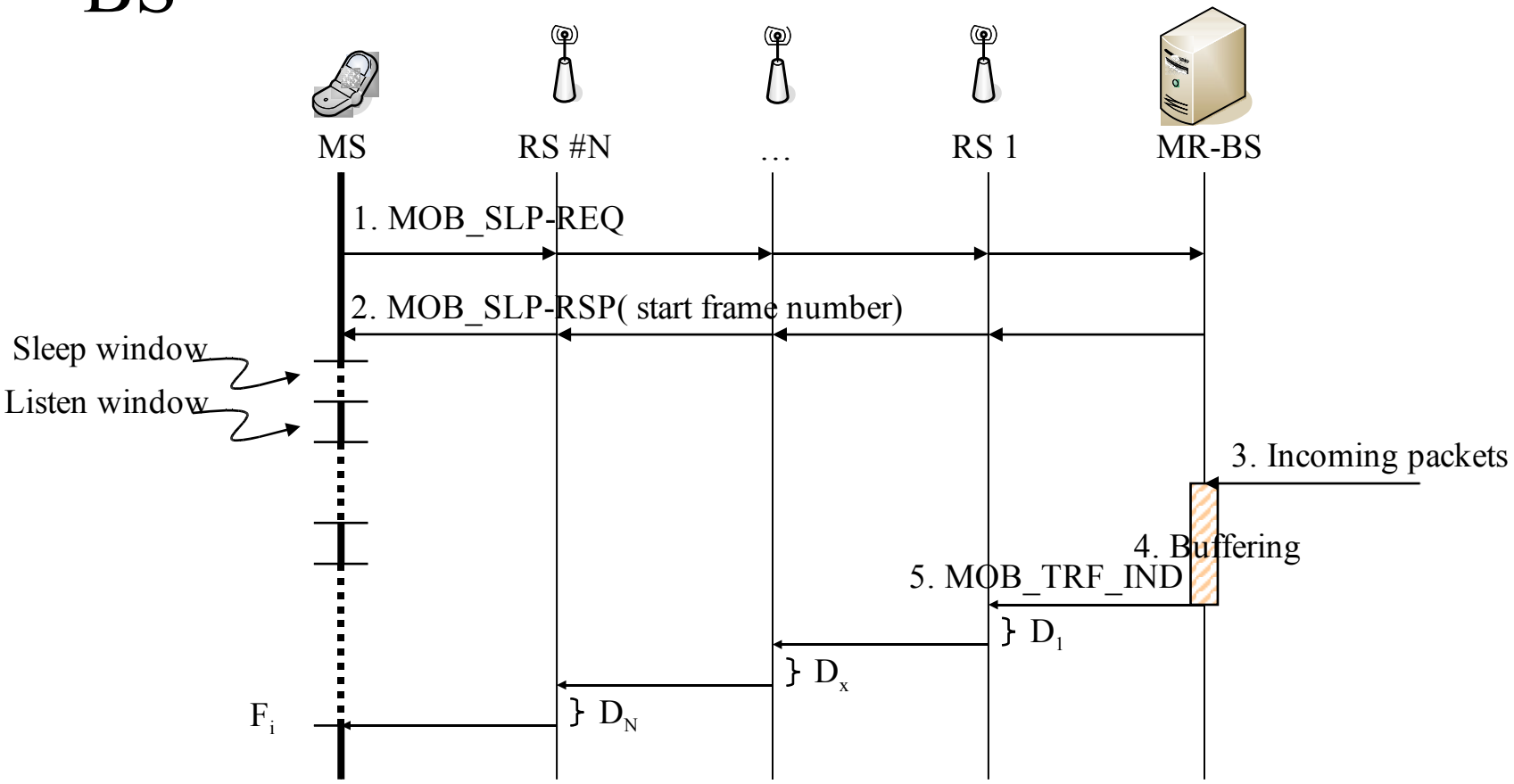
- In IEEE 802.16j MR networks, the RS may use two types of scheduling
  - Centralized Scheduling
    - where MR-BS controls all the radio resource scheduling and MAP allocation
  - Distributed Scheduling
    - where some functionality of radio resource scheduling and MAP allocation are distributed to RS

- MS sleep mode should be supported in an MR network for both centralized and decentralized scheduling approaches

- This contribution proposes text to clarify the MS sleep mode for the centralized scheduling approach only

# Sleep Mode Operations in MR Network for Centralized Scheduling Approach

- Centralized controlled and scheduled by MR-BS



# Proposed Text

*Insert new subclause 6.3.21.7:*

6.3.21.7 Relay support for MS sleep mode

*Add the following words in the first paragraph in 6.3.21.7:*

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

*Insert new subclause 6.3.21.7.1:*

6.3.21.7.1 MS sleep mode support for centralized scheduling approach

*Add the following words in the first paragraph in 6.3.21.7.1:*

For an MS attached to the MR-BS through an RS, MS sleep mode operates as defined in section 6.3.21. All MOB_SLP-REQ messages generated by MSs attached to an RS shall be relayed to the MR-BS. The MR-BS shall be responsible for generating MOB_SLP-RSP messages, which will be relayed by RSs, either in response to a MOB_SLP-REQ or unsolicited. The MR-BS shall take the additional relay delay into account while it forwards the packets through RS.

# References


- [1] IEEE Standard 802.16-2004, Air Interface for Broadband Wireless Access Systems, 2004.
- [2] IEEE Standard 802.16e-2005, Air Interface for Fixed and Mobile Broadband Wireless Access Systems; Amendment 2: Physical and Medium Access Control Layers for Combined Fixed and Mobile Operation in Licensed Bands, 2005.
- [3] WiMAX End-to-End Network Systems Architecture (Stage 2: Architecture Tenets, Reference Model and Reference Points, WiMAX Forum Draft Document, Aug. 2006.
- [4] WiMAX End-to-End Network Systems Architecture (Stage 3: Detailed Protocols and Procedures), WiMAX Forum Draft Document, Aug. 2006.
- [5] Harmonized definitions and terminology for 802.16j Mobile Multihop Relay, IEEE 802.16j-06/014r1.
- [6] Table of Contents of Task Group Working Document, IEEE 802.16j-06/017r2.
- [7] Yousuf Saifullah, Shashikant Maheshwari, Haihong Zheng, Kanchei (Ken) Loa, Hua-Chiang Yin, Yi-Hsueh Tsai, Shiann Tsong Sheu, “Sleep Mode with RS,” IEEE C802.16j-06/209r2, 2006-11-13.
- [8] Keiichi Nakatsugawa, Yuefeng Zhou, Shiao-Li Tsao, Fang-Ching Ren, Wern-Ho Sheen, I-Kang Fu, “A proposal for timing compensation of sleep mode in MR,” IEEE C802.16j-06/131r1, 2006-11-15.
- [9] Yuefeng Zhou, Mike Hart, Sunil Vadgama, Shiao-Li Tsao, Fang-Ching Ren, Wern-Ho Sheen, I-Kang Fu, “Obtaining Sleep Mode Information in RS,” IEEE C802.16j-06/136r6, 2006-11-16.
- [10] Shiao-Li Tsao, Fang-Ching Ren, Jen-Shun Yang, Wern-Ho Sheen, I-Kang Fu, Tzu-Ming Lin, Chie Ming Chou and Ching-Tarng Hsieh, “Sleep Mode and Idle Mode Operations for IEEE 802.16j,” IEEE C802.16j-06/173, 2006-11-07.