

Neighborhood Discovery and Topology Learning

IEEE 802.16 Presentation Submission Template (Rev. 8.3)

Document Number:

IEEE S802.16j-06/287

Date Submitted:

2006-11-13

Source:

Wei Zou, Jimin Liu

Alcatel, Research & Innovation

388#, Ningqiao Road, Shanghai, P. R. C.

Voice: +86 21 58541240

Fax: +86 21 50554550

E-mail: wei.zou@alcatel-sbell.com.cn

Venue:

IEEE 802.16 Session #46, Dallas, TX, USA.

Base Document:

IEEE C802.16j-06/287

Purpose:

Propose neighborhood discovery schemes for IEEE802.16j

Notice:

This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.

Release:

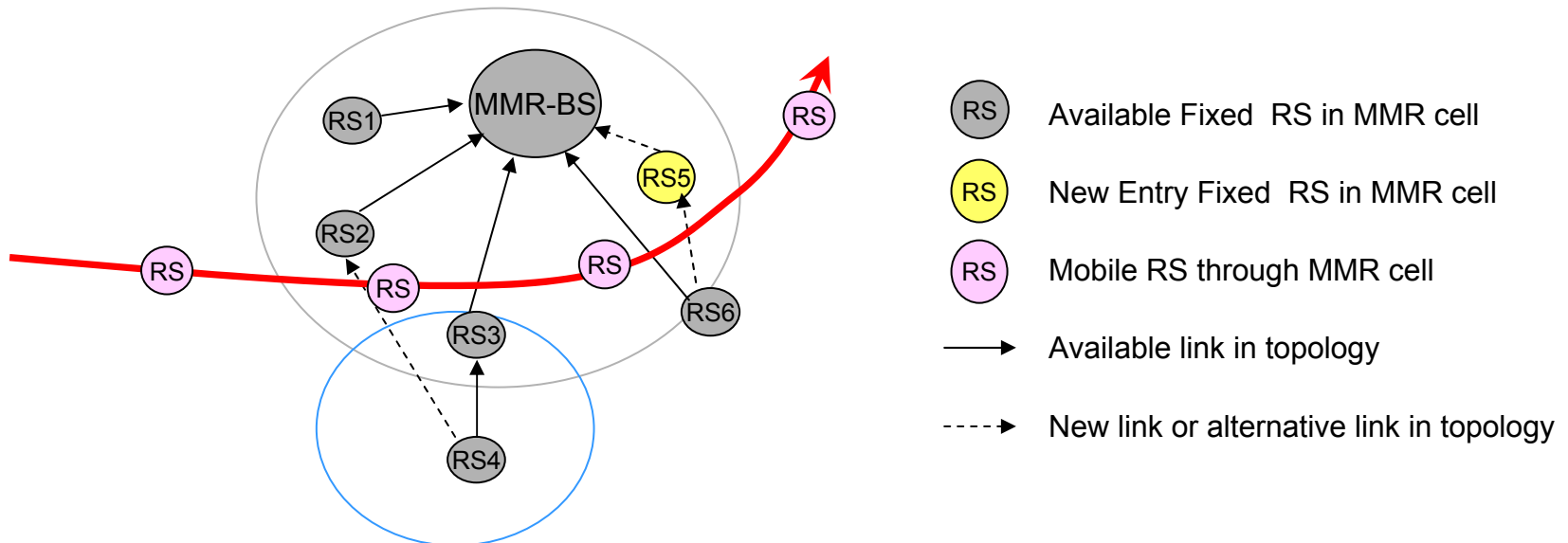
The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.

IEEE 802.16 Patent Policy:

The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <<http://ieee802.org/16/ipr/patents/policy.html>>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <<mailto:chair@wirelessman.org>> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <<http://ieee802.org/16/ipr/patents/notices>>.

Neighborhood Discovery

- Efficient radio resource allocation requires that MMR-BS has the knowledge of each RS and its neighbors
 - Neighbors only refers to the RSs which have good radio link quality with the designated RS rather than all RSs in one MR cell
 - MR-BS only maintain the radio link between each RS and its neighbors
 - Decrease the work burden of BS and speed up the path selection
- Neighborhood discovery may be triggered due to
 - New RS entry, mobile RS handover, RS exit , propagation environment change, and etc

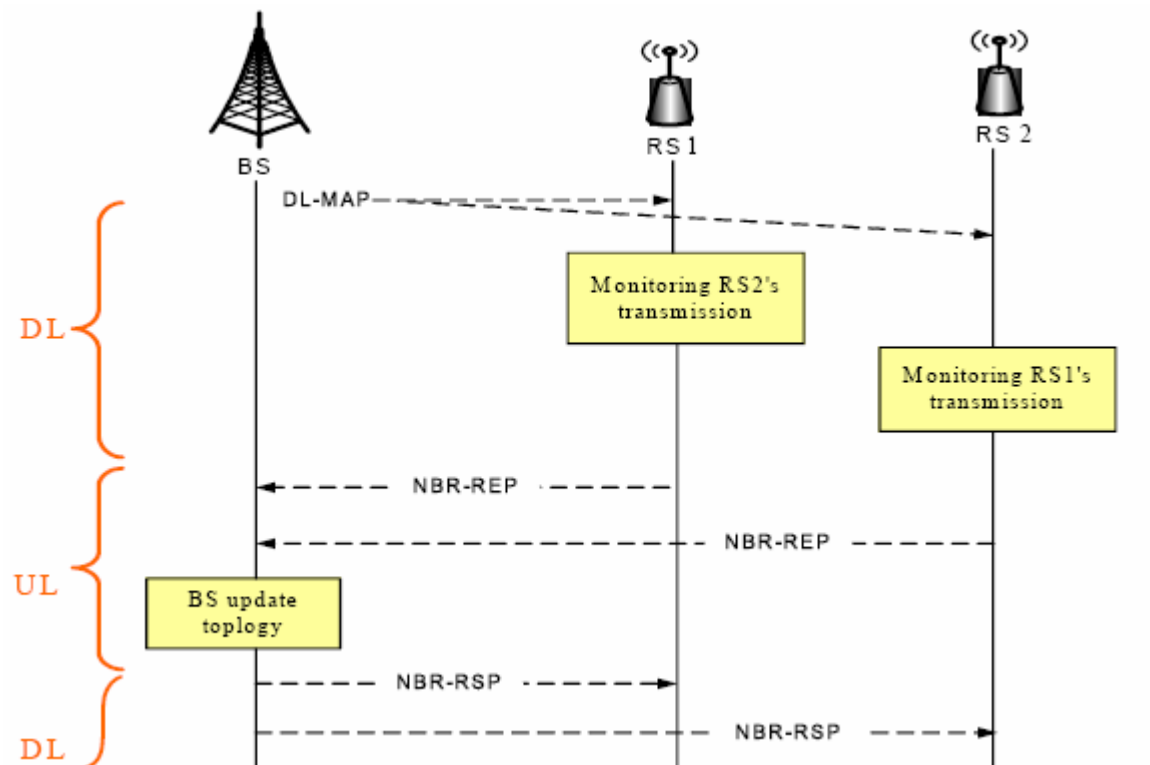


Neighborhood Discovery Mechanism

- Neighborhood table setup at new RS entry
 - BS create a neighborhood table for each RS at its network entry
- RS neighborhood discovery procedures
 - Measurement
 - RS measures signals from other RSs periodically or requested by MMR-BS
 - Link report
 - If the signal quality (e.g CINR/RSSI) is greater than a threshold, RS report to MMR-BS the existence of a neighbor and link qualities.
 - Table update
 - MMR-BS will process the received reports and update the topology and neighborhood table of corresponding RS

New MAC message introduced

- NBR_REP for reporting measurement result
- NBR_RSP for transporting neighborhood update information



Summary

- Key points of the proposal
 - Neighborhood discovery/topology learning mechanism
 - Neighborhood discovery procedures
 - New MAC message definition to support the transportation of related information