

Link Adaptive Multi-hop Path Management for IEEE802.16j

IEEE 802.16 Presentation Submission Template (Rev. 8.3)

Document Number:

IEEE S802.16j-06/296r1

Date Submitted:

2006-11-14

Source:

H. Lee, H. Park, Y.-H Choi, Y.-u Chung, S. H. Lee
Kwangwoon University
Seoul, Korea

Voice: +82-42-860-6479

hlee@kw.ac.kr

Y.S. Lee, Y.-i. Kim
ETRI
Daejeon, Korea

Voice: +82-11-252-3168

yikim@etri.re.kr

Venue:

IEEE 802.16 Session #46, Dallas, USA

Base Document:

IEEE C802.16j-06/296 and URL <http://ieee802.org/16/.../C80216j-06_296.pdf>.

Purpose:

For discussion and approval of inclusion of the proposed text into the P802.16j baseline document.

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>>.

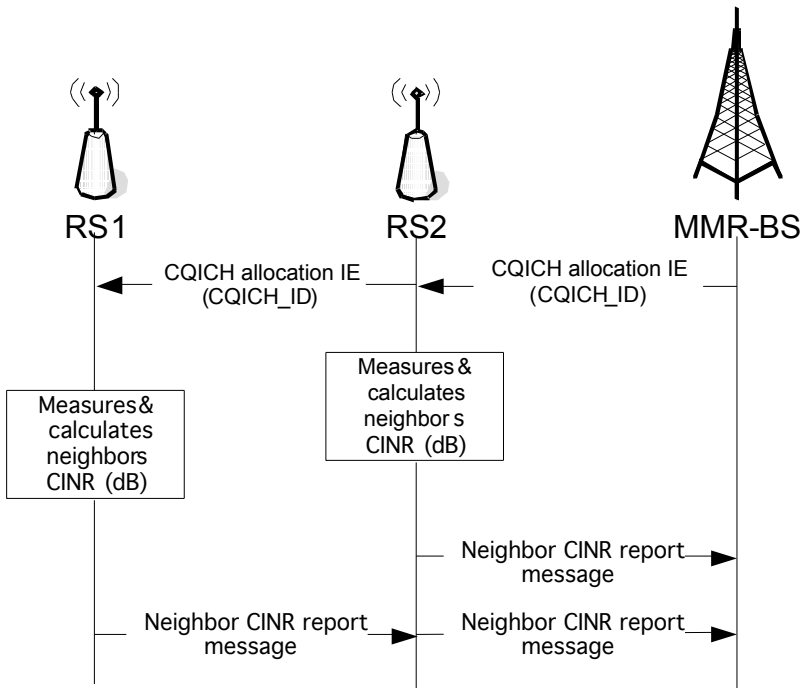
Objectives

- Centralized
 - Optimal path management and routing (resource allocation) by MMR-BS
- Link adaptive
 - Route update in response to dynamic changes in link quality
- Tree-based
 - No downstream links towards MMR-BS
- Optimal paths in terms of path metric based on link quality
 - CINR \rightarrow Tx Rate accumulated over multiple hops

Main Ideas

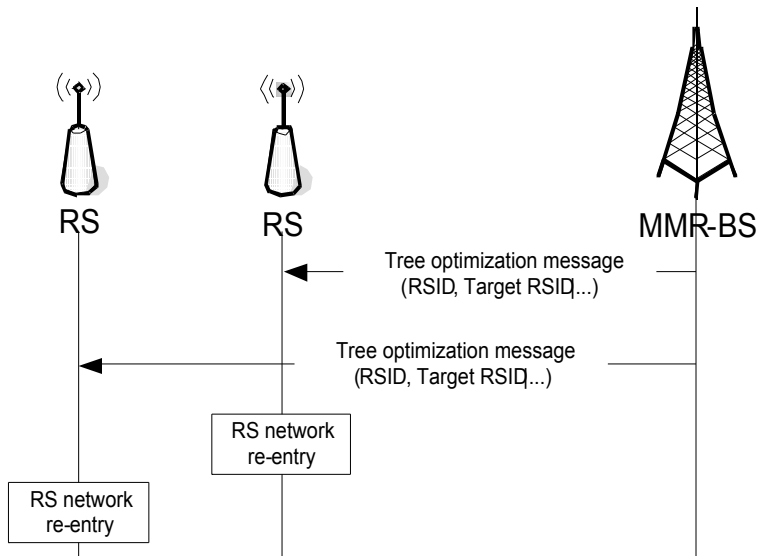
- Tree-based joint topology discovery and routing
 - Incremental construction
 - Entering RSs make initial connection to another RS or MMR-BS
 - Results in sub-optimal path tree
 - Periodical/on-demand topology update
 - Neighborhood discovery
 - RSIDs and link quality (CINR)
 - Neighbor CINR report
 - Calculation of optimal path spanning tree based on link quality
 - Tree optimization message
 - RS network re-entry
 - Routing by MMR-BS along the tree edges

Neighbor CINR report message



Syntax	Size	Notes
Neighbor_CINR_Report_Message_Format() {		
Management Message Type=75	8 bits	
Frame number	8 bits	8 LSB of the frame number
N_reports	8 bits	The number of report elements that the RS sends to the MMR-BS
For(i=0; i<N_reports; i++) {		
Measurement indication	4 bits	Bit #0- Report CINR Bit #1~3-Reserved
Neighbor station ID	48 bits	
CINR	7 bits	
}		
TLV Encoding Information	variable	TLV specific
}		

Tree optimization message



Syntax	Size	Notes
Tree_Optimization_Message_Format() {		
Management Message Type=80	8 bits	
Broadcast relay symbol	4 bits	
Frame Offset	4 bits	
N_Station	8 bits	
For(i=0; i<N_RS; i++) {		
RS network re-entry optimization	3 bits	Bit #0: Omit the RS Basic Capability REQ/RSP process Bit #1: Omit the RS registration REQ/RSP process Bit #2: Omit the address acquisition process
Station ID	48 bits	
Target station ID	48 bits	
}		
TLV Encoding Information	variable	TLV specific
}		