

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >
Title	Link Quality Threshold Based Link Measurement in Multi-Hop Relays System
Date Submitted	2007-04-06
Source(s)	<p>Mark Naden, Wen Tong, Hang Zhang, Peiying Zhu, Mo-Han Fong, Israfil Bahceci, David Steer, Gamini Senarath, Derek Yu, G.Q. Wang</p> <p>Voice: +1 613 7631315 [mailto:WenTong@nortel.com]</p> <p>Nortel [mailto:pyzhu@nortel.com] 3500 Carling Avenue Ottawa, Ontario K2H 8E9</p>
Re:	A response to a Call for Technical Proposal, http://wirelessman.org/relay/docs/80216j-06_027.pdf
Abstract	Introduce the link quality threshold to construct the link measurement candidate set
Purpose	To reduce the reporting of not useful link quality measurement
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.
Patent Policy and Procedures	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 >.

Link Quality Threshold Based Link Measurement in Multi-Hop Relays System

Mark Naden, Wen Tong, Hang Zhang, Peiying Zhu, Mo-Han Fong, David Steer, Gamini Senarath, Derek Yu, G.Q. Wang

Nortel

Introduction

Within a cell there may be several RSs and many MSs, in addition to a BS. There may also be RSs and MSs in neighbouring cells. There may be links between the BS and each RS, between the BS and each MS, between each pair of RSs, and between each RS and the MSs. It is desirable for the BS to have knowledge of the quality of these links in order to make optimum use of available resources. Various methods have been proposed for obtaining this link quality information and communicating it to the BS through signalling. However, this signalling is wasteful of resources, which may otherwise be used for user traffic, and should therefore be minimised.

Link quality threshold

We introduce a link quality threshold, LQT , such that an RS shall only report to a BS the quality of those links whose quality exceeds this threshold. Furthermore, a RS shall only report to a BS if the link quality of the link between the BS and the RS exceeds this threshold. This threshold shall be configurable and its value may be communicated to an RS by the BS.

For example, a particular MS may be visible to several RSs; however, each RS may only report a link quality for the link between itself and this MS to the BS if the said link quality is greater than the pre-configured link quality threshold, LQT . Thus, the RS may receive several signals transmitted on links from one or more MSs and RSs and from these may select links whose quality it may report to a BS. The RS measures the quality of each signal it receives from a MS or RS and compares the quality measured for each signal to a threshold quality for that signal, forming a candidate set of links, A , comprising those links whose received signals have a quality above their thresholds.

Furthermore, a particular RS may be visible to several BSs. The RS may only report a link quality for the link between itself and a MS or an RS to a BS if the link quality for the link between itself and this BS is greater than the pre-configured link quality threshold, LQT . Thus, the RS may receive several signals transmitted from one or more BSs. The RS measures the quality of each of these signals it receives from a BS and compares the quality measured for each signal to a threshold quality for that signal, and forms a candidate set of links, B , comprising those links whose received signals have a quality above their thresholds.

The RS selects those links which are members of the candidate set of links A , to MSs or RSs, whose corresponding link to a BS is a member of the candidate set of links B , between the RS and that BS, and reports that selected link quality to the corresponding BS.

In this way, RSs do not report the quality of links to BSs if the quality of the link between the RS and the MS or RS is too low or if the quality of the link between the RS and the BS is too low. Resources are therefore conserved for use by user traffic.

Configuration message

To be updated