

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >
Title	Path selection and reselection for RSs in IEEE 802.16j Multi-hop Relay Network
Date Submitted	2007-01-08
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Re:	IEEE 802.16j-06/034: "Call for Technical Proposals regarding IEEE Project P802.16j"
Abstract	This contribution describes path selection and reselection for RSs in IEEE 802.16j
Purpose	Propose the path reselection procedures for RSs in IEEE 802.16j specification
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1 **Path Selection and Reselection for RSs in IEEE 802.16j Multi-hop Relay** 2 **Network**

3 **40. Introduction**

5In the IEEE 802.16j #46 meeting, quite a few contributions proposed methods on path selection and/or
6reselection for RSs in the MR network [1-8]. The usage of path selection is when an RS first comes to attach
7to the MR network [1-4], and the usage of path reselection is when the network or an operating RS wants to
8perform path optimization so as to improve the path and/or network performance [5-6]. Generally speaking,
9the proposed methods can be divided into two categories: RS-assisted network-controlled [2,4,7,8] and
10network-assisted RS-controlled [1,3]. In the former, the RS makes measurements of the MR-BS and/or
11other RSs and reports them to the network (MR-BS) which in turn makes the selection decision. In the latter,
12the network broadcasts information regarding relay paths, and the RS makes the selection decision by itself
13after evaluating the information.

17 For the network-assisted RS-controlled scheme, in order to support path selection that may occur at
18anytime, periodic broadcast of path information is needed [1, 3]. In view of the fact that the instances of path
19selection for RSs may not occur too frequently, the periodic broadcast of path information can be very
20inefficient. This contribution focuses only on the RS-assisted network-controlled scheme.

21 Several RS-assisted network-controlled path selection methods were proposed in the IEEE 802.16j #46
22meeting [2,4,7,8], where path selection is done during the network entry of RS. Nevertheless, path
23reselection is also needed for an operating RS for the purpose of better path and/or network performance.
24This contribution proposes to specify path reselection for RSs as a separate procedure from the path
25selection which is performed during the network entry.

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29 **22 Proposed text**

30-----Start text proposal-----

31 **6.3.25 Relay path management and routing**

32 *[Insert the following sub-clauses and texts into this section]*

33

34 6.3.25.1 Path selection for RSs

35 *[This subsection may refer to 6.3.9.16 Support for network entry and initialization in relay mode]*

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37 6.3.25.2 Path reselection for RSs

38 A method of path reselection for RS is required for relay path management in addition to path selection
39which is performed during the network entry for a new coming RS. Path selection is used for an operating
40RS in order to obtain a better path and/or network performance.

41 The procedure of path reselection for RS consists of three steps: (1) MR-BS and/or RSs measurements
42and reporting. (2) Decision of path selection and notification (3) RS network re-entry. The procedure can be

1 initiated by the MR-BS or the RS.

2

3

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5 6.3.25.2.1 MR-BS and/or RSs measurements and reporting

6 TBD

7 *[This subsection may refer to 6.3.26 Relay station neighborhood discovery or 6.3.27 Interference*
8 *measurement for MR] (For example, the RS sounding mechanism proposed in [9])*

9

10 6.3.25.2.2 Decision of path selection and notification

11 After the MR-BS collects the measurement reports from the RS, it makes the decision on the path
12 selection according to some algorithms. The decision shall be notified to the RS. (For example, the
13 RLY_TPY-IND message in [2]).

14

15 6.3.25.2.3 RS network re-entry

16 The network re-entry shall be performed by the RS if it is indicated (For example, the RLY_TPY-IND
17 message in [2]). The RS can skip some of network re-entry processes such as RS basic capability REG/RSP,
18 RS registration REQ/RSP and address acquisition by checking the RS network re-entry optimization
19 parameter in order to accelerate the RS network re-entry.

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21

22 -----End of text proposal-----

23

24 **References**

25

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27 [2] IEEE C802.16j-06/167, "RS Network Entry, Topology Establishment and Initialization for IEEE
28 802.16j".

29 [3] IEEE C802.16j-06/278, "Path selection for RS initial network entry".

30 [4] IEEE C802.16j-06/286, "MS / RS network entry and initialization".

31 [5] IEEE C802.16j-06/296r1, "Link Adaptive Multi-hop Path Management for IEEE 802.16j".

32 [6] IEEE C802.16j-06/287r1, "Neighborhood Discovery and Topology Learning".

33 [7] IEEE C802.16j-06/124r4, "MS Network Entry for transparent Relay Station".

34 [8] IEEE C802.16j-06/133r4, "MS network entry for non-transparent Relay Station".

35 [9] IEEE C802.16j-06/149r1, "Resource reuse and interference management mechanism".

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