Project	**IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>**	
Title	**Initialization of HR-MS Relay Mode**	
Date Submitted	**2011-07-18**	
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Re:	Call for Comments for 802.16n AWD	
Abstract	In this contribution, we propose text of multi-mode operation for 802.16n.	
Purpose	To discuss and adopt the proposed text in the 802.16n draft Text	
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Initialization of HR-MS Relay Mode

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NICT

1. Introduction

This document is to provide the contribution to AWD Document IEEE 802.16n-11/0009r1 for the specification of the relay function of HR-MS.

A HR-MS which is capable of role change to HR-RS can start its relay function by centralized scheme or distributed scheme. The use cases for both schemes are illustrated in Figure 1 and Figure 2, respectively.

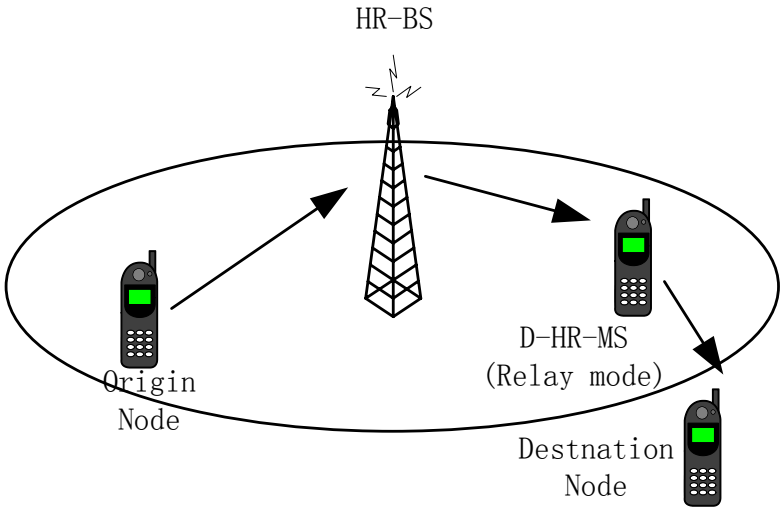

Figure 1. Centralized scheme for Relay Mode

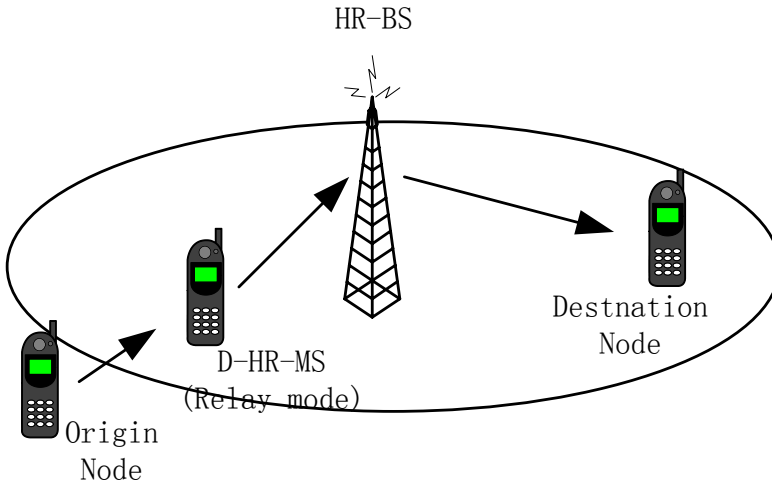

Figure 2. Distributed scheme for Relay Mode

4. Text Proposal for IEEE 802.16n AWD

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Note:

The text in **BLACK** color: the existing text in AWD

The text in ~~**RED**~~ color: the removal of existing AWD text

The text in **BLUE** color: the new text added to AWD

[----------Insert the following texts to section 17.2.1.2----------]

17.3.1.2 Initialization of Relay Function for HR-MS

HR-MS may initialize its relay mode by the following two schemes:

(1) Centralized scheme (Initialized by HR-BS)

In centralized scheme, relay mode operation of HR-MS is initiated by HR-BS for a destination HR-MS which is out of coverage of HR-BSs.

Initialization of Relay Mode

When an HR-BS receives message to a destination HR-MS which is out of HR-BSs coverage, based on obtained topology information, HR-BS may designate an HR-MS which is capable of role changing to relay mode to switch on the relay function and operate as an HR-RS.

To initialize, HR-BS will send an ENQ_RS message to a designated HR-MS (D-HR-MS) for relaying task to the destination node. The D-HR-MS will response with an RSP_RS message. The D-HR-MS will start operating as a HR-RS upon the acceptance of request.

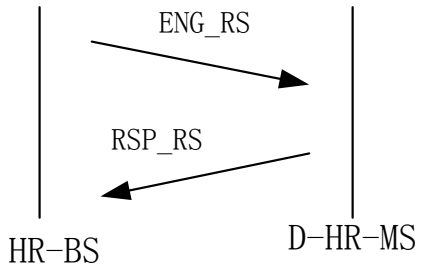

Figure 3. Messages for Initialization of Relay Operation in Centralized Scheme

In the case when D-HR-MS denies the request from HR-BS, HR-BS may search for another candidate HR-MS for relaying support.

(2) Distributed scheme (Initialized by HR-MS)

Distributed scheme for initialization of relay mode is initialized by HR-MS which is connected to one or multiple out-of-coverage HR-MSs.

The use case for distributed scheme is illustrated in Figure 3.

Initialization of Relay Mode

When a transmission is initiated from a HR-MS (origin node) which is originally link to one HR-BS and become out of the coverage of HR-BSs after movement, the origin node (HR-MS) will broadcast the ENQ_RS message for relay support when it loses the connection to HR-BS and is unable to connect to any other HR-BSs. The nearby HR-MS, which is capable of role change to an HR-RS, will send an RSP_RS message to the origin node to indicate its availability to operate as relay. There may be more than one response to be received by the origin node. A CM_RS message will be sent to the selected HR-MS by UNICAST. The selection of D-HR-MS may be based on the received power or other evaluation metrics. Upon receiving CM_RS, designated HR-MS will send an REQ_RS message to HR-BS to request/inform the operation at Relay mode. After receiving the AK_RS from the serving HR-BS, D-HR-MS start its relay mode and become an HR-RS.

ENQ_RS -- Request for relay support, broadcast by origin node which is out of coverage of HR-BSs

RSP_RS -- Response from HR-MSs which are capable of role change as relay

CM_RS -- Confirmation of selection of HR-MS for relay support

REQ_RS -- Request to operate at Relay mode from candidate HR-MS to its superordinate HR-BS

AK_RS -- Acknowledgement/approval for designated HR-MS to mode switch to perform its relay function

[----------End of Text Proposal----------]