

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >
Title	Text Enhancement for Project 802.16m Requirements: 9.2.3 Deployment with Multi-hop Relay Network
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Re:	IEEE 802.16m-07/013: "Call for Comments and Contributions on Project 802.16m Requirements: <i>IEEE 802.16 Advanced Air Interface</i> "
Abstract	This contribution provides the text enhancement for Project 802.16m Requirements, which is the amendment of section 9.2.3 Deployment with Multi-hop Relay Network.
Purpose	Provide the text enhancement to state the reason why TGm need to consider multi-hop relay network architecture.
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Text Enhancement for Project 802.16m Requirements: 9.2.3 Deployment with Multi-hop Relay

Original bracketed text in 802.16m-07/002r1 does not well address why TGm need to consider the multi-hop relay network architecture in its requirement document. This contribution provides the text enhancement for section 9.2.3 to state the necessity for TGm to consider multi-hop relay network architecture in order to resolve the potential power deficiency problem.

I. Proposed Text Modification

-----Start of the text-----

Add the following text at the start of section 9.2.3

9.2.3 Deployment with Multi-hop Relay

The project 802.16m aims to develop an air interface providing high transmission rate as specified in IMT-Advanced requirement. The target transmission rate is much higher than that defined in IEEE 802.16e specification. Upgrading the networks in order to support higher data rates, is equivalent to an increase of signal-to-interference plus noise ratio (SINR) at the receivers' front-end. Also, through deployment the network providers have to avoid coverage area holes.

A traditional solution to increase the receiver's SINR is to deploy additional BSs or repeaters to serve the coverage area holes with required data rates. Unfortunately, the cost of BS is very high and the wire-line backhaul may not be available everywhere. On the other hand, repeater has the problem of amplifying the interference and has no intelligence of signal control and processing. In order to achieve a better cost-effective solution, relay station (RS) is developed to decode and forward the signals from source to destination through radio interface. Here, RSs do not need a wire-line backhaul; the deployment cost of RSs is expected to be much lower than the cost of BSs. Meanwhile, with intelligent resource scheduling and cooperative transmission, multi-hop relay can be utilized to improve system performance.

Deploying RS can improve IEEE 802.16m network in different dimensions. The following are some examples: First, it can extend the coverage of IEEE 802.16m BS, as shown in Figure 9.x. Second, it can enhance the transmission rate for the SS located at shaded area or cell boundary, which is shown in Figure 9.x+1. Third, it can achieve more aggressive radio resource reuse within the cell, as shown in Figure 9.x+2.

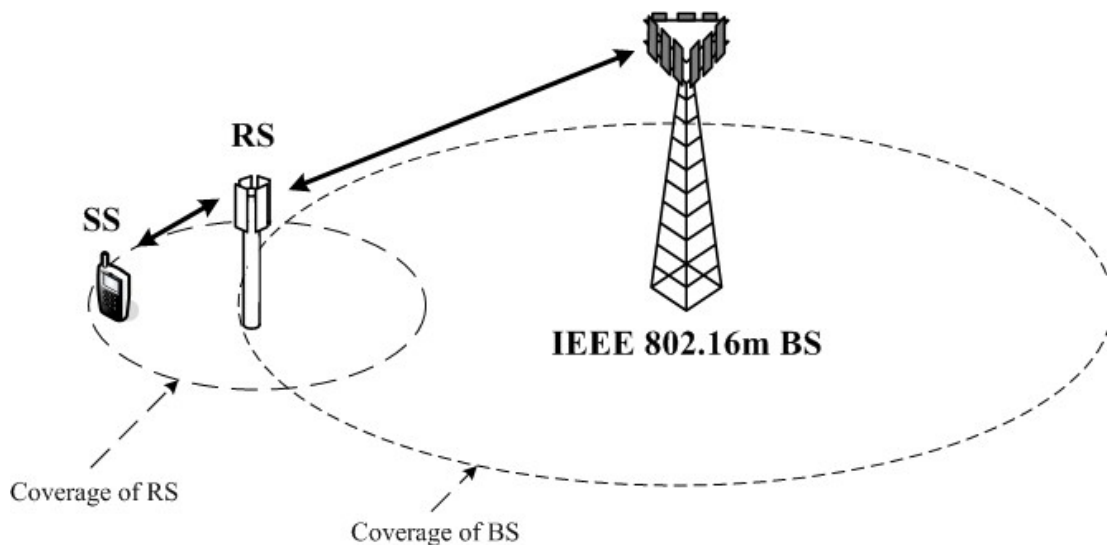


Figure. 9.x Coverage extension by deploying RS into IEEE 802.16m network

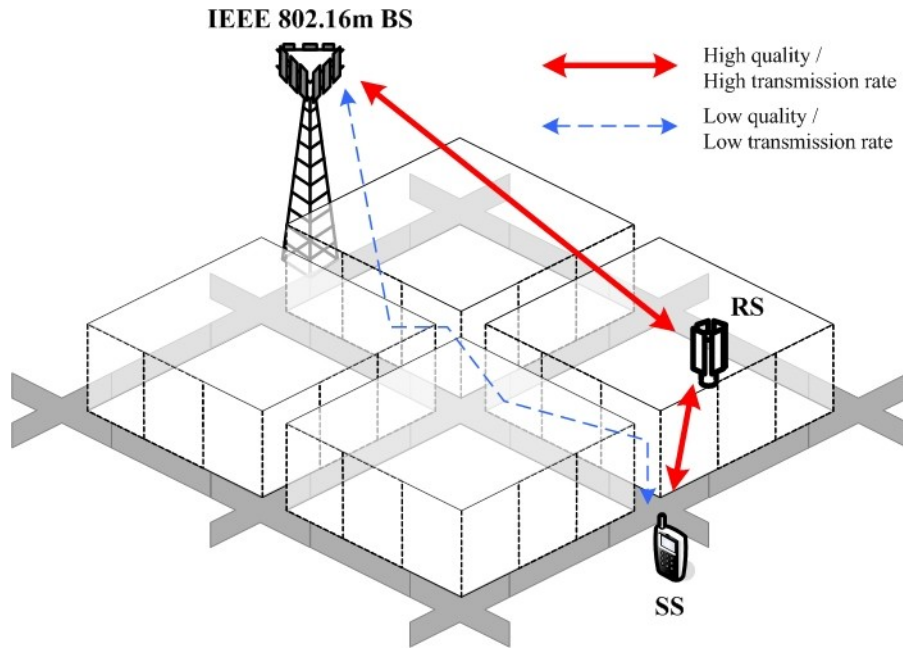


Figure. 9.x+1 Deploying RS can enhance transmission rate for the SS located in shaded area or cell boundary

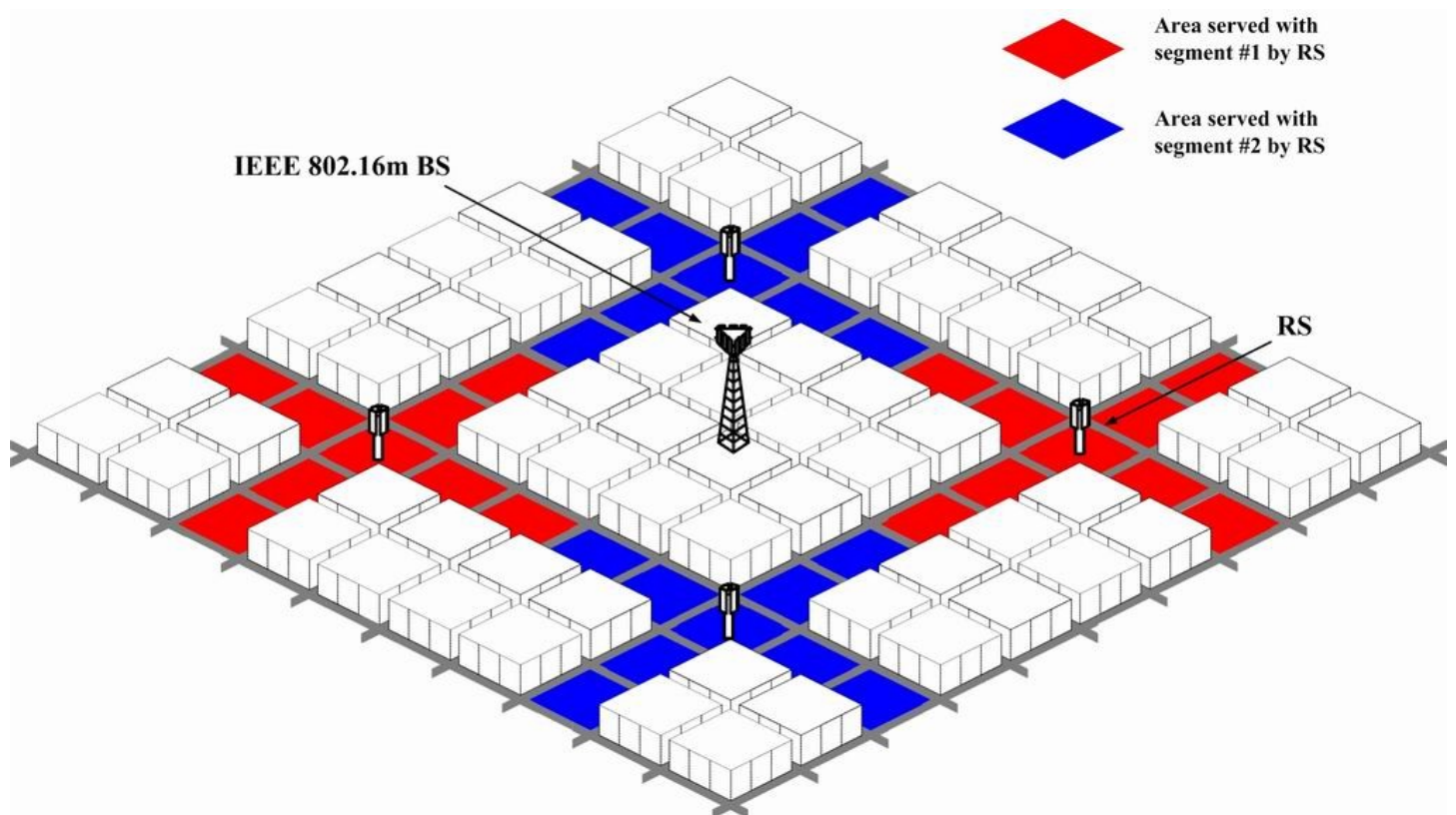


Figure. 9.x+2 More aggressive radio resource reuse by deploying RS in IEEE 802.16m network

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text-----

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