

Project	IEEE 802.16 Broadband Wireless Access Working Group		
Title	CR on SDD Chapter 15: Femtocell Cluster in IEEE 802.16m		
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Re:	Category: SDD comments / Area: Chapter 15 (Femtocell) “Comments on SDD 15 Femtocell”		
Abstract	This contribution provides text addition to SDD to facilitate femtocell cluster in IEEE 802.16m		
Purpose	For discussion and approval by IEEE 802.16m TG		
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Femtocell Cluster in IEEE 802.16m

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1. Introduction

Femtocell is a technology that allows users to install small base stations in indoor environment using licensed spectrum in order to increase coverage and/or throughput [1]. In most cases, the femtocell base stations are installed in isolation and they are connected to the network via a broadband connection such as ADSL. This method has many drawbacks. For example, an individual femtocell can only service a small area which radio link's covers; it is difficult to mitigate the inference from other femtocell/macrocell base stations/mobile stations. The power and resource allocation in femtocell environment is complex. So does the handover between femtocells sharing same neighborhood such as private enterprise premises, Mall, office building etc. In such environment all traffic between these femtocells needs to be diverted to the backbone network.

In this contribution, a concept "femtocell cluster" is proposed to connect a group of femtocell BSs to a femto cluster controller, who acts as the interface/gateway between the femtocells clusters and the outside world. In comparison with the isolated-installed-femtocell solution, not a cluster, this method has several advantages: For example, it can cover a larger area with support for soft handover; and traffic to backbone will reduce.

2. Femtocell Cluster

Our proposals are as follows:

Femtocell base stations are connected to a local femtocell cluster controller to form a femtocell cluster.

The local femtocell cluster controller acts as a femtocell proxy. From the outside world, the femtocell cluster is regarded as a single femtocell. Within the femtocell cluster, the local femtocell cluster controller has the functionalities of RRM, interference mitigation within and outside the femto cluster, security and traffic control, and enhanced soft handover within Femto cluster, enable the Handover between Femto cluster and other radio network, such as macrocell, other isolated Femto, Femto cluster, etc.

Modify the following text into the "Support for Femtocell" clause (IEEE 802.16m-08/003r8):

----- Proposed text -----

15 Support for Femtocell

15.13 Femtocell Cluster

Femtocell cluster should be supported to cover a large area. The femtocell cluster controller should have the functionalities on RRM, security and traffic control, interference mitigation, and handover, etc.