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Title	Cell Type broadcast for mobility optimization	
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Re:	Call for comments	
Abstract		
Purpose	This document proposes “Cell Type” broadcast for mobility optimization	
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Cell Type broadcast for mobility optimization

1 Introduction

In typical mobile cellular system deployments (2G/3G or WiMAX), hierarchical cell structures are used in order to support tradeoff of mobility and capacity requirements of mobile devices. An example of such hierarchical cellular design is shown in the figure below (this is a simplification for illustration purposes – please note that real cell coverage overlaps).

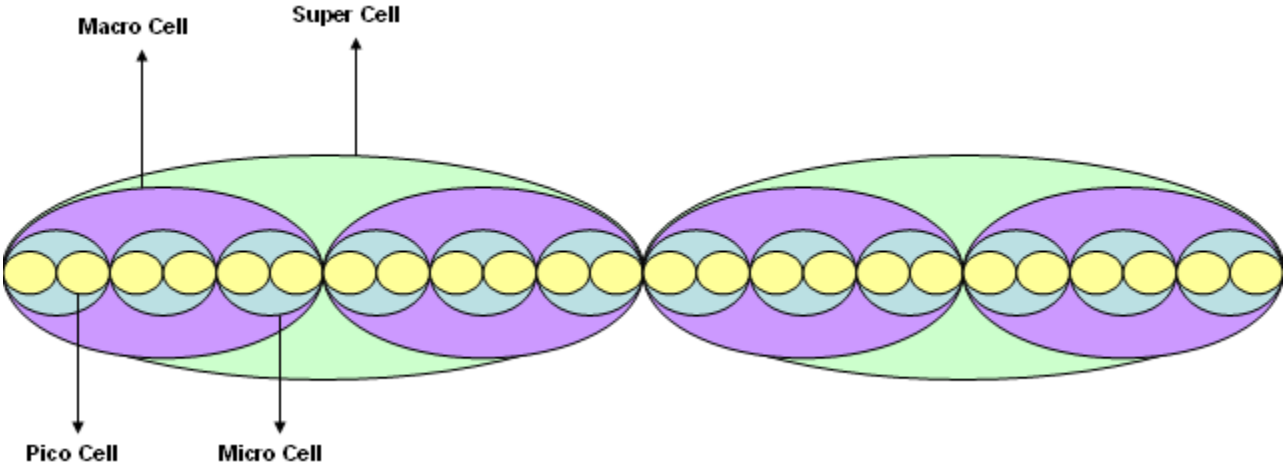

Figure-1: Hierarchical Cell Deployments

The smaller cells are better for low mobility and high data rate capacities whereas the larger cells are more suitable for high mobility and lower data rates. In order to reduce the handoff frequency and achieve optimal data rate for the user applications, it is required to identify the cell types prior to handoff. Handoff procedure entail significant amount of signaling and imposes service interrupts and potential packet loss. For example, if the user is moving fast, the mobile device should handoff to a larger cell in order to reduce the handoff frequency and associated handoff signaling and service disruption.

2 Proposed Text Changes

In order to enable an intelligent cell type selection, this contribution proposes to include a 4-bit TLV identifying the cell type and size. This TLV could be included in IEEE 802.16 specification in MOB_NBR_ADV and/or DCD messages as an optional TLV.

***Add the following TLV to section 11*:**

Type	Length	Value	Scope
Cell Type	4 bits	Defines the cell type indicating the cell size for hierarchical cell architecture	MOB_NBR_ADV DCD

“Cell Type = 0” represents the smallest cell type and “Cell Type = 15” represents the largest cell type. “Cell Type” information can be used for network- or MS-initiated handoffs. The mobile device or network can measure the frequency of handoff and based on that decide to move the user to a larger (in the case of high handoff frequency) or smaller cell (in the case low handoff frequency).