Project	IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>	
Title	Calculating the Non-pre-assigned DL/UL Radio Resources	
Date Submitted	2007-03-09	
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Re:	IEEE 802.16 Session #48	
Abstract	This contribution proposes the updates of IEEE 802.16g D8 document in order to calculate the Non-pre-assigned DL/UL radio resources.	
Purpose	Update 802.16g draft: calculate the Non-pre-assigned DL/UL radio resources.	
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Calculating the Non-pre-assigned DL/UL Radio Resources

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1. Introduction

Currently in 802.16g/D8, it is not clear how to calculate the Non-pre-assigned DL or UL radio resources. This contribution resolves these issues.

2. Proposed Text Change

Remedy 1:

Add two constant parameters for the window size over which the Non-pre-assigned DL or UL radio resources are calculated.

[Add the following entries to Table 342]:

Table 342 Parameters and Constants

Systems	Name	Time references	Minimum Value	Default Value	Maximum Value
BS	DL_radio_resources_smoothing_factor	The smoothing factor that is used to calculate the Non-pre-assigned DL radio resources.			1
BS	UL_radio_resources_smoothing_factor	The smoothing factor that is used to calculate the Non-pre-assigned UL radio resources.			1

Remedy 2:

In order to factor the loading information when determining the target BS for initial entry and handover, the radio loading condition is provided in the DCD message.

[Add to table 358 – DCD channel encoding the following entry]:

Name	Type (1 Byte)	Length	Value	PHY Scope
Non-pre-assigned DL radio resources	23	1	Indicates the average percentage of non-pre-assigned physical radio resources for DL ~~where averaging shall take place over a time interval which shall be a configurable value (with a default value of the last 200 frames) common to all BS within an operator network~~. Non-pre-assigned physical radio resources shall be defined as the set of subchannels and/or symbols within a radio frame, which are not used by any non-best-effort service flow class as identified by either the uplink grant scheduling type or the data delivery service as identified in the service flow encodings. The average shall be taken using exponential	All

			moving average with a smoothing factor that shall be configurable and common to all BS within an operator. Let the instantaneous non-pre-assigned DL physical radio resources at frame k be X_k, the smoothing factor be , the reported non-pre-assigned DL radio resources at frame k be S_k, then $S_k =$ $* X_k + (1-$ $) * S_{k-1}$. 0x00: 0% 0x01 : 1%, ..., 0x64 : 100% 0x65 - 0xFE : reserved, 0xFF indicates no information available	

(Note to the editor: Non-pre-assigned- DL radio message was introduced in the SB02 phone CBR session)

Remedy 4:

In order to factor the loading information when determining the target BS for initial entry and handover the radio loading condition is provided in the UCD message.

[Add to table 349 – UCD common channel encoding the following entry]:

Name	Type (1 Byte)	Length	Value
Non-pre-assigned UL radio resources	24	1	Indicates the average percentage of non-pre-assigned physical radio resources for UL ~~where averaging shall take place over a time interval which shall be a configurable value (with a default value of the last 200 frames) common to all BS within an operator network~~. Non-pre-assigned physical radio resources shall be defined as the set of subchannels and/or symbols within a radio frame, which are not used by any non-best-effort service flow class as identified by either the uplink grant scheduling type or the data delivery service as identified in the service flow encodings. The average shall be taken using exponential moving average with a smoothing factor that shall be configurable and common to all BS within an operator. Let the instantaneous non-pre-assigned UL physical radio resources at frame k be X_k, the smoothing factor be , the reported non-pre-assigned UL radio resources at

			frame k be S_k, then $S_k =$ $* X_k + (1 -$ $) * S_{k-1}$. 0x00: 0% 0x01 : 1%, ..., 0x64 : 100% 0x65 - 0xFE : reserved, 0xFF indicates no information available