Project	**IEEE 802.16 Working Group on Broadband Wireless Access <http://ieee802.org/16>**	
Title	**OA&M Message Requirements for 802.16g**	
Date Submitted	**2005-04-04**	
Source(s)	Scott Migaldi 1303 East Algonquin Road Schaumburg, IL. 60196	Voice: +1.847.576.0574 Fax: +1.847.576.6758 Email: w10265@motorola.com
	Jörg Schmidt 2501 South Price Rd Chandler, AZ. 85248	Voice: +1.480.732.6493 Email: j.Schmidt@motorola.com
Re:	Call for Contributions	
Abstract	Review and adopt suggestion into the 802.16 draft standard	
Purpose	To refine the requirements pertaining to the OA&M messages that need to be supported in 802.16g	
Notice	This document has been prepared to assist IEEE 802.16. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.	
Release	The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE's name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE's sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that this contribution may be made public by IEEE 802.16.	
Patent Policy	The contributor is familiar with the IEEE 802.16 Patent Policy and Procedures <http://ieee802.org/16/ipr/patents/policy.html>, including the statement "IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard." Early disclosure to the Working Group of patent information that might be relevant to the standard is essential to reduce the possibility for delays in the development process and increase the likelihood that the draft publication will be approved for publication. Please notify the Chair <mailto:chair@wirelessman.org> as early as possible, in written or electronic form, if patented technology (or technology under patent application) might be incorporated into a draft standard being developed within the IEEE 802.16 Working Group. The Chair will disclose this notification via the IEEE 802.16 web site <http://ieee802.org/16/ipr/patents/notices>.	

Some general considerations of the network management plane

These points may require new paragraphs to be added to the g specification.

1. Open interfaces: The AI shall support open interfaces between the base station and any upstream network entities. Any interfaces that may be implemented shall use IETF protocols or 3GPP/3GPP2 standardized as appropriate.
2. CPE software upgrade "push" – an operator should have the ability to "push" a software upgrade to CPE that are currently connected to the network. The packets that make up the software image should be given a very high priority and should be coded heavily such that they have a very high chance of arriving error free at the CPE. The CPE should be capable of holding 2 software loads (the existing one and a new one) such that an operator can ensure that the "new" software load has arrived safely at the CPE before deciding to switch from the "old" software load to the "new" software load.
3. Complex networks shall require alarm management systems that add a synthetic cognitive process such that only those alarms that quickly lead to solutions are presented to the operator. This require some sort of agent and filter to reduce the pressure on an operator when alarms are received by an operator at an OA&M terminal

Performance Measurements Support

Mobility creates a dynamic environment for the network that will require constant monitoring and optimization. To accomplish these tasks it is import that the network has a reasonable idea of how mobile stations are performing while moving through the network. Therefore, the air interface shall support the collection of the following metrics so that a network operator to can effectively monitor the performance of the 802.16 air interfaces.

Proposed Text Changes:

[Append to end of section 14.2.6]

The following values must be made available in real-time with redisplay intervals of no less than 1000 msecs, with the option to be displayed in both cumulative and delta modes:

- Paging Channel
  - Paging Channel Delivery
  - Occupancy/capacity used
- Access Channel
  - Access Channel Reception
  - Occupancy/ Capacity
- State transitions
  - Timing/ delay
- Registrations
  - Successful and failed
  - Forward Traffic Channel Delivery
  - Total and Per user
- MAC retries
- PHY retries
- MAC latency
- Total blocks/PDU assigned and delivered
- Uncorrectable Errors
- Signal Strength (RSSI)
- CINR
- Reverse Traffic Channel Reception
  - Total and Per user
- UL & DL Power Measurements
  - Total and per user