Project	IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>	
Title	Requirements to be addressed by 802.16g	
Date Submitted	2005-03-16	
Source(s)	Jose Puthenkulam, Gedon Rosner, Bala Rajagopalan, Sanjay Bakshi Intel Corporation	Voice: (503) 6968080 Email: jose.p.puthenkulam@intel.com, gedon.rosner@intel.com, bala.rajagopalan@intel.com, sanjay.bakshi@intel.com
	Rene Purnadi, Yousuf Saifullah Nokia 6000 Connection Drive, Irving, TX 75039, USA	Voice: +1-972 894 5000 Email: rene.purnadi@nokia.com, yousuf.saifullah@nokia.com
Re:	Call for comments	
Abstract	Requirements that need to be addressed by P802.16g specification	
Purpose	This document proposes requirements to better scope of the work of 802.16g specifications.	
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 and Procedures	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>.

Requirements to be addressed by 802.16g

Jose Puthenkulam, Gedon Rosner, Bala Rajagopalan, Sanjay Bakshi
Intel Corporation
Yousuf Saifullah, Rene Purnadi
Nokia Research Center

1 Introduction

This contribution proposes requirements that need to be addressed by the functional descriptions within the P802.16g specification [1]. The main intent is to clarify the scope of functionality the specification should address. As currently the baseline document also has a requirements section 14.2 we propose text for this section.

2 Proposed Text

[Replace the text in section 14.2 Requirements with the following]

14.2.1 Architectural Requirements

These are requirements that impact the FS, MS or BS from an air interface management and control perspective. These requirements do not assume a specific radio access network architectural topology and any implied physical connectivity model (eg. Routed vs Switched).

- Data, Control and Management Plane separation shall be maintained for all protocol procedures specified.
- The protocol procedures shall not tie a service to the access network.
- The communication mechanisms assumed between BSes shall be protocol agnostic.

14.2.2 Configuration Requirements

- BS shall be able to manage FS/MS configuration parameters individually or as a group.
- BS shall be able to request parameters from neighboring BSes, including information about MSes attached to it.
- FS/MS shall be able to override some of the configuration parameters that are managed by the BS when they do not impact the network.
- BS should provide an interface for reading configuration parameters.
- BS should provide the ability to update software and service capabilities on the mobile station.

14.2.3 Security Requirements

- BS shall be able to request FS/MS re-authentication at anytime.
- The security capabilities of the weakest FS/MS or BS should not compromise the security of the other devices.
- BS should support faster HO re-authentication.

14.2.4 Mobility Requirements

- MS and BS shall support primitives for enabling upper layer mobility management protocols
- HO capabilities at varying levels should be exposed appropriately to the upper layers.
- Location determination shall be supported within the accuracy as determined by the laws and regulations of the geographical area.
- Location servers may request location information on demand.
- Primitives for a loss less handoff shall be supported for non real time traffic (e.g. HTTP.) A loss less handoff is characterized by no frame loss during the handoff. The MAC frames could be buffered at the source BS and delivered to the target after the handoff completion.

14.2.5 Data Traffic Requirements

- Traffic Policies may be advertised during network entry and handover and may be enforceable by the BS.

  14.2.5.1 Traffic Policies
  - <Tbd>

  14.2.5.2 Traffic filters
  - <Tbd>

- QoS differentiation shall be supported through primitives to enable proper traffic prioritization by upper layer protocols.

14.2.6 Performance Requirements

- Protocol primitives defined shall maximize the MS battery lifetime.
- Protocol primitives for fast and seamless handoff shall be supported for real time traffic (e.g. VoIP). A fast and seamless handoff is characterized by low latency and tolerance for few frame drops without any noticeable glitch to the end user.
  - HO Latency
    - FBSS – BS transition latency < (tbd)
    - Hard-HO – BS transition latency < (tbd)

14.2.7 Resource Management Requirements

- Procedures for Emergency services shall be supported also for unidentified/unauthorized user. These procedures shall be given priority in resource allocation so as to increase the chance of success in connection initiation and handoffs.
- Primitives for sharing available Resource/Traffic Load information dynamically among the neighbor BSs for the efficient use of radio resources.
- Flexible bandwidth allocation shall be supported to fulfill the QoS requirement with any possible adaptation to efficiently utilize the spectrum
- Procedures supporting load balancing shall be supported and provisioned among the BSs for increased system utilization and accommodating more users

- BS supporting mobility, shall provide protocol primitives for collecting and forwarding neighbor BS information advertisements.
- BSes should be capable of providing default transport connections for MSes that need to use it for emergency services.
- 802.16g entities (BS/MS) shall provide relevant reports (e.g. measurements) on resource information for use by entities on the network.

14.2.8 Element Management Requirements

- Statistics for the FS/MSes should be collected by the BS using primitives defined and available to a higher layer Network Management Protocols.
- Statistics for the BS (e.g. usage of resources) should be collected by the BS and available to a higher layer Network Management Protocols
- MS should collects statistics on the radio link that may be queried by the BS.
- MSes and BSes should also collect statistics on neighboring BSes for the purposes of HO.

14.2.9 Specification Requirements

- There are several usage scenarios based on 802.16's specifications, such as Fixed Access, Nomadicity, Portability with Simple Mobility Support, Full Mobility Support. If a procedure, message, IE or IRP does not apply to all usage scenarios, the scenarios it applies to will be clearly specified.

References

[1] IEEE P802.16g baseline document. http://ieee802.org/16/netman/docs/80216g-04_03r1.pdf