

<b>Project</b>	<b>IEEE 802.16 Broadband Wireless Access Working Group</b> < <a href="http://ieee802.org/16">http://ieee802.org/16</a> >	
<b>Title</b>	<b>Proposal for MAC enhancements to 802.16.1 MAC for 802.16.3 Application</b>	
<b>Date Submitted</b>	<b>2000-11-03</b>	
<b>Source(s)</b>	George Fishel Communications Consulting Services 10 Bretz Circle Shermans Dale, PA  Chet Shirali Vyyo  Menashe Shahar Vyyo  Chris Tappenden Nortel Networks  Jose Costa: Nortel  Mike Rude ADC  Eric Jacobsen Intel  John Sanford: Remec	Voice: 717-582-2507 Fax: 717-581-3637 <a href="mailto:grfishel@pa.net">mailto:grfishel@pa.net</a>  Phone: 408 863-2354 Fax: 408 863-2329 E mail: <a href="mailto:cshirali@vyyo.com">cshirali@vyyo.com</a> Phone: 972 2 5889 813 Fax: 972 2 5889 889 Email: <a href="mailto:mshahar@vyyo.co.il">mshahar@vyyo.co.il</a> Phone: (613) 763-9894 Fax: 613 763 7326 Email: <a href="mailto:ctappend@nortelnetworks.com">ctappend@nortelnetworks.com</a> Phone: 613 763-7574 Fax: 613 765- 1225 Email: <a href="mailto:costa@nortelnetworks.com">costa@nortelnetworks.com</a> Phone: 952 946-2486 Fax: 952n914-6686 Email: <a href="mailto:mike_rude@adc.com">mike_rude@adc.com</a> Phone: (480)554-6078 Fax: (480)552-0771 Email: <a href="mailto:eric.a.jacobsen@intel.com">eric.a.jacobsen@intel.com</a> Phone: 408 965-0286 Fax: 408 432-1551 Email: <a href="mailto:jsanford@remecmagnum.com">jsanford@remecmagnum.com</a>
<b>Re:</b>	Proposed changes to 802.16.1 MAC	
<b>Abstract</b>	This contribution proposes meeting the MAC needs of 802.16.3 through a common MAC with 802.16.1. The common MAC uses enhancements to Mode A such that it is simpler, lower cost, and more IP centric for present point-to-multipoint as well as future IP based services.	
<b>Purpose</b>	It is recommended that mode A of 802.16.1 specs, which is an FDD application, be adopted with the changes mentioned in this document as the MAC of TG1 and TG3 MAC sub groups with the sub groups working together to implement the changes.	
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# Proposal for MAC enhancements to 802.16.1 MAC for 802.16.3 Application

Author: George Fishel

## Introduction

This contribution proposes meeting the MAC needs of 802.16.3 through a common MAC with 802.16.1. The common MAC uses enhancements to Mode A such that it is simpler, lower cost, and more IP centric for present point-to-multipoint as well as future IP based services.

## Recommended Changes

The major enhancements (changes) to 802.16.1 that make it IP centric and meet the 802.16.3 needs are:

- A non-connection-oriented option (extended header) is added to allow direct, low-risk, proven IP MAC commonality with existing IP residential services, encryption mechanisms, and allow for future expansion of common IP services.
- A CID of 14 bits is added as an option within the 16 bits 802.16 CID framework to allow commonality with IP network and residential service Ids.
- The Mode A piggyback request limit is increased beyond 256 bytes (which presently is much less than maximum Ethernet or IP packet -- an ATM driven limitation) to eliminate unnecessary and inefficient fragmentation overhead and associated additional delay.
- The HCS is increased from 1 to 2 bytes so it is large enough for the MMDS environment.
- Provisions are added for additional messages, antenna diversity, OFDM and MIMO support.
- A non-connection-oriented option (extended header) is added to allow tie into existing related standards (ITU-R F.1499/DOCSIS 1.1) and equipment.

Adopting the IEEE 802.16 TG1 MAC with these changes will significantly accelerate, solidify, and standardize the development of not only the IEEE 802.16 standard, but through its use and application, the in-step development effort for VoIP and other network IP services. The enhancements to Mode A allows IP network services commonality with related IP standards (e.g. IETF/DOCSIS 1.1).

With the 802.16 specification still in a early initial draft form, this contribution provides a method of doing IP and Ethernet in the convergence layer (MAC messages detailed) which is complimentary and consistent with ongoing development and 802.16.1 contributions being made in this area.

Finally, for time to market for the operators (the users of the standard), the contribution simplifies Mode A to facilitate a more immediate introduction and universal application of IEEE 802.16, as service providers want it: when the spectrum is auctioned, licenses awarded, and the service providers are specifying/procuring equipment. By allowing greater IP centric options and commonality, the contribution will help promulgate IEEE 802.16 to widespread adoption for both existing and future TG1 and TG 2 marketplaces and become the standard for specifying MMDS/LMDS BWA equipment.

**Recommendation**

It is recommended that mode A of 802.16.1 specs, which is an FDD application, be adopted as the MAC of TG1 and TG3 MAC sub groups with the sub groups working together to implement the changes.