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| Project | IEEE P802.16 Broadband Wireless Access Working Group | | |
| Title | MAC Services | | |
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| Re: | 802.16 System Requirements | | |


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| Abstract | This contribution drafts the principal requirements for the MAC services, in concordance with the IEEE 802.1 and 802.2 definitions, supported services and bandwidth efficiency considerations. |


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| Purpose | To include these requirements in the System Requirements document. |
| Notice | This document has been prepared to assist the IEEE P802.16. 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 | This contribution may be made publicly available by 802.16. |

# 1. Introduction

This contribution drafts the principal requirements for the MAC services, in accordance with the IEEE 802.1 and 802.2 definitions, supported services and bandwidth efficiency considerations.

# 2. Addressing mode

The CPE Unit and the BS Unit shall be identified by their unique IEEE 48bit MAC address.
For ATM, legacy telephony services or video the VPI/VCI, ITU-T E.164 or other provisioned addresses shall be converted to the appropriate IEEE addresses, as a part of the Interworking Functions.
For IEEE 802.3 Ethernet 10BaseT and 100BaseT interfaces, no translation is necessary.

# 3. MAC Services

The MAC services shall permit data transfer, link security and packet reordering.

## *3.1 Data Services*

The BS Unit shall be the radio resource supervisor, deciding when to transmit the down-link data packets, how to schedule the CPE Units to access the media and when to permit random media access.

### 3.1.1 Scheduled Data Service

The Scheduled mode of service should permit the radio resource efficient utilization.
In this case the BS Unit shall allocate bandwidth for the CPE Unit. The CPE Unit should be allowed to transmit for the allocated time according to the scheduling information.

The bandwidth request and allocation can be made for the next transmission, in a piggy-back mechanism.

### 3.1.2 Random Data Service

This service may be used by the CPE Units for short packet transmission or for scheduling request. Such asynchronous transport is performed on a best-effort connectionless basis. There are no guarantees that the submitted data is delivered successfully.

## *3.2 Security Services*

The Security Services in 802.16 shall provide Wire Equivalent Privacy (WEP).

The Authentication based on a shared key is a minimum mandatory requirement.

## *3.3 Ordering Services*

The packet reordering is needed due to the error correction mechanism based on retransmissions.

# 4. MAC Primitives

The 802.16 MAC shall support the following Service Primitives as defined in ISO/IEC 8802-2:1994(E):

MA-UNITDATA.request – to transmit a packet

MA-UNITDATA.indication – to receive a packet

MA-UNITDATA-STATUS.indication – to obtain the transmission status

The format of these primitives include source and destination addresses, which are actually the IEEE addresses identifying each unit. These addresses can specify unicast or broadcast type of transfer.