

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Corrections to sections 9.3 and 9.4	
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Re:	Call for comments IEEE802.16i-06/001r2	
Abstract	Sections 9.3 and 9.4 contain duplicate material. This contribution suggests the text changes to unify these sections.	
Purpose	Adopt the contribution and apply required changes in the text of 802.16i document.	
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Corrections to sections 9.3 and 9.4

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1. Introduction

Section 9.3 defines Management information base and it deals with the particular recommendations in respect to SNMP management. This section was introduced by amendment 802.16f.

Section 9.4 proposed by 802.16i repeats most of the same recommendations as in section 9.3. It is called Mobile MIB for SNMP.

There is no need to define a separate section for mobile MIB. Instead section 9.3 should be amended to take into account new MIB modules and new interface types. Also the text should give some general conformance requirements to indicate what device should implement what MIB modules.

2. Text changes

2.1 The following changes apply to section 9.3:

9.3 Management information base for SNMP

The management information base for SNMP managed BS and SS is defined as ~~two~~ ASN.1 MIB modules: ~~wmanIfMib and wmanDevMib~~. The implementation of ~~both~~ ASN.1 MIB modules is mandatory for all BSs. The implementation of ~~both~~ ASN.1 MIB modules is mandatory for SSs; that are managed using SNMP protocol. The specific requirements for implementation of individual MIB objects are defined in conformance statements of the MIB modules.

[The following two paragraphs are moved to subclause 9.3.3]

~~The wmanIfMib MIB module defines management objects relevant to the IEEE 802.16 broadband wireless interface as defined in this standard.~~

~~The wmanDevMib MIB module defines management objects relevant to the device implementing the IEEE 802.16 interface. The objects of this MIB module may refer explicitly to terms defined in the standard (e.g. configuration file encodings) but mainly provide the mandatory support required to implement, manage and test the equipment implementing the IEEE 802.16 interface.~~

This document also provides an informative Annex (see Annex D) to define vendor specific managed objects, such as temperature, fan and power alarms, for IEEE Std 802.16-2004 based Base Station.

9.3.1 Simple network management protocol

~~SNMP is a protocol to access the managed objects in the BS and SS. The support of SNMP is optional for~~

~~the SS.~~

The support of SNMP in this standard is compliant to SNMPv2, but is backward compatible to SNMPv1 through appropriate translation. The SNMP agent support for SNMPv3 is optional. An agent that implements SNMPv3, is required to implement at least all the mandatory groups of the standard MIBs required for SNMPv3: RFC3410, RFC3411, RFC3412, RFC3413, RFC3414 and RFC3415 as well as the MIB defining coexistence between SNMPv1, v2 and v3 in RFC 2576. The SNMPv3 framework may be considered as a mechanism to flexibly control access to this MIB module, and mitigate security vulnerability.

The SNMP agent shall support RFC3418.

9.3.2 Relationship with interface MIB

This subclause describes the integration with MIB-II under Interface Group MIB defined in IETF RFC2863; ~~as wmanIfMib will need to be integrated in the MIB tree. It describes where wmanIfMib is located in the MIB-II subtree, and how it can be accessed by NMS.~~

9.3.2.1 MIB-~~II~~ integration

[Editorial note: The following statement assumes that the process of acquiring the number from IANA has been successful. Remove this note when this happens or change the text otherwise .]

The Internet Assigned Numbers Authority (IANA) has assigned the following ifType to point-to-multipoint broadband wireless access:

```
IANAifType ::= TEXTUAL-CONVENTION
    SYNTAX INTEGER {
        propBWAp2Mp (184) — prop broadband wireless access point to multipoint
        ieee80216WMAN (???) -- IEEE 802.16 WirelessMAN interface
    }
```

~~WirelessMAN interface table is located under transmission subtree, as follows.~~

~~wmanIfMib ::= {transmission 184} — WMAN interface table2~~

The amendment 802.16f-2005 defined interface type for point-to-multipoint broadband wireless access interfaces as "propBWAp2Mp (184)". This interface type is now deprecated when used for 802.16 interfaces. For backwards compatibility purposed SNMP managers should detect the devices reporting this deprecated interface type as legitimate 802.16 devices.

9.3.2.2 Usage of MIB-II tables

The “Interfaces” group of MIB-II, in RFC2863, has been designed to manage various sub-layers (e.g. MAC and PHY) beneath the internetwork-layer for numerous media-specific interfaces. The implementation of ifTable in SNMP managed BS and SS is mandatory.

The implementation of the ifTable for the BS shall create one row for each BS sector. Each BS sector may support different MAC versions of IEEE 802.16 standard (e.g. IEEE 802.16-2004, IEEE 802.16e-2005). The following recommendations shall be applied to each row defining a BS sector:

- ifIndex value is implementation specific
- ifType shall be set to ~~propBWAp2Mp (value of 184 as defined in 9.3.2.1)~~ [ieee80216WMAN](#)
- ifSpeed shall be null
- ifPhysAddress shall be set to the MAC Address of the BS sector
- All other columnar objects shall be initialized as specified in RFC2863.

~~Table 1 provides an example.~~

Table 1—Example of the usage of ifTable objects for base station

ifTable	ifIndex	ifType (IANA)	ifSpeed	ifPhysAddress	ifAdminStatus	ifOperStatus
BS Sector 1	1	propBWAp2Mp ieee80216WMAN	Null	MAC address of BS sector	Administration Status	Operational Status
BS Sector 2	2	propBWAp2Mp ieee80216WMAN	Null	MAC address of BS sector	Administration Status	Operational Status
BS Sector 3	3	propBWAp2Mp ieee80216WMAN	Null	MAC address of BS sector	Administration Status	Operational Status
Ethernet			Null	MAC address	Administration Status	Operational Status

[Table 1 shows an example of the usage of ifTable for BS that supports multiple sectors. Each sector may support one of the following MAC / PHY interfaces:](#)

- [IEEE 802.16-2004, OFDM 256](#)
- [IEEE 802.16-2004, OFDMA 2048](#)
- [IEEE 802.16e, OFDM 128](#)
- [IEEE 802.16e, OFDM 512](#)
- [IEEE 802.16e, OFDM 1024](#)

The implementation of the ifTable for SS must create one row for each SS WirelessMAN interface. Additional rows may be necessary to support other network interfaces, such as Ethernet. The following recommendations must be applied to each row:

- ifIndex value is implementation specific
- ifType shall be set to ~~propBWAp2Mp~~ (value of 184 as defined in 9.3.2.1) [ieee80216WMAN](#)
- ifSpeed shall be null
- ifPhys Address shall be set to the SS MAC Address (of the WirelessMAN interface)
- All other columnar objects shall be initialized as specified in RFC2863

~~Table 2 provides an example.~~

Table 2—Example of the usage of ifTable objects for base station

ifTable	ifIndex	ifType (IANA)	ifSpeed	ifPhysAddress	ifAdminStatus	ifOperStatus
SS	1	propBWAp2Mp ieee80216WMAN	Null	MAC address of SS	Administration Status	Operational Status
Ethernet			Null	MAC address	Administration Status	Operational Status

[Copy here the text from 802.16i draft2 starting at page 9 line 60 through to page 12 line 5]

9.3.2.3 Events and traps

The wmanIfMib defines objects for reporting events through mechanisms, such as traps and non-volatile logging. However, the definition and coding of events is vendor-specific. In order to assist the network operators who must troubleshoot multi-vendor equipment, the circumstances and meaning of each event should be reported as human-readable text. Therefore, the trap definitions should include the event reason encoded as display String, and is shown in the following example.

```
trapName NOTIFICATION-TYPE
    OBJECTS {ifIndex,
            eventReason,
            other useful objects
    }
    MAX-Access read-only
    STATUS current
    DESCRIPTION
        "trap description"
    ::= { Object Id }.
```

9.3.3 ~~wmanDevMib MIB Subtree~~ MIB modules

The wmanIfMib MIB module defines management objects relevant to the IEEE 802.16 broadband wireless interface as defined in this standard. The wmanIfMib MIB module shall be accessed through the following MIB tree:

[iso\(1\).org\(3\).dod\(6\).internet\(1\).mgmt\(2\).mib-2\(1\).transmission\(10\).wmanIfMib\(184\)](#)

The wman2IfMib MIB module defines management objects relevant to the IEEE 802.16 broadband wireless interface for devices supporting mobility. The wman2IfMib MIB module shall be accessed through the following MIB tree:

[iso\(1\).std\(0\).iso8802\(8802\).wman\(16\).wman2IfMib\(3\)](#)

The wmanDevMib MIB module defines management objects relevant to the device implementing the IEEE 802.16 interface. The objects of this MIB module may refer explicitly to terms defined in the standard (e.g. configuration file encodings) but mainly provide the mandatory support required to implement, manage and test the equipment implementing the IEEE 802.16 interface. ~~This subclause specifies that~~ The wmanDevMib MIB module shall be accessed through the following MIB tree:

~~[iso\(1\).std\(0\).iso8802\(8802\).wman\(16\).wmanDev\(1\) { 1 0 8802 16 1 }](#)~~

[iso\(1\).std\(0\).iso8802\(8802\).wman\(16\).wmanDevMib\(1\)](#)

2.2 Remove section 9.4