Broadband Radio Access Networks (BRAN);
HiperMAN;
Simple Network Management Protocol (SNMP)
Management Information Base (MIB)
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Foreword

This Technical Specification (TS) has been produced by ETSI Project Broadband Radio Access Networks (BRAN).

Introduction

HiperMAN group defines air interface specifications for the development of standard based Base Station (BS) and Subscriber Station (SS) to provide broadband wireless services to Metropolitan Area Networks (MANs). The present document defines the HiperMAN MIB for DLC and PHY layers to achieve management interoperability and provide the remote management capability that are urgently needed for massive HiperMAN deployment.
1 Scope

The scope of the present document is to define the HiperMAN DLC and PHY MIB for the SS and BS, based on HiperMAN PHY and DLC specifications. The definition of managed objects in this MIB is based on SNMPv2 Structure of Management Information (SMI) [4] and Textual Conventions [5]. Therefore, HiperMAN MIB is compliant to SNMPv2, but is backward compatible to SNMPv1 through appropriate translation.

Since the HiperMAN MIB has to be accessed through the MIB tree, its relationship with the Interface MIB-RFC 2863 [7] are described. Additional MIBs may be necessary to manage other interfaces in the SS or BS, such as Ethernet, T1/E1 and ATM, but they are outside the scope of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1] ETSI TS 102 177 (V1.2.1): “Broadband Radio Access Networks (BRAN); HiperMAN; Physical (PHY) layer”.

[2] ETSI TS 102 178 (V1.2.1): "Broadband Radio Access Networks (BRAN); HiperMAN; Data Link Control (DLC) layer”.


3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

- ATM Asynchronous Transfer Mode
- BS Base Station
- BWA Broadband Wireless Access
- CID Connection ID
- DL Downlink
- ID Identifier
4 BWA Network Management Reference Model

Figure 1 shows the management reference model of Broadband Wireless Access (BWA) networks. It consists of a Network Management System (NMS), performing the network manager role, and managed nodes, which provide access to managed objects via MIB or virtual information store. SSs and BSs are managed nodes that act in the SNMP agent role. Furthermore, managed SSs, which have a secondary management CID, may be managed indirectly through the BS to which they are registered. In this case, the BS acts in an SNMP Proxy role on behalf of managed SSs. SS can be managed by NMS directly as well.

The management information between SS and BS will be carried over Second Management CID for managed SS. If the 2nd management CID does not exist, the SNMP messages shall go through another interface in the customer premise. The SNMP agent in the SS can be managed directly, or via a SNMP proxy in the BS.

Figure 1: BWA Network Management Reference Model

5 Relationship with Interface MIB

This clause describes the integration with MIB-II [6] under Interface Group MIB defined in RFC 2863 [7], 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.
5.1 MIB-2 Integration

The IANA has assigned the following ifType to point to multipoint broadband wireless access.

```
IANAifType ::= TEXTUAL-COVENTION
SYNTAX INTEGER {
    propBWAp2Mp (184) -- prop broadband wireless access
    -- point to multipoint
}
```

Therefore, upon wmanIfMib being approved by the IETF, this MIB can be accessed through

```
iso.org.dod.internet.mgmt.mib-2.transmission.ifType (1.3.6.1.2.1.10.184)
```

Wireless MAN interface table is located under transmission subtree, as follows.

```
wmanIfMib ::= {transmission 184} -- WMAN interface table
```

Before the approval of the IETF; however, wmanIfMib is temporary located under enterprise via:

- iso.org.dod.internet.private.enterprise.wmanIfMib (1.3.6.1.4.1.n); or
- iso.org.dod.internet.private.enterprise.vendorID.wmanIfMib (1.3.6.1.4.1.xxx.n).

5.2 Usage of MIB-II Tables

"Interfaces" group of MIB-II, in RFC 1573, has been designed to manage various sub-layers (e.g. MAC and PHY) beneath the internetwork-layer for numerous media-specific interfaces. ifTable in MIB-II is used to access the wmanIfMib.

Table 1 describes some key attributes in the ifTable that will be reused in the BS wmanIfMib. When the SNMP agent is implemented in a common base station controller, each BS sector will have an entry in the ifTable. When the SNMP agent is implemented in the sector controller, there is only one entry for the BS sector in the ifTable.

<table>
<thead>
<tr>
<th>ifTable</th>
<th>ifIndex</th>
<th>IfType (IANA)</th>
<th>IfSpeed</th>
<th>IfPhysAddress</th>
<th>IfAdminStatus</th>
<th>IfOperStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS Sector 1</td>
<td>An ifEntry per BS sector (1)</td>
<td>propBWAp2Mp</td>
<td>Null</td>
<td>MAC address of BS sector</td>
<td>Administration Status</td>
<td>Operational Status</td>
</tr>
<tr>
<td>BS Sector 2</td>
<td>An ifEntry per BS sector (2)</td>
<td>propBWAp2Mp</td>
<td>Null</td>
<td>MAC address of BS sector</td>
<td>Administration Status</td>
<td>Operational Status</td>
</tr>
<tr>
<td>BS Sector 3</td>
<td>An ifEntry per BS sector (3)</td>
<td>propBWAp2Mp</td>
<td>Null</td>
<td>MAC address of BS sector</td>
<td>Administration Status</td>
<td>Operational Status</td>
</tr>
<tr>
<td>Ethernet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows the usage of ifTable for SS. There is only one entry for the SS itself. Additional entries may be necessary to support other network interfaces, such as Ethernet.

<table>
<thead>
<tr>
<th>ifTable</th>
<th>ifIndex</th>
<th>IfType (IANA)</th>
<th>IfSpeed</th>
<th>IfPhysAddress</th>
<th>IfAdminStatus</th>
<th>IfOperStatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>An ifEntry for SS</td>
<td>propBWAp2Mp</td>
<td>Null</td>
<td>MAC address of SS</td>
<td>Administration Status</td>
<td>Operational Status</td>
</tr>
<tr>
<td>Ethernet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.3 Events and Traps

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.

\[
\text{trapName NOTIFICATION-TYPE}
\]

\[
\text{OBJECTS \{ifIndex, eventReason, other useful objects \}}
\]

\[
\text{MAX-Access read-only}
\]

\[
\text{STATUS current}
\]

\[
\text{DESCRIPTION "trap description" ::= \{ Object Id \}}
\]

5.4 HiperMAN MIB Structure

Figure 2 shows the MIB structure of `wmanIfMib` for HiperMAN. The MIB structure is organized based on the reference model as defined in HiperMAN standards [1] and [2].

\[
\text{wmanIfMib (1.3.6.1.2.1.10.184)}
\]

\[
\text{wmanIfsObjects}
\]

\[
\text{wmanIfsSystem}
\]

\[
\text{wmanIfsRegisteredSstable}
\]

\[
\text{wmanIfsProvisionedSstable}
\]

\[
\text{wmanIfsServiceClassstable}
\]

\[
\text{wmanIfsClassifierruleable}
\]

\[
\text{wmanIfsCps}
\]

\[
\text{wmanIfsConfigurationmable}
\]

\[
\text{wmanIfsStatCounter}
\]

\[
\text{wmanIfsPkm}
\]

\[
\text{wmanIfsPkmMaserable}
\]

\[
\text{wmanIfsPkmauthable}
\]

\[
\text{wmanIfsPkmTratable}
\]

\[
\text{wmanIfsNotification}
\]

\[
\text{wmanIfsObjects}
\]

\[
\text{wmanIfsSystem}
\]

\[
\text{wmanIfsConfigFileencodingTable}
\]

\[
\text{wmanIfsScps}
\]

\[
\text{wmanIfsConfigurationmable}
\]

\[
\text{wmanIfsPkm}
\]

\[
\text{wmanIfsPkmMaserable}
\]

\[
\text{wmanIfsPkmauthable}
\]

\[
\text{wmanIfsPkmTratable}
\]

\[
\text{wmanIfsDeviceCertable}
\]

\[
\text{wmanIfsNotification}
\]

\[
\text{wmanIfCommonObjects}
\]

\[
\text{wmanIfCmnpacketCs}
\]

\[
\text{wmanIfCmnClassifierruleable}
\]

\[
\text{wmanIfCmnCps}
\]

\[
\text{wmanIfCmnCpsServiceFlowtable}
\]

\[
\text{wmanIfCmnCmnassSconfigurationtable}
\]

\[
\text{wmanIfCmnCmnSserviceMeasurementtable}
\]

\[
\text{wmanIfCmnprivacy}
\]

\[
\text{wmanIfCmnCryptoSuiturable}
\]

\[
\text{wmanIfCmnOfdmphy}
\]

\[
\text{wmanIfOfdmuplinkChanneltable}
\]

\[
\text{wmanIfOfdmdownlinkChanneltable}
\]

\[
\text{wmanIfOfdmucudburstProfiletable}
\]

\[
\text{wmanIfOfdmucudburstProfiletable}
\]

Figure 2: wmanIfMib Structure
wmanIfMib is composed of three groups:

- wmanIfBsObjects: This group contains managed objects to be implemented in the SNMP agent in BS.
- wmanIfSsObjects: This group contains managed objects to be implemented in the SNMP agent in SS.
- wmanIfCommonObjects: This group contains common managed objects to be implemented in the SNMP agent in BS and SS.

5.5 wmanIfBsObjects

5.5.1 wmanIfBsSystem

wmanIfBsSystem group contains system level BS managed objects.

5.5.1.1 wmanIfBsRegisteredSsTable

This table is indexed by BS ifIndex and wmanIfBsSsIdIndex, each entry contains the information of SS that has been registered through REG-REQ message as defined in section 6.3.2.3.7 in [3].

5.5.2 wmanIfBsPacketCs

wmanIfBsPacketCs group contains BS managed objects relating to the Packet CS management entity layer in figure 1 of [3].

5.5.2.1 wmanIfBsProvisionedSfTable

This table is doubly indexed by SS MAC address and Service Flow ID and contains provisioned service flow profiles, Per SS. It contains the service flow attributes that have been pre-provisioned by NMS.

5.5.2.2 wmanIfBsServiceClassTable

This table is provisioned and is indexed by QoS profile index. Each entry of the table contains QoS parameter set, as defined in sections 6.3.14 and 11.13 in [3].

To facilitate the NMS task of provisioning service flow attributes for hundreds or even thousands of subscriber stations supported by each BS, the concept of Provisioned Service Classes are devised. Figure 3 shows an example of QoS profiles that are created to define the service flow attributes that can be shared by multiple service flows. For example, Basic CID UL for SSs A1, B1, and X1 uses profile 1. Service flow attribute profiles can be added or deleted dynamically to meet different QoS demands from subscribers.
Figure 3: Service Classes – Service Flows Mapping

5.5.2.3 wmanIfBsClassifierRuleTable
This table is indexed by service flow index and classifier rule index, and contains the packet classifier rules.

5.5.3 wmanIfBsCps
wmanIfBsCpsParameters group contains BS managed objects relating to the MAC CPS management entity layer in figure 1 of [3].

5.5.3.1 wmanIfBsConfigurationTable
This table contains objects for BS system parameters and constants as defined in section 10.1, table 340 of [3]. It is indexed by BS Id.

5.5.3.2 wmanIfBsChMeasurementTable
This table is indexed by BS ifIndex and contains statistics about the channel measurement.

5.5.4 wmanIfBsPkm
wmanIfBsPkm group contains BS managed objects relating to the MAC CPS privacy management entity section in figure 1 of [3].

5.5.4.1 wmanIfBsPkmBaselineTable
This table is indexed by BS ifIndex and contains base station PKM operational parameters described in section 10.2 and table 341 of [3].
5.5.4.2  wmanIfBsPkmAuthTable
This table is double indexed by ifIndex and SsMacAddress and contains runtime subscriber station authentication and authorization parameters for each base station.

5.5.4.3  wmanIfBsPkmTekTable
This table is double indexed by ifIndex and SAId and contains runtime Security association parameters for each base station.

5.5.5  wmanIfBsNotification
wmanIfBsNotification group contains BS traps to report fault events and exceptions, such as power status, RSSI threshold crossing.

5.6  wmanIfSsObjects

5.6.1  wmanSsSystem
wmanIfS wmanIfSsSystem group contains subscriber station system level objects.

5.6.1.1  wmanIfSsConfigFileEncodingTable
This table is indexed by SS index, and contain configuration file information about the subscriber station such as manufacturer, hardware model, serial number, and software or firmware revision.

5.6.2  wmanIfSsCps
wmanIfSsCpsParameters group contains subscriber station manageable objects relating to the MAC CPS management entity layer in figure 1 of [3].

5.6.2.1  wmanIfSsConfigurationTable
This table is indexed by SS Id and contains objects for SS system parameters and constants as defined in section 10.1, table 341 of [3].

5.6.2.2  wmanIfSsStatisticsCountersTable
This object contains the performance monitoring data for SS.

5.6.3  wmanIfSsPkm
wmanIfSsPkmParameters group contains subscriber station manageable objects relating to the MAC CPS privacy management entity section in figure 1 of [3].

5.6.3.1  wmanIfSsPkmAuthTable
This table is indexed by SS MAC address and contains subscriber station authentication and authorization parameters including those described in section 10.2 and table 342 of [3].

5.6.3.2  wmanIfSsPkmTekTable
This table is doubly indexed by SS MAC address and SAId and contains subscriber station runtime parameters for each active security association.
5.6.3.3 **wmanIfSsPkmCertificatesTable**

This table is indexed by SS MAC address and contains subscriber station and SS manufacturer certificates.

5.6.4 **wmanIfSsTraps**

*wmanIfBsTraps* group contains SS traps to report fault events and exceptions, such as power status, RSSI threshold crossing.

5.7 **wmanIfCommonObjects**

5.7.1 **wmanIfCmnPacketCs**

5.7.1.1 **wmanIfCmnClassifierRuleTable**

*wmanIfClassifierRuleTable* is indexed by service flow ID and contains runtime classifier rules screening criteria for each service flow as described in section 11.13.19.3.4 of [3].

5.7.2 **wmanIfCmnCps**

5.7.2.1 **wmanIfCmnServiceFlowTable**

This table is doubly indexed by ifIndex and service flow ID. In the BS, it represents the totality of all provisioned, admitted, and active service flow for both DL and UL directions. In the SS, this table should contain the service flows, both DL and UL, being allocated to a specific SS.

A Service Flow is represented by parameters, such as:

- Service Flow common parameters, like SFID and CID.
- Classifiers associated with Service Flow, see [3], sections 5.2.2, 5.2.5 to 5.2.7.
- Service Flow QoS parameters like QoS parameters of specific Service Flow, like Max Sustained Traffic Rate, QoS status (admitted etc.).
- Service Flow Header Suppression parameters like associated classifier and PHS rule, see [3], section 5.2.4.

5.7.2.2 **wmanIfCmnBsSsConfigurationTable**

This table is indexed by SS Id and contains objects for SS system parameters and constants as defined in section 10.1, table 341 of [3].

5.7.2.3 **wmanIfCmnSsChMeasurementTable**

This object contains the channel measurement table for SS.

5.7.3 **wmanIfCmnPrivacy**

5.7.3.1 **wmanIfCmnCryptoSuiteTable**

This table is doubly indexed by ifIndex and *wmanIfCryptoSuiteIndex* and contains supported crypto suites for the particular SS and other crypto parameters such as key lifetimes. See sections 11.9.14 and 11.9.15 of [3].

5.7.4 **wmanIfCmnOfdmPhy**

*wmanIfOfdmPhy* is a group containing objects specific to OFDM PHY.
5.7.4.1  wmanIfOfdmUplinkChannelTable

This table contains the uplink channels that the BS is able to receive. In the SS, this table should have an entry indicating the uplink channel that the SS can transmit. Each entry contains the parameters needed to describe uplink channel descriptor as defined in section 11, table 347 and 350 of [3].

5.7.4.2  wmanIfOfdmDownlinkChannelTable

This table contains the downlink channels that the BS is able to transmit. In the SS, this table should have an entry indicating the downlink channel that the SS can receive. Each entry contains the parameters needed to describe downlink channel descriptor as defined in section 11, table 356 of [3].

5.7.4.3  wmanIfOfdmUcdBurstProfileTable

Each entry in this table contains the parameters needed for the UCD burst profile as defined in section 11, table 354 of [3].

5.7.4.4  wmanIfOfdmDcdBurstProfileTable

wmanIfDcdBurstProfileTable: Each entry in this table contains the parameters needed for the UCD burst profile as defined in section 11, table 360 of [3].

---

6  ASN.1 Definition of HiperMAN MIB

WMAN-IF-MIB DEFINITIONS ::= BEGIN

IMPORTS

 MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
 Unsigned32, Integer32, Counter32, Counter64,
 TimeTicks, IpAddress, transmission FROM SNMPv2-SMI
 SnmpAdminString FROM SNMP-FRAMEWORK-MIB
 TEXTUAL-CONVENTION,
 MacAddress, RowStatus, TruthValue,
 DateAndTime, DisplayString, TimeInterval,
 TimeStamp FROM SNMPv2-TC
 InetAddressType, InetAddress FROM INET-ADDRESS-MIB
 OBJECT-GROUP,
 MODULE-COMPLIANCE
 FROM SNMPv2-CONF
 ifIndex, InterfaceIndexOrZero FROM IF-MIB;

wmanIfMib MODULE-IDENTITY
 LAST-UPDATED  "040826000000Z"  -- August 26, 2004
 ORGANIZATION  "IETF IPCDN Working Group"
 CONTACT-INFO
 " Joey Chou
 Postal: Intel Corporation
 5000 W. Chandler Blvd, Chandler, AZ 85227, USA
 E-mail: joey.chou@intel.com
 Russ Reynolds
 Postal: Proxim Corporation

 ETSI
**DESCRIPTION**

"This MIB Module defines managed objects for 802.16 based Subscriber Station and Base Station."

::= { transmission 184 }

wmanIfMibObjects OBJECT IDENTIFIER ::= { wmanIfMib 1 }
wmanIfBsObjects OBJECT IDENTIFIER ::= { wmanIfMibObjects 1 }
wmanIfSsObjects OBJECT IDENTIFIER ::= { wmanIfMibObjects 2 }
wmanIfCommonObjects OBJECT IDENTIFIER ::= { wmanIfMibObjects 3 }

-- Textual Conventions

WmanIfSsSchedulingType ::= TEXTUAL-CONVENTION

STATUS    current

DESCRIPTION

"The scheduling service provided by a SC for an upstream service flow. If the parameter is omitted from an upstream QOS Parameter Set, this object takes the value of bestEffort (2). This parameter must be reported as undefined (1) for downstream QOS Parameter Sets."

SYNTAX    INTEGER {undefined(1),
     bestEffort(2),
     nonRealTimePollingService(3),
     realTimePollingService(4),
     unsolicitedGrantService(6)}

--
-- BS object group - containing tables and objects to be implemented in -- the Base Station

-- wmanIfBsSystem contain the Base Station system objects

wmanIfBsSystem OBJECT IDENTIFIER ::= { wmanIfBsObjects 1 }

wmanIfBsRegisteredSsTable OBJECT-TYPE

SYNTAX    SEQUENCE OF WmanIfBsRegisteredSsEntry
MAX-ACCESS not-accessible

STATUS    current

DESCRIPTION

"This table contains entries of SSs that have been registered to the BS through REG-REQ message"

REFERENCE

"Section 6.3.2.3.7 in IEEE 802.16REVd/D5-2004; Sec.5.2 of ETSI TS 102 178"

::= { wmanIfBsSystem 1 }

wmanIfBsRegisteredSsTable OBJECT-TYPE

SYNTAX    WmanIfBsRegisteredSsEntry
MAX-ACCESS not-accessible

STATUS    current

DESCRIPTION

"This table provides one row for each SS that has been registered in the BS, and is indexed by wmanIfBsSsIdIndex. The primary index is the ifIndex with an ifType of propBWAp2Mp, indicating the BS sector with which the SS is associated. wmanIfBsSsIdIndex identifies the SS being registered."

INDEX { ifIndex, wmanIfBsSsIdIndex }

::= { wmanIfBsRegisteredSsTable 1 }

WmanIfBsRegisteredSsEntry ::= SEQUENCE {
   wmanIfBsSsIdIndex       Unsigned32,
   wmanIfBsSsMacAddress    MacAddress,
   wmanIfBsSsBasicCid      INTEGER,
   wmanIfBsSsPrimaryCid    INTEGER,
   wmanIfBsSsSecondaryCid  INTEGER,
   wmanIfBsSsHmacTuple     OCTET STRING,
wmanIfBsSu1CidSupport INTEGER,
wmanIfBsSmManagementSupport INTEGER,
wmanIfBsSmArgSupport INTEGER,
wmanIfBsSmDsxFlowControl INTEGER,
wmanIfBsSmMaccCrcSupport INTEGER,
wmanIfBsSmMcaFlowControl INTEGER,
wmanIfBsSmMcpGroupCidSupport INTEGER,
wmanIfBsSmPkmFlowControl INTEGER,
wmanIfBsSmAuthorizationPolicyControl BITS,
wmanIfBsSmMaxNumOfSupportedSA INTEGER,
wmanIfBsSmSnIPvVersion INTEGER,
wmanIfBsSmMacCsSupportBitMap BITS,
wmanIfBsSmMaxNumOfClassifier INTEGER,
wmanIfBsSmSnPsSupport INTEGER,
wmanIfBsSmSnIPvManagementSupport INTEGER,
wmanIfBsSmSn2ndMgmtArgEnable TruthValue,
wmanIfBsSmSn2ndMgmtArgWindowSize INTEGER,
wmanIfBsSmSn2ndMgmtArgFragmentLifetime INTEGER,
wmanIfBsSmSn2ndMgmtArgSyncLossTimeout INTEGER,
wmanIfBsSmSn2ndMgmtArgDeliverInOrder TruthValue,
wmanIfBsSmSn2ndMgmtArgRxPurgeTimeout INTEGER,
wmanIfBsSmVendorIdEncoding OCTET STRING }

wmanIfBsSu1CidIndex OBJECT-TYPE
SYNTAX   Unsigned32 (1 .. 4294967295)
MAX-ACCESS read-only
STATUS   current
DESCRIPTION "wmanIfBsSu1CidIndex identifies the SS that is registered."
::= { wmanIfBsSu1CidIndex 1 }

wmanIfBsSmMacAddress OBJECT-TYPE
SYNTAX   MacAddress
MAX-ACCESS read-only
STATUS   current
DESCRIPTION "The MAC address of SS is received from the RNG-REQ message. When SS registers, this MAC address is entered into the table, and used as the identifier to the SS."
REFERENCE "Section 6.3.2.3.6 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsSmMacAddress 2 }

wmanIfBsSu1BasicCid OBJECT-TYPE
SYNTAX   INTEGER
MAX-ACCESS read-only
STATUS   current
DESCRIPTION "The value of this object indicates the SS's basic CID that was sent in the RNG-RSP message."
REFERENCE "Section 6.3.2.3.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsSu1BasicCid 3 }

wmanIfBsSu1PrimaryCid OBJECT-TYPE
SYNTAX   INTEGER
MAX-ACCESS read-only
STATUS   current
DESCRIPTION "The value of this object indicates the primary CID of the SS received from the RNG-RSP message."
REFERENCE "Section 6.3.2.3.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsSu1PrimaryCid 4 }

wmanIfBsSu1SecondaryCid OBJECT-TYPE
SYNTAX   INTEGER
MAX-ACCESS read-only
STATUS   current
DESCRIPTION "The value of this object indicates the secondary management CID present in the REG-RSP message. The value should be null if the 2nd management channel is not available."
REFERENCE
"Section 6.4.2.3.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 5 }

wmanIfBsSsHmacTuple OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This parameter contains the HMAC Key Sequence Number concatenated with an HMAC-Digest message during the authentication. The HMAC Key Sequence Number is stored in the four least significant bits of the first byte of the HMAC Tuple, and the most significant four bits are reserved."
REFERENCE
"Section 11.1.2 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 6 }

wmanIfBsSsUlCidSupport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This object shows the number of Uplink CIDs the SS can support."
REFERENCE
"Section 11.7.4 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 7 }

wmanIfBsSsManagementSupport OBJECT-TYPE
SYNTAX INTEGER {unmanagedSs(0), managedSs(1)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This object indicates whether or not the SS is managed."
REFERENCE
"Section 11.7.1.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 8 }

wmanIfBsSsArqSupport OBJECT-TYPE
SYNTAX INTEGER {arqNotSupported(0), arqSupported(1)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This object indicates whether the SS support ARQ."
REFERENCE
"Section 11.7.6.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 9 }

wmanIfBsSsDsxFlowControl OBJECT-TYPE
SYNTAX INTEGER (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This object specifies the maximum number of concurrent DSA, DSC, or DSD transactions that may be outstanding."
REFERENCE
"Section 11.7.6.2 in IEEE 802.16REVd/D5-2004"
DEFVAL { 0 }
::= { wmanIfBsRegisteredSsEntry 10 }

wmanIfBsSsMacCrcSupport OBJECT-TYPE
SYNTAX INTEGER {noMacCrcSupport(0), macCrcSupport(1)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This object indicates whether or not the SS supports MAC level CRC."
REFERENCE
"Section 11.7.6.3 in IEEE 802.16REVd/D5-2004"
DEFVAL { 1 }
::= { wmanIfBsRegisteredSsEntry 11 }
wmanIfBsSsMcsaFlowControl OBJECT-TYPE
SYNTAX        INTEGER (0..255)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This object specifies the maximum number of concurrent MCA transactions that may be outstanding."
REFERENCE     "Section 11.7.6.4 in IEEE 802.16REVd/D5-2004"
DEFVAL        { 0 }
::= { wmanIfBsRegisteredSsEntry 12 }

wmanIfBsSsMcpGroupCidSupport OBJECT-TYPE
SYNTAX        INTEGER (0..255)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This object indicates the maximum number of simultaneous Multicast Polling Groups the SS is capable of belonging to."
REFERENCE     "Section 11.7.6.5 in IEEE 802.16REVd/D5-2004"
DEFVAL        { 0 }
::= { wmanIfBsRegisteredSsEntry 13 }

wmanIfBsSsPkmFlowControl OBJECT-TYPE
SYNTAX        INTEGER (0..255)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This object specifies the maximum number of concurrent PKM transactions that may be outstanding."
REFERENCE     "Section 11.7.6.6 in IEEE 802.16REVd/D5-2004; Sec.6.7 of ETSI TS 102 178"
DEFVAL        { 0 }
::= { wmanIfBsRegisteredSsEntry 14 }

wmanIfBsSsAuthorizationPolicyControl OBJECT-TYPE
SYNTAX        BITS {ieee802-16PrivacySupported(0),
reserved1(1),
reserved2(2),
reserved3(3),
reserved4(4),
reserved5(5),
reserved6(6),
reserved7(7)}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This object specifies authorization policy that both SS and BS need to negotiate and implement. A bit value of 0 = not supported, 1 = supported. If this field is omitted, then both SS and BS shall use the IEEE 802.16 security, constituting X.509 digital certificates and the RSA public key encryption algorithm, as authorization policy."
REFERENCE     "Section 11.7.8.7 in IEEE 802.16REVd/D5-2004; Sec.6.7 of ETSI TS 102 178"
::= { wmanIfBsRegisteredSsEntry 15 }

wmanIfBsSsMaxNumOfSupportedSA OBJECT-TYPE
SYNTAX        INTEGER (0..255)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This field specifies maximum number of supported security association of the SS."
REFERENCE     "Section 11.7.8.8 in IEEE 802.16REVd/D5-2004; Sec.6.7 of ETSI TS 102 178"
DEFVAL        { 1 }
::= { wmanIfBsRegisteredSsEntry 16 }

wmanIfBsSsIpVersion OBJECT-TYPE
SYNTAX        INTEGER {ipv4(1),
ipv6(2)}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
"This object indicates the version of IP used on the Secondary Management Connection. The values should be null if the second management CID does not exist."
REFERENCE
"Section 11.7.2.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 17 }

wmanIfBsSsMacCsSupportBitMap OBJECT-TYPE
SYNTAX      BITS {atm(0),
                  packetIpv4(1),
                  packetIpv6(2),
                  packet802-3(3),
                  packet802-1q(4),
                  packetIpv4Over802-3(5),
                  packetIpv6Over802-3(6),
                  packetIpv4Over802-1q(7),
                  packetIpv6Over802-1q(8)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object indicates the set of MAC convergence sublayer support. When a bit is set, it indicates the corresponding CS feature is supported."
REFERENCE
"Section 11.7.5.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 18 }

wmanIfBsSsMaxNumOfClassifier OBJECT-TYPE
SYNTAX      INTEGER
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object indicates the maximum number of admitted Classifiers that the SS is allowed to have."
REFERENCE
"Section 11.7.5.2 in IEEE 802.16REVd/D5-2004"
DEFVAL      { 0 }
::= { wmanIfBsRegisteredSsEntry 19 }

wmanIfBsSsPhsSupport OBJECT-TYPE
SYNTAX      INTEGER {noPhsSupport(0),
                   atmPhsSupport(1),
                   packetPhsSupport(2)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object indicates the level of PHS support."
REFERENCE
"Section 11.7.5.3 in IEEE 802.16REVd/D5-2004"
DEFVAL      { 0 }
::= { wmanIfBsRegisteredSsEntry 20 }

wmanIfBsSsIpManagementSupport OBJECT-TYPE
SYNTAX      INTEGER {unmanaged(0),
                     ipManaged(1)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The IP management mode parameter dictates whether the provider intends to manage the SS on an ongoing basis via IP-based mechanisms."
REFERENCE
"Section 11.7.3 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 21 }

wmanIfBsSs2ndMgmtArqEnable OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"True(1) ARQ enabling is requested for the 2nd management channel."
REFERENCE
"Section 11.13.20 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 22 }
wmanIfBsSs2ndMgmtArqWindowSize OBJECT-TYPE
SYNTAX INTEGER (1 .. 1024)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Indicates the maximum number of unacknowledged fragments at any time for 2nd management channel."
REFERENCE "Section 11.13.20 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 23 }

wmanIfBsSs2ndMgmtArqFragmentLifetime OBJECT-TYPE
SYNTAX INTEGER (0 .. 65535)
UNITS "10 us"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The maximum time interval an ARQ fragment will be managed by the transmitter ARQ machine, once initial transmission of the fragment has occurred. If transmission or retransmission of the fragment is not acknowledged by the receiver before the time limit is reached, the fragment is discarded. A value of 0 means Infinite."
REFERENCE "Section 11.13.20 in IEEE 802.16REVd/D5-2004"
DEFVAL {0}
::= { wmanIfBsRegisteredSsEntry 24 }

wmanIfBsSs2ndMgmtArqSyncLossTimeout OBJECT-TYPE
SYNTAX INTEGER (0 .. 65535)
UNITS "10 us"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The maximum interval before declaring a loss of synchronization of the sender and receiver state machines. A value of 0 means Infinite."
REFERENCE "Section 11.13.20 in IEEE 802.16REVd/D5-2004"
DEFVAL {0}
::= { wmanIfBsRegisteredSsEntry 25 }

wmanIfBsSs2ndMgmtArqDeliverInOrder OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Indicates whether or not data is to be delivered by the receiving MAC to its client application in the order in which data was handed off to the originating MAC."
REFERENCE "Section 11.13.20 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 26 }

wmanIfBsSs2ndMgmtArqRxPurgeTimeout OBJECT-TYPE
SYNTAX INTEGER (0 .. 65535)
UNITS "10 us"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Indicates the time interval the ARQ window is advanced after a fragment is received. A value of 0 means Infinite."
REFERENCE "Section 11.13.20 in IEEE 802.16REVd/D5-2004"
DEFVAL {0}
::= { wmanIfBsRegisteredSsEntry 27 }

wmanIfBsSsVendorIdEncoding OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(3))
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value field contains the vendor identification
specified by the 3 byte vendor-specific organizationally
unique identifier of the SS or BS MAC address. A vendor ID
used in a REG-REQ shall be the Vendor ID of the SS sending
the request. A vendor ID used in a REG-RSP shall be the
Vendor ID of the BS sending the response."

REFERENCE
"Section 11.1.5 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsRegisteredSsEntry 28 }

-- wmanIfBsPacketCs contain the Base Station Packet Convergence Sublayer
-- objects
wmanIfBsPacketCs OBJECT IDENTIFIER ::= { wmanIfBsObjects 2 }
wmanIfBsProvisionedSfTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfBsProvisionedSfEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table is doubly indexed (SS MAC address, SF ID) and
contains pre-provisioned service flow profiles, Per SS.
These connection parameters shall be provisioned for the SS
using DSA messages. NMS shall pre-provisioning the service
class table - wmanIfBsServiceClassTable by using
wmanIfBsServiceClassIndex, and packet classifier rule table
- wmanIfBsClassifierRuleTable by using wmanIfBsSfId"

REFERENCE
"Section 6.4.13 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsPacketCs 1 }
wmanIfBsProvisionedSfEntry OBJECT-TYPE
SYNTAX      WmanIfBsProvisionedSfEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table provides one row for each service flow been
pre-provisioned by NMS."
INDEX { wmanIfBsSsProvMacAddress, wmanIfBsSfId }
::= { wmanIfBsProvisionedSfTable 1 }

WmanIfBsProvisionedSfEntry ::= SEQUENCE {
  wmanIfBsSfId                            Unsigned32,
  wmanIfBsSsProvMacAddress                MacAddress,
  wmanIfBsSfDirection                     INTEGER,
  wmanIfBsServiceClassIndex               INTEGER,
  wmanIfBsServiceClassName                DisplayString,
  wmanIf BsSfState                        INTEGER,
  wmanIfBsSfProvisionedTime               TimeStamp,
  wmanIfBsProvisionedSfRowStatus          RowStatus
}
wmanIf BsSfId OBJECT-TYPE
SYNTAX      Unsigned32 (1 .. 4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"A 32 bit quantity that uniquely identifies a service flow
to both the subscriber station and base station (BS)."
::= { wmanIfBsProvisionedSfEntry 1 }
wmanIfBsSsProvMacAddress OBJECT-TYPE
SYNTAX      MacAddress
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The MAC address of the SS, where the service flow resides.
It can be used as the index to associate service flows
with the SS."
::= { wmanIfBsProvisionedSfEntry 2 }
wmanIfBsSfDirection OBJECT-TYPE
SYNTAX      INTEGER (downstream(1),
                                  upstream(2))
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"An attribute indicating the service flow is downstream or upstream."
::= { wmanIfBsProvisionedSfEntry 3 }

wmanIfBsServiceClassIndex OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The index in wmanIfBsServiceClassTable describing the service class or QoS parameters for such service flow. If no associated entry in wmanIfBsServiceClassTable exists, this object returns a value of zero."
::= { wmanIfBsProvisionedSfEntry 4 }

wmanIfBsServiceClassName OBJECT-TYPE
SYNTAX DisplayString (SIZE(1..32))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"Refers to the Service Class Name"
REFERENCE "Section 11.13.7 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsProvisionedSfEntry 5 }

wmanIfBsSfState OBJECT-TYPE
SYNTAX INTEGER {provisioned(1), admitted(2), active(3)}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"wmanIfBsSfState determines the state of a service flow. provisioned state: A service flow is provisioned but not resource is reserved yet admitted state: service flow has resources reserved active state: has resources committed by the BS (e.g., is actively sending maps containing unsolicited grants for a UGS-based service flow)"
REFERENCE "Section 6.4.13.6, in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsProvisionedSfEntry 6 }

wmanIfBsSfProvisionedTime OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"Indicates the date and time when the service flow is provisioned."
::= { wmanIfBsProvisionedSfEntry 7 }

wmanIfBsProvisionedSfRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object is used to create a new row or modify or delete an existing row in this table.
If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."
::= { wmanIfBsProvisionedSfEntry 8 }

wmanIfBsServiceClassTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfBsServiceClassEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table is provisioned and is indexed by wmanIfBsQoSProfileIndex. Each entry of the table contains corresponding service flow characteristic attributes (e.g. QoS parameter set). The value of wmanIfBsQoSProfileIndex is obtained from wmanIfBsServiceClassIndex in wmanIfBsProvisionedSfTable"
REFERENCE
"Section 6.4.13.4 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsPacketCs 2 }

wmanIfBsServiceClassEntry OBJECT-TYPE
SYNTAX WmanIfBsServiceClassEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table provides one row for each service class"
INDEX { wmanIfBsQoSProfileIndex } 
::= { wmanIfBsServiceClassTable 1 }

WmanIfBsServiceClassEntry ::= SEQUENCE {
  wmanIfBsQoSProfileIndex                 INTEGER,
  wmanIfBsQosServiceClassName             DisplayString,
  wmanIfBsQoSTrafficPriority              INTEGER,
  wmanIfBsQoSMaxSustainedRate             INTEGER,
  wmanIfBsQoSMaxTrafficBurst              INTEGER,
  wmanIfBsQoSMinReservedRate              INTEGER,
  wmanIfBsQoSToleratedJitter              INTEGER,
  wmanIfBsQoSMaxLatency                   INTEGER,
  wmanIfBsQoSFixedVsVariableSduInd        INTEGER,
  wmanIfBsQoSMaxSduSize                    INTEGER,
  wmanIfBsQossScSchedulingType            WmanIfSfSchedulingType,
  wmanIfBsQossScArqEnable                 TruthValue,
  wmanIfBsQossScArqWindowSize             INTEGER,
  wmanIfBsQossScArqFragmentLifetime       INTEGER,
  wmanIfBsQossScArqSyncLossTimeout        TruthValue,
  wmanIfBsQossScArqRxPurgeTimeout         INTEGER,
  wmanIfBsQossScFragmentLen               INTEGER,
  wmanIfBsQosScMinRsvdTolerableRate       INTEGER,
  wmanIfBsQoSReqTxPolicy                  BITS,
  wmanIfBsQoSServiceClassRowStatus        RowStatus
}

wmanIfBsQoSProfileIndex OBJECT-TYPE
SYNTAX INTEGER (1 .. 1000)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The index value which uniquely identifies an entry
in the wmanIfBsServiceClassTable"
::= { wmanIfBsServiceClassEntry 1 }

wmanIfBsQosServiceClassName OBJECT-TYPE
SYNTAX DisplayString (SIZE(1..32))
MAX-ACCESS read-create
STATUS current
DESCRIPTION "Refers to the Service Class Name"
REFERENCE "Section 11.13.7 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsServiceClassEntry 2 }

wmanIfBsQoSTrafficPriority OBJECT-TYPE
SYNTAX INTEGER (0..7)
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The value of this parameter specifies the priority
assigned to a service flow. For uplink service flows,
the BS should use this parameter when determining
precedence in request service and grant generation,
and the SS shall preferentially select contention
Request opportunities for Priority Request CIDs
based on this priority. Higher numbers indicate higher
priority"
REFERENCE "Section 11.13.7 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsServiceClassEntry 3 }

wmanIfBsQoSMaxSustainedRate OBJECT-TYPE
SYNTAX INTEGER
UNITS "bps"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This parameter defines the peak information rate of the service. The rate is expressed in bits per second and pertains to the SDUs at the input to the system."

REFERENCE
"Section 11.13.8 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsServiceClassEntry 4 }

wmanIfBsQoSMaxTrafficBurst OBJECT-TYPE
SYNTAX INTEGER
UNITS "byte"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This parameter defines the maximum burst size that must be accommodated for the service."

REFERENCE
"Section 11.13.9 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsServiceClassEntry 5 }

wmanIfBsQoSMinReservedRate OBJECT-TYPE
SYNTAX INTEGER
UNITS "bps"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This parameter specifies the minimum rate reserved for this service flow."

REFERENCE
"Section 11.13.10 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsServiceClassEntry 6 }

wmanIfBsQoSMaxLatency OBJECT-TYPE
SYNTAX INTEGER
UNITS "millisecond"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The value of this parameter specifies the maximum latency between the reception of a packet by the BS or SS on its network interface and the forwarding of the packet to its RF Interface."

REFERENCE
"Section 11.13.16 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsServiceClassEntry 8 }

wmanIfBsQoSFixedVsVariableSduInd OBJECT-TYPE
SYNTAX INTEGER {variableLength(0), fixedLength(1)}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The value of this parameter specifies whether the SDUs on the service flow are fixed-length (0) or variable-length (1). The parameter is used only if packing is on for the service flow. The default value is 0, i.e., variable-length SDUs."

REFERENCE
"Section 11.13.15 in IEEE 802.16REVd/D5-2004"
DEFVAL { 0 }

::= { wmanIfBsServiceClassEntry 9 }

wmanIfBsQoSsdusize OBJECT-TYPE
SYNTAX INTEGER
UNITS "byte"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "The value of this parameter specifies the length of the SDU for a fixed-length SDU service flow. This parameter is used only if packing is on and the service flow is indicated as carrying fixed-length SDUs. The default value is 49 bytes, i.e., VC-switched ATM cells with PHS. The parameter is relevant for both ATM and Packet Convergence Sublayers."
REFERENCE  "Section 11.13.17 in IEEE 802.16REvD/D4-2004"
DEFVAL      { 49 }
::= { wmanIfBsServiceClassEntry 10 }

wmanIfBsQosScSchedulingType OBJECT-TYPE
SYNTAX      WmanIfSfsSchedulingType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "Specifies the upstream scheduling service used for upstream service flow. If the referenced parameter is not present in the corresponding 802.16 QOS Parameter Set of an upstream service flow, the default value of this object is bestEffort(2)."
REFERENCE  "Section 11.13.13 in IEEE 802.16REvD/D5-2004"
DEFVAL        {2}
::= { wmanIfBsServiceClassEntry 11 }

wmanIfBsQosScArqEnable OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "True(1) ARQ enabling is requested for the connection."
REFERENCE  "Section 11.13.20 in IEEE 802.16REvD/D5-2004"
::= { wmanIfBsServiceClassEntry 12 }

wmanIfBsQosScArqWindowSize OBJECT-TYPE
SYNTAX      INTEGER (1 .. 1024)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "Indicates the maximum number of unacknowledged fragments at any time."
REFERENCE  "Section 11.13.20 in IEEE 802.16REvD/D5-2004"
::= { wmanIfBsServiceClassEntry 13 }

wmanIfBsQosScArqFragmentLifetime OBJECT-TYPE
SYNTAX      INTEGER (0 .. 65535)
UNITS     "10 us"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "The maximum time interval an ARQ fragment will be managed by the transmitter ARQ machine, once initial transmission of the fragment has occurred. If transmission or retransmission of the fragment is not acknowledged by the receiver before the time limit is reached, the fragment is discarded. A value of 0 means Infinite."
REFERENCE  "Section 11.13.20 in IEEE 802.16REvD/D5-2004"
DEFVAL  {0}
::= { wmanIfBsServiceClassEntry 14 }

wmanIfBsQosScArqSyncLossTimeout OBJECT-TYPE
SYNTAX      INTEGER (0 .. 65535)
UNITS     "10 us"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "The maximum interval before declaring a loss of synchronization of the sender and receiver state machines. A value of 0 means Infinite."
wmanIfBsQosScArgDeliverInOrder  OBJECT-TYPE
SYNTAX  TruthValue
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "Indicates whether or not data is to be delivered by the receiving MAC to its client application in the order in which data was handed off to the originating MAC."
REFERENCE  "Section 11.13.20 in IEEE 802.16REVD/D5-2004"
::= { wmanIfBsServiceClassEntry 15 }

wmanIfBsQosScArgRxPurgeTimeout  OBJECT-TYPE
SYNTAX     INTEGER (0 .. 65535)
UNITS     "10 us"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "Indicates the time interval the ARQ window is advanced after a fragment is received. A value of 0 means Infinite."
REFERENCE  "Section 11.13.20 in IEEE 802.16REVD/D5-2004"
::= { wmanIfBsServiceClassEntry 16 }

wmanIfBsQosScFragmentLen OBJECT-TYPE
SYNTAX     INTEGER (32 .. 2040)
UNITS       "byte"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "The maximum size fragment a transmitter shall form or a receiver shall expect to receive."
::= { wmanIfBsServiceClassEntry 17 }

wmanIfBsQosSCMinRsvdTolerableRate OBJECT-TYPE
SYNTAX     INTEGER
UNITS     "bps"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "Minimum Tolerable Traffic Rate = R (bits/sec) with time base T(sec) means the following. Let S denote additional demand accumulated at the MAC SAP of the transmitter during an arbitrary time interval of the length T. Then the amount of data forwarded at the receiver to CS (in bits) during this interval should be not less than min {S, R * T}."
REFERENCE  "Section 11.13.11 in IEEE 802.16REVD/D5-2004"
::= { wmanIfBsServiceClassEntry 18 }

wmanIfBsQosScReqTxPolicy OBJECT-TYPE
SYNTAX      BITS {noBroadcastBwReq(0),
reserved1(1),
noPiggybackReq(2),
noFragmentData(3),
noPHS(4),
noSduPacking(5),
nocrc(6),
reserved2(7)}
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "The value of this parameter provides the capability to specify certain attributes for the associated service flow. An attribute is enabled by setting the corresponding bit position to 1."
REFERENCE  "Section 11.13.12 in IEEE 802.16REVD/D5-2004"
::= { wmanIfBsServiceClassEntry 19 }
wmanIfBsQoSServiceClassRowStatus OBJECT-TYPE
SYNTAX     RowStatus
MAX-ACCESS read-create
STATUS      current
DESCRIPTION 
"This object is used to create a new row or modify or 
delete an existing row in this table.
If the implementor of this MIB has chosen not 
to implement 'dynamic assignment' of profiles, this 
object is not useful and should return noSuchName 
upon SNMP request."
::= { wmanIfBsServiceClassEntry 21 }

wmanIfBsClassifierRuleTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfBsClassifierRuleEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION 
"This table contains packet classifier rules associated 
with service flows."
REFERENCE "Section 11.13.22.3.4 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsPacketCs 3 }

wmanIfBsClassifierRuleEntry OBJECT-TYPE
SYNTAX      WmanIfBsClassifierRuleEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION 
"This table provides one row for each packet classifier 
rule, and is indexed by wmanIfBsSFIndex and 
wmanIfBsClassifierRuleIndex. wmanIfBsSFIndex 
identifies the service flow, while 
wmanIfBsClassifierRuleIndex identifies the packet 
classifier rule."
INDEX { wmanIfBsSFIndex, wmanIfBsClassifierRuleIndex } 
::= { wmanIfBsClassifierRuleTable 1 }

WmanIfBsClassifierRuleEntry ::= SEQUENCE {
  wmanIfBsSFIndex                        Unsigned32,
  wmanIfBsClassifierRuleIndex            Unsigned32,
  wmanIfBsClassifierRulePriority         INTEGER,
  wmanIfBsClassifierRuleIpTosLow         OCTET STRING,
  wmanIfBsClassifierRuleIpTosHigh        OCTET STRING,
  wmanIfBsClassifierRuleIpTosMask        OCTET STRING,
  wmanIfBsClassifierRuleIpProtocol       Integer32,
  wmanIfBsClassifierRuleIpAddressType    InetAddressType,
  wmanIfBsClassifierRuleIpSourceAddr     InetAddress,
  wmanIfBsClassifierRuleIpSourceMask     InetAddress,
  wmanIfBsClassifierRuleIpDestAddr       InetAddress,
  wmanIfBsClassifierRuleIpDestMask       InetAddress,
  wmanIfBsClassifierRuleSourcePortStart  Integer32,
  wmanIfBsClassifierRuleSourcePortEnd    Integer32,
  wmanIfBsClassifierRuleDestPortStart    Integer32,
  wmanIfBsClassifierRuleDestPortEnd      Integer32,
  wmanIfBsClassifierRuleDestMacAddr      MacAddress,
  wmanIfBsClassifierRuleDestMacMask      MacAddress,
  wmanIfBsClassifierRuleSourceMacAddr    MacAddress,
  wmanIfBsClassifierRuleSourceMacMask    MacAddress,
  wmanIfBsClassifierRuleEnetProtocolType INTEGER32,
  wmanIfBsClassifierRuleEnetProtocol     Integer32,
  wmanIfBsClassifierRuleUserPriLow       Integer32,
  wmanIfBsClassifierRuleUserPriHigh      Integer32,
  wmanIfBsClassifierRuleVlanId           Integer32,
  wmanIfBsClassifierRuleState            INTEGER,
  wmanIfBsClassifierRulePkts             Counter64,
  wmanIfBsClassifierRuleRowStatus        RowStatus }

wmanIfBsSFIndex OBJECT-TYPE
SYNTAX     Unsigned32 (1 .. 4294967295)
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"A 32 bit quantity that uniquely identifies a service flow
to both the subscriber station and base station (BS)."
::= { wmanIfBsClassifierRuleEntry 1 }

wmanIfBsClassifierRuleIndex OBJECT-TYPE
SYNTAX     Unsigned32 (1..4294967295)
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION "An index is assigned to a classifier in BS classifiers table"
::= { wmanIfBsClassifierRuleEntry 2 }

wmanIfBsClassifierRulePriority OBJECT-TYPE
SYNTAX     INTEGER (0..255)
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "The value specifies the priority for the Classifier, which
is used for determining the order of the Classifier. A higher value indicates higher priority.
Classifiers may have priorities in the range 0..255."
REFERENCE "Section 11.13.19.3.4.1 in IEEE 802.16REVd/D4-2004"
DEFVAL      { 0 }
::= { wmanIfBsClassifierRuleEntry 3 }

wmanIfBsClassifierRuleIpTosLow OBJECT-TYPE
SYNTAX     OCTET STRING (SIZE(1))
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "The low value of a range of TOS byte values. If the referenced parameter is not present in a classifier, this object reports the value of 0."
REFERENCE "Section 11.13.19.3.4.2 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 4 }

wmanIfBsClassifierRuleIpTosHigh OBJECT-TYPE
SYNTAX     OCTET STRING (SIZE(1))
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "The 8-bit high value of a range of TOS byte values.
If the referenced parameter is not present in a classifier, this object reports the value of 0."
REFERENCE "Section 11.13.19.3.4.2 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 5 }

wmanIfBsClassifierRuleIpTosMask OBJECT-TYPE
SYNTAX     OCTET STRING (SIZE(1))
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "The mask value is bitwise ANDed with TOS byte in an IP packet and this value is used check range checking of TosLow and TosHigh. If the referenced parameter is not present in a classifier, this object reports the value of 0."
REFERENCE "Section 11.13.19.3.4.2 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 6 }

wmanIfBsClassifierRuleIpProtocol OBJECT-TYPE
SYNTAX     Integer32 (0..255)
MAX-ACCESS read-create
STATUS      current
DESCRIPTION "This object indicates the value of the IP Protocol field required for IP packets to match this rule. If the referenced parameter is not present in a classifier, this object reports the value of 0."
REFERENCE
"Section 11.13.19.3.4.3 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 7 }

wmanIfBsClassifierRuleIpAddressType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The type of the internet address for
wmanIfBsClassifierRuleIpSourceAddr,
wmanIfBsClassifierRuleIpSourceMask,
wmanIfBsClassifierRuleIpDestAddr, and
wmanIfBsClassifierRuleIpDestMask.
If the referenced parameter is not present in a classifier,
this object reports the value of ipv4(1)."
REFERENCE
"Section 11.13.19.3.4.4 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 8 }

wmanIfBsClassifierRuleIpSourceAddr OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies the value of the IP Source Address
required for packets to match this rule. An IP packet
matches the rule when the packet ip source address bitwise
ANDed with the wmanIfBsClassifierRuleIpSourceMask value
equals the wmanIfBsClassifierRuleIpSourceAddr value.
If the referenced parameter is not present in a classifier,
this object reports the value of 0.0.0.0."
REFERENCE
"Section 11.13.19.3.4.4 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 9 }

wmanIfBsClassifierRuleIpSourceMask OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies which bits of a packet's IP Source
Address that are compared to match this rule. An IP packet
matches the rule when the packet source address bitwise
ANDed with the wmanIfBsClassifierRuleIpSourceMask value
equals the wmanIfBsClassifierRuleIpSourceAddr value.
If the referenced parameter is not present in a classifier,
this object reports the value of 0.0.0.0."
REFERENCE
"Section 11.13.19.3.4.4 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 10 }

wmanIfBsClassifierRuleIpDestAddr OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies the value of the IP Destination
Address required for packets to match this rule. An IP packet
matches the rule when the packet IP destination
address bitwise ANDed with the
wmanIfBsClassifierRuleIpDestMask value equals the
wmanIfBsClassifierRuleIpDestAddr value.
If the referenced parameter is not present in a classifier,
this object reports the value of 0.0.0.0."
REFERENCE
"Section 11.13.19.3.4.5 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 11 }

wmanIfBsClassifierRuleIpDestMask OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies which bits of a packet's IP Destination Address that are compared to match this rule. An IP packet matches the rule when the packet destination address bitwise ANDed with the wmanIfBsClassifierRuleIpDestMask value equals the wmanIfBsClassifierRuleIpDestAddr value. If the referenced parameter is not present in a classifier, this object reports the value of 0.0.0.0."

REFERENCE
"Section 11.13.19.3.4.5 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 12 }

wmanIfBsClassifierRuleSourcePortStart OBJECT-TYPE
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This object specifies the low end inclusive range of TCP/UDP source port numbers to which a packet is compared. This object is irrelevant for non-TCP/UDP IP packets. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.6 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 13 }

wmanIfBsClassifierRuleSourcePortEnd OBJECT-TYPE
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This object specifies the high end inclusive range of TCP/UDP source port numbers to which a packet is compared. This object is irrelevant for non-TCP/UDP IP packets. If the referenced parameter is not present in a classifier, this object reports the value of 65535."

REFERENCE
"Section 11.13.19.3.4.6 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 14 }

wmanIfBsClassifierRuleDestPortStart OBJECT-TYPE
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This object specifies the low end inclusive range of TCP/UDP destination port numbers to which a packet is compared. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.7 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 15 }

wmanIfBsClassifierRuleDestPortEnd OBJECT-TYPE
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This object specifies the high end inclusive range of TCP/UDP destination port numbers to which a packet is compared. If the referenced parameter is not present in a classifier, this object reports the value of 65535."

REFERENCE
"Section 11.13.19.3.4.7 in IEEE 802.16REVd/D5-2004"
 ::= { wmanIfBsClassifierRuleEntry 16 }
wmanIfBsClassifierRuleDestMacAddr OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION "An Ethernet packet matches an entry when its destination MAC address bitwise ANDed with wmanIfBsClassifierRuleDestMacMask equals the value of wmanIfBsClassifierRuleDestMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."
REFERENCE "Section 11.13.19.3.4.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 17 }

wmanIfBsClassifierRuleDestMacMask OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION "An Ethernet packet matches an entry when its destination MAC address bitwise ANDed with wmanIfBsClassifierRuleDestMacMask equals the value of wmanIfBsClassifierRuleDestMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."
REFERENCE "Section 11.13.19.3.4.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 18 }

wmanIfBsClassifierRuleSourceMacAddr OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION "An Ethernet packet matches this entry when its source MAC address bitwise ANDed with wmanIfBsClassifierRuleSourceMacMask equals the value of wmanIfBsClassifierRuleSourceMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."
REFERENCE "Section 11.13.19.3.4.9 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 19 }

wmanIfBsClassifierRuleSourceMacMask OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION "An Ethernet packet matches an entry when its destination MAC address bitwise ANDed with wmanIfBsClassifierRuleSourceMacMask equals the value of wmanIfBsClassifierRuleSourceMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."
REFERENCE "Section 11.13.19.3.4.9 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 20 }

wmanIfBsClassifierRuleEnetProtocolType OBJECT-TYPE
SYNTAX INTEGER {none(0), ethertype(1), dsap(2)}
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"This object indicates the format of the layer 3 protocol id in the Ethernet packet. A value of none(0) means that the rule does not use the layer 3 protocol type as a matching criteria. A value of ethertype(1) means that the rule applies only to frames which contains an EtherType value. Ethertype values are contained in packets using the Dec-Intel-Xerox (DIX) encapsulation or the RFC 1042 Sub-Network Access Protocol (SNAP) encapsulation formats. A value of dsap(2) means that the rule applies only to frames using the IEEE802.3 encapsulation format with a Destination Service Access Point (DSAP) other than 0xAA (which is reserved for SNAP). If the Ethernet frame contains an 802.1P/Q Tag header (i.e. EtherType 0x8100), this object applies to the embedded EtherType field within the 802.1P/Q header. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE

"Section 11.13.19.3.4.10 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsClassifierRuleEntry 21 }

wmanIfBsClassifierRuleEnetProtocol OBJECT-TYPE
SYNTAX Integer32 (0..65535)
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"If wmanIfBsClassifierRuleEnetProtocolType is none(0), this object is ignored when considering whether a packet matches the current rule.
If wmanIfBsClassifierRuleEnetProtocolType is ethertype(1), this object gives the 16-bit value of the EtherType that the packet must match in order to match the rule.
If wmanIfBsClassifierRuleEnetProtocolType is dsap(2), the lower 8 bits of this object’s value must match the DSAP byte of the packet in order to match the rule.
If the Ethernet frame contains an 802.1P/Q Tag header (i.e. EtherType 0x8100), this object applies to the embedded EtherType field within the 802.1P/Q header. If the referenced parameter is not present in the classifier, the value of this object is reported as 0."

REFERENCE

"Section 11.13.19.3.4.10 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsClassifierRuleEntry 22 }

wmanIfBsClassifierRuleUserPriLow OBJECT-TYPE
SYNTAX Integer32 (0..7)
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"This object applies only to Ethernet frames using the 802.1P/Q tag header (indicated with EtherType 0x8100). Such frames include a 16-bit Tag that contains a 3 bit Priority field and a 12 bit VLAN number. Tagged Ethernet packets must have a 3-bit Priority field within the range of wmanIfBsClassifierRulePriLow and wmanIfBsClassifierRulePriHigh in order to match this rule. If the referenced parameter is not present in the classifier, the value of this object is reported as 0."

REFERENCE

"Section 11.13.19.3.4.11 in IEEE 802.16REVd/D5-2004"

::= { wmanIfBsClassifierRuleEntry 23 }

wmanIfBsClassifierRuleUserPriHigh OBJECT-TYPE
SYNTAX Integer32 (0..7)
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"This object applies only to Ethernet frames using the 802.1P/Q tag header (indicated with EtherType 0x8100). Such frames include a 16-bit Tag that contains a 3 bit Priority field and a 12 bit VLAN number. Tagged Ethernet packets must have a 3-bit Priority field within the range of wmanIfBsClassifierRulePriLow and wmanIfBsClassifierRulePriHigh in order to match this rule."
If the referenced parameter is not present in the classifier, the value of this object is reported as 7.

REFERENCE
"Section 11.13.19.3.4.11 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 24 }

wmanIfBsClassifierRuleVlanId OBJECT-TYPE
SYNTAX        Integer32 (0..4095)
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
"This object applies only to Ethernet frames using the 802.1P/Q tag header.
If this object's value is nonzero, tagged packets must have a VLAN Identifier that matches the value in order to match the rule.
Only the least significant 12 bits of this object's value are valid.
If the referenced parameter is not present in the classifier, the value of this object is reported as 0."

REFERENCE
"Section 11.13.19.3.4.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 25 }

wmanIfBsClassifierRuleState OBJECT-TYPE
SYNTAX        INTEGER {active(1), inactive(2)}
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
"This object indicates whether or not the classifier is enabled to classify packets to a Service Flow.
If the referenced parameter is not present in the classifier, the value of this object is reported as active(1)."

REFERENCE
"Section 11.13.19.3.4.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 26 }

wmanIfBsClassifierRulePkts OBJECT-TYPE
SYNTAX        Counter64
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
"This object counts the number of packets that have been classified using this entry."

REFERENCE
"Section 11.13.19.3.4.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsClassifierRuleEntry 27 }

wmanIfBsClassifierRuleRowStatus OBJECT-TYPE
SYNTAX        RowStatus
MAX-ACCESS    read-create
STATUS        current
DESCRIPTION
"This object is used to create a new row or modify or delete an existing row in this table.
If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."
::= { wmanIfBsClassifierRuleEntry 28 }

wmanIfBsSsPacketCounterTable OBJECT-TYPE
SYNTAX        SEQUENCE OF WmanIfBsSsPacketCounterEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"This table contains counters to keep track of the number of packets or octets that have been received or transmitted on the per service flow basis."
::= { wmanIfBsPacketCs 4 }

wmanIfBsSsPacketCounterEntry OBJECT-TYPE
SYNTAX        WmanIfBsSsPacketCounterEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
"This table provides one row for each service flow, and
is indexed by wmanIfBsSsSfIndex and
wmanIfBsSsMacAddr." INDEX { wmanIfBsSsSfIndex, wmanIfBsSsMacAddr }
::= { wmanIfBsSsPacketCounterTable 1 }

WmanIfBsSsPacketCounterEntry ::= SEQUENCE {
wmanIfBsSsSfIndex                       Unsigned32,
wmanIfBsSsMacAddr                       MacAddress,
wmanIfBsSsSfDirection                   INTEGER,
wmanIfBsSsMacSduCount                   Counter64,
wmanIfBsSsOctetCount                    Counter64,
wmanIfBsSsResetCounter                  INTEGER,
wmanIfBsSsResetCounterTime              TimeStamp
}

wmanIfBsSsSfIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1 .. 4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"A 32 bit quantity that uniquely identifies a service flow."
::= { wmanIfBsSsPacketCounterEntry 1 }

wmanIfBsSsMacAddr OBJECT-TYPE
SYNTAX      MacAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The MAC address of the SS, where the service flow resides.
It can be used as the index to associate service flows
with the SS."
::= { wmanIfBsSsPacketCounterEntry 2 }

wmanIfBsSsSfDirection OBJECT-TYPE
SYNTAX      INTEGER {transmit(1),
receive(2)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"An attribute indicating whether the packet counter is on
transmit or receive direction from the BS perspective."
::= { wmanIfBsSsPacketCounterEntry 3 }

wmanIfBsSsMacSduCount OBJECT-TYPE
SYNTAX      Counter64
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object counts the number of MAC SDUs that have
been transmitted or received."
::= { wmanIfBsSsPacketCounterEntry 4 }

wmanIfBsSsOctetCount OBJECT-TYPE
SYNTAX      Counter64
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object counts the number of octets that have
been transmitted or received."
::= { wmanIfBsSsPacketCounterEntry 5 }

wmanIfBsSsResetCounter OBJECT-TYPE
SYNTAX      INTEGER {null(0),
resetCounter(1)}
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"When SET this attribute to resetCounter(1), the
 corresponding entry of packet counters will be reset.
 A GET operation performed on this object will always
 return null(0). The counter is normally reset after
 the packet count information is retrieved."
::= { wmanIfBsSsPacketCounterEntry 6 }
wmanIfBsRsResetCounterTime OBJECT-TYPE
SYNTAX      TimeStamp
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"Indicates the date and time when the counter is
reset."
::= { wmanIfBsRsPacketCounterEntry 7 }

--
-- wmanIfBsCps contain the Base Station Common Part Sublayer objects
wmanIfBsCps OBJECT IDENTIFIER ::= { wmanIfBsObjects 3 }

--
-- wmanIfBsConfigurationTable contains global parameters common in BS
--
wmanIfBsConfigurationTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfBsConfigurationEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table provides one row for each BS sector that
contains the BS system parameters as defined in section
10.1 of [3]."
::= { wmanIfBsCps 1 }

wmanIfBsConfigurationEntry OBJECT-TYPE
SYNTAX      WmanIfBsConfigurationEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table is indexed by ifIndex with an ifType of
propBWAp2Mp."
INDEX { ifIndex }
::= { wmanIfBsConfigurationTable 1 }

WmanIfBsConfigurationEntry ::= SEQUENCE {
  wmanIfBsDcdInterval                     INTEGER,  
  wmanIfBsUcdInterval                     INTEGER,  
  wmanIfBsUcdTransition                   INTEGER,  
  wmanIfBsDcdTransition                   INTEGER,  
  wmanIfBsMaxMAPPending                   INTEGER,  
  wmanIfBsInitialRangingInterval          INTEGER,  
  wmanIfBsClkCmpInterval                  INTEGER,  
  wmanIfBsSsULMapProcTime                 Unsigned32,  
  wmanIfBsSsRangRespProcTime              Unsigned32,  
  wmanIfBsT5Timeout                       INTEGER,  
  wmanIfBsT9Timeout                       INTEGER,  
  wmanIfBsT13Timeout                      INTEGER,  
  wmanIfBsT15Timeout                      INTEGER,  
  wmanIfBsT17Timeout                      INTEGER,  
  wmanIfBsT27IdleTimer                    INTEGER,  
  wmanIfBsT27ActiveTimer                  INTEGER,  
  wmanIfBsConfigurationRowStatus          RowStatus  }

wmanIfBsDcdInterval OBJECT-TYPE
SYNTAX      INTEGER(0..10000)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Time between transmission of DCD messages in ms."
::= { wmanIfBsConfigurationEntry 1 }

wmanIfBsUcdInterval OBJECT-TYPE
SYNTAX      INTEGER(0..10000)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Time between transmission of UCD messages in ms."
::= { wmanIfBsConfigurationEntry 2 }

wmanIfBsUcdTransition OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "Number of MAC Frames"
MAX-ACCESS  read-write
 STATUS current
DESCRIPTION "The time the BS shall wait after repeating a UCD message with an incremented Configuration Change Count before issuing a UL-MAP message referring to Downlink_Burst_Profiles defined in that UCD message."
 ::= { wmanIfBsConfigurationEntry 3 }

wmanIfBsDcdTransition OBJECT-TYPE
SYNTAX INTEGER
UNITS "Number of MAC Frames"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "The time the BS shall wait after repeating a DCD message with an incremented Configuration Change Count before issuing a DL-MAP message referring to Uplink_Burst_Profiles defined in that DCD message."
 ::= { wmanIfBsConfigurationEntry 4 }

wmanIfBsMaxMAPPending OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Maximum validity of map."
 ::= { wmanIfBsConfigurationEntry 5 }

wmanIfBsInitialRangingInterval OBJECT-TYPE
SYNTAX INTEGER(0..2000)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Time between Initial Ranging regions assigned by the BS in ms."
 ::= { wmanIfBsConfigurationEntry 6 }

wmanIfBsClkCmpInterval OBJECT-TYPE
SYNTAX INTEGER(50..50)
UNITS "milliseconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Time between the clock compare measurements used for the generation of CLK-CMP messages."
 ::= { wmanIfBsConfigurationEntry 7 }

wmanIfBsSsULMapProcTime OBJECT-TYPE
SYNTAX Unsigned32 (200 .. 4294967295)
UNITS "micro seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Time provided between arrival of the last bit of a UL-MAP at an SS and effectiveness of that map in us."
 ::= { wmanIfBsConfigurationEntry 8 }

wmanIfBsSsRangRespProcTime OBJECT-TYPE
SYNTAX Unsigned32 (10000 .. 4294967295)
UNITS "micro seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Time allowed for an SS following receipt of a ranging response before it is expected to reply to an invited ranging request in us."
 ::= { wmanIfBsConfigurationEntry 9 }

wmanIfBsT5Timeout OBJECT-TYPE
SYNTAX INTEGER(0 .. 2000)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Wait for Uplink Channel Change Response in ms."
 ::= { wmanIfBsConfigurationEntry 10 }
wmanIfBsT9Timeout OBJECT-TYPE
SYNTAX INTEGER(300 .. 65535)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Registration Timeout, the time allowed between the BS sending a RNG-RSP (success) to an SS, and receiving a SBC-REQ from that same SS in ms."
::= { wmanIfBsConfigurationEntry 11 }

wmanIfBsT13Timeout OBJECT-TYPE
SYNTAX INTEGER(15 .. 65535)
UNITS "minutes"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "The time allowed for an SS, following receipt of a REG-RSP message to send a TFTP-CPLT message to the BS in min."
::= { wmanIfBsConfigurationEntry 12 }

wmanIfBsT15Timeout OBJECT-TYPE
SYNTAX INTEGER(20 .. 65535)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Wait for MCA-RSP in ms."
::= { wmanIfBsConfigurationEntry 13 }

wmanIfBsT17Timeout OBJECT-TYPE
SYNTAX INTEGER(5 .. 65535)
UNITS "minutes"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Time allowed for SS to complete SS Authorization and Key Exchange in minutes."
::= { wmanIfBsConfigurationEntry 14 }

wmanIfBsT27IdleTimer OBJECT-TYPE
SYNTAX INTEGER
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Maximum time between unicast grants to SS when BS believes SS uplink transmission quality is good enough."
::= { wmanIfBsConfigurationEntry 15 }

wmanIfBsT27ActiveTimer OBJECT-TYPE
SYNTAX INTEGER
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Maximum time between unicast grants to SS when BS believes SS uplink transmission quality is not good enough."
::= { wmanIfBsConfigurationEntry 16 }

wmanIfBsConfigurationRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This object is used to create a new row or modify or delete an existing row in this table.

If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."
::= { wmanIfBsConfigurationEntry 17 }

--
-- Base Station statistics counters
--
wmanIfBsStatisticCounter OBJECT IDENTIFIER ::= { wmanIfBsCps 2 }

wmanIfBsChMeasurementTable OBJECT-TYPE
SYNTAX      SEQUENCE OF   WmanIfBsChMeasurementEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table contains channel measurement information
on the uplink signal received from SS. The table shall
be maintained as FIFO to store measurement samples that
can be used to create RSSI and CINR histogram report.
When the measurement entry for a SS reaches the limit,
the oldest entry shall be deleted as the new entry is
added to the table."
::= { wmanIfBsStatisticCounter  1 }

wmanIfBsChMeasurementEntry OBJECT-TYPE
SYNTAX      WmanIfBsChMeasurementEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"Each entry in the table contains RSSI and CINR
signal quality measurement on signal received from the SS.
The primary index is the ifIndex with ifType of propBWAp2Mp
identifying the BS sector. wmanIfChSsIdIndex identifies
the SS from which the signal was received.
wmanIfBsHistogramIndex is the index to histogram samples.
Since there is no time stamp in the table,
wmanIfBsHistogramIndex should be increased monotonically,
and warps around when it reaches the limit."
INDEX       { ifIndex, wmanIfBsChSsIdIndex,
wmanIfBsHistogramIndex }
::= { wmanIfBsChMeasurementTable  1 }

WmanIfBsChMeasurementEntry ::= SEQUENCE {
  wmanIfBsChSsIdIndex                     Unsigned32,
  wmanIfBsHistogramIndex                  Unsigned32,
  wmanIfBsChannelNumber                   INTEGER,
  wmanIfBsStartFrame                      INTEGER,
  wmanIfBsDuration                        INTEGER,
  wmanIfBsBasicReport                     BITS,
  wmanIfBsMeanCinrReport                  INTEGER,
  wmanIfBsMeanRssiReport                  INTEGER,
  wmanIfBsStdDeviationCinrReport          INTEGER,
  wmanIfBsStdDeviationRssiReport          INTEGER}

wmanIfBsChSsIdIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1 .. 4294967295)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"wmanIfBsChIdIndex identifies the SS providing the
channel measurement."
REFERENCE
"Section 6.4.2.3.5 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 1 }

wmanIfBsHistogramIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1 .. 4294967295)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"wmanIfBsHistogramIndex identifies the histogram samples
in the table for each subscriber station."
::= { wmanIfBsChMeasurementEntry 2 }

wmanIfBsChannelNumber OBJECT-TYPE
SYNTAX      INTEGER
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"Physical channel number to be reported on is only
applicable to licence exempt band. For licensed band,
this parameter should be null."
REFERENCE
"Section 8.5.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 3 }
wmanIfBsStartFrame OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Frame number in which measurement for this channel
started."
REFERENCE
"Section 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 4 }

wmanIfBsDuration OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Cumulative measurement duration on the channel in
multiples of Ts. For any value exceeding 0xFFFFFFFF,
report 0xFFFFFFFF."
REFERENCE
"Section 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 5 }

wmanIfBsBasicReport OBJECT-TYPE
SYNTAX BITS {wirelessHuman(0),
unknownTransmission(1),
primaryUser(2),
channelNotMeasured(3)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Bit #0: WirelessHuman detected on the channel
Bit #1: Unknown transmissions detected on the channel
Bit #2: Primary User detected on the channel
Bit #3: Unmeasured. Channel not measured"
REFERENCE
"Section 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 6 }

wmanIfBsMeanCinrReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Mean CINR report."
REFERENCE
"Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE
802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 7 }

wmanIfBsMeanRssiReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Mean RSSI report."
REFERENCE
"Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE
802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 8 }

wmanIfBsStdDeviationCinrReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Standard deviation CINR report."
REFERENCE
"Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE
802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 9 }

wmanIfBsStdDeviationRssiReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Standard deviation RSSI report."
REFERENCE
"Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfBsChMeasurementEntry 10 }

-- Base station PKM group
-- wmanIfBsPkmObjects contain the Base Station Privacy Sublayer objects
wmanIfBsPkmObjects OBJECT IDENTIFIER ::= { wmanIfBsObjects 4 }

-- Table wmanIfBsPkmBaseTable
-- wmanIfBsPkmBaseTable OBJECT-TYPE
  SYNTAX SEQUENCE OF WmanIfBsPkmBaseEntry
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION "This table describes the basic PKM attributes of each Base Station wireless interface."
  ::= { wmanIfBsPkmObjects 1 }

wmanIfBsPkmBaseEntry OBJECT-TYPE
  SYNTAX WmanIfBsPkmBaseEntry
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION "Each entry contains objects describing attributes of one BS wireless interface."
  INDEX { ifIndex }
  ::= { wmanIfBsPkmBaseTable 1 }

WmanIfBsPkmBaseEntry ::= SEQUENCE {
  wmanIfBsPkmDefaultAuthLifetime          Integer32,
  wmanIfBsPkmDefaultTEKLifetime           Integer32,
  wmanIfBsPkmDefaultSelfSigManufCertTrust INTEGER,
  wmanIfBsPkmCheckCertValidityPeriods     TruthValue,
  wmanIfBsPkmAuthentInfos                 Counter32,
  wmanIfBsPkmAuthRequests                 Counter32,
  wmanIfBsPkmAuthReplies                  Counter32,
  wmanIfBsPkmAuthInvalids                 Counter32
}

wmanIfBsPkmDefaultAuthLifetime OBJECT-TYPE
  SYNTAX Integer32 (86400..6048000)
  UNITS "seconds"
  MAX-ACCESS read-write
  STATUS current
  DESCRIPTION "The value of this object is the default lifetime, in seconds, the BS assigns to a new authorization key."
  REFERENCE "Table 341 in IEEE 802.16REVd/D5-2004"
  DEFVAL { 604800 }
  ::= { wmanIfBsPkmBaseEntry 1 }

wmanIfBsPkmDefaultTEKLifetime OBJECT-TYPE
  SYNTAX Integer32 (1800..604800)
  UNITS "seconds"
  MAX-ACCESS read-write
  STATUS current
  DESCRIPTION "The value of this object is the default lifetime, in seconds, the BS assigns to a new Traffic Encryption Key(TEK)."
  REFERENCE "Table 341 in IEEE 802.16REVd/D5-2004"
  DEFVAL { 43200 }
  ::= { wmanIfBsPkmBaseEntry 2 }

wmanIfBsPkmDefaultSelfSigManufCertTrust OBJECT-TYPE
  SYNTAX INTEGER { trusted (1), untrusted (2) }
  MAX-ACCESS read-write
  STATUS current
DESCRIPTION
"This object determines the default trust of all (new) self-signed manufacturer certificates obtained after setting the object."
 ::= { wmanIfBsPkmBaseEntry 3 }

wmanIfBsPkmCheckCertValidityPeriods OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Setting this object to TRUE causes all certificates received thereafter to have their validity periods (and their chain's validity periods) checked against the current time of day. A FALSE setting will cause all certificates received thereafter to not have their validity periods (nor their chain's validity periods) checked against the current time of day."
 ::= { wmanIfBsPkmBaseEntry 4 }

wmanIfBsPkmAuthentInfos OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has received an Authentication Information message from any SS."
 ::= { wmanIfBsPkmBaseEntry 5 }

wmanIfBsPkmAuthRequests OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has received an Authorization Request message from any SS."
 ::= { wmanIfBsPkmBaseEntry 6 }

wmanIfBsPkmAuthReplies OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has transmitted an Authorization Reply message to any SS."
 ::= { wmanIfBsPkmBaseEntry 7 }

wmanIfBsPkmAuthRejects OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has transmitted an Authorization Reject message to any SS."
 ::= { wmanIfBsPkmBaseEntry 8 }

wmanIfBsPkmAuthInvalids OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has transmitted an Authorization Invalid message to any SS."
 ::= { wmanIfBsPkmBaseEntry 9 }

-- Table wmanIfBsPkmAuthTable
--
wmanIfBsPkmAuthTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfBsPkmAuthEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table describes the attributes of each SS authorization association. The BS maintains one authorization association with each Baseline Privacy-enabled SS on each BS wireless interface."
wmanIfBsPkmAuthEntry ::= SEQUENCE {
  wmanIfBsPkmAuthSsMacAddress             MacAddress,
  wmanIfBsPkmAuthSsPublicKey              OCTET STRING,
  wmanIfBsPkmAuthSsKeySequenceNumber      Integer32,
  wmanIfBsPkmAuthSsExpiresOld             DateAndTime,
  wmanIfBsPkmAuthSsExpiresNew             DateAndTime,
  wmanIfBsPkmAuthSsLifetime               Integer32,
  wmanIfBsPkmAuthSsReset                  INTEGER,
  wmanIfBsPkmAuthSsInfos                  Counter64,
  wmanIfBsPkmAuthSsRequests               Counter64,
  wmanIfBsPkmAuthSsReplies                Counter64,
  wmanIfBsPkmAuthSsRejects                Counter64,
  wmanIfBsPkmAuthSsInvalids               Counter64,
  wmanIfBsPkmAuthRejectErrorCode          INTEGER,
  wmanIfBsPkmAuthRejectErrorString        SnmpAdminString,
  wmanIfBsPkmAuthInvalidErrorCode         INTEGER,
  wmanIfBsPkmAuthInvalidErrorString       SnmpAdminString,
  wmanIfBsPkmAuthPrimarySAId              Integer32,
  wmanIfBsPkmAuthBpkmSsCertValid          INTEGER,
  wmanIfBsPkmAuthBpkmSsCert               OCTET STRING
}

wmanIfBsPkmAuthSsMacAddress OBJECT-TYPE
SYNTAX      MacAddress
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The value of this object is the physical address of the SS to which the authorization association applies."
::= { wmanIfBsPkmAuthEntry 1 }

wmanIfBsPkmAuthSsPublicKey OBJECT-TYPE
SYNTAX      OCTET STRING (SIZE (140))
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is a DER-encoded RSAPublicKey ASN.1 type string, as defined in the RSA Encryption Standard (PKCS #1) [8], corresponding to the public key of the SS. The 74, 106, 140, 204, and 270 byte key encoding lengths correspond to 512 bit, 768 bit, 1024 bit, 1536 bit, and 2048 public moduli respectively. This is a zero-length string if the BS does not retain the public key."
::= { wmanIfBsPkmAuthEntry 2 }

wmanIfBsPkmAuthSsKeySequenceNumber OBJECT-TYPE
SYNTAX      Integer32 (0..15)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the most recent authorization key sequence number for this SS."
::= { wmanIfBsPkmAuthEntry 3 }

wmanIfBsPkmAuthSsExpiresOld OBJECT-TYPE
SYNTAX      DateAndTime
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the actual clock time for expiration of the immediate predecessor of the most recent authorization key for this FSM. If this FSM has only one authorization key, then the value is the time of activation of this FSM."
::= { wmanIfBsPkmAuthEntry 4 }

wmanIfBsPkmAuthSsExpiresNew OBJECT-TYPE
SYNTAX      DateAndTime
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the actual clock time for expiration of the most recent authorization key for this FSM"
::= { wmanIfBsPkmAuthEntry 5 }

wmanIfBsPkmAuthSsLifetime OBJECT-TYPE
SYNTAX      Integer32 (86400..6048000)
UNITS       "seconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"The value of this object is the lifetime, in seconds, the BS assigns to an authorization key for this SS."
REFERENCE
"Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL         { 604800 }
::= { wmanIfBsPkmAuthEntry 6 }

wmanIfBsPkmAuthSsReset OBJECT-TYPE
SYNTAX      INTEGER {noResetRequested(1), invalidateAuth(2), sendAuthInvalid(3), invalidateTeks(4) }
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Setting this object to invalidateAuth(2) causes the BS to invalidate the current SS authorization key(s), but not to transmit an Authorization Invalid message nor to invalidate unicast TEKs. Setting this object to sendAuthInvalid(3) causes the BS to invalidate the current SS authorization key(s), and to transmit an Authorization Invalid message to the SS, but not to invalidate unicast TEKs. Setting this object to invalidateTeks(4) causes the BS to invalidate the current SS authorization key(s), to transmit an Authorization Invalid message to the SS, and to invalidate all unicast TEKs associated with this SS authorization. Reading this object returns the most-recently-set value of this object, or returns noResetRequested(1) if the object has not been set since the last BS reboot."
::= { wmanIfBsPkmAuthEntry 7 }

wmanIfBsPkmAuthSsInfos OBJECT-TYPE
SYNTAX      Counter64
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has received an Authentication Information message from this SS."
::= { wmanIfBsPkmAuthEntry 8 }

wmanIfBsPkmAuthSsRequests OBJECT-TYPE
SYNTAX      Counter64
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the count of times the BS has received an Authorization Request message from this SS."
::= { wmanIfBsPkmAuthEntry 9 }

wmanIfBsPkmAuthSsReplies OBJECT-TYPE
SYNTAX      Counter64
MAX-ACCESS  read-only
wmanIfBsPkmAuthSsReceives OBJECT-TYPE
SYNTAX Counter64
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the BS has transmitted an Authorization Reply message to this SS."
::= { wmanIfBsPkmAuthEntry 10 }

wmanIfBsPkmAuthSsRejects OBJECT-TYPE
SYNTAX Counter64
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the BS has transmitted an Authorization Reject message to this SS."
::= { wmanIfBsPkmAuthEntry 11 }

wmanIfBsPkmAuthSsInvalids OBJECT-TYPE
SYNTAX Counter64
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the BS has transmitted an Authorization Invalid message to this SS."
::= { wmanIfBsPkmAuthEntry 12 }

wmanIfBsPkmAuthRejectErrorCode OBJECT-TYPE
SYNTAX INTEGER { noInformation(0), unauthorizedSs(1), unauthorizedSaid(2), permanentAuthorizationFailure(6) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the enumerated description of the Error-Code in most recent Authorization Reject message transmitted to the SS."
REFERENCE "IEEE 802.16 standard; table 371"
::= { wmanIfBsPkmAuthEntry 13 }

wmanIfBsPkmAuthRejectErrorString OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the Display-String in most recent Authorization Reject message transmitted to the SS. This is a zero length string if no Authorization Reject message has been transmitted to the SS."
::= { wmanIfBsPkmAuthEntry 14 }

wmanIfBsPkmAuthInvalidErrorCode OBJECT-TYPE
SYNTAX INTEGER { noInformation(0), unauthorizedSs(1), unsolicited(3), invalidKeySequence(4), keyRequestAuthenticationFailure(5) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the enumerated description of the Error-Code in most recent Authorization Invalid message transmitted to the SS."
REFERENCE "IEEE 802.16 standard; table 371"
::= { wmanIfBsPkmAuthEntry 15 }

wmanIfBsPkmAuthInvalidErrorString OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the Display-String in most recent Authorization Invalid message transmitted to the SS. This is a zero length string if no Authorization Invalid message has been transmitted to the SS."
::= { wmanIfBsPkmAuthEntry 16 }

wmanIfBsPkmAuthPrimarySAId OBJECT-TYPE
SYNTAX      Integer32 (0..65536)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this object is the Primary Security
Association identifier."
REFERENCE
"IEEE 802.16 standard; 11.9.7"
::= { wmanIfBsPkmAuthEntry 17 }

wmanIfBsPkmAuthBpkmsSsCertValid OBJECT-TYPE
SYNTAX      INTEGER {unknown (0),
                       validSsChained (1),
                       validSsTrusted (2),
                       invalidSsUntrusted (3),
                       invalidCAUntrusted (4),
                       invalidSsOther (5),
                       invalidCAOther (6) }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"Contains the reason why an SS's certificate is deemed valid
or invalid. Return unknown if the SS is running PKM mode.
ValidSsChained means the certificate is valid because it
chains to a valid certificate. ValidSsTrusted means the
certificate is valid because it has been provisioned to be
trusted. InvalidSsUntrusted means the certificate is
invalid because it has been provisioned to be untrusted.
InvalidCAUntrusted means the certificate is invalid
because it chains to an untrusted certificate.
InvalidSsOther and InvalidCAOther refer to errors in
validity, periods, etc which are attributable to
the SS certificate or its chain respectively."
::= { wmanIfBsPkmAuthEntry 18 }

wmanIfBsPkmAuthBpkmsSsCert OBJECT-TYPE
SYNTAX      OCTET STRING
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The X509 SS Certificate sent as part of a PKM
Authorization Request."
::= { wmanIfBsPkmAuthEntry 19 }

-- Table wmanIfBsPkmTEKTable
wmanIfBsPkmTEKTable OBJECT-TYPE
SYNTAX      SEQUENCE OF   WmanIfBsPkmTEKEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table describes the attributes of each Traffic
Encryption Key (TEK) association. The BS maintains one TEK
association per SAID on each BS wireless interface."
::= { wmanIfBsPkmObjects 3 }

wmanIfBsPkmTEKEntry OBJECT-TYPE
SYNTAX      WmanIfBsPkmTEKEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"Each entry contains objects describing attributes of one
TEK association on a particular BS wireless interface. The
BS MUST create one entry per SAID per wireless interface,
based on the receipt of a Key Request message, and MUST not
delete the entry before the SS authorization for the SAID
permanently expires."
INDEX       [ ifIndex, wmanIfBsPkmTEKSAId ]
::= { wmanIfBsPkmTEKTable 1 }

WmanIfBsPkmTEKEntry ::= SEQUENCE {
   wmanIfBsPkmTEKSAId                      Integer32,
   wmanIfBsPkmTEKSAIdType                  INTEGER,
   wmanIfBsPkmTEKDataEncryptAlg            INTEGER,
   wmanIfBsPkmTEKDataAuthenticateAlg        INTEGER,
wmanIfBsPktsPkmTEKEntry 1

wmanIfBsPkmTEKSAId OBJECT-TYPE
SYNTAX    Integer32 (0..65536)
MAX-ACCESS not-accessible
STATUS    current
DESCRIPTION "The value of this object is the WiMAX Security Association ID (SAID)."
REFERENCE "IEEE 802.16 standard; 11.9.7"
::= { wmanIfBsPkmTEKEntry 1 }

wmanIfBsPkmTEKSAType OBJECT-TYPE
SYNTAX    INTEGER {primarySA(0),
                 staticSA(1),
                 dynamicSA(2) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION "The value of this object is the type of security association. Dynamic does not apply to SSs running in PKM mode."
REFERENCE "IEEE 802.16 standard; 11.9.18"
::= { wmanIfBsPkmTEKEntry 2 }

wmanIfBsPkmTEKDataEncryptAlg OBJECT-TYPE
SYNTAX    INTEGER {none(0),
                   des56CbcMode(1) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION "The value of this object is the data encryption algorithm being utilized."
REFERENCE "IEEE 802.16 standard; table 301"
::= { wmanIfBsPkmTEKEntry 3 }

wmanIfBsPkmTEKDataAuthentAlg OBJECT-TYPE
SYNTAX    INTEGER {none(0) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION "The value of this object is the data authentication algorithm being utilized."
REFERENCE "IEEE 802.16 standard; table 302"
::= { wmanIfBsPkmTEKEntry 4 }

wmanIfBsPkmTEKEncryptAlg OBJECT-TYPE
SYNTAX    INTEGER {tripleDES(0),
                   rsa1024(1) }
MAX-ACCESS read-only
STATUS    current
DESCRIPTION "The value of this object is the TEK key encryption algorithm being utilized."
REFERENCE "IEEE 802.16 standard; table 303"
::= { wmanIfBsPkmTEKEntry 5 }
wmanIfBsPkmTEKLifetime OBJECT-TYPE
SYNTAX Integer32 (1800..604800)
UNITS "seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"The value of this object is the lifetime, in seconds, the
BS assigns to keys for this TEK association."
REFERENCE
"Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL { 43200 }
::= { wmanIfBsPkmTEKEntry 6 }

wmanIfBsPkmTEKKeySequenceNumber OBJECT-TYPE
SYNTAX Integer32 (0..3)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of this object is the most recent TEK key
sequence number for this SAID."
REFERENCE
"IEEE 802.16 standard; 11.9.5"
::= { wmanIfBsPkmTEKEntry 7 }

wmanIfBsPkmTEKExpiresOld OBJECT-TYPE
SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of this object is the actual clock time for
expiration of the immediate predecessor of the most recent
TEK for this FSM. If this FSM has only one TEK, then the
value is the time of activation of this FSM."
::= { wmanIfBsPkmTEKEntry 8 }

wmanIfBsPkmTEKExpiresNew OBJECT-TYPE
SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of this object is the actual clock time for
expiration of the most recent TEK for this FSM."
::= { wmanIfBsPkmTEKEntry 9 }

wmanIfBsPkmTEKReset OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"Setting this object to TRUE causes the BS to invalidate
the current active TEK(s) (plural due to key transition
periods), and to generate a new TEK for the associated
SAID; the BS MAY also generate an unsolicited TEK Invalid
message, to optimize the TEK synchronization between the BS
and the SS. Reading this object always returns FALSE."
::= { wmanIfBsPkmTEKEntry 10 }

wmanIfBsPkmKeyRequests OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of this object is the count of times the BS has
received a Key Request message."
::= { wmanIfBsPkmTEKEntry 11 }

wmanIfBsPkmKeyReplies OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of this object is the count of times the BS has
transmitted a Key Reply message."
::= { wmanIfBsPkmTEKEntry 12 }

wmanIfBsPkmKeyRejects OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
The value of this object is the count of times the BS has transmitted a Key Reject message.

wmanIfBsPkmTEKInvalids OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the BS has transmitted a TEK Invalid message."

wmanIfBsPkmKeyRejectErrorCode OBJECT-TYPE
SYNTAX INTEGER {noInformation(0),
unauthorizedSaid(2)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the enumerated description of the Error-Code in the most recent Key Reject message sent in response to a Key Request for this SAID."
REFERENCE "IEEE 802.16 standard; table 371"

wmanIfBsPkmKeyRejectErrorString OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the Display-String in the most recent Key Reject message sent in response to a Key Request for this SAID. This is a zero length string if no Key Reject message has been received since reboot."

wmanIfBsPkmTEKInvalidErrorCode OBJECT-TYPE
SYNTAX INTEGER {noInformation(0),
invalidKeySequence(4)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the enumerated description of the Error-Code in the most recent TEK Invalid message sent in association with this SAID."
REFERENCE "IEEE 802.16 standard; table 371"

wmanIfBsPkmTEKInvalidErrorString OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the Display-String in the most recent TEK Invalid message sent in association with this SAID. This is a zero length string if no TEK Invalid message has been received since reboot."
wmanBsSsBPKMFail {6}  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"The object is used to enable Base Station traps. From left  
to right, the set bit indicates the corresponding Base  
Station trap is enabled."
::= { wmanIfBsTrapControl 1 }

--  
-- BS threshold Definitions  
wmanIfBsThresholdConfigTable OBJECT-TYPE  
SYNTAX   SEQUENCE OF WmanIfBsThresholdConfigEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"This table contains threshold objects to be used to detect  
the threshold crossing events."
::= { wmanIfBsTrapDefinitions 1 }

wmanIfBsThresholdConfigEntry OBJECT-TYPE  
SYNTAX   WmanIfBsThresholdConfigEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"This table provides one row for each BS sector, and is  
ifIndex."
INDEX { ifIndex }  
::= { wmanIfBsThresholdConfigTable 1 }

WmanIfBsThresholdConfigEntry ::= SEQUENCE {  
wmanIfBsRssiLowThreshold                INTEGER,  
wmanIfBsRssiHighThreshold               INTEGER,  
wmanIfBsTempLowAlarmThreshold           INTEGER,  
wmanIfBsTempLowAlarmRestoredThreshold   INTEGER,  
wmanIfBsTempHighAlarmThreshold          INTEGER,  
wmanIfBsTempHighAlarmRestoredThreshold  INTEGER  
}

wmanIfBsRssiLowThreshold OBJECT-TYPE  
SYNTAX   INTEGER  
UNITS "dBm"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"Low threshold for generating the RSSI alarm trap.  
The detection of RSSI alarm will be disabled until the  
RSSI goes above wmanIfBsRssiHighThreshold"
::= { wmanIfBsThresholdConfigEntry 1 }

wmanIfBsRssiHighThreshold OBJECT-TYPE  
SYNTAX   INTEGER  
UNITS "dBm"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"High threshold for generating a trap indicating  
the RSSI alarm is restored."
::= { wmanIfBsThresholdConfigEntry 2 }

wmanIfBsTempLowAlarmThreshold OBJECT-TYPE  
SYNTAX   INTEGER  
UNITS "degreeF"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"Low threshold for generating the temperature low alarm  
trap. The detection of temperature low alarm will be  
disabled until the temperature goes above  
wmawIfBsTempLowAlarmRestoredThreshold"
::= { wmanIfBsThresholdConfigEntry 3 }

wmanIfBsTempLowAlarmRestoredThreshold OBJECT-TYPE  
SYNTAX   INTEGER  
UNITS "degreeF"  
MAX-ACCESS read-write  
STATUS current
DESCRIPTION
"Low threshold for generating a trap indicating
the temperature alarm is restored."
::= { wmanIfBsThresholdConfigEntry 4 }

wmanIfBsTempHighAlarmThreshold OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "degreeF"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Low threshold for generating the temperature high alarm
trap. The detection of temperature high alarm will be
disabled until the temperature goes above
wmanIfBsTempHighAlarmRestoredThreshold"
::= { wmanIfBsThresholdConfigEntry 5 }

wmanIfBsTempHighAlarmRestoredThreshold OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "degreeF"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"High threshold for generating a trap indicating
the temperature alarm is restored."
::= { wmanIfBsThresholdConfigEntry 6 }

-- Subscriber station Notification Objects Definitions
wmanIfBsSsNotificationObjectsTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfBsSsNotificationObjectsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table contains SS notification objects that have been
reported by the trap."
::= { wmanIfBsTrapDefinitions 2 }

wmanIfBsSsNotificationObjectsEntry OBJECT-TYPE
SYNTAX      WmanIfBsSsNotificationObjectsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table provides one row for each SS that has
generated traps, and is double indexed by
wmanIfBsTrapSsId and ifIndex for BS sector."
INDEX       { ifIndex, wmanIfBsTrapSsId }
::= { wmanIfBsSsNotificationObjectsTable 1 }

WmanIfBsSsNotificationObjectsEntry ::= SEQUENCE {
  wmanIfBsTrapSsId                        Unsigned32,
  wmanIfBsSsMacAddress                    MacAddress,
  wmanIfBsSsStatusValue                   INTEGER,
  wmanIfBsSsStatusInfo                    OCTET STRING,
  wmanIfBsDynamicServiceType              INTEGER,
  wmanIfBsDynamicServiceFailReason        OCTET STRING,
  wmanIfBsSsRssiStatus                    INTEGER,
  wmanIfBsSsRssiStatusInfo                OCTET STRING
}

wmanIfBsTrapSsId  OBJECT-TYPE
SYNTAX      Unsigned32 (1 .. 4294967295)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"wmanIfBsTrapSsId identifies the entry in
wmanIfBsSsNotificationObjectsTable."
::= { wmanIfBsSsNotificationObjectsEntry 1 }

wmanIfBsSsStatusValue  OBJECT-TYPE
SYNTAX      INTEGER {ssInitRangingSucc(1),
                        ssInitRangingFail(2),
                        ssRegistered(3),
                        ssRegistrationFail(4),
                        ssDeregistered(5),
                        ssBasicCapabilitySucc(6),
                        ssBasicCapabilityFail(7),
                        ssAuthorizationSucc(8),
                        -- Additional values
ssAuthorizationFail(9),
tftpSucc(10),
tftpFail(11),
sfCreationSucc(12),
sfCreationFail(13)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the status of a SS, as it goes through network entry and initialization procedure."
::= { wmanIfBsSsNotificationObjectsEntry 2 }

wmanIfBsSsStatusInfo OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the reason of SS's status change."
::= { wmanIfBsSsNotificationObjectsEntry 3 }

wmanIfBsDynamicServiceType OBJECT-TYPE
SYNTAX INTEGER {bsSfCreationReq(1),
bsSfCreationRsp(2),
bsSfCreationAck(3)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the dynamic service flow creation command type."
::= { wmanIfBsSsNotificationObjectsEntry 4 }

wmanIfBsDynamicServiceFailReason OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the reason why the service flow creation has failed."
::= { wmanIfBsSsNotificationObjectsEntry 5 }

wmanIfBsSsRssiStatus OBJECT-TYPE
SYNTAX INTEGER {bsRssiAlarm(1),
bsRssiNoAlarm(2)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"A RSSI alarm is generated if the RSSI is lower than wmanIfBsLowRssiThreshold."
::= { wmanIfBsSsNotificationObjectsEntry 6 }

wmanIfBsSsRssiStatusInfo OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the reason why RSSI alarm is generated."
::= { wmanIfBsSsNotificationObjectsEntry 7 }

-- Subscriber station Notification Trap Definitions

wmanIfBsSsStatusNotificationTrap NOTIFICATION-TYPE
OBJECTS {ifIndex,
    wmanIfBsTrapSsId,
    wmanIfBsSsMacAddress,
    wmanIfBsSsStatusValue,
    wmanIfBsSsStatusInfo
}
STATUS current
DESCRIPTION
"This trap reports the status of a SS. Based on this notification the NMS will issue an alarm with certain severity depending on the status and the reason received."
::= { wmanIfBsTrapDefinitions 3 }

ETS
wmanBsSsDynamicServiceFailTrap NOTIFICATION-TYPE
OBJECTS {ifIndex,
          wmanIfBsTrapSsId,
          wmanIfBsSsMacAddress,
          wmanIfBsDynamicServiceType,
          wmanIfBsDynamicServiceFailReason
     }
STATUS current
DESCRIPTION
"An event to report the failure of a dynamic service operation happened during the dynamic services process and detected in the Bs side."
::= { wmanIfBsTrapDefinitions 4 }

wmanBsSsRssiStatusChangeTrap NOTIFICATION-TYPE
OBJECTS {ifIndex,
          wmanIfBsTrapSsId,
          wmanIfBsSsMacAddress,
          wmanIfBsSsRssiStatus,
          wmanIfBsSsRssiStatusInfo
     }
STATUS current
DESCRIPTION
"An event to report that the uplink RSSI is below wmanIfBsLowRssiThreshold, or above wmanIfBsHighRssiThreshold after restore."
::= { wmanIfBsTrapDefinitions 5 }

wmanBsSsBPKMFailTrap NOTIFICATION-TYPE
OBJECTS {wmanIfBsSsMacAddress}
STATUS current
DESCRIPTION
"An event to report the failure of a BPKM operation."
::= { wmanIfBsTrapDefinitions 6 }

-- Base station Notification Object Definitions

wmanIfBsNotificationObjectsTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfBsNotificationObjectsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table contains BS notification objects that have been reported by the trap."
::= { wmanIfBsTrapDefinitions 7 }

wmanIfBsNotificationObjectsEntry OBJECT-TYPE
SYNTAX WmanIfBsNotificationObjectsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table provides one row for each BS sector that has generated traps, and is indexed by ifIndex."
INDEX { ifIndex }
::= { wmanIfBsNotificationObjectsTable 1 }

WmanIfBsNotificationObjectsEntry ::= SEQUENCE {
  wmanIfBsPowerStatus                     INTEGER,
  wmanIfBsFanStatus                       INTEGER,
  wmanIfBsTemperatureStatus               INTEGER,
  wmanIfBsPowerStatusInfo                 OCTET STRING,
  wmanIfBsFanStatusInfo                   OCTET STRING,
  wmanIfBsTemperatureStatusInfo           OCTET STRING
}

wmanIfBsPowerStatus OBJECT-TYPE
SYNTAX INTEGER {priOnSecStandby(0),
                secOnPriStandby(1),
                priOnSecFailed(2),
                secOnPriFailed(3)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Describes the status of the power supply in BS."
::= { wmanIfBsNotificationObjectsEntry 1 }
wmanIfBsFanStatus OBJECT-TYPE
SYNTAX INTEGER
{ fanFail(1),
  fanSucc(2) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Describes the status of the fan in BS."
::= { wmanIfBsNotificationObjectsEntry 2 }

wmanIfBsTemperatureStatus OBJECT-TYPE
SYNTAX INTEGER
{ lowTempReached(1),
  highTempReached(2),
  temperatureNormal(3) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "lowTempReached event is generated when temperature goes below wmanIfBsTempLowAlarmThreshold. temperatureNormal event is generated when temperature goes above wmanIfBsTempLowAlarmRestoredThreshold or below wmanIfBsTempHighAlarmRestoredThreshold after alarm. highTempReached event is generated when temperature goes above wmanIfBsTempHighAlarmThreshold."
::= { wmanIfBsNotificationObjectsEntry 3 }

wmanIfBsPowerStatusInfo OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Display the power supply status in text form."
::= { wmanIfBsNotificationObjectsEntry 4 }

wmanIfBsFanStatusInfo OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Display the fan status in text form."
::= { wmanIfBsNotificationObjectsEntry 5 }

wmanIfBsTemperatureStatusInfo OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Display the temperature status in text form."
::= { wmanIfBsNotificationObjectsEntry 6 }

-- Base station Notification Trap Definitions

wmanBsPowerStatusChangeTrap NOTIFICATION-TYPE
OBJECTS { wmanIfBsPowerStatus,
  wmanIfBsPowerStatusInfo }
STATUS current
DESCRIPTION "An event to report a change in the status of the power supply in BS. Typically it represents a failure."
::= { wmanIfBsTrapDefinitions 8 }

wmanBsFanStatusTrap NOTIFICATION-TYPE
OBJECTS { wmanIfBsFanStatus,
  wmanIfBsFanStatusInfo }
STATUS current
DESCRIPTION "An event to report the status of the fan inside the BS."
::= { wmanIfBsTrapDefinitions 9 }

wmanBsTemperatureChangeTrap NOTIFICATION-TYPE
OBJECTS { wmanIfBsTemperatureStatus,
  wmanIfBsTemperatureStatusInfo }
STATUS current
DESCRIPTION

"An alarm event will be generated when the temperature goes above 
\texttt{wmanIfBsTempHighAlarmThreshold} or below 
\texttt{wmanIfBsTempLowAlarmThreshold}. An event reporting the alarm 
has disappeared when the temperature goes below 
\texttt{wmanIfBsTempHighAlarmRestoredThreshold} or above 
\texttt{wmanIfBsTempLowAlarmRestoredThreshold}.
"

\[
\text{::=} \{ \text{wmanIfBsTrapDefinitions 10} \}
\]

-- SS object group - containing tables and objects to be implemented in -- the Subscriber station -- wmanIfSsSystem contain the Subscriber Station System objects
\texttt{wmanIfSsSystem} OBJECT IDENTIFIER ::= \{ \texttt{wmanIfSsObjects 1} \}

\texttt{wmanIfSsConfigFileEncodingTable} OBJECT-TYPE
SYNTAX \texttt{SEQUENCE OF WmanIfSsConfigFileEncodingEntry}
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table contains configuration file encoding information of the SS."
REFERENCE
"Section 11.2 in IEEE 802.16REVd/D5-2004"
\[
\text{::=} \{ \text{wmanIfSsSystem 1} \}
\]

\texttt{wmanIfSsConfigFileEncodingEntry} OBJECT-TYPE
SYNTAX \texttt{WmanIfSsConfigFileEncodingEntry}
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table has only one entry, and is indexed by ifIndex."
INDEX \{ ifIndex \}
\[
\text{::=} \{ \text{wmanIfSsConfigFileEncodingTable 1} \}
\]

\texttt{WmanIfSsConfigFileEncodingEntry} ::= \texttt{SEQUENCE} \{   
\texttt{wmanIfSsMicConfigSetting} OCTET STRING, 
\texttt{wmanIfSsVendorId} OCTET STRING, 
\texttt{wmanIfSsHwId} OCTET STRING, 
\texttt{wmanIfSsSwVersion} OCTET STRING, 
\texttt{wmanIfSsUpgradeFileName} OCTET STRING, 
\texttt{wmanIfSsUpgradableTftpServer} InetAddress, 
\texttt{wmanIfSsTftpServerTime Stamp} DateAndTime
\}

\texttt{wmanIfSsMicConfigSetting} OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(20))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value field contains the SS MIC code. This is used to detect 
unauthorized modification or corruption of the configuration file."
\[
\text{::=} \{ \text{wmanIfSsConfigFileEncodingEntry 1} \}
\]

\texttt{wmanIfSsVendorId} OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(3))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This value identifies the managed SS vendor to which the software upgrade is to be applied."
\[
\text{::=} \{ \text{wmanIfSsConfigFileEncodingEntry 2} \}
\]

\texttt{wmanIfSsHwId} OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This value identifies the hardware version to which the software upgrade is to be applied."
\[
\text{::=} \{ \text{wmanIfSsConfigFileEncodingEntry 3} \}
\]

\texttt{wmanIfSsSwVersion} OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
**wmanIfSsUpgradeFileName OBJECT-TYPE**

**SYNTAX** OCTET STRING

**MAX-ACCESS** read-only

**STATUS** current

**DESCRIPTION**

"The filename is a fully qualified directory path name which is in a format appropriate to the server."

::= { wmanIfSsConfigFileEncodingEntry 5 }

---

**wmanIfSsSwUpgradeTftpServer OBJECT-TYPE**

**SYNTAX** InetAddress

**MAX-ACCESS** read-only

**STATUS** current

**DESCRIPTION**

"This object is the IP address of the TFTP server on which the software upgrade file for the SS resides."

::= { wmanIfSsConfigFileEncodingEntry 6 }

---

**wmanIfSsTftpServerTimeStamp OBJECT-TYPE**

**SYNTAX** DateAndTime

**MAX-ACCESS** read-only

**STATUS** current

**DESCRIPTION**

"This is the sending time of the configuration file in seconds. The definition of time is as in RFC 868."

::= { wmanIfSsConfigFileEncodingEntry 7 }

---

-- wmanIfSsCps contain the Base Station Common Part Sublayer objects

**wmanIfSsCps OBJECT IDENTIFIER ::= { wmanIfSsObjects 2 }

---

-- wmanIfSsConfigurationTable contains global parameters for SS

**wmanIfSsConfigurationTable OBJECT-TYPE**

**SYNTAX** SEQUENCE OF WmanIfSsConfigurationEntry

**MAX-ACCESS** not-accessible

**STATUS** current

**DESCRIPTION**

"This table contains one row for the SS system parameters."

::= { wmanIfSsCps 1 }

**WmanIfSsConfigurationEntry OBJECT-TYPE**

**SYNTAX** WmanIfSsConfigurationEntry

**MAX-ACCESS** not-accessible

**STATUS** current

**DESCRIPTION**

"This table is indexed by ifIndex."

INDEX { ifIndex }

::= { wmanIfSsConfigurationTable 1 }

**WmanIfSsConfigurationEntry ::= SEQUENCE {**

- **wmanIfSsLostDLMapInterval INTEGER,**
- **wmanIfSsLostULMapInterval INTEGER,**
- **wmanIfSsContentionRangRetries INTEGER,**
- **wmanIfSsRequestRetries INTEGER,**
- **wmanIfSsRegRequestRetries INTEGER,**
- **wmanIfSsTftpBackoffStart INTEGER,**
- **wmanIfSsTftpBackoffEnd INTEGER,**
- **wmanIfSsTftpRequestRetries INTEGER,**
- **wmanIfSsTftpDownloadRetries INTEGER,**
- **wmanIfSsTftpWait INTEGER,**
- **wmanIfSsToDRetries INTEGER,**
- **wmanIfSsToDRetryPeriod INTEGER,**
- **wmanIfSsT1Timeout INTEGER,**
- **wmanIfSsT2Timeout INTEGER,**
- **wmanIfSsT3Timeout INTEGER,**
- **wmanIfSsT4Timeout INTEGER,**
- **wmanIfSsT6Timeout INTEGER,**
wmanIfSsT12Timeout INTEGER,
wmanIfSsT14Timeout INTEGER,
wmanIfSsT16Timeout INTEGER,
wmanIfSsT18Timeout INTEGER,
wmanIfSsT19Timeout INTEGER,
wmanIfSsT20Timeout INTEGER,
wmanIfSsT21Timeout INTEGER,
wmanIfSsSBCRequestRetries INTEGER,
wmanIfSsTftpCpltRetries INTEGER,
wmanIfSsT26Timeout INTEGER,
wmanIfSsDLManagProcTime INTEGER,
wmanIfSsConfigurationRowStatus RowStatus
}

wmanIfSsLostDLMapInterval OBJECT-TYPE
SYNTAX INTEGER(0..600)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Time since last received DL-MAP message before downlink synchronization is considered lost in ms."
::= { wmanIfSsConfigurationEntry 1 }

wmanIfSsLostULMapInterval OBJECT-TYPE
SYNTAX INTEGER(0..600)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Time since last received UL-MAP message before downlink synchronization is considered lost in ms."
::= { wmanIfSsConfigurationEntry 2 }

wmanIfSsContentionRangRetries OBJECT-TYPE
SYNTAX INTEGER(16..65535)
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Number of retries on contention Ranging Requests."
::= { wmanIfSsConfigurationEntry 3 }

wmanIfSsRequestRetries OBJECT-TYPE
SYNTAX INTEGER(16..65535)
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Number of retries on bandwidth allocation requests."
::= { wmanIfSsConfigurationEntry 4 }

wmanIfSsRegRequestRetries OBJECT-TYPE
SYNTAX INTEGER(3..65535)
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Number of retries on registration requests."
::= { wmanIfSsConfigurationEntry 5 }

wmanIfSsTftpBackoffStart OBJECT-TYPE
SYNTAX INTEGER(1..65535)
UNITS "seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Initial value for TFTP backoff in second."
::= { wmanIfSsConfigurationEntry 6 }

wmanIfSsTftpBackoffEnd OBJECT-TYPE
SYNTAX INTEGER(16..65535)
UNITS "seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Last value for TFTP backoff in s."
::= { wmanIfSsConfigurationEntry 7 }
wmanIfSsTftpRequestRetries  OBJECT-TYPE
SYNTAX      INTEGER(16..65535)
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Number of retries on TFTP request."
 ::= {  wmanIfSsConfigurationEntry 8 }

wmanIfSsTftpDownloadRetries  OBJECT-TYPE
SYNTAX      INTEGER(3..65535)
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Number of retries on entire TFTP downloads."
 ::= {  wmanIfSsConfigurationEntry 9 }

wmanIfSsTftpWait  OBJECT-TYPE
SYNTAX      INTEGER(2..65535)
UNITS       "minutes"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "The duration between two consecutive TFTP retries in min."
 ::= {  wmanIfSsConfigurationEntry 10 }

wmanIfSsToDRetries  OBJECT-TYPE
SYNTAX      INTEGER(3..65535)
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Number of Retries per Time of Day Retry Period."
 ::= {  wmanIfSsConfigurationEntry 11 }

wmanIfSsToDRetryPeriod  OBJECT-TYPE
SYNTAX      INTEGER(5..65535)
UNITS       "minutes"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Time of Day Retry Period."
 ::= {  wmanIfSsConfigurationEntry 12 }

wmanIfSsT1Timeout  OBJECT-TYPE
SYNTAX      INTEGER(0..50000)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Wait for DCD timeout in ms."
 ::= {  wmanIfSsConfigurationEntry 13 }

wmanIfSsT2Timeout  OBJECT-TYPE
SYNTAX      INTEGER(0..10000)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Wait for broadcast ranging timeout in ms."
 ::= {  wmanIfSsConfigurationEntry 14 }

wmanIfSsT3Timeout  OBJECT-TYPE
SYNTAX      INTEGER(0..200)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Ranging Response reception timeout following the
transmission of a Ranging Request in ms."
 ::= {  wmanIfSsConfigurationEntry 15 }

wmanIfSsT4Timeout  OBJECT-TYPE
SYNTAX      INTEGER(30..35)
UNITS       "seconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
"Wait for unicast ranging opportunity. If the pending until
complete field was used earlier by this SS, then the value
of that field shall be added to this interval in s."
 ::= { wmanIfSsConfigurationEntry 16 }

wmanIfSsT6Timeout OBJECT-TYPE
SYNTAX     INTEGER(0..3000)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "Wait for registration response in ms."
 ::= { wmanIfSsConfigurationEntry 17 }

wmanIfSsT12Timeout OBJECT-TYPE
SYNTAX     INTEGER (0..50000)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "Wait for UCD descriptor in ms."
 ::= { wmanIfSsConfigurationEntry 18 }

wmanIfSsT14Timeout OBJECT-TYPE
SYNTAX     INTEGER(0..200)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "Wait for DSX-RVD Timeout in ms."
 ::= { wmanIfSsConfigurationEntry 19 }

wmanIfSsT16Timeout OBJECT-TYPE
SYNTAX     INTEGER(10..65535)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "wait for bandwidth request grant in ms."
 ::= { wmanIfSsConfigurationEntry 20 }

wmanIfSsT18Timeout OBJECT-TYPE
SYNTAX     INTEGER(0..65535)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "wait for SBC-RSP timeout in ms."
 ::= { wmanIfSsConfigurationEntry 21 }

wmanIfSsT19Timeout OBJECT-TYPE
SYNTAX     INTEGER(0..65535)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "Time DL-channel remains unusable in ms."
 ::= { wmanIfSsConfigurationEntry 22 }

wmanIfSsT20Timeout OBJECT-TYPE
SYNTAX     INTEGER(0..65535)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "Time SS searches for preambles on a given channel in ms."
 ::= { wmanIfSsConfigurationEntry 23 }

wmanIfSsT21Timeout OBJECT-TYPE
SYNTAX     INTEGER(0..10000)
UNITS      "milliseconds"
MAX-ACCESS read-write
STATUS     current
DESCRIPTION "Time SS searches for DL-MAP on a given channel in ms."
 ::= { wmanIfSsConfigurationEntry 24 }
wmanIfSsSBCRequestRetries OBJECT-TYPE
SYNTAX INTEGER(3..16)
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Number of retries on SBC Request."
 ::= { wmanIfSsConfigurationEntry 25 }

wmanIfSsTftpCpltRetries OBJECT-TYPE
SYNTAX INTEGER(3..16)
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Number of retries on TFTP-CPLT."
 ::= { wmanIfSsConfigurationEntry 26 }

wmanIfSsT26Timeout OBJECT-TYPE
SYNTAX INTEGER(10..200)
UNITS "milliseconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Wait for TFTP-RSP in ms."
 ::= { wmanIfSsConfigurationEntry 27 }

wmanIfSsDLManagProcTime OBJECT-TYPE
SYNTAX INTEGER(0..200)
UNITS "micro seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION "Max. time between reception of Fast Power Control management message and compliance to its instructions by SS in us."
 ::= { wmanIfSsConfigurationEntry 28 }

wmanIfSsConfigurationRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This object is used to create a new row or modify or delete an existing row in this table.
If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."
 ::= { wmanIfSsConfigurationEntry 29 }

-- Subscriber station PKM group
-- wmanIfSsPkmObjects contain the Subscriber Station Privacy Sublayer objects
wmanIfSsPkmObjects OBJECT IDENTIFIER ::= { wmanIfSsObjects  3 }

-- Table wmanIfSsPkmBaseTable
wmanIfSsPkmBaseTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfSsPkmBaseEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table describes the basic PKM attributes of each SS wireless interface."
 ::= { wmanIfSsPkmObjects  1 }

wmanIfSsPkmBaseEntry OBJECT-TYPE
SYNTAX WmanIfSsPkmBaseEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "Each entry contains objects describing attributes of one SS wireless interface."
INDEX { ifIndex }
 ::= { wmanIfSsPkmBaseTable  1 }
WmanIfSsPkmBaseEntry ::= SEQUENCE {
    wmanIfSsPkmPrivacyEnable TruthValue,
    wmanIfSsPkmPublicKey OCTET STRING,
    wmanIfSsPkmAuthGraceTime Integer32,
    wmanIfSsPkmTEKGraceTime Integer32,
    wmanIfSsPkmAuthWaitTimeout Integer32,
    wmanIfSsPkmReauthWaitTimeout Integer32,
    wmanIfSsPkmOpWaitTimeout Integer32,
    wmanIfSsPkmRekeyWaitTimeout Integer32,
    wmanIfSsPkmAuthRejectWaitTimeout Integer32
}

wmanIfSsPkmPrivacyEnable OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION "This object identifies whether this SS is provisioned to
run Baseline Privacy Plus."
::= { wmanIfSsPkmBaseEntry 1 }

wmanIfSsPkmPublicKey OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (140))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is a DER-encoded RSAPublicKey
ASN.1 type string, as defined in the RSA Encryption
Standard (PKCS#1) [8], corresponding to the public key of
the SS. The 74, 106, 140, 204, and 270 byte key encoding
lengths correspond to 512 bit, 768 bit, 1024 bit, 1536 bit,
and 2048 public moduli respectively."
::= { wmanIfSsPkmBaseEntry 2 }

wmanIfSsPkmAuthGraceTime OBJECT-TYPE
SYNTAX Integer32 (300..3024000)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the grace time for an
authorization key. A SS is expected to start trying to get
a new authorization key beginning AuthGraceTime seconds
before the authorization key actually expires."
REFERENCE "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL { 600 }
::= { wmanIfSsPkmBaseEntry 3 }

wmanIfSsPkmTEKGraceTime OBJECT-TYPE
SYNTAX Integer32 (300..3024000)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the grace time for the TEK in
seconds. The SS is expected to start trying to acquire a
new TEK beginning TEK GraceTime seconds before the
expiration of the most recent TEK."
REFERENCE "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL { 3600 }
::= { wmanIfSsPkmBaseEntry 4 }

wmanIfSsPkmAuthWaitTimeout OBJECT-TYPE
SYNTAX Integer32 (2..30)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the Authorize Wait Timeout."
REFERENCE "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL { 10 }
::= { wmanIfSsPkmBaseEntry 5 }
wmanIfSsPkmReauthWaitTimeout OBJECT-TYPE
SYNTAX     Integer32 (2..30)
UNITS      "seconds"
MAX-ACCESS read-only
STATUS     current
DESCRIPTION "The value of this object is the Reauthorize Wait Timeout in seconds."
REFERENCE  "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL     { 10 }
::= { wmanIfSsPkmBaseEntry 6 }

wmanIfSsPkmOpWaitTimeout OBJECT-TYPE
SYNTAX     Integer32 (1..10)
UNITS      "seconds"
MAX-ACCESS read-only
STATUS     current
DESCRIPTION "The value of this object is the Operational Wait Timeout in seconds."
REFERENCE  "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL     { 1 }
::= { wmanIfSsPkmBaseEntry 7 }

wmanIfSsPkmRekeyWaitTimeout OBJECT-TYPE
SYNTAX     Integer32 (1..10)
UNITS      "seconds"
MAX-ACCESS read-only
STATUS     current
DESCRIPTION "The value of this object is the Rekey Wait Timeout in seconds."
REFERENCE  "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL     { 1 }
::= { wmanIfSsPkmBaseEntry 8 }

wmanIfSsPkmAuthRejectWaitTimeout OBJECT-TYPE
SYNTAX     Integer32 (10..600)
UNITS      "seconds"
MAX-ACCESS read-only
STATUS     current
DESCRIPTION "The value of this object is the Authorization Reject Wait Timeout in seconds."
REFERENCE  "Table 341 in IEEE 802.16REVd/D5-2004"
DEFVAL     { 60 }
::= { wmanIfSsPkmBaseEntry 9 }

-- Table wmanIfSsPkmAuthTable
--
wmanIfSsPkmAuthTable OBJECT-TYPE
SYNTAX     SEQUENCE OF WmanIfSsPkmAuthEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION "This table describes the PKM attributes related to the authorization for each SS wireless interface."
::= { wmanIfSsPkmObjects  2 }

wmanIfSsPkmAuthEntry OBJECT-TYPE
SYNTAX     WmanIfSsPkmAuthEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION "Each entry contains objects describing attributes of one SS wireless interface."
INDEX      [ ifIndex ]
::= { wmanIfSsPkmAuthTable  1 }

WmanIfSsPkmAuthEntry ::= SEQUENCE {
  wmanIfSsPkmAuthState              INTEGER,
  wmanIfSsPkmAuthKeySequenceNumber  Integer32,
  wmanIfSsPkmAuthExpiresOld         DateAndTime,
wmanIfSsPkmAuthState OBJECT-TYPE
SYNTAX      INTEGER {start(1),
               authWait(2),
               authorized(3),
               reauthWait(4),
               authRejectWait(5),
               silent(6)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the state of the SS
authorization FSM. The start state indicates that FSM is
in its initial state."
 ::= { wmanIfSsPkmAuthEntry 1 }

wmanIfSsPkmAuthKeySequenceNumber OBJECT-TYPE
SYNTAX      Integer32 (0..15)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the most recent authorization
key sequence number for this FSM."
 ::= { wmanIfSsPkmAuthEntry 2 }

wmanIfSsPkmAuthExpiresOld OBJECT-TYPE
SYNTAX      DateAndTime
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the actual clock time
for expiration of the immediate predecessor of the most recent
authorization key for this FSM. If this FSM has only one
authorization key, then the value is the time of activation
of this FSM."
 ::= { wmanIfSsPkmAuthEntry 3 }

wmanIfSsPkmAuthExpiresNew OBJECT-TYPE
SYNTAX      DateAndTime
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the actual clock time
for expiration of the most recent authorization key for this
FSM."
 ::= { wmanIfSsPkmAuthEntry 4 }

wmanIfSsPkmAuthReset OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION  "Setting this object to TRUE generates a Reauthorize event
in the authorization FSM. Reading this object always
returns FALSE."
 ::= { wmanIfSsPkmAuthEntry 5 }

wmanIfSsPkmAuthentInfos OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the count of times the SS has
transmitted an Authentication Information message."
 ::= { wmanIfSsPkmAuthEntry 6 }

wmanIfSsPkmAuthExpiresNew DateAndTime,
wmanIfSsPkmAuthReset TruthValue,
wmanIfSsPkmAuthentInfos Counter32,
wmanIfSsPkmAuthRequests Counter32,
wmanIfSsPkmAuthReplies Counter32,
wmanIfSsPkmAuthRejects Counter32,
wmanIfSsPkmAuthInvalids Counter32,
wmanIfSsPkmAuthRejectErrorCode INTEGER,
wmanIfSsPkmAuthRejectErrorString SnmpAdminString,
wmanIfSsPkmAuthInvalidErrorCode INTEGER,
wmanIfSsPkmAuthInvalidErrorString SnmpAdminString
wmanIfSsPkmAuthRequests OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the SS has transmitted an Authorization Request message."
 ::= { wmanIfSsPkmAuthEntry 7 }

wmanIfSsPkmAuthReplies OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the SS has received an Authorization Reply message."
 ::= { wmanIfSsPkmAuthEntry 8 }

wmanIfSsPkmAuthRejects OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the SS has received an Authorization Reject message."
 ::= { wmanIfSsPkmAuthEntry 9 }

wmanIfSsPkmAuthInvalids OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the count of times the SS has received an Authorization Invalid message."
 ::= { wmanIfSsPkmAuthEntry 10 }

wmanIfSsPkmAuthRejectErrorCode OBJECT-TYPE
SYNTAX INTEGER {none(1),
unknown(2),
unauthorizedSs(3),
unauthorizedSaid(4),
permanentAuthorizationFailure(8),
timeOfDayNotAcquired(11)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the enumerated description of the Error-Code in most recent Authorization Reject message received by the SS. This has value unknown(2) if the last Error-Code value was 0, and none(1) if no Authorization Reject message has been received since reboot."
 ::= { wmanIfSsPkmAuthEntry 11 }

wmanIfSsPkmAuthRejectErrorString OBJECT-TYPE
SYNTAX SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the Display-String in most recent Authorization Reject message received by the SS. This is a zero length string if no Authorization Reject message has been received since reboot."
 ::= { wmanIfSsPkmAuthEntry 12 }

wmanIfSsPkmAuthInvalidErrorCode OBJECT-TYPE
SYNTAX INTEGER {none(1),
unknown(2),
unauthorizedSs(3),
unsolicited(5),
invalidKeySequence(6),
keyRequestAuthenticationFailure(7)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of this object is the enumerated description of
the Error-Code in most recent Authorization Invalid message
received by the SS. This has value unknown(2) if the last
Error-Code value was 0, and none(1) if no Authorization
Invalid message has been received since reboot."
::= { wmanIfSsPkmAuthEntry 13 }

wmanIfSsPkmAuthInvalidErrorString OBJECT-TYPE
SYNTAX     SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The value of this object is the Display-String in most
recent Authorization Invalid message received by the SS.
This is a zero length string if no Authorization Invalid
message has been received since reboot."
::= { wmanIfSsPkmAuthEntry 14 }

-- Table wmanIfSsPkmTEKTable
--
wmanIfSsPkmTEKTable OBJECT-TYPE
SYNTAX     SEQUENCE OF WmanIfSsPkmTEKEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"This table describes the attributes of each SS Traffic
Encryption Key(TEK) association. The SS maintains (no more
than) one TEK association per SAID per SS wireless
interface."
::= { wmanIfSsPkmObjects  3 }

WmanIfSsPkmTEKEntry OBJECT-TYPE
SYNTAX     WmanIfSsPkmTEKEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"Each entry contains objects describing the TEK association
attributes of one SAID. The SS MUST create one entry per
SAID, regardless of whether the SAID was obtained from a
Registration Response message, from an Authorization Reply
message, or from any dynamic SAID establishment
mechanisms."
INDEX       { ifIndex, wmanIfSsPkmTEKSAId }
::= { wmanIfSsPkmTEKTable  1 }
WmanIfSsPkmTEKEntry ::= SEQUENCE {
  wmanIfSsPkmTEKSAId                      Integer32,
  wmanIfSsPkmTEKSAIdType                  INTEGER,
  wmanIfSsPkmTEKDataEncryptAlg            INTEGER,
  wmanIfSsPkmTEKDataAuthentAlg            INTEGER,
  wmanIfSsPkmTEKEncryptAlg                INTEGER,
  wmanIfSsPkmTEKState                     INTEGER,
  wmanIfSsPkmTEKKeySequenceNumber         Integer32,
  wmanIfSsPkmTEKExpiresOld                DateAndTime,
  wmanIfSsPkmTEKExpiresNew                DateAndTime,
  wmanIfSsPkmTEKKeyRequests               Counter32,
  wmanIfSsPkmTEKKeyReplies                Counter32,
  wmanIfSsPkmTEKKeyRejects                Counter32,
  wmanIfSsPkmTEKInvalids                  Counter32,
  wmanIfSsPkmTEKAuthPends                 Counter32,
  wmanIfSsPkmTEKKeyRejectErrorCode       INTEGER,
  wmanIfSsPkmTEKKeyRejectErrorString      SnmpAdminString,
  wmanIfSsPkmTEKInvalidErrorCode         INTEGER,
  wmanIfSsPkmTEKInvalidErrorString        SnmpAdminString
}

wmanIfSsPkmTEKSAId OBJECT-TYPE
SYNTAX     Integer32 (1..16383)
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"The value of this object is the WiMAX Security Association
ID (SAID)."
::= { wmanIfSsPkmTEKEntry 1 }
wmanIfSsPkmTEKSAType OBJECT-TYPE
SYNTAX INTEGER {primarySA(0),
               staticSA(1),
               dynamicSA(2)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the type of security association."
REFERENCE "IEEE 802.16 standard; 11.9.18"
::= { wmanIfSsPkmTEKEntry 2 }

wmanIfSsPkmTEKDataEncryptAlg OBJECT-TYPE
SYNTAX INTEGER { none(0),
                des56CbcMode(1) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the data encryption algorithm being utilized."
REFERENCE "IEEE 802.16 standard; table 301"
::= { wmanIfSsPkmTEKEntry 3 }

wmanIfSsPkmTEKDataAuthentAlg OBJECT-TYPE
SYNTAX INTEGER { none(0) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the data authentication algorithm being utilized."
REFERENCE "IEEE 802.16 standard; table 302"
::= { wmanIfSsPkmTEKEntry 4 }

wmanIfSsPkmTEKEncryptAlg OBJECT-TYPE
SYNTAX INTEGER { tripleDES(0),
                rsa1024(1) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the TEK key encryption algorithm for this cryptographic suite capability."
REFERENCE "IEEE 802.16 standard; table 303"
::= { wmanIfSsPkmTEKEntry 5 }

wmanIfSsPkmTEKState OBJECT-TYPE
SYNTAX INTEGER { start(1),
                 opWait(2),
                 opReauthWait(3),
                 operational(4),
                 rekeyWait(5),
                 rekeyReauthWait(6) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the state of the indicated TEK FSM. The start(1) state indicates that FSM is in its initial state."
::= { wmanIfSsPkmTEKEntry 6 }

wmanIfSsPkmTEKKeySequenceNumber OBJECT-TYPE
SYNTAX Integer32 (0..3)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this object is the most recent TEK key sequence number for this TEK FSM."
REFERENCE "IEEE 802.16 standard; 11.9.5"
::= { wmanIfSsPkmTEKEntry 7 }

wmanIfSsPkmTEKExpiresOld OBJECT-TYPE
SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the actual clock time for expiration of the immediate predecessor of the most recent TEK for this FSM. If this FSM has only one TEK, then the value is the time of activation of this FSM."

::= { wmanIfSsPkmTEKEntry 8 }

wmanIfSsPkmTEKExpiresNew OBJECT-TYPE
SYNTAX DateAndTime
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the actual clock time for expiration of the most recent TEK for this FSM."

::= { wmanIfSsPkmTEKEntry 9 }

wmanIfSsPkmTEKKeyRequests OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the count of times the SS has transmitted a Key Request message."

::= { wmanIfSsPkmTEKEntry 10 }

wmanIfSsPkmTEKKeyReplies OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the count of times the SS has received a Key Reply message, including a message whose authentication failed."

::= { wmanIfSsPkmTEKEntry 11 }

wmanIfSsPkmTEKKeyRejects OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the count of times the SS has received a Key Reject message, including a message whose authentication failed."

::= { wmanIfSsPkmTEKEntry 12 }

wmanIfSsPkmTEKInvalids OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the count of times the SS has received a TEK Invalid message, including a message whose authentication failed."

::= { wmanIfSsPkmTEKEntry 13 }

wmanIfSsPkmTEKAuthPends OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the count of times an Authorization Pending (Auth Pend) event occurred in this FSM."

::= { wmanIfSsPkmTEKEntry 14 }

wmanIfSsPkmTEKKeyRejectErrorCode OBJECT-TYPE
SYNTAX INTEGER {none(1),
unknown(2),
unauthorizedSaid(4)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of this object is the enumerated description of the Error-Code in most recent Key Reject message received by the SS. This has value unknown(2) if the last Error-Code value was 0, and none(1) if no Key Reject message has been received since reboot."
::= { wmanIfSsPkmTEKEntry 15 }

wmanIfSsPkmTEKKeyRejectErrorString OBJECT-TYPE
SYNTAX   SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS   current
DESCRIPTION  "The value of this object is the Display-String in most recent Key Reject message received by the SS. This is a zero length string if no Key Reject message has been received since reboot."
::= { wmanIfSsPkmTEKEntry 16 }

wmanIfSsPkmTEKInvalidErrorCode OBJECT-TYPE
SYNTAX   INTEGER {none(1),
                   unknown(2),
                   invalidKeySequence(6)}
MAX-ACCESS read-only
STATUS   current
DESCRIPTION  "The value of this object is the enumerated description of the Error-Code in most recent TEK Invalid message received by the SS. This has value unknown(2) if the last Error-Code value was 0, and none(1) if no TEK Invalid message has been received since reboot."
::= { wmanIfSsPkmTEKEntry 17 }

wmanIfSsPkmTEKInvalidErrorString OBJECT-TYPE
SYNTAX   SnmpAdminString (SIZE (0..128))
MAX-ACCESS read-only
STATUS   current
DESCRIPTION  "The value of this object is the Display-String in most recent TEK Invalid message received by the SS. This is a zero length string if no TEK Invalid message has been received since reboot."
::= { wmanIfSsPkmTEKEntry 18 }

-- Table wmanIfSsDeviceCertTable
--

wmanIfSsDeviceCertTable OBJECT-TYPE
SYNTAX   SEQUENCE OF   WmanIfSsDeviceCertEntry
MAX-ACCESS not-accessible
STATUS   current
DESCRIPTION  "This table describes the PKM device certificates for each SS wireless interface."
::= { wmanIfSsPkmObjects  4 }

wmanIfSsDeviceCertEntry OBJECT-TYPE
SYNTAX   WmanIfSsDeviceCertEntry
MAX-ACCESS not-accessible
STATUS   current
DESCRIPTION  "Each entry contains the device certificate of one SS."
INDEX   [ ifIndex ]
::= { wmanIfSsDeviceCertTable  1 }

WmanIfSsDeviceCertEntry ::= SEQUENCE {
  wmanIfSsDeviceCert          OCTET STRING,
  wmanIfSsDeviceManufCert     OCTET STRING
}

wmanIfSsDeviceCert OCTET-TYPE
SYNTAX     OCTET STRING
MAX-ACCESS read-only
STATUS     current
DESCRIPTION  "The X509 DER-encoded subscriber station certificate."
::= { wmanIfSsDeviceCertEntry 1 }

wmanIfSsDeviceManufCert OCTET-TYPE
SYNTAX     OCTET STRING
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The X509 DER-encoded manufacturer certificate which is
signed by the CA root authority certificate."
::= { wmanIfSsDeviceCertEntry 2 }

-- Subscriber station Notification Group
-- wmanIfSsNotificationObjects contains the SS SNMP Trap objects

wmanIfSsNotification OBJECT IDENTIFIER ::= { wmanIfSsObjects 4 }
wmanIfSsTrapDefinitions OBJECT IDENTIFIER ::= { wmanIfSsNotification 1 }
wmanIfSsTrapControl OBJECT IDENTIFIER ::= { wmanIfSsNotification 2 }

wmanIfSsTrapControlRegister OBJECT-TYPE
SYNTAX    BITS {wmanSsTLVUnknown(0),
             wmanSsDynamicServiceFail(1),
             wmanSsDHCPSuccess(2),
             wmanSsRssiStatusChange(3)}
MAX-ACCESS read-write
STATUS      current
DESCRIPTION
"The object is used to enable Subscriber Station traps.
From left to right, the set bit indicates the corresponding
Subscriber Station trap is enabled."
::= { wmanIfSsTrapControl 1 }

wmanIfSsRssiLowThreshold OBJECT-TYPE
SYNTAX    INTEGER
UNITS       "dBm"
MAX-ACCESS read-write
STATUS      current
DESCRIPTION
"Low RSSI threshold for generating the RSSI alarm trap."
::= { wmanIfSsTrapControl 2 }

wmanIfSsRssiHighThreshold OBJECT-TYPE
SYNTAX    INTEGER
UNITS       "dBm"
MAX-ACCESS read-write
STATUS      current
DESCRIPTION
"High RSSI threshold for generating a trap to indicate
the RSSI is restored."
::= { wmanIfSsTrapControl 3 }

wmanSsTLVUnknown Trap NOTIFICATION-TYPE
OBJECTS     {wmanIfSsMacAddress,
             wmanIfSsUnknownTlv}
STATUS      current
DESCRIPTION
"Event that notifies detection of unknown TLV during
the TLV parsing process."
::= { wmanIfSsTrapDefinitions 1 }

wmanSsDynamicServiceFailTrap NOTIFICATION-TYPE
OBJECTS     {wmanIfSsMacAddress,
             wmanIfSsDynamicServiceType,
             wmanIfSsDynamicServiceFailReason}
STATUS      current
DESCRIPTION
"An event to report the failure of a dynamic service
operation happened during the dynamic services process
and detected in the Bs side."
::= { wmanIfSsTrapDefinitions 2 }

wmanSsDHCPSuccessTrap NOTIFICATION-TYPE
OBJECTS     {wmanIfSsMacAddress}
STATUS      current
DESCRIPTION
"An event to report a successful DHCP Handshake for
the SS."
::= { wmanIfSsTrapDefinitions 3 }

ETSI
wmanSsRssiStatusChangeTrap NOTIFICATION-TYPE
OBJECTS {wmanIfSsMacAddress,
    wmanIfSsRssiStatus,
    wmanIfSsRssiStatusInfo
}
STATUS current
DESCRIPTION
"An event to report that the uplink RSSI is below
  wmanIfSsRssiLowThreshold, or above
  wmanIfSsRssiHighThreshold after restore."
::= { wmanIfSsTrapDefinitions 4 }

wmanIfSsMacAddress OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The MAC address of the SS generating the trap."
::= { wmanIfSsTrapDefinitions 5 }

wmanIfSsUnknownTlv OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicating the value of the unknown TLV."
::= { wmanIfSsTrapDefinitions 6 }

wmanIfSsDynamicServiceType OBJECT-TYPE
SYNTAX INTEGER {ssSfCreationReq(1),
   ssSfCreationRsp(2),
   ssSfCreationAck(3)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the dynamic service flow
  creation command type."
::= { wmanIfSsTrapDefinitions 7 }

wmanIfSsDynamicServiceFailReason OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the reason why the service flow
  creation has failed."
::= { wmanIfSsTrapDefinitions 8 }

wmanIfSsRssiStatus OBJECT-TYPE
SYNTAX INTEGER {ssRssiAlarm(1),
   ssRssiNoAlarm(2)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"A RSSI alarm is generated if the RSSI is lower than
  wmanIfSsRssiLowThreshold, or above
  wmanIfSsRssiHighThreshold after alarm is restored."
::= { wmanIfSsTrapDefinitions 9 }

wmanIfSsRssiStatusInfo OBJECT-TYPE
SYNTAX OCTET STRING
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the reason why RSSI event is
  generated."
::= { wmanIfSsTrapDefinitions 10 }

-- Common object group – containing common tables and objects to be
-- implemented in both Base Station and Subscriber Station
-- wmanIfCmnPacketCs contain the Packet Convergence Sublayer objects
-- that are common to both Base Station and Subscriber Station
wmanIfCmnPacketCs OBJECT IDENTIFIER ::= { wmanIfCommonObjects 1 }
wmanIfCmnClassifierRuleTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfCmnClassifierRuleEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table contains packet classifier rules associated with service flows."
 ::= { wmanIfCmnPacketCs 1 }

wmanIfCmnClassifierRuleEntry OBJECT-TYPE
SYNTAX WmanIfCmnClassifierRuleEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table provides one row for each packet classifier rule, and is indexed by wmanIfCmnCpsSfIndex and wmanIfCmnClassifierRuleIndex. wmanIfCmnCpsSfIndex identifies the service flow, and wmanIfCmnClassifierRuleIndex identifies the packet classifier rule."
INDEX { wmanIfCmnClassifierRuleIndex, wmanIfCmnCpsSfIndex }
 ::= { wmanIfCmnClassifierRuleTable 1 }

WmanIfCmnClassifierRuleEntry::= SEQUENCE {
  wmanIfCmnClassifierRuleIndex            Unsigned32,
  wmanIfCmnCpsSfIndex                     Unsigned32,
  wmanIfCmnClassifierRulePriority         INTEGER,
  wmanIfCmnClassifierRuleIpTosLow         OCTET STRING,
  wmanIfCmnClassifierRuleIpTosHigh        OCTET STRING,
  wmanIfCmnClassifierRuleIpTosMask        OCTET STRING,
  wmanIfCmnClassifierRuleIpProtocol       Integer32,
  wmanIfCmnClassifierRuleIpAddressType    InetAddressType,
  wmanIfCmnClassifierRuleIpSourceAddr     InetAddress,
  wmanIfCmnClassifierRuleIpSourceMask     InetAddress,
  wmanIfCmnClassifierRuleIpDestAddr       InetAddress,
  wmanIfCmnClassifierRuleIpDestMask       InetAddress,
  wmanIfCmnClassifierRuleSourcePortStart  Integer32,
  wmanIfCmnClassifierRuleSourcePortEnd    Integer32,
  wmanIfCmnClassifierRuleDestPortStart    Integer32,
  wmanIfCmnClassifierRuleDestPortEnd      Integer32,
  wmanIfCmnClassifierRuleDestMacAddr      MacAddress,
  wmanIfCmnClassifierRuleDestMacMask      MacAddress,
  wmanIfCmnClassifierRuleSourceMacAddr    MacAddress,
  wmanIfCmnClassifierRuleSourceMacMask    MacAddress,
  wmanIfCmnClassifierRuleEnetProtocolType INTEGER,
  wmanIfCmnClassifierRuleEnetProtocol     Integer32,
  wmanIfCmnClassifierRuleUserPriLow       Integer32,
  wmanIfCmnClassifierRuleUserPriHigh      Integer32,
  wmanIfCmnClassifierRuleVlanId           Integer32,
  wmanIfCmnClassifierRuleState            INTEGER,
  wmanIfCmnClassifierRulePkts            Counter64,
  wmanIfCmnClassifierRuleRowStatus        RowStatus
}

wmanIfCmnClassifierRuleIndex OBJECT-TYPE
SYNTAX Unsigned32 (1..4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "An index is assigned to each classifier in the classifiers table"
 ::= { wmanIfCmnClassifierRuleEntry 1 }

wmanIfCmnCpsSfIndex OBJECT-TYPE
SYNTAX Unsigned32 (1 .. 4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "A 32 bit quantity that uniquely identifies a service flow to both the subscriber station and base station (BS)."
 ::= { wmanIfCmnClassifierRuleEntry 2 }

wmanIfCmnClassifierRulePriority OBJECT-TYPE
SYNTAX INTEGER (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value specifies the order of evaluation of the classifiers. The higher the value the higher the priority. The value of 0 is used as default in provisioned service flows classifiers. The default value of 64 is used for dynamic service flow classifiers. If the referenced parameter is not present in a classifier, this object reports the default value as defined above"

REFERENCE
"Section 11.13.19.3.4.1 in IEEE 802.16REVd/D5-2004"

DEFVAL { 0 } ::= { wmanIfCmnClassifierRuleEntry 3 }

wmanIfCmnClassifierRuleIpTosLow OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(1))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The low value of a range of TOS byte values. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.2 in IEEE 802.16REVd/D5-2004"

::= { wmanIfCmnClassifierRuleEntry 4 }

wmanIfCmnClassifierRuleIpTosHigh OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(1))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The 8-bit high value of a range of TOS byte values. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.2 in IEEE 802.16REVd/D5-2004"

::= { wmanIfCmnClassifierRuleEntry 5 }

wmanIfCmnClassifierRuleIpTosMask OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(1))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The mask value is bitwise ANDed with TOS byte in an IP packet and this value is used check range checking of TosLow and TosHigh. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.2 in IEEE 802.16REVd/D5-2004"

::= { wmanIfCmnClassifierRuleEntry 6 }

wmanIfCmnClassifierRuleIpProtocol OBJECT-TYPE
SYNTAX Integer32 (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object indicates the value of the IP Protocol field required for IP packets to match this rule. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.3 in IEEE 802.16REVd/D5-2004"

::= { wmanIfCmnClassifierRuleEntry 7 }

wmanIfCmnClassifierRuleIpAddrType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The type of the internet address for wmanIfCmnClassifierRuleIpSourceAddr, wmanIfCmnClassifierRuleIpSourceMask, wmanIfCmnClassifierRuleIpDestAddr, and wmanIfCmnClassifierRuleIpDestMask. If the referenced parameter is not present in a classifier, this object reports the value of ipv4(1)."
wmanIfCmnClassifierRuleIpSourceAddr OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This object specifies the value of the IP Source Address required for packets to match this rule. An IP packet matches the rule when the packet IP source address bitwise ANDed with the wmanIfCmnClassifierRuleIpSourceMask value equals the wmanIfCmnClassifierRuleIpSourceAddr value.
If the referenced parameter is not present in a classifier, this object reports the value of 0.0.0.0."
REFERENCE
 "Section 11.13.19.3.4.4 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 8 }

wmanIfCmnClassifierRuleIpSourceMask OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This object specifies which bits of a packet's IP Source Address that are compared to match this rule. An IP packet matches the rule when the packet IP source address bitwise ANDed with the wmanIfCmnClassifierRuleIpSourceMask value equals the wmanIfCmnClassifierRuleIpSourceAddr value.
If the referenced parameter is not present in a classifier, this object reports the value of 0.0.0.0."
REFERENCE
 "Section 11.13.19.3.4.4 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 9 }

wmanIfCmnClassifierRuleIpDestAddr OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This object specifies the value of the IP Destination Address required for packets to match this rule. An IP packet matches the rule when the packet IP destination address bitwise ANDed with the wmanIfCmnClassifierRuleIpDestMask value equals the wmanIfCmnClassifierRuleIpDestAddr value.
If the referenced parameter is not present in a classifier, this object reports the value of 0.0.0.0."
REFERENCE
 "Section 11.13.19.3.4.5 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 10 }

wmanIfCmnClassifierRuleIpDestMask OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This object specifies which bits of a packet's IP Destination Address that are compared to match this rule. An IP packet matches the rule when the packet IP destination address bitwise ANDed with the wmanIfCmnClassifierRuleIpDestMask value equals the wmanIfCmnClassifierRuleIpDestAddr value.
If the referenced parameter is not present in a classifier, this object reports the value of 0.0.0.0."
REFERENCE
 "Section 11.13.19.3.4.5 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 11 }

wmanIfCmnClassifierRuleSourcePortStart OBJECT-TYPE
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "This object specifies the low end inclusive range of TCP/UDP source port numbers to which a packet is compared.
This object is irrelevant for non-TCP/UDP IP packets. If the referenced parameter is not present in a classifier, this object reports the value of 0.

REFERENCE
"Section 11.13.19.3.4.6 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 13 }

wmanIfCmnClassifierRuleSourcePortEnd OBJECT-TYPE
SYNTAX Integer32 (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the high end inclusive range of TCP/UDP source port numbers to which a packet is compared. This object is irrelevant for non-TCP/UDP IP packets. If the referenced parameter is not present in a classifier, this object reports the value of 65535."

REFERENCE
"Section 11.13.19.3.4.6 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 14 }

wmanIfCmnClassifierRuleDestPortStart OBJECT-TYPE
SYNTAX Integer32 (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the low end inclusive range of TCP/UDP destination port numbers to which a packet is compared. If the referenced parameter is not present in a classifier, this object reports the value of 0."

REFERENCE
"Section 11.13.19.3.4.7 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 15 }

wmanIfCmnClassifierRuleDestPortEnd OBJECT-TYPE
SYNTAX Integer32 (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object specifies the high end inclusive range of TCP/UDP destination port numbers to which a packet is compared. If the referenced parameter is not present in a classifier, this object reports the value of 65535."

REFERENCE
"Section 11.13.19.3.4.7 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 16 }

wmanIfCmnClassifierRuleDestMacAddr OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"An Ethernet packet matches an entry when its destination MAC address bitwise ANDed with wmanIfCmnClassifierRuleDestMacMask equals the value of wmanIfCmnClassifierRuleDestMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."

REFERENCE
"Section 11.13.19.3.4.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 17 }

wmanIfCmnClassifierRuleDestMacMask OBJECT-TYPE
SYNTAX MacAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"An Ethernet packet matches an entry when its destination MAC address bitwise ANDed with wmanIfCmnClassifierRuleDestMacMask equals the value of wmanIfCmnClassifierRuleDestMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."

REFERENCE
"Section 11.13.19.3.4.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 18 }
wmanIfCmnClassifierRuleSourceMacAddr OBJECT-TYPE
SYNTAX        MacAddress
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "An Ethernet packet matches this entry when its source MAC address bitwise ANDed with wmanIfCmnClassifierRuleSourceMacMask equals the value of wmanIfCmnClassifierRuleSourceMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."
REFERENCE     "Section 11.13.19.3.4.9 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 19 }

wmanIfCmnClassifierRuleSourceMacMask OBJECT-TYPE
SYNTAX        MacAddress
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "An Ethernet packet matches an entry when its destination MAC address bitwise ANDed with wmanIfCmnClassifierRuleSourceMacMask equals the value of wmanIfCmnClassifierRuleSourceMacAddr. If the referenced parameter is not present in a classifier, this object reports the value of '000000000000'H."
REFERENCE     "Section 11.13.19.3.4.9 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 20 }

wmanIfCmnClassifierRuleEnetProtocolType OBJECT-TYPE
SYNTAX        INTEGER {none(0),
                         ethertype(1),
                         dsap(2)}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This object indicates the format of the layer 3 protocol id in the Ethernet packet. A value of none(0) means that the rule does not use the layer 3 protocol type as a matching criteria. A value of ethertype(1) means that the rule applies only to frames which contains an EtherType value. Ethertype values are contained in packets using the Dec-Intel-Xerox (DIX) encapsulation or the RFC 1042 Sub-Network Access Protocol (SNAP) encapsulation formats. A value of dsap(2) means that the rule applies only to frames using the IEEE802.3 encapsulation format with a Destination Service Access Point (DSAP) other than OxAA (which is reserved for SNAP). If the Ethernet frame contains an 802.1P/Q Tag header (i.e. EtherType 0x8100), this object applies to the embedded EtherType field within the 802.1P/Q header. If the referenced parameter is not present in a classifier, this object reports the value of 0."
REFERENCE     "Section 11.13.19.3.4.10 in IEEE 802.16REVe/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 21 }

wmanIfCmnClassifierRuleEnetProtocol OBJECT-TYPE
SYNTAX        Integer32 (0..65535)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "If wmanIfCmnClassifierRuleEnetProtocolType is none(0), this object is ignored when considering whether a packet matches the current rule. If wmanIfCmnClassifierRuleEnetProtocolType is ethertype(1), this object gives the 16-bit value of the EtherType that the packet must match in order to match the rule. If wmanIfCmnClassifierRuleEnetProtocolType is dsap(2), the lower 8 bits of this object's value must match the DSAP byte of the packet in order to match the rule. If the Ethernet frame contains an 802.1P/Q Tag header (i.e. EtherType 0x8100), this object applies to the embedded EtherType field within the 802.1P/Q header. If the referenced parameter is not present in the classifier, the value of this object is reported as 0."

REFERENCE

"Section 11.13.19.3.4.10 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 22 }

wmanIfCmnClassifierRuleUserPriLow OBJECT-TYPE
SYNTAX      Integer32 (0..7)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object applies only to Ethernet frames using the 802.1P/Q tag header (indicated with EtherType 0x8100). Such frames include a 16-bit Tag that contains a 3 bit Priority field and a 12 bit VLAN number. Tagged Ethernet packets must have a 3-bit Priority field within the range of wmanIfCmnClassifierRulePriLow and wmanIfCmnClassifierRulePriHigh in order to match this rule. If the referenced parameter is not present in the classifier, the value of this object is reported as 0."
REFERENCE
"Section 11.13.19.3.4.11 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 23 }

wmanIfCmnClassifierRuleUserPriHigh OBJECT-TYPE
SYNTAX      Integer32 (0..7)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object applies only to Ethernet frames using the 802.1P/Q tag header (indicated with EtherType 0x8100). Such frames include a 16-bit Tag that contains a 3 bit Priority field and a 12 bit VLAN number. Tagged Ethernet packets must have a 3-bit Priority field within the range of wmanIfCmnClassifierRulePriLow and wmanIfCmnClassifierRulePriHigh in order to match this rule. If the referenced parameter is not present in the classifier, the value of this object is reported as 7."
REFERENCE
"Section 11.13.19.3.4.11 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 24 }

wmanIfCmnClassifierRuleVlanId OBJECT-TYPE
SYNTAX      Integer32 (0..4095)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object applies only to Ethernet frames using the 802.1P/Q tag header. If this object's value is nonzero, tagged packets must have a VLAN Identifier that matches the value in order to match the rule. Only the least significant 12 bits of this object's value are valid. If the referenced parameter is not present in the classifier, the value of this object is reported as 0."
REFERENCE
"Section 11.13.19.3.4.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnClassifierRuleEntry 25 }

wmanIfCmnClassifierRuleState OBJECT-TYPE
SYNTAX      INTEGER {active(1), inactive(2)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object indicates whether or not the classifier is enabled to classify packets to a Service Flow. If the referenced parameter is not present in the classifier, the value of this object is reported as active(1)."
::= { wmanIfCmnClassifierRuleEntry 26 }

wmanIfCmnClassifierRulePkts OBJECT-TYPE
SYNTAX      Counter64
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object counts the number of packets that have
been classified using this entry."
::= { wmanIfCmnClassifierRuleEntry 27 }

wmanIfCmnClassifierRuleRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This object is used to create a new row or modify or
delete an existing row in this table.

If the implementator of this MIB has chosen not
to implement 'dynamic assignment' of profiles, this
object is not useful and should return noSuchName
upon SNMP request."
::= { wmanIfCmnClassifierRuleEntry 28 }

-- -- wmanIfCmnCps contain the Common Part Sublayer objects that are
-- common to both Base Station and Subscriber Station
wmanIfCmnCps OBJECT IDENTIFIER ::= { wmanIfCommonObjects 2 }

wmanIfCmnCpsServiceFlowTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfCmnCpsServiceFlowEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table contains Service Flows that are created in
both BS and SS."
::= { wmanIfCmnCps 1 }

wmanIfCmnCpsServiceFlowEntry OBJECT-TYPE
SYNTAX      WmanIfCmnCpsServiceFlowEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table provides one row for each service flow, and is
indexed by wmanIfCmnCpsSfId. The value of wmanIfCmnCpsSfId
is obtained from wmanIfBsSfId."
INDEX     { wmanIfCmnCpsSfId }
::= { wmanIfCmnCpsServiceFlowTable 1 }

WmanIfCmnCpsServiceFlowEntry::= SEQUENCE {
  wmanIfCmnCpsSfId                        Unsigned32,
  wmanIfCmnCpsSfCid                       INTEGER,
  wmanIfCmnCpsSfDirection                 INTEGER,
  wmanIfCmnCpsSfState                     INTEGER,
  wmanIfCmnCpsServiceClassName            DisplayString,
  wmanIfCmnCpsTrafficPriority             INTEGER,
  wmanIfCmnCpsMaxSustainedRate            INTEGER,
  wmanIfCmnCpsMaxTrafficBurst             INTEGER,
  wmanIfCmnCpsMinReservedRate             INTEGER,
  wmanIfCmnCpsToleratedJitter             INTEGER,
  wmanIfCmnCpsMaxLatency                  INTEGER,
  wmanIfCmnCpsFixedVsVariableSduInd       INTEGER,
  wmanIfCmnCpsSduSize                     INTEGER,
  wmanIfCmnCpsSfSchedulingType            WmanIfSfSchedulingType,
  wmanIfCmnCpsArqEnable                   TruthValue,
  wmanIfCmnCpsArqWindowSize               INTEGER,
  wmanIfCmnCpsArqFragmentLifetime         INTEGER,
  wmanIfCmnCpsArqSyncLossTimeout          INTEGER,
  wmanIfCmnCpsArqRxPurgeTimeout           INTEGER,
  wmanIfCmnCpsFragmentLen                 INTEGER,
  wmanIfCmnCpsMinRsvdTolerableRate        INTEGER,
  wmanIfCmnCpsReqTxPolicy                 BITS
}

wmanIfCmnCpsSfId OBJECT-TYPE
SYNTAX      Unsigned32 { 1 .. 4294967295 }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"A 32 bit quantity that uniquely identifies a service flow
to both the subscriber station and base station (BS)."
wmanIfCmnCpsServiceFlowEntry 1

::= { wmanIfCmnCpsServiceFlowEntry 1 }

wmanIfCmnCpsSfCid OBJECT-TYPE
SYNTAX        INTEGER
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "A 16 bit channel identifier to identify the connection being created by DSA."
::= { wmanIfCmnCpsServiceFlowEntry 2 }

wmanIfCmnCpsSfDirection OBJECT-TYPE
SYNTAX        INTEGER {downstream(1), upstream(2)}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "An attribute indicating the service flow is downstream or upstream."
::= { wmanIfCmnCpsServiceFlowEntry 3 }

wmanIfCmnCpsSfState OBJECT-TYPE
SYNTAX        INTEGER {provisioned(1), admitted(2), active(3)}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "wmanIfCmnCpsSfState indicates the service flow state: Provisioned, AdmittedState(2), and Active service flow state."
REFERENCE     "Section 6.4.13.6, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 4 }

wmanIfCmnCpsServiceClassName OBJECT-TYPE
SYNTAX        DisplayString
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "Refers to the Service Class Name"
REFERENCE     "Section 11.13.3 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 5 }

wmanIfCmnCpsTrafficPriority OBJECT-TYPE
SYNTAX        INTEGER
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "The value of this parameter specifies the priority assigned to a service flow. For uplink service flows, the BS should use this parameter when determining precedence in request service and grant generation, and the SS shall preferentially select contention Request opportunities for Priority Request CIDs based on this priority"
REFERENCE     "Section 11.13.7 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 6 }

wmanIfCmnCpsMaxSustainedRate OBJECT-TYPE
SYNTAX        INTEGER
UNITS         "bps"
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION   "This parameter defines the peak information rate of the service. The rate is expressed in bits per second and pertains to the SDUs at the input to the system."
REFERENCE     "Section 11.13.8 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 7 }

wmanIfCmnCpsMaxTrafficBurst OBJECT-TYPE
SYNTAX        INTEGER
UNITS         "byte"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This parameter defines the maximum burst size that must be accommodated for the service."
REFERENCE
"Section 11.13.9 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 8 }

wmanIfCmnCpsMinReservedRate OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "byte"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This parameter specifies the minimum rate reserved for this service flow."
REFERENCE
"Section 11.13.10 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 9 }

wmanIfCmnCpsToleratedJitter OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "millisecond"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"This parameter defines the maximum delay variation (jitter) for the connection."
REFERENCE
"Section 11.13.15 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 10 }

wmanIfCmnCpsMaxLatency OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "millisecond"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this parameter specifies the maximum latency between the reception of a packet by the BS or SS on its network interface and the forwarding of the packet to its RF Interface."
REFERENCE
"Section 11.13.16 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 11 }

wmanIfCmnCpsFixedVsVariableSduInd OBJECT-TYPE
SYNTAX      INTEGER {variableLengthSdu(0), fixedLengthSdu(1)}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this parameter specifies whether the SDUs on the service flow are fixed-length (0) or variable-length (1). The parameter is used only if packing is on for the service flow. The default value is 0, i.e., variable-length SDUs."
REFERENCE
"Section 11.13.15 in IEEE 802.16REVd/D5-2004"
DEFVAL      { 0 }
::= { wmanIfCmnCpsServiceFlowEntry 12 }

wmanIfCmnCpsSduSize OBJECT-TYPE
SYNTAX      INTEGER
UNITS       "byte"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of this parameter specifies the length of the SDU for a fixed-length SDU service flow. This parameter is used only if packing is on and the service flow is indicated as carrying fixed-length SDUs. The default value is 49 bytes, i.e., VC-switched ATM cells with PHS. The parameter is relevant for both ATM and Packet Convergence Sublayers."
REFERENCE
"Section 11.13.17 in IEEE 802.16REVd/D5-2004"

DEFVAL  { 49 } ::= { wmanIfCnnCpsServiceFlowEntry 13 }

wmanIfCnnCpsSfSchedulingType OBJECT-TYPE
SYNTAX  WmanIfSfSchedulingType
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"Specifies the upstream scheduling service used for upstream service flow. If the referenced parameter is not present in the corresponding 802.16 QOS Parameter Set of an upstream service flow, the default value of this object is bestEffort(2)."

REFERENCE
"Section 11.13.11 in IEEE 802.16REVd/D5-2004"

DEFVAL  { 2 } ::= { wmanIfCnnCpsServiceFlowEntry 14 }

wmanIfCnnCpsArqEnable OBJECT-TYPE
SYNTAX  TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"True(1) ARQ enabling is requested for the connection."

::= { wmanIfCnnCpsServiceFlowEntry 15 }

wmanIfCnnCpsArqWindowSize OBJECT-TYPE
SYNTAX  INTEGER (1..1024)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"Indicates the maximum number of unacknowledged fragments at any time."

::= { wmanIfCnnCpsServiceFlowEntry 16 }

wmanIfCnnCpsArqFragmentLifetime OBJECT-TYPE
SYNTAX  INTEGER (0 .. 65535)
UNITS     "10 us"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The maximum time interval an ARQ fragment will be managed by the transmitter ARQ machine, once initial transmission of the fragment has occurred. If transmission or retransmission of the fragment is not acknowledged by the receiver before the time limit is reached, the fragment is discarded. A value of 0 means Infinite."

::= { wmanIfCnnCpsServiceFlowEntry 17 }

wmanIfCnnCpsArqSyncLossTimeout OBJECT-TYPE
SYNTAX  INTEGER (0 .. 65535)
UNITS     "10 us"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The maximum interval before declaring a loss of synchronization of the sender and receiver state machines. A value of 0 means Infinite."

::= { wmanIfCnnCpsServiceFlowEntry 18 }

wmanIfCnnCpsArqDeliverInOrder OBJECT-TYPE
SYNTAX  TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"Indicates whether or not data is to be delivered by the receiving MAC to its client application in the order in which data was handed off to the originating MAC."

::= { wmanIfCnnCpsServiceFlowEntry 19 }

wmanIfCnnCpsArqRxPurgeTimeout OBJECT-TYPE
SYNTAX  INTEGER (0 .. 65535)
UNITS     "10 us"
MAX-ACCESS  read-only
wmanIfCmnCpsFragmentLen OBJECT-TYPE
SYNTAX INTEGER (32 .. 2040)
UNITS "byte"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The maximum size fragment a transmitter shall form
or a receiver shall expect to receive."
::= { wmanIfCmnCpsServiceFlowEntry 21 }

wmanIfCmnCpsMinRsvdTolerableRate OBJECT-TYPE
SYNTAX INTEGER
UNITS "bps"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Minimum Tolerable Traffic Rate = R (bits/sec) with
time base T(sec) means the following. Let S denote
additional demand accumulated at the MAC SAP of the
transmitter during an arbitrary time interval of the
length T. Then the amount of data forwarded at the
receiver to CS (in bits) during this interval should
be not less than min (S, R * T)."
REFERENCE "Section 11.13.11 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 22 }

wmanIfCmnCpsReqTxPolicy OBJECT-TYPE
SYNTAX BITS {noBroadcastBwReq(0),
reserved1(1),
noPiggybackReq(2),
noFragmentData(3),
noPHS(4),
noSduPacking(5),
noCrc(6),
reserved2(7)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of this parameter provides the capability to
specify certain attributes for the associated service
flow. An attribute is enabled by setting the
corresponding bit position to 1."
REFERENCE "Section 11.13.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnCpsServiceFlowEntry 23 }

-- wmanIfCmnBsSsConfigurationTable contains global parameters
-- common in BS and SS
wmanIfCmnBsSsConfigurationTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfCmnBsSsConfigurationEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table provides one row for each BS sector that
contains the system parameters common in both SS and
BS. All SSs shall have the same parameters as the BS
to which the SSs are associated."
::= { wmanIfCmnCps 2 }

wmanIfCmnBsSsConfigurationEntry OBJECT-TYPE
SYNTAX WmanIfCmnBsSsConfigurationEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table is indexed by ifIndex, indicating BS
sector."
INDEX { ifIndex }
::= { wmanIfCmnBsSsConfigurationTable 1 }
WmanIfCmnBsSsConfigurationEntry ::= SEQUENCE {
  wmanIfCmnInvitedRangRetries            INTEGER,
  wmanIfCmnMinislotSize                   INTEGER,
  wmanIfCmnDSxReqRetries                  INTEGER,
  wmanIfCmnDSxRespRetries                 INTEGER,
  wmanIfCmnT7Timeout                      INTEGER,
  wmanIfCmnT8Timeout                      INTEGER,
  wmanIfCmnT10Timeout                     INTEGER,
  wmanIfCmnT22Timeout                     INTEGER,
  wmanIfCmnBsSsConfigurationRowStatus     RowStatus
}

wmanIfCmnInvitedRangRetries OBJECT-TYPE
SYNTAX      INTEGER(16..65535)
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Number of retries on inviting Ranging Requests."
::= { wmanIfCmnBsSsConfigurationEntry 1 }

wmanIfCmnMinislotSize OBJECT-TYPE
SYNTAX      INTEGER (1..100)
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Size of minislot for uplink transmission. Shall be a power
  of 2 (in units of PS)."
::= { wmanIfCmnBsSsConfigurationEntry 2 }

wmanIfCmnDSxReqRetries OBJECT-TYPE
SYNTAX      INTEGER
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Number of Timeout Retries on DSA/DSC/DSD Requests."
DEFVAL         { 3 }
::= { wmanIfCmnBsSsConfigurationEntry 3 }

wmanIfCmnDSxRespRetries OBJECT-TYPE
SYNTAX      INTEGER
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Number of Timeout Retries on DSA/DSC/DSD Responses."
DEFVAL         { 3 }
::= { wmanIfCmnBsSsConfigurationEntry 4 }

wmanIfCmnT7Timeout OBJECT-TYPE
SYNTAX      INTEGER(0 .. 1000)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Wait for DSA/DSC/DSD Response Timeout in ms."
::= { wmanIfCmnBsSsConfigurationEntry 5 }

wmanIfCmnT8Timeout OBJECT-TYPE
SYNTAX      INTEGER(0 .. 300)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Wait for DSA/DSC/DSD Acknowledge Timeout in ms."
::= { wmanIfCmnBsSsConfigurationEntry 6 }

wmanIfCmnT10Timeout OBJECT-TYPE
SYNTAX      INTEGER(0 .. 3000)
UNITS       "milliseconds"
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
  "Wait for Transaction End timeout in ms."
::= { wmanIfCmnBsSsConfigurationEntry 7 }

wmanIfCmnT22Timeout OBJECT-TYPE
SYNTAX      INTEGER(0 .. 500)
UNITS       "milliseconds"
MAX-ACCESS  read-write
wmanIfCmnnBsSsConfigurationRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This object is used to create a new row or modify or delete an existing row in this table.
If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."
::= { wmanIfCmnnBsSsConfigurationEntry 8 }

wmanIfCmnnBsSsStatCounter OBJECT IDENTIFIER ::= { wmanIfCmnnCps 3 }

wmanIfCmnnBsSsChMeasurementTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfCmnnBsSsChMeasurementEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table contains channel measurement information for each SS. BS retrieves the channel measurement information from REP-REQ/RSP messages. This table contains channel measurement information on the downlink signal sent to SS."
::= { wmanIfCmnnBsSsStatCounter 1 }

WmanIfCmnnBsSsChMeasurementEntry OBJECT-TYPE
SYNTAX WmanIfCmnnBsSsChMeasurementEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "Each entry in the table contains RSSI and CINR signal quality measurement taken from the SS. The primary index is the ifIndex with ifType propBWAp2Mp identifying the BS sector. The primary index is the ifIndex with ifType of propBWAp2Mp identifying the BS sector. wmanIfCmnnBsSsIdIndex identifies the SS where the measurements taking place. wmanIfCmnnHistogramIndex is the index to histogram samples. Since there is no time stamp in the table, wmanIfCmnnHistogramIndex should be increased monotonically, and warps around when it reaches the limit. be maintained as FIFO to store measurement samples that can be used to create RSSI and CINR histogram report. When the measurement entry for a SS reaches the limit, the oldest entry shall be deleted as the new entry is added to the table."
INDEX { ifIndex, wmanIfCmnnBsSsIdIndex, wmanIfCmnnHistogramIndex }
::= { wmanIfCmnnBsSsChMeasurementTable 1 }

WmanIfCmnnBsSsChMeasurementEntry ::= SEQUENCE {
  wmanIfCmnnBsSsIdIndex                      Unsigned32,
  wmanIfCmnnHistogramIndex                 Unsigned32,
  wmanIfCmnnChannelNumber                  INTEGER,
  wmanIfCmnnStartFrame                     INTEGER,
  wmanIfCmnnDuration                       INTEGER,
  wmanIfCmnnBasicReport                    BITS,
  wmanIfCmnnMeanCinrReport                 INTEGER,
  wmanIfCmnnStdDeviationCinrReport         INTEGER,
  wmanIfCmnnMeanRssiReport                 INTEGER,
  wmanIfCmnnStdDeviationRssiReport         INTEGER
}

wmanIfCmnnBsSsIdIndex OBJECT-TYPE
SYNTAX Unsigned32 (1 .. 4294967295)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"wmanIfCmnSsIdIndex identifies the SS providing the
channel measurement."
REFERENCE
"Section 6.4.2.3.5 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 1 }

wmanIfCmnHistogramIndex OBJECT-TYPE
SYNTAX        Unsigned32 (1 .. 4294967295)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION    "wmanIfBsHistogramIndex identifies the histogram samples
in the table for each subscriber station."
::= { wmanIfCmnSsChMeasurementEntry 2 }

wmanIfCmnChannelNumber OBJECT-TYPE
SYNTAX        INTEGER
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION    "Physical channel number to be reported on."
REFERENCE      "Section 8.5.1 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 3 }

wmanIfCmnStartFrame OBJECT-TYPE
SYNTAX        INTEGER
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION    "Frame number in which measurement for this channel
started."
REFERENCE      "Section 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 4 }

wmanIfCmnDuration OBJECT-TYPE
SYNTAX        INTEGER
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION    "Cumulative measurement duration on the channel in
multiples of Ts. For any value exceeding 0xFFFFFFFF, report
0xFFFFFFFF."
REFERENCE      "Section 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 5 }

wmanIfCmnBasicReport OBJECT-TYPE
SYNTAX        BITS {wirelessHuman(0),
unknownTransmission(1),
primaryUser(2),
channelNotMeasured(3)}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION    "Bit #0: WirelessHUMAN detected on the channel
Bit #1: Unknown transmissions detected on the channel
Bit #2: Primary User detected on the channel
Bit #3: Unmeasured. Channel not measured"
REFERENCE      "Section 11.12 in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 6 }

wmanIfCmnMeanCinrReport OBJECT-TYPE
SYNTAX        INTEGER
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION    "Mean CINR report."
REFERENCE      "Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE
802.16REVd/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 7 }
wmanIfCmnStdDeviationCinrReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Standard deviation CINR report."
REFERENCE "Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE 802.16REvD/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 8 }

wmanIfCmnMeanRssiReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Mean RSSI report."
REFERENCE "Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE 802.16REvD/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 9 }

wmanIfCmnStdDeviationRssiReport OBJECT-TYPE
SYNTAX INTEGER
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Standard deviation RSSI report."
REFERENCE "Section 8.2.2, 8.3.8, 8.4.1, 11.12 in IEEE 802.16REvD/D5-2004"
::= { wmanIfCmnSsChMeasurementEntry 10 }

-- Common PKM group
-- wmanIfCmnPkmObjects contain the Privacy Sublayer objects that are common to both Base Station and Subscriber Station
wmanIfCmnPkmObjects OBJECT IDENTIFIER ::= { wmanIfCommonObjects 3 }

-- Table wmanIfCmnCryptoSuiteTable

wmanIfCmnCryptoSuiteTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfCmnCryptoSuiteEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "This table describes the PKM cryptographic suite capabilities for each SS or BS wireless interface."
::= { wmanIfCmnPkmObjects 1 }

wmanIfCmnCryptoSuiteEntry OBJECT-TYPE
SYNTAX WmanIfCmnCryptoSuiteEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "Each entry contains the cryptographic suite pair that SS or BS supports."
INDEX { ifIndex, wmanIfCmnCryptoSuiteIndex }
::= { wmanIfCmnCryptoSuiteTable 1 }

WmanIfCmnCryptoSuiteEntry ::= SEQUENCE {
  wmanIfCmnCryptoSuiteIndex Integer32,
  wmanIfCmnCryptoSuiteDataEncryptAlg INTEGER,
  wmanIfCmnCryptoSuiteDataAuthentAlg INTEGER,
  wmanIfCmnCryptoSuiteTEKEncryptAlg INTEGER
}

wmanIfCmnCryptoSuiteIndex OBJECT-TYPE
SYNTAX Integer32 (1 .. 1000)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The index for a cryptographic suite row."
::= { wmanIfCmnCryptoSuiteEntry 1 }
wmanIfCmnCryptoSuiteDataEncryptAlg OBJECT-TYPE
SYNTAX      INTEGER { none(0),
              des56CbcMode(1),
              aesCcmMode(2) }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the data encryption algorithm
for this cryptographic suite capability."
REFERENCE    "IEEE 802.16 standard; table 373"
::= { wmanIfCmnCryptoSuiteEntry 2 }

wmanIfCmnCryptoSuiteDataAuthentAlg OBJECT-TYPE
SYNTAX      INTEGER { none(0) }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the data authentication
algorithm for this cryptographic suite capability."
REFERENCE    "IEEE 802.16 standard; table 302"
::= { wmanIfCmnCryptoSuiteEntry 3 }

wmanIfCmnCryptoSuiteTEKEncryptAlg OBJECT-TYPE
SYNTAX      INTEGER { tripleDES128Key(1),
                   rsa1024Key(2),
                   aes128Key(3) }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  "The value of this object is the TEK key encryption
algorithm for this cryptographic suite capability."
REFERENCE    "IEEE 802.16 standard; table 375"
::= { wmanIfCmnCryptoSuiteEntry 4 }

-- wmanIfCmnOfdmPhy contain the OFDM PHY objects that are common to both
-- Base Station and Subscriber Station. When the objects are implemented
-- in the BS, they should have the read-write access. When the objects
-- are implemented the SS, they should have the read-only access.

wmanIfCmnOfdmPhy OBJECT IDENTIFIER ::= { wmanIfCommonObjects 4 }

wmanIfCmnOfdmUplinkChannelTable OBJECT-TYPE
SYNTAX      SEQUENCE OF WmanIfCmnOfdmUplinkChannelEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  "This table contains UCD channel attributes, defining the
transmission characteristics of uplink channels."
REFERENCE    "Section 11.3.1, table 276 and 279, in IEEE
802.16REVd/D5-2004"
::= { wmanIfCmnOfdmPhy 1 }

wmanIfCmnOfdmUplinkChannelEntry OBJECT-TYPE
SYNTAX      WmanIfCmnOfdmUplinkChannelEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  "This table provides one row for each uplink channel of
multi-sector BS, and is indexed by BS ifIndex. An entry
in this table exists for each ifEntry of BS with an
ifType of propBWAp2Mp. The objects in each entry will be implemented as
read-create in BS and read-only in SS."
INDEX { ifIndex }
::= { wmanIfCmnOfdmUplinkChannelTable 1 }

WmanIfCmnOfdmUplinkChannelEntry ::= SEQUENCE {
  wmanIfCmnOfdmCtBasedResvTimeout        INTEGER,
  wmanIfCmnOfdmBwReqOppSize              INTEGER,
  wmanIfCmnOfdmRangReqOppSize            INTEGER,
  wmanIfCmnOfdmUplinkCenterFreq          INTEGER,
  wmanIfCmnOfdmSubChReqRegionFull        INTEGER,
  wmanIfCmnOfdmSubChFocusCtCode          INTEGER,
wmanIfCmnOfdmUplinkChannelRowStatus RowStatus

wmanIfCmnOfdmCtBasedResvTimeout OBJECT-TYPE
SYNTAX INTEGER (1..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The number of UL-MAPs to receive before contention-based reservation is attempted again for the same connection."
REFERENCE "Section 11.3.1, table 276, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmUplinkChannelEntry 1 }

wmanIfCmnOfdmBwReqOppSize OBJECT-TYPE
SYNTAX INTEGER (1..65535)
UNITS "PS"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Size (in units of PS) of PHY payload that SS may use to format and transmit a bandwidth request message in a contention request opportunity. The value includes all PHY overhead as well as allowance for the MAC data the message may hold."
REFERENCE "Section 11.3.1, table 276, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmUplinkChannelEntry 2 }

wmanIfCmnOfdmRangReqOppSize OBJECT-TYPE
SYNTAX INTEGER (1..65535)
UNITS "PS"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Size (in units of PS) of PHY payload that SS may use to format and transmit a RNG-REQ message in a contention request opportunity. The value includes all PHY overhead as well as allowance for the MAC data the message may hold and the maximum SS/BS roundtrip propagation delay."
REFERENCE "Section 11.3.1, table 276, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmUplinkChannelEntry 3 }

wmanIfCmnOfdmUplinkCenterFreq OBJECT-TYPE
SYNTAX INTEGER
UNITS "KHz"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Uplink center frequency (KHz)"
REFERENCE "Section 11.3.1, table 276, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmUplinkChannelEntry 4 }

wmanIfCmnOfdmSubChReqRegionFull OBJECT-TYPE
SYNTAX INTEGER {oneSubchannel(0),
twoSubchannels(1),
fourSubchannels(2),
eightSubchannels(3),
sixteenSubchannels(4)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Bits 0 - 2 Number of subchannels used by each transmit opportunity when REQ Region-Full is allocated in subchannelization region, per the following enumeration:
0: 1 Subchannel.
1: 2 Subchannels.
2: 4 Subchannels.
3: 8 Subchannels.
4: 16 Subchannels.
5-7: Shall not be used.
Bits 3 - 7: Number of OFDM symbols used by each transmit opportunity when REQ Region-Full is allocated in subchannelization region."
REFERENCE
Section 11.3.1, table 279, in IEEE 802.16REVd/D5-2004*
::= { wmanIfCmnOfdmUplinkChannelEntry 5 }

wmanIfCmnOfdmSubChFocusCtCode OBJECT-TYPE
SYNTAX INTEGER (0..8)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of contention codes (CSE) that shall only be used to request a subchannelized allocation. Default value 0. Allowed values 0-8."
REFERENCE
"Section 11.3.1, table 279, in IEEE 802.16REVd/D5-2004"
DEFVAL { 0 }
::= { wmanIfCmnOfdmUplinkChannelEntry 6 }

wmanIfCmnOfdmUplinkChannelRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object is used to create a new row or modify or delete an existing row in this table.

If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."
::= { wmanIfCmnOfdmUplinkChannelEntry 7 }

wmanIfCmnOfdmDownlinkChannelTable OBJECT-TYPE
SYNTAX SEQUENCE OF WmanIfCmnOfdmDownlinkChannelEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table contains DCD channel attributes, defining the transmission characteristics of downlink channels"
REFERENCE
"Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmPhy 2 }

wmanIfCmnOfdmDownlinkChannelEntry OBJECT-TYPE
SYNTAX WmanIfCmnOfdmDownlinkChannelEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table provides one row for each downlink channel of multi-sector BS, and is indexed by BS ifIndex. An entry in this table exists for each ifEntry of BS with an ifType of propBWAp2Mp. The objects in each entry will be implemented as read-create in BS and read-only in SS."
INDEX { ifIndex }
::= { wmanIfCmnOfdmDownlinkChannelTable 1 }

WmanIfCmnOfdmDownlinkChannelEntry ::= SEQUENCE {
  wmanIfCmnOfdmBsEIRP                     INTEGER,
  wmanIfCmnOfdmChannelNumber              INTEGER,
  wmanIfCmnOfdmTTG                        INTEGER,
  wmanIfCmnOfdmRTG                        INTEGER,
  wmanIfCmnOfdmInitRngMaxRSS              INTEGER,
  wmanIfCmnOfdmChSwitchFrameNmr           INTEGER,
  wmanIfCmnOfdmDownlinkCenterFreq         INTEGER,
  wmanIfCmnOfdmBsId                       OCTET STRING,
  wmanIfCmnOfdmMacVersion                 INTEGER,
  wmanIfCmnOfdmFrameDurationCode          INTEGER,
  wmanIfCmnOfdmFrameNumber                INTEGER,
  wmanIfCmnOfdmDownlinkChannelRowStatus   RowStatus
}

wmanIfCmnOfdmBsEIRP OBJECT-TYPE
SYNTAX INTEGER (0..65535)
UNITS "dBm"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Signed in units of 1 dBm."
REFERENCE
"Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 1 }

wmanIfCmnOfdmChannelNumber OBJECT-TYPE
SYNTAX INTEGER (1..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Downlink channel number as defined in 8.5.
Used for license-exempt operation only."
REFERENCE "Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 2 }

wmanIfCmnOfdmTTG OBJECT-TYPE
SYNTAX INTEGER (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Transmit / Receive Transition Gap."
REFERENCE "Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 3 }

wmanIfCmnOfdmRTG OBJECT-TYPE
SYNTAX INTEGER (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Receive / Transmit Transition Gap."
REFERENCE "Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 4 }

wmanIfCmnOfdmInitRngMaxRSS OBJECT-TYPE
SYNTAX INTEGER (0..65535)
UNITS "dBm"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Initial Ranging Max. Received Signal Strength at BS
Signed in units of 1 dBm."
REFERENCE "Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 5 }

wmanIfCmnOfdmChSwitchFrameNmr OBJECT-TYPE
SYNTAX INTEGER (0..16777215)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Channel switch frame number as defined in 6.4.14.7,
Used for license-exempt operation only."
REFERENCE "Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 6 }

wmanIfCmnOfdmDownlinkCenterFreq OBJECT-TYPE
SYNTAX INTEGER
UNITS "KHz"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Downlink center frequency (kHz)."
REFERENCE "Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 7 }

wmanIfCmnOfdmBsId OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(6))
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Base station ID."
REFERENCE
"Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 8 }

wmanIfCmnOfdmMacVersion OBJECT-TYPE
SYNTAX     INTEGER { ieee802Dot16-2001(1),
                    ieee802Dot16c-2002(2),
                    ieee802Dot16a-2003(3),
                    ieee802Dot16-2004(4)}
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"This parameter specifies the version of 802.16 to which
the message originator conforms."
REFERENCE
"Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 9 }

wmanIfCmnOfdmFrameDurationCode OBJECT-TYPE
SYNTAX     INTEGER (0..6)
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"The duration of the frame. The frame duration code
values are specified in table 230."
REFERENCE
"Section 11.4.1, table 230, in IEEE 802.16/2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 10 }

wmanIfCmnOfdmFrameNumber OBJECT-TYPE
SYNTAX     INTEGER (0..16777215)
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"The number of frame containing the DCD message."
REFERENCE
"Section 11.4.1, table 286, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDownlinkChannelEntry 11 }

wmanIfCmnOfdmDownlinkChannelRowStatus OBJECT-TYPE
SYNTAX     RowStatus
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"This object is used to create a new row or modify or
delete an existing row in this table.

If the implementator of this MIB has chosen not
to implement 'dynamic assignment' of profiles, this
object is not useful and should return noSuchName
upon SNMP request."
::= { wmanIfCmnOfdmDownlinkChannelEntry 12 }

wmanIfCmnOfdmUcdBurstProfileTable OBJECT-TYPE
SYNTAX     SEQUENCE OF WmanIfCmnOfdmUcdBurstProfileEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"This table contains UCD burst profiles for each uplink
channel"
REFERENCE
"Section 11.3.1.1, table 281 and 284, in IEEE
802.16REVd/D5-2004"
::= { wmanIfCmnOfdmPhy 3 }

wmanIfCmnOfdmUcdBurstProfileEntry OBJECT-TYPE
SYNTAX     WmanIfCmnOfdmUcdBurstProfileEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"This table provides one row for each UCD burst profile.
This table is double indexed. The primary index is an
ifIndex with an ifType of propBWAp2Mp. The secondary index
is wmanIfCmnOfdmOfdmUcdBurstProfIndex.
The objects in each entry will be implemented as
read-create in BS and read-only in SS."
**INDEX**

```plaintext
INDEX { ifIndex, wmanIfCmnOfdmOfdmUcdBurstProfIndex }
::= { wmanIfCmnOfdmUcdBurstProfileTable 1 }
```

**WmanIfCmnOfdmUcdBurstProfileEntry** ::= SEQUENCE {
  wmanIfCmnOfdmOfdmUcdBurstProfIndex INTEGER,
  wmanIfCmnOfdmUucValue INTEGER,
  wmanIfCmnOfdmUplinkFrequency INTEGER,
  wmanIfCmnOfdmUcdFecCodeType INTEGER,
  wmanIfCmnOfdmFocusCtPowerBoost INTEGER,
  wmanIfCmnOfdmUcdBurstProfileRowStatus RowStatus
}

**wmanIfCmnOfdmOfdmUcdBurstProfIndex OBJECT-TYPE**
SYNTAX INTEGER (5 .. 12)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "ifIndex and wmanIfCmnOfdmOfdmUcdBurstProfIndex uniquely identify an entry in the wmanIfCmnOfdmUcdBurstProfileTable."
::= { wmanIfCmnOfdmUcdBurstProfileEntry 1 }

**wmanIfCmnOfdmUucValue OBJECT-TYPE**
SYNTAX INTEGER (5..12)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The Uplink Interval Usage Code indicates the uplink burst profile in the UCD message."
REFERENCE "Section 8.3.6.3.1, in IEEE 802.16/2004"
::= { wmanIfCmnOfdmUcdBurstProfileEntry 2 }

**wmanIfCmnOfdmUplinkFrequency OBJECT-TYPE**
SYNTAX INTEGER "KHz"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Uplink Frequency (kHz)."
REFERENCE "Section 11.3.1.1, table 281, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmUcdBurstProfileEntry 3 }

**wmanIfCmnOfdmUcdFecCodeType OBJECT-TYPE**
SYNTAX INTEGER {qpskRsCcCc1-2(0),
  qpskRsCcCc3-4(1),
  sixteenQamRsCcCc1-2(2),
  sixteenQamRsCcCc3-4(3),
  sixtyFourQamRsCcCc2-3(4),
  sixtyFourQamRsCcCc3-4(5),
  qpskBtc1-2(6),
  qpskBtc3-4(7),
  sixteenQamBtc3-5(8),
  sixteenQamBtc4-5(9),
  sixtyFourQamBtc2-3(10),
  sixtyFourQamBtc5-6(11),
  qpskCtc1-2(12),
  qpskCtc2-3(13),
  qpskCtc3-4(14),
  sixteenQamCtc3-4(16),
  sixteenQamCtc2-3(17),
  sixtyFourQamCtc3-4(18))
MAX-ACCESS read-only
STATUS current
DESCRIPTION " 0 = QPSK (RS+CC/CC) 1/2
  1 = QPSK (RS+CC/Cc) 3/4
  2 = 16-QAM (RS+CC/CC) 1/2
  3 = 16-QAM (RS+CC/CC) 3/4
  4 = 64-QAM (RS+CC/CC) 2/3
  5 = 64-QAM (RS+CC/CC) 3/4
  6 = QPSK (BTC) 1/2
  7 = QPSK (BTC) 3/4
  8 = 16-QAM (BTC) 3/5
  9 = 16-QAM (BTC) 4/5
  10 = 64-QAM (BTC) 2/3
  11 = 64-QAM (BTC) 5/6
  12 = QPSK (CTC) 1/2
### Table 1.1.1

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>QPSK (CTC) 2/3</td>
</tr>
<tr>
<td>14</td>
<td>QPSK (CTC) 3/4</td>
</tr>
<tr>
<td>15</td>
<td>16-QAM (CTC) 1/2</td>
</tr>
<tr>
<td>16</td>
<td>16-QAM (CTC) 3/4</td>
</tr>
<tr>
<td>17</td>
<td>64-QAM (CTC) 2/3</td>
</tr>
<tr>
<td>18</td>
<td>64-QAM (CTC) 3/4</td>
</tr>
<tr>
<td>19 - 255</td>
<td>Reserved.</td>
</tr>
</tbody>
</table>

---

**wmanIfCmnOfdmFocusCtPowerBoost**

**OBJECT-TYPE**

**SYNTAX** INTEGER

**MAX-ACCESS** read-only

**STATUS** current

**DESCRIPTION**

"The power boost in dB of focused contention carriers, as described in 8.3.6.3.3."

**REFERENCE**

"Section 11.3.1.1, table 284, in IEEE 802.16REVd/D5-2004"

`::= { wmanIfCmnOfdmUcdBurstProfileEntry 4 }`

**wmanIfCmnOfdmUcdBurstProfileRowStatus**

**OBJECT-TYPE**

**SYNTAX** RowStatus

**MAX-ACCESS** read-only

**STATUS** current

**DESCRIPTION**

"This object is used to create a new row or modify or delete an existing row in this table.

If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."

`::= { wmanIfCmnOfdmUcdBurstProfileEntry 5 }`

**wmanIfCmnOfdmDcdBurstProfileTable**

**OBJECT-TYPE**

**SYNTAX** SEQUENCE OF WmanIfOfdmDcdBurstProfileEntry

**MAX-ACCESS** not-accessible

**STATUS** current

**DESCRIPTION**

"This table provides one row for each DCD burst profile. This table is double indexed. The primary index is an ifIndex with an ifType of propBWAp2Mp. The secondary index is wmanIfCmnOfdmDcdBurstProfIndex."

`::= { wmanIfCmnOfdmPhy 4 }`

**wmanIfCmnOfdmDcdBurstProfileEntry**

**OBJECT-TYPE**

**SYNTAX** WmanIfOfdmDcdBurstProfileEntry

**MAX-ACCESS** not-accessible

**STATUS** current

**DESCRIPTION**

"This table provides one row for each DCD burst profile. This table is double indexed. The primary index is an ifIndex with an ifType of propBWAp2Mp. The secondary index is wmanIfCmnOfdmDcdBurstProfIndex. The objects in each entry will be implemented as read-create in BS and read-only in SS."

**INDEX** { ifIndex, wmanIfCmnOfdmDcdBurstProfIndex }

`::= { wmanIfCmnOfdmDcdBurstProfileTable 1 }`

**WmanIfOfdmDcdBurstProfileEntry**

`::= SEQUENCE {`

- **wmanIfCmnOfdmDcdBurstProfIndex** INTEGER,
- **wmanIfCmnOfdmDiucValue** INTEGER,
- **wmanIfCmnOfdmDownlinkFrequency** INTEGER,
- **wmanIfCmnOfdmDcdFecCodeType** INTEGER,
- **wmanIfCmnOfdmDiucMandatoryExitThresh** INTEGER,
- **wmanIfCmnOfdmDiucMinEntryThresh** INTEGER,
- **wmanIfCmnOfdmTcsEnable** INTEGER,
- **wmanIfCmnOfdmDcdBurstProfileRowStatus** RowStatus

`}

**wmanIfCmnOfdmDcdBurstProfIndex**

**OBJECT-TYPE**

**SYNTAX** INTEGER (1 .. 11)

**MAX-ACCESS** not-accessible

**STATUS** current
DESCRIPTION
"ifIndex and wmanIfCmnOfdmDcdBurstProfIndex uniquely identify an entry in the wmanIfCmnOfdmDcdBurstProfileTable."
::= { wmanIfCmnOfdmDcdBurstProfileEntry 1 }

wmanIfCmnOfdmDlucValue OBJECT-TYPE
SYNTAX INTEGER (1..11)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The Downlink Interval Usage Code indicates the downlink burst profile in the UCD message."
REFERENCE "Section 8.3.6.3.1, in IEEE 802.16/2004"
::= { wmanIfCmnOfdmDcdBurstProfileEntry 2 }

wmanIfCmnOfdmDlucFrequency OBJECT-TYPE
SYNTAX INTEGER
UNITS "KHz"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Downlink Frequency (kHz)."
REFERENCE "Section 11.4.1, table 287, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDcdBurstProfileEntry 3 }

wmanIfCmnOfdmDcdFecCodeType OBJECT-TYPE
SYNTAX INTEGER {qpskRsCc1-2(0), qpskRsCc3-4(1), sixteenQamRsCc1-2(2), sixteenQamRsCc3-4(3), sixtyFourQamRsCc1-2(4), sixtyFourQamRsCc3-4(5), qpskBtc1-2(6), qpskBtc3-4(7), sixteenQamBtc3-4(8), sixteenQamBtc5-6or4-5(9), sixtyFourQamBtc2-3or5-8(10), sixtyFourQamBtc5-6or4-5(11), qpskCtc1-2(12), qpskCtc2-3(13), qpskCtc3-4(14), sixteenQamCtc1-2(16), sixteenQamCtc3-4(17), sixtyFourQamCtc3-4(18)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION "0= QPSK (RS+CC) 1/2
1= QPSK (RS+CC) 3/4
2= 16-QAM (RS+CC) 1/2
3= 16-QAM (RS+CC) 3/4
4= 64-QAM (RS+CC) 2/3
5= 64-QAM (RS+CC) 3/4
6= QPSK (BTC) 1/2
7= QPSK (BTC) 3/4
8= 16-QAM (BTC) 3/5
9= 16-QAM (BTC) 4/5
10 = 64-QAM (BTC) 2/3 or 5/8
11 = 64-QAM (BTC) 5/6 or 4/5
12 = QPSK (CTC) 1/2
13 = QPSK (CTC) 2/3
14 = QPSK (CTC) 3/4
15 = 16-QAM (CTC) 1/2
16 = 16-QAM (CTC) 3/4
17 = 64-QAM (CTC) 2/3
18 = 64-QAM (CTC) 3/4
19 - 255 Reserved."
REFERENCE "Section 11.4.1, table 290, in IEEE 802.16REVd/D5-2004"
::= { wmanIfCmnOfdmDcdBurstProfileEntry 4 }

wmanIfCmnOfdmDlucMandatoryExitThresh OBJECT-TYPE
SYNTAX INTEGER (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"DIUC mandatory exit threshold: 0 - 63.75 dB CINR at or below where this DIUC can no longer be used and where this change to a more robust DIUC is required, in 0.25 dB units."

REFERENCE
"Section 11.4.1, table 290, in IEEE 802.16REVd/D5-2004"

::= { wmanIfCmnOdfmDcdBurstProfileEntry 5 }

wmanIfCmnOdfmDiucMinEntryThresh OBJECT-TYPE
SYNTAX INTEGER (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"DIUC minimum entry threshold: 0 - 63.75 dB The minimum CINR required to start using this DIUC when changing from a more robust DIUC is required, in 0.25 dB units."

REFERENCE
"Section 11.4.1, table 290, in IEEE 802.16REVd/D5-2004"

::= { wmanIfCmnOdfmDcdBurstProfileEntry 6 }

wmanIfCmnOdfmTcsEnable OBJECT-TYPE
SYNTAX INTEGER {tcsDisabled (0),
tcsEnabled (1)}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates whether Transmission CONvergence Sublayer is enabled or disabled."

REFERENCE
"Section 11.4.1, table 360, in IEEE 802.16/2004"

::= { wmanIfCmnOdfmDcdBurstProfileEntry 7 }

wmanIfCmnOdfmDcdBurstProfileRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object is used to create a new row or modify or delete an existing row in this table.

If the implementator of this MIB has chosen not to implement 'dynamic assignment' of profiles, this object is not useful and should return noSuchName upon SNMP request."

::= { wmanIfCmnOdfmDcdBurstProfileEntry 8 }

END
Annex A (informative):
Bibliography

IETF RFC 2515 (February, 1999): "Definitions of Managed Objects for ATM Management".
IETF RFC 1573: "Evolution of the Interfaces Group of MIB-II".
IETF RFC 1042: "Standard for the transmission of IP datagrams over IEEE 802 networks".
IETF RFC 868: "Time Protocol".
# History

## Document history

<table>
<thead>
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<th>Version</th>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
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<td>January 2005</td>
<td>Publication</td>
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