Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Proposed text and ASN.1 code for service flow Management**
Date Submitted	**2007-05-08**
Source(s)	Joey Chou [mailto:joey.chou@intel.com] Intel Corporation
Re:	
Abstract	This contribution proposes the text and ASN.1 code in wmanIf2mMib to support service flow management.
Purpose	Adoption
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1. Introduction

This contribution proposes the text and ASN.1 code in wmanIf2mMib to support service flow management.

2. Proposed changes

2.1 wmanIf2mBsCmObjects Change

13.1.4.1 wmanIf2mBsCmObjects

13.1.4.1.1 wmanIf2mBsCm

[Change Figure 16 as the following:]

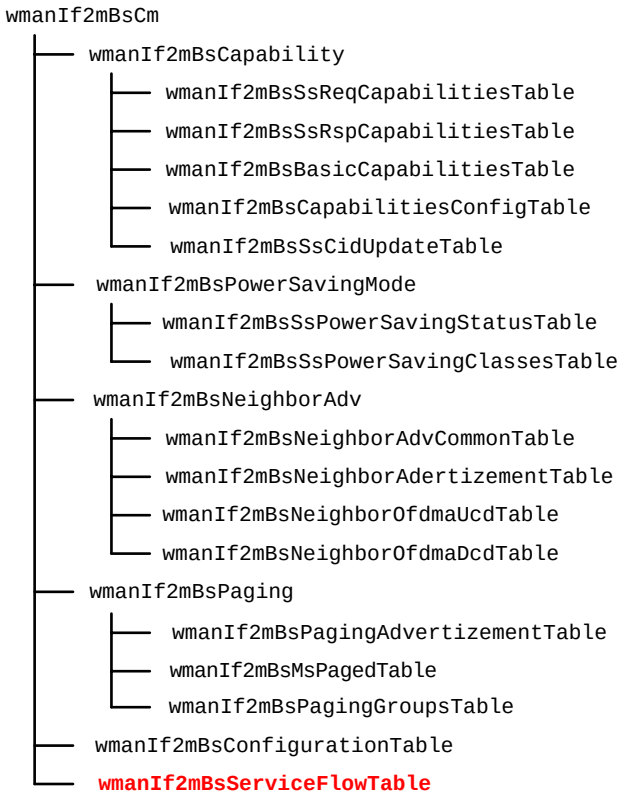

Figure 16— wmanIf2mBsCm structure

[Add the following subclause as below:]

13.1.4.1.1.6 wmanIf2mBsServiceFlowTable

wmanIf2mBsServiceFlowTable contains the service flow database. When an SS first registers at the BS, the BS should download the SS' service flow profile (e.g. QoS parameter set and classification rules) from the home AAA server.

For fixed or normadic SS, its service flow profile will not be changed in the entire duration of the session. For portable or mobile SS, when the SS handoffs to another BS, as part of the context transfer, the serving BS should transfer service flow profile to the target BS. After the handoff, the old serving BS shall change the wmanIf2BsServiceflowState of the service flows, previously used by the SS to 'inactive'.

The BS may cleanup wmanIf2BsServiceFlowTable periodically, by removing those entries with wmanIf2BsServiceflowState = 'inactive'.

2.2 wmanIf2mSsObjects Change

13.1.4.2 wmanIf2mSsObjects

13.1.4.2.1 wmanIf2mSsCm

[Change Figure 18 as the following:]

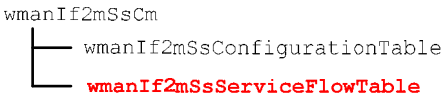

Figure 18— wmanIf2mSsCm structure

[Add the following subclause as below:]

13.1.4.2.1.2 wmanIf2mSsServiceFlowTable

wmanIf2mSsServiceFlowTable contains the service flow database. BS creates the service flow after has downloaded the SS' service flow profile (e.g. QoS parameter set and classification rules) from the home AAA server.

2.3 wmanIf2mBsServiceFlowTable ASN.1 Code Change

13.2 ASN.1 Definitions of MIB Modules

13.2.3 wmanIf2mMib

[Add the following ASN.1 code:]

```
-- XXX
WmanIf2mSfState ::= TEXTUAL-CONVENTION
        STATUS      current
        DESCRIPTION
            "Defines the state of a service flow.
```

```
                'inactive' - A service flow is inactive, when the MS owns
                             this service flow has handoff to another BS.
                'provisioned' - A service flow is provisioned, but not
                                yet activated.
                'admitted' - This maps to the 1st phase of the two-phase
                             activation model that the bandwidth a service
                             flow is reserved. But, no traffic can be
                             sent on this service flow yet.
                'active' - This maps to the 2nd phase of the two-phase
                           activation model that bandwidth is granted,
                           (e.g., is actively sending UL maps containing
                           unsolicited grants for a UGS service flow)."
            REFERENCE
                "Subclause 6.3.14.6 in IEEE Std 802.16-2004"
            SYNTAX      INTEGER {inactive(0),
                                 provisioned(1),
                                 admitted(2),
                                 active(3)}

    -- XXX
    WmanIf2mGlobalSrvClass ::= TEXTUAL-CONVENTION
            STATUS      current
            DESCRIPTION
                "Global Service Class Name contains 8 information fields
                 that map to predefined QoS attributes as shown in
                 subclause 6.3.14.4.1.

                 bit#0:     Uplink/Downlink indicator
                            0 - uplink
                            1 - downlink
                 bit#1-6:   Maximum sustained traffic rate in bps that is
                            defined in Table 124b
                 bit#7:     0 - no traffic indication
                            1 - traffic indication
                 bit#8-13:  Maximum traffic burst defines the maximum burst
                            size that must be accommodated for the service.
                 bit#14-19: Minimum reserved traffic rate parameter
                            specifies the minimum rate, in bits per second,
                            reserved for this service flow.
                 bit#20-25: Maximum latency specifies the maximum interval
                            between the reception of a packet at CS of BS
                            or SS and the arrival of the packet to the peer
                            device.
                 bit#26:    SDU indicator specifies whether the SDUs on the
                            service flow are fixed-length or variable-length.
                            0 - variable length
                            1 - fixed length
                 bit#27:    Paging indicator of an MS preference for the
                            reception of paging advisory messages during
                            idle mode. When set, it indicates that the BS
                            may present paging advisory messages or other
                            indicative messages to the MS when data SDUs
                            bound for the MS are present while the MS is in
                            Idle Mode.
                            0 - no paging generation
                            1 - paging generation"
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            SYNTAX      BITS {ulDlIndicator(0),
                              maxSustainedRate0(1),
                              maxSustainedRate1(2),
                              maxSustainedRate2(3),
                              maxSustainedRate3(4),
                              maxSustainedRate4(5),
```

```
                            maxSustainedRate5(6),
                            trafficIndication(7),
                            maxTrafficBurst0(8),
                            maxTrafficBurst1(9),
                            maxTrafficBurst2(10),
                            maxTrafficBurst3(11),
                            maxTrafficBurst4(12),
                            maxTrafficBurst5(13),
                            minReservedRate0(14),
                            minReservedRate1(15),
                            minReservedRate2(16),
                            minReservedRate3(17),
                            minReservedRate4(18),
                            minReservedRate5(19),
                            maxLatency0(20),
                            maxLatency1(21),
                            maxLatency2(22),
                            maxLatency3(23),
                            maxLatency4(24),
                            maxLatency5(25),
                            sduIndicator(26),
                            pagingGeneration(27),
                            reserved0(28),
                            reserved1(29),
                            reserved2(30),
                            reserved3(31)}

    -- XXX
    WmanIf2mSfDirection ::= TEXTUAL-CONVENTION
            STATUS      current
            DESCRIPTION
                "The direction of a service flow"
            SYNTAX      INTEGER {downstream(1),
                                 upstream(2)}

    -- XXX
    WmanIf2mReqTxPolicy ::= TEXTUAL-CONVENTION
            STATUS      current
            DESCRIPTION
                "Specify certain attributes for the associated service
                 flow. An attribute is enabled by setting the
                 corresponding bit position to 1.

                 bit#0: Service flow shall not use broadcast bandwidth
                        request opportunities. (Uplink only)
                 bit#1: reserved
                 bit#2: The service flow shall not piggyback requests with
                        data. (Uplink only)
                 bit#3: The service flow shall not fragment data.
                 bit#4: The service flow shall not suppress payload headers
                        (CS parameter)
                 bit#5: The service flow shall not pack multiple SDUs (or
                        fragments) into single MAC PDUs.
                 bit#6: The service flow shall not include CRC in the MAC
                        PDU."
            REFERENCE
                "Subclause 11.13.12 in IEEE Std 802.16-2004"
            SYNTAX      BITS {noBroadcastBwReq(0),
                              reserved1(1),
                              noPiggybackReq(2),
                              noFragmentData(3),
                              noPHS(4),
                              noSduPacking(5),
                              noCrc(6),
```

```
                            reserved2(7)}

    -- XXX
    WmanIf2mPhsRuleVerify ::= TEXTUAL-CONVENTION
            STATUS      current
            DESCRIPTION
                "The value of this field indicates to the sending entity
                 whether or not the packet header contents are to be
                 verified prior to performing suppression. If PHSV is
                 enabled, the sender shall compare the bytes in the packet
                 header with the bytes in the PHSF that are to be
                 suppressed as indicated by the PHSM."
            REFERENCE
                "Subclause 11.13.19.3.7.5 in IEEE Std 802.16-2004"
            SYNTAX      INTEGER {phsVerifyEnable(0),
                                 phsVerifyDisable(1)}

    -- XXX
    WmanIf2mSchedulingType ::= 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),
                                 extRealTimePollingService(5),
                                 unsolicitedGrantService(6)}
    -- XXX
    WmanIf2mCsSpecification ::= TEXTUAL-CONVENTION
            STATUS      current
            DESCRIPTION
                "Defines the types of convergence sublayer."
            REFERENCE
                "Subclause 11.13.19.1 in IEEE Std 802.16e-2005"
            SYNTAX      INTEGER {reserved(0),
                                 packetIpV4(1),
                                 packetIpV6(2),
                                 packet802dot3Ethernet(3),
                                 packet802dot1QVlan(4),
                                 packetIpV4Over802dot3(5),
                                 packetIpV6Over802dot3(6),
                                 packetIpV4Over802dot1Q(7),
                                 packetIpV6Over802dot1Q(8),
                                 atm(9),
                                 packet802dot3EthernetRohcHc(10),
                                 packet802dot3EthernetEcrtpHc(11),
                                 packetIp2RohcHc(12),
                                 packetIp2EcrtpHc(13)}
    -- XXX
    WmanIf2mIpv6FlowLabel ::= TEXTUAL-CONVENTION
            STATUS      current
            DESCRIPTION
                "The value of this field specifies the matching values for
                 the IPv6 Flow label field. As the flow label field has a
                 length of 20 bits, the first 4 bits of the most
                 significant byte shall be set to 0x0 and disregarded."
            SYNTAX      OCTET STRING (SIZE(3))
    -- XXX
```

```
WmanIf2mClassifierBitMap ::= TEXTUAL-CONVENTION
        STATUS      current
        DESCRIPTION
            "A bit of of this object is set to 1 if the parameter
             indicated by the comment was present in the classifier
             encoding, and 0 otherwise.
             Note: that BITS are encoded most significant bit first,
             so that if e.g. bits 6 and 7 are set, this object is
             encoded as the octet string '030000'H."
        REFERENCE
            "Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"
        SYNTAX      BITS {priority(0),
                          ipTos(1),
                          ipProtocol(2),
                          ipMaskedSrcAddr(3),
                          ipMaskedDestAddr(4),
                          srcPort(5),
                          destPort(6),
                          destMacAddr(7),
                          srcMacAddr(8),
                          ethernetProtocol(9),
                          userPriority(10),
                          vlanId(11),
                          ipv6FlowLabel(12)}

-- XXX
wmanIf2mBsServiceFlowTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIf2mBsServiceFlowEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains the service flow database. When an SS
             first registers at the BS, the BS should download the
             SS' service flow profile (e.g. QoS parameter set and
             classification rules) from the home AAA server.

             For fixed or normadic SS, its service flow profile will
             not be changed in the entire duration of the session.

             For portable or mobile SS, when the SS handoffs to another
             BS, as part of the context transfer, the serving BS should
             transfer service flow profile to the target BS. After the
             handoff, the old serving BS shall change the
             wmanIf2mBsServiceFlowState of the service flows, previously
             used by the SS to 'inactive'.

             The BS may cleanup wmanIf2mBsServiceFlowTable periodically,
             by removing those entries with wmanIf2mBsServiceFlowState
             = 'inactive'."
        REFERENCE
            "Subclause 6.3.14 in IEEE Std 802.16e-2005"
        ::= { wmanIf2mBsCm 6 }

wmanIf2mBsServiceFlowEntry OBJECT-TYPE
        SYNTAX      WmanIf2mBsServiceFlowEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides one row for each service flow. The
             table is indexed by ifIndex, wmanIf2mBsSsMacAddress and
             wmanIf2mBsSsSfId. ifIndex is associated with the BS sector.
             It supports both unicast and multicast service flows:
             Unicast - a SS (wmanIf2mBsSsMacAddress) may contain
                       multiple service flows (wmanIf2mBsSsSfId)
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                Multicast - a service flow (wmanIf2mBsSsSfId) may be
                            multicast to multiple SS
                            (wmanIf2mBsSsMacAddress)"
        INDEX { ifIndex, wmanIf2mBsSsMacAddress, wmanIf2mBsSsSfId }
        ::= { wmanIf2mBsServiceFlowTable 1 }

WmanIf2mBsServiceFlowEntry ::= SEQUENCE {
        wmanIf2mBsSsMacAddress                  MacAddress,
        wmanIf2mBsServiceFlowDirection          WmanIf2mSfDirection,
        wmanIf2mBsProvisionedGlobalServiceClass WmanIf2mGlobalSrvClass,
        wmanIf2mBsAdmittedGlobalServiceClass    WmanIf2mGlobalSrvClass,
        wmanIf2mBsActiveGlobalServiceClass      WmanIf2mGlobalSrvClass,
        wmanIf2mBsProvisionedQoSProfileIndex    INTEGER,
        wmanIf2mBsAdmittedQoSProfileIndex       INTEGER,
        wmanIf2mBsActiveQoSProfileIndex         INTEGER,
        wmanIf2mBsClassifierRuleIndex           Unsigned32,
        wmanIf2mBsPhsRuleIndex                  INTEGER,
        wmanIf2mBsArqAttributeIndex             INTEGER,
        wmanIf2mBsServiceFlowState              WmanIf2mSfState,
        wmanIf2mBsCid                           INTEGER,
        wmanIf2mBsSfCsSpecification             WmanIf2mCsSpecification,
        wmanIf2mBsSfMinTolerableTrafficRate     Unsigned32,
        wmanIf2mBsSfReqTxPolicy                 WmanIf2mReqTxPolicy,
        wmanIf2mBsSfTargetSaid                  INTEGER,
        wmanIf2mBsSfEstablishTime               TimeStamp,
        wmanIf2mBsSfTerminateTime               TimeStamp}

wmanIf2mBsSsMacAddress OBJECT-TYPE
        SYNTAX      MacAddress
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The MAC address of the SS that the service flow is
             associated with."
        ::= { wmanIf2mBsServiceFlowEntry 1 }

wmanIf2mBsServiceFlowDirection OBJECT-TYPE
        SYNTAX      WmanIf2mSfDirection
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "An attribute indicating the direction of a service flow."
        ::= { wmanIf2mBsServiceFlowEntry 2 }

wmanIf2mBsProvisionedGlobalServiceClass OBJECT-TYPE
        SYNTAX      WmanIf2mGlobalSrvClass
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object defines the ProvisionedQoSParamSet for this
             service flow. When '0' is returned from reading this object
             , it means either no global service class is defined, or
             its Qos profile may be defined in
             wmanIf2mBsProvisionedQoSProfileIndex."
        REFERENCE
            "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
        ::= { wmanIf2mBsServiceFlowEntry 3 }

wmanIf2mBsAdmittedGlobalServiceClass OBJECT-TYPE
        SYNTAX      WmanIf2mGlobalSrvClass
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object defines the AdmittededQoSParamSet for this
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                service flow. When '0' is returned from reading this object
                , it means either no global service class is defined, or
                its Qos profile may be defined in
                wmanIf2mBsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2mBsServiceFlowEntry 4 }

    wmanIf2mBsActiveGlobalServiceClass OBJECT-TYPE
            SYNTAX      WmanIf2mGlobalSrvClass
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This object defines the ActiveQoSParamSet for this service
                 flow. When '0' is returned from reading this object, it
                 means either no global service class is defined, or its Qos
                 profile may be defined in wmanIf2mBsActiveQoSProfileIndex.
                 ActiveQoSParamSet is a subset of AdmittededQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2mBsServiceFlowEntry 5 }

    wmanIf2mBsProvisionedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnQoSProfileTable
                 that defines the ProvisionedQoSParamSet of a service flow.
                 If WmanIf2mSfState = 'provisioned', then
                 ProvisionedQoSParamSet is the QoS profile for this service
                 flow. When '0' is returned from reading this object, it
                 means the QoS profile either is not defined, or is defined
                 in wmanIf2mBsProvisionedQoSProfileIndex."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 6 }

    wmanIf2mBsAdmittedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnQoSProfileTable
                 that defines the AdmittedQoSParamSet of a service flow. If
                 WmanIf2mSfState = 'admitted', then AdmittedQoSParamSet is
                 the QoS profile for this service flow. When '0' is returned
                 from reading this object, it means the QoS profile either
                 is not defined, or is defined in
                 wmanIf2mBsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                 a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 7 }

    wmanIf2mBsActiveQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnQoSProfileTable
                 that defines the ActiveQoSParamSet of a service flow. If
                 WmanIf2mSfState = 'active', then ActiveQoSParamSet is the
```

```
                QoS profile for this service flow. When '0' is returned
                from reading this object, it means the QoS profile either
                is not defined, or is defined in
                wmanIf2mBsActiveQoSProfileIndex. ActiveQoSParamSet is a
                subset of AdmittedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 8 }

    wmanIf2mBsClassifierRuleIndex OBJECT-TYPE
            SYNTAX      Unsigned32 (1 .. 4294967295)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in
                 wmanIf2mCmnClassifierRuleTable that defines the
                 classification rules for a service flow. When '0' is
                 returned from reading this object, it means the
                 classification rules are not defined for this service
                 flow."
            REFERENCE
                "Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 9 }

    wmanIf2mBsPhsRuleIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 255)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnPhsRuleTable
                 that defines the packet suppression rules for a service
                 flow. When '0' is returned from reading this object, it
                 means the PHS rules are not defined for this service
                 flow."
            REFERENCE
                "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 10 }

    wmanIf2mBsArqAttributeIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in
                 wmanIf2mCmnArqAttributeTable that defines the ARQ
                 attributes for a service flow. When '0' is returned from
                 reading this object, it means the ARQ attributes are not
                 defined for this service flow."
            REFERENCE
                "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 11 }

    wmanIf2mBsServiceFlowState OBJECT-TYPE
            SYNTAX      WmanIf2mSfState
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "wmanIf2SsServiceFlowState determines the state of a service
                 flow."
            REFERENCE
                "Subclause 6.3.14.6, in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 12 }

    wmanIf2mBsCid OBJECT-TYPE
```

```
            SYNTAX      INTEGER (0 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "A 16 bit channel identifier points to the connection being
                 created by DSA for this service flow. When '0' is returned
                 from reading this object, it means no CID has been assigned
                 to this service flow yet."
            ::= { wmanIf2mBsServiceFlowEntry 13 }

    wmanIf2mBsSfCsSpecification OBJECT-TYPE
            SYNTAX      WmanIf2mCsSpecification
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This parameter specifies the convergence sublayer
                 encapsulation mode."
            REFERENCE
                "Subclause 11.13.19.1 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 14 }

    wmanIf2mBsSfMinTolerableTrafficRate OBJECT-TYPE
            SYNTAX      Unsigned32
            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
                "Subclause 11.13.9 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 15 }

    wmanIf2mBsSfReqTxPolicy OBJECT-TYPE
            SYNTAX      WmanIf2mReqTxPolicy
            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
                "Subclause 11.13.12 in IEEE Std 802.16-2004"
            ::= { wmanIf2mBsServiceFlowEntry 16 }

    wmanIf2mBsSfTargetSaid OBJECT-TYPE
            SYNTAX      INTEGER (0 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The target SAID parameter indicates the SAID onto which the
                 service flow being set up shall be mapped."
            REFERENCE
                "Subclause 11.13.17 in IEEE Std 802.16e-2005"
            ::= { wmanIf2mBsServiceFlowEntry 17 }

    wmanIf2mBsSfEstablishTime OBJECT-TYPE
            SYNTAX      TimeStamp
```

```
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 established that means wmanIf2mBsServiceFlowState is
                 either in 'provisioned', 'admitted', or 'active' state."
            ::= { wmanIf2mBsServiceFlowEntry 19 }

    wmanIf2mBsSfTerminateTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 terminated that means wmanIf2mBsServiceFlowState is
                 in 'inactive' state."
            ::= { wmanIf2mBsServiceFlowEntry 18 }
```

2.4 wmanIf2mSsServiceFlowTable ASN.1 Code Change

13.2 ASN.1 Definitions of MIB Modules

13.2.4 wmanIf2Mib

[Add the following ASN.1 code:]

```
    -- XXX
    wmanIf2mSsServiceFlowTable OBJECT-TYPE
            SYNTAX      SEQUENCE OF WmanIf2mSsServiceFlowEntry
            MAX-ACCESS  not-accessible
            STATUS      current
            DESCRIPTION
                "This table contains the service flow database. BS creates
                 the service flow after has downloaded the SS' service flow
                 profile (e.g. QoS parameter set and classification rules)
                 from the home AAA server."
            REFERENCE
                "Subclause 6.3.14 in IEEE Std 802.16e-2005"
            ::= { wmanIf2mSsCm 2 }

    wmanIf2mSsServiceFlowEntry OBJECT-TYPE
            SYNTAX      WmanIf2mSsServiceFlowEntry
            MAX-ACCESS  not-accessible
            STATUS      current
            DESCRIPTION
                "This table provides one row for each service flow. The
                 table is indexed by ifIndex, and wmanIf2mSsSfId. ifIndex is
                 associated with the BS sector."
            INDEX { ifIndex, wmanIf2mSsSfId }
            ::= { wmanIf2mSsServiceFlowTable 1 }

    WmanIf2mSsServiceFlowEntry ::= SEQUENCE {
            wmanIf2mSsSfId                          Unsigned32,
            wmanIf2mSsServiceFlowDirection          WmanIf2mSfDirection,
            wmanIf2mSsProvisionedGlobalServiceClass WmanIf2mGlobalSrvClass,
            wmanIf2mSsAdmittedGlobalServiceClass    WmanIf2mGlobalSrvClass,
            wmanIf2mSsActiveGlobalServiceClass      WmanIf2mGlobalSrvClass,
            wmanIf2mSsProvisionedQoSProfileIndex    INTEGER,
            wmanIf2mSsAdmittedQoSProfileIndex       INTEGER,
            wmanIf2mSsActiveQoSProfileIndex         INTEGER,
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        wmanIf2mSsClassifierRuleIndex           Unsigned32,
        wmanIf2mSsPhsRuleIndex                  INTEGER,
        wmanIf2mSsArqAttributeIndex             INTEGER,
        wmanIf2mSsServiceFlowState              WmanIf2mSfState,
        wmanIf2mSsSfCsSpecification             WmanIf2mCsSpecification,
        wmanIf2mSsSfMinTolerableTrafficRate     Unsigned32,
        wmanIf2mSsSfReqTxPolicy                 WmanIf2mReqTxPolicy,
        wmanIf2mSsSfTargetSaid                  INTEGER,
        wmanIf2mSsSfEstablishTime               TimeStamp,
        wmanIf2mSsSfTerminateTime               TimeStamp}

wmanIf2mSsSfId OBJECT-TYPE
        SYNTAX      Unsigned32 (1 .. 4294967295)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A 32 bit quantity that uniquely identifies a service flow."
        ::= { wmanIf2mSsServiceFlowEntry 1 }

wmanIf2mSsServiceFlowDirection OBJECT-TYPE
        SYNTAX      WmanIf2mSfDirection
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "An attribute indicating the direction of a service flow."
        ::= { wmanIf2mSsServiceFlowEntry 2 }

wmanIf2mSsProvisionedGlobalServiceClass OBJECT-TYPE
        SYNTAX      WmanIf2mGlobalSrvClass
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object defines the ProvisionedQoSParamSet for this
             service flow. When '0' is returned from reading this object
             , it means either no global service class is defined, or
             its Qos profile may be defined in
             wmanIf2mSsProvisionedQoSProfileIndex."
        REFERENCE
            "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
        ::= { wmanIf2mSsServiceFlowEntry 3 }

wmanIf2mSsAdmittedGlobalServiceClass OBJECT-TYPE
        SYNTAX      WmanIf2mGlobalSrvClass
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object defines the AdmittededQoSParamSet for this
             service flow. When '0' is returned from reading this object
             , it means either no global service class is defined, or
             its Qos profile may be defined in
             wmanIf2mSsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
             a subset of ProvisionedQoSParamSet."
        REFERENCE
            "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
        ::= { wmanIf2mSsServiceFlowEntry 4 }

wmanIf2mSsActiveGlobalServiceClass OBJECT-TYPE
        SYNTAX      WmanIf2mGlobalSrvClass
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "This object defines the ActiveQoSParamSet for this service
             flow. When '0' is returned from reading this object, it
             means either no global service class is defined, or its Qos
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                profile may be defined in wmanIf2mSsActiveQoSProfileIndex.
                ActiveQoSParamSet is a subset of AdmittededQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2mSsServiceFlowEntry 5 }

    wmanIf2mSsProvisionedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnQoSProfileTable
                that defines the ProvisionedQoSParamSet of a service flow.
                If WmanIf2mSfState = 'provisioned', then
                ProvisionedQoSParamSet is the QoS profile for this service
                flow. When '0' is returned from reading this object, it
                means the QoS profile either is not defined, or is defined
                in wmanIf2mSsProvisionedQoSProfileIndex."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 6 }

    wmanIf2mSsAdmittedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnQoSProfileTable
                that defines the AdmittedQoSParamSet of a service flow. If
                WmanIf2mSfState = 'admitted', then AdmittedQoSParamSet is
                the QoS profile for this service flow. When '0' is returned
                from reading this object, it means the QoS profile either
                is not defined, or is defined in
                wmanIf2mSsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 7 }

    wmanIf2mSsActiveQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnQoSProfileTable
                that defines the ActiveQoSParamSet of a service flow. If
                WmanIf2mSfState = 'active', then ActiveQoSParamSet is the
                QoS profile for this service flow. When '0' is returned
                from reading this object, it means the QoS profile either
                is not defined, or is defined in
                wmanIf2mSsActiveQoSProfileIndex. ActiveQoSParamSet is a
                subset of AdmittedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 8 }

    wmanIf2mSsClassifierRuleIndex OBJECT-TYPE
            SYNTAX      Unsigned32 (1 .. 4294967295)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in
                wmanIf2mCmnClassifierRuleTable that defines the
                classification rules for a service flow. When '0' is
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                returned from reading this object, it means the
                classification rules are not defined for this service
                flow."
            REFERENCE
                "Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 9 }

    wmanIf2mSsPhsRuleIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 255)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2mCmnPhsRuleTable
                that defines the packet suppression rules for a service
                flow. When '0' is returned from reading this object, it
                means the PHS rules are not defined for this service
                flow."
            REFERENCE
                "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 10 }

    wmanIf2mSsArqAttributeIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in
                wmanIf2mCmnArqAttributeTable that defines the ARQ
                attributes for a service flow. When '0' is returned from
                reading this object, it means the ARQ attributes are not
                defined for this service flow."
            REFERENCE
                "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 11 }

    wmanIf2mSsServiceFlowState OBJECT-TYPE
            SYNTAX      WmanIf2mSfState
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "wmanIf2mSsServiceFlowState determines the state of a
                service flow."
            REFERENCE
                "Subclause 6.3.14.6, in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 12 }

    wmanIf2mSsSfCsSpecification OBJECT-TYPE
            SYNTAX      WmanIf2mCsSpecification
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This parameter specifies the convergence sublayer
                encapsulation mode."
            REFERENCE
                "Subclause 11.13.19.1 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 13 }

    wmanIf2mSsSfMinTolerableTrafficRate OBJECT-TYPE
            SYNTAX      Unsigned32
            UNITS       "bps"
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Minimum Tolerable Traffic Rate = R (bits/sec) with time
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                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
                "Subclause 11.13.9 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 14 }

    wmanIf2mSsSfReqTxPolicy OBJECT-TYPE
            SYNTAX      WmanIf2mReqTxPolicy
            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
                "Subclause 11.13.12 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 15 }

    wmanIf2mSsSfTargetSaid OBJECT-TYPE
            SYNTAX      INTEGER (0 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "The target SAID parameter indicates the SAID onto which the
                 service flow being set up shall be mapped."
            REFERENCE
                "Subclause 11.13.17 in IEEE Std 802.16-2004"
            ::= { wmanIf2mSsServiceFlowEntry 16 }

    wmanIf2mSsSfEstablishTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 established that means wmanIf2mBsServiceFlowState is
                 either in 'provisioned', 'admitted', or 'active' state."
            ::= { wmanIf2mSsServiceFlowEntry 17 }

    wmanIf2mSsSfTerminateTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 terminated that means wmanIf2mBsServiceFlowState is in
                 'inactive' state."
            ::= { wmanIf2mSsServiceFlowEntry 18 }
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