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	**2007-05-02**
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Re:	
Abstract	This contribution proposes the text and ASN.1 code in wmanIf2Mib to support service flow management.
Purpose	Adoption
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1. Introduction

This contribution proposes the text and ASN.1 code in wmanIf2Mib to support service flow management.

2. Proposed changes

2.1 wmanIf2BsPacketCs Change

13.1.3.1 wmanIf2BsObjects

13.1.3.1.1 wmanIf2BsPacketCs

[Change Figure 3 as the following:]

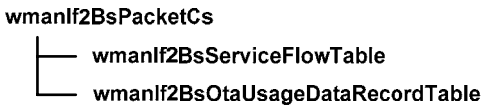

Figure 3—wmanIf2BsPacketCs structure

[Change the following subclause as below:]

~~**13.1.3.1.1.1 wmanIf2BsProvisionedSfTable**~~

~~wmanIf2BsProvisionedSfTable contains provisioned service flow profiles for SSs, and pointers to wmanIf2BsServiceClassTable and wmanIf2BsClassifierRuleTable for QoS parameters and classifier rules respectively.~~

~~**13.1.3.1.1.2 wmanIf2BsProvisionedForSfTable**~~

~~wmanIf2BsProvisionedForSfTable maps the MAC addresses of SSs to the service flows provisioned in wmanIf2BsProvisionedSfTable. It enables downlink multicast services where MAC addresses of multiple SSs can be mapped to the same service flow.~~

~~**13.1.3.1.1.3 wmanIf2BsServiceClassTable**~~

~~Each entry of the wmanIf2BsServiceClassTable contains QoS parameter set, as defined in subclause 6.3.14 and 11.13 in IEEE 802.16-2004 standard.~~

~~**13.1.3.1.1.4 wmanIf2BsClassifierRuleTable**~~

~~wmanIf2BsClassifierRuleTable contains the packet classifier rules associated with service flows.~~

~~**13.1.3.1.1.5 wmanIf2BsSsPacketCounterTable**~~

~~wmanIf2BsSsPacketCounterTable contains counters to keep track of the number of packets and octets that have been received or transmitted on the per service flow basis.~~

13.1.3.1.1.1 wmanIf2BsServiceFlowTable

wmanIf2BsServiceFlowTable 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 wmanIf2SsObjects Change

13.1.3.2 wmanIf2SsObjects

[Add a new subclause:]

13.1.3.2.1 wmanIf2SsPacketCs

Figure 8 shows the structure of wmanIf2SsPacketCs subtree that contains SS managed objects related to the Packet CS management entity layer.

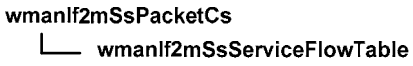

Figure 8—wmanIf2SsPacketCs structure

13.1.3.2.1.1 wmanIf2SsServiceFlowTable

wmanIf2SsServiceFlowTable 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 wmanIf2BsServiceFlowTable ASN.1 Code Change

13.2 ASN.1 Definitions of MIB Modules

13.2.2 wmanIf2Mib

[Delete the following ASN.1 code:]

```
wmanIf2BsProvisionedSfTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIf2BsProvisionedSfEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains service flow profiles provisioned by
             NMS. The service flow should be created with SS(s)
             following instruction given by wmanIf2BsSfState object.
             1. The QoS parameters of the service flow are provisioned
                in wmanIf2BsServiceClassTable and referenced by
                wmanIf2BsServiceClassIndex.
             2. The classifier rules of the service flow are provisioned
                in wmanIf2BsClassifierRuleTable, where they refer to SF
                via wmanIf2BsSfId.

             The MAC addresses of SSs the service flow is created with
             are provisioned in wmanIf2BsSsProvisionedForSfTable, where
             they refer to SF via wmanIf2BsSfId."
        REFERENCE
            "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
        ::= { wmanIf2BsPacketCs 1 }

wmanIf2BsProvisionedSfEntry OBJECT-TYPE
        SYNTAX      WmanIf2BsProvisionedSfEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides one row for each service flow
             provisioned by NMS. The table is indexed by ifIndex and
             wmanIf2BsSfId. ifIndex is associated with the BS sector."
        INDEX { ifIndex, wmanIf2BsSfId }
        ::= { wmanIf2BsProvisionedSfTable 1 }

WmanIf2BsProvisionedSfEntry ::= SEQUENCE {
        wmanIf2BsSfId                       Unsigned32,
        wmanIf2BsSfDirection                INTEGER,
        wmanIf2BsServiceClassIndex          INTEGER,
        wmanIf2BsSfState                    WmanIf2SfState,
        wmanIf2BsSfProvisionedTime          TimeStamp,
        wmanIf2BsSfCsSpecification          WmanIf2CsSpecification,
        wmanIf2BsProvisionedSfRowStatus     RowStatus}


wmanIf2BsSsProvisionedForSfTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIf2BsSsProvisionedForSfEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table maps the MAC addresses of SSs to the service
             flows provisioned in wmanIf2BsProvisionedSfTable."
        REFERENCE
            "Subclause 6.3.14 in IEEE Std 802.16-2004"
        ::= { wmanIf2BsPacketCs 2 }

wmanIf2BsSsProvisionedForSfEntry OBJECT-TYPE
        SYNTAX      WmanIf2BsSsProvisionedForSfEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table is indexed by wmanIf2BsSsProvMacAddress and
             wmanIf2BsProvSfId."
        INDEX { wmanIf2BsSsProvMacAddress, wmanIf2BsProvSfId }
```

```
        ::= { wmanIf2BsSsProvisionedForSfTable 1 }

WmanIf2BsSsProvisionedForSfEntry ::= SEQUENCE {
        wmanIf2BsSsProvMacAddress               MacAddress,
        wmanIf2BsProvSfId                       Unsigned32,
        wmanIf2BsSsProvisionedForSfRowStatus    RowStatus}


wmanIf2BsServiceClassTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIf2BsServiceClassEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table is provisioned and is indexed by
             wmanIf2BsQoSProfileIndex. Each entry of the table contains
             corresponding service flow characteristic attributes
             (e.g. QoS parameter set). The value of
             wmanIf2BsQoSProfileIndex is obtained from
             wmanIf2BsServiceClassIndex in wmanIf2BsProvisionedSfTable"
        REFERENCE
            "Subclause 6.3.14.4 in IEEE Std 802.16-2004"
        ::= { wmanIf2BsPacketCs 3 }

wmanIf2BsServiceClassEntry OBJECT-TYPE
        SYNTAX      WmanIf2BsServiceClassEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides one row for each service class"
        INDEX { ifIndex, wmanIf2BsQoSProfileIndex }
        ::= { wmanIf2BsServiceClassTable 1 }

WmanIf2BsServiceClassEntry ::= SEQUENCE {
        wmanIf2BsQoSProfileIndex                INTEGER,
        wmanIf2BsQosServiceClassName            WmanIf2ServClassName,
        wmanIf2BsQoSTrafficPriority             INTEGER,
        wmanIf2BsQoSMaxSustainedRate            Unsigned32,
        wmanIf2BsQoSMaxTrafficBurst             Unsigned32,
        wmanIf2BsQoSMinReservedRate             Unsigned32,
        wmanIf2BsQoSToleratedJitter             Unsigned32,
        wmanIf2BsQoSMaxLatency                  Unsigned32,
        wmanIf2BsQoSFixedVsVariableSduInd       INTEGER,
        wmanIf2BsQoSSduSize                     Unsigned32,
        wmanIf2BsQosScSchedulingType            WmanIf2SfSchedulingType,
        wmanIf2BsQosScArqEnable                 TruthValue,
        wmanIf2BsQosScArqWindowSize             INTEGER,
        wmanIf2BsQosScArqBlockLifetime          INTEGER,
        wmanIf2BsQosScArqSyncLossTimeout        INTEGER,
        wmanIf2BsQosScArqDeliverInOrder         TruthValue,
        wmanIf2BsQosScArqRxPurgeTimeout         INTEGER,
        wmanIf2BsQosScArqBlockSize              INTEGER,
        wmanIf2BsQosSCMinRsvdTolerableRate      Unsigned32,
        wmanIf2BsQoSReqTxPolicy                 BITS,
        wmanIf2BsQoSServiceClassRowStatus       RowStatus}


wmanIf2BsClassifierRuleTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIf2BsClassifierRuleEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains packet classifier rules associated
             with service flows."
        REFERENCE
```

~~"Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"~~
~~::= { wmanIf2BsPacketCs 4 }~~

~~wmanIf2BsClassifierRuleEntry OBJECT-TYPE~~
~~SYNTAX WmanIf2BsClassifierRuleEntry~~
~~MAX-ACCESS not-accessible~~
~~STATUS current~~
~~DESCRIPTION~~
~~"This table provides one row for each packet classifier rule, and is indexed by ifIndex, wmanIf2BsSfId, and wmanIf2BsClassifierRuleIndex. IfIdex is associated with the BS sector. wmanIf2BsSfId identifies the service flow, while wmanIf2BsClassifierRuleIndex identifies the packet classifier rule."~~
~~INDEX { ifIndex, wmanIf2BsSfId, wmanIf2BsClassifierRuleIndex }~~
~~::= { wmanIf2BsClassifierRuleTable 1 }~~

~~WmanIf2BsClassifierRuleEntry::= SEQUENCE {~~
~~wmanIf2BsClassifierRuleIndex Unsigned32,~~
~~wmanIf2BsClassifierRulePriority INTEGER,~~
~~wmanIf2BsClassifierRuleIpTosLow INTEGER,~~
~~wmanIf2BsClassifierRuleIpTosHigh INTEGER,~~
~~wmanIf2BsClassifierRuleIpTosMask INTEGER,~~
~~wmanIf2BsClassifierRuleIpProtocol Integer32,~~
~~wmanIf2BsClassifierRuleIpSourceAddr InetAddress,~~
~~wmanIf2BsClassifierRuleIpSourceMask InetAddress,~~
~~wmanIf2BsClassifierRuleIpDestAddr InetAddress,~~
~~wmanIf2BsClassifierRuleIpDestMask InetAddress,~~
~~wmanIf2BsClassifierRuleSourcePortStart Integer32,~~
~~wmanIf2BsClassifierRuleSourcePortEnd Integer32,~~
~~wmanIf2BsClassifierRuleDestPortStart Integer32,~~
~~wmanIf2BsClassifierRuleDestPortEnd Integer32,~~
~~wmanIf2BsClassifierRuleDestMacAddr MacAddress,~~
~~wmanIf2BsClassifierRuleDestMacMask MacAddress,~~
~~wmanIf2BsClassifierRuleSourceMacAddr MacAddress,~~
~~wmanIf2BsClassifierRuleSourceMacMask MacAddress,~~
~~wmanIf2BsClassifierRuleEnetProtocolType INTEGER,~~
~~wmanIf2BsClassifierRuleEnetProtocol Integer32,~~
~~wmanIf2BsClassifierRuleUserPriLow Integer32,~~
~~wmanIf2BsClassifierRuleUserPriHigh Integer32,~~
~~wmanIf2BsClassifierRuleVlanId Integer32,~~
~~wmanIf2BsClassifierRulePhsSize Integer32,~~
~~wmanIf2BsClassifierRulePhsMask OCTET STRING,~~
~~wmanIf2BsClassifierRulePhsVerify WmanIf2PhsRuleVerify,~~
~~wmanIf2BsClassifierRuleIpv6FlowLabel WmanIf2Ipv6FlowLabel,~~
~~wmanIf2BsClassifierRuleBitMap WmanIf2ClassifierBitMap,~~
~~wmanIf2BsClassifierRuleRowStatus RowStatus}~~

[Add the following ASN.1 code:]

```
-- XXX
WmanIf2GlobalSrvClass ::= 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
WmanIf2SfDirection ::= TEXTUAL-CONVENTION
        STATUS      current
        DESCRIPTION
```

```
            "The direction of a service flow"
        SYNTAX      INTEGER {downstream(1),
                             upstream(2)}

-- XXX
WmanIf2ReqTxPolicy ::= 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
wmanIf2BsServiceFlowTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF WmanIf2BsServiceFlowEntry
        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
             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'."
        REFERENCE
            "Subclause 6.3.14 in IEEE Std 802.16e-2005"
        ::= { wmanIf2BsPacketCs 1 }

wmanIf2BsServiceFlowEntry OBJECT-TYPE
```

```
        SYNTAX      WmanIf2BsServiceFlowEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table provides one row for each service flow. The
             table is indexed by ifIndex, wmanIf2BsSsMacAddress and
             wmanIf2BsSsSfId. ifIndex is associated with the BS sector.
             It supports both unicast and multicast service flows:
             Unicast - a SS (wmanIf2BsSsMacAddress) may contain
                       multiple service flows (wmanIf2BsSsSfId)
             Multicast - a service flow (wmanIf2BsSsSfId) may be
                         Multicast to multiple SS
                        (wmanIf2BsSsMacAddress)"
        INDEX { ifIndex, wmanIf2BsSsMacAddress, wmanIf2BsSsSfId }
        ::= { wmanIf2BsServiceFlowTable 1 }

WmanIf2BsServiceFlowEntry ::= SEQUENCE {
        wmanIf2BsSsMacAddress                   MacAddress,
        wmanIf2BsSsSfId                         Unsigned32,
        wmanIf2BsServiceFlowDirection           WmanIf2SfDirection,
        wmanIf2BsProvisionedGlobalServiceClass  WmanIf2GlobalSrvClass,
        wmanIf2BsAdmittedGlobalServiceClass     WmanIf2GlobalSrvClass,
        wmanIf2BsActiveGlobalServiceClass       WmanIf2GlobalSrvClass,
        wmanIf2BsProvisionedQoSProfileIndex     INTEGER,
        wmanIf2BsAdmittedQoSProfileIndex        INTEGER,
        wmanIf2BsActiveQoSProfileIndex          INTEGER,
        wmanIf2BsClassifierRuleIndex            Unsigned32,
        wmanIf2BsPhsRuleIndex                   INTEGER,
        wmanIf2BsArqAttributeIndex              INTEGER,
        wmanIf2BsServiceFlowState               WmanIf2SfState,
        wmanIf2BsCid                            WmanIf2CidType,
        wmanIf2BsSfCsSpecification              WmanIf2CsSpecification,
        wmanIf2BsSfMinTolerableTrafficRate      Unsigned32,
        wmanIf2BsSfReqTxPolicy                  WmanIf2ReqTxPolicy,
        wmanIf2BsSfTargetSaid                   INTEGER,
        wmanIf2BsSfEstablishTime                TimeStamp,
        wmanIf2BsSfTerminateTime                TimeStamp}

wmanIf2BsSsMacAddress OBJECT-TYPE
        SYNTAX      MacAddress
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The MAC address of the SS that the service flow is
             associated with."
        ::= { wmanIf2BsServiceFlowEntry 1 }

wmanIf2BsSsSfId OBJECT-TYPE
        SYNTAX      Unsigned32 (1 .. 4294967295)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A 32 bit quantity that uniquely identifies a service flow."
        ::= { wmanIf2BsServiceFlowEntry 2 }

wmanIf2BsServiceFlowDirection OBJECT-TYPE
        SYNTAX      WmanIf2SfDirection
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "An attribute indicating the direction of a service flow."
        ::= { wmanIf2BsServiceFlowEntry 3 }

wmanIf2BsProvisionedGlobalServiceClass OBJECT-TYPE
```

```
            SYNTAX      WmanIf2GlobalSrvClass
            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
                 wmanIf2BsProvisionedQoSProfileIndex."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2BsServiceFlowEntry 4 }

    wmanIf2BsAdmittedGlobalServiceClass OBJECT-TYPE
            SYNTAX      WmanIf2GlobalSrvClass
            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
                 wmanIf2BsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                 a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2BsServiceFlowEntry 5 }

    wmanIf2BsActiveGlobalServiceClass OBJECT-TYPE
            SYNTAX      WmanIf2GlobalSrvClass
            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 wmanIf2BsActiveQoSProfileIndex.
                 ActiveQoSParamSet is a subset of AdmittededQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2BsServiceFlowEntry 6 }

    wmanIf2BsProvisionedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2CmnQoSProfileTable
                 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 wmanIf2BsProvisionedQoSProfileIndex."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2BsServiceFlowEntry 7 }

    wmanIf2BsAdmittedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2CmnQoSProfileTable
```

```
                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
                wmanIf2BsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2BsServiceFlowEntry 8 }

    wmanIf2BsActiveQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2CmnQoSProfileTable
                 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
                 wmanIf2BsActiveQoSProfileIndex. ActiveQoSParamSet is a
                 subset of AdmittedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2BsServiceFlowEntry 9 }

    wmanIf2BsClassifierRuleIndex OBJECT-TYPE
            SYNTAX      Unsigned32 (1 .. 4294967295)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in
                 wmanIf2CmnClassifierRuleTable 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"
            ::= { wmanIf2BsServiceFlowEntry 10 }

    wmanIf2BsPhsRuleIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 255)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2CmnPhsRuleTable
                 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"
            ::= { wmanIf2BsServiceFlowEntry 11 }

    wmanIf2BsArqAttributeIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in
                 wmanIf2CmnCpsArqAttributeTable 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"
            ::= { wmanIf2BsServiceFlowEntry 12 }

    wmanIf2BsServiceFlowState OBJECT-TYPE
            SYNTAX      WmanIf2SfState
            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"
            ::= { wmanIf2BsServiceFlowEntry 13 }

    wmanIf2BsCid OBJECT-TYPE
            SYNTAX      WmanIf2CidType
            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."
            ::= { wmanIf2BsServiceFlowEntry 14 }

    wmanIf2BsSfCsSpecification OBJECT-TYPE
            SYNTAX      WmanIf2CsSpecification
            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"
            ::= { wmanIf2BsServiceFlowEntry 15 }

    wmanIf2BsSfMinTolerableTrafficRate 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"
            ::= { wmanIf2BsServiceFlowEntry 16 }

    wmanIf2BsSfReqTxPolicy OBJECT-TYPE
            SYNTAX      WmanIf2ReqTxPolicy
            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"
            ::= { wmanIf2BsServiceFlowEntry 17 }

    wmanIf2BsSfTargetSaid 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"
            ::= { wmanIf2BsServiceFlowEntry 18 }

    wmanIf2BsSfEstablishTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 established that means wmanIf2BsServiceFlowState is
                 either in 'provisioned', 'admitted', or 'active'
                 state."
            ::= { wmanIf2BsServiceFlowEntry 19 }

    wmanIf2BsSfTerminateTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 terminated that means wmanIf2BsServiceFlowState is
                 in 'inactive' state."
            ::= { wmanIf2BsServiceFlowEntry 20 }
```

2.4 wmanIf2SsServiceFlowTable ASN.1 Code Change

13.2 ASN.1 Definitions of MIB Modules

13.2.4 wmanIf2Mib

[Add the following ASN.1 code:]

```
    -- wmanIf2SsPacketCs contain the Subscriber Station Packet Convergence
    -- Sublayer objects
    --
    wmanIf2SsPacketCs OBJECT IDENTIFIER ::= { wmanIf2SsObjects 1 }

    -- XXX
    wmanIf2SsServiceFlowTable OBJECT-TYPE
            SYNTAX      SEQUENCE OF WmanIf2SsServiceFlowEntry
            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"
            ::= { wmanIf2SsPacketCs 1 }

    wmanIf2SsServiceFlowEntry OBJECT-TYPE
            SYNTAX      WmanIf2SsServiceFlowEntry
            MAX-ACCESS  not-accessible
            STATUS      current
            DESCRIPTION
                "This table provides one row for each service flow. The
                table is indexed by ifIndex, and wmanIf2SsSfId. ifIndex is
                associated with the BS sector."
            INDEX { ifIndex, wmanIf2SsSfId }
            ::= { wmanIf2SsServiceFlowTable 1 }

    WmanIf2SsServiceFlowEntry ::= SEQUENCE {
            wmanIf2SsSfId                           Unsigned32,
            wmanIf2SsServiceFlowDirection           WmanIf2SfDirection,
            wmanIf2SsProvisionedGlobalServiceClass  WmanIf2GlobalSrvClass,
            wmanIf2SsAdmittedGlobalServiceClass     WmanIf2GlobalSrvClass,
            wmanIf2SsActiveGlobalServiceClass       WmanIf2GlobalSrvClass,
            wmanIf2SsProvisionedQoSProfileIndex     INTEGER,
            wmanIf2SsAdmittedQoSProfileIndex        INTEGER,
            wmanIf2SsActiveQoSProfileIndex          INTEGER,
            wmanIf2SsClassifierRuleIndex            Unsigned32,
            wmanIf2SsPhsRuleIndex                   INTEGER,
            wmanIf2SsArqAttributeIndex              INTEGER,
            wmanIf2SsServiceFlowState               WmanIf2SfState,
            wmanIf2SsSfCsSpecification              WmanIf2CsSpecification,
            wmanIf2SsSfMinTolerableTrafficRate      Unsigned32,
            wmanIf2SsSfReqTxPolicy                  WmanIf2ReqTxPolicy,
            wmanIf2SsSfTargetSaid                   INTEGER,
            wmanIf2SsSfEstablishTime                TimeStamp,
            wmanIf2SsSfTerminateTime                TimeStamp}

    wmanIf2SsSfId OBJECT-TYPE
            SYNTAX      Unsigned32 (1 .. 4294967295)
            MAX-ACCESS  not-accessible
            STATUS      current
            DESCRIPTION
                "A 32 bit quantity that uniquely identifies a service flow."
            ::= { wmanIf2SsServiceFlowEntry 1 }

    wmanIf2SsServiceFlowDirection OBJECT-TYPE
            SYNTAX      WmanIf2SfDirection
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "An attribute indicating the direction of a service flow."
            ::= { wmanIf2SsServiceFlowEntry 2 }

    wmanIf2SsProvisionedGlobalServiceClass OBJECT-TYPE
            SYNTAX      WmanIf2GlobalSrvClass
            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
                wmanIf2SsProvisionedQoSProfileIndex."
            REFERENCE
```

```
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2SsServiceFlowEntry 3 }

    wmanIf2SsAdmittedGlobalServiceClass OBJECT-TYPE
            SYNTAX      WmanIf2GlobalSrvClass
            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
                 wmanIf2SsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                 a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2SsServiceFlowEntry 4 }

    wmanIf2SsActiveGlobalServiceClass OBJECT-TYPE
            SYNTAX      WmanIf2GlobalSrvClass
            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 wmanIf2SsActiveQoSProfileIndex.
                 ActiveQoSParamSet is a subset of AdmittededQoSParamSet."
            REFERENCE
                "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
            ::= { wmanIf2SsServiceFlowEntry 5 }

    wmanIf2SsProvisionedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2CmnQoSProfileTable
                 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 wmanIf2SsProvisionedQoSProfileIndex."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2SsServiceFlowEntry 6 }

    wmanIf2SsAdmittedQoSProfileIndex OBJECT-TYPE
            SYNTAX      INTEGER (1 .. 65535)
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "This index points to an entry in wmanIf2CmnQoSProfileTable
                 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
                 wmanIf2SsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
                 a subset of ProvisionedQoSParamSet."
            REFERENCE
                "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
            ::= { wmanIf2SsServiceFlowEntry 7 }
```

```
1
2    wmanIf2SsActiveQoSProfileIndex OBJECT-TYPE
3            SYNTAX      INTEGER (1 .. 65535)
4            MAX-ACCESS  read-only
5            STATUS      current
6            DESCRIPTION
7                "This index points to an entry in wmanIf2CmnQoSProfileTable
8                 that defines the ActiveQoSParamSet of a service flow. If
9                 WmanIf2mSfState = 'active', then ActiveQoSParamSet is the
10                QoS profile for this service flow. When '0' is returned
11                from reading this object, it means the QoS profile either
12                is not defined, or is defined in
13                wmanIf2SsActiveQoSProfileIndex. ActiveQoSParamSet is a
14                subset of AdmittedQoSParamSet."
15           REFERENCE
16               "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
17           ::= { wmanIf2SsServiceFlowEntry 8 }
18
19   wmanIf2SsClassifierRuleIndex OBJECT-TYPE
20           SYNTAX      Unsigned32 (1 .. 4294967295)
21           MAX-ACCESS  read-only
22           STATUS      current
23           DESCRIPTION
24               "This index points to an entry in
25                wmanIf2CmnClassifierRuleTable that defines the
26                classification rules for a service flow. When '0' is
27                returned from reading this object, it means the
28                classification rules are not defined for this service
29                flow."
30           REFERENCE
31               "Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"
32           ::= { wmanIf2SsServiceFlowEntry 9 }
33
34   wmanIf2SsPhsRuleIndex OBJECT-TYPE
35           SYNTAX      INTEGER (1 .. 255)
36           MAX-ACCESS  read-only
37           STATUS      current
38           DESCRIPTION
39               "This index points to an entry in wmanIf2CmnPhsRuleTable
40                that defines the packet suppression rules for a service
41                flow. When '0' is returned from reading this object, it
42                means the PHS rules are not defined for this service
43                flow."
44           REFERENCE
45               "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
46           ::= { wmanIf2SsServiceFlowEntry 10 }
47
48   wmanIf2SsArqAttributeIndex OBJECT-TYPE
49           SYNTAX      INTEGER (1 .. 65535)
50           MAX-ACCESS  read-only
51           STATUS      current
52           DESCRIPTION
53               "This index points to an entry in
54                wmanIf2CmnCpsArqAttributeTable that defines the ARQ
55                attributes for a service flow. When '0' is returned from
56                reading this object, it means the ARQ attributes are not
57                defined for this service flow."
58           REFERENCE
59               "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
60           ::= { wmanIf2SsServiceFlowEntry 11 }
61
62   wmanIf2SsServiceFlowState OBJECT-TYPE
63           SYNTAX      WmanIf2SfState
64           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"
            ::= { wmanIf2SsServiceFlowEntry 12 }

    wmanIf2SsSfCsSpecification OBJECT-TYPE
            SYNTAX      WmanIf2CsSpecification
            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"
            ::= { wmanIf2SsServiceFlowEntry 13 }

    wmanIf2SsSfMinTolerableTrafficRate 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"
            ::= { wmanIf2SsServiceFlowEntry 14 }

    wmanIf2SsSfReqTxPolicy OBJECT-TYPE
            SYNTAX      WmanIf2ReqTxPolicy
            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"
            ::= { wmanIf2SsServiceFlowEntry 15 }

    wmanIf2SsSfTargetSaid 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"
            ::= { wmanIf2SsServiceFlowEntry 16 }

    wmanIf2SsSfEstablishTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
```

```
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 established that means wmanIf2BsServiceFlowState is
                 either in 'provisioned', 'admitted', or 'active'
                 state."
            ::= { wmanIf2SsServiceFlowEntry 17 }

    wmanIf2SsSfTerminateTime OBJECT-TYPE
            SYNTAX      TimeStamp
            MAX-ACCESS  read-only
            STATUS      current
            DESCRIPTION
                "Indicates the date and time when the service flow is
                 terminated that means wmanIf2BsServiceFlowState is
                 in 'inactive' state."
            ::= { wmanIf2SsServiceFlowEntry 18 }
```