

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

1

2 1. Introduction

3 This contribution proposes the text and ASN.1 code in wmanlf2Mib to support service flow
4 management.

5 2. Proposed changes

6 2.1 wmanlf2BsPacketCs Change

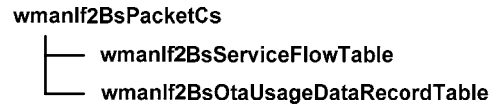
7 13.1.3.1 wmanlf2BsObjects

8 13.1.3.1.1 wmanlf2BsPacketCs

9 [Change Figure 3 as the following:]

10

11



12

13

14

Figure 3—wmanlf2BsPacketCs structure

15

16 [Change the following subclause as below:]

17 ~~13.1.3.1.1.1 wmanlf2BsProvisionedSfTable~~

18 ~~wmanlf2BsProvisionedSfTable contains provisioned service flow profiles for Ss, and pointers to~~
19 ~~wmanlf2BsServiceClassTable and wmanlf2BsClassifierRuleTable for QoS parameters and~~
20 ~~classifier rules respectively.~~

21 ~~13.1.3.1.1.2 wmanlf2BsProvisionedForSfTable~~

22 ~~wmanlf2BsProvisionedForSfTable maps the MAC addresses of Ss to the service flows~~
23 ~~provisioned in wmanlf2BsProvisionedSfTable. It enables downlink multicast services where MAC~~
24 ~~addresses of multiple Ss can be mapped to the same service flow.~~

25 ~~13.1.3.1.1.3 wmanlf2BsServiceClassTable~~

26 ~~Each entry of the wmanlf2BsServiceClassTable contains QoS parameter set, as defined in~~
27 ~~subclause 6.3.14 and 11.13 in IEEE 802.16-2004 standard.~~

28 ~~13.1.3.1.1.4 wmanlf2BsClassifierRuleTable~~

29 ~~wmanlf2BsClassifierRuleTable contains the packet classifier rules associated with service flows.~~

30 ~~13.1.3.1.1.5 wmanlf2BsSsPacketCounterTable~~

1 ~~wmanlf2BsSsPacketCounterTable~~ contains counters to keep track of the number of packets and
2 ~~octets that have been received or transmitted on the per service flow basis.~~

3 **13.1.3.1.1.1 wmanlf2BsServiceFlowTable**

4 wmanlf2BsServiceFlowTable contains the service flow database. When an SS first registers at the
5 BS, the BS should download the SS' service flow profile (e.g. QoS parameter set and classification
6 rules) from the home AAA server.

7 For fixed or normadic SS, its service flow profile will not be changed in the entire duration of the
8 session. For portable or mobile SS, when the SS handoffs to another BS, as part of the context
9 transfer, the serving BS should transfer service flow profile to the target BS. After the handoff, the
10 old serving BS shall change the wmanlf2BsServiceflowState of the service flows, previously used
11 by the SS to 'inactive'.

12 The BS may cleanup wmanlf2BsServiceFlowTable periodically, by removing those entries with
13 wmanlf2BsServiceflowState = 'inactive'.

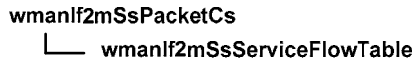
14 **2.2 wmanlf2SsObjects Change**

15 **13.1.3.2 wmanlf2SsObjects**

16 [\[Add a new subclause:\]](#)

17
18 **13.1.3.2.1 wmanlf2SsPacketCs**

19 Figure 8 shows the structure of wmanlf2SsPacketCs subtree that contains SS managed objects
20 related to the Packet CS management entity layer.



24
25
26 **Figure 8—wmanlf2SsPacketCs structure**

27
28 **13.1.3.2.1.1 wmanlf2SsServiceFlowTable**

29 wmanlf2SsServiceFlowTable contains the service flow database. BS creates the service flow after
30 has downloaded the SS' service flow profile (e.g. QoS parameter set and classification rules) from
31 the home AAA server.

32

33 **2.3 wmanlf2BsServiceFlowTable ASN.1 Code Change**

34 **13.2 ASN.1 Definitions of MIB Modules**

35 **13.2.2 wmanlf2Mib**

```

1  [Delete the following ASN.1 code:]
2
3  wmanIf2BsProvisionedSfTable OBJECT TYPE
4  ----- SYNTAX ----- SEQUENCE OF WmanIf2BsProvisionedSfEntry
5  ----- MAX ACCESS ----- not accessible
6  ----- STATUS ----- current
7  ----- DESCRIPTION
8  ----- "This table contains service flow profiles provisioned by
9  ----- NMS. The service flow should be created with SS(s)
10 ----- following instruction given by wmanIf2BsSfState object.
11 ----- 1. The QoS parameters of the service flow are provisioned
12 ----- in wmanIf2BsServiceClassTable and referenced by
13 ----- wmanIf2BsServiceClassIndex.
14 ----- 2. The classifier rules of the service flow are provisioned
15 ----- in wmanIf2BsClassifierRuleTable, where they refer to SF
16 ----- via wmanIf2BsSfId.
17
18 ----- The MAC addresses of SSs the service flow is created with
19 ----- are provisioned in wmanIf2BsSsProvisionedForSfTable, where
20 ----- they refer to SF via wmanIf2BsSfId."
21 ----- REFERENCE
22 ----- "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
23 ----- ::= { wmanIf2BsPacketCs 1 }
24
25 wmanIf2BsProvisionedSfEntry OBJECT TYPE
26 ----- SYNTAX ----- WmanIf2BsProvisionedSfEntry
27 ----- MAX ACCESS ----- not accessible
28 ----- STATUS ----- current
29 ----- DESCRIPTION
30 ----- "This table provides one row for each service flow
31 ----- provisioned by NMS. The table is indexed by ifIndex and
32 ----- wmanIf2BsSfId. ifIndex is associated with the BS sector."
33 ----- INDEX { ifIndex, wmanIf2BsSfId }
34 ----- ::= { wmanIf2BsProvisionedSfTable 1 }
35
36 WmanIf2BsProvisionedSfEntry ::= SEQUENCE {
37 ----- wmanIf2BsSfId ----- Unsigned32,
38 ----- wmanIf2BsSfDirection ----- INTEGER,
39 ----- wmanIf2BsServiceClassIndex ----- INTEGER,
40 ----- wmanIf2BsSfState ----- WmanIf2SfState,
41 ----- wmanIf2BsSfProvisionedTime ----- TimeStamp,
42 ----- wmanIf2BsSfCsSpecification ----- WmanIf2CsSpecification,
43 ----- wmanIf2BsProvisionedSfRowStatus ----- RowStatus}
44
45
46 wmanIf2BsSsProvisionedForSfTable OBJECT TYPE
47 ----- SYNTAX ----- SEQUENCE OF WmanIf2BsSsProvisionedForSfEntry
48 ----- MAX ACCESS ----- not accessible
49 ----- STATUS ----- current
50 ----- DESCRIPTION
51 ----- "This table maps the MAC addresses of SSs to the service
52 ----- flows provisioned in wmanIf2BsProvisionedSfTable."
53 ----- REFERENCE
54 ----- "Subclause 6.3.14 in IEEE Std 802.16-2004"
55 ----- ::= { wmanIf2BsPacketCs 2 }
56
57 wmanIf2BsSsProvisionedForSfEntry OBJECT TYPE
58 ----- SYNTAX ----- WmanIf2BsSsProvisionedForSfEntry
59 ----- MAX ACCESS ----- not accessible
60 ----- STATUS ----- current
61 ----- DESCRIPTION
62 ----- "This table is indexed by wmanIf2BsSsProvMacAddress and
63 ----- wmanIf2BsProvSfId."
64 ----- INDEX { wmanIf2BsSsProvMacAddress, wmanIf2BsProvSfId }

```

```

1  ----- ::= { wmanIf2BsSsProvisionedForSfTable 1 }
2
3  WmanIf2BsSsProvisionedForSfEntry ::= SEQUENCE {
4  ----- wmanIf2BsSsProvMacAddress ----- MacAddress,
5  ----- wmanIf2BsProvSfId ----- Unsigned32,
6  ----- wmanIf2BsSsProvisionedForSfRowStatus ----- RowStatus}
7
8
9  wmanIf2BsServiceClassTable OBJECT TYPE
10 ----- SYNTAX ----- SEQUENCE OF WmanIf2BsServiceClassEntry
11 ----- MAX ACCESS ----- not accessible
12 ----- STATUS ----- current
13 ----- DESCRIPTION
14 ----- "This table is provisioned and is indexed by
15 ----- wmanIf2BsQoSProfileIndex. Each entry of the table contains
16 ----- corresponding service flow characteristic attributes
17 ----- (e.g. QoS parameter set). The value of
18 ----- wmanIf2BsQoSProfileIndex is obtained from
19 ----- wmanIf2BsServiceClassIndex in wmanIf2BsProvisionedSfTable"
20 ----- REFERENCE
21 ----- "Subclause 6.3.14.4 in IEEE Std 802.16-2004"
22 ----- ::= { wmanIf2BsPacketCs 3 }
23
24  wmanIf2BsServiceClassEntry OBJECT TYPE
25 ----- SYNTAX ----- WmanIf2BsServiceClassEntry
26 ----- MAX ACCESS ----- not accessible
27 ----- STATUS ----- current
28 ----- DESCRIPTION
29 ----- "This table provides one row for each service class"
30 ----- INDEX { ifIndex, wmanIf2BsQoSProfileIndex }
31 ----- ::= { wmanIf2BsServiceClassTable 1 }
32
33  WmanIf2BsServiceClassEntry ::= SEQUENCE {
34  ----- wmanIf2BsQoSProfileIndex ----- INTEGER,
35  ----- wmanIf2BsQoSServiceClassName ----- WmanIf2ServClassName,
36  ----- wmanIf2BsQoSTrafficPriority ----- INTEGER,
37  ----- wmanIf2BsQoSMaxSustainedRate ----- Unsigned32,
38  ----- wmanIf2BsQoSMaxTrafficBurst ----- Unsigned32,
39  ----- wmanIf2BsQoSMinReservedRate ----- Unsigned32,
40  ----- wmanIf2BsQoSSToleratedJitter ----- Unsigned32,
41  ----- wmanIf2BsQoSMaxLatency ----- Unsigned32,
42  ----- wmanIf2BsQoSFixedVsVariableSduInd ----- INTEGER,
43  ----- wmanIf2BsQoSSSduSize ----- Unsigned32,
44  ----- wmanIf2BsQoSScSchedulingType ----- WmanIf2SfSchedulingType,
45  ----- wmanIf2BsQoSScArqEnable ----- TruthValue,
46  ----- wmanIf2BsQoSScArqWindowSize ----- INTEGER,
47  ----- wmanIf2BsQoSScArqBlockLifetime ----- INTEGER,
48  ----- wmanIf2BsQoSScArqSyncLossTimeout ----- INTEGER,
49  ----- wmanIf2BsQoSScArqDeliverInOrder ----- TruthValue,
50  ----- wmanIf2BsQoSScArqRxPurgeTimeout ----- INTEGER,
51  ----- wmanIf2BsQoSScArqBlockSize ----- INTEGER,
52  ----- wmanIf2BsQoSSCMinRsvdTolerableRate ----- Unsigned32,
53  ----- wmanIf2BsQoSReqTxPolicy ----- BITS,
54  ----- wmanIf2BsQoSServiceClassRowStatus ----- RowStatus}
55
56
57  wmanIf2BsClassifierRuleTable OBJECT TYPE
58 ----- SYNTAX ----- SEQUENCE OF WmanIf2BsClassifierRuleEntry
59 ----- MAX ACCESS ----- not accessible
60 ----- STATUS ----- current
61 ----- DESCRIPTION
62 ----- "This table contains packet classifier rules associated
63 ----- with service flows."
64 ----- REFERENCE

```

```

1  ----- "Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"
2  ----- ::= { wmanIf2BsPacketCs 4 }
3
4  wmanIf2BsClassifierRuleEntry OBJECT-TYPE
5  SYNTAX WmanIf2BsClassifierRuleEntry
6  MAX-ACCESS not-accessible
7  STATUS current
8  DESCRIPTION
9  "This table provides one row for each packet classifier
10 rule, and is indexed by ifIndex, wmanIf2BsSfId, and
11 wmanIf2BsClassifierRuleIndex. IfIndex is associated with
12 the BS sector. wmanIf2BsSfId identifies the service flow,
13 while wmanIf2BsClassifierRuleIndex identifies the packet
14 classifier rule."
15 INDEX { ifIndex, wmanIf2BsSfId, wmanIf2BsClassifierRuleIndex }
16  ::= { wmanIf2BsClassifierRuleTable 1 }
17
18 WmanIf2BsClassifierRuleEntry ::= SEQUENCE {
19   wmanIf2BsClassifierRuleIndex Unsigned32,
20   wmanIf2BsClassifierRulePriority INTEGER,
21   wmanIf2BsClassifierRuleIpTosLow INTEGER,
22   wmanIf2BsClassifierRuleIpTosHigh INTEGER,
23   wmanIf2BsClassifierRuleIpTosMask INTEGER,
24   wmanIf2BsClassifierRuleIpProtocol Integer32,
25   wmanIf2BsClassifierRuleIpSourceAddr InetAddress,
26   wmanIf2BsClassifierRuleIpSourceMask InetAddress,
27   wmanIf2BsClassifierRuleIpDestAddr InetAddress,
28   wmanIf2BsClassifierRuleIpDestMask InetAddress,
29   wmanIf2BsClassifierRuleSourcePortStart Integer32,
30   wmanIf2BsClassifierRuleSourcePortEnd Integer32,
31   wmanIf2BsClassifierRuleDestPortStart Integer32,
32   wmanIf2BsClassifierRuleDestPortEnd Integer32,
33   wmanIf2BsClassifierRuleDestMacAddr MacAddress,
34   wmanIf2BsClassifierRuleDestMacMask MacAddress,
35   wmanIf2BsClassifierRuleSourceMacAddr MacAddress,
36   wmanIf2BsClassifierRuleSourceMacMask MacAddress,
37   wmanIf2BsClassifierRuleEnetProtocolType INTEGER,
38   wmanIf2BsClassifierRuleEnetProtocol Integer32,
39   wmanIf2BsClassifierRuleUserPriLow Integer32,
40   wmanIf2BsClassifierRuleUserPriHigh Integer32,
41   wmanIf2BsClassifierRuleVlanId Integer32,
42   wmanIf2BsClassifierRulePhsSize Integer32,
43   wmanIf2BsClassifierRulePhsMask OCTET-STRING,
44   wmanIf2BsClassifierRulePhsVerify WmanIf2PhsRuleVerify,
45   wmanIf2BsClassifierRuleIpv6FlowLabel WmanIf2Ipv6FlowLabel,
46   wmanIf2BsClassifierRuleBitMap WmanIf2ClassifierBitMap,
47   wmanIf2BsClassifierRuleRowStatus RowStatus}

```

[Add the following ASN.1 code:]

```

50
51
52
53 -- XXX
54 WmanIf2GlobalSrvClass ::= TEXTUAL-CONVENTION
55     STATUS current
56     DESCRIPTION
57         "Global Service Class Name contains 8 information fields
58         that map to predefined QoS attributes as shown in
59         subclause 6.3.14.4.1.
60
61         bit#0:    Uplink/Downlink indicator
62                 0 - uplink
63                 1 - downlink
64         bit#1-6: Maximum sustained traffic rate in bps that is

```

1 defined in Table 124b
2 bit#7: 0 - no traffic indication
3 1 - traffic indication
4 bit#8-13: Maximum traffic burst defines the maximum burst
5 size that must be accommodated for the service.
6 bit#14-19: Minimum reserved traffic rate parameter
7 specifies the minimum rate, in bits per second,
8 reserved for this service flow.
9 bit#20-25: Maximum latency specifies the maximum interval
10 between the reception of a packet at CS of BS
11 or SS and the arrival of the packet to the peer
12 device.
13 bit#26: SDU indicator specifies whether the SDUs on the
14 service flow are fixed-length or variable-length.
15 0 - variable length
16 1 - fixed length
17 bit#27: Paging indicator of an MS preference for the
18 reception of paging advisory messages during
19 idle mode. When set, it indicates that the BS
20 may present paging advisory messages or other
21 indicative messages to the MS when data SDUs
22 bound for the MS are present while the MS is in
23 Idle Mode.
24 0 - no paging generation
25 1 - paging generation"

REFERENCE

27 "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"

28 SYNTAX BITS {ulDlIndicator(0),
29 maxSustainedRate0(1),
30 maxSustainedRate1(2),
31 maxSustainedRate2(3),
32 maxSustainedRate3(4),
33 maxSustainedRate4(5),
34 maxSustainedRate5(6),
35 trafficIndication(7),
36 maxTrafficBurst0(8),
37 maxTrafficBurst1(9),
38 maxTrafficBurst2(10),
39 maxTrafficBurst3(11),
40 maxTrafficBurst4(12),
41 maxTrafficBurst5(13),
42 minReservedRate0(14),
43 minReservedRate1(15),
44 minReservedRate2(16),
45 minReservedRate3(17),
46 minReservedRate4(18),
47 minReservedRate5(19),
48 maxLatency0(20),
49 maxLatency1(21),
50 maxLatency2(22),
51 maxLatency3(23),
52 maxLatency4(24),
53 maxLatency5(25),
54 sduIndicator(26),
55 pagingGeneration(27),
56 reserved0(28),
57 reserved1(29),
58 reserved2(30),
59 reserved3(31) }

60
61 -- XXX
62 WmanIf2SfDirection ::= TEXTUAL-CONVENTION
63 STATUS current
64 DESCRIPTION


```

1           "The direction of a service flow"
2     SYNTAX      INTEGER {downstream(1),
3                   upstream(2)}
4
5     -- XXX
6     WmanIf2ReqTxPolicy ::= TEXTUAL-CONVENTION
7       STATUS      current
8       DESCRIPTION
9         "Specify certain attributes for the associated service
10        flow. An attribute is enabled by setting the
11        corresponding bit position to 1.
12
13        bit#0: Service flow shall not use broadcast bandwidth
14               request opportunities. (Uplink only)
15        bit#1: reserved
16        bit#2: The service flow shall not piggyback requests with
17               data. (Uplink only)
18        bit#3: The service flow shall not fragment data.
19        bit#4: The service flow shall not suppress payload headers
20               (CS parameter)
21        bit#5: The service flow shall not pack multiple SDUs (or
22               fragments) into single MAC PDUs.
23        bit#6: The service flow shall not include CRC in the MAC
24               PDU."
25     REFERENCE
26       "Subclause 11.13.12 in IEEE Std 802.16-2004"
27     SYNTAX      BITS {noBroadcastBwReq(0),
28                       reserved1(1),
29                       noPiggybackReq(2),
30                       noFragmentData(3),
31                       noPHS(4),
32                       noSduPacking(5),
33                       noCrc(6),
34                       reserved2(7)}
35
36     -- XXX
37     wmanIf2BsServiceFlowTable OBJECT-TYPE
38       SYNTAX      SEQUENCE OF WmanIf2BsServiceFlowEntry
39       MAX-ACCESS  not-accessible
40       STATUS      current
41       DESCRIPTION
42         "This table contains the service flow database. When an SS
43         first registers at the BS, the BS should download the
44         SS' service flow profile (e.g. QoS parameter set and
45         classification rules) from the home AAA server.
46
47         For fixed or normadic SS, its service flow profile will
48         not be changed in the entire duration of the session.
49
50         For portable or mobile SS, when the SS handoffs to another
51         BS, as part of the context transfer, the serving BS should
52         transfer service flow profile to the target BS. After the
53         handoff, the old serving BS shall change the
54         wmanIf2BsServiceflowState of the service flows, previously
55         used by the SS to 'inactive'.
56
57         The BS may cleanup wmanIf2BsServiceFlowTable periodically,
58         by removing those entries with wmanIf2BsServiceflowState
59         = 'inactive'."
60     REFERENCE
61       "Subclause 6.3.14 in IEEE Std 802.16e-2005"
62     ::= { wmanIf2BsPacketCs 1 }
63
64     wmanIf2BsServiceFlowEntry OBJECT-TYPE

```

```

1      SYNTAX      WmanIf2BsServiceFlowEntry
2      MAX-ACCESS  not-accessible
3      STATUS      current
4      DESCRIPTION
5          "This table provides one row for each service flow. The
6          table is indexed by ifIndex, wmanIf2BsSsMacAddress and
7          wmanIf2BsSsSfId. ifIndex is associated with the BS sector.
8          It supports both unicast and multicast service flows:
9          Unicast - a SS (wmanIf2BsSsMacAddress) may contain
10             multiple service flows (wmanIf2BsSsSfId)
11          Multicast - a service flow (wmanIf2BsSsSfId) may be
12             Multicast to multiple SS
13             (wmanIf2BsSsMacAddress)"
14      INDEX { ifIndex, wmanIf2BsSsMacAddress, wmanIf2BsSsSfId }
15      ::= { wmanIf2BsServiceFlowTable 1 }
16
17      WmanIf2BsServiceFlowEntry ::= SEQUENCE {
18          wmanIf2BsSsMacAddress      MacAddress,
19          wmanIf2BsSsSfId            Unsigned32,
20          wmanIf2BsServiceFlowDirection WmanIf2SfDirection,
21          wmanIf2BsProvisionedGlobalServiceClass WmanIf2GlobalSrvClass,
22          wmanIf2BsAdmittedGlobalServiceClass WmanIf2GlobalSrvClass,
23          wmanIf2BsActiveGlobalServiceClass WmanIf2GlobalSrvClass,
24          wmanIf2BsProvisionedQoSProfileIndex INTEGER,
25          wmanIf2BsAdmittedQoSProfileIndex INTEGER,
26          wmanIf2BsActiveQoSProfileIndex INTEGER,
27          wmanIf2BsClassifierRuleIndex Unsigned32,
28          wmanIf2BsPhsRuleIndex INTEGER,
29          wmanIf2BsArgAttributeIndex INTEGER,
30          wmanIf2BsServiceFlowState WmanIf2SfState,
31          wmanIf2BsCid WmanIf2CidType,
32          wmanIf2BsSfCsSpecification WmanIf2CsSpecification,
33          wmanIf2BsSfMinTolerableTrafficRate Unsigned32,
34          wmanIf2BsSfReqTxPolicy WmanIf2ReqTxPolicy,
35          wmanIf2BsSfTargetSaid INTEGER,
36          wmanIf2BsSfEstablishTime TimeStamp,
37          wmanIf2BsSfTerminateTime TimeStamp}
38
39      wmanIf2BsSsMacAddress OBJECT-TYPE
40          SYNTAX      MacAddress
41          MAX-ACCESS  not-accessible
42          STATUS      current
43          DESCRIPTION
44              "The MAC address of the SS that the service flow is
45              associated with."
46          ::= { wmanIf2BsServiceFlowEntry 1 }
47
48      wmanIf2BsSsSfId OBJECT-TYPE
49          SYNTAX      Unsigned32 (1 .. 4294967295)
50          MAX-ACCESS  not-accessible
51          STATUS      current
52          DESCRIPTION
53              "A 32 bit quantity that uniquely identifies a service flow."
54          ::= { wmanIf2BsServiceFlowEntry 2 }
55
56      wmanIf2BsServiceFlowDirection OBJECT-TYPE
57          SYNTAX      WmanIf2SfDirection
58          MAX-ACCESS  read-only
59          STATUS      current
60          DESCRIPTION
61              "An attribute indicating the direction of a service flow."
62          ::= { wmanIf2BsServiceFlowEntry 3 }
63
64      wmanIf2BsProvisionedGlobalServiceClass OBJECT-TYPE

```

```

1      SYNTAX      WmanIf2GlobalSrvClass
2      MAX-ACCESS  read-only
3      STATUS      current
4      DESCRIPTION
5          "This object defines the ProvisionedQoSParamSet for this
6          service flow. When '0' is returned from reading this object
7          , it means either no global service class is defined, or
8          its Qos profile may be defined in
9          wmanIf2BsProvisionedQoSProfileIndex."
10     REFERENCE
11         "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
12     ::= { wmanIf2BsServiceFlowEntry 4 }
13
14     wmanIf2BsAdmittedGlobalServiceClass OBJECT-TYPE
15     SYNTAX      WmanIf2GlobalSrvClass
16     MAX-ACCESS  read-only
17     STATUS      current
18     DESCRIPTION
19         "This object defines the AdmittededQoSParamSet for this
20         service flow. When '0' is returned from reading this object
21         , it means either no global service class is defined, or
22         its Qos profile may be defined in
23         wmanIf2BsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
24         a subset of ProvisionedQoSParamSet."
25     REFERENCE
26         "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
27     ::= { wmanIf2BsServiceFlowEntry 5 }
28
29     wmanIf2BsActiveGlobalServiceClass OBJECT-TYPE
30     SYNTAX      WmanIf2GlobalSrvClass
31     MAX-ACCESS  read-only
32     STATUS      current
33     DESCRIPTION
34         "This object defines the ActiveQoSParamSet for this service
35         flow. When '0' is returned from reading this object, it
36         means either no global service class is defined, or its Qos
37         profile may be defined in wmanIf2BsActiveQoSProfileIndex.
38         ActiveQoSParamSet is a subset of AdmittededQoSParamSet."
39     REFERENCE
40         "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
41     ::= { wmanIf2BsServiceFlowEntry 6 }
42
43     wmanIf2BsProvisionedQoSProfileIndex OBJECT-TYPE
44     SYNTAX      INTEGER (1 .. 65535)
45     MAX-ACCESS  read-only
46     STATUS      current
47     DESCRIPTION
48         "This index points to an entry in wmanIf2CmnQoSProfileTable
49         that defines the ProvisionedQoSParamSet of a service flow.
50         If WmanIf2mSfState = 'provisioned', then
51         ProvisionedQoSParamSet is the QoS profile for this service
52         flow. When '0' is returned from reading this object, it
53         means the QoS profile either is not defined, or is defined
54         in wmanIf2BsProvisionedQoSProfileIndex."
55     REFERENCE
56         "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
57     ::= { wmanIf2BsServiceFlowEntry 7 }
58
59     wmanIf2BsAdmittedQoSProfileIndex OBJECT-TYPE
60     SYNTAX      INTEGER (1 .. 65535)
61     MAX-ACCESS  read-only
62     STATUS      current
63     DESCRIPTION
64         "This index points to an entry in wmanIf2CmnQoSProfileTable

```

```

1         that defines the AdmittedQoSParamSet of a service flow. If
2         WmanIf2mSfState = 'admitted', then AdmittedQoSParamSet is
3         the QoS profile for this service flow. When '0' is returned
4         from reading this object, it means the QoS profile either
5         is not defined, or is defined in
6         wmanIf2BsAdmittedQoSProfileIndex. AdmittedQoSParamSet is
7         a subset of ProvisionedQoSParamSet."
8     REFERENCE
9         "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
10    ::= { wmanIf2BsServiceFlowEntry 8 }
11
12    wmanIf2BsActiveQoSProfileIndex OBJECT-TYPE
13        SYNTAX      INTEGER (1 .. 65535)
14        MAX-ACCESS  read-only
15        STATUS      current
16        DESCRIPTION
17            "This index points to an entry in wmanIf2CmnQoSProfileTable
18            that defines the ActiveQoSParamSet of a service flow. If
19            WmanIf2mSfState = 'active', then ActiveQoSParamSet is the
20            QoS profile for this service flow. When '0' is returned
21            from reading this object, it means the QoS profile either
22            is not defined, or is defined in
23            wmanIf2BsActiveQoSProfileIndex. ActiveQoSParamSet is a
24            subset of AdmittedQoSParamSet."
25        REFERENCE
26            "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
27        ::= { wmanIf2BsServiceFlowEntry 9 }
28
29    wmanIf2BsClassifierRuleIndex OBJECT-TYPE
30        SYNTAX      Unsigned32 (1 .. 4294967295)
31        MAX-ACCESS  read-only
32        STATUS      current
33        DESCRIPTION
34            "This index points to an entry in
35            wmanIf2CmnClassifierRuleTable that defines the
36            classification rules for a service flow. When '0' is
37            returned from reading this object, it means the
38            classification rules are not defined for this service
39            flow."
40        REFERENCE
41            "Subclause 11.13.19.3.4 in IEEE Std 802.16-2004"
42        ::= { wmanIf2BsServiceFlowEntry 10 }
43
44    wmanIf2BsPhsRuleIndex OBJECT-TYPE
45        SYNTAX      INTEGER (1 .. 255)
46        MAX-ACCESS  read-only
47        STATUS      current
48        DESCRIPTION
49            "This index points to an entry in wmanIf2CmnPhsRuleTable
50            that defines the packet suppression rules for a service
51            flow. When '0' is returned from reading this object, it
52            means the PHS rules are not defined for this service
53            flow."
54        REFERENCE
55            "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
56        ::= { wmanIf2BsServiceFlowEntry 11 }
57
58    wmanIf2BsArqAttributeIndex OBJECT-TYPE
59        SYNTAX      INTEGER (1 .. 65535)
60        MAX-ACCESS  read-only
61        STATUS      current
62        DESCRIPTION
63            "This index points to an entry in
64            wmanIf2CmnCpsArqAttributeTable that defines the ARQ

```

```

1         attributes for a service flow. When '0' is returned from
2         reading this object, it means the ARQ attributes are not
3         defined for this service flow."
4     REFERENCE
5         "Subclause 11.13.19.3.5 in IEEE Std 802.16-2004"
6     ::= { wmanIf2BsServiceFlowEntry 12 }
7
8     wmanIf2BsServiceFlowState OBJECT-TYPE
9         SYNTAX      WmanIf2SfState
10        MAX-ACCESS  read-only
11        STATUS      current
12        DESCRIPTION
13            "wmanIf2SsServiceFlowState determines the state of a service
14             flow."
15        REFERENCE
16            "Subclause 6.3.14.6, in IEEE Std 802.16-2004"
17        ::= { wmanIf2BsServiceFlowEntry 13 }
18
19     wmanIf2BsCid OBJECT-TYPE
20        SYNTAX      WmanIf2CidType
21        MAX-ACCESS  read-only
22        STATUS      current
23        DESCRIPTION
24            "A 16 bit channel identifier points to the connection being
25             created by DSA for this service flow. When '0' is returned
26             from reading this object, it means no CID has been assigned
27             to this service flow yet."
28        ::= { wmanIf2BsServiceFlowEntry 14 }
29
30     wmanIf2BsSfCsSpecification OBJECT-TYPE
31        SYNTAX      WmanIf2CsSpecification
32        MAX-ACCESS  read-only
33        STATUS      current
34        DESCRIPTION
35            "This parameter specifies the convergence sublayer
36             encapsulation mode."
37        REFERENCE
38            "Subclause 11.13.19.1 in IEEE Std 802.16-2004"
39        ::= { wmanIf2BsServiceFlowEntry 15 }
40
41     wmanIf2BsSfMinTolerableTrafficRate OBJECT-TYPE
42        SYNTAX      Unsigned32
43        UNITS       "bps"
44        MAX-ACCESS  read-only
45        STATUS      current
46        DESCRIPTION
47            "Minimum Tolerable Traffic Rate = R (bits/sec) with
48             time base T(sec) means the following. Let S denote
49             additional demand accumulated at the MAC SAP of the
50             transmitter during an arbitrary time interval of the
51             length T. Then the amount of data forwarded at the
52             receiver to CS (in bits) during this interval should
53             be not less than min {S, R * T}."
54        REFERENCE
55            "Subclause 11.13.9 in IEEE Std 802.16-2004"
56        ::= { wmanIf2BsServiceFlowEntry 16 }
57
58     wmanIf2BsSfReqTxPolicy OBJECT-TYPE
59        SYNTAX      WmanIf2ReqTxPolicy
60        MAX-ACCESS  read-only
61        STATUS      current
62        DESCRIPTION
63            "The value of this parameter provides the capability to
64             specify certain attributes for the associated service

```

```

1         flow. An attribute is enabled by setting the
2         corresponding bit position to 1."
3     REFERENCE
4         "Subclause 11.13.12 in IEEE Std 802.16-2004"
5     ::= { wmanIf2BsServiceFlowEntry 17 }
6
7     wmanIf2BsSfTargetSaid OBJECT-TYPE
8     SYNTAX      INTEGER (0 .. 65535)
9     MAX-ACCESS  read-only
10    STATUS      current
11    DESCRIPTION
12        "The target SAID parameter indicates the SAID onto
13        which the service flow being set up shall be mapped."
14    REFERENCE
15        "Subclause 11.13.17 in IEEE Std 802.16-2004"
16    ::= { wmanIf2BsServiceFlowEntry 18 }
17
18    wmanIf2BsSfEstablishTime OBJECT-TYPE
19    SYNTAX      TimeStamp
20    MAX-ACCESS  read-only
21    STATUS      current
22    DESCRIPTION
23        "Indicates the date and time when the service flow is
24        established that means wmanIf2BsServiceFlowState is
25        either in 'provisioned', 'admitted', or 'active'
26        state."
27    ::= { wmanIf2BsServiceFlowEntry 19 }
28
29    wmanIf2BsSfTerminateTime OBJECT-TYPE
30    SYNTAX      TimeStamp
31    MAX-ACCESS  read-only
32    STATUS      current
33    DESCRIPTION
34        "Indicates the date and time when the service flow is
35        terminated that means wmanIf2BsServiceFlowState is
36        in 'inactive' state."
37    ::= { wmanIf2BsServiceFlowEntry 20 }
38
39

```

40 2.4 wmanIf2SsServiceFlowTable ASN.1 Code Change

41 13.2 ASN.1 Definitions of MIB Modules

42 13.2.4 wmanIf2Mib

```

43
44
45 \[Add the following ASN.1 code:\]
46
47 -- wmanIf2SsPacketCs contain the Subscriber Station Packet Convergence
48 -- Sublayer objects
49 --
50 wmanIf2SsPacketCs OBJECT IDENTIFIER ::= { wmanIf2SsObjects 1 }
51
52 -- XXX
53 wmanIf2SsServiceFlowTable OBJECT-TYPE
54 SYNTAX      SEQUENCE OF WmanIf2SsServiceFlowEntry
55 MAX-ACCESS  not-accessible
56 STATUS      current
57 DESCRIPTION
58     "This table contains the service flow database. BS creates
59     the service flow after has downloaded the SS' service flow

```

```

1         profile (e.g. QoS parameter set and classification rules)
2         from the home AAA server."
3     REFERENCE
4         "Subclause 6.3.14 in IEEE Std 802.16e-2005"
5     ::= { wmanIf2SsPacketCs 1 }
6
7     wmanIf2SsServiceFlowEntry OBJECT-TYPE
8         SYNTAX      WmanIf2SsServiceFlowEntry
9         MAX-ACCESS  not-accessible
10        STATUS      current
11        DESCRIPTION
12            "This table provides one row for each service flow. The
13            table is indexed by ifIndex, and wmanIf2SsSfId. ifIndex is
14            associated with the BS sector."
15        INDEX { ifIndex, wmanIf2SsSfId }
16        ::= { wmanIf2SsServiceFlowTable 1 }
17
18    WmanIf2SsServiceFlowEntry ::= SEQUENCE {
19        wmanIf2SsSfId                Unsigned32,
20        wmanIf2SsServiceFlowDirection WmanIf2SfDirection,
21        wmanIf2SsProvisionedGlobalServiceClass WmanIf2GlobalSrvClass,
22        wmanIf2SsAdmittedGlobalServiceClass WmanIf2GlobalSrvClass,
23        wmanIf2SsActiveGlobalServiceClass WmanIf2GlobalSrvClass,
24        wmanIf2SsProvisionedQoSProfileIndex INTEGER,
25        wmanIf2SsAdmittedQoSProfileIndex INTEGER,
26        wmanIf2SsActiveQoSProfileIndex INTEGER,
27        wmanIf2SsClassifierRuleIndex Unsigned32,
28        wmanIf2SsPhsRuleIndex INTEGER,
29        wmanIf2SsArgAttributeIndex INTEGER,
30        wmanIf2SsServiceFlowState WmanIf2SfState,
31        wmanIf2SsSfCsSpecification WmanIf2CsSpecification,
32        wmanIf2SsSfMinTolerableTrafficRate Unsigned32,
33        wmanIf2SsSfReqTxPolicy WmanIf2ReqTxPolicy,
34        wmanIf2SsSfTargetSaid INTEGER,
35        wmanIf2SsSfEstablishTime TimeStamp,
36        wmanIf2SsSfTerminateTime TimeStamp}
37
38    wmanIf2SsSfId OBJECT-TYPE
39        SYNTAX      Unsigned32 (1 .. 4294967295)
40        MAX-ACCESS  not-accessible
41        STATUS      current
42        DESCRIPTION
43            "A 32 bit quantity that uniquely identifies a service flow."
44        ::= { wmanIf2SsServiceFlowEntry 1 }
45
46    wmanIf2SsServiceFlowDirection OBJECT-TYPE
47        SYNTAX      WmanIf2SfDirection
48        MAX-ACCESS  read-only
49        STATUS      current
50        DESCRIPTION
51            "An attribute indicating the direction of a service flow."
52        ::= { wmanIf2SsServiceFlowEntry 2 }
53
54    wmanIf2SsProvisionedGlobalServiceClass OBJECT-TYPE
55        SYNTAX      WmanIf2GlobalSrvClass
56        MAX-ACCESS  read-only
57        STATUS      current
58        DESCRIPTION
59            "This object defines the ProvisionedQoSParamSet for this
60            service flow. When '0' is returned from reading this object
61            , it means either no global service class is defined, or
62            its Qos profile may be defined in
63            wmanIf2SsProvisionedQoSProfileIndex."
64        REFERENCE

```

```

1         "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
2         ::= { wmanIf2SsServiceFlowEntry 3 }
3
4 wmanIf2SsAdmittedGlobalServiceClass OBJECT-TYPE
5     SYNTAX      WmanIf2GlobalSrvClass
6     MAX-ACCESS  read-only
7     STATUS      current
8     DESCRIPTION
9         "This object defines the AdmittededQoSParamSet for this
10        service flow. When '0' is returned from reading this object
11        , it means either no global service class is defined, or
12        its Qos profile may be defined in
13        wmanIf2SsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
14        a subset of ProvisionedQoSParamSet."
15     REFERENCE
16         "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
17     ::= { wmanIf2SsServiceFlowEntry 4 }
18
19 wmanIf2SsActiveGlobalServiceClass OBJECT-TYPE
20     SYNTAX      WmanIf2GlobalSrvClass
21     MAX-ACCESS  read-only
22     STATUS      current
23     DESCRIPTION
24         "This object defines the ActiveQoSParamSet for this service
25        flow. When '0' is returned from reading this object, it
26        means either no global service class is defined, or its Qos
27        profile may be defined in wmanIf2SsActiveQoSProfileIndex.
28        ActiveQoSParamSet is a subset of AdmittededQoSParamSet."
29     REFERENCE
30         "Subclause 6.3.14.4.1 Table 124a in IEEE Std 802.16e-2005"
31     ::= { wmanIf2SsServiceFlowEntry 5 }
32
33 wmanIf2SsProvisionedQoSProfileIndex OBJECT-TYPE
34     SYNTAX      INTEGER (1 .. 65535)
35     MAX-ACCESS  read-only
36     STATUS      current
37     DESCRIPTION
38         "This index points to an entry in wmanIf2CmnQoSProfileTable
39        that defines the ProvisionedQoSParamSet of a service flow.
40        If WmanIf2mSfState = 'provisioned', then
41        ProvisionedQoSParamSet is the QoS profile for this service
42        flow. When '0' is returned from reading this object, it
43        means the QoS profile either is not defined, or is defined
44        in wmanIf2SsProvisionedQoSProfileIndex."
45     REFERENCE
46         "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
47     ::= { wmanIf2SsServiceFlowEntry 6 }
48
49 wmanIf2SsAdmittedQoSProfileIndex OBJECT-TYPE
50     SYNTAX      INTEGER (1 .. 65535)
51     MAX-ACCESS  read-only
52     STATUS      current
53     DESCRIPTION
54         "This index points to an entry in wmanIf2CmnQoSProfileTable
55        that defines the AdmittedQoSParamSet of a service flow. If
56        WmanIf2mSfState = 'admitted', then AdmittedQoSParamSet is
57        the QoS profile for this service flow. When '0' is returned
58        from reading this object, it means the QoS profile either
59        is not defined, or is defined in
60        wmanIf2SsAdmittedQoSProfileIndex. AdmittededQoSParamSet is
61        a subset of ProvisionedQoSParamSet."
62     REFERENCE
63         "Subclause 6.3.13 and 6.3.14 in IEEE Std 802.16-2004"
64     ::= { 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

```

```

1      STATUS      current
2      DESCRIPTION
3          "wmanIf2SsServiceFlowState determines the state of a service
4          flow."
5      REFERENCE
6          "Subclause 6.3.14.6, in IEEE Std 802.16-2004"
7      ::= { wmanIf2SsServiceFlowEntry 12 }
8
9      wmanIf2SsSfCsSpecification OBJECT-TYPE
10     SYNTAX      WmanIf2CsSpecification
11     MAX-ACCESS  read-only
12     STATUS      current
13     DESCRIPTION
14         "This parameter specifies the convergence sublayer
15         encapsulation mode."
16     REFERENCE
17         "Subclause 11.13.19.1 in IEEE Std 802.16-2004"
18     ::= { wmanIf2SsServiceFlowEntry 13 }
19
20     wmanIf2SsSfMinTolerableTrafficRate OBJECT-TYPE
21     SYNTAX      Unsigned32
22     UNITS       "bps"
23     MAX-ACCESS  read-only
24     STATUS      current
25     DESCRIPTION
26         "Minimum Tolerable Traffic Rate = R (bits/sec) with
27         time base T(sec) means the following. Let S denote
28         additional demand accumulated at the MAC SAP of the
29         transmitter during an arbitrary time interval of the
30         length T. Then the amount of data forwarded at the
31         receiver to CS (in bits) during this interval should
32         be not less than min {S, R * T}."
33     REFERENCE
34         "Subclause 11.13.9 in IEEE Std 802.16-2004"
35     ::= { wmanIf2SsServiceFlowEntry 14 }
36
37     wmanIf2SsSfReqTxPolicy OBJECT-TYPE
38     SYNTAX      WmanIf2ReqTxPolicy
39     MAX-ACCESS  read-only
40     STATUS      current
41     DESCRIPTION
42         "The value of this parameter provides the capability to
43         specify certain attributes for the associated service
44         flow. An attribute is enabled by setting the
45         corresponding bit position to 1."
46     REFERENCE
47         "Subclause 11.13.12 in IEEE Std 802.16-2004"
48     ::= { wmanIf2SsServiceFlowEntry 15 }
49
50     wmanIf2SsSfTargetSaid OBJECT-TYPE
51     SYNTAX      INTEGER (0 .. 65535)
52     MAX-ACCESS  read-only
53     STATUS      current
54     DESCRIPTION
55         "The target SAID parameter indicates the SAID onto
56         which the service flow being set up shall be mapped."
57     REFERENCE
58         "Subclause 11.13.17 in IEEE Std 802.16-2004"
59     ::= { wmanIf2SsServiceFlowEntry 16 }
60
61     wmanIf2SsSfEstablishTime OBJECT-TYPE
62     SYNTAX      TimeStamp
63     MAX-ACCESS  read-only
64     STATUS      current

```

```
1      DESCRIPTION
2          "Indicates the date and time when the service flow is
3          established that means wmanIf2BsServiceFlowState is
4          either in 'provisioned', 'admitted', or 'active'
5          state."
6      ::= { wmanIf2SsServiceFlowEntry 17 }
7
8  wmanIf2SsSfTerminateTime OBJECT-TYPE
9      SYNTAX      TimeStamp
10     MAX-ACCESS  read-only
11     STATUS      current
12     DESCRIPTION
13         "Indicates the date and time when the service flow is
14         terminated that means wmanIf2BsServiceFlowState is
15         in 'inactive' state."
16     ::= { wmanIf2SsServiceFlowEntry 18 }
17
18
19
20
21
22
23
24
25
26
```

