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Integrated Services Management Information Base using SMIv2

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing the the interface attributes defined in the Integrated Services Model. Comments should be made to the Integrated Services Working Group, int-serv@isi.edu.

Table of Contents

1. The SNMPv2 Network Management Framework

The SNMPv2 Network Management Framework consists of four major components. They are:

- RFC 1441 which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.
- STD 17, RFC 1213 defines MIB-II, the core set of managed objects for the Internet suite of protocols.
- RFC 1445 which defines the administrative and other architectural aspects of the framework.
- RFC 1448 which defines the protocol used for network access to managed objects.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

1.1. Object Definitions

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to refer to the object type.

2. Overview

2.1. Textual Conventions

Several new data types are introduced as a textual convention in this MIB document. These textual conventions enhance the readability of the specification and can ease comparison with other specifications if appropriate. It should be noted that the introduction of the these textual conventions has no effect on either the syntax nor the semantics of any managed objects. The use of these is merely an

artifact of the explanatory method used. Objects defined in terms of one of these methods are always encoded by means of the rules that define the primitive type. Hence, no changes to the SMI or the SNMP are necessary to accommodate these textual conventions which are adopted merely for the convenience of readers and writers in pursuit of the elusive goal of clear, concise, and unambiguous MIB documents.

2.2. Structure of MIB

The MIB is composed of the following sections:

```
     Integrated Services
          Interface Attributes Table
          Interface Flow Table
```

3. Definitions

```
INTEGRATED-SERVICES-MIB DEFINITIONS ::= BEGIN

    IMPORTS
            MODULE-IDENTITY, OBJECT-TYPE, Counter32,
            Gauge32, Integer32, mib-2               FROM SNMPv2-SMI
            TimeInterval, TEXTUAL-CONVENTION, RowStatus,
            TruthValue                              FROM SNMPv2-TC
            MODULE-COMPLIANCE, OBJECT-GROUP         FROM SNMPv2-CONF
            ifIndex, InterfaceIndex                 FROM IF-MIB;

--  This MIB module uses the extended OBJECT-TYPE macro as
--  defined in [9].

intSrv MODULE-IDENTITY
        LAST-UPDATED "9511030500Z" -- Thu Aug 28 09:04:13 PDT 1997
        ORGANIZATION "IETF Integrated Services Working Group"
        CONTACT-INFO
       "       Fred Baker
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               Santa Barbara, California 93111
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               Westford, Massachusetts 01886
       Tel:    +1 508 692 5875
       E-Mail: jjk@tiac.net"
    DESCRIPTION
       "The MIB module to describe the Integrated Services
```

```
       Protocol"
    ::= { mib-2 52 }

intSrvObjects          OBJECT IDENTIFIER ::= { intSrv 1 }
intSrvGenObjects       OBJECT IDENTIFIER ::= { intSrv 2 }
intSrvNotifications    OBJECT IDENTIFIER ::= { intSrv 3 }
intSrvConformance      OBJECT IDENTIFIER ::= { intSrv 4 }

-- Textual Conventions
--

    SessionNumber ::= TEXTUAL-CONVENTION
        STATUS   current
        DESCRIPTION
           "The Session  Number  convention  is  used  for
           numbers  identifying  sessions or saved PATH or
           RESV information. It is a number in  the  range
           returned  by  a TestAndIncr variable, having no
           protocol meaning whatsoever but serving instead
           as simple identifier.

           The alternative was a very complex instance  or
           instance object that became unwieldy."
       SYNTAX   INTEGER (0..2147483647)


    Protocol ::= TEXTUAL-CONVENTION
        DISPLAY-HINT "d"
        STATUS   current
        DESCRIPTION
           "The value of the IP Protocol field  of  an  IP
           Datagram  Header.  This identifies the protocol
           layer above IP.  For example, the  value  6  is
           used  for TCP and the value 17 is used for UDP.
           The values of this field are defined in the As-
           signed Numbers RFC."
       SYNTAX   INTEGER (1..255)


    SessionType ::= TEXTUAL-CONVENTION
        STATUS   current
        DESCRIPTION
           "The value of the C-Type field of a Session ob-
           ject,  as  defined  in  the RSVP specification.
           This value  determines  the  lengths  of  octet
           strings  and use of certain objects such as the
           'port' variables. If the C-Type  calls  for  an
           IP6  address, one would expect all source, des-
```

```
            tination, and next/previous hop addresses to be
            16  bytes long, and for the ports to be UDP/TCP
            port numbers, for example."
         SYNTAX   INTEGER (1..255)

    Port ::= TEXTUAL-CONVENTION
        DISPLAY-HINT "d"
        STATUS   current
        DESCRIPTION
            "The value of the UDP or TCP Source or Destina-
            tion  Port field, a virtual destination port or
            generalized port identifier used with the IPSEC
            Authentication Header or Encapsulating Security
            Payload, or other session discriminator.  If it
            is  not  used, the value should be of length 0.
            This pair, when coupled with the  IP  Addresses
            of the source and destination system and the IP
            protocol  field,  uniquely  identifies  a  data
            stream."
         SYNTAX   OCTET STRING (SIZE(2..4))


    MessageSize ::= TEXTUAL-CONVENTION
        DISPLAY-HINT "d"
        STATUS   current
        DESCRIPTION
            "The size of a message in bytes. This  is  used
            to  specify  the  minimum and maximum size of a
            message along an integrated services route."
         SYNTAX   INTEGER (0..'7FFFFFFF'h)


    BitRate ::= TEXTUAL-CONVENTION
        DISPLAY-HINT "d"
        STATUS   current
        DESCRIPTION
            "The rate, in bits/second, that data  may  move
            in  the context.  Applicable contexts minimally
            include the speed of an  interface  or  virtual
            circuit, the data rate of a (potentially aggre-
            gated) data flow, or the data rate to be  allo-
            cated for use by a flow."
         SYNTAX   INTEGER (0..'7FFFFFFF'h)

    BurstSize ::= TEXTUAL-CONVENTION
         DISPLAY-HINT "d"
         STATUS   current
         DESCRIPTION
```

```
            "The number of octets of IP Data, including  IP
            Headers, that a stream may send without concern
            for policing."
        SYNTAX   INTEGER (0..'7FFFFFFF'h)


    QosService ::= TEXTUAL-CONVENTION
         STATUS   current
         DESCRIPTION
           "The class of service in use by a flow."
        SYNTAX   INTEGER {
                   bestEffort (1),         -- Best Effort Service
                   guaranteedDelay (2),    -- Guaranteed Delay
                   controlledLoad (5)      -- Controlled Load
                 }

--      The Integrated Services Interface Attributes Database contains
--      information about resources allocated by resource reservation
--      protocols, such as RSVP and ST-II.


    intSrvIfAttribTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF IntSrvIfAttribEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "The reservable attributes of the system's  in-
           terfaces."
       ::= { intSrvObjects 1 }


    intSrvIfAttribEntry OBJECT-TYPE
        SYNTAX      IntSrvIfAttribEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "The reservable attributes of  a  given  inter-
           face."
       INDEX { ifIndex }
       ::= { intSrvIfAttribTable 1 }

IntSrvIfAttribEntry ::=
    SEQUENCE {
        intSrvIfAttribAllocatedBits     BitRate,
        intSrvIfAttribMaxAllocatedBits  BitRate,
        intSrvIfAttribAllocatedBuffer   BurstSize,
        intSrvIfAttribFlows             Gauge32,
        intSrvIfAttribPropagationDelay  Integer32,
```

```
        intSrvIfAttribStatus            RowStatus
    }

    intSrvIfAttribAllocatedBits OBJECT-TYPE
        SYNTAX      BitRate
        UNITS       "Bits per second"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
           "The number of bits/second currently  allocated
           to reserved sessions on the interface."
       ::= { intSrvIfAttribEntry 1 }

    intSrvIfAttribMaxAllocatedBits OBJECT-TYPE
        SYNTAX      BitRate
        UNITS       "Bits per second"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The maximum number of bits/second that may  be
           allocated  to  reserved  sessions on the inter-
           face."
       ::= { intSrvIfAttribEntry 2 }


    intSrvIfAttribAllocatedBuffer OBJECT-TYPE
        SYNTAX      BurstSize
        UNITS       "Bytes"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
           "The amount of buffer space  required  to  hold
           the simultaneous burst of all reserved flows on
           the interface."
       ::= { intSrvIfAttribEntry 3 }


    intSrvIfAttribFlows OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
           "The number of reserved flows currently  active
           on  this  interface.  A flow can be created ei-
           ther from a reservation protocol (such as  RSVP
           or ST-II) or via configuration information."
       ::= { intSrvIfAttribEntry 4 }
```

```
    intSrvIfAttribPropagationDelay OBJECT-TYPE
        SYNTAX      Integer32
        UNITS       "microseconds"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The amount of propagation delay that this  in-
           terface  introduces  in addition to that intro-
           diced by bit propagation delays."
       DEFVAL { 0 }-- by default, interfaces are presumed to add
                   -- no extra delays
       ::= { intSrvIfAttribEntry 5 }


    intSrvIfAttribStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "'active' on interfaces that are configured for
           RSVP."
       ::= { intSrvIfAttribEntry 6 }


--      The Integrated Services Active Flows Database
--      lists all flows active on an outgoing interface, including
--      relevant attributes.


    intSrvFlowTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF IntSrvFlowEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "Information describing the reserved flows  us-
           ing the system's interfaces."
       ::= { intSrvObjects 2 }


    intSrvFlowEntry OBJECT-TYPE
        SYNTAX      IntSrvFlowEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "Information describing the use of a given  in-
           terface   by   a   given   flow.   The  counter
           intSrvFlowPoliced starts counting  at  the  in-
           stallation of the flow."
```

```
       INDEX { intSrvFlowNumber }
       ::= { intSrvFlowTable 1 }


    IntSrvFlowEntry ::=
        SEQUENCE {
            intSrvFlowNumber                SessionNumber,
            intSrvFlowType                  SessionType,
            intSrvFlowOwner                 INTEGER,
            intSrvFlowDestAddr              OCTET STRING,
            intSrvFlowSenderAddr            OCTET STRING,
            intSrvFlowDestAddrLength        INTEGER,
            intSrvFlowSenderAddrLength      INTEGER,
            intSrvFlowProtocol              Protocol,
            intSrvFlowDestPort              Port,
            intSrvFlowPort                  Port,
            intSrvFlowFlowId                INTEGER,
            intSrvFlowInterface             InterfaceIndex,
            intSrvFlowIfAddr                OCTET STRING,
            intSrvFlowRate                  BitRate,
            intSrvFlowBurst                 BurstSize,
            intSrvFlowWeight                Integer32,
            intSrvFlowQueue                 Integer32,
            intSrvFlowMinTU                 MessageSize,
            intSrvFlowMaxTU                 MessageSize,
            intSrvFlowBestEffort            Counter32,
            intSrvFlowPoliced               Counter32,
            intSrvFlowDiscard               TruthValue,
            intSrvFlowService               QosService,
            intSrvFlowOrder                 INTEGER,
            intSrvFlowStatus                RowStatus
        }


    intSrvFlowNumber OBJECT-TYPE
        SYNTAX      SessionNumber
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "The number of this flow.  This is for SNMP In-
           dexing purposes only and has no relation to any
           protocol value."
       ::= { intSrvFlowEntry 1 }


    intSrvFlowType OBJECT-TYPE
        SYNTAX      SessionType
        MAX-ACCESS  read-create
```

```
        STATUS      current
        DESCRIPTION
           "The type of session (IP4, IP6, IP6  with  flow
           information, etc)."
       ::= { intSrvFlowEntry 2 }


    intSrvFlowOwner OBJECT-TYPE
        SYNTAX      INTEGER {
                         other(1),
                         rsvp(2),
                         management(3)
                    }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The process that installed this  flow  in  the
           queue policy database."
       ::= { intSrvFlowEntry 3 }


    intSrvFlowDestAddr OBJECT-TYPE
        SYNTAX      OCTET STRING (SIZE(4..16))
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The destination address used by all senders in
           this  session.   This object may not be changed
           when the value of the RowStatus object is  'ac-
           tive'."
       ::= { intSrvFlowEntry 4 }


    intSrvFlowSenderAddr OBJECT-TYPE
        SYNTAX      OCTET STRING (SIZE(4..16))
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The source address of the sender  selected  by
           this  reservation.  The value of all zeroes in-
           dicates 'all senders'.  This object may not  be
           changed  when the value of the RowStatus object
           is 'active'."
       ::= { intSrvFlowEntry 5 }


    intSrvFlowDestAddrLength OBJECT-TYPE
        SYNTAX      INTEGER(0..128)
```

```
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The length of the destination address in bits.
           This  is  the CIDR Prefix Length, which for IP4
           hosts and multicast addresses is 32 bits.  This
           object may not be changed when the value of the
           RowStatus object is 'active'."
       ::= { intSrvFlowEntry 6 }


    intSrvFlowSenderAddrLength OBJECT-TYPE
        SYNTAX      INTEGER(0..128)
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The length of the sender's  address  in  bits.
           This  is  the CIDR Prefix Length, which for IP4
           hosts and multicast addresses is 32 bits.  This
           object may not be changed when the value of the
           RowStatus object is 'active'."
               ::= { intSrvFlowEntry 7 }


    intSrvFlowProtocol OBJECT-TYPE
        SYNTAX      Protocol
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The IP Protocol used by a session.   This  ob-
           ject  may  not be changed when the value of the
           RowStatus object is 'active'."
       ::= { intSrvFlowEntry 8 }


    intSrvFlowDestPort OBJECT-TYPE
        SYNTAX      Port
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The UDP or TCP port number used as a  destina-
           tion  port for all senders in this session.  If
           the  IP   protocol   in   use,   specified   by
           intSrvResvFwdProtocol,  is 50 (ESP) or 51 (AH),
           this  represents  a  virtual  destination  port
           number.   A value of zero indicates that the IP
           protocol in use does not have ports.  This  ob-
           ject  may  not be changed when the value of the
```

```
            RowStatus object is 'active'."
        ::= { intSrvFlowEntry 9 }


    intSrvFlowPort OBJECT-TYPE
        SYNTAX      Port
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The UDP or TCP port number used  as  a  source
            port  for  this sender in this session.  If the
            IP    protocol    in    use,    specified    by
            intSrvResvFwdProtocol  is  50 (ESP) or 51 (AH),
            this represents a generalized  port  identifier
            (GPI).   A  value of zero indicates that the IP
            protocol in use does not have ports.  This  ob-
            ject  may  not be changed when the value of the
            RowStatus object is 'active'."
        ::= { intSrvFlowEntry 10 }


    intSrvFlowFlowId OBJECT-TYPE
        SYNTAX      INTEGER (0..16777215)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The flow ID that  this  sender  is  using,  if
            this  is  an IPv6 session."
        ::= { intSrvFlowEntry 11 }


    intSrvFlowInterface OBJECT-TYPE
        SYNTAX      InterfaceIndex
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The ifIndex value of the  interface  on  which
            this reservation exists."
        ::= { intSrvFlowEntry 12 }


    intSrvFlowIfAddr OBJECT-TYPE
        SYNTAX      OCTET STRING (SIZE(4..16))
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The IP Address on the ifEntry  on  which  this
            reservation  exists.  This is present primarily
```

```
            to support those interfaces which layer  multi-
            ple IP Addresses on the interface."
        ::= { intSrvFlowEntry 13 }


    intSrvFlowRate OBJECT-TYPE
        SYNTAX      BitRate
        UNITS       "bits per second"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The Reserved Rate of the sender's data stream.
            If this is a Controlled Load service flow, this
            rate is derived from the Tspec  rate  parameter
            (r).   If  this  is  a Guaranteed service flow,
            this rate is derived from  the  Rspec  clearing
            rate parameter (R)."
        ::= { intSrvFlowEntry 14 }


    intSrvFlowBurst OBJECT-TYPE
        SYNTAX      BurstSize
        UNITS       "bytes"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The size of the largest  burst  expected  from
            the sender at a time.

            If this is less than  the  sender's  advertised
            burst  size, the receiver is asking the network
            to provide flow pacing  beyond  what  would  be
            provided  under normal circumstances. Such pac-
            ing is at the network's option."
        ::= { intSrvFlowEntry 15 }


    intSrvFlowWeight OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
            "The weight used  to  prioritize  the  traffic.
            Note  that the interpretation of this object is
            implementation-specific,   as   implementations
            vary in their use of weighting procedures."
        ::= { intSrvFlowEntry 16 }
```

```
    intSrvFlowQueue OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The number of the queue used by this  traffic.
           Note  that the interpretation of this object is
           implementation-specific,   as   implementations
           vary in their use of queue identifiers."
       ::= { intSrvFlowEntry 17 }


    intSrvFlowMinTU OBJECT-TYPE
        SYNTAX      MessageSize
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The minimum message size for  this  flow.  The
           policing  algorithm will treat smaller messages
           as though they are this size."
       ::= { intSrvFlowEntry 18 }


    intSrvFlowMaxTU OBJECT-TYPE
        SYNTAX      MessageSize
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "The maximum datagram size for this  flow  that
           will conform to the traffic specification. This
           value cannot exceed the MTU of the interface."
       ::= { intSrvFlowEntry 19 }


    intSrvFlowBestEffort OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
           "The number of packets that  were  remanded  to
           best effort service."
       ::= { intSrvFlowEntry 20 }


    intSrvFlowPoliced OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
```

```
        DESCRIPTION
           "The number of packets policed since the incep-
           tion of the flow's service."
        ::= { intSrvFlowEntry 21 }


    intSrvFlowDiscard OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "If 'true', the flow  is  to  incur  loss  when
           traffic is policed.  If 'false', policed traff-
           ic is treated as best effort traffic."
       DEFVAL { false } -- traffic is, by default, treated as best
                        -- effort
       ::= { intSrvFlowEntry 22 }


    intSrvFlowService OBJECT-TYPE
        SYNTAX      QosService
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
           "The QoS service being applied to this flow."
       ::= { intSrvFlowEntry 23 }


    intSrvFlowOrder OBJECT-TYPE
        SYNTAX      INTEGER (0..65535)
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "In the event of ambiguity, the order in  which
           the  classifier  should  make  its comparisons.
           The row with intSrvFlowOrder=0 is tried  first,
           and  comparisons  proceed  in  the order of in-
           creasing value.  Non-serial implementations  of
           the classifier should emulate this behavior."
       ::= { intSrvFlowEntry 24 }


    intSrvFlowStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
           "'active' for all active  flows.   This  object
```

```
            may be used to install static classifier infor-
            mation, delete classifier information,  or  au-
            thorize such."
        ::= { intSrvFlowEntry 25 }


    intSrvFlowNewIndex OBJECT-TYPE
        SYNTAX      TestAndIncr
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "This  object  is  used  to  assign  values  to
            intSrvFlowNumber  as described in 'Textual Con-
            ventions  for  SNMPv2'.   The  network  manager
            reads  the  object,  and  then writes the value
            back in the SET that creates a new instance  of
            intSrvFlowEntry.   If  the  SET  fails with the
            code 'inconsistentValue', then the process must
            be  repeated; If the SET succeeds, then the ob-
            ject is incremented, and the  new  instance  is
            created according to the manager's directions."
        ::= { intSrvGenObjects 1 }


-- conformance information


intSrvGroups      OBJECT IDENTIFIER ::= { intSrvConformance 1 }
intSrvCompliances OBJECT IDENTIFIER ::= { intSrvConformance 2 }

-- compliance statements


    intSrvCompliance MODULE-COMPLIANCE
        STATUS  current
        DESCRIPTION
            "The compliance statement "
        MODULE  -- this module
        MANDATORY-GROUPS { intSrvIfAttribGroup, intSrvFlowsGroup }

        OBJECT       intSrvFlowType
          MIN-ACCESS read-only
          DESCRIPTION
           "read-create access is not required. This may be
           read-only."

       OBJECT       intSrvFlowOwner
         MIN-ACCESS read-only
```

```
        DESCRIPTION
         "read-create access is not required. This may  be
         read-only."

      OBJECT       intSrvFlowDestAddr
        MIN-ACCESS read-only
        DESCRIPTION
         "read-create access is not required. This  may  be
         read-only."

    OBJECT       intSrvFlowSenderAddr
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowDestAddrLength
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowSenderAddrLength
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowProtocol
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowDestPort
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowPort
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowFlowId
      MIN-ACCESS not-accessible
```

```
      DESCRIPTION
       "This object is needed only in a system that imple-
       ments IPv6."

    OBJECT       intSrvFlowInterface
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowRate
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowBurst
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowWeight
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowQueue
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowMinTU
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowMaxTU
      MIN-ACCESS read-only
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    OBJECT       intSrvFlowStatus
      MIN-ACCESS read-only
```

```
      DESCRIPTION
       "read-create access is not required.  This  may  be
       read-only."

    ::= { intSrvCompliances 1 }


    intSrvIfAttribGroup OBJECT-GROUP
         OBJECTS {
            intSrvIfAttribAllocatedBits, intSrvIfAttribMaxAllocatedBits,
            intSrvIfAttribAllocatedBuffer, intSrvIfAttribFlows,
            intSrvIfAttribPropagationDelay, intSrvIfAttribStatus
        }
        STATUS  current
        DESCRIPTION
           "These objects are required  for  Systems  sup-
           porting the Integrated Services Architecture."
       ::= { intSrvGroups 1 }

    intSrvFlowsGroup OBJECT-GROUP
         OBJECTS {
            intSrvFlowType, intSrvFlowOwner, intSrvFlowDestAddr,
            intSrvFlowSenderAddr, intSrvFlowDestAddrLength,
            intSrvFlowSenderAddrLength, intSrvFlowProtocol,
            intSrvFlowDestPort, intSrvFlowPort, intSrvFlowInterface,
            intSrvFlowBestEffort, intSrvFlowRate, intSrvFlowBurst,
            intSrvFlowWeight, intSrvFlowQueue, intSrvFlowMinTU,
            intSrvFlowDiscard, intSrvFlowPoliced, intSrvFlowService,
            intSrvFlowIfAddr, intSrvFlowOrder, intSrvFlowStatus
        }
        STATUS  current
        DESCRIPTION
           "These objects are required  for  Systems  sup-
           porting the Integrated Services Architecture."
       ::= { intSrvGroups 2 }

END
```

4. Security Considerations

The use of an SNMP SET results in an RSVP or Integrated Services reservation under rules that are different compared to if the reservation was negotiated using RSVP. However, no other security considerations exist other than those imposed by SNMP itself.

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7. References

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