           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.

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1. The SNMPv2 Network Management Framework

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

   o   RFC 1441 which defines the SMI, the mechanisms used for
         describing and naming objects for the purpose of
         management.

   o   STD 17, RFC 1213 defines MIB-II, the core set of managed
         objects for the Internet suite of protocols.

   o   RFC 1445 which defines the administrative and other
         architectural aspects of the framework.

   o   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
      Postal: Cisco Systems
              519 Lado Drive
              Santa Barbara, California 93111
      Tel: +1 805 681 0115
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              John Krawczyk
      Postal: ArrowPoint Communications
              235 Littleton Road
              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

   [1] Rose, M., Editor, "Management Information Base for Network
   Management of TCP/IP-based internets", STD 17, RFC 1213, May 1990.

   [2] Information processing systems - Open Systems
   Interconnection - Specification of Abstract Syntax
   Notation One (ASN.1), International Organization for
   Standardization. International Standard 8824, (December,

1987).

[3] Information processing systems - Open Systems
Interconnection - Specification of Basic Encoding Rules
for Abstract Notation One (ASN.1), International
Organization for Standardization. International Standard
8825, (December, 1987).