

Network Working Group
Request for Comments: 2213
Category: Standards Track

F. Baker
Cisco Systems
J. Krawczyk
ArrowPoint Communications
A. Sastry
Cisco Systems
September 1997

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	2
1.1 Object Definitions	2
2 Overview	2
2.1 Textual Conventions	2
2.2 Structure of MIB	3
3 Definitions	3
3.2 Interface Attributes Database	6
3.3 Integrated Services Interface Flows Database	8
4 Security Considerations	19
5 Authors' Addresses	20
6 Acknowledgements	20
7 References	20

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 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
    E-Mail: fred@cisco.com

           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-
```

mination, 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 Destination 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 aggregated) data flow, or the data rate to be allocated 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 interfaces."

::= { intSrvObjects 1 }

intSrvIfAttribEntry OBJECT-TYPE

SYNTAX IntSrvIfAttribEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The reservable attributes of a given interface."

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-
         duced 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 object 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 multiple 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 pacing 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 inception 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 traffic 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 increasing 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 information, delete classifier information, or authorize 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 Conventions 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 object 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 implements 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 supporting 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 supporting 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.

5. Authors' Addresses

Fred Baker
Postal: Cisco Systems
519 Lado Drive
Santa Barbara, California 93111

Phone: +1 805 681 0115
EMail: fred@cisco.com

John Krawczyk
Postal: ArrowPoint Communications
235 Littleton Road
Westford, Massachusetts 01886

Phone: +1 508 692 5875
EMail: jjk@tiac.net

Arun Sastry
Postal: Cisco Systems
210 W. Tasman Drive
San Jose, California 95314
Phone: +1 408 526 7685
EMail: arun@cisco.com

6. Acknowledgements

This document was produced by the Integrated Services Working Group.

The authors would like to thank the following people for providing feedback on this document:

Lou Berger, Fore Systems
Bob Braden, ISI
Viswanatha Rao, Compaq
John Wroclawski, MIT

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).

