

Management Information Base for IS-IS
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Abstract

This document describes a management information base for the IS-IS Routing protocol when it is used to construct routing tables for IP networks.

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community.

This memo is based on an IETF draft by Chris Gunner. This version has been modified to include MIB-II syntax, to exclude portions of the protocol that are not relevant to IP, such as the ES-IS protocol, and to add management support for current practice.

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[1.](#) The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [[RFC3410](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

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2. Overview

This document describes a management information base for the IS-IS Routing protocol as described in ISO 10589 [[ISO10589](#)], when it is used to construct routing tables for IP networks, as described in [RFC 1195](#) [[RFC1195](#)]. The objects are mainly derived from the GDMO definitions in ISO 10589 and from the GDMO definitions in ISO 10733 [[ISO10733](#)]. There are also additional objects to manage the IP-specific functionality of Integrated IS-IS operation.

This MIB imports definitions from SNMPv2-TC [[RFC2579](#)], SNMPv2-SMI [[RFC2578](#)], SNMPv2-CONF [[RFC2580](#)], SNMP-FRAMEWORK-MIB [[RFC3411](#)], DIFFSERV-MIB [[RFC3289](#)], IF-MIB [[RFC2863](#)], and INET-ADDRESS-MIB [[RFC4001](#)]. See the imports section of the MIB for the specific items imported.

This MIB defines some objects to manage Mesh Groups, described in [[RFC2973](#)] and a three-way handshake for point-to-point adjacencies described in [[RFC3373](#)].

The IS-IS MIB defines the following objects:

System-wide Attributes

- isisSystem

This table contains information specific to a single instance of the IS-IS protocol running on a router.

- isisManAreaAddr

This table includes area addresses manually configured which are used to control the associations formed between Level 1 Intermediate Systems.

- isisAreaAddr

This table includes area addresses reported in relevant L1 LSPs.

- isisSummAddr

This table holds summary addresses configured for each Level 2 instance of the IS-IS protocol running on a router.

- isisRedistributeAddr

This table provides criteria to decide if a route should be

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leaked from L2 to L1 when Domain Wide Prefix leaking is enabled.

- isisRouter

This table holds the hostname and router ID for Intermediate Systems in the network.

- isisSysLevel

This table contains information specific to a domain (Level 2) or an area (Level 1) of the IS-IS protocol.

- isisNextCircIndex

This scalar is used to provide a unique circuit index.

Circuit-specific Attributes

- isisCirc

This table contains information specific to a point-to-point or a broadcast interface in the system.

- isisCircLevel

This table contains information specific to a one Level 1 or Level 2 of an interface.

Counters

- isisSystemCounter

Counters in the System table, such as times we have wrapped a sequence counter on one of our Link State PDUs.

- isisCircuitCounter

Counters of events particular to a circuit, such as PDUs with an illegal value of the System ID field length.

- isisPacketCounter

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Counts of ISIS Protocol PDUs broken down into packet type.

Attributes associated with an Adjacency

- isisISAdj

This table contains information about adjacencies to routers maintained by the protocol. Entries in this table cannot be created by management action: they are established through the Hello protocol.

- isisISAdjAreaAddr

This table contains the set of Area Addresses of neighboring Intermediate Systems as reported in IIH PDUs.

- isisISAdjIPAddr

This table contains the set of IP Addresses of neighboring Intermediate Systems as reported in received IIH PDUs.

- isisISAdjProtSupp

This table contains the set of protocols supported by neighboring Intermediate Systems as reported in received IIH PDUs.

Attributes associated with addresses

- isisRA

The Reachable Address Table.

This table contains information about an address prefix manually configured on the system or learned through another protocol.

- isisIPRA

The IP Reachable Address Table.

This table contains information about IP reachable address manually configured on this system or learned from another protocol.

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Attributes associated with Link State PDU Table

- isisLSPSummaryTable

The Link State PDU Summary Table

This table contains information contained in the headers of Link State PDUs stored by the system.

- isisLSPTLVTable

The Link State PDU TLV Table

This table holds the sequence of TLVs that make up an LSP fragment.

Attributes associated with a Notification

- isisNotification

This table defines attributes that will be included when reporting IS-IS notifications.

3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL", when they appear in this document, are to be interpreted as described in [BCP 14](#), [RFC 2119](#) [[RFC2119](#)].

4. Definition of IS-IS MIB

```
ISIS-MIB DEFINITIONS ::= BEGIN
  IMPORTS
    TEXTUAL-CONVENTION, RowStatus, TruthValue, TimeStamp
      FROM SNMPv2-TC
      -- RFC2579
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
```

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Unsigned32, Counter32, mib-2
FROM SNMPv2-SMI -- [RFC2578](#)
MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
FROM SNMPv2-CONF -- [RFC2580](#)
SnmpAdminString
FROM SNMP-FRAMEWORK-MIB -- [RFC2571](#)
IndexInteger, IndexIntegerNextFree
FROM DIFFSERV-MIB -- [RFC3289](#)
InterfaceIndex
FROM IF-MIB -- [RFC2863](#)
InetAddressType, InetAddress, InetAddressPrefixLength
FROM INET-ADDRESS-MIB; -- [RFC3291](#)

isisMIB MODULE-IDENTITY

LAST-UPDATED "200512261200Z" -- December 26, 2005, noon
ORGANIZATION "IETF IS-IS for IP Internets Working Group"
CONTACT-INFO

"IS-IS for IP Internets working Group
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DESCRIPTION

"This document describes a management information base for the IS-IS Routing protocol, as described in ISO 10589, when it is used to construct routing tables for IP networks, as described in [RFC 1195](#).

This document is based on a 1994 IETF draft by Chris Gunner. This version has been modified to include current syntax, to exclude portions of the protocol that are not relevant to IP, and to add management support for current practice.

Copyright (C) The Internet Society (2005). This version of this MIB module is part of RFC 0DDD; see the RFC itself for full legal notices."

REVISION "200512261200Z" -- December 26, 2005, noon

DESCRIPTION

"Initial version, published as RFC 0DDD."

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```
 ::= { mib-2 XXX }

-- RFC Editor - please Replace with proper IANA Value

-- Top-level structure of the MIB

isisNotifications      OBJECT IDENTIFIER ::= { isisMIB 0 }
isisObjects            OBJECT IDENTIFIER ::= { isisMIB 1 }
isisConformance       OBJECT IDENTIFIER ::= { isisMIB 2 }

-- OBJECT IDENTIFIER definitions

-- System wide attributes.
isisSystem OBJECT IDENTIFIER ::= { isisObjects 1 }

-- Attributes associated with the domain or with the area.
isisSysLevel OBJECT IDENTIFIER ::= { isisObjects 2 }

-- Attributes associated with one Circuit
isisCirc OBJECT IDENTIFIER ::= { isisObjects 3 }

-- Attributes associated with area or domain relevant within a Circuit.
isisCircLevelValues OBJECT IDENTIFIER ::= { isisObjects 4 }

-- System and circuit counters.
isisCounters OBJECT IDENTIFIER ::= { isisObjects 5 }

-- Attributes associated with an adjacent Protocol Peer.
isisISAdj OBJECT IDENTIFIER ::= { isisObjects 6 }

-- Attributes associated with a configured address.
isisReachAddr OBJECT IDENTIFIER ::= { isisObjects 7 }

-- Attributes associated with IP routes learned by
-- configuration or through another protocol.
isisIPReachAddr OBJECT IDENTIFIER ::= { isisObjects 8 }

-- The collection of Link State PDUs known to the Intermediate System
isisLSPDataBase OBJECT IDENTIFIER ::= { isisObjects 9 }

-- Objects included in Notifications.
isisNotification OBJECT IDENTIFIER ::= { isisObjects 10 }

-- Type definitions

    IsisOSINSAddress ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
```

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"OSI Network Service Address, e.g. NSAP, SNPA, or Network Entity Title"
SYNTAX OCTET STRING (SIZE(0..20))

IsisSystemID ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
"The ID for an Intermediate System. This should be unique within a network, and is included in all PDUs originated by an Intermediate System. The protocol does not place any meanings upon the bits, other than using ordering to break ties in electing a Designated IS on a LAN."
REFERENCE "{ISIS.aoi systemId (119)}"
SYNTAX OCTET STRING (SIZE(6))

IsisLinkStatePDUID ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
"The 8 byte Link State PDU (LSP) ID, consisting of the 6 byte SystemID of the originating IS, a one byte PseudoNode ID which is 0 unless the LSP represents the topology of a LAN, and one byte LSP fragment number that are issued in sequence, starting with 0. Non zero PseudoNode IDs need to be unique to the IS, but need not match the IfIndex."
REFERENCE "{See [section 9.8](#) of ISO 10589}"
SYNTAX OCTET STRING (SIZE(8))

IsisAdminState ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
"Type used in enabling and disabling a row."
SYNTAX INTEGER
{
 on(1),
 off(2)
}

IsisLSPBuffSize ::= TEXTUAL-CONVENTION
DISPLAY-HINT "d"
STATUS current
DESCRIPTION
"Integer sub range for maximum LSP size."
SYNTAX Unsigned32 (512..16000)

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IsisLevelState ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"States of the IS-IS protocol."

SYNTAX INTEGER

```
{
    off (1),
    on (2),
    waiting (3),
    overloaded(4)
}
```

IsisSupportedProtocol ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Types of network protocol supported by Integrated IS-IS.
The values for ISO8473 and IP are those registered for
these protocols in ISO TR9577."

REFERENCE "{See [section 5.3.1 of RFC 1195](#)}"

SYNTAX INTEGER

```
{
    iso8473(129),
    ipv6(142),
    ip(204)
}
```

IsisDefaultMetric ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"Integer sub-range for default metric for single hop.
ISO 10589 provides for 4 types of metric. Only the
'default' metric is used in practice."

REFERENCE "{See [section 7.2.2 of ISO 10589](#)}"

SYNTAX Unsigned32 (0..63)

IsisWideMetric ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"Wide Metric for IS Neighbors. ISO 10589 provides a
6 bit metric. Traffic Engineering extensions provide
24 bit metrics."

REFERENCE "{See [section 3 of RFC 3784](#)}"

SYNTAX Unsigned32 (0..16777215)

IsisFullMetric ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

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```
STATUS current
DESCRIPTION
    "Full Metric for IP Routes.  Traffic Engineering extensions
    provide 32 bit metrics."
REFERENCE "{See section 4 of RFC 3784}"
SYNTAX Unsigned32
```

```
IsisMetricType ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
    "Is this an Internal or External Metric?"
REFERENCE "{See section 7.2.2 of ISO 10589}"
SYNTAX INTEGER
    {
        internal(1),
        external(2)
    }
```

```
IsisMetricStyle ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
    "Do we use RFC 1195 style metrics or wide metrics?"
REFERENCE "{See section 5 of RFC 3787}"
SYNTAX INTEGER
    {
        narrow(1),
        wide(2),
        both(3)
    }
```

```
IsisISLevel ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
    "Identifies a level."
REFERENCE "{See definitions 3.6.1 and 3.6.11 of ISO 10589}"
SYNTAX INTEGER
    {
        area(1),          -- L1
        domain(2)        -- L2
    }
```

```
IsisLevel ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
    "Identifies one or more levels."
REFERENCE "{See definitions 3.6.1 and 3.6.11 of ISO 10589}"
SYNTAX INTEGER
    {
```

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```
        level1(1),
        level2(2),
        level1and2(3)
    }
```

```
IsisPDUHeader ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "A block to contain the header from a PDU."
    SYNTAX OCTET STRING (SIZE(0..64))
```

```
IsisCircuitID ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "ID for a circuit."
    REFERENCE "{See section 7.2.7 of ISO 10589}"
    SYNTAX OCTET STRING (SIZE(0|7))
```

```
IsisISPriority ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS current
    DESCRIPTION
        "Integer sub-range for IS-IS priority."
    REFERENCE "{See section 9.5 of ISO 10589}"
    SYNTAX Unsigned32 (0..127)
```

```
IsisUnsigned16TC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS current
    DESCRIPTION
        "An Unsigned32 further restricted to 16 Bits. Note that
        the ASN.1 BER encoding may still require 24 Bits for
        some values."
    SYNTAX Unsigned32 (0..65535)
```

```
IsisUnsigned8TC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS current
    DESCRIPTION
        "An Unsigned32 further restricted to 8 Bits. Note that
        the ASN.1 BER encoding may still require 16 Bits for
        some values."
    SYNTAX Unsigned32 (0..255)
```

-- Behavior Definitions

-- ResettingTimer behavior definition

--

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```
-- "This behavior applies to objects that specify the interval
-- between events in the operation of the protocol state machine.
-- If the value of such an object is set to a new value while
-- the protocol state machine is in operation, the implementation
-- shall take the necessary steps to ensure that for any time
-- interval which was in progress when the value of the
-- corresponding object was changed, the next expiration of that
-- interval takes place the specified time after the original
-- start of that interval, or immediately, whichever is later.
-- The precision with which this time shall be implemented shall
-- be the same as that associated with the basic operation of
-- the timer object."
```

```
-- ReplaceOnlyWhileDisabled behavior definition
-- "This behavior applies to objects that may not be modified
-- while the corresponding table row's variable of type
-- IsisAdminState is in state on."
```

```
-- ManualOrAutomatic behavior definition
-- "This behavior applies to objects that are read-write
-- if the object was created manually. Objects that were
-- created automatically that have this behavior are
-- read-only.
```

```
isisSysObject OBJECT IDENTIFIER ::= { isisSystem 1 }
```

```
isisSysVersion OBJECT-TYPE
```

```
SYNTAX INTEGER
```

```
{
    unknown(0),
    one(1)
}
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The version number of the IS-IS protocol that
is implemented."
```

```
REFERENCE "{ISIS.aoi version (1)}"
```

```
DEFVAL { one }
```

```
::= { isisSysObject 1 }
```

```
isisSysLevelType OBJECT-TYPE
```

```
SYNTAX IsisLevel
```

```
MAX-ACCESS read-write
```

```
STATUS current
```

```
DESCRIPTION
```

```
"At which levels is the Intermediate System
running? This object may not be modified when
```

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the isisSysAdminState variable is in state 'on'
for this Intermediate System.

Configured values MUST survive an agent reboot."
REFERENCE "{ISIS.aoi iSType (2)}"
DEFVAL { level1and2 }
::= { isisSysObject 2 }

isisSysID OBJECT-TYPE

SYNTAX IsisSystemID
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The ID for this Intermediate System.
This value is appended to each of the
area addresses to form the Network Entity Titles.
The derivation of a value for this object is
implementation-specific. Some implementations may
automatically assign values and not permit an
SNMP write, while others may require the value
to be set manually.

Configured values MUST survive an agent reboot."
REFERENCE "{ISIS.aoi systemId (119)}"
::= { isisSysObject 3 }

isisSysMaxPathSplits OBJECT-TYPE

SYNTAX Unsigned32 (1..32)
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"Maximum number of paths with equal routing metric value
which it is permitted to split between. This object
may not be modified when the isisSysAdminState variable
is in state 'on' for this Intermediate System.

Configured values MUST survive an agent reboot."
REFERENCE "{ISIS.aoi maximumPathSplits (3)}"
DEFVAL { 2 }
::= { isisSysObject 4 }

isisSysMaxLSPGenInt OBJECT-TYPE

SYNTAX Unsigned32 (1..65235)
UNITS "seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"Maximum interval, in seconds, between generated LSPs

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by this Intermediate System. This object follows the ResettingTimer behavior. The value must be greater than any value configured for isisSysLevelMinLSPGenInt, and should be at least 300 seconds less than isisSysMaxAge.

Configured values MUST survive an agent reboot."

REFERENCE "{ISIS.aoi maximumLSPGenerationInterval (6)}"

DEFVAL { 900 }

::= { isisSysObject 5 }

isisSysPolleSHelloRate OBJECT-TYPE

SYNTAX IsisUnsigned16TC (1..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The value, in seconds, to be used for the suggested ES configuration timer in ISH PDUs when soliciting the ES configuration.

Configured values MUST survive an agent reboot."

REFERENCE "{ISIS.aoi polleSHelloRate (13)}"

DEFVAL { 50 }

::= { isisSysObject 6 }

isisSysWaitTime OBJECT-TYPE

SYNTAX IsisUnsigned16TC (1..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Number of seconds to delay in state 'waiting' before entering the state 'on'. This object follows the ResettingTimer behavior.

Configured values MUST survive an agent reboot."

REFERENCE "{ISIS.aoi waitingTime (15)}"

DEFVAL { 60 }

::= { isisSysObject 7 }

isisSysAdminState OBJECT-TYPE

SYNTAX IsisAdminState

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The administrative state of this Intermediate System. Setting this object to the value 'on'

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when its current value is 'off' enables
the Intermediate System.

Configured values MUST survive an agent reboot."

```
DEFVAL { off }  
 ::= { isisSysObject 8 }
```

isisSysL2toL1Leaking OBJECT-TYPE

```
SYNTAX TruthValue  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION
```

"If true, allow the router to leak L2 routes into L1.

Configured values MUST survive an agent reboot."

```
DEFVAL { false }  
 ::= { isisSysObject 9 }
```

isisSysMaxAge OBJECT-TYPE

```
SYNTAX IsisUnsigned16TC (350..65535)  
UNITS "seconds"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION
```

"Value to place in RemainingLifeTime field of
the LSPs we generate.
This should be at least 300 seconds greater than
isisSysMaxLSPGenInt.

Configured values MUST survive an agent reboot."

```
DEFVAL { 1200 }  
 ::= { isisSysObject 10 }
```

isisSysReceiveLSPBufferSize OBJECT-TYPE

```
SYNTAX IsisUnsigned16TC (1492..16000)  
UNITS "bytes"  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION
```

"Size of the largest Buffer we are designed or
configured to store. This should be at least
as big as the maximum isisSysLevelOrigLSPBuffSize
supported by the system.

If resources allow, we will store and flood LSPs
larger than isisSysReceiveLSPBufferSize, as this
can help avoid problems in networks with different
values for isisSysLevelOrigLSPBuffSize.

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Configured values MUST survive an agent reboot."

```
DEFVAL { 1492 }
 ::= { isisSysObject 11 }
```

isisSysProtSupported OBJECT-TYPE

```
SYNTAX BITS {
    iso8473 (0),
    ipv4 (1),
    ipv6 (2)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "This attribute contains the set of protocols
    supported by this Intermediate System."
 ::= { isisSysObject 12 }
```

isisSysNotificationEnable OBJECT-TYPE

```
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "If this object is set to true(1), then it enables
    the emission of IS-IS Notifications. If it is
    set to false(2), these notifications are not sent.

    Configured values MUST survive an agent reboot."
DEFVAL { true }
 ::= { isisSysObject 13 }
```

-- The Level 1 Manual Area Address Table

isisManAreaAddrTable OBJECT-TYPE

```
SYNTAX SEQUENCE OF IsisManAreaAddrEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "The set of manual area addresses configured on this
    Intermediate System.

    At least one row in which the value of
    isisManAreaAddrExistState is active must be present.
    The maximum number of rows in this table for for
    which the object isisManAreaAddrExistState has the
    value active is 3.

    An attempt to create more 3 rows of isisManAreaAddrEntry
    with state 'active' in one instance of the IS-IS protocol
```

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```
    should return inconsistentValue."
    REFERENCE "{ISIS.aoi manualAreaAddresses (10)}"
 ::= { isisSystem 2 }
```

```
isisManAreaAddrEntry OBJECT-TYPE
    SYNTAX IsisManAreaAddrEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each entry contains one area address manually configured
        on this system.

        Dynamically created rows MUST survive an agent reboot."
    INDEX { isisManAreaAddr }
 ::= { isisManAreaAddrTable 1 }
```

```
IsisManAreaAddrEntry ::=
    SEQUENCE {
        isisManAreaAddr
            IsisOSINSAddress,
        isisManAreaAddrExistState
            RowStatus
    }
```

```
isisManAreaAddr OBJECT-TYPE
    SYNTAX IsisOSINSAddress
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "A manually configured area address for this system.

        Note: an index for the entry {1, {49.0001} active} in
        this table would be the ordered pair
        (1, (0x03 0x49 0x00 0x01)), as the length of an Octet
        string is part of the OID."
 ::= { isisManAreaAddrEntry 1 }
```

```
isisManAreaAddrExistState OBJECT-TYPE
    SYNTAX RowStatus
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The state of the isisManAreaAddrEntry. If the
        isisSysAdminState for this Intermediate System is 'on', and
        an attempt is made to set this object to the value
        'destroy' or 'notInService' when this is the only
        isisManAreaAddrEntry in state 'active' for this
        Intermediate System should return inconsistentValue."
```

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A row entry cannot be modified when the value of this object is 'active'."

```
::= { isisManAreaAddrEntry 2 }
```

-- The Level 1 Area Address Table

-- The Level 1 Area Address Table contains the
-- union of the sets of relevant area addresses configured
-- or learned from Level 1 LSPs received by this Intermediate System.

isisAreaAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF IsisAreaAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The union of the sets of area addresses reported in all Level 1 LSPs with fragment number zero generated by this Intermediate System, or received from other Intermediate Systems which are reachable via Level 1 routing."

REFERENCE "{ISIS.aoi areaAddresses (18)}"

```
::= { isisSystem 3 }
```

isisAreaAddrEntry OBJECT-TYPE

SYNTAX IsisAreaAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry contains one area address reported in a Level 1 LSP generated or received by this Intermediate System.

Dynamically learned rows do not survive an agent reboot."

INDEX { isisAreaAddr }

```
::= { isisAreaAddrTable 1 }
```

IsisAreaAddrEntry ::=

SEQUENCE {

isisAreaAddr

IsisOSINSAddress

}

isisAreaAddr OBJECT-TYPE

SYNTAX IsisOSINSAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"An area address reported in a Level 1 LSP."

```
::= { isisAreaAddrEntry 1 }
```

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- The Summary Address Table
- The Summary Address Table contains the set of summary addresses manually configured for the Intermediate System.
-
- This is used to control leaking L1 routes into L2.

```
isisSummAddrTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisSummAddrEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The set of IP summary addresses to use in forming
        summary TLVs originated by this Intermediate System.

        An administrator may use a summary address to combine
        and modify IP Reachability announcements.  If the
        Intermediate system can reach any subset of the summary
        address, the summary address MUST be announced instead,
        at the configured metric."
 ::= { isisSystem 4 }
```

```
isisSummAddrEntry OBJECT-TYPE
    SYNTAX IsisSummAddrEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each entry contains one IP summary address.

        Dynamically created rows MUST survive an agent reboot.

        Implementers need to be aware that if the total number
        of elements (octets or sub-identifiers) in
        isisSummAddress and isisSummAddrPrefixLen is too great
        then OIDs of column instances in this table will have
        more than 128 subidentifiers and cannot be accessed
        using SNMPv1, SNMPv2c, or SNMPv3."
    INDEX { isisSummAddressType,
            isisSummAddress,
            isisSummAddrPrefixLen }
 ::= { isisSummAddrTable 1 }
```

```
IsisSummAddrEntry ::=
    SEQUENCE {
        isisSummAddressType
            InetAddressType,
        isisSummAddress
            InetAddress,
```

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```
        isisSummAddrPrefixLen
            InetAddressPrefixLength,
        isisSummAddrExistState
            RowStatus,
        isisSummAddrMetric
            IsisDefaultMetric,
        isisSummAddrFullMetric
            IsisFullMetric
    }

isisSummAddressType OBJECT-TYPE
    SYNTAX InetAddressType
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The Type of IP address for this summary address."
 ::= { isisSummAddrEntry 1 }

isisSummAddress OBJECT-TYPE
    SYNTAX InetAddress
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The IP Address value for this summary address.
        The address must not contain any set host bits
        (bits set after the address prefix determined by
        isisSummAddrPrefixLen).

        The type of this address is determined by the value of
        the isisSummAddressType object."

 ::= { isisSummAddrEntry 2 }

isisSummAddrPrefixLen OBJECT-TYPE
    SYNTAX InetAddressPrefixLength
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The Length of the IP NetMask for this summary address.

        The values for the index objects isisSummAddress and
        isisSummAddrPrefixLen must be consistent.  When the value
        of isisSummAddress (excluding the zone index, if one
        is present) is x, then the bitwise logical-AND
        of x with the value of the mask formed from the
        corresponding index object isisSummAddrPrefixLen MUST be
        equal to x.  If not, then the index pair is not
        consistent and an inconsistentName error must be
```

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returned on SET or CREATE requests."

::= { isisSummAddrEntry 3 }

isisSummAddrExistState OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The existence state of this summary address. Support for 'createAndWait' and 'notInService' is not required.

A row entry cannot be modified when the value of this object is 'active'."

::= { isisSummAddrEntry 4 }

isisSummAddrMetric OBJECT-TYPE

SYNTAX IsisDefaultMetric

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The metric value to announce this summary address within LSPs generated by this system."

DEFVAL { 20 }

::= { isisSummAddrEntry 5 }

isisSummAddrFullMetric OBJECT-TYPE

SYNTAX IsisFullMetric

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The wide metric value to announce this summary address within LSPs generated by this system."

DEFVAL { 20 }

::= { isisSummAddrEntry 6 }

-- The Redistribution table defines addresses that should be
-- leaked from L2 to L1 if isisSysL2toL1Leaking is enabled.

isisRedistributeAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF IsisRedistributeAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table provides criteria to decide if a route should be leaked from L2 to L1 when Domain Wide Prefix leaking is enabled.

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Addresses that match the summary mask in the table MUST be announced at L1 by routers when isisSysL2toL1Leaking is enabled. Routes that fall into the ranges specified are announced as is, without being summarized. Routes that do not match a summary mask are not announced."

```
::= { isisSystem 5 }
```

```
isisRedistributeAddrEntry OBJECT-TYPE
```

```
SYNTAX IsisRedistributeAddrEntry
```

```
MAX-ACCESS not-accessible
```

```
STATUS current
```

```
DESCRIPTION
```

```
"Each entry contains one configured IP summary address to manage leaking L2 addresses into L1.
```

```
Dynamically created rows MUST survive an agent reboot.
```

```
Implementers need to be aware that if the total number of elements (octets or sub-identifiers) in isisRedistributeAddrAddress and isisRedistributeAddrPrefixLen is too great then OIDs of column instances in this table will have more than 128 subidentifiers and cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3."
```

```
INDEX { isisRedistributeAddrType,  
        isisRedistributeAddrAddress,  
        isisRedistributeAddrPrefixLen }
```

```
::= { isisRedistributeAddrTable 1 }
```

```
IsisRedistributeAddrEntry ::=
```

```
SEQUENCE {  
    isisRedistributeAddrType  
        InetAddressType,  
    isisRedistributeAddrAddress  
        InetAddress,  
    isisRedistributeAddrPrefixLen  
        InetAddressPrefixLength,  
    isisRedistributeAddrExistState  
        RowStatus  
}
```

```
isisRedistributeAddrType OBJECT-TYPE
```

```
SYNTAX InetAddressType
```

```
MAX-ACCESS not-accessible
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The Type of IP address for this summary address."
```

```
::= { isisRedistributeAddrEntry 1 }
```

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`isisRedistributeAddrAddress OBJECT-TYPE``SYNTAX InetAddress``MAX-ACCESS not-accessible``STATUS current``DESCRIPTION`

"The IP Address value for this summary address.
The type of this address is determined by the
value of the `isisRedistributeAddrType` object.
The address must not contain any set host bits -
bits set after the address prefix determined by
`isisRedistributeAddrPrefixLen`."

`::= { isisRedistributeAddrEntry 2 }``isisRedistributeAddrPrefixLen OBJECT-TYPE``SYNTAX InetAddressPrefixLength``MAX-ACCESS not-accessible``STATUS current``DESCRIPTION`

"The Length of the IP NetMask for this summary address.

The values for the index objects
`isisRedistributeAddrAddress` and
`isisRedistributeAddrPrefixLen` must be consistent.
When the value of `isisRedistributeAddrAddress`
(excluding the zone index, if one is present) is x,
then the bitwise logical-AND of x with the value of
the mask formed from the corresponding index object
`isisRedistributeAddrPrefixLen` MUST be equal to x.
If not, then the index pair is not consistent and an
`inconsistentName` error must be returned on SET or
CREATE requests."

`::= { isisRedistributeAddrEntry 3 }``isisRedistributeAddrExistState OBJECT-TYPE``SYNTAX RowStatus``MAX-ACCESS read-create``STATUS current``DESCRIPTION`

"The existence state of this summary address. Support
for `createAndWait` and `notInService` is not required.

A row entry cannot be modified when the value of this
object is 'active'."

`::= { isisRedistributeAddrEntry 4 }`

-- The Router Table keeps track of hostnames and router IDs

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-- associated with Intermediate Systems in the area and domain.

```
isisRouterTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisRouterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The set of hostnames and router ID."
 ::= { isisSystem 6 }
```

```
isisRouterEntry OBJECT-TYPE
    SYNTAX IsisRouterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each entry tracks information about one Intermediate
        System at one level.

        Dynamically learned rows do not survive an agent reboot."
    INDEX { isisRouterSysID,
            isisRouterLevel }
 ::= { isisRouterTable 1 }
```

```
IsisRouterEntry ::=
    SEQUENCE {
        isisRouterSysID
            IsisSystemID,
        isisRouterLevel
            IsisISLevel,
        isisRouterHostName
            SnmpAdminString,
        isisRouterID
            Unsigned32
    }
```

```
isisRouterSysID OBJECT-TYPE
    SYNTAX IsisSystemID
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The System ID of the Intermediate System."
 ::= { isisRouterEntry 1 }
```

```
isisRouterLevel OBJECT-TYPE
    SYNTAX IsisISLevel
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
```

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```
        "The level at which the information about this
        Intermediate System was received."
 ::= { isisRouterEntry 2 }
```

```
isisRouterHostName OBJECT-TYPE
    SYNTAX SnmpAdminString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The hostname listed in the LSP, or a zero-length
        string if none."
 ::= { isisRouterEntry 3 }
```

```
isisRouterID OBJECT-TYPE
    SYNTAX Unsigned32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The Router ID found in the LSP, or zero if none."
 ::= { isisRouterEntry 4 }
```

```
-- The System Level Table
-- This table captures level-specific information about the System
```

```
isisSysLevelTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisSysLevelEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Level specific information about the System."
 ::= { isisSysLevel 1 }
```

```
isisSysLevelEntry OBJECT-TYPE
    SYNTAX IsisSysLevelEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each row describes variables configured for Area or Domain.

        Configured values MUST survive an agent reboot."
    INDEX { isisSysLevelIndex }
 ::= { isisSysLevelTable 1 }
```

```
IsisSysLevelEntry ::=
    SEQUENCE {
        isisSysLevelIndex
        IsisISLevel,
        isisSysLevelOrigLSPBuffSize
```

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```
        IsisLSPBuffSize,
isisSysLevelMinLSPGenInt
        IsisUnsigned16TC,
isisSysLevelState
        IsisLevelState,
isisSysLevelSetOverload
        TruthValue,
isisSysLevelSetOverloadUntil
        Unsigned32,
isisSysLevelMetricStyle
        IsisMetricStyle,
isisSysLevelSPFConsiders
        IsisMetricStyle,
isisSysLevelTEEnabled
        TruthValue
    }

isisSysLevelIndex OBJECT-TYPE
    SYNTAX IsisISLevel
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The level that this entry describes."
    ::= { isisSysLevelEntry 1 }

isisSysLevelOrigLSPBuffSize OBJECT-TYPE
    SYNTAX IsisLSPBuffSize
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "The maximum size of LSPs and SNPs originated by
        this Intermediate System at this level.  This
        object may not be modified when the isisSysAdminState
        variable is in state 'on' for this Intermediate System."
    REFERENCE "{ISIS.aoi originatingL1LSPBufferSize (9)}"
    DEFVAL { 1492 }
    ::= { isisSysLevelEntry 2 }

isisSysLevelMinLSPGenInt OBJECT-TYPE
    SYNTAX IsisUnsigned16TC (1..65535)
    UNITS "seconds"
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "Minimum interval, in seconds, between successive
        generation of LSPs with the same LSPID at this level
        by this Intermediate System."
    REFERENCE "{ISIS.aoi minimumLSPGenerationInterval (11)}"
```

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```
    DEFVAL { 30 }  
 ::= { isisSysLevelEntry 3 }
```

```
isisSysLevelState OBJECT-TYPE
```

```
    SYNTAX IsisLevelState
```

```
    MAX-ACCESS read-only
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "The state of the database at this level.  
        The value 'off' indicates that IS-IS is not active at  
        this level.  
        The value 'on' indicates that IS-IS is active at this  
        level, and not overloaded.  
        The value 'waiting' indicates a database that is low on  
        an essential resource, such as memory.  
        The administrator may force the state to 'overloaded'  
        by setting the object isisSysLevelSetOverload.  
        If the state is 'waiting' or 'overloaded', we  
        originate LSPs with the Overload bit set."
```

```
    REFERENCE "{ISIS.aoi l1State (17)}"
```

```
 ::= { isisSysLevelEntry 4 }
```

```
isisSysLevelSetOverload OBJECT-TYPE
```

```
    SYNTAX TruthValue
```

```
    MAX-ACCESS read-write
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "Administratively set the overload bit for the level.  
        The overload bit MUST continue to be set if the  
        implementation runs out of memory, independent of  
        this variable. It may also be set manually independent  
        of this variable, using the isisSysLevelSetOverloadUntil  
        object."
```

```
    DEFVAL { false }
```

```
 ::= { isisSysLevelEntry 5 }
```

```
isisSysLevelSetOverloadUntil OBJECT-TYPE
```

```
    SYNTAX Unsigned32
```

```
    UNITS "Seconds until clearing manually set Overload Bit"
```

```
    MAX-ACCESS read-write
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "If this object is non-zero, the overload bit is set at  
        this level when the isisSysAdminState variable goes to  
        state 'on' for this Intermediate System. The overload bit  
        remains set for isisSysLevelSetOverloadUntil seconds.  
        When isisSysLevelSetOverloadUntil seconds have elapsed,  
        the overload flag remains set if the implementation has
```

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run out of memory, or if it is set manually using the isisSysLevelSetOverload object.

If isisSysLevelSetOverload is false, the system clears the overload bit when isisSysLevelSetOverloadUntil seconds have elapsed, if the system has not run out of memory."

```
::= { isisSysLevelEntry 6 }
```

```
isisSysLevelMetricStyle OBJECT-TYPE
```

```
SYNTAX IsisMetricStyle
```

```
MAX-ACCESS read-write
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Which style of Metric do we generate in our LSPs  
    at this level?"
```

```
DEFVAL { narrow }
```

```
::= { isisSysLevelEntry 7 }
```

```
isisSysLevelSPFConsiders OBJECT-TYPE
```

```
SYNTAX IsisMetricStyle
```

```
MAX-ACCESS read-write
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Which style of Metric do we consider in our  
    SPF computation at this level?"
```

```
DEFVAL { narrow }
```

```
::= { isisSysLevelEntry 8 }
```

```
isisSysLevelTEEnabled OBJECT-TYPE
```

```
SYNTAX TruthValue
```

```
MAX-ACCESS read-write
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Do we do Traffic Engineering at this level?"
```

```
DEFVAL { false }
```

```
::= { isisSysLevelEntry 9 }
```

```
-- Static to provide next CircIndex
```

```
isisNextCircIndex OBJECT-TYPE
```

```
SYNTAX IndexIntegerNextFree
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "This object is used to assist a management  
    application in creating new rows in the  
    isisCircTable.  If it is possible to create
```

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a new instance of isisCircEntry, then this object will contain a non-zero value that is not in use as the index of any row in the isisCircTable. The network manager reads the value of this object and then (if the value value read is non-zero) attempts to create the corresponding instance of isisCircEntry. If the set request fails with the code 'inconsistentValue', then the process must be repeated; if the set request succeeds, then the agent will change value of this object according to an implementation-specific algorithm."

```
::= { isisCirc 1 }
```

```
-- The Circuit Table
-- Each broadcast or point-to-point interface on the system
-- corresponds to one entry in the Circuit table. However, there
-- may be multiple X.25 DA circuit entries in the Circuit table
-- for a given X.25 interface.
```

```
isisCircTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisCircEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The table of circuits used by this
        Intermediate System."
```

```
::= { isisCirc 2 }
```

```
isisCircEntry OBJECT-TYPE
    SYNTAX IsisCircEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An isisCircEntry exists for each circuit configured
        for Integrated IS-IS on this system.
```

Dynamically created rows MUST survive an agent reboot."

```
INDEX { isisCircIndex }
```

```
::= { isisCircTable 1 }
```

```
IsisCircEntry ::=
    SEQUENCE {
        isisCircIndex
            IndexInteger,
        isisCircIfIndex
            InterfaceIndex,
```

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```
isisCircAdminState
    IsisAdminState,
isisCircExistState
    RowStatus,
isisCircType
    INTEGER,
isisCircExtDomain
    TruthValue,
isisCircLevelType
    IsisLevel,
isisCircPassiveCircuit
    TruthValue,
isisCircMeshGroupEnabled
    INTEGER,
isisCircMeshGroup
    Unsigned32,
isisCircSmallHellos
    TruthValue,
isisCircLastUpTime
    TimeStamp,
isisCirc3WayEnabled
    TruthValue,
isisCircExtendedCircID
    Unsigned32
}
```

isisCircIndex OBJECT-TYPE

```
SYNTAX IndexInteger
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
```

"An index used to uniquely identify this circuit. When creating a row in this table, the isisNextCircIndex object should be retrieved and it's value should be specified as the value of this index using a SET operation. A retrieved value of zero(0) indicates that no rows can be created at this time."

```
::= { isisCircEntry 1 }
```

isisCircIfIndex OBJECT-TYPE

```
SYNTAX InterfaceIndex
MAX-ACCESS read-create
STATUS current
DESCRIPTION
```

"The value of ifIndex for the interface to which this circuit corresponds. This object cannot be modified after creation."

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```
::= { isisCircEntry 2 }
```

```
isisCircAdminState OBJECT-TYPE
```

```
SYNTAX IsisAdminState
```

```
MAX-ACCESS read-create
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "The administrative state of the circuit."
```

```
DEFVAL { off }
```

```
::= { isisCircEntry 3 }
```

```
isisCircExistState OBJECT-TYPE
```

```
SYNTAX RowStatus
```

```
MAX-ACCESS read-create
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "The existence state of this circuit.  Setting the state to 'notInService' halts the generation and processing of IS-IS protocol PDUs on this circuit.  Setting the state to destroy will also erase any configuration associated with the circuit.  Support for 'createAndWait' and 'notInService' is not required.
```

```
    A row entry cannot be modified when the value of this object is 'active'."
```

```
::= { isisCircEntry 4 }
```

```
isisCircType OBJECT-TYPE
```

```
SYNTAX INTEGER
```

```
{  
    broadcast(1),  
    ptToPt(2),  
    staticIn(3),  
    staticOut(4),  
    dA(5)  
}
```

```
MAX-ACCESS read-create
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "The type of the circuit.  This object follows the ReplaceOnlyWhileDisabled behavior.  The type specified must be compatible with the type of the interface defined by the value of isisCircIfIndex."
```

```
REFERENCE "{ISIS.aoi type (33)}"
```

```
::= { isisCircEntry 5 }
```

```
isisCircExtDomain OBJECT-TYPE
```

```
SYNTAX TruthValue
```

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```
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "If true, suppress normal transmission of and
    interpretation of Intra-domain IS-IS PDUs on this
    circuit."
REFERENCE "{ISIS.aoi externalDomain (46)}"
DEFVAL { false }
 ::= { isisCircEntry 6 }

isisCircLevelType OBJECT-TYPE
SYNTAX IsisLevel
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "Indicates which type of packets will be sent and
    accepted on this circuit. The values set will be
    saved, but the values used will be modified by
    the settings of isisSysLevelType. Thus if the
    isisSysType is level2 and the isisCircLevelType
    for a circuit is level1, the circuit will not send
    or receive IS-IS packets. This object follows the
    ReplaceOnlyWhileDisabled behavior."
DEFVAL { level1and2 }
 ::= { isisCircEntry 7 }

isisCircPassiveCircuit OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "Should we include this interface in LSPs, even if
    it is not running the IS-IS Protocol?"
DEFVAL { false }
 ::= { isisCircEntry 8 }

isisCircMeshGroupEnabled OBJECT-TYPE
SYNTAX INTEGER
    {
        inactive(1),
        blocked(2),
        set(3)
    }
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "Is this port a member of a mesh group, or blocked?
    Circuits in the same mesh group act as a virtual
```

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```
        multiaccess network. LSPs seen on one circuit in
        a mesh group will not be flooded to another circuit
        in the same mesh group."
REFERENCE "{ RFC 2973 }"
DEFVAL { inactive }
 ::= { isisCircEntry 9 }

isisCircMeshGroup OBJECT-TYPE
    SYNTAX Unsigned32
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "Circuits in the same mesh group act as a virtual
        multiaccess network. LSPs seen on one circuit in
        a mesh group will not be flooded to another circuit
        in the same mesh group. If isisCircMeshGroupEnabled
        is inactive or blocked, this value is ignored."
REFERENCE "{ RFC 2973 }"
 ::= { isisCircEntry 10 }

isisCircSmallHellos OBJECT-TYPE
    SYNTAX TruthValue
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "Can we send unpadded hellos on LAN circuits? False
        means LAN Hellos must be padded.
        Implementations should allow the administrator to read
        this value. An implementation need not be able to
        support unpadded hellos to be conformant."
    DEFVAL { false }
 ::= { isisCircEntry 11 }

isisCircLastUpTime OBJECT-TYPE
    SYNTAX TimeStamp
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "How long the circuit has been enabled, measured in
        hundredths of seconds since the last re-initialization
        of the network management subsystem, or 0 if the
        circuit has never been 'on'."
 ::= { isisCircEntry 12 }

isisCirc3WayEnabled OBJECT-TYPE
    SYNTAX TruthValue
    MAX-ACCESS read-create
    STATUS current
```

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DESCRIPTION

"Is this circuit enabled to run 3Way handshake?"

DEFVAL { true }

::= { isisCircEntry 13 }

isisCircExtendedCircID OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The value to be used as the extended circuit ID in 3Way handshake. This value is only used if isisCirc3WayEnabled is true, and must be unique across all circuits on this IS."

::= { isisCircEntry 14 }

-- The Circuit Level Table

-- This table captures level-specific information about a circuit

isisCircLevelTable OBJECT-TYPE

SYNTAX SEQUENCE OF IsisCircLevelEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Level specific information about circuits used by IS-IS."

::= { isisCircLevelValues 1 }

isisCircLevelEntry OBJECT-TYPE

SYNTAX IsisCircLevelEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An isisCircLevelEntry exists for each level on each circuit configured for Integrated IS-IS on this system.

Configured values MUST survive an agent reboot."

INDEX { isisCircIndex,
isisCircLevelIndex }

::= { isisCircLevelTable 1 }

IsisCircLevelEntry ::=

SEQUENCE {

isisCircLevelIndex

IsisISLevel,

isisCircLevelMetric

IsisDefaultMetric,

isisCircLevelWideMetric

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```
        IsisWideMetric,
isisCircLevelISPriority
        IsisISPriority,
isisCircLevelIDOctet
        Unsigned32,
isisCircLevelID
        IsisCircuitID,
isisCircLevelDesIS
        IsisCircuitID,
isisCircLevelHelloMultiplier
        Unsigned32,
isisCircLevelHelloTimer
        Unsigned32,
isisCircLevelDRHelloTimer
        Unsigned32,
isisCircLevelLSPThrottle
        IsisUnsigned16TC,
isisCircLevelMinLSPRetransInt
        Unsigned32,
isisCircLevelCSNPInterval
        Unsigned32,
isisCircLevelPartSNPInterval
        Unsigned32
    }

isisCircLevelIndex OBJECT-TYPE
    SYNTAX IsisISLevel
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The level that this entry describes."
    ::= { isisCircLevelEntry 1 }

isisCircLevelMetric OBJECT-TYPE
    SYNTAX IsisDefaultMetric
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "The metric value of this circuit for this level."
    REFERENCE "{ISIS.aoi l1DefaultMetric (35)}"
    DEFVAL { 10 }
    ::= { isisCircLevelEntry 2 }

isisCircLevelWideMetric OBJECT-TYPE
    SYNTAX IsisWideMetric
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
```

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```
    "The wide metric value of this circuit for this level."  
    DEFVAL { 10 }  
 ::= { isisCircLevelEntry 3 }
```

```
isisCircLevelISPriority OBJECT-TYPE  
    SYNTAX IsisISPriority  
    MAX-ACCESS read-write  
    STATUS current  
    DESCRIPTION  
        "The priority for becoming LAN Designated  
        Intermediate System at this level."  
    REFERENCE "{ISIS.aoi 12IntermediateSystemPriority (73)}"  
    DEFVAL { 64 }  
 ::= { isisCircLevelEntry 4 }
```

```
isisCircLevelIDOctet OBJECT-TYPE  
    SYNTAX Unsigned32(0..255)  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "A one byte identifier for the circuit selected by the  
        Intermediate System.  
  
        On point-to-point circuits, the value is used as the Local  
        Circuit ID in point-to-point IIH PDUs transmitted on this  
        circuit.  In this case, values of isisCircLevelIDOctet do  
        not need to be unique.  
  
        For broadcast circuits, the value is used to generate the  
        LAN ID that will be used if this Intermediate System is  
        elected as the Designated IS on this circuit.  The value  
        is required to differ on LANs where the Intermediate System  
        is the Designated Intermediate System."  
 ::= { isisCircLevelEntry 5 }
```

```
isisCircLevelID OBJECT-TYPE  
    SYNTAX IsisCircuitID  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "On a point to point circuit with a fully initialized  
        adjacency to a peer IS, the value of this object is  
        the circuit ID negotiated during adjacency initialization.  
        On a point to point circuit without such an adjacency,  
        the value is the concatenation of the local system ID  
        and the one byte isisCircLevelIDOctet for this circuit  
        i.e. the value that would be proposed for the circuit ID."
```

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On other circuit types, the value returned is the zero length OCTET STRING."

REFERENCE "{ISIS.aoi ptPtCircuitID (51)}"

::= { isisCircLevelEntry 6 }

isisCircLevelDesIS OBJECT-TYPE

SYNTAX IsisCircuitID

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The ID of the LAN Designated Intermediate System on this circuit at this level. If, for any reason, this system is not partaking in the relevant Designated Intermediate System election process, then the value returned is the zero length OCTET STRING."

REFERENCE "{ISIS.aoi l2DesignatedIntermediateSystem (75)}"

::= { isisCircLevelEntry 7 }

isisCircLevelHelloMultiplier OBJECT-TYPE

SYNTAX Unsigned32 (2..100)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This value is multiplied by the corresponding HelloTimer and the result in seconds (rounded up) is used as the holding time in transmitted hellos, to be used by receivers of hello packets from this IS"

REFERENCE "{ISIS.aoi iSISHelloTimer (45)}"

DEFVAL { 10 }

::= { isisCircLevelEntry 8 }

isisCircLevelHelloTimer OBJECT-TYPE

SYNTAX Unsigned32 (10..600000)

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Maximum period, in milliseconds, between IIH PDUs on multiaccess networks at this level for LANs. The value at L1 is used as the period between Hellos on L1L2 point to point circuits. Setting this value at level 2 on an L1L2 point to point circuit will result in an error of InconsistentValue.

This object follows the ResettingTimer behavior."

REFERENCE "{ISIS.aoi iSISHelloTimer (45)}"

DEFVAL { 3000 }

::= { isisCircLevelEntry 9 }

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```
isisCircLevelDRHelloTimer OBJECT-TYPE
    SYNTAX Unsigned32 (10..120000)
    UNITS "milliseconds"
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "Period, in milliseconds, between Hello PDUs on
        multiaccess networks when this IS is the Designated
        Intermediate System. This object follows the
        ResettingTimer behavior."
    REFERENCE "{ISIS.aoi iSISHelloTimer (45)}"
    DEFVAL { 1000 }
 ::= { isisCircLevelEntry 10 }

isisCircLevelLSPThrottle OBJECT-TYPE
    SYNTAX IsisUnsigned16TC (1..65535)
    UNITS "milliseconds"
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "Minimal interval of time, in milliseconds, between
        transmissions of LSPs on an interface at this level."
    REFERENCE
        "{ISIS.aoi minimumBroadcastLSPTransmissionInterval (5)}"
    DEFVAL { 30 }
 ::= { isisCircLevelEntry 11 }

isisCircLevelMinLSPRetransInt OBJECT-TYPE
    SYNTAX Unsigned32 (1..300)
    UNITS "seconds"
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "Minimum interval, in seconds, between re-transmission of
        an LSP at this level. This object follows the
        ResettingTimer behavior.

        Note that isisCircLevelLSPThrottle controls
        how fast we send back to back LSPs. This variable
        controls how fast we re-send the same LSP."
    REFERENCE "{ISIS.aoi minimumLSPTransmissionInterval (5)}"
    DEFVAL { 5 }
 ::= { isisCircLevelEntry 12 }

isisCircLevelCSNPInterval OBJECT-TYPE
    SYNTAX Unsigned32 (1..600)
    UNITS "seconds"
    MAX-ACCESS read-write
```

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```
STATUS current
DESCRIPTION
    "Interval of time, in seconds, between periodic
    transmission of a complete set of CSNPs on
    multiaccess networks if this router is the
    designated router at this level.
    This object follows the ResettingTimer behavior."
REFERENCE "{ISIS.aoi completeSNPInterval (8)}"
DEFVAL { 10 }
 ::= { isisCircLevelEntry 13 }
```

```
isisCircLevelPartSNPInterval OBJECT-TYPE
    SYNTAX Unsigned32 (1..120)
    UNITS "seconds"
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "Minimum interval in seconds between sending Partial
        Sequence Number PDUs at this level. This object
        follows the ResettingTimer behavior."
    REFERENCE "{ISIS.aoi partialSNPInterval (14)}"
    DEFVAL { 2 }
 ::= { isisCircLevelEntry 14 }
```

-- isisSystemCounterTable keeps track of system-wide events.

```
isisSystemCounterTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisSystemCounterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "System wide counters for this Intermediate System."
 ::= { isisCounters 1 }
```

```
isisSystemCounterEntry OBJECT-TYPE
    SYNTAX IsisSystemCounterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "System-wide IS-IS counters."
    INDEX { isisSysStatLevel }
 ::= { isisSystemCounterTable 1 }
```

```
IsisSystemCounterEntry ::=
    SEQUENCE {
        isisSysStatLevel
        IsisISLevel,
        isisSysStatCorrLSPs
```

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```
        Counter32,
isisSysStatAuthTypeFails
        Counter32,
isisSysStatAuthFails
        Counter32,
isisSysStatLSPDbase0loads
        Counter32,
isisSysStatManAddrDropFromAreas
        Counter32,
isisSysStatAttmptToExMaxSeqNums
        Counter32,
isisSysStatSeqNumSkips
        Counter32,
isisSysStatOwnLSPPurges
        Counter32,
isisSysStatIDFieldLenMismatches
        Counter32,
isisSysStatPartChanges
        Counter32,
isisSysStatSPFRuns
        Counter32,
isisSysStatLSPErrors
        Counter32
    }

isisSysStatLevel OBJECT-TYPE
    SYNTAX IsisISLevel
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The level that this entry describes."
 ::= { isisSystemCounterEntry 1 }

isisSysStatCorrLSPs OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of corrupted in-memory frames"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of corrupted in-memory LSPs detected.

        LSPs received from the wire with a bad checksum
        are silently dropped and not counted.

        LSPs received from the wire with parse errors
        are counted by isisSysStatLSPErrors."
    REFERENCE "{ISIS.aoi corruptedLSPsDetected (19)}"
 ::= { isisSystemCounterEntry 2 }
```

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```
isisSysStatAuthTypeFails OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of frames with authentication type mismatches"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of authentication type mismatches recognized
         by this Intermediate System."
 ::= { isisSystemCounterEntry 3 }

isisSysStatAuthFails OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of frames with authentication key failures"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of authentication key failures recognized
         by this Intermediate System."
 ::= { isisSystemCounterEntry 4 }

isisSysStatLSPDbaseOverloads OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times the LSP database has become
         overloaded."
    REFERENCE "{ISIS.aoi lSPL1DatabaseOverloads (20)}"
 ::= { isisSystemCounterEntry 5 }

isisSysStatManAddrDropFromAreas OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times a manual address has been dropped from
         the area."
    REFERENCE "{ISIS.aoi manualAddressesDroppedFromArea (21)}"
 ::= { isisSystemCounterEntry 6 }

isisSysStatAttmpToExMaxSeqNums OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times the IS has attempted to exceed the
         maximum sequence number."
    REFERENCE
```

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```
        "{ISIS.aoi attemptsToExceedmaximumSequenceNumber (22)}"
 ::= { isisSystemCounterEntry 7 }

isisSysStatSeqNumSkips OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times a sequence number skip has occurred."
    REFERENCE "{ISIS.aoi sequenceNumberSkips (23)}"
 ::= { isisSystemCounterEntry 8 }

isisSysStatOwnLSPPurges OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times a zero-aged copy of the system's own LSP
         is received from some other node."
    REFERENCE "{ISIS.aoi ownLSPPurges (24)}"
 ::= { isisSystemCounterEntry 9 }

isisSysStatIDFieldLenMismatches OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of frames with ID length mismatches"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times a PDU is received with a different value
         for ID field length to that of the receiving system."
    REFERENCE "{ISIS.aoi idFieldLengthMismatches (25)}"
 ::= { isisSystemCounterEntry 10 }

isisSysStatPartChanges OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Partition changes."
 ::= { isisSystemCounterEntry 11 }

isisSysStatSPFRuns OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of times we ran SPF at this level."
 ::= { isisSystemCounterEntry 12 }
```

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```
isisSysStatLSPErrors OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of frames with errors that we have received"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number of LSPs with errors we have received."
 ::= { isisSystemCounterEntry 13 }
```

```
-- isisCircuitCounterTable keeps track of events
-- specific to a circuit and a level
```

```
isisCircuitCounterTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisCircuitCounterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Circuit specific counters for this
         Intermediate System."
 ::= { isisCounters 2 }
```

```
isisCircuitCounterEntry OBJECT-TYPE
    SYNTAX IsisCircuitCounterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An isisCircuitCounterEntry exists for each circuit
         used by Integrated IS-IS on this system."
    INDEX { isisCircIndex,
            isisCircuitType }
 ::= { isisCircuitCounterTable 1 }
```

```
IsisCircuitCounterEntry ::= SEQUENCE {
    isisCircuitType
        INTEGER,
    isisCircAdjChanges
        Counter32,
    isisCircNumAdj
        Unsigned32,
    isisCircInitFails
        Counter32,
    isisCircRejAdjs
        Counter32,
    isisCircIDFieldLenMismatches
        Counter32,
    isisCircMaxAreaAddrMismatches
        Counter32,
    isisCircAuthTypeFails
```

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```
        Counter32,
isisCircAuthFails
        Counter32,
isisCircLANDesISChanges
        Counter32
    }

isisCircuitType OBJECT-TYPE
    SYNTAX INTEGER
    {
        lanlevel1(1),
        lanlevel2(2),
        p2pcircuit(3)
    }
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "What type of circuit saw these counts?

        The point to point Hello PDU includes
        both L1 and L2, and ISs form a single
        adjacency on point to point links.
        Thus we combine counts on
        point to point links into one group."
 ::= { isisCircuitCounterEntry 1 }

isisCircAdjChanges OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times an adjacency state change has
        occurred on this circuit."
    REFERENCE "{ISIS.aoi changesInAdjacencyState (40)}"
 ::= { isisCircuitCounterEntry 2 }

isisCircNumAdj OBJECT-TYPE
    SYNTAX Unsigned32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of adjacencies on this circuit."
    REFERENCE "{ISIS.aoi changesInAdjacencyState (40)}"
 ::= { isisCircuitCounterEntry 3 }

isisCircInitFails OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
```

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```
STATUS current
DESCRIPTION
    "The number of times initialization of this circuit has
    failed. This counts events such as PPP NCP failures.
    Failures to form an adjacency are counted by
    isisCircRejAdjs."
 ::= { isisCircuitCounterEntry 4 }

isisCircRejAdjs OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times an adjacency has been rejected on
        this circuit."
    REFERENCE "{ISIS.aoi rejectedAdjacencies (42)}"
 ::= { isisCircuitCounterEntry 5 }

isisCircIDFieldLenMismatches OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of frames with ID field length mismatch"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times an IS-IS control PDU with an ID
        field length different to that for this system has been
        received."
    REFERENCE "{ISIS.aoi idFieldLengthMismatches (25)}"
 ::= { isisCircuitCounterEntry 6 }

isisCircMaxAreaAddrMismatches OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times an IS-IS control PDU with a
        max area address field different to that for this
        system has been received."
    REFERENCE "{ISIS.aoi idFieldLengthMismatches (25)}"
 ::= { isisCircuitCounterEntry 7 }

isisCircAuthTypeFails OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times an IS-IS control PDU with
        an auth type field different to that for this
```

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```
        system has been received."
 ::= { isisCircuitCounterEntry 8 }

isisCircAuthFails OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times an IS-IS control PDU with
         the correct auth type has failed to pass authentication
         validation."
 ::= { isisCircuitCounterEntry 9 }

isisCircLANDesISChanges OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times the Designated IS has changed
         on this circuit at this level.  If the circuit is
         point to point, this count is zero."
 ::= { isisCircuitCounterEntry 10 }

-- isisPacketCounterTable keeps track of the number of IS-IS
-- control packets sent and received at each level

isisPacketCounterTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisPacketCounterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Information about IS-IS protocol traffic at one level
         on one circuit in one direction."
 ::= { isisCounters 3 }

isisPacketCounterEntry OBJECT-TYPE
    SYNTAX IsisPacketCounterEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Information about IS-IS protocol traffic at one level
         on one circuit in one direction."
    INDEX { isisCircIndex,
            isisPacketCountLevel,
            isisPacketCountDirection }
 ::= { isisPacketCounterTable 1 }

IsisPacketCounterEntry ::=
```

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```
SEQUENCE {
    isisPacketCountLevel
        IsisISLevel,
    isisPacketCountDirection
        INTEGER,
    isisPacketCountIIHello
        Counter32,
    isisPacketCountISHello
        Counter32,
    isisPacketCountESHello
        Counter32,
    isisPacketCountLSP
        Counter32,
    isisPacketCountCSNP
        Counter32,
    isisPacketCountPSNP
        Counter32,
    isisPacketCountUnknown
        Counter32
}

isisPacketCountLevel OBJECT-TYPE
    SYNTAX IsisISLevel
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The level at which these PDU counts have been collected."
 ::= { isisPacketCounterEntry 1 }

isisPacketCountDirection OBJECT-TYPE
    SYNTAX INTEGER
    {
        sending(1),
        receiving(2)
    }
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Were we sending or receiving these PDUs?"
 ::= { isisPacketCounterEntry 2 }

isisPacketCountIIHello OBJECT-TYPE
    SYNTAX Counter32
    UNITS "Number of IS-IS Hellos frames seen in this direction
        at this level"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
```

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"The number of IS-IS Hello PDUs seen in this direction at this level.

Point-to-Point IIH PDUs are counted at the lowest enabled level: at L1 on L1 or L1L2 circuits, and at L2 otherwise."

REFERENCE "{ISIS.aoi iSISControlPDUsSent (43)}"
 ::= { isisPacketCounterEntry 3 }

isisPacketCountISHello OBJECT-TYPE

SYNTAX Counter32

UNITS "Number of ES-IS frames seen in this direction at this level."

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of ES-IS Hello PDUs seen in this direction. ISH PDUs are counted at the lowest enabled level: at L1 on L1 or L1L2 circuits, and at L2 otherwise."

::= { isisPacketCounterEntry 4 }

isisPacketCountESHello OBJECT-TYPE

SYNTAX Counter32

UNITS "Number of ES Hello frames seen in this direction at this level"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of ES Hello PDUs seen in this direction. ESH PDUs are counted at the lowest enabled level: at L1 on L1 or L1L2 circuits, and at L2 otherwise."

::= { isisPacketCounterEntry 5 }

isisPacketCountLSP OBJECT-TYPE

SYNTAX Counter32

UNITS "Number of IS-IS LSP frames seen in this direction at this level"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of IS-IS LSPs seen in this direction at this level."

REFERENCE "{ISIS.aoi iSISControlPDUsSent (43)}"
 ::= { isisPacketCounterEntry 6 }

isisPacketCountCSNP OBJECT-TYPE

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```
SYNTAX Counter32
UNITS "Number of IS-IS CSNP frames seen in this direction at
      this level"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of IS-IS CSNPs seen in this
     direction at this level."
REFERENCE "{ISIS.aoi iSISControlPDUsSent (43)}"
 ::= { isisPacketCounterEntry 7 }
```

```
isisPacketCountPSNP OBJECT-TYPE
SYNTAX Counter32
UNITS "Number of IS-IS PSNP frames seen in this direction at
      this level"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of IS-IS PSNPs seen in this
     direction at this level."
REFERENCE "{ISIS.aoi iSISControlPDUsSent (43)}"
 ::= { isisPacketCounterEntry 8 }
```

```
isisPacketCountUnknown OBJECT-TYPE
SYNTAX Counter32
UNITS "Number of unknown IS-IS frames seen at this level"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of unknown IS-IS PDUs seen
     at this level."
REFERENCE "{ISIS.aoi iSISControlPDUsSent (43)}"
 ::= { isisPacketCounterEntry 9 }
```

```
-- The IS Adjacency Table
--
-- Each adjacency to an IS corresponds to one entry in this
-- table.
```

```
isisISAdjTable OBJECT-TYPE
SYNTAX SEQUENCE OF IsisISAdjEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "The table of adjacencies to Intermediate Systems."
 ::= { isisISAdj 1 }
```

```
isisISAdjEntry OBJECT-TYPE
```

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```
SYNTAX IsisISAdjEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Each entry corresponds to one adjacency to an
    Intermediate System on this system.

    Dynamically learned rows do not survive an agent reboot."
INDEX { isisCircIndex,
        isisISAdjIndex }
 ::= { isisISAdjTable 1 }

IsisISAdjEntry ::=
SEQUENCE {
    isisISAdjIndex
        Unsigned32,
    isisISAdjState
        INTEGER,
    isisISAdj3WayState
        INTEGER,
    isisISAdjNeighSNPAAAddress
        IsisOSINSAddress,
    isisISAdjNeighSysType
        INTEGER,
    isisISAdjNeighSysID
        IsisSystemID,
    isisISAdjNbrExtendedCircID
        Unsigned32,
    isisISAdjUsage
        IsisLevel,
    isisISAdjHoldTimer
        IsisUnsigned16TC,
    isisISAdjNeighPriority
        IsisISPriority,
    isisISAdjLastUpTime
        TimeStamp
}

isisISAdjIndex OBJECT-TYPE
SYNTAX Unsigned32(1..4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "A unique value identifying the IS adjacency from all
    other such adjacencies on this circuit. This value is
    automatically assigned by the system when the adjacency
    is created."
 ::= { isisISAdjEntry 1 }
```

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```
isisISAdjState OBJECT-TYPE
    SYNTAX INTEGER
        {
            down (1),
            initializing (2),
            up (3),
            failed(4)
        }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The state of the adjacency."
    REFERENCE "{ISIS.aoi adjacencyState (78)}"
 ::= { isisISAdjEntry 2 }
```

```
isisISAdj3WayState OBJECT-TYPE
    SYNTAX INTEGER
        {
            up (0),
            initializing (1),
            down (2),
            failed (3)
        }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The 3Way state of the adjacency. These are picked
        to match the historical on-the-wire representation
        of the 3Way state, and are not intended to match
        isisISAdjState."
    REFERENCE "{ RFC 3373 }"
 ::= { isisISAdjEntry 3 }
```

```
isisISAdjNeighSNPAAAddress OBJECT-TYPE
    SYNTAX IsisOSINSAddress
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The SNPA address of the neighboring system."
    REFERENCE "{ISIS.aoi neighbourSNPAAAddress (79)}"
 ::= { isisISAdjEntry 4 }
```

```
isisISAdjNeighSysType OBJECT-TYPE
    SYNTAX INTEGER
        {
            l1IntermediateSystem(1),
            l2IntermediateSystem(2),
            l1L2IntermediateSystem(3),
```

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```
        unknown(4)
    }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The type of the neighboring system."
    REFERENCE "{ISIS.aoi neighbourSystemType (80)}"
 ::= { isisISAdjEntry 5 }

isisISAdjNeighSysID OBJECT-TYPE
    SYNTAX IsisSystemID
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The system ID of the neighboring Intermediate
        System."
    REFERENCE "{ISIS.aoi neighbourSystemIds (83)}"
 ::= { isisISAdjEntry 6 }

isisISAdjNbrExtendedCircID OBJECT-TYPE
    SYNTAX Unsigned32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The 4 byte Extended Circuit ID learned from the
        Neighbor during 3-way handshake, or 0."
 ::= { isisISAdjEntry 7 }

isisISAdjUsage OBJECT-TYPE
    SYNTAX IsisLevel
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "How is the adjacency used?  On a point-to-point link,
        this might be level1and2, but on a LAN, the usage will
        be level1 on the adjacency between peers at L1,
        and level2 for the adjacency between peers at L2."
    REFERENCE "{ISIS.aoi adjacencyUsage (82)}"
 ::= { isisISAdjEntry 8 }

isisISAdjHoldTimer OBJECT-TYPE
    SYNTAX IsisUnsigned16TC (1..65535)
    UNITS "seconds"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The holding time in seconds for this adjacency.
        This value is based on received IIH PDUs and
```

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```
        the elapsed time since receipt."
REFERENCE "{ISIS.aoi holdingTimer (85)}"
 ::= { isisISAdjEntry 9 }
```

```
isisISAdjNeighPriority OBJECT-TYPE
SYNTAX IsisISPriority
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Priority of the neighboring Intermediate System for
    becoming the Designated Intermediate System."
REFERENCE "{ISIS.aoi LANPriority (86)}"
 ::= { isisISAdjEntry 10 }
```

```
isisISAdjLastUpTime OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "When the adjacency most recently entered the state 'up',
    measured in hundredths of a second since the last
    re-initialization of the network management subsystem.
    Holds 0 if the adjacency has never been in state 'up'."
 ::= { isisISAdjEntry 11 }
```

-- The IS Adjacency Area Address Table

-- The IS Adjacency Area Address Table contains the set of
-- Area Addresses of neighboring
-- Intermediate Systems as reported in IIH PDUs.

```
isisISAdjAreaAddrTable OBJECT-TYPE
SYNTAX SEQUENCE OF IsisISAdjAreaAddrEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This table contains the set of Area Addresses of
    neighboring Intermediate Systems as reported in received
    IIH PDUs."
REFERENCE "{ISIS.aoi areaAddressesOfNeighbour (84)}"
 ::= { isisISAdj 2 }
```

```
isisISAdjAreaAddrEntry OBJECT-TYPE
SYNTAX IsisISAdjAreaAddrEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Each entry contains one Area Address reported by a
```

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neighboring Intermediate System in its IIH PDUs.

Dynamically learned rows do not survive an agent reboot."

```
INDEX { isisCircIndex,
        isisISAdjIndex,
        isisISAdjAreaAddrIndex }
 ::= { isisISAdjAreaAddrTable 1 }
```

```
IsisISAdjAreaAddrEntry ::=
  SEQUENCE {
    isisISAdjAreaAddrIndex
      Unsigned32,
    isisISAdjAreaAddress
      IsisOSINSAddress
  }
```

```
isisISAdjAreaAddrIndex OBJECT-TYPE
  SYNTAX Unsigned32(1..4294967295)
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
    "An index for the areas associated with one neighbor.
     This provides a simple way to walk the table."
 ::= { isisISAdjAreaAddrEntry 1 }
```

```
isisISAdjAreaAddress OBJECT-TYPE
  SYNTAX IsisOSINSAddress
  MAX-ACCESS read-only
  STATUS current
  DESCRIPTION
    "One Area Address as reported in IIH PDUs received from
     the neighbor."
 ::= { isisISAdjAreaAddrEntry 2 }
```

-- The IS Adjacency IP Address Table

-- The IS Adjacency IP Address Table contains the
-- set of IP Addresses of neighboring Intermediate Systems
-- as reported in received IIH PDUs.

```
isisISAdjIPAddrTable OBJECT-TYPE
  SYNTAX SEQUENCE OF IsisISAdjIPAddrEntry
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
    "This table contains the set of IP Addresses of
     neighboring Intermediate Systems as reported in received
     IIH PDUs."
```

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```
::= { isisISAdj 3 }
```

```
isisISAdjIPAddrEntry OBJECT-TYPE
```

```
SYNTAX IsisISAdjIPAddrEntry
```

```
MAX-ACCESS not-accessible
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Each entry contains one IP Address reported by a  
    neighboring Intermediate System in its IIH PDUs.
```

```
    Dynamically learned rows do not survive an agent reboot."
```

```
INDEX { isisCircIndex,  
        isisISAdjIndex,  
        isisISAdjIPAddrIndex  
      }
```

```
::= { isisISAdjIPAddrTable 1 }
```

```
IsisISAdjIPAddrEntry ::=
```

```
SEQUENCE {
```

```
    isisISAdjIPAddrIndex
```

```
    Unsigned32,
```

```
    isisISAdjIPAddrType
```

```
    InetAddressType,
```

```
    isisISAdjIPAddrAddress
```

```
    InetAddress
```

```
}
```

```
isisISAdjIPAddrIndex OBJECT-TYPE
```

```
SYNTAX Unsigned32(1..4294967295)
```

```
MAX-ACCESS not-accessible
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "An index to this table which identifies the IP addresses  
    to which this entry belongs."
```

```
::= { isisISAdjIPAddrEntry 1 }
```

```
isisISAdjIPAddrType OBJECT-TYPE
```

```
SYNTAX InetAddressType
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "The type of one IP Address as reported in IIH PDUs  
    received from the neighbor."
```

```
::= { isisISAdjIPAddrEntry 2 }
```

```
isisISAdjIPAddrAddress OBJECT-TYPE
```

```
SYNTAX InetAddress
```

```
MAX-ACCESS read-only
```

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```
STATUS current
DESCRIPTION
    "One IP Address as reported in IIH PDUs received from the
    neighbor.
```

```
    The type of this address is determined by the value of
    the isisISAdjIPAddrType object."
```

```
::= { isisISAdjIPAddrEntry 3 }
```

```
-- The IS Adjacency Protocol Supported Table
```

```
--
```

```
-- The IS Adjacency Protocol Supported Table contains the set of
-- protocols supported by neighboring
-- Intermediate Systems as reported in received IIH PDUs.
```

```
isisISAdjProtSuppTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisISAdjProtSuppEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "This table contains the set of protocols supported by
        neighboring Intermediate Systems as reported in received
        IIH PDUs."
 ::= { isisISAdj 4 }
```

```
isisISAdjProtSuppEntry OBJECT-TYPE
    SYNTAX IsisISAdjProtSuppEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each entry contains one protocol supported by a
        neighboring Intermediate System as reported in its IIH
        PDUs.

        Dynamically learned rows do not survive an agent reboot."
    INDEX { isisCircIndex,
            isisISAdjIndex,
            isisISAdjProtSuppProtocol }
 ::= { isisISAdjProtSuppTable 1 }
```

```
IsisISAdjProtSuppEntry ::=
    SEQUENCE {
        isisISAdjProtSuppProtocol
        IsisSupportedProtocol
    }
```

```
isisISAdjProtSuppProtocol OBJECT-TYPE
    SYNTAX IsisSupportedProtocol
```

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```
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "One supported protocol as reported in IIH PDUs received
    from the neighbor."
 ::= { isisISAdjProtSupEntry 1 }
```

```
-- The Reachable Address Group
--
-- The Reachable Address Table
-- Each entry records information about a reachable address
-- (NSAP or address prefix) manually configured on the system
-- or learned through another protocol.
```

```
isisRATable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisRAEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The table of Reachable Addresses to NSAPs or Address
        Prefixes."
 ::= { isisReachAddr 1 }
```

```
isisRAEntry OBJECT-TYPE
    SYNTAX IsisRAEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each entry defines a configured Reachable Address
        to a NSAP or Address Prefix.

        Dynamically created rows MUST survive an agent reboot."
    INDEX { isisCircIndex,
            isisRAIndex }
 ::= { isisRATable 1 }
```

```
IsisRAEntry ::=
    SEQUENCE {
        isisRAIndex
            Unsigned32,
        isisRAExistState
            RowStatus,
        isisRAAdminState
            IsisAdminState,
        isisRAAddrPrefix
            IsisOSINSAddress,
        isisRAMapType
            INTEGER,
```

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```
isisRAMetric
    IsisDefaultMetric,
isisRAMetricType
    IsisMetricType,
isisRASNPAAddress
    IsisOSINSAddress,
isisRASNPMask
    IsisOSINSAddress,
isisRASNPAPrefix
    IsisOSINSAddress,
isisRAType
    INTEGER
}
```

isisRAIndex OBJECT-TYPE

SYNTAX Unsigned32(1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The identifier for this isisRAEntry. This value must be unique amongst all Reachable Addresses on the same parent Circuit."

::= { isisRAEntry 1 }

isisRAExistState OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The existence state of this Reachable Address. This object follows the ManualOrAutomatic behaviors. Support for 'createAndWait' and 'notInService' is not required.

A row entry cannot be modified when the value of this object is 'active'."

::= { isisRAEntry 2 }

isisRAAdminState OBJECT-TYPE

SYNTAX IsisAdminState

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The administrative state of the Reachable Address. This object follows the ManualOrAutomatic behaviors."

DEFVAL { off }

::= { isisRAEntry 3 }

isisRAAddrPrefix OBJECT-TYPE

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```
SYNTAX IsisOSINSAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "The destination of this Reachable Address. This is an
    Address Prefix. This object follows the
    ReplaceOnlyWhileDisabled and ManualOrAutomatic
    behaviors."
REFERENCE "{ISIS.aoi addressPrefix (98)}"
 ::= { isisRAEntry 4 }

isisRAMapType OBJECT-TYPE
    SYNTAX INTEGER
        {
            none (1),
            explicit (2),
            extractIDI (3),
            extractDSP (4)
        }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The type of mapping to be employed to ascertain the SNPA
        Address which should be used in forwarding PDUs for this
        Reachable Address prefix. This object follows the
        ManualOrAutomatic behavior. The following values of
        mapping type are defined:

            none: The mapping is null because the neighbor SNPA is
            implicit by nature of the subnetwork (e.g. a
            point-to-point linkage).

            explicit: The subnetwork addresses in the object
            isisRASNPAAAddress is to be used.

            extractIDI: The SNPA is embedded in the IDI of
            the destination NSAP Address. The mapping
            algorithm extracts the SNPA to be used
            according to the format and encoding rules of
            IS08473/Add2. This SNPA extraction algorithm can
            be used in conjunction with Reachable Address
            prefixes from the X.121, F.69, E.163 and E.164
            addressing subdomains.

            extractDSP: All, or a suffix, of the SNPA is embedded
            in the DSP of the destination address. This SNPA
            extraction algorithm extracts the embedded
            subnetwork addressing information by performing a
```

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logical AND of the isisRASNPAAddress object value with the destination address. The part of the SNPA extracted from the destination NSAP is appended to the isisRASNPAAddress object value to form the next hop subnetwork addressing information."

REFERENCE "{ISO10589-ISIS.aoi mappingType (107)}"
 ::= { isisRAEntry 5 }

isisRAMetric OBJECT-TYPE

SYNTAX IsisDefaultMetric
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The metric value for reaching the specified prefix over this circuit. This object follows the ManualOrAutomatic behavior."
REFERENCE "{ISIS.aoi DefaultMetric (99)}"
DEFVAL { 20 }
 ::= { isisRAEntry 6 }

isisRAMetricType OBJECT-TYPE

SYNTAX IsisMetricType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Indicates whether the metric is internal or external. This object follows the ManualOrAutomatic behavior."
REFERENCE "{ISIS.aoi DefaultMetricType (103)}"
DEFVAL { internal }
 ::= { isisRAEntry 7 }

isisRASNPAAddress OBJECT-TYPE

SYNTAX IsisOSINSAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The SNPA Address to which a PDU may be forwarded in order to reach a destination which matches the address prefix of the Reachable Address. This object follows the ManualOrAutomatic behavior."
REFERENCE "{ISIS.aoi sNPAAddresses (109)}"
-- Note only one address may be specified per Reachable Address
-- in the MIB
DEFVAL { 'H' }
 ::= { isisRAEntry 8 }

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isisRASNPAAddress OBJECT-TYPE

SYNTAX IsisOSINSAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A bit mask with 1 bits indicating the positions in the effective destination address from which embedded SNPA information is to be extracted. For the extraction the first octet of the isisRASNPAAddress object value is aligned with the first octet (AFI) of the NSAP Address. If the isisRASNPAAddress object value and NSAP Address are of different lengths, the shorter of the two is logically padded with zeros before performing the extraction. This object follows the ManualOrAutomatic behavior."

REFERENCE "{ISIS.aoi sNPAMask (122)}"

DEFVAL { '00'H }

::= { isisRAEntry 9 }

isisRASNPAPrefix OBJECT-TYPE

SYNTAX IsisOSINSAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A fixed SNPA prefix for use when the isisRAMapType is extractDSP. The SNPA Address to use is formed by concatenating the fixed SNPA prefix with a variable SNPA part that is extracted from the effective destination address. For Reachable Address prefixes in which the entire SNPA is embedded in the DSP the SNPA Prefix shall be null. This object follows the ManualOrAutomatic behavior."

REFERENCE "{ISIS.aoi sNPAPrefix (123)}"

DEFVAL { '00'H }

::= { isisRAEntry 10 }

isisRAType OBJECT-TYPE

SYNTAX INTEGER

```
{
    manual (1),
    automatic (2)
}
```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The type of Reachable address. Those of type manual are created by the network manager. Those of type automatic are created through propagation of routing information from another routing

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```
        protocol (eg. IDRP). "  
        DEFVAL {manual}  
 ::= {isisRAEntry 11 }
```

-- The IP Reachable Address Table

-- Each entry records information about one IP reachable
-- address manually configured on this system or learned from
-- another protocol.

```
isisIPRATable OBJECT-TYPE  
    SYNTAX SEQUENCE OF IsisIPRAEntry  
    MAX-ACCESS not-accessible  
    STATUS current  
    DESCRIPTION  
        "The table of IP Reachable Addresses to networks,  
        subnetworks or hosts either manually configured or  
        learned from another protocol."  
 ::= { isisIPReachAddr 1 }
```

```
isisIPRAEntry OBJECT-TYPE  
    SYNTAX IsisIPRAEntry  
    MAX-ACCESS not-accessible  
    STATUS current  
    DESCRIPTION  
        "Each entry defines an IP Reachable Address to a network,  
        subnetwork or host.
```

Each IP Reachable Address may have multiple entries in the table, one for each equal cost path to the reachable address.

Dynamically created rows MUST survive an agent reboot.

Implementers need to be aware that if the total number of elements (octets or sub-identifiers) in isisIPRADestr, isisIPRADestPrefixLen, and isisIPRANextHopIndex is too great then OIDs of column instances in this table will have more than 128 subidentifiers and cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3."

```
INDEX { isisSysLevelIndex,  
        isisIPRADestType,  
        isisIPRADest,  
        isisIPRADestPrefixLen,  
        isisIPRANextHopIndex }  
 ::= { isisIPRATable 1 }
```

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```
IsisIPRAEntry ::=
  SEQUENCE {
    isisIPRADestType
      InetAddressType,
    isisIPRADest
      InetAddress,
    isisIPRADestPrefixLen
      InetAddressPrefixLength,
    isisIPRANextHopIndex
      Unsigned32,
    isisIPRANextHopType
      InetAddressType,
    isisIPRANextHop
      InetAddress,
    isisIPRAType
      INTEGER,
    isisIPRAExistState
      RowStatus,
    isisIPRAAdminState
      IsisAdminState,
    isisIPRAMetric
      IsisDefaultMetric,
    isisIPRAMetricType
      IsisMetricType,
    isisIPRAFullMetric
      IsisFullMetric,
    isisIPRASNPAAAddress
      IsisOSINSAddress,
    isisIPRASourceType
      INTEGER
  }

isisIPRADestType OBJECT-TYPE
  SYNTAX InetAddressType
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
    "The type of this IP Reachable Address."
 ::= { isisIPRAEntry 1 }

isisIPRADest OBJECT-TYPE
  SYNTAX InetAddress
  MAX-ACCESS not-accessible
  STATUS current
  DESCRIPTION
    "The destination of this IP Reachable Address. This is
     either a network address, subnetwork address or host
     address."
```

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The type of this address is determined by the value of the isisIPRADestType object."

::= { isisIPRAEntry 2 }

isisIPRADestPrefixLen OBJECT-TYPE
SYNTAX InetAddressPrefixLength
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"The length of the IP Netmask for Reachability Address.

The values for the index objects isisIPRADest and isisIPRADestPrefixLen must be consistent. When the value of isisIPRADest (excluding the zone index, if one is present) is x, then the bitwise logical-AND of x with the value of the mask formed from the corresponding index object isisIPRADestPrefixLen MUST be equal to x. If not, then the index pair is not consistent and an inconsistentName error must be returned on SET or CREATE requests."

::= { isisIPRAEntry 3 }

isisIPRANextHopIndex OBJECT-TYPE
SYNTAX Unsigned32(1..4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"Index of next hop. Used when there are multiple Equal Cost Multipath alternatives for the same destination."

::= { isisIPRAEntry 4 }

isisIPRANextHopType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"The type of the IP next hop address."

::= { isisIPRAEntry 5 }

isisIPRANextHop OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"The IP next hop to this destination.

The type of this address is determined by the value of

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```
        the isisIPRANextHopType object."
 ::= { isisIPRAEntry 6 }

isisIPRAType OBJECT-TYPE
    SYNTAX INTEGER
        {
            manual (1),
            automatic (2)
        }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The type of this IP Reachable Address. Those of type
        manual are created by the network manager. Those of type
        automatic are created through propagation of routing
        information from another routing protocol. This object
        follows the ManualOrAutomatic behavior."
 ::= { isisIPRAEntry 7 }

isisIPRAExistState OBJECT-TYPE
    SYNTAX RowStatus
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The state of this IP Reachable Address. This object
        follows the ExistenceState and ManualOrAutomatic
        behaviors. Support for 'createAndWait' and
        'notInService' is not required.

        A row entry cannot be modified when the value of this
        object is 'active'."
 ::= { isisIPRAEntry 8 }

isisIPRAAdminState OBJECT-TYPE
    SYNTAX IsisAdminState
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The administrative state of the IP Reachable Address. This
        object follows the IsisAdminState and ManualOrAutomatic
        behaviors."
    DEFVAL { off }
 ::= { isisIPRAEntry 9 }

isisIPRAMetric OBJECT-TYPE
    SYNTAX IsisDefaultMetric
    MAX-ACCESS read-create
    STATUS current
```

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```
DESCRIPTION
    "The metric value for reaching the specified
    destination over this circuit. This object follows the
    ManualOrAutomatic behavior."
DEFVAL { 10 }
 ::= { isisIPRAEntry 10 }

isisIPRAMetricType OBJECT-TYPE
    SYNTAX IsisMetricType
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "Indicates whether the metric is internal or
        external. This object follows the ManualOrAutomatic
        behavior."
    DEFVAL { internal }
 ::= { isisIPRAEntry 11 }

isisIPRAFullMetric OBJECT-TYPE
    SYNTAX IsisFullMetric
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The wide metric value for reaching the specified
        destination over this circuit. This object follows the
        ManualOrAutomatic behavior."
    DEFVAL { 10 }
 ::= { isisIPRAEntry 12 }

isisIPRASNPAAAddress OBJECT-TYPE
    SYNTAX IsisOSINSAddress
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The SNPA Address to which a PDU may be forwarded in
        order to reach a destination which matches this IP
        Reachable Address. This object follows the
        ManualOrAutomatic behavior."
    DEFVAL { 'H' }
 ::= { isisIPRAEntry 13 }

isisIPRASourceType OBJECT-TYPE
    SYNTAX INTEGER
    {
        static (1),
        direct (2),
        ospfv2 (3),
        ospfv3 (4),
```

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```
        isis (5),
        rip (6),
        igrp (7),
        eigrp (8),
        bgp (9),
        other (10)
    }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The origin of this route."
    ::= { isisIPRAEntry 14 }

-- The LSP Database Table
--
-- The first table provides Summary Information about LSPs
-- The next table provides a complete record

isisLSPSummaryTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisLSPSummaryEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The table of LSP Headers."
    ::= { isisLSPDataBase 1 }

isisLSPSummaryEntry OBJECT-TYPE
    SYNTAX IsisLSPSummaryEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "Each entry provides a summary describing an
        LSP currently stored in the system.

        Dynamically learned rows will not survive an
        agent reboot."
    INDEX { isisLSPLevel,
            isisLSPID }
    ::= { isisLSPSummaryTable 1 }

IsisLSPSummaryEntry ::=
    SEQUENCE {
        isisLSPLevel
        IsisISLevel,
        isisLSPID
        IsisLinkStatePDUID,
        isisLSPSeq
        Unsigned32,
```

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```
        isisLSPZeroLife
            TruthValue,
        isisLSPChecksum
            IsisUnsigned16TC,
        isisLSPLifetimeRemain
            IsisUnsigned16TC,
        isisLSPPDULength
            IsisUnsigned16TC,
        isisLSPAttributes
            IsisUnsigned8TC
    }

isisLSPLevel OBJECT-TYPE
    SYNTAX IsisISLevel
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "At which level does this LSP appear?"
    ::= { isisLSPSummaryEntry 1 }

isisLSPID OBJECT-TYPE
    SYNTAX IsisLinkStatePDUID
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The 8 byte LSP ID for this Link State PDU."
    ::= { isisLSPSummaryEntry 2 }

isisLSPSeq OBJECT-TYPE
    SYNTAX Unsigned32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The sequence number for this LSP."
    ::= { isisLSPSummaryEntry 3 }

isisLSPZeroLife OBJECT-TYPE
    SYNTAX TruthValue
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Is this LSP being purged by this System?"
    ::= { isisLSPSummaryEntry 4 }

isisLSPChecksum OBJECT-TYPE
    SYNTAX IsisUnsigned16TC
    MAX-ACCESS read-only
    STATUS current
```

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```
DESCRIPTION
    "The 16 bit Fletcher Checksum for this LSP."
 ::= { isisLSPSummaryEntry 5 }

isisLSPLifetimeRemain OBJECT-TYPE
    SYNTAX IsisUnsigned16TC
    UNITS "seconds"
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The remaining lifetime in seconds for this LSP."
 ::= { isisLSPSummaryEntry 6 }

isisLSPPDULength OBJECT-TYPE
    SYNTAX IsisUnsigned16TC
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The length of this LSP."
 ::= { isisLSPSummaryEntry 7 }

isisLSPAttributes OBJECT-TYPE
    SYNTAX IsisUnsigned8TC
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Flags carried by the LSP."
 ::= { isisLSPSummaryEntry 8 }

-- LSP Table
--
-- The full LSP as a sequence of {Type, Len, Value} tuples
-- Since the underlying LSP may have changed while downloading
-- TLVs, we provide the Sequence number and Checksum for each
-- LSP TLV, so the network manager may verify that they are
-- still working on the same version of the LSP.

isisLSPTLVTable OBJECT-TYPE
    SYNTAX SEQUENCE OF IsisLSPTLVEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The table of LSPs in the database."
 ::= { isisLSPDataBase 2 }

isisLSPTLVEntry OBJECT-TYPE
    SYNTAX IsisLSPTLVEntry
    MAX-ACCESS not-accessible
```

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```
STATUS current
DESCRIPTION
    "Each entry describes a TLV within
    an LSP current stored in the system.

    Dynamically learned rows will not survive an
    agent reboot."
INDEX { isisLSPLLevel,
        isisLSPID,
        isisLSPTLVIndex }
 ::= { isisLSPTLVTable 1 }

IsisLSPTLVEntry ::=
SEQUENCE {
    isisLSPTLVIndex
        Unsigned32,
    isisLSPTLVSeq
        Unsigned32,
    isisLSPTLVChecksum
        IsisUnsigned16TC,
    isisLSPTLVType
        IsisUnsigned8TC,
    isisLSPTLVLen
        IsisUnsigned8TC,
    isisLSPTLVValue
        OCTET STRING
}

isisLSPTLVIndex OBJECT-TYPE
SYNTAX Unsigned32(1..4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "The index of this TLV in the LSP. The first TLV has
    index 1 and the Nth TLV has an index of N."
 ::= { isisLSPTLVEntry 1 }

isisLSPTLVSeq OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The sequence number for this LSP."
 ::= { isisLSPTLVEntry 2 }

isisLSPTLVChecksum OBJECT-TYPE
SYNTAX IsisUnsigned16TC
MAX-ACCESS read-only
```

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```
STATUS current
DESCRIPTION
    "The 16 bit Fletcher Checksum for this LSP."
 ::= { isisLSPTLVEntry 3 }
```

```
isisLSPTLVType OBJECT-TYPE
    SYNTAX IsisUnsigned8TC
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The type of this TLV."
 ::= { isisLSPTLVEntry 4 }
```

```
isisLSPTLVLen OBJECT-TYPE
    SYNTAX IsisUnsigned8TC
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The length of this TLV."
 ::= { isisLSPTLVEntry 5 }
```

```
isisLSPTLVValue OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE(0..255))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The value of this TLV."
 ::= { isisLSPTLVEntry 6 }
```

-- The IS-IS Notification Table

-- The IS-IS Notification Table records fields that are
-- required for notifications

```
isisNotificationEntry OBJECT IDENTIFIER
    ::= { isisNotification 1 }
```

```
isisNotificationSysLevelIndex OBJECT-TYPE
    SYNTAX IsisLevel
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The system level for this notification."
 ::= { isisNotificationEntry 1 }
```

```
isisNotificationCircIfIndex OBJECT-TYPE
    SYNTAX Unsigned32 (1..2147483647)
```

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```
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "The identifier of this circuit relevant to
    this Notification."
 ::= { isisNotificationEntry 2 }

isisPduLspId OBJECT-TYPE
    SYNTAX IsisLinkStatePDUID
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "An Octet String that uniquely identifies
        a Link State PDU."
 ::= { isisNotificationEntry 3 }

isisPduFragment OBJECT-TYPE
    SYNTAX IsisPDUHeader
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "Holds up to 64 initial bytes of a PDU that
        triggered the notification."
 ::= { isisNotificationEntry 4 }

isisPduFieldLen OBJECT-TYPE
    SYNTAX IsisUnsigned8TC
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "Holds the System ID length reported in PDU we received."
 ::= { isisNotificationEntry 5 }

isisPduMaxAreaAddress OBJECT-TYPE
    SYNTAX IsisUnsigned8TC
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "Holds the Max Area Addresses reported in a PDU
        we received."
 ::= { isisNotificationEntry 6 }

isisPduProtocolVersion OBJECT-TYPE
    SYNTAX IsisUnsigned8TC
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "Holds the Protocol version reported in PDU we received."
```

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```
::= { isisNotificationEntry 7 }
```

```
isisPduLspSize OBJECT-TYPE
```

```
SYNTAX Unsigned32 (0..2147483647)
```

```
MAX-ACCESS accessible-for-notify
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Holds the size of LSP we received that is too  
    big to forward."
```

```
::= { isisNotificationEntry 8 }
```

```
isisPduOriginatingBufferSize OBJECT-TYPE
```

```
SYNTAX IsisUnsigned16TC (0..16000)
```

```
MAX-ACCESS accessible-for-notify
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Holds the size of isisSysLevelOrigLSPBuffSize advertised  
    by the peer in the originatingLSPBufferSize TLV.  
    If the peer does not advertise this TLV, this  
    value is set to 0."
```

```
::= { isisNotificationEntry 9 }
```

```
isisPduBufferSize OBJECT-TYPE
```

```
SYNTAX IsisUnsigned16TC (0..16000)
```

```
MAX-ACCESS accessible-for-notify
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "Holds the size of LSP received from peer."
```

```
::= { isisNotificationEntry 10 }
```

```
isisPduProtocolsSupported OBJECT-TYPE
```

```
SYNTAX OCTET STRING (SIZE(0..255))
```

```
MAX-ACCESS accessible-for-notify
```

```
STATUS current
```

```
DESCRIPTION
```

```
    "The list of protocols supported by an  
    adjacent system. This may be empty."
```

```
::= { isisNotificationEntry 11 }
```

```
isisAdjState OBJECT-TYPE
```

```
SYNTAX INTEGER
```

```
{  
    down (1),  
    initializing (2),  
    up (3),  
    failed(4)  
}
```

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```
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "The current state of an adjacency."
 ::= { isisNotificationEntry 12 }
```

```
isisErrorOffset OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "An offset to a problem in a PDU.  If the problem
     is a malformed TLV, this points to the beginning
     of the TLV.  If the problem is in the header, this
     points to the byte that is suspicious."
 ::= { isisNotificationEntry 13 }
```

```
isisErrorTLVType OBJECT-TYPE
SYNTAX Unsigned32 (0..255)
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "The type for a malformed TLV."
 ::= { isisNotificationEntry 14 }
```

```
isisNotificationAreaAddress OBJECT-TYPE
SYNTAX IsisOSINSAddress
MAX-ACCESS accessible-for-notify
STATUS current
DESCRIPTION
    "An Area Address."
 ::= { isisNotificationEntry 15 }
```

```
-- Notification definitions
--
-- Note that notifications can be disabled by setting
-- isisSysNotificationEnable false
```

```
isisDatabaseOverload NOTIFICATION-TYPE
OBJECTS {
    isisNotificationSysLevelIndex,
    isisSysLevelState
}
STATUS current
DESCRIPTION
    "This notification is generated when the system
     enters or leaves the Overload state.  The number
     of times this has be generated and cleared is kept
```

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```
        track of by isisSysStatLSPDbase0loads."
 ::= { isisNotifications 1 }
```

```
isisManualAddressDrops NOTIFICATION-TYPE
```

```
  OBJECTS {
```

```
    isisNotificationAreaAddress
```

```
  }
```

```
  STATUS current
```

```
  DESCRIPTION
```

```
    "This notification is generated when one of the
    manual areaAddresses assigned to this system is
    ignored when computing routes. The object
    isisNotificationAreaAddress describes the area that
    has been dropped.
```

```
    The number of times this event has been generated
    is counted by isisSysStatManAddrDropFromAreas.
```

```
    The agent must throttle the generation of
    consecutive isisManualAddressDrops notifications
    so that there is at least a 5-second gap between
    notifications of this type. When notifications
    are throttled, they are dropped, not queued for
    sending at a future time."
```

```
 ::= { isisNotifications 2 }
```

```
isisCorruptedLSPDetected NOTIFICATION-TYPE
```

```
  OBJECTS {
```

```
    isisNotificationSysLevelIndex,
```

```
    isisPduLspId
```

```
  }
```

```
  STATUS current
```

```
  DESCRIPTION
```

```
    "This notification is generated when we find that
    an LSP that was stored in memory has become
    corrupted. The number of times this has been
    generated is counted by isisSysCorrLSPs.
```

```
    We forward an LSP ID. We may have independent
    knowledge of the ID, but in some implementations
    there is a chance that the ID itself will be
    corrupted."
```

```
 ::= { isisNotifications 3 }
```

```
isisAttemptToExceedMaxSequence NOTIFICATION-TYPE
```

```
  OBJECTS {
```

```
    isisNotificationSysLevelIndex,
```

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```
        isisPduLspId
    }
    STATUS current
    DESCRIPTION
        "When the sequence number on an LSP we generate
        wraps the 32 bit sequence counter, we purge and
        wait to re-announce this information. This
        notification describes that event. Since these
        should not be generated rapidly, we generate
        an event each time this happens.

        While the first 6 bytes of the LSPID are ours,
        the other two contain useful information."

 ::= { isisNotifications 4 }

isisIDLenMismatch NOTIFICATION-TYPE
    OBJECTS {
        isisNotificationSysLevelIndex,
        isisPduFieldLen,
        isisNotificationCircIfIndex,
        isisPduFragment
    }
    STATUS current
    DESCRIPTION
        "A notification sent when we receive a PDU
        with a different value of the System ID Length.
        This notification includes the an index to identify
        the circuit where we saw the PDU and the header of
        the PDU which may help a network manager identify
        the source of the confusion.

        The agent must throttle the generation of
        consecutive isisIDLenMismatch notifications
        so that there is at least a 5-second gap between
        notifications of this type. When notifications
        are throttled, they are dropped, not queued for
        sending at a future time."

 ::= { isisNotifications 5 }

isisMaxAreaAddressesMismatch NOTIFICATION-TYPE
    OBJECTS {
        isisNotificationSysLevelIndex,
        isisPduMaxAreaAddress,
        isisNotificationCircIfIndex,
        isisPduFragment
    }
}
```

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STATUS current

DESCRIPTION

"A notification sent when we receive a PDU with a different value of the Maximum Area Addresses. This notification includes the header of the packet, which may help a network manager identify the source of the confusion.

The agent must throttle the generation of consecutive isisMaxAreaAddressesMismatch notifications so that there is at least a 5-second gap between notifications of this type. When notifications are throttled, they are dropped, not queued for sending at a future time."

::= { isisNotifications 6 }

isisOwnLSPPurge NOTIFICATION-TYPE

OBJECTS {

isisNotificationSysLevelIndex,
isisNotificationCircIfIndex,
isisPduLspId

}

STATUS current

DESCRIPTION

"A notification sent when we receive a PDU with our systemID and zero age. This notification includes the circuit Index and router ID from the LSP, if available, which may help a network manager identify the source of the confusion."

::= { isisNotifications 7 }

isisSequenceNumberSkip NOTIFICATION-TYPE

OBJECTS {

isisNotificationSysLevelIndex,
isisNotificationCircIfIndex,
isisPduLspId

}

STATUS current

DESCRIPTION

"When we receive an LSP with our System ID and different contents, we may need to reissue the LSP with a higher sequence number.

We send this notification if we need to increase

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the sequence number by more than one. If two Intermediate Systems are configured with the same System ID, this notification will fire."

```
::= { isisNotifications 8 }
```

```
isisAuthenticationTypeFailure NOTIFICATION-TYPE
```

```
OBJECTS {
```

```
    isisNotificationSysLevelIndex,
```

```
    isisNotificationCircIfIndex,
```

```
    isisPduFragment
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A notification sent when we receive a PDU with the wrong authentication type field. This notification includes the header of the packet, which may help a network manager identify the source of the confusion.
```

```
The agent must throttle the generation of consecutive isisAuthenticationTypeFailure notifications so that there is at least a 5-second gap between notifications of this type. When notifications are throttled, they are dropped, not queued for sending at a future time."
```

```
::= { isisNotifications 9 }
```

```
isisAuthenticationFailure NOTIFICATION-TYPE
```

```
OBJECTS {
```

```
    isisNotificationSysLevelIndex,
```

```
    isisNotificationCircIfIndex,
```

```
    isisPduFragment
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A notification sent when we receive a PDU with incorrect authentication information field. This notification includes the header of the packet, which may help a network manager identify the source of the confusion.
```

```
The agent must throttle the generation of consecutive isisAuthenticationFailure notifications so that there is at least a 5-second gap between notifications of this type. When notifications are throttled, they are dropped, not
```

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queued for sending at a future time."

```
::= { isisNotifications 10 }
```

```
isisVersionSkew NOTIFICATION-TYPE
```

```
OBJECTS {
```

```
    isisNotificationSysLevelIndex,  
    isisNotificationCircIfIndex,  
    isisPduProtocolVersion,  
    isisPduFragment
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A notification sent when we receive a Hello  
PDU from an IS running a different version  
of the protocol. This notification includes  
the header of the packet, which may help a  
network manager identify the source of the  
confusion.
```

```
The agent must throttle the generation of  
consecutive isisVersionSkew notifications  
so that there is at least a 5-second gap  
between notifications of this type. When  
notifications are throttled, they are dropped, not  
queued for sending at a future time."
```

```
::= { isisNotifications 11 }
```

```
isisAreaMismatch NOTIFICATION-TYPE
```

```
OBJECTS {
```

```
    isisNotificationCircIfIndex,  
    isisPduFragment
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"A notification sent when we receive a Hello  
PDU from an IS which does not share any  
area address. This notification includes  
the header of the packet, which may help a  
network manager identify the source of the  
confusion.
```

```
The agent must throttle the generation of  
consecutive isisAreaMismatch notifications  
so that there is at least a 5-second gap  
between notifications of this type. When  
notifications are throttled, they are dropped, not
```

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queued for sending at a future time."

::= { isisNotifications 12 }

isisRejectedAdjacency NOTIFICATION-TYPE

OBJECTS {

isisNotificationSysLevelIndex,
isisNotificationCircIfIndex,
isisPduFragment

}

STATUS current

DESCRIPTION

"A notification sent when we receive a Hello PDU from an IS, but do not establish an adjacency for some reason.

The agent must throttle the generation of consecutive isisRejectedAdjacency notifications so that there is at least a 5-second gap between notifications of this type. When notifications are throttled, they are dropped, not queued for sending at a future time."

::= { isisNotifications 13 }

isisLSPTooLargeToPropagate NOTIFICATION-TYPE

OBJECTS {

isisNotificationSysLevelIndex,
isisNotificationCircIfIndex,
isisPduLspSize,
isisPduLspId

}

STATUS current

DESCRIPTION

"A notification sent when we attempt to propagate an LSP which is larger than the dataLinkBlockSize for the circuit.

The agent must throttle the generation of consecutive isisLSPTooLargeToPropagate notifications so that there is at least a 5-second gap between notifications of this type. When notifications are throttled, they are dropped, not queued for sending at a future time."

::= { isisNotifications 14 }

isisOrigLSPBuffSizeMismatch NOTIFICATION-TYPE

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```
OBJECTS {
    isisNotificationSysLevelIndex,
    isisNotificationCircIfIndex,
    isisPduLspId,
    isisPduOriginatingBufferSize,
    isisPduBufferSize
}
STATUS current
DESCRIPTION
    "A notification sent when a Level 1 LSP or Level
    2 LSP is received which is larger than the local
    value for isisSysLevelOrigLSPBuffSize, or when an
    LSP is received containing the supported Buffer Size
    option and the value in the PDU option field does
    not match the local value for isisSysLevelOrigLSPBuffSize.
    We pass up the size from the option field and the
    size of the LSP when one of them exceeds our configuration.

    The agent must throttle the generation of
    consecutive isisOrigLSPBuffSizeMismatch notifications
    so that there is at least a 5-second gap
    between notifications of this type. When
    notifications are throttled, they are dropped, not
    queued for sending at a future time."

 ::= { isisNotifications 15 }

isisProtocolsSupportedMismatch NOTIFICATION-TYPE
OBJECTS {
    isisNotificationSysLevelIndex,
    isisNotificationCircIfIndex,
    isisPduProtocolsSupported,
    isisPduLspId,
    isisPduFragment
}
STATUS current
DESCRIPTION
    "A notification sent when a non-pseudonode
    segment 0 LSP is received that has no matching
    protocols supported.
    This may be because the system does not generate
    the field, or because there are no common elements.
    The list of protocols supported should be included
    in the notification: it may be empty if the TLV
    is not supported, or if the TLV is empty.

    The agent must throttle the generation of
    consecutive isisProtocolsSupportedMismatch
```

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notifications so that there is at least a 5-second gap between notifications of this type. When notifications are throttled, they are dropped, not queued for sending at a future time."

```
::= { isisNotifications 16 }
```

```
isisAdjacencyChange NOTIFICATION-TYPE
```

```
  OBJECTS {  
    isisNotificationSysLevelIndex,  
    isisNotificationCircIfIndex,  
    isisPduLspId,  
    isisAdjState  
  }
```

```
  STATUS current
```

```
  DESCRIPTION
```

"A notification sent when an adjacency changes state, entering or leaving state up. The first 6 bytes of the isisPduLspId are the SystemID of the adjacent IS. The isisAdjState is the new state of the adjacency."

```
::= { isisNotifications 17 }
```

```
isisLSPErrorDetected NOTIFICATION-TYPE
```

```
  OBJECTS {  
    isisNotificationSysLevelIndex,  
    isisPduLspId,  
    isisNotificationCircIfIndex,  
    isisPduFragment,  
    isisErrorOffset,  
    isisErrorTLVType  
  }
```

```
  STATUS current
```

```
  DESCRIPTION
```

"This notification is generated when we receive an LSP with a parse error. The isisCircIfIndex holds in index of the circuit on which the PDU arrived. The isisPduFragment holds start of the LSP, and the isisErrorOffset points to the problem.

If the problem is a malformed TLV, isisErrorOffset points to start of the TLV and isisErrorTLVType holds the value of the type.

If the problem is with the LSP header, isisErrorOffset points to the suspicious byte.

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The number of such LSPs is accumulated in
isisSysStatLSPErrors."

```
::= { isisNotifications 18 }
```

```
-- Agent Conformance Definitions  
-- We define the objects a conformant agent must define
```

```
isisCompliances OBJECT IDENTIFIER ::= { isisConformance 1 }  
isisGroups      OBJECT IDENTIFIER ::= { isisConformance 2 }
```

```
-- compliance statements
```

```
isisCompliance MODULE-COMPLIANCE
```

```
  STATUS current
```

```
  DESCRIPTION
```

```
    "The compliance statement for agents that support  
    the IS-IS MIB.
```

```
    There are a number of INDEX objects that cannot be  
    represented in the form of OBJECT clauses in SMIV2,  
    but for which there are compliance requirements.  
    Those requirements, and similar requirements for  
    related objects, are expressed below in  
    pseudo-OBJECT clause form in this description:
```

```
    -- OBJECT isisSummAddressType  
    -- SYNTAX InetAddressType { ipv4(1), ipv6(2) }  
    --  
    -- DESCRIPTION  
    --   The MIB requires support for IPv4 Summary  
    --   Addresses, and anticipates the support of  
    --   IPv6 addresses.  
    --  
    --  
    -- OBJECT isisRedistributeAddrType  
    -- SYNTAX InetAddressType { ipv4(1), ipv6(2) }  
    --  
    -- DESCRIPTION  
    --   The MIB requires support for IPv4  
    --   Redistribution Addresses, and anticipates  
    --   the support of IPv6 addresses."  
    --  
    --  
    -- OBJECT isisISAdjIPAddrType  
    -- SYNTAX InetAddressType { ipv4(1), ipv6(2) }  
    --  
    -- DESCRIPTION
```

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```
-- The MIB requires support for IPv4
-- Adjacency Addresses, and anticipates the
-- support of IPv6 addresses.
MODULE -- this module
  MANDATORY-GROUPS {
    isisSystemGroup,
    isisCircuitGroup,
    isisISAdjGroup,
    isisNotificationObjectGroup,
    isisNotificationGroup
  }
 ::= { isisCompliances 1 }

-- List of all groups, mandatory and optional
isisAdvancedCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION
    "The compliance statement for agents that fully
    support the IS-IS MIB.

    There are a number of INDEX objects that cannot be
    represented in the form of OBJECT clauses in SMIV2,
    but for which there are compliance requirements.
    Those requirements, and similar requirements for
    related objects, are expressed below in
    pseudo-OBJECT clause form in this description:

    -- OBJECT isisSummAddressType
    -- SYNTAX InetAddressType { ipv4(1), ipv6(2) }
    --
    -- DESCRIPTION
    --   The MIB requires support for IPv4 Summary
    --   Addresses, and anticipates the support of
    --   IPv6 addresses.
    --
    --
    -- OBJECT isisRedistributeAddrType
    -- SYNTAX InetAddressType { ipv4(1), ipv6(2) }
    --
    -- DESCRIPTION
    --   The MIB requires support for IPv4
    --   Redistribution Addresses, and anticipates
    --   the support of IPv6 addresses."
    --
    --
    -- OBJECT isisISAdjIPAddrType
    -- SYNTAX InetAddressType { ipv4(1), ipv6(2) }
    --
```

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```
-- DESCRIPTION
--   The MIB requires support for IPv4
--   Adjacency Addresses, and anticipates the
--   support of IPv6 addresses.
--
--
-- OBJECT isisIPRADestType
-- SYNTAX InetAddressType { ipv4(1), ipv6(2) }
--
-- DESCRIPTION
--   The MIB requires support for IPv4 RA
--   Addresses, and anticipates the support of
--   IPv6 addresses.
--
--
-- OBJECT isisIPRANextHopType
-- SYNTAX InetAddressType { ipv4(1), ipv6(2) }
--
-- DESCRIPTION
--   The MIB requires support for IPv4 NextHop
--   Addresses, and anticipates the support of
--   IPv6 addresses.
MODULE -- this module
  MANDATORY-GROUPS {
    isisSystemGroup,
    isisCircuitGroup,
    isisISAdjGroup,
    isisNotificationObjectGroup,
    isisNotificationGroup,
    isisISPDUCounterGroup,
    isisRATableGroup,
    isisISIPRADestGroup,
    isisLSPGroup
  }
 ::= { isisCompliances 2 }

isisReadOnlyCompliance MODULE-COMPLIANCE
  STATUS      current
  DESCRIPTION
    "When this MIB is implemented without support for
    read-create (i.e. in read-only mode), the implementation
    can claim read-only compliance.  Such a device can then
    be monitored but can not be configured with this MIB."
  MODULE -- this module
    MANDATORY-GROUPS {
      isisSystemGroup,
      isisCircuitGroup,
      isisISAdjGroup
```

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}

OBJECT isisSysLevelType
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysID
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysMaxPathSplits
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysMaxLSPGenInt
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysPollESHelloRate
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysWaitTime
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysAdminState
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysL2toL1Leaking
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysMaxAge
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisManAreaAddrExistState

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MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelOrigLSPBuffSize
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelMinLSPGenInt
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelSetOverload
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelSetOverloadUntil
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelMetricStyle
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelSPFConsiders
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysLevelTEEnabled
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSysReceiveLSPBufferSize
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT isisSummAddrExistState
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

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OBJECT isisSummAddrMetric
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisSummAddrFullMetric
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisRedistributeAddrExistState
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircAdminState
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircExistState
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircType
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircExtDomain
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircLevelType
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircPassiveCircuit
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircMeshGroupEnabled
MIN-ACCESS read-only
DESCRIPTION

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"Write access is not required."

OBJECT isisCircMeshGroup

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircSmallHellos

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircExtendedCircID

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircIfIndex

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCirc3WayEnabled

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircLevelMetric

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircLevelWideMetric

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircLevelISPriority

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircLevelHelloMultiplier

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT isisCircLevelHelloTimer

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MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircLevelDRHelloTimer
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircLevelLSPThrottle
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircLevelMinLSPRetransInt
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircLevelCSNPInterval
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

OBJECT isisCircLevelPartSNPInterval
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required."

::= { isisCompliances 3 }

-- MIB Grouping

isisSystemGroup OBJECT-GROUP
 OBJECTS {
 isisSysVersion,
 isisSysLevelType,
 isisSysID,
 isisSysMaxPathSplits,
 isisSysMaxLSPGenInt,
 isisSysPollESHelloRate,
 isisSysWaitTime,
 isisSysAdminState,
 isisSysL2toL1Leaking,
 isisSysMaxAge,
 isisSysProtSupported,
 isisSysNotificationEnable,
 isisManAreaAddrExistState,

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```
isisSysLevelOrigLSPBuffSize,
isisSysLevelMinLSPGenInt,
isisSysLevelState,
isisSysLevelSetOverload,
isisSysLevelSetOverloadUntil,
isisSysLevelMetricStyle,
isisSysLevelSPFConsiders,
isisSysLevelTEEnabled,
isisSysReceiveLSPBufferSize,
isisSummAddrExistState,
isisSummAddrMetric,
isisAreaAddr,
isisSummAddrFullMetric,
isisRedistributeAddrExistState,
isisRouterHostName,
isisRouterID,
isisSysStatCorrLSPs,
isisSysStatLSPDbase0loads,
isisSysStatManAddrDropFromAreas,
isisSysStatAttmptToExMaxSeqNums,
isisSysStatSeqNumSkips,
isisSysStatOwnLSPPurges,
isisSysStatIDFieldLenMismatches,
isisSysStatPartChanges,
isisSysStatSPFRuns,
isisSysStatAuthTypeFails,
isisSysStatAuthFails,
isisSysStatLSPErrors
}
STATUS current
DESCRIPTION
    "The collections of objects used to manage an
    IS-IS router."
 ::= { isisGroups 1 }

isisCircuitGroup OBJECT-GROUP
OBJECTS {
    isisNextCircIndex,
    isisCircAdminState,
    isisCircExistState,
    isisCircType,
    isisCircExtDomain,
    isisCircLevelType,
    isisCircAdjChanges,
    isisCircNumAdj,
    isisCircInitFails,
    isisCircRejAdjs,
    isisCircIDFieldLenMismatches,
```

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```
isisCircMaxAreaAddrMismatches,
isisCircAuthTypeFails,
isisCircAuthFails,
isisCircLANDesISChanges,
isisCircPassiveCircuit,
isisCircMeshGroupEnabled,
isisCircMeshGroup,
isisCircSmallHellos,
isisCircLastUpTime,
isisCirc3WayEnabled,
isisCircExtendedCircID,
isisCircIfIndex,
isisCircLevelMetric,
isisCircLevelWideMetric,
isisCircLevelISPriority,
isisCircLevelIDOctet,
isisCircLevelID,
isisCircLevelDesIS,
isisCircLevelHelloMultiplier,
isisCircLevelHelloTimer,
isisCircLevelDRHelloTimer,
isisCircLevelLSPThrottle,
isisCircLevelMinLSPRetransInt,
isisCircLevelCSNPInterval,
isisCircLevelPartSNPInterval
}
STATUS current
DESCRIPTION
    "The collection of objects used to describe in
    IS-IS Circuit."
 ::= { isisGroups 2 }

isisISAdjGroup OBJECT-GROUP
OBJECTS {
    isisISAdjState,
    isisISAdj3WayState,
    isisISAdjNeighSNPAddress,
    isisISAdjNeighSysType,
    isisISAdjNeighSysID,
    isisISAdjNbrExtendedCircID,
    isisISAdjUsage,
    isisISAdjHoldTimer,
    isisISAdjNeighPriority,
    isisISAdjLastUpTime,
    isisISAdjAreaAddress,
    isisISAdjIPAddrType,
    isisISAdjIPAddrAddress,
    isisISAdjProtSuppProtocol
```

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```
    }
    STATUS current
    DESCRIPTION
        "The collections of objects used to manage an
        IS-IS Adjacency."
    ::= { isisGroups 3 }

isisNotificationObjectGroup OBJECT-GROUP
    OBJECTS {
        isisNotificationSysLevelIndex,
        isisNotificationCircIfIndex,
        isisPduLspId,
        isisPduFragment,
        isisPduFieldLen,
        isisPduMaxAreaAddress,
        isisPduProtocolVersion,
        isisPduLspSize,
        isisPduOriginatingBufferSize,
        isisPduBufferSize,
        isisPduProtocolsSupported,
        isisAdjState,
        isisErrorOffset,
        isisErrorTLVType,
        isisNotificationAreaAddress
    }
    STATUS current
    DESCRIPTION
        "The objects used to record notification parameters."
    ::= { isisGroups 4 }

isisNotificationGroup          NOTIFICATION-GROUP
    NOTIFICATIONS {
        isisDatabaseOverload,
        isisManualAddressDrops,
        isisCorruptedLSPDetected,
        isisAttemptToExceedMaxSequence,
        isisIDLLenMismatch,
        isisMaxAreaAddressesMismatch,
        isisOwnLSPPurge,
        isisSequenceNumberSkip,
        isisAuthenticationTypeFailure,
        isisAuthenticationFailure,
        isisVersionSkew,
        isisAreaMismatch,
        isisRejectedAdjacency,
        isisLSPTooLargeToPropagate,
        isisOrigLSPBuffSizeMismatch,
```

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```
        isisProtocolsSupportedMismatch,
        isisAdjacencyChange,
        isisLSPErrorDetected
    }
    STATUS current
    DESCRIPTION
        "The collections of notifications sent by an IS."
 ::= { isisGroups 5 }

isisISPDUCounterGroup OBJECT-GROUP
    OBJECTS {
        isisPacketCountIIHello,
        isisPacketCountISHello,
        isisPacketCountESHello,
        isisPacketCountLSP,
        isisPacketCountCSNP,
        isisPacketCountPSNP,
        isisPacketCountUnknown
    }
    STATUS current
    DESCRIPTION
        "The collections of objects used to count protocol PDUs."
 ::= { isisGroups 6 }

isisRATableGroup OBJECT-GROUP
    OBJECTS {
        isisRAExistState,
        isisRAAdminState,
        isisRAAddrPrefix,
        isisRAMapType,
        isisRAMetric,
        isisRAMetricType,
        isisRASNPAAddress,
        isisRASNPAAddressMask,
        isisRASNPAAddressPrefix,
        isisRAType
    }
    STATUS current
    DESCRIPTION
        "The collections of objects used to manage the
        reachable NSAP prefixes."
 ::= { isisGroups 7 }

isisISIPRADestGroup OBJECT-GROUP
    OBJECTS {
```

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```
    isisIPRANextHopType,
    isisIPRANextHop,
    isisIPRAType,
    isisIPRAExistState,
    isisIPRAAdminState,
    isisIPRAMetric,
    isisIPRAFullMetric,
    isisIPRAMetricType,
    isisIPRASNPAAAddress,
    isisIPRASourceType
}
STATUS current
DESCRIPTION
    "The collections of objects used to manage configured
    IP addresses."
 ::= { isisGroups 8 }
```

```
isisLSPGroup OBJECT-GROUP
    OBJECTS {
        isisLSPSeq,
        isisLSPZeroLife,
        isisLSPChecksum,
        isisLSPLifetimeRemain,
        isisLSPPDULength,
        isisLSPAttributes,
        isisLSPTLVSeq,
        isisLSPTLVChecksum,
        isisLSPTLVType,
        isisLSPTLVLen,
        isisLSPTLVValue
    }
STATUS current
DESCRIPTION
    "The collections of objects used to observe the LSP
    Data Base."
 ::= { isisGroups 9 }
```

END

5. IANA Considerations

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor	OBJECT IDENTIFIER value
------------	-------------------------

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```
-----  
isisMIB          { mib-2 XXX }
```

Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for "XXX" under the 'mib-2' subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace "XXX" (here and in the MIB module) with the assigned value and to remove this note.

6. Acknowledgments

This draft MIB is based on a March 1994 Internet Draft by Chris Gunner, who should be held blameless for the errors introduced since then.

We would like to thank the following individuals for constructive and valuable comments: Mike Bartlett, Neal Castagnoli, Ken Chapman, Joan Cucchiara, Satish Dattatri, Nagi Jonnala, Adrian Farrel, Shamik Ganguly, Les Ginsberg, Don Goodspeed, Jeff Gross, Jim Halpin, Jon Harrison, Dimitri Haskin, C. M. Heard, Peter Higginson, Christian Hopps, Laura Liu, Gavin McPherson, Kay Noguchi, Serge Maskalik, Z. Opalka, Jeff Pickering, Sundar Ramachandran, Swaminatha Ramalingam, Aravind Ravikumar, Juergen Schoenwaelder, Koen Vermeulen, Hans De Vleeschouwer, Bert Wijnen, and Bingzhang Zhao.

7. Security Considerations

Management information defined in this MIB may be considered sensitive in some network environments.

7.1 Discussion

This MIB may be used to manage an IP router, which is used to direct network traffic. The control of network traffic allows an attacker to deny service to a region of the network or to forward traffic to adversaries. By raising or lowering metrics, traffic may be directed to insecure portions of the network. By disabling the protocol on an interface, the network may be partitioned. Changes to the network topology will force all routers to recompute their routes. Periodic route changes have brought down networks in the past by subjecting routers to stressful recomputations.

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There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. Authentication of received SNMP requests and controlled access to management information should be employed in such environments.

We identify a set of threats, and then list attributes that can be used in each form of attack. We discuss the effects that can be obtained by a single change to the variable in each class.

7.2 Threats

- Drop an Adjacency
- Drop all Peers
- Drop Subnetwork
- Split the Network
- Intermittent Outages
- Redirect Traffic
- Delay Convergence
- Avoid Detection
- Prevent Updates
- Hijack LAN
- Create problems for CLNS networks

7.2.1 Drop an Adjacency

By changing attributes that are used to peer, we can disrupt an adjacency and bring a link down.

```
isisCirc3WayEnabled
isisCircAdminState
isisCircExistState
isisCircLevelDRHelloTimer
isisCircLevelHelloTimer
isisCircLevelType
isisCircSmallHellos
```

7.2.2 Drop All Adjacencies

These attributes can be used to break some or all of a router's adjacencies. In the case of System ID, the adjacency may be restored. However, it will subject the network to additional stress.

```
isisSysLevelType
isisManAreaAddrExistState
```

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isisSysAdminState
isisSysID

7.2.3 Drop Subnetwork

This attribute can be used to stop advertisement of a subnetwork reachable through a single interface.

isisCircPassiveCircuit

7.2.4 Split the Network

If the network design depends upon Wide Metrics or TE, we can use these attributes to prevent traffic from passing through a router.

isisSysLevelMetricStyle
isisSysLevelOrigLSPBuffSize
isisSysLevelSPFConsiders
isisSysLevelTEEnabled
isisSysReceiveLSPBufferSize

7.2.5 Intermittent Outages

We can use these attributes to subject the network to a series of topology changes, or otherwise force extensive recomputations of routes.

isisSysLevelMinLSPGenInt
isisSysLevelSetOverload
isisSysLevelSetOverloadUntil
isisSysMaxAge
isisSysMaxLSPGenInt
isisSysL2toL1Leaking
isisSysID

7.2.6 Redirect Traffic

By changing attributes such as metrics, we can push traffic to different parts of the network. This may allow an intruder to observe data traffic from otherwise remote parts of the network.

We may also use these attributes to deny service to parts of the network.

isisSysMaxPathSplits
isisCircLevelMetric
isisCircLevelWideMetric
isisIPRAAdminState

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```
isisIPRAExistState
isisIPRAFullMetric
isisIPRAMetric
isisIPRAMetricType
isisIPRANextHop
isisIPRANextHopType
isisIPRASNPAAddress
isisIPRAType
isisRedistributeAddrExistState
isisSummAddrExistState
isisSummAddrFullMetric
isisSummAddrMetric
isisSysL2toL1Leaking
```

7.2.7 Delay Convergence

These attributes can be used to slow convergence by increasing the minimal interval required to update a packet.

```
isisCircLevelCSNPInterval
isisCircLevelLSPThrottle
isisCircLevelMinLSPRetransInt
isisCircLevelPartSNPInterval
isisSysWaitTime
isisCircPassiveCircuit
```

7.2.8 Avoid Detection

By turning off traps, we can prevent a Network Management station from observing problems in the network caused by other aspects of an attack.

```
isisSysNotificationEnable
```

7.2.9 Prevent Updates

Mesh Groups can be used to prevent the transmission of Link State PDUs on certain interfaces, delaying or preventing the propagation of updates.

```
isisCircMeshGroup
isisCircMeshGroupEnabled
```

7.2.10 Hijack LAN

If we have compromised a router, we can use this attribute to become the designated router and lie about the topology of a LAN.

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isisCircLevelISPriority

7.2.11 Create problems for CLNS networks

This attribute can be used to modify the handling of CLNS traffic.

isisRAAddrPrefix
isisRAAdminState
isisRAExistState
isisRAMapType
isisRAMetric
isisRAMetricType
isisRASNPAAddress
isisRASNPMask
isisRASNPAPrefix
isisRAType
isisSysPollESHelloRate

7.2.12 Mostly Harmless

The following writable attributes do not pose a known security risk.

isisCircExtDomain
isisCircExtendedCircID
isisCircIfIndex
isisCircLevelHelloMultiplier
isisCircType

7.2.13 Recommendations

Much of the MIB is used to set or read attributes which are readily visible to any intruder who has access to traffic. None of the security attributes are settable or visible through the MIB. Read access to the MIB does not pose additional risks or vulnerabilities.

If write access is to be provided, it is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [\[RFC3410\]](#), [section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPSec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

Deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable

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cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

8. Normative References

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