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Definitions of Managed Objects for Source Routing Bridges

Status of this Memo

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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP based internets. In particular it defines objects for managing MAC bridges based on the IEEE 802.1D-1990 standard between Local Area Network (LAN)

segments. Provisions are made for support of transparent bridging.
Provisions are also made so that these objects apply to bridges
connected by subnetworks other than LAN segments.

The MIB presented in this memo is a direct translation of the SOURCE

ROUTING MIB defined in [RFC1525], to the SMIv2 syntax required for current IETF MIB standards. This memo obsoletes RFC 1525.

1. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- An overall architecture, described in RFC 2571 [RFC2571].
- Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIv1 and described in STD 16, RFC 1155 [RFC1155], STD 16, RFC 1212 [RFC1212] and RFC 1215 [RFC1215]. The second version, called SMIv2, is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].
- Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, RFC 1157 [RFC1157]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in RFC 1901 [RFC1901] and RFC 1906 [RFC1906]. The third version of the message protocol is called SNMPv3 and described in RFC 1906 [RFC1906], RFC 2572 [RFC2572] and RFC 2574 [RFC2574].
- Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in STD 15, RFC 1157 [RFC1157]. A second set of protocol operations and associated PDU formats is described in RFC 1905 [RFC1905].
- A set of fundamental applications described in RFC 2573 [RFC2573] and the view-based access control mechanism described in RFC 2575 [RFC2575].

A more detailed introduction to the current SNMP Management Framework can be found in RFC 2570 [RFC2570].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIv2. A MIB conforming to the SMIv1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIv2 will be converted into textual descriptions in SMIv1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the

MIB.

2. Overview

A common device present in many networks is the Bridge. This device is used to connect Local Area Network segments below the network layer. There are two major modes defined for this bridging; transparent and source route. The transparent method of bridging is defined in the IEEE 802.1d MAC Bridge specification [11]. Source route bridging has been defined by I.B.M. and is described in the Token Ring Architecture Reference [12], as well as the IEEE 802.5M SRT Bridge Operations Addendum [14] to 802.1d. This memo defines objects needed for management of a source routing bridge, and is an extension to the SNMP Bridge MIB [6].

An explicit attempt was made to keep this MIB as simple as possible. This was accomplished by applying the following criteria to objects proposed for inclusion:

(1) Start with a small set of essential objects and add only as further objects are needed.

(2) Require objects be essential for either fault or configuration management.

(3) Consider evidence of current use and/or utility.

(4) Limit the total of objects.

(5) Exclude objects which are simply derivable from others in this or other MIBs.

(6) Avoid causing critical sections to be heavily instrumented. The guideline that was followed is one counter per critical section per layer.

2.1. Structure of MIB

Objects in this MIB are arranged into groups. Each group is organized as a set of related objects. The overall structure and assignment of objects to their groups is shown below. Where appropriate, the corresponding management object name found in IEEE 802.1d [11] and IEEE 802.5M [14] is also included.

SR Bridge MIB Name	IEEE Name
dot1dSr	
PortTable	
Port	
HopCount	SourceRoutingPort .PortHopCount

LocalSegment .SegmentNumber

BridgeNum	.BridgeNumber
TargetSegment	
LargestFrame	.LargestFrameSize
STESpanMode	.LimitedBroadcastMode
SpecInFrames	BridgePort .ValidSRFramesReceived
SpecOutFrames	.ValidSRForwardedOutbound
ApeInFrames	
ApeOutFrames	.BroadcastFramesForwarded
SteInFrames	
SteOutFrames	.BroadcastFramesForwarded
SegmentMismatchDiscards	.DiscardInvalidRI
DuplicateSegmentDiscards	.LanIdMismatch
HopCountExceededDiscards	.FramesDiscardedHopCountExceeded

The following IEEE management objects have not been included in the SR Bridge MIB for the indicated reasons.

IEEE Object	Disposition
SourceRoutingPort	
	The following objects were NOT included in this MIB because they are redundant or not considered useful.
.LimitedBroadcastEnable	
.DiscardLackOfBuffers	
.DiscardErrorDetails	
.DiscardTargetLANInoperable	
.ValidSRDiscardedInbound	
.BroadcastBytesForwarded	
.NonBroadcastBytesForwarded	
.FramesNotReceivedDueToCongestion	
.FramesDiscardedDueToInternalError	

2.1.1. The dot1dSr Group

This group contains the objects that describe the entity's state with respect to source route bridging. If source routing is not supported, this group will not be implemented. This group is applicable to source route only, and SRT bridges.

2.1.2. The dot1dPortPair Group

Implementation of this group is optional. This group is implemented by those bridges that support the port-pair multiport model of the source route bridging mode as defined in the IEEE 802.5M SRT Addendum to 802.1d.

2.2. Relationship to Other MIBs

As described above, some IEEE 802.1d management objects have not been included in this MIB because they overlap with objects in other MIBs applicable to a bridge implementing this MIB. In particular, it is assumed that a bridge implementing this MIB will also implement (at least) the Bridge MIB and the 'system' group and the 'interfaces' group defined in MIB-II [4].

2.2.1. Relationship to the Bridge MIB

The Bridge MIB [6] must be implemented by all bridges, including transparent, SR and SRT bridges. The SR bridge MIB is an extension to the Bridge MIB.

2.2.2. Relationship to the 'system' group

In MIB-II, the 'system' group is defined as being mandatory for all systems such that each managed entity contains one instance of each object in the 'system' group. Thus, those objects apply to the entity as a whole irrespective of whether the entity's sole functionality is bridging, or whether bridging is only a subset of the entity's functionality.

2.2.3. Relationship to the 'interfaces' group

In MIB-II, the 'interfaces' group is defined as being mandatory for all systems and contains information on an entity's interfaces, where each interface is thought of as being attached to a `subnetwork'. (Note that this term is not to be confused with `subnet' which refers to an addressing partitioning scheme used in the Internet suite of protocols.) The term 'segment' is used in this memo to refer to such a subnetwork.

Implicit in this MIB is the notion of ports on a bridge. Each of these ports is associated with one interface of the 'interfaces' group, and in most situations, each port is associated with a different interface. However, there are situations in which multiple ports are associated with the same interface. An example of such a situation would be several ports, each corresponding one-to-one with several X.25 virtual circuits, but all on the same interface.

Each port is uniquely identified by a port number. A port number has no mandatory relationship to an interface number, but in the simple case, a port number will have the same value as the corresponding interface's interface number.

Some entities provide other services in addition to bridging with respect to the data sent and received by their interfaces. In such

situations, only a subset of the data sent/received on an interface

is within the domain of the entity's bridging functionality. This subset is considered to be delineated according to a set of protocols, with some protocols being bridged, and other protocols not being bridged. For example, in an entity which exclusively performed bridging, all protocols would be considered as being bridged, whereas in an entity which performed IP routing on IP datagrams and only bridged other protocols, only the non-IP data would be considered as being bridged.

Thus, this MIB (and in particular, its counters) are applicable only to that subset of the data on an entity's interfaces which is sent/received for a protocol being bridged. All such data is sent/received via the ports of the bridge.

3. Definitions

```
SOURCE-ROUTING-MIB DEFINITIONS ::= BEGIN

-- ------------------------------------------------------------ --
-- MIB for IEEE Source Routing and SRT Bridges
-- ------------------------------------------------------------ --

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, Counter32, Gauge32, Integer32
        FROM SNMPv2-SMI
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF
    dot1dBridge, dot1dSr
        FROM BRIDGE-MIB;

srMIB MODULE-IDENTITY
    LAST-UPDATED "200106260000Z"
    ORGANIZATION "IETF Bridge MIB Working Group"
    CONTACT-INFO
        "Email: bridgemib@external.cisco.com"
    DESCRIPTION
        "The Bridge MIB module for managing devices that support
        IEEE 802.1D."
    REVISION     "200106260000Z"
    DESCRIPTION
         "Draft 0: initial translation of RFC 1493 to SMIv2."
    REVISION     "199309300000Z"
    DESCRIPTION
         "RFC 1525: SMIv1 version."
    ::= { dot1dBridge 9 }

-- ------------------------------------------------------------ --
-- groups in the SR MIB
-- ------------------------------------------------------------ --

-- Note: the following group is imported from the Bridge MIB:
--      dot1dSr OBJECT IDENTIFIER ::= { dot1dBridge 3 }

dot1dPortPair   OBJECT IDENTIFIER ::= { dot1dBridge 10 }

srConformance OBJECT IDENTIFIER ::= { srMIB 1 }

-- ------------------------------------------------------------ --
-- the dot1dSr group
-- ------------------------------------------------------------ --
-- this group is implemented by those bridges that
-- support the source route bridging mode, including Source
-- Routing and SRT bridges.
```

-- -- --

```
    dot1dSrPortTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dot1dSrPortEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table that contains information about every port that
            is associated with this source route bridge."
        ::= { dot1dSr 1 }

    dot1dSrPortEntry OBJECT-TYPE
        SYNTAX      Dot1dSrPortEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A list of information for each port of a source
            route bridge."
        INDEX   { dot1dSrPort }
        ::= { dot1dSrPortTable 1 }

    Dot1dSrPortEntry ::=
        SEQUENCE {
            dot1dSrPort
                Integer32,
            dot1dSrPortHopCount
                Integer32,
            dot1dSrPortLocalSegment
                Integer32,
            dot1dSrPortBridgeNum
                Integer32,
            dot1dSrPortTargetSegment
                Integer32,
            dot1dSrPortLargestFrame
                Integer32,
            dot1dSrPortSTESpanMode
                INTEGER,
            dot1dSrPortSpecInFrames
                Counter32,
            dot1dSrPortSpecOutFrames
                Counter32,
            dot1dSrPortApeInFrames
                Counter32,
            dot1dSrPortApeOutFrames
                Counter32,
            dot1dSrPortSteInFrames
                Counter32,
            dot1dSrPortSteOutFrames
                Counter32,
            dot1dSrPortSegmentMismatchDiscards
```

Counter32,
dot1dSrPortDuplicateSegmentDiscards

```
            Counter32,
        dot1dSrPortHopCountExceededDiscards
            Counter32,
        dot1dSrPortDupLanIdOrTreeErrors
            Counter32,
        dot1dSrPortLanIdMismatches
            Counter32
    }

dot1dSrPort OBJECT-TYPE
    SYNTAX      Integer32 (1..65535)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The port number of the port for which this entry
        contains Source Route management information."
    ::= { dot1dSrPortEntry 1 }

dot1dSrPortHopCount OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The maximum number of routing descriptors allowed
        in an All Paths or Spanning Tree Explorer frames."
    ::= { dot1dSrPortEntry 2 }

dot1dSrPortLocalSegment OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The segment number that uniquely identifies the segment
        to which this port is connected. Current source routing
        protocols limit this value to the range: 0 through 4095.
        (The value 0 is used by some management applications for
        special test cases.) A value of 65535 signifies that no
        segment number is assigned to this port."
    ::= { dot1dSrPortEntry 3 }

dot1dSrPortBridgeNum OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "A bridge number uniquely identifies a bridge when more
        than one bridge is used to span the same two segments.
        Current source routing protocols limit this value to the
```

range: 0 through 15. A value of 65535 signifies that no
bridge number is assigned to this bridge."

```
        ::= { dot1dSrPortEntry 4 }

    dot1dSrPortTargetSegment OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "The segment number that corresponds to the target
            segment this port is considered to be connected to by
            the bridge.  Current source routing protocols limit this
            value to the range: 0 through 4095.  (The value 0 is
            used by some management applications for special test
            cases.) A value of 65535 signifies that no target
            segment is assigned to this port."
        ::= { dot1dSrPortEntry 5 }

    -- It would be nice if we could use ifMtu as the size of the
    -- largest frame, but we can't because ifMtu is defined to be
    -- the size that the (inter-)network layer can use which can
    -- differ from the MAC layer (especially if several layers of
    -- encapsulation are used).

    dot1dSrPortLargestFrame OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "The maximum size of the INFO field (LLC and above) that
            this port can send/receive.  It does not include any MAC
            level (framing) octets.  The value of this object is
            used by this bridge to determine whether a modification
            of the LargestFrame (LF, see [14]) field of the Routing
            Control field of the Routing Information Field is
            necessary.

            64 valid values are defined by the IEEE 802.5M SRT
            Addendum: 516, 635, 754, 873, 993, 1112, 1231, 1350,
            1470, 1542, 1615, 1688, 1761, 1833, 1906, 1979, 2052,
            2345, 2638, 2932, 3225, 3518, 3812, 4105, 4399, 4865,
            5331, 5798, 6264, 6730, 7197, 7663, 8130, 8539, 8949,
            9358, 9768, 10178, 10587, 10997, 11407, 12199, 12992,
            13785, 14578, 15370, 16163, 16956, 17749, 20730, 23711,
            26693, 29674, 32655, 35637, 38618, 41600, 44591, 47583,
            50575, 53567, 56559, 59551, and 65535.

            An illegal value will not be accepted by the bridge."
        ::= { dot1dSrPortEntry 6 }
```

```
    dot1dSrPortSTESpanMode OBJECT-TYPE
        SYNTAX      INTEGER {
```

```
                    autoSpan(1),
                    disabled(2),
                    forced(3)
                }
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "Determines how this port behaves when presented with a
            Spanning Tree Explorer frame.  The value 'disabled(2)'
            indicates that the port will not accept or send Spanning
            Tree Explorer packets; any STE packets received will be
            silently discarded.  The value 'forced(3)' indicates the
            port will always accept and propagate Spanning Tree
            Explorer frames.  This allows a manually configured
            Spanning Tree for this class of packet to be configured.
            Note that unlike transparent bridging, this is not
            catastrophic to the network if there are loops.  The
            value 'auto-span(1)' can only be returned by a bridge
            that both implements the Spanning Tree Protocol and has
            use of the protocol enabled on this port. The behavior
            of the port for Spanning Tree Explorer frames is
            determined by the state of dot1dStpPortState.  If the
            port is in the 'forwarding' state, the frame will be
            accepted or propagated.  Otherwise, it will be silently
            discarded."
        ::= { dot1dSrPortEntry 7 }

    dot1dSrPortSpecInFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Specifically Routed frames, also
            referred to as Source Routed Frames, that have
            been received from this port's segment."
        ::= { dot1dSrPortEntry 8 }

    dot1dSrPortSpecOutFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of Specifically Routed frames, also
            referred to as Source Routed Frames, that this
            port has transmitted on its segment."
        ::= { dot1dSrPortEntry 9 }

    dot1dSrPortApeInFrames OBJECT-TYPE
```

```
        SYNTAX      Counter32
        MAX-ACCESS  read-only
```

```
        STATUS      current
        DESCRIPTION
            "The number of All Paths Explorer frames, also
            referred to as All Routes Explorer frames, that
            have been received by this port from its segment."
        ::= { dot1dSrPortEntry 10 }

    dot1dSrPortApeOutFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of all Paths Explorer Frames, also
            referred to as All Routes Explorer frames, that
            have been transmitted by this port on its segment."
        ::= { dot1dSrPortEntry 11 }

    dot1dSrPortSteInFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of spanning tree explorer frames that
            have been received by this port from its segment."
        ::= { dot1dSrPortEntry 12 }

    dot1dSrPortSteOutFrames OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of spanning tree explorer frames that
            have been transmitted by this port on its segment."
        ::= { dot1dSrPortEntry 13 }

    dot1dSrPortSegmentMismatchDiscards OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of explorer frames that have been discarded
            by this port because the routing descriptor field
            contained an invalid adjacent segment value."
        ::= { dot1dSrPortEntry 14 }

    dot1dSrPortDuplicateSegmentDiscards OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
```

```
        STATUS      current
        DESCRIPTION
```

```
            "The number of frames that have been discarded by this
            port because the routing descriptor field contained a
            duplicate segment identifier."
        ::= { dot1dSrPortEntry 15 }

    dot1dSrPortHopCountExceededDiscards OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of explorer frames that have been discarded
            by this port because the Routing Information Field has
            exceeded the maximum route descriptor length."
        ::= { dot1dSrPortEntry 16 }

    dot1dSrPortDupLanIdOrTreeErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of duplicate LAN IDs or Tree errors.
            This helps in detection of problems in networks
            containing older IBM Source Routing Bridges."
        ::= { dot1dSrPortEntry 17 }

    dot1dSrPortLanIdMismatches OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of ARE and STE frames that were discarded
            because the last LAN ID in the routing information field
            did not equal the LAN-in ID.  This error can occur in
            implementations which do only a LAN-in ID and Bridge
            Number check instead of a LAN-in ID, Bridge Number, and
            LAN-out ID check before they forward broadcast frames."
        ::= { dot1dSrPortEntry 18 }

    -- ------------------------------------------------------- --
    -- scalar object in dot1dSr
    -- ------------------------------------------------------- --

    dot1dSrBridgeLfMode OBJECT-TYPE
        SYNTAX      INTEGER {
                        mode3(1),
                        mode6(2)
                    }
        MAX-ACCESS  read-write
```

```
        STATUS      current
        DESCRIPTION
```

```
            "Indicates whether the bridge operates using older 3 bit
            length negotiation fields or the newer 6 bit length
            field in its RIF."
        ::= { dot1dSr 2 }

    -- ------------------------------------------------------------ --
    -- The Port-Pair Database
    -- ------------------------------------------------------------ --
    -- Implementation of this group is optional.
    -- This group is implemented by those bridges that support
    -- the direct multiport model of the source route bridging
    -- mode as defined in the IEEE 802.5 SRT Addendum to 802.1d.
    -- Bridges implementing this group may report 65535 for
    -- dot1dSrPortBridgeNumber and dot1dSrPortTargetSegment,
    -- indicating that those objects are not applicable.
    -- ------------------------------------------------------------ --

    dot1dPortPairTableSize OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The total number of entries in the Bridge Port
            Pair Database."
        ::= { dot1dPortPair 1 }

    -- ------------------------------------------------------------ --
    -- the Bridge Port-Pair table
    -- ------------------------------------------------------------ --
    -- this table represents port pairs within a bridge forming
    -- a unique bridge path, as defined in the IEEE 802.5M SRT
    -- Addendum.
    -- ------------------------------------------------------------ --

    dot1dPortPairTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF Dot1dPortPairEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "A table that contains information about every
            port pair database entity associated with this
            source routing bridge."
        ::= { dot1dPortPair 2 }

    dot1dPortPairEntry OBJECT-TYPE
        SYNTAX      Dot1dPortPairEntry
        MAX-ACCESS  not-accessible
        STATUS      current
```

```
        DESCRIPTION
            "A list of information for each port pair entity
```

```
            of a bridge."
        INDEX   { dot1dPortPairLowPort, dot1dPortPairHighPort }
        ::= { dot1dPortPairTable 1 }

    Dot1dPortPairEntry ::=
        SEQUENCE {
            dot1dPortPairLowPort
                Integer32,
            dot1dPortPairHighPort
                Integer32,
            dot1dPortPairBridgeNum
                Integer32,
            dot1dPortPairBridgeState
                INTEGER
        }

    dot1dPortPairLowPort OBJECT-TYPE
        SYNTAX      Integer32 (1..65535)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The port number of the lower numbered port for which
            this entry contains port pair database information."
        ::= { dot1dPortPairEntry 1 }

    dot1dPortPairHighPort OBJECT-TYPE
        SYNTAX      Integer32 (1..65535)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "The port number of the higher numbered port for which
            this entry contains port pair database information."
        ::= { dot1dPortPairEntry 2 }

    dot1dPortPairBridgeNum OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "A bridge number that uniquely identifies the path
            provided by this source routing bridge between the
            segments connected to dot1dPortPairLowPort and
            dot1dPortPairHighPort.  The purpose of bridge number is
            to disambiguate between multiple paths connecting the
            same two LANs."
        ::= { dot1dPortPairEntry 3 }

    dot1dPortPairBridgeState OBJECT-TYPE
```

```
        SYNTAX      INTEGER {
                        enabled(1),
```

```
                    disabled(2),
                    invalid(3)
                }
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "The state of dot1dPortPairBridgeNum.  Writing
            'invalid(3)' to this object removes the
            corresponding entry."
        ::= { dot1dPortPairEntry 4 }

    -- ------------------------------------------------------------ --
    -- Source Routing MIB - Conformance Information
    -- ------------------------------------------------------------ --

    srGroups OBJECT IDENTIFIER ::= { srConformance 1 }
    srCompliances OBJECT IDENTIFIER ::= { srConformance 2 }

    -- ------------------------------------------------------------ --
    -- units of conformance
    -- ------------------------------------------------------------ --
    -- the dot1dSr group
    -- ------------------------------------------------------------ --

    srPortGroup OBJECT-GROUP
        OBJECTS {
            dot1dSrPortHopCount,
            dot1dSrPortLocalSegment,
            dot1dSrPortBridgeNum,
            dot1dSrPortTargetSegment,
            dot1dSrPortLargestFrame,
            dot1dSrPortSTESpanMode,
            dot1dSrPortSpecInFrames,
            dot1dSrPortSpecOutFrames,
            dot1dSrPortApeInFrames,
            dot1dSrPortApeOutFrames,
            dot1dSrPortSteInFrames,
            dot1dSrPortSteOutFrames,
            dot1dSrPortSegmentMismatchDiscards,
            dot1dSrPortDuplicateSegmentDiscards,
            dot1dSrPortHopCountExceededDiscards,
            dot1dSrPortDupLanIdOrTreeErrors,
            dot1dSrPortLanIdMismatches
        }
        STATUS      current
        DESCRIPTION
            "Source Route information for each port of the Bridge."
        ::= { srGroups 1 }
```

```
    srBridgeGroup OBJECT-GROUP
```

```
        OBJECTS {
            dot1dSrBridgeLfMode
        }
        STATUS      current
        DESCRIPTION
            "Source Route information for the Bridge."
        ::= { srGroups 2 }

    -- ---------------------------------------------------------- --
    -- The Port-Pair Database
    -- ---------------------------------------------------------- --

    srPortPairGroup OBJECT-GROUP
        OBJECTS {
            dot1dPortPairTableSize,
            dot1dPortPairBridgeNum,
            dot1dPortPairBridgeState
        }
        STATUS      current
        DESCRIPTION
            "Source Route Port Pair information for the Bridge."
        ::= { srGroups 3 }

    -- ---------------------------------------------------------- --
    -- compliance statements
    -- ---------------------------------------------------------- --

    srCompliance MODULE-COMPLIANCE
        STATUS  current
        DESCRIPTION
            "The compliance statement for device support of bridging
            services."

        MODULE
            MANDATORY-GROUPS {
                srPortGroup,
                srBridgeGroup
            }

            GROUP   srPortPairGroup
            DESCRIPTION
                "Implementation of this group is optional.  This
                group is implemented by those bridges that support
                the direct multiport model of the source route
                bridging mode as defined in the IEEE 802.5 SRT
                Addendum to 802.1d."

            ::= { srCompliances 1 }
```

```
    END
```

4. Security Considerations

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.

SNMPv1 by itself is not a secure environment. 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.

It is recommended that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model RFC 2574 [RFC2574] and the View-based Access Control Model RFC 2575 [RFC2575] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, 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.

5. Acknowledgments

The MIB presented in this memo is a direct translation of the SOURCE ROUTING MIB defined in [RFC1525], to the SMIv2 syntax required for current IETF MIB standards.

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7. Changes from RFC 1525

The following changes have been made from RFC 1525.

(1) Translated the MIB definition to use SMIv2.

(2) Updated the SNMP Framework and references to comply with the current IETF guidelines.

(3) Updated the Security section to comply with current IETF guidelines.

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