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Definition of Managed Objects for SAVI Protocol draft-an-savi-mib-15

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it defines objects for managing SAVI (Source Address Validation Improvements) protocol instance.

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[1.](#) Introduction

The Source Address Validation Improvement protocol was developed to complement ingress filtering with finer-grained, standardized IP source address validation (refer to [\[RFC7039\]](#)). A SAVI protocol instance is located on the path of hosts' packets, enforcing the hosts' use of legitimate IP source addresses.

SAVI protocol determines whether the IP address obtaining process is legitimate according to IP address assignment method. For links with Stateless Address Auto Configuration (SLAAC), Dynamic Host Configuration Protocol (DHCP), and Secure Neighbor Discovery (SEND), the process is defined in separate documents of SAVI Working Group (refer to [\[RFC6620\]](#), [\[RFC7513\]](#), [\[RFC7219\]](#).)

This document defines a MIB module that can be used to manage the SAVI protocol instance. It covers both configuration and status monitoring aspects of SAVI implementations.

This document uses terminology from the SAVI Protocol specification.

2. 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](#)].

3. Conventions

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

4. Overview

The SAVI Protocol MIB module (SAVI-MIB) is conformant to SAVI protocol, and is designed to:

- o Support centralized management and monitoring of SAVI protocol instance by standard SNMP protocol.
- o Support configuration and querying of SAVI protocol parameters.
- o Support configuration and querying of binding entries. Operators may insert and delete manual binding entries.
- o Support querying of filtering entries.
- o Support querying of the count of packets dropped because of validation failure for each interface.

Based on SAVI protocol, attributes and objects of a SAVI protocol instance can be classified into five categories:

- o System attributes. These attributes are corresponding to a SAVI protocol instance, such as IP Address Assignment Methods and some constants.
- o Anchor attributes. These attributes are corresponding to a SAVI anchor. Anchor is defined in [\[RFC7039\]](#).
- o Binding Status Table. This table contains the state of binding between source address and binding anchor (refer to [\[RFC6620\]](#), [\[RFC7513\]](#), [\[RFC7219\]](#)).
- o Filtering Table. This table contains the bindings between binding anchor and address, which is used to filter packets (refer to [\[RFC6620\]](#), [\[RFC7513\]](#), [\[RFC7219\]](#)).
- o Counting Table. This table contains the count of fail packets for each interface.

A table is designed for each category of objects.

5. Structure of the MIB Module

This section presents the structure of the SAVI-MIB module. The MIB objects are derived from the SAVI protocol specification.

This MIB is composed of a series of tables meant to form the base for managing SAVI entities. The following subsections describe all tables in the SAVI MIB module.

5.1. The SAVI System Table

The SAVI System Table (saviObjectsSystemTable) contains the objects which are corresponding to SAVI system-wide parameters. It supports the configuration and collection of SAVI system-wide parameters.

There is an entry for each IP stack, IPv4 and IPv6. The table is indexed by:

- o saviObjectsSystemIPVersion - The IP Version. A textual convention InetVersion defined in [RFC4001](#) is used to represent the different version of IP protocol.
- o saviObjectsSystemMethod - IP address assignment method.

It contains the following objects:

- o saviObjectsSystemMethodName - Name of IP address assignment method.

- o saviObjectsSystemMethodEnable - If the method is enabled.
- o saviObjectsSystemMethodPreference - Preference of the method.

The MAX-ACCESS of these objects is READ-WRITE. Network Operators may do configuration by setting these objects.

5.2. The SAVI Port Table

The SAVI Port Table (saviObjectsPortTable) contains the objects which are corresponding to SAVI running parameters of each anchor. It supports the configuration and collection of SAVI parameters of each anchor.

There is an entry for each IP stack, IPv4 and IPv6. The table is indexed by:

- o saviObjectsPortIPVersion - The IP Version.
- o saviObjectsPortIfIndex - The index value that uniquely identifies the interface to which this entry is applicable.

It contains the following objects:

- o saviObjectsPortValidatingAttr - An attribute defined in SAVI protocol (refer to [[RFC7513](#)]).
- o saviObjectsPortDhcpTrustAttr - An attribute defined in SAVI protocol (refer to [[RFC7513](#)]).
- o saviObjectsPortTrustAttr - An attribute defined in SAVI protocol (refer to [[RFC7513](#)]).
- o saviObjectsPortDhcpSnoopingAttr - An attribute defined in SAVI protocol (refer to [[RFC7513](#)]).
- o saviObjectsPortDataSnoopingAttr - An attribute defined in SAVI protocol (refer to [[RFC7513](#)]).
- o saviObjectsPortFilteringNum - The max filtering number of the Port.

The MAX-ACCESS of these objects is READ-WRITE. Network Operators may configure by setting these objects.

5.3. The SAVI Binding Table

The SAVI Binding Table (saviObjectsBindingTable) contains the objects which are corresponding to Binding State Table (BST) defined in SAVI protocol. It contains the binding parameters and state of each binding entry. It supports the collection of binding entries. And an entry can be inserted or deleted if it is a manual binding entry.

The table is indexed by:

- o saviObjectsBindingIpAddressType - IP address type. A textual convention InetAddressType defined in [RFC4001](#) is used to represent the different kind of IP address.
- o saviObjectsBindingMethod - which IP address assignment method is used to create the binding entry - manual(1), slaac(2), dhcp(3), send(4).
- o saviObjectsBindingIfIndex - The index value that uniquely identifies the interface to which this entry is applicable.
- o saviObjectsBindingIpAddress - The binding source IP address. A textual convention InetAddress defined in [RFC4001](#) is used to define this object.

The SAVI Binding Table contains the following objects:

- o saviObjectsBindingMacAddr - The binding source mac address.
- o saviObjectsBindingLifetime - The remaining lifetime of the entry.
- o saviObjectsBindingCreationtime - The value of the local clock when the entry was firstly created.
- o saviObjectsBindingRowStatus - The status of this row, by which new entries may be created, or old entries be deleted from this table. As defined in [RFC2579](#), the RowStatus textual convention is used to manage the creation and deletion of conceptual rows. For SAVI Binding Table, an entry can be created or deleted only when saviObjectsBindingMethod>manual.

The MAX-ACCESS of these objects is READ-CREATE. Network Operators may create or delete an entry by setting these objects.

5.4. The SAVI Filtering Table

The SAVI Filtering Table (saviObjectsFilteringTable) contains the objects which are corresponding to Filtering Table (FT) defined in SAVI protocol. It supports the collection of filtering entries.

The table is indexed by:

- o saviObjectsFilteringIpAddressType - IP address type.
- o saviObjectsFilteringIfIndex - The index value that uniquely identifies the interface to which this entry is applicable.
- o saviObjectsFilteringIpAddress - The source IP address.

It contains the following objects:

- o saviObjectsFilteringMacAddr - The source mac address.

The MAX-ACCESS of the object is READ-ONLY.

5.5. The SAVI Counting Table

The SAVI Counting Table (saviObjectsCountTable) contains the objects counting packets dropped because of validation failure for each interface.

The table is indexed by:

- o saviObjectsCountIPVersion - IP Version.
- o saviObjectsCountIfIndex - The index value that uniquely identifies the interface to which this entry is applicable.

It contains the following objects:

- o saviObjectsCountFilterPkts - The count of packets dropped because of validation failure.
- o saviObjectsCountFilterOctets - The count of octets dropped because of validation failure.

The MAX-ACCESS of the object is READ-ONLY.

6. Textual Conventions

The textual conventions used in the SAVI-MIB are as follows.

The MODULE-COMPLIANCE, OBJECT-GROUP textual convention is imported from SNMPv2-CONF [[RFC2580](#)]. The MODULE-IDENTITY, OBJECT-IDENTITY, OBJECT-TYPE, Unsigned32 textual convention is imported from SNMPv2-SMI [[RFC2578](#)].

The MacAddress, TimeInterval, RowStatus textual convention is imported from SNMPv2-TC [[RFC2579](#)].

The InetVersion, InetAddressType, InetAddress textual convention is imported from INET-ADDRESS-MIB [[RFC4001](#)].

The InterfaceIndex textual convention is imported from IF-MIB [[RFC2863](#)].

The ip textual convention is imported from IP-MIB [[RFC4293](#)].

7. Relationship to Other MIB Modules

7.1. Relationship to the INET-ADDRESS-MIB

To support extensibility, IETF defined new textual conventions to represent different IP protocol and different IP address in a unified formation in [RFC4001](#). To support different IP version, a textual convention InetVersion is defined to represent the different version of IP protocol. To support different IP address, a generic Internet address is defined. It consists of two objects: The first one has the syntax InetAddressType, and the second object have the syntax InetAddress. The value of the first object determines how the value of the second is encoded.

Since SAVI running mode and parameter is independent of IPv4 and IPv6, so different OID instances should be defined for each protocol. In SAVI-MIB definition, when IP address is used as a part of binding table, it is defined using textual conventions described in INET-ADDRESS-MIB.

7.2. Relationship to the IF-MIB

The Interfaces MIB [[RFC2863](#)] defines generic managed objects for managing interfaces. This document contains the interface-specific extensions for managing SAVI anchors that are modeled as interfaces.

The IF-MIB module is required to be supported on the SAVI device. The interface MUST be modeled as an ifEntry, and ifEntry objects such as ifIndex are to be used as per [RFC2863].

An ifIndex [RFC2863] is used as a common index for interfaces in the SAVI-MIB modules.

7.3. MIB modules required for IMPORTS

The SAVI MIB module IMPORTS objects from SNMPv2-SMI [RFC2578], SNMPv2-TC [RFC2579], SNMPv2-CONF [RFC2580], IF-MIB [RFC2863] and INET-ADDRESS-MIB [RFC4001] .

8. Definitions

SAVI-MIB DEFINITIONS ::=BEGIN

IMPORTS

```
MODULE-COMPLIANCE, OBJECT-GROUP
    FROM SNMPv2-CONF                --RFC2580
MODULE-IDENTITY, OBJECT-IDENTITY, OBJECT-TYPE, Unsigned32
    FROM SNMPv2-SMI                --RFC2578
TEXTUAL-CONVENTION, MacAddress, TimeInterval, RowStatus
    FROM SNMPv2-TC                --RFC2579
InterfaceIndex
    FROM IF-MIB                    --RFC2863
InetVersion, InetAddressType, InetAddress
    FROM INET-ADDRESS-MIB          --RFC4001
ip
    FROM IP-MIB                    --RFC4293
;
```

saviMIB MODULE-IDENTITY

LAST-UPDATED "201807180000Z"

ORGANIZATION

"IETF SAVI Working Group"

CONTACT-INFO

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<http://datatracker.ietf.org/wg/savi/charter/>

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"

DESCRIPTION

"This MIB Module is designed to support configuration and monitoring of SAVI protocol.

"

REVISION "201807180000Z"

DESCRIPTION

"Initial version"

::= {ip xxx}

saviObjects OBJECT IDENTIFIER ::= { saviMIB 1 }

-- System parameters for SAVI protocol

saviObjectsSystemTable OBJECT-TYPE

SYNTAX SEQUENCE OF SaviObjectsSystemEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table containing savi system-wide parameters."

::= { saviObjects 1 }

saviObjectsSystemEntry OBJECT-TYPE

SYNTAX SaviObjectsSystemEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry containing savi system-wide parameters for a particular IP version.

"

INDEX { saviObjectsSystemIPVersion, saviObjectsSystemMethod }

::= { saviObjectsSystemTable 1 }

SaviObjectsSystemEntry ::=

SEQUENCE {

saviObjectsSystemIPVersion InetVersion,

saviObjectsSystemMethod INTEGER,

saviObjectsSystemMethodName DisplayString (SIZE (0..255)),

saviObjectsSystemMethodEnable INTEGER,

saviObjectsSystemMethodPreference INTEGER

}

saviObjectsSystemIPVersion OBJECT-TYPE

SYNTAX InetVersion

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP version "

::= { saviObjectsSystemEntry 1 }

saviObjectsSystemMethod OBJECT-TYPE

```
SYNTAX      INTEGER {
                manual(1),
                slaac(2),
                dhcp(3),
                send(4)
            }
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "IP address assignment methods."
 ::= { saviObjectsSystemEntry 2 }
```

saviObjectsSystemMethodName OBJECT-TYPE

```
SYNTAX      DisplayString (SIZE (0..255))
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Name of IP address assignment methods. "
 ::= { saviObjectsSystemEntry 3 }
```

saviObjectsSystemMethodEnable OBJECT-TYPE

```
SYNTAX      INTEGER {
                enable(1),
                disable(2)
            }
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "If the method is enabled. "
 ::= { saviObjectsSystemEntry 4 }
```

saviObjectsSystemMethodPreference OBJECT-TYPE

```
SYNTAX      INTEGER {
                enable(1),
                disable(2)
            }
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "Preference of the method. "
 ::= { saviObjectsSystemEntry 5 }
```

```
-- Port parameters for SAVI protocol
```



```
saviObjectsPortTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SaviObjectsPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The table containing SAVI parameters of each anchor."
    ::= { saviObjects 2 }

saviObjectsPortEntry OBJECT-TYPE
    SYNTAX      SaviObjectsPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry containing SAVI running parameters of an anchor."
    INDEX {
        saviObjectsPortIPVersion,
        saviObjectsPortIfIndex
    }
    ::= { saviObjectsPortTable 1 }

SaviObjectsPortEntry ::=
    SEQUENCE {
        saviObjectsPortIPVersion      InetVersion,
        saviObjectsPortIfIndex        InterfaceIndex,
        saviObjectsPortValidatingAttr  INTEGER,
        saviObjectsPortDhcpTrustAttr   INTEGER,
        saviObjectsPortTrustAttr       INTEGER,
        saviObjectsPortDhcpSnoopingAttr INTEGER,
        saviObjectsPortDataSnoopingAttr INTEGER,
        saviObjectsPortFilteringNum    Unsigned32
    }

saviObjectsPortIPVersion      OBJECT-TYPE
    SYNTAX      InetVersion
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The IP version "
    ::= { saviObjectsPortEntry 1 }

saviObjectsPortIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The index value that uniquely identifies the interface to
```


which this entry is applicable. The interface identified by a particular value of this index is the same interface as identified by the same value of the IF-MIB's ifIndex.

"

::= { saviObjectsPortEntry 2 }

saviObjectsPortValidatingAttr OBJECT-TYPE

SYNTAX INTEGER {
 enable(1),
 disable(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An attribute defined in SAVI protocol.
enable(1), the attribute is set.
disable(2), the attribute is not set.
"

::= { saviObjectsPortEntry 3 }

saviObjectsPortDhcpTrustAttr OBJECT-TYPE

SYNTAX INTEGER {
 enable(1),
 disable(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An attribute defined in SAVI protocol.
enable(1), the attribute is set.
disable(2), the attribute is not set.
"

::= { saviObjectsPortEntry 4 }

saviObjectsPortTrustAttr OBJECT-TYPE

SYNTAX INTEGER {
 enable(1),
 disable(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An attribute defined in SAVI protocol.
enable(1), the attribute is set.
disable(2), the attribute is not set.
"

::= { saviObjectsPortEntry 5 }

saviObjectsPortDhcpSnoopingAttr OBJECT-TYPE

SYNTAX INTEGER {
 enable(1),
 disable(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An attribute defined in SAVI protocol.
 enable(1), the attribute is set.
 disable(2), the attribute is not set."
"

::= { saviObjectsPortEntry 6 }

saviObjectsPortDataSnoopingAttr OBJECT-TYPE

SYNTAX INTEGER {
 enable(1),
 disable(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"An attribute defined in SAVI protocol.
 enable(1), the attribute is set.
 disable(2), the attribute is not set."
"

::= { saviObjectsPortEntry 7 }

saviObjectsPortFilteringNum OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The max filtering number of the Port."

::= { saviObjectsPortEntry 8 }

-- Binding Status Table for SAVI protocol

saviObjectsBindingTable OBJECT-TYPE

SYNTAX SEQUENCE OF SaviObjectsBindingEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table containing the state of binding
 between source address and anchor."
"

::= { saviObjects 3 }

saviObjectsBindingEntry OBJECT-TYPE

SYNTAX SaviObjectsBindingEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry containing the state of binding between source address and anchor.

Entries are keyed on the source IP address type, binding type, anchor, and source IP address.

"

INDEX {

saviObjectsBindingIpAddressType,

saviObjectsBindingMethod,

saviObjectsBindingIfIndex,

saviObjectsBindingIpAddress

}

::= { saviObjectsBindingTable 1 }

SaviObjectsBindingEntry ::=

SEQUENCE {

saviObjectsBindingIpAddressType InetAddressType,

saviObjectsBindingMethod INTEGER,

saviObjectsBindingIfIndex InterfaceIndex,

saviObjectsBindingIpAddress InetAddress,

saviObjectsBindingMacAddr MacAddress,

saviObjectsBindingLifetime TimeInterval,

saviObjectsBindingCreationtime DateAndTime,

saviObjectsBindingRowStatus RowStatus

}

saviObjectsBindingIpAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"IP address type of the binding source IP."

::= { saviObjectsBindingEntry 1 }

saviObjectsBindingMethod OBJECT-TYPE

SYNTAX INTEGER {
manual(1),
slaac(2),
dhcp(3),
send(4)
}

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION


```
    "IP address assignment methods."  
 ::= { saviObjectsBindingEntry 2 }
```

```
saviObjectsBindingIfIndex OBJECT-TYPE
```

```
    SYNTAX      InterfaceIndex
```

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

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "The index value that uniquely identifies the interface to  
        which this entry is applicable. The interface identified by  
        a particular value of this index is the same interface as  
        identified by the same value of the IF-MIB's ifIndex."  
    "
```

```
 ::= { saviObjectsBindingEntry 3 }
```

```
saviObjectsBindingIpAddress OBJECT-TYPE
```

```
    SYNTAX      InetAddress
```

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

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "The binding source IP address"
```

```
 ::= { saviObjectsBindingEntry 4 }
```

```
saviObjectsBindingMacAddr OBJECT-TYPE
```

```
    SYNTAX      MacAddress
```

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

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "The binding source mac address."
```

```
 ::= { saviObjectsBindingEntry 5 }
```

```
saviObjectsBindingLifetime OBJECT-TYPE
```

```
    SYNTAX      TimeInterval
```

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

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "The remaining lifetime of the entry.  
        TimeInterval is defined in RFC 2579, it's a period of time,  
        measured in units of 0.01 seconds,  
        and the value is (0..2147483647).  
        If saviObjectsBindingMethod>manual, a value of 2147483647  
        represents infinity."  
    "
```

```
 ::= { saviObjectsBindingEntry 6 }
```

```
saviObjectsBindingCreationtime OBJECT-TYPE
```

```
    SYNTAX      DateAndTime
```

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



```
STATUS      current
DESCRIPTION
    "The value of the local clock when the entry was firstly created.
    "
 ::= { saviObjectsBindingEntry 7 }
```

```
saviObjectsBindingRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "The status of this row, by which new entries may be
        created, or old entries deleted from this table.
        An Entry can be created or deleted only when
        saviObjectsBindingMethod=manual.
        "
    ::= { saviObjectsBindingEntry 8 }
```

```
-- Filtering Table for SAVI protocol
```

```
saviObjectsFilteringTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SaviObjectsFilteringEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "The table containing the filtering entries."
    ::= { saviObjects 4 }
```

```
saviObjectsFilteringEntry OBJECT-TYPE
    SYNTAX      SaviObjectsFilteringEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "An entry containing the filtering parameters.
        Entries are keyed on the source IP address type,
        anchor, and source IP address.
        "
    INDEX { saviObjectsFilteringIpAddressType,
            saviObjectsFilteringIfIndex,
            saviObjectsFilteringIpAddress
          }
    ::= { saviObjectsFilteringTable 1 }
```

```
SaviObjectsFilteringEntry ::=
    SEQUENCE {
        saviObjectsFilteringIpAddressType  InetAddressType,
```



```
        saviObjectsFilteringIfIndex      InterfaceIndex,
        saviObjectsFilteringIpAddress    InetAddress,
        saviObjectsFilteringMacAddr      MacAddress
    }
```

saviObjectsFilteringIpAddressType OBJECT-TYPE

```
    SYNTAX      InetAddressType
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "IP address type of the filtering source IP"
    ::= { saviObjectsFilteringEntry 1 }
```

saviObjectsFilteringIfIndex OBJECT-TYPE

```
    SYNTAX      InterfaceIndex
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The index value that uniquely identifies the interface to
        which this entry is applicable. The interface identified by
        a particular value of this index is the same interface as
        identified by the same value of the IF-MIB's ifIndex.
        "
    ::= { saviObjectsFilteringEntry 2 }
```

saviObjectsFilteringIpAddress OBJECT-TYPE

```
    SYNTAX      InetAddress
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The filtering source IP address."
    ::= { saviObjectsFilteringEntry 3 }
```

saviObjectsFilteringMacAddr OBJECT-TYPE

```
    SYNTAX      MacAddress
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The filtering source mac address."
    ::= { saviObjectsFilteringEntry 4 }
```

--Count of packets dropped because of validation failure for each interface.

saviObjectsCountTable OBJECT-TYPE

```
    SYNTAX      SEQUENCE OF saviObjectsCountEntry
    MAX-ACCESS   not-accessible
    STATUS       current
```


DESCRIPTION

"The table containing count of packets dropped because of validation failure."

::= { saviObjects 5 }

saviObjectsCountEntry OBJECT-TYPE

SYNTAX saviObjectsCountEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry containing count of packets dropped because of validation failure for each interface."

INDEX { saviObjectsCountIPVersion,
saviObjectsCountIfIndex
}

::= { saviObjectsCountTable 1 }

saviObjectsCountEntry ::=

SEQUENCE {

saviObjectsCountIPVersion	InetVersion,
saviObjectsCountIfIndex	InterfaceIndex,
saviObjectsCountFilterPkts	Counter64,
saviObjectsCountFilterOctets	Counter64

}

saviObjectsCountIPVersion OBJECT-TYPE

SYNTAX InetVersion

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP version "

::= { saviObjectsCountEntry 1 }

saviObjectsCountIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Interface."

::= { saviObjectsCountEntry 2 }

saviObjectsCountFilterPkts OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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```
        "The count of Pkts dropped."
 ::= { saviObjectsCountEntry 3 }

saviObjectsCountFilterOctets OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The count of Octets dropped."
 ::= { saviObjectsCountEntry 4 }

-- Conformance information
saviConformance OBJECT IDENTIFIER ::= { saviMIB 2 }
saviCompliances OBJECT IDENTIFIER ::= { saviConformance 1 }

-- Compliance statements
saviCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for entities which implement SAVI
        protocol."
    MODULE
    MANDATORY-GROUPS {
        systemGroup,
        portGroup,
        bindingGroup,
        filteringGroup
    }
 ::= { saviCompliances 1}

saviGroups OBJECT IDENTIFIER ::= { saviConformance 2 }

--Units of conformance

systemGroup OBJECT-GROUP
    OBJECTS {
        saviObjectsSystemMethod,
        saviObjectsSystemMethodName,
        saviObjectsSystemMethodEnable,
        saviObjectsSystemMethodPreference
    }
    STATUS current
    DESCRIPTION
        "The system group contains objects corresponding to savi system
        parameters."
 ::= {saviGroups 1}
```


portGroup OBJECT-GROUP

OBJECTS {

saviObjectsPortValidatingAttr,
saviObjectsPortDhcpTrustAttr,
saviObjectsPortTrustAttr,
saviObjectsPortDhcpSnoopingAttr,
saviObjectsPortDataSnoopingAttr,
saviObjectsPortFilteringNum

}

STATUS current

DESCRIPTION

"The if group contains objects corresponding to the savi running
parameters of each anchor.
"

::= {saviGroups 2}

bindingGroup OBJECT-GROUP

OBJECTS {

saviObjectsBindingMacAddr,
saviObjectsBindingLifetime,
saviObjectsBindingCreationtime,
saviObjectsBindingRowStatus

}

STATUS current

DESCRIPTION

"The binding group contains the binding
information of anchor and source ip address.
"

::= {saviGroups 3}

filteringGroup OBJECT-GROUP

OBJECTS {

saviObjectsFilteringMacAddr

}

STATUS current

DESCRIPTION

"The filtering group contains the filtering
information of anchor and source ip address.
"

::= {saviGroups 4}

END

9. Security Considerations

There are a number of management objects defined in this MIB module with 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. These are the tables and objects and their sensitivity/vulnerability:

- o saviObjectsSystemTable - Unauthorized changes to the writable objects under saviObjectsSystemTable MAY disrupt allocation of resources in the network. For example, a device's SAVI system mode be changed by set operation to SAVI-DISABLE will give chance to IP source address spoofing.
- o saviObjectsPortTable - Unauthorized changes to the writable objects under saviObjectsPortTable MAY disrupt allocation of resources in the network. For example, an anchor's ValidatingAttr be changed by set operation to DISABLE will give chance to IP source address spoofing.
- o saviObjectsBindingTable - Unauthorized changes to the writable objects under this table MAY disrupt allocation of resources in the network. For example, a manual binding entry is inserted to the BST will give chance to IP source address spoofing.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability:

- o saviObjectsBindingTable, saviObjectsFilteringTable - The IP address and binding anchor information will be helpful to some attacks.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), 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.

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).

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

10. 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
-----	-----
SAVI-MIB	{ ip XXX }

11. Contributors

12. References

12.1. Normative References

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12.3. URL References

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- [idnits] IETF Internet Drafts editor, "http://www.ietf.org/ID-Checklist.html".
- [ietf] IETF Tools Team, "http://tools.ietf.org".
- [ops] the IETF OPS Area, "http://www.ops.ietf.org".
- [xml2rfc] XML2RFC tools and documentation, "http://xml.resource.org".

[Appendix A](#). Change Log

From draft 00 to draft 01

- o Change the value range of object saviObjectsSystemMode and add a new value savi-send(6).

From draft 01 to draft 02

- o Change saviObjectsTrustStatus into two booleans, one is saviObjectsDhcpTrustStatus, another is saviObjectsRaTrustStatus.
- o Change the character string saviObjectsIf to saviObjectsPort globally.
- o Change saviObjectsBindingState according to the latest version of solution drafts.

From draft 02 to draft 03

- o Add a new object saviObjectsPortBindRecoveryAttr, and change the object saviObjectsPortRaTrustStatus to saviObjectsPortTrustAttr according to the latest version of solution drafts and RFC.
- o Change the value range and meaning of saviObjectsBindingState according to the latest version of solution drafts and RFC.
- o Change the value range of object saviObjectsBindingType, add a new value send(4), and change the value static(1) to manual(1).

From draft 03 to draft 04

- o Add three new objects according to the latest version of solution drafts and RFC, i.e. saviObjectsSystemTentLT, saviObjectsSystemDefaultLT, saviObjectsSystemTWAIT.

From draft 04 to draft 05

- o Add two new objects according to the latest version of solution drafts and RFC, i.e. saviObjectsBindingCreationTime, saviObjectsBindingTID.

From draft 05 to draft 06

- o Add three new objects, saviObjectsSystemDadTimeout, saviObjectsPortDhcpSnoopingAttr and saviObjectsPortDataSnoopingAttr.

- o Replace object saviObjectsSystemBindRecoveryInterval with saviObjectsSystemDataSnoopingInterval.
- o Replace object saviObjectsPortSAVISAVIAttr with saviObjectsPortTrustAttr.
- o Delete object saviObjectsPortBindRecoveryAttr.

From draft 06 to draft 07

- o Replace object saviObjectsSystemDadTimeout with saviObjectsSystemDetectionTimeout.

From draft 07 to draft 08

- o Add a new table to count the fail packets of each interface.

From draft 08 to draft 09

- o Change the value range and meaning of saviObjectsBindingState according to the latest version of solution RFC.

From draft 09 to draft 10

- o Replace object saviObjectsSystemMode with saviObjectsSystemSlaacEnable, saviObjectsSystemDhcpEnable, saviObjectsSystemSendEnable, saviObjectsManualEnable.

From draft 10 to draft 11

- o Add a new table SaviObjectsPreferenceTable to reflect the preference of each savi method.

From draft 11 to draft 12

- o Replace object saviObjectsBindingType with saviObjectsBindingMethod.

From draft 12 to draft 13

- o Add a new object saviObjectsCountFilterOctets to count the octets dropped by SAVI protocol.

[Appendix B](#). Open Issues

Note to RFC Editor: please remove this appendix before publication as an RFC.

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