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**Definition of Managed Objects for the Manet Simplified Multicast
Framework Relay Set Process
draft-cole-manet-smf-mib-02**

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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 describes objects for configuring aspects of the Simplified Multicast Forwarding (SMF) process. The SMF MIB also reports state information, performance metrics, and notifications. In addition to configuration, this additional state and performance information is useful to management stations troubleshooting multicast forwarding problems.

Table of Contents

- [1.](#) Introduction [3](#)
- [2.](#) The Internet-Standard Management Framework [3](#)
- [3.](#) Conventions [3](#)
- [4.](#) Overview [3](#)
 - [4.1.](#) SMF Management Model [4](#)
 - [4.2.](#) Terms [5](#)
- [5.](#) Structure of the MIB Module [6](#)
 - [5.1.](#) Textual Conventions [6](#)
 - [5.2.](#) The Capabilities Group [6](#)
 - [5.3.](#) The Configuration Group [7](#)
 - [5.4.](#) The State Group [7](#)
 - [5.5.](#) The Performance Group [7](#)
 - [5.6.](#) The Reports Group [8](#)
 - [5.7.](#) The Notifications Group [8](#)
- [6.](#) Relationship to Other MIB Modules [8](#)
 - [6.1.](#) Relationship to the SNMPv2-MIB [9](#)
 - [6.2.](#) Relationship to the IF-MIB [9](#)
 - [6.3.](#) MIB modules required for IMPORTS [9](#)
- [7.](#) Definitions [9](#)
- [8.](#) Security Considerations [51](#)
- [9.](#) IANA Considerations [53](#)
- [10.](#) Contributors [54](#)
- [11.](#) Acknowledgements [54](#)
- [12.](#) References [54](#)
 - [12.1.](#) Normative References [54](#)
 - [12.2.](#) Informative References [55](#)
- [Appendix A.](#) Change Log [55](#)
- [Appendix B.](#) Open Issues [55](#)
- [Appendix C.](#) [56](#)

1. Introduction

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes objects for configuring aspects of a process implementing Simplified Multicast Forwarding (SMF) [[I-D.ietf-manet-smf](#)]. SMF provides multicast duplicate packet detection (DPD) and supports algorithms for constructing an estimate of a mobile ad hoc network (MANET) Minimum Connected Dominating Set (MCDS) for efficient multicast forwarding. The SMF MIB also reports state information, performance metrics, and notifications. In addition to configuration, this additional state and performance information is useful to management stations troubleshooting multicast forwarding problems.

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

SMF provides methods for implementing DPD-based multicast forwarding with the optional use of CDS-based relay sets. The MCDS is the smallest set of MANET nodes (comprising a connected cluster) which cover all the nodes in the cluster with their transmissions. As the density of the MANET nodes increase, the fraction of nodes required in an MCDS decreases. Using the MCDS as a multicast forwarding set then becomes an efficient multicast mechanism for MANETs.

Various algorithms for the construction of estimates of the MCDS exist. The Simplified Multicast Framework [[I-D.ietf-manet-smf](#)]

describes some of these. It further defines various operational modes for a node which is participating in the collective creation of the MCDS estimates. These modes depend upon the set of related MANET routing and discovery protocols and mechanisms in operation in the specific MANET node.

A SMF routers' MIB contains SMF process configuration parameters (e.g. specific CDS algorithm), state information (e.g., current membership in the CDS), performance counters (e.g., packet counters), and notifications.

4.1. SMF Management Model

This section describes the management model for the SMF node process.

Figure 1 (reproduced from Figure 4 of [[I-D.ietf-manet-smf](#)]) shows the relationship between the SMF Relay Set selection algorithm and the related algorithms, processes and protocols running in the MANET nodes. The Relay Set Selection Algorithm (RSSA) can rely upon topology information gotten from the MANET Neighborhood Discovery Protocol (NHDP), from the specific MANET routing protocol running on the node, or from Layer 2 information passed up to the higher layer protocol processes.

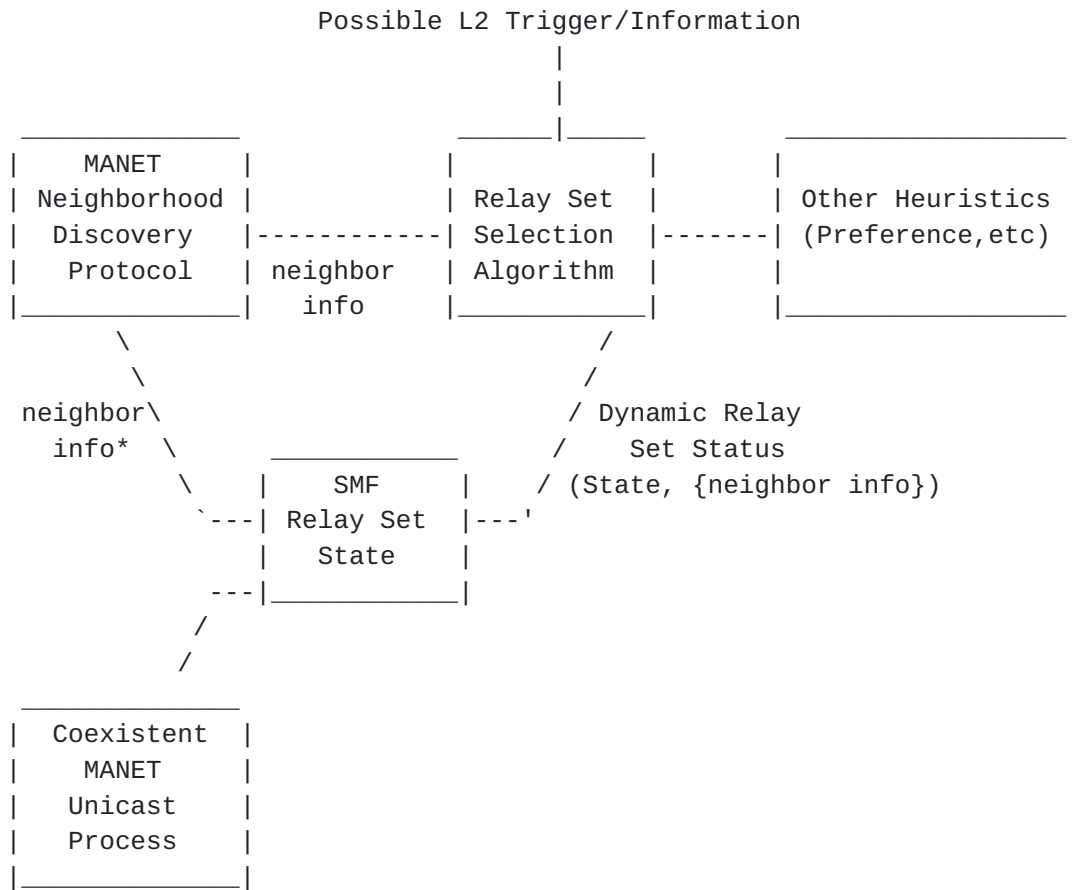


Figure 1: SMF Relay Set Control Options

4.2. Terms

The following definitions apply throughout this document:

- o Configuration Objects - switches, tables, objects which are initialized to default settings or set through the management interface defined by this MIB.
- o Tunable Configuration Objects - objects whose values affect timing or attempt bounds on the SMF RS process.
- o State Objects - automatically generated values which define the current operating state of the SMF RS process in the router.
- o Performance Objects - automatically generated values which help an administrator or automated tool to assess the performance of the CDS multicast process on the router and the overall multicasting performance within the MANET routing domain.

5. Structure of the MIB Module

This section presents the structure of the SMF MIB module. The objects are arranged into the following groups:

- o smfMIBNotifications - defines the notifications associated with the SMF MIB.
- o smfMIBObjects - defines the objects forming the basis for the SMF MIB. These objects are divided up by function into the following groups:
 - o
 - * Capabilities Group - This group contains the SMF objects that the device uses to advertise its local capabilities with respect to, e.g., the supported RSSAs.
 - * Configuration Group - This group contains the SMF objects that configure specific options that determine the overall operation of the SMF RSSA and the resulting multicast performance.
 - * State Group - Contains information describing the current state of the SMF RSSA process such as the Neighbor Table.
 - * Performance Group - Contains objects which help to characterize the performance of the SMF RSSA process, typically statistics counters.
 - * Reports Group - Contains objects which allow the device to develop and locally store performance related reports. The management application can then pull these locally stored reports when it wishes.
 - o smfMIBConformance - defines minimal and full conformance of implementations to this SMF MIB.

5.1. Textual Conventions

The textual conventions used in the SMF MIB are as follows. The RowStatus textual convention is imported from [RFC 2579](#) [[RFC2579](#)].

5.2. The Capabilities Group

The SMF device supports a set of capabilities. The list of capabilities which the device can advertise are:

- o Operational Mode - topology information from NHDP, CDS-aware unicast routing or Cross-layer from Layer 2
- o SMF RSSA - the specific RSSA operational on the device

5.3. The Configuration Group

The SMF device is configured with a set of controls. The list of configuration controls for the SMF device follow.

- o Operational Mode - topology information from NHDP, CDS-aware unicast routing or Cross-layer from Layer 2
- o SMF RSSA - the specific RSSA operational on the device
- o Duplicate Packet detection for IPv4 - Identification-based or Hash-based DPD
- o Duplicate Packet detection for IPv6 - Identification-based or Hash-based DPD
- o NHDP RSSA Message TLV - if NHDP mode is selected, then is the RSSA Message TLV included in the NHDP exchanges. (Question: Is this and the following two TLVs optional and are they included as a group or independently of one another?)
- o NHDP RSSA Address Block TLV - if NHDP mode is selected, then is the RSSA Address Block TLV included in the NHDP exchanges.
- o Router Priority TLV - if NHDP mode is selected, then is the Router Priority TLV included in the NHDP exchanges.

5.4. The State Group

The State Subtree reports current state information.

- o Node RSS State - is the node currently in or out of the Relay Set.
- o Neighbors Table - a table containing current neighbors and their operational RSSA.

5.5. The Performance Group

The Performance subtree reports primarily counters that relate to SMF RSSA performance. The SMF performance counters consists of per node and per interface objects: (Note: Need to have a discussion of the important and measurable events related to SMF RSSA multicast performance.) (Note: Do we need to break these out by type, i.e., v4

versus v6?)

- o Total multicast packets received -
- o Total multicast packets forwarded -
- o Total duplicate multicast packets detected -
- o Per interface statistics table with the following entries:
 - o
 - * Multicast packets received
 - * Multicast packets forwarded
 - * Duplicate multicast packets detected

5.6. The Reports Group

The SMF device supports a capability to generate and store locally a set of performance reports. The objects to control the generation of these reports and to identify the information contained within these reports are contained within this group. These objects include:

- o Report Control Objects - which specify the storage requirements, the time and duration and the authorship of the reports.
- o Report Objects - which identify the information, i.e., metrics, contained within these reports. Currently, these objects represent a sub-set of the objects found within the Performance Group discussed above.

5.7. The Notifications Group

The Notifications Subtree contains the list of notifications supported within the SMF-MIB and their intended purpose or utility. This group is currently empty.

6. Relationship to Other MIB Modules

[[TODO](#)]: The text of this section specifies the relationship of the MIB modules contained in this document to other standards, particularly to standards containing other MIB modules. Definitions imported from other MIB modules and other MIB modules that SHOULD be implemented in conjunction with the MIB module contained within this document are identified in this section.

6.1. Relationship to the SNMPv2-MIB

The 'system' group in the SNMPv2-MIB [[RFC3418](#)] is defined as being mandatory for all systems, and the objects apply to the entity as a whole. The 'system' group provides identification of the management entity and certain other system-wide data. The SMF-MIB does not duplicate those objects.

6.2. Relationship to the IF-MIB

[TODO] This section is included as an example; If the MIB module is not an adjunct of the Interface MIB, then this section should be removed.

6.3. MIB modules required for IMPORTS

[TODO]: Citations are not permitted within a MIB module, but any module mentioned in an IMPORTS clause or document mentioned in a REFERENCE clause is a Normative reference, and must be cited someplace within the narrative sections. If there are imported items in the MIB module, such as Textual Conventions, that are not already cited, they can be cited in text here. Since relationships to other MIB modules should be described in the narrative text, this section is typically used to cite modules from which Textual Conventions are imported.

The following SMF-MIB module IMPORTS objects from SNMPv2-SMI [[RFC2578](#)], SNMPv2-TC [[RFC2579](#)], SNMPv2-CONF [[RFC2580](#)], and IF-MIB [[RFC2863](#)]

7. Definitions

```
MANET-SMF-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    ZeroBasedCounter32
        FROM RMON2-MIB -- [RFC2021]
```

```
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
    Counter32, Unsigned32, Integer32, mib-2
        FROM SNMPv2-SMI -- [RFC2578]
```

```
    TEXTUAL-CONVENTION, RowStatus, TruthValue,
    TimeStamp, StorageType
        FROM SNMPv2-TC -- [RFC2579]
```



```
MODULE-COMPLIANCE, OBJECT-GROUP,  
NOTIFICATION-GROUP  
  FROM SNMPv2-CONF -- [RFC2580]  
  
OwnerString  
  FROM RMON-MIB -- [RFC2819]  
  
InterfaceIndexOrZero  
  FROM IF-MIB -- [RFC2863]  
  
SnmpAdminString  
  FROM SNMP-FRAMEWORK-MIB -- [RFC3411]  
  
InetAddress, InetAddressType,  
InetAddressPrefixLength  
  FROM INET-ADDRESS-MIB -- [RFC4001]  
;
```

manetSmfMIB MODULE-IDENTITY

LAST-UPDATED "200902271300Z" -- February 27, 2009

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DESCRIPTION

"This MIB module contains managed object definitions for the Manet SMF RSSA process defined in: Macker, J.(ed.), Simplified Multicast Forwarding [draft-ietf-manet-smf-08](#), November 03, 2008.

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-- Revision History

REVISION "200902271300Z" -- February 27, 2009

DESCRIPTION

"Updated draft of this MIB module published as [draft-cole-manet-smf-mib-02.txt](#). Fairly extensive revisions and additions to this MIB were made in this version. Specifically, the following changes were made in development of this version:

- added a Capabilities Group within the Objects Group to allow the device to report supported capabilities, e.g., RSSAs supported.
- added administrative status objects for device and interfaces
- added multicast address forwarding tables, both for configured (within Configuration Group) and discovered (within the State Group).
- added additional Performance counters related to DPD functions.
- Split up the performance counters into IPv4 and IPv6, for both global and per interface statistics.
- Split out the reports capability into a separate Reports Group under the Objects Group.

"

REVISION "200811031300Z" -- November 03, 2008

DESCRIPTION

"Updated draft of this MIB module published as


```
        -- future(5-127)
        -- noStdAction(128-239)
        -- experimental(240-255)
    }

--
-- Top-Level Object Identifier Assignments
--

smfMIBNotifications OBJECT IDENTIFIER ::= { manetSmfMIB 0 }
smfMIBObjects       OBJECT IDENTIFIER ::= { manetSmfMIB 1 }
smfMIBConformance  OBJECT IDENTIFIER ::= { manetSmfMIB 2 }

--
-- smfMIBObjects Assignments:
--     smfCapabilitiesGroup - 1
--     smfConfigurationGroup - 2
--     smfStateGroup - 3
--     smfPerformanceGroup - 4
--     smfReportsGroup - 5
--
--
-- smfCapabilitiesGroup
--
--     This group contains the SMF objects that identify specific
--     capabilities within this device related to SMF functions.
--

smfCapabilitiesGroup OBJECT IDENTIFIER ::= { smfMIBObjects 1 }

--
-- SMF Operational Mode Capabilities Table
--

smfOpModeCapabilitiesTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfOpModeCapabilitiesEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The smfOpModeCapabilitiesTable contains ..."
        "
    ::= { smfCapabilitiesGroup 1 }
```



```
smfOpModeCapabilitiesEntry OBJECT-TYPE
    SYNTAX      SmfOpModeCapabilitiesEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Information about a particular operational
        mode.
        "
    INDEX      { smfOpModeCapabilitiesID }
    ::= { smfOpModeCapabilitiesTable 1 }

SmfOpModeCapabilitiesEntry ::= SEQUENCE {
    smfOpModeCapabilitiesID          SmfOpModeID,
    smfOpModeCapabilitiesName       SnmpAdminString,
    smfOpModeCapabilitiesReference  SnmpAdminString
}

smfOpModeCapabilitiesID      OBJECT-TYPE
    SYNTAX      SmfOpModeID
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The index for this entry.  This object identifies
        the particular operational mode for this device.
        "
    ::= { smfOpModeCapabilitiesEntry 1 }

smfOpModeCapabilitiesName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The textual name of this operational
        mode.
        "
    ::= { smfOpModeCapabilitiesEntry 2 }

smfOpModeCapabilitiesReference OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object contains a reference to the document that
        defines this operational mode.
        "
    ::= { smfOpModeCapabilitiesEntry 3 }
```



```
--
-- SMF RSSA Capabilities Table
--

smfRssaCapabilitiesTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfRssaCapabilitiesEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The smfRssaCapabilitiesTable contains ..."
        "
    ::= { smfCapabilitiesGroup 2 }

smfRssaCapabilitiesEntry OBJECT-TYPE
    SYNTAX      SmfRssaCapabilitiesEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Information about a particular algorithm."
    INDEX      { smfRssaCapabilitiesID }
    ::= { smfRssaCapabilitiesTable 1 }

SmfRssaCapabilitiesEntry ::= SEQUENCE {
    smfRssaCapabilitiesID          SmfRssaID,
    smfRssaCapabilitiesName        SnmpAdminString,
    smfRssaCapabilitiesReference   SnmpAdminString
}

smfRssaCapabilitiesID      OBJECT-TYPE
    SYNTAX      SmfRssaID
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The index for this entry. This object identifies
        the particular algorithm in this MIB module."
    ::= { smfRssaCapabilitiesEntry 1 }

smfRssaCapabilitiesName OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The textual name of this algorithm."
        "
    ::= { smfRssaCapabilitiesEntry 2 }

smfRssaCapabilitiesReference OBJECT-TYPE
    SYNTAX      SnmpAdminString
```



```
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "This object contains a reference to the document that
    defines this algorithm.
    "
 ::= { smfRssaCapabilitiesEntry 3 }

--
-- smfConfigurationGroup
--
-- This group contains the SMF objects that configure specific
-- options that determine the overall performance and operation
-- of the multicast forwarding process for the router device
-- and its interfaces.
--

smfConfigurationGroup OBJECT IDENTIFIER ::= { smfMIBObjects 2 }

smfAdminStatus OBJECT-TYPE
    SYNTAX Status
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "The configured status of the SMF process
        on this device. Enabled(1) means that
        SMF is configured to run on this device.
        Disabled(2) mean that the SMF process
        is configured off."
 ::= { smfConfigurationGroup 1 }

smfConfiguredOpMode OBJECT-TYPE
    SYNTAX INTEGER {
        withNHDP(1),
        cdsAwareRouting(2),
        crossLayer(3),
        other(4)
    }
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "The SMF RSS node operational mode.
```


The value withNHDP(1) indicates ...
The value cdsAwareRouting(2) indicates ...
The value crossLayer(3) indicates... ."
 ::= { smfConfigurationGroup 2 }

smfConfiguredRssa OBJECT-TYPE

SYNTAX SmfRssaID
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The SMF RSS currently operational algorithm.

The value cf(1) indicates ...

The value experimental(240-255) indicates... ."
 ::= { smfConfigurationGroup 3 }

smfRssaMember OBJECT-TYPE

SYNTAX INTEGER {
potential(1),
always(2),
never(3)
}

MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The RSSA downselects a set of forwarders for multicast forwarding. Sometimes it is useful to force an agent to be included or excluded from the resulting RSS. This object is a switch to allow for this behavior.

The value potential(1) allows the selected RSSA to determine if this agent is included or excluded from the RSS.

The value always(1) forces the selected RSSA include this agent in the RSS.

The value never(3) forces the selected RSSA to exclude this agent from the RSS."

::= { smfConfigurationGroup 4 }

smfIpv4Dpd OBJECT-TYPE

SYNTAX INTEGER {
identificationBased(1),
hashBased(2)


```
    }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The current method for IPv4 duplicate packet
    detection.
    The value identificationBased(1)
    indicates...

    The value 'hashBased(2) indicates... ."
 ::= { smfConfigurationGroup 5 }

smfIpv6Dpd OBJECT-TYPE
    SYNTAX INTEGER {
        identificationBased(1),
        hashBased(2)
    }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The current method for IPv6 duplicate packet
    detection.
    The value identificationBased(1)
    indicates...

    The value 'hashBased(2) indicates... ."
 ::= { smfConfigurationGroup 6 }

smfMaxPktLifetime OBJECT-TYPE
    SYNTAX Integer32 (0..65535)
    UNITS "Seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The estimate of the network packet
    traversal time.
    "
    DEFVAL { 60 }
 ::= { smfConfigurationGroup 7 }

smfDpdMaxMemorySize OBJECT-TYPE
    SYNTAX Integer32 (0..65535)
    UNITS "Kilo-Bytes"
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The locally reserved memory for storage
    of cached DPD records for both IPv4 and
```



```
        IPv6 methods.
    "
    DEFVAL { 1024 }
 ::= { smfConfigurationGroup 8 }

smfDpdEntryMaxLifetime OBJECT-TYPE
    SYNTAX      Integer32 (0..65525)
    UNITS       "Seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The maximum lifetime of a cached DPD
         record in the local device storage.
    "
    DEFVAL { 600 }
 ::= { smfConfigurationGroup 9 }

--
-- Configuration of messages to be included in
-- NHDP message exchanges in support of SMF
-- operations.
--

smfNhdpRssaMesgTLVIncluded OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Indicates whether the associated NHDP messages
         include the RSSA Message TLV, or not. This
         is an optional SMF operational setting.
         The value true(1) indicates that this TLV is
         included; the value false(2) indicates that it
         is not included."
 ::= { smfConfigurationGroup 10 }

smfNhdpRssaAddrBlockTLVIncluded OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Indicates whether the associated NHDP messages
         include the RSSA Address Block TLV, or not.
         This is an optional SMF operational setting.
         The value true(1) indicates that this TLV is
         included; the value false(2) indicates that it
         is not included."
```



```
::= { smfConfigurationGroup 11 }
```

```
smfNhdprouterPriorityTLVIncluded OBJECT-TYPE
```

```
SYNTAX      TruthValue
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
"Indicates whether the associated NHDP messages
include the RSSA Router Priority TLV, or not.
This is an optional SMF operational setting.
The value true(1) indicates that this TLV is
included; the value false(2) indicates that it
is not included."
```

```
::= { smfConfigurationGroup 12 }
```

```
--
```

```
-- Table identifying configured multicast addresses to be forwarded.
```

```
--
```

```
smfConfiguredAddrForwardingTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF SmfConfiguredAddrForwardingEntry
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
"The (conceptual) table containing information on multicast
addresses which are to be forwarded by the SMF process.
```

```
Entries in this table are configured. As well, addresses
to be forwarded by the SMF device can be dynamically discovered
by other means. The corresponding state table,
smfDiscoveredAddrForwardingTable contains
these additional, dynamically discovered address for
forwarding.
```

```
Each row is associated with a range of multicast addresses,
and ranges for different rows must be disjoint.
```

```
"
```

```
::= { smfConfigurationGroup 13 }
```

```
smfConfiguredAddrForwardingEntry OBJECT-TYPE
```

```
SYNTAX      SmfConfiguredAddrForwardingEntry
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
"An entry (conceptual row) containing the information on a
particular multicast scope."
```

```
INDEX { smfConfiguredAddrForwardingAddrType,
```



```
    smfConfiguredAddrForwardingFirstAddr }  
 ::= { smfConfiguredAddrForwardingTable 1 }
```

```
SmfConfiguredAddrForwardingEntry ::= SEQUENCE {  
    smfConfiguredAddrForwardingAddrType      InetAddressType,  
    smfConfiguredAddrForwardingFirstAddr     InetAddress,  
    smfConfiguredAddrForwardingLastAddr      InetAddress,  
    smfConfiguredAddrForwardingStatus        RowStatus  
}
```

```
smfConfiguredAddrForwardingAddrType OBJECT-TYPE
```

```
SYNTAX      InetAddressType
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The type of the addresses in the multicast forwarding  
    range. Legal values correspond to the subset of  
    address families for which multicast address allocation  
    is supported."
```

```
::= { smfConfiguredAddrForwardingEntry 1 }
```

```
smfConfiguredAddrForwardingFirstAddr OBJECT-TYPE
```

```
SYNTAX      InetAddress (SIZE(0..20))
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The first address in the multicast scope range. The type  
    of this address is determined by the value of the  
    smfConfiguredAddrForwardingAddrType object."
```

```
::= { smfConfiguredAddrForwardingEntry 2 }
```

```
smfConfiguredAddrForwardingLastAddr OBJECT-TYPE
```

```
SYNTAX      InetAddress (SIZE(0..20))
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The last address in the multicast scope range.  
    The type of this address is determined by the  
    value of the smfConfiguredAddrForwardingAddrType  
    object."
```

```
::= { smfConfiguredAddrForwardingEntry 3 }
```

```
smfConfiguredAddrForwardingStatus 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.  If write
        access is supported, the other writable objects in this
        table may be modified even while the status is `active'."
 ::= { smfConfiguredAddrForwardingEntry 4 }
```

```
--
-- SMF Interfaces Configuration Table
--
```

```
smfInterfaceTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfInterfaceEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The SMF Interface Table describes the SMF
        interfaces that are participating in the
        SMF packet forwarding process. The ifIndex is
        from the interfaces group defined in the
        Interfaces Group MIB.
        "
    REFERENCE
        "RFC 2863 - The Interfaces Group MIB, McCloghrie,
        K., and F. Kastenholz, June 2000."
 ::= { smfConfigurationGroup 14 }
```

```
smfInterfaceEntry OBJECT-TYPE
    SYNTAX      SmfInterfaceEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The SMF interface entry describes one SMF
        interface as indexed by its ifIndex."
    INDEX { smfIfIndex }
 ::= { smfInterfaceTable 1 }
```

```
SmfInterfaceEntry ::=
    SEQUENCE {
        smfIfIndex      InterfaceIndexOrZero,
        smfIfAdminStatus Status,
        smfIfRowStatus  RowStatus
    }
```

```
smfIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndexOrZero
    MAX-ACCESS  not-accessible
    STATUS      current
```


DESCRIPTION

"The ifIndex for this SMF interface."

::= { smfInterfaceEntry 1 }

smfIfAdminStatus OBJECT-TYPE

SYNTAX Status

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The SMF interface's administrative status.

The value 'enabled' denotes that the interface is running the SMF forwarding process.

The value 'disabled' denotes that the interface is external to the SMF forwarding process.

"

::= { smfInterfaceEntry 2 }

smfIfRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object permits management of the table by facilitating actions such as row creation, construction, and destruction. The value of this object has no effect on whether other objects in this conceptual row can be modified."

::= { smfInterfaceEntry 3 }

--

-- SMF Gateway Filter Table

-- (Note: Not sure at this point what to do with this table. Most likely want to move to a separate MIB.)

--

smfGatewayFilterTable OBJECT-TYPE

SYNTAX SEQUENCE OF SmfGatewayFilterEntry

MAX-ACCESS not-accessible

STATUS obsolete

DESCRIPTION

"The SMF Gateway can be configured to filter multicast packets into and outof the SMF MANET domain. This table defines the filter rules which define packet matching and related actions. The rules are in order ..."

REFERENCE

"The SMF draft."

::= { smfConfigurationGroup 15 }

smfGatewayFilterEntry OBJECT-TYPE

SYNTAX SmfGatewayFilterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A single entry in the smfGatewayFilterTable."

REFERENCE

"The SMF draft."

INDEX { smfGatewayFilterIndex }

::= { smfGatewayFilterTable 1 }

SmfGatewayFilterEntry ::=

SEQUENCE {

smfGatewayFilterIndex	InterfaceIndexOrZero,
smfGatewayFilterIf	InterfaceIndexOrZero,
smfGatewayFilterIfDirection	INTEGER,
smfGatewayFilterRuleRank	Integer32,
smfGatewayFilterDestAddrType	InetAddressType,
smfGatewayFilterDestAddr	InetAddress,
smfGatewayFilterDestAddrPrefixLen	InetAddressPrefixLength,
smfGatewayFilterSrcAddrType	InetAddressType,
smfGatewayFilterSrcAddr	InetAddress,
smfGatewayFilterSrcAddrPrefixLen	InetAddressPrefixLength,
smfGatewayFilterProtocolNumber	Integer32,
smfGatewayFilterDestPortNumber	Integer32,
smfGatewayFilterAction	INTEGER,
smfGatewayFilterRowStatus	RowStatus

}

smfGatewayFilterIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Index for this filter rule.

"

::= { smfGatewayFilterEntry 1 }

smfGatewayFilterIf OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The ifIndex for this node interface


```
        that is filtering this rule."
 ::= { smfGatewayFilterEntry 2 }

smfGatewayFilterIfDirection OBJECT-TYPE
    SYNTAX      INTEGER {
                    in(1),
                    out(2)
                }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The ifIndex direction for this interface
        filtering rule."
 ::= { smfGatewayFilterEntry 3 }

smfGatewayFilterRuleRank OBJECT-TYPE
    SYNTAX      Integer32 (1..65535)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The rank of the rule specified in
        this entry.  This rank is specified by
        the management application.  The rules applied
        on this device are rank ordered by this
        rank, from smallest (applied first) to
        largest (applied last).  The rule ranks do not
        have to be contiguous, but they must be unique.
        When a management application changes this rank
        and the new rank is identical to the rank of another
        entry, then that entry's rank and all other entries
        with a rank greater than this rank must be incremented
        by one.
        "
    REFERENCE
        "The SMF draft."
 ::= { smfGatewayFilterEntry 4 }

smfGatewayFilterDestAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The type of the DestAddr, as defined
        in the InetAddress MIB [RFC 4001]."
    REFERENCE
        "The SMF draft."
 ::= { smfGatewayFilterEntry 5 }
```


smfGatewayFilterDestAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The destination IP address of this rule. The type of this address is determined by the value of the smfGatewayFilterDestAddrType object."

REFERENCE

"The SMF draft."

::= { smfGatewayFilterEntry 6 }

smfGatewayFilterDestAddrPrefixLen OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Indicates the number of leading one bits that form the mask to be logical-ANDed with the destination address before being compared to the value in the smfGatewayFilterDestAddr field."

REFERENCE

"The SMF draft."

::= { smfGatewayFilterEntry 7 }

smfGatewayFilterSrcAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The type of the SrcAddr, as defined in the InetAddress MIB [[RFC 4001](#)]."

REFERENCE

"The SMF draft."

::= { smfGatewayFilterEntry 8 }

smfGatewayFilterSrcAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The source IP address of this rule. The type of this address is determined by the value of the smfGatewayFilterSrcAddrType object."

REFERENCE

"The SMF draft."

::= { smfGatewayFilterEntry 9 }


```
smfGatewayFilterSrcAddrPrefixLen OBJECT-TYPE
    SYNTAX      InetAddressPrefixLength
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Indicates the number of leading one bits that form the
         mask to be logical-ANDed with the destination address
         before being compared to the value in the
         smfGatewayFilterSrcAddr field."
    REFERENCE
        "The SMF draft."
 ::= { smfGatewayFilterEntry 10 }

-- Note: check out the necessary range for protocol
-- and port numbers.
smfGatewayFilterProtocolNumber OBJECT-TYPE
    SYNTAX      Integer32(0..65535)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The Protocol Number defined in RFC 5237."
 ::= { smfGatewayFilterEntry 11 }

smfGatewayFilterDestPortNumber OBJECT-TYPE
    SYNTAX      Integer32(0..65535)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The destination Port Number defined in
         RFC XXXX."
 ::= { smfGatewayFilterEntry 12 }

smfGatewayFilterAction OBJECT-TYPE
    SYNTAX      INTEGER {
                    drop(1),
                    pass(2),
                    other(3)
                }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The action to be taken if the rule is
         matched."
 ::= { smfGatewayFilterEntry 13 }

smfGatewayFilterRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
```



```
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "This object permits management of the table
    by facilitating actions such as row creation,
    construction, and destruction. The value of
    this object has no effect on whether other
    objects in this conceptual row can be
    modified."
 ::= { smfGatewayFilterEntry 14 }

--
-- smfStateGroup
--
-- Contains information describing the current state of the SMF
-- process such as the current inclusion in the RS or not.
--

smfStateGroup OBJECT IDENTIFIER ::= { smfMIBObjects 3 }

smfNodeRsStatusIncluded OBJECT-TYPE
    SYNTAX TruthValue
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The current status of the SMF node in the context of
        the MANETs relay set. A value of true(1) indicates
        that the node is currently part of the MANET Relay
        Set. A value of false(2) indicates that the node
        is currently not part of the MANET Relay Set."
 ::= { smfStateGroup 1 }

smfDpdMemoryOverflow OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The number of times that the memory for caching
        records for DPD overran and records had to be flushed.
        The number of records to be flushed upon a buffer
        overflow is an implementation specific decision.
        "
 ::= { smfStateGroup 2 }
```



```
--
-- Dynamically Discovered Multicast Addr Table
--

smfDiscoveredAddrForwardingTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfDiscoveredAddrForwardingEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table containing information on multicast
        addresses which are to be forwarded by the SMF process.

        Entries in this table are configured. As well, addresses
        to be forwarded by the SMF device can be dynamically discovered
        by other means. The corresponding state table,
        smfDiscoveredAddrForwardingTable contains
        these additional, dynamically discovered address for
        forwarding.

        Each row is associated with a range of multicast addresses,
        and ranges for different rows must be disjoint.
        "
 ::= { smfStateGroup 3 }

smfDiscoveredAddrForwardingEntry OBJECT-TYPE
    SYNTAX      SmfDiscoveredAddrForwardingEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) containing the information on a
        particular multicast scope."
    INDEX { smfDiscoveredAddrForwardingAddrType,
            smfDiscoveredAddrForwardingFirstAddr }
 ::= { smfDiscoveredAddrForwardingTable 1 }

SmfDiscoveredAddrForwardingEntry ::= SEQUENCE {
    smfDiscoveredAddrForwardingAddrType  InetAddressType,
    smfDiscoveredAddrForwardingFirstAddr  InetAddress,
    smfDiscoveredAddrForwardingLastAddr   InetAddress,
    smfDiscoveredAddrForwardingStatus     RowStatus
}

smfDiscoveredAddrForwardingAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The type of the addresses in the multicast forwarding
```



```
    range. Legal values correspond to the subset of
    address families for which multicast address allocation
    is supported."
 ::= { smfDiscoveredAddrForwardingEntry 1 }

smfDiscoveredAddrForwardingFirstAddr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(0..20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The first address in the multicast scope range. The type
        of this address is determined by the value of the
        smfConfiguredAddrForwardingAddrType object."
 ::= { smfDiscoveredAddrForwardingEntry 2 }

smfDiscoveredAddrForwardingLastAddr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(0..20))
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The last address in the multicast scope range.
        The type of this address is determined by the
        value of the smfConfiguredAddrForwardingAddrType
        object."
 ::= { smfDiscoveredAddrForwardingEntry 3 }

smfDiscoveredAddrForwardingStatus 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. If write
        access is supported, the other writable objects in this
        table may be modified even while the status is `active'."
 ::= { smfDiscoveredAddrForwardingEntry 4 }

--
-- SMF Neighbor Table
--

smfNeighborTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfNeighborEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
```


"The SMF NeighborTable describes the current neighbor nodes, their address and SMF RSSA and the interface on which they can be reached."

REFERENCE

"Simplified Multicast Forwarding for MANET (SMF), Macker, J., February 2008.
[Section 7](#): SMF Neighborhood Discovery Requirements."

```
::= { smfStateGroup 4 }
```

```
smfNeighborEntry OBJECT-TYPE
```

```
SYNTAX      SmfNeighborEntry
```

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

```
STATUS      current
```

DESCRIPTION

"The SMF Neighbor Table contains the set of one-hop neighbors, the interface they are reachable on and the SMF RSSA they are currently running."

```
INDEX { smfNeighborIpAddrType,
        smfNeighborIpAddr,
        smfNeighborPrefixLen }
```

```
::= { smfNeighborTable 1 }
```

```
SmfNeighborEntry ::=
```

SEQUENCE {

```
    smfNeighborIpAddrType      InetAddressType,
    smfNeighborIpAddr          InetAddress,
    smfNeighborPrefixLen       InetAddressPrefixLength,
    smfNeighborRSSA            SmfRssaID,
    smfNeighborNextHopInterface InterfaceIndexOrZero
}
```

```
smfNeighborIpAddrType OBJECT-TYPE
```

```
SYNTAX      InetAddressType
```

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

```
STATUS      current
```

DESCRIPTION

"The neighbor IP address type."

```
::= { smfNeighborEntry 1 }
```

```
smfNeighborIpAddr OBJECT-TYPE
```

```
SYNTAX      InetAddress
```

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

```
STATUS      current
```

DESCRIPTION

"The neighbor Inet IPv4 or IPv6 address."


```
::= { smfNeighborEntry 2 }
```

```
smfNeighborPrefixLen OBJECT-TYPE
```

```
SYNTAX      InetAddressPrefixLength
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The prefix length. This is a decimal value that indicates the number of contiguous, higher-order bits of the address that make up the network portion of the address."
```

```
::= { smfNeighborEntry 3 }
```

```
smfNeighborRSSA OBJECT-TYPE
```

```
SYNTAX      SmfRssaID
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The current RSSA running on the neighbor. The list is identical to that described above for the smfRssa object."
```

```
::= { smfNeighborEntry 4 }
```

```
smfNeighborNextHopInterface OBJECT-TYPE
```

```
SYNTAX      InterfaceIndexOrZero
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The interface ifIndex over which the neighbor is reachable in one-hop."
```

```
::= { smfNeighborEntry 5 }
```

```
--
```

```
-- SMF Performance Group
```

```
--
```

```
-- Contains objects which help to characterize the performance of the SMF RSSA process, such as statistics counters. There are two types of SMF RSSA statistics: global counters and per interface counters.
```

```
--
```

```
smfPerformanceGroup OBJECT IDENTIFIER ::= { smfMIBObjects 4 }
```

```
smfGlobalPerfGroup OBJECT IDENTIFIER ::= { smfPerformanceGroup 1 }
```



```
--
-- IPv4 packet counters
--

smfIpv4MultiPktsRecvTotal  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of
        multicast IPv4 packets received by the
        device."
 ::= { smfGlobalPerfGroup 1 }

smfIpv4MultiPktsForwardedTotal  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of
        multicast IPv4 packets forwarded by the
        device."
 ::= { smfGlobalPerfGroup 2 }

smfIpv4DuplMultiPktsDetectedTotal  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of duplicate
        multicast IPv4 packets detected by the
        device."
 ::= { smfGlobalPerfGroup 3 }

smfIpv4DroppedMultiPktsTTLExceededTotal  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of dropped
        multicast IPv4 packets by the
        device due to TTL exceeded."
 ::= { smfGlobalPerfGroup 4 }

smfIpv4TTLLargerThanPreviousTotal  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
```


DESCRIPTION

"A counter of the total number of IPv4 packets received which have a TTL larger than that of a previously received identical packet."
"

::= { smfGlobalPerfGroup 5 }

--

-- IPv6 packet counters

--

smfIpv6MultiPktsRecvTotal OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A counter of the total number of multicast IPv6 packets received by the device."

::= { smfGlobalPerfGroup 6 }

smfIpv6MultiPktsForwardedTotal OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A counter of the total number of multicast IPv6 packets forwarded by the device."

::= { smfGlobalPerfGroup 7 }

smfIpv6DuplMultiPktsDetectedTotal OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A counter of the total number of duplicate multicast IPv6 packets detected by the device."

::= { smfGlobalPerfGroup 8 }

smfIpv6DroppedMultiPktsTTLExceededTotal OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A counter of the total number of dropped multicast IPv6 packets by the


```
        device due to TTL exceeded."
 ::= { smfGlobalPerfGroup 9 }

smfIpv6TTLLargerThanPreviousTotal OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of IPv6 packets
        recieved which have a TTL larger than that
        of a previously recieved identical packet.
        "
 ::= { smfGlobalPerfGroup 10 }

smfIpv6HAVAssistsReqdTotal OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of IPv6 packets
        recieved which required the HAV assist for DPD.
        "
 ::= { smfGlobalPerfGroup 11 }

smfIpv6DpdHeaderInsertionsTotal OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of IPv6 packets
        recieved which the device inserted the
        DPD header option.
        "
 ::= { smfGlobalPerfGroup 12 }

--
-- Per SMF Interface Performance Table
--

smfInterfacePerfGroup OBJECT IDENTIFIER ::= { smfPerformanceGroup 2 }

smfIpv4InterfacePerfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfIpv4InterfacePerfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The SMF Interface Performance Table
```



```
        describes the SMF statistics per
        interface."
 ::= { smfInterfacePerfGroup 1 }

smfIpv4InterfacePerfEntry OBJECT-TYPE
    SYNTAX      SmfIpv4InterfacePerfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The SMF Interface Performance entry
        describes the statistics for a particular
        node interface."
    INDEX { smfIpv4IfPerfIfIndex }
 ::= { smfIpv4InterfacePerfTable 1 }

SmfIpv4InterfacePerfEntry ::=
    SEQUENCE {
        smfIpv4IfPerfIfIndex          InterfaceIndexOrZero,
        smfIpv4MultiPktsRecvPerIf    Counter32,
        smfIpv4MultiPktsForwardedPerIf Counter32,
        smfIpv4DuplMultiPktsDetectedPerIf Counter32,
        smfIpv4DroppedMultiPktsTTLExceededPerIf Counter32,
        smfIpv4TTLLargerThanPreviousPerIf Counter32
    }

smfIpv4IfPerfIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndexOrZero
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The ifIndex for this node interface
        that is collecting this set of
        performance management statistics."
 ::= { smfIpv4InterfacePerfEntry 1 }

smfIpv4MultiPktsRecvPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the number of
        multicast IP packets received by the
        device on this interface."
 ::= { smfIpv4InterfacePerfEntry 2 }

smfIpv4MultiPktsForwardedPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
```



```
STATUS      current
DESCRIPTION
  "A counter of the number of
  multicast IP packets forwarded by the
  device on this interface."
 ::= { smfIpv4InterfacePerfEntry 3 }

smfIpv4DuplMultiPktsDetectedPerIf  OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "A counter of the number of duplicate
  multicast IP packets detected by the
  device on this interface."
 ::= { smfIpv4InterfacePerfEntry 4 }

smfIpv4DroppedMultiPktsTTLExceededPerIf  OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "A counter of the total number of dropped
  multicast IPv4 packets by the
  device due to TTL exceeded."
 ::= { smfIpv4InterfacePerfEntry 5 }

smfIpv4TTLLargerThanPreviousPerIf  OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
  "A counter of the total number of IPv4 packets
  recieved which have a TTL larger than that
  of a previously recieved identical packet.
  "
 ::= { smfIpv4InterfacePerfEntry 6 }

smfIpv6InterfacePerfTable  OBJECT-TYPE
SYNTAX      SEQUENCE OF SmfIpv6InterfacePerfEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "The SMF Interface Performance Table
  describes the SMF statistics per
  interface."
 ::= { smfInterfacePerfGroup 2 }
```


smfIpv6InterfacePerfEntry OBJECT-TYPE

SYNTAX SmfIpv6InterfacePerfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The SMF Interface Performance entry describes the statistics for a particular node interface."

INDEX { smfIpv6IfPerfIfIndex }

::= { smfIpv6InterfacePerfTable 1 }

SmfIpv6InterfacePerfEntry ::=

SEQUENCE {

smfIpv6IfPerfIfIndex InterfaceIndexOrZero,

smfIpv6MultiPktsRecvPerIf Counter32,

smfIpv6MultiPktsForwardedPerIf Counter32,

smfIpv6DuplMultiPktsDetectedPerIf Counter32,

smfIpv6DroppedMultiPktsTTLExceededPerIf Counter32,

smfIpv6TTLargerThanPreviousPerIf Counter32,

smfIpv6HAVAssistsReqdPerIf Counter32,

smfIpv6DpdHeaderInsertionsPerIf Counter32

}

smfIpv6IfPerfIfIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ifIndex for this node interface that is collecting this set of performance management statistics.

For packets generated locally at this node, performance counters are assigned to the loopback interface.

"

::= { smfIpv6InterfacePerfEntry 1 }

smfIpv6MultiPktsRecvPerIf OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A counter of the number of multicast IP packets received by the device on this interface."

::= { smfIpv6InterfacePerfEntry 2 }


```
smfIpv6MultiPktsForwardedPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the number of
         multicast IP packets forwarded by the
         device on this interface."
 ::= { smfIpv6InterfacePerfEntry 3 }

smfIpv6DuplMultiPktsDetectedPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the number of duplicate
         multicast IP packets detected by the
         device on this interface."
 ::= { smfIpv6InterfacePerfEntry 4 }

smfIpv6DroppedMultiPktsTTLExceededPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the number of dropped
         multicast IP packets by the
         device on this interface due to TTL
         exceeded."
 ::= { smfIpv6InterfacePerfEntry 5 }

smfIpv6TTLLargerThanPreviousPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of IPv6 packets
         recieved which have a TTL larger than that
         of a previously recieved identical packet.
         "
 ::= { smfIpv6InterfacePerfEntry 6 }

smfIpv6HAVAssistsReqdPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of IPv6 packets
```



```
        recieved which required the HAV assist for DPD.
    "
 ::= { smfIpv6InterfacePerfEntry 7 }

smfIpv6DpdHeaderInsertionsPerIf OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A counter of the total number of IPv6 packets
        recieved which the device inserted the
        DPD header option.
    "
 ::= { smfIpv6InterfacePerfEntry 8 }

--
-- Reports Control
-- This and the following tables are modeled
-- after the report control and collection
-- capabilities found in RMON II, RFC XXXX

--
-- Note: Starting down this road only for general performance
-- measures first.  If desireable, then will add reports for
-- IF specific measurements.
--

smfReportsGroup OBJECT IDENTIFIER ::= { smfMIBObjects 5 }

smfGenReportCntrlTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SmfGenReportCntrlEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The smfGenReportCntrlTable is the controlling entry
        that manages the population of studies in the
        Report for selected time intervals.

        Note that this is not like the typical RMON
        controlTable and dataTable in which each entry creates
        its own data table.  Each entry in this table enables the
        creation of multiple data tables on a study basis.  For each
        interval, the study is updated in place, and the current
        data content of the table becomes invalid.

        The control table entries are persistent across
        system reboots."
 ::= { smfReportsGroup 1 }
```


smfGenReportCntrlEntry OBJECT-TYPE

SYNTAX SmfGenReportCntrlEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A conceptual row in the smfGenReportCntrlTable.

An example of the indexing of this entry is
smfGenReportCntrlInterval.1"

INDEX { smfGenReportCntrlIndex }

::= { smfGenReportCntrlTable 1 }

SmfGenReportCntrlEntry ::= SEQUENCE {

smfGenReportCntrlIndex Unsigned32,

smfGenReportCntrlInterval Unsigned32,

smfGenReportCntrlReqSize Unsigned32,

smfGenReportCntrlGrantedSize Unsigned32,

smfGenReportCntrlReqReports Unsigned32,

smfGenReportCntrlGrantedReports Unsigned32,

smfGenReportCntrlStartTime TimeStamp,

smfGenReportCntrlReportNumber Unsigned32,

smfGenReportCntrlInsertsDenied Counter32,

smfGenReportCntrlOwner OwnerString,

smfGenReportCntrlStorageType StorageType,

smfGenReportCntrlStatus RowStatus

}

smfGenReportCntrlIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An index that uniquely identifies an entry in the
smfGenReportCntrlTable. Each such entry defines a unique
report whose results are placed in the smfGenReportTable on
behalf of this smfGenReportCntrlEntry."

::= { smfGenReportCntrlEntry 1 }

smfGenReportCntrlInterval OBJECT-TYPE

SYNTAX Unsigned32

UNITS "Seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The interval in seconds over which data is accumulated before
being aggregated into a report in the smfGenReportTable.
All reports with the same smfGenReportCntrlIndex will be

based on the same interval.

This object may not be modified if the associated
smfGenReportCntrlStatus object is equal to active(1)."

DEFVAL { 3600 }

::= { smfGenReportCntrlEntry 2 }

smfGenReportCntrlReqSize OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The maximum number of Client and Server combination
entries requested for this report.

When this object is created or modified, the probe
should set smfGenReportCntrlGrantedSize as closely to this
object as is possible for the particular probe
implementation and available resources.

It is important to note that this value is the number of
requested entries in the smfGenReportTable only.

This object may not be modified if the associated
smfGenReportCntrlStatus object is equal to active(1)."

::= { smfGenReportCntrlEntry 3 }

smfGenReportCntrlGrantedSize OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The maximum number of performance entries in this report.

When the associated smfGenReportCntrlReqSize object is
created or modified, the probe should set this
object as closely to the requested value as is
possible for the particular implementation and
available resources. The probe must not lower this
value except as a result of a set to the associated
smfGenReportCntrlReqSize object.

It is an implementation-specific matter as to whether
zero-valued entries are available."

::= { smfGenReportCntrlEntry 4 }

smfGenReportCntrlReqReports OBJECT-TYPE

SYNTAX Unsigned32 (1..65535)


```
MAX-ACCESS read-create
STATUS current
DESCRIPTION
    "The number of saved reports requested to be allocated on
    behalf of this entry.

    This object may not be modified if the associated
    smfGenReportCntrlStatus object is equal to active(1)."
```

::= { smfGenReportCntrlEntry 5 }

smfGenReportCntrlGrantedReports OBJECT-TYPE

```
SYNTAX Unsigned32 (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of saved reports the agent has allocated based
    on the requested amount in smfGenReportCntrlReqReports.
    Because each report can have many entries, the total number
    of entries allocated will be this number multiplied by the
    value of smfGenReportCntrlGrantedSize, or by 1 if that
    object doesn't exist.
```

When the associated smfGenReportCntrlReqReports object is created or modified, the agent should set this object as closely to the requested value as is possible for the particular implementation and available resources. When considering available resources, the agent must consider its ability to allocate this many reports, each with the number of entries represented by smfGenReportCntrlGrantedSize, or by 1 if that object doesn't exist.

Note that although the storage required for each report may fluctuate due to changing conditions, the agent must continue to have storage available to satisfy the full report size for all reports, when necessary. Further, the agent must not lower this value except as a result of a set to the associated smfGenReportCntrlReqSize object."

```
 ::= { smfGenReportCntrlEntry 6 }
```

smfGenReportCntrlStartTime OBJECT-TYPE

```
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value of sysUpTime when the system began processing the
    report in progress. Note that the report in progress is not
    available.
```


This object may be used by the management station to figure out the start time for all previous reports saved for this smfGenReportCntrlEntry, as reports are started at fixed intervals."

::= { smfGenReportCntrlEntry 7 }

smfGenReportCntrlReportNumber OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of the report in progress. When an smfGenReportCntrlEntry is activated, the first report will be numbered zero."

::= { smfGenReportCntrlEntry 8 }

smfGenReportCntrlInsertsDenied OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of attempts to add an entry to reports for this SmfGenReportCntrlEntry that failed because the number of entries would have exceeded smfGenReportCntrlGrantedSize.

This number is valuable in determining if enough entries have been allocated for reports in light of fluctuating network usage. Note that an entry that is denied will often be attempted again, so this number will not predict the exact number of additional entries needed, but it can be used to understand the relative magnitude of the problem.

Also note that there is no ordering specified for the entries in the report; thus, there are no rules for which entries will be omitted when not enough entries are available. As a consequence, the agent is not required to delete 'least valuable' entries first."

::= { smfGenReportCntrlEntry 9 }

smfGenReportCntrlOwner OBJECT-TYPE

SYNTAX OwnerString

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The entity that configured this entry and is therefore using the resources assigned to it.

This object may not be modified if the associated


```
    smfGenReportCntrlStatus object is equal to active(1)."  
 ::= { smfGenReportCntrlEntry 10 }
```

```
smfGenReportCntrlStorageType OBJECT-TYPE
```

```
SYNTAX      StorageType
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The storage type of this smfGenReportCntrlEntry.  If the  
    value of this object is 'permanent', no objects in this row  
    need to be writable."
```

```
 ::= { smfGenReportCntrlEntry 11 }
```

```
smfGenReportCntrlStatus OBJECT-TYPE
```

```
SYNTAX      RowStatus
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The status of this performance control entry.
```

```
    An entry may not exist in the active state unless each  
    object in the entry has an appropriate value.
```

```
    Once this object is set to active(1), no objects in the  
    smfGenReportCntrlTable can be changed.
```

```
    If this object is not equal to active(1), all associated  
    entries in the smfGenReportTable shall be deleted."
```

```
 ::= { smfGenReportCntrlEntry 12 }
```

```
--
```

```
-- Reports
```

```
-- (Note: This represents a rather conservative list  
-- of objects for inclusion within offline report  
-- generation.  As discussions evolve, more objects  
-- may be added to the below set.
```

```
--
```

```
-- Also, it is typical to use this construct to define  
-- objects representing statistical information and not  
-- counter associated information.  We need to define a set  
-- of statistical objects for these remote reports and  
-- replace this place-holder set prior to finalizing this MIB.)
```

```
--
```

```
smfGenReportTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF SmfGenReportEntry
```

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


STATUS current

DESCRIPTION

"This table contains studies for each of the control table entries in smfGenReportCntrlTable. These studies are provided based on the selections and parameters found for the entry in the smfGenReportCntrlTable.

The performance counter are the same as those specified in the smfPerformanceGroup."

::= { smfReportsGroup 2 }

smfGenReportEntry OBJECT-TYPE

SYNTAX SmfGenReportEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A conceptual row in the smfGenReportTable.

The smfGenReportCntrlIndex value in the index identifies the smfGenReportCntrlEntry on whose behalf this entry was created.

The smfGenReportIndex value in the index identifies which report (in the series of reports) this entry is a part of.

An example of the indexing of this entry is smfGenReportMultiPktsForwarded.3.15"

INDEX { smfGenReportCntrlIndex,
smfGenReportIndex
}

::= { smfGenReportTable 1 }

SmfGenReportEntry ::= SEQUENCE {

smfGenReportIndex	Unsigned32,
smfGenReportIpv4MultiPktsRecvTot	ZeroBasedCounter32,
smfGenReportIpv4MultiPktsForwardedTot	ZeroBasedCounter32,
smfGenReportIpv4DuplMultiPktsDetectedTot	ZeroBasedCounter32,
smfGenReportIpv4DroppedMultiPktsTTLExceededTot	ZeroBasedCounter32

}

smfGenReportIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..2147483647)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The value of smfGenReportCntrlNumber for the report to


```
    which this entry belongs."
 ::= { smfGenReportEntry 1 }

smfGenReportIpv4MultiPktsRecvTot OBJECT-TYPE
    SYNTAX      ZeroBasedCounter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The count of the total number of ...."
 ::= { smfGenReportEntry 2 }

smfGenReportIpv4MultiPktsForwardedTot OBJECT-TYPE
    SYNTAX      ZeroBasedCounter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The count of the total number of ...."
 ::= { smfGenReportEntry 3 }

smfGenReportIpv4DuplMultiPktsDetectedTot OBJECT-TYPE
    SYNTAX      ZeroBasedCounter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The count of the total number of ...."
 ::= { smfGenReportEntry 4 }

smfGenReportIpv4DroppedMultiPktsTTLExceededTot OBJECT-TYPE
    SYNTAX      ZeroBasedCounter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The count of the total number of ...."
 ::= { smfGenReportEntry 5 }

--
-- Notifications
--

-- Note:  What notifications do we want for this MIB?

--
-- Compliance Statements
--
```



```
-- Note: need to update the Compliance section once the mib
--       objects stablize.
```

```
smfCompliances OBJECT IDENTIFIER ::= { smfMIBConformance 1 }
smfMIBGroups   OBJECT IDENTIFIER ::= { smfMIBConformance 2 }
```

```
smfBasicCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The basic implementation requirements for
              managed network entities that implement
              the SMF RSSA process."
  MODULE -- this module
  MANDATORY-GROUPS { smfCapabObjectsGroup,
                    smfConfigObjectsGroup }
 ::= { smfCompliances 1 }
```

```
smfFullCompliance MODULE-COMPLIANCE
  STATUS current
  DESCRIPTION "The full implementation requirements for
              managed network entities that implement
              the SMF RSSA process."
  MODULE -- this module
  MANDATORY-GROUPS { smfCapabObjectsGroup,
                    smfConfigObjectsGroup,
                    smfStateObjectsGroup,
                    smfPerfObjectsGroup,
                    smfRepObjectsGroup }
 ::= { smfCompliances 2 }
```

```
--
-- Units of Conformance
--
```

```
smfCapabObjectsGroup OBJECT-GROUP
  OBJECTS {
    smfOpModeCapabilitiesName,
    smfOpModeCapabilitiesReference,

    smfRssaCapabilitiesName,
    smfRssaCapabilitiesReference
  }
  STATUS current
  DESCRIPTION
    "Set of SMF configuration objects implemented
    in this module."
 ::= { smfMIBGroups 1 }
```



```
smfConfigObjectsGroup OBJECT-GROUP
  OBJECTS {
    smfAdminStatus,
    smfConfiguredOpMode,
    smfConfiguredRssa,
    smfRssaMember,
    smfIpv4Dpd,
    smfIpv6Dpd,
    smfMaxPktLifetime,
    smfDpdMaxMemorySize,
    smfDpdEntryMaxLifetime,
    smfNhdpRssaMesgTLVIncluded,
    smfNhdpRssaAddrBlockTLVIncluded,
    smfNhdpRouterPriorityTLVIncluded,

    smfConfiguredAddrForwardingLastAddr,
    smfConfiguredAddrForwardingStatus,

    smfIfAdminStatus,
    smfIfRowStatus,

    smfGatewayFilterIf,
    smfGatewayFilterIfDirection,
    smfGatewayFilterRuleRank,
    smfGatewayFilterDestAddrType,
    smfGatewayFilterDestAddr,
    smfGatewayFilterDestAddrPrefixLen,
    smfGatewayFilterSrcAddrType,
    smfGatewayFilterSrcAddr,
    smfGatewayFilterSrcAddrPrefixLen,
    smfGatewayFilterProtocolNumber,
    smfGatewayFilterDestPortNumber,
    smfGatewayFilterAction,
    smfGatewayFilterRowStatus
  }
  STATUS current
  DESCRIPTION
    "Set of SMF configuration objects implemented
    in this module."
 ::= { smfMIBGroups 2 }
```

```
smfStateObjectsGroup OBJECT-GROUP
  OBJECTS {
    smfNodeRsStatusIncluded,
    smfDpdMemoryOverflow,

    smfDiscoveredAddrForwardingLastAddr,
    smfDiscoveredAddrForwardingStatus,
```



```
        smfNeighborRSSA,
        smfNeighborNextHopInterface
    }
    STATUS current
    DESCRIPTION
        "Set of SMF state objects implemented
        in this module."
 ::= { smfMIBGroups 3 }

smfPerfObjectsGroup OBJECT-GROUP
    OBJECTS {
        smfIpv4MultiPktsRecvTotal,
        smfIpv4MultiPktsForwardedTotal,
        smfIpv4DuplMultiPktsDetectedTotal,
        smfIpv4DroppedMultiPktsTTLExceededTotal,
        smfIpv4TTLLargerThanPreviousTotal,

        smfIpv6MultiPktsRecvTotal,
        smfIpv6MultiPktsForwardedTotal,
        smfIpv6DuplMultiPktsDetectedTotal,
        smfIpv6DroppedMultiPktsTTLExceededTotal,
        smfIpv6TTLLargerThanPreviousTotal,
        smfIpv6HAVAssistsReqdTotal,
        smfIpv6DpdHeaderInsertionsTotal,

        smfIpv4MultiPktsRecvPerIf,
        smfIpv4MultiPktsForwardedPerIf,
        smfIpv4DuplMultiPktsDetectedPerIf,
        smfIpv4DroppedMultiPktsTTLExceededPerIf,
        smfIpv4TTLLargerThanPreviousPerIf,

        smfIpv6MultiPktsRecvPerIf,
        smfIpv6MultiPktsForwardedPerIf,
        smfIpv6DuplMultiPktsDetectedPerIf,
        smfIpv6DroppedMultiPktsTTLExceededPerIf,
        smfIpv6TTLLargerThanPreviousPerIf,
        smfIpv6HAVAssistsReqdPerIf,
        smfIpv6DpdHeaderInsertionsPerIf
    }
    STATUS current
    DESCRIPTION
        "Set of SMF performance objects implemented
        in this module by total and per interface."
 ::= { smfMIBGroups 4 }

smfRepObjectsGroup OBJECT-GROUP
    OBJECTS {
        smfGenReportCntrlInterval,
```



```
    smfGenReportCntrlReqSize,
    smfGenReportCntrlGrantedSize,
    smfGenReportCntrlReqReports,
    smfGenReportCntrlGrantedReports,
    smfGenReportCntrlStartTime,
    smfGenReportCntrlReportNumber,
    smfGenReportCntrlInsertsDenied,
    smfGenReportCntrlOwner,
    smfGenReportCntrlStorageType,
    smfGenReportCntrlStatus,

    smfGenReportIpv4MultiPktsRecvTot,
    smfGenReportIpv4MultiPktsForwardedTot,
    smfGenReportIpv4DuplMultiPktsDetectedTot,
    smfGenReportIpv4DroppedMultiPktsTTLExceededTot
}
STATUS current
DESCRIPTION
    "Set of SMF reports objects implemented
    in this module."
 ::= { smfMIBGroups 5 }

END
```

8. Security Considerations

[TODO] Each specification that defines one or more MIB modules MUST contain a section that discusses security considerations relevant to those modules. This section MUST be patterned after the latest approved template (available at <http://www.ops.ietf.org/mib-security.html>). Remember that the objective is not to blindly copy text from the template, but rather to think and evaluate the risks/vulnerabilities and then state/document the result of this evaluation.

[TODO] if you have any read-write and/or read-create objects, please include the following boilerplate paragraph.

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 [TODO] writable MIB objects that could be especially disruptive if abused MUST be explicitly listed by name and the associated security risks MUST be spelled out; [RFC 2669](#) has a very good example.
- o [TODO] list the writable tables and objects and state why they are sensitive.

[TODO] else if there are no read-write objects in your MIB module, use the following boilerplate paragraph.

There are no management objects defined in this MIB module that have a MAX-ACCESS clause of read-write and/or read-create. So, if this MIB module is implemented correctly, then there is no risk that an intruder can alter or create any management objects of this MIB module via direct SNMP SET operations.

[TODO] if you have any sensitive readable objects, please include the following boilerplate paragraph.

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 [TODO] you must explicitly list by name any readable objects that are sensitive or vulnerable and the associated security risks MUST be spelled out (for instance, if they might reveal customer information or violate personal privacy laws such as those of the European Union if exposed to unauthorized parties)
- o [TODO] list the tables and objects and state why they are sensitive.

[TODO] discuss what security the protocol used to carry the information should have. The following three boilerplate paragraphs should not be changed without very good reason. Changes will almost certainly require justification during IESG review.

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.

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.

9. IANA Considerations

[TODO] In order to comply with IESG policy as set forth in <http://www.ietf.org/ID-Checklist.html>, every Internet-Draft that is submitted to the IESG for publication MUST contain an IANA Considerations section. The requirements for this section vary depending what actions are required of the IANA. see [RFC4181 section 3.5](#) for more information on writing an IANA clause for a MIB module document.

[TODO] select an option and provide the necessary details.

Option #1:

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

Descriptor	OBJECT IDENTIFIER value
-----	-----
sampleMIB	{ mib-2 XXX }

Option #2:

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.

Note well: prior to official assignment by the IANA, a draft document MUST use placeholders (such as "XXX" above) rather than actual numbers. See [RFC4181 Section 4.5](#) for an example of how this is done

in a draft MIB module.

Option #3:

This memo includes no request to IANA.

10. Contributors

This MIB document uses the template authored by D. Harrington which is based on contributions from the MIB Doctors, especially Juergen Schoenwaelder, Dave Perkins, C.M.Heard and Randy Presuhn.

11. Acknowledgements

12. References

12.1. Normative References

- [RFC2863] McCloghrie, K. and F. Kastenholz, "The Interfaces Group MIB", [RFC 2863](#), June 2000.
- [RFC3418] Presuhn, R., "Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3418](#), December 2002.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIV2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIV2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIV2", STD 58, [RFC 2580](#), April 1999.
- [I-D.ietf-manet-smf] Macker, J. and S. Team, "Simplified Multicast Forwarding for MANET", [draft-ietf-manet-smf-08](#) (work in progress), November 2008.

12.2. Informative References

- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", [RFC 3410](#), December 2002.

Appendix A. Change Log

Not applicable to draft 00

- 1.

Appendix B. Open Issues

This section contains the set of open issues related to the development and design of the SMF-MIB. This section will not be present in the final version of the MIB and will be removed once all the open issues have been resolved.

1. Clarify handling of the NHDP TLV message inclusions?
2. Can we develop a capabilities table for the supported RSSA algorithms? And, if so, can each supported RSSA have a different set of configuration parameters?
3. Is the Gateway Filter table appropriate for this MIB or should it be handled in a separate MIB worked elsewhere? How should this table be indexed and how should it represent the ordering of the rules (or chains)? Should this be greatly simplified? How do we handle null values in the rules?
4. Is it useful to track the effectiveness of the coverage of the current RSSA? Is it possible to track this?
5. Complete notification group.
6. Complete conformance group.
7. Work on the relationship to other MIBs, IF-MIB, NHDP-MIB.
8. Update the text of the document to reflect the final state of the MIB.
9. Identify all objects requiring non-volatile storage in their DESCRIPTION clauses.

- 10. Incorporate parameter relationship conditions into their DESCRIPTION clauses.
- 11. Complete the security analysis and section.
- 12. Cleanup all the [TODOs] from the MIB template.

Appendix C.

```

*****
* Note to the RFC Editor (to be removed prior to publication) *
*
* 1) The reference to RFCXXXX within the DESCRIPTION clauses *
* of the MIB module point to this draft and are to be *
* assigned by the RFC Editor. *
*
* 2) The reference to RFCXXX2 throughout this document point *
* to the current draft-ietf-manet-smf-xx.txt. This *
* need to be replaced with the XXX RFC number. *
*
*****

```

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