

PIM WG
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Protocol Independent Multicast MIB
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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 managed objects used for managing the Protocol Independent Multicast (PIM) protocols (PIM-SM and BIDIR-PIM). This document obsoletes [RFC 2934](#).

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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 managed objects used for managing the Protocol Independent Multicast (PIM) protocols (PIM-SM [[I-D.ietf-pim-sm-v2-new](#)] and BIDIR-PIM [[I-D.ietf-pim-bidir](#)]).

This document obsoletes [RFC 2934](#) [[RFC2934](#)]. [RFC 2934](#) defined an experimental MIB module for managing the PIM protocols. The MIB module defined by this document is a complete re-working of the MIB module from [RFC 2934](#), with major changes that include the following.

- o This MIB module is independent of IP version, whereas [RFC 2934](#) only supported IPv4.
- o This MIB module includes support for managing BIDIR-PIM.
- o This MIB module does not include support for managing PIM-DM.
- o This MIB module does not include support for managing PIM-SM v1.
- o This MIB module does not depend on the IPv4 Multicast Routing MIB defined in [RFC 2932](#) [[RFC2932](#)].
- o This MIB module includes support for configuring SSM ranges and static RPs.

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](#)].

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](#)

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.](#) Overview

This MIB module contains the following tables.

1. The PIM Interface Table, which contains one row per IP version for each interface of the router which is running PIM.
2. The PIM Neighbor Table, which contains one row for each of the router's PIM neighbors.
3. The PIM Neighbor Secondary Address Table, which contains one row for each secondary address advertised by each of the router's PIM neighbors.
4. The PIM (*,G) State Table, which contains one row for each group for which PIM has (*,G) state.
5. The PIM (*,G,I) State Table, which contains one row for each group and interface for which PIM has interface-specific (*,G) state.
6. The PIM (S,G) State Table, which contains one row for each source and group for which PIM has (S,G) state.
7. The PIM (S,G,I) State Table, which contains one row for each source, group and interface for which PIM has interface-specific (S,G) state.
8. The PIM (S,G,rpt) State Table, which contains one row for each

source and group for which PIM has (S,G,rpt) state.

9. The PIM (S,G,rpt,I) State Table, which contains one row for each source, group and interface for which PIM has interface-specific (S,G,rpt) state.
10. The PIM Bidir DF-Election Table, which contains one row per interface for each Rendezvous Point (RP) for which Bidirectional-PIM Designated Forwarder (DF) election state is maintained.
11. The PIM SSM Range Table, which contains one row per range of multicast group addresses to which SSM semantics [[RFC3569](#)] should be applied.
12. The PIM Static RP Table, which contains one row per range of multicast group addresses for which a particular configured RP should be used.

13. The PIM Group Mapping Table, which contains one row for each mapping from a multicast group address prefix to the PIM mode and RP address to use for groups within that group prefix, regardless of the source of the group mapping information.
14. The BSR Candidate-RP Table, which contains one row for each multicast group address prefix for which the local router is to advertise itself as a Candidate-RP.
15. The BSR RP-Set Table, which contains one row for each group mapping that was learned via BSR.
16. The BSR Candidate-BSR Table, which contains Candidate-BSR configuration for the local router.
17. The BSR Elected BSR Table, which contains one row for each elected BSR.

This MIB module uses textual conventions defined in the IF-MIB [[RFC2863](#)], the INET-ADDRESS-MIB [[RFC4001](#)] and the IANA-RTPROTO-MIB.

[4.](#) Definitions

PIM-STD-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
MODULE-IDENTITY, OBJECT-TYPE, mib-2,
NOTIFICATION-TYPE,
Unsigned32, TimeTicks                FROM SNMPv2-SMI
TEXTUAL-CONVENTION,
RowStatus, TruthValue                FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP,
NOTIFICATION-GROUP                  FROM SNMPv2-CONF
InterfaceIndexOrZero,
InterfaceIndex                       FROM IF-MIB
InetAddressType,
InetAddressPrefixLength,
InetAddress, InetVersion              FROM INET-ADDRESS-MIB
IANAipRouteProtocol                  FROM IANA-RTPROTO-MIB;
```

pimStdMIB MODULE-IDENTITY

```
LAST-UPDATED "200507150000Z" -- July 15, 2005
ORGANIZATION "IETF PIM Working Group"
CONTACT-INFO
    "Email: pim@ietf.org"
DESCRIPTION
    "The MIB module for management of PIM routers."
```

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

-- RFC Ed.: replace yyyy with actual RFC number & remove this note

```
REVISION      "200507150000Z" -- July 15, 2005
```

```
DESCRIPTION   "Initial version, published as RFC yyyy."
```

-- RFC Ed.: replace yyyy with actual RFC number & remove this note

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

-- RFC Ed.: replace XXX with IANA-assigned number & remove this note

```
pimMIBObjects OBJECT IDENTIFIER ::= { pimStdMIB 1 }
```

```
pimTraps      OBJECT IDENTIFIER ::= { pimMIBObjects 0 }
```

```
pim           OBJECT IDENTIFIER ::= { pimMIBObjects 1 }
```

--

-- Textual Conventions
--

PimMode ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The PIM mode in which a group is operating.

none(1) The group is not using PIM, which may be the case if, for example, it is a link-local or unroutable group address.

ssm(2) Source-Specific Multicast (SSM), with PIM Sparse Mode.

asm(3) Any Source Multicast (ASM), with PIM Sparse Mode.

bidir(4) Bi-directional PIM.

other(5) Any other PIM mode."

SYNTAX INTEGER {
 none(1),
 ssm(2),
 asm(3),
 bidir(4),
 other(5)
 }

PimGroupMappingOriginType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The mechanism by which a PIM group mapping was learned.

fixed(1) Statically created link-local or unroutable group mappings.

config(2) Local configuration.

bsr(3) The PIM Bootstrap Router (BSR) mechanism [[I-D.ietf-pim-sm-bsr](#)].

autoRP(4) Cisco's Auto-RP mechanism.

embedded(5) The Embedded-RP mechanism [[RFC3956](#)] where the RP address is embedded in the multicast group address.

other(6) Any other mechanism."

```
SYNTAX      INTEGER {
                fixed(1),
                config(2),
                bsr(3),
                autoRP(4),
                embedded(5),
                other(6)
            }
```

--

-- The PIM Interface Table

--

pimInterfaceTable OBJECT-TYPE

SYNTAX SEQUENCE OF PimInterfaceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the router's PIM interfaces.

PIM is enabled on all interfaces listed in this table."

::= { pim 1 }

pimInterfaceEntry OBJECT-TYPE

SYNTAX PimInterfaceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimInterfaceTable."

INDEX { pimInterfaceIfIndex,
pimInterfaceIPVersion }

::= { pimInterfaceTable 1 }

PimInterfaceEntry ::= SEQUENCE {

pimInterfaceIPVersion	InetVersion,
pimInterfaceAddressType	InetAddressType,
pimInterfaceAddress	InetAddress,
pimInterfaceNetMaskLength	InetAddressPrefixLength,
pimInterfaceDR	InetAddress,
pimInterfaceHelloInterval	Unsigned32,
pimInterfaceTrigHelloInterval	Unsigned32,
pimInterfaceJoinPruneInterval	Unsigned32,
pimInterfaceDFElectionRobustness	Unsigned32,
pimInterfaceHelloHoldtime	Unsigned32,
pimInterfaceJoinPruneHoldtime	Unsigned32,
pimInterfaceUseLanPruneDelay	TruthValue,
pimInterfacePropagationDelay	Unsigned32,
pimInterfaceOverrideInterval	Unsigned32,
pimInterfaceUseGenerationID	TruthValue,
pimInterfaceGenerationIDValue	Unsigned32,
pimInterfaceUseDRPriority	TruthValue,
pimInterfaceDRPriority	Unsigned32,
pimInterfaceLanDelayEnabled	TruthValue,
pimInterfaceEffectPropagDelay	Unsigned32,
pimInterfaceEffectOverrideIvl	Unsigned32,
pimInterfaceSuppressionEnabled	TruthValue,
pimInterfaceBidirCapable	TruthValue,
pimInterfaceDRPriorityEnabled	TruthValue,
pimInterfaceBSRBorder	TruthValue,
pimInterfaceStatus	RowStatus

}

pimInterfaceIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ifIndex value of this PIM interface."

::= { pimInterfaceEntry 1 }

pimInterfaceIPVersion OBJECT-TYPE

SYNTAX InetVersion

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP version of this PIM interface. A physical interface may be configured in multiple modes concurrently, e.g. IPv4 and IPv6, however the traffic is considered to be logically separate."

::= { pimInterfaceEntry 2 }

pimInterfaceAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type of this PIM interface."

::= { pimInterfaceEntry 3 }

pimInterfaceAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The primary IP address of this router on this PIM interface. The InetAddressType is given by the pimInterfaceAddressType object."

::= { pimInterfaceEntry 4 }

pimInterfaceNetMaskLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The network mask length for the primary IP address of this router on this PIM interface. The InetAddressType is given by the pimInterfaceAddressType object. A value of 0 indicates that the network mask length is unknown."

::= { pimInterfaceEntry 5 }

pimInterfaceDR OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The primary IP address of the Designated Router on this PIM interface. The InetAddressType is given by the pimInterfaceAddressType object."

::= { pimInterfaceEntry 6 }

pimInterfaceHelloInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..18000)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The frequency at which PIM Hello messages are transmitted"

on this interface. This object corresponds to the 'Hello_Period' timer value defined in the PIM-SM

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specification [[I-D.ietf-pim-sm-v2-new](#)]. A value of 0 represents an 'infinite' interval, and indicates that periodic PIM Hello messages should not be sent on this interface."

DEFVAL { 30 }
::= { pimInterfaceEntry 7 }

pimInterfaceTrigHelloInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..60)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The maximum time before this router sends a triggered PIM Hello message on this interface. This object corresponds to the 'Trigered_Hello_Delay' timer value defined in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. A value of 0 has no special meaning and indicates that triggered PIM Hello messages should always be sent immediately."

DEFVAL { 5 }
::= { pimInterfaceEntry 8 }

pimInterfaceJoinPruneInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..18000)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The frequency at which this router sends PIM Join/Prune messages on this PIM interface. This object corresponds to the 't_periodic' timer value defined in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. A value of 0 represents an 'infinite' interval, and indicates that periodic PIM Join/Prune messages should not be sent on this interface."

DEFVAL { 60 }
::= { pimInterfaceEntry 9 }

pimInterfaceDFElectionRobustness OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The minimum number of PIM DF-Election messages that must be
 lost in order for DF election on this interface to fail."
DEFVAL { 3 }
::= { pimInterfaceEntry 10 }

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pimInterfaceHelloHoldtime OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The value set in the Holdtime field of PIM Hello messages
 transmitted on this interface. A value of 65535 represents
 an 'infinite' holdtime. Implementations are recommended
 to use a holdtime that is 3.5 times the value of
 pimInterfaceHelloInterval, or 65535 if
 pimInterfaceHelloInterval is set to 0."
DEFVAL { 105 }
::= { pimInterfaceEntry 11 }

pimInterfaceJoinPruneHoldtime OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The value inserted into the Holdtime field of a PIM
 Join/Prune message sent on this interface. A value of 65535
 represents an 'infinite' holdtime. Implementations are
 recommended to use a holdtime that is 3.5 times the value of
 pimInterfaceJoinPruneInterval, or 65535 if
 pimInterfaceJoinPruneInterval is set to 0."
DEFVAL { 210 }
::= { pimInterfaceEntry 12 }

pimInterfaceUseLanPruneDelay OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Whether or not this router includes the LAN Prune Delay
 option in the PIM Hello messages it sends on this
 interface."
DEFVAL { true }
 ::= { pimInterfaceEntry 13 }

pimInterfacePropagationDelay OBJECT-TYPE
SYNTAX Unsigned32 (0..32767)
UNITS "milliseconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The value this router inserts into the Propagation_Delay

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field of the LAN Prune Delay option in the PIM Hello
messages it sends on this interface. This object is only
used if pimInterfaceUseLanPruneDelay is set to TRUE.
Implementations should enforce a lower bound on the
permitted values for this object to allow for scheduling and
processing delays within the local router."

DEFVAL { 500 }
 ::= { pimInterfaceEntry 14 }

pimInterfaceOverrideInterval OBJECT-TYPE
SYNTAX Unsigned32 (0..65535)
UNITS "milliseconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The value this router inserts into the Override_Interval
 field of the LAN Prune Delay option in the PIM Hello
 messages it sends on this interface. This object is only
 used if pimInterfaceUseLanPruneDelay is set to TRUE."
DEFVAL { 2500 }
 ::= { pimInterfaceEntry 15 }

pimInterfaceUseGenerationID OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-create

STATUS current
DESCRIPTION
 "Whether or not this router includes the Generation ID
 option in the PIM Hello messages it sends on this
 interface."
DEFVAL { true }
::= { pimInterfaceEntry 16 }

pimInterfaceGenerationIDValue OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The value of the Generation ID this router inserted in the
 last PIM Hello message it sent on this interface. This
 object is 0 if pimInterfaceUseGenerationID is set to FALSE."
::= { pimInterfaceEntry 17 }

pimInterfaceUseDRPriority OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION

 "Whether or not this router includes the DR Priority option
 in the PIM Hello messages it sends on this interface."
DEFVAL { true }
::= { pimInterfaceEntry 18 }

pimInterfaceDRPriority OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The Designated Router Priority value inserted into the DR
 Priority option on this interface. Numerically higher
 values for this object indicate higher priorities. This
 object is only used if pimInterfaceUseDRPriority is set to
 TRUE."
DEFVAL { 1 }
::= { pimInterfaceEntry 19 }

pimInterfaceLanDelayEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Evaluates to TRUE if all routers on this interface are using the LAN Prune Delay option."

::= { pimInterfaceEntry 20 }

pimInterfaceEffectPropagDelay OBJECT-TYPE

SYNTAX Unsigned32 (0..32767)

UNITS "milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The Effective Propagation Delay on this interface. This object is always 500 if pimInterfaceLanDelayEnabled is FALSE."

::= { pimInterfaceEntry 21 }

pimInterfaceEffectOverrideIvl OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "milliseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The Effective Override Interval on this interface. This object is always 2500 if pimInterfaceLanDelayEnabled is FALSE."

::= { pimInterfaceEntry 22 }

pimInterfaceSuppressionEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether join suppression is enabled on this interface. This object is always TRUE if pimInterfaceLanDelayEnabled is FALSE."

::= { pimInterfaceEntry 23 }

pimInterfaceBidirCapable OBJECT-TYPE

```

SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Evaluates to TRUE if all routers on this interface are
    using the Bidirectional-PIM Capable option."
 ::= { pimInterfaceEntry 24 }

```

pimInterfaceDRPriorityEnabled OBJECT-TYPE

```

SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Evaluates to TRUE if all routers on this interface are
    using the DR Priority option."
 ::= { pimInterfaceEntry 25 }

```

pimInterfaceBSRBorder OBJECT-TYPE

```

SYNTAX      TruthValue
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Whether or not this interface acts as a border for all PIM
    Bootstrap messages."
DEFVAL { false }
 ::= { pimInterfaceEntry 26 }

```

pimInterfaceStatus OBJECT-TYPE

```

SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The status of this entry.  Creating the entry enables PIM
    on the interface; destroying the entry disables PIM on the
    interface."
 ::= { pimInterfaceEntry 27 }

```



```

pimNeighborTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PimNeighborEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table listing the router's PIM neighbors."
    ::= { pim 2 }

```

```

pimNeighborEntry OBJECT-TYPE
    SYNTAX      PimNeighborEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the pimNeighborTable."
    INDEX       { pimNeighborIfIndex,
                  pimNeighborAddressType,
                  pimNeighborAddress }
    ::= { pimNeighborTable 1 }

```

```

PimNeighborEntry ::= SEQUENCE {
    pimNeighborIfIndex      InterfaceIndex,
    pimNeighborAddressType  InetAddressType,
    pimNeighborAddress       InetAddress,
    pimNeighborUpTime       TimeTicks,
    pimNeighborExpiryTime   TimeTicks,
    pimNeighborLanPruneDelayPresent TruthValue,
    pimNeighborPropagationDelay Unsigned32,
    pimNeighborOverrideInterval Unsigned32,
    pimNeighborTBit         TruthValue,
    pimNeighborGenerationIDPresent TruthValue,
    pimNeighborGenerationIDValue Unsigned32,
    pimNeighborBidirCapable  TruthValue,
    pimNeighborDRPriorityPresent TruthValue,
    pimNeighborDRPriority    Unsigned32
}

```

```

pimNeighborIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The value of ifIndex for the interface used to reach this
        PIM neighbor."
    ::= { pimNeighborEntry 1 }

```

pimNeighborAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of this PIM neighbor."

::= { pimNeighborEntry 2 }

pimNeighborAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The primary IP address of this PIM neighbor. The
InetAddressType is given by the pimNeighborAddressType
object."

::= { pimNeighborEntry 3 }

pimNeighborUpTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time since this PIM neighbor (last) became a neighbor
of the local router."

::= { pimNeighborEntry 4 }

pimNeighborExpiryTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The minimum time remaining before this PIM neighbor will
be aged out. The value zero indicates that this PIM
neighbor will never be aged out."

::= { pimNeighborEntry 5 }

pimNeighborLanPruneDelayPresent OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Evaluates to TRUE if this neighbor is using the LAN Prune
Delay option."

::= { pimNeighborEntry 6 }

pimNeighborPropagationDelay OBJECT-TYPE

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MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of the Propagation_Delay field of the LAN Prune Delay option received from this neighbor. This object is always 0 if pimNeighborLanPruneDelayPresent is FALSE."

::= { pimNeighborEntry 7 }

pimNeighborOverrideInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of the Override_Interval field of the LAN Prune Delay option received from this neighbor. This object is always 0 if pimNeighborLanPruneDelayPresent is FALSE."

::= { pimNeighborEntry 8 }

pimNeighborTBit OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether the T bit was set in the LAN Prune Delay option received from this neighbor. The T bit specifies the ability of the neighbor to disable join suppression. This object is always TRUE if pimNeighborLanPruneDelayPresent is FALSE."

::= { pimNeighborEntry 9 }

pimNeighborGenerationIDPresent OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Evaluates to TRUE if this neighbor is using the Generation ID option."

::= { pimNeighborEntry 10 }

pimNeighborGenerationIDValue OBJECT-TYPE

SYNTAX Unsigned32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The value of the Generation ID from the last PIM Hello
 message received from this neighbor. This object is always
 0 if pimNeighborGenerationIDPresent is FALSE."
 ::= { pimNeighborEntry 11 }

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pimNeighborBidirCapable OBJECT-TYPE

SYNTAX TruthValue
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Evaluates to TRUE if this neighbor is using the
 Bidirectional-PIM Capable option."
 ::= { pimNeighborEntry 12 }

pimNeighborDRPriorityPresent OBJECT-TYPE

SYNTAX TruthValue
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Evaluates to TRUE if this neighbor is using the DR Priority
 option."
 ::= { pimNeighborEntry 13 }

pimNeighborDRPriority OBJECT-TYPE

SYNTAX Unsigned32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The value of the Designated Router Priority from the last
 PIM Hello message received from this neighbor. This object
 is always 0 if pimNeighborDRPriorityPresent is FALSE."
 ::= { pimNeighborEntry 14 }

--

-- The PIM Neighbor Secondary Address Table

--

pimNbrSecAddressTable OBJECT-TYPE

SYNTAX SEQUENCE OF PimNbrSecAddressEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "The (conceptual) table listing the secondary addresses
 advertised by each PIM neighbor (on a subset of the rows of
 the pimNeighborTable defined above)."
 ::= { pim 3 }

pimNbrSecAddressEntry OBJECT-TYPE

SYNTAX PimNbrSecAddressEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An entry (conceptual row) in the pimNbrSecAddressTable."

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INDEX { pimNbrSecAddressIfIndex,
 pimNbrSecAddressType,
 pimNbrSecAddressPrimary,
 pimNbrSecAddress }
 ::= { pimNbrSecAddressTable 1 }

PimNbrSecAddressEntry ::= SEQUENCE {
 pimNbrSecAddressIfIndex InterfaceIndex,
 pimNbrSecAddressType InetAddressType,
 pimNbrSecAddressPrimary InetAddress,
 pimNbrSecAddress InetAddress
 }

pimNbrSecAddressIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "The value of ifIndex for the interface used to reach this
 PIM neighbor."
 ::= { pimNbrSecAddressEntry 1 }

pimNbrSecAddressType OBJECT-TYPE

SYNTAX InetAddressType
 MAX-ACCESS not-accessible
 STATUS current

DESCRIPTION

"The address type of this PIM neighbor."
 ::= { pimNbrSecAddressEntry 2 }

pimNbrSecAddressPrimary OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The primary IP address of this PIM neighbor. The
InetAddressType is given by the pimNbrSecAddressType
object."

::= { pimNbrSecAddressEntry 3 }

pimNbrSecAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The secondary IP address of this PIM neighbor. The
InetAddressType is given by the pimNbrSecAddressType
object."

::= { pimNbrSecAddressEntry 4 }

--

-- The PIM (*,G) State Table

--

pimStarGTable OBJECT-TYPE

SYNTAX SEQUENCE OF PimStarGEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the non-interface specific
(*,G) state that PIM has."

::= { pim 4 }

pimStarGEntry OBJECT-TYPE

SYNTAX PimStarGEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimStarGTable."

INDEX { pimStarGAddressType,
pimStarGGrpAddress }

::= { pimStarGTable 1 }

```
PimStarGEntry ::= SEQUENCE {  
    pimStarGAddressType      InetAddressType,  
    pimStarGGrpAddress        InetAddress,  
    pimStarGUpTime            TimeTicks,  
    pimStarGPimMode           PimMode,  
    pimStarGRPAddress         InetAddress,  
    pimStarGRPOrigin          PimGroupMappingOriginType,  
    pimStarGRPIsLocal         TruthValue,  
    pimStarGUpstreamJoinState INTEGER,  
    pimStarGUpstreamJoinTimer TimeTicks,  
    pimStarGUpstreamNeighbor InetAddress,  
    pimStarGRPFIIfIndex       InterfaceIndexOrZero,  
    pimStarGRPFPNextHop       InetAddress,  
    pimStarGRPFRRouteProtocol IANAipRouteProtocol,  
    pimStarGRPFRRouteAddress  InetAddress,  
    pimStarGRPFRRoutePrefixLength InetAddressPrefixLength,  
    pimStarGRPFRRouteMetricPref Unsigned32,  
    pimStarGRPFRRouteMetric   Unsigned32  
}
```

pimStarGAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of this multicast group."

::= { pimStarGEntry 1 }

pimStarGGrpAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The multicast group address. The InetAddressType is given by the pimStarGAddressType object."

::= { pimStarGEntry 2 }

pimStarGUpTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time since this entry was created by the local router."

::= { pimStarGEntry 3 }

pimStarGPimMode OBJECT-TYPE

SYNTAX PimMode { asm(3), bidir(4) }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether this entry represents an ASM (Any Source Multicast, used with PIM-SM) or BIDIR-PIM group."

::= { pimStarGEntry 4 }

pimStarGRPAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address of the Rendezvous Point (RP) for the group.

The InetAddressType is given by the pimStarGAddressType

object. This object is zero if the RP address is unknown."

::= { pimStarGEntry 5 }

pimStarGRPOrigin OBJECT-TYPE

SYNTAX PimGroupMappingOriginType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The mechanism by which the PIM mode and RP for the group were learned."

::= { pimStarGEntry 6 }

pimStarGRPIsLocal OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current
DESCRIPTION
"Whether the local router is the RP for the group."
::= { pimStarGEntry 7 }

pimStarGUpstreamJoinState OBJECT-TYPE

SYNTAX INTEGER {
notJoined (1),
joined (2)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Whether the local router should join the RP tree for the
group. This corresponds to the state of the upstream (*,G)
state machine in the PIM-SM specification
[\[I-D.ietf-pim-sm-v2-new\]](#)."
::= { pimStarGEntry 8 }

pimStarGUpstreamJoinTimer OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The time remaining before the local router next sends a
periodic (*,G) Join message on pimStarGRPFIIndex. This
timer is called the (*,G) Upstream Join Timer in the PIM-SM
specification [\[I-D.ietf-pim-sm-v2-new\]](#). This object is zero
if the timer is not running."
::= { pimStarGEntry 9 }

pimStarGUpstreamNeighbor OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The primary address of the neighbor on pimStarGRPFIIndex
that the local router is sending periodic (*,G) Join
messages to. This is zero if the the RPF next hop is
unknown or is not a PIM neighbor. The InetAddressType is
given by the pimStarGAddressType object. This address is
called RPF'(*,G) in the PIM-SM specification
[\[I-D.ietf-pim-sm-v2-new\]](#)."

::= { pimStarGEntry 10 }

pimStarGRPFIIfIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of ifIndex for the RPF interface towards the RP,
or zero if the RPF interface is unknown."

::= { pimStarGEntry 11 }

pimStarGRPNextHop OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address of the RPF next hop towards the RP, or zero if
the the RPF next hop is unknown. The InetAddressType is
given by the pimStarGAddressType object. This address is
called MRIB.next_hop(RP(G)) in the PIM-SM specification
[\[I-D.ietf-pim-sm-v2-new\]](#)."

::= { pimStarGEntry 12 }

pimStarGRPFRouteProtocol OBJECT-TYPE

SYNTAX IANAipRouteProtocol

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The routing mechanism via which the route used to find the
RPF interface towards the RP was learned."

::= { pimStarGEntry 13 }

pimStarGRPFRouteAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IP address which when combined with the corresponding
value of pimStarGRPFRoutePrefixLength identifies the route
used to find the RPF interface towards the RP. The
InetAddressType is given by the pimStarGAddressType
object."

::= { pimStarGEntry 14 }

pimStarGRPFRoutePrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-only

STATUS current

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DESCRIPTION

"The prefix length which when combined with the corresponding value of pimStarGRPFRouteAddress identifies the route used to find the RPF interface towards the RP. The InetAddressType is given by the pimStarGAddressType object."

::= { pimStarGEntry 15 }

pimStarGRPFRouteMetricPref OBJECT-TYPE

SYNTAX Unsigned32 (0..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The metric preference of the route used to find the RPF interface towards the RP."

::= { pimStarGEntry 16 }

pimStarGRPFRouteMetric OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The routing metric of the route used to find the RPF interface towards the RP."

::= { pimStarGEntry 17 }

--

-- The PIM (*,G,I) State Table

--

pimStarGITable OBJECT-TYPE

SYNTAX SEQUENCE OF PimStarGIEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the interface-specific (*,G) state that PIM has."

::= { pim 5 }

pimStarGIEntry OBJECT-TYPE

SYNTAX PimStarGIEntry

MAX-ACCESS not-accessible

```

STATUS      current
DESCRIPTION
    "An entry (conceptual row) in the pimStarGITable."
INDEX       { pimStarGAddressType,
              pimStarGGrpAddress,
              pimStarGIIfIndex }

```

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```
 ::= { pimStarGITable 1 }
```

```

PimStarGIEntry ::= SEQUENCE {
    pimStarGIIfIndex      InterfaceIndex,
    pimStarGIUpTime       TimeTicks,
    pimStarGILocalMembership TruthValue,
    pimStarGIJoinPruneState INTEGER,
    pimStarGIPrunePendingTimer TimeTicks,
    pimStarGIJoinExpiryTimer TimeTicks,
    pimStarGIAssertState  INTEGER,
    pimStarGIAssertTimer  TimeTicks,
    pimStarGIAssertWinnerAddress InetAddress,
    pimStarGIAssertWinnerMetricPref Unsigned32,
    pimStarGIAssertWinnerMetric Unsigned32
}

```

```

pimStarGIIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The ifIndex of the interface that this entry corresponds
        to."
    ::= { pimStarGIEntry 1 }

```

```

pimStarGIUpTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time since this entry was created by the local router."
    ::= { pimStarGIEntry 2 }

```

```

pimStarGILocalMembership OBJECT-TYPE
    SYNTAX      TruthValue

```

MAX-ACCESS read-only
STATUS current
DESCRIPTION

"Whether the local router has (*,G) local membership on this interface (resulting from a mechanism such as IGMP or MLD). This corresponds to local_receiver_include(*,G,I) in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimStarGIEEntry 3 }

pimStarGIJoinPruneState OBJECT-TYPE

SYNTAX INTEGER {
noInfo (1),
join (2),

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prunePending (3)

}

MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The state resulting from (*,G) Join/Prune messages received on this interface. This corresponds to the state of the downstream per-interface (*,G) state machine in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimStarGIEEntry 4 }

pimStarGIPrunePendingTimer OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The time remaining before the local router acts on a (*,G) Prune message received on this interface, during which the router is waiting to see whether another downstream router will override the Prune message. This timer is called the (*,G) Prune-Pending Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. This object is zero if the timer is not running."

::= { pimStarGIEEntry 5 }

pimStarGIJoinExpiryTimer OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only

STATUS current
 DESCRIPTION
 "The time remaining before (*,G) Join state for this interface expires. This timer is called the (*,G) Join Expiry Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. This object is zero if the timer is not running. A value of 'FFFFFFFF'h indicates an infinite expiry time."
 ::= { pimStarGIEEntry 6 }

pimStarGIAssertState OBJECT-TYPE

SYNTAX INTEGER {
 noInfo (1),
 iAmAssertWinner (2),
 iAmAssertLoser (3)
 }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The (*,G) Assert state for this interface. This

corresponds to the state of the per-interface (*,G) Assert state machine in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. If pimStarGPimMode is 'bidir', this object must be 'noInfo'."

::= { pimStarGIEEntry 7 }

pimStarGIAssertTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAssertState is 'iAmAssertWinner', this is the time remaining before the local router next sends a (*,G) Assert message on this interface. If pimStarGIAssertState is 'iAmAssertLoser', this is the time remaining before the (*,G) Assert state expires. If pimStarGIAssertState is 'noInfo', this is zero. This timer is called the (*,G) Assert Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimStarGIEEntry 8 }

pimStarGIAAssertWinnerAddress OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAAssertState is 'iAmAssertLoser', this is the address of the assert winner; otherwise, this object is zero. The InetAddressType is given by the pimStarGAddressType object."

::= { pimStarGEntry 9 }

pimStarGIAAssertWinnerMetricPref OBJECT-TYPE

SYNTAX Unsigned32 (0..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAAssertState is 'iAmAssertLoser', this is the metric preference of the route to the RP advertised by the assert winner; otherwise, this object is zero."

::= { pimStarGEntry 11 }

pimStarGIAAssertWinnerMetric OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAAssertState is 'iAmAssertLoser', this is the

routing metric of the route to the RP advertised by the assert winner; otherwise, this object is zero."

::= { pimStarGEntry 12 }

--

-- The PIM (S,G) State Table

--

pimSGTable OBJECT-TYPE

SYNTAX SEQUENCE OF PimSGEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the non-interface specific

(S,G) state that PIM has."
 ::= { pim 6 }

pimSGEntry OBJECT-TYPE

SYNTAX PimSGEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimSGTable."

INDEX { pimSGAddressType,
 pimSGGrpAddress,
 pimSGSrcAddress }

::= { pimSGTable 1 }

PimSGEntry ::= SEQUENCE {

pimSGAddressType	InetAddressType,
pimSGGrpAddress	InetAddress,
pimSGSrcAddress	InetAddress,
pimSGUpTime	TimeTicks,
pimSGPimMode	PimMode,
pimSGUpstreamJoinState	INTEGER,
pimSGUpstreamJoinTimer	TimeTicks,
pimSGUpstreamNeighbor	InetAddress,
pimSGRPFIIfIndex	InterfaceIndexOrZero,
pimSGRPFNextHop	InetAddress,
pimSGRPFRouteProtocol	IANAipRouteProtocol,
pimSGRPFRouteAddress	InetAddress,
pimSGRPFRoutePrefixLength	InetAddressPrefixLength,
pimSGRPFRouteMetricPref	Unsigned32,
pimSGRPFRouteMetric	Unsigned32,
pimSGSPTBit	TruthValue,
pimSGKeepaliveTimer	TimeTicks,
pimSGDRRegisterState	INTEGER,
pimSGDRRegisterStopTimer	TimeTicks,

 pimSGRPRRegisterPMBRAAddress InetAddress
}

pimSGAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of the source and multicast group for this entry."

::= { pimSGEntry 1 }

pimSGGrpAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The multicast group address for this entry. The InetAddressType is given by the pimSGAddressType object."

::= { pimSGEntry 2 }

pimSGSrcAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The source address for this entry. The InetAddressType is given by the pimSGAddressType object."

::= { pimSGEntry 3 }

pimSGUpTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time since this entry was created by the local router."

::= { pimSGEntry 4 }

pimSGPimMode OBJECT-TYPE

SYNTAX PimMode { ssm(2), asm(3) }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether pimSGGrpAddress is an SSM (Source Specific Multicast, used with PIM-SM) or ASM (Any Source Multicast, used with PIM-SM) group."

::= { pimSGEntry 5 }

pimSGUpstreamJoinState OBJECT-TYPE

SYNTAX INTEGER {
notJoined (1),
joined (2)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether the local router should join the shortest-path tree for the source and group represented by this entry. This corresponds to the state of the upstream (S,G) state machine in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimSGEntry 6 }

pimSGUpstreamJoinTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time remaining before the local router next sends a periodic (S,G) Join message on pimSGRPFIfIndex. This timer is called the (S,G) Upstream Join Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. This object is zero if the timer is not running."

::= { pimSGEntry 7 }

pimSGUpstreamNeighbor OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The primary address of the neighbor on pimSGRPFIfIndex that the local router is sending periodic (S,G) Join messages to. This is zero if the the RPF next hop is unknown or is not a PIM neighbor. The InetAddressType is given by the pimSGAddressType object. This address is called RPF'(S,G) in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimSGEntry 8 }

pimSGRPFIfIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of ifIndex for the RPF interface towards the source, or zero if the RPF interface is unknown."

::= { pimSGEntry 9 }

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pimSGRPFNextHop OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address of the RPF next hop towards the source, or zero if the the RPF next hop is unknown. The InetAddressType is given by the pimSGAddressType object. This address is called MRIB.next_hop(S) in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimSGEntry 10 }

pimSGRPFRouteProtocol OBJECT-TYPE

SYNTAX IANAipRouteProtocol

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The routing mechanism via which the route used to find the RPF interface towards the source was learned."

::= { pimSGEntry 11 }

pimSGRPFRouteAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IP address which when combined with the corresponding value of pimSGRPFRoutePrefixLength identifies the route used to find the RPF interface towards the source. The InetAddressType is given by the pimSGAddressType object."

::= { pimSGEntry 12 }

pimSGRPFRoutePrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The prefix length which when combined with the corresponding value of pimSGRPFRouteAddress identifies the route used to find the RPF interface towards the source. The InetAddressType is given by the pimSGAddressType object."

::= { pimSGEntry 13 }

pimSGRPFRouteMetricPref OBJECT-TYPE
SYNTAX Unsigned32 (0..2147483647)
MAX-ACCESS read-only
STATUS current

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DESCRIPTION

"The metric preference of the route used to find the RPF
interface towards the source."

::= { pimSGEntry 14 }

pimSGRPFRouteMetric OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The routing metric of the route used to find the RPF
interface towards the source."

::= { pimSGEntry 15 }

pimSGSPTBit OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Whether the SPT bit is set; and therefore whether
forwarding is taking place on the shortest-path tree."

::= { pimSGEntry 16 }

pimSGKeepaliveTimer OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The time remaining before, in the absence of explicit (S,G)
local membership or (S,G) Join messages received to maintain
it, this (S,G) state expires. This timer is called the
(S,G) Keepalive Timer in the PIM-SM specification

[\[I-D.ietf-pim-sm-v2-new\]](#)."

::= { pimSGEntry 17 }

pimSGDRRegisterState OBJECT-TYPE

SYNTAX INTEGER {
 noInfo (1),
 join (2),
 joinPending (3),
 prune (4)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Whether the local router should encapsulate (S,G) data
 packets in Register messages and send them to the RP. This
 corresponds to the state of the per-(S,G) Register state

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 machine in the PIM-SM specification
 [\[I-D.ietf-pim-sm-v2-new\]](#). This object is always 'noInfo'
 unless pimSGPimMode is 'asm'.
 ::= { pimSGEntry 18 }

pimSGDRRegisterStopTimer OBJECT-TYPE

SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "If pimSGDRRegisterState is 'prune', this is the time
 remaining before the local router sends a Null-Register
 message to the RP. If pimSGDRRegisterState is
 'joinPending', this is the time remaining before the local
 router resumes encapsulating data packets and sending them
 to the RP. Otherwise, this is zero. This timer is called
 the Register-Stop Timer in the PIM-SM specification
 [\[I-D.ietf-pim-sm-v2-new\]](#)."
 ::= { pimSGEntry 19 }

pimSGRPRegisterPMBRAddress OBJECT-TYPE

SYNTAX InetAddress
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The IP address of the first PIM Multicast Border Router to
 send a Register message with the Border bit set. This
 object is zero if the local router is not the RP for the
 group. The InetAddressType is given by the pimSGAddressType

```

        object."
 ::= { pimSGEntry 20 }

--
-- The PIM (S,G,I) State Table
--

pimSGITable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PimSGIEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table listing the interface-specific (S,G)
        state that PIM has."
    ::= { pim 7 }

pimSGIEntry OBJECT-TYPE
    SYNTAX      PimSGIEntry
    MAX-ACCESS  not-accessible

```

```

    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the pimSGITable."
    INDEX       { pimSGAddressType,
                  pimSGGrpAddress,
                  pimSGSrcAddress,
                  pimSGIIfIndex }
    ::= { pimSGITable 1 }

PimSGIEntry ::= SEQUENCE {
    pimSGIIfIndex      InterfaceIndex,
    pimSGIUpTime       TimeTicks,
    pimSGILocalMembership TruthValue,
    pimSGIJoinPruneState INTEGER,
    pimSGIPrunePendingTimer TimeTicks,
    pimSGIJoinExpiryTimer TimeTicks,
    pimSGIAssertState  INTEGER,
    pimSGIAssertTimer  TimeTicks,
    pimSGIAssertWinnerAddress InetAddress,
    pimSGIAssertWinnerMetricPref Unsigned32,
    pimSGIAssertWinnerMetric Unsigned32
}

```

```

pimSGIIIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The ifIndex of the interface that this entry corresponds
        to."
    ::= { pimSGIEntry 1 }

pimSGIUpTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time since this entry was created by the local router."
    ::= { pimSGIEntry 2 }

pimSGILocalMembership OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Whether the local router has (S,G) local membership on this
        interface (resulting from a mechanism such as IGMPv3 or
        MLDv2). This corresponds to local_receiver_include(S,G,I)

```

```

        in the PIM-SM specification [I-D.ietf-pim-sm-v2-new]."
    ::= { pimSGIEntry 3 }

pimSGIJoinPruneState OBJECT-TYPE
    SYNTAX      INTEGER {
        noInfo (1),
        join (2),
        prunePending (3)
    }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The state resulting from (S,G) Join/Prune messages
        received on this interface. This corresponds to the state
        of the downstream per-interface (S,G) state machine in the

```

PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."
 ::= { pimSGIEntry 4 }

pimSGIPrunePendingTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time remaining before the local router acts on an (S,G) Prune message received on this interface, during which the router is waiting to see whether another downstream router will override the Prune message. This timer is called the (S,G) Prune-Pending Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. This object is zero if the timer is not running."

::= { pimSGIEntry 5 }

pimSGIJoinExpiryTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time remaining before (S,G) Join state for this interface expires. This timer is called the (S,G) Join Expiry Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. This object is zero if the timer is not running. A value of 'FFFFFFFF'h indicates an infinite expiry time."

::= { pimSGIEntry 6 }

pimSGIAssertState OBJECT-TYPE

SYNTAX INTEGER {
noInfo (1),

 iAmAssertWinner (2),
 iAmAssertLoser (3)
 }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The (S,G) Assert state for this interface. This corresponds to the state of the per-interface (S,G) Assert

state machine in the PIM-SM specification
[[I-D.ietf-pim-sm-v2-new](#)]."
 ::= { pimSGIEntry 7 }

pimSGIAssertTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimSGIAssertState is 'iAmAssertWinner', this is the time remaining before the local router next sends a (S,G) Assert message on this interface. If pimSGIAssertState is 'iAmAssertLoser', this is the time remaining before the (S,G) Assert state expires. If pimSGIAssertState is 'noInfo', this is zero. This timer is called the (S,G) Assert Timer in the PIM-SM specification
[[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimSGIEntry 8 }

pimSGIAssertWinnerAddress OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimSGIAssertState is 'iAmAssertLoser', this is the address of the assert winner; otherwise, this object is zero. The InetAddressType is given by the pimSGAddressType object."

::= { pimSGIEntry 9 }

pimSGIAssertWinnerMetricPref OBJECT-TYPE

SYNTAX Unsigned32 (0..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimSGIAssertState is 'iAmAssertLoser', this is the metric preference of the route to the source advertised by the assert winner; otherwise, this object is zero."

::= { pimSGIEntry 11 }

```

SYNTAX      Unsigned32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "If pimSGIAssertState is 'iAmAssertLoser', this is the
    routing metric of the route to the source advertised by the
    assert winner; otherwise, this object is zero."
 ::= { pimSGIEntry 12 }

--
-- The PIM (S,G,rpt) State Table
--

pimSGRptTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PimSGRptEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table listing the non-interface specific
        (S,G,rpt) state that PIM has."
    ::= { pim 8 }

pimSGRptEntry OBJECT-TYPE
    SYNTAX      PimSGRptEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the pimSGRptTable."
    INDEX      { pimStarGAddressType,
                pimStarGGrpAddress,
                pimSGRptSrcAddress }
    ::= { pimSGRptTable 1 }

PimSGRptEntry ::= SEQUENCE {
    pimSGRptSrcAddress      InetAddress,
    pimSGRptUpTime          TimeTicks,
    pimSGRptUpstreamPruneState  INTEGER,
    pimSGRptUpstreamOverrideTimer TimeTicks
}

pimSGRptSrcAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The source address for this entry. The InetAddressType is
        given by the pimStarGAddressType object."

```

```
::= { pimSGRptEntry 1 }
```

```
pimSGRptUpTime OBJECT-TYPE
```

```
SYNTAX      TimeTicks
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The time since this entry was created by the local router."
```

```
::= { pimSGRptEntry 2 }
```

```
pimSGRptUpstreamPruneState OBJECT-TYPE
```

```
SYNTAX      INTEGER {  
                rptNotJoined (1),  
                pruned (2),  
                notPruned (3)  
            }
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "Whether the local router should prune the source off the RP  
    tree. This corresponds to the state of the upstream  
    (S,G,rpt) state machine for triggered messages in the PIM-SM  
    specification [I-D.ietf-pim-sm-v2-new]."
```

```
::= { pimSGRptEntry 3 }
```

```
pimSGRptUpstreamOverrideTimer OBJECT-TYPE
```

```
SYNTAX      TimeTicks
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The time remaining before the local router sends a  
    triggered (S,G,rpt) Join message on pimStarGRPFIfIndex.  
    This timer is called the (S,G,rpt) Upstream Override Timer  
    in the PIM-SM specification [I-D.ietf-pim-sm-v2-new]. This  
    object is zero if the timer is not running."
```

```
::= { pimSGRptEntry 4 }
```

```
--
```

```
-- The PIM (S,G,rpt,I) State Table
```

```
--
```

```
pimSGRptItable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF PimSGRptIEntry
```

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

```
STATUS      current
```

```
DESCRIPTION
```

"The (conceptual) table listing the interface-specific (S,G,rpt) state that PIM has."

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::= { pim 9 }

pimSGRptIEntry OBJECT-TYPE

SYNTAX PimSGRptIEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimSGRptITable."

INDEX { pimStarGAddressType,
pimStarGGrpAddress,
pimSGRptSrcAddress,
pimSGRptIIfIndex }

::= { pimSGRptITable 1 }

PimSGRptIEntry ::= SEQUENCE {

pimSGRptIIfIndex InterfaceIndex,

pimSGRptIUpTime TimeTicks,

pimSGRptILocalMembership TruthValue,

pimSGRptIJoinPruneState INTEGER,

pimSGRptIPrunePendingTimer TimeTicks,

pimSGRptIPruneExpiryTimer TimeTicks

}

pimSGRptIIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ifIndex of the interface that this entry corresponds to."

::= { pimSGRptIEntry 1 }

pimSGRptIUpTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time since this entry was created by the local router."

::= { pimSGRptIEntry 2 }

pimSGRptILocalMembership OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether the local router has both (*,G) include local membership and (S,G) exclude local membership on this interface (resulting from a mechanism such as IGMPv3 or

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MLDv2). This corresponds to local_receiver_exclude(S,G,I) in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimSGRptIEntry 3 }

pimSGRptIJoinPruneState OBJECT-TYPE

SYNTAX INTEGER {
 noInfo (1),
 prune (2),
 prunePending (3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The state resulting from (S,G,rpt) Join/Prune messages received on this interface. This corresponds to the state of the downstream per-interface (S,G,rpt) state machine in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]."

::= { pimSGRptIEntry 4 }

pimSGRptIPrunePendingTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time remaining before the local router starts pruning this source off the RP tree. This timer is called the (S,G,rpt) Prune-Pending Timer in the PIM-SM specification [[I-D.ietf-pim-sm-v2-new](#)]. This object is zero if the timer is not running."

::= { pimSGRptIEntry 5 }

pimSGRptIPruneExpiryTimer OBJECT-TYPE

SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The time remaining before (S,G,rpt) Prune state for this
 interface expires. This timer is called the (S,G,rpt)
 Prune Expiry Timer in the PIM-SM specification
 [\[I-D.ietf-pim-sm-v2-new\]](#). This object is zero if the timer
 is not running. A value of 'FFFFFFFF'h indicates an
 infinite expiry time."
 ::= { pimSGRptIEntry 6 }

--
 -- The PIM Bidir DF-Election Table
 --

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pimBidirDFElectionTable OBJECT-TYPE
 SYNTAX SEQUENCE OF PimBidirDFElectionEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "The (conceptual) table listing the per-RP Designated
 Forwarder (DF) Election state for each interface for all the
 RPs in BIDIR mode."
 ::= { pim 10 }

pimBidirDFElectionEntry OBJECT-TYPE
 SYNTAX PimBidirDFElectionEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An entry (conceptual row) in the pimBidirDFElectionTable."
 INDEX { pimBidirDFElectionAddressType,
 pimBidirDFElectionRPAddress,
 pimBidirDFElectionIfIndex }
 ::= { pimBidirDFElectionTable 1 }

PimBidirDFElectionEntry ::= SEQUENCE {
 pimBidirDFElectionAddressType InetAddressType,
 pimBidirDFElectionRPAddress InetAddress,
 pimBidirDFElectionIfIndex InterfaceIndex,

```

    pimBidirDFElectionWinnerAddress      InetAddress,
    pimBidirDFElectionWinnerUpTime       TimeTicks,
    pimBidirDFElectionWinnerMetricPref   Unsigned32,
    pimBidirDFElectionWinnerMetric       Unsigned32,
    pimBidirDFElectionState               INTEGER,
    pimBidirDFElectionStateTimer          TimeTicks
}

pimBidirDFElectionAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The address type of the RP for which the DF state is being
        maintained."
    ::= { pimBidirDFElectionEntry 1 }

pimBidirDFElectionRPAAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The IP address of the RP for which the DF state is being

```

```

        maintained. The InetAddressType is given by the
        pimBidirDFElectionAddressType object."
    ::= { pimBidirDFElectionEntry 2 }

pimBidirDFElectionIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The value of ifIndex for the interface for which the DF
        state is being maintained."
    ::= { pimBidirDFElectionEntry 3 }

pimBidirDFElectionWinnerAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION

```

"The primary IP address of the winner of the DF Election process. The InetAddressType is given by the pimBidirDFElectionAddressType object. A value of zero indicates there is currently no DF."

::= { pimBidirDFElectionEntry 4 }

pimBidirDFElectionWinnerUpTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time since the current winner (last) became elected as the DF for this RP."

::= { pimBidirDFElectionEntry 5 }

pimBidirDFElectionWinnerMetricPref OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The metric preference advertised by the DF Winner, or zero if there is currently no DF."

::= { pimBidirDFElectionEntry 6 }

pimBidirDFElectionWinnerMetric OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The metric advertised by the DF Winner, or zero if there is

currently no DF."

::= { pimBidirDFElectionEntry 7 }

pimBidirDFElectionState OBJECT-TYPE

SYNTAX INTEGER {
dfOffer(1),
dfLose(2),
dfWinner(3),
dfBackoff(4)
}

MAX-ACCESS read-only

STATUS current
 DESCRIPTION
 "The state of this interface with respect to DF-Election for this RP. The states correspond to the ones defined in the BIDIR-PIM specification [[I-D.ietf-pim-bidir](#)]."
 ::= { pimBidirDFElectionEntry 8 }

pimBidirDFElectionStateTimer OBJECT-TYPE
 SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The minimum time remaining after which the local router will expire the current DF state represented by pimBidirDFElectionState."
 ::= { pimBidirDFElectionEntry 9 }

--
 -- The PIM SSM Range Table
 --

pimSsmRangeTable OBJECT-TYPE
 SYNTAX SEQUENCE OF PimSsmRangeEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "This table is used to create and manage the range(s) of group addresses to which SSM semantics should be applied. SSM is described in [[RFC3569](#)]."
 ::= { pim 11 }

pimSsmRangeEntry OBJECT-TYPE
 SYNTAX PimSsmRangeEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An entry (conceptual row) in the ssmRangeTable."

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INDEX { pimSsmRangeAddressType,
 pimSsmRangeAddress,
 pimSsmRangePrefixLength }
 ::= { pimSsmRangeTable 1 }

```

PimSsmRangeEntry ::= SEQUENCE {
    pimSsmRangeAddressType  InetAddressType,
    pimSsmRangeAddress      InetAddress,
    pimSsmRangePrefixLength  InetAddressPrefixLength,
    pimSsmRangeRowStatus    RowStatus
}

```

```

pimSsmRangeAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The address type of the multicast group prefix."
    ::= { pimSsmRangeEntry 1 }

```

```

pimSsmRangeAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The multicast group address which, when combined with
        pimSsmRangePrefixLength, gives the group prefix for this
        SSM range. The InetAddressType is given by the
        pimSsmRangeAddressType object."
    ::= { pimSsmRangeEntry 2 }

```

```

pimSsmRangePrefixLength OBJECT-TYPE
    SYNTAX      InetAddressPrefixLength (4..128)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The multicast group prefix length, which, when combined
        with pimSsmRangeAddress, gives the group prefix for this SSM
        range. The InetAddressType is given by the
        pimSsmRangeAddressType object. If pimSsmRangeAddressType is
        'ipv4' or 'ipv4z', this object must be in the range 4..32.
        If pimSsmRangeAddressType is 'ipv6' or 'ipv6z', this object
        must be in the range 8..128."
    ::= { pimSsmRangeEntry 3 }

```

```

pimSsmRangeRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create

```

```

    STATUS      current
    DESCRIPTION
        "The status of this row, by which rows in this table can
        be created and destroyed."
    ::= { pimSsmRangeEntry 4 }

--
-- The PIM Static RP Table
--

pimStaticRPTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PimStaticRPEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This table is used to create and manage static
        configuration of RPs.

        If the group prefixes configured for two or more rows in
        this table overlap, the row with the greatest value of
        pimStaticRPGrpPrefixLength is used for the overlapping
        range."
    ::= { pim 12 }

pimStaticRPEntry OBJECT-TYPE
    SYNTAX      PimStaticRPEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the pimStaticRPTable."
    INDEX       { pimStaticRPAddressType,
                  pimStaticRPGrpAddress,
                  pimStaticRPGrpPrefixLength }
    ::= { pimStaticRPTable 1 }

PimStaticRPEntry ::= SEQUENCE {
    pimStaticRPAddressType      InetAddressType,
    pimStaticRPGrpAddress       InetAddress,
    pimStaticRPGrpPrefixLength  InetAddressPrefixLength,
    pimStaticRPPRPAddress       InetAddress,
    pimStaticRPPimMode          PimMode,
    pimStaticRPOverrideDynamic  TruthValue,
    pimStaticRPRowStatus        RowStatus
}

pimStaticRPAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
```

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STATUS current

DESCRIPTION

"The address type of this entry."

::= { pimStaticRPEntry 1 }

pimStaticRPGrpAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The multicast group address which, when combined with pimStaticRPGrpPrefixLength, gives the group prefix for this entry. The InetAddressType is given by the pimStaticRPAddressType object."

::= { pimStaticRPEntry 2 }

pimStaticRPGrpPrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength (4..128)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The multicast group prefix length, which, when combined with pimStaticRPGrpAddress, gives the group prefix for this entry. The InetAddressType is given by the pimStaticRPAddressType object. If pimStaticRPAddressType is 'ipv4' or 'ipv4z', this object must be in the range 4..32. If pimStaticRPGrpAddressType is 'ipv6' or 'ipv6z', this object must be in the range 8..128."

::= { pimStaticRPEntry 3 }

pimStaticRPRPAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The IP address of the RP to be used for groups within this group prefix. The InetAddressType is given by the pimStaticRPAddressType object."

::= { pimStaticRPEntry 4 }

```

pimStaticRPPimMode OBJECT-TYPE
    SYNTAX      PimMode { asm(3), bidir(4) }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The PIM mode to be used for groups in this group prefix."
    DEFVAL { asm }
    ::= { pimStaticRPEntry 5 }

```

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```

pimStaticRPOVERRIDEdynamic OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "Whether this static RP configuration overrides RP
        information learned dynamically for groups in this group
        prefix."
    DEFVAL { false }
    ::= { pimStaticRPEntry 6 }

```

```

pimStaticRPRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The status of this row, by which rows in this table can
        be created and destroyed."
    ::= { pimStaticRPEntry 7 }

```

```

--
-- The PIM Group Mapping Table
--

```

```

pimGroupMappingTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PimGroupMappingEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table listing mappings from multicast
        group prefixes to the PIM mode and RP address to use for
        groups within that group prefix."

```

Rows in this table are created for a variety of reasons, indicated by the value of the pimGroupMappingOrigin object.

- Rows with a pimGroupMappingOrigin value of 'fixed' are created automatically by the router at startup, to correspond to the well-defined prefixes of link-local and unroutable group addresses. These rows are never destroyed.
- Rows with a pimGroupMappingOrigin value of 'embedded' are created by the router to correspond to group prefixes that are to be treated as being in Embedded-RP format, as defined in [[RFC3956](#)].
- Rows with a pimGroupMappingOrigin value of 'config' are

created and destroyed as a result of rows in the pimSsmRangeTable and pimStaticRPTable being created and destroyed.

- Rows with a pimGroupMappingOrigin value of 'bsr' are created as a result of running the PIM Bootstrap Router (BSR) mechanism. If the local router is not the elected BSR, these rows are created to correspond to group prefixes in the PIM Bootstrap messages received from the elected BSR. If the local router is the elected BSR, these rows are created to correspond to group prefixes in the PIM Bootstrap messages that the local router sends. In either case, these rows are destroyed when the group prefixes are timed out by the BSR mechanism.
- Rows with a pimGroupMappingOrigin value of 'other' are created and destroyed according to some other mechanism not specified here.

Given the collection of rows in this table at any point in time, the PIM mode and RP address to use for a particular group is determined using the following algorithm.

1. From the set of all rows, the subset whose group prefix contains the group in question are selected.

2. If there are no such rows, the behavior is undefined.
3. If there is at least one such row, from the selected subset of rows, the subset that have the lowest value of pimGroupMappingPrecedence are selected.
4. From the selected subset of rows, the subset that have the greatest value of pimGroupMappingGrpPrefixLength are selected.
5. If there are multiple selected rows, the subset that have pimGroupMappingActive set to 'true' are selected. There must be at least one such row.
6. If there are multiple selected rows, the row selected is implementation dependent; the implementation might or might not apply the PIM hash function to select the row.
7. The group mode to use is given by the value of pimGroupMappingPimMode from the single selected row; the RP to use is given by the value of pimGroupMappingRPAddress, unless pimGroupMappingOrigin is

'embedded', in which case the RP is extracted from the group address in question using the algorithm in [\[RFC3956\]](#)."

::= { pim 13 }

pimGroupMappingEntry OBJECT-TYPE

SYNTAX PimGroupMappingEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimGroupMappingTable."

INDEX { pimGroupMappingOrigin,
pimGroupMappingAddressType,
pimGroupMappingGrpAddress,
pimGroupMappingGrpPrefixLength,
pimGroupMappingRPAddress }

::= { pimGroupMappingTable 1 }

PimGroupMappingEntry ::= SEQUENCE {

pimGroupMappingOrigin	PimGroupMappingOriginType,
pimGroupMappingAddressType	InetAddressType,
pimGroupMappingGrpAddress	InetAddress,
pimGroupMappingGrpPrefixLength	InetAddressPrefixLength,
pimGroupMappingRPAAddress	InetAddress,
pimGroupMappingPimMode	PimMode,
pimGroupMappingPrecedence	Unsigned32,
pimGroupMappingActive	TruthValue

}

pimGroupMappingOrigin OBJECT-TYPE

SYNTAX PimGroupMappingOriginType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The mechanism by which this group mapping was learned."

::= { pimGroupMappingEntry 1 }

pimGroupMappingAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of the IP multicast group prefix."

::= { pimGroupMappingEntry 2 }

pimGroupMappingGrpAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP multicast group address which, when combined with pimGroupMappingGrpPrefixLength, gives the group prefix for this mapping. The InetAddressType is given by the pimGroupMappingAddressType object."

::= { pimGroupMappingEntry 3 }

pimGroupMappingGrpPrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength (4..128)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The multicast group prefix length, which, when combined with pimGroupMappingGrpAddress, gives the group prefix for this mapping. The InetAddressType is given by the pimGroupMappingAddressType object. If pimGroupMappingAddressType is 'ipv4' or 'ipv4z', this object must be in the range 4..32. If pimGroupMappingAddressType is 'ipv6' or 'ipv6z', this object must be in the range 8..128."

::= { pimGroupMappingEntry 4 }

pimGroupMappingRPAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP address of the RP to be used for groups within this group prefix, or zero if no RP is to be used or if the RP address is unknown. The InetAddressType is given by the pimGroupMappingAddressType object. This object must be zero if pimGroupMappingPimMode is 'ssm', or if pimGroupMappingOrigin is 'embedded'."

::= { pimGroupMappingEntry 5 }

pimGroupMappingPimMode OBJECT-TYPE

SYNTAX PimMode

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The PIM mode to be used for groups in this group prefix."

::= { pimGroupMappingEntry 6 }

pimGroupMappingPrecedence OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The precedence of this row, used in the algorithm that determines which row applies to a given group address (described above). Numerically higher values for this object indicate lower precedences, with the value 0 denoting

the highest precedence.

The absolute values of this object have a significance only on the local router and do not need to be coordinated with other routers."

::= { pimGroupMappingEntry 7 }

pimGroupMappingActive OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether or not this group mapping is active, and may therefore be used for obtaining RP or mode information. A group mapping is always inactive if another mapping with a higher precedence (that is, a lower value of pimGroupMappingPrecedence) covers the whole group prefix of this mapping. Otherwise, a group mapping is always active unless there is at least one other mapping with the same precedence and the same group prefix as this mapping. In this case, one or much such mappings are active; if more than one, the PIM hash function is applied to the subset of active mappings to select one to use for an individual group within the prefix."

::= { pimGroupMappingEntry 8 }

--

-- The BSR Candidate-RP Table

--

bsrCandidateRPTable OBJECT-TYPE

SYNTAX SEQUENCE OF BsrCandidateRPEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the IP multicast groups for which the local router is to advertise itself as a Candidate-RP."

::= { pim 14 }

bsrCandidateRPEntry OBJECT-TYPE

SYNTAX BsrCandidateRPEntry

MAX-ACCESS not-accessible

```

STATUS      current
DESCRIPTION
    "An entry (conceptual row) in the bsrCandidateRPTable."
INDEX       { bsrCandidateRPAAddressType,
              bsrCandidateRPAAddress,
              bsrCandidateRPGGroupAddress,
              bsrCandidateRPGGroupPrefixLength }
::= { bsrCandidateRPTable 1 }

```

```

BsrCandidateRPEntry ::= SEQUENCE {
    bsrCandidateRPAAddressType      InetAddressType,
    bsrCandidateRPAAddress          InetAddress,
    bsrCandidateRPGGroupAddress     InetAddress,
    bsrCandidateRPGGroupPrefixLength InetAddressPrefixLength,
    bsrCandidateRPBidir             TruthValue,
    bsrCandidateRPStatus            RowStatus
}

```

```

bsrCandidateRPAAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The address type of the Candidate-RP."
    ::= { bsrCandidateRPEntry 1 }

```

```

bsrCandidateRPAAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (unicast) address which will be advertised as a
        Candidate-RP. The InetAddressType is given by the
        bsrCandidateRPAAddressType object."
    ::= { bsrCandidateRPEntry 2 }

```

```

bsrCandidateRPGGroupAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16|20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The IP multicast group address which, when combined with
        the corresponding value of bsrCandidateRPGGroupPrefixLength,
        identifies a group prefix for which the local router will
        advertise itself as a Candidate-RP. The InetAddressType is
        given by the bsrCandidateRPAAddressType object."
    ::= { bsrCandidateRPEntry 3 }

```

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bsrCandidateRPGroupPrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The multicast group address mask which, when combined with the corresponding value of bsrCandidateRPGroupMask, identifies a group prefix for which the local router will advertise itself as a Candidate-RP. The InetAddressType is given by the bsrCandidateRPAddressType object. A value of zero is not permitted for this object."

::= { bsrCandidateRPEntry 4 }

bsrCandidateRPBidir OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"If this object is set to TRUE, this group range is advertised to this RP as a BIDIR-PIM group range. If it is set to FALSE, it is advertised as a PIM-SM group range."

::= { bsrCandidateRPEntry 5 }

bsrCandidateRPStatus 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."

::= { bsrCandidateRPEntry 6 }

--

-- The BSR RP-Set Table

--

bsrRPSetTable OBJECT-TYPE

SYNTAX SEQUENCE OF BsrRPSetEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing BSR-specific information

about PIM group mappings learned via BSR. There is one entry in this table for every entry in the pimGroupMappingTable with a pimGroupMappingOrigin value of 'bsr'."

```
::= { pim 15 }
```

bsrRPSetEntry OBJECT-TYPE

SYNTAX BsrRPSetEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"An entry (conceptual row) in the bsrRPSetTable."

INDEX { pimGroupMappingOrigin,
pimGroupMappingAddressType,
pimGroupMappingGrpAddress,
pimGroupMappingGrpPrefixLength,
pimGroupMappingRPAddress }
::= { bsrRPSetTable 1 }

BsrRPSetEntry ::= SEQUENCE {

bsrRPSetPriority Unsigned32,
bsrRPSetHoldtime Unsigned32,
bsrRPSetExpiryTime TimeTicks

}

bsrRPSetPriority OBJECT-TYPE

SYNTAX Unsigned32 (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The RP Priority from the PIM Candidate-RP-Advertisement message or PIM Bootstrap message by which this RP was learned. Numerically higher values for this object indicate lower priorities, with the value zero denoting the highest priority."

::= { bsrRPSetEntry 1 }

bsrRPSetHoldtime OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)
UNITS "seconds"
MAX-ACCESS read-only

```

STATUS      current
DESCRIPTION
    "The RP Holddtime from the PIM Candidate-RP-Advertisement
    message or PIM Bootstrap message by which this RP was
    learned."
 ::= { bsrRPSetEntry 2 }

```

```

bsrRPSetExpiryTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The minimum time remaining before this entry will be aged

```

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```

        out. The value zero indicates that this entry will never be
        aged out."
 ::= { bsrRPSetEntry 3 }

```

```

--
-- The BSR Candidate-BSR Table
--

```

```

bsrCandidateBSRTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF BsrCandidateBSREntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table containing Candidate-BSR
        configuration for the local router. The table contains one
        row for each address family for which the local router is to
        advertise itself as a Candidate-BSR."
 ::= { pim 16 }

```

```

bsrCandidateBSREntry OBJECT-TYPE
    SYNTAX      BsrCandidateBSREntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the bsrCandidateBSRTable."
    INDEX      { bsrCandidateBSRAddressType }
 ::= { bsrCandidateBSRTable 1 }

```

```

BsrCandidateBSREntry ::= SEQUENCE {
    bsrCandidateBSRAddressType      InetAddressType,
    bsrCandidateBSRAddress          InetAddress,
    bsrCandidateBSRPriority         Unsigned32,
    bsrCandidateBSRHashMaskLength   Unsigned32,
    bsrCandidateBSRElectedBSR      TruthValue,
    bsrCandidateBSRBootstrapTimer    TimeTicks,
    bsrCandidateBSRStatus            RowStatus
}

```

```

bsrCandidateBSRAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The address type of the Candidate-BSR."
    ::= { bsrCandidateBSREntry 1 }

```

```

bsrCandidateBSRAddress OBJECT-TYPE
    SYNTAX      InetAddress

```

```

MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The (unicast) address which the local router will use to
    advertise itself as a Candidate-BSR. The InetAddressType is
    given by the bsrCandidateBSRAddressType object."
    ::= { bsrCandidateBSREntry 2 }

```

```

bsrCandidateBSRPriority OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "The priority value for the local router as a Candidate-BSR
        for this address type. Numerically higher values for this
        object indicate higher priorities."
    DEFVAL { 0 }
    ::= { bsrCandidateBSREntry 3 }

```

```

bsrCandidateBSRHashMaskLength OBJECT-TYPE
    SYNTAX      Unsigned32 (0..128)

```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The hash mask length (used in the RP hash function) that the local router will advertise in its Bootstrap messages for this address type. This object defaults to 30 if bsrCandidateBSRAccessType is 'ipv4' or 'ipv4z', and defaults to 126 if bsrCandidateBSRAccessType is 'ipv6' or 'ipv6z'."

-- DEFVAL { 30 or 126 }

::= { bsrCandidateBSREntry 4 }

bsrCandidateBSRElectedBSR OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether the local router is the elected BSR for this address type."

::= { bsrCandidateBSREntry 5 }

bsrCandidateBSRBootstrapTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time remaining before the local router next originates

a Bootstrap message for this address type. This is zero if bsrCandidateBSRElectedBSR is 'false'."

::= { bsrCandidateBSREntry 6 }

bsrCandidateBSRStatus 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."

::= { bsrCandidateBSREntry 7 }

--

-- The BSR Elected BSR Table

--

bsrElectedBSRTable OBJECT-TYPE

SYNTAX SEQUENCE OF BsrElectedBSREntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table containing information about elected BSRs. The table contains one row for each address family for which there is an elected BSR."

::= { pim 17 }

bsrElectedBSREntry OBJECT-TYPE

SYNTAX BsrElectedBSREntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the bsrElectedBSRTable."

INDEX { bsrElectedBSRAddressType }

::= { bsrElectedBSRTable 1 }

BsrElectedBSREntry ::= SEQUENCE {

bsrElectedBSRAddressType InetAddressType,

bsrElectedBSRAddress InetAddress,

bsrElectedBSRPriority Unsigned32,

bsrElectedBSRHashMaskLength Unsigned32,

bsrElectedBSRExpiryTime TimeTicks,

bsrElectedBSRCRPAdvTimer TimeTicks

}

bsrElectedBSRAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

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STATUS current

DESCRIPTION

"The address type of the elected BSR."

::= { bsrElectedBSREntry 1 }

bsrElectedBSRAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|16|20))

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The (unicast) address of the elected BSR. The
 InetAddressType is given by the bsrElectedBSRAddressType
 object."
 ::= { bsrElectedBSREntry 2 }

bsrElectedBSRPriority OBJECT-TYPE
SYNTAX Unsigned32 (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The priority value for the elected BSR for this address
 type. Numerically higher values for this object indicate
 higher priorities."
 ::= { bsrElectedBSREntry 3 }

bsrElectedBSRHashMaskLength OBJECT-TYPE
SYNTAX Unsigned32 (0..128)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The hash mask length (used in the RP hash function)
 advertised by the elected BSR for this address type."
 ::= { bsrElectedBSREntry 4 }

bsrElectedBSRExpiryTime OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The minimum time remaining before the elected BSR for this
 address type will be declared down."
 ::= { bsrElectedBSREntry 5 }

bsrElectedBSRCRPAAdvTimer OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION

```

        "The time remaining before the local router next sends a
        Candidate-RP-Advertisement signal to the elected BSR for
        this address type."
    ::= { bsrElectedBSREntry 6 }

--
-- PIM Traps
--

pimNeighborLoss NOTIFICATION-TYPE
    OBJECTS { pimNeighborUpTime }
    STATUS      current
    DESCRIPTION
        "A pimNeighborLoss trap signifies the loss of an adjacency
        with a neighbor. This trap should be generated when the
        neighbor timer expires, and the router has no other
        neighbors on the same interface with the same IP version and
        a lower IP address than itself."
    ::= { pimTraps 1 }

--
-- Conformance Information
--

pimMIBConformance OBJECT IDENTIFIER ::= { pimStdMIB 2 }
pimMIBCompliances OBJECT IDENTIFIER ::= { pimMIBConformance 1 }
pimMIBGroups      OBJECT IDENTIFIER ::= { pimMIBConformance 2 }

--
-- Compliance Statements
--

pimMIBCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for PIM routers which implement
        the PIM MIB."
    MODULE      -- this module
    MANDATORY-GROUPS { pimNotificationGroup,
                        pimObjectGroup }
    ::= { pimMIBCompliances 1 }

--
-- Units of Conformance
--

pimNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS { pimNeighborLoss }

```

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STATUS current

DESCRIPTION

"A collection of notifications for signaling important PIM events."

::= { pimMIBGroups 1 }

pimObjectGroup OBJECT-GROUP

OBJECTS { pimInterfaceAddressType,
pimInterfaceAddress,
pimInterfaceNetMaskLength,
pimInterfaceDR,
pimInterfaceHelloInterval,
pimInterfaceTrigHelloInterval,
pimInterfaceJoinPruneInterval,
pimInterfaceDFElectionRobustness,
pimInterfaceHelloHoldtime,
pimInterfaceJoinPruneHoldtime,
pimInterfaceUseLanPruneDelay,
pimInterfacePropagationDelay,
pimInterfaceOverrideInterval,
pimInterfaceUseGenerationID,
pimInterfaceGenerationIDValue,
pimInterfaceUseDRPriority,
pimInterfaceDRPriority,
pimInterfaceLanDelayEnabled,
pimInterfaceEffectPropagDelay,
pimInterfaceEffectOverrideIvl,
pimInterfaceSuppressionEnabled,
pimInterfaceBidirCapable,
pimInterfaceDRPriorityEnabled,
pimInterfaceBSRBorder,
pimInterfaceStatus,
pimNeighborUpTime,
pimNeighborExpiryTime,
pimNeighborLanPruneDelayPresent,
pimNeighborPropagationDelay,
pimNeighborOverrideInterval,
pimNeighborTBit,
pimNeighborGenerationIDPresent,
pimNeighborGenerationIDValue,
pimNeighborBidirCapable,
pimNeighborDRPriorityPresent,
pimNeighborDRPriority,

pimNbrSecAddress,
pimStarGUpTime,
pimStarGPimMode,
pimStarGRPAddress,
pimStarGRPOrigin,

pimStarGRPIsLocal,
pimStarGUpstreamJoinState,
pimStarGUpstreamJoinTimer,
pimStarGUpstreamNeighbor,
pimStarGRPFIIfIndex,
pimStarGRPFPNextHop,
pimStarGRPFRRouteProtocol,
pimStarGRPFRRouteAddress,
pimStarGRPFRRoutePrefixLength,
pimStarGRPFRRouteMetricPref,
pimStarGRPFRRouteMetric,
pimStarGIUpTime,
pimStarGILocalMembership,
pimStarGIJoinPruneState,
pimStarGIJoinPrunePendingTimer,
pimStarGIJoinExpiryTimer,
pimStarGIAssertState,
pimStarGIAssertTimer,
pimStarGIAssertWinnerAddress,
pimStarGIAssertWinnerMetricPref,
pimStarGIAssertWinnerMetric,
pimSGUpTime,
pimSGPimMode,
pimSGUpstreamJoinState,
pimSGUpstreamJoinTimer,
pimSGUpstreamNeighbor,
pimSGRPFIIfIndex,
pimSGRPFPNextHop,
pimSGRPFRRouteProtocol,
pimSGRPFRRouteAddress,
pimSGRPFRRoutePrefixLength,
pimSGRPFRRouteMetricPref,
pimSGRPFRRouteMetric,
pimSGSPTBit,
pimSGKeepaliveTimer,
pimSGDRRegisterState,

pimSGDRRegisterStopTimer,
pimSGRPRRegisterPMBRAddress,
pimSGIUpTime,
pimSGILocalMembership,
pimSGIJoinPruneState,
pimSGIPrunePendingTimer,
pimSGIJoinExpiryTimer,
pimSGIAAssertState,
pimSGIAAssertTimer,
pimSGIAAssertWinnerAddress,
pimSGIAAssertWinnerMetricPref,
pimSGIAAssertWinnerMetric,

pimSGRptUpTime,
pimSGRptUpstreamPruneState,
pimSGRptUpstreamOverrideTimer,
pimSGRptIUpTime,
pimSGRptILocalMembership,
pimSGRptIJoinPruneState,
pimSGRptIPrunePendingTimer,
pimSGRptIPruneExpiryTimer,
pimBidirDFElectionWinnerAddress,
pimBidirDFElectionWinnerUpTime,
pimBidirDFElectionWinnerMetricPref,
pimBidirDFElectionWinnerMetric,
pimBidirDFElectionState,
pimBidirDFElectionStateTimer,
pimSsmRangeRowStatus,
pimStaticRPRPAddress,
pimStaticRPPimMode,
pimStaticRPOVERRIDEdynamic,
pimStaticRPRowStatus,
pimGroupMappingPimMode,
pimGroupMappingPrecedence,
pimGroupMappingActive,
bsrCandidateRPBidir,
bsrCandidateRPStatus,
bsrRPSetPriority,
bsrRPSetHoldtime,
bsrRPSetExpiryTime,
bsrCandidateBSRAddress,
bsrCandidateBSRPriority,

```

        bsrCandidateBSRHashMaskLength,
        bsrCandidateBSRElectedBSR,
        bsrCandidateBSRBootstrapTimer,
        bsrCandidateBSRStatus,
        bsrElectedBSRAddress,
        bsrElectedBSRPriority,
        bsrElectedBSRHashMaskLength,
        bsrElectedBSRExpiryTime,
        bsrElectedBSRCRPAAdvTimer }
STATUS    current
DESCRIPTION
    "A collection of objects for managing PIM routers."
 ::= { pimMIBGroups 2 }

```

END

[5.](#) 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:

TODO.

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:

TODO.

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.

[6.](#) IANA Considerations

PIM-STD-MIB should be rooted under the mib-2 subtree. IANA is requested to assign { mib-2 XXX } to the PIM-STD-MIB module specified in this document.

[7.](#) Acknowledgements

This MIB module is based on the original work in [RFC 2934](#) [[RFC2934](#)] by K. McCloghrie, D. Farinacci, D. Thaler and W. Fenner and has been updated based on feedback from the IETF's Protocol Independent Multicast (PIM) Working Group.

Jonathan Nicholas was the editor of early versions of this document.

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