

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-

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PIM). This document is part of work in progress to obsolete [RFC 2934](#), and is to be preferred where the two documents overlap. This document does not obsolete [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 is part of work in progress to obsolete [RFC 2934](#) [[RFC2934](#)]. [RFC 2934](#) defined an experimental MIB module for managing the PIM protocols. The MIB module defined by this document is a 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 retains limited support for managing PIM-DM [[RFC3973](#)], but that is no longer its primary purpose.
- 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 static RPs.
- o This MIB module includes support for configuring anycast RPs [[I-D.ietf-pim-anycast-rp](#)]>.

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 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,

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[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 Static RP Table, which contains one row per range of multicast group addresses for which a particular configured RP should be used.

12. 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.
13. The PIM Anycast-RP Set Table, which contains one row for each RP within each Anycast-RP set of which the local router is a member.

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,
Counter32, Gauge32, 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 "200601240000Z" -- 24 January 2006

ORGANIZATION "IETF PIM Working Group"

CONTACT-INFO

"Email: pim@ietf.org"

DESCRIPTION

"The MIB module for management of PIM routers.

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 "200601240000Z" -- 24 January 2006

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

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-- 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.

dm(5) PIM Dense Mode.

other(6) Any other PIM mode."

SYNTAX INTEGER {
 none(1),
 ssm(2),
 asm(3),
 bidir(4),
 dm(5),
 other(6)
 }

PimGroupMappingOriginType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

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

fixed(1) Link-local or unroutable group mappings.

configRp(2) Local static RP configuration.

configSsm(3) Local SSM Group configuration.

bsr(4) The PIM Bootstrap Router (BSR) mechanism.

autoRP(5) Cisco's Auto-RP mechanism.

embedded(6) The Embedded-RP mechanism where the RP address is embedded in the multicast group address.

other(7) Any other mechanism."

REFERENCE "[RFC 3956](#), I-D.ietf-pim-sm-bsr"

SYNTAX INTEGER {
 fixed(1),

```

        configRp(2),
        configSsm(3),
        bsr(4),
        autoRP(5),
        embedded(6),
        other(7)
    }

--
-- Top-level structure
--

pimMIBObjects OBJECT IDENTIFIER ::= { pimStdMIB 1 }
pimTraps      OBJECT IDENTIFIER ::= { pimMIBObjects 0 }
pim           OBJECT IDENTIFIER ::= { pimMIBObjects 1 }

pimKeepalivePeriod OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The duration of the Keepalive Timer. This is the period
        during which the PIM router will maintain (S,G) state in the
        absence of explicit (S,G) local membership or (S,G) join
        messages received to maintain it. This timer period is
        called the Keepalive_Period in the PIM-SM specification. It
        is called the SourceLifetime in the PIM-DM specification."
    REFERENCE   "I-D.ietf-pim-sm-v2-new section 4.11"
    DEFVAL      { 210 }
    ::= { pim 14 }

pimRegisterSuppressionTime OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The duration of the Register Suppression Timer. This is
        the period during which a PIM Designated Router (DR) stops

```


(RP) after receiving a Register-Stop message. This object is used to run timers both at the DR and at the RP. This timer period is called the Register_Suppression_Time in the PIM-SM specification."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.11](#)"

DEFVAL { 60 }

::= { pim 15 }

pimStarGEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the pimStarGTable."

::= { pim 16 }

pimStarGIEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the pimStarGITable."

::= { pim 17 }

pimSGEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the pimSGTable."

::= { pim 18 }

pimSGIEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the pimSGITable."

::= { pim 19 }

pimSGRptEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the pimSGRptTable."

::= { pim 20 }

pimSGRptIEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the pimSGRptITable."

::= { pim 21 }

pimOutAsserts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Asserts sent by this router."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.6](#)"

::= { pim 22 }

pimInAsserts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Asserts received by this router. Asserts are multicast to all routers on a network. This counter is incremented by all routers that receive an assert, not only those routers that are contesting the assert."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.6](#)"

::= { pim 23 }

pimLastAssertInterface OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The interface on which this router most recently sent or received an assert, or zero if this router has not sent or received an assert."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.6](#)"

::= { pim 24 }

pimLastAssertGroupAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type of the multicast group address in the most

recently sent or received assert. If this router has not sent or received an assert then this object is set to

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```
        unknown(0)."  
 ::= { pim 25 }
```

pimLastAssertGroupAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The multicast group address in the most recently sent or received assert. The InetAddressType is given by the pimLastAssertGroupAddressType object."

```
 ::= { pim 26 }
```

pimLastAssertSourceAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type of the multicast source address in the most recently sent or received assert. If the most recent assert was (*,G), or if this router has not sent or received an assert, then this object is set to unknown(0)."

```
 ::= { pim 27 }
```

pimLastAssertSourceAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The multicast source address in the most recently sent or received assert. The InetAddressType is given by the pimLastAssertSourceAddressType object."

```
 ::= { pim 28 }
```

pimNeighborLossTrapPeriod OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The minimum time that must elapse between pimNeighborLoss traps originated by this router. The maximum value 65535 represents an 'infinite' time, in which case no pimNeighborLoss traps are ever sent."

DEFVAL { 0 }

::= { pim 29 }

pimNeighborLossCount OBJECT-TYPE

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SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of neighbor loss events that have occurred.

This count is incremented 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.

This counter is incremented whenever a pimNeighborLoss trap would be generated."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.3.2](#)"

::= { pim 30 }

pimInvalidRegisterTrapPeriod OBJECT-TYPE

SYNTAX Unsigned32 (10..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The minimum time that must elapse between pimInvalidRegister traps originated by this router. The default value of 65535 represents an 'infinite' time, in which case no pimInvalidRegister traps are ever sent.

The non-zero minimum allowed value provides resilience against propagation of denial-of-service attacks from the data and control planes to the network management plane."

DEFVAL { 65535 }

::= { pim 31 }

pimInvalidRegisterMsgsRcvd OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of invalid PIM Register messages that have been received by this device.

A PIM Register message is invalid if either

- o the destination address of the Register message does not match the Group to RP mapping on this device, or

- o this device believes the group address to be within an SSM address range, but this Register implies ASM usage.

These conditions can occur transiently while RP mapping changes propagate through the network. If this counter is incremented repeatedly over several minutes, then there is a persisting configuration error that requires correction.

The active Group to RP mapping on this device is specified by the object pimGroupMappingPimMode. If there is no such mapping, then the object pimGroupMappingPimMode is absent. The RP address contained in the invalid Register is pimInvalidRegisterRp.

Multicast data carried by invalid Register messages is discarded. The discarded data is from a source directly connected to pimInvalidRegisterOrigin, and is addressed to pimInvalidRegisterGroup."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.4.2](#)"

::= { pim 32 }

pimInvalidRegisterAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type stored in pimInvalidRegisterOrigin, pimInvalidRegisterGroup and pimInvalidRegisterRp.

If no unexpected Register messages have been received, then
 this object is set to unknown(0)."
 ::= { pim 33 }

pimInvalidRegisterOrigin OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The source address of the last unexpected Register message
 received by this device."
 ::= { pim 34 }

pimInvalidRegisterGroup OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The IP multicast group address to which the last unexpected
 Register message received by this device was addressed."
 ::= { pim 35 }

pimInvalidRegisterRp OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The RP address to which the last unexpected Register
 message received by this device was delivered."
 ::= { pim 36 }

pimInvalidJoinPruneTrapPeriod OBJECT-TYPE

SYNTAX Unsigned32 (10..65535)
UNITS "seconds"
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "The minimum time that must elapse between
 pimInvalidJoinPrune traps originated by this router. The
 default value of 65535 represents an 'infinite' time, in

which case no pimInvalidJoinPrune traps are ever sent.

The non-zero minimum allowed value provides resilience against propagation of denial-of-service attacks from the control plane to the network management plane."

DEFVAL { 65535 }

::= { pim 37 }

pimInvalidJoinPruneMsgsRcvd OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of invalid PIM Join/Prune messages that have been received by this device.

A PIM Join/Prune message is invalid if either

o the Group to RP mapping specified by this message does not match the Group to RP mapping on this device, or

o this device believes the group address to be within an SSM address range, but this Join/Prune (*,G) or (S,G,rpt) implies ASM usage.

These conditions can occur transiently while RP mapping changes propagate through the network. If this counter is incremented repeatedly over several minutes, then there is a persisting configuration error that requires correction.

The active Group to RP mapping on this device is specified by the object pimGroupMappingPimMode. If there is no such mapping, then the object pimGroupMappingPimMode is absent. The RP address contained in the invalid Join/Prune is pimInvalidJoinPruneRp.

Invalid Join/Prune messages are discarded. This may result in loss of multicast data affecting listeners downstream of pimInvalidJoinPruneOrigin, for multicast data addressed to pimInvalidJoinPruneGroup."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.2](#)"

::= { pim 38 }

pimInvalidJoinPruneAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type stored in pimInvalidJoinPruneOrigin,
pimInvalidJoinPruneGroup and pimInvalidJoinPruneRp.

If no unexpected Join/Prune messages have been received,
this object is set to unknown(0)."

::= { pim 39 }

pimInvalidJoinPruneOrigin OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The source address of the last unexpected Join/Prune
message received by this device."

::= { pim 40 }

pimInvalidJoinPruneGroup OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IP multicast group address carried in the last
unexpected Join/Prune message received by this device."

::= { pim 41 }

pimInvalidJoinPruneRp OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|8|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The RP address carried in the last unexpected Join/Prune
message received by this device."

::= { pim 42 }

"The RP address carried in the last unexpected Join/Prune
message received by this device."

::= { pim 42 }

pimRPMappingTrapPeriod OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The minimum time that must elapse between pimRPMappingChange traps originated by this router. The default value of 65535 represents an 'infinite' time, in which case no pimRPMappingChange traps are ever sent."

DEFVAL { 65535 }

::= { pim 43 }

pimRPMappingChangeCount OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of changes to active RP mappings on this device.

Information about active RP mappings is available in pimGroupMappingTable. Only changes to active mappings cause his count to be incremented. That is, changes that modify the pimGroupMappingEntry with the highest precedence for a group (lowest value of pimGroupMappingPrecedence).

Such changes may result from configuration of this device, or from automatic RP mapping discovery methods including the PIM Bootstrap Router (BSR) mechanism."

REFERENCE "I-D.ietf-pim-sm-bsr"

::= { pim 44 }

pimInterfaceElectionTrapPeriod OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The minimum time that must elapse between pimInterfaceElection traps originated by this router. The default value of 65535 represents an 'infinite' time, in which case no pimInterfaceElection traps are ever sent."

DEFVAL { 65535 }

::= { pim 45 }

pimInterfaceElectionWinCount OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times this device has been elected DR or DF on any interface.

Elections occur frequently on newly-active interfaces, as triggered Hellos establish adjacencies. This counter is not incremented for elections on an interface until the first periodic Hello has been sent. If this router is the DR or DF at the time of sending the first periodic Hello after interface activation, then this counter is incremented (once) at that time."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.3.2](#) and
I-D.ietf-pim-bidir [section 3.5.2](#)"

::= { pim 46 }

pimRefreshInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The interval between successive State Refresh messages sent by an Originator. This timer period is called the RefreshInterval in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.8](#)"

DEFVAL { 60 }

::= { pim 47 }

--

-- 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

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MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimInterfaceTable. This entry is preserved on agent restart."

INDEX { pimInterfaceIfIndex,
pimInterfaceIPVersion }

::= { pimInterfaceTable 1 }

PimInterfaceEntry ::= SEQUENCE {

pimInterfaceIfIndex	InterfaceIndex,
pimInterfaceIPVersion	InetVersion,
pimInterfaceAddressType	InetAddressType,
pimInterfaceAddress	InetAddress,
pimInterfaceDR	InetAddress,
pimInterfaceHelloInterval	Unsigned32,
pimInterfaceTrigHelloInterval	Unsigned32,
pimInterfaceJoinPruneInterval	Unsigned32,
pimInterfaceDFElectionRobustness	Unsigned32,
pimInterfaceHelloHoldtime	Unsigned32,
pimInterfaceJoinPruneHoldtime	Unsigned32,
pimInterfacePropagationDelay	Unsigned32,
pimInterfaceOverrideInterval	Unsigned32,
pimInterfaceGenerationIDValue	Unsigned32,
pimInterfaceDRPriority	Unsigned32,
pimInterfaceLanDelayEnabled	TruthValue,
pimInterfaceEffectPropagDelay	Unsigned32,
pimInterfaceEffectOverrideIvl	Unsigned32,
pimInterfaceSuppressionEnabled	TruthValue,
pimInterfaceBidirCapable	TruthValue,
pimInterfaceDRPriorityEnabled	TruthValue,
pimInterfaceDomainBorder	TruthValue,
pimInterfaceStatus	RowStatus,
pimInterfaceStubInterface	TruthValue,
pimInterfacePruneLimitInterval	Unsigned32,
pimInterfaceGraftRetryInterval	Unsigned32,
pimInterfaceSRPriorityEnabled	TruthValue

}

pimInterfaceIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The ifIndex value of this PIM interface."
 ::= { pimInterfaceEntry 1 }

pimInterfaceIPVersion OBJECT-TYPE

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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|8|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 }

pimInterfaceDR OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|8|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 5 }

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 specification. A value of zero represents an 'infinite'

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interval, and indicates that periodic PIM Hello messages should not be sent on this interface."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.11](#)"

DEFVAL { 30 }

::= { pimInterfaceEntry 6 }

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. A value of zero has no special meaning and indicates that triggered PIM Hello messages should always be sent immediately."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.11](#)"

DEFVAL { 5 }

::= { pimInterfaceEntry 7 }

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. A value of zero represents an 'infinite' interval, and indicates that periodic PIM Join/Prune messages should not be sent on this interface."
REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.11](#)"
DEFVAL { 60 }
::= { pimInterfaceEntry 8 }

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 9 }

pimInterfaceHelloHoldtime OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)
UNITS "seconds"
MAX-ACCESS read-create
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 zero."
DEFVAL { 105 }
::= { pimInterfaceEntry 10 }

pimInterfaceJoinPruneHoldtime OBJECT-TYPE

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

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 zero. PIM-DM implementations are recommended to use the value of pimInterfacePruneLimitInterval."
DEFVAL { 210 }
::= { pimInterfaceEntry 11 }

pimInterfacePropagationDelay OBJECT-TYPE

SYNTAX Unsigned32 (0..32767)
UNITS "milliseconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The expected propagation delay between PIM routers on this network or link."

This router inserts this value into the Propagation_Delay field of the LAN Prune Delay option in the PIM Hello messages sent on this interface. 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 12 }

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."

When overriding a prune, PIM routers pick a random timer duration up to the value of this object. The more PIM routers that are active on a network, the more likely it is that the prune will be overridden after a small proportion of this time has elapsed.

The more PIM routers are active on this network, the larger this object should be to obtain an optimal spread of prune override latencies."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.3.3](#)"

DEFVAL { 2500 }

::= { pimInterfaceEntry 13 }

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."

::= { pimInterfaceEntry 14 }

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."

DEFVAL { 1 }

::= { pimInterfaceEntry 15 }

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 16 }

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 17 }

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 18 }

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 19 }

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 20 }

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 21 }

pimInterfaceDomainBorder OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Whether or not this interface is a PIM domain border. This
 includes acting as a border for PIM Bootstrap Router (BSR)
 messages, if the BSR mechanism is in use."
DEFVAL { false }
::= { pimInterfaceEntry 22 }

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.

 This status object can be set to active(1) without setting
 any other columnar objects in this entry.

 All writeable objects in this entry can be modified when the
 status of this entry is active(1)."
::= { pimInterfaceEntry 23 }

pimInterfaceStubInterface OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Whether this interface is a 'stub interface'. If this
 object is set to TRUE, then no PIM packets are sent out this
 interface, and any received PIM packets are ignored.

 Setting this object to TRUE is a security measure for
 interfaces towards untrusted hosts. This allows an
 interface to be configured for use with IGMP or MGMT, while
 also protecting the PIM router from forged PIM messages on

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the interface.

To communicate with other PIM routers using this interface, this object must remain set to FALSE.

Changing the value of this object while the interface is operational causes the interface to be deactivated and then reactivated."

DEFVAL { false }

::= { pimInterfaceEntry 24 }

pimInterfacePruneLimitInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The minimum interval that must transpire between two successive Prunes sent by a router. This object corresponds to the 't_limit' timer value defined in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.8](#)"

DEFVAL { 60 }

::= { pimInterfaceEntry 25 }

pimInterfaceGraftRetryInterval OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The minimum interval that must transpire between two successive Grafts sent by a router. This object corresponds to the 'Graft_Retry_Period' timer value defined in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.8](#)"

DEFVAL { 3 }

::= { pimInterfaceEntry 26 }

pimInterfaceSRPriorityEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

```

STATUS      current
DESCRIPTION
    "Evaluates to TRUE if all routers on this interface are
    using the State Refresh option.  This object is used only by
    PIM-DM."
 ::= { pimInterfaceEntry 27 }

```

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```

--
-- The PIM Neighbor Table
--

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,
pimNeighborSRCapable	TruthValue

}

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|8|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 }

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pimNeighborPropagationDelay OBJECT-TYPE

SYNTAX Unsigned32 (0..32767)

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 zero 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 zero 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

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zero if pimNeighborGenerationIDPresent is FALSE."
 ::= { pimNeighborEntry 11 }

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 zero if pimNeighborDRPriorityPresent is FALSE."
 ::= { pimNeighborEntry 14 }

```

pimNeighborSRCapable OBJECT-TYPE

```

SYNTAX      TruthValue
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "Evaluates to TRUE if this neighbor is using the State
    Refresh Capable option. This object is used only by
    PIM-DM."
 ::= { pimNeighborEntry 15 }

```

```

--
-- 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."
    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|8|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|8|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,
pimStarGRPAddressType	InetAddressType,
pimStarGRPAddress	InetAddress,
pimStarGPimModeOrigin	PimGroupMappingOriginType,
pimStarGRPIsLocal	TruthValue,
pimStarGUpstreamJoinState	INTEGER,

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```
pimStarGUpstreamJoinTimer      TimeTicks,
pimStarGUpstreamNeighborType  InetAddressType,
pimStarGUpstreamNeighbor      InetAddress,
pimStarGRPFIIfIndex            InterfaceIndexOrZero,
pimStarGRPFPNextHopType        InetAddressType,
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|8|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 }

pimStarGRPAddressType OBJECT-TYPE

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SYNTAX InetAddressType
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The address type of the Rendezvous Point (RP), or
 unknown(0) if the RP address is unknown."
 ::= { pimStarGEntry 5 }

pimStarGRPAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|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 pimStarGRPAddressType."
 ::= { pimStarGEntry 6 }

pimStarGPimModeOrigin 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 7 }

pimStarGRPIsLocal OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "Whether the local router is the RP for the group."
 ::= { pimStarGEntry 8 }

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."
REFERENCE "I-D.ietf-pim-sm-v2-new section 4.5.6"
::= { pimStarGEntry 9 }

```

```

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. This object is zero if the timer is not
        running."
    REFERENCE "I-D.ietf-pim-sm-v2-new section 4.10"
    ::= { pimStarGEntry 10 }

```

```

pimStarGUpstreamNeighborType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The primary address type of the upstream neighbor, or
        unknown(0) if the upstream neighbor address is unknown or is
        not a PIM neighbor."
    ::= { pimStarGEntry 11 }

```

```

pimStarGUpstreamNeighbor OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (0|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. The InetAddressType is given by the pimStarGUpstreamNeighborType object. This address is called RPF'(*,G) in the PIM-SM specification."
REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.1.6](#)"
::= { pimStarGEntry 12 }

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 13 }

pimStarGRPFPNextHopType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-only

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STATUS current
DESCRIPTION
"The address type of the RPF next hop towards the RP, or unknown(0) if the RPF next hop is unknown."
::= { pimStarGEntry 14 }

pimStarGRPFPNextHop OBJECT-TYPE
SYNTAX InetAddress (SIZE (0|4|16|20))
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The address of the RPF next hop towards the RP. The InetAddressType is given by the pimStarGRPFPNextHopType object. This address is called MRIB.next_hop(RP(G)) in the PIM-SM specification."
REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.5](#)"
::= { pimStarGEntry 15 }

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 16 }

pimStarGRPFRouteAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|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 pimStarGRPFRNextHopType object.

This address object is only significant up to pimStarGRPFRoutePrefixLength bits. The remainder of the address bits are zero."

::= { pimStarGEntry 17 }

pimStarGRPFRoutePrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength

MAX-ACCESS read-only

STATUS current

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 pimStarGRPFRNextHopType object."

::= { pimStarGEntry 18 }

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 19 }

```

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 20 }

--
-- 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 }
    ::= { pimStarGITable 1 }

```

```

PimStarGIEntry ::= SEQUENCE {
    pimStarGIIfIndex      InterfaceIndex,
    pimStarGIUpTime       TimeTicks,
    pimStarGILocalMembership TruthValue,
    pimStarGIJoinPruneState INTEGER,
    pimStarGIPrunePendingTimer TimeTicks,
    pimStarGIJoinExpiryTimer TimeTicks,
    pimStarGIAssertState  INTEGER,

```



```

    pimStarGIAssertTimer           TimeTicks,
    pimStarGIAssertWinnerAddressType InetAddressType,
    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."
    REFERENCE  "I-D.ietf-pim-sm-v2-new section 4.1.6"
    ::= { pimStarGIEntry 3 }

pimStarGIJoinPruneState OBJECT-TYPE
    SYNTAX      INTEGER {
        noInfo (1),
        join (2),

```

```

    }
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."
REFERENCE "I-D.ietf-pim-sm-v2-new section 4.5.2"
::= { 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. This
    object is zero if the timer is not running."
REFERENCE "I-D.ietf-pim-sm-v2-new section 4.5.1"
::= { 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. This object is
    zero if the timer is not running. A value of 'FFFFFFFF'h
    indicates an infinite expiry time."
REFERENCE "I-D.ietf-pim-sm-v2-new section 4.10"
::= { 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. If pimStarGPimMode is 'bidir', this object must be 'noInfo'."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.6.2](#)"

::= { pimStarGIEntry 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."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.6.2](#)"

::= { pimStarGIEntry 8 }

pimStarGIAssertWinnerAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAssertState is 'iAmAssertLoser', this is the address type of the assert winner; otherwise, this object is unknown(0)."

::= { pimStarGIEntry 9 }

pimStarGIAssertWinnerAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAssertState is 'iAmAssertLoser', this is the address of the assert winner. The InetAddressType is given by the pimStarGIAssertWinnerAddressType object."

::= { pimStarGIEntry 10 }

pimStarGIAssertWinnerMetricPref OBJECT-TYPE

SYNTAX Unsigned32 (0..2147483647)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimStarGIAssertState is 'iAmAssertLoser', this is the

metric preference of the route to the RP advertised by the
assert winner; otherwise, this object is zero."
 ::= { pimStarGIEntry 11 }

pimStarGIAssertWinnerMetric OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

::= { pimStarGIEntry 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,

pimSGRPFNextHopType	InetAddressType,
pimSGRPFNextHop	InetAddress,
pimSGRPFRouteProtocol	IANAipRouteProtocol,
pimSGRPFRouteAddress	InetAddress,
pimSGRPFRoutePrefixLength	InetAddressPrefixLength,
pimSGRPFRouteMetricPref	Unsigned32,
pimSGRPFRouteMetric	Unsigned32,
pimSGSPTBit	TruthValue,
pimSGKeepaliveTimer	TimeTicks,
pimSGDRRegisterState	INTEGER,
pimSGDRRegisterStopTimer	TimeTicks,
pimSGRPRegisterPMBRAAddressType	InetAddressType,
pimSGRPRegisterPMBRAAddress	InetAddress,
pimSGUpstreamPruneState	INTEGER,
pimSGUpstreamPruneLimitTimer	TimeTicks,
pimSGOriginatorState	INTEGER,
pimSGSourceActiveTimer	TimeTicks,
pimSGStateRefreshTimer	TimeTicks

}

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|8|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|8|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

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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."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.7](#)"
::= { 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. This object is zero if the timer is not running."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.10](#) and 4.11"
::= { pimSGEntry 7 }

pimSGUpstreamNeighbor OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|8|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 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."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.1.6](#)"
::= { 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 }

pimSGRPFNextHopType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type of the RPF next hop towards the source, or unknown(0) if the RPF next hop is unknown."

::= { pimSGEntry 10 }

pimSGRPFNextHop OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|8|16|20))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address of the RPF next hop towards the source. The InetAddressType is given by the pimSGRPFNextHopType. This address is called MRIB.next_hop(S) in the PIM-SM specification."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.5](#)"

::= { pimSGEntry 11 }

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 12 }

pimSGRPFRouteAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|8|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 pimSGRPFNextHopType object."

This address object is only significant up to
pimSGRPFRoutePrefixLength bits. The remainder of the
address bits are zero."

::= { pimSGEntry 13 }

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 pimSGRPFNextHopType
object."

::= { pimSGEntry 14 }

pimSGRPFRouteMetricPref 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 source."

::= { pimSGEntry 15 }

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 16 }

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 17 }

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."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.1.4](#)"

::= { pimSGEntry 18 }

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 machine in the PIM-SM specification. This object is always 'noInfo' unless pimSGPimMode is 'asm'."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.4.1](#)"

::= { pimSGEntry 19 }

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."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.4](#)"

::= { pimSGEntry 20 }

pimSGRPRRegisterPMBRAAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type of the first PIM Multicast Border Router to send a Register message with the Border bit set. This object is unknown(0) if the local router is not the RP for the group."

::= { pimSGEntry 21 }

pimSGRPRRegisterPMBRAAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (0|4|16|20))

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. The InetAddressType is given by the pimSGRPRRegisterPMBRAAddressType object."

::= { pimSGEntry 22 }

pimSGUpstreamPruneState OBJECT-TYPE

SYNTAX INTEGER {
 forwarding (1),
 ackpending (2),
 pruned (3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether the local router has pruned itself from the tree. This corresponds to the state of the upstream prune (S,G) state machine in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.4.1](#)"

::= { pimSGEntry 23 }

pimSGUpstreamPruneLimitTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

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"The time remaining before the local router may send a (S,G) Prune message on pimSGRPFIfIndex. This timer is called the (S,G) Prune Limit Timer in the PIM-DM specification. This object is zero if the timer is not running. This object is used only by PIM-DM."

REFERENCE "[RFC 2973 section 4.8](#)"

::= { pimSGEntry 24 }

pimSGOriginatorState OBJECT-TYPE

SYNTAX INTEGER {
notOriginator (1),
originator (2)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether the router is an originator for an (S,G) message flow. This corresponds to the state of the per-(S,G) Originator state machine in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.5.2](#)"

::= { pimSGEntry 25 }

pimSGSourceActiveTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimSGOriginatorState is 'originator', this is the time remaining before the local router reverts to a notOriginator state. Otherwise, this is zero. This timer is called the Source Active Timer in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.8](#)"

::= { pimSGEntry 26 }

pimSGStateRefreshTimer OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If pimSGOriginatorState is 'originator', this is the time remaining before the local router sends a State Refresh message. Otherwise, this is zero. This timer is called the State Refresh Timer in the PIM-DM specification. This object is used only by PIM-DM."

REFERENCE "[RFC 3973 section 4.8](#)"

::= { pimSGEntry 27 }

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--

-- 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,
    pimSGIAssertWinnerAddressType InetAddressType,
    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 }

```

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```

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."
    REFERENCE  "I-D.ietf-pim-sm-v2-new section 4.1.6, 4.6.1 and 4.6.2"
    ::= { 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 and PIM-DM specification."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.3](#) and [RFC 3973 section 4.4.2](#)"

::= { 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. This object is zero if the timer is not running."

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REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.3](#) and 4.5.4"
::= { 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. This object is zero if the timer is not running. A value of 'FFFFFFFF'h indicates an infinite expiry time. This timer is called the (S,G) Prune Timer in the PIM-DM specification."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.10](#) and [RFC 3973 section 4.8](#)"

::= { 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."
REFERENCE "I-D.ietf-pim-sm-v2-new section 4.6.1"
 ::= { 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."
REFERENCE "I-D.ietf-pim-sm-v2-new section 4.6.1"
 ::= { pimSGIEntry 8 }

```

pimSGIAssertWinnerAddressType OBJECT-TYPE

```

SYNTAX      InetAddressType
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "If pimSGIAssertState is 'iAmAssertLoser', this is the
    address type of the assert winner; otherwise, this object is
    unknown(0)."
 ::= { pimSGIEntry 9 }

```

pimSGIAssertWinnerAddress OBJECT-TYPE

```

SYNTAX      InetAddress (SIZE (0|4|16|20))

```


MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "If pimSGIAssertState is 'iAmAssertLoser', this is the
 address of the assert winner. The InetAddressType is given
 by the pimSGIAssertWinnerAddressType object."
 ::= { pimSGIEntry 10 }

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 }

pimSGIAssertWinnerMetric OBJECT-TYPE
 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|8|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."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.9](#)"

::= { 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 pimStarGRPFIIfIndex. This timer is called the (S,G,rpt) Upstream Override Timer in the PIM-SM specification. This object is zero if the timer is not running."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.9](#)"

::= { 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."

::= { 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,

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```
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
        MLDv2). This corresponds to local_receiver_exclude(S,G,I)
        in the PIM-SM specification."
    REFERENCE  "I-D.ietf-pim-sm-v2-new section 4.1.6"
    ::= { 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."

```

```

REFERENCE "I-D.ietf-pim-sm-v2-new section 4.5.4"
::= { 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.
        This object is zero if the timer is not running."

```

```

REFERENCE "I-D.ietf-pim-sm-v2-new section 4.5.4"
::= { 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. This object
        is zero if the timer is not running. A value of 'FFFFFFFF'h
        indicates an infinite expiry time."

```

```

REFERENCE "I-D.ietf-pim-sm-v2-new section 4.5.4"
::= { pimSGRptIEntry 6 }

```

```

--

```

```

-- The PIM Bidir DF-Election Table

```

```

--

```

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

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DESCRIPTION
 "An entry (conceptual row) in the pimBidirDFElectionTable."
 INDEX { pimBidirDFElectionAddressType,
 pimBidirDFElectionRPAddress,
 pimBidirDFElectionIfIndex }
 ::= { pimBidirDFElectionTable 1 }

PimBidirDFElectionEntry ::= SEQUENCE {
 pimBidirDFElectionAddressType InetAddressType,
 pimBidirDFElectionRPAddress InetAddress,
 pimBidirDFElectionIfIndex InterfaceIndex,
 pimBidirDFElectionWinnerAddressType InetAddressType,
 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|8|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 }

pimBidirDFElectionWinnerAddressType OBJECT-TYPE
 SYNTAX InetAddressType
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The primary address type of the winner of the DF Election
 process. A value of unknown(0) indicates there is currently
 no DF."
 ::= { pimBidirDFElectionEntry 4 }

pimBidirDFElectionWinnerAddress OBJECT-TYPE
 SYNTAX InetAddress (SIZE (0|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
 pimBidirDFElectionWinnerAddressType object."
 ::= { pimBidirDFElectionEntry 5 }

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 6 }

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 7 }

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 8 }

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."
 REFERENCE "I-D.ietf-pim-bidir-07 [section 3.5.3.1](#)"
 ::= { pimBidirDFElectionEntry 9 }

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 10 }

--

-- 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 11 }

pimStaticRPEntry OBJECT-TYPE

SYNTAX PimStaticRPEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the pimStaticRPTable. This entry is preserved on agent restart."

INDEX { pimStaticRPAddressType,
pimStaticRPGrpAddress,
pimStaticRPGrpPrefixLength }

::= { pimStaticRPTable 1 }

```

PimStaticRPEntry ::= SEQUENCE {
    pimStaticRPAddressType      InetAddressType,
    pimStaticRPGrpAddress       InetAddress,
    pimStaticRPGrpPrefixLength  InetAddressPrefixLength,
    pimStaticRPRPAddress        InetAddress,
    pimStaticRPPimMode          PimMode,
    pimStaticRPOverrideDynamic   TruthValue,
    pimStaticRPRowStatus        RowStatus,
    pimStaticRPPrecedence       Unsigned32
}

```

```

pimStaticRPAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The address type of this entry."
    ::= { pimStaticRPEntry 1 }

```

```

pimStaticRPGrpAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|8|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.

        This address object is only significant up to
        pimSGRPFRoutePrefixLength bits. The remainder of the
        address bits are zero. This is especially important for
        this index field, which is part of the index of this entry.
        Any non-zero bits would signify an entirely different
        entry."
    ::= { 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|8|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 { ssm(2), asm(3), bidir(4) }

MAX-ACCESS read-create

STATUS current

DESCRIPTION

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

If this object is set to ssm(2), then pimStaticRPRPAddress must be set to zero. No RP operations are ever possible for PIM Mode SSM."

DEFVAL { asm }

::= { pimStaticRPEntry 5 }

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

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DESCRIPTION

"The status of this row, by which rows in this table can be created and destroyed.

This status object cannot be set to active(1) before valid values have been written to pimStaticRPRPAddress.

All writeable objects in this entry can be modified when the status of this entry is active(1)."

::= { pimStaticRPEntry 7 }

pimStaticRPPrecedence OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The value for pimGroupMappingPrecedence to be used for this static RP configuration. This allows fine control over which configuration is overridden by this static configuration.

If this object is present, then pimStaticRPOverrideDynamic is ignored.

The absolute values of this object have a significance only on the local router and do not need to be coordinated with other routers. A setting of this object may have different effects when applied to other routers.

Do not use this object unless fine control of static RP behavior on the local router is required."

::= { pimStaticRPEntry 8 }

--

-- The PIM Anycast-RP Set Table

--

pimAnycastRPSetTable OBJECT-TYPE

SYNTAX SEQUENCE OF PimAnycastRPSetEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table is used to create and manage Anycast-RP via PIM

Register messages, as opposed to via other protocols such as MSDP.

Entries must be configured in this table if and only if the local router is a member of one or more Anycast-RP sets,

that is, one or more Anycast-RP addresses are assigned to the local router. Note that if using static RP configuration, this is in addition to, not instead of, the `pimStaticRPTable` entries that must be configured for the Anycast-RPs.

The set of rows with the same values of both `pimAnycastRPSetAddressType` and `pimAnycastRPSetAnycastAddress` corresponds to the Anycast-RP set for that Anycast-RP address.

When an Anycast-RP set configuration is active, one entry per `pimAnycastRPSetAnycastAddress` corresponds to the local router. The local router is identified by the `pimAnycastRpSetLocalRouter` object. That entry determines the source address used by the local router when forwarding PIM Register messages within the Anycast-RP set."

REFERENCE "I-D.ietf-pim-anycast-rp-04"

::= { pim 12 }

`pimAnycastRPSetEntry` OBJECT-TYPE

SYNTAX `PimAnycastRPSetEntry`

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry corresponds to a single router within a particular Anycast-RP set. This entry is preserved on agent restart."

INDEX { `pimAnycastRPSetAddressType`,
 `pimAnycastRPSetAnycastAddress`,
 `pimAnycastRPSetRouterAddress` }

::= { `pimAnycastRPSetTable` 1 }

`PimAnycastRPSetEntry` ::= SEQUENCE {

`pimAnycastRPSetAddressType` `InetAddressType`,

`pimAnycastRPSetAnycastAddress` `InetAddress`,

`pimAnycastRPSetRouterAddress` `InetAddress`,

```

        pimAnycastRPSetRowStatus      RowStatus,
        pimAnycastRPSetLocalRouter    TruthValue
    }

```

pimAnycastRPSetAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of the Anycast-RP address and router address."

::= { pimAnycastRPSetEntry 1 }

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pimAnycastRPSetAnycastAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|8|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Anycast-RP address. The InetAddressType is given by the pimAnycastRPSetAddressType object."

::= { pimAnycastRPSetEntry 2 }

pimAnycastRPSetRouterAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (4|8|16|20))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address of a router that is a member of the Anycast-RP set. The InetAddressType is given by the pimAnycastRPSetAddressType object.

This address differs from pimAnycastRPSetAnycastAddress. Equal values for these two addresses in a single entry is not permitted. That would cause a Register loop."

::= { pimAnycastRPSetEntry 3 }

pimAnycastRPSetRowStatus 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. There are no other other
writeable columnar objects in this entry."
 ::= { pimAnycastRPSetEntry 4 }

pimAnycastRPSetLocalRouter OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Whether this entry corresponds to the local router."

::= { pimAnycastRPSetEntry 5 }

--

-- The PIM Group Mapping Table

--

pimGroupMappingTable OBJECT-TYPE

SYNTAX SEQUENCE OF PimGroupMappingEntry

MAX-ACCESS not-accessible

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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.
- Rows with a pimGroupMappingOrigin value of 'configRp' are
created and destroyed as a result of rows in the
pimStaticRPTable being created and destroyed.

- Rows with a pimGroupMappingOrigin value of 'configSsm' are created and destroyed as a result of configuration of SSM address ranges to the local router.
- 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 the highest precedence (the lowest numerical value for pimGroupMappingPrecedence) are selected.
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."

REFERENCE "[RFC 3956](#)"

::= { 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 {

<code>pimGroupMappingOrigin</code>	<code>PimGroupMappingOriginType</code> ,
<code>pimGroupMappingAddressType</code>	<code>InetAddressType</code> ,
<code>pimGroupMappingGrpAddress</code>	<code>InetAddress</code> ,
<code>pimGroupMappingGrpPrefixLength</code>	<code>InetAddressPrefixLength</code> ,
<code>pimGroupMappingRPAddress</code>	<code>InetAddress</code> ,
<code>pimGroupMappingPimMode</code>	<code>PimMode</code> ,
<code>pimGroupMappingPrecedence</code>	<code>Unsigned32</code>

}

`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|8|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.

This address object is only significant up to pimGroupMappingGrpPrefixLength bits. The remainder of the address bits are zero. This is especially important for this index field, which is part of the index of this entry. Any non-zero bits would signify an entirely different entry."

::= { 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 }

pimGroupMappingRPAAddress OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|8|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 zero
        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 }

--
-- 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.

This notification is generated whenever the counter pimNeighborLossCount is incremented, subject to the rate limit specified by pimNeighborLossPeriod."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.3.2](#)"
 ::= { pimTraps 1 }

pimInvalidRegister NOTIFICATION-TYPE

OBJECTS { pimGroupMappingPimMode,
 pimInvalidRegisterAddressType,
 pimInvalidRegisterOrigin,
 pimInvalidRegisterGroup,
 pimInvalidRegisterRp
 }

STATUS current

DESCRIPTION

"A pimInvalidRegister trap signifies that an invalid PIM Register message was received by this device.

This notification is generated whenever the counter pimInvalidRegisterMsgsRcvd is incremented, subject to the rate limit specified by pimInvalidRegisterTrapPeriod."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.4.2](#)"
 ::= { pimTraps 2 }

pimInvalidJoinPrune NOTIFICATION-TYPE

OBJECTS { pimGroupMappingPimMode,
 pimInvalidJoinPruneAddressType,
 pimInvalidJoinPruneOrigin,
 pimInvalidJoinPruneGroup,
 pimInvalidJoinPruneRp,
 pimNeighborUpTime
 }

STATUS current

DESCRIPTION

"A pimInvalidJoinPrune trap signifies that an invalid PIM Join/Prune message was received by this device.

This notification is generated whenever the counter pimInvalidJoinPruneMsgsRcvd is incremented, subject to the rate limit specified by pimInvalidJoinPruneTrapPeriod."

REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.5.2](#)"
 ::= { pimTraps 3 }

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pimRPMappingChange NOTIFICATION-TYPE
 OBJECTS { pimGroupMappingPimMode,
 pimGroupMappingPrecedence
 }
 STATUS current
 DESCRIPTION
 "A pimRPMappingChange trap signifies a change to the active
 RP mapping on this device.

 This notification is generated whenever the counter
 pimRPMappingChangeCount is incremented, subject to the
 rate limit specified by pimRPMappingChangeTrapPeriod."
 ::= { pimTraps 4 }

pimInterfaceElection NOTIFICATION-TYPE
 OBJECTS { pimInterfaceAddressType,
 pimInterfaceAddress }
 STATUS current
 DESCRIPTION
 "A pimInterfaceElection trap signifies that a new DR or DF
 has been elected on a network.

 This notification is generated whenever the counter
 pimInterfaceElectionsWinCount is incremented, subject to the
 rate limit specified by pimInterfaceElectionTrapPeriod."
 REFERENCE "I-D.ietf-pim-sm-v2-new [section 4.3.2](#) and
 I-D.ietf-pim-bidir [section 3.5.2](#)"
 ::= { pimTraps 5 }

--
-- 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 the PIM MIB."
    MODULE    -- this module
    MANDATORY-GROUPS { pimTopologyGroup }
    ::= { pimMIBCompliances 1 }
```

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--

-- Units of Conformance

--

```
pimTopologyGroup OBJECT-GROUP
    OBJECTS { pimInterfaceAddressType,
        pimInterfaceAddress,
        pimInterfaceDR,
        pimInterfaceHelloHolddtime,
        pimInterfaceJoinPruneHolddtime,
        pimInterfaceGenerationIDValue,
        pimInterfaceLanDelayEnabled,
        pimInterfaceEffectPropagDelay,
        pimInterfaceEffectOverrideIvl,
        pimInterfaceSuppressionEnabled,
        pimInterfaceBidirCapable,
        pimInterfaceDRPriorityEnabled,
        pimNeighborUpTime,
        pimNeighborExpiryTime,
        pimNeighborLanPruneDelayPresent,
        pimNeighborPropagationDelay,
        pimNeighborOverrideInterval,
        pimNeighborTBit,
        pimNeighborGenerationIDPresent,
        pimNeighborGenerationIDValue,
        pimNeighborBidirCapable,
        pimNeighborDRPriorityPresent,
        pimNeighborDRPriority,
        pimNbrSecAddress
    }
    STATUS    current
    DESCRIPTION
```

"A collection of read-only objects used to report local PIM
 topology."
 ::= { pimMIBGroups 1 }

pimNotificationGroup NOTIFICATION-GROUP
 NOTIFICATIONS { pimNeighborLoss }
 STATUS current
 DESCRIPTION
 "A collection of notifications for signaling important PIM
 events."
 ::= { pimMIBGroups 2 }

pimTuningParametersGroup OBJECT-GROUP
 OBJECTS { pimKeepalivePeriod,
 pimRegisterSuppressionTime,
 pimInterfaceHelloInterval,

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 pimInterfaceTrigHelloInterval,
 pimInterfaceJoinPruneInterval,
 pimInterfacePropagationDelay,
 pimInterfaceOverrideInterval,
 pimInterfaceDRPriority,
 pimInterfaceDomainBorder,
 pimInterfaceStatus,
 pimInterfaceStubInterface
 }
 STATUS current
 DESCRIPTION
 "A collection of writeable objects used to configure PIM
 behavior and to tune performance."
 ::= { pimMIBGroups 3 }

pimRouterStatisticsGroup OBJECT-GROUP
 OBJECTS { pimStarGEntries,
 pimStarGIEntries,
 pimSGEntries,
 pimSGIEntries,
 pimSGRptEntries,
 pimSGRptIEntries
 }
 STATUS current
 DESCRIPTION

"A collection of statistics global to the PIM router."
 ::= { pimMIBGroups 4 }

pimSsmGroup OBJECT-GROUP
 OBJECTS { pimSGUpTime,
 pimSGPimMode,
 pimSGUpstreamJoinState,
 pimSGUpstreamJoinTimer,
 pimSGUpstreamNeighbor,
 pimSGRPFIIfIndex,
 pimSGRPFNextHopType,
 pimSGRPFNextHop,
 pimSGRPFRouteProtocol,
 pimSGRPFRouteAddress,
 pimSGRPFRoutePrefixLength,
 pimSGRPFRouteMetricPref,
 pimSGRPFRouteMetric,
 pimSGSPTBit,
 pimSGKeepaliveTimer,
 pimSGDRRegisterState,
 pimSGDRRegisterStopTimer,
 pimSGRPRegisterPMBRAAddressType,
 pimSGRPRegisterPMBRAAddress,

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pimSGIUpTime,
 pimSGILocalMembership,
 pimSGIJoinPruneState,
 pimSGIPrunePendingTimer,
 pimSGIJoinExpiryTimer,
 pimSGIAssertState,
 pimSGIAssertTimer,
 pimSGIAssertWinnerAddressType,
 pimSGIAssertWinnerAddress,
 pimSGIAssertWinnerMetricPref,
 pimSGIAssertWinnerMetric
 }
 STATUS current
 DESCRIPTION
 "A collection of objects to support management of PIM
 routers running the PIM SSM (Source Specific Multicast)
 protocol, in PIM mode SM (Sparse Mode)."
 ::= { pimMIBGroups 5 }


```

pimRPConfigGroup OBJECT-GROUP
    OBJECTS { pimStaticRPRPAddress,
               pimStaticRPPimMode,
               pimStaticRPOverrideDynamic,
               pimStaticRPRowStatus,
               pimGroupMappingPimMode,
               pimGroupMappingPrecedence
            }
    STATUS current
    DESCRIPTION
        "A collection of objects to support configuration of RPs
        (Rendezvous Points) and Group Mappings."
    ::= { pimMIBGroups 6 }

```

```

pimSmGroup OBJECT-GROUP
    OBJECTS { pimStarGUPTime,
               pimStarGPimMode,
               pimStarGRPAddressType,
               pimStarGRPAddress,
               pimStarGPimModeOrigin,
               pimStarGRPIsLocal,
               pimStarGUPstreamJoinState,
               pimStarGUPstreamJoinTimer,
               pimStarGUPstreamNeighborType,
               pimStarGUPstreamNeighbor,
               pimStarGRPFIIndex,
               pimStarGRPFINextHopType,
               pimStarGRPFINextHop,
               pimStarGRPFIRouteProtocol,

```

```

pimStarGRPFIRouteAddress,
pimStarGRPFIRoutePrefixLength,
pimStarGRPFIRouteMetricPref,
pimStarGRPFIRouteMetric,
pimStarGIUPTime,
pimStarGILocalMembership,
pimStarGIJoinPruneState,
pimStarGIJoinPrunePendingTimer,
pimStarGIJoinExpiryTimer,
pimStarGIAssertState,
pimStarGIAssertTimer,

```

```

        pimStarGIAssertWinnerAddressType,
        pimStarGIAssertWinnerAddress,
        pimStarGIAssertWinnerMetricPref,
        pimStarGIAssertWinnerMetric,
        pimSGRptUpTime,
        pimSGRptUpstreamPruneState,
        pimSGRptUpstreamOverrideTimer,
        pimSGRptIUpTime,
        pimSGRptILocalMembership,
        pimSGRptIJoinPruneState,
        pimSGRptIPrunePendingTimer,
        pimSGRptIPruneExpiryTimer
    }
    STATUS    current
    DESCRIPTION
        "A collection of objects to support management of PIM
        routers running PIM-SM (Sparse Mode).  The groups
        pimSsmGroup and pimRPConfigGroup are also required."
    ::= { pimMIBGroups 7 }

pimBidirGroup OBJECT-GROUP
    OBJECTS { pimInterfaceDFElectionRobustness,
        pimBidirDFElectionWinnerAddressType,
        pimBidirDFElectionWinnerAddress,
        pimBidirDFElectionWinnerUpTime,
        pimBidirDFElectionWinnerMetricPref,
        pimBidirDFElectionWinnerMetric,
        pimBidirDFElectionState,
        pimBidirDFElectionStateTimer
    }
    STATUS    current
    DESCRIPTION
        "A collection of objects to support management of PIM
        routers running BIDIR mode.  The groups pimSsmGroup,
        pimSmGroup and pimRPConfigGroup are also required."
    ::= { pimMIBGroups 8 }

```

```

pimAnycastRpGroup OBJECT-GROUP
    OBJECTS { pimAnycastRPSetRowStatus,
        pimAnycastRPSetLocalRouter
    }

```

```

STATUS    current
DESCRIPTION
    "A collection of objects to support management of the PIM
    Anycast-RP mechanism."
 ::= { pimMIBGroups 9 }

pimStaticRPPrecedenceGroup OBJECT-GROUP
  OBJECTS { pimStaticRPPrecedence }
  STATUS   current
  DESCRIPTION
    "A collection of objects to allow fine control of
    interactions between static RP configuration and
    dynamically acquired group to RP mappings."
  ::= { pimMIBGroups 10 }

pimNetMgmtNotificationObjects OBJECT-GROUP
  OBJECTS { pimInvalidRegisterTrapPeriod,
            pimInvalidRegisterMsgsRcvd,
            pimInvalidRegisterAddressType,
            pimInvalidRegisterOrigin,
            pimInvalidRegisterGroup,
            pimInvalidRegisterRp,
            pimInvalidJoinPruneTrapPeriod,
            pimInvalidJoinPruneMsgsRcvd,
            pimInvalidJoinPruneAddressType,
            pimInvalidJoinPruneOrigin,
            pimInvalidJoinPruneGroup,
            pimInvalidJoinPruneRp,
            pimRPMappingTrapPeriod,
            pimRPMappingChangeCount,
            pimInterfaceElectionTrapPeriod,
            pimInterfaceElectionWinCount
          }
  STATUS   current
  DESCRIPTION
    "A collection of objects to support notification of PIM
    network management events."
  ::= { pimMIBGroups 11 }

pimNetMgmtNotificationGroup NOTIFICATION-GROUP
  NOTIFICATIONS { pimInvalidRegister,
                  pimInvalidJoinPrune,
                  pimRPMappingChange,
                  pimInterfaceElection
                }

```

```
    }
    STATUS    current
    DESCRIPTION
        "A collection of notifications for signaling PIM network
        management events."
    ::= { pimMIBGroups 12 }

pimDiagnosticsGroup OBJECT-GROUP
    OBJECTS { pimInAsserts,
               pimOutAsserts,
               pimLastAssertInterface,
               pimLastAssertGroupAddressType,
               pimLastAssertGroupAddress,
               pimLastAssertSourceAddressType,
               pimLastAssertSourceAddress,
               pimNeighborLossTrapPeriod,
               pimNeighborLossCount
            }
    STATUS    current
    DESCRIPTION
        "Objects providing additonal diagnostics related to a PIM
        router."
    ::= { pimMIBGroups 13 }

pimDmGroup OBJECT-GROUP
    OBJECTS {
        pimRefreshInterval,
        pimInterfacePruneLimitInterval,
        pimInterfaceGraftRetryInterval,
        pimInterfaceSRPriorityEnabled,
        pimNeighborSRCapable,
        pimSGUpstreamPruneState,
        pimSGUpstreamPruneLimitTimer,
        pimSGOriginatorState,
        pimSGSourceActiveTimer,
        pimSGStateRefreshTimer
    }
    STATUS    current
    DESCRIPTION
        "A collection of objects required for management of PIM
        Dense Mode (PIM-DM) function."
    REFERENCE "RFC 3973"
    ::= { pimMIBGroups 14 }

END
```

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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:

The following tables and objects could be employed to modify multicast routing behavior in a way that prevents, disrupts, or subverts services provided by the network, including (but not limited to) multicast data traffic delivery. For example, attacks can be envisaged that would pass nominated multicast data streams through a nominated location, without the sources or listeners becoming aware of this subversion.

pimKeepalivePeriod	pimRegisterSuppressionTime
pimNeighborLossTrapPeriod	
pimInvalidRegisterTrapPeriod	
pimInvalidJoinPruneTrapPeriod	pimRPMappingTrapPeriod
pimInterfaceElectionTrapPeriod	pimRefreshInterval
pimInterfaceTable	pimInterfaceEntry
pimInterfaceIfIndex	pimInterfaceIPVersion
pimInterfaceHelloInterval	
pimInterfaceTrigHelloInterval	
pimInterfaceJoinPruneInterval	
pimInterfaceDFElectionRobustness	pimInterfaceHelloHoldtime
pimInterfaceJoinPruneHoldtime	
pimInterfacePropagationDelay	
pimInterfaceOverrideInterval	pimInterfaceDRPriority
pimInterfaceDomainBorder	pimInterfaceStatus
pimInterfaceStubInterface	
pimInterfacePruneLimitInterval	pimStaticRPTable
pimStaticRPEntry	pimStaticRPAddressType
pimStaticRPGrpAddress	pimStaticRPGrpPrefixLength
pimStaticRPRPAddress	pimStaticRPPimMode
pimStaticRPOverrideDynamic	pimStaticRPRowStatus
pimStaticRPPrecedence	pimAnycastRPSetTable

pimAnycastRPSetEntry
pimAnycastRPSetAnycastAddress
pimAnycastRPSetRouterAddress

pimAnycastRPSetAddressType

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:

The following tables and objects could be employed to determine the topology, disposition, and composition of the network. This information may be commercially sensitive, and may also be used in preparation for attacks, including any of the attacks described above.

The following tables and objects may also be used to determine whether multicast data is flowing in the network, or has flowed recently. They may also be used to determine the network location of senders and recipients. An attacker can apply 'traffic analysis' to this data. In some cases, the information revealed by traffic analyses can be as damaging as full knowledge of the data being transported.

pimKeepalivePeriod
pimRegisterSuppressionTime
pimStarGEntries
pimStarGIEEntries
pimSGEntries
pimSGIEEntries
pimSGRptEntries
pimSGRptIEEntries
pimOutAsserts
pimInAsserts
pimLastAssertInterface
pimLastAssertGroupAddressType
pimLastAssertGroupAddress
pimLastAssertSourceAddressType
pimLastAssertSourceAddress

pimNeighborLossTrapPeriod
pimNeighborLossCount
pimInvalidRegisterTrapPeriod
pimInvalidRegisterMsgsRcvd
pimInvalidRegisterAddressType
pimInvalidRegisterOrigin
pimInvalidRegisterGroup
pimInvalidRegisterRp
pimInvalidJoinPruneTrapPeriod
pimInvalidJoinPruneMsgsRcvd
pimInvalidJoinPruneAddressType
pimInvalidJoinPruneOrigin
pimInvalidJoinPruneGroup
pimInvalidJoinPruneRp
pimRPMMappingTrapPeriod

pimRPMMappingChangeCount
pimInterfaceElectionTrapPeriod
pimInterfaceElectionWinCount
pimRefreshInterval
pimInterfaceTable
pimInterfaceEntry
pimInterfaceIfIndex
pimInterfaceIPVersion
pimInterfaceAddressType
pimInterfaceAddress
pimInterfaceDR
pimInterfaceHelloInterval
pimInterfaceTrigHelloInterval
pimInterfaceJoinPruneInterval
pimInterfaceDFElectionRobustness
pimInterfaceHelloHoldtime
pimInterfaceJoinPruneHoldtime
pimInterfacePropagationDelay
pimInterfaceOverrideInterval
pimInterfaceGenerationIDValue
pimInterfaceDRPriority
pimInterfaceLanDelayEnabled
pimInterfaceEffectPropagDelay
pimInterfaceEffectOverrideIvl
pimInterfaceSuppressionEnabled
pimInterfaceBidirCapable

pimInterfaceDRPriorityEnabled
pimInterfaceDomainBorder
pimInterfaceStatus
pimInterfaceStubInterface
pimInterfacePruneLimitInterval
pimInterfaceSRPriorityEnabled
pimNeighborTable
pimNeighborEntry
pimNeighborIfIndex
pimNeighborAddressType
pimNeighborAddress
pimNeighborUpTime
pimNeighborExpiryTime
pimNeighborLanPruneDelayPresent
pimNeighborPropagationDelay
pimNeighborOverrideInterval
pimNeighborTBit
pimNeighborGenerationIDPresent
pimNeighborGenerationIDValue
pimNeighborBidirCapable
pimNeighborDRPriorityPresent
pimNeighborDRPriority

pimNeighborSRCapable
pimNbrSecAddressTable
pimNbrSecAddressEntry
pimNbrSecAddressIfIndex
pimNbrSecAddressType
pimNbrSecAddressPrimary
pimNbrSecAddress
pimStarGTable
pimStarGEntry
pimStarGAddressType
pimStarGGrpAddress
pimStarGUpTime
pimStarGPimMode
pimStarGRPAddressType
pimStarGRPAddress
pimStarGPimModeOrigin
pimStarGRPIsLocal
pimStarGUpstreamJoinState
pimStarGUpstreamJoinTimer

pimStarGUpstreamNeighborType
pimStarGUpstreamNeighbor
pimStarGRPFIIfIndex
pimStarGRPFPNextHopType
pimStarGRPFPNextHop
pimStarGRPFRouteProtocol
pimStarGRPFRouteAddress
pimStarGRPFRoutePrefixLength
pimStarGRPFRouteMetricPref
pimStarGRPFRouteMetric
pimStarGITable
pimStarGIEntry
pimStarGIIfIndex
pimStarGIUpTime
pimStarGILocalMembership
pimStarGIJoinPruneState
pimStarGIPrunePendingTimer
pimStarGIJoinExpiryTimer
pimStarGIAssertState
pimStarGIAssertTimer
pimStarGIAssertWinnerAddressType
pimStarGIAssertWinnerAddress
pimStarGIAssertWinnerMetricPref
pimStarGIAssertWinnerMetric
pimSGTable
pimSGEntry
pimSGAddressType
pimSGGrpAddress
pimSGSrcAddress

pimSGUpTime
pimSGPimMode
pimSGUpstreamJoinState
pimSGUpstreamJoinTimer
pimSGUpstreamNeighbor
pimSGRPFIIfIndex
pimSGRPFPNextHopType
pimSGRPFPNextHop
pimSGRPFRouteProtocol
pimSGRPFRouteAddress
pimSGRPFRoutePrefixLength
pimSGRPFRouteMetricPref

pimSGRPFRouteMetric
pimSGSPTBit
pimSGKeepaliveTimer
pimSGDRRegisterState
pimSGDRRegisterStopTimer
pimSGRPRegisterPMBRAAddressType
pimSGRPRegisterPMBRAAddress
pimSGUpstreamPruneState
pimSGUpstreamPruneLimitTimer
pimSGOriginatorState
pimSGSourceActiveTimer
pimSGStateRefreshTimer
pimSGITable
pimSGIEntry
pimSGIIIfIndex
pimSGIUpTime
pimSGILocalMembership
pimSGIJoinPruneState
pimSGIPrunePendingTimer
pimSGIJoinExpiryTimer
pimSGIAssertState
pimSGIAssertTimer
pimSGIAssertWinnerAddressType
pimSGIAssertWinnerAddress
pimSGIAssertWinnerMetricPref
pimSGIAssertWinnerMetric
pimSGRptTable
pimSGRptEntry
pimSGRptSrcAddress
pimSGRptUpTime
pimSGRptUpstreamPruneState
pimSGRptUpstreamOverrideTimer
pimSGRptITable
pimSGRptIEntry
pimSGRptIIIfIndex
pimSGRptIUpTime

pimSGRptILocalMembership
pimSGRptIJoinPruneState
pimSGRptIPrunePendingTimer
pimSGRptIPruneExpiryTimer
pimBidirDFElectionTable

pimBidirDFElectionEntry
 pimBidirDFElectionAddressType
 pimBidirDFElectionRPAddress
 pimBidirDFElectionIfIndex
 pimBidirDFElectionWinnerAddressType
 pimBidirDFElectionWinnerAddress
 pimBidirDFElectionWinnerUpTime
 pimBidirDFElectionWinnerMetricPref
 pimBidirDFElectionWinnerMetric
 pimBidirDFElectionState
 pimBidirDFElectionStateTimer
 pimStaticRPTable
 pimStaticRPEntry
 pimStaticRPAddressType
 pimStaticRPGrpAddress
 pimStaticRPGrpPrefixLength
 pimStaticRPRPAddress
 pimStaticRPPimMode
 pimStaticRPOVERRIDEdynamic
 pimStaticRPRowStatus
 pimStaticRPPrecedence
 pimAnycastRPSetTable
 pimAnycastRPSetEntry
 pimAnycastRPSetAddressType
 pimAnycastRPSetAnycastAddress
 pimAnycastRPSetRouterAddress
 pimAnycastRPSetRowStatus
 pimAnycastRPSetLocalRouter
 pimGroupMappingTable
 pimGroupMappingEntry
 pimGroupMappingOrigin
 pimGroupMappingAddressType
 pimGroupMappingGrpAddress
 pimGroupMappingGrpPrefixLength
 pimGroupMappingRPAddress
 pimGroupMappingPimMode
 pimGroupMappingPrecedence

There is also a specific danger arising from the notification `pimInvalidRegister`. This is originated by devices that receive an incorrect unicast-encapsulated multicast data packet, which poses a clear danger of propagating a DoS (Denial of Service) attack from the data or control plane to the network management plane. The following

steps are taken to guard against this.

1. The notification is disabled by default. The writeable field `pimInvalidRegisterTrapPeriod` must be set in order to enable it.
2. The syntax of `pimInvalidRegisterTrapPeriod` prevents any given device from originating the notification more frequently than once every 10 seconds.
3. The counter `pimInvalidRegisterMsgsRcvd` provides equivalent function to the notification. Management applications are encouraged to monitor this counter in preference to enabling the notification.

The same measures are taken in respect of `pimInvalidJoinPrune`, though as this notification can only arise as a result of non-routable control packets, the risk is not so acute.

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

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Jonathan Nicholas was the editor of early versions of this document, and contributed the objects for management of PIM-DM.

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