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**Multicast Source Discovery protocol MIB**  
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Abstract

This memo defines an experimental 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 Multicast Source Discovery Protocol (MSDP) [[1](#)] speakers.

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## [1. The 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](#) [[7](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[4](#)], STD 58, [RFC 2579](#) [[5](#)] and STD 58, [RFC 2580](#) [[6](#)].

## [2. Revision History](#)

A record of changes which will be removed before publication.

### [11 July 2004](#)

Renamed to [draft-ietf-mboned-msdp-mib-00](#).

Fixed spec references and defaults for msdpPeerHoldTimeConfigured, msdpPeerKeepAliveConfigured and msdpPeerConnectRetryInterval, as pointed out by Ketan Talaulikar.

Deprecated all objects related to SA-Requests and notifications, since [RFC 3618](#) doesn't have either one. As pointed out by Ketan Talaulikar.

Clarified that msdpSACachePeerLearnedFrom should be 0.0.0.0 on the originator. From Mike Davison.



Removed msdpSASStatePeriod. I couldn't figure out what it's for; at best it should be SG State Period, but that's already msdpCacheLifetime. From Mike Davison.

#### **17 October 2003**

Undid most of the hard work since draft -03, which is the only implementation I was able to find by querying the MSDP mailing list.

#### **29 May 2003**

Republished with no changes. How did it get to be almost 2 years?

#### **18 July 2001**

Since the INET-ADDRESS-MIB relaxed restrictions on InetAddressType, remove msdpPeerLocalAddressType, rename msdpSACacheGroupAddrType to msdpCacheAddrType, remove msdpCacheSourceAddrType, msdpSACacheOriginRPTType, msdpSACachePeerLearnedFromType, msdpSACacheRPFPeerType.

Updated the DESCRIPTION of msdpRequestsTable to describe exactly how it is used.

Added msdpPeerDiscontinuityTime.

Changed msdpPeerFsmEstablishedTime to a TimeStamp instead of a counting number of seconds.

Changed msdpPeerInMessageElapsedTime to msdpPeerInMessageTime and changed it to a TimeStamp.

Added msdpMeshGroupTable.

Updated conformance information.

#### **1 March 2001**

Added msdpPeerIfIndex.

Converted all IPAddress items to InetAddressType/InetAddress pairs. This bigtime violates [RFC2578](#)'s rules about MIB evolution, so take extra care when implementing this change.

Added msdpRequestsPriority, in order to allow configuration of multiple peers to whom Requests will be sent. Note that this violates [RFC2578](#)'s rules about MIB evolution, so take extra care



when implementing this change.

Removed DEFVAL on scalars, since it should only be needed for table row creation.

Removed msdpPeerSAAdvPeriod, since the spec changed to say its value MUST be 60.

Added none(0) to msdpPeerEncapsulationType enumeration XXX is this OK? should it be 4?

Removed msdpPeerEncapsulationState since the encapsulation "negotiation" was removed from the spec.

Added msdpRPAddress to specify the RP address to use when sourcing SA messages.

Added msdpSACacheSourcePrefix to msdpSACacheTable, and added it to the INDEX. Note that this violates [RFC2578](#)'s rules about MIB evolution, so take extra care when implementing this change.

Completely renumbered the MIB, removing the extra level of msdpMIBObjects and creating an msdpScalars group to contain all scalars. Note that this violates [RFC2578](#)'s rules about MIB evolution, so take extra care when implementing this change.

## **16 December 1999**

Added msdpSAHoldDownPeriod, msdpPeerEncapsulationState, msdpPeerEncapsulationType, msdpPeerConnectionAttempts, msdpPeerInNotifications, msdpPeerOutNotifications, and msdpLastError

Removed msdpPeerConfigMethod, since this has disappeared from the spec.

Renamed the states in msdpPeerState to go with the state machine in the spec.

Added msdpPeerLocalPort and msdpPeerRemotePort in order to provide full information about the TCP connection in use. I'd like to reorder the Peer Table but that can wait until the MIB gets published as an RFC in order to only change things like that once.

Added msdpSACacheOriginRP as an INDEX to the msdpSACacheTable. Note that this violates [RFC2578](#)'s rules about MIB evolution, so take extra care when implementing this change.



**25 June 1999**

Renamed to DRAFT-MSDP-MIB. It will be renamed back to MSDP-MIB when it gets renumbered under mib-2, in order to avoid module naming problems.

Turned msdpSendRequestsTo into a table in order to handle administratively scoped groups with different RP's.

**27 May 1999**

Added IANA-assigned experimental OID

Added msdpSendRequestsTo and msdpPeerProcessRequestsFrom to configure MSDP SA-Request/Response processing.

Added msdpPeerDataTtl to allow TTL scoping of data packets forwarded across MSDP peerings.

Renumbered msdpSACacheInDataPackets and further items in msdpSACacheTable, to eliminate duplicate OIDs

**20 April 1999**

initial version.

**3. Overview**

XXX This needs to be updated.

This MIB module contains three scalars and three tables. The tables are:

- o the Requests Table, containing the longest-match table used to determine the peer to send SA-Requests to for a given group;
- o the Peer Table, containing information on the peers; and
- o the Source-Active Cache Table, containing the SA cache entries.

**4. Definitions**

--  
--

DRAFT-MSDP-MIB DEFINITIONS ::= BEGIN

IMPORTS





MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,  
experimental, Counter32, Gauge32, TimeTicks, Integer32,  
IpAddress

FROM SNMPv2-SMI

RowStatus, TruthValue, TimeStamp, DisplayString

FROM SNMPv2-TC

MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP

FROM SNMPv2-CONF;

msdpMIB MODULE-IDENTITY

LAST-UPDATED "200407120000Z"

ORGANIZATION "IETF MBONED Working Group"

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DESCRIPTION

"An experimental MIB module for MSDP Management.

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this MIB module is part of RFC XXXX; see the RFC itself for  
full legal notices."

::= { experimental 92 }

msdpMIBObjects OBJECT IDENTIFIER ::= { msdpMIB 1 }

msdp OBJECT IDENTIFIER ::= { msdpMIBObjects 1 }

msdpEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The state of MSDP on this MSDP speaker - globally enabled or  
disabled."

::= { msdp 1 }

msdpCacheLifetime OBJECT-TYPE

SYNTAX TimeTicks



MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
    "The lifetime given to SA cache entries when created or  
    refreshed. This is the [SG-State-Period] in the MSDP spec.  
    A value of 0 means no SA caching is done by this MSDP  
    speaker."  
REFERENCE "[RFC 3618 section 5.3](#)"  
::= { msdp 2 }

msdpNumSACacheEntries OBJECT-TYPE  
SYNTAX Gauge32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The total number of entries in the SA Cache table."  
::= { msdp 3 }

--  
-- The spec doesn't define SA-Hold-Down-Period any more.  
-- msdpSAHoldDownPeriod OBJECT-TYPE  
--     ::= { msdp 9 }  
  
-- It's not clear what this was supposed to refer to.  
-- msdpSAStatePeriod OBJECT-TYPE  
--     ::= { msdp 10 }

msdpRPAAddress OBJECT-TYPE  
SYNTAX IPAddress  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
    "The RP address used when sourcing MSDP SA messages. May be  
    0.0.0.0 on non-RP's."  
::= { msdp 11 }

--  
-- The MSDP Requests table  
-- SA Requests were removed from the MSDP spec, so this entire table  
-- is deprecated.

msdpRequestsTable OBJECT-TYPE  
SYNTAX SEQUENCE OF MsdpRequestsEntry  
MAX-ACCESS not-accessible  
STATUS deprecated  
DESCRIPTION  
    "The (conceptual) table listing group ranges and MSDP peers



used when deciding where to send an SA Request message when required. If SA Requests are not enabled, this table may be empty.

In order to choose a peer to whom to send an SA Request for a given group G, the subset of entries in this table whose (msdpRequestsPeerType, msdpRequestsPeer) tuple represents a peer whose msdpPeerState is established are examined. The set is further reduced by examining only those entries for which msdpPeerRequestsGroupAddressType equals the address type of G, and the entries with the highest value of msdpRequestsGroupPrefix are considered, where the group G falls within the range described by the combination of msdpRequestsGroup and msdpRequestsGroupPrefix. (This sequence is commonly known as a 'longest-match' lookup.)

Finally, if multiple entries remain, the entry with the lowest value of msdpRequestsPriority is chosen. The SA Request message is sent to the peer described by this row."

::= { msdp 4 }

msdpRequestsEntry OBJECT-TYPE

SYNTAX MsdpRequestsEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"An entry (conceptual row) representing a group range used when deciding where to send an SA Request message."

INDEX { msdpRequestsGroupAddress, msdpRequestsGroupMask }

::= { msdpRequestsTable 1 }

MsdpRequestsEntry ::= SEQUENCE {

msdpRequestsGroupAddress IpAddress,

msdpRequestsGroupMask IpAddress,

msdpRequestsPeer IpAddress,

msdpRequestsStatus RowStatus

}

msdpRequestsGroupAddress OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"The group address that, when combined with the mask in this entry, represents the group range to which this row applies."

::= { msdpRequestsEntry 1 }



**msdpRequestsGroupMask OBJECT-TYPE**

SYNTAX       IpAddress  
MAX-ACCESS not-accessible  
STATUS       deprecated  
DESCRIPTION

"The mask that, when combined with the group address in this entry, represents the group range to which this row applies."

::= { msdpRequestsEntry 2 }

**msdpRequestsPeer OBJECT-TYPE**

SYNTAX       IpAddress  
MAX-ACCESS read-create  
STATUS       deprecated  
DESCRIPTION

"The peer to which MSDP SA Requests for groups matching this entry's group range will be sent. This object combined with msdpRequestsPeerType must match the INDEX of a row in the msdpPeerTable, and to be considered, this peer's msdpPeerState must be established."

::= { msdpRequestsEntry 3 }

**msdpRequestsStatus OBJECT-TYPE**

SYNTAX       RowStatus  
MAX-ACCESS read-create  
STATUS       deprecated  
DESCRIPTION

"The status of this row, by which new rows may be added to the table or old rows may be deleted."

::= { msdpRequestsEntry 4 }

--

-- The MSDP Peer table

--

**msdpPeerTable OBJECT-TYPE**

SYNTAX       SEQUENCE OF MsdpPeerEntry  
MAX-ACCESS not-accessible  
STATUS       current  
DESCRIPTION

"The (conceptual) table listing the MSDP speaker's peers."

::= { msdp 5 }

**msdpPeerEntry OBJECT-TYPE**

SYNTAX       MsdpPeerEntry  
MAX-ACCESS not-accessible  
STATUS       current





## DESCRIPTION

"An entry (conceptual row) representing an MSDP peer."

INDEX { msdpPeerRemoteAddress }

::= { msdpPeerTable 1 }

```
MsdpPeerEntry ::= SEQUENCE {
    msdpPeerRemoteAddress      IpAddress,
    msdpPeerState              INTEGER,
    msdpPeerRPFFailures        Counter32,
    msdpPeerInSAs              Counter32,
    msdpPeerOutSAs             Counter32,
    msdpPeerInSARequests       Counter32,
    msdpPeerOutSARequests      Counter32,
    msdpPeerInSAResponses      Counter32,
    msdpPeerOutSAResponses     Counter32,
    msdpPeerInControlMessages  Counter32,
    msdpPeerOutControlMessages Counter32,
    msdpPeerInDataPackets      Counter32,
    msdpPeerOutDataPackets     Counter32,
    msdpPeerFsmEstablishedTransitions Counter32,
    msdpPeerFsmEstablishedTime TimeTicks,
    msdpPeerInMessageTime      TimeTicks,
    msdpPeerLocalAddress        IpAddress,
    msdpPeerConnectRetryInterval Integer32,
    msdpPeerHoldTimeConfigured  Integer32,
    msdpPeerKeepAliveConfigured Integer32,
    msdpPeerDataTtl             Integer32,
    msdpPeerProcessRequestsFrom TruthValue,
    msdpPeerStatus              RowStatus,
    msdpPeerRemotePort          Integer32,
    msdpPeerLocalPort           Integer32,
    msdpPeerEncapsulationType   INTEGER,
    msdpPeerConnectionAttempts Counter32,
    msdpPeerInNotifications     Counter32,
    msdpPeerOutNotifications    Counter32,
    msdpPeerLastError           OCTET STRING,
    msdpPeerDiscontinuityTime   TimeStamp
}
```

msdpPeerRemoteAddress OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"The address of the remote MSDP peer."

::= { msdpPeerEntry 1 }

-- dunno what happened to 2.



**msdpPeerState OBJECT-TYPE**

```
SYNTAX      INTEGER {
                                inactive(1),
                                listen(2),
                                connecting(3),
                                established(4),
                                disabled(5)
                        }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The state of the MSDP TCP connection with this peer."
 ::= { msdpPeerEntry 3 }
```

**msdpPeerRPFFailures OBJECT-TYPE**

```
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The number of SA messages received from this peer which
    failed the Peer-RPF check.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other
    times as indicated by the value of
    msdpPeerDiscontinuityTime."
 ::= { msdpPeerEntry 4 }
```

**msdpPeerInSAs OBJECT-TYPE**

```
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The number of MSDP SA messages received on this connection.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other
    times as indicated by the value of
    msdpPeerDiscontinuityTime."
 ::= { msdpPeerEntry 5 }
```

**msdpPeerOutSAs OBJECT-TYPE**

```
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The number of MSDP SA messages transmitted on this
    connection."
```



Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 6 }

msdpPeerInSARRequests OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of MSDP SA-Request messages received on this connection.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 7 }

msdpPeerOutSARRequests OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of MSDP SA-Request messages transmitted on this connection.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 8 }

msdpPeerInSAResponses OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of MSDP SA-Response messages received on this connection.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 9 }



**msdpPeerOutSAResponses OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of MSDP SA Response messages transmitted on this TCP connection.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 10 }

**msdpPeerInControlMessages OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The total number of MSDP messages received on this TCP connection.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 11 }

**msdpPeerOutControlMessages OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The total number of MSDP messages transmitted on this TCP connection.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 12 }

**msdpPeerInDataPackets OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The total number of encapsulated data packets received from





this peer.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 13 }

msdpPeerOutDataPackets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of encapsulated data packets sent to this peer.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 14 }

msdpPeerFsmEstablishedTransitions OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of times the MSDP FSM transitioned into the established state."

::= { msdpPeerEntry 15 }

msdpPeerFsmEstablishedTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This timestamp is set to the value of sysUpTime when a peer transitions into or out of the Established state. It is set to zero when the MSDP speaker is booted."

::= { msdpPeerEntry 16 }

msdpPeerInMessageTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The sysUpTime value when the last MSDP message was received from the peer. It is set to zero when the MSDP speaker is



```
        booted."
 ::= { msdpPeerEntry 17 }
```

msdpPeerLocalAddress OBJECT-TYPE

```
SYNTAX      IPAddress
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The local IP address of this entry's MSDP connection."
 ::= { msdpPeerEntry 18 }
```

-- msdpPeerSAAAdvPeriod ([SA-Advertisement-Timer]) has been removed.  
-- [RFC 3618 section 5.1](#) says it MUST be 60 seconds.

msdpPeerConnectRetryInterval OBJECT-TYPE

```
SYNTAX      Integer32 (1..65535)
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Time interval in seconds for the [ConnectRetry-period] for
    this peer."
REFERENCE   "RFC 3618 section 5.6"
DEFVAL { 30 }
 ::= { msdpPeerEntry 20 }
```

msdpPeerHoldTimeConfigured OBJECT-TYPE

```
SYNTAX      Integer32 (0|3..65535)
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Time interval in seconds for the [HoldTime-Period]
    configured for this MSDP speaker with this peer.  If the
    value of this object is zero (0), the MSDP connection is
    never torn down due to the absence of messages from the
    peer."
REFERENCE   "RFC 3618 section 5.4"
DEFVAL { 75 }
 ::= { msdpPeerEntry 21 }
```

msdpPeerKeepAliveConfigured OBJECT-TYPE

```
SYNTAX      Integer32 (0|1..21845)
UNITS       "seconds"
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
```



"Time interval in seconds for the [KeepAlive-Period] configured for this MSDP speaker with this peer. If the value of this object is zero (0), no periodic KEEPALIVE messages are sent to the peer after the MSDP connection has been established."

REFERENCE "[RFC 3618 section 5.5](#)"

DEFVAL { 60 }

::= { msdpPeerEntry 22 }

#### msdpPeerDataTtl OBJECT-TYPE

SYNTAX Integer32 (0..255)

MAX-ACCESS read-create

STATUS current

##### DESCRIPTION

"The minimum TTL a packet is required to have before it may be forwarded using SA encapsulation to this peer."

::= { msdpPeerEntry 23 }

#### msdpPeerProcessRequestsFrom OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS deprecated

##### DESCRIPTION

"This object indicates whether or not to process MSDP SA Request messages from this peer. If True(1), MSDP SA Request messages from this peer are processed and replied to (if appropriate) with SA Response messages. If False(2), MSDP SA Request messages from this peer are silently ignored. It defaults to False when msdpCacheLifetime is 0 and True when msdpCacheLifetime is non-0.

This object is deprecated because MSDP SA Requests were removed from the MSDP specification."

::= { msdpPeerEntry 24 }

#### msdpPeerStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

##### DESCRIPTION

"The RowStatus object by which peers can be added and deleted. A transition to 'active' will cause the MSDP Start Event to be generated. A transition out of the 'active' state will cause the MSDP Stop Event to be generated. Care should be used in providing write access to this object without adequate authentication."

::= { msdpPeerEntry 25 }



**msdpPeerRemotePort OBJECT-TYPE**

SYNTAX Integer32 (0..65535)

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The remote port for the TCP connection between the MSDP peers."

::= { msdpPeerEntry 26 }

**msdpPeerLocalPort OBJECT-TYPE**

SYNTAX Integer32 (0..65535)

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The local port for the TCP connection between the MSDP peers."

::= { msdpPeerEntry 27 }

-- msdpPeerEncapsulationState has been removed  
-- because there is no longer an encapsulation  
-- state machine.

**msdpPeerEncapsulationType OBJECT-TYPE**SYNTAX INTEGER {  
    none(0),  
    tcp(1)  
}

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"The encapsulation in use when encapsulating data in SA messages to this peer."

::= { msdpPeerEntry 29 }

**msdpPeerConnectionAttempts OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of times the state machine has transitioned from inactive to connecting."

::= { msdpPeerEntry 30 }

**msdpPeerInNotifications OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS deprecated

## DESCRIPTION





"The number of MSDP Notification messages received from this peer.

This object is deprecated because MSDP Notifications have been removed from the spec."

::= { msdpPeerEntry 31 }

msdpPeerOutNotifications OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of MSDP Notification messages transmitted to this peer.

This object is deprecated because MSDP Notifications have been removed from the spec."

::= { msdpPeerEntry 32 }

msdpPeerLastError OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (2))

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The last error code and subcode received via Notification from this peer. If no error has occurred, this field is zero. Otherwise, the first byte of this two byte OCTET STRING contains the 0-bit and error code, and the second byte contains the subcode.

This object is deprecated because MSDP Notifications have been removed from the spec."

DEFVAL { '0000'h }

::= { msdpPeerEntry 33 }

msdpPeerDiscontinuityTime OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of sysUpTime on the most recent occasion at which one or more of this entry's counters suffered a discontinuity. See the DESCRIPTION of each object to see if it is expected to have discontinuities. These discontinuities may occur at peer connection establishment.

If no such discontinuities have occurred since the last reinitialization of the local management subsystem, then



```
        this object contains a zero value."
 ::= { msdpPeerEntry 34 }
```

```
--
```

```
-- The MSDP Source-Active Cache table
```

```
--
```

```
msdpSACacheTable OBJECT-TYPE
```

```
    SYNTAX      SEQUENCE OF MsdpSACacheEntry
```

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

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "The (conceptual) table listing the MSDP SA advertisements
        currently in the MSDP speaker's cache."
```

```
 ::= { msdp 6 }
```

```
msdpSACacheEntry OBJECT-TYPE
```

```
    SYNTAX      MsdpSACacheEntry
```

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

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "An entry (conceptual row) representing an MSDP SA
        advertisement. The INDEX to this table includes
        msdpSACacheOriginRP for diagnosing incorrect MSDP
        advertisements; normally a Group and Source pair would be
        unique."
```

```
    INDEX      { msdpSACacheGroupAddr, msdpSACacheSourceAddr,
                  msdpSACacheOriginRP }
```

```
 ::= { msdpSACacheTable 1 }
```

```
MsdpSACacheEntry ::= SEQUENCE {
```

```
    msdpSACacheGroupAddr      IPAddress,
```

```
    msdpSACacheSourceAddr     IPAddress,
```

```
    msdpSACacheOriginRP       IPAddress,
```

```
    msdpSACachePeerLearnedFrom IPAddress,
```

```
    msdpSACacheRPFPeer        IPAddress,
```

```
    msdpSACacheInSAs          Counter32,
```

```
    msdpSACacheInDataPackets  Counter32,
```

```
    msdpSACacheUpTime         TimeTicks,
```

```
    msdpSACacheExpiryTime     TimeTicks,
```

```
    msdpSACacheStatus         RowStatus
```

```
}
```

```
msdpSACacheGroupAddr OBJECT-TYPE
```

```
    SYNTAX      IPAddress
```

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

```
    STATUS      current
```



## DESCRIPTION

"The group address of the SA Cache entry."  
::= { msdpSACacheEntry 1 }

## msdpSACacheSourceAddr OBJECT-TYPE

SYNTAX        IpAddress

MAX-ACCESS not-accessible

STATUS        current

## DESCRIPTION

"The source address of the SA Cache entry."  
::= { msdpSACacheEntry 2 }

## msdpSACacheOriginRP OBJECT-TYPE

SYNTAX        IpAddress

MAX-ACCESS not-accessible

STATUS        current

## DESCRIPTION

"The RP of the SA Cache entry. This field is in the INDEX in order to catch multiple RP's advertising the same source and group."  
::= { msdpSACacheEntry 3 }

## msdpSACachePeerLearnedFrom OBJECT-TYPE

SYNTAX        IpAddress

MAX-ACCESS read-only

STATUS        current

## DESCRIPTION

"The peer from which this SA Cache entry was last accepted. This address must correspond to the msdpPeerRemoteAddress value for a row in the MSDP Peer Table. This should be 0.0.0.0 on the router that originated the entry."  
::= { msdpSACacheEntry 4 }

## msdpSACacheRPFPeer OBJECT-TYPE

SYNTAX        IpAddress

MAX-ACCESS read-only

STATUS        current

## DESCRIPTION

"The peer from which an SA message corresponding to this cache entry would be accepted (i.e. the RPF peer for msdpSACacheOriginRP). This may be different than msdpSACachePeerLearnedFrom if this entry was created by an MSDP SA-Response. This address must correspond to the msdpPeerRemoteAddress value for a row in the MSDP Peer Table, or may be 0.0.0.0 if no RPF peer exists."  
::= { msdpSACacheEntry 5 }

## msdpSACacheInSAs OBJECT-TYPE



SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The number of MSDP SA messages received relevant to this  
    cache entry. This object must be initialized to zero when  
    creating a cache entry."  
::= { msdpSACacheEntry 6 }

msdpSACacheInDataPackets OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The number of MSDP encapsulated data packets received  
    relevant to this cache entry. This object must be  
    initialized to zero when creating a cache entry."  
::= { msdpSACacheEntry 7 }

msdpSACacheUpTime OBJECT-TYPE

SYNTAX TimeTicks  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The time since this entry was placed in the SA cache."  
::= { msdpSACacheEntry 8 }

msdpSACacheExpiryTime OBJECT-TYPE

SYNTAX TimeTicks  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The time remaining before this entry will expire from the SA  
    cache."  
::= { msdpSACacheEntry 9 }

msdpSACacheStatus OBJECT-TYPE

SYNTAX RowStatus  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
    "The status of this row in the table. The only allowable  
    actions are to retrieve the status, which will be `active',  
    or to set the status to `destroy' in order to remove this  
    entry from the cache."  
::= { msdpSACacheEntry 10 }





--

-- MSDP Mesh Group Membership table

--

msdpMeshGroupTable OBJECT-TYPE

SYNTAX SEQUENCE OF MsdpMeshGroupEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing MSDP Mesh Group configuration."

::= { msdp 12 }

msdpMeshGroupEntry OBJECT-TYPE

SYNTAX MsdpMeshGroupEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) representing a peer in an MSDP Mesh Group."

INDEX { msdpMeshGroupName, msdpMeshGroupPeerAddress }

::= { msdpMeshGroupTable 1 }

MsdpMeshGroupEntry ::= SEQUENCE {

msdpMeshGroupName DisplayString,

msdpMeshGroupPeerAddress IPAddress,

msdpMeshGroupStatus RowStatus

}

msdpMeshGroupName OBJECT-TYPE

SYNTAX DisplayString (SIZE(1..64))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The name of the mesh group."

::= { msdpMeshGroupEntry 1 }

msdpMeshGroupPeerAddress OBJECT-TYPE

SYNTAX IPAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A peer address that is a member of the mesh group with name msdpMeshGroupName. The msdpMeshGroupPeerAddress must match a row in the msdpPeerTable."

::= { msdpMeshGroupEntry 2 }

msdpMeshGroupStatus OBJECT-TYPE



```
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "This entry's status, by which new entries may be added to
    the table and old entries deleted."
::= { msdpMeshGroupEntry 3 }
```

-- Traps

```
msdpTraps    OBJECT IDENTIFIER ::= { msdp 0 }
```

```
msdpEstablished NOTIFICATION-TYPE
    OBJECTS { msdpPeerFsmEstablishedTransitions }
    STATUS      current
    DESCRIPTION
        "The MSDP Established event is generated when the MSDP FSM
        enters the ESTABLISHED state."
    ::= { msdpTraps 1 }
```

```
msdpBackwardTransition NOTIFICATION-TYPE
    OBJECTS { msdpPeerState }
    STATUS      current
    DESCRIPTION
        "The MSDPBackwardTransition Event is generated when the MSDP
        FSM moves from a higher numbered state to a lower numbered
        state."
    ::= { msdpTraps 2 }
```

-- conformance information

```
msdpMIBConformance OBJECT IDENTIFIER ::= { msdp 8 }
msdpMIBCompliances  OBJECT IDENTIFIER ::= { msdpMIBConformance 1 }
msdpMIBGroups       OBJECT IDENTIFIER ::= { msdpMIBConformance 2 }
```

-- compliance statements

```
msdpMIBCompliance MODULE-COMPLIANCE
    STATUS      deprecated
    DESCRIPTION
        "The compliance statement for entities which implement the
        MSDP MIB."
    MODULE -- this module
    MANDATORY-GROUPS { msdpMIBGlobalsGroup, msdpMIBPeerGroup,
                        msdpMIBNotificationGroup }
```



```
GROUP msdpMIBEncapsulationGroup
DESCRIPTION
    "This group is mandatory if MSDP encapsulation interfaces are
    not given their own interface index numbers."
GROUP msdpMIBSACacheGroup
DESCRIPTION
    "This group is mandatory if the MSDP speaker has the ability
    to cache SA messages."
GROUP msdpMIBRequestsGroup
DESCRIPTION
    "This group is mandatory if the MSDP speaker has the ability
    to send SA-Request messages and parse SA-Response
    messages."
GROUP msdpMIBRPGroup
DESCRIPTION
    "This group is mandatory if the MSDP speaker sources (as
    opposed to forwards) MSDP messages."
GROUP msdpMIBMeshGroupGroup
DESCRIPTION
    "This group is mandatory if the MSDP speaker can participate
    in MSDP Mesh Groups."
```

```
::= { msdpMIBCompliances 1 }
```

```
msdpMIBCompliance2 MODULE-COMPLIANCE
```

```
STATUS deprecated
```

```
DESCRIPTION
```

```
    "The compliance statement for entities which implement the
    MSDP MIB."
```

```
MODULE -- this module
```

```
MANDATORY-GROUPS { msdpMIBGlobalsGroup, msdpMIBPeerGroup2,
                    msdpMIBSACacheGroup, msdpMIBEncapsulationGroup }
```

```
GROUP msdpMIBRPGroup
```

```
DESCRIPTION
```

```
    "This group is mandatory if the MSDP speaker sources (as
    opposed to forwards) MSDP messages."
```

```
GROUP msdpMIBMeshGroupGroup
```

```
DESCRIPTION
```

```
    "This group is mandatory if the MSDP speaker can participate
    in MSDP Mesh Groups."
```

```
::= { msdpMIBCompliances 2 }
```

```
-- units of conformance
```

```
msdpMIBGlobalsGroup OBJECT-GROUP
```

```
OBJECTS { msdpEnabled }
```

```
STATUS current
```

```
DESCRIPTION
```



"A collection of objects providing information on global MSDP state."

::= { msdpMIBGroups 1 }

msdpMIBPeerGroup OBJECT-GROUP

OBJECTS { msdpPeerRPFFailures,  
msdpPeerState, msdpPeerInSAs, msdpPeerOutSAs,  
msdpPeerInSARRequests, msdpPeerOutSARRequests,  
msdpPeerInSARResponses, msdpPeerOutSARResponses,  
msdpPeerInNotifications, msdpPeerOutNotifications,  
msdpPeerInControlMessages, msdpPeerOutControlMessages,  
msdpPeerFsmEstablishedTransitions,  
msdpPeerFsmEstablishedTime,  
msdpPeerLocalAddress,  
msdpPeerRemotePort, msdpPeerLocalPort,  
msdpPeerConnectRetryInterval,  
msdpPeerHoldTimeConfigured,  
msdpPeerKeepAliveConfigured,  
msdpPeerInMessageTime,  
msdpPeerProcessRequestsFrom,  
msdpPeerConnectionAttempts,  
msdpPeerLastError,  
msdpPeerStatus,  
msdpPeerDiscontinuityTime  
}

STATUS deprecated

DESCRIPTION

"A collection of objects for managing MSDP peers."

::= { msdpMIBGroups 2 }

msdpMIBEncapsulationGroup OBJECT-GROUP

OBJECTS { msdpPeerInDataPackets, msdpPeerOutDataPackets,  
msdpPeerDataTtl,  
msdpPeerEncapsulationType  
}

STATUS current

DESCRIPTION

"A collection of objects for managing encapsulations if the MSDP encapsulation interfaces are not given interface indices."

::= { msdpMIBGroups 3 }

msdpMIBSACacheGroup OBJECT-GROUP

OBJECTS { msdpCacheLifetime, msdpNumSACacheEntries,  
msdpSACachePeerLearnedFrom,  
msdpSACacheRPFPeer, msdpSACacheInSAs,  
msdpSACacheInDataPackets,  
msdpSACacheUpTime, msdpSACacheExpiryTime,





```
        msdpSACacheStatus }
STATUS      current
DESCRIPTION
    "A collection of objects for managing MSDP SA cache entries."
 ::= { msdpMIBGroups 4 }

msdpMIBNotificationGroup NOTIFICATION-GROUP
NOTIFICATIONS { msdpEstablished,
                msdpBackwardTransition }
STATUS      current
DESCRIPTION
    "A collection of notifications for signaling changes in MSDP
    peer relationships."
 ::= { msdpMIBGroups 5 }

msdpMIBRequestsGroup OBJECT-GROUP
OBJECTS { msdpRequestsPeer, msdpRequestsStatus }
STATUS      deprecated
DESCRIPTION
    "A collection of objects for managing MSDP Request
    transmission."
 ::= { msdpMIBGroups 6 }

msdpMIBRPGroup OBJECT-GROUP
OBJECTS { msdpRPAddress }
STATUS      current
DESCRIPTION
    "A collection of objects for MSDP speakers that source MSDP
    messages."
 ::= { msdpMIBGroups 7 }

msdpMIBMeshGroupGroup OBJECT-GROUP
OBJECTS { msdpMeshGroupStatus }
STATUS      current
DESCRIPTION
    "A collection of objects for MSDP speakers that can
    participate in MSDP mesh groups."
 ::= { msdpMIBGroups 8 }

msdpMIBPeerGroup2 OBJECT-GROUP
OBJECTS { msdpPeerRPFFailures,
          msdpPeerState, msdpPeerInSAs, msdpPeerOutSAs,
          msdpPeerInSARequests, msdpPeerOutSARequests,
          msdpPeerInSAResponses, msdpPeerOutSAResponses,
          msdpPeerInControlMessages, msdpPeerOutControlMessages,
          msdpPeerFsmEstablishedTransitions,
          msdpPeerFsmEstablishedTime,
          msdpPeerLocalAddress,
```



```
        msdpPeerRemotePort, msdpPeerLocalPort,
        msdpPeerConnectRetryInterval,
        msdpPeerHoldTimeConfigured,
        msdpPeerKeepAliveConfigured,
        msdpPeerInMessageTime,
        msdpPeerConnectionAttempts,
        msdpPeerStatus,
        msdpPeerDiscontinuityTime
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects for managing MSDP peers."
    ::= { msdpMIBGroups 9 }
```

END

## 5. Open Issues

The Backwards Transition notification won't trigger on established -> disabled. Is that desired?

Is the RowStatus object in the SACache appropriate? (e.g. used to flush potentially bad state)

Are there any other variables appropriate for configuring/managing mesh groups?

Is the msdpRPAAddress useful? Per-peer? Remove it completely?

Should we use IPAddress (since [RFC 3618](#) is v4-only) or InetAddressType/InetAddress?

## 6. Security Considerations

There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

There are a number of managed objects in this MIB that may contain sensitive information. These are:

-- XXX fill this in



It is thus important to control even GET access to these objects and possibly to even encrypt the values of these object when sending them over the network via SNMP. Not all versions of SNMP provide features for such a secure environment.

SNMPv1 by itself is not a secure environment. Even if the network itself is secure (for example by using IPSec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB.

It is recommended that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC 3414](#) [2] and the View-based Access Control Model [RFC 3415](#) [3] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

## **7. Acknowledgements**

Tom Pusateri and Billy Ng both provided valuable input on early versions of this draft. It was completed based upon feedback from Mike Davison and Ketan Talaulikar.

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- [2] Blumenthal, U. and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", STD 62, [RFC 3414](#), December 2002.
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- [5] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIV2", STD 58, [RFC 2579](#), April 1999.
- [6] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIV2", STD 58, [RFC 2580](#), April 1999.

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