

MSDP Working Group  
INTERNET-DRAFT  
Expires: April 2004

Bill Fenner  
AT&T Research  
Dave Thaler  
Microsoft  
October 2003

Multicast Source Discovery protocol MIB  
<[draft-ietf-msdp-mib-08.txt](#)>

## Status of this Document

This document is an Internet-Draft and is in full conformance with all provisions of [Section 10 of RFC2026](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at  
<http://www.ietf.org/ietf/1id-abstracts.txt>

The list of Internet-Draft Shadow Directories can be accessed at  
<http://www.ietf.org/shadow.html>.

This document is a product of the MSDP Working Group. Comments should be addressed to the authors, or the mailing list at [msdp@network-services.uoregon.edu](mailto:msdp@network-services.uoregon.edu).

## Copyright Notice

Copyright (C) The Internet Society (2003). All Rights Reserved.

## 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) [2] speakers.

INTERNET-DRAFT

Expires: April 2004

October 2003

## Table of Contents

<a href="#">1. The The Internet-Standard Management Framework. . . . .</a>	<a href="#">2</a>
<a href="#">2. Revision History. . . . .</a>	<a href="#">2</a>
<a href="#">3. Overview. . . . .</a>	<a href="#">5</a>
<a href="#">4. Definitions . . . . .</a>	<a href="#">5</a>
<a href="#">5. Open Issues . . . . .</a>	<a href="#">26</a>
<a href="#">6. Security Considerations . . . . .</a>	<a href="#">26</a>
<a href="#">7. Acknowledgements. . . . .</a>	<a href="#">27</a>
<a href="#">8. References. . . . .</a>	<a href="#">27</a>
<a href="#">9. Full Copyright Statement. . . . .</a>	<a href="#">28</a>
<a href="#">10. Full Copyright Statement . . . . .</a>	<a href="#">28</a>

[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](#) [[6](#)].

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](#) [[3](#)], STD 58, [RFC 2579](#) [[4](#)] and STD 58, [RFC 2580](#) [[5](#)].

[2. Revision History](#)

A record of changes which will be removed before publication.

[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,

Fenner

[Section 2](#). [Page 2]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

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.

Fenner

[Section 2](#). [Page 3]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

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

Fenner

[Section 2.](#) [Page 4]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

[20](#) April 1999

initial version.

### [3.](#) Overview

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
InterfaceIndexOrZero
    FROM IF-MIB;
```

## msdpMIB MODULE-IDENTITY

```
LAST-UPDATED "200310170000Z"
ORGANIZATION "IETF MSDP Working Group"
CONTACT-INFO
    "Bill Fenner
     75 Willow Road
     Menlo Park, CA 94025
     Phone: +1 650 867 6073
     E-mail: fenner@research.att.com

     Dave Thaler
     One Microsoft Way
     Redmond, WA 98052
```

Fenner

[Section 4.](#) [Page 5]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

```
Phone: +1 425 703 8835
Email: dthaler@microsoft.com"
```

## DESCRIPTION

```
"An experimental MIB module for MSDP Management."
 ::= { 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 [SA-State-Period] in the MSDP spec. A value of 0 means no SA caching is done by this MSDP speaker."

::= { 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 }

msdpSAHoldDownPeriod OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of seconds in the MSDP SA Hold-down period."

::= { msdp 9 }

msdpSAStatePeriod OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of seconds in the MSDP SA State period."

::= { msdp 10 }

msdpRPAddress OBJECT-TYPE

SYNTAX       IpAddress

MAX-ACCESS read-write

STATUS       current

DESCRIPTION

"The RP address used when sourcing MSDP SA messages. May be a zero length string on non-RP's or when the PIM RP address is correct."

::= { msdp 11 }

---

--- The MSDP Requests table

---

msdpRequestsTable OBJECT-TYPE

SYNTAX       SEQUENCE OF MsdpRequestsEntry

MAX-ACCESS not-accessible

STATUS       current

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



::= { msdp 4 }

msdpRequestsEntry OBJECT-TYPE

SYNTAX MsdpRequestsEntry

MAX-ACCESS not-accessible

STATUS current

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 current

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 current

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 current

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 current

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,

INTERNET-DRAFT

Expires: April 2004

October 2003

msdpPeerOutDataPackets	Counter32,
msdpPeerFsmEstablishedTransitions	Counter32,
msdpPeerFsmEstablishedTime	Gauge32,
msdpPeerInMessageElapsedTime	Gauge32,
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

Fenner

[Section 4.](#) [Page 10]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

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 }

msdpPeerInSARequests 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

Fenner

[Section 4.](#) [Page 11]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

times as indicated by the value of msdpPeerDiscontinuityTime."

::= { msdpPeerEntry 7 }

msdpPeerOutSARequests 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

Fenner

[Section 4.](#) [Page 12]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

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       Gauge32  
UNITS        "seconds"  
MAX-ACCESS   read-only  
STATUS       current  
DESCRIPTION  
    "This timer indicates how long (in seconds) this peer has  
    been in the Established state or how long since this peer  
    was last in the Established state. It is set to zero when a  
    new peer is configured or the MSDP speaker is booted."  
 ::= { msdpPeerEntry 16 }

msdpPeerInMessageElapsedTime OBJECT-TYPE

SYNTAX       Gauge32  
UNITS        "seconds"  
MAX-ACCESS   read-only  
STATUS       current  
DESCRIPTION  
    "Elapsed time in seconds since the last MSDP message was  
    received from the peer. Each time msdpPeerInControlMessages  
    is incremented, the value of this object is set to zero (0).  
    It is also 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 }

-- msdpPeerSAAdvPeriod has been removed

Fenner

[Section 4](#). [Page 14]

INTERNET-DRAFT

Expires: April 2004

October 2003

-- [RFC 3618](#) section \_\_\_ 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 8.7](#)"  
 DEFVAL { 120 }  
 ::= { 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."  
 REFERENCE "[RFC 3618 section 8.5](#)"  
 DEFVAL { 90 }  
 ::= { 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. A  
     reasonable maximum value for this timer would be configured  
     to be one third of that of msdpPeerHoldTimeConfigured. 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 8.6](#)"  
 DEFVAL { 30 }  
 ::= { 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 current

## 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."

::= { 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."

INTERNET-DRAFT

Expires: April 2004

October 2003

::= { 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 current

DESCRIPTION

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

::= { msdpPeerEntry 31 }

msdpPeerOutNotifications OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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

::= { msdpPeerEntry 32 }

msdpPeerLastError OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (2))

MAX-ACCESS read-only

Fenner

[Section 4.](#) [Page 17]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

STATUS current

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."

REFERENCE "[RFC 3618 section 16.2.5](#) and 17"

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

Fenner

[Section 4.](#) [Page 18]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

    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

Fenner

[Section 4.](#) [Page 19]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

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."

::= { 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      current
    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 }

-- units of conformance

```

INTERNET-DRAFT

Expires: April 2004

October 2003

**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,  
msdpPeerInSAResponses, msdpPeerOutSAResponses,  
msdpPeerInNotifications, msdpPeerOutNotifications,  
msdpPeerInControlMessages, msdpPeerOutControlMessages,  
msdpPeerFsmEstablishedTransitions,  
msdpPeerFsmEstablishedTime,  
msdpPeerLocalAddress,  
msdpPeerRemotePort, msdpPeerLocalPort,  
msdpPeerConnectRetryInterval,  
msdpPeerHoldTimeConfigured,  
msdpPeerKeepAliveConfigured,  
msdpPeerInMessageTime,  
msdpPeerProcessRequestsFrom,  
msdpPeerConnectionAttempts,  
msdpPeerLastError,  
msdpPeerIfIndex,  
msdpPeerStatus,  
msdpPeerDiscontinuityTime  
}

STATUS current

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

Fenner

[Section 4.](#) [Page 24]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

```
OBJECTS { msdpCacheLifetime, msdpNumSACacheEntries,
          msdpSAHoldDownPeriod, msdpSAStatePeriod,
          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 { msdpRequestsPeerType, msdpRequestsPeer, msdpRequestsStatus }
STATUS      current
DESCRIPTION
    "A collection of objects for managing MSDP Request
    transmission."
 ::= { msdpMIBGroups 6 }
```

msdpMIBRPGroup OBJECT-GROUP

```
OBJECTS { msdpRPAddressType, 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 }
```

```
END
```

Fenner

[Section 4.](#) [Page 25]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

## [5.](#) Open Issues

We need Components to describe multiple instances of MSDP in the same box (similar to the PIM MIB)

Need a static RPF-peer table (see spec, [section 14.3](#))

Do we need an msdpPeerLastErrorSent, too, for what notification I last sent to this peer?

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

A table to express policy was suggested on the MSDP mailing list. More discussion is required before including this in the MIB. (Some of the more discussion: other than filtering announcements at an RP, policy in MSDP == black holes; policy should be in MBGP)

An OID for control of encapsulation (e.g. SA-encapsulate the first N packets sent to this group?) was suggested, although it might be more appropriate to be a table for fine-grained control.

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

Should there be a mechanism to describe alternate methods of RPF? (e.g. statically configured peer address and RP address lists - could be a table indexed by peer address and RP address with a value of

accept/deny) One or more MSDP default-peers?

Is it appropriate to use names to distinguish mesh groups?

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

Should the UDP port used for encapsulation be in the Peer table?

## 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:

Fenner

Section 6. [Page 26]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

-- 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 2574](#) [] and the View-based Access Control Model [RFC 2575](#) [] 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 this draft.

Bill Fenner  
[75](#) Willow Road  
Menlo Park, CA 94025  
Phone: +1 650 867 6073  
EMail: fenner@research.att.com

Dave Thaler  
Microsoft Corporation  
One Microsoft Way  
Redmond, WA 98052-6399  
Phone: +1 425 703 8835  
EMail: dthaler@microsoft.com

## [8.](#) References

- [1] R. Atkinson. "Security architecture for the internet protocol", [RFC 1825](#), August 1995.

Fenner [Section 8.](#) [Page 27]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

- [2] Farinacci, D., Rekhter, Y., Lothberg, P., Kilmer, H., and J. Hall, "Multicast Source Discovery Protocol (MSDP)", [draft-ietf-msdp-spec-01.txt](#), March 1999.
- [3] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.
- [4] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.
- [5] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, [RFC](#)

[2580](#), April 1999.

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

## [9](#). Full Copyright Statement

## [10](#). Full Copyright Statement

Copyright (C) The Internet Society (2003). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR

Fenner

[Section 10](#). [Page 28]

---

INTERNET-DRAFT

Expires: April 2004

October 2003

FITNESS FOR A PARTICULAR PURPOSE.



