

Distance-Vector Multicast Routing Protocol MIB
<draft-ietf-idmr-dvmrp-mib-11.txt>

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[1.](#) 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 Distance-Vector Multicast Routing Protocol (DVMRP).

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[2.](#) 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 Distance-Vector Multicast Routing Protocol (DVMRP) protocol [[16](#),[17](#)]. This MIB

module is applicable to IPv4 multicast routers which implement DVMRP. This MIB does not support management of DVMRP for other address families, including IPv6. Such management may be supported by other MIBs.

3. The SNMP Network Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2271](#) [1].
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in [RFC 1155](#) [2], [RFC 1212](#) [3] and [RFC 1215](#) [4]. The second version, called SMIV2, is described in [RFC 2578](#) [5], [RFC 2579](#) [6] and [RFC 2580](#) [7].
- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in [RFC 1157](#) [8]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [9] and [RFC 1906](#) [10]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [10], [RFC 2572](#) [11] and [RFC 2574](#) [12].
- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in [RFC 1157](#) [8]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [13].
- o A set of fundamental applications described in [RFC 2573](#) [14] and the view-based access control mechanism described in [RFC 2575](#) [15].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

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This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine

readable information is not considered to change the semantics of the MIB.

[4.](#) Overview

[4.1.](#) Structure of MIB

Managing DVMRP routers requires the following groups of information:

- o General statistics.
- o DVMRP configuration information common to all multicast-capable interfaces.
- o Information to store DVMRP neighbor information.
- o Information to store the DVMRP routing table.
- o Information related to DVMRP tree construction.
- o Information related to DVMRP security.
- o Traps used to alert a manager of critical DVMRP events.

[4.1.1.](#) General Description

This MIB controls all aspects of the DVMRP protocol. It consists of six groups of objects, and one group of notifications. The object groups are:

- o The `dvmrpGeneralGroup` is used to describe general configuration information.
- o The `dvmrpInterfaceGroup` is used to describe interface configuration and statistics, and augments the Multicast Routing Interface Table from the IP Multicast MIB [[18](#)].

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- o The `dvmrpNeighborGroup` is used to describe peer configuration and statistics.
- o The `dvmrpRoutingGroup` is used to describe the DVMRP routing table.
- o The `dvmrpTreeGroup` is used to describe DVMRP tree construction state.

- o The dvmrpSecurityGroup is used to manage keys for securing DVMRP.

[4.2.](#) Relationship to the IP Tunnel MIB

"DVMRP tunnels" (IP-in-IP tunnels which are commonly used with DVMRP) are not managed via this MIB. Instead, the IP Tunnel MIB [[19](#)] is used for this purpose.

[5.](#) Definitions

DVMRP-STD-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
MODULE-IDENTITY, OBJECT-TYPE, mib-2,
Integer32, Counter32, Gauge32, NOTIFICATION-TYPE,
IpAddress, TimeTicks          FROM SNMPv2-SMI
DisplayString, RowStatus      FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP,
NOTIFICATION-GROUP           FROM SNMPv2-CONF
SnmAdminString                FROM SNMP-FRAMEWORK-MIB
InterfaceIndexOrZero,
InterfaceIndex                FROM IF-MIB;
```

dvmrpStdMIB MODULE-IDENTITY

LAST-UPDATED "9910191200Z" -- October 19, 1999

ORGANIZATION "IETF IDMR Working Group."

CONTACT-INFO

```
" Dave Thaler
Microsoft
One Microsoft Way
Redmond, WA 98052-6399
Email: dthaler@microsoft.com"
```

DESCRIPTION

"The MIB module for management of DVMRP routers."

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DESCRIPTION

"Initial version, published as RFC xxxx (to be filled in by RFC-Editor)."

::= { mib-2 xx }

-- NOTE TO RFC EDITOR: When this document is published as an

-- RFC, replace xx with IANA assignment, and delete this comment.

dvmrpMIBObjects OBJECT IDENTIFIER ::= { dvmrpStdMIB 1 }

dvmrp OBJECT IDENTIFIER ::= { dvmrpMIBObjects 1 }

dvmrpScalar OBJECT IDENTIFIER ::= { dvmrp 1 }

dvmrpVersionString OBJECT-TYPE

SYNTAX DisplayString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The router's DVMRP version information. Similar to sysDescr in MIB-II, this is a free-form field which can be used to display vendor-specific information."

::= { dvmrpScalar 1 }

dvmrpGenerationId OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The generation identifier for the routing process. This is used by neighboring routers to detect whether the DVMRP routing table should be resent."

::= { dvmrpScalar 2 }

dvmrpNumRoutes OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the routing table. This can be used to monitor the routing table size to detect illegal advertisements of unicast routes."

::= { dvmrpScalar 3 }

dvmrpReachableRoutes OBJECT-TYPE

SYNTAX Gauge32

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MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of entries in the routing table with non infinite metrics. This can be used to detect network partitions by observing the ratio of reachable routes to total routes."

::= { dvmrpScalar 4 }

-- The DVMRP Interface Table

dvmrpInterfaceTable OBJECT-TYPE

SYNTAX SEQUENCE OF DvmrpInterfaceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the router's multicast-capable interfaces."

::= { dvmrp 2 }

dvmrpInterfaceEntry OBJECT-TYPE

SYNTAX DvmrpInterfaceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) in the dvmrpInterfaceTable. This row augments ipMRouteInterfaceEntry in the IP Multicast MIB, where the threshold object resides."

INDEX { dvmrpInterfaceIfIndex }

::= { dvmrpInterfaceTable 1 }

DvmrpInterfaceEntry ::= SEQUENCE {

dvmrpInterfaceIfIndex InterfaceIndex,

dvmrpInterfaceLocalAddress IpAddress,

dvmrpInterfaceMetric Integer32,

dvmrpInterfaceStatus RowStatus,

dvmrpInterfaceRcvBadPkts Counter32,

dvmrpInterfaceRcvBadRoutes Counter32,

dvmrpInterfaceSentRoutes Counter32,

dvmrpInterfaceInterfaceKey SnmpAdminString,

dvmrpInterfaceInterfaceKeyVersion Integer32

}

dvmrpInterfaceIfIndex OBJECT-TYPE

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SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ifIndex value of the interface for which DVMRP is enabled."

::= { dvmrpInterfaceEntry 1 }

dvmrpInterfaceLocalAddress OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The IP address this system will use as a source address on this interface. On unnumbered interfaces, it must be the same value as dvmrpInterfaceLocalAddress for some interface on the system."

::= { dvmrpInterfaceEntry 2 }

dvmrpInterfaceMetric OBJECT-TYPE

SYNTAX Integer32 (1..31)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The distance metric for this interface which is used to calculate distance vectors."

DEFVAL { 1 }

::= { dvmrpInterfaceEntry 3 }

dvmrpInterfaceStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The status of this entry. Creating the entry enables DVMRP on the virtual interface; destroying the entry or setting it to notInService disables DVMRP on the virtual interface."

::= { dvmrpInterfaceEntry 4 }

dvmrpInterfaceRcvBadPkts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of DVMRP messages received on the interface by

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the DVMRP process which were subsequently discarded as invalid (e.g. invalid packet format, or a route report from an unknown neighbor)."

::= { dvmrpInterfaceEntry 5 }

dvmrpInterfaceRcvBadRoutes OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of routes, in valid DVMRP packets, which were
 ignored because the entry was invalid."
 ::= { dvmrpInterfaceEntry 6 }

dvmrpInterfaceSentRoutes OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The number of routes, in DVMRP Report packets, which have
 been sent on this interface. Together with
 dvmrpNeighborRcvRoutes at a peer, this object is useful for
 detecting routes being lost."
 ::= { dvmrpInterfaceEntry 7 }

dvmrpInterfaceInterfaceKey OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The (shared) key for authenticating neighbors on this
 interface. This object is intended solely for the purpose
 of setting the interface key, and MUST be accessible only
 via requests using both authentication and privacy. The
 agent MAY report an empty string in response to get, get-
 next, get-bulk requests."
 ::= { dvmrpInterfaceEntry 8 }

dvmrpInterfaceInterfaceKeyVersion OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The highest version number of all known interface keys for
 this interface used for authenticating neighbors."

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::= { dvmrpInterfaceEntry 9 }

-- The DVMRP Neighbor Table

dvmrpNeighborTable OBJECT-TYPE
SYNTAX SEQUENCE OF DvmrpNeighborEntry

MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "The (conceptual) table listing the router's DVMRP
 neighbors, as discovered by receiving DVMRP messages."
 ::= { dvmrp 3 }

dvmrpNeighborEntry OBJECT-TYPE
 SYNTAX DvmrpNeighborEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "An entry (conceptual row) in the dvmrpNeighborTable."
 INDEX { dvmrpNeighborIfIndex, dvmrpNeighborAddress }
 ::= { dvmrpNeighborTable 1 }

DvmrpNeighborEntry ::= SEQUENCE {
 dvmrpNeighborIfIndex InterfaceIndex,
 dvmrpNeighborAddress IpAddress,
 dvmrpNeighborUpTime TimeTicks,
 dvmrpNeighborExpiryTime TimeTicks,
 dvmrpNeighborGenerationId Integer32,
 dvmrpNeighborMajorVersion Integer32,
 dvmrpNeighborMinorVersion Integer32,
 dvmrpNeighborCapabilities BITS,
 dvmrpNeighborRcvRoutes Counter32,
 dvmrpNeighborRcvBadPkts Counter32,
 dvmrpNeighborRcvBadRoutes Counter32,
 dvmrpNeighborState INTEGER
 }

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

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dvmrpNeighborAddress OBJECT-TYPE
 SYNTAX IpAddress
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION

"The IP address of the DVMRP neighbor for which this entry
 contains information."
 ::= { dvmrpNeighborEntry 2 }

dvmrpNeighborUpTime OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The time since this DVMRP neighbor (last) became a neighbor
 of the local router."
 ::= { dvmrpNeighborEntry 3 }

dvmrpNeighborExpiryTime OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The minimum time remaining before this DVMRP neighbor will
 be aged out."
 ::= { dvmrpNeighborEntry 4 }

dvmrpNeighborGenerationId OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The neighboring router's generation identifier."
 ::= { dvmrpNeighborEntry 5 }

dvmrpNeighborMajorVersion OBJECT-TYPE

SYNTAX Integer32 (0..255)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The neighboring router's major DVMRP version number."
 ::= { dvmrpNeighborEntry 6 }

dvmrpNeighborMinorVersion OBJECT-TYPE

SYNTAX Integer32 (0..255)

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MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The neighboring router's minor DVMRP version number."

::= { dvmrpNeighborEntry 7 }

dvmrpNeighborCapabilities OBJECT-TYPE

SYNTAX BITS {
leaf(0),
prune(1),
generationID(2),
mtrace(3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object describes the neighboring router's capabilities. The leaf bit indicates that the neighbor has only one interface with neighbors. The prune bit indicates that the neighbor supports pruning. The generationID bit indicates that the neighbor sends its generationID in Probe messages. The mtrace bit indicates that the neighbor can handle mtrace requests."

::= { dvmrpNeighborEntry 8 }

dvmrpNeighborRcvRoutes OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of routes received in valid DVMRP packets received from this neighbor. This can be used to diagnose problems such as unicast route injection, as well as giving an indication of the level of DVMRP route exchange activity."

::= { dvmrpNeighborEntry 9 }

dvmrpNeighborRcvBadPkts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of packet received from this neighbor which were discarded as invalid."

::= { dvmrpNeighborEntry 10 }

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dvmrpNeighborRcvBadRoutes OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

```

STATUS      current
DESCRIPTION
    "The number of routes, in valid DVMRP packets received from
    this neighbor, which were ignored because the entry was
    invalid."
::= { dvmrpNeighborEntry 11 }

dvmrpNeighborState OBJECT-TYPE
    SYNTAX      INTEGER { oneway(1), active(2), ignoring(3), down(4) }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "State of the neighbor adjacency."
    ::= { dvmrpNeighborEntry 12 }

-- The DVMRP Route Table

dvmrpRouteTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF DvmrpRouteEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The table of routes learned through DVMRP route exchange."
    ::= { dvmrp 4 }

dvmrpRouteEntry OBJECT-TYPE
    SYNTAX      DvmrpRouteEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) containing the multicast routing
        information used by DVMRP in place of the unicast routing
        information."
    INDEX       { dvmrpRouteSource, dvmrpRouteSourceMask }
    ::= { dvmrpRouteTable 1 }

DvmrpRouteEntry ::= SEQUENCE {
    dvmrpRouteSource      IpAddress,
    dvmrpRouteSourceMask  IpAddress,
    dvmrpRouteUpstreamNeighbor  IpAddress,
    dvmrpRouteIfIndex      InterfaceIndexOrZero,

```

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dvmrpRouteMetric	Integer32,
dvmrpRouteExpiryTime	TimeTicks,
dvmrpRouteUpTime	TimeTicks

}

dvmrpRouteSource OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The network address which when combined with the corresponding value of dvmrpRouteSourceMask identifies the sources for which this entry contains multicast routing information."

::= { dvmrpRouteEntry 1 }

dvmrpRouteSourceMask OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The network mask which when combined with the corresponding value of dvmrpRouteSource identifies the sources for which this entry contains multicast routing information."

::= { dvmrpRouteEntry 2 }

dvmrpRouteUpstreamNeighbor OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address of the upstream neighbor (e.g., RPF neighbor) from which IP datagrams from these sources are received."

::= { dvmrpRouteEntry 3 }

dvmrpRouteIfIndex OBJECT-TYPE

SYNTAX InterfaceIndexOrZero

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of ifIndex for the interface on which IP datagrams sent by these sources are received. A value of 0 typically means the route is an aggregate for which no next-hop interface exists."

::= { dvmrpRouteEntry 4 }

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dvmrpRouteMetric OBJECT-TYPE

SYNTAX Integer32 (1..32)

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The distance in hops to the source subnet."
::= { dvmrpRouteEntry 5 }

dvmrpRouteExpiryTime OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The minimum amount of time remaining before this entry will
 be aged out."
::= { dvmrpRouteEntry 6 }

dvmrpRouteUpTime OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The time since the route represented by this entry was
 learned by the router."
::= { dvmrpRouteEntry 7 }

-- The DVMRP Routing Next Hop Table

dvmrpRouteNextHopTable OBJECT-TYPE
SYNTAX SEQUENCE OF DvmrpRouteNextHopEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The (conceptual) table containing information on the next
 hops on outgoing interfaces for routing IP multicast
 datagrams."
::= { dvmrp 5 }

dvmrpRouteNextHopEntry OBJECT-TYPE
SYNTAX DvmrpRouteNextHopEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "An entry (conceptual row) in the list of next hops on
 outgoing interfaces to which IP multicast datagrams from

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```

INDEX      { dvmrpRouteNextHopSource, dvmrpRouteNextHopSourceMask,
              dvmrpRouteNextHopIfIndex }
 ::= { dvmrpRouteNextHopTable 1 }

DvmrpRouteNextHopEntry ::= SEQUENCE {
    dvmrpRouteNextHopSource      IPAddress,
    dvmrpRouteNextHopSourceMask  IPAddress,
    dvmrpRouteNextHopIfIndex     InterfaceIndex,
    dvmrpRouteNextHopType        INTEGER
}

dvmrpRouteNextHopSource OBJECT-TYPE
    SYNTAX      IPAddress
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The network address which when combined with the
        corresponding value of dvmrpRouteNextHopSourceMask
        identifies the sources for which this entry specifies a next
        hop on an outgoing interface."
    ::= { dvmrpRouteNextHopEntry 1 }

dvmrpRouteNextHopSourceMask OBJECT-TYPE
    SYNTAX      IPAddress
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The network mask which when combined with the corresponding
        value of dvmrpRouteNextHopSource identifies the sources for
        which this entry specifies a next hop on an outgoing
        interface."
    ::= { dvmrpRouteNextHopEntry 2 }

dvmrpRouteNextHopIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The ifIndex value of the interface for the outgoing
        interface for this next hop."
    ::= { dvmrpRouteNextHopEntry 3 }

dvmrpRouteNextHopType OBJECT-TYPE
    SYNTAX      INTEGER { leaf(1), branch(2) }

```

```

MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "Type is leaf if no downstream dependent neighbors exist on
    the outgoing virtual interface.  Otherwise, type is branch."
::= { dvmrpRouteNextHopEntry 4 }

```

-- The DVMRP Prune Table

```

dvmrpPruneTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF DvmrpPruneEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The (conceptual) table listing the router's upstream prune
        state."
    ::= { dvmrp 6 }

```

```

dvmrpPruneEntry OBJECT-TYPE
    SYNTAX      DvmrpPruneEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "An entry (conceptual row) in the dvmrpPruneTable."
    INDEX       { dvmrpPruneGroup, dvmrpPruneSource,
                  dvmrpPruneSourceMask }
    ::= { dvmrpPruneTable 1 }

```

```

DvmrpPruneEntry ::= SEQUENCE {
    dvmrpPruneGroup      IPAddress,
    dvmrpPruneSource     IPAddress,
    dvmrpPruneSourceMask IPAddress,
    dvmrpPruneExpiryTime TimeTicks
}

```

```

dvmrpPruneGroup OBJECT-TYPE
    SYNTAX      IPAddress
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The group address which has been pruned."
    ::= { dvmrpPruneEntry 1 }

```

```

dvmrpPruneSource OBJECT-TYPE
    SYNTAX      IPAddress

```

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```

MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "The address of the source or source network which has been
    pruned."
 ::= { dvmrpPruneEntry 2 }

```

dvmrpPruneSourceMask OBJECT-TYPE

```

SYNTAX      IpAddress
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "The address of the source or source network which has been
    pruned. The mask must either be all 1's, or else
    dvmrpPruneSource and dvmrpPruneSourceMask must match
    dvmrpRouteSource and dvmrpRouteSourceMask for some entry in
    the dvmrpRouteTable."
 ::= { dvmrpPruneEntry 3 }

```

dvmrpPruneExpiryTime OBJECT-TYPE

```

SYNTAX      TimeTicks
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The amount of time remaining before this prune should
    expire at the upstream neighbor. This value should be the
    minimum of the default prune lifetime and the remaining
    prune lifetimes of the local router's downstream neighbors,
    if any."
 ::= { dvmrpPruneEntry 4 }

```

-- DVMRP Traps

dvmrpTraps OBJECT IDENTIFIER ::= { dvmrp 7 }

dvmrpNeighborLoss NOTIFICATION-TYPE

```

OBJECTS {
    dvmrpInterfaceLocalAddress, -- The originator of the trap
    dvmrpNeighborState -- The new state
}
STATUS      current
DESCRIPTION
    "A dvmrpNeighborLoss trap signifies the loss of a 2-way
    adjacency with a neighbor. This trap should be generated
    when the neighbor state changes from active to one-way,

```

```
        ignoring, or down. The trap should be generated only if the
        router has no other neighbors on the same interface with a
        lower IP address than itself."
 ::= { dvmrpTraps 1 }

dvmrpNeighborNotPruning NOTIFICATION-TYPE
  OBJECTS {
    dvmrpInterfaceLocalAddress, -- The originator of the trap
    dvmrpNeighborCapabilities
  }
  STATUS          current
  DESCRIPTION
    "A dvmrpNeighborNotPruning trap signifies that a non-pruning
    neighbor has been detected (in an implementation-dependent
    manner). This trap should be generated at most once per
    generation ID of the neighbor. For example, it should be
    generated at the time a neighbor is first heard from if the
    prune bit is not set in its capabilities. It should also be
    generated if the local system has the ability to tell that a
    neighbor which sets the the prune bit in its capabilities is
    not pruning any branches over an extended period of time.
    The trap should be generated only if the router has no other
    neighbors on the same interface with a lower IP address than
    itself."
 ::= { dvmrpTraps 2 }

-- conformance information

dvmrpMIBConformance OBJECT IDENTIFIER ::= { dvmrpStdMIB 2 }

dvmrpMIBCompliances OBJECT IDENTIFIER ::= { dvmrpMIBConformance 1 }

dvmrpMIBGroups      OBJECT IDENTIFIER ::= { dvmrpMIBConformance 2 }

-- compliance statements

dvmrpMIBCompliance MODULE-COMPLIANCE
  STATUS  current
  DESCRIPTION
    "The compliance statement for the DVMRP MIB."
  MODULE -- this module
    MANDATORY-GROUPS { dvmrpGeneralGroup, dvmrpInterfaceGroup,
      dvmrpNeighborGroup, dvmrpRoutingGroup, dvmrpTreeGroup
```

```
    }

    GROUP    dvmrpSecurityGroup
    DESCRIPTION
        "This group is mandatory for agents which support both
        authentication and privacy of SNMP messages, and only for
        those network interfaces for which DVMRP is authenticating
        neighbors."
    ::= { dvmrpMIBCompliances 1 }

-- units of conformance

dvmrpGeneralGroup OBJECT-GROUP
    OBJECTS { dvmrpVersionString, dvmrpGenerationId,
              dvmrpNumRoutes, dvmrpReachableRoutes
            }
    STATUS   current
    DESCRIPTION
        "A collection of objects used to describe general DVMRP
        configuration information."
    ::= { dvmrpMIBGroups 2 }

dvmrpInterfaceGroup OBJECT-GROUP
    OBJECTS { dvmrpInterfaceLocalAddress, dvmrpInterfaceMetric,
              dvmrpInterfaceStatus,
              dvmrpInterfaceRcvBadPkts, dvmrpInterfaceRcvBadRoutes,
              dvmrpInterfaceSentRoutes
            }
    STATUS   current
    DESCRIPTION
        "A collection of objects used to describe DVMRP interface
        configuration and statistics."
    ::= { dvmrpMIBGroups 3 }

dvmrpNeighborGroup OBJECT-GROUP
    OBJECTS { dvmrpNeighborUpTime, dvmrpNeighborExpiryTime,
              dvmrpNeighborGenerationId,
              dvmrpNeighborMajorVersion, dvmrpNeighborMinorVersion,
              dvmrpNeighborCapabilities, dvmrpNeighborRcvRoutes,
              dvmrpNeighborRcvBadPkts, dvmrpNeighborRcvBadRoutes,
              dvmrpNeighborState
            }
    STATUS   current
    DESCRIPTION
```

```
        "A collection of objects used to describe DVMRP peer
        configuration and statistics."
 ::= { dvmrpMIBGroups 4 }

dvmrpRoutingGroup OBJECT-GROUP
    OBJECTS { dvmrpRouteUpstreamNeighbor, dvmrpRouteIfIndex,
              dvmrpRouteMetric, dvmrpRouteExpiryTime,
              dvmrpRouteUpTime, dvmrpRouteNextHopType
            }
    STATUS current
    DESCRIPTION
        "A collection of objects used to store the DVMRP routing
        table."
 ::= { dvmrpMIBGroups 5 }

dvmrpSecurityGroup OBJECT-GROUP
    OBJECTS { dvmrpInterfaceInterfaceKey,
              dvmrpInterfaceInterfaceKeyVersion }
    STATUS current
    DESCRIPTION
        "A collection of objects used to store information related
        to DVMRP security."
 ::= { dvmrpMIBGroups 6 }

dvmrpTreeGroup OBJECT-GROUP
    OBJECTS { dvmrpPruneExpiryTime }
    STATUS current
    DESCRIPTION
        "A collection of objects used to store information related
        to DVMRP prune state."
 ::= { dvmrpMIBGroups 7 }

dvmrpNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS { dvmrpNeighborLoss,
                   dvmrpNeighborNotPruning }
    STATUS current
    DESCRIPTION
        "A collection of notifications for signaling important DVMRP
        events."
 ::= { dvmrpMIBGroups 8 }

END
```

6. Security Considerations

This MIB contains readable objects whose values provide information related to multicast routing, including information on the network topology. There are also a number of objects that have a MAX-ACCESS clause of read-write and/or read-create, which allow an administrator to configure DVMRP in the router.

If the agent allows configuring keys via SNMP, for use by DVMRP, then the security of DVMRP is at best only as secure as SNMP. For this reason, the security-related objects (i.e. those in the `dvmrpSecurityGroup`) MUST NOT be accessible via unencrypted messages. It is also recommended that keys not be made visible through SNMP GET (or GET-NEXT or GET-BULK) messages, even if encryption is used.

While unauthorized access to other readable objects is relatively innocuous, unauthorized access to the write-able objects could cause a denial of service. Hence, the support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

SNMPv1 by itself is such an insecure 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 SET (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 2274](#) [12] and the View-based Access Control Model [RFC 2275](#) [15] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to this MIB, is properly configured to give access to those objects only to those principals (users) that have legitimate rights to access them.

7. Intellectual Property Notice

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[8.](#) Acknowledgements

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