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Internet Group Management Protocol MIB
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[1.](#) Introduction

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 the Internet Group Management Protocol (IGMP). All of this MIB module is applicable to IP multicast routers [[6](#),[7](#),[8](#),[9](#)]; a subset is applicable to hosts implementing IGMP [[5](#)].

2. Revision History

A record of changes which will be removed before publication.

9 June

- (1) added support for IGMP version 2.

3. The SNMP Network Management Framework

The SNMP Network Management Framework presently consists of three major components. They are:

- o [RFC 1902](#) [[1](#)] which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.
- o STD 17, [RFC 1213](#) [[2](#)] defines MIB-II, the core set of managed objects for the Internet suite of protocols.
- o [RFC 1157](#) [[3](#)] and [RFC 1905](#) [[4](#)] which define two versions of the protocol used for network access to managed objects.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

3.1. Object Definitions

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to refer to the object type.

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4. Overview

This MIB module contains two tables:

- (1) the IGMP Interface Table which contains one row for each interface on which IGMP is enabled, and
- (2) the IGMP Cache Table which contains one row for each IP multicast group for which there are members on a particular interface.

Both tables are intended to be implemented by hosts and routers, but some columnar objects in each table apply only to routers.

5. Definitions

IGMP-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, experimental,
Integer32, IPAddress, TimeTicks FROM SNMPv2-SMI
RowStatus, TruthValue FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP FROM SNMPv2-CONF;

igmpMIB MODULE-IDENTITY

LAST-UPDATED "9504281659Z"

ORGANIZATION "IETF IDMR Working Group."

CONTACT-INFO

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DESCRIPTION

"The MIB module for IGMP Management."

::= { experimental 59 }

igmpMIBObjects OBJECT IDENTIFIER ::= { igmpMIB 1 }

igmp OBJECT IDENTIFIER ::= { igmpMIBObjects 1 }

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--
--

The IGMP Interface Table

igmpInterfaceTable OBJECT-TYPE

SYNTAX SEQUENCE OF IgmpInterfaceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the interfaces on which IGMP
is enabled."

::= { igmp 1 }

igmpInterfaceEntry OBJECT-TYPE

SYNTAX IgmpInterfaceEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An entry (conceptual row) representing an interface on
which IGMP is enabled."

INDEX { igmpInterfaceIfIndex }

::= { igmpInterfaceTable 1 }

IgmpInterfaceEntry ::= SEQUENCE {

igmpInterfaceIfIndex Integer32,

igmpInterfaceQueryInterval Integer32,

igmpInterfaceStatus RowStatus,

igmpInterfaceVersion INTEGER,

igmpInterfaceQuerier IpAddress,

igmpInterfaceQueryMaxResponseTime Integer32,

igmpInterfaceQuerierPresentTimeout Integer32,

igmpInterfaceLeaveEnabled TruthValue,

igmpInterfaceVersion1HostTimer Integer32

}

igmpInterfaceIfIndex OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The interface for which IGMP is enabled."

::= { igmpInterfaceEntry 1 }

igmpInterfaceQueryInterval OBJECT-TYPE

SYNTAX Integer32

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```
UNITS          "seconds"
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION
    "The frequency at which IGMP Host-Query packets are
    transmitted on this interface."
DEFVAL         { 60 }
::= { igmpInterfaceEntry 2 }
```

igmpInterfaceStatus OBJECT-TYPE

```
SYNTAX         RowStatus
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION
    "The activation of a row enables IGMP on the interface.  The
    destruction of a row disables IGMP on the interface."
::= { igmpInterfaceEntry 3 }
```

igmpInterfaceVersion OBJECT-TYPE

```
SYNTAX         INTEGER { version1(1), version2(2) }
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION
    "The version of IFMP which is running on this interface."
DEFVAL         { version2 }
::= { igmpInterfaceEntry 4 }
```

igmpInterfaceQuerier OBJECT-TYPE

```
SYNTAX         IpAddress
MAX-ACCESS     read-only
STATUS         current
DESCRIPTION
    "The address of the IGMP Querier on the IP subnet to which
    this interface is attached."
::= { igmpInterfaceEntry 5 }
```

igmpInterfaceQueryMaxResponseTime OBJECT-TYPE

```
SYNTAX         Integer32
UNITS          "seconds"
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION
    "The maximum query response time advertised in IGMPv2
    queries on this interface.  Smaller values allow a router to
    prune groups faster."
```

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```
::= { igmpInterfaceEntry 6 }
```

igmpInterfaceQuerierPresentTimeout OBJECT-TYPE

SYNTAX Integer32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A timeout interval. If no IGMPv2 queries are heard on this interface within this timeout interval, the local router will take over the Querier on the IP subnet to which this interface is attached."

```
::= { igmpInterfaceEntry 7 }
```

igmpInterfaceLeaveEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"An indication of whether the processing of IGMPv2 Leave messages is enabled on this interface."

DEFVAL { true }

```
::= { igmpInterfaceEntry 8 }
```

igmpInterfaceVersion1HostTimer OBJECT-TYPE

SYNTAX Integer32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time remaining until the local router will assume that there are no longer any IGMP version 1 hosts on the IP subnet attached to this interface. Upon hearing any IGMPv1 Membership Report, this value is reset to the group membership timer. While this time remaining is non-zero, the local router ignores any IGMPv2 Leave messages that it receives on this interface."

```
::= { igmpInterfaceEntry 9 }
```

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--
--

-- The IGMP Cache Table

igmpCacheTable OBJECT-TYPE

SYNTAX SEQUENCE OF IgmpCacheEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the IP multicast groups for
which there are members on a particular interface."

::= { igmp 2 }

igmpCacheEntry OBJECT-TYPE

SYNTAX IgmpCacheEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

INDEX { igmpCacheAddress, igmpCacheIfIndex }

::= { igmpCacheTable 1 }

IgmpCacheEntry ::= SEQUENCE {

igmpCacheAddress IpAddress,

igmpCacheIfIndex Integer32,

igmpCacheSelf TruthValue,

igmpCacheLastReporter IpAddress,

igmpCacheUpTime TimeTicks,

igmpCacheExpiryTime TimeTicks,

igmpCacheStatus RowStatus

}

igmpCacheAddress OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IP multicast group address for which this entry
contains information."

::= { igmpCacheEntry 1 }

igmpCacheIfIndex OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The interface for which this entry contains information for an IP multicast group address."

::= { igmpCacheEntry 2 }

igmpCacheSelf OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"An indication of whether the local system is a member of this group address on this interface."

DEFVAL { true }

::= { igmpCacheEntry 3 }

igmpCacheLastReporter OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IP address of the source of the last membership report received for this IP Multicast group address on this interface. If no membership report has been received, this object has the value 0.0.0.0."

::= { igmpCacheEntry 4 }

igmpCacheUpTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time since the system joined this group address, or zero if the system is not currently a member."

::= { igmpCacheEntry 5 }

igmpCacheExpiryTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The minimum amount of time remaining before this entry will be aged out."

::= { igmpCacheEntry 6 }

igmpCacheStatus OBJECT-TYPE


```
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The status of this entry."
 ::= { igmpCacheEntry 7 }
```

```
-- conformance information
```

```
igmpMIBConformance
```

```
    OBJECT IDENTIFIER ::= { igmpMIB 2 }
```

```
igmpMIBCompliances
```

```
    OBJECT IDENTIFIER ::= { igmpMIBConformance 1 }
```

```
igmpMIBGroups OBJECT IDENTIFIER ::= { igmpMIBConformance 2 }
```

```
-- compliance statements
```

```
igmpHostMIBCompliance MODULE-COMPLIANCE
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "The compliance statement for hosts implementing the IGMP  
        MIB."
```

```
    MODULE -- this module
```

```
        MANDATORY-GROUPS { igmpBaseMIBGroup }
```

```
    ::= { igmpMIBCompliances 1 }
```

```
igmpRouterMIBCompliance MODULE-COMPLIANCE
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "The compliance statement for routers implementing the IGMP  
        MIB."
```

```
    MODULE -- this module
```

```
        MANDATORY-GROUPS { igmpBaseMIBGroup,  
                            igmpRouterMIBGroup  
                            }
```

```
    ::= { igmpMIBCompliances 2 }
```

```
-- units of conformance
```

```
igmpBaseMIBGroup OBJECT-GROUP
```

```
    OBJECTS { igmpCacheSelf, igmpCacheLastReporter,  
              igmpCacheStatus, igmpInterfaceStatus  
            }
```

```
    STATUS current
```

```
    DESCRIPTION
```

```
        "The basic collection of objects providing management of  
        IGMP version 1 or 2."
```

```
    ::= { igmpMIBGroups 1 }
```

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igmpRouterMIBGroup OBJECT-GROUP

```
OBJECTS { igmpCacheUpTime, igmpCacheExpiryTime,
          igmpInterfaceQueryInterval
        }
```

```
STATUS current
```

DESCRIPTION

```
"A collection of additional objects for management of IGMP
version 1 or 2 in routers."
```

```
::= { igmpMIBGroups 2 }
```

igmpBaseVersion2MIBGroup OBJECT-GROUP

```
OBJECTS { igmpInterfaceVersion, igmpInterfaceQuerier }
```

```
STATUS current
```

DESCRIPTION

```
"A collection of additional objects for management of IGMP
version 2."
```

```
::= { igmpMIBGroups 3 }
```

igmpRouterVersion2MIBGroup OBJECT-GROUP

```
OBJECTS { igmpInterfaceQueryMaxResponseTime,
          igmpInterfaceQuerierPresentTimeout,
          igmpInterfaceLeaveEnabled,
          igmpInterfaceVersion1HostTimer
        }
```

```
STATUS current
```

DESCRIPTION

```
"A collection of additional objects for management of IGMP
version 2 in routers."
```

```
::= { igmpMIBGroups 4 }
```

```
END
```

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6. References

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- [7] Deering, S., Estrin, D., Farinacci, D., Jacobson, V., Liu, G., and L. Wei, "Protocol Independent Multicast (PIM): Protocol Specification", Xerox, University of Southern California, Cisco Systems, Lawrence Berkeley Laboratories, January 1995.
- [8] Moy, J., "Multicast Extensions to OSPF", [RFC 1584](#), Proteon, March 1994.
- [9] Ballardie, A. J., "Core Based Trees (CBT) Multicast: Architectural Overview and Specification", University College London, November 1994.

7. Security Considerations

Security issues are not discussed in this memo.

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