

Internetworking Over NBMA (ion) Working Group
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**Definitions of Managed Objects for
Multicast over UNI 3.0/3.1 based ATM Networks**

<[draft-ietf-ion-mars-mib-05.txt](#)>

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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects for IP hosts and routers that use a Multicast Address Resolution Server (MARS) to support IP multicast over ATM, as described in 'Support for Multicast over UNI 3.0/3.1 based ATM Networks' [[1](#)].

This memo specifies a MIB module in a manner that is both compliant to the SNMPv2 SMI, and semantically identical to the peer SNMPv1 definitions.

This memo does not specify a standard for the Internet community.

[1.](#) The SNMP Network Management Framework

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

- o the SMI, described in [RFC 1902](#) [[2](#)] - the mechanisms used for describing and naming objects for the purpose of management.
- o the Textual Conventions, described in [RFC 1903](#) [[3](#)] for SNMPv2.
- o the Conformance Statements, described in [RFC 1904](#) [[4](#)] for SNMPv2.
- o the Simple Network Management Protocol, described in [RFC 1157](#) [[5](#)].
- o the Protocol Operations, described in [RFC 1905](#) [[6](#)] for SNMPv2.
- o the MIB-II, STD 17, [RFC 1213](#) [[7](#)] - the core set of managed objects for the Internet suite of protocols for SNMPv2.

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

[1.1.](#) 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)

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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 also refer to the object type.

2. Overview

This MARS MIB is designed to define managed objects that can be used to manage the MARS clients, servers, and the multicast servers (MCS), as described in the [RFC2022](#)[1]. The MIB is supposed to be used on a system where one or more MARS clients are running, or where one or more MARS servers are running, or where one or more MARS multicast servers are running.

An understanding of MARS, as defined in [1] is assumed in this MIB module definition. However, the following terms are used frequently and are included here for reference:

Multicast Group

A group of endpoints that communicate with each other such that packets sent from one endpoint are received by all other members of the multicast group.

Multicast Address Resolution Server (MARS)

A server that distributes multicast group membership information to endpoints.

Client/Endpoint

An ATM-attached host or router that registers with a MARS and that is a member of one or more multicast groups. An endpoint may establish ATM Virtual Channels (VCs) to the other group members or may make use of a Multicast Server.

Cluster

The set of clients managed by a MARS.

Multicast Server (MCS)

A server that sets up ATM Virtual Channels (VCs) between endpoints in a multicast group and to which the endpoints forward data traffic for

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transmission on their behalf.

The MIB is broken down into three major groups: a MARS client group, MARS (server) group, and MARS Multicast Server (MCS) Group.

2.1. The MARS Client Group

This client group defines a collection of objects required to be implemented in a MIB for the management of MARS clients. It contains the following tables:

- o MARS Client Table

Information about a client such as its ATM address, the ATM address of its default MARS, registration status, and timers.

- o MARS Client Multicast Group Table

A list of IP multicast address blocks associated with a MARS client.

- o MARS Client Backup MARS Group Table

A list of backup MARS's associated with a MARS client.

- o MARS Client VC Table

Information about VCs opened by a client.

- o MARS Client Statistics Table

Statistics collected by a MARS client.

2.2. The MARS Server Group

This MARS server group defines a collection of objects required to be implemented in a MIB for the management of MARS servers. It contains the following tables:

- o MARS Table

Information about a MARS such as its ATM address, its status and timers.

- o MARS Multicast Group Table

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A list of IP multicast address blocks associated with a MARS.

- o MARS VC Table

Information about VCs opened by a MARS.

- o MARS Registered Client Table

A list of clients registered with a MARS.

- o MARS Registered Multicast Server Table

A list of MCSs registered with a MARS.

- o MARS Statistics Table

Statistics collected by a MARS.

- o MARS Host Map Table

Mappings between multicast groups and clients maintained by a MARS.

- o MARS Server Map Table

Mappings between multicast groups and MCSs maintained by a MARS.

2.3. The MARS Multicast Server Group

This MARS multicast server group defines a collection of objects required to be implemented in a MIB for the management of MARS multicast servers. It contains the following tables:

This group contains the following tables:

- o MARS Multicast Server Table

Information about a MCS, such as its ATM address, default MARS ATM address, and registration state.

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- o MARS MCS Multicast Group Table

A list of IP multicast address blocks associated with a MARS MCS.

- o MARS MCS Backup Mars Group Table

A list of backup MARS's associated with a MARS MCS.

- o MARS Multicast Server VC Table

Information about VCs opened by a MCS.

- o MARS Multicast Server Statistics Table

Statistics collected by a MCS.

3. IP Over ATM Multicast Address Resolution Server MIB Definitions

IPATM-IPMC-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-COMPLIANCE, NOTIFICATION-GROUP, OBJECT-GROUP
FROM SNMPv2-CONF
snmpModules, MODULE-IDENTITY, NOTIFICATION-TYPE, Counter32,
Integer32, Unsigned32, OBJECT-TYPE, IpAddress
FROM SNMPv2-SMI
AtmAddr
FROM ATM-TC-MIB
TruthValue, RowStatus
FROM SNMPv2-TC
ipAdEntAddr
FROM [RFC1213](#)-MIB
InterfaceIndex
FROM IF-MIB;

marsMIB MODULE-IDENTITY

LAST-UPDATED "9803230145Z" -- 23 March 1998
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DESCRIPTION

"This module defines a portion of the managed information base (MIB) for managing classical IP multicast address resolution server (MARS) and related entities as described in the [RFC2022](#). This MIB is meant to be used in conjunction with the ATM-MIB ([RFC1695](#)), MIB-II ([RFC1213](#)), and optionally the IF-MIB ([RFC1573](#))."
::= { snmpModules xx } -- to be assigned by IANA

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```

_ _*****
-- IP ATM MARS Client Object Definitions
_ _*****

```

```

marsClientObjects OBJECT IDENTIFIER ::= { marsMIB 1 }

```

```

marsClientTable OBJECT-TYPE

```

```

    SYNTAX SEQUENCE OF MarsClientEntry

```

```

    MAX-ACCESS not-accessible

```

```

    STATUS current

```

```

    DESCRIPTION

```

```

        "The objects defined in this table are used for
        the management of MARS clients, ATM attached
        endpoints."

```

```

    ::= { marsClientObjects 1 }

```

```

marsClientEntry OBJECT-TYPE

```

```

    SYNTAX MarsClientEntry

```

```

    MAX-ACCESS not-accessible

```

```

    STATUS current

```

```

    DESCRIPTION

```

```

        "Each entry contains a MARS client and its associated
        attributes. An entry in the marsClientTable has
        a corresponding entry in the ipAddrTable defined in
        RFC1213. Association between the ipAddrTable and
        the marsClientTable is made through the index,
        ipAdEntAddr."

```

```

    INDEX { ipAdEntAddr, marsClientIndex }

```

```

    ::= { marsClientTable 1 }

```

```

MarsClientEntry ::=

```

```

    SEQUENCE {

```

marsClientIndex	Integer32,
marsClientAddr	AtmAddr,
marsClientDefaultMarsAddr	AtmAddr,
marsClientHsn	Unsigned32,
marsClientRegistration	INTEGER,
marsClientCmi	INTEGER,
marsClientDefaultMtu	INTEGER,
marsClientFailureTimer	INTEGER,
marsClientRetranDelayTimer	INTEGER,
marsClientRdmMulReqAddRetrTimer	INTEGER,
marsClientRdmVcRevalidateTimer	INTEGER,
marsClientJoinLeaveRetrInterval	INTEGER,
marsClientJoinLeaveRetrLimit	INTEGER,
marsClientRegWithMarsRdmTimer	INTEGER,
marsClientForceWaitTimer	INTEGER,
marsClientLmtToMissRedirMapTimer	INTEGER,

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```
        marsClientIdleTimer          INTEGER,
        marsClientRowStatus          RowStatus
    }
```

marsClientIndex OBJECT-TYPE

SYNTAX Integer32(1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The auxiliary variable used to identify instances of
the columnar objects in the MARS MarsClientTable."

::= { marsClientEntry 1 }

marsClientAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The ATM address associated with the ATM Client."

::= { marsClientEntry 2 }

marsClientDefaultMarsAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The default MARS ATM address which is needed to
setup the initial signalling path between a MARS
client and its associated MARS."

::= { marsClientEntry 3 }

marsClientHsn OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The cluster membership own 32 bit Host Sequence
Number. When a new cluster member starts up, it is
initialized to zero. When the cluster member sends
the MARS_JOIN to register, the HSN will be correctly
set to the current cluster sequence number (CSN) when
the Client receives the copy of its MARS_JOIN from
the MARS. It is is used to track the MARS sequence
number."

::= { marsClientEntry 4 }

marsClientRegistration OBJECT-TYPE

SYNTAX INTEGER {

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```
    notRegistered (1),
    registering (2),
    registered (3),
    reRegisteringFault (4),
    reRegisteringRedirMap (5)
}
```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"An indication with regards to the registration status of this client. The registration codes of 'notRegistered (1)', 'registered (2)', and registered (3) are self-explanatory. The 'reRegisteringFault (4)' indicates the client is in the process of re-registering with a MARS due to some fault conditions. The 'reRegisteringRedMap (5)' status code shows that client is re-registering because it has received a MARS_REDIRECT_MAP message and was told to register with a different MARS from the current MARS."

::= { marsClientEntry 5 }

marsClientCmi OBJECT-TYPE

SYNTAX INTEGER (0..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"16 bit Cluster member identifier (CMI) assigned by the MARS which uniquely identifies each endpoint attached to the cluster. The value becomes valid after the 'marsClientRegistration' is set to the value of 'registered (1)'."

::= { marsClientEntry 6 }

marsClientDefaultMtu OBJECT-TYPE

SYNTAX INTEGER (1..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The default maximum transmission unit (MTU) used for this cluster. Note that the actual size used for a VC between two members of the cluster may be negotiated during connection setup and may be different than this value. Default value = 9180 bytes."

DEFVAL { 9180 }

::= { marsClientEntry 7 }

marsClientFailureTimer OBJECT-TYPE

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```
SYNTAX  INTEGER (1..2147483647)
UNITS   "seconds"
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "A timer used to flag the failure of last MARS_MULTI
    to arrive.  Default value = 10 seconds (recommended)."
```

DEFVAL { 10 }

::= { marsClientEntry 8 }

marsClientRetranDelayTimer OBJECT-TYPE

```
SYNTAX  INTEGER (5..10)
UNITS   "seconds"
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "The delay timer for sending out new MARS_REQUEST
    for the group after the client learned that there
    is no other group in the cluster.  The timer must
    be set between 5 and 10 seconds inclusive."
```

::= { marsClientEntry 9 }

marsClientRdmMulReqAddRetrTimer OBJECT-TYPE

```
SYNTAX  INTEGER (5..10)
UNITS   "seconds"
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "The initial random L_MULTI_RQ/ADD retransmit timer
    which can be set between 5 and 10 seconds inclusive."
```

::= { marsClientEntry 10 }

marsClientRdmVcRevalidateTimer OBJECT-TYPE

```
SYNTAX  INTEGER (1..10)
UNITS   "seconds"
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "The random time to set VC_revalidate flag.  The
    timer value ranges between 1 and 10 seconds
    inclusive."
```

::= { marsClientEntry 11 }

marsClientJoinLeaveRetrInterval OBJECT-TYPE

```
SYNTAX  INTEGER(5..2147483647)
UNITS   "seconds"
MAX-ACCESS read-create
STATUS  current
```

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DESCRIPTION

"MARS_JOIN/LEAVE retransmit interval. The minimum and recommended values are 5 and 10 seconds, respectively."

DEFVAL { 10 }

::= { marsClientEntry 12 }

marsClientJoinLeaveRetrLimit OBJECT-TYPE

SYNTAX INTEGER (0..5)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"MARS_JOIN/LEAVE retransmit limit. The maximum value is 5."

::= { marsClientEntry 13 }

marsClientRegWithMarsRdmTimer OBJECT-TYPE

SYNTAX INTEGER (1..10)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Random time to register with MARS."

::= { marsClientEntry 14 }

marsClientForceWaitTimer OBJECT-TYPE

SYNTAX INTEGER (1..2147483647)

UNITS "minutes"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Force wait if MARS re-registration is looping.
The minimum value is 1 minute."

::= { marsClientEntry 15 }

marsClientLmtToMissRedirMapTimer OBJECT-TYPE

SYNTAX INTEGER (1..4)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Timer limit for client to miss MARS_REDIRECT_MAPS."

::= { marsClientEntry 16 }

marsClientIdleTimer OBJECT-TYPE

SYNTAX INTEGER (1..2147483647)

UNITS "minutes"

MAX-ACCESS read-create

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STATUS current
DESCRIPTION

"The configurable inactivity timer associated with a client. When a VC is created at this client, it gets the idle timer value from this configurable timer. The minimum suggested value is 1 minute and the recommended default value is 20 minutes."

DEFVAL { 20 }
::= { marsClientEntry 17 }

marsClientRowStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION

"The object is used to create, delete or modify a row in this table.

A row cannot be made 'active' until instances of all corresponding columns in the row of this table are appropriately configured and until the agent has also created a corresponding row in the marsClientStatTable.

When this object has a value of 'active', the following columnar objects can not be modified:

 marsClientDefaultMarsAddr,
 marsClientHsn,
 marsClientRegistration,
 marsClientCmi,
 marsClientDefaultMtu

while other objects in this conceptual row can be modified irrespective of the value of this object.

Deletion of this row is allowed regardless of whether or not a row in any associated tables (i.e., marsClientVcTable) still exists or is in use. Once this row is deleted, it is recommended that the agent or the SNMP management station (if possible) through the set command deletes any stale rows that are associated with this row."

::= { marsClientEntry 18 }

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```

_*****
-- IP ATM MARS Client Multicast Group Address Object Definitions
_*****

```

marsClientMcGrpTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsClientMcGrpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains a list of IP multicast group address blocks associated with a MARS client. Entries in this table are used by the client that needs to receive or transmit packets from/to the specified range of multicast addresses.

Each row can be created or deleted via configuration."

::= { marsClientObjects 2 }

marsClientMcGrpEntry OBJECT-TYPE

SYNTAX MarsClientMcGrpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry represents a consecutive block of multicast group addresses."

INDEX { ipAdEntAddr,
marsClientIndex,
marsClientMcMinGrpAddr,
marsClientMcMaxGrpAddr }

::= { marsClientMcGrpTable 1 }

MarsClientMcGrpEntry ::=

SEQUENCE {

 marsClientMcMinGrpAddr IpAddress,

 marsClientMcMaxGrpAddr IpAddress,

 marsClientMcGrpRowStatus RowStatus

}

marsClientMcMinGrpAddr OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Minimum multicast group address - the min and max multicast forms multi-group block. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that this block contains a single group address."

::= { marsClientMcGrpEntry 1 }

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marsClientMcMaxGrpAddr OBJECT-TYPE

SYNTAX IPAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Maximum multicast group address - the min and max multicast forms a multi-group block. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that this block contains a single group address."

::= { marsClientMcGrpEntry 2 }

marsClientMcGrpRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create or delete a row in this table.

Since other objects in this row are not-accessible 'index-objects', the value of this object has no effect on whether those objects in this conceptual row can be modified."

::= { marsClientMcGrpEntry 3 }

```
-- *****  
-- IP ATM MARS Client Backup MARS Object Definitions  
-- *****
```

marsClientBackupMarsTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsClientBackupMarsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains a list of backup MARS addresses that a client can connect to in case of failure for connecting to the primary server. The list of addresses is in descending order of preference. It should be noted that the backup list provided by the MARS to the client via the MARS_REDIRECT_MAP message has a higher preference than addresses that are manually configured into the client. When such a list is received from the MARS, this information should be inserted at the top of the list.

Each row can be created or deleted via configuration."

::= { marsClientObjects 3 }

marsClientBackupMarsEntry OBJECT-TYPE

SYNTAX MarsClientBackupMarsEntry

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MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry represents an ATM address of a backup MARS."

INDEX { ipAdEntAddr,
 marsClientIndex,
 marsClientBackupMarsPriority,
 marsClientBackupMarsAddr }

::= { marsClientBackupMarsTable 1 }

MarsClientBackupMarsEntry ::=

SEQUENCE {
 marsClientBackupMarsPriority Unsigned32,
 marsClientBackupMarsAddr AtmAddr,
 marsClientBackupMarsRowStatus RowStatus
}

marsClientBackupMarsPriority OBJECT-TYPE

SYNTAX Unsigned32(0..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The priority associated with a backup MARS. A lower
 priority value indicates a higher preference."

::= { marsClientBackupMarsEntry 1 }

marsClientBackupMarsAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ATM address associated with a backup MARS."

::= { marsClientBackupMarsEntry 2 }

marsClientBackupMarsRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create or delete a row in this
 table."

Since other objects in this row are not-accessible
'index-objects', the value of this object has no effect
on whether those objects in this conceptual row can be
modified."

::= { marsClientBackupMarsEntry 3 }

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```

_ _*****
-- IP ATM MARS Client VC Object Definition Table
_ _*****

```

marsClientVcTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsClientVcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains information about open virtual circuits (VCs) that a client has. For point to point circuit, each entry represents a single VC connection between this client ATM address to another party ATM address. In the case of point to multipoint connection where a single source address is associated with multiple destinations, several entries are used to represent the relationship. An example of point to multi-point VC represented in a table is shown below.

Client	VPI/VCI	Grp	Addr1/Addr2	Part	Addr
1	0,1		g1,g2		p1
1	0,1		g1,g2		p2
1	0,1		g1,g2		p3

Note: This table assumes the IP multicast address groups (min, max) defined in each entry are always consecutive. In the case of that a client receives a JOIN/LEAVE with mars\$flag.punched set, each pair of the IP groups will first be broken into several pairs of consecutive IP groups before each entry row corresponding to a pair of IP group is created."

```
 ::= { marsClientObjects 4 }
```

marsClientVcEntry OBJECT-TYPE

SYNTAX MarsClientVcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The objects contained in the entry are VC related attributes such as VC signalling type, control VC type, idle timer, negotiated MTU size, etc."

```

INDEX { ipAdEntAddr,
        marsClientIndex,
        marsClientVcVpi,
        marsClientVcVci,
        marsClientVcMinGrpAddr,

```

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```
        marsClientVcMaxGrpAddr,  
        marsClientVcPartyAddr }  
 ::= { marsClientVcTable 1 }
```

```
MarsClientVcEntry ::=  
  SEQUENCE {  
    marsClientVcVpi          INTEGER,  
    marsClientVcVci          INTEGER,  
    marsClientVcMinGrpAddr   IpAddress,  
    marsClientVcMaxGrpAddr   IpAddress,  
    marsClientVcPartyAddr    AtmAddr,  
    marsClientVcPartyAddrType INTEGER,  
    marsClientVcType          INTEGER,  
    marsClientVcCtrlType      INTEGER,  
    marsClientVcIdleTimer     INTEGER,  
    marsClientVcRevalidate    TruthValue,  
    marsClientVcEncapsType     INTEGER,  
    marsClientVcNegotiatedMtu INTEGER,  
    marsClientVcRowStatus     RowStatus  
  }
```

```
marsClientVcVpi OBJECT-TYPE  
  SYNTAX  INTEGER (0..4095)  
  MAX-ACCESS not-accessible  
  STATUS  current  
  DESCRIPTION  
    "The value of virtual path identifier (VPI). Since  
    a VPI can be numbered 0, this sub-index can take  
    a value of 0."  
  ::= { marsClientVcEntry 1 }
```

```
marsClientVcVci OBJECT-TYPE  
  SYNTAX  INTEGER (0..65535)  
  MAX-ACCESS not-accessible  
  STATUS  current  
  DESCRIPTION  
    "The value of virtual circuit identifier (VCI). Since  
    a VCI can be numbered 0, this sub-index can take  
    a value of 0."  
  ::= { marsClientVcEntry 2 }
```

```
marsClientVcMinGrpAddr OBJECT-TYPE  
  SYNTAX  IpAddress  
  MAX-ACCESS not-accessible  
  STATUS  current  
  DESCRIPTION  
    "Minimum IP multicast group address - the min and  
    max multicast forms a multi-group consecutive
```

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block which is associated with a table entry.
if the MinGrpAddr and MaxGrpAddr are the same, it
indicates that the size of multi-group block is 1,
a single IP group."

::= { marsClientVcEntry 3 }

marsClientVcMaxGrpAddr OBJECT-TYPE

SYNTAX IPAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Maximum IP multicast group address - the min and
max multicast forms a multi-group consecutive
block which is associated with a table entry.
if the MinGrpAddr and MaxGrpAddr are the same, it
indicates that the size of multi-group block is 1,
a single IP group."

::= { marsClientVcEntry 4 }

marsClientVcPartyAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An ATM party address in which this VC is linked.
The party type is identified by the
marsClientVcPartyAddrType."

::= { marsClientVcEntry 5 }

marsClientVcPartyAddrType OBJECT-TYPE

SYNTAX INTEGER {
 called (1),
 calling (2)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The party type is associated with the party address.
The 'called (1)' indicates that the party address is
a destination address which implies that VC is
originated from this client. The 'calling (2)'
indicates the VC was initiated externally to this
client. In this case, the party address is the
source address."

::= { marsClientVcEntry 6 }

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marsClientVcType OBJECT-TYPE

```
SYNTAX  INTEGER {
    pvc (1),
    svc (2)
}
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "Circuit Connection type: permanent virtual circuit or
    switched virtual circuit."
 ::= { marsClientVcEntry 7 }
```

marsClientVcCtrlType OBJECT-TYPE

```
SYNTAX  INTEGER {
    pointToPointVC (1),
    clusterControlVC (2),
    pointToMultiPointVC (3)
}
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "Control VC type used to specify a particular connection.
    pointToPointVC (1):
        used by the ATM Clients for the registration and
        queries. This VC or the initial signalling path
        is set up from the source Client to a MARS. It is
        bi-directional.
    clusterControlVC (2):
        used by a MARS to issue asynchronous updates to an
        ATM Client. This VC is established from the MARS
        to the ATM Client.
    pointToMultiPointVC (3):
        used by the client to transfer multicast data
        packets from layer 3. This VC is established
        from the source ATM Client to a destination ATM
        endpoint which can be a multicast group member
        or an MCS. The destination endpoint was obtained
        from the MARS."
 ::= { marsClientVcEntry 8 }
```

marsClientVcIdleTimer OBJECT-TYPE

```
SYNTAX  INTEGER (1..2147483647)
UNITS   "minutes"
MAX-ACCESS read-create
STATUS  current
DESCRIPTION
    "The idle timer associated with this VC. The minimum
    suggested value is 1 minute and the recommended
```

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default value is 20 minutes."
DEFVAL { 20 }
::= { marsClientVcEntry 9 }

marsClientVcRevalidate OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"A flag associated with an open and active multipoint
VC. It is checked every time a packet is queued for
transmission on that VC. The object has the value of
true (1) if revalidate is required and the value
false (2) otherwise."
::= { marsClientVcEntry 10 }

marsClientVcEncapsType OBJECT-TYPE

SYNTAX INTEGER {
 other (1),
 llcSnap (2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The encapsulation type used when communicating over
this VC."
::= { marsClientVcEntry 11 }

marsClientVcNegotiatedMtu OBJECT-TYPE

SYNTAX INTEGER (1..65535)
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The negotiated MTU when communicating over this VC."
::= { marsClientVcEntry 12 }

marsClientVcRowStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The object is used to create, delete or modify a
row in this table.

A row cannot be made 'active' until instances of
all corresponding columns in the row of this table
are appropriately configured.

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While objects: marsClientVcIdleTimer and marsClientVcRevalidate in this conceptual row can be modified irrespective of the value of this object, all other objects in the row can not be modified when this object has a value of 'active'.

It is possible for an SNMP management station to set the row to 'notInService' and modify the entry and then set it back to 'active'

with the following exception. That is, rows for which the corresponding instance of marsClientVcType has a value of 'svc' can not be modified or deleted."

```
::= { marsClientVcEntry 13 }
```

```
-- *****
-- IP ATM MARS Client Statistic Object Definition Table
-- *****
```

marsClientStatTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsClientStatEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table contains statistics collected at MARS clients."

```
::= { marsClientObjects 5 }
```

marsClientStatEntry OBJECT-TYPE

SYNTAX MarsClientStatEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry contains statistics collected at one MARS client."

INDEX { ipAdEntAddr, marsClientIndex }

```
::= { marsClientStatTable 1 }
```

MarsClientStatEntry ::=

SEQUENCE {

marsClientStatTxReqMsgs	Counter32,
marsClientStatTxJoinMsgs	Counter32,
marsClientStatTxLeaveMsgs	Counter32,
marsClientStatTxGrpLstReqMsgs	Counter32,
marsClientStatRxJoinMsgs	Counter32,
marsClientStatRxLeaveMsgs	Counter32,

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```
    marsClientStatRxMultiMsgs      Counter32,  
    marsClientStatRxNakMsgs       Counter32,  
    marsClientStatRxMigrateMsgs   Counter32,  
    marsClientStatRxGrpLstRplyMsgs Counter32,  
    marsClientStatFailMultiMsgs   Counter32  
}
```

marsClientStatTxReqMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_REQUEST messages transmitted
from a client."

::= { marsClientStatEntry 1 }

marsClientStatTxJoinMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_JOIN messages transmitted from
a client."

::= { marsClientStatEntry 2 }

marsClientStatTxLeaveMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_LEAVE messages transmitted from
a client."

::= { marsClientStatEntry 3 }

marsClientStatTxGrpLstReqMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_GROUPLIST_REQUEST messages
transmitted from a client."

::= { marsClientStatEntry 4 }

marsClientStatRxJoinMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

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```
    "Total number of MARS_JOIN messages received by
      a client."
 ::= { marsClientStatEntry 5 }
```

marsClientStatRxLeaveMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_LEAVE messages received by
      a client."
 ::= { marsClientStatEntry 6 }
```

marsClientStatRxMultiMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_MULTI messages received by
      a client."
 ::= { marsClientStatEntry 7 }
```

marsClientStatRxNakMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_NAK messages received by
      a client."
 ::= { marsClientStatEntry 8 }
```

marsClientStatRxMigrateMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_MIGRATE messages received by
      a client."
 ::= { marsClientStatEntry 9 }
```

marsClientStatRxGrpLstRplyMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_GROUPLIST_REPLY messages
      received by a client."
 ::= { marsClientStatEntry 10 }
```

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marsClientStatFailMultiMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of timeouts occurred indicating failure of the last MARS_MULTI to arrive."

::= { marsClientStatEntry 11 }

```
-- *****
-- IP ATM MARS Object Definitions
-- *****
```

marsObjects OBJECT IDENTIFIER ::= { marsMIB 2 }

marsTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The objects defined in this table are used for the management of MARS servers."

::= { marsObjects 1 }

marsEntry OBJECT-TYPE

SYNTAX MarsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry contains a MARS and its associated attributes."

INDEX { marsIndex, marsIfIndex }

::= { marsTable 1 }

MarsEntry ::=

SEQUENCE {

marsIndex	Integer32,
marsIfIndex	InterfaceIndex,
marsAddr	AtmAddr,
marsLocal	TruthValue,
marsServStatus	INTEGER,
marsServType	INTEGER,
marsServPriority	Unsigned32,
marsRedirMapMsgTimer	INTEGER,
marsCsn	Unsigned32,
marsSsn	Unsigned32,
marsRowStatus	RowStatus

}

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marsIndex OBJECT-TYPE

SYNTAX Integer32(1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The auxiliary variable used to identify instances of the columnar objects in the MARS table."

::= { marsEntry 1 }

marsIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ifIndex of the interface that the MARS is associated with."

::= { marsEntry 2 }

marsAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The ATM address associated with the MARS."

::= { marsEntry 3 }

marsLocal OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A flag associated with a MARS entry. The object has the value of true (1) if the MARS whose interface is local to the machine that implements this MIB; otherwise the object has the value of false (2)."

::= { marsEntry 4 }

marsServStatus OBJECT-TYPE

```
SYNTAX INTEGER {  
    active (1),  
    inactive (2),  
    faulted (3)  
}
```

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The current status of MARS."

::= { marsEntry 5 }

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marsServType OBJECT-TYPE

```
SYNTAX  INTEGER {
    primary (1),
    backup  (2)
}
MAX-ACCESS read-create
STATUS   current
DESCRIPTION
    "Types of MARS servers: primary or backup."
 ::= { marsEntry 6 }
```

marsServPriority OBJECT-TYPE

```
SYNTAX  Unsigned32(0..65535)
MAX-ACCESS read-create
STATUS   current
DESCRIPTION
    "Priority associated with a backup MARS server.
     A backup MARS server with lower priority value
     indicates a higher preference than other backup
     MARS servers to be used as the MARS server when
     the primary server fails."
 ::= { marsEntry 7 }
```

marsRedirMapMsgTimer OBJECT-TYPE

```
SYNTAX  INTEGER (1..2)
UNITS    "minutes"
MAX-ACCESS read-create
STATUS   current
DESCRIPTION
    "Periodic interval on which a multi-part
     MARS_REDIRECT_MAP is sent from this MARS."
    DEFVAL { 1 }
 ::= { marsEntry 8 }
```

marsCsn OBJECT-TYPE

```
SYNTAX  Unsigned32
MAX-ACCESS read-create
STATUS   current
DESCRIPTION
    "Current cluster sequence number (CSN) which is global
     within the context of a given protocol. The CSN is
     incremented by the MARS on every transmission of a
     message on ClusterControlVC. A cluster member uses
     the CSN to track the message loss on ClusterControlVC
     or to monitor a membership change."
 ::= { marsEntry 9 }
```

marsSsn OBJECT-TYPE

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SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Current server sequence number (SSN) which is global within the context of a given protocol. The SSN is incremented by the MARS on every transmission of a message on ServerControlVC. A MCS uses the SSN to track the message loss on ServerControlVC or to monitor a membership change."

::= { marsEntry 10 }

marsRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create, delete or modify a row in this table.

A row cannot be made 'active' until instances of all corresponding columns in the row of this table are appropriately configured and until the agent has also created a corresponding row in the marsStatTable.

When this object has a value of 'active', the following columnar objects can not be modified:

marsAddr,
marsAddrLocal,
marsServStatus,
marsServType,
marsCsn,
marsSsn

while other objects in this conceptual row can be modified irrespective of the value of this object.

Deletion of this row is allowed regardless of whether or not a row in any associated tables (i.e., marsVcTable) still exists or is in use. Once this row is deleted, it is recommended that the agent or the SNMP management station (if possible) through the set command deletes any stale rows that are associated with this row."

::= { marsEntry 11 }

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```

_ _*****
-- IP ATM MARS Multicast Group Address Object Definitions
_ _*****

```

marsMcGrpTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsMcGrpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains a list of IP multicast address blocks associated with a MARS. Entries in this table are used by the MARS host map table and the server map table. They should be created prior to being referenced as indices by those tables.

Each row can be created or deleted via configuration."

```
::= { marsObjects 2 }
```

marsMcGrpEntry OBJECT-TYPE

SYNTAX MarsMcGrpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry represents a consecutive block of multicast group addresses."

```
INDEX { marsIndex,
        marsIfIndex,
        marsMcMinGrpAddr,
        marsMcMaxGrpAddr }
```

```
::= { marsMcGrpTable 1 }
```

MarsMcGrpEntry ::=

SEQUENCE {

marsMcMinGrpAddr	IpAddress,
marsMcMaxGrpAddr	IpAddress,
marsMcGrpAddrUsage	INTEGER,
marsMcGrpRxLayer3GrpSets	Counter32,
marsMcGrpRxLayer3GrpResets	Counter32,
marsMcGrpRowStatus	RowStatus

}

marsMcMinGrpAddr OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Minimum multicast group address - the min and max multicast forms multi-group block. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that this

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block contains a single group address."

::= { marsMcGrpEntry 1 }

marsMcMaxGrpAddr OBJECT-TYPE

SYNTAX IPAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Maximum multicast group address - the min and max multicast forms a multi-group block. If The MinGrpAddr and MaxGrpAddr are the same, it indicates that this block contains a single group address."

::= { marsMcGrpEntry 2 }

marsMcGrpAddrUsage OBJECT-TYPE

SYNTAX INTEGER {
 hostMap (1),
 serverMap (2),
 hostServerMap (3)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Usage of the multicast address block. The hostMap (1) indicates that the address block is only used in the MARS host map table. The serverMap (2) indicates that the address block is only used in the MARS server map table. The hostServerMap (3) indicates that the address block is used in both the host map and the server map tables."

::= { marsMcGrpEntry 3 }

marsMcGrpRxLayer3GrpSets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of MARS_JOIN messages received with mars\$flags.layer3grp flag set."

::= { marsMcGrpEntry 4 }

marsMcGrpRxLayer3GrpResets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of MARS_JOIN messages received with mars\$flags.layer3grp flag reset."

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```
::= { marsMcGrpEntry 5 }
```

marsMcGrpRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create, delete or modify a row in this table.

The value of this object has no effect on whether other objects in this conceptual row can be modified."

```
::= { marsMcGrpEntry 6 }
```

```
-- *****  
-- IP ATM MARS Host Map Object Definitions  
-- *****
```

marsHostMapTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarshHostMapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table caches mappings between IP multicast address to a list of ATM addresses that are configured or dynamically learned from the MARS. This address resolution is used for the host map. It supports the mapping of a block of multicast group addresses to a cluster member address. In the case where a group block is associated with multiple cluster members, several entries are used to representing the relationship."

```
::= { marsObjects 3 }
```

marshHostMapEntry OBJECT-TYPE

SYNTAX MarshHostMapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry row contains attributes associated with the mapping between a multicast group block and an ATM address."

```
INDEX { marsIndex,  
        marsIfIndex,  
        marsMcMinGrpAddr,  
        marsMcMaxGrpAddr,  
        marshHostMapAtmAddr }
```

```
::= { marshHostMapTable 1 }
```

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MarsHostMapEntry ::=

```
SEQUENCE {
    marsHostMapAtmAddr      AtmAddr,
    marsHostMapRowType      INTEGER,
    marsHostMapRowStatus    RowStatus
}
```

marshHostMapAtmAddr OBJECT-TYPE

```
SYNTAX      AtmAddr
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The mapped cluster member ATM address."
::= { marshHostMapEntry 1 }
```

marshHostMapRowType OBJECT-TYPE

```
SYNTAX      INTEGER {
    static (1),
    dynamic (2)
}
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Method in which this entry row is created. The
    static (1) indicates that this row is created
    through configuration. The dynamic (2) indicates
    that the row is created as the result of group
    address updates received at this MARS."
::= { marshHostMapEntry 2 }
```

marshHostMapRowStatus OBJECT-TYPE

```
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The object is used to create, delete or modify a
    row in this table.
```

This object must not be set to 'active' until instances of all corresponding columns in the row of this table are appropriately configured.

It is possible for an SNMP management station to set the row to 'notInService' and modify the entry and then set it back to 'active' with the following exception. That is, rows for which the corresponding instance of marshHostMapRowType has a value of 'dynamic'

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```

        can not be modified or deleted."
 ::= { marshHostMapEntry 3 }

```

```

-- *****
-- IP ATM MARS Server Map Object Definitions
-- *****

```

marshServerMapTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarshServerMapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table caches mappings between IP multicast address to a list of MCS ATM addresses that are configured or dynamically learned from the MARS. This address resolution is used for the server map. It supports the mapping of a block of multicast group addresses to a MCS address. In the case where a group block is associated with multiple MCSs, several entries are used to representing the relationship."

```
 ::= { marshObjects 4 }
```

marshServerMapEntry OBJECT-TYPE

SYNTAX MarshServerMapEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry row contains attributes associated with the mapping between a multicast group block and an MCS address."

```

INDEX { marshIndex,
        marshIfIndex,
        marshMcMinGrpAddr,
        marshMcMaxGrpAddr,
        marshServerMapAtmAddr }

```

```
 ::= { marshServerMapTable 1 }
```

MarshServerMapEntry ::=

```

SEQUENCE {
    marshServerMapAtmAddr  AtmAddr,
    marshServerMapRowType  INTEGER,
    marshServerMapRowStatus RowStatus
}

```

marshServerMapAtmAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS not-accessible

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STATUS current

DESCRIPTION

"The mapped MCS ATM address."

::= { marsServerMapEntry 1 }

marsServerMapRowType OBJECT-TYPE

SYNTAX INTEGER {
 static (1),
 dynamic (2)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Method in which this entry row is created. The
'static (1)' indicates that this row is created
through configuration. The 'dynamic (2)' indicates
that the row is created as the result of group
address updates received at this MARS."

::= { marsServerMapEntry 2 }

marsServerMapRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create, delete or modify a
row in this table.

This object must not be set to 'active' until
instances of all corresponding columns in the
row of this table are appropriately configured.

It is possible for an SNMP management station
to set the row to 'notInService' and modify
the entry and then set it back to 'active'
with the following exception. That is, rows
for which the corresponding instance of
marsServerMapRowType has a value of 'dynamic'
can not be modified or deleted."

::= { marsServerMapEntry 3 }

-- *****
-- IP ATM MARS VC Object Definition Table
-- *****

marsVcTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsVcEntry

MAX-ACCESS not-accessible

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STATUS current

DESCRIPTION

"This table contains information about open virtual circuits (VCs) that a MARS has. For point to point circuit, each entry represents a single VC connection between this MARS ATM address to another party's ATM address. In the case of point to multipoint connection where a ControlVc is attached with multiple leaf nodes, several entries are used to represent the relationship. An example of point to multi-point VC represented in a table is shown below.

MARS	VPI/VCI	MARS Addr	Party Addr
1	0,1	m1	p1
1	0,1	m1	p2
1	0,1	m1	p3"

::= { marsObjects 5 }

marsVcEntry OBJECT-TYPE

SYNTAX MarsVcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The objects contained in the entry are VC related attributes such as VC signalling type, control VC type, idle timer, negotiated MTU size, etc."

INDEX { marsIndex,
marsIfIndex,
marsVcVpi,
marsVcVci,
marsVcPartyAddr }

::= { marsVcTable 1 }

MarsVcEntry ::=

```
SEQUENCE {
    marsVcVpi          INTEGER,
    marsVcVci          INTEGER,
    marsVcPartyAddr    AtmAddr,
    marsVcPartyAddrType INTEGER,
    marsVcType          INTEGER,
    marsVcCtrlType      INTEGER,
    marsVcIdleTimer     INTEGER,
    marsVcCmi           INTEGER,
    marsVcEncapsType    INTEGER,
    marsVcNegotiatedMtu INTEGER,
    marsVcRowStatus     RowStatus
}
```

marsVcVpi OBJECT-TYPE

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SYNTAX INTEGER (0..4095)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The value of virtual path identifier (VPI). Since
 a VPI can be numbered 0, this sub-index can take
 a value of 0."
 ::= { marsVcEntry 1 }

marsVcVci OBJECT-TYPE

SYNTAX INTEGER (0..65535)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The value of virtual circuit identifier (VCI).
 Since a VCI can be numbered 0, this sub-index
 can take a value of 0."
 ::= { marsVcEntry 2 }

marsVcPartyAddr OBJECT-TYPE

SYNTAX AtmAddr
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "An ATM party address in which this VC is linked. The
 party type is identified by the marsVcPartyAddrType."
 ::= { marsVcEntry 5 }

marsVcPartyAddrType OBJECT-TYPE

SYNTAX INTEGER {
 called (1),
 calling (2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The party type is associated with the party address. The
 'called (1)' indicates that the party address is a
 destination address which implies that VC is originated
 from this MARS. The 'calling (2)' indicates the VC was
 initiated externally to this MARS. The party address is
 the source address."
 ::= { marsVcEntry 6 }

marsVcType OBJECT-TYPE

SYNTAX INTEGER {
 pvc (1),
 svc (2)

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```
    }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "Circuit Connection type: permanent virtual circuit or
        switched virtual circuit."
    ::= { marsVcEntry 7 }
```

marsVcCtrlType OBJECT-TYPE

```
    SYNTAX INTEGER {
        pointToPointVC (1),
        clusterControlVC (2),
        serverControlVC (3)
    }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "Control VC type used to specify a particular connection.
        pointToPointVC (1):
            used by the ATM endpoints (clients) or the MCS for
            registration and queries. This VC is set up from
            a MARS client and MCS to this MARS. It is a
            bi-directional VC.
        clusterControlVC (2):
            used by MARS to issue asynchronous updates to ATM
            an ATM client. This VC is established from the
            MARS to the ATM client.
        serverControlVC (3):
            used by MARS to issue asynchronous update to ATM
            multicast servers. This type of VC exists when at
            least a MCS is being used."
    ::= { marsVcEntry 8 }
```

marsVcIdleTimer OBJECT-TYPE

```
    SYNTAX INTEGER (1..2147483647)
    UNITS "minutes"
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION
        "The idle timer associated with this VC. The minimum
        suggested value is 1 minute and the recommended default
        value is 20 minutes."
    DEFVAL { 20 }
    ::= { marsVcEntry 9 }
```

marsVcCmi OBJECT-TYPE

```
    SYNTAX INTEGER (0..65535)
    MAX-ACCESS read-create
```

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STATUS current

DESCRIPTION

"Cluster member identifier (CMI) which uniquely identifies each endpoint attached to the cluster. This variable applies to each 'leaf node' of an outgoing control VC."

::= { marsVcEntry 10 }

marsVcEncapsType OBJECT-TYPE

SYNTAX INTEGER {

other (1),

llcSnap (2)

}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The encapsulation type used when communicating over this VC."

::= { marsVcEntry 11 }

marsVcNegotiatedMtu OBJECT-TYPE

SYNTAX INTEGER (1..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The negotiated MTU when communicating over this VC."

::= { marsVcEntry 12 }

marsVcRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create, delete or modify a row in this table.

A row cannot be made 'active' until instances of all corresponding columns in the row of this table are appropriately configured.

While the marsVcIdleTimer in this conceptual row can be modified irrespective of the value of this object, all other objects in the row can not be modified when this object has a value of 'active'.

It is possible for an SNMP management station to set the row to 'notInService' and modify the entry and then set it back to 'active'

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with the following exception. That is, rows for which the corresponding instance of marsVcType has a value of 'svc' can not be modified or deleted."

```
::= { marsVcEntry 13 }
```

```
_ _*****
-- IP ATM MARS Registered Cluster Member List Table
_ _*****
```

marsRegClientTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsRegClientEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains ATM identities of all the currently registered cluster members at a MARS. Each entry represents one set of ATM identities associated with one cluster member or the MARS client."

```
::= { marsObjects 6 }
```

marsRegClientEntry OBJECT-TYPE

SYNTAX MarsRegClientEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry row contains attributes associated with one register cluster member."

INDEX { marsIndex,
 marsIfIndex,
 marsRegClientCmi }

```
::= { marsRegClientTable 1 }
```

MarsRegClientEntry ::=

SEQUENCE {

 marsRegClientCmi INTEGER,

 marsRegClientAtmAddr AtmAddr

}

marsRegClientCmi OBJECT-TYPE

SYNTAX INTEGER (0..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This cluster member identifier is used as an auxiliary index for the entry in this table."

```
::= { marsRegClientEntry 1 }
```

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marsRegClientAtmAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The registered client's ATM address."

::= { marsRegClientEntry 2 }

```

_ _*****
-- IP ATM MARS Registered Server Member List Table
_ _*****

```

marsRegMcsTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsRegMcsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains ATM identities of all the currently registered MCSs at a MARS. Each entry represents one set of ATM identities associated with one MCS."

::= { marsObjects 7 }

marsRegMcsEntry OBJECT-TYPE

SYNTAX MarsRegMcsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry row contains attributes associated with one registered MCS."

```

INDEX { marsIndex,
        marsIfIndex,
        marsRegMcsAtmAddr
      }

```

::= { marsRegMcsTable 1 }

MarsRegMcsEntry ::=

SEQUENCE {

marsRegMcsAtmAddr AtmAddr

}

marsRegMcsAtmAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The registered MCS's ATM address."

::= { marsRegMcsEntry 1 }

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```

_ _*****
-- IP ATM MARS Statistics Object Definition Table
_ _*****

```

marsStatTable OBJECT-TYPE

```

    SYNTAX  SEQUENCE OF MarsStatEntry
    MAX-ACCESS not-accessible
    STATUS current

```

DESCRIPTION

```

    "The table contains statistics collected at MARS."
    ::= { marsObjects 8 }

```

marsStatEntry OBJECT-TYPE

```

    SYNTAX  MarsStatEntry
    MAX-ACCESS not-accessible
    STATUS current

```

DESCRIPTION

```

    "Each entry contains statistics collected at one MARS."
    INDEX { marsIndex, marsIfIndex }
    ::= { marsStatTable 1 }

```

MarsStatEntry ::=

```

    SEQUENCE {
        marsStatTxMultiMsgs      Counter32,
        marsStatTxGrpLstRplyMsgs Counter32,
        marsStatTxRedirectMapMsgs Counter32,
        marsStatTxMigrateMsgs    Counter32,
        marsStatTxNakMsgs        Counter32,
        marsStatTxJoinMsgs       Counter32,
        marsStatTxLeaveMsgs       Counter32,
        marsStatTxSjoinMsgs      Counter32,
        marsStatTxSleaveMsgs     Counter32,
        marsStatTxMservMsgs      Counter32,
        marsStatTxUnservMsgs     Counter32,
        marsStatRxReqMsgs        Counter32,
        marsStatRxGrpLstReqMsgs  Counter32,
        marsStatRxJoinMsgs       Counter32,
        marsStatRxLeaveMsgs       Counter32,
        marsStatRxMservMsgs      Counter32,
        marsStatRxUnservMsgs     Counter32,
        marsStatRxBlkJoinMsgs    Counter32,
        marsStatRegMemGroups     Counter32,
        marsStatRegMcsGroups     Counter32
    }

```

marsStatTxMultiMsgs OBJECT-TYPE

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```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_MULTI transmitted by this MARS."
 ::= { marsStatEntry 1 }
```

marsStatTxGrpLstRplyMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_GROUPLIST_REPLY messages transmitted
    by this MARS."
 ::= { marsStatEntry 2 }
```

marsStatTxRedirectMapMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_REDIRECT_MAP messages transmitted by
    this MARS."
 ::= { marsStatEntry 3 }
```

marsStatTxMigrateMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_MIGRATE messages transmitted by
    this MARS."
 ::= { marsStatEntry 4 }
```

marsStatTxNakMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_NAK messages transmitted by this MARS."
 ::= { marsStatEntry 5 }
```

marsStatTxJoinMsgs OBJECT-TYPE

```
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "Total number of MARS_JOIN messages transmitted by this
```

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```
    MARS."  
 ::= { marsStatEntry 6 }
```

marsStatTxLeaveMsgs OBJECT-TYPE

```
    SYNTAX Counter32  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "Total number of MARS_LEAVE messages transmitted by this  
        MARS."  
 ::= { marsStatEntry 7 }
```

marsStatTxSjoinMsgs OBJECT-TYPE

```
    SYNTAX Counter32  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "Total number of MARS_SJOIN messages transmitted by this  
        MARS."  
 ::= { marsStatEntry 8 }
```

marsStatTxSleaveMsgs OBJECT-TYPE

```
    SYNTAX Counter32  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "Total number of MARS_SLEAVE messages transmitted by this  
        MARS."  
 ::= { marsStatEntry 9 }
```

marsStatTxMservMsgs OBJECT-TYPE

```
    SYNTAX Counter32  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "Total number of MARS_MSERV messages transmitted by this  
        MARS."  
 ::= { marsStatEntry 10 }
```

marsStatTxUnservMsgs OBJECT-TYPE

```
    SYNTAX Counter32  
    MAX-ACCESS read-only  
    STATUS current  
    DESCRIPTION  
        "Total number of MARS_UNSERV messages transmitted by this  
        MARS."  
 ::= { marsStatEntry 11 }
```

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marsStatRxReqMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_REQUEST messages received by this
MARS."

::= { marsStatEntry 12 }

marsStatRxGrpLstReqMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_GROUPLIST_REQUEST messages received
by this MARS."

::= { marsStatEntry 13 }

marsStatRxJoinMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_JOINS messages received by this MARS."

::= { marsStatEntry 14 }

marsStatRxLeaveMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_LEAVES messages received by this MARS."

::= { marsStatEntry 15 }

marsStatRxMservMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_MSERV messages received by this MARS."

::= { marsStatEntry 16 }

marsStatRxUnservMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of MARS_UNSERV messages received by this MARS."

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```
::= { marsStatEntry 17 }
```

marsStatRxBlkJoinMsgs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of block joins messages received by this MARS."

```
::= { marsStatEntry 18 }
```

marsStatRegMemGroups OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of IP multicast groups with 1 or more joined
cluster members."

```
::= { marsStatEntry 19 }
```

marsStatRegMcsGroups OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of IP multicast groups with 1 or more joined
MCSs."

```
::= { marsStatEntry 20 }
```

```
-- *****  
-- IP ATM MARS MCS Object Definitions  
-- *****
```

marsMcsObjects OBJECT IDENTIFIER ::= { marsMIB 3 }

marsMcsTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsMcsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The objects defined in this table are used for
the management of a multicast server (MCS)."

```
::= { marsMcsObjects 1 }
```

marsMcsEntry OBJECT-TYPE

SYNTAX MarsMcsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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"Each entry contains a MCS and its associated attributes."

```
INDEX { marsMcsIndex, marsMcsIfIndex }
 ::= { marsMcsTable 1 }
```

MarsMcsEntry ::=

```
SEQUENCE {
    marsMcsIndex                Integer32,
    marsMcsIfIndex              InterfaceIndex,
    marsMcsAddr                 AtmAddr,
    marsMcsDefaultMarsAddr      AtmAddr,
    marsMcsRegistration         INTEGER,
    marsMcsSsn                  Unsigned32,
    marsMcsDefaultMtu           INTEGER,
    marsMcsFailureTimer         INTEGER,
    marsMcsRetranDelayTimer     INTEGER,
    marsMcsRdmMulReqAddRetrTimer INTEGER,
    marsMcsRdmVcRevalidateTimer INTEGER,
    marsMcsRegisterRetrInterval INTEGER,
    marsMcsRegisterRetrLimit   INTEGER,
    marsMcsRegWithMarsRdmTimer  INTEGER,
    marsMcsForceWaitTimer      INTEGER,
    marsMcsIdleTimer            INTEGER,
    marsMcsLmtToMissRedirMapTimer INTEGER,
    marsMcsRowStatus            RowStatus
}
```

marsMcsIndex OBJECT-TYPE

SYNTAX Integer32(1..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The auxiliary variable used to identify instances of the columnar objects in the MCS table."

```
::= { marsMcsEntry 1 }
```

marsMcsIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The ifIndex of the interface that the MCS is associated with."

```
::= { marsMcsEntry 2 }
```

marsMcsAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS read-create

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STATUS current
DESCRIPTION
 "The ATM address associated with the MCS."
 ::= { marsMcsEntry 3 }

marsMcsDefaultMarsAddr OBJECT-TYPE

SYNTAX AtmAddr
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The default MARS ATM address which is needed to
 setup the initial signalling path between a MCS
 and its associated MARS."
 ::= { marsMcsEntry 4 }

marsMcsRegistration OBJECT-TYPE

SYNTAX INTEGER {
 notRegistered (1),
 registering (2),
 registered (3),
 reRegisteringFault (4),
 reRegisteringRedirMap (5)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "An indication with regards to the registration
 STATUS of this MCS. The registration codes of
 'notRegistered (1)', 'registered (2)', and
 registered (3) are self-explanatory. The
 'reRegisteringFault (4)' indicates the MCS is
 in the process of re-registering with a MARS due
 to some fault conditions. The 'reRegisteringRedMap
 (5)' status code shows that MCS is re-registering
 because it has received a MARS_REDIRECT_MAP message
 and was told to register with a shift MARS."
 ::= { marsMcsEntry 5 }

marsMcsSsn OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The MCS own 32 bit Server Sequence Number. It
 is used to track the Mars sequence number."
 ::= { marsMcsEntry 6 }

marsMcsDefaultMtu OBJECT-TYPE

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SYNTAX INTEGER (1..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The default maximum transmission unit (MTU) used for this cluster. Note that the actual size used for a VC between two members of the cluster may be negotiated during connection setup and may be different than this value.

Default value = 9180 bytes."

DEFVAL { 9180 }

::= { marsMcsEntry 7 }

marsMcsFailureTimer OBJECT-TYPE

SYNTAX INTEGER (1..2147483647)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A timer used to flag the failure of last MARS_MULTI to arrive. Default value = 10 seconds (recommended)."

DEFVAL { 10 }

::= { marsMcsEntry 8 }

marsMcsRetranDelayTimer OBJECT-TYPE

SYNTAX INTEGER (5..10)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The delay timer for sending out new MARS_REQUEST for the group after the MCS learned that there is no other group in the cluster. The timer must be set between 5 and 10 seconds inclusive."

::= { marsMcsEntry 9 }

marsMcsRdmMulReqAddRetrTimer OBJECT-TYPE

SYNTAX INTEGER (5..10)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The initial random L_MULTI_RQ/ADD retransmit timer which can be set between 5 and 10 seconds inclusive."

::= { marsMcsEntry 10 }

marsMcsRdmVcRevalidateTimer OBJECT-TYPE

SYNTAX INTEGER (1..10)

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UNITS "seconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "The random time to set VC_revalidate flag. The
 timer value ranges between 1 and 10 seconds
 inclusive."
 ::= { marsMcsEntry 11 }

marsMcsRegisterRetrInterval OBJECT-TYPE
SYNTAX INTEGER(5..2147483647)
UNITS "seconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "MARS_MSERV/UNSERV retransmit interval. The minimum
 and recommended values are 5 and 10 seconds,
 respectively."
DEFVAL { 10 }
 ::= { marsMcsEntry 12 }

marsMcsRegisterRetrLimit OBJECT-TYPE
SYNTAX INTEGER (0..5)
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "MARS_MSERV/UNSERV retransmit limit. The maximum value
 is 5."
 ::= { marsMcsEntry 13 }

marsMcsRegWithMarsRdmTimer OBJECT-TYPE
SYNTAX INTEGER (1..10)
UNITS "seconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Random time for a MCS to register with a MARS."
 ::= { marsMcsEntry 14 }

marsMcsForceWaitTimer OBJECT-TYPE
SYNTAX INTEGER (1..2147483647)
UNITS "minutes"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Force wait if MARS re-registration is looping.
 The minimum value is 1 minute."
 ::= { marsMcsEntry 15 }

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marsMcsLmtToMissRedirMapTimer OBJECT-TYPE

SYNTAX INTEGER (1..4)

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Timer limit for MCS to miss MARS_REDIRECT_MAPS."

::= { marsMcsEntry 16 }

marsMcsIdleTimer OBJECT-TYPE

SYNTAX INTEGER (1..2147483647)

UNITS "minutes"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The configurable inactivity timer associated with a MCS. When a VC is created at this MCS, it gets the idle timer value from this configurable timer. The minimum suggested value is 1 minute and the recommended default value is 20 minutes."

DEFVAL { 20 }

::= { marsMcsEntry 17 }

marsMcsRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create, delete or modify a row in this table.

A row cannot be made 'active' until instances of all corresponding columns in the row of this table are appropriately configured and until the agent has also created a corresponding row in the marsMcsStatTable.

When this object has a value of 'active', the following columnar objects can not be modified:

 marsMcsDefaultMarsAddr,
 marsMcsSsn,
 marsMcsRegistration,
 marsMcsDefaultMtu

while other objects in this conceptual row can be modified irrespective of the value of this object.

Deletion of this row is allowed regardless of whether or not a row in any associated tables (i.e., marsMcsVcTable) still exists or is in use. Once this row is deleted, it is recommended that the agent or the SNMP management station (if possible) through the set command deletes any stale rows that are associated with this row."

::= { marsMcsEntry 18 }

```
-- *****
-- IP ATM MARS MCS Multicast Group Address Object Definitions
-- *****
```

marsMcsMcGrpTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsMcsMcGrpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains a list of IP multicast group address blocks associated by a MARS MCS. The MCS uses the information contained in list to advertise its multicast group service to the MARS.

Each row can be created or deleted via configuration."

::= { marsMcsObjects 2 }

marsMcsMcGrpEntry OBJECT-TYPE

SYNTAX MarsMcsMcGrpEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry represents a consecutive block of multicast group addresses."

INDEX { marsMcsIndex,
marsMcsIfIndex,
marsMcsMcMinGrpAddr,
marsMcsMcMaxGrpAddr }

::= { marsMcsMcGrpTable 1 }

MarsMcsMcGrpEntry ::=

SEQUENCE {

marsMcsMcMinGrpAddr IpAddress,

marsMcsMcMaxGrpAddr IpAddress,

marsMcsMcGrpRowStatus RowStatus

}

marsMcsMcMinGrpAddr OBJECT-TYPE

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SYNTAX IPAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Minimum multicast group address - the min and max multicast forms multi-group block. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that this block contains a single group address. Since the block joins are no allowed by a MCS as implied in the [RFC2022](#), the MinGrpAddr and MaxGrpAddress should be set to the same value at this time when an entry row is created."

::= { marsMcsMcGrpEntry 1 }

marsMcsMcMaxGrpAddr OBJECT-TYPE

SYNTAX IPAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Maximum multicast group address - the min and max multicast forms a multi-group block. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that this block contains a single group address. Since the block joins are no allowed by a MCS as implied in the [RFC2022](#), the MinGrpAddr and MaxGrpAddress should be set to the same value at this time when an entry row is created."

::= { marsMcsMcGrpEntry 2 }

marsMcsMcGrpRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create or delete a row in this table.

Since other objects in this row are not-accessible 'index-objects', the value of this object has no effect on whether those objects in this conceptual row can be modified."

::= { marsMcsMcGrpEntry 3 }

-- *****

-- IP ATM MARS MCS Backup MARS Object Definitions

-- *****

marsMcsBackupMarTable OBJECT-TYPE

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SYNTAX SEQUENCE OF MarsMcsBackupMarsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains a list of backup MARS addresses that a MCS can make contact to in case of failure for connecting to the primary server. The list of addresses is in descending order of preference. It should be noted that the backup list provided by the MARS to the MCS via the MARS_REDIRECT_MAP message has a higher preference than addresses that are manually configured into the MCS. When such a list is received from the MARS, this information should be inserted at the top of the list.

Each row can be created or deleted via configuration."

::= { marsMcsObjects 3 }

marsMcsBackupMarsEntry OBJECT-TYPE

SYNTAX MarsMcsBackupMarsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry represents an ATM address of a backup MARS."

INDEX { marsMcsIndex,
marsMcsIfIndex,
marsMcsBackupMarsPriority,
marsMcsBackupMarsAddr }

::= { marsMcsBackupMarsTable 1 }

MarsMcsBackupMarsEntry ::=

SEQUENCE {
marsMcsBackupMarsPriority Unsigned32,
marsMcsBackupMarsAddr AtmAddr,
marsMcsBackupMarsRowStatus RowStatus
}

marsMcsBackupMarsPriority OBJECT-TYPE

SYNTAX Unsigned32(0..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The priority associated with a backup MARS. A lower priority value indicates a higher preference."

::= { marsMcsBackupMarsEntry 1 }

marsMcsBackupMarsAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS not-accessible

STATUS current

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DESCRIPTION

"The ATM address associated with a backup MARS."

::= { marsMcsBackupMarsEntry 2 }

marsMcsBackupMarsRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create or delete a row in this table.

Since other objects in this row are not-accessible 'index-objects', the value of this object has no effect on whether those objects in this conceptual row can be modified."

::= { marsMcsBackupMarsEntry 3 }

```
-- *****
-- IP ATM MARS MCS VC Object Definition Table
-- *****
```

marsMcsVcTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsMcsVcEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains information about open virtual circuits (VCs) that a MCS has. For point to point circuit, each entry represents a single VC connection between this MCS ATM address to another party ATM address. In the case of point to multipoint connection where a single source address is associated with multiple destinations, several entries are used to represent the relationship. An example of point to multi-point VC represented in a table is shown below.

MCS	VPI/VCI	Grp	Addr1/Addr2	Part	Addr
1	0,1		g1,g2		p1
1	0,1		g1,g2		p2
1	0,1		g1,g2		p3"

::= { marsMcsObjects 4 }

marsMcsVcEntry OBJECT-TYPE

SYNTAX MarsMcsVcEntry

MAX-ACCESS not-accessible

STATUS current

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DESCRIPTION

"The objects contained in the entry are VC related attributes such as VC signalling type, control VC type, idle timer, negotiated MTU size, etc."

```
INDEX { marsMcsIndex,
        marsMcsIfIndex,
        marsMcsVcVpi,
        marsMcsVcVci,
        marsMcsVcMinGrpAddr,
        marsMcsVcMaxGrpAddr,
        marsMcsVcPartyAddr }
 ::= { marsMcsVcTable 1 }
```

MarsMcsVcEntry ::=

```
SEQUENCE {
    marsMcsVcVpi          INTEGER,
    marsMcsVcVci          INTEGER,
    marsMcsVcMinGrpAddr   IpAddress,
    marsMcsVcMaxGrpAddr   IpAddress,
    marsMcsVcPartyAddr    AtmAddr,
    marsMcsVcPartyAddrType INTEGER,
    marsMcsVcType          INTEGER,
    marsMcsVcCtrlType      INTEGER,
    marsMcsVcIdleTimer     INTEGER,
    marsMcsVcRevalidate    TruthValue,
    marsMcsVcEncapsType     INTEGER,
    marsMcsVcNegotiatedMtu INTEGER,
    marsMcsVcRowStatus     RowStatus
}
```

marsMcsVcVpi OBJECT-TYPE

SYNTAX INTEGER (0..4095)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The value of virtual path identifier (VPI). Since a VPI can be numbered 0, this sub-index can take a value of 0."

```
::= { marsMcsVcEntry 1 }
```

marsMcsVcVci OBJECT-TYPE

SYNTAX INTEGER (0..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The value of virtual circuit identifier (VCI). Since a VCI can be numbered 0, this sub-index can take a value of 0."

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```
::= { marsMcsVcEntry 2 }
```

marsMcsVcMinGrpAddr OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Minimum IP multicast group address - the min and max multicast forms a multi-group block which is associated with a VC. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that the size of multi-group block is 1, a single IP group."

```
::= { marsMcsVcEntry 3 }
```

marsMcsVcMaxGrpAddr OBJECT-TYPE

SYNTAX IpAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Maximum IP multicast group address - the min and max multicast forms a multi-group block which is associated with a VC. If the MinGrpAddr and MaxGrpAddr are the same, it indicates that the size of multi-group block is 1, a single IP group."

```
::= { marsMcsVcEntry 4 }
```

marsMcsVcPartyAddr OBJECT-TYPE

SYNTAX AtmAddr

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An ATM party address in which this VC is linked. The party type is identified by the marsMcsVcPartyAddrType."

```
::= { marsMcsVcEntry 5 }
```

marsMcsVcPartyAddrType OBJECT-TYPE

SYNTAX INTEGER {

called (1),

calling (2)

}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The party type is associated with the party address. The called (1) indicates that the party address is

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a destination address which implies that VC is originated from this MCS. The calling (2) indicates the VC was initiated externally to this MCS. In this case, the party address is the source address."

::= { marsMcsVcEntry 6 }

marsMcsVcType OBJECT-TYPE

SYNTAX INTEGER {
 pvc (1),
 svc (2)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Circuit Connection type: permanent virtual circuit or switched virtual circuit."

::= { marsMcsVcEntry 7 }

marsMcsVcCtrlType OBJECT-TYPE

SYNTAX INTEGER {
 pointToPointVC (1),
 serverControlVC (2),
 pointToMultiPointVC (3)
}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Control VC type used to specify a particular connection.

pointToPointVC (1):

used by the ATM Clients for the registration and queries. This VC or the initial signalling path is set up from the source MCS to a MARS. It is bi-directional.

serverControlVC (2):

used by a MARS to issue asynchronous updates to an ATM Client. This VC is established from the MARS to the MCS.

pointToMultiPointVC (3):

used by the client to transfer multicast data packets from layer 3. This VC is established from this VC to a cluster member."

::= { marsMcsVcEntry 8 }

marsMcsVcIdleTimer OBJECT-TYPE

SYNTAX INTEGER (1..2147483647)

UNITS "minutes"

MAX-ACCESS read-create

Expires September 1998

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STATUS current

DESCRIPTION

"The idle timer associated with this VC. The minimum suggested value is 1 minute and the recommended default value is 20 minutes."

DEFVAL { 20 }

::= { marsMcsVcEntry 9 }

marsMcsVcRevalidate OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"A flag associated with an open and active multipoint VC. It is checked every time a packet is queued for transmission on that VC. The object has the value of true (1) if revalidate is required and the value false (2) otherwise."

::= { marsMcsVcEntry 10 }

marsMcsVcEncapsType OBJECT-TYPE

SYNTAX INTEGER {

other (1),

llcSnap (2)

}

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The encapsulation type used when communicating over this VC."

::= { marsMcsVcEntry 11 }

marsMcsVcNegotiatedMtu OBJECT-TYPE

SYNTAX INTEGER (1..65535)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The negotiated MTU when communicating over this VC."

::= { marsMcsVcEntry 12 }

marsMcsVcRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The object is used to create, delete or modify a row in this table."

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A row cannot be made 'active' until instances of all corresponding columns in the row of this table are appropriately configured.

While objects: marsMcsVcIdleTimer and marsMcsVcRevalidate in this conceptual row can be modified irrespective of the value of this object, all other objects in the row can not be modified when this object has a value of 'active'.

It is possible for an SNMP management station to set the row to 'notInService' and modify the entry and then set it back to 'active' with the following exception. That is, rows for which the corresponding instance of marsMcsVcType has a value of 'svc' can not be modified or deleted."

```
::= { marsMcsVcEntry 13 }
```

```
-- *****
-- IP ATM MARS MCS Statistics Definition Table
-- *****
```

marsMcsStatTable OBJECT-TYPE

SYNTAX SEQUENCE OF MarsMcsStatEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The table contains statistics collected at MARS MCSs."

```
::= { marsMcsObjects 5 }
```

marsMcsStatEntry OBJECT-TYPE

SYNTAX MarsMcsStatEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry contains statistics collected at one
MARS MCS."

INDEX { marsMcsIndex, marsMcsIfIndex }

```
::= { marsMcsStatTable 1 }
```

MarsMcsStatEntry ::=

SEQUENCE {

marsMcsStatTxReqMsgs	Counter32,
marsMcsStatTxMservMsgs	Counter32,
marsMcsStatTxUnservMsgs	Counter32,
marsMcsStatRxMultiMsgs	Counter32,
marsMcsStatRxSjoinMsgs	Counter32,

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```
    marsMcsStatRxSleaveMsgs    Counter32,  
    marsMcsStatRxNakMsgs      Counter32,  
    marsMcsStatRxMigrateMsgs   Counter32,  
    marsMcsStatFailMultiMsgs   Counter32  
}
```

marsMcsStatTxReqMsgs OBJECT-TYPE

```
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "Total number of MARS_REQUEST messages transmitted  
    from this MCS."  
 ::= { marsMcsStatEntry 1 }
```

marsMcsStatTxMservMsgs OBJECT-TYPE

```
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "Total number of MARS_MSERV messages transmitted from  
    this MCS."  
 ::= { marsMcsStatEntry 2 }
```

marsMcsStatTxUnservMsgs OBJECT-TYPE

```
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "Total number of MARS_UNSERV messages transmitted from  
    this MCS."  
 ::= { marsMcsStatEntry 3 }
```

marsMcsStatRxMultiMsgs OBJECT-TYPE

```
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "Total number of MARS_MULTI messages received by  
    this MCS."  
 ::= { marsMcsStatEntry 4 }
```

marsMcsStatRxSjoinMsgs OBJECT-TYPE

```
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "Total number of MARS_SJOIN messages received by
```

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```
        this MCS."
 ::= { marsMcsStatEntry 5 }
```

marsMcsStatRxSleaveMsgs OBJECT-TYPE

```
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Total number of MARS_SLEAVE messages received
        by this MCS."
 ::= { marsMcsStatEntry 6 }
```

marsMcsStatRxNakMsgs OBJECT-TYPE

```
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Total number of MARS_NAK messages received
        by this MCS."
 ::= { marsMcsStatEntry 7 }
```

marsMcsStatRxMigrateMsgs OBJECT-TYPE

```
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Total number of MARS_MIGRATE messages received
        by this MCS."
 ::= { marsMcsStatEntry 8 }
```

marsMcsStatFailMultiMsgs OBJECT-TYPE

```
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Total number of timeouts occurred indicating
        failure of the last MARS_MULTI to arrive."
 ::= { marsMcsStatEntry 9 }
```

```
-- *****
-- IP ATM MARS Notification Definitions
-- *****
```

marsTrapInfo OBJECT IDENTIFIER ::= { marsMIB 0 }

marsFaultTrap NOTIFICATION-TYPE

```
    OBJECTS {
        marsAddr,
```

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```

        marsServStatus
    }
    STATUS current
    DESCRIPTION
        "This trap/inform is sent to the manager whenever
        there is a fault condition occurred on a MARS."
    ::= { marsTrapInfo 1 }

-- *****
-- IP ATM MARS Conformance Definitions
-- *****

marsConformance          OBJECT IDENTIFIER ::= { marsMIB 4 }
marsClientConformance    OBJECT IDENTIFIER ::= { marsConformance 1 }
marsServerConformance    OBJECT IDENTIFIER ::= { marsConformance 2 }
marsMcsConformance       OBJECT IDENTIFIER ::= { marsConformance 3 }

marsClientCompliances    OBJECT IDENTIFIER ::= { marsClientConformance 1 }
marsClientGroups         OBJECT IDENTIFIER ::= { marsClientConformance 2 }

marsServerCompliances    OBJECT IDENTIFIER ::= { marsServerConformance 1 }

marsServerGroups         OBJECT IDENTIFIER ::= { marsServerConformance 2 }

marsMcsCompliances       OBJECT IDENTIFIER ::= { marsMcsConformance 1 }
marsMcsGroups            OBJECT IDENTIFIER ::= { marsMcsConformance 2 }

-- *****
-- MARS Client Compliance Statements
-- *****

marsClientCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for entities that are required
        for the management of MARS clients."
    MODULE
        MANDATORY-GROUPS {
            marsClientGroup
        }

    OBJECT marsClientAddr
    MIN-ACCESS read-only
    DESCRIPTION
        "Write access is not required."

    OBJECT marsClientDefaultMarsAddr

```

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MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientHsn

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientRegistration

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientCmi

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientDefaultMtu

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientFailureTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientRetranDelayTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientRdmMulReqAddRetrTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientRdmVcRevalidateTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientJoinLeaveRetrInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientJoinLeaveRetrLimit

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientRegWithMarsRdmTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientForceWaitTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientLmtToMissRedirMapTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientIdleTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientMcGrpRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientBackupMarsRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcCtrlType

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MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcIdleTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcRevalidate

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcEncapsType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcNegotiatedMtu

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsClientVcRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

::= { marsClientCompliances 1 }

marsClientGroup OBJECT-GROUP

OBJECTS {

 marsClientAddr,
 marsClientDefaultMarsAddr,
 marsClientHsn,
 marsClientRegistration,
 marsClientCmi,
 marsClientDefaultMtu,
 marsClientFailureTimer,
 marsClientRetranDelayTimer,
 marsClientRdmMulReqAddRetrTimer,
 marsClientRdmVcRevalidateTimer,
 marsClientJoinLeaveRetrInterval,
 marsClientJoinLeaveRetrLimit,
 marsClientRegWithMarsRdmTimer,
 marsClientForceWaitTimer,
 marsClientIdleTimer,

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```

marsClientLmtToMissRedirMapTimer,
marsClientRowStatus,
marsClientMcGrpRowStatus,
marsClientBackupMarsRowStatus,
marsClientVcPartyAddrType,
marsClientVcType,
marsClientVcCtrlType,
marsClientVcIdleTimer,
marsClientVcRevalidate,
marsClientVcEncapsType,
marsClientVcNegotiatedMtu,
marsClientVcRowStatus,
marsClientStatTxReqMsgs,
marsClientStatTxJoinMsgs,
marsClientStatTxLeaveMsgs,
marsClientStatTxGrpLstReqMsgs,
marsClientStatRxJoinMsgs,
marsClientStatRxLeaveMsgs,
marsClientStatRxMultiMsgs,
marsClientStatRxNakMsgs,
marsClientStatRxGrpLstRplyMsgs,
marsClientStatRxMigrateMsgs,
marsClientStatFailMultiMsgs
}

```

STATUS current

DESCRIPTION

"A collection of objects to be implemented in a MIB
for the management of MARS clients."

::= { marsClientGroups 1 }

```

_ _*****
-- MARS Server Compliance Statements
_ _*****

```

marsServerCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for entities that are required
for the management of MARS servers."

MODULE -- this module

```

MANDATORY-GROUPS {
    marsServerGroup,
    marsServerEventGroup
}

```

OBJECT marsAddr

MIN-ACCESS read-only

DESCRIPTION

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"Write access is not required."

OBJECT marsLocal

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsServStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsServType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsServPriority

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsRedirMapMsgTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsCsn

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsSsn

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcGrpAddrUsage

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcGrpRowStatus

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MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsHostMapRowType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsHostMapRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsServerMapRowType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsServerMapRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcPartyAddrType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcCtrlType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcIdleTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcCmi

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcEncapsType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcNegotiatedMtu

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsVcRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

::= { marsServerCompliances 1 }

marsServerGroup OBJECT-GROUP

OBJECTS {

 marsAddr,

 marsLocal,

 marsServStatus,

 marsServType,

 marsServPriority,

 marsRedirMapMsgTimer,

 marsCsn,

 marsSsn,

 marsRowStatus,

 marsMcGrpAddrUsage,

 marsMcGrpRxLayer3GrpSets,

 marsMcGrpRxLayer3GrpResets,

 marsMcGrpRowStatus,

 marsHostMapRowType,

 marsHostMapRowStatus,

 marsServerMapRowType,

 marsServerMapRowStatus,

 marsVcPartyAddrType,

 marsVcType,

 marsVcCtrlType,

 marsVcIdleTimer,

 marsVcCmi,

 marsVcEncapsType,

 marsVcNegotiatedMtu,

 marsVcRowStatus,

 marsRegClientAtmAddr,

 marsRegMcsAtmAddr,

 marsStatTxMultiMsgs,

 marsStatTxGrpLstRplyMsgs,

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```

marsStatTxRedirectMapMsgs,
marsStatTxMigrateMsgs,
marsStatTxNakMsgs,
marsStatTxJoinMsgs,
marsStatTxLeaveMsgs,
marsStatTxSjoinMsgs,
marsStatTxSleaveMsgs,
marsStatTxMservMsgs,
marsStatTxUnservMsgs,
marsStatRxReqMsgs,
marsStatRxGrpLstReqMsgs,
marsStatRxJoinMsgs,
marsStatRxLeaveMsgs,
marsStatRxMservMsgs,
marsStatRxUnservMsgs,
marsStatRxBlkJoinMsgs,
marsStatRegMemGroups,
marsStatRegMcsGroups
}

```

STATUS current

DESCRIPTION

"A collection of objects to be implemented in a MIB
for the management of MARS servers."

::= { marsServerGroups 1 }

marsServerEventGroup NOTIFICATION-GROUP

NOTIFICATIONS { marsFaultTrap }

STATUS current

DESCRIPTION

"A collection of events that can be generated from
a MARS server."

::= { marsServerGroups 2 }

```

_*****
-- MARS Multicast Server (MCS) Compliance Statements
_*****

```

marsMcsCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for entities that are required
for the management of MARS multicast servers (MCS)."

MODULE

```

MANDATORY-GROUPS {
    marsMcsGroup
}

```

OBJECT marsMcsAddr

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MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsDefaultMarsAddr

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsRegistration

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsSsn

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsDefaultMtu

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsFailureTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsRetranDelayTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsRdmMulReqAddRetrTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsRdmVcRevalidateTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsRegisterRetrInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

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OBJECT marsMcsRegisterRetrLimit
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsForceWaitTimer
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsLmtToMissRedirMapTimer
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsIdleTimer
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsRowStatus
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsMcGrpRowStatus
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsBackupMarsRowStatus
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsVcPartyAddrType
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsVcType
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required."

OBJECT marsMcsVcCtrlType
MIN-ACCESS read-only
DESCRIPTION

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"Write access is not required."

OBJECT marsMcsVcIdleTimer

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsVcRevalidate

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsVcEncapsType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsVcNegotiatedMtu

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT marsMcsVcRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

::= { marsMcsCompliances 1 }

marsMcsGroup OBJECT-GROUP

OBJECTS {

 marsMcsAddr,
 marsMcsDefaultMarsAddr,
 marsMcsRegistration,
 marsMcsSsn ,
 marsMcsDefaultMtu,
 marsMcsFailureTimer,
 marsMcsRetranDelayTimer,
 marsMcsRdmMulReqAddRetrTimer,
 marsMcsRdmVcRevalidateTimer,
 marsMcsRegisterRetrInterval,
 marsMcsRegisterRetrLimit,
 marsMcsRegWithMarsRdmTimer,
 marsMcsForceWaitTimer,
 marsMcsIdleTimer,
 marsMcsLmtToMissRedirMapTimer,
 marsMcsRowStatus,
 marsMcsMcGrpRowStatus,


```
marsMcsVcPartyAddrType,  
marsMcsBackupMarsRowStatus,  
marsMcsVcType,  
marsMcsVcCtrlType,  
marsMcsVcIdleTimer,  
marsMcsVcRevalidate,  
marsMcsVcEncapsType,  
marsMcsVcNegotiatedMtu,  
marsMcsVcRowStatus,  
marsMcsStatTxReqMsgs,  
marsMcsStatTxMservMsgs,  
marsMcsStatTxUnservMsgs,  
marsMcsStatRxMultiMsgs,  
marsMcsStatRxSjoinMsgs,  
marsMcsStatRxSleaveMsgs,  
marsMcsStatRxNakMsgs,  
marsMcsStatRxMigrateMsgs,  
marsMcsStatFailMultiMsgs  
}
```

STATUS current

DESCRIPTION

"A collection of objects to be implemented in a MIB
for the management of MARS multicast servers (MCS)."

::= { marsMcsGroups 1 }

END

4. Acknowledgments

This document is a product of the IETF's Internetworking Over NBMA Networks (ion) Working Group.

The author would like to recognize Grenville Armitage (Bellcore), Ken Carlberg (SAIC), Ramesh Uppuluri (Fore Systems), and Radha Gowda (SYNNET), and Bill Willcox (Fujitsu Nexion) for their support and comments in completing the MARS MIB. Also thanks to Bert Wijnen (IBM) for his thorough review of the MARS MIB.

5. References

- [1] Armitage, Grenville, "Support for Multicast over UNI 3.0/3.1 based ATM Networks.", [RFC 2022](#), Bellcore, November 1996.
- [2] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Structure of Management Information for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC1902](#), SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
- [3] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Textual Conventions for Version 2 of the of the Simple Network Management Protocol (SNMPv2)", [RFC 1903](#), SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
- [4] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Conformance Statements for Version 2 of the of the Simple Network Management Protocol (SNMPv2)", [RFC 1904](#), SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
- [5] Case, J., Fedor, M., Schoffstall, M., and J. Davin, "Simple Network Management Protocol", [RFC 1157](#), SNMP Research, Performance Systems International, Performance Systems International, MIT Laboratory for Computer Science, May 1990.
- [6] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1905](#), SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.
- [7] McCloghrie, K., and M. Rose, Editors, "Management Information Base for Network Management of TCP/IP-based internets: MIB-II", STD 17, [RFC 1213](#), Hughes LAN Systems, Performance Systems International, March 1991.

6. Security Considerations

Security issues are not discussed in this memo.

7. Authors' Addresses

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8. Changes since version 04

(Note: this section will be removed when the document becomes an RFC.)

- 1) Provide descriptions on how the MARS MIB is to be used in [Section 2](#).
- 2) Changed the prefix of all the MIB objects from ipAtmMars to mars.
- 3) Replaced Uinteger32 with Unsigned32
- 4) Set ranges for all timer objects
- 5) Add descriptions for all row status objects describing the conditions for the values in the corresponding table's conceptual rows that can be modified.
- 6) Modified the compliance statements that allow the MIB to be implemented on a system that only supports read-only objects.
- 7) All the counter descriptors are now denoted plurality.
- 8) { experimental 9999 } is replace by { snmpModules xx }
- 9) ipAtmMarsTrapInfo OBJECT IDENTIFIER ::= { ipAtmMarsMib 4 } is replaced by:
marsTrapInfo OBJECT IDENTIFIER ::= { marsMIB 0 }
- 10) Add TxMservMsgs and TxUnservMsgs statistics counters for MARS
- 11) Add a priority field which is an index before the address to

the backup MARS's at the client and MCS, respectively.

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