Media Gateway Control (Megaco)

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Megaco MIB

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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 defines objects for use by the MEGACO/H.248 protocol operating on Media Gateways and Media Gateway Controllers. These objects can be used to manage the network containing Media Gateways and Media Gateway Controllers.

Changes from the previous version of the draft include:

1. Added medGwyGatewayControllerId as an additional index to the medGwyGatewayControllerTable.

2. Modified the usage of TimeTicks to TimeStamp which is now being widely used
   and is more useful.
3. Converted the Integer32Æs to Unsigned32 wherever appropriate.
4. Added few more Textual Conventions that could be imported to vendor specific
   MIBs.
5. Corrected few MIB syntax errors.
6. Reformatted the entire document to be compliant with the new IETF MIB
   guidelines from [MIBGUIDE]

Table of Contents

1. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-
Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the
Management Information Base or MIB. MIB objects are generally accessed through
the Simple Network Management Protocol (SNMP). Objects in the MIB are defined
using the mechanisms defined in the Structure of Management Information (SMI).
This memo specifies a MIB module that is compliant to the SMIv2, which is
described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58,
RFC 2580 [RFC2580].

2. Overview

The MEGACO/H.248 protocol [RFC3015] [ITUH248] defines communication

between the
elements of a physically decomposed multimedia gateway. Those elements are the
Media Gateway Controller (MGC) and the Media Gateway (MG). This MIB defines
objects on these elements that are to be used to configure these elements such
as through control of variable settings, to gather and report management
statistics, and to report the occurrence of system management events (i.e.,
traps) to the network management system.

This memo specifies a MIB module that is compliant to the SMIv2. A MIB conforming to the SMIv1 can be produced through the appropriate translations.
The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIv2 will be converted into textual descriptions in SMIv1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB.

2.1 Terms

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14, RFC 2119 [RFC2119].

3. Megaco MIB Definition

```
--****************************************************************
-- MEGACO-MIB
--    Media Gateway Control MIB
--
--****************************************************************

MEGACO-MIB DEFINITIONS ::= BEGIN

IMPORTS
     MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
     Integer32, IpAddress, Unsigned32
             FROM SNMPv2-SMI

     TEXTUAL-CONVENTION,
     RowStatus, TestAndIncr, AutonomousType, TimeStamp
             FROM SNMPv2-TC

     MODULE-COMPLIANCE, OBJECT-GROUP,
     NOTIFICATION-GROUP
             FROM SNMPv2-CONF

     SnmpAdminString
```

```
                FROM SNMP-FRAMEWORK-MIB

        InterfaceIndex
                FROM IF-MIB;


    megacoMib MODULE-IDENTITY
```

```
    LAST-UPDATED   "200209301200Z"
    ORGANIZATION   "IETF"
    CONTACT-INFO
     "
     Postal:
     Bala Pitchandi
     UTStarcom Inc
     33 Wood Avenue South
     Iselin, NJ 08830

     Phone:
     +1 (732)452-4457

     Email:
     bs@utstar.com
     "
    DESCRIPTION
     "Media Gateway Control (Megaco) Management
     Information Base (MIB)
     "

    -- Revision History

     REVISION     "200304181200Z"            -- 18.Apr, 2003
     DESCRIPTION
      "Corrected syntactical errors and some MIB errors"

     REVISION     "200209301200Z"            -- 30.Sep, 2002
     DESCRIPTION
      "Reworked the entire MIB to add the missing objects and
       eliminate the ambiguities"

     REVISION     "0003201200Z"              -- May, 2001
     DESCRIPTION
      "Initial Version by Holdridge et al"


    ::= { mib-2 xx } _ final assignment by IANA at publication time


-- ****************************************************************
--
-- OID For the MIB
--
-- ****************************************************************

mediaGatewayMIBObjects    OBJECT IDENTIFIER::= { megacoMib 1 }
```

```
    -- ****************************************************************
    --
```

```
      -- MEGACO-MIB
      --
      -- The Media Gateway MIB contains 4 (object) groups
      -- medGwyConfiguration
      --    This group consists of all the configuration related information
      --    pertained with the Media Gateways and Media Gateway Controllers
      --    in the network being managed. This group contains the following
      --    three tables:
      --    medGwyLinkIdTable - Table used to provide the linkId to create
      --                        new entries in the gateway table
      --    medGwyGatewayConfigTable - Table provides the list of gateways
      --                               in the network and their configuration
      --    medGwyGatewayControllerTable - Table provides the list of media
      --                                   gateway controllers in the network
      --                                   and their configuration
      -- medGwyStatistics
      --    This group consists of all the statistics related information
      --    pertained with the gateways. This group contains the following
table:
      --    medGwyGatewayStatsTable - Table provides the gateway statistics
      --                              and related information
      --
      -- medGwyConnections
      --    This group consists of the connections, terminations and their
      --    properties related information for the gateways being managed
      --    This group contains the following three tables:
      --    medGwyTermIdTable - Table used to provide the manager the next
      --                        available termination Id.
      --    medGwyTerminationsTable - Table provides the list of terminations
      --                              and their configuration & status
      --    medGwyPropertyProfileTable - Table provides the list of profiles
      --                                 that are being supported by the
      --                                 gateway
      --
      -- medGwyProperties
      --    For Future Extension
      --
      --
      -- ****************************************************************

      -- ****************************************************************
      --
      -- Group Objects
      --
      -- ****************************************************************

     medGwyConfiguration
          OBJECT IDENTIFIER::= { mediaGatewayMIBObjects 1 }
```

```
    medGwyStatistics
         OBJECT IDENTIFIER::= { mediaGatewayMIBObjects 2 }
    medGwyConnections
         OBJECT IDENTIFIER::= { mediaGatewayMIBObjects 3 }
```

```
medGwyProperties
     OBJECT IDENTIFIER::= { mediaGatewayMIBObjects 4 }


-- ****************************************************************
--
-- Textual conventions for the Media Gateway MIB
--
-- ****************************************************************

MediaGatewayId ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
     "Possible Media Gateway Id that can be used to identify
      any media gateway uniquely"
    SYNTAX      INTEGER (1..2147483647)

MediaGatewayLinkId ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
     "Possible Media Gateway Link Id that can be used to identify
      any media gateway link uniquely"
    SYNTAX      Unsigned32 (1..2147483647)

MediaGatewayTermId ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
     "Possible Termination Id that can be used to identify
      any media gateway termination uniquely"
    SYNTAX      Unsigned32 (1..2147483647)


-- ****************************************************************
--
-- medGwyLinkIdTable
--   Media Gateway LinkId Table...
--
--   Provides the manager with the nextId for use in creating a
--   LinkId. There is one entry in this table for each MediaGateway.
--
--   Link represents the signalling link between the media gateway
--   and the media gateway controller. The following rules guide
--   the creation of the LinkId
--
--   (1) There could be more than one media gateways (medGwyGatewayId)
--       sharing the same signalling link (medGwyLinkId).
--
--   (2) A gateway may have many links (interfaces) towards the Media
```

```
    --       Gateway Controller but only the active link that is currently
    --       being used to communicate with the controller would be accounted
    --       in this table
```

```
--
--   If this table isn't implemented, the manager would be
--   responsible for providing the (unique) nextId (via retaining
--   used id's, hashing, etc)
--
-- ****************************************************************


medGwyLinkIdTable OBJECT-TYPE
    SYNTAX       SEQUENCE OF MedGwyLinkIdEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
     "This table contains a nextLinkId for each Gateway.
      It provides the manager with the nextLinkId for use
      in creating new Gateway Table Entries."
::= { medGwyConfiguration 1}

medGwyLinkIdEntry OBJECT-TYPE
    SYNTAX       MedGwyLinkIdEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
    "This table contains the NextLinkId for this Gateway
    and is indexed by mediaGatewayId."
    INDEX        { medGwyGatewayId }
::= { medGwyLinkIdTable 1 }

MedGwyLinkIdEntry ::= SEQUENCE
{
    medGwyNextLinkId                    TestAndIncr         -- rw
}

medGwyNextLinkId OBJECT-TYPE
    SYNTAX        TestAndIncr
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
     "The Next Value for a MediaGateway LinkId.  Assists the
      manager in selecting a value for medGwyGatewayLinkId.
      Using the TestAndIncr syntax, A Manager will 'lock' this
      variable, ensuring single access."
::= { medGwyLinkIdEntry 1 }


-- ****************************************************************
--
-- medGwyGatewayConfigTable
```

```
    --
    --   The Media Gateway Configuration Table...
    --
```

```
--   There would be one entry in this table and is indexed by
--   (medGwyGatewayId, medGwyGatewayLinkId). The table is guided by
--   the following rules:
--
--   (1) There is one entry in this table for each MediaGateway
--       SignallingLink.
--
--   (2) Even though gateways could share the signalling link, they
--       could have different IP Address and/or Port Number. In order
--       to accomodate that, the table is indexed by both medGwyGatewayId
--       and medGwyGatewayLinkId.
--
--   (3) Virtual MGs must be represented as a separate entry
--       in this table
--
--   (4) Statistics can be reset to zero by managers when necessary using
--       medGwyGatewayResetStatistics.
--
-- ****************************************************************

medGwyGatewayConfigTable       OBJECT-TYPE
    SYNTAX      SEQUENCE OF MedGwyGatewayConfigEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "A list of medGwyGatewayConfigEntry objects."
::= { medGwyConfiguration 2 }

medGwyGatewayConfigEntry  OBJECT-TYPE
    SYNTAX       MedGwyGatewayConfigEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION "Entry holding configuration information about a
                 group of Media Gateway Controllers sharing the same
                 signaling link."
    INDEX      { medGwyGatewayId, medGwyGatewayLinkId }
::= { medGwyGatewayConfigTable 1 }

MedGwyGatewayConfigEntry ::= SEQUENCE
{
    medGwyGatewayId                    MediaGatewayId,     -- na
    medGwyGatewayLinkId                MediaGatewayLinkId, -- na
    medGwyGatewayLinkName              OCTET STRING,       -- rc
    medGwyGatewayIPAddress             IpAddress,          -- rc
    medGwyGatewayPort                  Integer32,          -- rc
    medGwyGatewayEncodingScheme        INTEGER,            -- rc
    medGwyGatewayProtocol              INTEGER,            -- rc
    medGwyGatewaySignalingTptProtocol  INTEGER,            -- rc
    medGwyGatewayAdminStatus           INTEGER,            -- rc
```

```
        medGwyGatewayOperStatus             INTEGER,            -- ro
        medGwyGatewayLastStatusChange       TimeStamp,          -- ro
        medGwyGatewayResetStatistics        INTEGER,            -- rc
```

```
        medGwyGatewayRowStatus              RowStatus           -- rc
    }


    medGwyGatewayId OBJECT-TYPE
        SYNTAX       MediaGatewayId
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION "The unique Media Gateway Id which identifies this
                     media gateway"
    ::= { medGwyGatewayConfigEntry 1 }

    medGwyGatewayLinkId OBJECT-TYPE
        SYNTAX       MediaGatewayLinkId
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION "The unique link id which identifies the signalling
                     link that this gateway uses to communicate with the
                     Gateway Controller(s)."
    ::= { medGwyGatewayConfigEntry 2 }

    medGwyGatewayLinkName OBJECT-TYPE
        SYNTAX      OCTET STRING  ( SIZE (0..255) )
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "A descriptive name of this signalling link / media
                     gateway combination"
    ::= { medGwyGatewayConfigEntry 3 }

    medGwyGatewayIPAddress OBJECT-TYPE
        SYNTAX      IpAddress
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "The IP address that the Media Gateway Controller
                     will use to communicate with the Media Gateway.
                     The value 0.0.0.0 is returned if the entry is
                     invalid."
    ::= { medGwyGatewayConfigEntry 4 }

    medGwyGatewayPort OBJECT-TYPE
        SYNTAX      Integer32 (0..65535)
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "TCP/UDP port number that the Media Gateway Controller
will
                     use to communiacte with the Media Gateway. The value
                     0 is returned if the entry is invalid."
        DEFVAL { 2944 }
```

```
    ::= { medGwyGatewayConfigEntry 5 }

    medGwyGatewayEncodingScheme OBJECT-TYPE
        SYNTAX     INTEGER
```

```
                    {
                      text         (1),
                      binary       (2)
                    }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "The encoding scheme that would be used to encode the
Megaco
                     messages that are sent/received to/from the gateway
                     controller"
        DEFVAL { text }
    ::= { medGwyGatewayConfigEntry 6 }

    medGwyGatewayProtocol OBJECT-TYPE
        SYNTAX     INTEGER
                    {
                      notApplicable(1),  --
                      other        (2),  -- Other (none from the list below)
                      dss1-ip      (3),  -- Q931+
                      ipdc         (4),  -- IPDC
                      megacov1     (5)   -- MEGACO/H.248 Version 1
                      megacov2     (6)   -- MEGACO/H.248 Version 2
                      mgcp         (7)   -- MGCP
                    }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "Type of the control protocol in use."
    ::= { medGwyGatewayConfigEntry 7 }

    medGwyGatewaySignalingTptProtocol OBJECT-TYPE
        SYNTAX     INTEGER
                    {
                      TCP          (1),
                      UDP          (2),
                      SCTP         (3),
                      other        (4)
                    }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "Type of the transport protocol that is being used to
                     transport the megaco signalling traffic"
    ::= { medGwyGatewayConfigEntry 8 }

    medGwyGatewayAdminStatus OBJECT-TYPE
        SYNTAX     INTEGER
                    {
                      up      (1),
                      down    (2),
```

```
                testing (3)
              }
        MAX-ACCESS  read-create
        STATUS      current
```

```
        DESCRIPTION "The desired state of the gateway.  The testing(3) state
                    indicates that no signalling packets can be passed.  When
                    a managed system initializes, all gateways start with
                      medGwyGatewayAdminStatus in the down(2) state.  As a
result
                      of either explicit management action or per configuration
                      information retained by the managed system,
                      medGwyGatewayAdminStatus is then changed to either the
                      up(1) or testing(3) states (or remains in the down(2)
                      state)."
    ::= { medGwyGatewayConfigEntry 9 }

    medGwyGatewayOperStatus  OBJECT-TYPE
        SYNTAX     INTEGER
                   {
                 up     (1),   -- ready to communicate with MGC
                 down   (2),
                 testing(3),   -- in some test mode
                 unknown(4),   -- status can not be determined
                           -- for some reason.
                   }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "The current operational state of the gateway.  The
                     testing(3) state indicates that no signalling packets can
                     be passed.  If medGwyGatewayAdminStatus is down(2) then
                     medGwyGatewayOperStatus should be down(2).  If
                     medGwyGatewayAdminStatus is changed to up(1) then
                     medGwyGatewayOperStatus should change to up(1) if the
                     gateway is ready to transmit and receive signalling
                     traffic; it should remain in the down(2) state if and
                     only if there is a fault that prevents it from going to
                     the up(1) state"

    ::= { medGwyGatewayConfigEntry 10 }

    medGwyGatewayLastStatusChange OBJECT-TYPE
        SYNTAX      TimeStamp
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "The value of sysUpTime at the time the associated
                     link entered its current operational status. If
                     the current status was entered prior to the last
                     re-initialization of the local network management
                     subsystem, then this object contains a zero value."
    ::= { medGwyGatewayConfigEntry 11 }

    medGwyGatewayResetStatistics OBJECT-TYPE
```

```
        SYNTAX     INTEGER
                   {
                      notApplicable (1), -- Invalid/unknown.
                      other         (2), -- None from the list below.
```

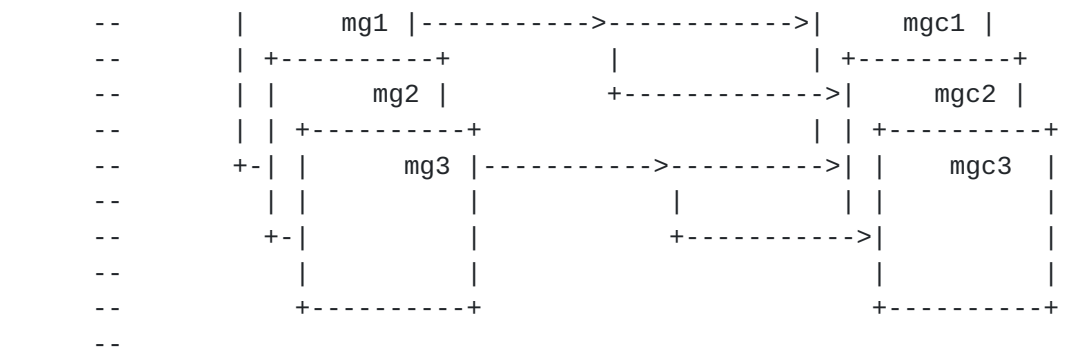
```
                    reset         (3)  -- Reset all statistics now.
                  }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "This object can be used to reset all statistics
                     collected for this media gateway link so far.
                     Statistics will be reset when the object is SET
                     to 'reset'.  Upon reset, the agent changes the value
                     of this object to 'notApplicable'."
    ::= { medGwyGatewayConfigEntry 12 }

    medGwyGatewayRowStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "This is used to create new rows in this table,
                     Modify existing rows, and to delete existing rows."
    ::= { medGwyGatewayConfigEntry 13 }



    -- ****************************************************************
    --
    -- medGwyGatewayControllerTable
    --
    --   The Media Gateway Controller Table...
    --
    --   This table would provide information about the media gateway
    --   controllers in the network and their configuration. The rules
    --   that guide this table are:
    --
    --   (1) This table consists a 'List' of Media Gateway Controllers
    --       (on a media gateway), and Configuration Information for these
    --       Controllers.
    --
    --   (2) An Entry in this Table is automatically created when a manager
    --       creates an entry in the medGwyGatewayConfigTable because even
    --       though the same MGC could manage many gateways, they could have
    --       different logical IP address/Port number towards each of the
    --       gateway
    --
    --   (3) There can be many logical gateways inside a physical gateway
    --       (MediaGatewayId) and there can me multiple media gateway
    --       controllers (medGwyGatewayControllerId) and there can be many
    --       links between "m" number of gateways and "n" number of
controllers
    --       (medGwyGatewayLinkId).
    --
```

```
--       The relationship can be, for example, as follows:
--
--      MediaGatewayId                        medGwyGatewayControllerId
--       +----------+   medGwyGatewayLinkId   +----------+
```




```
--
-- ****************************************************************

    medGwyGatewayControllerTable OBJECT-TYPE
        SYNTAX       SEQUENCE OF MedGwyGatewayControllerEntry
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION "List of the Media Gateway Controllers that are managed
                     in the network"
        ::= { medGwyConfiguration 3 }

    medGwyGatewayControllerEntry OBJECT-TYPE
        SYNTAX      MedGwyGatewayControllerEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION "Entry holding information about an individual
                     Media Gateway Controller."
        INDEX      { medGwyGatewayId, medGwyGatewayLinkId,
medGwyGatewayControllerId
  }
        ::= { medGwyGatewayControllerTable 1 }

    MedGwyGatewayControllerEntry ::= SEQUENCE
    {
        medGwyGatewayControllerId             Unsigned32,         -- ro
        medGwyGatewayControllerIPAddress      IpAddress,          -- rw
        medGwyGatewayControllerPort           Integer32,          -- rw
        medGwyGatewayControllerAdminStatus    INTEGER             -- rw
        medGwyGatewayControllerOperStatus     INTEGER,            -- ro
    }

    medGwyGatewayControllerId OBJECT-TYPE
        SYNTAX      Unsigned32 (1..2147483647)
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION "An unique identification number that is assigned to
                     the gateway controller by the manager"
    ::= { medGwyGatewayControllerEntry 1 }
```

```
    medGwyGatewayControllerIPAddress OBJECT-TYPE
        SYNTAX      IpAddress
        MAX-ACCESS  read-write
        STATUS      current
```

```
        DESCRIPTION "The IP address of the Media Gateway Controller. The
                     value 0.0.0.0 is returned if the entry is invalid."
    ::= { medGwyGatewayControllerEntry 2 }

    medGwyGatewayControllerPort OBJECT-TYPE
        SYNTAX      Integer32 (0..65535)
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION "TCP port of the Media Gateway Controller. The value
                     0 is returned if the entry is invalid."
    ::= { medGwyGatewayControllerEntry 3 }

    medGwyGatewayControllerAdminStatus OBJECT-TYPE
        SYNTAX     INTEGER
                   {
                     up      (1),
                     down    (2),
                     testing (3)
                   }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "The desired state of the gateway.  The testing(3) state
                   indicates that no signalling packets can be passed.  When
                   a managed system initializes, all gateways start with
                     medGwyGatewayControllerAdminStatus in the down(2) state.
                     As a result of either explicit management action or per
                     configuration information retained by the managed system,
                     medGwyGatewayControllerAdminStatus is then changed to
                     either the up(1) or testing(3) states (or remains in the
                     down(2) state)."
    ::= { medGwyGatewayControllerEntry 4 }

    medGwyGatewayControllerOperStatus OBJECT-TYPE
        SYNTAX     INTEGER
                   {
                      up      (1), -- Up/active.
                      down    (2), -- Down.
                      standby (3)  -- Standby mode.
                   }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION "The current operational state of the gateway controller.
                     The standby(3) state indicates that it is in the standby
                     mode and no signalling packets can be passed. If
                     medGwyGatewayControllerAdminStatus is down(2) then
                     medGwyGatewayControllerOperStatus should be down(2). If
                     medGwyGatewayControllerAdminStatus is changed to up(1)
then
```

medGwyGatewayControllerOperStatus should change to up(1)
if the gateway contoller is ready to transmit and receive
signalling traffic; it should remain in the down(2) state
if
and only if there is a fault that prevents it from going
to

```
                the up(1) state"
::= { medGwyGatewayControllerEntry 5 }

-- ****************************************************************
--
-- medGwyGatewayStatsTable
--
--   The Media Gateway Stats Table...
--
--   This table provides the control protocol related statistics for
--   the gateways that are being managed in the network. The rules
--   that guide this table are:
--
--   (1) There is one entry in this table for each
--       MediaGateway/SignallingLink.
--   (2) The Agent creates this table, when a GatewayConfigTable
--       Entry is created.
--
-- ****************************************************************

medGwyGatewayStatsTable       OBJECT-TYPE
    SYNTAX      SEQUENCE OF MedGwyGatewayStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "A list of mediaGatewayTableEntry objects."
::= { medGwyStatistics 1 }

medGwyGatewayStatsEntry  OBJECT-TYPE
    SYNTAX      MedGwyGatewayStatsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "Entry holding statistics about a group of
                 media Gateway/signalling link pair
                "
    INDEX      { medGwyGatewayId, medGwyGatewayLinkId }
::= { medGwyGatewayStatsTable 1 }

MedGwyGatewayStatsEntry ::= SEQUENCE
{
    medGwyGatewayNumInMessages          Unsigned32,          -- ro
    medGwyGatewayNumInOctets            Unsigned32,          -- ro
    medGwyGatewayNumOutMessages         Unsigned32,          -- ro
    medGwyGatewayNumOutOctets           Unsigned32,          -- ro
    medGwyGatewayNumErrors              Unsigned32,          -- ro
    medGwyGatewayNumTimerRecovery       Unsigned32,          -- ro
    medGwyGatewayTransportNumLosses     Unsigned32,          -- ro
    medGwyGatewayTransportNumSwitchover Unsigned32,          -- ro
    medGwyGatewayTransportTotalNumAlarms Unsigned32,         -- ro
```

```
        medGwyGatewayTransportLastEvent      INTEGER,            -- ro
        medGwyGatewayTransportLastEventTime  TimeStamp,          -- ro
        medGwyGatewayLastStatisticsReset     TimeStamp           -- ro
```

```
}


medGwyGatewayNumInMessages OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total number of messages received on the link."
::= { medGwyGatewayStatsEntry 1 }

medGwyGatewayNumInOctets OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total number of octets received on the link."
::= { medGwyGatewayStatsEntry 2 }

medGwyGatewayNumOutMessages OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total number of messages sent on the link."
::= { medGwyGatewayStatsEntry 3 }

medGwyGatewayNumOutOctets OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total number of octets sent on the link."
::= { medGwyGatewayStatsEntry 4 }

medGwyGatewayNumErrors OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total number of signaling-level errors encountered.
                 Includes, but is not limited to, number of bad
                 messages received, number of failures to sent a
                 message and number of other errors."
::= { medGwyGatewayStatsEntry 5 }

medGwyGatewayNumTimerRecovery OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total Number of timer recovery events since the
                 statistics was last reset. This reflects all protocol
                 timers that are supported (For Megaco, T - start timer,
```

```
                    S - short timer, L - long timer, and Z - long duration
                    timer etc)"
    ::= { medGwyGatewayStatsEntry 6 }
```

```
medGwyGatewayTransportNumLosses OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Number of times a transport link was lost
             (excluding switch-over cases). A link loss is defined
             as loss of communication with the entity (MGC) due to
             hardware/transient problems in the interface or other
             related hardware/software"
::= { medGwyGatewayStatsEntry 7 }

medGwyGatewayTransportNumSwitchover OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Number of times when the signaling was switched
                 over to an alternative link. This includes
                 switchover due to the Handoffs initiated by the
                 gateway controllers"
::= { medGwyGatewayStatsEntry 8 }

medGwyGatewayTransportTotalNumAlarms OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "Total number of all alarms issued for the transport
                 layer."
::= { medGwyGatewayStatsEntry 9 }

medGwyGatewayTransportLastEvent OBJECT-TYPE
    SYNTAX     INTEGER
               {
                  notApplicable   (1), -- Invalid/unknown.
                  other           (2), -- None from the list below.
                  linkUp          (3), -- Transport link is up.
                  linkLoss        (4), -- Transport link loss.
                  persistentError (5), -- No link - persistent error.
                  linkShutdown    (6), -- Link is shut down.
                  switchOver      (7)  -- Fail-over.
               }
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION  "Last event reported by the transport layer."
::= { medGwyGatewayStatsEntry 10 }

medGwyGatewayTransportLastEventTime OBJECT-TYPE
    SYNTAX      TimeStamp
```

```
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION "The value of sysUpTime at the time when the event
```

```
                specified by mediaGatewayTransportLastEvent occured.
                If the last event occured prior to the last
                re-initialization of the local network management
                subsystem, then this object contains a zero value."
::= { medGwyGatewayStatsEntry 11 }

medGwyGatewayLastStatisticsReset OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION "The value of sysUpTime at the time when the
                 statistics were reset. If the reset occured prior to
                 the last re-initialization of the local network
                 management subsystem, this object contains a zero
                 value."
::= { medGwyGatewayStatsEntry 12 }

-- ****************************************************************
--
-- medGwyTermIdTable
--
--   TerminationId Table...
--
--   This table provides unique TerminationId for the creation of
--   an entry into the TerminationsTable. The following rules guide
--   this table:
--
--   (1) This table provides the manager with the nextId for use in
--       creating a Termination. There is one entry in this table for each
--       MediaGateway.
--   (2) If this table isn't implemented, the manager would be
--       responsible for providing the (unique) nextId (via retaining
--       used id's, hashing, etc)
--
-- ****************************************************************

medGwyTermIdTable OBJECT-TYPE
    SYNTAX       SEQUENCE OF MedGwyTermIdEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
                "This table contains a nextTerminationId for each
                 Gateway. It provides the manager with the
                 nextTerminationId for use in creating a new
                 TerminationsTable Entry."
::= { medGwyConnections 1}

medGwyTermIdEntry OBJECT-TYPE
```

```
        SYNTAX       MedGwyTermIdEntry
        MAX-ACCESS   not-accessible
        STATUS       current
```

```
    DESCRIPTION
                "This table contains a nextTerminationId for each
                 Gateway, and is indexed by mediaGatewayId."
    INDEX        { medGwyGatewayId }
::= { medGwyTermIdTable 1 }


MedGwyTermIdEntry ::= SEQUENCE
{
    medGwyNextTerminationId             TestAndIncr         -- rw
}

medGwyNextTerminationId OBJECT-TYPE
    SYNTAX        TestAndIncr
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION "The Next Value for a MediaGateway TerminationId.  Assists
                 the manager in selecting a value for medGwyTerminationId.
                 Using the TestAndIncr syntax, A Manager will 'lock' this
                 variable, ensuring single access."
::= { medGwyTermIdEntry 1 }


-- ****************************************************************
--
-- medGwyTerminationsTable
--
--   The Terminations Table...
--
--   This table provides the list of terminations available in the gateway
--   and their corresponding profile information and related configuration
--   information. The following rules guide this table:
--
--   (1) There is one entry in this table for each Termination in a
--       MediaGateway.
--   (2) The list of terminations include terminations that are present
--       for all the contexts that are present in the gateway (excluding
--       the NULL context) (Subject to Discussion)
--
-- ****************************************************************

medGwyTerminationsTable OBJECT-TYPE
    SYNTAX       SEQUENCE OF MedGwyTerminationsEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
                "This table contains information about terminations
                 in a media gateway. It is a list of terminations.
```

```
                    The number of entries equals to the total number of
                    terminations for all contexts in a gateway."
    ::= { medGwyConnections 2}
```

```
medGwyTerminationsEntry OBJECT-TYPE
    SYNTAX       MedGwyTerminationsEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION "
                 It contains objects that describe a termination.
                "
    INDEX        { medGwyGatewayId, medGwyTerminationId }
::= { medGwyTerminationsTable 1 }


MedGwyTerminationsEntry ::= SEQUENCE
{
    medGwyTerminationId                 MediaGatewayTermId, -- na
    medGwyTerminationName               SnmpAdminString,    -- rc
    medGwyTerminationAdminStatus        INTEGER,            -- rw
    medGwyTerminationOperStatus         INTEGER,            -- rc
    medGwyTerminationInterfaceIdentifier InterfaceIndex,    -- rc
    medGwyTerminationPropertyProfileId  Unsigned32,         -- rc
    medGwyTerminationRowStatus          RowStatus           -- rc
}
medGwyTerminationId OBJECT-TYPE
    SYNTAX      MediaGatewayTermId
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "An unique identification number that is assigned to
                 the termination by a media gateway. This is the
                 TerminationId that would be used in the protocol
                 messages that are sent from the gateway"
::= { medGwyTerminationsEntry 1 }

medGwyTerminationName OBJECT-TYPE
    SYNTAX      SnmpAdminString ( SIZE (0..64) )
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION "A descriptive name that would describe this termination
                 and its use. For example, 'emergency-ds0-1' indicating
                 that this termination is reserved as an emergencey DS0
                 channel"
::= { medGwyTerminationsEntry 2 }

medGwyTerminationAdminStatus OBJECT-TYPE
    SYNTAX      INTEGER
                {
                  in-Service    (1),
                  out-Of-Service(2),
                  testing       (3)
```

```
                }
        MAX-ACCESS  read-write
        STATUS      current
```

```
        DESCRIPTION "The desired state of the termination.  The testing(3)
state
                    indicates that no connections can be created for this
                    termination.  When a managed system initializes, all
                    terminations start with medGwyTerminationAdminStatus in the
                    out-of-service(2) state.  As a result of either
                      explicit management action or per configuration
information
                      retained by the managed system,
                      medGwyTerminationAdminStatus is then changed to either
the
                      in-Service(1) or testing(3) states (or remains in the
                      out-Of-Service(2) state)."
    ::= { medGwyTerminationsEntry 3 }

    medGwyTerminationOperStatus OBJECT-TYPE
        SYNTAX      INTEGER
                    {
                      up      (1),
                      down    (2),
                      testing (3)
                    }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "The current operational state of the termination.
                     The testing(3) state indicates that it is in the testing
                     mode and no connections can be created on it. If
                     medGwyTerminationAdminStatus is out-of-service(2) then
                     medGwyTerminationOperStatus should be down(2). If
                     medGwyTerminationAdminStatus is changed to up(1) then
                     medGwyTerminationOperStatus should change to up(1) if the
                     termination is ready to accept connections; it should
remain
                     in the down(2) state if and only if there is a fault that
                     prevents it from going to the up(1) state"
    ::= { medGwyTerminationsEntry 4 }

    medGwyTerminationInterfaceIdentifier OBJECT-TYPE
        SYNTAX      InterfaceIndex
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "A number that uniquely identifies the interface in
                     the physical gateway. This is the ifIndex in the ifTable,
                     that this termination would be using to communicate to
                     other gateways"
    ::= { medGwyTerminationsEntry 5 }

    medGwyTerminationPropertyProfileId OBJECT-TYPE
```

```
        SYNTAX      Unsigned32 (1..2147483647)
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION "This determines the profile of the termination which
                     determines what kind of capabilities this termination
has.
                     This is an index into the medGwyPropertyProfileTable
                     which identifies all the profile that are available"
```

```
::= { medGwyTerminationsEntry 6 }

medGwyTerminationRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION "This is used to create new rows in this table,
                 Modify existing rows, and to delete existing rows."
::= { medGwyTerminationsEntry 7 }



-- ****************************************************************
--
-- medGwyPropertyProfileTable
--
--   The Media Gateway Property Profile Table...
--
--   This table describes different profiles and the properties supported
--   by each profile. The rules that guide this table are:
--
--   (1) There are 'N' entries for each Gateway-PropertyProfile
--   (2) Each entry is a supported property, thus this table gives a list
--       of supported properties for each specified Profile.
--   (3) Each Property is defined as an Object Identifer in the various
--       Package Mibs (like MEGACO-TONES-MIB etc).
--   (4) That OID is used to identify the particular Package, and if the
--       Termination supports the property, this Package OID is included
--       in its list.
--   (5) Terminations (in the TerminationsTable) will have a
--       PropertyProfileId that indicates which PropertyProfile this
--       Termination supports.
--   (6) A Manager builds a Profile of properties, then ties each
--       termination to a defined profile, via the PropertyProfileId
--   (7) Vendors are encouraged to come up with different profiles
--       for different scenarios in order to ensure inter-operability
--       among different implementations
--
-- ****************************************************************


medGwyPropertyProfileTable OBJECT-TYPE
    SYNTAX       SEQUENCE OF MedGwyPropertyProfileEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
                "This table contains a list of the properties
                 supported in a Profile.  A Manager builds a Profile
```

```
                    of properties, then ties each termination to a
                    defined profile"
    ::= { medGwyConnections 3}
```

```
medGwyPropertyProfileEntry OBJECT-TYPE
    SYNTAX       MedGwyPropertyProfileEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION "
                 Each row represents a default property of the
                 Property Profile N-entries per
                 mediaGatewayId/PropertyId, one entry per property."
    INDEX        { medGwyGatewayId, medGwyPropertyProfileId,
                   medGwyPropertyProfileIndex }
::= { medGwyPropertyProfileTable 1 }


MedGwyPropertyProfileEntry ::= SEQUENCE
{
    medGwyPropertyProfileId             Unsigned32,         -- na
    medGwyPropertyProfileIndex          Unsigned32,         -- na
    medGwyPropertyProfileProperty       AutonomousType,     -- rc
    medGwyTermPropertyProfileStatus     RowStatus           -- rc
}


medGwyPropertyProfileId OBJECT-TYPE
    SYNTAX      Unsigned32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "This PropertyProfile Identifier uniquelyidentifies this
                 set of properties.  This is the value each termination
                 would refer, when they would like to support all the
                 properties in this profile"
::= { medGwyPropertyProfileEntry 1 }

medGwyPropertyProfileIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..2147483647)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "This is the index to the PropertyProfile This is just
                a 'counter' through the medGwyPropertyProfile Table.
                ie, property=1 property=2 etc."
::= { medGwyPropertyProfileEntry 2 }

medGwyPropertyProfileProperty OBJECT-TYPE
    SYNTAX      AutonomousType
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION "The Property supported by this Profile.
                 This is an Object ID (OID) defined in a package MIB
```

to identify a Particular property (such as AnalogLines, Tones etc)."

```
::= { medGwyPropertyProfileEntry 3 }

medGwyTermPropertyProfileStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
                "used to create new rows in this table, modify
                 existing rows, and to delete existing rows."
::= { medGwyPropertyProfileEntry 4 }


-- ****************************************************************
--
-- MEGACO-MIB Notification Definitions
--
-- There are seven traps currently supported by the MEGACO-MIB. They are
--
-- o medGwyLinkStatusChange
--    This trap is sent whenever there is a change in the link status
--    that the media gateway is communicating
--
-- o medGwyInvalidControllerAddress
--    This trap is sent whenever a gateway receives a protocol message
--    from a controller that was not present in the configured list
--    of media gateway controllers
--
-- o meGwyInvalidTerminationId
--    This trap is sent whenever a gateway receives a protocol message
--    for a termination that is not recognized by the gateway
--
-- o medGwyInvalidPackageElement
--    This trap is sent whenever a gateway receives an invalid
--    event/signal or any other descriptor for the package specified
--    along with it.
--
-- o medGwyTerminationStatusChange
--    This trap is sent whenever the status of the termination
--    changes from in-Service to out-of-Service or to testing.
--
-- o medGwyGatewayHandoff
--    This trap is sent whenever there is a handoff (due to a failure of
--    the MGC or enforced by the MGC) in a gateway
--
-- o medGwyProtocolError
--    This trap is sent whenever there is a protocol error detected
--    in the messages that the gateway receives from the gateway
--    controllers that are configured
```

```
--
-- ********************************************************************
```

```
mediaGatewayMIBNotifications
   OBJECT IDENTIFIER ::= { megacoMib 2 }


medGwyNotifPrefix
   OBJECT IDENTIFIER ::= { mediaGatewayMIBNotifications 0 }
medGwyNotifObjects
   OBJECT IDENTIFIER ::= { mediaGatewayMIBNotifications 1 }

--
-- Objects necessary for these Notifications
--
medGwyReceivedElement OBJECT-TYPE
    SYNTAX      OCTET STRING  ( SIZE (0..255) )
    MAX-ACCESS  accessible-for-notify
    STATUS      current
    DESCRIPTION "The element name received in a megaco message. For
                 example, 'eventDescriptor' is one such element that
                 could be sent with the notifications"
::= { medGwyNotifObjects 1 }


medGwyLinkStatusChange NOTIFICATION-TYPE
    OBJECTS {
              medGwyGatewayLinkName,
              medGwyGatewayOperStatus
            }
    STATUS  current
    DESCRIPTION "This notification indicates that operational status
                 of a media gateway control link has changed."
::= { medGwyNotifPrefix 1}

medGwyInvalidControllerAddress NOTIFICATION-TYPE
    OBJECTS {
              medGwyGatewayControllerIPAddress
            }
    STATUS  current
    DESCRIPTION "This notification indicates that a message was received
                 from a controller that did not match any of the valid
                 controller IPAddress-es configured in
                 medGwyGatewayControllerTable"
::=  { medGwyNotifPrefix 2 }

medGwyInvalidTerminationId NOTIFICATION-TYPE
    OBJECTS {
              medGwyTerminationId
            }
    STATUS  current
```

```
        DESCRIPTION "This notification indicates that a message was received
                     from a controller that contained a TerminationId that did
                     not match any TerminationId in the TerminationsTable.
```

```
                    TerminationId is found in the OID of the
                    medGwyTerminationName Object."
    ::=  { medGwyNotifPrefix 3 }


    medGwyInvalidPackageElement NOTIFICATION-TYPE
        OBJECTS {
                  medGwyReceivedElement
                }
        STATUS  current
        DESCRIPTION "This notification indicates that a message was received
                    from a controller that contained an event, signal,
                    or descriptor that was not recognized for the
                    package."
    ::=  { medGwyNotifPrefix 4 }


    medGwyTerminationStatusChange NOTIFICATION-TYPE
        OBJECTS {
                  medGwyTerminationStatus,
                  medGwyTerminationTestStatus
                }
        STATUS  current
        DESCRIPTION "This notification is sent when a termination changes
                    status."
    ::=  { medGwyNotifPrefix 5 }

    medGwyGatewayHandoff NOTIFICATION-TYPE
        OBJECTS {
                  medGwyGatewayId,
                  medGwyGatewayControllerId
                }
        STATUS  current
        DESCRIPTION "This notification is sent when a gateway is handed off
                    to a different gateway controller either due to a
apparent
                    MGC failure or due to a MGC-enforced condition"
    ::=  { medGwyNotifPrefix 6 }

    medGwyProtocolError NOTIFICATION-TYPE
        OBJECTS {
                  medGwyTerminationId
                }
        STATUS  current
        DESCRIPTION "This notification is sent when a protocol error is
detected
                    in the messages received from the 'configured' gateway
                    controllers"
```

```
    ::=  { medGwyNotifPrefix 7 }

    -- ****************************************************************
    --
```

```
-- Conformance for the MEGACO-MIB
--
-- This object group provides list of groups to be conformed when
-- managing different types of gateways, gateway controllers individually
-- and both simultaneously from one single management entity.
--
-- ****************************************************************

mediaGatewayConformance OBJECT IDENTIFIER ::= { megacoMib 3 }


-- ****************************************************************
--
-- Conformance Object Groups
--
-- There are two object groups
--
-- medGwyCompliances
--   This group includes all the compliance statements (both mandatory
--   and optional statements.
--
-- medGwyConfGroups
--   This group includes all the different groups that form the compliance
--   statements
--
-- ****************************************************************

medGwyCompliances
   OBJECT IDENTIFIER ::= { mediaGatewayConformance 1 }
medGwyConfGroups
   OBJECT IDENTIFIER ::= { mediaGatewayConformance 2 }


-- Compliance

medGwyCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
       "Compliance statement for entities which implement
        the MEGACO-MIB.
       "
    MODULE              -- this module
    MANDATORY-GROUPS
    {
        medGwyConfigGroup,
        medGwyStatsGroup,
    }

    GROUP medGwyGWControllerGroup
```

```
        DESCRIPTION
           "This group is mandatory for all Systems that are gateway
```

```
        controllers and are being managed over a distributed
        environment"

    GROUP medGwyNextIdGroup
    DESCRIPTION
       "This group is not mandatory for all the agent implementations.
        But if this group is not implemented, then the manager is
        responsible for uniquely determining the nextId to be used
        in various listed objects."

    GROUP medGwyNotificationsGroup
    DESCRIPTION
       "This group is mandatory for all the implementations, which .
        are fault tolerant. This group contains all the notifications"

  ::= { medGwyCompliances 1 }


-- Units of Conformance

medGwyConfigGroup OBJECT-GROUP
    OBJECTS
    {
      medGwyGatewayLinkName,
      medGwyGatewayIPAddress,
      medGwyGatewayPort,
      medGwyGatewayEncodingScheme,
      medGwyGatewayProtocol,
      medGwyGatewaySignalingTptProtocol,
      medGwyGatewayAdminStatus,
      medGwyGatewayOperStatus,
      medGwyGatewayLastStatusChange,
      medGwyGatewayResetStatistics
    }
    STATUS current
    DESCRIPTION
       "This group contains of all the configuration Information for a
        Media Gateway. This group is mandatory for any implementation
        managing a media gateway or a group of media gateways"
::= { medGwyConfGroups 1 }

medGwyStatsGroup OBJECT-GROUP
    OBJECTS
    {
      medGwyGatewayNumInMessages,
      medGwyGatewayNumInOctets,
      medGwyGatewayNumOutMessages,
      medGwyGatewayNumOutOctets,
```

```
            medGwyGatewayNumErrors,
            medGwyGatewayNumTimerRecovery,
            medGwyGatewayTransportNumLosses,
```

```
          medGwyGatewayTransportNumSwitchover,
          medGwyGatewayTransportTotalNumAlarms,
          medGwyGatewayTransportLastEvent,
          medGwyGatewayTransportLastEventTime,
          medGwyGatewayLastStatisticsReset
        }
        STATUS current
        DESCRIPTION
           "This group contains of all the statistics Information for a
            Media Gateway. This group is mandatory for any implementation
            managing a media gateway or a group of media gateways"
    ::= { medGwyConfGroups 2 }

    medGwyGWControllerGroup OBJECT-GROUP
        OBJECTS
        {
          medGwyGatewayControllerIPAddress,
          medGwyGatewayControllerPort,
          medGwyGatewayControllerAdminStatus,
          medGwyGatewayControllerOperStatus
        }
        STATUS current
        DESCRIPTION
           "This group contains of all the configuration Information for a
            Media Gateway Controller. This group is mandatory for any
            implementation managing a media gateway controller or a group of
            media gateway controllers. It is also mandatory for
implementations
            managing media gateway(s)"
    ::= { medGwyConfGroups 3 }

    medGwyNextIdGroup OBJECT-GROUP
        OBJECTS
        {
          medGwyNextTerminationId,
          medGwyNextLinkId
        }
        STATUS current
        DESCRIPTION
           "Agent provides NextId's to the Manager to assist in selecting
            and creating new table entries. This group is optional for
            all the implementations. But when it is not implemented, it is
            the manager's responsibility to uniquely determine these ids"
    ::= { medGwyConfGroups 4 }

    medGwyNotificationsGroup NOTIFICATION-GROUP
        NOTIFICATIONS
        {
```

```
            medGwyLinkStatusChange,
            medGwyInvalidControllerAddress,
            medGwyInvalidTerminationId,
            medGwyInvalidPackageElement,
```

```
      medGwyTerminationStatusChange,
      medGwyGatewayHandoff,
      medGwyProtocolError
    }
    STATUS current
    DESCRIPTION
       "This group contains notifications that an entity implementing
        the Media Gateway(s) will send. This group is mandatory for
        all implementations that are managing a media gateway or a group
        of media gateways"
::= { medGwyConfGroups 5 }

END
```

4. Intellectual Property

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5. Normative References

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[RFC2574] Blumenthal, U., and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", RFC 2574, April 1999.

7. Security Considerations

In order to implement this MIB, a probe must capture all packets on the locally-attached network, including packets between third parties. These packets are analyzed to collect network addresses, protocol usage information, and conversation statistics. Data of this nature may be considered sensitive in some environments. In such environments the administrator may wish to restrict SNMP access to the probe.

This MIB also includes functions for returning the contents of captured packets, potentially including sensitive user data or passwords. It is recommended that SNMP access to these functions be restricted.

There are a number of management objects defined in this MIB that have a MAX-

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

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

It is recommended that the implementors consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based

Security Model RFC 2574 [18] and the View- based Access Control Model RFC 2575
[17] is recommended.

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

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