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Internet-Draft   Alcatel-Lucent
Intended status: Standards Track   M. Morgenstern
Expires: August 30, 2007   ECI Telecom Ltd.
                                                     February 26, 2007

Access Node Control Protocol (ANCP) MIB module for Access Nodes
draft-decnodder-ancp-mib-an-01.txt

Status of this Memo

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Abstract

   This memo defines a portion of the Management Information Base (MIB)
   for use with network management protocols. In particular it defines
   objects for managing access nodes as described in [ANCPFW] that are
   using the Access Node Control Protocol (ANCP) defined in [ANCPPR].

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1. Introduction

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   for use with network management protocols. In particular it defines
   objects for managing access nodes as described in [ANCPFW] that are
   using the Access Node Control Protocol defined in [ANCPPR].

2. 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].

3. Conventions

   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 [RFC2119].

4. Overview

   In [ANCPFW], the framework for the Access Node Control Protocol
   (ANCP) is described. It defines 2 network entities, the Access Node
   (AN) and the Network Access Server (NAS), between which ANCP sessions
   are established. The detailed protocol specification of ANCP is
   described in [ANCPPR]. This document specifies a MIB module for an
   AN that supports ANCP.

   Note: the current MIB definition is specific for [ANCPPR]. If
   [ANCPPR] gets updated later, then the MIB definition in this document
   will also follow these changes.

5. Structure of the MIB Module

   The ANCP MIB module for the AN has 3 parts. A first table,

ancpAnSessionConfigTable, is used to configure ANCP sessions at the
AN towards a specific NAS. The NAS is identified by a number of
attributes in this table (ancpAnSessionConfigNasIpAddressType and
ancpAnSessionConfigNasIpAddress). The other attributes in this table
can be used to configure properties that are specific for that
particular ANCP session. A second table, ancpAnCurrentSessionTable,
shows the operational state of a particular ANCP session. Each
session configured in ancpAnSessionConfigTable has a corresponding
row in ancpAnCurrentSessionTable. When a session is configured or
deleted in the ancpAnSessionConfigTable, then the corresponding row
of that session in the ancpAnCurrentSessionTable is, respectively,
automatically created or deleted. A third table is used to assign
interfaces to particular partitions. A row in this table is created
automatically when an interface is created in the ifTable of the IF-
MIB [RFC2863] for which the system supports ANCP.

Four groups are defined:

o ancpAnConfigGroup

   This group contains all objects of the ancpAnSessionConfigTable in
   which the ANCP sessions are configured in the access node.

o ancpAnCurrentGroup

   This group contains all objects of the ancpAnCurrentSessionTable
   where the operational state and other information of the ANCP
   sessions are shown.

o ancpAnInterfaceGroup

   This group contains all objects to configure interfaces to be used
   by ANCP. Assigning interfaces to particular partitions is part of
   this group.

o ancpAnNotificationsGroup

   This group contains the notifications that indicate state changes
   of ANCP sessions.

5.1. Textual Conventions

Two new textual convention, GsmpSubVersion and
AncpAnSessionCapabilities, are defined in this MIB module. The ANCP
specification in [ANCPPR] is re-using the GSMP specification in
[RFC3292] where the GSMP subversion is introduced. These textual
convention complement the textual conventions defined in [RFC3295],

GsmpVersion, GsmpNameType, and GsmpPartitionIdType, which are also
used in this MIB module. These textual conventions are used for the
convenience of humans reading the MIB.

5.2. The ANCP Subtree for the Access Node

   TBD

5.3. The Notifications Subtree

   Notifications are defined to inform the management station about
   state changes of ANCP sessions, whenever an ANCP session changes
   state. Two notifications are defined for this purpose. The
   notification ancpSessionUp is to inform the management station when
   the session comes up, and the notification ancpSessionDown is to
   inform when the ANCP session is down again after it was up before.

   No special measures for congestion avoidance for the notifications
   are needed because the number of ANCP sessions in an access node is
   typically small. In addition, establishing an ANCP session and
   tearing down it again, takes some time such that for a particular
   ANCP session, not many notifications in a short time period can be
   generated.

5.4. Relationship to Other MIB Modules

   There is a dependency with the Interfaces Group MIB (IF-MIB) defined
   in [RFC2863]. The ifIndex defined in the ifTable of IF-MIB is used
   as the index of the ancpAnInterfaceConfigTable defined in the ANCP
   MIB module for access nodes. Each time that an entry is created in
   the ifTable for which the system supports ANCP (e.g., in a DSLAM this
   is typically for each DSL line), a row is created automatically in
   the ancpAnInterfaceConfigTable.

6. ANCP MIB Definitions for the Access Node

ANCP-AN-MIB DEFINITIONS ::= BEGIN

IMPORTS
        MODULE-IDENTITY, OBJECT-TYPE,
        Unsigned32, mib-2, TimeTicks,
        NOTIFICATION-TYPE
            FROM SNMPv2-SMI   -- [RFC2578]
        ZeroBasedCounter32
            FROM RMON2-MIB   -- [RFC4502]
        ifIndex   FROM IF-MIB   -- [RFC2863]
        InetAddressType, InetAddress, InetPortNumber

```
          FROM INET-ADDRESS-MIB                 -- [RFC4001]
      MODULE-COMPLIANCE, OBJECT-GROUP,
      NOTIFICATION-GROUP
          FROM SNMPv2-CONF                      -- [RFC2580]
      GsmpVersion, GsmpNameType, GsmpPartitionIdType
          FROM GSMP-MIB                         -- [RFC3295]
      RowStatus, TEXTUAL-CONVENTION
          FROM SNMPv2-TC;                       -- [RFC2579]

ancpAnMIB MODULE-IDENTITY
      LAST-UPDATED "200702260000Z" -- 26 February 2007
      ORGANIZATION "IETF ANCP Working Group"
      CONTACT-INFO
            " Editors:

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                "
      DESCRIPTION
          "The MIB module for entities implementing the access node
           side of the Access Node Control Protocol (ANCP).

           Copyright (C) The IETF Trust (2007).  The initial version of
           this MIB module was published in RFC yyyy; for full legal
           notices see the RFC itself."
-- RFC Ed.: replace yyyy with actual RFC number & remove this note
      REVISION "200702260000Z" -- 26 February 2007
      DESCRIPTION "Initial version as published in RFC yyyy."
-- RFC Ed.: replace yyyy with actual RFC number & remove this note
      ::= { mib-2 xxx }
-- The value xxx to be assigned by IANA.

ancpNotifications              OBJECT IDENTIFIER ::= { ancpAnMIB 0 }
ancpAnObjects                  OBJECT IDENTIFIER ::= { ancpAnMIB 1 }
ancpAnConformance              OBJECT IDENTIFIER ::= { ancpAnMIB 2 }
```

GsmpSubVersion   ::= TEXTUAL-CONVENTION
        STATUS   current
        DESCRIPTION
              "The subversion numbers defined for the GSMP protocol."
        SYNTAX   Unsigned32

AncpAnSessionCapabilities ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
              "ANCP capabilities supported by the AN.
               The following capabilities are available:
                  topologyDiscovery (0)- Access Topology Discovery
                  lineConfig (1)   - Line Configuration
                  multicast (2)   - Multicast
                  l2Oam (3)   - Layer 2 OAM
               A bit set means the associated capability is supported."
        SYNTAX BITS {
                    topologyDiscovery (0),
                    lineConfig (1),
                    multicast (2),
                    l2Oam (3)
                  }

ancpAnNextSessionId OBJECT-TYPE
        SYNTAX   Unsigned32
        MAX-ACCESS read-only
        STATUS   current
        DESCRIPTION
              "The object reports the next index (potential value of
               ancpAnSessionConfigSessionId) which is available for
               creating a new row in ancpAnSessionConfigTable.
               If no such value is available (e.g., the table is full or
               any other reason) the object reports '0' (zero).
               An available value V becomes unavailable when a row is
               actually created with ancpAnSessionConfigSessionId=V and
               until then consecutive GET commands with this object may
               return the same value V. Note that eventually only one row
               creation with the value V can succeed.
               An unavailable value V becomes available again when a row
               with ancpAnSessionConfigSessionId=V in
               ancpAnSessionConfigTable is deleted."
        ::= { ancpAnObjects 1 }

ancpAnSessionConfigTable OBJECT-TYPE
        SYNTAX SEQUENCE OF AncpAnSessionConfigEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION

```
          "This table represents the ANCP sessions in the access
           node. An entry in this table needs to be configured
           (created) before an ANCP session might be started."
     ::= { ancpAnObjects 2 }

ancpAnSessionConfigEntry OBJECT-TYPE
     SYNTAX     AncpAnSessionConfigEntry
     MAX-ACCESS not-accessible
     STATUS     current
     DESCRIPTION
          "An entry in the table showing the data for a
           specific actual or yet to be established session.
           If partitions are used, one session corresponds to
           one specific access node partition."
     INDEX { ancpAnSessionConfigSessionId }
     ::= { ancpAnSessionConfigTable 1 }

AncpAnSessionConfigEntry ::= SEQUENCE {
     ancpAnSessionConfigSessionId          Unsigned32,
     ancpAnSessionConfigRowStatus          RowStatus,
     ancpAnSessionConfigGsmpVersion        GsmpVersion,
     ancpAnSessionConfigGsmpSubVersion     GsmpSubVersion,
     ancpAnSessionConfigEncapsulationType  INTEGER,
     ancpAnSessionConfigCapabilities       AncpAnSessionCapabilities,
     ancpAnSessionConfigAliveTimer         Unsigned32,
     ancpAnSessionConfigPortReportShaper   Unsigned32,
     ancpAnSessionConfigAggregateReportShaper  Unsigned32,
     ancpAnSessionConfigTransportRetryTimer Unsigned32,
     ancpAnSessionConfigGsmpRetryTimer     Unsigned32,
     ancpAnSessionConfigAnName             GsmpNameType,
     ancpAnSessionConfigPartitionId        GsmpPartitionIdType,
     ancpAnSessionConfigWindowSize         Unsigned32,
     ancpAnSessionConfigNasIpAddressType   InetAddressType,
     ancpAnSessionConfigNasIpAddress       InetAddress,
     ancpAnSessionConfigEncapPortNumber    InetPortNumber
}

ancpAnSessionConfigSessionId OBJECT-TYPE
     SYNTAX     Unsigned32 (1..255)
     MAX-ACCESS not-accessible
     STATUS     current
     DESCRIPTION
          "A system generated index to distinguish between
           different sessions. Session may be actually established
           or just potential."
     ::= { ancpAnSessionConfigEntry 1 }

ancpAnSessionConfigRowStatus OBJECT-TYPE
```

        SYNTAX   RowStatus
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
              "An object that allows entries in this table to
               be created and deleted using the RowStatus convention."
        ::= { ancpAnSessionConfigEntry 2 }

ancpAnSessionConfigGsmpVersion OBJECT-TYPE
        SYNTAX   GsmpVersion
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
              "The maximum version number of the GSMP protocol that
               may be used in this session. The value of this object
               is persistent."
        DEFVAL { 3 }
        ::= { ancpAnSessionConfigEntry 3 }

ancpAnSessionConfigGsmpSubVersion OBJECT-TYPE
        SYNTAX   GsmpSubVersion
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
              "The maximum subversion number of the GSMP protocol that
               may be used in this session. The value of this object
               is persistent."
        DEFVAL { 1 }
        ::= { ancpAnSessionConfigEntry 4 }

ancpAnSessionConfigEncapsulationType OBJECT-TYPE
        SYNTAX INTEGER {
                    tcp(1)
               }
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
              "Required encapsulation for this session. The value of
               this object is persistent."
        DEFVAL { tcp }
        ::= { ancpAnSessionConfigEntry 5 }

ancpAnSessionConfigCapabilities OBJECT-TYPE
        SYNTAX   AncpAnSessionCapabilities
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
              "ANCP capabilities supported by the AN in this session.

```
               When all bits are set to zero then this means that no
               capabilities are supported. The value of this object
               is persistent."
        DEFVAL { { topologyDiscovery, l2Oam } }
        ::= { ancpAnSessionConfigEntry 6 }

ancpAnSessionConfigAliveTimer OBJECT-TYPE
        SYNTAX     Unsigned32(1..255)
        UNITS      "deciseconds"
        MAX-ACCESS read-create
        STATUS     current
        DESCRIPTION
               "The timer specifies the nominal time between periodic
               adjacency protocol messages generated by the access node.
               It is a constant for the duration of a GSMP session. The
               timer is specified in units of 100ms. The value of this
               object is persistent."
        DEFVAL { 100 }
        ::= { ancpAnSessionConfigEntry 7 }

ancpAnSessionConfigPortReportShaper OBJECT-TYPE
        SYNTAX     Unsigned32(1..255)
        UNITS      "deciseconds"
        MAX-ACCESS read-create
        STATUS     current
        DESCRIPTION
               "The timer specifies the nominal time between
               2 EventReport messages related to the same port.
               It is a constant for the duration of a GSMP session.
               The timer is specified in units of 100ms. The value
               of this object is persistent."
        DEFVAL { 10 }
        ::= { ancpAnSessionConfigEntry 8 }

ancpAnSessionConfigAggregateReportShaper OBJECT-TYPE
        SYNTAX     Unsigned32(1..2550)
        UNITS      "centiseconds"
        MAX-ACCESS read-create
        STATUS     current
        DESCRIPTION
               "The timer specifies the nominal time between
               2 EventReport messages related to any port.
               It is a constant for the duration of a GSMP session.
               The timer is specified in units of 10ms. The value
               of this object is persistent."
        DEFVAL { 10 }
        ::= { ancpAnSessionConfigEntry 9 }
```

```
ancpAnSessionConfigTransportRetryTimer OBJECT-TYPE
       SYNTAX     Unsigned32(0..255)
       UNITS      "deciseconds"
       MAX-ACCESS read-create
       STATUS     current
       DESCRIPTION
             "The timer specifies the nominal time between 2 transport
              connection setup attempts done by the access node.
              The transport protocol is specified in
              ancpAnSessionConfigEncapsulationType.
              The timer is specified in units of 100ms.
              A value 0 means that the access node will NOT
              initiate nor setup the transport connection. The
              value of this object is persistent."
       DEFVAL { 10 }
       ::= { ancpAnSessionConfigEntry 10 }

ancpAnSessionConfigGsmpRetryTimer OBJECT-TYPE
       SYNTAX     Unsigned32(0..255)
       UNITS      "deciseconds"
       MAX-ACCESS read-create
       STATUS     current
       DESCRIPTION
             "The timer specifies the nominal time between
              2 ANCP connection setup attempts.
              The timer is specified in units of 100ms.
              A value 0 means that the access node will NOT
              spontaneously trigger an ANCP session.
              Whatever the setting of this timer, the access
              node shall always listen for ANCP session setup.
              The value of this object is persistent."
       DEFVAL { 10 }
       ::= { ancpAnSessionConfigEntry 11 }

ancpAnSessionConfigAnName OBJECT-TYPE
       SYNTAX     GsmpNameType
       MAX-ACCESS read-create
       STATUS     current
       DESCRIPTION
             "The name of the access node. The first three octets must
              be an Organizationally Unique Identifier (OUI) that
              identifies the manufacturer of the access node. This can
              be (one of) the MAC address(es) of the access node on the
              network side.
              It may not change during the ANCP session.
              When set to zero, the access node shall autonomously
              decide on using the most appropriate MAC address of the
              access node. Then the actually used access node name can
```

```
            be read from ancpAnCurrentSessionAnName.
            The value of this object is persistent."
     DEFVAL { '000000000000'H }
     ::= { ancpAnSessionConfigEntry 12 }


ancpAnSessionConfigPartitionId OBJECT-TYPE
     SYNTAX     GsmpPartitionIdType
     MAX-ACCESS read-create
     STATUS     current
     DESCRIPTION
            "The Id for this session's specific access node partition.
            The value of this object is persistent."
     DEFVAL { '00'H }
     ::= { ancpAnSessionConfigEntry 13 }


ancpAnSessionConfigWindowSize OBJECT-TYPE
     SYNTAX     Unsigned32(1..65535)
     MAX-ACCESS read-create
     STATUS     current
     DESCRIPTION
            "The maximum number of unacknowledged request messages
             that may be transmitted by the controller without the
             possibility of loss. This field is used to prevent
             request messages from being lost in the access node
             because of overflow in the receive buffer. The field is
             a hint to the controller. The value of this object is
             persistent."
     DEFVAL { 10 }
     ::= { ancpAnSessionConfigEntry 14 }


ancpAnSessionConfigNasIpAddressType OBJECT-TYPE
     SYNTAX     InetAddressType
     MAX-ACCESS read-create
     STATUS     current
     DESCRIPTION
            "The type of address in ancpAnSessionConfigNasIpAddress.
            The value of this object is persistent."
     ::= { ancpAnSessionConfigEntry 15 }


ancpAnSessionConfigNasIpAddress OBJECT-TYPE
     SYNTAX     InetAddress
     MAX-ACCESS read-create
     STATUS     current
     DESCRIPTION
            "The IP address used for the ANCP session peer (NAS).
            The value of this object is persistent."
     ::= { ancpAnSessionConfigEntry 16 }
```

ancpAnSessionConfigEncapPortNumber OBJECT-TYPE
        SYNTAX   InetPortNumber
        MAX-ACCESS read-create
        STATUS   current
        DESCRIPTION
             "The port number used for the transport protocol
              establishment to the ANCP peer. The value of this
              object is persistent."
        DEFVAL { 6068 }
        ::= { ancpAnSessionConfigEntry 17 }

ancpAnCurrentSessionTable OBJECT-TYPE
        SYNTAX SEQUENCE OF AncpAnCurrentSessionEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
             "This table gives actual information of the sessions
              in the access node.
              A row in this table is created when the corresponding row
              in the ancpAnSessionConfigTable is activated.
              A row in this table is deleted when the corresponding row
              in the ancpAnSessionConfigTable is deleted."
        ::= { ancpAnObjects 3 }

ancpAnCurrentSessionEntry OBJECT-TYPE
        SYNTAX   AncpAnCurrentSessionEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
             "An entry in the table showing the data for a
              specific actual session."
        INDEX { ancpAnSessionConfigSessionId }
        ::= { ancpAnCurrentSessionTable 1 }

AncpAnCurrentSessionEntry ::= SEQUENCE {
        ancpAnCurrentSessionState   INTEGER,
        ancpAnCurrentSessionGsmpVersion   GsmpVersion,
        ancpAnCurrentSessionGsmpSubVersion   GsmpSubVersion,
        ancpAnCurrentSessionAnName   GsmpNameType,
        ancpAnCurrentSessionNasName   GsmpNameType,
        ancpAnCurrentSessionAnIpAddressType   InetAddressType,
        ancpAnCurrentSessionAnIpAddress   InetAddress,
        ancpAnCurrentSessionAnInstance   Unsigned32,
        ancpAnCurrentSessionNasInstance   Unsigned32,
        ancpAnCurrentSessionCapabilities   AncpAnSessionCapabilities,
        ancpAnCurrentSessionStartUptime   TimeTicks,
        ancpAnCurrentSessionDiscontinuityTime   TimeTicks,
        ancpAnCurrentSessionStatSentMessages   ZeroBasedCounter32,

```
        ancpAnCurrentSessionStatReceivedValidMessages ZeroBasedCounter32,
        ancpAnCurrentSessionStatDiscardedMessages     ZeroBasedCounter32
}

ancpAnCurrentSessionState OBJECT-TYPE
      SYNTAX     INTEGER {
                     null(1),
                     synsent(2),
                     synrcvd(3),
                     estab(4)
                 }
      MAX-ACCESS read-only
      STATUS     current
      DESCRIPTION
            "The state of this session.
             The null (1) state is returned if the proper
             encapsulation data is not yet configured, if the row is
             not in active status or if the session is in NULL state
             as defined in the GSMP specification."
      ::= { ancpAnCurrentSessionEntry 1 }

ancpAnCurrentSessionGsmpVersion OBJECT-TYPE
      SYNTAX     GsmpVersion
      MAX-ACCESS read-only
      STATUS     current
      DESCRIPTION
            "The actual version number of the GSMP protocol that
             is used in this session.
             This object has value 0 if ancpAnCurrentSessionState is
             not estab(4)."
      ::= { ancpAnCurrentSessionEntry 2 }

ancpAnCurrentSessionGsmpSubVersion OBJECT-TYPE
      SYNTAX     GsmpSubVersion
      MAX-ACCESS read-only
      STATUS     current
      DESCRIPTION
            "The actual subversion number of the GSMP protocol that
             may be used in this session.
             This object has value 0 if ancpAnCurrentSessionState is
             not estab(4)."
      ::= { ancpAnCurrentSessionEntry 3 }

ancpAnCurrentSessionAnName OBJECT-TYPE
      SYNTAX     GsmpNameType
      MAX-ACCESS read-only
      STATUS     current
      DESCRIPTION
```

```
             "The name of the access node used in this session.
              It should be the same as ancpAnSessionConfigAnName.
              The value of this object is used as value for the
              'Sender Name' field in the header of the ANCP messages
              generated for this session by the AN."
        ::= { ancpAnCurrentSessionEntry 4 }


ancpAnCurrentSessionNasName OBJECT-TYPE
        SYNTAX      GsmpNameType
        MAX-ACCESS read-only
        STATUS      current
        DESCRIPTION
             "The name of the NAS as advertised in the adjacency
              message.
              The value of this object is set to the value of the
              'Sender Name' field in the header of the ANCP messages
              received on this session.  This object has value 0 if
              ancpAnCurrentSessionState is not estab(4)."
        ::= { ancpAnCurrentSessionEntry 5 }


ancpAnCurrentSessionAnIpAddressType OBJECT-TYPE
        SYNTAX      InetAddressType
        MAX-ACCESS read-only
        STATUS      current
        DESCRIPTION
             "The type of address in ancpAnCurrentSessionAnIpAddress."
        ::= { ancpAnCurrentSessionEntry 6 }


ancpAnCurrentSessionAnIpAddress OBJECT-TYPE
        SYNTAX      InetAddress
        MAX-ACCESS read-only
        STATUS      current
        DESCRIPTION
             "The IP address used for the access node."
        ::= { ancpAnCurrentSessionEntry 7 }


ancpAnCurrentSessionAnInstance OBJECT-TYPE
        SYNTAX      Unsigned32(0..16777215)
        MAX-ACCESS read-only
        STATUS      current
        DESCRIPTION
             "The instance number used by the access node during this
              session. The Instance number is a 24-bit number
              that should be guaranteed to be unique within
              the recent past and to change when the link
              or node comes back up after going down. Zero is
              not a valid instance number.
              This object has value 0 if ancpAnCurrentSessionState is
```

```
                not estab(4)."
        ::= { ancpAnCurrentSessionEntry 8 }


ancpAnCurrentSessionNasInstance OBJECT-TYPE
        SYNTAX     Unsigned32(0..16777215)
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The instance number used by the NAS during this
                 session. The Instance number is a 24-bit number
                 that should be guaranteed to be unique within
                 the recent past and to change when the link
                 or node comes back up after going down.
                 This object has value 0 if ancpAnCurrentSessionState is
                 not estab(4)."
        ::= { ancpAnCurrentSessionEntry 9 }


ancpAnCurrentSessionCapabilities OBJECT-TYPE
        SYNTAX     AncpAnSessionCapabilities
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The common ANCP capabilities supported by the AN and
                 NAS in this session.
                 The object has the value 0 if no capabilities are
                 supported
                 or if ancpAnCurrentSessionState is not estab(4)."
        ::= { ancpAnCurrentSessionEntry 10 }


ancpAnCurrentSessionStartUptime OBJECT-TYPE
        SYNTAX     TimeTicks
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The value of sysUpTime when the session came to
                 established state.
                 This object has value 0 if ancpAnCurrentSessionState is
                 not estab(4)."
        ::= { ancpAnCurrentSessionEntry 11 }


ancpAnCurrentSessionDiscontinuityTime OBJECT-TYPE
        SYNTAX     TimeTicks
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
                "The value of sysUpTime on the most recent occasion at
                 which session's counters suffered a discontinuity.
                 If no such discontinuities have occurred since then,
```

```
                  this object contains the same value as
                  ancpAnCurrentSessionStartUptime."
          ::= { ancpAnCurrentSessionEntry 12 }


ancpAnCurrentSessionStatSentMessages OBJECT-TYPE
        SYNTAX     ZeroBasedCounter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of messages that have been sent in this session
               by the access node.
               All ANCP messages pertaining to this session after
               the session came to established state shall
               be counted, also including adjacency protocol messages
               and failure response messages.
               Discontinuities of this counter are indicated by
               ancpAnCurrentSessionDiscontinuityTime."
          ::= { ancpAnCurrentSessionEntry 13 }


ancpAnCurrentSessionStatReceivedValidMessages OBJECT-TYPE
        SYNTAX     ZeroBasedCounter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of messages that have been received and
               processed in this session by the access node.
               All ANCP messages pertaining to this session after
               the session came to established state shall
               be counted, also including adjacency protocol messages
               and failure response messages.
               Discontinuities of this counter are indicated by
               ancpAnCurrentSessionDiscontinuityTime."
          ::= { ancpAnCurrentSessionEntry 14 }


ancpAnCurrentSessionStatDiscardedMessages OBJECT-TYPE
        SYNTAX     ZeroBasedCounter32
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of messages that in this session have been
               received and discarded for whatever reason by the access
               node.
               All ANCP messages pertaining to this session after
               the session came to established state shall
               be counted, also including adjacency protocol messages
               and failure response messages.
               Discontinuities of this counter are indicated by
               ancpAnCurrentSessionDiscontinuityTime."
```

         ::= { ancpAnCurrentSessionEntry 15 }

--
-- Partitions
--

ancpAnInterfaceDefaultPartitionId OBJECT-TYPE
        SYNTAX   GsmpPartitionIdType
        MAX-ACCESS read-write
        STATUS   current
        DESCRIPTION
               "This object allows the manager control the default value
                for the ancpAnInterfaceConfigPartitionId object in
                ancpAnInterfaceConfigTable. The value of this object is
                persistent."
        DEFVAL { "0" }
        ::= { ancpAnObjects 4 }

ancpAnInterfaceConfigTable OBJECT-TYPE
        SYNTAX SEQUENCE OF AncpAnInterfaceConfigEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
               "This table configures the association of user facing
                interfaces to ANCP partitions in the access node.
                An entry in this table needs to be added by the agent
                for each relevant user facing interface with the value
                of ancpAnInterfaceConfigPartitionId set to
                the value of ancpAnInterfaceDefaultPartitionId at the
                time of the creation of the row. A relevant user facing
                interface is created whenever a row is created in the
                ifTable of the IF-MIB that can be controlled by ANCP.
                When such an interface is deleted from the ifTable, the
                corresponding row in this table has to be removed by the
                agent.
                A manager is allowed to change the value of
                ancpAnInterfaceConfigPartitionId after the row has been
                created."
        ::= { ancpAnObjects 5 }

ancpAnInterfaceConfigEntry OBJECT-TYPE
        SYNTAX   AncpAnInterfaceConfigEntry
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
               "An entry in the table showing the partition id for a
                specific user facing interface"
        INDEX { ifIndex }

```
        ::= { ancpAnInterfaceConfigTable 1 }

AncpAnInterfaceConfigEntry ::= SEQUENCE {
        ancpAnInterfaceConfigPartitionId        GsmpPartitionIdType
}

ancpAnInterfaceConfigPartitionId OBJECT-TYPE
        SYNTAX     GsmpPartitionIdType
        MAX-ACCESS read-write
        STATUS     current
        DESCRIPTION
              "A partition Id associated with the related ifIndex.
               Upon creation of the row, the value is set to
               ancpAnInterfaceDefaultPartitionId.  The value of this
               object is persistent."
        ::= { ancpAnInterfaceConfigEntry 1 }

--
-- Notifications
--


ancpSessionDown NOTIFICATION-TYPE
        OBJECTS {
                    ancpAnCurrentSessionAnIpAddressType,
                    ancpAnCurrentSessionAnIpAddress,
                    ancpAnSessionConfigNasIpAddressType,
                    ancpAnSessionConfigNasIpAddress,
                    ancpAnCurrentSessionAnInstance,
                    ancpAnCurrentSessionNasInstance,
                    ancpAnCurrentSessionStartUptime,
                    ancpAnCurrentSessionStatSentMessages,
                    ancpAnCurrentSessionStatReceivedValidMessages,
                    ancpAnCurrentSessionStatDiscardedMessages
                 }
        STATUS current
        DESCRIPTION
              "This notification is generated whenever an ANCP session
               goes down.  A session can go down for several reasons:
               1) The ANCP session can be deleted by a manager from the
                  ancpAnSessionConfigTable, and hence it will also be
                  removed from the ancpAnCurrentSessionTable.
               2) The session can go operational down due to some
                  malfunction in the network, the AN, or the NAS.  In
                  this case, the ANCP session will be still in the
                  ancpAnSessionConfigTable and ancpAnCurrentSessionTable,
                  but the ancpAnCurrentSessionState moves from the estab
                  state to another state."
```

```
        ::= { ancpNotifications 1 }


ancpSessionUp NOTIFICATION-TYPE
        OBJECTS {
                    ancpAnCurrentSessionAnInstance
                  }
        STATUS current
        DESCRIPTION
            "This notification is generated when an ANCP session enters
             the estab state as given by ancpAnCurrentSessionState.
             Since ancpAnCurrentSessionAnInstance identifies the ANCP
             session uniquely the other attributes can be derived from
             this attribute."
        ::= { ancpNotifications 2 }



--
-- ANCP AN Compliance
--


ancpAnGroups            OBJECT IDENTIFIER ::= { ancpAnConformance 1 }
ancpAnCompliances       OBJECT IDENTIFIER ::= { ancpAnConformance 2 }

ancpAnModuleCompliance MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
            "The compliance statement for agents that support
             the ANCP MIB module for access nodes."
        MODULE -- this module
        MANDATORY-GROUPS {
                          ancpAnConfigGroup,
                          ancpAnCurrentGroup,
                          ancpAnInterfaceGroup,
                          ancpAnNotificationsGroup
                        }
        ::= { ancpAnCompliances 1 }

-- units of conformance

ancpAnConfigGroup OBJECT-GROUP
        OBJECTS {
                  ancpAnNextSessionId,
                  ancpAnSessionConfigRowStatus,
                  ancpAnSessionConfigGsmpVersion,
                  ancpAnSessionConfigGsmpSubVersion,
                  ancpAnSessionConfigEncapsulationType,
                  ancpAnSessionConfigCapabilities,
```

```
                   ancpAnSessionConfigAliveTimer,
                   ancpAnSessionConfigPortReportShaper,
                   ancpAnSessionConfigAggregateReportShaper,
                   ancpAnSessionConfigTransportRetryTimer,
                   ancpAnSessionConfigGsmpRetryTimer,
                   ancpAnSessionConfigAnName,
                   ancpAnSessionConfigPartitionId,
                   ancpAnSessionConfigWindowSize,
                   ancpAnSessionConfigNasIpAddressType,
                   ancpAnSessionConfigNasIpAddress,
                   ancpAnSessionConfigEncapPortNumber
                 }
        STATUS current
        DESCRIPTION
              "These objects apply to the configuration of ANCP
               sessions in access nodes."
        ::= { ancpAnGroups 1 }

ancpAnCurrentGroup OBJECT-GROUP
        OBJECTS {
                   ancpAnCurrentSessionState,
                   ancpAnCurrentSessionGsmpVersion,
                   ancpAnCurrentSessionGsmpSubVersion,
                   ancpAnCurrentSessionAnName,
                   ancpAnCurrentSessionNasName,
                   ancpAnCurrentSessionAnIpAddressType,
                   ancpAnCurrentSessionAnIpAddress,
                   ancpAnCurrentSessionAnInstance,
                   ancpAnCurrentSessionNasInstance,
                   ancpAnCurrentSessionCapabilities,
                   ancpAnCurrentSessionStartUptime,
                   ancpAnCurrentSessionDiscontinuityTime,
                   ancpAnCurrentSessionStatSentMessages,
                   ancpAnCurrentSessionStatReceivedValidMessages,
                   ancpAnCurrentSessionStatDiscardedMessages
                 }
        STATUS current
        DESCRIPTION
              "These objects show the operational state of all ANCP
               sessions configured in the access node."
        ::= { ancpAnGroups 2 }

ancpAnInterfaceGroup OBJECT-GROUP
        OBJECTS {
                   ancpAnInterfaceDefaultPartitionId,
                   ancpAnInterfaceConfigPartitionId
                 }
        STATUS current
```

```
        DESCRIPTION
              "These objects are used to assign user facing interface to
               partitions."
        ::= { ancpAnGroups 3 }

ancpAnNotificationsGroup NOTIFICATION-GROUP
        NOTIFICATIONS {
                        ancpSessionDown,
                        ancpSessionUp
                      }
        STATUS current
        DESCRIPTION
              "These notifications inform management stations about
               changes in the state of ANCP sessions."
        ::= { ancpAnGroups 4 }

END
```

7. Security Considerations

There are a number of management objects defined in this MIB module
with 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. This is the table and these are the objects and
their sensitivity/vulnerability:

o ancpAnSessionConfigTable

   The table consists of the following objects that support SET
   operations:

   * ancpAnSessionConfigRowStatus
   * ancpAnSessionConfigGsmpVersion
   * ancpAnSessionConfigGsmpSubVersion
   * ancpAnSessionConfigEncapsulationType
   * ancpAnSessionConfigCapabilities
   * ancpAnSessionConfigAliveTimer
   * ancpAnSessionConfigPortReportShaper
   * ancpAnSessionConfigAggregateReportShaper
   * ancpAnSessionConfigTransportRetryTimer
   * ancpAnSessionConfigGsmpRetryTimer
   * ancpAnSessionConfigAnName
   * ancpAnSessionConfigPartitionId

   *   ancpAnSessionConfigWindowSize
   *   ancpAnSessionConfigNasIpAddressType
   *   ancpAnSessionConfigNasIpAddress
   *   ancpAnSessionConfigEncapPortNumber

   Unauthorized changes to ancpAnSessionConfigRowStatus could result
   in session being created or brought into service prematurely; or
   could result in session being inadvertently deleted or taken out
   of service.

   Unauthorized changes to ancpAnSessionConfigGsmpVersion or
   ancpAnSessionConfigGsmpSubVersion could have an adverse
   operational effect by limiting the GSMP version to be used in the
   context of this session or enabling a GSMP version number that is
   actually unsupported by the access node.

   Unauthorized changes to ancpAnSessionConfigEncapsulationType could
   have an adverse operational effect by configuring the session to
   use an undesired or even unsupported protocol.

   Unauthorized changes to ancpAnSessionConfigCapabilities could have
   an adverse operational effect by disabling certain ANCP
   capabilities that the operator assumed that are enabled, or enable
   a capability that the operator would not like to activate.

   Unauthorized changes to ancpAnSessionConfigAliveTimer could have
   an adverse operational effect by increasing the frequency of
   adjacency protocol messages generated by the access node and
   leading to an overload of such messages. Decreasing the frequency
   of such messages may harm the synchronization between the access
   node and the NAS.

   Unauthorized changes to ancpAnSessionConfigPortReportShaper or
   ancpAnSessionConfigAggregateReportShaper could have an adverse
   operational effect by increasing the frequency of Event Report
   messages generated by the access node and leading to an overload
   of such messages. Decreasing the frequency of such messages may
   delay the responsivness of the system to events associated with
   one or more ports.

   Unauthorized changes to ancpAnSessionConfigTransportRetryTimer
   could have an adverse operational effect by increasing the
   frequency of transport connection setup attempts initiated by the
   access node or even unexpectedly enabling the access node to
   initiate the transport connection setup when that supposed to be
   disabled. Alternatively, when the operator basically planned
   transport connection setup attempts by the access node
   unauthorized changes to the attribute may cause unexpected low

frequency of such attepts or unexpectedly disable those attempts.

Unauthorized changes to ancpAnSessionConfigGsmpRetryTimer could
have an adverse operational effect by increasing the frequency of
ANCP onnection setup attempts initiated by the access node or even
unexpectedly enabling the access node to initiate the ANCP
connection setup when that supposed to be disabled.
Alternatively, when the operator basically planned ANCP connection
setup attempts by the access node unauthorized changes to the
attribute may cause unexpected low frequency of such attepts or
unexpectedly disable those attempts.

Unauthorized changes to ancpAnSessionConfigAnName could confuse
the NAS, e.g., by detecting the same name from multiple access
nodes. This may also override the operator's will to allow/avoid
the access node to autonomously determine its name.

Unauthorized changes to ancpAnSessionConfigPartitionId could mean
that partitions are used when actually they are not, or vice
versa. It could also al least specify a different partition ID
than the one actually associated with the session.

Unauthorized changes to ancpAnSessionConfigWindowSize are not
directly harmfull. However, if the controller adopts the
suggested wrong window size it may either cause the controller to
send too many messages in a window or unnecessarily limit itself
and that could reduce the system performance.

Unauthorized changes to ancpAnSessionConfigNasIpAddressType and/or
ancpAnSessionConfigNasIpAddress and/or
ancpAnSessionConfigEncapPortNumber could produce a wrong address
type (interpretation) and/or IP address for the NAS and/or specify
a wrong transport protocol port number for the session,
respectively.

Some of the readable objects in this MIB module (i.e., objects with a
MAX-ACCESS other than not-accessible) may be considered sensitive or
vulnerable in some network environments. It is thus important to
control even GET and/or NOTIFY access to these objects and possibly
to even encrypt the values of these objects when sending them over
the network via SNMP. This is the table and these are the objects
and their sensitivity/vulnerability:

o ancpAnCurrentSessionTable

   Access to these objects would allow an intruder to obtain
   information about which vendor's equipment is in use on the

network. Further, such information is considered sensitive in
many environments for competitive reasons.

   *   ancpAnCurrentSessionState
   *   ancpAnCurrentSessionGsmpVersion
   *   ancpAnCurrentSessionGsmpSubVersion
   *   ancpAnCurrentSessionAnName
   *   ancpAnCurrentSessionNasName
   *   ancpAnCurrentSessionAnIpAddressType
   *   ancpAnCurrentSessionAnIpAddress
   *   ancpAnCurrentSessionAnInstance
   *   ancpAnCurrentSessionNasInstance
   *   ancpAnCurrentSessionCapabilities
   *   ancpAnCurrentSessionStartUptime
   *   ancpAnCurrentSessionDiscontinuityTime
   *   ancpAnCurrentSessionStatSentMessages
   *   ancpAnCurrentSessionStatReceivedValidMessages
   *   ancpAnCurrentSessionStatDiscardedMessages

SNMP versions prior to SNMPv3 did not include adequate security.
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 module.

It is RECOMMENDED that implementers consider the security features as
provided by the SNMPv3 framework (see [RFC3410], Section 8),
including full support for the SNMPv3 cryptographic mechanisms (for
authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT
RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to
enable cryptographic security. It is then a customer/operator
responsibility to ensure that the SNMP entity giving access to an
instance of this MIB module 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.

8. IANA considerations

IANA is requested to assign an OID xxx under mib-2.

9. Acknowledgements

The authors would like to thank Paul Reynders and Bert Wijnen for
their feedback.

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