Access Node Control Protocol (ANCP) MIB module for Access Nodes
draft-ietf-ancp-mib-an-12.txt

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 that are using the Access Node Control Protocol (ANCP).

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1. Introduction

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 [RFC5851] that are using the Access Node Control Protocol defined in [RFC6320].

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 MIB modules that is compliant to the SMIPv2, 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 [RFC5851], 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 [RFC6320]. This document specifies a MIB module for an AN that supports ANCP, and a MIB module that defines textual conventions.

This document specifies MIB modules for an AN as defined in [RFC6320], and any protocol extensions not defined in [RFC6320] are not covered by this document. Also MIB modules for a NAS are not covered by this document.

5. Structure of the MIB Module

5.1. Textual Conventions

New textual conventions, AncpSessionCapabilities, AncpVersion, AncpName, and AncpPartitionId are defined in a separate MIB module in this document. These textual conventions are used for the convenience of humans reading the MIB.

5.2. The ANCP MIB module Subtree

ANCP-TC-MIB is the first MIB module defined in this document, and it is put under mib-2. Also the second MIB module defined in this document, ANCP-AN-MIB is put under mib-2.

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 ancpAnSessionUp is to inform the management station when the session comes up, and the notification ancpAnSessionDown is to inform when the ANCP session is down again after it was up before.

Attributes are introduced to enable and disable the generation of these notifications per ANCP session. No other 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. The Table Structures

The ANCP MIB module for the AN has 3 tables. The tables are the following:

- **ancpAnSessionConfigTable**

  This table 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. The interface to which the ANCP session is bound is also configured in this table. This interface can be an IP interface, an ATM PVC, a VLAN (or VLAN stack), or any other interface defined in IF-MIB.

- **ancpAnCurrentSessionTable**

  This table shows the operational state of a particular ANCP session, as well as the actual values of various parameters associated with it. The table also provides statistical information collected for each 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.

- **ancpAnInterfaceConfigTable**

  This table is used to assign interfaces to particular partitions if partitions are being used as indicated by the scalar ancpAnPartitionsUsed. When partitions are used, a row in this table is created automatically when a user facing interface for which the system supports ANCP is created in the ifTable of the IF-MIB [RFC2863].

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 in case partitions are used.

o  ancpAnNotificationsGroup

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

6.  Relationship to Other MIB Modules

6.1.  Relationship to the Interfaces Group MIB module

    There is a dependency between the ANCP MIB module and 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 if partitions are being used.

6.2.  MIB modules required for IMPORTS

    The ANCP TC MIB module requires the following MIB modules for IMPORTS:
The ANCP MIB module for access nodes requires the following MIB modules for IMPORTS:

- SNMPv2-SMI defined in [RFC2578]
- SNMPv2-TC defined in [RFC2579]
- RMON2-MIB defined in [RFC4502]
- IF-MIB defined in [RFC2863]
- INET-ADDRESS-MIB defined in [RFC4001]
- SNMPv2-CONF defined in [RFC2580]
- SNMPv2-TC defined in [RFC2579]
- Q-BRIDGE-MIB defined in [RFC4363]
- ANCP-TC-MIB defined in this document

7. ANCP MIB Definitions for the Access Node

ANCP-TC-MIB DEFINITIONS ::= BEGIN

IMPORTS
MODULE-IDENTITY, mib-2, Unsigned32
FROM SNMPv2-SMI
FROM SNMPv2-TC; -- RFC2578

TEXTUAL-CONVENTION
FROM SNMPv2-TC; -- RFC2579

ancpTcMIB MODULE-IDENTITY
LAST-UPDATED "201306240000Z" -- 24 June 2013
ORGANIZATION "IETF ANCP Working Group"
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This MIB module provides Textual Conventions to be used by MIB modules for AN and NAS that are implementing the Access Node Control Protocol (ANCP).

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DESCRIPTION
"Initial version as published in RFC yyyy."

AncpSessionCapabilities ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
"ANCP capabilities supported by the AN.
The following capabilities are available:
dslTopologyDiscovery (1) - Access Topology Discovery
dslLineConfiguration (2) - Line Configuration
dslLineTesting (4) - Layer 2 OAM
A bit set means the associated capability is supported."
SYNTAX BITS {
    dslTopologyDiscovery (1),
    dslLineConfiguration (2),
    dslLineTesting (4)
}

AncpVersion ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION
"The version numbers defined for the ANCP protocol.
The version numbers used are defined in the specifications of the respective protocol."
Version 50 is defined in [RFC6320]. Other numbers may be defined for other versions of the ANCP protocol.

SYNTAX Unsigned32

AncpPartitionId ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION "A 8-bit value identifying a partition on the AN."
SYNTAX OCTET STRING (SIZE(1))

AncpName ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION "The Name is a 48-bit quantity. A 48-bit IEEE 802 MAC address, if available, may be used."
SYNTAX OCTET STRING (SIZE(6))

ANCP-AN-MIB DEFINITIONS ::= BEGIN

IMPORTS
MODULE-IDENTITY, OBJECT-TYPE,
Unsigned32, TimeTicks, zeroDotZero,
NOTIFICATION-TYPE, mib-2
FROM SNMPv2-SMI -- RFC2578
ZeroBasedCounter32
FROM RMON2-MIB -- RFC4502
InterfaceIndex, ifIndex FROM IF-MIB -- RFC2863
InetAddressType, InetAddress, InetPortNumber
FROM INET-ADDRESS-MIB -- RFC4001
MODULE-COMPLIANCE, OBJECT-GROUP,
NOTIFICATION-GROUP
FROM SNMPv2-CONF -- RFC2580
RowStatus, TruthValue, RowPointer
FROM SNMPv2-TC -- RFC2579
VlanIdOrNone
FROM Q-BRIDGE-MIB -- RFC4363
AncpSessionCapabilities, AncpVersion,
AncpPartitionId, AncpName
FROM ANCP-TC-MIB; -- This document

anCpAnMIB MODULE-IDENTITY
LAST-UPDATED "201306240000Z" -- 24 June 2013
ORGANIZATION "IETF ANCP Working Group"
CONTACT-INFO
"Editors:
DESCRIPTION

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

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-- RFC Ed.: replace yyyy with actual RFC number and remove this note
REVISION "201306240000Z" -- 24 June 2013
DESCRIPTION "Initial version as published in RFC yyyy."
-- RFC Ed.: replace yyyy with actual RFC number and remove this note
::= { mib-2 xxx }
-- The value xxx to be assigned by IANA.

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

--
-- Global ANCP Control Parameters
--
-- The following scalar parameters globally control the behavior
-- of the ANCP implementation
--

ancpAnPartitionsUsed OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION "This object allows the manager to specify whether or
not to use the ‘Partition ID’ field in the ANCP message header. When set to ‘false’ the application does not use partitions and the ancpAnSessionConfigPartitionId object MUST be zero for all sessions. In addition, rows SHOULD NOT be created in the ancpAnInterfaceConfigTable. When set to ‘true’ the application uses partitions and the ancpAnSessionConfigPartitionId object MUST be set, for every session, to a nonzero value. In such a case, rows are created in ancpAnInterfaceConfigTable. The default value zero in ancpAnInterfaceConfigPartitionId object means that the operator did not associate the interface with a particular partition. Note that modifying the value of this object is restricted. E.g., prior to setting it from ‘true’ to ‘false’ ancpAnSessionConfigRowStatus objects for all sessions should be set to notInService and the partition ID value MUST be set to zero.

The value of this object is persistent.

DEFVAL { false } 
 ::= { ancpAnObjects 1 }

--
-- Configuration of ANCP Sessions
--

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 2 }

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 3 }

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,
  ancpAnSessionConfigAncpVersion        AncpVersion,
  ancpAnSessionConfigEncapsulationType  INTEGER,
  ancpAnSessionConfigCapabilities       AncpSessionCapabilities,
  ancpAnSessionConfigAliveTimer         Unsigned32,
  ancpAnSessionConfigPortReportShaper   Unsigned32,
  ancpAnSessionConfigAggregateReportShaper  Unsigned32,
  ancpAnSessionConfigTransportRetryTimer Unsigned32,
  ancpAnSessionConfigAnpRetryTimer      Unsigned32,
  ancpAnSessionConfigAnName             AncpName,
  ancpAnSessionConfigPartitionId        AncpPartitionId,
  ancpAnSessionConfigWindowSize         Unsigned32,
  ancpAnSessionConfigRelatedInterface   InterfaceIndex,
  ancpAnSessionConfigRelatedEntity      RowPointer,
  ancpAnSessionConfigSvid               VlanIdOrNone,
  ancpAnSessionConfigSPrio              Unsigned32,
  ancpAnSessionConfigCvid               VlanIdOrNone,
  ancpAnSessionConfigCPrio              Unsigned32,
  ancpAnSessionConfigNasIpAddressType   InetAddressType,
  ancpAnSessionConfigNasIpAddress       InetAddress,
  ancpAnSessionConfigEncapPortNumber    InetPortNumber,
  ancpAnSessionConfigNotifyDnEnable     TruthValue,
  ancpAnSessionConfigNotifyUpEnable     TruthValue
}

ancpAnSessionConfigSessionId OBJECT-TYPE
SYNTAX  Unsigned32 (1..255)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"An index of a session referred by this row. The index is unique across all partitions. The referred session may be actually established or just potential. Prior to creating a row in the table it is advised to check the ancpAnNextSessionId for an available index."
::= { 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, modified and deleted using the RowStatus convention. A SET operation to any other attribute in this row, when this object is set to ‘active’ (1), MUST be rejected with an SNMP error (e.g., inconsistentValue). In order to perform a SET operation to any other attribute in this table the manager MUST set this object to notInService (2). After setting the object back to ‘active’ the implementation MAY tear down the session and recreate it, depending on what session attributes have been modified."
::= { ancpAnSessionConfigEntry 2 }

ancpAnSessionConfigAncpVersion OBJECT-TYPE
SYNTAX AncpVersion
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The maximum version number of the ANCP protocol that may be used in this session. The value of this object is persistent."
DEFVAL { 50 }
::= { ancpAnSessionConfigEntry 3 }

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 4 }

ancpAnSessionConfigCapabilities OBJECT-TYPE
SYNTAX AncpSessionCapabilities
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 { { dslTopologyDiscovery, dslLineTesting } }
::= { ancpAnSessionConfigEntry 5 }

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 an ANCP session.
The timer is specified in units of 100ms. The value
of this object is persistent."
DEFVAL { 250 }
::= { ancpAnSessionConfigEntry 6 }

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 ANCP session.
The timer is specified in units of 100ms. The value
of this object is persistent."
DEFVAL { 10 }
::= { ancpAnSessionConfigEntry 7 }

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 ANCP session.
  The timer is specified in units of 10ms. The value
  of this object is persistent."
DEFVAL { 10 }
::= { ancpAnSessionConfigEntry 8 }

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 9 }

ancpAnSessionConfigAncpRetryTimer 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 10 }

ancpAnSessionConfigAnName OBJECT-TYPE
SYNTAX AncpName
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 object can be (one of) the MAC address(es) of the access node on the network side. 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 11 }

ancpAnSessionConfigPartitionId OBJECT-TYPE
SYNTAX AncpPartitionId
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The Id for this session’s specific access node partition. This object has a meaning only if partitions are used (ancpAnPartitionsUsed='true') and is ignored otherwise. The value of this object is persistent."
DEFVAL { '00'H }
::= { ancpAnSessionConfigEntry 12 }

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 13 }

ancpAnSessionConfigRelatedInterface OBJECT-TYPE
SYNTAX InterfaceIndex
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This object contains the value of an ifIndex object, defined in IF-MIB, indicating an interface corresponding to this session. The corresponding interface might be either physical or logical (e.g., IP Interface). The value of this object is persistent."
 ::= { ancpAnSessionConfigEntry 14 }

ancpAnSessionConfigRelatedEntity OBJECT-TYPE
SYNTAX      RowPointer
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This object contains the name of an object instance uniquely identifying a lower layer entity associated with this session. For example, in the case where the session is associated with an ATM VCC, this object might be set to an object identifier uniquely identifying that VCC (e.g., an object instance in atmVciTable). If unused, this object MUST have the value zeroDotZero. The value of this object is persistent."
DEFVAL { zeroDotZero } ::= { ancpAnSessionConfigEntry 15 }

ancpAnSessionConfigSvid OBJECT-TYPE
SYNTAX      VlanIdOrNone
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "If the session is associated with a single VLAN, this object contains the VLAN ID of the single VLAN tag. If ancpAnSessionConfigCvid is also nonzero then the session is associated with two VLAN tags, S-VLAN tag and C-VLAN tag, then this object contains the VLAN ID of the S-VLAN tag (the outer VLAN tag). In both cases the value of this object SHOULD be nonzero.
If the session is not associated with any VLAN, this object MUST have the default value 0. The value of this object is persistent."
DEFVAL       { 0 } ::= { ancpAnSessionConfigEntry 16 }

ancpAnSessionConfigSPrio OBJECT-TYPE
SYNTAX      Unsigned32(0..7 | 65535)
MAX-ACCESS  read-create
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STATUS      current
DESCRIPTION
"If the session is associated with a single VLAN, this
object contains the priority value of the single VLAN
tag.
If ancpAnSessionConfigCvid is also nonzero then the
session is associated with two VLAN tags, S-VLAN tag
and C-VLAN tag, then this object contains the priority
value of the S-VLAN tag (the priority value of the
outer VLAN tag). In both cases the value of this object
SHOULD be in the range 0 to 7 inclusive.
If the session is not associated with any VLAN, this
object MUST have the default value 65535.
The value of this object is persistent."
DEFVAL       { 65535 }
::= { ancpAnSessionConfigEntry 17 }

ancpAnSessionConfigCvid OBJECT-TYPE
SYNTAX      VlanIdOrNone
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"If the session is associated with two VLANs, has both
S-VLAN tag and C-VLAN tag, this object contains the
VLAN ID of the inner VLAN tag (also called C-VLAN ID).
In such a case the value of this object SHOULD be
nonzero.
If the session is not associated with any VLAN or if it
is associated with a single VLAN, this object MUST
have the default value 0.
The value of this object is persistent."
DEFVAL       { 0 }
::= { ancpAnSessionConfigEntry 18 }

ancpAnSessionConfigCPrio OBJECT-TYPE
SYNTAX      Unsigned32(0..7 | 65535)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"If the session is associated with two VLANs, has both
S-VLAN tag and C-VLAN tag, this object contains the
priority value of the inner VLAN tag (also called
C-VLAN priority). In such a case the value of this
object SHOULD be in the range 0 to 7 inclusive.
If the session is not associated with any VLAN or if it
is associated with a single VLAN, this object MUST have
the default value 65535.
The value of this object is persistent."
DEFVAL { 65535 }
::= { ancpAnSessionConfigEntry 19 }

ancpAnSessionConfigNasIpAddressType OBJECT-TYPE
SYNTAX  InetAddressType { ipv4(1), ipv6(2) }
MAX-ACCESS read-create
STATUS    current
DESCRIPTION
"The type of address in ancpAnSessionConfigNasIpAddress.
The value of this object is persistent.
Note that although other types of addresses are defined
in the InetAddressType textual convention, this object
is limited to IPv4 and IPv6 addresses."
::= { ancpAnSessionConfigEntry 20 }

ancpAnSessionConfigNasIpAddress OBJECT-TYPE
SYNTAX     InetAddress
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"The IP address used for the ANCP session peer (NAS).
The type of this IP address attribute is determined
by the value of ancpAnSessionConfigNasIpAddressType.
The value of this object is persistent."
::= { ancpAnSessionConfigEntry 21 }

ancpAnSessionConfigEncapPortNumber OBJECT-TYPE
SYNTAX     InetPortNumber (1..65535)
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"The port number used for the transport protocol
establishment to the ANCP peer. The transport
protocol type is specified by
ancpAnSessionConfigEncapsulationType and as
it is set by default to 'tcp' then the default
port number is set to 6068 (see details in
http://www.iana.org/). Other port numbers may
be relevant if other transport protocols are used.
The value of this object is persistent."
DEFVAL { 6068 }
::= { ancpAnSessionConfigEntry 22 }

ancpAnSessionConfigNotifyDnEnable OBJECT-TYPE
SYNTAX     TruthValue
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"This object specifies if ancpAnSessionDown notification should be generated when this session leaves the ‘estab’ state as given by ancpAnCurrentSessionState in the corresponding row in ancpAnCurrentSessionTable. The value of this object is persistent."

DEFVAL { false }
::= { ancpAnSessionConfigEntry 23 }

ancpAnSessionConfigNotifyUpEnable OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies if ancpAnSessionUp notification should be generated when this session goes to ‘estab’ state as given by ancpAnCurrentSessionState in the corresponding row in ancpAnCurrentSessionTable. The value of this object is persistent."

DEFVAL { false }
::= { ancpAnSessionConfigEntry 24 }

--

-- Operational Information of ANCP Sessions
--

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 available only for active sessions, i.e., for each session that its corresponding row status (ancpAnSessionConfigRowStatus) in ancpAnSessionConfigTable is set to either ‘active’ (1) or ‘notInService’ (2). A row in this table is deleted when the corresponding row in the ancpAnSessionConfigTable is deleted."

::= { ancpAnObjects 4 }

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,
    ancpAnCurrentSessionAncpVersion       AncpVersion,
    ancpAnCurrentSessionAnName            AncpName,
    ancpAnCurrentSessionNasName           AncpName,
    ancpAnCurrentSessionAnIpAddressType   InetAddressType,
    ancpAnCurrentSessionAnIpAddress       InetAddress,
    ancpAnCurrentSessionAnInstance        Unsigned32,
    ancpAnCurrentSessionNasInstance       Unsigned32,
    ancpAnCurrentSessionCapabilities      AncpSessionCapabilities,
    ancpAnCurrentSessionStartUptime       TimeTicks,
    ancpAnCurrentSessionDiscontinuityTime TimeTicks,
    ancpAnCurrentSessionStatSentMessages  ZeroBasedCounter32,
    ancpAnCurrentSessionStatReceivedValidMessages  ZeroBasedCounter32,
    ancpAnCurrentSessionStatDiscardedMessages ZeroBasedCounter32,
    ancpAnCurrentSessionStatReceivedAdjSyn ZeroBasedCounter32,
    ancpAnCurrentSessionStatReceivedAdjSynack ZeroBasedCounter32,
    ancpAnCurrentSessionStatReceivedAdjAck ZeroBasedCounter32,
    ancpAnCurrentSessionStatReceivedAdjRstack ZeroBasedCounter32,
    ancpAnCurrentSessionStatTransmittedAdjSyn ZeroBasedCounter32,
    ancpAnCurrentSessionStatTransmittedAdjSynack ZeroBasedCounter32,
    ancpAnCurrentSessionStatTransmittedAdjAck ZeroBasedCounter32,
    ancpAnCurrentSessionStatTransmittedAdjRstack ZeroBasedCounter32
}

ancpAnCurrentSessionState OBJECT-TYPE
SYNTAX    INTEGER {
    other(1),
    synsent(2),
    synrcvd(3),
    estab(4),
    syncloss(5)
}
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"The state of this session as defined in the ANCP specification.
the state other(1) is returned if the session state cannot be reflected by any other valid object-value."
The state syncloss(5) indicates that the AN has
declared loss of synchronization as defined in section
3.5.2.7 of RFC 6320."
::= { ancpAnCurrentSessionEntry 1 }

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

ancpAnCurrentSessionAnName OBJECT-TYPE
SYNTAX AncpName
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The name of the access node used in this session.
It should be the same as ancpAnSessionConfigAnName if
that object is not set to zero.
If ancpAnSessionConfigAnName is set to zero, then this
object will contain the MAC address selected by the
access node as described in the description of
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 3 }

ancpAnCurrentSessionNasName OBJECT-TYPE
SYNTAX AncpName
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 4 }

ancpAnCurrentSessionAnIpAddressType OBJECT-TYPE
SYNTAX InetAddressType { ipv4(1), ipv6(2) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The type of address in ancpAnCurrentSessionAnIpAddress.
Note that although other types of addresses are defined
in the InetAddressType textual convention, this object
is limited to IPv4 and IPv6 addresses."
::= { ancpAnCurrentSessionEntry 5 }

ancpAnCurrentSessionAnIpAddress OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The IP address used for the access node.
The type of this IP address attribute is determined
by the value of ancpAnCurrentSessionAnIpAddressType."
::= { ancpAnCurrentSessionEntry 6 }

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 7 }

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 8 }

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ancpAnCurrentSessionCapabilities OBJECT-TYPE
SYNTAX AncpSessionCapabilities
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 9 }

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 10 }

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 11 }

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 shall be counted, also including adjacency protocol messages and failure response messages.
Discontinuities of this counter are indicated by ancpAnCurrentSessionDiscontinuityTime."
 ::= { ancpAnCurrentSessionEntry 12 }


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 shall be counted, also including adjacency protocol messages     and failure response messages. Discontinuities of this counter are indicated by     ancpAnCurrentSessionDiscontinuityTime."  
::= { ancpAnCurrentSessionEntry 13 }

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 shall be counted, also including adjacency protocol messages     and failure response messages. Discontinuities of this counter are indicated by     ancpAnCurrentSessionDiscontinuityTime."  
::= { ancpAnCurrentSessionEntry 14 }

ancpAnCurrentSessionStatReceivedAdjSyn OBJECT-TYPE  
SYNTAX     ZeroBasedCounter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION  
"The number of adjacency SYN messages that in this session have been received by the access node. Discontinuities of this counter are indicated by ancpAnCurrentSessionDiscontinuityTime."  
::= { ancpAnCurrentSessionEntry 15 }

ancpAnCurrentSessionStatReceivedAdjSynack OBJECT-TYPE  
SYNTAX     ZeroBasedCounter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION  
"The number of adjacency SYNACK messages that in this session have been received by the access node. Discontinuities of this counter are indicated by
ancpAnCurrentSessionDiscontinuityTime.

::= { ancpAnCurrentSessionEntry 16 }

ancpAnCurrentSessionStatReceivedAdjAck OBJECT-TYPE
SYNTAX    ZeroBasedCounter32
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"The number of adjacency ACK messages that in this
session have been received by the access node.
Discontinuities of this counter are indicated by
ancpAnCurrentSessionDiscontinuityTime."
::= { ancpAnCurrentSessionEntry 17 }

ancpAnCurrentSessionStatReceivedAdjRstack OBJECT-TYPE
SYNTAX    ZeroBasedCounter32
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"The number of adjacency RSTACK messages that in this
session have been received by the access node.
Discontinuities of this counter are indicated by
ancpAnCurrentSessionDiscontinuityTime."
::= { ancpAnCurrentSessionEntry 18 }

ancpAnCurrentSessionStatTransmittedAdjSyn OBJECT-TYPE
SYNTAX    ZeroBasedCounter32
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"The number of adjacency SYN messages that in this
session have been transmitted by the access node.
Discontinuities of this counter are indicated by
ancpAnCurrentSessionDiscontinuityTime."
::= { ancpAnCurrentSessionEntry 19 }

ancpAnCurrentSessionStatTransmittedAdjSynack OBJECT-TYPE
SYNTAX    ZeroBasedCounter32
MAX-ACCESS read-only
STATUS    current
DESCRIPTION
"The number of adjacency SYNACK messages that in this
session have been transmitted by the access node.
Discontinuities of this counter are indicated by
ancpAnCurrentSessionDiscontinuityTime."
::= { ancpAnCurrentSessionEntry 20 }

ancpAnCurrentSessionStatTransmittedAdjAck OBJECT-TYPE
SYNTAX  ZeroBasedCounter32
MAX-ACCESS read-only
STATUS  current
DESCRIPTION
  "The number of adjacency ACK messages that in this
  session have been transmitted by the access node.
  Discontinuities of this counter are indicated by
  ancpAnCurrentSessionDiscontinuityTime."
 ::= { ancpAnCurrentSessionEntry 21 }

ancpAnCurrentSessionStatTransmittedAdjRstack OBJECT-TYPE
SYNTAX  ZeroBasedCounter32
MAX-ACCESS read-only
STATUS  current
DESCRIPTION
  "The number of adjacency RSTACK messages that in this
  session have been transmitted by the access node.
  Discontinuities of this counter are indicated by
  ancpAnCurrentSessionDiscontinuityTime."
 ::= { ancpAnCurrentSessionEntry 22 }

--
-- Partitions
--

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 zero 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.
  Rows should only be created by the agent when
  ancpAnPartitionsUsed is set to ‘true’. If no
  partitions are used, then no rows should be created in
  this table."
 ::= { 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 AncpPartitionId
}

AncpAnInterfaceConfigPartitionId OBJECT-TYPE
SYNTAX AncpPartitionId
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 '00'H. The value of this object is persistent."
DEFVAL { '00'H }
 ::= { ancpAnInterfaceConfigEntry 1 }

--
-- Notifications
--
ancpAnSessionDown NOTIFICATION-TYPE
OBJECTS {
ancpAnCurrentSessionAnIpAddressType,
ancpAnCurrentSessionAnIpAddress,
ancpAnSessionConfigNasIpAddressType,
ancpAnSessionConfigNasIpAddress,
ancpAnCurrentSessionAnInstance,
ancpAnCurrentSessionNasInstance,
ancpAnCurrentSessionStartUptime,
ancpAnCurrentSessionDiscontinuityTime,
ancpAnCurrentSessionStatSentMessages,
ancpAnCurrentSessionStatReceivedValidMessages,
ancpAnCurrentSessionStatDiscardedMessages,
ancpAnCurrentSessionStatReceivedAdjSyn,
ancpAnCurrentSessionStatReceivedAdjSynack,
ancpAnCurrentSessionStatReceivedAdjAck,
ancpAnCurrentSessionStatReceivedAdjRstack,
ancpAnCurrentSessionStatTransmittedAdjSyn,
ancpAnCurrentSessionStatTransmittedAdjSynack,
ancpAnCurrentSessionStatTransmittedAdjAck,
}

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ancpAnCurrentSessionStatTransmittedAdjRstack

}  
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.
This notification is only generated when ancpAnSessionConfigNotifyDnEnable of this session is set to true."
::= { ancpAnNotifications 1 }

ancpAnSessionUp 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.
This notification is only generated when ancpAnSessionConfigNotifyUpEnable of this session is set to true."
::= { ancpAnNotifications 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,
    ancpAnSessionConfigAncpVersion,
    ancpAnSessionConfigEncapsulationType,
    ancpAnSessionConfigCapabilities,
    ancpAnSessionConfigAliveTimer,
    ancpAnSessionConfigPortReportShaper,
    ancpAnSessionConfigAggregateReportShaper,
    ancpAnSessionConfigTransportRetryTimer,
    ancpAnSessionConfigAncpRetryTimer,
    ancpAnSessionConfigAnName,
    ancpAnSessionConfigPartitionId,
    ancpAnSessionConfigWindowSize,
    ancpAnSessionConfigNasIpAddressType,
    ancpAnSessionConfigNasIpAddress,
    ancpAnSessionConfigEncapPortNumber,
    ancpAnSessionConfigNotifyDnEnable,
    ancpAnSessionConfigNotifyUpEnable
  }
STATUS current
DESCRIPTION
  "These objects apply to the configuration of ANCP
  sessions in access nodes."
::= { ancpAnGroups 1 }

ancpAnRelatedInterfaceGroup OBJECT-GROUP
  OBJECTS {
    ancpAnSessionConfigRelatedInterface
  }
STATUS current
DESCRIPTION
  "This object contains the ifIndex of an interface defined
  in IF-MIB. If an ANCP session must be associated with an
IP interface, then this group must be supported. This group also must be supported together with the ancpAnRelatedEntityGroup in case the ANCP session is to be associated with an ATM PVC."

::= { ancpAnGroups 2 }

ancpAnRelatedEntityGroup OBJECT-GROUP
  OBJECTS {
    ancpAnSessionConfigRelatedEntity
  }
  STATUS current
  DESCRIPTION "This object contains the name of an object instance uniquely identifying a lower layer entity. If an ANCP session must be associated with an ATM PVC, then this group together with ancpAnRelatedInterfaceGroup must be supported."

::= { ancpAnGroups 3 }

ancpAnRelatedVlanGroup OBJECT-GROUP
  OBJECTS {
    ancpAnSessionConfigSvid,
    ancpAnSessionConfigSPrio,
    ancpAnSessionConfigCvid,
    ancpAnSessionConfigCPrio
  }
  STATUS current
  DESCRIPTION "These objects contains all VLAN related configuration when the ANCP session is associated with a particular VLAN. If an ANCP session must be associated with a VLAN (or VLAN stack), then this group must be supported."

::= { ancpAnGroups 4 }

ancpAnCurrentGroup OBJECT-GROUP
  OBJECTS {
    ancpAnCurrentSessionState,
    ancpAnCurrentSessionAncpVersion,
    ancpAnCurrentSessionAnName,
    ancpAnCurrentSessionNasName,
    ancpAnCurrentSessionAnIpAddressType,
    ancpAnCurrentSessionAnIpAddress,
    ancpAnCurrentSessionAnInstance,
    ancpAnCurrentSessionNasInstance,
    ancpAnCurrentSessionCapabilities,
    ancpAnCurrentSessionStartUptime,
    ancpAnCurrentSessionDiscontinuityTime,
8. 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. These are the tables and objects and their sensitivity/vulnerability:

- **ancpAnPartitionsUsed**
  
  This scalar object supports SET operations. Unauthorized changes to this object could result in a wrong interpretation of ancpAnSessionConfigPartitionId attribute of all sessions, as if all sessions use partition id zero, or to actually disabling the use of partitions in the system.

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

  - ancpAnSessionConfigRowStatus
  - ancpAnSessionConfigAncpVersion
  - ancpAnSessionConfigEncapsulationType
  - ancpAnSessionConfigCapabilities
  - ancpAnSessionConfigAliveTimer
  - ancpAnSessionConfigPortReportShaper
  - ancpAnSessionConfigAggregateReportShaper
  - ancpAnSessionConfigTransportRetryTimer
  - ancpAnSessionConfigAncpRetryTimer
  - ancpAnSessionConfigAnName
  - ancpAnSessionConfigPartitionId
  - ancpAnSessionConfigWindowSize
  - ancpAnSessionConfigRelatedInterface
* ancpAnSessionConfigRelatedEntity
* ancpAnSessionConfigSvid
* ancpAnSessionConfigSPrio
* ancpAnSessionConfigCvid
* ancpAnSessionConfigCPrio
* ancpAnSessionConfigNasIpAddressType
* ancpAnSessionConfigNasIpAddress
* ancpAnSessionConfigEncapPortNumber
* ancpAnSessionConfigNotifyDnEnable
* ancpAnSessionConfigNotifyUpEnable

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 ancpAnSessionConfigAncpVersion could have an adverse operational effect by limiting the ANCP version to be used in the context of this session or enabling an ANCP 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 responsiveness 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 attempts or unexpectedly disable those attempts.

Unauthorized changes to ancpAnSessionConfigAncpRetryTimer could have an adverse operational effect by increasing the frequency of ANCP connection 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 attempts 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 at least specify a different partition ID than the one actually associated with the session.

Unauthorized changes to ancpAnSessionConfigWindowSize are not directly harmful. 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 ancpAnSessionConfigRelatedInterface and/or ancpAnSessionConfigRelatedEntity and/or ancpAnSessionConfigSvid and/or ancpAnSessionConfigCvid can result in the ANCP packets to be sent out on the wrong interface. This means that the ANCP packets to establish a session can be received by someone who is not the intended receiver.
Unauthorized changes to ancpAnSessionConfigSPrio and/or ancpAnSessionConfigCPrio may give the ANCP packets a lower or a higher priority in the network compared to other packets. Lowering the priority might result in a reduced timely behavior of the ANCP session, and increasing the priority may result in impacting other traffic in the network than ANCP.

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.

Unauthorized changes to ancpAnSessionConfigNotifyDnEnable could lead (if the change was setting the attribute to ‘enable’) to overload of notification messages at the SNMP manager in case multiple sessions leave the ‘estab’ state simultaneously. If the change was setting the attribute to ‘disable’ it could lead to hiding the actual session state from the SNMP manager.

Unauthorized changes to ancpAnSessionConfigNotifyUpEnable could lead (if the change was setting the attribute to ‘enable’) to overload of notification messages at the SNMP manager in case multiple sessions enter the ‘estab’ state simultaneously. If the change was setting the attribute to ‘disable’ it could lead to hiding the actual session state from the SNMP manager.

- ancpAnInterfaceConfigTable

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

* ancpAnInterfaceConfigPartitionId

Unauthorized changes to ancpAnInterfaceConfigPartitionId could result in a wrong association between the interface and a partition. It could result in not being able to manage the interface from the correct session and/or to exposing the interface to a wrong NAS.
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:

- 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
  * ancpAnCurrentSessionAncpVersion
  * ancpAnCurrentSessionAnName
  * ancpAnCurrentSessionNasName
  * ancpAnCurrentSessionAnIpAddressType
  * ancpAnCurrentSessionAnIpAddress
  * ancpAnCurrentSessionAnInstance
  * ancpAnCurrentSessionNasInstance
  * ancpAnCurrentSessionCapabilities
  * ancpAnCurrentSessionStartUptime
  * ancpAnCurrentSessionDiscontinuityTime
  * ancpAnCurrentSessionStatSentMessages
  * ancpAnCurrentSessionStatReceivedValidMessages
  * ancpAnCurrentSessionStatDiscardedMessages
  * ancpAnCurrentSessionStatReceivedAdjSyn
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.

9. IANA considerations

IANA is requested to assign two OID's xxx under mib-2 for ANCP-TC-MIB and ANCP-AN-MIB.

10. Acknowledgements

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

11. References
11.1. Normative References


11.2. Informative References


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