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**Access Node Control Protocol (ANCP) MIB module for Access Nodes
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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 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 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 [[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:

- o **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.

- o **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.

- o **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:

- o SNMPv2-SMI defined in [[RFC2578](#)]
- o SNMPv2-TC defined in [[RFC2579](#)]

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

- o SNMPv2-SMI defined in [[RFC2578](#)]
- o RMON2-MIB defined in [[RFC4502](#)]
- o IF-MIB defined in [[RFC2863](#)]
- o INET-ADDRESS-MIB defined in [[RFC4001](#)]
- o SNMPv2-CONF defined in [[RFC2580](#)]
- o SNMPv2-TC defined in [[RFC2579](#)]
- o Q-BRIDGE-MIB defined in [[RFC4363](#)]
- o 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 -- [RFC2578](#)

TEXTUAL-CONVENTION
FROM SNMPv2-TC; -- [RFC2579](#)

anctpTcMIB MODULE-IDENTITY

LAST-UPDATED "201306240000Z" -- 24 June 2013
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"

DESCRIPTION

"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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-- 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.

--

-- Textual Conventions

--

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))

END

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

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ORGANIZATION "IETF ANCP Working Group"

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"

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,
ancpAnSessionConfigAncpRetryTimer	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 ancpcAnCurrentSessionAnName. The value of this object is persistent."
DEFVAL { '000000000000'H }
 ::= { ancpcAnSessionConfigEntry 11 }

ancpcAnSessionConfigPartitionId 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 (ancpcAnPartitionsUsed='true') and is ignored otherwise. The value of this object is persistent."
DEFVAL { '00'H }
 ::= { ancpcAnSessionConfigEntry 12 }

ancpcAnSessionConfigWindowSize 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 }
 ::= { ancpcAnSessionConfigEntry 13 }

ancpcAnSessionConfigRelatedInterface 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 atmVclTable).
 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

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 }

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,
```



```
        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,


```
        ancpAnCurrentSessionStatSentMessages,
        ancpAnCurrentSessionStatReceivedValidMessages,
        ancpAnCurrentSessionStatDiscardedMessages,
        ancpAnCurrentSessionStatReceivedAdjSyn,
        ancpAnCurrentSessionStatReceivedAdjSynack,
        ancpAnCurrentSessionStatReceivedAdjAck,
        ancpAnCurrentSessionStatReceivedAdjRstack,
        ancpAnCurrentSessionStatTransmittedAdjSyn,
        ancpAnCurrentSessionStatTransmittedAdjSynack,
        ancpAnCurrentSessionStatTransmittedAdjAck,
        ancpAnCurrentSessionStatTransmittedAdjRstack
    }
STATUS current
DESCRIPTION
    "These objects show the operational state of all ANCP
    sessions configured in the access node."
::= { ancpAnGroups 5 }

ancpAnInterfaceGroup OBJECT-GROUP
    OBJECTS {
        ancpAnPartitionsUsed,
        ancpAnInterfaceConfigPartitionId
    }
STATUS current
DESCRIPTION
    "These objects are used to assign user facing interface
    to partitions."
::= { ancpAnGroups 6 }

ancpAnNotificationsGroup NOTIFICATION-GROUP
    NOTIFICATIONS {
        ancpAnSessionDown,
        ancpAnSessionUp
    }
STATUS current
DESCRIPTION
    "These objects are used to enable or disable the
    generation of notifications by the access node about
    changes in the state of ANCP sessions."
::= { ancpAnGroups 7 }

END
```

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:

- o 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.

- o 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.

- o `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:

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

- * ancpAnCurrentSessionStatReceivedAdjSynack
- * ancpAnCurrentSessionStatReceivedAdjAck
- * ancpAnCurrentSessionStatReceivedAdjRstack
- * ancpAnCurrentSessionStatTransmittedAdjSyn
- * ancpAnCurrentSessionStatTransmittedAdjSynack
- * ancpAnCurrentSessionStatTransmittedAdjAck
- * ancpAnCurrentSessionStatTransmittedAdjRstack

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

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