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**Definitions for Port Access Control (IEEE 802.1X) MIB
draft-ietf-bridge-8021x-03.txt**

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IESG Note

This document is not the product of an IETF Working Group. The IETF currently has no effort underway to standardize the Port Access Control (IEEE 802.1X) MIB

Abstract

This document defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing the operation of Port Access Control, based on the specification contained in Clause 8 and Clause 9 of the IEEE 802.1X standard. This clause includes a MIB module that is SNMPv2 SMI compliant.

This standard defines a mechanism for Port-based network access control that makes use of the physical access characteristics of

IEEE 802 LAN infrastructures in order to provide a means of authenticating and authorizing devices attached to a LAN port that has point-to-point connection characteristics, and of preventing access to that port in cases in which the authentication and authorization process fails.

This standard is part of a family of standards for local and metropolitan area networks.

This draft is written within the IEEE 802.1X working group and is being presented to the IETF for informational purposes.

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[1.](#) Introduction

The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2571](#) [[RFC2571](#)].
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in

STD 16, [RFC 1155](#) [[RFC1155](#)], STD 16, [RFC 1212](#) [[RFC1212](#)] and [RFC](#)

[1215](#) [[RFC1215](#)]. The second version, called SMIV2, is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [[RFC1901](#)] and [RFC 1906](#) [[RFC1906](#)]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [[RFC1906](#)], [RFC 2572](#) [[RFC2572](#)] and [RFC 2574](#) [[RFC2574](#)].
- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [[RFC1905](#)].
- o A set of fundamental applications described in [RFC 2573](#) [[RFC2573](#)] and the view-based access control mechanism described in [RFC 2575](#) [[RFC2575](#)].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [[RFC2570](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB.

2. Overview

Local Area Networks (or LANs; see 3.4 in IEEE Std 802.1D, 1998 Edition) are often deployed in environments that permit unauthorized devices to be physically attached to the LAN infrastructure, or permit unauthorized users to attempt to access the LAN through equipment already attached. Examples of such environments include corporate LANs that provide LAN connectivity in areas of a building that are accessible to the general public, and LANs that are deployed by one organization in order to offer connectivity services to other organizations (for example, as may occur in a business park or a serviced office building). In such environments, it is desirable to

restrict access to the services offered by the LAN to those users and devices that are permitted to make use of those services.

Port-based network access control makes use of the physical access characteristics of IEEE 802 LAN infrastructures in order to provide a

means of authenticating and authorizing devices attached to a LAN port that has point-to-point connection characteristics, and of preventing access to that port in cases in which the authentication and authorization process fails. A port in this context is a single point of attachment to the LAN infrastructure. Examples of ports in which the use of authentication can be desirable Include the Ports of MAC Bridges (as specified in IEEE 802.1D), the ports used to attach servers or routers to the LAN infrastructure, and associations between stations and access points in IEEE 802.11 Wireless LANs.

2.1. Scope

The purpose of this document is to specify how the management operations are made available to a remote manager using the protocol and architectural description provided by the Simple Network Management Protocol (SNMP).

This MIB is the republishing of the IEEE Definitions for Port Access Control MIB (802.1X) defined in the 802.1X specification document.

3. Structure of MIB

A single MIB module is defined in this clause. Objects in the MIB are arranged into groups. Each group is organized as a set of related objects. The overall structure and assignment of objects to their groups is shown in the following subclauses. IEEE Std 802.1X-2001 LOCAL AND METROPOLITAN AREA NETWORKS 10.4.1 Relationship to the managed objects defined in IEEE 802.1X Clause 9. The following table contains cross-references between the objects defined in IEEE 802.1X Clause 9 and the MIB objects defined in this clause.

3.1 Relationship to the managed objects defined in IEEE 802.1X

Note: The relationship sections (9.4.3 Authenticator Diagnostics, 9.4.4 Authenticator Session Statistics, etc.) defined related to sections in the 801.1X document specification, not this document.

Definition in IEEE 802.1X Clause 9	MIB object(s)
-----	-----
EAPOL Logoff frames received	dot1xAuthEapolLogoffFramesRx
EAP Resp/Id frames received	dot1xAuthEapolRespIdFramesRx
EAP Response frames received	dot1xAuthEapolRespFramesRx
EAP Req/Id frames transmitted	dot1xAuthEapolReqIdFramesTx
EAP Request frames transmitted	dot1xAuthEapolReqFramesTx
Invalid EAPOL frames received	dot1xAuthInvalidEapolFramesRx
EAP length error frames received	dot1xAuthEapLengthErrorFramesRx
Last EAPOL frame version	dot1xAuthLastEapolFrameVersion

Last EAPOL frame source

dot1xAuthLastEapolFrameSource

9.4.3 Authenticator Diagnostics
authEntersConnecting

dot1xAuthDiagTable
dot1xAuthEntersConnecting

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authEapLogoffsWhileConnecting	dot1xAuthEapLogoffsWhileConnecting
authEntersAuthenticating	dot1xAuthEntersAuthenticating
authAuthSuccessWhileAuthenticating	dot1xAuthAuthSuccessWhileAuthenticating
authAuthTimeoutsWhileAuthenticating	dot1xAuthAuthTimeoutsWhileAuthenticating
authAuthFailWhileAuthenticating	dot1xAuthAuthFailWhileAuthenticating
authAuthReauthsWhileAuthenticating	dot1xAuthAuthReauthsWhileAuthenticating
authAuthEapStartsWhileAuthenticating	dot1xAuthAuthEapStartsWhileAuthenticating
authAuthLogoffWhileAuthenticating	dot1xAuthAuthEapLogoffWhileAuthenticating
authAuthReauthsWhileAuthenticated	dot1xAuthAuthReauthsWhileAuthenticated
authAuthEapStartsWhileAuthenticated	dot1xAuthAuthEapStartsWhileAuthenticated
authAuthLogoffWhileAuthenticated	dot1xAuthAuthEapLogoffWhileAuthenticated
backendResponses	dot1xAuthBackendResponses
backendAccessChallenges	dot1xAuthBackendAccessChallenges
backendOtherRequestsToSupplicant	dot1xAuthBackendOtherRequestsToSupplicant
backendNonNakResponsesFromSupplicant	dot1xAuthBackendNonNakResponsesFromSupplicant
backendAuthSuccesses	dot1xAuthBackendAuthSuccesses
backendAuthFails	dot1xAuthBackendAuthFails

9.4.4 Authenticator Session Statistics	dot1xAuthSessionStatsTable
Port number	dot1xPaePortNumber (table index)
Session Octets Received	dot1xAuthSessionOctetsRx

Session Octets Transmitted	dot1xAuthSessionOctetsTx
Session Frames Received	dot1xAuthSessionFramesRx
Session Frames Transmitted	dot1xAuthSessionFramesTx
Session Identifier	dot1xAuthSessionId
Session Authentication Method	dot1xAuthSessionAuthenticMethod
Session Time	dot1xAuthSessionTime
Session Terminate Cause	dot1xAuthSessionTerminateCause
Session User Name	dot1xAuthSessionUserName

9.5.1 Supplicant Configuration	dot1xSuppConfigTable
Port number	dot1xPaePortNumber (table index)
Supplicant PAE State	dot1xSuppPaeState
heldPeriod	dot1xSuppHeldPeriod
authPeriod	dot1xSuppAuthPeriod
startPeriod	dot1xSuppStartPeriod
maxStart	dot1xSuppMaxStart

9.5.2 Supplicant Statistics	dot1xSuppStatsTable
Port number	dot1xPaePortNumber (table index)
EAPOL frames received	dot1xSuppEapolFramesRx
EAPOL frames transmitted	dot1xSuppEapolFramesTx
EAPOL Start frames transmitted	dot1xSuppEapolStartFramesTx

EAPOL Logoff frames transmitted	dot1xSuppEapolLogoffFramesTx
EAP Resp/Id frames transmitted	dot1xSuppEapolRespIdFramesTx
EAP Response frames transmitted	dot1xSuppEapolRespFramesTx
EAP Req/Id frames received	dot1xSuppEapolReqIdFramesRx
EAP Request frames received	dot1xSuppEapolReqFramesRx
Invalid EAPOL frames received	dot1xSuppInvalidEapolFramesRx
EAP length error frames received	dot1xSuppEapLengthErrorFramesRx
Last EAPOL frame version	dot1xSuppLastEapolFrameVersion
Last EAPOL frame source	dot1xSuppLastEapolFrameSource

3.2 The PAE System Group

This group of objects provides management functionality that is not specific to the operation of either of the two PAE roles (Supplicant and Authenticator). A means of enabling and disabling the operation of Port Access Control for the entire system is provided, plus a per-Port indication of the protocol version supported and the PAE roles supported by the port. As it is not mandatory for all Ports of a System to support PAE functionality, there may be Port entries that indicate Ports that support neither Supplicant nor Authenticator functionality.

3.3 The PAE Authenticator Group

This group of objects provides, for each Port of an Authenticator [[8021XAUTH](#)], the functionality necessary to allow configuration of the operation of the Authenticator PAE, recording and retrieving statistical information relating to the operation of the Authenticator PAE, and recording and retrieving information relating to a session (i.e., the period of time between consecutive authentications on the Port).

3.4 The PAE Supplicant Group

This group of objects provides, for each Port of a Supplicant [[8021XSUPP](#)], the functionality necessary to allow configuration of the operation of the Supplicant PAE, and recording and retrieving statistical information relating to the operation of the Authenticator PAE.

3.5 Relationship to other MIBs

It is assumed that a system implementing this MIB will also implement (at least) the system group defined in MIB-II defined in IETF [RFC 1213](#) and the interfaces group defined in IETF [RFC 2863](#).

3.6 Relationship to the Interfaces MIB

IETF [RFC 2863](#), the Interface MIB Evolution, requires that any MIB that is an adjunct of the Interface MIB clarify specific areas within

the Interface MIB. These areas were intentionally left vague in IETF [RFC 2863](#) to avoid overconstraining the MIB, thereby precluding management of certain media types.

[Section 3.3](#) of IETF [RFC 2863](#) enumerates several areas that a media-specific MIB must clarify. Each of these areas is addressed in a following subsection. The implementor is referred to IETF [RFC 2863](#) in order to understand the general intent of these areas.

In IETF [RFC 2863](#), the interfaces group is defined as being mandatory for all systems and contains information on an entity's interfaces, where each interface is thought of as being attached to a subnetwork.

(Note that this term is not to be confused with subnet, which refers to an addressing partitioning scheme used in the Internet suite of protocols.) The term segment is sometimes used to refer to such a subnetwork.

Where Port numbers are used in this standard to identify Ports of a System, these numbers are equal to the ifIndex value for the interface for the corresponding Port.

[4](#) Definitions for the 802.1X-MIB

In the MIB definition below, should any discrepancy between the DESCRIPTION text and the corresponding definition in IEEE 802.1X Clause 9 occur, the definition in IEEE 802.1X Clause 9 shall take precedence.

The MIB module below was originally published on-line as:

<http://www.ieee802.org/1/files/public/MIBs/802-1x-2001-mib.txt>

The text that follows includes certain corrections relative to the original version that were necessary in order to get the module to compile. These changes were:

- Replaced all non-ascii double quotes and apostrophes by the equivalent ASCII characters;
- In the MODULE-IDENTITY value assignment changed "iso(1)" to "iso";
- Added dot1xPaePortReauthenticate and dot1xAuthSessionUserName to the appropriate conformance groups.

```
IEEE8021-PAE-MIB DEFINITIONS ::= BEGIN
```

```
-- -----  
-- IEEE 802.1X MIB
```

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, Counter32, Counter64,

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```
Unsigned32, TimeTicks
    FROM SNMPv2-SMI
MacAddress, TEXTUAL-CONVENTION, TruthValue
    FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP
    FROM SNMPv2-CONF
SnmpAdminString
    FROM SNMP-FRAMEWORK-MIB
InterfaceIndex
    FROM IF-MIB
;
```

```
ieee8021paeMIB MODULE-IDENTITY
    LAST-UPDATED "200309050000Z"
    ORGANIZATION "IEEE 802.1 Working Group"
    CONTACT-INFO
        "http://grouper.ieee.org/groups/802/1/index.html"
```

```
DESCRIPTION
    "The Port Access Entity module for managing IEEE
    802.1X."
```

```
REVISION    "200309050000Z"
DESCRIPTION "The IETF published version as in RFC xxxx.
```

```
    The IETF Bridge-mib WG made the following changes:
    - Replaced all non-ascii double quotes and
      apostrophes by the equivalent ASCII characters;
    - In the MODULE-IDENTITY value assignment changed
      'iso(1)' to 'iso';
    - Added dot1xPaePortReauthenticate and
      dot1xAuthSessionUserName to the appropriate
      conformance groups.
```

```
    "
```

```
REVISION    "200101160000Z" -- Jan 16th, 2001
DESCRIPTION "The initial and authoritative version as published at:
http://www.ieee802.org/1/files/public/MIBs/802-1x-2001-mib.txt
    "
```

```
::= { iso std(0) iso8802(8802) ieee802dot1(1)
    ieee802dot1mibs(1) 1 }
```

```
paeMIBObjects OBJECT IDENTIFIER ::= { ieee8021paeMIB 1 }
```

```
-- -----
-- Textual Conventions
-- -----
```

```
PaeControlledDirections ::= TEXTUAL-CONVENTION
```

STATUS current

DESCRIPTION

"The control mode values for the Authenticator PAE."

SYNTAX INTEGER {
 both(0),


```
        in(1)
    }
```

PaeControlledPortStatus ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The status values of the Authenticator PAE controlled
Port."

SYNTAX INTEGER {
 authorized(1),
 unauthorized(2)
 }

PaeControlledPortControl ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The control values of the Authenticator PAE controlled
Port."

SYNTAX INTEGER {
 forceUnauthorized(1),
 auto(2),
 forceAuthorized(3)
 }

-- -----

-- -----

-- groups in the PAE MIB

-- -----

dot1xPaeSystem OBJECT IDENTIFIER ::= { paeMIBObjects 1 }

dot1xPaeAuthenticator OBJECT IDENTIFIER ::= { paeMIBObjects 2 }

dot1xPaeSupplicant OBJECT IDENTIFIER ::= { paeMIBObjects 3 }

-- -----

-- -----

-- The PAE System Group

-- -----

dot1xPaeSystemAuthControl OBJECT-TYPE

SYNTAX INTEGER { enabled(1), disabled(2) }

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The administrative enable/disable state for
Port Access Control in a System."

REFERENCE

"9.6.1, SystemAuthControl"

```
::= { dot1xPaeSystem 1 }
```

```
-- ----- --  
-- The PAE Port Table  
-- ----- --
```

dot1xPaePortTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1xPaePortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table of system level information for each port supported by the Port Access Entity. An entry appears in this table for each port of this system."

REFERENCE

"9.6.1"

::= { dot1xPaeSystem 2 }

dot1xPaePortEntry OBJECT-TYPE

SYNTAX Dot1xPaePortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Port number, protocol version, and initialization control for a Port."

INDEX { dot1xPaePortNumber }

::= { dot1xPaePortTable 1 }

Dot1xPaePortEntry ::=

SEQUENCE {

dot1xPaePortNumber

InterfaceIndex,

dot1xPaePortProtocolVersion

Unsigned32,

dot1xPaePortCapabilities

BITS,

dot1xPaePortInitialize

TruthValue,

dot1xPaePortReauthenticate

TruthValue

}

dot1xPaePortNumber OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Port number associated with this Port."

REFERENCE

"9.6.1, Port number"

::= { dot1xPaePortEntry 1 }

dot1xPaePortProtocolVersion OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The protocol version associated with this Port."

REFERENCE

"9.6.1, Protocol version"
::= { dot1xPaePortEntry 2 }

dot1xPaePortCapabilities OBJECT-TYPE

SYNTAX BITS {
dot1xPaePortAuthCapable(0),
-- Authenticator functions are supported
dot1xPaePortSuppCapable(1)
-- Supplicant functions are supported
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates the PAE functionality that this Port
supports and that may be managed through this MIB."
REFERENCE
"9.6.1, PAE Capabilities"
::= { dot1xPaePortEntry 3 }

dot1xPaePortInitialize OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"The initialization control for this Port. Setting this
attribute TRUE causes the Port to be initialized.
The attribute value reverts to FALSE once initialization
has completed."
REFERENCE
"9.6.1.2, Initialize Port"
::= { dot1xPaePortEntry 4 }

dot1xPaePortReauthenticate OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"The reauthentication control for this port. Setting
this attribute TRUE causes the Authenticator PAE state
machine for the Port to reauthenticate the Supplicant.
Setting this attribute FALSE has no effect.
This attribute always returns FALSE when it is read."
REFERENCE
"9.4.1.3 Reauthenticate"
::= { dot1xPaePortEntry 5 }

-- -----
-- The PAE Authenticator Group
-- -----

-- ----- --
-- The Authenticator Configuration Table
-- ----- --

dot1xAuthConfigTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1xAuthConfigEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains the configuration objects for the Authenticator PAE associated with each port.

An entry appears in this table for each port that may authenticate access to itself."

REFERENCE

"9.4.1 Authenticator Configuration"

::= { dot1xPaeAuthenticator 1 }

dot1xAuthConfigEntry OBJECT-TYPE

SYNTAX Dot1xAuthConfigEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The configuration information for an Authenticator PAE."

INDEX { dot1xPaePortNumber }

::= { dot1xAuthConfigTable 1 }

Dot1xAuthConfigEntry ::=

SEQUENCE {

dot1xAuthPaeState

INTEGER,

dot1xAuthBackendAuthState

INTEGER,

dot1xAuthAdminControlledDirections

PaeControlledDirections,

dot1xAuthOperControlledDirections

PaeControlledDirections,

dot1xAuthAuthControlledPortStatus

PaeControlledPortStatus,

dot1xAuthAuthControlledPortControl

PaeControlledPortControl,

dot1xAuthQuietPeriod

Unsigned32,

dot1xAuthTxPeriod

Unsigned32,

dot1xAuthSuppTimeout

Unsigned32,

dot1xAuthServerTimeout

Unsigned32,

dot1xAuthMaxReq

Unsigned32,

dot1xAuthReAuthPeriod

Unsigned32,

```
dot1xAuthReAuthEnabled
    TruthValue,
dot1xAuthKeyTxEnabled
    TruthValue
}
```


dot1xAuthPaeState OBJECT-TYPE

```
SYNTAX      INTEGER {
                initialize(1),
                disconnected(2),
                connecting(3),
                authenticating(4),
                authenticated(5),
                aborting(6),
                held(7),
                forceAuth(8),
                forceUnauth(9)
            }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The current value of the Authenticator PAE state
    machine."
REFERENCE
    "9.4.1, Authenticator PAE state"
 ::= { dot1xAuthConfigEntry 1 }
```

dot1xAuthBackendAuthState OBJECT-TYPE

```
SYNTAX      INTEGER {
                request(1),
                response(2),
                success(3),
                fail(4),
                timeout(5),
                idle(6),
                initialize(7)
            }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The current state of the Backend Authentication
    state machine."
REFERENCE
    "9.4.1, Backend Authentication state"
 ::= { dot1xAuthConfigEntry 2 }
```

dot1xAuthAdminControlledDirections OBJECT-TYPE

```
SYNTAX      PaeControlledDirections
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "The current value of the administrative controlled
    directions parameter for the Port."
REFERENCE
```

"9.4.1, Admin Control Mode"
::= { dot1xAuthConfigEntry 3 }

dot1xAuthOperControlledDirections OBJECT-TYPE
SYNTAX PaeControlledDirections

MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The current value of the operational controlled
 directions parameter for the Port."
REFERENCE
 "9.4.1, Oper Control Mode"
 ::= { dot1xAuthConfigEntry 4 }

dot1xAuthAuthControlledPortStatus OBJECT-TYPE

SYNTAX PaeControlledPortStatus
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The current value of the controlled Port
 status parameter for the Port."
REFERENCE
 "9.4.1, AuthControlledPortStatus"
 ::= { dot1xAuthConfigEntry 5 }

dot1xAuthAuthControlledPortControl OBJECT-TYPE

SYNTAX PaeControlledPortControl
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "The current value of the controlled Port
 control parameter for the Port."
REFERENCE
 "9.4.1, AuthControlledPortControl"
 ::= { dot1xAuthConfigEntry 6 }

dot1xAuthQuietPeriod OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "The value, in seconds, of the quietPeriod constant
 currently in use by the Authenticator PAE state
 machine."
REFERENCE
 "9.4.1, quietPeriod"
DEFVAL { 60 }
 ::= { dot1xAuthConfigEntry 7 }

dot1xAuthTxPeriod OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The value, in seconds, of the txPeriod constant currently in use by the Authenticator PAE state machine."

REFERENCE

"9.4.1, txPeriod"

```
DEFVAL { 30 }  
::= { dot1xAuthConfigEntry 8 }
```

dot1xAuthSuppTimeout OBJECT-TYPE

```
SYNTAX      Unsigned32  
MAX-ACCESS  read-write  
STATUS      current  
DESCRIPTION  
    "The value, in seconds, of the suppTimeout constant  
    currently in use by the Backend Authentication state  
    machine."  
REFERENCE  
    "9.4.1, suppTimeout"  
DEFVAL { 30 }  
::= { dot1xAuthConfigEntry 9 }
```

dot1xAuthServerTimeout OBJECT-TYPE

```
SYNTAX      Unsigned32  
MAX-ACCESS  read-write  
STATUS      current  
DESCRIPTION  
    "The value, in seconds, of the serverTimeout constant  
    currently in use by the Backend Authentication state  
    machine."  
REFERENCE  
    "9.4.1, serverTimeout"  
DEFVAL { 30 }  
::= { dot1xAuthConfigEntry 10 }
```

dot1xAuthMaxReq OBJECT-TYPE

```
SYNTAX      Unsigned32  
MAX-ACCESS  read-write  
STATUS      current  
DESCRIPTION  
    "The value of the maxReq constant currently in use by  
    the Backend Authentication state machine."  
REFERENCE  
    "9.4.1, maxReq"  
DEFVAL { 2 }  
::= { dot1xAuthConfigEntry 11 }
```

dot1xAuthReAuthPeriod OBJECT-TYPE

```
SYNTAX      Unsigned32  
MAX-ACCESS  read-write  
STATUS      current  
DESCRIPTION  
    "The value, in seconds, of the reAuthPeriod constant  
    currently in use by the Reauthentication Timer state  
    machine."
```

REFERENCE

```
"9.4.1, reAuthPeriod"  
DEFVAL { 3600 }  
::= { dot1xAuthConfigEntry 12 }
```

dot1xAuthReAuthEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The enable/disable control used by the Reauthentication
Timer state machine (8.5.5.1)."

REFERENCE

"9.4.1, reAuthEnabled"

DEFVAL { false }

::= { dot1xAuthConfigEntry 13 }

dot1xAuthKeyTxEnabled OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The value of the keyTransmissionEnabled constant
currently in use by the Authenticator PAE state
machine."

REFERENCE

"9.4.1, keyTransmissionEnabled"

::= { dot1xAuthConfigEntry 14 }

-- -----
-- The Authenticator Statistics Table
-- -----

dot1xAuthStatsTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1xAuthStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains the statistics objects for the
Authenticator PAE associated with each Port.
An entry appears in this table for each port that may
authenticate access to itself."

REFERENCE

"9.4.2 Authenticator Statistics"

::= { dot1xPaeAuthenticator 2 }

dot1xAuthStatsEntry OBJECT-TYPE

SYNTAX Dot1xAuthStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The statistics information for an Authenticator PAE."

INDEX { dot1xPaePortNumber }

::= { dot1xAuthStatsTable 1 }

```
Dot1xAuthStatsEntry ::=
    SEQUENCE {
        dot1xAuthEapolFramesRx
        Counter32,
```



```
dot1xAuthEapolFramesTx
    Counter32,
dot1xAuthEapolStartFramesRx
    Counter32,
dot1xAuthEapolLogoffFramesRx
    Counter32,
dot1xAuthEapolRespIdFramesRx
    Counter32,
dot1xAuthEapolRespFramesRx
    Counter32,
dot1xAuthEapolReqIdFramesTx
    Counter32,
dot1xAuthEapolReqFramesTx
    Counter32,
dot1xAuthInvalidEapolFramesRx
    Counter32,
dot1xAuthEapLengthErrorFramesRx
    Counter32,
dot1xAuthLastEapolFrameVersion
    Unsigned32,
dot1xAuthLastEapolFrameSource
    MacAddress
}
```

dot1xAuthEapolFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid EAPOL frames of any type
that have been received by this Authenticator."

REFERENCE

"9.4.2, EAPOL frames received"

::= { dot1xAuthStatsEntry 1 }

dot1xAuthEapolFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames of any type
that have been transmitted by this Authenticator."

REFERENCE

"9.4.2, EAPOL frames transmitted"

::= { dot1xAuthStatsEntry 2 }

dot1xAuthEapolStartFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL Start frames that have
been received by this Authenticator."

REFERENCE

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"9.4.2, EAPOL Start frames received"
 ::= { dot1xAuthStatsEntry 3 }

dot1xAuthEapolLogoffFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL Logoff frames that have
 been received by this Authenticator."

REFERENCE

"9.4.2, EAPOL Logoff frames received"
 ::= { dot1xAuthStatsEntry 4 }

dot1xAuthEapolRespIdFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAP Resp/Id frames that have
 been received by this Authenticator."

REFERENCE

"9.4.2, EAPOL Resp/Id frames received"
 ::= { dot1xAuthStatsEntry 5 }

dot1xAuthEapolRespFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid EAP Response frames
 (other than Resp/Id frames) that have been
 received by this Authenticator."

REFERENCE

"9.4.2, EAPOL Response frames received"
 ::= { dot1xAuthStatsEntry 6 }

dot1xAuthEapolReqIdFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAP Req/Id frames that have been
 transmitted by this Authenticator."

REFERENCE

"9.4.2, EAPOL Req/Id frames transmitted"
 ::= { dot1xAuthStatsEntry 7 }

dot1xAuthEapolReqFramesTx OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

 "The number of EAP Request frames

(other than Rq/Id frames) that have been transmitted by this Authenticator."

REFERENCE

"9.4.2, EAPOL Request frames transmitted"
 ::= { dot1xAuthStatsEntry 8 }

dot1xAuthInvalidEapolFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames that have been received by this Authenticator in which the frame type is not recognized."

REFERENCE

"9.4.2, Invalid EAPOL frames received"
 ::= { dot1xAuthStatsEntry 9 }

dot1xAuthEapLengthErrorFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames that have been received by this Authenticator in which the Packet Body Length field is invalid."

REFERENCE

"9.4.2, EAP length error frames received"
 ::= { dot1xAuthStatsEntry 10 }

dot1xAuthLastEapolFrameVersion OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The protocol version number carried in the most recently received EAPOL frame."

REFERENCE

"9.4.2, Last EAPOL frame version"
 ::= { dot1xAuthStatsEntry 11 }

dot1xAuthLastEapolFrameSource OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The source MAC address carried in the most recently received EAPOL frame."

REFERENCE

"9.4.2, Last EAPOL frame source"
 ::= { dot1xAuthStatsEntry 12 }

-- The Authenticator Diagnostics Table

dot1xAuthDiagTable OBJECT-TYPE
SYNTAX SEQUENCE OF Dot1xAuthDiagEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"A table that contains the diagnostics objects for the
Authenticator PAE associated with each Port.
An entry appears in this table for each port that may
authenticate access to itself."
REFERENCE
"9.4.3 Authenticator Diagnostics"
 ::= { dot1xPaeAuthenticator 3 }

dot1xAuthDiagEntry OBJECT-TYPE
SYNTAX Dot1xAuthDiagEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The diagnostics information for an Authenticator PAE."
INDEX { dot1xPaePortNumber }
 ::= { dot1xAuthDiagTable 1 }

Dot1xAuthDiagEntry ::=

SEQUENCE {
dot1xAuthEntersConnecting
Counter32,
dot1xAuthEapLogoffsWhileConnecting
Counter32,
dot1xAuthEntersAuthenticating
Counter32,
dot1xAuthAuthSuccessWhileAuthenticating
Counter32,
dot1xAuthAuthTimeoutsWhileAuthenticating
Counter32,
dot1xAuthAuthFailWhileAuthenticating
Counter32,
dot1xAuthAuthReauthsWhileAuthenticating
Counter32,
dot1xAuthAuthEapStartsWhileAuthenticating
Counter32,
dot1xAuthAuthEapLogoffWhileAuthenticating
Counter32,
dot1xAuthAuthReauthsWhileAuthenticated
Counter32,
dot1xAuthAuthEapStartsWhileAuthenticated
Counter32,
dot1xAuthAuthEapLogoffWhileAuthenticated

Counter32,
dot1xAuthBackendResponses
Counter32,
dot1xAuthBackendAccessChallenges
Counter32,


```
dot1xAuthBackendOtherRequestsToSupplicant
    Counter32,
dot1xAuthBackendNonNakResponsesFromSupplicant
    Counter32,
dot1xAuthBackendAuthSuccesses
    Counter32,
dot1xAuthBackendAuthFails
    Counter32
}
```

dot1xAuthEntersConnecting OBJECT-TYPE

```
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Counts the number of times that the state machine
    transitions to the CONNECTING state from any other
    state."
REFERENCE
    "9.4.2, 8.5.4.2.1"
::= { dot1xAuthDiagEntry 1 }
```

dot1xAuthEapLogoffsWhileConnecting OBJECT-TYPE

```
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Counts the number of times that the state machine
    transitions from CONNECTING to DISCONNECTED as a result
    of receiving an EAPOL-Logoff message."
REFERENCE
    "9.4.2, 8.5.4.2.2"
::= { dot1xAuthDiagEntry 2 }
```

dot1xAuthEntersAuthenticating OBJECT-TYPE

```
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Counts the number of times that the state machine
    transitions from CONNECTING to AUTHENTICATING, as a
    result of an EAP-Response/Identity message being
    received from the Supplicant."
REFERENCE
    "9.4.2, 8.5.4.2.3"
::= { dot1xAuthDiagEntry 3 }
```

dot1xAuthAuthSuccessWhileAuthenticating OBJECT-TYPE

```
SYNTAX      Counter32
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine
transitions from AUTHENTICATING to AUTHENTICATED, as a

result of the Backend Authentication state machine
indicating successful authentication of the Supplicant
(authSuccess = TRUE)."

REFERENCE

"9.4.2, 8.5.4.2.4"

::= { dot1xAuthDiagEntry 4 }

dot1xAuthAuthTimeoutsWhileAuthenticating OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine
transitions from AUTHENTICATING to ABORTING, as a result
of the Backend Authentication state machine indicating
authentication timeout (authTimeout = TRUE)."

REFERENCE

"9.4.2, 8.5.4.2.5"

::= { dot1xAuthDiagEntry 5 }

dot1xAuthAuthFailWhileAuthenticating OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine
transitions from AUTHENTICATING to HELD, as a result
of the Backend Authentication state machine indicating
authentication failure (authFail = TRUE)."

REFERENCE

"9.4.2, 8.5.4.2.6"

::= { dot1xAuthDiagEntry 6 }

dot1xAuthAuthReauthsWhileAuthenticating OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine
transitions from AUTHENTICATING to ABORTING, as a result
of a reauthentication request (reAuthenticate = TRUE)."

REFERENCE

"9.4.2, 8.5.4.2.7"

::= { dot1xAuthDiagEntry 7 }

dot1xAuthAuthEapStartsWhileAuthenticating OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of an EAPOL-Start message being received from the Supplicant."

REFERENCE

"9.4.2, 8.5.4.2.8"

::= { dot1xAuthDiagEntry 8 }

dot1xAuthAuthEapLogoffWhileAuthenticating OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of an EAPOL-Logoff message being received from the Supplicant."

REFERENCE

"9.4.2, 8.5.4.2.9"

::= { dot1xAuthDiagEntry 9 }

dot1xAuthAuthReauthsWhileAuthenticated OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine transitions from AUTHENTICATED to CONNECTING, as a result of a reauthentication request (reAuthenticate = TRUE)."

REFERENCE

"9.4.2, 8.5.4.2.10"

::= { dot1xAuthDiagEntry 10 }

dot1xAuthAuthEapStartsWhileAuthenticated OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine transitions from AUTHENTICATED to CONNECTING, as a result of an EAPOL-Start message being received from the Supplicant."

REFERENCE

"9.4.2, 8.5.4.2.11"

::= { dot1xAuthDiagEntry 11 }

dot1xAuthAuthEapLogoffWhileAuthenticated OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine

transitions from AUTHENTICATED to DISCONNECTED, as a result of an EAPOL-Logoff message being received from the Supplicant."

REFERENCE

"9.4.2, 8.5.4.2.12"

```
::= { dot1xAuthDiagEntry 12 }
```

dot1xAuthBackendResponses OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine sends an initial Access-Request packet to the Authentication server (i.e., executes sendRespToServer on entry to the RESPONSE state). Indicates that the Authenticator attempted communication with the Authentication Server."

REFERENCE

"9.4.2, 8.5.6.2.1"

```
::= { dot1xAuthDiagEntry 13 }
```

dot1xAuthBackendAccessChallenges OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine receives an initial Access-Challenge packet from the Authentication server (i.e., aReq becomes TRUE, causing exit from the RESPONSE state). Indicates that the Authentication Server has communication with the Authenticator."

REFERENCE

"9.4.2, 8.5.6.2.2"

```
::= { dot1xAuthDiagEntry 14 }
```

dot1xAuthBackendOtherRequestsToSupplicant OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine sends an EAP-Request packet (other than an Identity, Notification, Failure or Success message) to the Supplicant (i.e., executes txReq on entry to the REQUEST state). Indicates that the Authenticator chose an EAP-method."

REFERENCE

"9.4.2, 8.5.6.2.3"

```
::= { dot1xAuthDiagEntry 15 }
```

dot1xAuthBackendNonNakResponsesFromSupplicant OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine
receives a response from the Supplicant to an initial
EAP-Request, and the response is something other than

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EAP-NAK (i.e., rxResp becomes TRUE, causing the state machine to transition from REQUEST to RESPONSE, and the response is not an EAP-NAK). Indicates that the Supplicant can respond to the Authenticator's chosen EAP-method."

REFERENCE

"9.4.2, 8.5.6.2.4"

::= { dot1xAuthDiagEntry 16 }

dot1xAuthBackendAuthSuccesses OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine receives an EAP-Success message from the Authentication Server (i.e., aSuccess becomes TRUE, causing a transition from RESPONSE to SUCCESS). Indicates that the Supplicant has successfully authenticated to the Authentication Server."

REFERENCE

"9.4.2, 8.5.6.2.5"

::= { dot1xAuthDiagEntry 17 }

dot1xAuthBackendAuthFails OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Counts the number of times that the state machine receives an EAP-Failure message from the Authentication Server (i.e., aFail becomes TRUE, causing a transition from RESPONSE to FAIL). Indicates that the Supplicant has not authenticated to the Authentication Server."

REFERENCE

"9.4.2, 8.5.6.2.6"

::= { dot1xAuthDiagEntry 18 }

-- -----
-- The Authenticator Session Statistics Table
-- -----

dot1xAuthSessionStatsTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1xAuthSessionStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains the session statistics objects for the Authenticator PAE associated with each Port."

An entry appears in this table for each port that may
authenticate access to itself."

REFERENCE

"9.4.4"

::= { dot1xPaeAuthenticator 4 }

dot1xAuthSessionStatsEntry OBJECT-TYPE

SYNTAX Dot1xAuthSessionStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The session statistics information for an Authenticator PAE. This shows the current values being collected for each session that is still in progress, or the final values for the last valid session on each port where there is no session currently active."

INDEX { dot1xPaePortNumber }

::= { dot1xAuthSessionStatsTable 1 }

Dot1xAuthSessionStatsEntry ::=

SEQUENCE {

dot1xAuthSessionOctetsRx

Counter64,

dot1xAuthSessionOctetsTx

Counter64,

dot1xAuthSessionFramesRx

Counter32,

dot1xAuthSessionFramesTx

Counter32,

dot1xAuthSessionId

SnmpAdminString,

dot1xAuthSessionAuthenticMethod

INTEGER,

dot1xAuthSessionTime

TimeTicks,

dot1xAuthSessionTerminateCause

INTEGER,

dot1xAuthSessionUserName

SnmpAdminString

}

dot1xAuthSessionOctetsRx OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of octets received in user data frames on this Port during the session."

REFERENCE

"9.4.4, Session Octets Received"

::= { dot1xAuthSessionStatsEntry 1 }

dot1xAuthSessionOctetsTx OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of octets transmitted in user data
frames on this Port during the session."

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REFERENCE

"9.4.4, Session Octets Transmitted"
 ::= { dot1xAuthSessionStatsEntry 2 }

dot1xAuthSessionFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of user data frames received
 on this Port during the session."

REFERENCE

"9.4.4, Session Frames Received"
 ::= { dot1xAuthSessionStatsEntry 3 }

dot1xAuthSessionFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of user data frames transmitted
 on this Port during the session."

REFERENCE

"9.4.4, Session Frames Transmitted"
 ::= { dot1xAuthSessionStatsEntry 4 }

dot1xAuthSessionId OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A unique identifier for the session, in the
 form of a printable ASCII string of at least
 three characters."

REFERENCE

"9.4.4, Session Identifier"
 ::= { dot1xAuthSessionStatsEntry 5 }

dot1xAuthSessionAuthenticMethod OBJECT-TYPE

SYNTAX INTEGER {
 remoteAuthServer(1),
 localAuthServer(2)
 }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The authentication method used to establish the
 session."

REFERENCE

"9.4.4, Session Authentication Method"
 ::= { dot1xAuthSessionStatsEntry 6 }

dot1xAuthSessionTime OBJECT-TYPE
 SYNTAX TimeTicks

```
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "The duration of the session in seconds."
REFERENCE
    "9.4.4, Session Time"
::= { dot1xAuthSessionStatsEntry 7 }
```

dot1xAuthSessionTerminateCause OBJECT-TYPE

```
SYNTAX        INTEGER {
                    supplicantLogoff(1),
                    portFailure(2),
                    supplicantRestart(3),
                    reauthFailed(4),
                    authControlForceUnauth(5),
                    portReInit(6),
                    portAdminDisabled(7),
                    notTerminatedYet(999)
                }
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "The reason for the session termination."
REFERENCE
    "9.4.4, Session Terminate Cause"
::= { dot1xAuthSessionStatsEntry 8 }
```

dot1xAuthSessionUserName OBJECT-TYPE

```
SYNTAX        SnmpAdminString
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "The User-Name representing the identity of the
     Supplicant PAE."
REFERENCE
    "9.4.4, Session User Name"
::= { dot1xAuthSessionStatsEntry 9 }
```

```
-- -----
-- The PAE Supplicant Group
-- -----
-- -----
-- The Supplicant Configuration Table
-- -----
```

dot1xSuppConfigTable OBJECT-TYPE

```
SYNTAX        SEQUENCE OF Dot1xSuppConfigEntry
```

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains the configuration objects for the
Supplicant PAE associated with each port.

An entry appears in this table for each port that may authenticate itself when challenged by a remote system."

REFERENCE

"9.5.1"

::= { dot1xPaeSupplicant 1 }

dot1xSuppConfigEntry OBJECT-TYPE

SYNTAX Dot1xSuppConfigEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The configuration information for a Supplicant PAE."

INDEX { dot1xPaePortNumber }

::= { dot1xSuppConfigTable 1 }

Dot1xSuppConfigEntry ::=

SEQUENCE {

dot1xSuppPaeState

INTEGER,

dot1xSuppHeldPeriod

Unsigned32,

dot1xSuppAuthPeriod

Unsigned32,

dot1xSuppStartPeriod

Unsigned32,

dot1xSuppMaxStart

Unsigned32

}

dot1xSuppPaeState OBJECT-TYPE

SYNTAX INTEGER {

disconnected(1),

logoff(2),

connecting(3),

authenticating(4),

authenticated(5),

acquired(6),

held(7)

}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The current state of the Supplicant PAE state machine (8.5.8)."

REFERENCE

"9.5.1, Supplicant PAE State"

::= { dot1xSuppConfigEntry 1 }

dot1xSuppHeldPeriod OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

 "The value, in seconds, of the heldPeriod

constant currently in use by the Supplicant
PAE state machine (8.5.8.1.2)."

REFERENCE

"9.5.1, heldPeriod"

DEFVAL { 60 }

::= { dot1xSuppConfigEntry 2 }

dot1xSuppAuthPeriod OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The value, in seconds, of the authPeriod
constant currently in use by the Supplicant
PAE state machine (8.5.8.1.2)."

REFERENCE

"9.5.1, authPeriod"

DEFVAL { 30 }

::= { dot1xSuppConfigEntry 3 }

dot1xSuppStartPeriod OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The value, in seconds, of the startPeriod
constant currently in use by the Supplicant
PAE state machine (8.5.8.1.2)."

REFERENCE

"9.5.1, startPeriod"

DEFVAL { 30 }

::= { dot1xSuppConfigEntry 4 }

dot1xSuppMaxStart OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The value of the maxStart constant currently in use by
the Supplicant PAE state machine (8.5.8.1.2)."

REFERENCE

"9.5.1, maxStart"

DEFVAL { 3 }

::= { dot1xSuppConfigEntry 5 }

-- The Supplicant Statistics Table

dot1xSuppStatsTable OBJECT-TYPE
SYNTAX SEQUENCE OF Dot1xSuppStatsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"A table that contains the statistics objects for the Supplicant PAE associated with each port.

An entry appears in this table for each port that may authenticate itself when challenged by a remote system."

REFERENCE

"9.5.2"

::= { dot1xPaeSupplicant 2 }

dot1xSuppStatsEntry OBJECT-TYPE

SYNTAX Dot1xSuppStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The statistics information for a Supplicant PAE."

INDEX { dot1xPaePortNumber }

::= { dot1xSuppStatsTable 1 }

Dot1xSuppStatsEntry ::=

SEQUENCE {

dot1xSuppEapolFramesRx

Counter32,

dot1xSuppEapolFramesTx

Counter32,

dot1xSuppEapolStartFramesTx

Counter32,

dot1xSuppEapolLogoffFramesTx

Counter32,

dot1xSuppEapolRespIdFramesTx

Counter32,

dot1xSuppEapolRespFramesTx

Counter32,

dot1xSuppEapolReqIdFramesRx

Counter32,

dot1xSuppEapolReqFramesRx

Counter32,

dot1xSuppInvalidEapolFramesRx

Counter32,

dot1xSuppEapLengthErrorFramesRx

Counter32,

dot1xSuppLastEapolFrameVersion

Unsigned32,

dot1xSuppLastEapolFrameSource

MacAddress

}

dot1xSuppEapolFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames of any type
that have been received by this Supplicant."

REFERENCE

"9.5.2, EAPOL frames received"

```
::= { dot1xSuppStatsEntry 1 }
```

dot1xSuppEapolFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames of any type
that have been transmitted by this Supplicant."

REFERENCE

"9.5.2, EAPOL frames transmitted"

```
::= { dot1xSuppStatsEntry 2 }
```

dot1xSuppEapolStartFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL Start frames
that have been transmitted by this Supplicant."

REFERENCE

"9.5.2, EAPOL Start frames transmitted"

```
::= { dot1xSuppStatsEntry 3 }
```

dot1xSuppEapolLogoffFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL Logoff frames
that have been transmitted by this Supplicant."

REFERENCE

"9.5.2, EAPOL Logoff frames transmitted"

```
::= { dot1xSuppStatsEntry 4 }
```

dot1xSuppEapolRespIdFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAP Resp/Id frames
that have been transmitted by this Supplicant."

REFERENCE

"9.5.2, EAP Resp/Id frames transmitted"

```
::= { dot1xSuppStatsEntry 5 }
```

dot1xSuppEapolRespFramesTx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid EAP Response frames
(other than Resp/Id frames)
that have been transmitted by this Supplicant."

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REFERENCE

"9.5.2, EAP Resp frames transmitted"
::= { dot1xSuppStatsEntry 6 }

dot1xSuppEapolReqIdFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAP Req/Id frames
that have been received by this Supplicant."

REFERENCE

"9.5.2, EAP Req/Id frames received"
::= { dot1xSuppStatsEntry 7 }

dot1xSuppEapolReqFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAP Request frames (other than Rq/Id
frames) that have been received by this Supplicant."

REFERENCE

"9.5.2, EAP Req frames received"
::= { dot1xSuppStatsEntry 8 }

dot1xSuppInvalidEapolFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames that have been
received by this Supplicant in which the
frame type is not recognized."

REFERENCE

"9.5.2, Invalid EAPOL frames received"
::= { dot1xSuppStatsEntry 9 }

dot1xSuppEapLengthErrorFramesRx OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of EAPOL frames that have been
received by this Supplicant in which the Packet
Body Length field (7.5.5) is invalid."

REFERENCE

"9.5.2, EAP length error frames received"
::= { dot1xSuppStatsEntry 10 }

dot1xSuppLastEapolFrameVersion OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

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DESCRIPTION

"The protocol version number carried in the most recently received EAPOL frame."

REFERENCE

"9.5.2, Last EAPOL frame version"

::= { dot1xSuppStatsEntry 11 }

dot1xSuppLastEapolFrameSource OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The source MAC address carried in the most recently received EAPOL frame."

REFERENCE

"9.5.2, Last EAPOL frame source"

::= { dot1xSuppStatsEntry 12 }

-- -----
-- IEEE 802.1X MIB - Conformance Information
-- -----

dot1xPaeConformance OBJECT IDENTIFIER ::= { ieee8021paeMIB 2 }

dot1xPaeGroups OBJECT IDENTIFIER ::= { dot1xPaeConformance 1 }

dot1xPaeCompliances OBJECT IDENTIFIER

::= { dot1xPaeConformance 2 }

-- -----
-- units of conformance
-- -----

dot1xPaeSystemGroup OBJECT-GROUP

OBJECTS {

dot1xPaeSystemAuthControl,
dot1xPaePortProtocolVersion,
dot1xPaePortCapabilities,
dot1xPaePortInitialize,
dot1xPaePortReauthenticate

}

STATUS current

DESCRIPTION

"A collection of objects providing system information about, and control over, a PAE."

::= { dot1xPaeGroups 1 }

dot1xPaeAuthConfigGroup OBJECT-GROUP

OBJECTS {

dot1xAuthPaeState,
dot1xAuthBackendAuthState,
dot1xAuthAdminControlledDirections,
dot1xAuthOperControlledDirections,
dot1xAuthAuthControlledPortStatus,

```
dot1xAuthAuthControlledPortControl,
dot1xAuthQuietPeriod,
dot1xAuthTxPeriod,
dot1xAuthSuppTimeout,
dot1xAuthServerTimeout,
dot1xAuthMaxReq,
dot1xAuthReAuthPeriod,
dot1xAuthReAuthEnabled,
dot1xAuthKeyTxEnabled
}
STATUS      current
DESCRIPTION
    "A collection of objects providing configuration
    information about an Authenticator PAE."
::= { dot1xPaeGroups 2 }
```

dot1xPaeAuthStatsGroup OBJECT-GROUP

```
OBJECTS {
    dot1xAuthEapolFramesRx,
    dot1xAuthEapolFramesTx,
    dot1xAuthEapolStartFramesRx,
    dot1xAuthEapolLogoffFramesRx,
    dot1xAuthEapolRespIdFramesRx,
    dot1xAuthEapolRespFramesRx,
    dot1xAuthEapolReqIdFramesTx,
    dot1xAuthEapolReqFramesTx,
    dot1xAuthInvalidEapolFramesRx,
    dot1xAuthEapLengthErrorFramesRx,
    dot1xAuthLastEapolFrameVersion,
    dot1xAuthLastEapolFrameSource
}
STATUS      current
DESCRIPTION
    "A collection of objects providing statistics about an
    Authenticator PAE."
::= { dot1xPaeGroups 3 }
```

dot1xPaeAuthDiagGroup OBJECT-GROUP

```
OBJECTS {
    dot1xAuthEntersConnecting,
    dot1xAuthEapLogoffsWhileConnecting,
    dot1xAuthEntersAuthenticating,
    dot1xAuthAuthSuccessWhileAuthenticating,
    dot1xAuthAuthTimeoutsWhileAuthenticating,
    dot1xAuthAuthFailWhileAuthenticating,
    dot1xAuthAuthReauthsWhileAuthenticating,
    dot1xAuthAuthEapStartsWhileAuthenticating,
    dot1xAuthAuthEapLogoffWhileAuthenticating,
    dot1xAuthAuthReauthsWhileAuthenticated,

```

dot1xAuthAuthEapStartsWhileAuthenticated,
dot1xAuthAuthEapLogoffWhileAuthenticated,
dot1xAuthBackendResponses,
dot1xAuthBackendAccessChallenges,
dot1xAuthBackendOtherRequestsToSupplicant,

```
        dot1xAuthBackendNonNakResponsesFromSupplicant,
        dot1xAuthBackendAuthSuccesses,
        dot1xAuthBackendAuthFails
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing diagnostic statistics
        about an Authenticator PAE."
    ::= { dot1xPaeGroups 4 }
```

dot1xPaeAuthSessionStatsGroup OBJECT-GROUP

```
    OBJECTS {
        dot1xAuthSessionOctetsRx,
        dot1xAuthSessionOctetsTx,
        dot1xAuthSessionFramesRx,
        dot1xAuthSessionFramesTx,
        dot1xAuthSessionId,
        dot1xAuthSessionAuthenticMethod,
        dot1xAuthSessionTime,
        dot1xAuthSessionTerminateCause,
        dot1xAuthSessionUserName
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing statistics about the
        current, or last session for an Authenticator PAE."
    ::= { dot1xPaeGroups 5 }
```

dot1xPaeSuppConfigGroup OBJECT-GROUP

```
    OBJECTS {
        dot1xSuppPaeState,
        dot1xSuppHeldPeriod,
        dot1xSuppAuthPeriod,
        dot1xSuppStartPeriod,
        dot1xSuppMaxStart
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing configuration
        information about a Supplicant PAE."
    ::= { dot1xPaeGroups 6 }
```

dot1xPaeSuppStatsGroup OBJECT-GROUP

```
    OBJECTS {
        dot1xSuppEapolFramesRx,
        dot1xSuppEapolFramesTx,
        dot1xSuppEapolStartFramesTx,
        dot1xSuppEapolLogoffFramesTx,
        dot1xSuppEapolRespIdFramesTx,
```

dot1xSuppEapolRespFramesTx,
dot1xSuppEapolReqIdFramesRx,
dot1xSuppEapolReqFramesRx,
dot1xSuppInvalidEapolFramesRx,
dot1xSuppEapLengthErrorFramesRx,


```
        dot1xSupLastEapolFrameVersion,
        dot1xSupLastEapolFrameSource
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects providing statistics about a
        Supplicant PAE."
    ::= { dot1xPaeGroups 7 }
```

```
-- -----
-- compliance statements
-- -----
```

dot1xPaeCompliance MODULE-COMPLIANCE

```
    STATUS      current
    DESCRIPTION
        "The compliance statement for device support of
        Port Access Control."

    MODULE

        MANDATORY-GROUPS {
            dot1xPaeSystemGroup
        }

        GROUP    dot1xPaeAuthConfigGroup
        DESCRIPTION
            "This group is mandatory for systems that support
            the Authenticator functions of the PAE."

        OBJECT    dot1xAuthAdminControlledDirections
        SYNTAX     INTEGER {
                        both(0)
                    }
        MIN-ACCESS read-only
        DESCRIPTION
            "Support for in(1) is optional."

        OBJECT    dot1xAuthOperControlledDirections
        SYNTAX     INTEGER {
                        both(0)
                    }
        DESCRIPTION
            "Support for in(1) is optional."

        OBJECT    dot1xAuthKeyTxEnabled
        MIN-ACCESS read-only
        DESCRIPTION
            "An Authenticator PAE that does not support
            EAPOL-Key frames may implement this object as
```

read-only, returning a value of FALSE."

GROUP dot1xPaeAuthStatsGroup

DESCRIPTION

"This group is mandatory for systems that support

the Authenticator functions of the PAE."

GROUP dot1XPaeAuthDiagGroup

DESCRIPTION

"This group is optional for systems that support the Authenticator functions of the PAE."

GROUP dot1XPaeAuthSessionStatsGroup

DESCRIPTION

"This group is optional for systems that support the Authenticator functions of the PAE."

GROUP dot1XPaeSuppConfigGroup

DESCRIPTION

"This group is mandatory for systems that support the Supplicant functions of the PAE."

GROUP dot1XPaeSuppStatsGroup

DESCRIPTION

"This group is mandatory for systems that support the Supplicant functions of the PAE."

::= { dot1XPaeCompliances 1 }

END

5. Intellectual Property

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6. Acknowledgements

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metropolitan area networks Port-Based Network Access Control.

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9. Security Considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write. If maliciously set these objects can affect the operation of the port authentication functions, including allowing access to unauthorized users or denying access to authorized users. Hence the support for SET operations in without proper access control may have a negative effect on network operations. The sensitive read-write objects in this MIB module are: dot1xPaeSystemAuthControl, dot1xPaePortInitialize, dot1xPaePortReauthenticate, dot1xAuthAdminControlledDirections, dot1xAuthAuthControlledPortControl, dot1xAuthQuietPeriod,

dot1xAuthTxPeriod, dot1xAuthSuppTimeout, dot1xAuthServerTimeout,
dot1xAuthMaxReq, dot1xAuthReAuthPeriod, dot1xAuthReAuthEnabled,
dot1xAuthKeyTxEnabled, dot1xSuppHeldPeriod, dot1xSuppAuthPeriod,
dot1xSuppStartPeriod, and dot1xSuppMaxStart.

The readable object in this MIB module (i.e., the managed objects that have a MAX-ACCESS clause of anything other than not-accessible) contain information that may be used to compromise the access and security of network users. It is therefore important to control GET and/or NOTIFY access to these objects and possibly even to encrypt their values when sending them over the network via SNMP.

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.

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[11.](#) Change Log

The following changes were made to [<draft-ietf-bridge-8021x-00.txt>](#) to produce [<draft-ietf-bridge-8021x-03.txt>](#):

- 1) Redefined the overview to more reflect the IEEE 802.1x document.
- 1) Clarification of the security [section](#)
- 2) Splitting references into Normative and Informative
- 3) Changing draft to reflect IETF document standards.

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