

Network Working Group
Internet-Draft
Obsoletes: RFC [2618](#) (if approved)
Expires: December 28, 2006

D. Nelson
Enterasys Networks
June 26, 2006

RADIUS Authentication Client MIB for IPV6
draft-ietf-radext-rfc2618bis-04.txt

Status of this Memo

By submitting this Internet-Draft, each author represents that any applicable patent or other IPR claims of which he or she is aware have been or will be disclosed, and any of which he or she becomes aware will be disclosed, in accordance with [Section 6 of BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/lid-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on December 28, 2006.

Copyright Notice

Copyright (C) The Internet Society (2006).

Abstract

This memo defines a set of extensions, which instrument RADIUS authentication client functions. These extensions represent a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. Using these extensions IP-based management stations can manage RADIUS authentication clients.

This memo obsoletes [RFC 2618](#) by deprecating the MIB table containing

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

IPv4-only address formats and defining a new table to add support for version neutral IP address formats. The remaining MIB objects from [RFC 2618](#) are carried forward into this document. The memo also adds UNITS and REFERENCE clauses to selected objects.

Table of Contents

1.	Terminology	3
2.	Introduction	3
3.	The Internet-Standard Management Framework	3
4.	Scope of Changes	3
5.	Structure of the MIB Module	4
6.	Deprecated Objects	5
7.	Definitions	5
8.	IANA Considerations	20
9.	Security Considerations	20
10.	References	22
10.1.	Normative References	22
10.2.	Informative References	22
Appendix A.	Acknowledgments	22
	Author's Address	23
	Intellectual Property and Copyright Statements	24

1. Terminology

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 [RFC 2119](#) [[RFC2119](#)].

This document uses terminology from [RFC 2865](#) [[RFC2865](#)].

This document uses the word "malformed" with respect to RADIUS packets, particularly in the context of counters of "malformed packets". While [RFC 2865](#) does not provide an explicit definition of "malformed", malformed generally means that the implementation has determined the packet does not match the format defined in [RFC 2865](#). Some implementations may determine that packets are malformed when the Vendor Specific Attribute (VSA) format does not follow the [RFC 2865](#) recommendations for VSAs. Those implementations are used in deployments today, and thus set the de-facto definition of "malformed".

2. Introduction

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. The objects defined within this memo relate to the Remote Authentication Dial-In User Service (RADIUS) Authentication Client as defined in [RFC 2865](#) [[RFC2865](#)].

3. The Internet-Standard Management Framework

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

Managed objects are accessed via a virtual information store, termed

the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

4. Scope of Changes

This document obsoletes [RFC 2618](#) [[RFC2618](#)], RADIUS Authentication

Nelson

Expires December 28, 2006

[Page 3]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

Client MIB, by deprecating the radiusAuthServerTable table and adding a new table, radiusAuthServerExtTable, containing radiusAuthServerInetAddressType, radiusAuthServerInetAddress, and radiusAuthClientServerInetPortNumber. The purpose of these added MIB objects is to support version neutral IP addressing formats. The existing table containing radiusAuthServerAddress and radiusAuthClientServerPortNumber is deprecated. The remaining MIB objects are carried forward from [RFC 2618](#) into this document. This memo also adds UNITS and REFERENCE clauses to selected objects.

[RFC 4001](#) [[RFC4001](#)], which defines the SMI Textual Conventions for IPv6 addresses, contains the following recommendation.

'In particular, when revising a MIB module that contains IPv4 specific tables, it is suggested to define new tables using the textual conventions defined in this memo [[RFC4001](#)] that support all versions of IP. The status of the new tables SHOULD be "current", whereas the status of the old IP version specific tables SHOULD be changed to "deprecated". The other approach, of having multiple similar tables for different IP versions, is strongly discouraged.'

5. Structure of the MIB Module

The RADIUS authentication protocol, described in [RFC 2865](#) [[RFC2865](#)], distinguishes between the client function and the server function. In RADIUS authentication, clients send Access-Requests, and servers reply with Access-Accepts, Access-Rejects, and Access-Challenges. Typically Network Access Server (NAS) devices implement the client

function, and thus would be expected to implement the RADIUS authentication client MIB, while RADIUS authentication servers implement the server function, and thus would be expected to implement the RADIUS authentication server MIB.

However, it is possible for a RADIUS authentication entity to perform both client and server functions. For example, a RADIUS proxy may act as a server to one or more RADIUS authentication clients, while simultaneously acting as an authentication client to one or more authentication servers. In such situations, it is expected that RADIUS entities combining client and server functionality will support both the client and server MIBs. The client MIB is defined in this document, and the server MIB is defined in [[2619bis](#)].

RFC Editor: Replace the above I-D reference with the assigned RFC number at the time of publication and delete this note.

This MIB module contains two scalars as well as a single table, the RADIUS Authentication Server Table, which contains one row for each

Nelson

Expires December 28, 2006

[Page 4]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

RADIUS authentication server with which the client shares a secret. Each entry in the RADIUS Authentication Server Table includes sixteen columns presenting a view of the activity of the RADIUS authentication client.

[6.](#) Deprecated Objects

The deprecated table in this MIB is carried forward from [RFC 2618](#) [[RFC2618](#)]. There are two conditions under which it MAY be desirable for managed entities to continue to support the deprecated table:

1. The managed entity only supports IPv4 address formats.
2. The managed entity supports both IPv4 and IPv6 address formats, and the deprecated table is supported for backwards compatibility with older management stations. This option SHOULD only be used when the IP addresses in the new table are in IPv4 format and can accurately be represented in both the new table and the deprecated table.

Managed entities SHOULD NOT instantiate row entries in the deprecated table, containing IPv4-only address objects, when the RADIUS server

address represented in such a table row is not an IPv4 address. Managed entities SHOULD NOT return inaccurate values of IP address or SNMP object access errors for IPv4-only address objects in otherwise populated tables. When row entries exist in both the deprecated IPv4-only table and the new IP version neutral table that describe the same RADIUS server, the row indexes SHOULD be the same for the corresponding rows in each table, to facilitate correlation of these related rows by management applications.

7. Definitions

```
RADIUS-AUTH-CLIENT-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY, OBJECT-TYPE, OBJECT-IDENTITY,  
    Counter32, Integer32, Gauge32,  
    IpAddress, TimeTicks, mib-2          FROM SNMPv2-SMI  
    SnmpAdminString                     FROM SNMP-FRAMEWORK-MIB  
    InetAddressType, InetAddress,  
    InetPortNumber                     FROM INET-ADDRESS-MIB  
    MODULE-COMPLIANCE, OBJECT-GROUP    FROM SNMPv2-CONF;
```

```
radiusAuthClientMIB MODULE-IDENTITY
```

```
    LAST-UPDATED "200605100000Z" -- 10 May 2006
```

Nelson

Expires December 28, 2006

[Page 5]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

```
ORGANIZATION "IETF RADIUS Extensions Working Group."
```

```
CONTACT-INFO
```

```
    " Bernard Aboba  
    Microsoft  
    One Microsoft Way  
    Redmond, WA 98052  
    US  
    Phone: +1 425 936 6605  
    EMail: bernarda@microsoft.com"
```

```
DESCRIPTION
```

```
    "The MIB module for entities implementing the client  
    side of the Remote Authentication Dial-In User Service  
    (RADIUS) authentication protocol. Copyright (C) The  
    Internet Society (2006). This version of this MIB  
    module is part of RFC xxxx; see the RFC itself for
```

full legal notices."

-- RFC Editor: replace xxxx with actual RFC number at the time of
-- publication, and remove this note.

REVISION "200605100000Z" -- 10 May 2006

DESCRIPTION

"Revised version as published in RFC xxxx. This
version obsoletes that of [RFC 2618](#) by deprecating
the MIB table containing IPv4-only address formats
and defining a new table to add support for version
neutral IP address formats. The remaining MIB objects
from [RFC 2618](#) are carried forward into this version."

-- RFC Editor: replace xxxx with actual RFC number at the time of
-- publication, and remove this note.

REVISION "199906110000Z" -- 11 Jun 1999

DESCRIPTION "Initial version as published in [RFC 2618](#)."

::= { radiusAuthentication 2 }

radiusMIB OBJECT-IDENTITY

STATUS current

DESCRIPTION

"The OID assigned to RADIUS MIB work by the IANA."

::= { mib-2 67 }

radiusAuthentication OBJECT IDENTIFIER ::= {radiusMIB 1}

radiusAuthClientMIBObjects OBJECT IDENTIFIER

::= { radiusAuthClientMIB 1 }

radiusAuthClient OBJECT IDENTIFIER

Nelson

Expires December 28, 2006

[Page 6]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

::= { radiusAuthClientMIBObjects 1 }

radiusAuthClientInvalidServerAddresses OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Response packets
received from unknown addresses."
 ::= { radiusAuthClient 1 }

radiusAuthClientIdentifier OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The NAS-Identifier of the RADIUS authentication client.

This is not necessarily the same as sysName in MIB II."

REFERENCE "[RFC 2865 section 5.32](#)"

::= { radiusAuthClient 2 }

radiusAuthServerTable OBJECT-TYPE

SYNTAX SEQUENCE OF RadiusAuthServerEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"The (conceptual) table listing the RADIUS authentication
servers with which the client shares a secret."

::= { radiusAuthClient 3 }

radiusAuthServerEntry OBJECT-TYPE

SYNTAX RadiusAuthServerEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"An entry (conceptual row) representing a RADIUS
authentication server with which the client shares
a secret."

INDEX { radiusAuthServerIndex }

::= { radiusAuthServerTable 1 }

RadiusAuthServerEntry ::= SEQUENCE {

radiusAuthServerIndex Integer32,

radiusAuthServerAddress IPAddress,

radiusAuthClientServerPortNumber Integer32,

radiusAuthClientRoundTripTime TimeTicks,

radiusAuthClientAccessRequests Counter32,

radiusAuthClientAccessAccepts	Counter32,
radiusAuthClientAccessRejects	Counter32,
radiusAuthClientAccessChallenges	Counter32,
radiusAuthClientMalformedAccessResponses	Counter32,
radiusAuthClientBadAuthenticators	Counter32,
radiusAuthClientPendingRequests	Gauge32,
radiusAuthClientTimeouts	Counter32,
radiusAuthClientUnknownTypes	Counter32,
radiusAuthClientPacketsDropped	Counter32

}

radiusAuthServerIndex OBJECT-TYPE
 SYNTAX Integer32 (1..2147483647)
 MAX-ACCESS not-accessible
 STATUS deprecated
 DESCRIPTION
 "A number uniquely identifying each RADIUS
 Authentication server with which this client
 communicates."
 ::= { radiusAuthServerEntry 1 }

radiusAuthServerAddress OBJECT-TYPE
 SYNTAX IPAddress
 MAX-ACCESS read-only
 STATUS deprecated
 DESCRIPTION
 "The IP address of the RADIUS authentication server
 referred to in this table entry."
 ::= { radiusAuthServerEntry 2 }

radiusAuthClientServerPortNumber OBJECT-TYPE
 SYNTAX Integer32 (0..65535)
 MAX-ACCESS read-only
 STATUS deprecated
 DESCRIPTION
 "The UDP port the client is using to send requests to
 this server."
 REFERENCE ["RFC 2865 section 3"](#)
 ::= { radiusAuthServerEntry 3 }

radiusAuthClientRoundTripTime OBJECT-TYPE
 SYNTAX TimeTicks
 MAX-ACCESS read-only
 STATUS deprecated
 DESCRIPTION
 "The time interval (in hundredths of a second) between
 the most recent Access-Reply/Access-Challenge and the

```
        Access-Request that matched it from this RADIUS
        authentication server."
 ::= { radiusAuthServerEntry 4 }

-- Request/Response statistics
--
-- TotalIncomingPackets = Accepts + Rejects + Challenges +
-- UnknownTypes
--
-- TotalIncomingPackets - MalformedResponses -
-- BadAuthenticators - UnknownTypes - PacketsDropped =
-- Successfully received
--
-- AccessRequests + PendingRequests + ClientTimeouts =
-- Successfully received
--
--

radiusAuthClientAccessRequests OBJECT-TYPE
    SYNTAX Counter32
    UNITS "packets"
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The number of RADIUS Access-Request packets sent
        to this server. This does not include retransmissions."
    REFERENCE "RFC 2865 section 4.1"
    ::= { radiusAuthServerEntry 5 }

radiusAuthClientAccessRetransmissions OBJECT-TYPE
    SYNTAX Counter32
    UNITS "packets"
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The number of RADIUS Access-Request packets
        retransmitted to this RADIUS authentication server."
    REFERENCE "RFC 2865 sections 2.5, 4.1"
    ::= { radiusAuthServerEntry 6 }

radiusAuthClientAccessAccepts OBJECT-TYPE
    SYNTAX Counter32
    UNITS "packets"
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
```

"The number of RADIUS Access-Accept packets
(valid or invalid) received from this server."

Nelson

Expires December 28, 2006

[Page 9]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

REFERENCE "[RFC 2865 section 4.2](#)"
::= { radiusAuthServerEntry 7 }

radiusAuthClientAccessRejects OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of RADIUS Access-Reject packets
 (valid or invalid) received from this server."
REFERENCE "[RFC 2865 section 4.3](#)"
::= { radiusAuthServerEntry 8 }

radiusAuthClientAccessChallenges OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of RADIUS Access-Challenge packets
 (valid or invalid) received from this server."
REFERENCE "[RFC 2865 section 4.4](#)"
::= { radiusAuthServerEntry 9 }

-- "Access-Response" includes an Access-Accept, Access-Challenge
-- or Access-Reject

radiusAuthClientMalformedAccessResponses OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of malformed RADIUS Access-Response
 packets received from this server.
 Malformed packets include packets with
 an invalid length. Bad authenticators or
 Message Authenticator attributes or unknown types

are not included as malformed access responses."
 ::= { radiusAuthServerEntry 10 }

radiusAuthClientBadAuthenticators OBJECT-TYPE

SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

Nelson

Expires December 28, 2006

[Page 10]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

"The number of RADIUS Access-Response packets
containing invalid authenticators or Message
Authenticator attributes received from this server."
REFERENCE "[RFC 2865 section 3](#), [RFC 2869 section 5.14](#)"
 ::= { radiusAuthServerEntry 11 }

radiusAuthClientPendingRequests OBJECT-TYPE

SYNTAX Gauge32
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"The number of RADIUS Access-Request packets
destined for this server that have not yet timed out
or received a response. This variable is incremented
when an Access-Request is sent and decremented due to
receipt of an Access-Accept, Access-Reject or
Access-Challenge, a timeout or retransmission."
REFERENCE "[RFC 2865 section 2](#)"
 ::= { radiusAuthServerEntry 12 }

radiusAuthClientTimeouts OBJECT-TYPE

SYNTAX Counter32
UNITS "timeouts"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"The number of authentication timeouts to this server.
After a timeout the client may retry to the same
server, send to a different server, or
give up. A retry to the same server is counted as a
retransmit as well as a timeout. A send to a different
server is counted as a Request as well as a timeout."

REFERENCE "[RFC 2865 section 2](#), [RFC 2869 section 2.3.2](#)"
 ::= { radiusAuthServerEntry 13 }

radiusAuthClientUnknownTypes OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of RADIUS packets of unknown type which
 were received from this server on the authentication
 port."
 ::= { radiusAuthServerEntry 14 }

radiusAuthClientPacketsDropped OBJECT-TYPE
SYNTAX Counter32

Nelson Expires December 28, 2006 [Page 11]

Internet-Draft RADIUS Auth Client MIB (IPv6) June 2006

UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of RADIUS packets of which were
 received from this server on the authentication port
 and dropped for some other reason."
 ::= { radiusAuthServerEntry 15 }

-- New MIB Objects in this revision

radiusAuthServerExtTable OBJECT-TYPE
SYNTAX SEQUENCE OF RadiusAuthServerExtEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The (conceptual) table listing the RADIUS authentication
 servers with which the client shares a secret."
 ::= { radiusAuthClient 4 }

radiusAuthServerExtEntry OBJECT-TYPE
SYNTAX RadiusAuthServerExtEntry
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"An entry (conceptual row) representing a RADIUS authentication server with which the client shares a secret."

INDEX { radiusAuthServerExtIndex }
 ::= { radiusAuthServerExtTable 1 }

RadiusAuthServerExtEntry ::= SEQUENCE {
 radiusAuthServerExtIndex Integer32,
 radiusAuthServerInetAddressType InetAddressType,
 radiusAuthServerInetAddress InetAddress,
 radiusAuthClientServerInetPortNumber InetPortNumber,
 radiusAuthClientExtRoundTripTime TimeTicks,
 radiusAuthClientExtAccessRequests Counter32,
 radiusAuthClientExtAccessRetransmissions Counter32,
 radiusAuthClientExtAccessAccepts Counter32,
 radiusAuthClientExtAccessRejects Counter32,
 radiusAuthClientExtAccessChallenges Counter32,
 radiusAuthClientExtMalformedAccessResponses Counter32,
 radiusAuthClientExtBadAuthenticators Counter32,
 radiusAuthClientExtPendingRequests Gauge32,
 radiusAuthClientExtTimeouts Counter32,
 radiusAuthClientExtUnknownTypes Counter32,

Nelson

Expires December 28, 2006

[Page 12]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

radiusAuthClientExtPacketsDropped Counter32,
 radiusAuthClientCounterDiscontinuity TimeTicks
 }

radiusAuthServerExtIndex OBJECT-TYPE

SYNTAX Integer32 (1..2147483647)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A number uniquely identifying each RADIUS Authentication server with which this client communicates."

::= { radiusAuthServerExtEntry 1 }

radiusAuthServerInetAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current
DESCRIPTION
 "The type of address format used for the
 radiusAuthServerInetAddress object."
::= { radiusAuthServerExtEntry 2 }

radiusAuthServerInetAddress OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The IP address of the RADIUS authentication
 server referred to in this table entry, using
 the version neutral IP address format."
::= { radiusAuthServerExtEntry 3 }

radiusAuthClientServerInetPortNumber OBJECT-TYPE
SYNTAX InetPortNumber (1..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The UDP port the client is using to send requests
 to this server. The value of zero (0) is invalid."
REFERENCE "[RFC 2865 section 3](#)"
::= { radiusAuthServerExtEntry 4 }

radiusAuthClientExtRoundTripTime OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current

Nelson Expires December 28, 2006 [Page 13]

Internet-Draft RADIUS Auth Client MIB (IPv6) June 2006

DESCRIPTION
 "The time interval (in hundredths of a second) between
 the most recent Access-Reply/Access-Challenge and the
 Access-Request that matched it from this RADIUS
 authentication server."
REFERENCE "[RFC 2865 section 2](#)"
::= { radiusAuthServerExtEntry 5 }

-- Request/Response statistics
--
-- TotalIncomingPackets = Accepts + Rejects + Challenges +

```
-- UnknownTypes
--
-- TotalIncomingPackets - MalformedResponses -
-- BadAuthenticators - UnknownTypes - PacketsDropped =
-- Successfully received
--
-- AccessRequests + PendingRequests + ClientTimeouts =
-- Successfully received
--
--
```

radiusAuthClientExtAccessRequests OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Request packets sent to this server. This does not include retransmissions. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 section 4.1](#)"

::= { radiusAuthServerExtEntry 6 }

radiusAuthClientExtAccessRetransmissions OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Request packets retransmitted to this RADIUS authentication server. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value

of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865](#) sections [2.5](#), [4.1](#)"

::= { radiusAuthServerExtEntry 7 }

radiusAuthClientExtAccessAccepts OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Accept packets (valid or invalid) received from this server. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 section 4.2](#)"

::= { radiusAuthServerExtEntry 8 }

radiusAuthClientExtAccessRejects OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Reject packets (valid or invalid) received from this server. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 section 4.3](#)"

::= { radiusAuthServerExtEntry 9 }

radiusAuthClientExtAccessChallenges OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Challenge packets (valid or invalid) received from this server. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 section 4.4](#)"

::= { radiusAuthServerExtEntry 10 }

-- "Access-Response" includes an Access-Accept, Access-Challenge
-- or Access-Reject

radiusAuthClientExtMalformedAccessResponses OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of malformed RADIUS Access-Response packets received from this server.

Malformed packets include packets with an invalid length. Bad authenticators or Message Authenticator attributes or unknown types are not included as malformed access responses.

This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 sections 3, 4](#)"

::= { radiusAuthServerExtEntry 11 }

radiusAuthClientExtBadAuthenticators OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Access-Response packets containing invalid authenticators or Message Authenticator attributes received from this server. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 section 3](#)"

::= { radiusAuthServerExtEntry 12 }

radiusAuthClientExtPendingRequests OBJECT-TYPE

SYNTAX Gauge32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

destined for this server that have not yet timed out or received a response. This variable is incremented when an Access-Request is sent and decremented due to receipt of an Access-Accept, Access-Reject or Access-Challenge, a timeout or retransmission."

REFERENCE "[RFC 2865 section 2](#)"

::= { radiusAuthServerExtEntry 13 }

radiusAuthClientExtTimeouts OBJECT-TYPE

SYNTAX Counter32

UNITS "timeouts"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of authentication timeouts to this server. After a timeout the client may retry to the same server, send to a different server, or give up. A retry to the same server is counted as a retransmit as well as a timeout. A send to a different server is counted as a Request as well as a timeout. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865](#) sections [2.5](#), [4.1](#)"

::= { radiusAuthServerExtEntry 14 }

radiusAuthClientExtUnknownTypes OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS packets of unknown type which were received from this server on the authentication port. This counter may experience a discontinuity when the RADIUS Client module within the managed entity is reinitialized, as indicated by the current value of radiusAuthClientCounterDiscontinuity."

REFERENCE "[RFC 2865 section 4](#)"

```
::= { radiusAuthServerExtEntry 15 }
```

```
radiusAuthClientExtPacketsDropped OBJECT-TYPE
```

```
SYNTAX Counter32
```

```
UNITS "packets"
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

```
DESCRIPTION
```

Nelson

Expires December 28, 2006

[Page 17]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

```
"The number of RADIUS packets of which were
received from this server on the authentication port
and dropped for some other reason. This counter may
experience a discontinuity when the RADIUS Client
module within the managed entity is reinitialized,
as indicated by the current value of
radiusAuthClientCounterDiscontinuity."
```

```
::= { radiusAuthServerExtEntry 16 }
```

```
radiusAuthClientCounterDiscontinuity OBJECT-TYPE
```

```
SYNTAX TimeTicks
```

```
UNITS "centiseconds"
```

```
MAX-ACCESS read-only
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The number of centiseconds since the last discontinuity
in the RADIUS Client counters. A discontinuity may
be the result of a reinitialization of the RADIUS
Client module within the managed entity."
```

```
::= { radiusAuthServerExtEntry 17 }
```

```
-- conformance information
```

```
radiusAuthClientMIBConformance OBJECT IDENTIFIER
```

```
::= { radiusAuthClientMIB 2 }
```

```
radiusAuthClientMIBCompliances OBJECT IDENTIFIER
```

```
::= { radiusAuthClientMIBConformance 1 }
```

```
radiusAuthClientMIBGroups OBJECT IDENTIFIER
```

```
::= { radiusAuthClientMIBConformance 2 }
```

-- compliance statements

radiusAuthClientMIBCompliance MODULE-COMPLIANCE

STATUS deprecated

DESCRIPTION

"The compliance statement for authentication clients implementing the RADIUS Authentication Client MIB. Implementation of this module is for IPv4-only entities, or for backwards compatibility use with entities that support both IPv4 and IPv6."

MODULE -- this module

MANDATORY-GROUPS { radiusAuthClientMIBGroup }

::= { radiusAuthClientMIBCompliances 1 }

Nelson

Expires December 28, 2006

[Page 18]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

radiusAuthClientExtMIBCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for authentication clients implementing the RADIUS Authentication Client IPv6 Extensions MIB. Implementation of this module is for entities that support IPv6, or support IPv4 and IPv6."

MODULE -- this module

MANDATORY-GROUPS { radiusAuthClientExtMIBGroup }

OBJECT radiusAuthServerInetAddressType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is only required to support IPv4 and globally unique IPv6 addresses."

OBJECT radiusAuthServerInetAddress

SYNTAX InetAddress (SIZE (4|16))

DESCRIPTION

"An implementation is only required to support IPv4 and globally unique IPv6 addresses."

::= { radiusAuthClientMIBCompliances 2 }

-- units of conformance

radiusAuthClientMIBGroup OBJECT-GROUP

```
OBJECTS { radiusAuthClientIdentifier,
           radiusAuthClientInvalidServerAddresses,
           radiusAuthServerAddress,
           radiusAuthClientServerPortNumber,
           radiusAuthClientRoundTripTime,
           radiusAuthClientAccessRequests,
           radiusAuthClientAccessRetransmissions,
           radiusAuthClientAccessAccepts,
           radiusAuthClientAccessRejects,
           radiusAuthClientAccessChallenges,
           radiusAuthClientMalformedAccessResponses,
           radiusAuthClientBadAuthenticators,
           radiusAuthClientPendingRequests,
           radiusAuthClientTimeouts,
           radiusAuthClientUnknownTypes,
           radiusAuthClientPacketsDropped
}
```

STATUS deprecated

DESCRIPTION

"The basic collection of objects providing management of

Nelson

Expires December 28, 2006

[Page 19]

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

RADIUS Authentication Clients."
::= { radiusAuthClientMIBGroups 1 }

radiusAuthClientExtMIBGroup OBJECT-GROUP

```
OBJECTS { radiusAuthClientIdentifier,
           radiusAuthClientInvalidServerAddresses,
           radiusAuthServerInetAddressType,
           radiusAuthServerInetAddress,
           radiusAuthClientServerInetPortNumber,
           radiusAuthClientExtRoundTripTime,
           radiusAuthClientExtAccessRequests,
           radiusAuthClientExtAccessRetransmissions,
           radiusAuthClientExtAccessAccepts,
           radiusAuthClientExtAccessRejects,
           radiusAuthClientExtAccessChallenges,
           radiusAuthClientExtMalformedAccessResponses,
           radiusAuthClientExtBadAuthenticators,
           radiusAuthClientExtPendingRequests,
```

```

        radiusAuthClientExtTimeouts,
        radiusAuthClientExtUnknownTypes,
        radiusAuthClientExtPacketsDropped,
        radiusAuthClientCounterDiscontinuity
    }
    STATUS current
    DESCRIPTION
        "The collection of extended objects providing
        management of RADIUS Authentication Clients
        using version neutral IP address format."
    ::= { radiusAuthClientMIBGroups 2 }

END

```

[8.](#) IANA Considerations

This document requires no new IANA assignments.

[9.](#) Security Considerations

There are no management objects defined in this MIB that have a MAX-ACCESS clause of read-write and/or read-create. So, if this MIB is implemented correctly, then there is no risk that an intruder can alter or create any management objects of this MIB via direct SNMP SET operations.

Some of the readable objects in this MIB module (i.e., objects with a

Nelson	Expires December 28, 2006	[Page 20]
--------	---------------------------	-----------

Internet-Draft	RADIUS Auth Client MIB (IPv6)	June 2006
----------------	-------------------------------	-----------

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. These are the tables and objects and their sensitivity/vulnerability:

radiusAuthServerIPAddress This can be used to determine the address of the RADIUS authentication server with which the client is communicating. This information could be useful in mounting an attack on the authentication server.

radiusAuthClientServerPortNumber This can be used to determine the port number on which the RADIUS authentication client is sending. This information could be useful in impersonating the client in order to send data to the authentication server.

radiusAuthServerInetAddress This can be used to determine the address of the RADIUS authentication server with which the client is communicating. This information could be useful in mounting an attack on the authentication server.

radiusAuthClientServerInetPortNumber This can be used to determine the port number on which the RADIUS authentication client is sending. This information could be useful in impersonating the client in order to send data to the authentication server.

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.

[10.](#) References

Nelson	Expires December 28, 2006	[Page 21]
--------	---------------------------	-----------

Internet-Draft	RADIUS Auth Client MIB (IPv6)	June 2006
----------------	-------------------------------	-----------

[10.1.](#) Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.
- [RFC2865] Rigney, C., Willens, S., Rubens, A., and W. Simpson, "Remote Authentication Dial In User Service (RADIUS)", [RFC 2865](#), June 2000.
- [RFC4001] Daniele, M., Haberman, B., Routhier, S., and J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", [RFC 4001](#), February 2005.

[10.2.](#) Informative References

- [2619bis] Nelson, D., "RADIUS Authentication Server MIB for IPv6", [draft-ietf-radext-rfc2619bis-04.txt](#) (work in progress), June 2006.
- [RFC2618] Aboba, B. and G. Zorn, "RADIUS Authentication Client MIB", [RFC 2618](#), June 1999.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", [RFC 3410](#), December 2002.

[Appendix A.](#) Acknowledgments

The authors of the original MIB are Bernard Aboba and Glen Zorn.

Many thanks to all reviewers, especially to Dave Harrington, Dan Romascanu, C.M. Heard, Bruno Pape, Greg Weber and Bert Wijnen.

Author's Address

David B. Nelson
Enterasys Networks
50 Minuteman Road
Andover, MA 01810
USA

Email: dnelson@enterasys.com

Internet-Draft

RADIUS Auth Client MIB (IPv6)

June 2006

Intellectual Property Statement

The IETF takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights. Information on the procedures with respect to rights in RFC documents can be found in [BCP 78](#) and [BCP 79](#).

Copies of IPR disclosures made to the IETF Secretariat and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the IETF on-line IPR repository at <http://www.ietf.org/ipr>.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights that may cover technology that may be required to implement this standard. Please address the information to the IETF at ietf-ipr@ietf.org.

Disclaimer of Validity

This document and the information contained herein are provided on an "AS IS" basis and THE CONTRIBUTOR, THE ORGANIZATION HE/SHE REPRESENTS OR IS SPONSORED BY (IF ANY), THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Copyright Statement

Copyright (C) The Internet Society (2006). This document is subject to the rights, licenses and restrictions contained in [BCP 78](#), and except as set forth therein, the authors retain all their rights.

Acknowledgment

Funding for the RFC Editor function is currently provided by the Internet Society.

Nelson

Expires December 28, 2006

[Page 24]