RADIUS Authentication Server MIB for IPv6

Status of This Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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Abstract

This memo defines a set of extensions that instrument RADIUS authentication server 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 servers.

This memo obsoletes RFC 2619 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 2619 are carried forward into this document. This memo also adds UNITS and REFERENCE clauses to selected objects.
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1. 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 Server as defined in RFC 2865 [RFC2865].

2. 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".

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 2619 [RFC2619], RADIUS Authentication Server MIB, by deprecating the radiusAuthClientTable table and adding a new table, radiusAuthClientExtTable, containing radiusAuthClientInetAddressType and radiusAuthClientInetAddress. The
purpose of these added MIB objects is to support version-neutral IP addressing formats. The existing table containing radiusAuthClientAddress is deprecated. The remaining MIB objects from RFC 2619 are carried forward into this document. This memo also adds UNITS and REFERENCE clauses to selected objects.

RFC 4001 [RFC4001], which defines the SMI Textual Conventions for version-neutral IP 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, 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 server MIB is defined in this document, and the client MIB is defined in [RFC4668].

This MIB module contains fourteen scalars as well as a single table, the RADIUS Authentication Client Table, which contains one row for each RADIUS authentication client with which the server shares a secret. Each entry in the RADIUS Authentication Client Table includes thirteen columns presenting a view of the activity of the RADIUS authentication server.

This MIB imports from [RFC2578], [RFC2580], [RFC3411], and [RFC4001].
6. Deprecated Objects

The deprecated table in this MIB is carried forward from RFC 2619 [RFC2619]. 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 client 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 client, 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-SERVER-MIB DEFINITIONS ::= BEGIN

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

radiusAuthServMIB MODULE-IDENTITY
LAST-UPDATED "200608210000Z" -- 21 August 2006
ORGANIZATION "IETF RADIUS Extensions Working Group."
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DESCRIPTION
"The MIB module for entities implementing the server
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 4669; see the RFC itself for
full legal notices."

REVISION "200608210000Z" -- 21 August 2006

DESCRIPTION
"Revised version as published in RFC 4669. This
version obsoletes that of RFC 2619 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
2619 are carried forward into this version."

REVISION "199906110000Z" -- 11 Jun 1999

DESCRIPTION "Initial version as published in RFC 2619."

::= {radiusAuthentication 1 }

radiusMIB OBJECT-IDENTITY
  STATUS current
  DESCRIPTION
    "The OID assigned to RADIUS MIB work by the IANA."
  ::= { mib-2 67 }

radiusAuthentication OBJECT IDENTIFIER ::= {radiusMIB 1}

radiusAuthServMIBObjects OBJECT IDENTIFIER
  ::= {radiusAuthServMIB 1 }

radiusAuthServ OBJECT IDENTIFIER
  ::= {radiusAuthServMIBObjects 1 }

radiusAuthServIdent OBJECT-TYPE
  SYNTAX SnmpAdminString
  MAX-ACCESS read-only
  STATUS current
  DESCRIPTION
    "The implementation identification string for the
    RADIUS authentication server software in use on the
    system, for example, 'FNS-2.1'."
  ::= {radiusAuthServ 1 }

radiusAuthServUpTime OBJECT-TYPE
  SYNTAX TimeTicks
  MAX-ACCESS read-only
  STATUS current
DESCRIPTION
"If the server has a persistent state (e.g., a process), this value will be the time elapsed (in hundredths of a second) since the server process was started. For software without persistent state, this value will be zero."
::= {radiusAuthServ 2}

radiusAuthServResetTime OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"If the server has a persistent state (e.g., a process) and supports a 'reset' operation (e.g., can be told to re-read configuration files), this value will be the time elapsed (in hundredths of a second) since the server was 'reset.' For software that does not have persistence or does not support a 'reset' operation, this value will be zero."
::= {radiusAuthServ 3}

radiusAuthServConfigReset OBJECT-TYPE
SYNTAX INTEGER { other(1),
               reset(2),
               initializing(3),
               running(4) }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"Status/action object to reinitialize any persistent server state. When set to reset(2), any persistent server state (such as a process) is reinitialized as if the server had just been started. This value will never be returned by a read operation. When read, one of the following values will be returned:
other(1) - server in some unknown state;
initializing(3) - server (re)initializing;
running(4) - server currently running."
::= {radiusAuthServ 4}

radiusAuthServTotalAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of packets received on the
authentication port."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthServ 5 }

radiusAuthServTotalInvalidRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Request packets received from unknown addresses."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthServ 6 }

radiusAuthServTotalDupAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of duplicate RADIUS Access-Request packets received."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthServ 7 }

radiusAuthServTotalAccessAccepts OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Accept packets sent."
REFERENCE "RFC 2865 section 4.2"
::= { radiusAuthServ 8 }

radiusAuthServTotalAccessRejects OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Reject packets sent."
REFERENCE "RFC 2865 section 4.3"
::= { radiusAuthServ 9 }

radiusAuthServTotalAccessChallenges OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Challenge packets sent."
REFERENCE "RFC 2865 section 4.4"
::= { radiusAuthServ 10 }

radiusAuthServTotalMalformedAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of malformed RADIUS Access-Request packets received. Bad authenticators and unknown types are not included as malformed Access-Requests."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthServ 11 }

radiusAuthServTotalBadAuthenticators OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Authentication-Request packets that contained invalid Message Authenticator attributes received."
REFERENCE "RFC 2865 section 3"
::= { radiusAuthServ 12 }

radiusAuthServTotalPacketsDropped OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of incoming packets silently discarded for some reason other than malformed, bad authenticators or unknown types."
REFERENCE "RFC 2865 section 3"
::= { radiusAuthServ 13 }

radiusAuthServTotalUnknownTypes OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS packets of unknown type that were received."
REFERENCE "RFC 2865 section 4"
 ::= { radiusAuthServ 14 }

radiusAuthClientTable OBJECT-TYPE
SYNTAX SEQUENCE OF RadiusAuthClientEntry
MAX-ACCESS not-accessible
STATUS deprecated
DESCRIPTION
"The (conceptual) table listing the RADIUS authentication clients with which the server shares a secret."
 ::= { radiusAuthServ 15 }

radiusAuthClientEntry OBJECT-TYPE
SYNTAX RadiusAuthClientEntry
MAX-ACCESS not-accessible
STATUS deprecated
DESCRIPTION
"An entry (conceptual row) representing a RADIUS authentication client with which the server shares a secret."
INDEX { radiusAuthClientIndex }
 ::= { radiusAuthClientTable 1 }

RadiusAuthClientEntry ::= SEQUENCE {
  radiusAuthClientIndex                           Integer32,
  radiusAuthClientAddress                         IpAddress,
  radiusAuthClientID                        SnmpAdminString,
  radiusAuthServAccessRequests                    Counter32,
  radiusAuthServDupAccessRequests                 Counter32,
  radiusAuthServAccessAccepts                     Counter32,
  radiusAuthServAccessRejects                     Counter32,
  radiusAuthServAccessChallenges                  Counter32,
  radiusAuthServMalformedAccessRequests           Counter32,
  radiusAuthServBadAuthenticators                 Counter32,
  radiusAuthServPacketsDropped                    Counter32,
  radiusAuthServUnknownTypes                      Counter32
}

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

radiusAuthClientAddress OBJECT-TYPE
SYNTAX IpAddress
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The NAS-IP-Address of the RADIUS authentication client referred to in this table entry."
REFERENCE "RFC 2865 section 2"
::= { radiusAuthClientEntry 2 }

radiusAuthClientID OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The NAS-Identifier of the RADIUS authentication client referred to in this table entry. This is not necessarily the same as sysName in MIB II."
REFERENCE "RFC 2865 section 5.32"
::= { radiusAuthClientEntry 3 }

-- Server Counters

-- Responses = AccessAccepts + AccessRejects + AccessChallenges
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped - Responses = Pending
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped = entries logged

radiusAuthServAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of packets received on the authentication

port from this client.
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthClientEntry 4 }

radiusAuthServDupAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of duplicate RADIUS Access-Request packets received from this client."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthClientEntry 5 }

radiusAuthServAccessAccepts OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of RADIUS Access-Accept packets sent to this client."
REFERENCE "RFC 2865 section 4.2"
::= { radiusAuthClientEntry 6 }

radiusAuthServAccessRejects OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of RADIUS Access-Reject packets sent to this client."
REFERENCE "RFC 2865 section 4.3"
::= { radiusAuthClientEntry 7 }

radiusAuthServAccessChallenges OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of RADIUS Access-Challenge packets sent to this client."
REFERENCE "RFC 2865 section 4.4"
::= { radiusAuthClientEntry 8 }
radiusAuthServMalformedAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of malformed RADIUS Access-Request
packets received from this client.
Bad authenticators and unknown types are not included
as malformed Access-Requests."
REFERENCE "RFC 2865 section 3"
 ::= { radiusAuthClientEntry 9 }

radiusAuthServBadAuthenticators OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of RADIUS Authentication-Request packets
that contained invalid Message Authenticator
attributes received from this client."
REFERENCE "RFC 2865 section 3"
 ::= { radiusAuthClientEntry 10 }

radiusAuthServPacketsDropped OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of incoming packets from this
client silently discarded for some reason other
than malformed, bad authenticators or
unknown types."
REFERENCE "RFC 2865 section 3"
 ::= { radiusAuthClientEntry 11 }

radiusAuthServUnknownTypes OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"The number of RADIUS packets of unknown type that
were received from this client."
REFERENCE "RFC 2865 section 4"
 ::= { radiusAuthClientEntry 12 }
-- New MIB objects added in this revision

radiusAuthClientExtTable OBJECT-TYPE
SYNTAX     SEQUENCE OF RadiusAuthClientExtEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
    "The (conceptual) table listing the RADIUS
    authentication clients with which the server shares
    a secret."
 ::= { radiusAuthServ 16 }

radiusAuthClientExtEntry OBJECT-TYPE
SYNTAX     RadiusAuthClientExtEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
    "An entry (conceptual row) representing a RADIUS
    authentication client with which the server shares a
    secret."
INDEX      { radiusAuthClientExtIndex }
 ::= { radiusAuthClientExtTable 1 }

RadiusAuthClientExtEntry ::= SEQUENCE {
    radiusAuthClientExtIndex                 Integer32,
    radiusAuthClientInetAddressType          InetAddressType,
    radiusAuthClientInetAddress              InetAddress,
    radiusAuthClientExtID                    SnmpAdminString,
    radiusAuthServExtAccessRequests          Counter32,
    radiusAuthServExtDupAccessRequests       Counter32,
    radiusAuthServExtAccessAccepts           Counter32,
    radiusAuthServExtAccessRejects           Counter32,
    radiusAuthServExtAccessChallenges        Counter32,
    radiusAuthServExtMalformedAccessRequests Counter32,
    radiusAuthServExtBadAuthenticators       Counter32,
    radiusAuthServExtPacketsDropped          Counter32,
    radiusAuthServExtUnknownTypes            Counter32,
    radiusAuthServCounterDiscontinuity       TimeTicks
}

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

radiusAuthClientInetAddressType OBJECT-TYPE
SYNTAX InetAddressType
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The type of address format used for the radiusAuthClientInetAddress object."
::= { radiusAuthClientExtEntry 2 }

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

radiusAuthClientExtID OBJECT-TYPE
SYNTAX SnmpAdminString
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The NAS-Identifier of the RADIUS authentication client referred to in this table entry. This is not necessarily the same as sysName in MIB II."
REFERENCE "RFC 2865 section 5.32"
::= { radiusAuthClientExtEntry 4 }

-- Server Counters

-- Responses = AccessAccepts + AccessRejects + AccessChallenges
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped - Responses = Pending
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped = entries logged

radiusAuthServExtAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of packets received on the authentication port from this client. This counter may experience a discontinuity when the RADIUS Server module within the managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthClientExtEntry  5 }

radiusAuthServExtDupAccessRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of duplicate RADIUS Access-Request packets received from this client. This counter may experience a discontinuity when the RADIUS Server module within the managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity."
REFERENCE "RFC 2865 section 4.1"
::= { radiusAuthClientExtEntry  6 }

radiusAuthServExtAccessAccepts OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Accept packets sent to this client. This counter may experience a discontinuity when the RADIUS Server module within the managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity."
REFERENCE "RFC 2865 section 4.2"
::= { radiusAuthClientExtEntry  7 }

radiusAuthServExtAccessRejects OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Reject packets sent to this client. This counter may experience a discontinuity when the RADIUS Server module within the
The managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity.

REFERENCE "RFC 2865 section 4.3"
:= { radiusAuthClientExtEntry  8 }

radiusAuthServExtAccessChallenges OBJECT-TYPE
SYNTAX  Counter32
UNITS  "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Access-Challenge packets sent to this client. This counter may experience a discontinuity when the RADIUS Server module within the managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity."

REFERENCE "RFC 2865 section 4.4"
:= { radiusAuthClientExtEntry  9 }

radiusAuthServExtMalformedAccessRequests OBJECT-TYPE
SYNTAX  Counter32
UNITS  "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of malformed RADIUS Access-Request packets received from this client. Bad authenticators and unknown types are not included as malformed Access-Requests. This counter may experience a discontinuity when the RADIUS Server module within the managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity."

REFERENCE "RFC 2865 sections 3, 4.1"
:= { radiusAuthClientExtEntry  10 }

radiusAuthServExtBadAuthenticators OBJECT-TYPE
SYNTAX  Counter32
UNITS  "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Authentication-Request packets that contained invalid Message Authenticator attributes received from this client. This counter may experience a discontinuity when the RADIUS Server module within the managed entity is reinitialized, as indicated by the current value of radiusAuthServCounterDiscontinuity."
REFERENCE "RFC 2865 section 3"
::= { radiusAuthClientExtEntry 11 }

radiusAuthServExtPacketsDropped OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of incoming packets from this client
silently discarded for some reason other than
malformed, bad authenticators or unknown types.
This counter may experience a discontinuity when the
RADIUS Server module within the managed entity is
reinitialized, as indicated by the current value of
radiusAuthServCounterDiscontinuity."
REFERENCE "RFC 2865 section 3"
::= { radiusAuthClientExtEntry 12 }

radiusAuthServExtUnknownTypes OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS packets of unknown type that
were received from this client. This counter may
experience a discontinuity when the RADIUS Server
module within the managed entity is reinitialized, as
indicated by the current value of
radiusAuthServCounterDiscontinuity."
REFERENCE "RFC 2865 section 4"
::= { radiusAuthClientExtEntry 13 }

radiusAuthServCounterDiscontinuity OBJECT-TYPE
SYNTAX TimeTicks
UNITS "centiseconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of centiseconds since the last
discontinuity in the RADIUS Server counters.
A discontinuity may be the result of a
reinitialization of the RADIUS Server module
within the managed entity."
::= { radiusAuthClientExtEntry 14 }
-- conformance information

radiusAuthServMIBConformance OBJECT IDENTIFIER ::= { radiusAuthServMIB 2 }

radiusAuthServMIBCompliances OBJECT IDENTIFIER ::= { radiusAuthServMIBConformance 1 }

radiusAuthServMIBGroups OBJECT IDENTIFIER ::= { radiusAuthServMIBConformance 2 }

-- compliance statements

radiusAuthServMIBCompliance MODULE-COMPLIANCE
STATUS deprecated
DESCRIPTION "The compliance statement for authentication servers implementing the RADIUS Authentication Server 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 { radiusAuthServMIBGroup }

OBJECT radiusAuthServConfigReset
WRITE-SYNTAX INTEGER { reset(2) }
DESCRIPTION "The only SETable value is ‘reset’ (2)."
 ::= { radiusAuthServMIBCompliances 1 }

radiusAuthServMIBExtCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION "The compliance statement for authentication servers implementing the RADIUS Authentication Server IPv6 Extensions MIB. Implementation of this module is for entities that support IPv6, or support IPv4 and IPv6."
MODULE -- this module
MANDATORY-GROUPS { radiusAuthServExtMIBGroup }

OBJECT radiusAuthServConfigReset
WRITE-SYNTAX INTEGER { reset(2) }
DESCRIPTION "The only SETable value is ‘reset’ (2)."

OBJECT radiusAuthClientInetAddressType

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

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

OBJECT radiusAuthClientInetAddress
SYNTAX InetAddress ( SIZE (4|16) )
DESCRIPTION
"An implementation is only required to support IPv4 and globally unique IPv6 addresses."

::= { radiusAuthServMIBCompliances 2 }

-- units of conformance

radiusAuthServMIBGroup OBJECT-GROUP
OBJECTS {radiusAuthServIdent,
radiusAuthServUpTime,
radiusAuthServResetTime,
radiusAuthServConfigReset,
radiusAuthServTotalAccessRequests,
radiusAuthServTotalInvalidRequests,
radiusAuthServTotalDupAccessRequests,
radiusAuthServTotalAccessAccepts,
radiusAuthServTotalAccessRejects,
radiusAuthServTotalAccessChallenges,
radiusAuthServTotalMalformedAccessRequests,
radiusAuthServTotalBadAuthenticators,
radiusAuthServTotalPacketsDropped,
radiusAuthServTotalUnknownTypes,
radiusAuthClientAddress,
radiusAuthClientID,
radiusAuthServAccessRequests,
radiusAuthServDupAccessRequests,
radiusAuthServAccessAccepts,
radiusAuthServAccessRejects,
radiusAuthServAccessChallenges,
radiusAuthServMalformedAccessRequests,
radiusAuthServBadAuthenticators,
radiusAuthServPacketsDropped,
radiusAuthServUnknownTypes
}

STATUS deprecated
DESCRIPTION
"The collection of objects providing management of a RADIUS Authentication Server."

::= { radiusAuthServMIBGroups 1 }
radiusAuthServExtMIBGroup OBJECT-GROUP
OBJECTS {radiusAuthServIdent,
radiusAuthServUpTime,
radiusAuthServResetTime,
radiusAuthServConfigReset,
radiusAuthServTotalAccessRequests,
radiusAuthServTotalInvalidRequests,
radiusAuthServTotalDupAccessRequests,
radiusAuthServTotalAccessAccepts,
radiusAuthServTotalAccessRejects,
radiusAuthServTotalAccessChallenges,
radiusAuthServTotalMalformedAccessRequests,
radiusAuthServTotalBadAuthenticators,
radiusAuthServTotalPacketsDropped,
radiusAuthServTotalUnknownTypes,
radiusAuthClientInetAddressType,
radiusAuthClientInetAddress,
radiusAuthClientExtID,
radiusAuthServExtAccessRequests,
radiusAuthServExtDupAccessRequests,
radiusAuthServExtAccessAccepts,
radiusAuthServExtAccessRejects,
radiusAuthServExtAccessChallenges,
radiusAuthServExtMalformedAccessRequests,
radiusAuthServExtBadAuthenticators,
radiusAuthServExtPacketsDropped,
radiusAuthServExtUnknownTypes,
radiusAuthServCounterDiscontinuity}

STATUS current
DESCRIPTION
"The collection of objects providing management of a RADIUS Authentication Server."
 ::= { radiusAuthServMIBGroups 2 }

END

8. Security Considerations

There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These are:
radiusAuthServConfigReset

This object can be used to reinitialize the persistent state of any server. When set to reset(2), any persistent server state (such as a process) is reinitialized as if the server had just been started. Depending on the server implementation details, this action may or may not interrupt the processing of pending request in the server. Abuse of this object may lead to a Denial of Service attack on the server.

There are a number of managed objects in this MIB that may contain sensitive information. These are:

radiusAuthClientIPAddress

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

radiusAuthClientInetAddress

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

It is thus important to control even GET access to these objects and possibly to even encrypt the values of these object when sending them over the network via SNMP. Not all versions of SNMP provide features for such a secure environment.

SNMP versions prior to SNMPv3 do not provide a secure environment. Even if the network itself is secure (for example by using IPsec), 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.

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

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.
9. References

9.1. Normative References


9.2. Informative References


Appendix A. Acknowledgements

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