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**RADIUS Auth Client MIB (IPv6)**  
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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

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.

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## **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



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.

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

::= { 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,  
    radiusAuthClientAccessRetransmissions Counter32,  
    radiusAuthClientAccessAccepts Counter32,  
    radiusAuthClientAccessRejects Counter32,  
    radiusAuthClientAccessChallenges Counter32,  
    radiusAuthClientMalformedAccessResponses Counter32,  
    radiusAuthClientBadAuthenticators Counter32,

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```
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
--
```

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```
-- 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."
REFERENCE "RFC 2865 section 4.2"
::= { radiusAuthServerEntry 7 }
```

radiusAuthClientAccessRejects OBJECT-TYPE

```
SYNTAX Counter32
UNITS "packets"
```



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```
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
        "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 }
```

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## 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

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"

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```
        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,
radiusAuthClientExtPacketsDropped	Counter32,
radiusAuthClientCounterDiscontinuity	TimeTicks

```
}
```

```
radiusAuthServerExtIndex OBJECT-TYPE
```

```
    SYNTAX      Integer32 (1..2147483647)
```

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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  
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](#)"



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```
 ::= { 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
```

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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

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## 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

"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](#)"

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```
::= { 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

"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



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```
        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 }

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
        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 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.

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**

### **[10.1.](#) Normative References**

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- [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.
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- [RFC2865] Rigney, C., Willens, S., Rubens, A., and W. Simpson, "Remote Authentication Dial In User Service (RADIUS)", [RFC 2865](#), June 2000.

## **[10.2.](#) Informative References**

- [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.
- [RFC4001] Daniele, M., Haberman, B., Routhier, S., and J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", [RFC 4001](#), February 2005.

## **[Appendix A.](#) Acknowledgments**

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