

RADIUS Working Group  
INTERNET-DRAFT  
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## RADIUS Server MIB

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### [2.](#) Abstract

This memo defines a set of extensions which instrument RADIUS 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 servers.

### [3.](#) Introduction

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects used for managing RADIUS servers.

RADIUS servers are today widely deployed by dialup Internet Service Providers, in order to provide for authentication, authorization, and accounting. As a result, the effective management of RADIUS servers is

of considerable importance.

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#### [4.](#) The SNMPv2 Network Management Framework

The SNMPv2 Network Management Framework consists of four major components. They are:

- o [RFC 1902](#) which defines the SMI, the mechanisms used for describing and naming objects for the purpose of management.
- o [RFC 1905](#) which defines the protocol used for network access to managed objects.
- o [RFC 1907](#) defines the core set of managed objects for the Internet suite of protocols.
- o [RFC 1909](#) which defines the administrative aspects of the framework.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

##### [4.1.](#) Object Definitions

Managed objects are accessed via a virtual information store, termed the Management Information Base (MIB). Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to refer to the object type.

#### [5.](#) Overview

The RADIUS protocol, described in [\[1\]](#) and [\[2\]](#), distinguishes between the client function and the server function; RADIUS clients send

requests, and RADIUS servers reply to those requests. In RADIUS authentication, clients send Access-Requests, and servers reply with Access-Accepts, Access-Rejects, and Access-Challenges. In RADIUS accounting, clients send Accounting-Requests, and servers reply with Accounting-Responses. Typically NAS devices implement the client function, and thus would be expected to implement the RADIUS client MIB, while RADIUS servers implement the server function, and thus would be expected to implement the RADIUS server MIB.

However, it is possible for a RADIUS entity to perform both client and server functions. For example, a RADIUS proxy may act as a server to one or more RADIUS clients, while simultaneously acting as a client to one or more servers. In such situations, it is expected that RADIUS entities combining client and server functionality will support both the client and server MIBs.

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### [5.1.](#) Selected objects

This MIB module contains five scalars as well as a single table:

- (1) the RADIUS Client Table contains one row for each RADIUS client that the server shares a secret with.

Each entry in the RADIUS Client Table includes eighteen entries presenting a view of the activity of the RADIUS server.

## [6.](#) Definitions

RADIUS-SERVER-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
MODULE-IDENTITY, OBJECT-TYPE,
OBJECT-IDENTITY, experimental,
Counter32, Gauge32, Integer32,
IpAddress, TimeTicks          FROM SNMPv2-SMI
TEXTUAL-CONVENTION, RowStatus,
TruthValue, DisplayString     FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP FROM SNMPv2-CONF;
```

```

radius OBJECT-IDENTITY
    STATUS current
    DESCRIPTION
        "The OID assigned to RADIUS MIB work by the IANA."
    ::= { experimental 79 }

radiusServMIB MODULE-IDENTITY
    LAST-UPDATED "9707211659Z"
    ORGANIZATION "IETF RADIUS Working Group."
    CONTACT-INFO
        " Glen Zorn
          Microsoft
          One Microsoft Way
          Redmond, WA 98052
          US

          Phone: +1 425 703 1559
          Email: glennz@microsoft.com"
    DESCRIPTION
        "The MIB module for entities implementing the server side of
        the Remote Access Dialin User Service (RADIUS) protocol."
    ::= { radius 1 }

radiusServMIBObjects OBJECT IDENTIFIER ::= { radiusServMIB 1 }

radiusServ OBJECT IDENTIFIER ::= { radiusServMIBObjects 1 }

-- Textual conventions

```

```

RadiusTime ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "4d"
    STATUS current
    DESCRIPTION
        "RadiusTime values are 32-bit unsigned integers which
        measure time in seconds."
    SYNTAX Gauge32

radiusServIdent OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only

```

STATUS current  
 DESCRIPTION  
 "The implementation identification string for the  
 RADIUS server software in use on the system, for  
 example; `FNS-2.1'"  
 ::= {radiusServ 1}

radiusServUpTime OBJECT-TYPE  
 SYNTAX RadiusTime  
 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 since it started.  
 For software without persistent state, this value will  
 be zero."  
 ::= {radiusServ 2}

radiusServResetTime OBJECT-TYPE  
 SYNTAX RadiusTime  
 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 since the last time the name server was  
 `reset.' For software that does not have persistence or  
 does not support a `reset' operation, this value will be  
 zero."  
 ::= {radiusServ 3}

radiusServConfigReset 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."

::= {radiusServ 4}

radiusServInvalidClientAddresses OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of RADIUS Access-Request packets received from unknown addresses since server start-up."

::= {radiusServ 5}

radiusClientTable OBJECT-TYPE

SYNTAX SEQUENCE OF RadiusClientEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The (conceptual) table listing the RADIUS clients with which the server shares a secret."

::= { radiusServ 6 }

radiusClientEntry OBJECT-TYPE

SYNTAX RadiusClientEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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

INDEX { radiusClientIndex }

::= { radiusClientTable 1 }

RadiusClientEntry ::= SEQUENCE {

radiusClientIndex Integer32,

radiusClientAddress IpAddress,

radiusClientID DisplayString,

radiusServAccessRequests Counter32,

radiusServDupAccessRequests Counter32,

radiusServAccessAccepts Counter32,

radiusServAccessRejects Counter32,

radiusServAccessChallenges Counter32,

radiusServMalformedAccessRequests Counter32,

radiusServAuthenticationBadAuthenticators Counter32,

radiusServPacketsDropped Counter32,

radiusServAccountingRequests Counter32,

|                                       |            |
|---------------------------------------|------------|
| radiusServDupAccountingRequests       | Counter32, |
| radiusServAccountingResponses         | Counter32, |
| radiusServAccountingBadAuthenticators | Counter32, |
| radiusServMalformedAccountingRequests | Counter32, |
| radiusServAccountingNoRecord          | Counter32, |

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|                       |           |
|-----------------------|-----------|
| radiusServUnknownType | Counter32 |
|-----------------------|-----------|

}

radiusClientIndex OBJECT-TYPE  
 SYNTAX Integer32  
 MAX-ACCESS not-accessible  
 STATUS current  
 DESCRIPTION  
     "The RADIUS client referred to in this  
     table entry."  
 ::= { radiusClientEntry 1 }

radiusClientAddress OBJECT-TYPE  
 SYNTAX IPAddress  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
     "The NAS-IP-Address of the RADIUS client  
     referred to in this table entry."  
 ::= { radiusClientEntry 2 }

radiusClientID OBJECT-TYPE  
 SYNTAX DisplayString  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
     "The NAS-Identifier of the RADIUS client  
     referred to in this table entry."  
 ::= { radiusClientEntry 3 }

-- Server Counters

radiusServAccessRequests OBJECT-TYPE  
 SYNTAX Counter32  
 MAX-ACCESS read-only  
 STATUS current

DESCRIPTION

"The total number of RADIUS Access-Request packets received from this client since server start-up."

::= { radiusClientEntry 4 }

radiusServDupAccessRequests OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of duplicate RADIUS Access-Request packets received from this client since server start-up."

::= { radiusClientEntry 5 }

radiusServAccessAccepts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of RADIUS Access-Accept packets sent to this client since server start-up."

::= { radiusClientEntry 6 }

radiusServAccessRejects OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of RADIUS Access-Reject packets sent to this client since server start-up."

::= { radiusClientEntry 7 }

radiusServAccessChallenges OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of RADIUS Access-Challenge packets sent to this client since server start-up."

::= { radiusClientEntry 8 }



```

radiusServMalformedAccessRequests OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The total number of malformed RADIUS Access-Request
        packets received from this client since server start-up.
        Bad authenticators are not included as
        malformed Access-Requests."
    ::= { radiusClientEntry 9 }

radiusServAuthenticationBadAuthenticators OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The total number of RADIUS Authentication-Request packets
        which contained invalid Signature attributes received
        from this client since server start-up."
    ::= { radiusClientEntry 10 }

radiusServPacketsDropped OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The total number of packets dropped from this client,
        with no reply sent."
    ::= { radiusClientEntry 11 }

radiusServAccountingRequests OBJECT-TYPE

```

```

    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The total number of RADIUS Accounting-Request packets
        received from this client since server start-up."
    ::= { radiusClientEntry 12 }

radiusServDupAccountingRequests OBJECT-TYPE
    SYNTAX Counter32

```

MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The total number of duplicate RADIUS Accounting-Request  
        packets received from this client since server start-up."  
 ::= { radiusClientEntry 13 }

radiusServAccountingResponses OBJECT-TYPE  
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The total number of RADIUS Accounting-Response packets  
        sent to this client since server start-up."  
 ::= { radiusClientEntry 14 }

radiusServAccountingBadAuthenticators OBJECT-TYPE  
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The total number of RADIUS Accounting-Request packets  
        which contained invalid authenticators received  
        from this client since server start-up."  
 ::= { radiusClientEntry 15 }

radiusServMalformedAccountingRequests OBJECT-TYPE  
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The total number of malformed RADIUS Accounting-Request  
        packets which were received from this client since  
        server start-up. Bad authenticators are not included as  
        malformed Accounting-Requests."  
 ::= { radiusClientEntry 16 }

radiusServAccountingNoRecord OBJECT-TYPE  
SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The total number of RADIUS Accounting-Request packets  
        which were received from this client but not recorded

```
        since server start-up."
 ::= { radiusClientEntry 17 }

radiusServUnknownType OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The total number of RADIUS packets of unknown type which
        were received from this client since server start-up."
 ::= { radiusClientEntry 18 }

-- conformance information

radiusServMIBConformance
    OBJECT IDENTIFIER ::= { radiusServMIB 2 }
radiusServMIBCompliances
    OBJECT IDENTIFIER ::= { radiusServMIBConformance 1 }
radiusServMIBGroups
    OBJECT IDENTIFIER ::= { radiusServMIBConformance 2 }

-- compliance statements

radiusServMIBCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for servers implementing the RADIUS
        MIB."
    MODULE -- this module
    MANDATORY-GROUPS { radiusServMIBGroup }

    ::= { radiusServMIBCompliances 1 }

-- units of conformance

radiusServMIBGroup OBJECT-GROUP
    OBJECTS {radiusServIdent,
        radiusServUpTime,
        radiusServResetTime,
        radiusServConfigReset,
        radiusServInvalidClientAddresses,
        radiusClientAddress,
        radiusClientID,
        radiusServAccessRequests,
```

```
radiusServDupAccessRequests,  
radiusServAccessAccepts,  
radiusServAccessRejects,  
radiusServAccessChallenges,  
radiusServMalformedAccessRequests,  
radiusServAuthenticationBadAuthenticators,  
radiusServPacketsDropped,
```

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```
radiusServAccountingRequests,  
radiusServDupAccountingRequests,  
radiusServAccountingResponses,  
radiusServAccountingBadAuthenticators,  
radiusServMalformedAccountingRequests,  
radiusServAccountingNoRecord,  
radiusServUnknownType  
}  
STATUS current  
DESCRIPTION  
    "The collection of objects providing management of  
    a RADIUS Server."  
 ::= { radiusServMIBGroups 1 }
```

END

## [7.](#) Security considerations

All MIB variables described in this document are read-only, with the exception of radiusServConfigReset.

## [8.](#) Acknowledgments

Thanks to Narendra Gidwani of Microsoft, Allan C. Rubens of MERIT, Carl Rigney of Livingston, and Peter Heitman of American Internet Corporation for useful discussions of this problem space.

## [9.](#) References

[1] C. Rigney, A. Rubens, W. Simpson, S. Willens. "Remote Authentication Dial In User Service (RADIUS)." RFC 2138, Livingston, Merit,

Daydreamer, April, 1997.

[2] C. Rigney. "RADIUS Accounting." [RFC 2139](#), Livingston, April, 1997.

[3] C. Rigney, W. Willats. "RADIUS Extensions." [draft-ietf-radius-ext-00.txt](#), Livingston, January, 1997.

[4] "Information processing systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)", International Organization for Standardization, International Standard 8824, December 1987.

[5] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Introduction to Community-based SNMPv2", [RFC 1901](#), SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[6] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Structure of Management Information for Version 2 of the Simple Network

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Management Protocol (SNMPv2)", [RFC 1902](#), SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[7] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Textual Conventions for version 2 of the the Simple Network Management Protocol (SNMPv2)", RFC 1903, SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[8] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Conformance Statements for version 2 of the the Simple Network Management Protocol (SNMPv2)", RFC 1904, SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[9] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2)", RFC 1905, SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[10] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Transport

Mappings for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1906](#), SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[11] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2)", [RFC 1907](#), SNMP Research, nc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[12] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, "Coexistence between Version 1 and Version 2 of the Internet-standard Network Management Framework", [RFC 1908](#), SNMP Research, Inc., Cisco Systems, Dover Beach Consulting, Inc., International Network Services, January, 1996.

[13] McCloghrie, K., "An Administrative Infrastructure for SNMPv2", [RFC 1909](#), Cisco Systems, February, 1996.

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