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D. Nelson
Enterasys Networks
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RADIUS Accounting Server MIB for IPv6

Status of This Memo

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Abstract

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

This memo obsoletes RFC 2621 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 2621 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) Accounting Server as defined in RFC 2866 [RFC2866].

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] and RFC 2866 [RFC2866].

This document uses the word "malformed" with respect to RADIUS packets, particularly in the context of counters of "malformed packets". While RFC 2866 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 2866. 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 2621 [RFC2621], RADIUS Accounting Server MIB, by deprecating the radiusAccClientTable table and adding a new table, radiusAccClientExtTable, containing radiusAccClientInetAddressType and radiusAccClientInetAddress. The purpose of these added MIB objects is to support version-neutral IP addressing formats. The existing table containing

radiusAccClientAddress is deprecated. The remaining MIB objects from RFC 2621 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 accounting protocol, described in RFC 2866 [RFC2866], distinguishes between the client function and the server function. In RADIUS accounting, clients send Accounting-Requests, and servers reply with Accounting-Responses. Typically, Network Access Server (NAS) devices implement the client function, and thus would be expected to implement the RADIUS accounting client MIB, while RADIUS accounting servers implement the server function, and thus would be expected to implement the RADIUS accounting server MIB.

However, it is possible for a RADIUS accounting entity to perform both client and server functions. For example, a RADIUS proxy may act as a server to one or more RADIUS accounting clients, while simultaneously acting as an accounting client to one or more accounting 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 [RFC4670].

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

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

6. Deprecated Objects

The deprecated table in this MIB is carried forward from RFC 2621 [RFC2621]. 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 accounting 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 accounting 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-ACC-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;
```

```
radiusAccServMIB MODULE-IDENTITY
```

```
    LAST-UPDATED "200608210000Z" -- 21 August 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 server side of the Remote Authentication Dial-In User Service (RADIUS) accounting protocol. Copyright (C) The Internet Society (2006). This version of this MIB module is part of RFC 4671; see the RFC itself for full legal notices."

REVISION "200608210000Z" -- 21 August 2006

DESCRIPTION

"Revised version as published in RFC 4671. This version obsoletes that of RFC 2621 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 2621 are carried forward into this version."

REVISION "199906110000Z" -- 11 Jun 1999

DESCRIPTION "Initial version as published in RFC 2621."

::= { radiusAccounting 1 }

radiusMIB OBJECT-IDENTITY

STATUS current

DESCRIPTION

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

::= { mib-2 67 }

radiusAccounting OBJECT IDENTIFIER ::= {radiusMIB 2}

radiusAccServMIBObjects OBJECT IDENTIFIER

::= { radiusAccServMIB 1 }

radiusAccServ OBJECT IDENTIFIER

::= { radiusAccServMIBObjects 1 }

radiusAccServIdent OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The implementation identification string for the RADIUS accounting server software in use on the system, for example, 'FNS-2.1'."

::= {radiusAccServ 1}

radiusAccServUpTime 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."
 ::= {radiusAccServ 2}

```

```
radiusAccServResetTime 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."
 ::= {radiusAccServ 3}

```

```
radiusAccServConfigReset 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."
 ::= {radiusAccServ 4}

```

```
radiusAccServTotalRequests OBJECT-TYPE
```

```

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

```

"The number of packets received on the
accounting port."
REFERENCE "RFC 2866 section 4.1"
 ::= { radiusAccServ 5 }

radiusAccServTotalInvalidRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Accounting-Request packets
received from unknown addresses."
REFERENCE "RFC 2866 sections 2, 4.1"
 ::= { radiusAccServ 6 }

radiusAccServTotalDupRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of duplicate RADIUS Accounting-Request
packets received."
REFERENCE "RFC 2866 section 4.1"
 ::= { radiusAccServ 7 }

radiusAccServTotalResponses OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of RADIUS Accounting-Response packets
sent."
REFERENCE "RFC 2866 section 4.2"
 ::= { radiusAccServ 8 }

radiusAccServTotalMalformedRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of malformed RADIUS Accounting-Request
packets received. Bad authenticators or unknown
types are not included as malformed Access-Requests."
REFERENCE "RFC 2866 section 3"

```
::= { radiusAccServ 9 }
```

```
radiusAccServTotalBadAuthenticators OBJECT-TYPE
```

```
SYNTAX Counter32
```

```
UNITS "packets"
```

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

```
STATUS current
```

```
DESCRIPTION
```

```
    "The number of RADIUS Accounting-Request packets  
    that contained an invalid authenticator."
```

```
REFERENCE "RFC 2866 section 3"
```

```
::= { radiusAccServ 10 }
```

```
radiusAccServTotalPacketsDropped OBJECT-TYPE
```

```
SYNTAX Counter32
```

```
UNITS "packets"
```

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

```
STATUS current
```

```
DESCRIPTION
```

```
    "The number of incoming packets silently discarded  
    for a reason other than malformed, bad authenticators,  
    or unknown types."
```

```
REFERENCE "RFC 2866 section 3"
```

```
::= { radiusAccServ 11 }
```

```
radiusAccServTotalNoRecords OBJECT-TYPE
```

```
SYNTAX Counter32
```

```
UNITS "packets"
```

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

```
STATUS current
```

```
DESCRIPTION
```

```
    "The number of RADIUS Accounting-Request packets  
    that were received and responded to but not  
    recorded."
```

```
::= { radiusAccServ 12 }
```

```
radiusAccServTotalUnknownTypes 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 2866 section 4"
```

```
::= { radiusAccServ 13 }
```

```
radiusAccClientTable OBJECT-TYPE
```

```

SYNTAX      SEQUENCE OF RadiusAccClientEntry
MAX-ACCESS  not-accessible
STATUS      deprecated
DESCRIPTION
    "The (conceptual) table listing the RADIUS accounting
    clients with which the server shares a secret."
 ::= { radiusAccServ 14 }

```

```

radiusAccClientEntry OBJECT-TYPE
SYNTAX      RadiusAccClientEntry
MAX-ACCESS  not-accessible
STATUS      deprecated
DESCRIPTION
    "An entry (conceptual row) representing a RADIUS
    accounting client with which the server shares a
    secret."
INDEX       { radiusAccClientIndex }
 ::= { radiusAccClientTable 1 }

```

```

RadiusAccClientEntry ::= SEQUENCE {
    radiusAccClientIndex          Integer32,
    radiusAccClientAddress        IPAddress,
    radiusAccClientID             SnmpAdminString,
    radiusAccServPacketsDropped   Counter32,
    radiusAccServRequests         Counter32,
    radiusAccServDupRequests      Counter32,
    radiusAccServResponses        Counter32,
    radiusAccServBadAuthenticators Counter32,
    radiusAccServMalformedRequests Counter32,
    radiusAccServNoRecords        Counter32,
    radiusAccServUnknownTypes     Counter32
}

```

```

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

```

```

radiusAccClientAddress OBJECT-TYPE
SYNTAX      IPAddress
MAX-ACCESS  read-only
STATUS      deprecated
DESCRIPTION
    "The NAS-IP-Address of the RADIUS accounting client

```

```
        referred to in this table entry."
 ::= { radiusAccClientEntry 2 }

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

-- Server Counters
--
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped - Responses = Pending
--
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped - NoRecords = entries logged

radiusAccServPacketsDropped OBJECT-TYPE
    SYNTAX Counter32
    UNITS "packets"
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The number of incoming packets received
        from this client and silently discarded
        for a reason other than malformed, bad
        authenticators, or unknown types."
    REFERENCE "RFC 2866 section 3"
    ::= { radiusAccClientEntry 4 }

radiusAccServRequests OBJECT-TYPE
    SYNTAX Counter32
    UNITS "packets"
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The number of packets received from this
        client on the accounting port."
    REFERENCE "RFC 2866 section 4.1"
    ::= { radiusAccClientEntry 5 }

radiusAccServDupRequests OBJECT-TYPE
    SYNTAX Counter32
```

UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of duplicate RADIUS Accounting-Request
 packets received from this client."
REFERENCE "RFC 2866 section 4.1"
 ::= { radiusAccClientEntry 6 }

radiusAccServResponses OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of RADIUS Accounting-Response packets
 sent to this client."
REFERENCE "RFC 2866 section 4.2"
 ::= { radiusAccClientEntry 7 }

radiusAccServBadAuthenticators OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of RADIUS Accounting-Request packets
 that contained invalid authenticators received
 from this client."
REFERENCE "RFC 2866 section 3"
 ::= { radiusAccClientEntry 8 }

radiusAccServMalformedRequests OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
 "The number of malformed RADIUS Accounting-Request
 packets that were received from this client.
 Bad authenticators and unknown types
 are not included as malformed Accounting-Requests."
REFERENCE "RFC 2866 section 3"
 ::= { radiusAccClientEntry 9 }

radiusAccServNoRecords OBJECT-TYPE
SYNTAX Counter32
UNITS "packets"

```

MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
    "The number of RADIUS Accounting-Request packets
    that were received and responded to but not
    recorded."
 ::= { radiusAccClientEntry 10 }

```

```

radiusAccServUnknownTypes 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 2866 section 4"
 ::= { radiusAccClientEntry 11 }

```

-- New MIB objects added in this revision

```

radiusAccClientExtTable OBJECT-TYPE
SYNTAX SEQUENCE OF RadiusAccClientExtEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "The (conceptual) table listing the RADIUS accounting
    clients with which the server shares a secret."
 ::= { radiusAccServ 15 }

```

```

radiusAccClientExtEntry OBJECT-TYPE
SYNTAX RadiusAccClientExtEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "An entry (conceptual row) representing a RADIUS
    accounting client with which the server shares a
    secret."
INDEX { radiusAccClientExtIndex }
 ::= { radiusAccClientExtTable 1 }

```

```

RadiusAccClientExtEntry ::= SEQUENCE {
    radiusAccClientExtIndex          Integer32,
    radiusAccClientInetAddressType  InetAddressType,
    radiusAccClientInetAddress      InetAddress,
    radiusAccClientExtID             SnmpAdminString,
    radiusAccServExtPacketsDropped  Counter32,

```

```

radiusAccServExtRequests          Counter32,
radiusAccServExtDupRequests       Counter32,
radiusAccServExtResponses         Counter32,
radiusAccServExtBadAuthenticators Counter32,
radiusAccServExtMalformedRequests Counter32,
radiusAccServExtNoRecords         Counter32,
radiusAccServExtUnknownTypes     Counter32,
radiusAccServerCounterDiscontinuity TimeTicks
}

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

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

radiusAccClientInetAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The IP address of the RADIUS accounting
         client referred to in this table entry, using
         the IPv6 address format."
    ::= { radiusAccClientExtEntry 3 }

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

```

```
-- Server Counters
--
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped - Responses = Pending
--
-- Requests - DupRequests - BadAuthenticators - MalformedRequests -
-- UnknownTypes - PacketsDropped - NoRecords = entries logged
```

radiusAccServExtPacketsDropped OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of incoming packets received from this client and silently discarded for a reason other than malformed, bad authenticators, or unknown types. This counter may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 3"

::= { radiusAccClientExtEntry 5 }

radiusAccServExtRequests OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of packets received from this client on the accounting port. This counter may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 4.1"

::= { radiusAccClientExtEntry 6 }

radiusAccServExtDupRequests OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of duplicate RADIUS Accounting-Request packets received from this client. This counter

may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of
radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 4.1"
 ::= { radiusAccClientExtEntry 7 }

radiusAccServExtResponses OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Accounting-Response packets sent to this client. This counter may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of
radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 4.2"
 ::= { radiusAccClientExtEntry 8 }

radiusAccServExtBadAuthenticators OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Accounting-Request packets that contained invalid authenticators received from this client. This counter may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of
radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 3"
 ::= { radiusAccClientExtEntry 9 }

radiusAccServExtMalformedRequests OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of malformed RADIUS Accounting-Request packets that were received from this client. Bad authenticators and unknown types are not

included as malformed Accounting-Requests. This counter may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 3"

::= { radiusAccClientExtEntry 10 }

radiusAccServExtNoRecords OBJECT-TYPE

SYNTAX Counter32

UNITS "packets"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of RADIUS Accounting-Request packets that were received and responded to but not recorded. This counter may experience a discontinuity when the RADIUS Accounting Server module within the managed entity is reinitialized, as indicated by the current value of radiusAccServerCounterDiscontinuity."

::= { radiusAccClientExtEntry 11 }

radiusAccServExtUnknownTypes 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 Accounting Server module within the managed entity is reinitialized, as indicated by the current value of radiusAccServerCounterDiscontinuity."

REFERENCE "RFC 2866 section 4"

::= { radiusAccClientExtEntry 12 }

radiusAccServerCounterDiscontinuity OBJECT-TYPE

SYNTAX TimeTicks

UNITS "centiseconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of centiseconds since the last discontinuity in the RADIUS Accounting Server counters. A discontinuity may be the result of a reinitialization of the RADIUS Accounting Server

```

        module within the managed entity."
 ::= { radiusAccClientExtEntry 13 }

-- conformance information

radiusAccServMIBConformance OBJECT IDENTIFIER
 ::= { radiusAccServMIB 2 }

radiusAccServMIBCompliances OBJECT IDENTIFIER
 ::= { radiusAccServMIBConformance 1 }

radiusAccServMIBGroups OBJECT IDENTIFIER
 ::= { radiusAccServMIBConformance 2 }

-- compliance statements

radiusAccServMIBCompliance MODULE-COMPLIANCE
  STATUS deprecated
  DESCRIPTION
    "The compliance statement for accounting servers
    implementing the RADIUS Accounting 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 { radiusAccServMIBGroup }

  OBJECT          radiusAccServConfigReset
  WRITE-SYNTAX    INTEGER { reset(2) }
  DESCRIPTION     "The only SETable value is 'reset' (2)."
```

```

 ::= { radiusAccServMIBCompliances 1 }

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

  OBJECT          radiusAccServConfigReset
  WRITE-SYNTAX    INTEGER { reset(2) }
```

DESCRIPTION "The only SETable value is 'reset' (2)."

OBJECT radiusAccClientInetAddressType

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

DESCRIPTION

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

OBJECT radiusAccClientInetAddress

SYNTAX InetAddress (SIZE (4|16))

DESCRIPTION

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

::= { radiusAccServMIBCompliances 2 }

-- units of conformance

radiusAccServMIBGroup OBJECT-GROUP

OBJECTS {radiusAccServIdent,
radiusAccServUpTime,
radiusAccServResetTime,
radiusAccServConfigReset,
radiusAccServTotalRequests,
radiusAccServTotalInvalidRequests,
radiusAccServTotalDupRequests,
radiusAccServTotalResponses,
radiusAccServTotalMalformedRequests,
radiusAccServTotalBadAuthenticators,
radiusAccServTotalPacketsDropped,
radiusAccServTotalNoRecords,
radiusAccServTotalUnknownTypes,
radiusAccClientAddress,
radiusAccClientID,
radiusAccServPacketsDropped,
radiusAccServRequests,
radiusAccServDupRequests,
radiusAccServResponses,
radiusAccServBadAuthenticators,
radiusAccServMalformedRequests,
radiusAccServNoRecords,
radiusAccServUnknownTypes
}

STATUS deprecated

DESCRIPTION

"The collection of objects providing management of a RADIUS Accounting Server."

```

 ::= { radiusAccServMIBGroups 1 }

radiusAccServExtMIBGroup OBJECT-GROUP
  OBJECTS {radiusAccServIdent,
            radiusAccServUpTime,
            radiusAccServResetTime,
            radiusAccServConfigReset,
            radiusAccServTotalRequests,
            radiusAccServTotalInvalidRequests,
            radiusAccServTotalDupRequests,
            radiusAccServTotalResponses,
            radiusAccServTotalMalformedRequests,
            radiusAccServTotalBadAuthenticators,
            radiusAccServTotalPacketsDropped,
            radiusAccServTotalNoRecords,
            radiusAccServTotalUnknownTypes,
            radiusAccClientInetAddressType,
            radiusAccClientInetAddress,
            radiusAccClientExtID,
            radiusAccServExtPacketsDropped,
            radiusAccServExtRequests,
            radiusAccServExtDupRequests,
            radiusAccServExtResponses,
            radiusAccServExtBadAuthenticators,
            radiusAccServExtMalformedRequests,
            radiusAccServExtNoRecords,
            radiusAccServExtUnknownTypes,
            radiusAccServerCounterDiscontinuity
          }
  STATUS current
  DESCRIPTION
    "The collection of objects providing management of
     a RADIUS Accounting Server."
 ::= { radiusAccServMIBGroups 2 }

```

END

8. Security Considerations

There are management objects (radiusAccServConfigReset) 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:

radiusAccServConfigReset

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:

radiusAccClientIPAddress

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

radiusAccClientInetAddress

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

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Appendix A. Acknowledgements

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Author's Address

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

EMail: dnelson@enterasys.com

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