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RADIUS Acct Server MIB (IPv6)
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Abstract

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.

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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 2866 [RFC2866].

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) Accounting Server as defined in RFC 2866 [RFC2866].

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.

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 [RFC 4001] 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 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.

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.

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 the deprecated table containing IPv4-only address objects when the RADIUS server address represented in the 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.

7. Definitions

```
RADIUS-ACCT-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 "200510170000Z"  -- 17 Oct 2005
       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."
       REVISION "200510170000Z"  -- 17 Oct 2005
       DESCRIPTION "Revised version as published in RFC xxxx.
       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 "9906110000Z"    -- 11 Jun 1999
       DESCRIPTION "Initial version as published in RFC 2621"


-- RFC Editor: replace xxxx with actual RFC number at the time of
```

```
   -- publication, and remove this note.

          ::= { 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
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
               "The number of packets received on the
                accounting port."
        ::= { radiusAccServ 5 }

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

   radiusAccServTotalDupRequests OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
```

```
                "The number of duplicate RADIUS Accounting-Request
                 packets received."
        ::= { radiusAccServ 7 }

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

   radiusAccServTotalMalformedRequests OBJECT-TYPE
        SYNTAX Counter32
        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."
        ::= { radiusAccServ 9 }

   radiusAccServTotalBadAuthenticators OBJECT-TYPE
       SYNTAX Counter32
       MAX-ACCESS read-only
       STATUS current
       DESCRIPTION
               "The number of RADIUS Accounting-Request packets
                which contained invalid Signature attributes."
       ::= { radiusAccServ 10 }

   radiusAccServTotalPacketsDropped OBJECT-TYPE
       SYNTAX Counter32
       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."
       ::= { radiusAccServ 11 }

   radiusAccServTotalNoRecords OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
                "The number of RADIUS Accounting-Request packets
```

```
                which were received and responded to but not
                recorded."
        ::= { radiusAccServ 12 }

   radiusAccServTotalUnknownTypes OBJECT-TYPE
         SYNTAX Counter32
         MAX-ACCESS read-only
         STATUS current
         DESCRIPTION
               "The number of RADIUS packets of unknown type which
                were received."
         ::= { 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."
        ::= { 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
      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."
     ::= { radiusAccClientEntry  4 }

radiusAccServRequests OBJECT-TYPE
        SYNTAX Counter32
```

```
        MAX-ACCESS read-only
        STATUS deprecated
        DESCRIPTION
              "The number of packets received from this
               client on the accounting port."
        ::= { radiusAccClientEntry  5 }

   radiusAccServDupRequests OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS deprecated
        DESCRIPTION
              "The number of duplicate RADIUS Accounting-Request
               packets received from this client."
        ::= { radiusAccClientEntry 6 }

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

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

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

   radiusAccServNoRecords OBJECT-TYPE
        SYNTAX Counter32
```

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

   radiusAccServUnknownTypes OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS deprecated
        DESCRIPTION
              "The number of RADIUS packets of unknown type which
               were received from this client."
        ::= { 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
   }

   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 adddess 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."
        ::= { 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
         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."
        ::= { radiusAccClientExtEntry  5 }

   radiusAccServExtRequests OBJECT-TYPE
          SYNTAX Counter32
          MAX-ACCESS read-only
          STATUS current
          DESCRIPTION
                "The number of packets received from this
                 client on the accounting port."
          ::= { radiusAccClientExtEntry  6 }

   radiusAccServExtDupRequests OBJECT-TYPE
          SYNTAX Counter32
          MAX-ACCESS read-only
          STATUS current
          DESCRIPTION
                "The number of duplicate RADIUS Accounting-Request
                 packets received from this client."
          ::= { radiusAccClientExtEntry 7 }

   radiusAccServExtResponses OBJECT-TYPE
          SYNTAX Counter32
          MAX-ACCESS read-only
          STATUS current
          DESCRIPTION
                "The number of RADIUS Accounting-Response packets
                 sent to this client."
          ::= { radiusAccClientExtEntry  8 }

   radiusAccServExtBadAuthenticators OBJECT-TYPE
          SYNTAX Counter32
          MAX-ACCESS read-only
          STATUS current
          DESCRIPTION
```

```
                "The number of RADIUS Accounting-Request packets
                 which contained invalid  authenticators received
                 from this client."
        ::= { radiusAccClientExtEntry  9 }

radiusAccServExtMalformedRequests OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
                "The number of malformed RADIUS Accounting-Request
                 packets which were received from this client.
                 Bad authenticators and unknown types
                 are not included as malformed Accounting-Requests."
        ::= { radiusAccClientExtEntry  10 }

radiusAccServExtNoRecords OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
                "The number of RADIUS Accounting-Request packets
                 which were received and responded to but not
                 recorded."
        ::= { radiusAccClientExtEntry  11 }

radiusAccServExtUnknownTypes OBJECT-TYPE
        SYNTAX Counter32
        MAX-ACCESS read-only
        STATUS current
        DESCRIPTION
                "The number of RADIUS packets of unknown type which
                 were received from this client."
        ::= { radiusAccClientExtEntry  12 }



-- 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."
          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 MIB."
          MODULE  -- this module
          MANDATORY-GROUPS { radiusAccServExtMIBGroup }

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

          ::= { 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
                 }
        STATUS  current
        DESCRIPTION
              "The collection of objects providing management of
               a RADIUS Accounting Server."
        ::= { radiusAccServMIBGroups 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.

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 the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC2574] and the View-based Access Control Model [RFC2575] is recommended. Using these security features, customer/users can give access to the objects only to those principals (users) that have legitimate rights to GET or SET (change/create/delete) them.

10. References

10.1. Normative References

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

[RFC2574] Blumenthal, U. and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", RFC 2574, April 1999.

[RFC2575] Wijnen, B., Presuhn, R., and K. McCloghrie, "View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)", RFC 2575, April 1999.

[RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

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Appendix A. Acknowledgments

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