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RADIUS Dynamic Authorization Server MIB

Status of This Memo

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Abstract

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 the Remote Authentication Dial-In User Service (RADIUS) (RFC 2865) Dynamic Authorization Server (DAS) functions that support the dynamic authorization extensions as defined in RFC 3576.

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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. It is becoming increasingly important to support Dynamic Authorization extensions on the network access server (NAS) devices to handle the Disconnect and Change-of-Authorization (CoA) messages as described in [RFC3576]. As a result, the effective management of RADIUS Dynamic Authorization entities is of considerable importance. This RADIUS Dynamic Authorization Server (DAS) MIB complements the managed objects used for managing RADIUS authentication and accounting clients as described in [RFC4668] and [RFC4670], respectively.

1.1. Requirements Notation

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 [RFC2119].

1.2. Terminology

Dynamic Authorization Server (DAS)

The component that resides on the NAS that processes the Disconnect and Change-of-Authorization (CoA) Request packets [RFC3576] sent by the Dynamic Authorization Client.

Dynamic Authorization Client (DAC)

The component that sends Disconnect and CoA-Request packets to the Dynamic Authorization Server. Although this component often resides on the RADIUS server, it is also possible for it to be located on a separate host, such as a Rating Engine.

Dynamic Authorization Server Port

The UDP port on which the Dynamic Authorization Server listens for the Disconnect and CoA requests sent by the Dynamic Authorization Client.

2. 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 [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].

3. Overview

"Dynamic Authorization Extensions to RADIUS" [RFC3576] defines the operation of Disconnect-Request, Disconnect-ACK, Disconnect-NAK, CoA-Request, CoA-ACK, and CoA-NAK packets. Typically, NAS devices implement the DAS function, and thus would be expected to implement the RADIUS Dynamic Authorization Server MIB, whereas DACs implement the client function and thus would be expected to implement the RADIUS Dynamic Authorization Client MIB.

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

This memo describes the MIB for Dynamic Authorization Servers and relates to the following documents as follows:

[RFC4668] describes the MIB for a RADIUS Auth Client MIB.

[RFC4669] describes the MIB for a RADIUS Auth Server MIB.

[RFC4670] describes the MIB for a RADIUS Acct Client MIB.

[RFC4671] describes the MIB for a RADIUS Acct Server MIB.

[RFC4672] describes the MIB for a RADIUS Dynamic Auth Client.

A NAS typically implements the MIBs for a RADIUS Authentication Client, a RADIUS accounting client, and a RADIUS Dynamic Authorization Server. However, any one MIB can be implemented without implementing any of the other MIBs; i.e., the MIBs have no dependencies on each other. A typical case would be for a device to implement the MIBs RADIUS authentication server, RADIUS accounting server, and RADIUS Dynamic Authorization Client. A RADIUS proxy might implement any, all, or a subset of the MIBs listed above and the MIB as defined in this document.

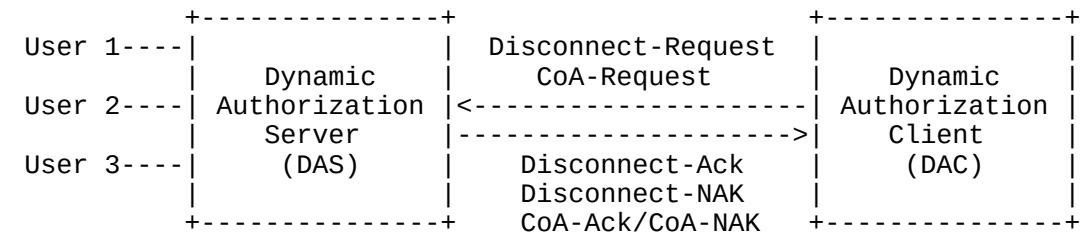

Figure 1. Mapping of clients and servers

This MIB module for the Dynamic Authorization Server contains the following:

1. Three scalar objects.

2. One Dynamic Authorization Client Table. This table contains one row for each DAC with which the DAS shares a secret.

4. RADIUS Dynamic Authorization Server MIB Definitions

```
RADIUS-DYNAUTH-SERVER-MIB DEFINITIONS ::= BEGIN

IMPORTS
       MODULE-IDENTITY, OBJECT-TYPE,
       Counter32, Integer32, mib-2,
       TimeTicks         FROM SNMPv2-SMI             -- [RFC2578]
       SnmpAdminString   FROM SNMP-FRAMEWORK-MIB     -- [RFC3411]
       InetAddressType,
       InetAddress       FROM INET-ADDRESS-MIB       -- [RFC4001]
       MODULE-COMPLIANCE,
       OBJECT-GROUP  FROM SNMPv2-CONF;               -- [RFC2580]

radiusDynAuthServerMIB MODULE-IDENTITY
       LAST-UPDATED "200608290000Z" -- 29 August 2006
       ORGANIZATION "IETF RADEXT Working Group"
       CONTACT-INFO
              " Stefaan De Cnodder
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                Murtaza Chiba
                Cisco Systems, Inc.
                170 West Tasman Dr.
                San Jose CA, 95134

                Phone: +1 408 525 7198
                EMail: mchiba@cisco.com "
       DESCRIPTION
           "The MIB module for entities implementing the server
            side of the Dynamic Authorization Extensions to the
            Remote Authentication Dial-In User Service (RADIUS)
            protocol.  Copyright (C) The Internet Society (2006).
```

```
            Initial version as published in RFC 4673; for full
            legal notices see the RFC itself."

        REVISION "200608290000Z" -- 29 August 2006
        DESCRIPTION "Initial version as published in RFC 4673."
        ::= { mib-2 146 }

radiusDynAuthServerMIBObjects OBJECT IDENTIFIER ::=
                                    { radiusDynAuthServerMIB 1 }

radiusDynAuthServerScalars    OBJECT IDENTIFIER ::=
                               { radiusDynAuthServerMIBObjects 1 }

radiusDynAuthServerDisconInvalidClientAddresses OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
            "The number of Disconnect-Request packets received from
             unknown addresses.  This counter may experience a
             discontinuity when the DAS module (re)starts, as
             indicated by the value of
             radiusDynAuthServerCounterDiscontinuity."
      ::= { radiusDynAuthServerScalars 1 }

radiusDynAuthServerCoAInvalidClientAddresses OBJECT-TYPE
      SYNTAX Counter32
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
            "The number of CoA-Request packets received from unknown
             addresses.  This counter may experience a discontinuity
             when the DAS module (re)starts, as indicated by the
             value of radiusDynAuthServerCounterDiscontinuity."
      ::= { radiusDynAuthServerScalars 2 }

radiusDynAuthServerIdentifier OBJECT-TYPE
      SYNTAX SnmpAdminString
      MAX-ACCESS read-only
      STATUS current
      DESCRIPTION
             "The NAS-Identifier of the RADIUS Dynamic Authorization
              Server.  This is not necessarily the same as sysName in
              MIB II."
      REFERENCE
             "RFC 2865, Section 5.32, NAS-Identifier."
      ::= { radiusDynAuthServerScalars 3 }
```

```
radiusDynAuthClientTable OBJECT-TYPE
      SYNTAX SEQUENCE OF RadiusDynAuthClientEntry
      MAX-ACCESS not-accessible
      STATUS     current
      DESCRIPTION
            "The (conceptual) table listing the RADIUS Dynamic
             Authorization Clients with which the server shares a
             secret."
      ::= { radiusDynAuthServerMIBObjects 2 }

radiusDynAuthClientEntry OBJECT-TYPE
       SYNTAX     RadiusDynAuthClientEntry
       MAX-ACCESS not-accessible
       STATUS     current
       DESCRIPTION
             "An entry (conceptual row) representing one Dynamic
              Authorization Client with which the server shares a
              secret."
       INDEX      { radiusDynAuthClientIndex }
       ::= { radiusDynAuthClientTable 1 }

RadiusDynAuthClientEntry ::= SEQUENCE {
       radiusDynAuthClientIndex                    Integer32,
       radiusDynAuthClientAddressType              InetAddressType,
       radiusDynAuthClientAddress                  InetAddress,
       radiusDynAuthServDisconRequests             Counter32,
       radiusDynAuthServDisconAuthOnlyRequests     Counter32,
       radiusDynAuthServDupDisconRequests          Counter32,
       radiusDynAuthServDisconAcks                 Counter32,
       radiusDynAuthServDisconNaks                 Counter32,
       radiusDynAuthServDisconNakAuthOnlyRequests  Counter32,
       radiusDynAuthServDisconNakSessNoContext     Counter32,
       radiusDynAuthServDisconUserSessRemoved      Counter32,
       radiusDynAuthServMalformedDisconRequests    Counter32,
       radiusDynAuthServDisconBadAuthenticators    Counter32,
       radiusDynAuthServDisconPacketsDropped       Counter32,
       radiusDynAuthServCoARequests                Counter32,
       radiusDynAuthServCoAAuthOnlyRequests        Counter32,
       radiusDynAuthServDupCoARequests             Counter32,
       radiusDynAuthServCoAAcks                    Counter32,
       radiusDynAuthServCoANaks                    Counter32,
       radiusDynAuthServCoANakAuthOnlyRequests     Counter32,
       radiusDynAuthServCoANakSessNoContext        Counter32,
       radiusDynAuthServCoAUserSessChanged         Counter32,
       radiusDynAuthServMalformedCoARequests       Counter32,
       radiusDynAuthServCoABadAuthenticators       Counter32,
       radiusDynAuthServCoAPacketsDropped          Counter32,
       radiusDynAuthServUnknownTypes               Counter32,
```

```
       radiusDynAuthServerCounterDiscontinuity      TimeTicks
}


radiusDynAuthClientIndex OBJECT-TYPE
       SYNTAX     Integer32 (1..2147483647)
       MAX-ACCESS not-accessible
       STATUS     current
       DESCRIPTION
             "A number uniquely identifying each RADIUS Dynamic
              Authorization Client with which this Dynamic
              Authorization Server communicates.  This number is
              allocated by the agent implementing this MIB module
              and is unique in this context."
       ::= { radiusDynAuthClientEntry 1 }

radiusDynAuthClientAddressType OBJECT-TYPE
       SYNTAX     InetAddressType
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The type of IP address of the RADIUS Dynamic
              Authorization Client referred to in this table entry."
       ::= { radiusDynAuthClientEntry 2 }

radiusDynAuthClientAddress OBJECT-TYPE
       SYNTAX     InetAddress
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The IP address value of the RADIUS Dynamic
              Authorization Client referred to in this table entry,
              using the version neutral IP address format.  The type
              of this address is determined by the value of
              the radiusDynAuthClientAddressType object."
       ::= { radiusDynAuthClientEntry 3 }

radiusDynAuthServDisconRequests OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS Disconnect-Requests received
              from this Dynamic Authorization Client.  This also
              includes the RADIUS Disconnect-Requests that have a
              Service-Type attribute with value 'Authorize Only'.
              This counter may experience a discontinuity when the
```

```
              DAS module (re)starts as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM)."
       ::= { radiusDynAuthClientEntry 4 }

radiusDynAuthServDisconAuthOnlyRequests OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS Disconnect-Requests that include
              a Service-Type attribute with value 'Authorize Only'
              received from this Dynamic Authorization Client.  This
              counter may experience a discontinuity when the DAS
              module (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM)."
       ::= { radiusDynAuthClientEntry 5 }

radiusDynAuthServDupDisconRequests OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of duplicate RADIUS Disconnect-Request
              packets received from this Dynamic Authorization
              Client.  This counter may experience a discontinuity
              when the DAS module (re)starts, as indicated by the
              value of radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM)."
       ::= { radiusDynAuthClientEntry 6 }

radiusDynAuthServDisconAcks  OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "replies"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS Disconnect-ACK packets sent to
              this Dynamic Authorization Client.  This counter may
              experience a discontinuity when the DAS module
              (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
```

```
        REFERENCE
              "RFC 3576, Section 2.1, Disconnect Messages (DM)."
        ::= { radiusDynAuthClientEntry 7 }

radiusDynAuthServDisconNaks OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "replies"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of RADIUS Disconnect-NAK packets
               sent to this Dynamic Authorization Client.  This
               includes the RADIUS Disconnect-NAK packets sent
               with a Service-Type attribute with value 'Authorize
               Only' and the RADIUS Disconnect-NAK packets sent
               because no session context was found.  This counter
               may experience a discontinuity when the DAS module
               (re)starts, as indicated by the value of
               radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
              "RFC 3576, Section 2.1, Disconnect Messages (DM)."
        ::= { radiusDynAuthClientEntry 8 }

radiusDynAuthServDisconNakAuthOnlyRequests OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "replies"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of RADIUS Disconnect-NAK packets that
               include a Service-Type attribute with value
               'Authorize Only' sent to this Dynamic Authorization
               Client.  This counter may experience a discontinuity
               when the DAS module (re)starts, as indicated by the
               value of radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
              "RFC 3576, Section 2.1, Disconnect Messages (DM)."
        ::= { radiusDynAuthClientEntry 9 }

radiusDynAuthServDisconNakSessNoContext OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "replies"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of RADIUS Disconnect-NAK packets
               sent to this Dynamic Authorization Client
               because no session context was found.  This counter may
```

```
              experience a discontinuity when the DAS module
              (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM)."
       ::= { radiusDynAuthClientEntry 10 }

radiusDynAuthServDisconUserSessRemoved OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "sessions"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of user sessions removed for the
              Disconnect-Requests received from this
              Dynamic Authorization Client.  Depending on site-
              specific policies, a single Disconnect request
              can remove multiple user sessions.  In cases where
              this Dynamic Authorization Server has no
              knowledge of the number of user sessions that
              are affected by a single request, each such
              Disconnect-Request will count as a single
              affected user session only.  This counter may experience
              a discontinuity when the DAS module (re)starts, as
              indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM)."
       ::= { radiusDynAuthClientEntry 11 }

radiusDynAuthServMalformedDisconRequests OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of malformed RADIUS Disconnect-Request
              packets received from this Dynamic Authorization
              Client.  Bad authenticators and unknown types are not
              included as malformed Disconnect-Requests.  This counter
              may experience a discontinuity when the DAS module
              (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM), and
              Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry 12 }
```

```
radiusDynAuthServDisconBadAuthenticators OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS Disconnect-Request packets
              that contained an invalid Authenticator field
              received from this Dynamic Authorization Client.  This
              counter may experience a discontinuity when the DAS
              module (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM), and
              Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry 13 }

radiusDynAuthServDisconPacketsDropped OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of incoming Disconnect-Requests
              from this Dynamic Authorization Client silently
              discarded by the server application for some reason
              other than malformed, bad authenticators, or unknown
              types.  This counter may experience a discontinuity
              when the DAS module (re)starts, as indicated by the
              value of radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.1, Disconnect Messages (DM), and
              Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry 14 }

radiusDynAuthServCoARequests OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS CoA-requests received from this
              Dynamic Authorization Client.  This also includes
              the CoA requests that have a Service-Type attribute
              with value 'Authorize Only'.  This counter may
              experience a discontinuity when the DAS module
              (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
```

```
        REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA)."
        ::= { radiusDynAuthClientEntry 15 }

radiusDynAuthServCoAAuthOnlyRequests OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "requests"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of RADIUS CoA-requests that include a
               Service-Type attribute with value 'Authorize Only'
               received from this Dynamic Authorization Client.  This
               counter may experience a discontinuity when the DAS
               module (re)starts, as indicated by the value of
               radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA)."
        ::= { radiusDynAuthClientEntry 16 }


radiusDynAuthServDupCoARequests OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "requests"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of duplicate RADIUS CoA-Request packets
               received from this Dynamic Authorization Client.  This
               counter may experience a discontinuity when the DAS
               module (re)starts, as indicated by the value of
               radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA)."
        ::= { radiusDynAuthClientEntry 17 }

radiusDynAuthServCoAAcks  OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "replies"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of RADIUS CoA-ACK packets sent to this
               Dynamic Authorization Client.  This counter may
               experience a discontinuity when the DAS module
```

```
              (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.2, Change-of-Authorization
              Messages (CoA)."
       ::= { radiusDynAuthClientEntry 18 }

radiusDynAuthServCoANaks OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "replies"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS CoA-NAK packets sent to
              this Dynamic Authorization Client.  This includes
              the RADIUS CoA-NAK packets sent with a Service-Type
              attribute with value 'Authorize Only' and the RADIUS
              CoA-NAK packets sent because no session context was
              found.  This counter may experience a discontinuity
              when the DAS module (re)starts, as indicated by the
              value of radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.2, Change-of-Authorization
              Messages (CoA)."
       ::= { radiusDynAuthClientEntry 19 }

radiusDynAuthServCoANakAuthOnlyRequests OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "replies"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
             "The number of RADIUS CoA-NAK packets that include a
              Service-Type attribute with value 'Authorize Only'
              sent to this Dynamic Authorization Client.  This counter
              may experience a discontinuity when the DAS module
              (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.2, Change-of-Authorization
              Messages (CoA)."
       ::= { radiusDynAuthClientEntry 20 }

radiusDynAuthServCoANakSessNoContext OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "replies"
       MAX-ACCESS read-only
       STATUS     current
```

```
        DESCRIPTION
              "The number of RADIUS CoA-NAK packets sent to this
               Dynamic Authorization Client because no session context
               was found.  This counter may experience a discontinuity
               when the DAS module (re)starts, as indicated by the
               value of radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA)."
        ::= { radiusDynAuthClientEntry 21 }

radiusDynAuthServCoAUserSessChanged OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "sessions"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of user sessions authorization
               changed for the CoA-Requests received from this
               Dynamic Authorization Client.  Depending on site-
               specific policies, a single CoA request can change
               multiple user sessions' authorization.  In cases where
               this Dynamic Authorization Server has no knowledge of
               the number of user sessions that are affected by a
               single request, each such CoA-Request will
               count as a single affected user session only.  This
               counter may experience a discontinuity when the DAS
               module (re)starts, as indicated by the value of
               radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA)."
        ::= { radiusDynAuthClientEntry 22 }

radiusDynAuthServMalformedCoARequests OBJECT-TYPE
        SYNTAX     Counter32
        UNITS      "requests"
        MAX-ACCESS read-only
        STATUS     current
        DESCRIPTION
              "The number of malformed RADIUS CoA-Request packets
               received from this Dynamic Authorization Client.  Bad
               authenticators and unknown types are not included as
               malformed CoA-Requests.  This counter may experience a
               discontinuity when the DAS module (re)starts, as
               indicated by the value of
               radiusDynAuthServerCounterDiscontinuity."
        REFERENCE
```

```
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA), and Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry  23 }

radiusDynAuthServCoABadAuthenticators OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
              "The number of RADIUS CoA-Request packets that
               contained an invalid Authenticator field received
               from this Dynamic Authorization Client.  This counter
               may experience a discontinuity when the DAS module
               (re)starts, as indicated by the value of
                 radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA), and Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry 24 }

radiusDynAuthServCoAPacketsDropped OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
              "The number of incoming CoA packets from this
               Dynamic Authorization Client silently discarded
               by the server application for some reason other than
               malformed, bad authenticators, or unknown types.  This
               counter may experience a discontinuity when the DAS
               module (re)starts, as indicated by the value of
               radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
              "RFC 3576, Section 2.2, Change-of-Authorization
               Messages (CoA), and Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry 25 }

radiusDynAuthServUnknownTypes OBJECT-TYPE
       SYNTAX     Counter32
       UNITS      "requests"
       MAX-ACCESS read-only
       STATUS     current
       DESCRIPTION
              "The number of incoming packets of unknown types that
               were received on the Dynamic Authorization port.  This
               counter may experience a discontinuity when the DAS
```

```
              module (re)starts, as indicated by the value of
              radiusDynAuthServerCounterDiscontinuity."
       REFERENCE
             "RFC 3576, Section 2.3, Packet Format."
       ::= { radiusDynAuthClientEntry 26 }

radiusDynAuthServerCounterDiscontinuity OBJECT-TYPE
       SYNTAX TimeTicks
       UNITS  "hundredths of a second"
       MAX-ACCESS read-only
       STATUS current
       DESCRIPTION
             "The time (in hundredths of a second) since the
              last counter discontinuity.  A discontinuity may
              be the result of a reinitialization of the DAS
              module within the managed entity."
       ::= { radiusDynAuthClientEntry 27 }


-- conformance information

radiusDynAuthServerMIBConformance
       OBJECT IDENTIFIER ::= { radiusDynAuthServerMIB 2 }
radiusDynAuthServerMIBCompliances
       OBJECT IDENTIFIER ::= { radiusDynAuthServerMIBConformance 1 }
radiusDynAuthServerMIBGroups
       OBJECT IDENTIFIER ::= { radiusDynAuthServerMIBConformance 2 }

-- compliance statements

radiusAuthServerMIBCompliance MODULE-COMPLIANCE
       STATUS  current
       DESCRIPTION
             "The compliance statement for entities implementing
              the RADIUS Dynamic Authorization Server.  Implementation
              of this module is for entities that support IPv4 and/or
              IPv6."
       MODULE  -- this module
       MANDATORY-GROUPS { radiusDynAuthServerMIBGroup }

       OBJECT             radiusDynAuthClientAddressType
       SYNTAX             InetAddressType { ipv4(1), ipv6(2) }
       DESCRIPTION
           "An implementation is only required to support IPv4 and
            globally unique IPv6 addresses."

       OBJECT             radiusDynAuthClientAddress
       SYNTAX             InetAddress (SIZE(4|16))
```

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

        GROUP               radiusDynAuthServerAuthOnlyGroup
        DESCRIPTION
              "Only required for Dynamic Authorization Clients that
               are supporting Service-Type attributes with value
               'Authorize-Only'."


        GROUP               radiusDynAuthServerNoSessGroup
        DESCRIPTION
              "This group is not required if the Dynamic
               Authorization Server cannot easily determine whether
               a session exists (e.g., in case of a RADIUS
               proxy)."

        ::= { radiusDynAuthServerMIBCompliances 1 }

-- units of conformance

radiusDynAuthServerMIBGroup OBJECT-GROUP
        OBJECTS { radiusDynAuthServerDisconInvalidClientAddresses,
                  radiusDynAuthServerCoAInvalidClientAddresses,
                  radiusDynAuthServerIdentifier,
                  radiusDynAuthClientAddressType,
                  radiusDynAuthClientAddress,
                  radiusDynAuthServDisconRequests,
                  radiusDynAuthServDupDisconRequests,
                  radiusDynAuthServDisconAcks,
                  radiusDynAuthServDisconNaks,
                  radiusDynAuthServDisconUserSessRemoved,
                  radiusDynAuthServMalformedDisconRequests,
                  radiusDynAuthServDisconBadAuthenticators,
                  radiusDynAuthServDisconPacketsDropped,
                  radiusDynAuthServCoARequests,
                  radiusDynAuthServDupCoARequests,
                  radiusDynAuthServCoAAcks,
                  radiusDynAuthServCoANaks,
                  radiusDynAuthServCoAUserSessChanged,
                  radiusDynAuthServMalformedCoARequests,
                  radiusDynAuthServCoABadAuthenticators,
                  radiusDynAuthServCoAPacketsDropped,
                  radiusDynAuthServUnknownTypes,
                  radiusDynAuthServerCounterDiscontinuity
                }
        STATUS  current
```

```
        DESCRIPTION
              "The collection of objects providing management of
               a RADIUS Dynamic Authorization Server."
        ::= { radiusDynAuthServerMIBGroups 1 }

radiusDynAuthServerAuthOnlyGroup OBJECT-GROUP
        OBJECTS { radiusDynAuthServDisconAuthOnlyRequests,
                  radiusDynAuthServDisconNakAuthOnlyRequests,
                  radiusDynAuthServCoAAuthOnlyRequests,
                  radiusDynAuthServCoANakAuthOnlyRequests
                }
        STATUS  current
        DESCRIPTION
              "The collection of objects supporting the RADIUS
               messages including Service-Type attribute with
               value 'Authorize Only'."
        ::= { radiusDynAuthServerMIBGroups 2 }

radiusDynAuthServerNoSessGroup OBJECT-GROUP
        OBJECTS { radiusDynAuthServDisconNakSessNoContext,
                  radiusDynAuthServCoANakSessNoContext
                }
        STATUS  current
        DESCRIPTION
              "The collection of objects supporting the RADIUS
               messages that are referring to non-existing sessions."
        ::= { radiusDynAuthServerMIBGroups 3 }


END
```

5. Security Considerations

There are no management objects defined in this MIB module that have a MAX-ACCESS clause of read-write and/or read-create. So, if this MIB module is implemented correctly, then there is no risk that an intruder can alter or create any management objects of this MIB module 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:

radiusDynAuthClientAddress and radiusDynAuthClientAddressType

These can be used to determine the address of the DAC with which the DAS is communicating. This information could be useful in mounting an attack on the DAC.

radiusDynAuthServerIdentifier

This can be used to determine the Identifier of the DAS. This information could be useful in impersonating the DAS.

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.

6. IANA Considerations

The IANA has assigned OID number 146 under mib-2.

7. Acknowledgements

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