Abstract

Along with providing support for certain basic authentication, authorization and accounting functions, the Diameter protocol is designed to provide a framework for AAA applications.

This document defines the Management Information Base (MIB) module which describes the minimum set of objects needed to manage an implementation of the Diameter protocol.

Status of this Memo

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1. 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 ([RFC2578], [RFC2579], [RFC2580]). In particular, it describes managed objects used for managing the base Diameter protocol [RFC3588].

2. Requirements Language

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].

3. Overview

This MIB defines objects supporting the management of the Diameter base protocol as defined in RFC 3588 [RFC3588]. Objects related to Diameter applications are defined in separate documents.

4. Diameter Base Protocol MIB Definitions

DIAMETER-BASE-PROTOCOL-MIB DEFINITIONS ::= BEGIN

IMPORTS
    InetAddressType,
    InetAddress
    FROM INET-ADDRESS-MIB -- [RFC4001]
    MODULE-IDENTITY,
    OBJECT-TYPE,
    NOTIFICATION-TYPE,
    Counter32,
    Unsigned32,
    Gauge32,
    TimeTicks,
    mib-2
    FROM SNMPv2-SMI -- [RFC2578]
SnmpAdminString
FROM SNMP-FRAMEWORK-MIB -- [RFC3411]
NOTIFICATION-GROUP,
MODULE-COMPLIANCE,
OBJECT-GROUP
FROM SNMPv2-CONF -- [RFC2580]
RowStatus,
TruthValue,
StorageType
FROM SNMPv2-TC; -- [RFC2579]

diameterBaseProtocolMIB MODULE-IDENTITY
LAST-UPDATED "201001150000Z" -- 15 January 2010
ORGANIZATION "IETF dime Working Group."
CONTACT-INFO
"Glen Zorn
Network Zen
1463 East Republican Street, #358
Seattle, WA 98112
USA
Email: gwz@net-zen.net"
DESCRIPTION
"The MIB module for entities implementing the
Diameter Base Protocol.

Copyright (C) The IETF Trust (2010). This initial
version of this MIB module was published in RFC yyyy;
for full legal notices see the RFC itself. Supplementary
information may be available on

-- RFC Ed.: replace yyyy with actual RFC number and remove this note

REVISION "201001150000Z" -- 15 January 2010
DESCRIPTION "Initial version as published in RFC yyyy"

-- RFC Ed.: replace yyyy with actual RFC number and remove this note

::= { mib-2 XXX }

-- RFC Ed.: replace XXX with value assigned by IANA

-- Top-Level Components of this MIB.

diameterBaseNotifications OBJECT IDENTIFIER ::= 
  { diameterBaseProtocolMIB 0 }
diameterBaseObjects OBJECT IDENTIFIER ::= 
    { diameterBaseProtocolMIB 1 }

diameterBaseConform OBJECT IDENTIFIER ::= 
    { diameterBaseProtocolMIB 2 }
dbpLocalCfgs OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 1 }
dbpLocalStats OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 2 }
dbpPeerCfgs OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 3 }
dbpPeerStats OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 4 }
dbpRealmCfgs OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 5 }
dbpRealmStats OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 6 }
dbpNotifCfgs OBJECT IDENTIFIER ::= 
    { diameterBaseObjects 7 }

-- Protocol Error Notifications

dbpProtocolErrorNotifEnabled OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"Setting the value of this object to True(1) enables the
dbpProtocolErrorNotif notification."
DEFVAL (false)
::= { dbpNotifCfgs 1 }

dbpProtocolErrorNotif NOTIFICATION-TYPE
OBJECTS {
  dbpPeerId,
  dbpPerPeerStatsProtocolErrors
}
STATUS current
DESCRIPTION
"An dbpProtocolError Notification is sent when both the
following conditions are true:
1) the value of dbpProtocolErrorNotifEnabled is True(1)
2) the value of dbpPerPeerStatsProtocolErrors changes
It can be utilized by an NMS to trigger logical/physical entity table maintenance polls.
An agent must not generate more than one dbpProtocolError 'notification event' in a five second period, where a 'notification event' is the transmission of a single Notification PDU to a list of Notification destinations.
If additional protocol errors occur within the five second 'throttling' period, then these notification events should be suppressed by the agent.
An NMS should periodically check the value of dbpPerPeerStatsProtocolErrors to detect any missed dbpProtocolError notification events, e.g. due to
throttling or transmission loss."
::= { diameterBaseNotifications 1 }

-- Transient Error Notifications

dbpTransientFailureNotifEnabled OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION
"Setting the value of this object to True(1)
enables the dbpTransientFailure Notification."
::= { dbpNotifCfgs 2 }

dbpTransientFailureNotif NOTIFICATION-TYPE
OBJECTS {
    dbpPeerId,
    dbpPerPeerStatsTransientFailures
}
STATUS current
DESCRIPTION
"An dbpTransientFailure Notification is sent when both
the following conditions are true:
1) the value of dbpTransientFailureNotifEnabled
   is True(1)
2) the value of dbpPerPeerStatsTransientFailures
   changes
It can be utilized by an NMS to trigger
logical/physical entity table maintenance polls.
An agent must not generate more than one
dbpTransientFailure ‘notification event’ in a five
second period, where a ‘notification event’ is the
transmission of a single notification PDU to a list
of notification destinations.
If additional transient failures occur
within the five second ‘throttling’ period, then
these notification events should be suppressed
by the agent.
An NMS should periodically check the value of
dbpPerPeerStatsTransientFailures to detect any
missed dbpTransientFailure notification events,
e.g. due to throttling or transmission loss."
::= { diameterBaseNotifications 2 }

-- Permanent Failure Notifications

dbpPermanentFailureNotifEnabled OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
   "Setting the value of this object to True(1)
enables the dbpPermanentFailure notification."
DEFVAL       { false }
::= { dbpNotifCfgs 3 }

dbpPermanentFailureNotif NOTIFICATION-TYPE
OBJECTS  {
    dbpPeerId,
    dbpPerPeerStatsPermanentFailures
}
STATUS     current
DESCRIPTION
   "An dbpPermanentFailure notification is sent when
both the following conditions are true:
1) the value of dbpPermanentFailureNotifEnabled
   is True(1)
2) the value of dbpPerPeerStatsPermanentFailures
   changes
   It can be utilized by an NMS to trigger
   logical/physical entity table maintenance polls.
   An agent must not generate more than one
   dbpPermanentFailure ‘notification event’ in a five
   second period, where a ‘notification event’ is the
   transmission of a single notification PDU to a list
   of notification destinations.
   If additional permanent failures occur within the
   five second ‘throttling’ period, then these
   trap-events should be suppressed by the agent.
   An NMS should periodically check the value of
   dbpPerPeerStatsPermanentFailures to detect
   any missed dbpPermanentFailure trap-events,
   e.g. due to throttling or transmission loss."
::= { diameterBaseNotifications 3 }

-- Connection Down Notifs

dbpPeerConnectionDownNotifEnabled OBJECT-TYPE
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
   "Setting the value of this object to True(1)
enables the dbpPeerConnectionDown notification.

DEFVAL  { false }
 ::= { dbpNotifCfgs 4 }

dbpPeerConnectionDownNotif NOTIFICATION-TYPE
 OBJECTS  {
   dbpLocalId,
   dbpPeerId
 }

STATUS  current

DESCRIPTION
 "An dbpPeerConnectionDown notification is sent when both the following conditions are true:
  1) the value of dbpPeerConnectionDownNotifEnabled is True(1)
  2) dbpPerPeerStatsState changes to closed(1)
It can be utilized by an NMS to trigger logical/physical entity table maintenance polls. An agent must not generate more than one dbpPeerConnectionDown 'notification event' in a five second period, where a 'notification event' is the transmission of a single notification PDU to a list of notification destinations. If additional 'transport down' events occur within the five second 'throttling' period, then these trap-events should be suppressed by the agent."

 ::= { diameterBaseNotifications 4 }

-- Connection Up Notifications

dbpPeerConnectionUpNotifEnabled OBJECT-TYPE
 SYNTAX      TruthValue
 MAX-ACCESS  read-write
 STATUS      current
 DESCRIPTION
 "Setting the value of this object to True(1) enables the dbpPeerConnectionUp notification."
 DEFVAL  { false }
 ::= { dbpNotifCfgs 5 }

dbpPeerConnectionUpNotif NOTIFICATION-TYPE
 OBJECTS  {
   dbpLocalId,
   dbpPeerId
 }

STATUS  current

DESCRIPTION
An dbpPeerConnectionUp notification is sent when both the following conditions are true:
1) the value of dbpPeerConnectionUpNotifEnabled is True(1)
2) the value of dbpPerPeerStatsState changes to either rOpen(6) or iOpen(7)
It can be utilized by an NMS to trigger logical/physical entity table maintenance polls.
An agent must not generate more than one dbpPeerConnectionUp notification event’ in a five second period, where a ‘notification event’ is the transmission of a single notification PDU to a list of notification destinations.
If additional ‘connection up’ events occur within the five second ‘throttling’ period, then these trap-events should be suppressed by the agent.

::= { diameterBaseNotifications 5 }

-- Local Configs

dbpLocalId OBJECT-TYPE
SYNTAX      SnmpAdminString
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The implementation-specific identification string for the Diameter software in use on the system; for example: ‘diameterd’"
::= { dbpLocalCfgs 1 }

dbpLocalIpAddrTable OBJECT-TYPE
SYNTAX      SEQUENCE OF DbpLocalIpAddrEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The table listing the Diameter local host’s IP Addresses."
::= { dbpLocalCfgs 2 }

dbpLocalIpAddrEntry OBJECT-TYPE
SYNTAX      DbpLocalIpAddrEntry
MAX-ACCESS  not-accessible
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STATUS  current
DESCRIPTION
  "A row entry representing a Diameter
local host IP Address."
INDEX
  { dbpLocalIpAddrIndex }
 ::= { dbpLocalIpAddrTable 1 }

DbpLocalIpAddrEntry ::= SEQUENCE {
  dbpLocalIpAddrIndex Unsigned32,
  dbpLocalIpAddrType InetAddressType,
  dbpLocalIpAddress InetAddress
}

dbpLocalIpAddrIndex OBJECT-TYPE
SYNTAX   Unsigned32 (1..4294967295 )
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
  "A number uniquely identifying an IP Address
supported by this Diameter host."
 ::= { dbpLocalIpAddrEntry 1 }

dbpLocalIpAddrType OBJECT-TYPE
SYNTAX   InetAddressType
MAX-ACCESS read-only
STATUS current
DESCRIPTION
  "The type of internet address stored
in dbpLocalIpAddress."
 ::= { dbpLocalIpAddrEntry 2 }

dbpLocalIpAddress OBJECT-TYPE
SYNTAX   InetAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
  "The IP-Address of the host, which is of the type
specified in dbpLocalIpAddrType."
 ::= { dbpLocalIpAddrEntry 3 }

dbpLocalTcpListenPort OBJECT-TYPE
SYNTAX   Unsigned32 (1..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
  "Diameter TCP 'listen' port."
 ::= { dbpLocalCfgs 3 }

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dbpLocalSctpListenPort OBJECT-TYPE
SYNTAX      Unsigned32 (1..65535)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
   "Diameter SCTP 'listen' port."
 ::= { dbpLocalCfgs 4 }

dbpLocalOriginHost OBJECT-TYPE
SYNTAX          SnmpAdminString
MAX-ACCESS      read-write
STATUS          current
DESCRIPTION     "This object represents the Local Origin Host."
DEFVAL          { "" }
 ::= { dbpLocalCfgs 5 }

dbpLocalRealm OBJECT-TYPE
SYNTAX          SnmpAdminString
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION     "This object represents the Local Realm Name."
DEFVAL          { "" }
 ::= { dbpLocalCfgs 6 }

dbpLocalStatsTotalMessagesIn OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
   "The total number of Diameter Base Protocol messages received."
 ::= { dbpLocalStats 1 }

dbpLocalStatsTotalMessagesOut OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
   "The total number of Diameter Base Protocol messages transmitted."
 ::= { dbpLocalStats 2 }

dbpLocalStatsTotalUpTime OBJECT-TYPE
SYNTAX     TimeTicks
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
   "This object represents the total time this Diameter
The description of `dbpLocalResetTime` is:

> If the server keeps 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.

The description of `dbpLocalConfigReset` is:

> 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(2) - server (re)initializing;
>   - running(3) - server currently running.

The description of `dbpLocalApplTable` is:

> The table listing the Diameter applications supported by this server.
A row entry representing a Diameter application on this server.

```
DbpLocalApplEntry ::= SEQUENCE {
    dbpLocalApplIndex  Unsigned32,
    dbpLocalApplStorageType    StorageType,
    dbpLocalApplRowStatus      RowStatus
}
```

dbpLocalApplIndex OBJECT-TYPE
SYNTAX    Unsigned32 ( 1..4294967295 )
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"A number uniquely identifying a supported Diameter application. Upon reload, dbpLocalApplIndex values may be changed."
 ::= { dbpLocalApplEntry 1 }

dbpLocalApplStorageType OBJECT-TYPE
SYNTAX    StorageType
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
"The storage type for this conceptual row. None of the columnar objects is writable when the conceptual row is permanent."
REFERENCE   "Textual Conventions for SMIv2, Section 2."
DEFVAL      { nonVolatile }
 ::= { dbpLocalApplEntry 2 }

dbpLocalApplRowStatus OBJECT-TYPE
SYNTAX    RowStatus
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
"The status of this conceptual row.

To create a row in this table, a manager must set this object to either createAndGo(4) or createAndWait(5).

Until instances of all corresponding columns are appropriately configured, the value of the"
corresponding instance of the dbpLocalApplRowStatus column is 'notReady'.

In particular, a newly created row cannot be made active until the corresponding dbpLocalApplIndex has been set. dbpLocalApplIndex may not be modified while the value of this object is active(1): An attempt to set these objects while the value of dbpLocalApplRowStatus is active(1) will result in an inconsistentValue error.

Entries in this table with dbpLocalApplRowStatus equal to active(1) remain in the table until destroyed.

Entries in this table with dbpLocalApplRowStatus equal to values other than active(1) will be destroyed after timeout (5 minutes).

::= { dbpLocalApplEntry 3 }

dbpPeerTable OBJECT-TYPE
SYNTAX     SEQUENCE OF DbpPeerEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"The table listing information regarding the discovered or configured Diameter peer servers."
::= { dbpPeerCfgs 1 }

dbpPeerEntry OBJECT-TYPE
SYNTAX     DbpPeerEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A row entry representing a discovered or configured Diameter peer server."
INDEX      { dbpPeerIndex }
::= { dbpPeerTable 1 }

DbpPeerEntry ::= SEQUENCE {
    dbpPeerIndex                         Unsigned32,
    dbpPeerId                       SnmpAdminString,
    dbpPeerPortConnect                   Unsigned32,
    dbpPeerPortListen                    Unsigned32,
    dbpPeerProtocol                         INTEGER,
    dbpPeerSecurity                         INTEGER,
    dbpPeerFirmwareRevision              Unsigned32,
dbpPeerIndex OBJECT-TYPE
SYNTAX     Unsigned32 (1..4294967295)
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
   "A number uniquely identifying each Diameter peer
   with which the host server communicates.
   Upon reload, dbpPeerIndex values may be changed."
::= { dbpPeerEntry  1 }

dbpPeerId OBJECT-TYPE
SYNTAX     SnmpAdminString
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
   "The server identifier for the Diameter peer.
   It must be unique and non-empty."
::= { dbpPeerEntry  2 }

dbpPeerPortConnect OBJECT-TYPE
SYNTAX     Unsigned32 (1..65535)
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
   "The connection port this server used
to connect to the Diameter peer.
If there is no active connection, this
value will be zero(0)."
::= { dbpPeerEntry  3 }

dbpPeerPortListen OBJECT-TYPE
SYNTAX     Unsigned32 (1..65535)
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
   "The port the server is listening on."
::= { dbpPeerEntry  4 }

dbpPeerProtocol OBJECT-TYPE
SYNTAX     INTEGER { tcp(1),
                sctp(2) }
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
   "The transport protocol (tcp/sctp) the
Diameter peer is using.

::= { dbpPeerEntry  5 }

dbpPeerSecurity OBJECT-TYPE
SYNTAX INTEGER { other(1),
tls(2),
ipsec(3) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The security the Diameter peer is using.
other(1) - Unknown Security Protocol
tls(2) - Transport Layer Security Protocol
ipsec(3) - Internet Protocol Security"
DEFVAL { other }
::= { dbpPeerEntry  6 }

dbpPeerFirmwareRevision OBJECT-TYPE
SYNTAX Unsigned32 (1..4294967295)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Firmware revision of peer. If no firmware
revision, the revision of the Diameter software
module may be reported instead."
::= { dbpPeerEntry  7 }

dbpPeerStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The storage type for this conceptual row.
Only the dbpPeerPortListen object is writable when
the conceptual row is permanent."
REFERENCE "Textual Conventions for SMIv2, Section 2."
DEFVAL { nonVolatile }
::= { dbpPeerEntry  8 }

dbpPeerRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "Status of the peer entry: creating the entry
enables the peer, destroying the entry disables
the peer."
::= {dbpPeerEntry 9 }

dbpPeerIpAddrTable OBJECT-TYPE
SYNTAX      SEQUENCE OF DbpPeerIpAddrEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"The table listing the Diameter peer IP addresses."
::= { dbpPeerCfgs 2 }

dbpPeerIpAddrEntry OBJECT-TYPE
SYNTAX      DbpPeerIpAddrEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"A row entry representing a peer Diameter server."
INDEX
{ dbpPeerIndex,
  dbpPeerIpAddressIndex }
::= { dbpPeerIpAddrTable 1 }

DbpPeerIpAddrEntry ::= SEQUENCE {
  dbpPeerIpAddressIndex Unsigned32,
  dbpPeerIpAddressType  InetAddressType,
  dbpPeerIpAddress      InetAddress }

dbpPeerIpAddressIndex OBJECT-TYPE
SYNTAX      Unsigned32 (1..4294967295)
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"A number uniquely identifying an IP Address supported by this Diameter peer."
::= { dbpPeerIpAddrEntry 1 }

dbpPeerIpAddressType OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"The type of address stored in dbpPeerIpAddress."
::= {dbpPeerIpAddrEntry 2}

dbpPeerIpAddress OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS read-only
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STATUS     current
DESCRIPTION
    "The active IP Address(es) used for connections."
 ::= {dbPeerIpAddrEntry 3}

dbpAppAdvToPeerTable OBJECT-TYPE
SYNTAX     SEQUENCE OF DbpAppAdvToPeerEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
    "The table listing the applications advertised by
    this host to each peer and the types of service
    supported: accounting, authentication or both."
 ::= { dbpLocalCfgs 8 }

dbpAppAdvToPeerEntry OBJECT-TYPE
SYNTAX     DbpAppAdvToPeerEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
    "A row entry representing a discovered or
    configured Diameter peer server."
INDEX      { dbpPeerIndex,
          dbpAppAdvToPeerVendorId,
          dbpAppAdvToPeerIndex } ::= { dbpAppAdvToPeerTable 1 }

DbpAppAdvToPeerEntry ::= SEQUENCE {
    dbpAppAdvToPeerVendorId                 Unsigned32,
    dbpAppAdvToPeerIndex                    Unsigned32,
    dbpAppAdvToPeerServices                    INTEGER,
    dbpAppAdvToPeerStorageType           StorageType,
    dbpAppAdvToPeerRowStatus                  RowStatus }

dbpAppAdvToPeerVendorId OBJECT-TYPE
SYNTAX     Unsigned32 ( 1..4294967295 )
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
    "The IANA Enterprise Code value assigned to
    the vendor of the Diameter device."
 ::= { dbpAppAdvToPeerEntry 1 }

dbpAppAdvToPeerIndex OBJECT-TYPE
SYNTAX     Unsigned32 ( 1..4294967295 )
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A number uniquely identifying a Diameter application advertised as supported by this host to each peer. Upon reload, dbpAppAdvToPeerIndex values may be changed"
 ::= { dbpAppAdvToPeerEntry 2 }

dbpAppAdvToPeerServices OBJECT-TYPE
SYNTAX INTEGER { acct(1),
auth(2),
both(3) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The type of services supported for each application, accounting, authentication or both."
 ::= { dbpAppAdvToPeerEntry 3 }

dbpAppAdvToPeerStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The storage type for this conceptual row. None of the objects are writable when the conceptual row is permanent."
REFERENCE "Textual Conventions for SMIv2, Section 2."
DEFVAL { nonVolatile }
 ::= { dbpAppAdvToPeerEntry 4 }

dbpAppAdvToPeerRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"Status of the entry: creating the entry causes the application to be advertised, destroying the entry ceases advertisement."
 ::= { dbpAppAdvToPeerEntry 5 }

-- Applications advertised BY peers

dbpAppAdvFromPeerTable OBJECT-TYPE
SYNTAX SEQUENCE OF DbpAppAdvFromPeerEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The table listing the applications advertised by
each peer to this host and the types of service supported: accounting, authentication or both.

::= { dbPeerCfgs 3 }

dbAppAdvFromPeerEntry OBJECT-TYPE
SYNTAX     DbpAppAdvFromPeerEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A row entry representing a discovered or configured Diameter peer server."
INDEX
{     
dbpPeerIndex,
dbpAppAdvFromPeerVendorId,
dbpAppAdvFromPeerIndex
}

::= { dbAppAdvFromPeerTable 1 }

DbpAppAdvFromPeerEntry ::= SEQUENCE {
  dbAppAdvFromPeerVendorId Unsigned32,
  dbAppAdvFromPeerIndex    Unsigned32,
  dbAppAdvFromPeerType     INTEGER
}

dbpAppAdvFromPeerVendorId OBJECT-TYPE
SYNTAX     Unsigned32 (1..4294967295 )
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"The IANA Enterprise Code value assigned to the vendor of the Diameter application."

::= { dbAppAdvFromPeerEntry 1 }

dbpAppAdvFromPeerIndex OBJECT-TYPE
SYNTAX     Unsigned32 (1..4294967295 )
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A number uniquely identifying the applications advertised as supported from each Diameter peer."

::= { dbAppAdvFromPeerEntry 2 }

dbpAppAdvFromPeerType OBJECT-TYPE
SYNTAX     INTEGER 
             { acct(1),
               auth(2),
               both(3) }

The type of services supported for each application, accounting, authentication or both.
  acct(1) - accounting
  auth(2) - authentication
  both(3) - both accounting and authentication.

```plaintext
::= { dbpAppAdvFromPeerEntry 3 }
```

-- table of vendor-IDs supported by each peer

```plaintext
dbpPeerVendorTable OBJECT-TYPE
SYNTAX        SEQUENCE OF DbpPeerVendorEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION "The table listing the Vendor IDs supported by the peer."
::= { dbpPeerCfgs 4 }
```

```plaintext
dbpPeerVendorEntry OBJECT-TYPE
SYNTAX        DbpPeerVendorEntry
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION "A row entry representing a Vendor ID supported by the peer."
INDEX         {
  dbpPeerIndex,
  dbpPeerVendorIndex
}
::= { dbpPeerVendorTable 1 }
```

```plaintext
DbpPeerVendorEntry ::= SEQUENCE {
  dbpPeerVendorIndex   Unsigned32,
  dbpPeerVendorId       Unsigned32,
  dbpPeerVendorStorageType   StorageType,
  dbpPeerVendorRowStatus  RowStatus
}
```

```plaintext
dbpPeerVendorIndex OBJECT-TYPE
SYNTAX        Unsigned32 { 1..4294967295 }
MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION "A number uniquely identifying the Vendor ID supported by the peer. Upon reload,
dbpPeerVendorIndex values may be changed.

::= { dbpPeerVendorEntry 1 }

dbpPeerVendorId OBJECT-TYPE
SYNTAX Unsigned32 {1..4294967295 }
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The active vendor ID used for peer connections."

::= { dbpPeerVendorEntry 2 }

dbpPeerVendorStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The storage type for this conceptual row. None of the objects are writable when the conceptual row is permanent."
REFERENCE "Textual Conventions for SMIv2, Section 2."
DEFVAL { nonVolatile }

::= { dbpPeerVendorEntry 3 }

dbpPeerVendorRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The status of this conceptual row.

To create a row in this table, a manager must set this object to either createAndGo(4) or createAndWait(5).

Until instances of all corresponding columns are appropriately configured, the value of the corresponding instance of the dbpPeerVendorRowStatus column is 'notReady'.

In particular, a newly created row cannot be made active until the corresponding dbpPeerVendorId has been set. Also, a newly created row cannot be made active until the corresponding 'dbpPeerIndex' has been set.

dbpPeerVendorId may not be modified while the value of this object is active(1):
An attempt to set these objects while the value of
dbpPeerVendorRowStatus is active(1) will result in an inconsistentValue error.

Entries in this table with dbpPeerVendorRowStatus equal to active(1) remain in the table until destroyed.

Entries in this table with dbpPeerVendorRowStatus equal to values other than active(1) will be destroyed after timeout (5 minutes).

::= { dbpPeerVendorEntry 4 }

dbpPerPeerStatsTable OBJECT-TYPE
SYNTAX     SEQUENCE OF DbpPerPeerStatsEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
   "The table listing the Diameter peer statistics."
 ::= { dbpPeerStats 1 }

dbpPerPeerStatsEntry OBJECT-TYPE
SYNTAX     DbpPerPeerStatsEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
   "A row entry representing a Diameter peer."
INDEX     { dbpPeerIndex }
 ::= { dbpPerPeerStatsTable 1 }

DbpPerPeerStatsEntry ::= SEQUENCE {
   dbpPerPeerStatsState               INTEGER,
   dbpPerPeerStatsStateDuration       TimeTicks,
   dbpPerPeerStatsLastDiscCause       INTEGER,
   dbpPerPeerStatsWhoInitDisconnect   INTEGER,
   dbpPerPeerStatsDWCurrentStatus     INTEGER,
   dbpPerPeerStatsTimeoutConnAtmpts   Counter32,
   dbpPerPeerStatsASRsIn              Counter32,
   dbpPerPeerStatsASRsOut             Counter32,
   dbpPerPeerStatsASAsIn              Counter32,
   dbpPerPeerStatsASAsOut             Counter32,
   dbpPerPeerStatsACRsIn              Counter32,
   dbpPerPeerStatsACRsOut             Counter32,
   dbpPerPeerStatsACAsIn              Counter32,
   dbpPerPeerStatsACAsOut             Counter32,
dbpPerPeerStatsDWRsIn          Counter32,
dbpPerPeerStatsDWRsOut         Counter32,
dbpPerPeerStatsDWAsIn          Counter32,
dbpPerPeerStatsDWAsOut         Counter32,
dbpPerPeerStatsDPRsIn          Counter32,
dbpPerPeerStatsDPRsOut         Counter32,
dbpPerPeerStatsDPAsIn          Counter32,
dbpPerPeerStatsDPAsOut         Counter32,
dbpPerPeerStatsRARsIn          Counter32,
dbpPerPeerStatsRARsOut         Counter32,
dbpPerPeerStatsRAAsIn          Counter32,
dbpPerPeerStatsRAAsOut         Counter32,
dbpPerPeerStatsSTRsIn          Counter32,
dbpPerPeerStatsSTRsOut         Counter32,
dbpPerPeerStatsSTAsIn          Counter32,
dbpPerPeerStatsSTAsOut         Counter32,

dbpPerPeerStatsState OBJECT-TYPE
SYNTAX          INTEGER { closed(1),
                     waitConnAck(2),
                     waitICea(3),
                     elect (4),
                     waitReturns(5),
                     rOpen(6),
                     iOpen(7),
                     closing(8) }

MAX-ACCESS read-only
STATUS          current
DESCRIPTION
"Connection state in the Peer State Machine of
the peer with which this Diameter server is
 communicating."
closed  - Connection closed with this peer.
waitConnAck - Waiting for an acknowledgment from this peer.
waitICea   - Waiting for a Capabilities-Exchange-Answer from this peer.
elect     - When the peer and the server are both trying to bring up a connection with each other at the same time. An election process begins which determines which socket remains open.
waitReturns - Waiting for election returns.
r-open    - Responder transport connection is used for communication.
i-open    - Initiator transport connection is used for communication.
closing   - Actively closing and doing cleanup."
 ::= { dbpPerPeerStatsEntry 1 }

dbpPerPeerStatsStateDuration OBJECT-TYPE
SYNTAX     TimeTicks
MAX-ACCESS read-only
STATUS     current
DESCRIPTION "Peer state duration."
 ::= { dbpPerPeerStatsEntry 2 }

dbpPerPeerStatsLastDiscCause OBJECT-TYPE
SYNTAX     INTEGER { rebooting(1),
                       busy(2),
                       doNotWantToTalk(3),
                       election(4) }
MAX-ACCESS read-only
STATUS     current
DESCRIPTION "The last cause for a peer’s disconnection.
rebooting    - A scheduled reboot is imminent.
business - The peer’s internal resources are constrained, and it has determined that the transport connection needs to be shutdown.
doNotWantToTalk - The peer has determined that it does not see a need for the transport connection to exist, since it does not expect any messages to be exchanged in the foreseeable future.
electionLost - The peer has determined that it
has lost the election process
and has therefore disconnected
the transport connection."

::= { dbPerPeerStatsEntry 3 }

dbPerPeerStatsWhoInitDisconnect OBJECT-TYPE
SYNTAX INTEGER { host(1),
     peer(2) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Did the host or peer initiate the disconnect?

host - If this server initiated the disconnect.
peer - If the peer with which this server was
     connected initiated the disconnect."

::= { dbPerPeerStatsEntry 4 }

dbPerPeerStatsDWCurrentStatus OBJECT-TYPE
SYNTAX INTEGER { okay(1),
     suspect(2),
     down(3),
     reopen(4) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"okay    - Indicates the connection is presumed working.
suspect - Indicates the connection is possibly
congested or down.
down    - The peer is no longer reachable, causing
the transport connection to be shutdown.
reopen  - Three watchdog messages are exchanged with
accepted round trip times, and the connection
to the peer is considered stabilized."

::= { dbPerPeerStatsEntry 5 }

dbPerPeerStatsTimeoutConnAtmpts OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"If there is no transport connection with a peer,
this is the number of times the server attempts
connect to that peer. This is reset on
disconnection."

::= { dbPerPeerStatsEntry 6 }

dbPerPeerStatsASRsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Abort-Session-Request messages received from the peer."
::= { dbpPerPeerStatsEntry 7 }

dbpPerPeerStatsASRsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Abort-Session-Request messages sent to the peer."
::= { dbpPerPeerStatsEntry 8 }

dbpPerPeerStatsASAsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Abort-Session-Answer messages received from the peer."
::= { dbpPerPeerStatsEntry 9 }

dbpPerPeerStatsASAsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Abort-Session-Answer messages sent to the peer."
::= { dbpPerPeerStatsEntry 10 }

dbpPerPeerStatsACRsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Accounting-Request messages received from the peer."
::= { dbpPerPeerStatsEntry 11 }

dbpPerPeerStatsACRsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Accounting-Request messages
  sent to the peer."
::= { dbpPerPeerStatsEntry 12 }

dbpPerPeerStatsACAsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Accounting-Answer messages
  received from the peer."
::= { dbpPerPeerStatsEntry 13 }

dbpPerPeerStatsACAsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Accounting-Answer messages
  sent to the peer."
::= { dbpPerPeerStatsEntry 14 }

dbpPerPeerStatsCERsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Capabilities-Exchange-Request
  messages received from the peer."
::= { dbpPerPeerStatsEntry 15 }

dbpPerPeerStatsCERsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Capabilities-Exchange-Request
  messages sent to the peer."
::= { dbpPerPeerStatsEntry 16 }

dbpPerPeerStatsCEAsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
  "Number of Capabilities-Exchange-Answer
  messages received from the peer."
::= { dbPerPeerStatsEntry 17 }

**dbPerPeerStatsCEAsOut** OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Capabilities-Exchange-Answer messages sent to the peer."
::= { dbPerPeerStatsEntry 18 }

**dbPerPeerStatsDWRsIn** OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Device-Watchdog-Request messages received from the peer."
::= { dbPerPeerStatsEntry 19 }

**dbPerPeerStatsDWRsOut** OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Device-Watchdog-Request messages sent to the peer."
::= { dbPerPeerStatsEntry 20 }

**dbPerPeerStatsDWAsIn** OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Device-Watchdog-Answer messages received from the peer."
::= { dbPerPeerStatsEntry 21 }

**dbPerPeerStatsDWAsOut** OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Device-Watchdog-Answer messages sent to the peer."
::= { dbPerPeerStatsEntry 22 }

**dbPerPeerStatsDPRsIn** OBJECT-TYPE

SYNTAX     Counter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION   "Number of Disconnect-Peer-Request messages received."  
::= { dbpPerPeerStatsEntry 23 }

dbpPerPeerStatsDPRsOut  OBJECT-TYPE  
SYNTAX     Counter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION   "Number of Disconnect-Peer-Request messages sent."  
::= { dbpPerPeerStatsEntry 24 }

dbpPerPeerStatsDPAsIn  OBJECT-TYPE  
SYNTAX     Counter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION   "Number of Disconnect-Peer-Answer messages received."  
::= { dbpPerPeerStatsEntry 25 }

dbpPerPeerStatsDPAsOut  OBJECT-TYPE  
SYNTAX     Counter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION   "Number of Disconnect-Peer-Answer messages sent."  
::= { dbpPerPeerStatsEntry 26 }

dbpPerPeerStatsRARsIn  OBJECT-TYPE  
SYNTAX     Counter32  
MAX-ACCESS read-only  
STATUS     current  
DESCRIPTION   "Number of Re-Auth-Request messages received."  
::= { dbpPerPeerStatsEntry 27 }

dbpPerPeerStatsRARsOut  OBJECT-TYPE  
SYNTAX     Counter32  
MAX-ACCESS read-only  
STATUS     current
DESCRIPTION
"Number of Re-Auth-Request messages sent."
::= { dbPerPeerStatsEntry 28 }

dbpPerPeerStatsRAAsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Re-Auth-Answer messages received."
::= { dbPerPeerStatsEntry 29 }

dbpPerPeerStatsRAAsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Re-Auth-Answer messages sent."
::= { dbPerPeerStatsEntry 30 }

dbpPerPeerStatsSTRsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Session-Termination-Request messages received from the peer."
::= { dbPerPeerStatsEntry 31 }

dbpPerPeerStatsSTRsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Session-Termination-Request messages sent to the peer."
::= { dbPerPeerStatsEntry 32 }

dbpPerPeerStatsSTAsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Session-Termination-Answer messages received from the peer."
::= { dbPerPeerStatsEntry 33 }

dbpPerPeerStatsSTAsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Session-Termination-Answer messages sent to the peer."
::= { dbPerPeerStatsEntry 34 }

dbpPerPeerStatsDWReqTimer OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Device-Watchdog Request Timer, which is the interval between packets sent to peers."
::= { dbPerPeerStatsEntry 35 }

dbpPerPeerStatsRedirectEvents OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Redirect Event count, which is the number of redirects sent from a peer."
::= { dbPerPeerStatsEntry 36 }

dbpPerPeerStatsAccDupRequests OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The number of duplicate Diameter Accounting-Request packets received."
::= { dbPerPeerStatsEntry 37 }

dbpPerPeerStatsMalformedReqsts OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The number of malformed Diameter packets received."
::= { dbPerPeerStatsEntry 38 }
dbpPerPeerStatsAccsNotRecorded OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of Diameter Accounting-Request packets
which were received and responded to but not
recorded."
::= { dbpPerPeerStatsEntry 39 }

dbpPerPeerStatsAccRetrans OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of Diameter Accounting-Request packets
retransmitted to this Diameter server."
::= { dbpPerPeerStatsEntry 40 }

dbpPerPeerStatsTotalRetrans OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of Diameter packets retransmitted
to this Diameter server, not to include Diameter
Accounting-Request packets retransmitted."
::= { dbpPerPeerStatsEntry 41 }

dbpPerPeerStatsAccPendRegstsOut OBJECT-TYPE
SYNTAX Gauge32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of Diameter Accounting-Request packets
sent to this peer that have not yet timed out or
received a response. This variable is incremented when an
Accounting-Request is sent to this server and decremented
due to receipt of an Accounting-Response, a timeout or
a retransmission."
::= { dbpPerPeerStatsEntry 42 }

dbpPerPeerStatsAccRegstsDropped OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of Accounting-Requests to this server
that have been dropped."
::= { dbpPerPeerStatsEntry 43 }

dbpPerPeerStatsHByHDropMessages OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  
"An answer message that is received with an unknown
Hop-by-Hop Identifier. Does not include Accounting
Requests dropped."
::= { dbpPerPeerStatsEntry 44 }

dbpPerPeerStatsEToEDupMessages OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  
"Duplicate answer messages that are to be locally
consumed. Does not include duplicate Accounting
Requests received."
::= { dbpPerPeerStatsEntry 45 }

dbpPerPeerStatsUnknownTypes OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  
"The number of Diameter packets of unknown type
which were received."
::= { dbpPerPeerStatsEntry 46 }

dbpPerPeerStatsProtocolErrors OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  
"Number of protocol errors returned to peer,
but not including redirects."
::= { dbpPerPeerStatsEntry 47 }

dbpPerPeerStatsTransientFailures OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION  
"Transient Failure count."
::= { dbpPerPeerStatsEntry 48 }

dbpPerPeerStatsPermanentFailures OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of permanent failures returned to peer."
 ::= { dbpPerPeerStatsEntry 49 }

dbpPerPeerStatsTransportDown OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of unexpected transport failures."
 ::= { dbpPerPeerStatsEntry 50 }

dbpRealmMessageRouteTable OBJECT-TYPE
SYNTAX SEQUENCE OF DbpRealmMessageRouteEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "The table listing the Diameter Realm-based Message Route information."
 ::= { dbpRealmStats 1 }

DbpRealmMessageRouteEntry OBJECT-TYPE
SYNTAX DbpRealmMessageRouteEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "A row entry representing a Diameter Realm Based Message Route server."
INDEX { dbpRealmMessageRouteIndex }
 ::= { dbpRealmMessageRouteTable 1 }

DbpRealmMessageRouteEntry ::= SEQUENCE {
  dbpRealmMessageRouteIndex  Unsigned32,
  dbpRealmMessageRouteRealm   SnmpAdminString,
  dbpRealmMessageRouteApp     Unsigned32,
  dbpRealmMessageRouteType    INTEGER,
  dbpRealmMessageRouteAction  INTEGER,
  dbpRealmMessageRouteACRsIn  Counter32,
  dbpRealmMessageRouteACRsOut Counter32,
  dbpRealmMessageRouteACAsIn  Counter32,
  dbpRealmMessageRouteACAsOut Counter32,
  dbpRealmMessageRouteRARsIn  Counter32,
  dbpRealmMessageRouteRARsOut Counter32,
  dbpRealmMessageRouteRAAsIn  Counter32,
dbpRealmMessageRouteRAAsOut  Counter32,
dbpRealmMessageRouteSTRsIn   Counter32,
dbpRealmMessageRouteSTRsOut  Counter32,
dbpRealmMessageRouteSTAsIn   Counter32,
dbpRealmMessageRouteSTAsOut  Counter32,
dbpRealmMessageRouteASRsIn   Counter32,
dbpRealmMessageRouteASRsOut  Counter32,
dbpRealmMessageRouteASAsIn   Counter32,
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dbpRealmMessageRouteASRsOut  Counter32,

dbpRealmMessageRouteIndex OBJECT-TYPE
SYNTAX     Unsigned32 (1..4294967295)
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A number uniquely identifying each Realm."
::= { dbpRealmMessageRouteEntry 1 }

dbpRealmMessageRouteRealm OBJECT-TYPE
SYNTAX     SnmpAdminString
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"Realm name"
::= { dbpRealmMessageRouteEntry 2 }

dbpRealmMessageRouteApp OBJECT-TYPE
SYNTAX     Unsigned32 (1..4294967295)
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"Application id used to route packets to this realm."
::= { dbpRealmMessageRouteEntry 3 }

dbpRealmMessageRouteType OBJECT-TYPE
SYNTAX     INTEGER { acct(1),
       auth(2),
       both(3) }
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The types of service supported for each realm application: accounting,
::= { dbpRealmMessageRouteEntry 4 }

dbpRealmMessageRouteAction OBJECT-TYPE
SYNTAX INTEGER { local(1),
  relay(2),
  proxy(3),
  redirect(4) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The action is used to identify how a
message should be treated based on the realm,
application and type.
local    - Diameter messages that resolve to a
  route entry with the Local Action set to
  Local can be satisfied locally, and do
  not need to be routed to another server.
relay    - All Diameter messages that fall within
  this category MUST be routed to a
  next-hop server, without modifying any
  non-routing AVPs.
proxy    - All Diameter messages that fall within this
  category MUST be routed to a next-hop
  server.
redirect - Diameter messages that fall within this
  category MUST have the identity of the home
  Diameter server(s) appended, and returned
  to the sender of the message."
::= { dbpRealmMessageRouteEntry 5 }

dbpRealmMessageRouteACRsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Accounting-Request messages
  received from the realm."
::= { dbpRealmMessageRouteEntry 6 }

dbpRealmMessageRouteACRsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Accounting-Request messages
  sent to the realm."
::= { dbpRealmMessageRouteEntry 7 }
dbpRealmMessageRouteACAsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Accounting-Answer messages received from the realm."
 ::= { dbpRealmMessageRouteEntry 8 }

dbpRealmMessageRouteACAsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Accounting-Answer messages sent to the realm."
 ::= { dbpRealmMessageRouteEntry 9 }

dbpRealmMessageRouteRARsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Re-Auth-Request messages received from the realm."
 ::= { dbpRealmMessageRouteEntry 10 }

dbpRealmMessageRouteRARsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Re-Auth-Request messages sent to the realm."
 ::= { dbpRealmMessageRouteEntry 11 }

dbpRealmMessageRouteRAAsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of Re-Auth-Answer messages received from the realm."
 ::= { dbpRealmMessageRouteEntry 12 }

dbpRealmMessageRouteRAAsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Re-Auth-Answer messages sent to the realm."
::= { dbpRealmMessageRouteEntry 13 }

dbpRealmMessageRouteSTRsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Session-Termination-Request messages received from the realm."
::= { dbpRealmMessageRouteEntry 14 }

dbpRealmMessageRouteSTRsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Session-Termination-Request messages sent to the realm."
::= { dbpRealmMessageRouteEntry 15 }

dbpRealmMessageRouteSTAsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Session-Termination-Answer messages received from the realm."
::= { dbpRealmMessageRouteEntry 16 }

dbpRealmMessageRouteSTAsOut OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Session-Termination-Answer messages sent to the realm."
::= { dbpRealmMessageRouteEntry 17 }

dbpRealmMessageRouteASRsIn OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "Number of Abort-Session-Request messages
received from the realm."
 ::= { dbpRealmMessageRouteEntry 18 }

```
dbpRealmMessageRouteASRsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
 "Number of Abort-Session-Request messages
 sent to the realm."
 ::= { dbpRealmMessageRouteEntry 19 }
```

```
dbpRealmMessageRouteASAsIn OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
 "Number of Abort-Session-Answer messages
 received from the realm."
 ::= { dbpRealmMessageRouteEntry 20 }
```

```
dbpRealmMessageRouteASAsOut OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
 "Number of Abort-Session-Answer messages
 sent to the realm."
 ::= { dbpRealmMessageRouteEntry 21 }
```

```
dbpRealmMessageRouteAccRetrans OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
 "The number of Diameter accounting packets
 retransmitted to this realm."
 ::= { dbpRealmMessageRouteEntry 22 }
```

```
dbpRealmMessageRouteAccDupReqsts OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
 "The number of duplicate Diameter accounting
 packets sent to this realm."
 ::= { dbpRealmMessageRouteEntry 23 }
```
dbpRealmMessageRoutePendReqstsOut OBJECT-TYPE
SYNTAX     Gauge32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The number of Diameter Accounting-Request packets
sent to this peer that have not yet timed out or
received a response. This variable is incremented when an
Accounting-Request is sent to this server and decremented
due to receipt of an Accounting-Response, a timeout or
a retransmission."
::= { dbpRealmMessageRouteEntry 24 }

dbpRealmMessageRouteReqstsDrop OBJECT-TYPE
SYNTAX     Counter32
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The number of requests dropped by this realm."
::= { dbpRealmMessageRouteEntry 25 }

dbpRealmKnownPeersTable OBJECT-TYPE
SYNTAX     SEQUENCE OF DbpRealmKnownPeersEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"The table listing the Diameter
Realms and known peers."
::= { dbpRealmCfgs 1 }

DbpRealmKnownPeersEntry OBJECT-TYPE
SYNTAX     DbpRealmKnownPeersEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A row entry representing a Diameter
Realm and known peers."
INDEX      { dbpRealmMessageRouteIndex,
        dbpRealmKnownPeersIndex }
::= { dbpRealmKnownPeersTable 1 }

DbpRealmKnownPeersEntry ::= SEQUENCE {
    dbpRealmKnownPeersIndex Unsigned32,
    dbpRealmKnownPeers Unsigned32,
    dbpRealmKnownPeersChosen INTEGER }
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "A sequential identifier number."
::= { dbpRealmKnownPeersEntry 1 }

dbpRealmKnownPeers OBJECT-TYPE
SYNTAX Unsigned32 (1..4294967295)
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The index of the peer this realm knows about.
This is an ordered list, where the ordering signifies the order in which the peers are tried. Same as the dbpPeerIndex"
::= { dbpRealmKnownPeersEntry 2 }

dbpRealmKnownPeersChosen OBJECT-TYPE
SYNTAX INTEGER { roundRobin(1),
loadBalance(2),
firstPreferred(3),
mostRecentFirst(4),
other(5) }
MAX-ACCESS read-only
STATUS current
DESCRIPTION "How the realm chooses which peer to send packets to.
roundRobin - The peer used for each transaction is selected based on the order in which peers are configured.
loadBalance - The peer used for each transaction is based on the load metric (maybe implementation dependent) of all peers defined for the realm, with the least loaded server selected first.
firstPreferred - The first defined server is always used for transactions unless failover occurs.
mostRecentFirst - The most recently used server is used first for each transaction."
::= { dbpRealmKnownPeersEntry 3 }

-- Conformance
-- dbpMIBCompliances

diameterBaseProtocolMIBCompliances
OBJECT IDENTIFIER ::= { diameterBaseConform 1 }
diameterBaseProtocolMIBGroups
OBJECT IDENTIFIER ::= { diameterBaseConform 2 }

-- Compliance Statements

diameterBaseProtocolCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION
"The compliance statement for Diameter Base Protocol entities."
MODULE -- this module
MANDATORY-GROUPS { dbpLocalCfgGroup,
                     dbpPeerCfgGroup,
                     dbpPeerStatsGroup,
                     dbpRealmCfgGroup,
                     dbpRealmStatsGroup,
                     dbpNotificationsGroup,
                     dbpNotifCfgGroup }

::= { diameterBaseProtocolMIBCompliances 1 }

-- Units of Conformance

dbpLocalCfgGroup OBJECT-GROUP
OBJECTS {
  dbpLocalRealm,
  dbpLocalOriginHost,
  dbpLocalId,
  dbpLocalIpAddrType,
  dbpLocalIpAddress,
  dbpLocalTcpListenPort,
  dbpLocalSctpListenPort,
  dbpLocalStatsTotalMessagesIn,
  dbpLocalStatsTotalMessagesOut,
  dbpLocalStatsTotalUpTime,
  dbpLocalResetTime,
  dbpLocalConfigReset,
  dbpLocalApplStorageType,
  dbpLocalApplRowStatus,
  dbpAppAdvToPeerServices,
  dbpAppAdvToPeerStorageType,
  dbpAppAdvToPeerRowStatus
}
STATUS current
DESCRIPTION
"A collection of objects providing configuration common to the server."

::= { diameterBaseProtocolMIBGroups 1 }

dbpPeerCfgGroup OBJECT-GROUP
OBJECTS {
  dbpPeerId,
  dbpPeerPortConnect,
  dbpPeerPortListen,
  dbpPeerProtocol,
  dbpPeerSecurity,
  dbpPeerFirmwareRevision,
  dbpPeerStorageType,
  dbpPeerRowStatus,
  dbpPeerIpAddressType,
  dbpPeerIpAddress,
  dbpPeerVendorId,
  dbpPeerVendorStorageType,
  dbpPeerVendorRowStatus,
  dbpAppAdvFromPeerType
}

STATUS current
DESCRIPTION "A collection of objects providing configuration of the Diameter peers."

::= { diameterBaseProtocolMIBGroups 2 }

dbpPeerStatsGroup OBJECT-GROUP
OBJECTS {
  dbpPerPeerStatsState,
  dbpPerPeerStatsStateDuration,
  dbpPerPeerStatsLastDiscCause,
  dbpPerPeerStatsWhoInitDisconnect,
  dbpPerPeerStatsDWCCurrentStatus,
  dbpPerPeerStatsTimeoutConnAttempt,
  dbpPerPeerStatsASRsIn,
  dbpPerPeerStatsASRsOut,
  dbpPerPeerStatsASAsIn,
  dbpPerPeerStatsASAsOut,
  dbpPerPeerStatsACRsIn,
  dbpPerPeerStatsACRsOut,
  dbpPerPeerStatsACAsIn,
  dbpPerPeerStatsACAsOut,
  dbpPerPeerStatsCERsIn,
  dbpPerPeerStatsCERsOut,
  dbpPerPeerStatsCEAsIn,
  dbpPerPeerStatsCEAsOut,
  dbpPerPeerStatsDWRsIn,
  dbpPerPeerStatsDWRsOut,
  dbpPerPeerStatsDWRsIn,
  dbpPerPeerStatsDWRsOut,
dbpPerPeerStatsDWRsOut,
dbpPerPeerStatsDWAsIn,
dbpPerPeerStatsDWAsOut,
dbpPerPeerStatsDPRsIn,
dbpPerPeerStatsDPRsOut,
dbpPerPeerStatsDPAsIn,
dbpPerPeerStatsDPAsOut,
dbpPerPeerStatsRARsIn,
dbpPerPeerStatsRARsOut,
dbpPerPeerStatsRAAsIn,
dbpPerPeerStatsRAAsOut,
dbpPerPeerStatsSTRsIn,
dbpPerPeerStatsSTRsOut,
dbpPerPeerStatsSTAsIn,
dbpPerPeerStatsSTAsOut,
dbpPerPeerStatsDWReqTimer,
dbpPerPeerStatsRedirectEvents,
dbpPerPeerStatsAccDupRequests,
dbpPerPeerStatsMalformedReqsts,
dbpPerPeerStatsAccsNotRecorded,
dbpPerPeerStatsAccRetrans,
dbpPerPeerStatsTotalRetrans,
dbpPerPeerStatsAccPendReqstsOut,
dbpPerPeerStatsAccReqstsDropped,
dbpPerPeerStatsHByHDropMessages,
dbpPerPeerStatsEToEDupMessages,
dbpPerPeerStatsUnknownTypes,
dbpPerPeerStatsProtocolErrors,
dbpPerPeerStatsTransientFailures,
dbpPerPeerStatsPermanentFailures,
dbpPerPeerStatsTransportDown,
dbpPerPeerStatsDWCurrentStatus,
dbpPerPeerStatsDWReqTimer,
dbpPerPeerStatsRedirectEvents,
dbpPerPeerStatsAccDupRequests,
dbpPerPeerStatsEToEDupMessages

STATUS current
DESCRIPTION
"A collection of objects providing statistics of the Diameter peers."
::= { diameterBaseProtocolMIBGroups 3 }

dbpNotificationsGroup NOTIFICATION-GROUP
NOTIFICATIONS
{ dbpProtocolErrorNotif,
  dbpTransientFailureNotif,
The set of notifications which an agent is required to implement.
::= { diameterBaseProtocolMIBGroups 4 }

dbpNotifCfgGroup OBJECT-GROUP
OBJECTS
{    
    dbpProtocolErrorNotifEnabled,
    dbpTransientFailureNotifEnabled,
    dbpPermanentFailureNotifEnabled,
    dbpPeerConnectionDownNotifEnabled,
    dbpPeerConnectionUpNotifEnabled
    }
STATUS    current
DESCRIPTION
"A collection of objects providing configuration for base protocol notifications."
::= { diameterBaseProtocolMIBGroups 5 }

dbpRealmCfgGroup OBJECT-GROUP
OBJECTS
    
    dbpRealmKnownPeers,
    dbpRealmKnownPeersChosen
    }
STATUS    current
DESCRIPTION
"A collection of objects providing configuration for Realm."
::= { diameterBaseProtocolMIBGroups 6 }

dbpRealmStatsGroup OBJECT-GROUP
OBJECTS
    
    dbpRealmMessageRouteRealm,
    dbpRealmMessageRouteApp,
    dbpRealmMessageRouteType,
    dbpRealmMessageRouteAction,
    dbpRealmMessageRouteACRsIn,
    dbpRealmMessageRouteACRsOut,
    dbpRealmMessageRouteACAsIn,
    dbpRealmMessageRouteACAsOut,
    dbpRealmMessageRouteRARsIn,
    dbpRealmMessageRouteRARsOut,
    dbpRealmMessageRouteRARsOut,
    dbpRealmMessageRouteRARsOut,
5. IANA Considerations

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>OBJECT IDENTIFIER value</th>
</tr>
</thead>
<tbody>
<tr>
<td>diameterBaseProtocolMIB</td>
<td>{ mib-2 XXX }</td>
</tr>
</tbody>
</table>

Editor’s Note (to be removed prior to publication) The IANA is requested to assign a value for "XXX" under the ‘mib-2’ subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace "XXX" (here and in the MIB module) with the assigned value and to remove this note.

6. Security Considerations

There are managed objects 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.
There are several managed objects in this MIB that may contain sensitive information. These are:

- diameterHostAddress
- diameterPeerServerAddress
- diameterPeerIpAddress

These can be used to determine the address of the Diameter host, and/or peers with which the host is communicating. This information could be useful in impersonating the host or peer.

It is important to control GET access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. Not all versions of SNMP provide features for such a secure environment.

SNMPv1 by itself is not 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 (read) 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 [RFC3414] and the View-based Access Control Model [RFC3415] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, 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.

7. Contributors

This document is based upon and derived from work done by Jay Koehler, Mark Eklund and Hai Li.

8. Acknowledgements

Thanks to David Battle for his participation and suggestions in designing the table structures; Kevin Lingle, Sumanth Mithra, Tolga Asveren, Tina Tsou, Mark Jones, John Loughney and Biswaranjan Panda for reviewing the MIB and making invaluable suggestions; and Greg Weber for his help in representing the MIB at IETF meetings.
9. References

9.1. Normative References


9.2. Informative References


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