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       Path Computation Element Communications Protocol (PCEP) Management
                      Information Base (MIB) Module
                       draft-ietf-pce-pcep-mib-11

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 managed objects for modeling of Path
   Computation Element communications Protocol (PCEP) for communications
   between a Path Computation Client (PCC) and a Path Computation
   Element (PCE), or between two PCEs.

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1. Introduction

   The Path Computation Element (PCE) defined in [RFC4655] is an entity
   that is capable of computing a network path or route based on a
   network graph, and applying computational constraints. A Path
   Computation Client (PCC) may make requests to a PCE for paths to be
   computed.

PCEP is the communication protocol between a PCC and PCE and is
defined in [RFC5440]. PCEP interactions include path computation
requests and path computation replies as well as notifications of
specific states related to the use of a PCE in the context of
Multiprotocol Label Switching (MPLS) and Generalized MPLS (GMPLS)
Traffic Engineering (TE).

This memo defines a portion of the Management Information Base (MIB)
for use with network management protocols in the Internet community.
In particular, it defines a MIB module that can be used to monitor
PCEP interactions between a PCC and a PCE, or between two PCEs.

The scope of this document is to provide a MIB module for the PCEP
base protocol defined in [RFC5440]. Extensions to the PCEP base
protocol are beyond the scope for this document.

1.1. 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 BCP 14, RFC 2119
[RFC2119].

1.2. Terminology

This document uses the terminology defined in [RFC4655] and
[RFC5440]. In particular, it uses the following acronyms.

o Path Computation Request message (PCReq).

o Path Computation Reply message (PCRep).

o Notification message (PCNtf).

o Error message (PCErr).

o Request Parameters object (RP).

o Synchronization Vector object (SVEC).

o Explicit Route object (ERO).

This document uses the term "PCEP entity" to refer to a local PCEP
speaker, "peer" to refer to a remote PCEP speaker and "PCEP speaker"
where it is not necessary to distinguish between local and remote.

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
RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed
the Management Information Base or MIB. MIB objects are generally
accessed through the Simple Network Management Protocol (SNMP).
Objects in the MIB are defined using the mechanisms defined in the
Structure of Management Information (SMI). This memo specifies a MIB
module that is compliant to the SMIv2, which is described in STD 58,
RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579], and STD 58, RFC 2580
[RFC2580].

3. PCEP MIB Module Architecture

   The PCEP MIB module contains the following information:

   a. PCE and PCC local entity status (see pcePcepEntityTable).

   b. PCEP peer information (see pcePcepPeerTable).

   c. PCEP session information (see pcePcepSessTable).

   d. Notifications to indicate PCEP session changes.

   The PCEP MIB module is limited to "read-only" access except for
   pcePcepNotificationsMaxRate, which is used to throttle the rate at
   which the implementation generates notifications.

3.1. pcePcepEntityTable

   The PCEP MIB module may contain status information for multiple
   logical local PCEP entities. There are several scenarios in which
   there may be more than one local PCEP entity, including the
   following.

   o A physical router, which is partitioned into multiple virtual
      routers, each with its own PCC.

   o A PCE device which front-ends a cluster of compute resources, each
      with a different set of capabilities that are accessed via
      different IP addresses.

   The pcePcepEntityTable contains one row for each local PCEP entity.
   Each row is read-only and contains current status information plus
   the PCEP entity's running configuration.

The pcePcepEntityTable is indexed by pcePcepEntityIndex, which also
acts as the primary index for the other tables in this MIB module.

3.2. pcePcepPeerTable

The pcePcepPeerTable contains one row for each peer that the local
PCEP entity knows about. Each row is read-only and contains
information to identify the peer, the running configuration relating
to that peer and statistics that track the messages exchanged with
that peer and its response times.

A PCEP speaker is identified by its IP address. If there is a PCEP
speaker in the network that uses multiple IP addresses then it looks
like multiple distinct peers to the other PCEP speakers in the
network.

The pcePcepPeerTable is indexed first by pcePcepEntityIndex, then by
pcePcepPeerAddrType and pcePcepPeerAddr. This indexing structure
allows each local PCEP entity to report its own set of peers.

Since PCEP sessions can be ephemeral, the pcePcepPeerTable tracks a
peer even when no PCEP session currently exists to that peer. The
statistics contained in pcePcepPeerTable are an aggregate of the
statistics for all successive sessions to that peer.

To limit the quantity of information that is stored, an
implementation MAY choose to discard a row from the pcePcepPeerTable
if and only if no PCEP session exists to the corresponding peer.

3.3. pcePcepSessTable

The pcePcepSessTable contains one row for each PCEP session that the
PCEP entity (PCE or PCC) is currently participating in. Each row is
read-only and contains the running configuration that is applied to
the session, plus identifiers and statistics for the session.

The statistics in pcePcepSessTable are semantically different from
those in pcePcepPeerTable since the former apply to the current
session only, whereas the latter are the aggregate for all sessions
that have existed to that peer.

Although [RFC5440] forbids there from being more than one active PCEP
session between a given pair of PCEP entities at any one time, there
is a window during session establishment where the pcePcepSessTable
may contain two rows for a given peer, one representing a session
initiated by the local PCEP entity and one representing a session
initiated by the peer. If either of these sessions reaches active
state, then the other is discarded.

The pcePcepSessTable is indexed first by pcePcepEntityIndex, then by pcePcepPeerAddrType and pcePcepPeerAddr, and finally by pcePcepSessInitiator. This indexing structure allows each local PCEP entity to report its own set of active sessions. The pcePcepSessInitiator index allows two rows to exist transiently for a given peer, as discussed above.

3.4. PCEP Notifications

   The PCEP MIB module contains notifications for the following conditions.

   a. pcePcepSessUp: PCEP Session has gone up.

   b. pcePcepSessDown: PCEP Session has gone down.

   c. pcePcepSessLocalOverload: Local PCEP entity has sent an overload PCNtf on this session.

   d. pcePcepSessLocalOverloadClear: Local PCEP entity has sent an overload-cleared PCNtf on this session.

   e. pcePcepSessPeerOverload: Peer has sent an overload PCNtf on this session.

   f. pcePcepSessPeerOverloadClear: Peer has sent an overload-cleared PCNtf on this session.

3.5. Relationship to other MIB modules

   The PCEP MIB module imports the following textual conventions from the INET-ADDRESS-MIB defined in RFC 4001 [RFC4001]:

   o InetAddressType

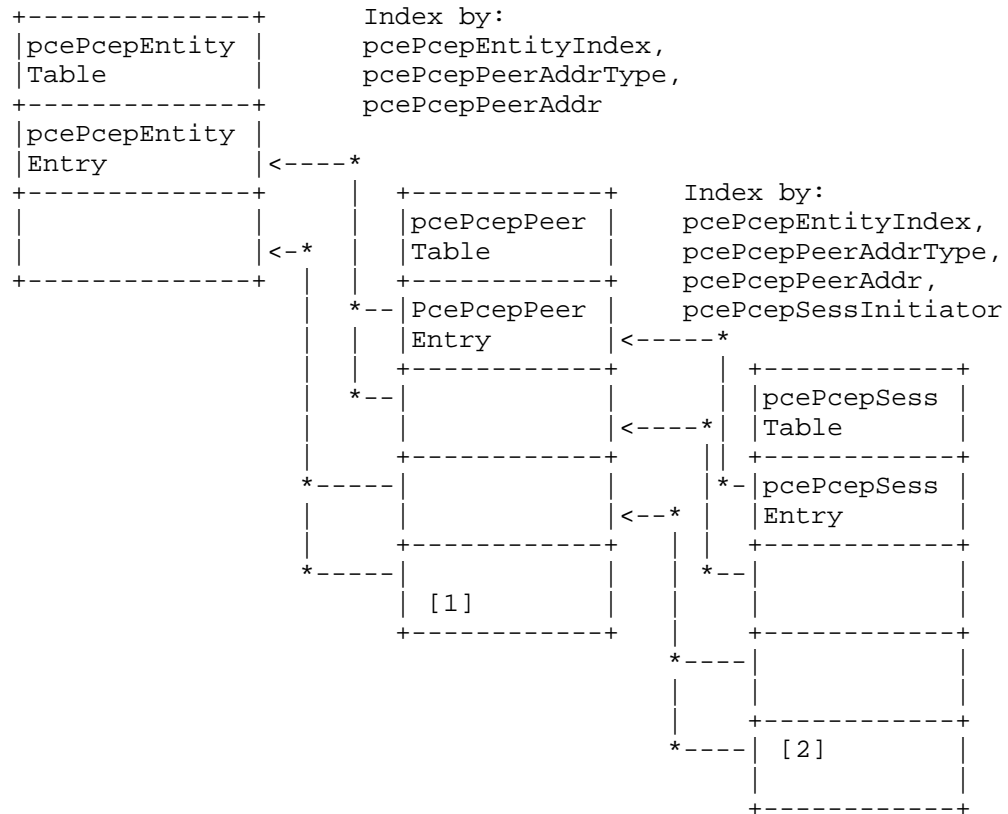   o InetAddress

   PCEP relies on existing protocols which have specialized MIB objects to monitor their own activities. Consequently this document considers that the monitoring of underlying protocols is out of scope of the PCEP MIB module.

3.6. Illustrative example

   The following diagram illustrates the relationships between the pcePcepEntityTable, pcePcepPeerTable and pcePcepSessTable.

```
     Index by:
     pcePcepEntityIndex

     +--------------+          Index by:
     |pcePcepEntity |          pcePcepEntityIndex,
     |Table         |          pcePcepPeerAddrType,
     +--------------+          pcePcepPeerAddr
     |pcePcepEntity |
     |Entry         |<----*
     +-------------+   |  +-----------+      Index by:
     |             |   |  |pcePcepPeer|      pcePcepEntityIndex,
     |             |<-*|  |Table      |      pcePcepPeerAddrType,
     +-------------+ | |  +-----------+      pcePcepPeerAddr,
                     | *--|PcePcepPeer|      pcePcepSessInitiator
                     | |  |Entry      |<-----*
                     | |  +-----------+   |  +-----------+
                     | *--|           |   |  |pcePcepSess|
                     | |  |           |<----*|  |Table      |
                     | |  +-----------+   ||  +-----------+
                  *-----|           |   |  |*-|pcePcepSess|
                     | |  |           |<--* |  |Entry      |
                     | |  +-----------+ | |  +-----------+
                  *-----|           |   | | *--|           |
                     | | [1]        |   | |  |           |
                     | +-----------+   |  +-----------+
                                    *----|           |
                                       |  |           |
                                       |  +-----------+
                                    *----| [2]        |
                                       |  |           |
                                       |  +-----------+
```

     [1]: A peer entry with no current session
     [2]: Two sessions exist during a window in session
          initialization.

4. Object Definitions

4.1. PCE-PCEP-MIB

     PCE-PCEP-MIB DEFINITIONS ::= BEGIN

     IMPORTS
         MODULE-IDENTITY,
         OBJECT-TYPE,
         mib-2,
         NOTIFICATION-TYPE,
         Unsigned32,

```
            Counter32
                   FROM SNMPv2-SMI              -- RFC 2578
            TruthValue,
            TimeStamp
                   FROM SNMPv2-TC               -- RFC 2579
            MODULE-COMPLIANCE,
            OBJECT-GROUP,
            NOTIFICATION-GROUP
                   FROM SNMPv2-CONF             -- RFC 2580
            InetAddressType,
            InetAddress
                   FROM INET-ADDRESS-MIB;       -- RFC 4001

        pcePcepMIB MODULE-IDENTITY
            LAST-UPDATED
                "201410241200Z" -- 24 October 2014
            ORGANIZATION
                "IETF Path Computation Element (PCE) Working Group"
            CONTACT-INFO
                "Email: pce@ietf.org
                 WG charter:
                         http://www.ietf.org/html.charters/pce-charter.html"

            DESCRIPTION
                "This MIB module defines a collection of objects for managing
                 Path Computation Element communications Protocol (PCEP).

                 Copyright (C) The IETF Trust (2014).  This version of this
                 MIB module is part of RFC YYYY; see the RFC itself for full
                 legal notices."
        -- RFC Ed,: replace YYYY with actual RFC number & remove this note
            REVISION
                "201410241200Z" -- 24 October 2014
            DESCRIPTION
                "Initial version, published as RFC YYYY."
        -- RFC Ed.: replace YYYY with actual RFC number & remove this note
            ::= { mib-2 XXX }
        -- RFC Ed.: replace XXX with IANA-assigned number & remove this note

        pcePcepNotifications OBJECT IDENTIFIER ::= { pcePcepMIB 0 }
        pcePcepObjects       OBJECT IDENTIFIER ::= { pcePcepMIB 1 }
        pcePcepConformance   OBJECT IDENTIFIER ::= { pcePcepMIB 2 }

        --
        -- PCEP Entity Objects
        --

        pcePcepEntityTable OBJECT-TYPE
```

```
        SYNTAX      SEQUENCE OF PcePcepEntityEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This table contains information about local PCEP entities.
             The entries in this table are read-only."
        ::= { pcePcepObjects 1 }

    pcePcepEntityEntry OBJECT-TYPE
        SYNTAX      PcePcepEntityEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
            "This entry represents a local PCEP entity."
        INDEX       { pcePcepEntityIndex  }
        ::= { pcePcepEntityTable 1 }

    PcePcepEntityEntry ::= SEQUENCE {
        pcePcepEntityIndex              Unsigned32,
        pcePcepEntityAdminStatus        INTEGER,
        pcePcepEntityOperStatus         INTEGER,
        pcePcepEntityAddrType           InetAddressType,
        pcePcepEntityAddr               InetAddress,
        pcePcepEntityConnectTimer       Unsigned32,
        pcePcepEntityConnectMaxRetry    Unsigned32,
        pcePcepEntityInitBackoffTimer   Unsigned32,
        pcePcepEntityMaxBackoffTimer    Unsigned32,
        pcePcepEntityOpenWaitTimer      Unsigned32,
        pcePcepEntityKeepWaitTimer      Unsigned32,
        pcePcepEntityKeepAliveTimer     Unsigned32,
        pcePcepEntityDeadTimer          Unsigned32,
        pcePcepEntityAllowNegotiation   TruthValue,
        pcePcepEntityMaxKeepAliveTimer  Unsigned32,
        pcePcepEntityMaxDeadTimer       Unsigned32,
        pcePcepEntityMinKeepAliveTimer  Unsigned32,
        pcePcepEntityMinDeadTimer       Unsigned32,
        pcePcepEntitySyncTimer          Unsigned32,
        pcePcepEntityRequestTimer       Unsigned32,
        pcePcepEntityMaxSessions        Unsigned32,
        pcePcepEntityMaxUnknownReqs     Unsigned32,
        pcePcepEntityMaxUnknownMsgs     Unsigned32
    }

    pcePcepEntityIndex OBJECT-TYPE
        SYNTAX      Unsigned32
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
```

                "This index is used to uniquely identify the PCEP entity."
            ::= { pcePcepEntityEntry 1 }

        pcePcepEntityAdminStatus OBJECT-TYPE
            SYNTAX   INTEGER {
                        adminStatusUp(1),
                        adminStatusDown(2)
                    }
            MAX-ACCESS   read-only
            STATUS   current
            DESCRIPTION
                "The administrative status of this PCEP Entity.

                 This is the desired operational status as currently set by
                 an operator or by default in the implementation. The value
                 of pcePcepEntityOperStatus represents the current status of
                 an attempt to reach this desired status."
            ::= { pcePcepEntityEntry 2 }

        pcePcepEntityOperStatus OBJECT-TYPE
            SYNTAX   INTEGER {
                        operStatusUp(1),
                        operStatusDown(2),
                        operStatusGoingUp(3),
                        operStatusGoingDown(4),
                        operStatusFailed(5),
                        operStatusFailedPerm(6)
                    }
            MAX-ACCESS   read-only
            STATUS   current
            DESCRIPTION
                "The operational status of the PCEP entity. Takes one of the
                 following values.
                 - operStatusUp(1): the PCEP entity is active.
                 - operStatusDown(2): the PCEP entity is inactive.
                 - operStatusGoingUp(3): the PCEP entity is activating.
                 - operStatusGoingDown(4): the PCEP entity is deactivating.
                 - operStatusFailed(5): the PCEP entity has failed and will
                   recover when possible.
                 - operStatusFailedPerm(6): the PCEP entity has failed and
                   will not recover without operator intervention."
            ::= { pcePcepEntityEntry 3 }

        pcePcepEntityAddrType OBJECT-TYPE
            SYNTAX   InetAddressType
            MAX-ACCESS   read-only
            STATUS   current
            DESCRIPTION

              "The type of the PCEP entity's Internet address. This object
               specifies how the value of the pcePcepEntityAddr object
               should be interpreted. Only values unknown(0), ipv4(1), or
               ipv6(2) are supported."
          ::= { pcePcepEntityEntry 4 }

      pcePcepEntityAddr OBJECT-TYPE
          SYNTAX   InetAddress
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The local Internet address of this PCEP entity. The type is
               given by pcePcepEntityAddrType.

               If operating as a PCE server, the PCEP entity listens on
               this address. If operating as a PCC, the PCEP entity binds
               outgoing TCP connections to this address.

               It is possible for the PCEP entity to operate both as a PCC
               and a PCE Server, in which case it uses this address both to
               listen for incoming TCP connections and to bind outgoing
               TCP connections."
          ::= { pcePcepEntityEntry 5 }

      pcePcepEntityConnectTimer OBJECT-TYPE
          SYNTAX   Unsigned32 (1..65535)
          UNITS   "seconds"
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The time that the PCEP entity will wait to establish a TCP
               connection with a peer. If a TCP connection is not
               established within this time then PCEP aborts the session
               setup attempt."
          ::= { pcePcepEntityEntry 6 }

      pcePcepEntityConnectMaxRetry OBJECT-TYPE
          SYNTAX   Unsigned32
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The maximum number of times the system tries to establish
               a TCP connection to a peer before the session with the peer
               transitions to the idle state.

               When the session transitions to the idle state:
               - pcePcepPeerSessionExists transitions to false(2)
               - the associated PcePcepSessEntry is deleted

```
            - a backoff timer runs before the session is tried again."
        ::= { pcePcepEntityEntry 7 }

    pcePcepEntityInitBackoffTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (1..65535)
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The initial back-off time for retrying a failed session
             setup attempt to a peer.

             The back-off time increases for each failed session setup
             attempt, until a maximum back-off time is reached.  The
             maximum back-off time is pcePcepEntityMaxBackoffTimer."
        ::= { pcePcepEntityEntry 8 }

    pcePcepEntityMaxBackoffTimer OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The maximum back-off time for retrying a failed session
             setup attempt to a peer.

             The back-off time increases for each failed session setup
             attempt, until this maximum value is reached.  Session
             setup attempts then repeat periodically without any
             further increase in back-off time."
        ::= { pcePcepEntityEntry 9 }

    pcePcepEntityOpenWaitTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (1..65535)
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The time that the PCEP entity will wait to receive an Open
             message from a peer after the TCP connection has come up.
             If no Open message is received within this time then PCEP
             terminates the TCP connection and deletes the associated
             PcePcepSessEntry."
        ::= { pcePcepEntityEntry 10 }

    pcePcepEntityKeepWaitTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (1..65535)
        UNITS       "seconds"
```

```
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time that the PCEP entity will wait to receive a
         Keepalive or PCErr message from a peer during session
         initialization after receiving an Open message.  If no
         Keepalive or PCErr message is received within this time then
         PCEP terminates the TCP connection and deletes the
         associated PcePcepSessEntry."
    ::= { pcePcepEntityEntry 11 }

pcePcepEntityKeepAliveTimer OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The keep alive transmission timer that this PCEP entity will
         propose in the initial OPEN message of each session it is
         involved in.  This is the maximum time between two
         consecutive messages sent to a peer.  Zero means that
         the PCEP entity prefers not to send Keepalives at all.

         Note that the actual Keepalive transmission intervals, in
         either direction of an active PCEP session, are determined
         by negotiation between the peers as specified by RFC
         5440, and so may differ from this configured value.  For
         the actually negotiated values (per-session), see
         pcePcepSessKeepaliveTimer and
         pcePcepSessPeerKeepaliveTimer."
    ::= { pcePcepEntityEntry 12 }

pcePcepEntityDeadTimer OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The dead timer that this PCEP entity will propose in the
         initial OPEN message of each session it is involved in.
         This is the time after which a peer should declare a
         session down if it does not receive any PCEP messages.
         Zero suggests that the peer does not run a dead timer at
         all."
    ::= { pcePcepEntityEntry 13 }

pcePcepEntityAllowNegotiation OBJECT-TYPE
    SYNTAX      TruthValue
```

```
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "Whether the PCEP entity will permit negotiation of session
             parameters."
        ::= { pcePcepEntityEntry 14 }

    pcePcepEntityMaxKeepAliveTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "In PCEP session parameter negotiation, the maximum value
             that this PCEP entity will accept from a peer for the
             interval between Keepalive transmissions.  Zero means that
             the PCEP entity will allow no Keepalive transmission at
             all."
        ::= { pcePcepEntityEntry 15 }

    pcePcepEntityMaxDeadTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "In PCEP session parameter negotiation, the maximum value
             that this PCEP entity will accept from a peer for the Dead
             timer.  Zero means that the PCEP entity will allow not
             running a Dead timer."
        ::= { pcePcepEntityEntry 16 }

    pcePcepEntityMinKeepAliveTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "In PCEP session parameter negotiation, the minimum value
             that this PCEP entity will accept for the interval between
             Keepalive transmissions.  Zero means that the PCEP entity
             insists on no Keepalive transmission at all."
        ::= { pcePcepEntityEntry 17 }

    pcePcepEntityMinDeadTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        UNITS       "seconds"
        MAX-ACCESS  read-only
```

```
     STATUS       current
     DESCRIPTION
         "In PCEP session parameter negotiation, the minimum value
          that this PCEP entity will accept for the Dead timer.  Zero
          means that the PCEP entity insists on not running a Dead
          timer."
     ::= { pcePcepEntityEntry 18 }

 pcePcepEntitySyncTimer OBJECT-TYPE
     SYNTAX       Unsigned32 (0..65535)
     UNITS        "seconds"
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION
         "The value of SyncTimer is used in the case of synchronized
          path computation request using the SVEC object.

          Consider the case where a PCReq message is received by a PCE
          that contains the SVEC object referring to M synchronized
          path computation requests.  If after the expiration of the
          SyncTimer all the M path computation requests have not been
          received, a protocol error is triggered and the PCE MUST
          cancel the whole set of path computation requests.

          The aim of the SyncTimer is to avoid the storage of unused
          synchronized requests should one of them get lost for some
          reasons (for example, a misbehaving PCC).

          A value of zero is returned if and only if the entity does
          not use the SyncTimer."
     ::= { pcePcepEntityEntry 19 }

 pcePcepEntityRequestTimer OBJECT-TYPE
     SYNTAX       Unsigned32 (1..65535)
     UNITS        "seconds"
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION
         "The maximum time that the PCEP entity will wait for a
          response to a PCReq message."
     ::= { pcePcepEntityEntry 20 }

 pcePcepEntityMaxSessions OBJECT-TYPE
     SYNTAX       Unsigned32
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION
         "Maximum number of sessions involving this PCEP entity
```

```
        that can exist at any time."
    ::= { pcePcepEntityEntry 21 }


pcePcepEntityMaxUnknownReqs OBJECT-TYPE
    SYNTAX       Unsigned32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The maximum number of unrecognized requests and replies that
         any session on this PCEP entity is willing to accept per
         minute before terminating the session.

         A PCRep message contains an unrecognized reply if it
         contains an RP object whose request ID does not correspond
         to any in-progress request sent by this PCEP entity.

         A PCReq message contains an unrecognized request if it
         contains an RP object whose request ID is zero."
    ::= { pcePcepEntityEntry 22 }


pcePcepEntityMaxUnknownMsgs OBJECT-TYPE
    SYNTAX       Unsigned32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The maximum number of unknown messages that any session
         on this PCEP entity is willing to accept per minute before
         terminating the session."
    ::= { pcePcepEntityEntry 23 }

--
-- The PCEP Peer Table
--

pcePcepPeerTable OBJECT-TYPE
    SYNTAX       SEQUENCE OF PcePcepPeerEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This table contains information about peers known by
         the local PCEP entity.  The entries in this table are
         read-only.

         This table gives peer information that spans PCEP
         sessions.  Information about current PCEP sessions can be
         found in the pcePcepSessTable table."
    ::= { pcePcepObjects 2 }
```

```
     pcePcepPeerEntry OBJECT-TYPE
         SYNTAX       PcePcepPeerEntry
         MAX-ACCESS   not-accessible
         STATUS       current
         DESCRIPTION
             "Information about a single peer which spans all PCEP
              sessions to that peer."
         INDEX { pcePcepEntityIndex,
                 pcePcepPeerAddrType,
                 pcePcepPeerAddr }
         ::= { pcePcepPeerTable 1 }

     PcePcepPeerEntry ::= SEQUENCE {
         pcePcepPeerAddrType                 InetAddressType,
         pcePcepPeerAddr                     InetAddress,
         pcePcepPeerRole                     INTEGER,
         pcePcepPeerDiscontinuityTime        TimeStamp,
         pcePcepPeerInitiateSession          TruthValue,
         pcePcepPeerSessionExists            TruthValue,
         pcePcepPeerNumSessSetupOK           Counter32,
         pcePcepPeerNumSessSetupFail         Counter32,
         pcePcepPeerSessionUpTime            TimeStamp,
         pcePcepPeerSessionFailTime          TimeStamp,
         pcePcepPeerSessionFailUpTime        TimeStamp,
         pcePcepPeerAvgRspTime               Unsigned32,
         pcePcepPeerLWMRspTime               Unsigned32,
         pcePcepPeerHWMRspTime               Unsigned32,
         pcePcepPeerNumPCReqSent             Counter32,
         pcePcepPeerNumPCReqRcvd             Counter32,
         pcePcepPeerNumPCRepSent             Counter32,
         pcePcepPeerNumPCRepRcvd             Counter32,
         pcePcepPeerNumPCErrSent             Counter32,
         pcePcepPeerNumPCErrRcvd             Counter32,
         pcePcepPeerNumPCNtfSent             Counter32,
         pcePcepPeerNumPCNtfRcvd             Counter32,
         pcePcepPeerNumKeepaliveSent         Counter32,
         pcePcepPeerNumKeepaliveRcvd         Counter32,
         pcePcepPeerNumUnknownRcvd           Counter32,
         pcePcepPeerNumCorruptRcvd           Counter32,
         pcePcepPeerNumReqSent               Counter32,
         pcePcepPeerNumSvecSent              Counter32,
         pcePcepPeerNumSvecReqSent           Counter32,
         pcePcepPeerNumReqSentPendRep        Counter32,
         pcePcepPeerNumReqSentEroRcvd        Counter32,
         pcePcepPeerNumReqSentNoPathRcvd     Counter32,
         pcePcepPeerNumReqSentCancelRcvd     Counter32,
         pcePcepPeerNumReqSentErrorRcvd      Counter32,
         pcePcepPeerNumReqSentTimeout        Counter32,
```

```
        pcePcepPeerNumReqSentCancelSent     Counter32,
        pcePcepPeerNumReqSentClosed         Counter32,
        pcePcepPeerNumReqRcvd               Counter32,
        pcePcepPeerNumSvecRcvd              Counter32,
        pcePcepPeerNumSvecReqRcvd           Counter32,
        pcePcepPeerNumReqRcvdPendRep        Counter32,
        pcePcepPeerNumReqRcvdEroSent        Counter32,
        pcePcepPeerNumReqRcvdNoPathSent     Counter32,
        pcePcepPeerNumReqRcvdCancelSent     Counter32,
        pcePcepPeerNumReqRcvdErrorSent      Counter32,
        pcePcepPeerNumReqRcvdCancelRcvd     Counter32,
        pcePcepPeerNumReqRcvdClosed         Counter32,
        pcePcepPeerNumRepRcvdUnknown        Counter32,
        pcePcepPeerNumReqRcvdUnknown        Counter32
}

pcePcepPeerAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The type of the peer's Internet address.  This object
         specifies how the value of the pcePcepPeerAddr object should
         be interpreted.  Only values unknown(0), ipv4(1), or
         ipv6(2) are supported."
    ::= { pcePcepPeerEntry 1 }

pcePcepPeerAddr OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The Internet address of the peer.  The type is given by
         pcePcepPeerAddrType."
    ::= { pcePcepPeerEntry 2 }

pcePcepPeerRole OBJECT-TYPE
    SYNTAX      INTEGER {
                    unknown(0),
                    pcc(1),
                    pce(2),
                    pccAndPce(3)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The role that this peer took the last time a session was
         established.  Takes one of the following values.
```

```
            - unknown(0): this peer's role is not known.
            - pcc(1): this peer is a Path Computation Client (PCC).
            - pce(2): this peer is a Path Computation Server (PCE).
            - pccAndPce(3): this peer is both a PCC and a PCE."
        ::= { pcePcepPeerEntry 3 }

    pcePcepPeerDiscontinuityTime OBJECT-TYPE
        SYNTAX        TimeStamp
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The value of sysUpTime at the time that the information and
             statistics in this row were last reset."
        ::= { pcePcepPeerEntry 4 }

    pcePcepPeerInitiateSession OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether the local PCEP entity initiates sessions
             to this peer, or waits for the peer to initiate a session."
        ::= { pcePcepPeerEntry 5 }

    pcePcepPeerSessionExists OBJECT-TYPE
        SYNTAX        TruthValue
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "Indicates whether a session with this peer currently
             exists."
        ::= { pcePcepPeerEntry 6 }

    pcePcepPeerNumSessSetupOK OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCEP sessions successfully established with
             the peer, including any current session.  This counter is
             incremented each time a session with this peer is
             successfully established."
        ::= { pcePcepPeerEntry 7 }

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

          DESCRIPTION
              "The number of PCEP sessions with the peer that have been
               attempted but failed before being fully established.
               This counter is incremented each time a session retry to
               this peer fails."
          ::= { pcePcepPeerEntry 8 }

      pcePcepPeerSessionUpTime OBJECT-TYPE
          SYNTAX   TimeStamp
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The value of sysUpTime the last time a session with this
               peer was successfully established.

               If pcePcepPeerNumSessSetupOK is zero, then this object
               contains zero."
          ::= { pcePcepPeerEntry 9 }

      pcePcepPeerSessionFailTime OBJECT-TYPE
          SYNTAX   TimeStamp
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The value of sysUpTime the last time a session with this
               peer failed to be established.

               If pcePcepPeerNumSessSetupFail is zero, then this object
               contains zero."
          ::= { pcePcepPeerEntry 10 }

      pcePcepPeerSessionFailUpTime OBJECT-TYPE
          SYNTAX   TimeStamp
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The value of sysUpTime the last time a session with this
               peer failed from active.

               If pcePcepPeerNumSessSetupOK is zero, then this object
               contains zero."
          ::= { pcePcepPeerEntry 11 }

      pcePcepPeerAvgRspTime OBJECT-TYPE
          SYNTAX   Unsigned32
          UNITS   "milliseconds"
          MAX-ACCESS   read-only
          STATUS   current

```
        DESCRIPTION
            "The average response time for this peer.

             If an average response time has not been calculated for this
             peer then this object has the value zero.

             If pcePcepPeerRole is pcc then this field is meaningless and
             is set to zero."
        ::= { pcePcepPeerEntry 12 }

    pcePcepPeerLWMRspTime OBJECT-TYPE
        SYNTAX        Unsigned32
        UNITS         "milliseconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The smallest (low-water mark) response time seen from this
             peer.

             If no responses have been received from this peer then this
             object has the value zero.

             If pcePcepPeerRole is pcc then this field is meaningless and
             is set to zero."
        ::= { pcePcepPeerEntry 13 }

    pcePcepPeerHWMRspTime OBJECT-TYPE
        SYNTAX        Unsigned32
        UNITS         "milliseconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The greatest (high-water mark) response time seen from this
             peer.

             If no responses have been received from this peer then this
             object has the value zero.

             If pcePcepPeerRole is pcc then this field is meaningless and
             is set to zero."
        ::= { pcePcepPeerEntry 14 }

    pcePcepPeerNumPCReqSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCReq messages sent to this peer."
```

```
        ::= { pcePcepPeerEntry 15 }

  pcePcepPeerNumPCReqRcvd OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "The number of PCReq messages received from this peer."
      ::= { pcePcepPeerEntry 16 }

  pcePcepPeerNumPCRepSent OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "The number of PCRep messages sent to this peer."
      ::= { pcePcepPeerEntry 17 }

  pcePcepPeerNumPCRepRcvd OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "The number of PCRep messages received from this peer."
      ::= { pcePcepPeerEntry 18 }

  pcePcepPeerNumPCErrSent OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "The number of PCErr messages sent to this peer."
      ::= { pcePcepPeerEntry 19 }

  pcePcepPeerNumPCErrRcvd OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "The number of PCErr messages received from this peer."
      ::= { pcePcepPeerEntry 20 }

  pcePcepPeerNumPCNtfSent OBJECT-TYPE
      SYNTAX      Counter32
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "The number of PCNtf messages sent to this peer."
```

```
       ::= { pcePcepPeerEntry 21 }

   pcePcepPeerNumPCNtfRcvd OBJECT-TYPE
       SYNTAX       Counter32
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "The number of PCNtf messages received from this peer."
       ::= { pcePcepPeerEntry 22 }

   pcePcepPeerNumKeepaliveSent OBJECT-TYPE
       SYNTAX       Counter32
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "The number of Keepalive messages sent to this peer."
       ::= { pcePcepPeerEntry 23 }

   pcePcepPeerNumKeepaliveRcvd OBJECT-TYPE
       SYNTAX       Counter32
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "The number of Keepalive messages received from this peer."
       ::= { pcePcepPeerEntry 24 }

   pcePcepPeerNumUnknownRcvd OBJECT-TYPE
       SYNTAX       Counter32
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "The number of unknown messages received from this peer."
       ::= { pcePcepPeerEntry 25 }

   pcePcepPeerNumCorruptRcvd OBJECT-TYPE
       SYNTAX       Counter32
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "The number of corrupted PCEP message received from this
           peer."
       ::= { pcePcepPeerEntry 26 }

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

             "The number of requests sent to this peer. A request
              corresponds 1:1 with an RP object in a PCReq message.

              This might be greater than pcePcepPeerNumPCReqSent because
              multiple requests can be batched into a single PCReq
              message."
          ::= { pcePcepPeerEntry 27 }

     pcePcepPeerNumSvecSent OBJECT-TYPE
         SYNTAX   Counter32
         MAX-ACCESS read-only
         STATUS   current
         DESCRIPTION
             "The number of SVEC objects sent to this peer in PCReq
              messages. An SVEC object represents a set of synchronized
              requests."
          ::= { pcePcepPeerEntry 28 }

     pcePcepPeerNumSvecReqSent OBJECT-TYPE
         SYNTAX   Counter32
         MAX-ACCESS read-only
         STATUS   current
         DESCRIPTION
             "The number of requests sent to this peer that appeared in
              one or more SVEC objects."
          ::= { pcePcepPeerEntry 29 }

     pcePcepPeerNumReqSentPendRep OBJECT-TYPE
         SYNTAX   Counter32
         MAX-ACCESS read-only
         STATUS   current
         DESCRIPTION
             "The number of requests that have been sent to this peer for
              which a response is still pending."
          ::= { pcePcepPeerEntry 30 }

     pcePcepPeerNumReqSentEroRcvd OBJECT-TYPE
         SYNTAX   Counter32
         MAX-ACCESS read-only
         STATUS   current
         DESCRIPTION
             "The number of requests that have been sent to this peer for
              which a response with an ERO object was received. Such
              responses indicate that a path was successfully computed by
              the peer."
          ::= { pcePcepPeerEntry 31 }

     pcePcepPeerNumReqSentNoPathRcvd OBJECT-TYPE

```
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of requests that have been sent to this peer for
         which a response with a NO-PATH object was received.  Such
         responses indicate that the peer could not find a path to
         satisfy the request."
    ::= { pcePcepPeerEntry 32 }

pcePcepPeerNumReqSentCancelRcvd OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of requests that were cancelled by the peer with
         a PCNtf message.

         This might be different than pcePcepPeerNumPCNtfRcvd because
         not all PCNtf messages are used to cancel requests, and a
         single PCNtf message can cancel multiple requests."
    ::= { pcePcepPeerEntry 33 }

pcePcepPeerNumReqSentErrorRcvd OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of requests that were rejected by the peer with a
         PCErr message.

         This might be different than pcePcepPeerNumPCErrRcvd because
         not all PCErr messages are used to reject requests, and a
         single PCErr message can reject multiple requests."
    ::= { pcePcepPeerEntry 34 }

pcePcepPeerNumReqSentTimeout OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of requests that have been sent to a peer and
         have been abandoned because the peer has taken too long to
         respond to them."
    ::= { pcePcepPeerEntry 35 }

pcePcepPeerNumReqSentCancelSent OBJECT-TYPE
    SYNTAX      Counter32
```

```
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of requests that were sent to the peer and
             explicitly canceled by the local PCEP entity sending a
             PCNtf."
        ::= { pcePcepPeerEntry 36 }

    pcePcepPeerNumReqSentClosed OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of requests that were sent to the peer and
             implicitly canceled when the session they were sent over was
             closed."
        ::= { pcePcepPeerEntry 37 }

    pcePcepPeerNumReqRcvd OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of requests received from this peer.  A request
             corresponds 1:1 with an RP object in a PCReq message.

             This might be greater than pcePcepPeerNumPCReqRcvd because
             multiple requests can be batched into a single PCReq
             message."
        ::= { pcePcepPeerEntry 38 }

    pcePcepPeerNumSvecRcvd OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of SVEC objects received from this peer in PCReq
             messages.  An SVEC object represents a set of synchronized
             requests."
        ::= { pcePcepPeerEntry 39 }

    pcePcepPeerNumSvecReqRcvd OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of requests received from this peer that appeared
             in one or more SVEC objects."
```

```
    ::= { pcePcepPeerEntry 40 }

pcePcepPeerNumReqRcvdPendRep OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of requests that have been received from this
         peer for which a response is still pending."
    ::= { pcePcepPeerEntry 41 }

pcePcepPeerNumReqRcvdEroSent OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of requests that have been received from this
         peer for which a response with an ERO object was sent.  Such
         responses indicate that a path was successfully computed by
         the local PCEP entity."
    ::= { pcePcepPeerEntry 42 }

pcePcepPeerNumReqRcvdNoPathSent OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of requests that have been received from this
         peer for which a response with a NO-PATH object was sent.
         Such responses indicate that the local PCEP entity could
         not find a path to satisfy the request."
    ::= { pcePcepPeerEntry 43 }

pcePcepPeerNumReqRcvdCancelSent OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of requests received from this peer that were
         cancelled by the local PCEP entity sending a PCNtf message.

         This might be different than pcePcepPeerNumPCNtfSent because
         not all PCNtf messages are used to cancel requests, and a
         single PCNtf message can cancel multiple requests."
    ::= { pcePcepPeerEntry 44 }

pcePcepPeerNumReqRcvdErrorSent OBJECT-TYPE
    SYNTAX        Counter32
```

```
     MAX-ACCESS  read-only
     STATUS      current
     DESCRIPTION
         "The number of requests received from this peer that were
          rejected by the local PCEP entity sending a PCErr message.

          This might be different than pcePcepPeerNumPCErrSent because
          not all PCErr messages are used to reject requests, and a
          single PCErr message can reject multiple requests."
     ::= { pcePcepPeerEntry 45 }

 pcePcepPeerNumReqRcvdCancelRcvd OBJECT-TYPE
     SYNTAX      Counter32
     MAX-ACCESS  read-only
     STATUS      current
     DESCRIPTION
         "The number of requests that were received from the peer and
          explicitly canceled by the peer sending a PCNtf."
     ::= { pcePcepPeerEntry 46 }

 pcePcepPeerNumReqRcvdClosed OBJECT-TYPE
     SYNTAX      Counter32
     MAX-ACCESS  read-only
     STATUS      current
     DESCRIPTION
         "The number of requests that were received from the peer and
          implicitly canceled when the session they were received over
          was closed."
     ::= { pcePcepPeerEntry 47 }

 pcePcepPeerNumRepRcvdUnknown OBJECT-TYPE
     SYNTAX      Counter32
     MAX-ACCESS  read-only
     STATUS      current
     DESCRIPTION
         "The number of responses to unknown requests received from
          this peer.  A response to an unknown request is a response
          whose RP object does not contain the request ID of any
          request that is currently outstanding on the session."
     ::= { pcePcepPeerEntry 48 }

 pcePcepPeerNumReqRcvdUnknown OBJECT-TYPE
     SYNTAX      Counter32
     MAX-ACCESS  read-only
     STATUS      current
     DESCRIPTION
         "The number of unknown requests that have been received from
          a peer.  An unknown request is a request whose RP object
```

```
         contains a request ID of zero."
      ::= { pcePcepPeerEntry 49 }

   --
   -- The PCEP Sessions Table
   --

   pcePcepSessTable OBJECT-TYPE
       SYNTAX       SEQUENCE OF PcePcepSessEntry
       MAX-ACCESS   not-accessible
       STATUS       current
       DESCRIPTION
           "A table of PCEP sessions that involve the local PCEP
            entity.  Each entry in this table represents a single
            session.  The entries in this table are read-only.

            An entry appears in this table when the corresponding PCEP
            session transitions out of idle state.  If the PCEP session
            transitions back into idle state then the corresponding
            entry in this table is removed."
       ::= { pcePcepObjects 3 }

   pcePcepSessEntry OBJECT-TYPE
       SYNTAX       PcePcepSessEntry
       MAX-ACCESS   not-accessible
       STATUS       current
       DESCRIPTION
           "This entry represents a single PCEP session in which the
            local PCEP entity participates.

            This entry exists only if the corresponding PCEP session has
            been initialized by some event, such as manual user
            configuration, autodiscovery of a peer, or an incoming TCP
            connection."
       INDEX { pcePcepEntityIndex,
               pcePcepPeerAddrType,
               pcePcepPeerAddr,
               pcePcepSessInitiator }
       ::= { pcePcepSessTable 1 }

   PcePcepSessEntry ::= SEQUENCE {
       pcePcepSessInitiator               INTEGER,
       pcePcepSessStateLastChange         TimeStamp,
       pcePcepSessState                   INTEGER,
       pcePcepSessConnectRetry            Counter32,
       pcePcepSessLocalID                 Unsigned32,
       pcePcepSessRemoteID                Unsigned32,
       pcePcepSessKeepaliveTimer          Unsigned32,
```

```
        pcePcepSessPeerKeepaliveTimer      Unsigned32,
        pcePcepSessDeadTimer               Unsigned32,
        pcePcepSessPeerDeadTimer           Unsigned32,
        pcePcepSessKAHoldTimeRem           Unsigned32,
        pcePcepSessOverloaded              TruthValue,
        pcePcepSessOverloadTime            Unsigned32,
        pcePcepSessPeerOverloaded          TruthValue,
        pcePcepSessPeerOverloadTime        Unsigned32,
        pcePcepSessDiscontinuityTime       TimeStamp,
        pcePcepSessAvgRspTime              Unsigned32,
        pcePcepSessLWMRspTime              Unsigned32,
        pcePcepSessHWMRspTime              Unsigned32,
        pcePcepSessNumPCReqSent            Counter32,
        pcePcepSessNumPCReqRcvd            Counter32,
        pcePcepSessNumPCRepSent            Counter32,
        pcePcepSessNumPCRepRcvd            Counter32,
        pcePcepSessNumPCErrSent            Counter32,
        pcePcepSessNumPCErrRcvd            Counter32,
        pcePcepSessNumPCNtfSent            Counter32,
        pcePcepSessNumPCNtfRcvd            Counter32,
        pcePcepSessNumKeepaliveSent        Counter32,
        pcePcepSessNumKeepaliveRcvd        Counter32,
        pcePcepSessNumUnknownRcvd          Counter32,
        pcePcepSessNumCorruptRcvd          Counter32,
        pcePcepSessNumReqSent              Counter32,
        pcePcepSessNumSvecSent             Counter32,
        pcePcepSessNumSvecReqSent          Counter32,
        pcePcepSessNumReqSentPendRep       Counter32,
        pcePcepSessNumReqSentEroRcvd       Counter32,
        pcePcepSessNumReqSentNoPathRcvd    Counter32,
        pcePcepSessNumReqSentCancelRcvd    Counter32,
        pcePcepSessNumReqSentErrorRcvd     Counter32,
        pcePcepSessNumReqSentTimeout       Counter32,
        pcePcepSessNumReqSentCancelSent    Counter32,
        pcePcepSessNumReqRcvd              Counter32,
        pcePcepSessNumSvecRcvd             Counter32,
        pcePcepSessNumSvecReqRcvd          Counter32,
        pcePcepSessNumReqRcvdPendRep       Counter32,
        pcePcepSessNumReqRcvdEroSent       Counter32,
        pcePcepSessNumReqRcvdNoPathSent    Counter32,
        pcePcepSessNumReqRcvdCancelSent    Counter32,
        pcePcepSessNumReqRcvdErrorSent     Counter32,
        pcePcepSessNumReqRcvdCancelRcvd    Counter32,
        pcePcepSessNumRepRcvdUnknown       Counter32,
        pcePcepSessNumReqRcvdUnknown       Counter32
    }

    pcePcepSessInitiator OBJECT-TYPE
```

```
        SYNTAX       INTEGER {
                        local(1),
                        remote(2)
                     }
        MAX-ACCESS   not-accessible
        STATUS       current
        DESCRIPTION
            "The initiator of the session, that is, whether the TCP
             connection was initiated by the local PCEP entity or the
             peer.

             There is a window during session initialization where two
             sessions can exist between a pair of PCEP speakers, each
             initiated by one of the speakers.  One of these sessions is
             always discarded before it leaves OpenWait state.  However,
             before it is discarded, two sessions to the given peer
             appear transiently in this MIB module.  The sessions are
             distinguished by who initiated them, and so this field is an
             index for the pcePcepSessTable."
        ::= { pcePcepSessEntry 1 }

    pcePcepSessStateLastChange OBJECT-TYPE
        SYNTAX       TimeStamp
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The value of sysUpTime at the time this session entered its
             current state as denoted by the pcePcepSessState object."
        ::= { pcePcepSessEntry 2 }

    pcePcepSessState OBJECT-TYPE
        SYNTAX       INTEGER {
                        tcpPending(1),
                        openWait(2),
                        keepWait(3),
                        sessionUp(4)
                     }
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The current state of the session.

             The set of possible states excludes the idle state since
             entries do not exist in this table in the idle state."
        ::= { pcePcepSessEntry 3 }

    pcePcepSessConnectRetry OBJECT-TYPE
        SYNTAX       Counter32
```

```
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The number of times that the local PCEP entity has
             attempted to establish a TCP connection for this session
             without success.  The PCEP entity gives up when this
             reaches pcePcepEntityConnectMaxRetry."
        ::= { pcePcepSessEntry 4 }

    pcePcepSessLocalID OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The value of the PCEP session ID used by the local PCEP
             entity in the Open message for this session.

             If pcePcepSessState is tcpPending then this is the session
             ID that will be used in the Open message.  Otherwise, this
             is the session ID that was sent in the Open message."
        ::= { pcePcepSessEntry 5 }

    pcePcepSessRemoteID OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The value of the PCEP session ID used by the peer in its
             Open message for this session.

             If pcePcepSessState is tcpPending or openWait then this
             field is not used and MUST be set to zero."
        ::= { pcePcepSessEntry 6 }

    pcePcepSessKeepaliveTimer OBJECT-TYPE
        SYNTAX      Unsigned32 (0..255)
        UNITS       "seconds"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
            "The agreed maximum interval at which the local PCEP entity
             transmits PCEP messages on this PCEP session.  Zero means
             that the local PCEP entity never sends Keepalives on this
             session.

             This field is used if and only if pcePcepSessState is
             sessionUp.  Otherwise, it is not used and MUST be set to
             zero."
```

```
        ::= { pcePcepSessEntry 7 }

    pcePcepSessPeerKeepaliveTimer OBJECT-TYPE
        SYNTAX        Unsigned32 (0..255)
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The agreed maximum interval at which the peer transmits PCEP
             messages on this PCEP session.  Zero means that the peer
             never sends Keepalives on this session.

             This field is used if and only if pcePcepSessState is
             sessionUp.  Otherwise, it is not used and MUST be set to
             zero."
        ::= { pcePcepSessEntry 8 }

    pcePcepSessDeadTimer OBJECT-TYPE
        SYNTAX        Unsigned32 (0..255)
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The DeadTimer interval for this PCEP session."
        ::= { pcePcepSessEntry 9 }

    pcePcepSessPeerDeadTimer OBJECT-TYPE
        SYNTAX        Unsigned32 (0..255)
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The peer's DeadTimer interval for this PCEP session.

             If pcePcepSessState is tcpPending or openWait then this
             field is not used and MUST be set to zero."
        ::= { pcePcepSessEntry 10 }

    pcePcepSessKAHoldTimeRem OBJECT-TYPE
        SYNTAX        Unsigned32 (0..255)
        UNITS         "seconds"
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The keep alive hold time remaining for this session.

             If pcePcepSessState is tcpPending or openWait then this
             field is not used and MUST be set to zero."
```

```
        ::= { pcePcepSessEntry 11 }

pcePcepSessOverloaded OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "If the local PCEP entity has informed the peer that it is
         currently overloaded, then this is set to true.  Otherwise,
         it is set to false."
    ::= { pcePcepSessEntry 12 }

pcePcepSessOverloadTime OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The interval of time that is remaining until the local PCEP
         entity will cease to be overloaded on this session.

         This field is only used if pcePcepSessOverloaded is set to
         true.  Otherwise, it is not used and MUST be set to zero."
    ::= { pcePcepSessEntry 13 }

pcePcepSessPeerOverloaded OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "If the peer has informed the local PCEP entity that it is
         currently overloaded, then this is set to true.  Otherwise,
         it is set to false."
    ::= { pcePcepSessEntry 14 }

pcePcepSessPeerOverloadTime OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The interval of time that is remaining until the peer will
         cease to be overloaded.  If it is not known how long the
         peer will stay in overloaded state, this field is set to
         zero.

         This field is only used if pcePcepSessPeerOverloaded is set
         to true.  Otherwise, it is not used and MUST be set to
```

```
            zero."
        ::= { pcePcepSessEntry 15 }

    pcePcepSessDiscontinuityTime OBJECT-TYPE
        SYNTAX       TimeStamp
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The value of sysUpTime at the time that the statistics in
             this row were last reset."
        ::= { pcePcepSessEntry 16 }

    pcePcepSessAvgRspTime OBJECT-TYPE
        SYNTAX       Unsigned32
        UNITS        "milliseconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The average response time for this peer on this session.

             If an average response time has not been calculated for this
             peer then this object has the value zero."
        ::= { pcePcepSessEntry 17 }

    pcePcepSessLWMRspTime OBJECT-TYPE
        SYNTAX       Unsigned32
        UNITS        "milliseconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The smallest (low-water mark) response time seen from this
             peer on this session.

             If no responses have been received from this peer then this
             object has the value zero."
        ::= { pcePcepSessEntry 18 }

    pcePcepSessHWMRspTime OBJECT-TYPE
        SYNTAX       Unsigned32
        UNITS        "milliseconds"
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
            "The greatest (high-water mark) response time seen from this
             peer on this session.

             If no responses have been received from this peer then this
             object has the value zero."
```

```
        ::= { pcePcepSessEntry 19 }

    pcePcepSessNumPCReqSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCReq messages sent on this session."
        ::= { pcePcepSessEntry 20 }

    pcePcepSessNumPCReqRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCReq messages received on this session."
        ::= { pcePcepSessEntry 21 }

    pcePcepSessNumPCRepSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCRep messages sent on this session."
        ::= { pcePcepSessEntry 22 }

    pcePcepSessNumPCRepRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCRep messages received on this session."
        ::= { pcePcepSessEntry 23 }

    pcePcepSessNumPCErrSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCErr messages sent on this session."
        ::= { pcePcepSessEntry 24 }

    pcePcepSessNumPCErrRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCErr messages received on this session."
```

```
        ::= { pcePcepSessEntry 25 }

    pcePcepSessNumPCNtfSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCNtf messages sent on this session."
        ::= { pcePcepSessEntry 26 }

    pcePcepSessNumPCNtfRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of PCNtf messages received on this session."
        ::= { pcePcepSessEntry 27 }

    pcePcepSessNumKeepaliveSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of Keepalive messages sent on this session."
        ::= { pcePcepSessEntry 28 }

    pcePcepSessNumKeepaliveRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of Keepalive messages received on this session."
        ::= { pcePcepSessEntry 29 }

    pcePcepSessNumUnknownRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of unknown messages received on this session."
        ::= { pcePcepSessEntry 30 }

    pcePcepSessNumCorruptRcvd OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of corrupted PCEP message received on this
```

```
              session."
         ::= { pcePcepSessEntry 31 }

    pcePcepSessNumReqSent OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
            "The number of requests sent on this session.  A request
             corresponds 1:1 with an RP object in a PCReq message.

             This might be greater than pcePcepSessNumPCReqSent because
             multiple requests can be batched into a single PCReq
             message."
         ::= { pcePcepSessEntry 32 }

    pcePcepSessNumSvecSent OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
            "The number of SVEC objects sent on this session in PCReq
             messages.  An SVEC object represents a set of synchronized
             requests."
         ::= { pcePcepSessEntry 33 }

    pcePcepSessNumSvecReqSent OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
            "The number of requests sent on this session that appeared in
             one or more SVEC objects."
         ::= { pcePcepSessEntry 34 }

    pcePcepSessNumReqSentPendRep OBJECT-TYPE
         SYNTAX        Counter32
         MAX-ACCESS    read-only
         STATUS        current
         DESCRIPTION
            "The number of requests that have been sent on this session
             for which a response is still pending."
         ::= { pcePcepSessEntry 35 }

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

```
    DESCRIPTION
        "The number of successful responses received on this session.
         A response corresponds 1:1 with an RP object in a PCRep
         message.  A successful response is a response for which an
         ERO was successfully computed."
    ::= { pcePcepSessEntry 36 }

pcePcepSessNumReqSentNoPathRcvd OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of unsuccessful responses received on this
         session.  A response corresponds 1:1 with an RP object in a
         PCRep message.  An unsuccessful response is a response with
         a NO-PATH object."
    ::= { pcePcepSessEntry 37 }

pcePcepSessNumReqSentCancelRcvd OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of requests sent on this session that were
         cancelled by the peer with a PCNtf message.

         This might be different than pcePcepSessNumPCNtfRcvd because
         not all PCNtf messages are used to cancel requests, and a
         single PCNtf message can cancel multiple requests."
    ::= { pcePcepSessEntry 38 }

pcePcepSessNumReqSentErrorRcvd OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
        "The number of requests sent on this session that were
         rejected by the peer with a PCErr message.

         This might be different than pcePcepSessNumPCErrRcvd because
         not all PCErr messages are used to reject requests, and a
         single PCErr message can reject multiple requests."
    ::= { pcePcepSessEntry 39 }

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

        DESCRIPTION
            "The number of requests sent on this session that have been
             sent to a peer and have been abandoned because the peer has
             taken too long to respond to them."
        ::= { pcePcepSessEntry 40 }

    pcePcepSessNumReqSentCancelSent OBJECT-TYPE
        SYNTAX   Counter32
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "The number of requests sent on this session that were sent
             to the peer and explicitly canceled by the local PCEP
             entity sending a PCNtf."
        ::= { pcePcepSessEntry 41 }

    pcePcepSessNumReqRcvd OBJECT-TYPE
        SYNTAX   Counter32
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "The number of requests received on this session. A request
             corresponds 1:1 with an RP object in a PCReq message.

             This might be greater than pcePcepSessNumPCReqRcvd because
             multiple requests can be batched into a single PCReq
             message."
        ::= { pcePcepSessEntry 42 }

    pcePcepSessNumSvecRcvd OBJECT-TYPE
        SYNTAX   Counter32
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "The number of SVEC objects received on this session in PCReq
             messages. An SVEC object represents a set of synchronized
             requests."
        ::= { pcePcepSessEntry 43 }

    pcePcepSessNumSvecReqRcvd OBJECT-TYPE
        SYNTAX   Counter32
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
            "The number of requests received on this session that
             appeared in one or more SVEC objects."
        ::= { pcePcepSessEntry 44 }

```
    pcePcepSessNumReqRcvdPendRep OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of requests that have been received on this
             session for which a response is still pending."
        ::= { pcePcepSessEntry 45 }

    pcePcepSessNumReqRcvdEroSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of successful responses sent on this session.  A
             response corresponds 1:1 with an RP object in a PCRep
             message.  A successful response is a response for which an
             ERO was successfully computed."
        ::= { pcePcepSessEntry 46 }

    pcePcepSessNumReqRcvdNoPathSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of unsuccessful responses sent on this session.
             A response corresponds 1:1 with an RP object in a PCRep
             message.  An unsuccessful response is a response with a
             NO-PATH object."
        ::= { pcePcepSessEntry 47 }

    pcePcepSessNumReqRcvdCancelSent OBJECT-TYPE
        SYNTAX        Counter32
        MAX-ACCESS    read-only
        STATUS        current
        DESCRIPTION
            "The number of requests received on this session that were
             cancelled by the local PCEP entity sending a PCNtf message.

             This might be different than pcePcepSessNumPCNtfSent because
             not all PCNtf messages are used to cancel requests, and a
             single PCNtf message can cancel multiple requests."
        ::= { pcePcepSessEntry 48 }

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

            DESCRIPTION
                "The number of requests received on this session that were
                 rejected by the local PCEP entity sending a PCErr message.

                 This might be different than pcePcepSessNumPCErrSent because
                 not all PCErr messages are used to reject requests, and a
                 single PCErr message can reject multiple requests."
            ::= { pcePcepSessEntry 49 }

        pcePcepSessNumReqRcvdCancelRcvd OBJECT-TYPE
            SYNTAX   Counter32
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "The number of requests that were received on this session
                 and explicitly canceled by the peer sending a PCNtf."
            ::= { pcePcepSessEntry 50 }

        pcePcepSessNumRepRcvdUnknown OBJECT-TYPE
            SYNTAX   Counter32
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "The number of responses to unknown requests received on this
                 session. A response to an unknown request is a response
                 whose RP object does not contain the request ID of any
                 request that is currently outstanding on the session."
            ::= { pcePcepSessEntry 51 }

        pcePcepSessNumReqRcvdUnknown OBJECT-TYPE
            SYNTAX   Counter32
            MAX-ACCESS read-only
            STATUS   current
            DESCRIPTION
                "The number of unknown requests that have been received on
                 this session. An unknown request is a request whose RP
                 object contains a request ID of zero."
            ::= { pcePcepSessEntry 52 }

        --- Notifications Configuration
        ---

        pcePcepNotificationsMaxRate OBJECT-TYPE
            SYNTAX   Unsigned32
            MAX-ACCESS read-write
            STATUS   current
            DESCRIPTION

```
                "This variable indicates the maximum number of
                 notifications issued per second. If events occur
                 more rapidly, the implementation may simply fail to
                 emit these notifications during that period, or may
                 queue them until an appropriate time. A value of 0
                 means no notifications are emitted and all should be
                 discarded (that is, not queued)."
           ::= { pcePcepObjects 4 }


      ---
      --- Notifications
      ---


      pcePcepSessUp NOTIFICATION-TYPE
          OBJECTS        {
                          pcePcepSessState,
                          pcePcepSessStateLastChange
                         }
          STATUS         current
          DESCRIPTION
              "This notification is sent when the value of
               'pcePcepSessState' enters the 'sessionUp' state."
           ::= { pcePcepNotifications 1 }


      pcePcepSessDown NOTIFICATION-TYPE
          OBJECTS        {
                          pcePcepSessState,
                          pcePcepSessStateLastChange
                         }
          STATUS         current
          DESCRIPTION
              "This notification is sent when the value of
               'pcePcepSessState' leaves the 'sessionUp' state."
           ::= { pcePcepNotifications 2 }


      pcePcepSessLocalOverload NOTIFICATION-TYPE
          OBJECTS        {
                          pcePcepSessOverloaded,
                          pcePcepSessOverloadTime
                         }
          STATUS         current
          DESCRIPTION
              "This notification is sent when the local PCEP entity enters
               overload state for a peer."
           ::= { pcePcepNotifications 3 }


      pcePcepSessLocalOverloadClear NOTIFICATION-TYPE
          OBJECTS        {
```

```
                    pcePcepSessOverloaded
                }
        STATUS      current
        DESCRIPTION
            "This notification is sent when the local PCEP entity leaves
             overload state for a peer."
        ::= { pcePcepNotifications 4 }

    pcePcepSessPeerOverload NOTIFICATION-TYPE
        OBJECTS     {
                    pcePcepSessPeerOverloaded,
                    pcePcepSessPeerOverloadTime
                }
        STATUS      current
        DESCRIPTION
            "This notification is sent when a peer enters overload
             state."
        ::= { pcePcepNotifications 5 }

    pcePcepSessPeerOverloadClear NOTIFICATION-TYPE
        OBJECTS     {
                    pcePcepSessPeerOverloaded
                }
        STATUS      current
        DESCRIPTION
            "This notification is sent when a peer leaves overload
             state."
        ::= { pcePcepNotifications 6 }

    --
    -- Module Conformance Statement
    --

    pcePcepCompliances
        OBJECT IDENTIFIER ::= { pcePcepConformance 1 }

    pcePcepGroups
        OBJECT IDENTIFIER ::= { pcePcepConformance 2 }


    --
    -- Read-Only Compliance
    --

    pcePcepModuleReadOnlyCompliance MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
            "The Module is implemented with support for read-only.  In
             other words, only monitoring is available by implementing
```

```
             this MODULE-COMPLIANCE."

        MODULE -- this module
            MANDATORY-GROUPS     {
                                   pcePcepGeneralGroup,
                                   pcePcepNotificationsGroup
                                 }

        OBJECT        pcePcepEntityAddrType
        SYNTAX        InetAddressType { unknown(0), ipv4(1), ipv6(2) }
        DESCRIPTION   "Only unknown(0), ipv4(1) and ipv6(2) support
                       is required."

        OBJECT        pcePcepPeerAddrType
        SYNTAX        InetAddressType { unknown(0), ipv4(1), ipv6(2) }
        DESCRIPTION   "Only unknown(0), ipv4(1) and ipv6(2) support
                       is required."

        ::= { pcePcepCompliances 1 }

    -- units of conformance

    pcePcepGeneralGroup OBJECT-GROUP
        OBJECTS { pcePcepEntityAdminStatus,
                  pcePcepEntityOperStatus,
                  pcePcepEntityAddrType,
                  pcePcepEntityAddr,
                  pcePcepEntityConnectTimer,
                  pcePcepEntityConnectMaxRetry,
                  pcePcepEntityInitBackoffTimer,
                  pcePcepEntityMaxBackoffTimer,
                  pcePcepEntityOpenWaitTimer,
                  pcePcepEntityKeepWaitTimer,
                  pcePcepEntityKeepAliveTimer,
                  pcePcepEntityDeadTimer,
                  pcePcepEntityAllowNegotiation,
                  pcePcepEntityMaxKeepAliveTimer,
                  pcePcepEntityMaxDeadTimer,
                  pcePcepEntityMinKeepAliveTimer,
                  pcePcepEntityMinDeadTimer,
                  pcePcepEntitySyncTimer,
                  pcePcepEntityRequestTimer,
                  pcePcepEntityMaxSessions,
                  pcePcepEntityMaxUnknownReqs,
                  pcePcepEntityMaxUnknownMsgs,
                  pcePcepPeerRole,
                  pcePcepPeerDiscontinuityTime,
                  pcePcepPeerInitiateSession,
```

```
pcePcepPeerSessionExists,
pcePcepPeerNumSessSetupOK,
pcePcepPeerNumSessSetupFail,
pcePcepPeerSessionUpTime,
pcePcepPeerSessionFailTime,
pcePcepPeerSessionFailUpTime,
pcePcepPeerAvgRspTime,
pcePcepPeerLWMRspTime,
pcePcepPeerHWMRspTime,
pcePcepPeerNumPCReqSent,
pcePcepPeerNumPCReqRcvd,
pcePcepPeerNumPCRepSent,
pcePcepPeerNumPCRepRcvd,
pcePcepPeerNumPCErrSent,
pcePcepPeerNumPCErrRcvd,
pcePcepPeerNumPCNtfSent,
pcePcepPeerNumPCNtfRcvd,
pcePcepPeerNumKeepaliveSent,
pcePcepPeerNumKeepaliveRcvd,
pcePcepPeerNumUnknownRcvd,
pcePcepPeerNumCorruptRcvd,
pcePcepPeerNumReqSent,
pcePcepPeerNumSvecSent,
pcePcepPeerNumSvecReqSent,
pcePcepPeerNumReqSentPendRep,
pcePcepPeerNumReqSentEroRcvd,
pcePcepPeerNumReqSentNoPathRcvd,
pcePcepPeerNumReqSentCancelRcvd,
pcePcepPeerNumReqSentErrorRcvd,
pcePcepPeerNumReqSentTimeout,
pcePcepPeerNumReqSentCancelSent,
pcePcepPeerNumReqSentClosed,
pcePcepPeerNumReqRcvd,
pcePcepPeerNumSvecRcvd,
pcePcepPeerNumSvecReqRcvd,
pcePcepPeerNumReqRcvdPendRep,
pcePcepPeerNumReqRcvdEroSent,
pcePcepPeerNumReqRcvdNoPathSent,
pcePcepPeerNumReqRcvdCancelSent,
pcePcepPeerNumReqRcvdErrorSent,
pcePcepPeerNumReqRcvdCancelRcvd,
pcePcepPeerNumReqRcvdClosed,
pcePcepPeerNumRepRcvdUnknown,
pcePcepPeerNumReqRcvdUnknown,
pcePcepSessStateLastChange,
pcePcepSessState,
pcePcepSessConnectRetry,
pcePcepSessLocalID,
```

```
                    pcePcepSessRemoteID,
                    pcePcepSessKeepaliveTimer,
                    pcePcepSessPeerKeepaliveTimer,
                    pcePcepSessDeadTimer,
                    pcePcepSessPeerDeadTimer,
                    pcePcepSessKAHoldTimeRem,
                    pcePcepSessOverloaded,
                    pcePcepSessOverloadTime,
                    pcePcepSessPeerOverloaded,
                    pcePcepSessPeerOverloadTime,
                    pcePcepSessDiscontinuityTime,
                    pcePcepSessAvgRspTime,
                    pcePcepSessLWMRspTime,
                    pcePcepSessHWMRspTime,
                    pcePcepSessNumPCReqSent,
                    pcePcepSessNumPCReqRcvd,
                    pcePcepSessNumPCRepSent,
                    pcePcepSessNumPCRepRcvd,
                    pcePcepSessNumPCErrSent,
                    pcePcepSessNumPCErrRcvd,
                    pcePcepSessNumPCNtfSent,
                    pcePcepSessNumPCNtfRcvd,
                    pcePcepSessNumKeepaliveSent,
                    pcePcepSessNumKeepaliveRcvd,
                    pcePcepSessNumUnknownRcvd,
                    pcePcepSessNumCorruptRcvd,
                    pcePcepSessNumReqSent,
                    pcePcepSessNumSvecSent,
                    pcePcepSessNumSvecReqSent,
                    pcePcepSessNumReqSentPendRep,
                    pcePcepSessNumReqSentEroRcvd,
                    pcePcepSessNumReqSentNoPathRcvd,
                    pcePcepSessNumReqSentCancelRcvd,
                    pcePcepSessNumReqSentErrorRcvd,
                    pcePcepSessNumReqSentTimeout,
                    pcePcepSessNumReqSentCancelSent,
                    pcePcepSessNumReqRcvd,
                    pcePcepSessNumSvecRcvd,
                    pcePcepSessNumSvecReqRcvd,
                    pcePcepSessNumReqRcvdPendRep,
                    pcePcepSessNumReqRcvdEroSent,
                    pcePcepSessNumReqRcvdNoPathSent,
                    pcePcepSessNumReqRcvdCancelSent,
                    pcePcepSessNumReqRcvdErrorSent,
                    pcePcepSessNumReqRcvdCancelRcvd,
                    pcePcepSessNumRepRcvdUnknown,
                    pcePcepSessNumReqRcvdUnknown,
                    pcePcepNotificationsMaxRate
```

```
        }
    STATUS current
    DESCRIPTION
        "Objects that apply to all PCEP MIB module implementations."
    ::= { pcePcepGroups 1 }

pcePcepNotificationsGroup NOTIFICATION-GROUP
    NOTIFICATIONS { pcePcepSessUp,
                    pcePcepSessDown,
                    pcePcepSessLocalOverload,
                    pcePcepSessLocalOverloadClear,
                    pcePcepSessPeerOverload,
                    pcePcepSessPeerOverloadClear
                  }
    STATUS   current
    DESCRIPTION
        "The notifications for a PCEP MIB module implementation."
    ::= { pcePcepGroups 2 }

END
```

5. Security Considerations

The pcePcepNotificationsMaxRate object defined in this MIB module has
a MAX-ACCESS clause of read-write. 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. In
particular, pcePcepNotificationsMaxRate may be used improperly to
stop notifications being issued, or to permit a flood of
notifications to be sent to the management agent at a high rate.

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 since, collectively, they
provide information about the amount and frequency of path
computation requests and responses within the network and can reveal
some aspects of its configuration. 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.

SNMP versions prior to SNMPv3 did not include adequate security.
Even if the network itself is secure (for example by using IPsec),
there is no control as to who on the secure network is allowed to
access and GET/SET (read/change/create/delete) the objects in this
MIB module.

Implementations SHOULD provide the security features described by the
SNMPv3 framework (see [RFC3410]), and implementations claiming
compliance to the SNMPv3 standard MUST include full support for
authentication and privacy via the User-based Security Model (USM)
[RFC3414] with the AES cipher algorithm [RFC3826]. Implementations
MAY also provide support for the Transport Security Model (TSM)
[RFC5591] in combination with a secure transport such as SSH
[RFC5592] or TLS/DTLS [RFC6353].

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

        Descriptor   OBJECT IDENTIFIER value
        ----------   -----------------------
        pcePcepMIB   { mib-2 XXX }

   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.

7. Acknowledgement

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              Shell Transport Model for the Simple Network Management
              Protocol (SNMP)", RFC 5592, June 2009.

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              Model for the Simple Network Management Protocol (SNMP)",
              STD 78, RFC 6353, July 2011.

Appendix A. Contributors

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Appendix B. PCEP MIB Module Example

    This example considers the set of PCC / PCE relationships shown in
    the following figure. The example shows the contents of the PCEP MIB
    module as read at PCE2 and PCCb.

        PCE1---PCE2   PCE3
         | / | / |
         | / | / |
        PCCa/   PCCb   PCCc
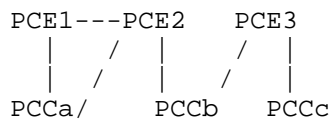
    The IP addresses of the PCE speakers in this diagram are given in the
    following table.

    +------+-------------+
    | PCE1 | 1.1.1.1 |
    +------+-------------+
    | PCE2 | 2.2.2.2 |
    +------+-------------+
    | PCE3 | 3.3.3.3 |
    +------+-------------+
    | PCCa | 11.11.11.11 |
    +------+-------------+
    | PCCb | 22.22.22.22 |
    +------+-------------+
    | PCCc | 33.33.33.33 |
    +------+-------------+

    In this example, the PCEP session between PCCb and PCE3 is currently
    down.

B.1. Contents of PCEP MIB module at PCE2

    At PCE2, there is a single local PCEP entity which has three peers
    (PCCa, PCCb and PCE1). There is a session active to all of these
    peers.

The contents of the PCEP MIB module as read at PCE2 are as follows.

In pcePcepEntityTable {
        pcePcepEntityIndex   1,
        pcePcepEntityAdminStatus   adminStatusUp(1),
        pcePcepEntityOperStatus   operStatusUp(1),
        pcePcepEntityAddrType   ipv4(1),
        pcePcepEntityAddr   2.2.2.2, -- PCE2
        pcePcepEntityConnectTimer   60,
        pcePcepEntityConnectMaxRetry   5,
        pcePcepEntityInitBackoffTimer   30,
        pcePcepEntityMaxBackoffTimer   3600,
        pcePcepEntityOpenWaitTimer   60,
        pcePcepEntityKeepWaitTimer   60,
        pcePcepEntityKeepAliveTimer   1,
        pcePcepEntityDeadTimer   4,
        pcePcepEntityAllowNegotiation   true(1),
        pcePcepEntityMaxKeepAliveTimer   60,
        pcePcepEntityMaxDeadTimer   240,
        pcePcepEntityMinKeepAliveTimer   1,
        pcePcepEntityMinDeadTimer   4,
        pcePcepEntitySyncTimer   60,
        pcePcepEntityRequestTimer   120,
        pcePcepEntityMaxSessions   999,
        pcePcepEntityMaxUnknownReqs   5,
        pcePcepEntityMaxUnknownMsgs   5
    }

In pcePcepPeerTable {
        pcePcepPeerAddrType   ipv4(1), --PCE1
        pcePcepPeerAddr   1.1.1.1,
        pcePcepPeerRole   pccAndPce(3),
        pcePcepPeerDiscontinuityTime   TimeStamp,
        pcePcepPeerInitiateSession   true(1),
        pcePcepPeerSessionExists   true(1),
        pcePcepPeerNumSessSetupOK   1,
        pcePcepPeerNumSessSetupFail   0,
        pcePcepPeerSessionUpTime   TimeStamp,
        pcePcepPeerSessionFailTime   0,
        pcePcepPeerSessionFailUpTime   TimeStamp,
        pcePcepPeerAvgRspTime   0,
        pcePcepPeerLWMRspTime   0,
        pcePcepPeerHWMRspTime   0,
        pcePcepPeerNumPCReqSent   0,
        pcePcepPeerNumPCReqRcvd   0,
        pcePcepPeerNumPCRepSent   0,
        pcePcepPeerNumPCRepRcvd   0,
        pcePcepPeerNumPCErrSent   0,

```
            pcePcepPeerNumPCErrRcvd             0,
            pcePcepPeerNumPCNtfSent             0,
            pcePcepPeerNumPCNtfRcvd             0,
            pcePcepPeerNumKeepaliveSent         123,
            pcePcepPeerNumKeepaliveRcvd         123,
            pcePcepPeerNumUnknownRcvd           0,
            pcePcepPeerNumCorruptRcvd           0,
            pcePcepPeerNumReqSent               0,
            pcePcepPeerNumSvecSent              0,
            pcePcepPeerNumSvecReqSent           0,
            pcePcepPeerNumReqSentPendRep        0,
            pcePcepPeerNumReqSentEroRcvd        0,
            pcePcepPeerNumReqSentNoPathRcvd     0,
            pcePcepPeerNumReqSentCancelRcvd     0,
            pcePcepPeerNumReqSentErrorRcvd      0,
            pcePcepPeerNumReqSentTimeout        0,
            pcePcepPeerNumReqSentCancelSent     0,
            pcePcepPeerNumReqSentClosed         0,
            pcePcepPeerNumReqRcvd               0,
            pcePcepPeerNumSvecRcvd              0,
            pcePcepPeerNumSvecReqRcvd           0,
            pcePcepPeerNumReqRcvdPendRep        0,
            pcePcepPeerNumReqRcvdEroSent        0,
            pcePcepPeerNumReqRcvdNoPathSent     0,
            pcePcepPeerNumReqRcvdCancelSent     0,
            pcePcepPeerNumReqRcvdErrorSent      0,
            pcePcepPeerNumReqRcvdCancelRcvd     0,
            pcePcepPeerNumReqRcvdClosed         0,
            pcePcepPeerNumRepRcvdUnknown        0,
            pcePcepPeerNumReqRcvdUnknown        0
        },
        {

            pcePcepPeerAddrType                 ipv4(1),  --PCCa
            pcePcepPeerAddr                     11.11.11.11,
            pcePcepPeerRole                     pcc(1),
            pcePcepPeerDiscontinuityTime        TimeStamp,
            pcePcepPeerInitiateSession          false(0),
            pcePcepPeerSessionExists            true(1),
            pcePcepPeerNumSessSetupOK           1,
            pcePcepPeerNumSessSetupFail         0,
            pcePcepPeerSessionUpTime            TimeStamp,
            pcePcepPeerSessionFailTime          0,
            pcePcepPeerSessionFailUpTime        TimeStamp,
            pcePcepPeerAvgRspTime               200,
            pcePcepPeerLWMRspTime               100,
            pcePcepPeerHWMRspTime               300,
            pcePcepPeerNumPCReqSent             0,
            pcePcepPeerNumPCReqRcvd             3,
```

```
            pcePcepPeerNumPCRepSent             3,
            pcePcepPeerNumPCRepRcvd             0,
            pcePcepPeerNumPCErrSent             0,
            pcePcepPeerNumPCErrRcvd             0,
            pcePcepPeerNumPCNtfSent             0,
            pcePcepPeerNumPCNtfRcvd             0,
            pcePcepPeerNumKeepaliveSent         123,
            pcePcepPeerNumKeepaliveRcvd         123,
            pcePcepPeerNumUnknownRcvd           0,
            pcePcepPeerNumCorruptRcvd           0,
            pcePcepPeerNumReqSent               0,
            pcePcepPeerNumSvecSent              0,
            pcePcepPeerNumSvecReqSent           0,
            pcePcepPeerNumReqSentPendRep        0,
            pcePcepPeerNumReqSentEroRcvd        0,
            pcePcepPeerNumReqSentNoPathRcvd     0,
            pcePcepPeerNumReqSentCancelRcvd     0,
            pcePcepPeerNumReqSentErrorRcvd      0,
            pcePcepPeerNumReqSentTimeout        0,
            pcePcepPeerNumReqSentCancelSent     0,
            pcePcepPeerNumReqSentClosed         0,
            pcePcepPeerNumReqRcvd               3,
            pcePcepPeerNumSvecRcvd              0,
            pcePcepPeerNumSvecReqRcvd           0,
            pcePcepPeerNumReqRcvdPendRep        0,
            pcePcepPeerNumReqRcvdEroSent        3,
            pcePcepPeerNumReqRcvdNoPathSent     0,
            pcePcepPeerNumReqRcvdCancelSent     0,
            pcePcepPeerNumReqRcvdErrorSent      0,
            pcePcepPeerNumReqRcvdCancelRcvd     0,
            pcePcepPeerNumReqRcvdClosed         0,
            pcePcepPeerNumRepRcvdUnknown        0,
            pcePcepPeerNumReqRcvdUnknown        0
        },
        {
            pcePcepPeerAddrType                 ipv4(1), -- PCCb
            pcePcepPeerAddr                     22.22.22.22,
            pcePcepPeerRole                     pcc(1),
            pcePcepPeerDiscontinuityTime        TimeStamp,
            pcePcepPeerInitiateSession          true(1),
            pcePcepPeerSessionExists            true(1),
            pcePcepPeerNumSessSetupOK           1,
            pcePcepPeerNumSessSetupFail         0,
            pcePcepPeerSessionUpTime            TimeStamp,
            pcePcepPeerSessionFailTime          0,
            pcePcepPeerSessionFailUpTime        TimeStamp,
            pcePcepPeerAvgRspTime               200,
            pcePcepPeerLWMRspTime               100,
```

```
        pcePcepPeerHWMRspTime                 300,
        pcePcepPeerNumPCReqSent               0,
        pcePcepPeerNumPCReqRcvd               4,
        pcePcepPeerNumPCRepSent               4,
        pcePcepPeerNumPCRepRcvd               0,
        pcePcepPeerNumPCErrSent               0,
        pcePcepPeerNumPCErrRcvd               0,
        pcePcepPeerNumPCNtfSent               0,
        pcePcepPeerNumPCNtfRcvd               0,
        pcePcepPeerNumKeepaliveSent           123,
        pcePcepPeerNumKeepaliveRcvd           123,
        pcePcepPeerNumUnknownRcvd             0,
        pcePcepPeerNumCorruptRcvd             0,
        pcePcepPeerNumReqSent                 0,
        pcePcepPeerNumSvecSent                0,
        pcePcepPeerNumSvecReqSent             0,
        pcePcepPeerNumReqSentPendRep          0,
        pcePcepPeerNumReqSentEroRcvd          0,
        pcePcepPeerNumReqSentNoPathRcvd       0,
        pcePcepPeerNumReqSentCancelRcvd       0,
        pcePcepPeerNumReqSentErrorRcvd        0,
        pcePcepPeerNumReqSentTimeout          0,
        pcePcepPeerNumReqSentCancelSent       0,
        pcePcepPeerNumReqSentClosed           0,
        pcePcepPeerNumReqRcvd                 4,
        pcePcepPeerNumSvecRcvd                0,
        pcePcepPeerNumSvecReqRcvd             0,
        pcePcepPeerNumReqRcvdPendRep          0,
        pcePcepPeerNumReqRcvdEroSent          3,
        pcePcepPeerNumReqRcvdNoPathSent       1,
        pcePcepPeerNumReqRcvdCancelSent       0,
        pcePcepPeerNumReqRcvdErrorSent        0,
        pcePcepPeerNumReqRcvdCancelRcvd       0,
        pcePcepPeerNumReqRcvdClosed           0,
        pcePcepPeerNumRepRcvdUnknown          0,
        pcePcepPeerNumReqRcvdUnknown          0
    }

In pcePcepSessTable {
        pcePcepSessInitiator                  local(1), --PCE1
        pcePcepSessStateLastChange            TimeStamp,
        pcePcepSessState                      sessionUp(4),
        pcePcepSessConnectRetry               0,
        pcePcepSessLocalID                    1,
        pcePcepSessRemoteID                   2,
        pcePcepSessKeepaliveTimer             1,
        pcePcepSessPeerKeepaliveTimer         1,
        pcePcepSessDeadTimer                  4,
```

```
          pcePcepSessPeerDeadTimer            4,
          pcePcepSessKAHoldTimeRem            1,
          pcePcepSessOverloaded               false(0),
          pcePcepSessOverloadTime             0,
          pcePcepSessPeerOverloaded           false(0),
          pcePcepSessPeerOverloadTime         0,
          pcePcepSessDiscontinuityTime        TimeStamp,
          pcePcepSessAvgRspTime               0,
          pcePcepSessLWMRspTime               0,
          pcePcepSessHWMRspTime               0,
          pcePcepSessNumPCReqSent             0,
          pcePcepSessNumPCReqRcvd             0,
          pcePcepSessNumPCRepSent             0,
          pcePcepSessNumPCRepRcvd             0,
          pcePcepSessNumPCErrSent             0,
          pcePcepSessNumPCErrRcvd             0,
          pcePcepSessNumPCNtfSent             0,
          pcePcepSessNumPCNtfRcvd             0,
          pcePcepSessNumKeepaliveSent         123,
          pcePcepSessNumKeepaliveRcvd         123,
          pcePcepSessNumUnknownRcvd           0,
          pcePcepSessNumCorruptRcvd           0,
          pcePcepSessNumReqSent               0,
          pcePcepSessNumSvecSent              0,
          pcePcepSessNumSvecReqSent           0,
          pcePcepSessNumReqSentPendRep        0,
          pcePcepSessNumReqSentEroRcvd        0,
          pcePcepSessNumReqSentNoPathRcvd     0,
          pcePcepSessNumReqSentCancelRcvd     0,
          pcePcepSessNumReqSentErrorRcvd      0,
          pcePcepSessNumReqSentTimeout        0,
          pcePcepSessNumReqSentCancelSent     0,
          pcePcepSessNumReqRcvd               0,
          pcePcepSessNumSvecRcvd              0,
          pcePcepSessNumSvecReqRcvd           0,
          pcePcepSessNumReqRcvdPendRep        0,
          pcePcepSessNumReqRcvdEroSent        0,
          pcePcepSessNumReqRcvdNoPathSent     0,
          pcePcepSessNumReqRcvdCancelSent     0,
          pcePcepSessNumReqRcvdErrorSent      0,
          pcePcepSessNumReqRcvdCancelRcvd     0,
          pcePcepSessNumRepRcvdUnknown        0,
          pcePcepSessNumReqRcvdUnknown        0
      },
      {
          pcePcepSessInitiator                remote(2), --PCCa
          pcePcepSessStateLastChange          TimeStamp,
          pcePcepSessState                    sessionUp(4),
```

```
        pcePcepSessConnectRetry           0,
        pcePcepSessLocalID                2,
        pcePcepSessRemoteID               1,
        pcePcepSessKeepaliveTimer         1,
        pcePcepSessPeerKeepaliveTimer     1,
        pcePcepSessDeadTimer              4,
        pcePcepSessPeerDeadTimer          4,
        pcePcepSessKAHoldTimeRem          1,
        pcePcepSessOverloaded             false(0),
        pcePcepSessOverloadTime           0,
        pcePcepSessPeerOverloaded         false(0),
        pcePcepSessPeerOverloadTime       0,
        pcePcepSessDiscontinuityTime      TimeStamp,
        pcePcepSessAvgRspTime             200,
        pcePcepSessLWMRspTime             100,
        pcePcepSessHWMRspTime             300,
        pcePcepSessNumPCReqSent           0,
        pcePcepSessNumPCReqRcvd           1,
        pcePcepSessNumPCRepSent           1,
        pcePcepSessNumPCRepRcvd           0,
        pcePcepSessNumPCErrSent           0,
        pcePcepSessNumPCErrRcvd           0,
        pcePcepSessNumPCNtfSent           0,
        pcePcepSessNumPCNtfRcvd           0,
        pcePcepSessNumKeepaliveSent       123,
        pcePcepSessNumKeepaliveRcvd       123,
        pcePcepSessNumUnknownRcvd         0,
        pcePcepSessNumCorruptRcvd         0,
        pcePcepSessNumReqSent             0,
        pcePcepSessNumSvecSent            0,
        pcePcepSessNumSvecReqSent         0,
        pcePcepSessNumReqSentPendRep      0,
        pcePcepSessNumReqSentEroRcvd      0,
        pcePcepSessNumReqSentNoPathRcvd   0,
        pcePcepSessNumReqSentCancelRcvd   0,
        pcePcepSessNumReqSentErrorRcvd    0,
        pcePcepSessNumReqSentTimeout      0,
        pcePcepSessNumReqSentCancelSent   0,
        pcePcepSessNumReqRcvd             3,
        pcePcepSessNumSvecRcvd            0,
        pcePcepSessNumSvecReqRcvd         0,
        pcePcepSessNumReqRcvdPendRep      0,
        pcePcepSessNumReqRcvdEroSent      3,
        pcePcepSessNumReqRcvdNoPathSent   0,
        pcePcepSessNumReqRcvdCancelSent   0,
        pcePcepSessNumReqRcvdErrorSent    0,
        pcePcepSessNumReqRcvdCancelRcvd   0,
        pcePcepSessNumRepRcvdUnknown      0,
```

```
        pcePcepSessNumReqRcvdUnknown        0
},
{
        pcePcepSessInitiator                remote(2), --PCCb
        pcePcepSessStateLastChange          TimeStamp,
        pcePcepSessState                    sessionUp(4),
        pcePcepSessConnectRetry             0,
        pcePcepSessLocalID                  2,
        pcePcepSessRemoteID                 1,
        pcePcepSessKeepaliveTimer           1,
        pcePcepSessPeerKeepaliveTimer       1,
        pcePcepSessDeadTimer                4,
        pcePcepSessPeerDeadTimer            4,
        pcePcepSessKAHoldTimeRem            1,
        pcePcepSessOverloaded               false(0),
        pcePcepSessOverloadTime             0,
        pcePcepSessPeerOverloaded           false(0),
        pcePcepSessPeerOverloadTime         0,
        pcePcepSessDiscontinuityTime        TimeStamp,
        pcePcepSessAvgRspTime               200,
        pcePcepSessLWMRspTime               100,
        pcePcepSessHWMRspTime               300,
        pcePcepSessNumPCReqSent             0,
        pcePcepSessNumPCReqRcvd             4,
        pcePcepSessNumPCRepSent             4,
        pcePcepSessNumPCRepRcvd             0,
        pcePcepSessNumPCErrSent             0,
        pcePcepSessNumPCErrRcvd             0,
        pcePcepSessNumPCNtfSent             0,
        pcePcepSessNumPCNtfRcvd             0,
        pcePcepSessNumKeepaliveSent         123,
        pcePcepSessNumKeepaliveRcvd         123,
        pcePcepSessNumUnknownRcvd           0,
        pcePcepSessNumCorruptRcvd           0,
        pcePcepSessNumReqSent               0,
        pcePcepSessNumSvecSent              0,
        pcePcepSessNumSvecReqSent           0,
        pcePcepSessNumReqSentPendRep        0,
        pcePcepSessNumReqSentEroRcvd        0,
        pcePcepSessNumReqSentNoPathRcvd     0,
        pcePcepSessNumReqSentCancelRcvd     0,
        pcePcepSessNumReqSentErrorRcvd      0,
        pcePcepSessNumReqSentTimeout        0,
        pcePcepSessNumReqSentCancelSent     0,
        pcePcepSessNumReqRcvd               4,
        pcePcepSessNumSvecRcvd              0,
        pcePcepSessNumSvecReqRcvd           0,
        pcePcepSessNumReqRcvdPendRep        0,
```

```
        pcePcepSessNumReqRcvdEroSent          3,
        pcePcepSessNumReqRcvdNoPathSent       1,
        pcePcepSessNumReqRcvdCancelSent       0,
        pcePcepSessNumReqRcvdErrorSent        0,
        pcePcepSessNumReqRcvdCancelRcvd       0,
        pcePcepSessNumRepRcvdUnknown          0,
        pcePcepSessNumReqRcvdUnknown          0
    }
```

B.2. Contents of PCEP MIB module at PCCb

    At PCCb, there is a single local PCEP entity which has two peers
    (PCE2 and PCE3). There is a session active to PCE2, but the session
    to PCE3 is currently down.

    The contents of the PCEP MIB module as read at PCCb are as follows.

```
    In pcePcepEntityTable  {
        pcePcepEntityIndex            1,
        pcePcepEntityAdminStatus      adminStatusUp(1),
        pcePcepEntityOperStatus       operStatusUp(1),
        pcePcepEntityAddrType         ipv4(1),
        pcePcepEntityAddr             22.22.22.22, -- PCCb
        pcePcepEntityConnectTimer     60,
        pcePcepEntityConnectMaxRetry  5,
        pcePcepEntityInitBackoffTimer 30,
        pcePcepEntityMaxBackoffTimer  3600,
        pcePcepEntityOpenWaitTimer    60,
        pcePcepEntityKeepWaitTimer    60,
        pcePcepEntityKeepAliveTimer   1,
        pcePcepEntityDeadTimer        4,
        pcePcepEntityAllowNegotiation true(1),
        pcePcepEntityMaxKeepAliveTimer 60,
        pcePcepEntityMaxDeadTimer     240,
        pcePcepEntityMinKeepAliveTimer 1,
        pcePcepEntityMinDeadTimer     4,
        pcePcepEntitySyncTimer        60,
        pcePcepEntityRequestTimer     120,
        pcePcepEntityMaxSessions      999,
        pcePcepEntityMaxUnknownReqs   5,
        pcePcepEntityMaxUnknownMsgs   5
    }

    In pcePcepPeerTable {
        pcePcepPeerAddrType                ipv4(1), --PCE2
        pcePcepPeerAddr                    2.2.2.2,
        pcePcepPeerRole                    pce(2),
        pcePcepPeerDiscontinuityTime       TimeStamp,
```

```
        pcePcepPeerInitiateSession          true(1),
        pcePcepPeerSessionExists            true(1)),
        pcePcepPeerNumSessSetupOK           0,
        pcePcepPeerNumSessSetupFail         1,
        pcePcepPeerSessionUpTime            TimeStamp,
        pcePcepPeerSessionFailTime          TimeStamp,
        pcePcepPeerSessionFailUpTime        TimeStamp,
        pcePcepPeerAvgRspTime               0,
        pcePcepPeerLWMRspTime               0,
        pcePcepPeerHWMRspTime               0,
        pcePcepPeerNumPCReqSent             4,
        pcePcepPeerNumPCReqRcvd             0,
        pcePcepPeerNumPCRepSent             0,
        pcePcepPeerNumPCRepRcvd             4,
        pcePcepPeerNumPCErrSent             0,
        pcePcepPeerNumPCErrRcvd             0,
        pcePcepPeerNumPCNtfSent             0,
        pcePcepPeerNumPCNtfRcvd             0,
        pcePcepPeerNumKeepaliveSent         0,
        pcePcepPeerNumKeepaliveRcvd         0,
        pcePcepPeerNumUnknownRcvd           0,
        pcePcepPeerNumCorruptRcvd           0,
        pcePcepPeerNumReqSent               4,
        pcePcepPeerNumSvecSent              0,
        pcePcepPeerNumSvecReqSent           0,
        pcePcepPeerNumReqSentPendRep        0,
        pcePcepPeerNumReqSentEroRcvd        3,
        pcePcepPeerNumReqSentNoPathRcvd     1,
        pcePcepPeerNumReqSentCancelRcvd     0,
        pcePcepPeerNumReqSentErrorRcvd      0,
        pcePcepPeerNumReqSentTimeout        0,
        pcePcepPeerNumReqSentCancelSent     0,
        pcePcepPeerNumReqSentClosed         0,
        pcePcepPeerNumReqRcvd               0,
        pcePcepPeerNumSvecRcvd              0,
        pcePcepPeerNumSvecReqRcvd           0,
        pcePcepPeerNumReqRcvdPendRep        0,
        pcePcepPeerNumReqRcvdEroSent        0,
        pcePcepPeerNumReqRcvdNoPathSent     0,
        pcePcepPeerNumReqRcvdCancelSent     0,
        pcePcepPeerNumReqRcvdErrorSent      0,
        pcePcepPeerNumReqRcvdCancelRcvd     0,
        pcePcepPeerNumReqRcvdClosed         0,
        pcePcepPeerNumRepRcvdUnknown        0,
        pcePcepPeerNumReqRcvdUnknown        0
    },
    {
        pcePcepPeerAddrType                 ipv4(1),  --PCE3
```

```
          pcePcepPeerAddr                    3.3.3.3,
          pcePcepPeerRole                    pce(2),
          pcePcepPeerDiscontinuityTime       TimeStamp,
          pcePcepPeerInitiateSession         true(1),
          pcePcepPeerSessionExists           false(0),
          pcePcepPeerNumSessSetupOK          1,
          pcePcepPeerNumSessSetupFail        0,
          pcePcepPeerSessionUpTime           TimeStamp,
          pcePcepPeerSessionFailTime         TimeStamp,
          pcePcepPeerSessionFailUpTime       TimeStamp,
          pcePcepPeerAvgRspTime              200,
          pcePcepPeerLWMRspTime              100,
          pcePcepPeerHWMRspTime              300,
          pcePcepPeerNumPCReqSent            4,
          pcePcepPeerNumPCReqRcvd            0,
          pcePcepPeerNumPCRepSent            0,
          pcePcepPeerNumPCRepRcvd            3,
          pcePcepPeerNumPCErrSent            0,
          pcePcepPeerNumPCErrRcvd            0,
          pcePcepPeerNumPCNtfSent            0,
          pcePcepPeerNumPCNtfRcvd            0,
          pcePcepPeerNumKeepaliveSent        123,
          pcePcepPeerNumKeepaliveRcvd        123,
          pcePcepPeerNumUnknownRcvd          0,
          pcePcepPeerNumCorruptRcvd          0,
          pcePcepPeerNumReqSent              4,
          pcePcepPeerNumSvecSent             0,
          pcePcepPeerNumSvecReqSent          0,
          pcePcepPeerNumReqSentPendRep       0,
          pcePcepPeerNumReqSentEroRcvd       3,
          pcePcepPeerNumReqSentNoPathRcvd    0,
          pcePcepPeerNumReqSentCancelRcvd    0,
          pcePcepPeerNumReqSentErrorRcvd     0,
          pcePcepPeerNumReqSentTimeout       0,
          pcePcepPeerNumReqSentCancelSent    0,
          pcePcepPeerNumReqSentClosed        1,
          pcePcepPeerNumReqRcvd              0,
          pcePcepPeerNumSvecRcvd             0,
          pcePcepPeerNumSvecReqRcvd          0,
          pcePcepPeerNumReqRcvdPendRep       0,
          pcePcepPeerNumReqRcvdEroSent       0,
          pcePcepPeerNumReqRcvdNoPathSent    0,
          pcePcepPeerNumReqRcvdCancelSent    0,
          pcePcepPeerNumReqRcvdErrorSent     0,
          pcePcepPeerNumReqRcvdCancelRcvd    0,
          pcePcepPeerNumReqRcvdClosed        0,
          pcePcepPeerNumRepRcvdUnknown       0,
          pcePcepPeerNumReqRcvdUnknown       0
```

```
        }

   In pcePcepSessTable {
        pcePcepSessInitiator              local(1), --PCE2
        pcePcepSessStateLastChange        TimeStamp,
        pcePcepSessState                  sessionUp(4),
        pcePcepSessConnectRetry           0,
        pcePcepSessLocalID                1,
        pcePcepSessRemoteID               1,
        pcePcepSessKeepaliveTimer         1,
        pcePcepSessPeerKeepaliveTimer     1,
        pcePcepSessDeadTimer              4,
        pcePcepSessPeerDeadTimer          4,
        pcePcepSessKAHoldTimeRem          1,
        pcePcepSessOverloaded             false(0),
        pcePcepSessOverloadTime           0,
        pcePcepSessPeerOverloaded         false(0),
        pcePcepSessPeerOverloadTime       0,
        pcePcepSessDiscontinuityTime      TimeStamp,
        pcePcepSessAvgRspTime             200,
        pcePcepSessLWMRspTime             100,
        pcePcepSessHWMRspTime             300,
        pcePcepSessNumPCReqSent           4,
        pcePcepSessNumPCReqRcvd           0,
        pcePcepSessNumPCRepSent           0,
        pcePcepSessNumPCRepRcvd           4,
        pcePcepSessNumPCErrSent           0,
        pcePcepSessNumPCErrRcvd           0,
        pcePcepSessNumPCNtfSent           0,
        pcePcepSessNumPCNtfRcvd           0,
        pcePcepSessNumKeepaliveSent       123,
        pcePcepSessNumKeepaliveRcvd       123,
        pcePcepSessNumUnknownRcvd         0,
        pcePcepSessNumCorruptRcvd         0,
        pcePcepSessNumReqSent             4,
        pcePcepSessNumSvecSent            0,
        pcePcepSessNumSvecReqSent         0,
        pcePcepSessNumReqSentPendRep      0,
        pcePcepSessNumReqSentEroRcvd      3,
        pcePcepSessNumReqSentNoPathRcvd   1,
        pcePcepSessNumReqSentCancelRcvd   0,
        pcePcepSessNumReqSentErrorRcvd    0,
        pcePcepSessNumReqSentTimeout      0,
        pcePcepSessNumReqSentCancelSent   0,
        pcePcepSessNumReqRcvd             0,
        pcePcepSessNumSvecRcvd            0,
        pcePcepSessNumSvecReqRcvd         0,
        pcePcepSessNumReqRcvdPendRep      0,
```

```
        pcePcepSessNumReqRcvdEroSent        0,
        pcePcepSessNumReqRcvdNoPathSent     0,
        pcePcepSessNumReqRcvdCancelSent     0,
        pcePcepSessNumReqRcvdErrorSent      0,
        pcePcepSessNumReqRcvdCancelRcvd     0,
        pcePcepSessNumRepRcvdUnknown        0,
        pcePcepSessNumReqRcvdUnknown        0
    }

    -- no session to PCE3
```

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