PCE communication protocol (PCEP) Management Information Base
draft-kkoushik-pce-pcep-mib-02.txt

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Abstract

This memo defines an experimental portion of the Management Information Base for use with network management protocols in the Internet community. In particular, it describes managed objects for modeling of Path Computation Element communication Protocol (PCEP) for communications between a Path Computation Client (PCC) and a Path Computation Element (PCE), or between two PCEs.
1 Introduction

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 manage Path Computation Element communication Protocol (PCEP) for communications between a Path Computation Client (PCC) and a Path Computation Element (PCE), or between two PCEs.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC-2119 [BCP14].

2 Terminology

The terminology used in this document is built on notions introduced and discussed in PCE WG documents. The reader should be familiar with these documents.

Domain:

any collection of network elements within a common sphere of address management or path computational responsibility.
IGP Area:
    OSPF Area or ISIS level.

PCC:
    Path Computation Client: any client application requesting a path
    computation to be performed by a Path Computation Element.

PCE:
    Path Computation Element: an entity (component, application, or
    network node) that is capable of computing a network path or route
    based on a network graph, and applying computational
    constraints.

PCEP Client:
    A PCEP client represents a PCE or a PCC for network management
    purposes.

3 The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current
Internet-Standard Management Framework, please refer to section 7
of RFC 3410 [RFC3410].

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

4. PCEP MIB Module Architecture

The PCEP MIB will contain the following information:
  a. PCEP client configuration and status.
  b. PCEP peer configuration and information.
  c. PCEP session configuration and information.
  d. Notifications to indicate PCEP session changes.

4.1. Relations to other MIB modules

TBD

5 Example of the PCEP MIB module usage
TBD

6 Object definitions

6.1 PCE-PCEP-DRAFT-MIB

This MIB module makes references to the following documents:
[RFC2578], [RFC2579], [RFC2580], [RFC3411],
[RFC2863], [RFC4001], [RFC4265] and [RFC3813].

PCE-PCEP-DRAFT-MIB DEFINITIONS ::= BEGIN

IMPORTS
MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
Counter32, Unsigned32, Gauge32, Integer32, IpAddress,
experimental
FROM SNMPv2-SMI

RowStatus, TimeInterval, TruthValue,
TimeStamp, StorageType,TEXTUAL-CONVENTION
FROM SNMPv2-TC

-- [RFC2579]

InetAddressPrefixLength,
InetAddressType,
InetAddress,
InetPortNumber
FROM INET-ADDRESS-MIB

MODULE-COMPLIANCE,
OBJECT-GROUP,
NOTIFICATION-GROUP
FROM SNMPv2-CONF;

pcepDraftMIB MODULE-IDENTITY
LAST-UPDATED "200811030000Z" --Nov 3, 2008
ORGANIZATION "Path Computation Element (PCE) Working Group"
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WG-URL: http://www.ietf.org/html.charters/pce-charter.html"

DESCRIPTION
"This MIB module defines a collection of objects for managing PCE communication protocol (PCEP)."

-- Revision history

REVISION
"200811031200Z" -- Nov 03 2008 12:00:00 EST
DESCRIPTION
"Changes from -01- draft include support for the following in the MIB:
  o The SyncTimer,
  o The maximum number of sessions that can be setup,
  o Request timer: amount of time a PCC waits for a reply before resending its path computation requests (potentially to an alternate PCE).
  o The MAX-UNKNOWN-REQUESTS
  o The MAX-UNKNOWN-MESSAGES
  o Response time (minimum, average and maximum), on a per PCE Peer basis,
  o PCEP Session failures,
  o Amount of time the session has been in active state,
  o Number of corrupted messages,
  o Number of failed computations,

Changes from -00- draft:
  1. Clarified the notion of PCEP Client.
  2. Added new objects to the PCEP client and session tables to manage PCEP protocol as in section 8 of draft-ietf-pce-pcep-08.txt
  3. Did not add all the objects to manage the recommendations in draft-ietf-pce-pcep-08.txt to control the complexity of the MIB."

REVISION
"200702201200Z" -- 20 Feb 2007 12:00:00 EST
DESCRIPTION
"draft-00 version"
 ::= { experimental 9999 } --

-- Textual Conventions used in this MIB module --
PcePcepIdentifier ::= TEXTUAL-CONVENTION
   DISPLAY-HINT "1d.1d.1d.1d:1d:1d"
   STATUS current
   DESCRIPTION
   "The LDP identifier is a six octet quantity which is used to identify a PCE client."
SYNTAX OCTET STRING (SIZE (6))

-- Notifications --

pcePcepNotifications OBJECT IDENTIFIER ::= { pcePcepDraftMIB 0 }
pcePcepMIBObjects OBJECT IDENTIFIER ::= { pcePcepDraftMIB 1 }
pcePcepConformance OBJECT IDENTIFIER ::= { pcePcepDraftMIB 2 }
pcePcepClientObjects OBJECT IDENTIFIER ::= { pcePcepMIBObjects 1 }

-- PCE Client Objects

pcePcepClientLastChange OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of sysUpTime at the time of the most recent addition or deletion of an entry to/from the pcePcepClientTable/pcePcepClientStatsTable, or the most recent change in value of any objects in the pcePcepClientTable. If no such changes have occurred since the last re-initialization of the local management subsystem, then this object contains a zero value."
::= { pcePcepClientObjects 1 }

pcePcepClientIndexNext OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This object contains an appropriate value to be used for pcePcepClientIndex when creating entries in the pcePcepClientTable. The value 0 indicates that no unassigned entries are available."
::= { pcePcepClientObjects 2 }

pcePcepClientTable OBJECT-TYPE
SYNTAX SEQUENCE OF PcePcepClientEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table contains information about the PCEP Client."
::= { pcePcepClientObjects 3 }

pcePcepClientEntry OBJECT-TYPE
SYNTAX      PcePcepClientEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "An entry in this table represents a PCEP client. An entry can be created by a network administrator or by an SNMP agent as instructed by PCEP."
INDEX       { pcePcepClientPcepId, pcePcepClientIndex }
::= { pcePcepClientTable 1 }

PcePcepClientEntry ::= SEQUENCE {
    pcePcepClientPcepId               PcePcepIdentifier,
    pcePcepClientIndex                Unsigned32,
    pcePcepClientAdminStatus          INTEGER,
    pcePcepClientOperStatus           INTEGER,
    pcePcepClientTcpPort              InetPortNumber,
    pcePcepClientKeepAliveTimer       Unsigned32,
    pcePcepClientStorageType          StorageType,
    pcePcepClientRowStatus            RowStatus,
    pcePcepClientDeadTimer            Unsigned32
}

pcePcepClientPcepId OBJECT-TYPE
SYNTAX      PcePcepIdentifier
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The PCEP client identifier."
::= { pcePcepClientEntry 1 }

pcePcepClientIndex OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This index is used to uniquely identify the PCEP client. Before creating a row in this table, the 'pcePcepClientIndexNext' object should be retrieved. That value should be used for the value of this index when creating a row in this table. NOTE: if a value of zero (0) is retrieved, that indicates that no rows can be created in this table at this time."
::= { pcePcepClientEntry 2 }

pcePcepClientAdminStatus OBJECT-TYPE
SYNTAX INTEGER {
    enable(1),
    disable(2)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The administrative status of this PCEP Client. If this object is changed from 'enable' to 'disable' and this entity has already attempted to establish contact with a Peer, then all contact with that Peer is lost and all information from that Peer needs to be removed from the MIB. (This implies that the network management subsystem should clean up any related entry in the pcePcepPeerTable. This further implies that a 'tear-down' for that session is issued and the session and all information related to that session cease to exist).

At this point the operator is able to change values which are related to this entity.

When the admin status is set back to 'enable', then this Entity will attempt to establish a new session with the Peer."

DEFVAL { enable }
 ::= { pcePcepClientEntry 4 }

pcePcepClientOperStatus OBJECT-TYPE
SYNTAX INTEGER {
    unknown(1),
    enabled(2),
    disabled(3)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The operational status of this PCEP client.

The value of unknown(1) indicates that the operational status cannot be determined at this time. The value of unknown should be a transient condition before changing to enabled(2) or disabled(3)."
::= { pcePcepClientEntry 5 }

pcePcepClientTcpPort OBJECT-TYPE
SYNTAX InetPortNumber
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The TCP Port for
PCEP. The default value is the well-known
value of this port." -- To be assigned by IANA
::= { pcePcepClientEntry 6 }

pcePcepClientKeepAliveTimer OBJECT-TYPE
SYNTAX Unsigned32 (1..65535)
UNITS "seconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The integer value which is the proposed keep
alive timer for this PCEP client."
::= { pcePcepClientEntry 7 }

pcePcepClientStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The storage type for this conceptual row.
Conceptual rows having the value 'permanent(4)'
need not allow write-access to any columnar
objects in the row."
DEFVAL{ nonVolatile }
::= { pcePcepClientEntry 8 }

pcePcepClientRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The status of this conceptual row. All writable
objects in this row may be modified at any
time, however, as described in detail in
the section entitled, 'Changing Values After
Session Establishment’, and again described
in the DESCRIPTION clause of the
pcePcepClientAdminStatus object, if a session
has been initiated with a Peer, changing objects

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in this table will wreak havoc with the session and interrupt traffic. To repeat again: the recommended procedure is to set the pcePcepClientAdminStatus to down, thereby explicitly causing a session to be torn down. Then, change objects in this entry, then set the pcePcepClientAdminStatus to enable, which enables a new session to be initiated.

::= { pcePcepClientEntry 9 }

pcePcepClientDeadTimer OBJECT-TYPE
SYNTAX     Unsigned32 (4..262140)
UNITs      "seconds"
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
"The value which indicates a period of time after the expiration of which a PCEP peer declares the session down if no PCEP message has been received. The Deadtimer value is recommended to be 4 times the Keepalive value."

::= { pcePcepClientEntry 10 }

--
-- The PCEP Client Statistics Table
-- TBD
--

-- The PCEP Peer Table
--

pcePcepSessionObjects OBJECT IDENTIFIER ::= { pcePcepMIBObjects 3 }

pcePcepPeerLastChange OBJECT-TYPE
SYNTAX     TimeStamp
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"The value of sysUpTime at the time of the most recent addition or deletion to/from the pcePcepPeerTable/pcePcepSessionTable."

::= { pcePcepSessionObjects 1 }

pcePcepPeerTable OBJECT-TYPE
SYNTAX     SEQUENCE OF PcePcepPeerEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"Information about PCEP peers known by Entities in the pcePcepClientTable. The information in this table is based on information from the Client-Peer interaction during session initialization but is not appropriate for the pcePcepSessionTable, because objects in this table may or may not be used in session establishment."
::= { pcePcepSessionObjects 2 }

pcePcepPeerEntry OBJECT-TYPE
SYNTAX    PcePcepPeerEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"Information about a single Peer which is related to a Session. This table is augmented by the pcePcepSessionTable."
INDEX     { pcePcepClientPcepId, pcePcepClientIndex, pcePcepPeerPcepId }
::= { pcePcepPeerTable 1 }

PcePcepPeerEntry ::= SEQUENCE {
  pcePcepPeerPcepId                PcePcepIdentifier,
pcePcepPeerTransportAddrType    InetAddressType,
pcePcepPeerTransportAddr        InetAddress
}

pcePcepPeerPcepId OBJECT-TYPE
SYNTAX     PcePcepIdentifier
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"The PCEP identifier of this PCE Peer."
::= { pcePcepPeerEntry 1 }

pcePcepPeerTransportAddrType OBJECT-TYPE
SYNTAX     InetAddressType
MAX-ACCESS read-only
STATUS     current
DESCRIPTION
"The type of the Internet address for the pcePcepPeerTransportAddr object. The PCEP specification describes this as being either an IPv4 Transport Address or IPv6 Transport Address.

This object specifies how the value of the pcePcepPeerTransportAddr object should be
interpreted.
 ::= { pcePcepPeerEntry 2 }

pcePcepPeerTransportAddr OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The Internet address advertised by the peer.
The type of this address is specified by the value of the pcePcepPeerTransportAddrType object."
 ::= { pcePcepPeerEntry 3 }

pcePcepPeerResponseTime OBJECT-TYPE
SYNTAX Unsigned32 (1..65535)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The Average response time for this PCEP peer."
 ::= { pcePcepPeerEntry 4 }

--
-- The PCEP Sessions Table
--

pcePcepSessionMax OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The maximum number of sessions that can be setup on this PCEP client."
 ::= { pcePcepSessionObjects 3 }

pcePcepSessionMaxUnknownRequests OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The maximum number of unknown requests that any session on this PCEP client is willing to accept."
 ::= { pcePcepSessionObjects 4 }

pcePcepSessionMaxUnknownMsgs OBJECT-TYPE
SYNTAX  Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The maximum number of unknown messages that any session
on this PCEP client is willing to accept."
::= { pcePcepSessionObjects 5 }

pcePcepSessionFailures OBJECT-TYPE
SYNTAX  Unsigned32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of failed sessions on this client."
::= { pcePcepSessionObjects 6 }

pcePcepSessionTable OBJECT-TYPE
SYNTAX      SEQUENCE OF PcePcepSessionEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"A table of Sessions between PCEP clients.
This table AUGMENTS the pcePcepPeerTable.
Each row in this table represents a single session."
::= { pcePcepSessionObjects 7 }

PcePcepSessionEntry OBJECT-TYPE
SYNTAX      PcePcepSessionEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"An entry in this table represents information on a
single session between two PCEP clients.
The information contained in a row is read-only."

AUGMENTS { pcePcepPeerEntry }
::= { pcePcepSessionTable 1 }

PcePcepSessionEntry ::= SEQUENCE {
  pcePcepSessionStateLastChange       TimeStamp,
pcePcepSessionState                 INTEGER,
pcePcepSessionKeepAliveHoldTimeRem  TimeInterval,
pcePcepSessionKeepAliveTime         Unsigned32,
pcePcepSessionDiscontinuityTime     TimeStamp,
pcePcepSessionSpeakerRole           INTEGER,
pcePcepSessionSyncTime              Unsigned32,
pcePcepSessionActiveTime            Unsigned32,
pcePcepSessionCorruptedMsgs         Unsigned32,
pcePcepSessionFailedComps Unsigned32

pcePcepSessionStateLastChange 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 pcePcepSessionState
object."
::= { pcePcepSessionEntry 1 }

pcePcepSessionState OBJECT-TYPE
SYNTAX INTEGER {
    sessionUp(1),
    keepWait(2),
    openWait(3),
    tcpPending(4),
    idle(5)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The current state of the session, all of the
states 1 to 5 are based on the state machine
for session negotiation behavior."
::= { pcePcepSessionEntry 2 }

pcePcepSessionKeepAliveHoldTimeRem OBJECT-TYPE
SYNTAX TimeInterval
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The keep alive hold time remaining for
this session."
::= { pcePcepSessionEntry 3 }

pcePcepSessionKeepAliveTime OBJECT-TYPE
SYNTAX Unsigned32 (1..65535)
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The negotiated KeepAlive Time which
represents the amount of seconds between
keep alive messages. The
pcePcepClientKeepAliveHoldTimer
related to this Session is the
value that was proposed as the
KeepAlive Time for this session

This value is negotiated during
session initialization between
the entity’s proposed value
(i.e., the value configured in
pcePcepClientKeepAliveHoldTimer)
and the peer’s proposed
KeepAlive Hold Timer value.
This value is the smaller
of the two proposed values.

::= { pcePcepSessionEntry 4 }

pcePcepSessionDiscontinuityTime OBJECT-TYPE
SYNTAX           TimeStamp
MAX-ACCESS        read-only
STATUS            current
DESCRIPTION
"The value of sysUpTime on the most recent occasion
at which any one or more of this session’s counters
suffered a discontinuity. The relevant counters are
the specific instances associated with this session
of any Counter32 object contained in the
pcePcepSessionStatsTable.

The initial value of this object is the value of
sysUpTime when the entry was created in this table.

Also, a command generator can distinguish when a session
between a given Entity and Peer goes away and a new
session is established. This value would change and
thus indicate to the command generator that this is a
different session."

::= { pcePcepSessionEntry 5 }

pcePcepSessionSpeakerRole OBJECT-TYPE
SYNTAX           INTEGER {
    pcc(1),
    pce(2),
    pccandpce(3)
}
MAX-ACCESS        read-only
STATUS            current
DESCRIPTION
"The value of this object indicates the PCEP
pcePcepSessionSyncTime OBJECT-TYPE
SYNTAX      Unsigned32 (1..65535)
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "The value of SYNC timer 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 SYNC timer 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 request should one of them get lost for some reasons (e.g a misbehaving PCC)."

DEFVAL { 60 }
 ::= { pcePcepSessionEntry 7 }

pcePcepSessionRequestTime OBJECT-TYPE
SYNTAX      Unsigned32 (1..65535)
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "The maximum amount of time a PCC waits for a reply before resending its path computation requests (potentially to an alternate PCE)."
 ::= { pcePcepSessionEntry 8 }

pcePcepSessionActiveTime OBJECT-TYPE
SYNTAX      Unsigned32 (1..65535)
UNITS       "seconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "The amount of time this session has been active since creation or a discontinuity."
 ::= { pcePcepSessionEntry 9 }
pcePcepSessionCorruptedMsgs OBJECT-TYPE
SYNTAX    Unsigned32
MAX-ACCESS read-only
STATUS    current
DESCRIPTION "The number of corrupted messages received on this session."
 ::= { pcePcepSessionEntry 10 }

pcePcepSessionCorruptedMsgs OBJECT-TYPE
SYNTAX    Unsigned32
MAX-ACCESS read-only
STATUS    current
DESCRIPTION "The number of requests which had failed computations."
 ::= { pcePcepSessionEntry 11 }

---
--- Notifications
---

pcePcepSessionUp NOTIFICATION-TYPE
OBJECTS     {
          pcePcepSessionState,
          pcePcepSessionDiscontinuityTime
          }
STATUS    current
DESCRIPTION "This notification is sent when the value of ‘pcePcepSessionState’ enters the ‘sessionUp(1)’ state."
 ::= { pcePcepNotifications 1 }

pcePcepSessionDown NOTIFICATION-TYPE
OBJECTS     {
          pcePcepSessionState,
          pcePcepSessionDiscontinuityTime
          }
STATUS    current
DESCRIPTION "This notification is sent when the value of ‘pcePcepSessionState’ leaves the ‘sessionUp(1)’ state."
 ::= { pcePcepNotifications 2 }
--***************************************************************
-- Module Conformance Statement
--***************************************************************

pcePcepGroups
OBJECT IDENTIFIER ::= { pcePcepConformance 1 }

pcePcepCompliances
OBJECT IDENTIFIER ::= { pcePcepConformance 2 }

--
-- Full Compliance
--

pcePcepModuleFullCompliance MODULE-COMPLIANCE
STATUS current
DESCRIPTION
"The Module is implemented with support for read-create and read-write. In other words, both monitoring and configuration are available when using this MODULE-COMPLIANCE."

MODULE -- this module
MANDATORY-GROUPS { pcePcepGeneralGroup,
                      pcePcepNotificationsGroup }
::= { pcePcepCompliances 1 }

--
-- 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 }
::= { pcePcepCompliances 2 }
-- units of conformance

pcePcepGeneralGroup OBJECT-GROUP
   OBJECTS {
      pcePcepClientLastChange, 
      pcePcepClientIndexNext, 
      pcePcepClientAdminStatus, 
      pcePcepClientOperStatus, 
      pcePcepClientTcpPort, 
      pcePcepClientKeepAliveTimer, 
      pcePcepClientStorageType, 
      pcePcepClientRowStatus, 
      pcePcepPeerLastChange, 
      pcePcepPeerTransportAddrType, 
      pcePcepPeerTransportAddr, 
      pcePcepSessionStateLastChange, 
      pcePcepSessionState, 
      pcePcepSessionKeepAliveHoldTimeRem, 
      pcePcepSessionKeepAliveTime, 
      pcePcepSessionDiscontinuityTime, 
      pcePcepClientDeadTimer, 
      pcePcepSessionMax, 
      pcePcepSessionSpeakerRole, 
      pcePcepClientSyncTime, 
      pcePcepClientRequestTime, 
      pcePcepSessionMaxUnknownRequests, 
      pcePcepSessionMaxUnknownMsgs, 
      pcePcepSessionSessionFailures, 
      pcePcepSessionActiveTime, 
      pcePcepSessionCorruptedMsgs, 
      pcePcepSessionFailedComps
   }
   STATUS current
   DESCRIPTION
      "Objects that apply to all PCEP MIB implementations."

::= { pcePcepGroups 1 }

pcePcepNotificationsGroup NOTIFICATION-GROUP
   NOTIFICATIONS { pcePcepSessionUp, 
                    pcePcepSessionDown
   }
   STATUS current
   DESCRIPTION
      "The notifications for a PCEP MIB implementation."

::= { pcePcepGroups 2 }
7. Security Considerations

These MIB modules can be used for configuration of certain objects, and anything that can be configured can be incorrectly configured, with potentially disastrous results.

There are a number of management objects defined in these MIB modules with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These are the tables and objects and their sensitivity/vulnerability:

TBD

8. IANA Considerations

-- (Note to RFC-Editor:)
-- We request that you assign contiguous RFC numbers to the
-- IANA is requested to root MIB objects in the MIB module
-- contained in this document under the transmission subtree.
--

9. References

9.1 Normative References

[PCEP] Path Computation Element (PCE) communication Protocol (PCEP),
JP. Vasseur, JL. Le Roux


9.2. Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart,

10. Acknowledgement

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11. Authors’ Addresses

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