IPsec Security Policy IKE Action MIB
draft-ietf-ipsp-ikeaction-mib-01.txt

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Abstract

This document defines a SMIv2 Management Information Base (MIB) module for configuring IKE actions for the security policy database
(SPD) of a device that uses the IPsec Security Policy Database
Configuration MIB for configuring the IKE protocol actions on that
device. The IPSP IKE Action MIB integrates directly with the IPsec
Security Policy Database Configuration MIB and it is meant to work
within the framework of an action referenced by that MIB.

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1. Introduction

This document defines a MIB module for configuration of an IKE action within the IPsec security policy database (SPD). This module works within the framework of the IPsec Security Policy Database Configuration MIB (IPSP-SPD-MIB). It can be referenced as an action by the IPSP-SPD-MIB and is used to configure IKE negotiations between network devices.


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. Relationship to the DMTF Policy Model

The Distributed Management Task Force (DMTF) has created an object oriented model of IPsec policy information known as the IPsec Policy Model White Paper [IPPMWP]. The contents of this document are also reflected in the "IPsec Configuration Policy Model" (IPCP) [RFC3585]. This MIB module is a task specific derivation of the IKE actions portions of the IPCP for use with SNMPv3. This includes the necessary filters, negotiation, identity and IKE action information required to enable IKE negotiation within the IPsec Policy framework.

4. MIB Module Overview

The MIB module describes the necessary information to implement IKE actions and their associated negotiations referred to by the IPsec Security Policy Database Configuration MIB. A basic understanding of IKE, of IPsec processing, of the IPsec Configuration Policy Model and of how actions fit in to the overall framework of the IPSP-SPD-MIB
are required to use this MIB properly.
5. MIB definition

IPSEC-IKEACTION-MIB DEFINITIONS ::= BEGIN

IMPORTS
  MODULE-IDENTITY, OBJECT-TYPE, Integer32, Unsigned32
  FROM SNMPv2-SMI

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

  MODULE-COMPLIANCE, OBJECT-GROUP
  FROM SNMPv2-CONF

  SnmpAdminString
  FROM SNMP-FRAMEWORK-MIB

  InetSocketAddress, InetAddress, InetPortNumber
  FROM INET-ADDRESS-MIB

  spdActions, SpdIPPacketLogging, spdEndGroupIdentType,
  spdEndGroupAddress
  FROM IPSEC-SPD-MIB

  IpsaCredentialType, IpsecDoiIdentType, IpsaIdentityFilter,
  ipsaSharedGroup
  FROM IPSEC-IPSECACTION-MIB

;

--
-- module identity
--

ipiaMIB MODULE-IDENTITY
  LAST-UPDATED "200212100000Z"          -- 12 December 2002
  ORGANIZATION "IETF IP Security Policy Working Group"
  CONTACT-INFO "Michael Baer
                Sparta, Inc.
                Phone: +1 530 902 3131
                Email: baerm@tislabs.com"

    Ricky Charlet
Email: rcharlet@alumni.calpoly.edu

Wes Hardaker
DESCRIPTION
"The MIB module for defining IKE actions for managing IPsec Security Policy.

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-- Revision History

REVISION "200301070000Z" -- 7 January 2003
DESCRIPTION "Initial version, published as RFC xxxx."
-- RFC-editor assigns xxxx

::= { spdActions 2 }

--
-- groups of related objects
--

ipiaConfigObjects OBJECT IDENTIFIER ::= { ipiaMIB 1 }
ipiaNotificationObjects OBJECT IDENTIFIER ::= { ipiaMIB 2 }
ipiaConformanceObjects OBJECT IDENTIFIER ::= { ipiaMIB 3 }
--
-- Textual Conventions
IkeEncryptionAlgorithm ::= TEXTUAL-CONVENTION
  STATUS      current
  DESCRIPTION "Values for encryption algorithms negotiated
               for the ISAKMP SA by IKE in Phase I. These are
               values for SA Attribute type Encryption
               Algorithm (1).

Unused values <= 65000 are reserved to IANA.
Currently assigned values at the time of this writing:

reserved(0),  -- reserved in IKE
descbc(1),     -- RFC 2405
ideaCbc(2),    
blowfishCbc(3),
rc5R16B64Cbc(4),  -- RC5 R16 B64 CBC
tripleDesCbc(5),  -- 3DES CBC
castCbc(6),     
aesCbc(7)

Values 65001-65535 are for private use among
mutually consenting parties."
REFERENCE "RFC 2409 appendix A,
IANA"
SYNTAX      Unsigned32 (0..65535)

IkeAuthMethod ::= TEXTUAL-CONVENTION
  STATUS      current
  DESCRIPTION "Values for authentication methods negotiated
               for the ISAKMP SA by IKE in Phase I. These are
               values for SA Attribute type Authentication
               Method (3).

Unused values <= 65000 are reserved to IANA.

reserved(0),  -- reserved in IKE
preSharedKey(1),
dssSignatures(2),
rsaSignatures(3),
enryptionWithRsa(4),
revisedEncryptionWithRsa(5),
reservedDontUse6(6),  -- not to be used
reservedDontUse7(7),  -- not to be used
ecdsaSignatures(8)

Values 65001-65535 are for private use among
mutually consenting parties."

**REFERENCE**

"RFC 2409 appendix A,
IANA"

**SYNTAX**

Unsigned32 (0..65535)

---

**IkeHashAlgorithm ::= TEXTUAL-CONVENTION**

**STATUS** current

**DESCRIPTION** "Values for hash algorithms negotiated for the ISAKMP SA by IKE in Phase I. These are values for SA Attribute type Hash Algorithm (2).

Unused values <= 65000 are reserved to IANA. Currently assigned values at the time of this writing:

- reserved(0), -- reserved in IKE
- md5(1), -- RFC 1321
- sha(2), -- FIPS 180-1
- tiger(3),
- sha256(4),
- sha384(5),
- sha512(6)

Values 65001-65535 are for private use among mutually consenting parties."

**REFERENCE**

"RFC 2409 appendix A,
IANA"

**SYNTAX**

Unsigned32 (0..65535)

---

**IkeGroupDescription ::= TEXTUAL-CONVENTION**

**STATUS** current

**DESCRIPTION** "Values for Oakley key computation groups for Diffie-Hellman exchange negotiated for the ISAKMP SA by IKE in Phase I. They are also used in Phase II when perfect forward secrecy is in use. These are values for SA Attribute type Group Description (4).

Unused values <= 32767 are reserved to IANA. Currently assigned values at the time of this writing:

- none(0), -- reserved in IKE, used
  -- in MIBs to reflect that
  -- none of the predefined
  -- groups are used
- modp768(1), -- default 768-bit MODP group
- modp1024(2), -- alternate 1024-bit MODP
  -- group
ec2nGF155(3), -- EC2N group on Galois
-- Field GF[2^155]
ec2nGF185(4), -- EC2N group on Galois
-- Field GF[2^185]
ec2nGF163Random(6), -- EC2N group on Galois
-- Field GF[2^163],
-- random seed
ec2nGF163Koblitz(7),
-- EC2N group on Galois
-- Field GF[2^163],
-- Koblitz curve
ec2nGF283Random(8), -- EC2N group on Galois
-- Field GF[2^283],
-- random seed
ec2nGF283Koblitz(9),
-- EC2N group on Galois
-- Field GF[2^283],
-- Koblitz curve
ec2nGF409Random(10),
-- EC2N group on Galois
-- Field GF[2^409],
-- random seed
ec2nGF409Koblitz(11),
-- EC2N group on Galois
-- Field GF[2^409],
-- Koblitz curve
ec2nGF571Random(12),
-- EC2N group on Galois
-- Field GF[2^571],
-- random seed
ec2nGF571Koblitz(13)
-- EC2N group on Galois
-- Field GF[2^571],
-- Koblitz curve

Values 32768-65535 are for private use among mutually consenting parties."

REFERENCE "RFC 2409 appendix A,
IANA"
SYNTAX Unsigned32 (0..65535)

IpsecDoiSecProtocolId ::= TEXTUAL-CONVENTION
STATUS current
DESCRIPTION "These are the IPsec DOI values for the Protocol-Id field in an ISAKMP Proposal Payload, and in all Notification Payloads. They are also used as the Protocol-ID In the
Notification Payload and the Delete Payload.

Currently assigned values at the time of this writing:

- `reserved(0)`, -- reserved in DOI
- `protoIsakmp(1)`, -- message protection
  -- required during Phase I
  -- of the IKE protocol
- `protoIpsecAh(2)`, -- IP packet authentication
  -- via Authentication Header
- `protoIpsecEsp(3)`, -- IP packet confidentiality
  -- via Encapsulating
  -- Security Payload
- `protoIpcomp(4)` -- IP payload compression

The values 249-255 are reserved for private use amongst cooperating systems.

REFERENCE "RFC 2407 section 4.4.1"
SYNTAX Unsigned32 (0..255)
DESCRIPTION
"This static filter can be used to test if a packet is part of an IKE phase-2 negotiation."
 ::= { ipiaStaticFilters 2 }

--
-- credential filter table
--

ipiaCredentialFilterTable OBJECT-TYPE
SYNTAX      SEQUENCE OF IpiaCredentialFilterEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table defines filters which can be used to match credentials of IKE peers, where the credentials in question have been obtained from an IKE phase 1 exchange. They may be X.509 certificates, Kerberos tickets, etc...
 ::= { ipiaConfigObjects 3 }

ipiaCredentialFilterEntry OBJECT-TYPE
SYNTAX      IpiaCredentialFilterEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"A row defining a particular credential filter"
INDEX   { ipiaCredFiltName }
 ::= { ipiaCredentialFilterTable 1 }

IpiaCredentialFilterEntry ::= SEQUENCE {
  ipiaCredFiltName                      SnmpAdminString,
  ipiaCredFiltCredentialType            IpiaCredentialType,
  ipiaCredFiltMatchFieldName            OCTET STRING,
  ipiaCredFiltMatchFieldValue           OCTET STRING,
  ipiaCredFiltAcceptCredFrom            OCTET STRING,
  ipiaCredFiltLastChanged               TimeStamp,
  ipiaCredFiltStorageType               StorageType,
  ipiaCredFiltRowStatus                 RowStatus
}

ipiaCredFiltName OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..32))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The administrative name of this filter."
 ::= { ipiaCredentialFilterEntry 1 }
ipiaCredFiltCredentialType OBJECT-TYPE
SYNTAX    IpsaCredentialType
MAX-ACCESS read-create
STATUS    current
DESCRIPTION
 "The credential type that is expected for this filter to succeed."
DEFVAL    { x509 }
::= { ipiaCredentialFilterEntry 2 }

ipiaCredFiltMatchFieldName OBJECT-TYPE
SYNTAX    OCTET STRING (SIZE(0..256))
MAX-ACCESS read-create
STATUS    current
DESCRIPTION
 "The piece of the credential to match against. Examples:
 serialNumber, signatureAlgorithm, issuerName or
 subjectName.

For credential types without fields (e.g. shared secret),
this field should be left empty, and the entire credential
will be matched against the ipiaCredFiltMatchFieldValue."
 ::= { ipiaCredentialFilterEntry 3 }

ipiaCredFiltMatchFieldValue OBJECT-TYPE
SYNTAX    OCTET STRING (SIZE(1..4096))
MAX-ACCESS read-create
STATUS    current
DESCRIPTION
 "The value that the field indicated by the
 ipiaCredFiltMatchFieldName must match against for the
 filter to be considered TRUE."
 ::= { ipiaCredentialFilterEntry 4 }

ipiaCredFiltAcceptCredFrom OBJECT-TYPE
SYNTAX    OCTET STRING(SIZE(1..117))
MAX-ACCESS read-create
STATUS    current
DESCRIPTION
 "This value is used to look up a row in the
 ipiaIpsecCredMngServiceTable for the Certificate Authority
 (CA) Information. This value is empty if there is no CA
 used for this filter."
 ::= { ipiaCredentialFilterEntry 5 }

ipiaCredFiltLastChanged OBJECT-TYPE
SYNTAX    TimeStamp
MAX-ACCESS read-only
STATUS  current
DESCRIPTION
"The value of sysUpTime when this row was last modified or
created either through SNMP SETs or by some other external
means."
 ::= { ipiaCredentialFilterEntry 6 }

ipiaCredFiltStorageType OBJECT-TYPE
SYNTAX    StorageType
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"The storage type for this row. Rows in this table which
were created through an external process may have a storage
type of readOnly or permanent."
DEFVAL { nonVolatile }
 ::= { ipiaCredentialFilterEntry 7 }

ipiaCredFiltRowStatus OBJECT-TYPE
SYNTAX    RowStatus
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"This object indicates the conceptual status of this row."
 ::= { ipiaCredentialFilterEntry 8 }

--
-- Peer Identity Filter Table
--

ipiaPeerIdentityFilterTable OBJECT-TYPE
SYNTAX    SEQUENCE OF IpiaPeerIdentityFilterEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"This table defines filters which can be used to match
credentials of IKE peers, where the credentials in question
have been obtained from an IKE phase 1 exchange. They may
be X.509 certificates, Kerberos tickets, etc..."
 ::= { ipiaConfigObjects 4 }

ipiaPeerIdentityFilterEntry OBJECT-TYPE
SYNTAX    IpiaPeerIdentityFilterEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION
"A row defining a particular credential filter"
INDEX    { ipiaPeerIdFiltName }  
::= { ipiaPeerIdentityFilterTable 1 }

IpiaPeerIdentityFilterEntry ::= SEQUENCE {
    ipiaPeerIdFiltName                      SnmpAdminString,  
    ipiaPeerIdFiltIdentityType              IpsecDoiIdentType,  
    ipiaPeerIdFiltIdentityValue             IpsaIdentityFilter,  
    ipiaPeerIdFiltLastChanged               TimeStamp,  
    ipiaPeerIdFiltStorageType               StorageType,  
    ipiaPeerIdFiltRowStatus                 RowStatus
}

ipiaPeerIdFiltName OBJECT-TYPE
SYNTAX    SnmpAdminString (SIZE(1..32))  
MAX-ACCESS not-accessible  
STATUS      current  
DESCRIPTION
"The administrative name of this filter."  
::= { ipiaPeerIdentityFilterEntry 1 }

ipiaPeerIdFiltIdentityType OBJECT-TYPE
SYNTAX    IpsecDoiIdentType  
MAX-ACCESS read-create  
STATUS      current  
DESCRIPTION
"The type of identity field in the peer ID payload to match against."  
::= { ipiaPeerIdentityFilterEntry 2 }

ipiaPeerIdFiltIdentityValue OBJECT-TYPE
SYNTAX    IpsaIdentityFilter  
MAX-ACCESS read-create  
STATUS      current  
DESCRIPTION
"The string representation of the value that the peer ID payload value must match against. Wildcard mechanisms MUST be supported such that:

- a ipiaPeerIdFiltIdentityValue of ‘*@example.com’ will match a userFqdn ID payload of ‘JDOE@EXAMPLE.COM’

- a ipiaPeerIdFiltIdentityValue of ‘*.example.com’ will match a fqdn ID payload of ‘WWW.EXAMPLE.COM’

- a ipiaPeerIdFiltIdentityValue of:
  ‘cn=*,ou=engineering,o=company,c=us’
  will match a DER DN ID payload of
  ‘cn=John Doe,ou=engineering,o=company,c=us’
- a ipiaPeerIdFiltIdentityValue of '192.0.2.0/24' will
  match an IPv4 address ID payload of 192.0.2.10

- a ipiaPeerIdFiltIdentityValue of '192.0.2.*' will also
  match an IPv4 address ID payload of 192.0.2.10.

The character '*' replaces 0 or multiple instances of any
character.
::= { ipiaPeerIdentityFilterEntry 3 }

ipiaPeerIdFiltLastChanged OBJECT-TYPE
SYNTAX      TimeStamp
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "The value of sysUpTime when this row was last modified or
 created either through SNMP SETs or by some other external
 means."
::= { ipiaPeerIdentityFilterEntry 4 }

ipiaPeerIdFiltStorageType OBJECT-TYPE
SYNTAX      StorageType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "The storage type for this row. Rows in this table which
 were created through an external process may have a storage
 type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaPeerIdentityFilterEntry 5 }

ipiaPeerIdFiltRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This object indicates the conceptual status of this row.
 This object can not be considered active unless the
 ipiaPeerIdFiltIdentityType and ipiaPeerIdFiltIdentityValue
 column values are defined."
::= { ipiaPeerIdentityFilterEntry 6 }

--
-- Static Actions
--

-- these are static actions which can be pointed to by the
ipiaStaticActions OBJECT IDENTIFIER ::= { ipiaConfigObjects 5 }

ipiaRejectIKEAction OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This scalar indicates that a packet should be rejected WITHOUT action/packet logging. This object returns a value of 1 for IPsec policy implementations that support the reject static action."
 ::= { ipiaStaticActions 1 }

ipiaRejectIKEActionLog OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"This scalar indicates that a packet should be rejected WITH action/packet logging. This object returns a value of 1 for IPsec policy implementations that support the reject static action with logging."
 ::= { ipiaStaticActions 2 }

ipiaIKEActionTable OBJECT-TYPE
SYNTAX SEQUENCE OF IpiaIKEActionEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The ipiaIKEActionTable contains a list of the parameters used for an IKE phase 1 SA DOI negotiation. See the corresponding table ipiaIKEActionProposalsTable for a list of proposals contained within a given IKE Action."
 ::= { ipiaConfigObjects 6 }

ipiaIKEActionEntry OBJECT-TYPE
SYNTAX IpiaIKEActionEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The ipiaIkeActionEntry lists the IKE negotiation attributes."

INDEX
{ ipiaIkeActName }
::= { ipiaIkeActionTable 1 }

IpiaIkeActionEntry ::= SEQUENCE {
ipiaIkeActName                              SnmpAdminString,
ipiaIkeActParametersName                    SnmpAdminString,
ipiaIkeActThresholdDerivedKeys              Integer32,
ipiaIkeActExchangeMode                      INTEGER,
ipiaIkeActAgressiveModeGroupId              IkeGroupDescription,
ipiaIkeActIdentityType                      IpsecDoiIdentType,
ipiaIkeActIdentityContext                   SnmpAdminString,
ipiaIkeActPeerName                          SnmpAdminString,
ipiaIkeActDoActionLogging                   TruthValue,
ipiaIkeActDoPacketLogging                   SpdIPPacketLogging,
ipiaIkeActVendorId                          OCTET STRING,
ipiaIkeActLastChanged                       TimeStamp,
ipiaIkeActStorageType                       StorageType,
ipiaIkeActRowStatus                         RowStatus }

ipiaIkeActName OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..32))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  "This object contains the name of this ikeAction entry."
::= { ipiaIkeActionEntry 1 }

ipiaIkeActParametersName OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..32))
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "This object is administratively assigned to reference a row
in the ipiaSaNegotiationParametersTable where additional
parameters affecting this action may be found."
::= { ipiaIkeActionEntry 2 }

ipiaIkeActThresholdDerivedKeys OBJECT-TYPE
SYNTAX      Integer32 (0..100)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION  "ipiaIkeActThresholdDerivedKeys specifies what percentage
of the derived key limit (see the LifetimeDerivedKeys
property of IKEProposal) can expire before IKE should
attempt to renegotiate the IKE phase 1 security association."
DEFVAL
   { 100 }
::= { ipiaIkeActionEntry 3 }

ipiaIkeActExchangeMode OBJECT-TYPE
SYNTAX           INTEGER { main(1), agressive(2) }
MAX-ACCESS       read-create
STATUS           current
DESCRIPTION
   "ipiaIkeActExchangeMode specifies the IKE Phase 1
   negotiation mode."
DEFVAL { main }
::= { ipiaIkeActionEntry 4 }

ipiaIkeActAgressiveModeGroupId OBJECT-TYPE
SYNTAX           IkeGroupDescription
MAX-ACCESS       read-create
STATUS           current
DESCRIPTION
   "The values to be used for Diffie-Hellman exchange."
::= { ipiaIkeActionEntry 5 }

ipiaIkeActIdentityType OBJECT-TYPE
SYNTAX      IpsecDoiIdentType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
   "This column along with ipiaIkeActIdentityContext and
   endpoint information is used to refer an
   ipiaIkeIdentityEntry in the ipiaIkeIdentityTable."
::= { ipiaIkeActionEntry 6 }

ipiaIkeActIdentityContext   OBJECT-TYPE
SYNTAX           SnmpAdminString (SIZE(1..32))
MAX-ACCESS       read-create
STATUS           current
DESCRIPTION
   "This column, along with ipiaIkeActIdentityType and endpoint
   information, is used to refer to an ipiaIkeIdentityEntry in
   the ipiaIkeIdentityTable."
::= { ipiaIkeActionEntry 7 }

ipiaIkeActPeerName OBJECT-TYPE
SYNTAX           SnmpAdminString(SIZE(0..32))
MAX-ACCESS       read-create
STATUS           current
DESCRIPTION
This object indicates the peer id name of the IKE peer. This object can be used to look up the peer id value, address, credentials and other values in the ipiaPeerIdentityTable.

::= { ipiaIkeActionEntry 8 }

ipiaIkeActDoActionLogging OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION "ikeDoActionLogging specifies whether or not an audit message should be logged when this ike SA is created."
DEFVAL { false }
 ::= { ipiaIkeActionEntry 9 }

ipiaIkeActDoPacketLogging OBJECT-TYPE
SYNTAX SpdIPPacketLogging
MAX-ACCESS read-create
STATUS current
DESCRIPTION "ikeDoPacketLogging specifies whether or not an audit message should be logged and if there is logging, how many bytes of the packet to place in the notification."
DEFVAL { -1 }
 ::= { ipiaIkeActionEntry 10 }

ipiaIkeActVendorId OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(0..65535))
MAX-ACCESS read-create
STATUS current
DESCRIPTION "Vendor ID Payload. A value of NULL means that Vendor ID payload will be neither generated nor accepted. A non-NULL value means that a Vendor ID payload will be generated (when acting as an initiator) or is expected (when acting as a responder)."
DEFVAL { "" }
 ::= { ipiaIkeActionEntry 11 }

ipiaIkeActLastChanged OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external
means."
::= { ipiaIkeActionEntry 12 }

ipiaIkeActStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaIkeActionEntry 13 }

ipiaIkeActRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object indicates the conceptual status of this row. The value of this object has no effect on whether other objects in this conceptual row can be modified. This object may not be set to destroy if refered to by other rows in other action tables."
::= { ipiaIkeActionEntry 14 }

--
-- IPsec action definition table
--

ipiaIpsecActionTable OBJECT-TYPE
SYNTAX SEQUENCE OF IpiaIpsecActionEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The ipiaIpsecActionTable contains a list of the parameters used for an IKE phase 2 IPsec DOI negotiation."
::= { ipiaConfigObjects 7 }

ipiaIpsecActionEntry OBJECT-TYPE
SYNTAX IpiaIpsecActionEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The ipiaIpsecActionEntry lists the IPsec negotiation attributes."
INDEX { ipiaIpsecActName } ::= { ipiaIpsecActionTable 1 }

IpiaIpsecActionEntry ::= SEQUENCE {
ipiaIpsecActName                          SnmpAdminString,
ipiaIpsecActParametersName                SnmpAdminString,
ipiaIpsecActProposalsName                 SnmpAdminString,
ipiaIpsecActUsePfs                        TruthValue,
ipiaIpsecActVendorId                      OCTET STRING,
ipiaIpsecActGroupId                       IkeGroupDescription,
ipiaIpsecActPeerGatewayIdName             OCTET STRING,
ipiaIpsecActUseIkeGroup                   TruthValue,
ipiaIpsecActGranularity                   INTEGER,
ipiaIpsecActMode                          INTEGER,
ipiaIpsecActDFHandling                    INTEGER,
ipiaIpsecActDoActionLogging               TruthValue,
ipiaIpsecActDoPacketLogging               SpdIPPacketLogging,
ipiaIpsecActLastChanged                   TimeStamp,
ipiaIpsecActStorageType                   StorageType,
ipiaIpsecActRowStatus                     RowStatus
}

ipiaIpsecActName OBJECT-TYPE
SYNTAX     SnmpAdminString (SIZE(1..32))
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION "ipiaIpsecActName is the name of the ipsecAction entry."
 ::= { ipiaIpsecActionEntry 1 }

ipiaIpsecActParametersName OBJECT-TYPE
SYNTAX     SnmpAdminString (SIZE(1..32))
MAX-ACCESS read-create
STATUS     current
DESCRIPTION "This object is used to reference a row in the
ipiaSaNegotiationParametersTable where additional
parameters affecting this action may be found."
 ::= { ipiaIpsecActionEntry 2 }

ipiaIpsecActProposalsName OBJECT-TYPE
SYNTAX     SnmpAdminString (SIZE(1..32))
MAX-ACCESS read-create
STATUS     current
DESCRIPTION
"This object is used to reference one or more rows in the
ipiaIpsecProposalsTable where an ordered list of proposals
affecting this action may be found."
::= { ipiaIpsecActionEntry 3 }

ipiaIpsecActUsePfs OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This MIB object specifies whether or not perfect forward
secrecy should be used when refreshing keys.
A value of true indicates that PFS should be used."
::= { ipiaIpsecActionEntry 4 }

ipiaIpsecActVendorId OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(0..255))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The VendorID property is used to identify vendor-defined
key exchange GroupIDs."
::= { ipiaIpsecActionEntry 5 }

ipiaIpsecActGroupId OBJECT-TYPE
SYNTAX IkeGroupDescription
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies the Diffie-Hellman group to use for
phase 2 when the object ipiaIpsecActUsePfs is true and the
object ipiaIpsecActUseIkeGroup is false. If the GroupID
number is from the vendor-specific range (32768-65535), the
VendorID qualifies the group number."
::= { ipiaIpsecActionEntry 6 }

ipiaIpsecActPeerGatewayIdName OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(0..116))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object indicates the peer id name of the peer
gateway. This object can be used to look up the peer id
value, address and other values in the
ipiaPeerIdentityTable. This object is used when initiating
a tunnel SA. This object is not used for transport SAs.
If no value is set and ipiaIpsecActMode is tunnel, the peer
gateway should be determined from the source or destination
address of the packet."
::= { ipiaIpsecActionEntry 7 }

ipiaIpsecActUseIkeGroup OBJECT-TYPE
SYNTAX       TruthValue
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION
 "This object specifies whether or not to use the same
 GroupId for phase 2 as was used in phase 1. If UsePFS is
 false, this entry should be ignored."
::= { ipiaIpsecActionEntry 8 }

ipiaIpsecActGranularity OBJECT-TYPE
SYNTAX       INTEGER { subnet(1), address(2), protocol(3),
                        port(4) }
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION
 "This object specifies how the proposed selector for the
 security association will be created. The selector is
 created by using the FilterList information. The selector
 can be subnet, address, porotocol, or port."
::= { ipiaIpsecActionEntry 9 }

ipiaIpsecActMode OBJECT-TYPE
SYNTAX       INTEGER { tunnel(1), transport(2) }
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION
 "This object specifies the encapsulation of the IPsec SA
 to be negotiated."
DEFVAL { tunnel }
::= { ipiaIpsecActionEntry 10 }

ipiaIpsecActDFHandling OBJECT-TYPE
SYNTAX       INTEGER { copy(1), set(2), clear(3) }
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION
 "This object specifies the processing of DF bit by the
 negotiated IPsec tunnel.  
 1 - DF bit is copied. 
 2 - DF bit is set. 
 3 - DF bit is cleared."
DEFVAL { copy }
::= { ipiaIpsecActionEntry 11 }
ipiaIpsecActDoActionLogging OBJECT-TYPE
SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"ipiaIpsecActDoActionLogging specifies whether or not an audit message should be logged when this ipsec SA is created."
DEFVAL { false }
::= { ipiaIpsecActionEntry 12 }

ipiaIpsecActDoPacketLogging OBJECT-TYPE
SYNTAX SpdIPPacketLogging
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"ipiaIpsecActDoPacketLogging specifies whether or not an audit message should be logged and if there is logging, how many bytes of the packet to place in the notification."
DEFVAL { -1 }
::= { ipiaIpsecActionEntry 13 }

ipiaIpsecActLastChanged OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaIpsecActionEntry 14 }

ipiaIpsecActStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaIpsecActionEntry 15 }

ipiaIpsecActRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object indicates the conceptual status of this row.

The value of this object has no effect on whether other objects in this conceptual row can be modified.

If active, this object must remain active if it is referenced by a row in another table."

::= { ipiaIpsecActionEntry 16 }

--
-- ipiaSaNegotiationParametersTable
--

-- PROPERTIES MinLifetimeSeconds
-- MinLifetimeKilobytes
-- RefreshThresholdSeconds
-- RefreshThresholdKilobytes
-- IdleDurationSeconds

ipiaSaNegotiationParametersTable OBJECT-TYPE
SYNTAX      SEQUENCE OF IpiaSaNegotiationParametersEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"This table contains reusable parameters that can be pointed to by the ipiaIKEActionTable and ipiaisIpsecActionTable. These parameters are reusable since it is likely an administrator will want to make global policy changes to lifetime parameters that apply to multiple actions. This table allows multiple rows in the other actions tables to reuse global lifetime parameters in this table by repeatedly pointing to a row contained within this table."
::= { ipiaConfigObjects 8 }

ipiaSaNegotiationParametersEntry OBJECT-TYPE
SYNTAX      IpiaSaNegotiationParametersEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"Contains the attributes of one row in the ipiaSaNegotiationParametersTable."
INDEX       { ipiaSaNegParamName }
::= { ipiaSaNegotiationParametersTable 1 }

IpiaSaNegotiationParametersEntry ::= SEQUENCE {
ipiaSaNegParamName                  SnmpAdminString,
ipiaSaNegParamMinLifetimeSecs       Unsigned32,
ipiaSaNegParamMinLifetimeKB         Unsigned32,
**ipiaSaNegParamRefreshThreshSecs**  Unsigned32,
**ipiaSaNegParamRefreshThresholdKB**  Unsigned32,
**ipiaSaNegParamIdleDurationSecs**  Unsigned32,
**ipiaSaNegParamLastChanged**  TimeStamp,
**ipiaSaNegParamStorageType**  StorageType,
**ipiaSaNegParamRowStatus**  RowStatus

**ipiaSaNegParamName** OBJECT-TYPE
SYNTAX          SnmpAdminString (SIZE(1..32))
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
"This object contains the administrative name of this
SaNegotiationParametersEntry.  This row can be referred
to by this name in other policy action tables."
::= { ipiaSaNegotiationParametersEntry 1 }

**ipiaSaNegParamMinLifetimeSecs** OBJECT-TYPE
SYNTAX          Unsigned32
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
"ipiaSaNegParamMinLifetimeSecs specifies the minimum seconds
 lifetime that will be accepted from the peer."
::= { ipiaSaNegotiationParametersEntry 2 }

**ipiaSaNegParamMinLifetimeKB** OBJECT-TYPE
SYNTAX          Unsigned32
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
"ipiaSaNegParamMinLifetimeKB specifies the minimum kilobyte
 lifetime that will be accepted from the peer."
::= { ipiaSaNegotiationParametersEntry 3 }

**ipiaSaNegParamRefreshThreshSecs** OBJECT-TYPE
SYNTAX          Unsigned32 (1..100)
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
"ipiaSaNegParamRefreshThreshSecs specifies what percentage
of the seconds lifetime can expire before IKE should
attempt to renegotiate the IPsec security association.  A
value between 1 and 100 representing a percentage.  A value
of 100 indicates that the IPsec security association should
not be renegotiated until the seconds lifetime has been
completely reached."
::= { ipiaSaNegotiationParametersEntry 4 }

ipiaSaNegParamRefreshThresholdKB OBJECT-TYPE
SYNTAX      Unsigned32 (1..100)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"ipiaSaNegParamRefreshThresholdKB specifies what percentage of the kilobyte lifetime can expire before IKE should attempt to renegotiate the IPsec security association. A value between 1 and 100 representing a percentage. A value of 100 indicates that the IPsec security association should not be renegotiated until the kilobyte lifetime has been reached."
::= { ipiaSaNegotiationParametersEntry 5 }

ipiaSaNegParamIdleDurationSecs OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"ipiaSaNegParamIdleDurationSecs specifies how many seconds a security association may remain idle (i.e., no traffic protected using the security association) before it is deleted. A value of zero indicates that idle detection should not be used for the security association. Any non-zero value indicates the number of seconds the security association may remain unused."
::= { ipiaSaNegotiationParametersEntry 6 }

ipiaSaNegParamLastChanged OBJECT-TYPE
SYNTAX      TimeStamp
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
"The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaSaNegotiationParametersEntry 7 }

ipiaSaNegParamStorageType OBJECT-TYPE
SYNTAX      StorageType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
 ::= { ipiaSaNegotiationParametersEntry 8 }

ipiaSaNegParamRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This object indicates the conceptual status of this row.

The value of this object has no effect on whether other objects in this conceptual row can be modified.

This object may not be set to destroy if referred to by other rows in other action tables."
 ::= { ipiaSaNegotiationParametersEntry 9 }

--
-- ipiaIkeActionProposalsTable proposals contained within a ikeAction
--

ipiaIkeActionProposalsTable OBJECT-TYPE
SYNTAX      SEQUENCE OF IpiaIkeActionProposalsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
 "This table contains a list of all ike proposal names found within a given IKE Action."
 ::= { ipiaConfigObjects 9 }

ipiaIkeActionProposalsEntry OBJECT-TYPE
SYNTAX      IpiaIkeActionProposalsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
 "a row containing one ike proposal reference"
INDEX   { ipiaIkeActName, ipiaIkeActPropPriority }
 ::= { ipiaIkeActionProposalsTable 1 }

IpiaIkeActionProposalsEntry ::= SEQUENCE {
   ipiaIkeActPropPriority Integer32,
ipiaIkeActPropName SnmpAdminString,
ipiaIkeActPropLastChanged TimeStamp,
ipiaIkeActPropStorageType StorageType,
ipiaIkeActPropRowStatus RowStatus
}

ipiaIkeActPropPriority OBJECT-TYPE
SYNTAX       Integer32 (0..65535)
MAX-ACCESS   not-accessible
STATUS       current
DESCRIPTION  "The numeric priority of a given contained proposal inside
              an ike Action. This index should be used to order the
              proposals in an IKE Phase I negotiation, lowest value
              first."
::= { ipiaIkeActionProposalsEntry 1 }

ipiaIkeActPropName OBJECT-TYPE
SYNTAX       SnmpAdminString (SIZE(1..32))
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION  "The administratively assigned name that can be used to
              reference a set of values contained within the
              ipiaIkeProposalTable."
::= { ipiaIkeActionProposalsEntry 2 }

ipiaIkeActPropLastChanged OBJECT-TYPE
SYNTAX       TimeStamp
MAX-ACCESS   read-only
STATUS       current
DESCRIPTION  "The value of sysUpTime when this row was last modified or
              created either through SNMP SETs or by some other external
              means."
::= { ipiaIkeActionProposalsEntry 3 }

ipiaIkeActPropStorageType OBJECT-TYPE
SYNTAX       StorageType
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION  "The storage type for this row. Rows in this table which
              were created through an external process may have a storage
              type of readOnly or permanent.
DEFVAL { nonVolatile }
::= { ipiaIkeActionProposalsEntry 4 }

ipiaIkeActPropRowStatus OBJECT-TYPE
SYNTAX       RowStatus
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION  "This object indicates the conceptual status of this row.
The value of this object has no effect on whether other objects in this conceptual row can be modified.

::= { ipiaIkeActionProposalsEntry 5 }

--
IKE proposal definition table
--

ipiaIkeProposalTable OBJECT-TYPE
SYNTAX  SEQUENCE OF IpiaIkeProposalEntry
MAX-ACCESS not-accessible
STATUS    current
DESCRIPTION  "This table contains a list of IKE proposals which are used in an IKE negotiation."
::= { ipiaConfigObjects 10 }

ipiaIkeProposalEntry OBJECT-TYPE
SYNTAX IpiaIkeProposalEntry
MAX-ACCESS not-accessible
STATUS    current
DESCRIPTION  "One IKE proposal entry."
INDEX    { ipiaIkeActPropName }
::= { ipiaIkeProposalTable 1 }

IpiaIkeProposalEntry ::= SEQUENCE {
  ipiaIkePropLifetimeDerivedKeys     Unsigned32,
  ipiaIkePropCipherAlgorithm         IkeEncryptionAlgorithm,
  ipiaIkePropCipherKeyLength         Unsigned32,
  ipiaIkePropCipherKeyRounds         Unsigned32,
  ipiaIkePropHashAlgorithm           IkeHashAlgorithm,
  ipiaIkePropPrfAlgorithm            INTEGER,
  ipiaIkePropVendorId                OCTET STRING,
  ipiaIkePropDhGroup                 IkeGroupDescription,
  ipiaIkePropAuthenticationMethod    IkeAuthMethod,
  ipiaIkePropMaxLifetimeSecs         Unsigned32,
  ipiaIkePropMaxLifetimeKB           Unsigned32,
  ipiaIkePropLastChanged             TimeStamp,
  ipiaIkePropStorageType             StorageType,
  ipiaIkePropRowStatus               RowStatus
}

ipiaIkePropLifetimeDerivedKeys OBJECT-TYPE
SYNTAX    Unsigned32
MAX-ACCESS read-create
STATUS    current
DESCRIPTION

"ipiaIkePropLifetimeDerivedKeys specifies the number of times that a phase 1 key will be used to derive a phase 2 key before the phase 1 security association needs renegotiated."
::= { ipiaIkeProposalEntry 1 }

ipiaIkePropCipherAlgorithm OBJECT-TYPE
SYNTAX      IkeEncryptionAlgorithm
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"ipiaIkePropCipherAlgorithm specifies the proposed phase 1 security association encryption algorithm."
::= { ipiaIkeProposalEntry 2 }

ipiaIkePropCipherKeyLength OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This object specifies, in bits, the key length for the cipher algorithm used in IKE Phase 1 negotiation."
::= { ipiaIkeProposalEntry 3 }

ipiaIkePropCipherKeyRounds OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"This object specifies the number of key rounds for the cipher algorithm used in IKE Phase 1 negotiation."
::= { ipiaIkeProposalEntry 4 }

ipiaIkePropHashAlgorithm OBJECT-TYPE
SYNTAX      IkeHashAlgorithm
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"ipiaIkePropHashAlgorithm specifies the proposed phase 1 security association hash algorithm."
::= { ipiaIkeProposalEntry 5 }

ipiaIkePropPrfAlgorithm OBJECT-TYPE
SYNTAX      INTEGER { reserved(0) }
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
"ipPRFAlgorithm specifies the proposed phase 1 security association pseudo-random function.

Note: currently no prf algorithms are defined."
 ::= { ipiaIkeProposalEntry 6 }

ipiaIkePropVendorId OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(0..255))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The VendorID property is used to identify vendor-defined key exchange GroupIDs."
 ::= { ipiaIkeProposalEntry 7 }

ipiaIkePropDhGroup OBJECT-TYPE
SYNTAX IkeGroupDescription
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies the proposed phase 1 security association Diffie-Hellman group"
 ::= { ipiaIkeProposalEntry 8 }

ipiaIkePropAuthenticationMethod OBJECT-TYPE
SYNTAX IkeAuthMethod
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This object specifies the proposed authentication method for the phase 1 security association."
 ::= { ipiaIkeProposalEntry 9 }

ipiaIkePropMaxLifetimeSecs OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"ipiaIkePropMaxLifetimeSecs specifies the maximum amount of time to propose a security association remain valid.

A value of 0 indicates that the default lifetime of 8 hours should be used."
 ::= { ipiaIkeProposalEntry 10 }

ipiaIkePropMaxLifetimeKB OBJECT-TYPE
SYNTAX Unsigned32
MAX-ACCESS read-create
ipiaIkePropMaxLifetimeKB specifies the maximum kilobyte lifetime to propose a security association remain valid.

::= { ipiaIkeProposalEntry 11 }

The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means.

::= { ipiaIkeProposalEntry 12 }

The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent.

DEFVAL { nonVolatile }

::= { ipiaIkeProposalEntry 13 }

This object indicates the conceptual status of this row. The value of this object has no effect on whether other objects in this conceptual row can be modified.

::= { ipiaIkeProposalEntry 14 }

ipiaIpsecProposalsTable OBJECT-TYPE
SYNTAX SEQUENCE OF IpiaIpsecProposalsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This table lists one or more IPsec proposals for
IPsec actions."
::= { ipiaConfigObjects 11 }

ipiaIpsecProposalsEntry OBJECT-TYPE
SYNTAX      IpiaIpsecProposalsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"An entry containing (possibly a portion of) a proposal."
INDEX       { ipiaIpsecPropName, ipiaIpsecPropPriority,
ipiaIpsecPropProtocolId }
::= { ipiaIpsecProposalsTable 1 }

IpiaIpsecProposalsEntry ::= SEQUENCE {
ipiaIpsecPropName                   SnmpAdminString,
ipiaIpsecPropPriority               Integer32,
ipiaIpsecPropProtocolId             IpsecDoiSecProtocolId,
ipiaIpsecPropTransformsName         SnmpAdminString,
ipiaIpsecPropLastChanged            TimeStamp,
ipiaIpsecPropStorageType            StorageType,
ipiaIpsecPropRowStatus              RowStatus
}

ipiaIpsecPropName OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..32))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The name of this proposal."
::= { ipiaIpsecProposalsEntry 1 }

ipiaIpsecPropPriority OBJECT-TYPE
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The priority level (AKA sequence level) of this proposal.
A lower number indicates a higher precedence."
::= { ipiaIpsecProposalsEntry 2 }

ipiaIpsecPropProtocolId OBJECT-TYPE
SYNTAX      IpsecDoiSecProtocolId
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
"The protocol Id for the transforms for this proposal. The
protoIsakmp(1) value is not valid for this object. This object, along with the ipiaIpsecPropTransformsName, is the index into the ipiaIpsecTransformsTable.

::= { ipiaIpsecProposalsEntry 3 }

ipiaIpsecPropTransformsName OBJECT-TYPE
SYNTAX      SnmpAdminString (SIZE(1..32))
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "The name of the transform or group of transforms for this protocol. This object, along with the ipiaIpsecPropProtocolId, is the index into the ipiaIpsecTransformsTable."
::= { ipiaIpsecProposalsEntry 4 }

ipiaIpsecPropLastChanged OBJECT-TYPE
SYNTAX      TimeStamp
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
 "The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaIpsecProposalsEntry 5 }

ipiaIpsecPropStorageType OBJECT-TYPE
SYNTAX      StorageType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaIpsecProposalsEntry 6 }

ipiaIpsecPropRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This object indicates the conceptual status of this row. The value of this object has no effect on whether other objects in this conceptual row can be modified. This row may not be set to active until the corresponding
row in the ipiaIpsecTransformsTable exists and is active.
 ::= { ipiaIpsecProposalsEntry 7 }

--
-- ipiaIpsecTransformsTable
--

ipiaIpsecTransformsTable OBJECT-TYPE
SYNTAX      SEQUENCE OF IpiaIpsecTransformsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  
"This table lists the IPsec proposals contained within a
given IPsec action and the transforms within each of those
proposals. These proposals and transforms can then be used
to create phase 2 negotiation proposals."
 ::= { ipiaConfigObjects 12 }

ipiaIpsecTransformsEntry OBJECT-TYPE
SYNTAX      IpiaIpsecTransformsEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  
"An entry containing the information on an IPsec transform."
INDEX       { ipiaIpsecTranType, ipiaIpsecTranName,
ipiaIpsecTranPriority }
 ::= { ipiaIpsecTransformsTable 1 }

IpiaIpsecTransformsEntry ::= SEQUENCE {
  ipiaIpsecTranType                        IpsecDoiSecProtocolId,
  ipiaIpsecTranName                        SnmpAdminString,
  ipiaIpsecTranPriority                    Integer32,
  ipiaIpsecTranTransformName               SnmpAdminString,
  ipiaIpsecTranLastChanged                 TimeStamp,
  ipiaIpsecTranStorageType                 StorageType,
  ipiaIpsecTranRowStatus                   RowStatus
}

ipiaIpsecTranType OBJECT-TYPE
SYNTAX      IpsecDoiSecProtocolId
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION  
"The protocol type for this transform. The protoIsakmp(1)
value is not valid for this object."
 ::= { ipiaIpsecTransformsEntry 1 }
ipiaIpsecTranName OBJECT-TYPE
SYNTAX       SnmpAdminString (SIZE(1..32))
MAX-ACCESS   not-accessible
STATUS       current
DESCRIPTION  
"The name for this transform or group of transforms."
::= { ipiaIpsecTransformsEntry 2 }

ipiaIpsecTranPriority OBJECT-TYPE
SYNTAX       Integer32 (0..65535)
MAX-ACCESS   not-accessible
STATUS       current
DESCRIPTION  
"The priority level (AKA sequence level) of the this transform within the group of transforms. This indicates the preference for which algorithms are requested when the list of transforms are sent to the remote host. A lower number indicates a higher precedence."
::= { ipiaIpsecTransformsEntry 3 }

ipiaIpsecTranTransformName OBJECT-TYPE
SYNTAX       SnmpAdminString (SIZE(1..32))
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION  
"The name for the given transform. Depending on the value of ipiaIpsecTranType, this value should be used to lookup the transform’s specific parameters in the ipiaAhTransformTable, the ipiaEspTransformTable or the ipiaIpcompTransformTable."
::= { ipiaIpsecTransformsEntry 4 }

ipiaIpsecTranLastChanged OBJECT-TYPE
SYNTAX       TimeStamp
MAX-ACCESS   read-only
STATUS       current
DESCRIPTION  
"The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaIpsecTransformsEntry 5 }

ipiaIpsecTranStorageType OBJECT-TYPE
SYNTAX       StorageType
MAX-ACCESS   read-create
STATUS       current
DESCRIPTION  
"The storage type for this row. Rows in this table which
were created through an external process may have a storage type of readOnly or permanent.
DEFVAL { nonVolatile }
::= { ipiaIpsecTransformsEntry 6 }

ipiaIpsecTranRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This object indicates the conceptual status of this row.
The value of this object has no effect on whether other objects in this conceptual row can be modified.
This row may not be set to active until the corresponding row in the ipiaAhTransformTable, ipiaEspTransformTable or the ipiaIpcompTransformTable exists."
::= { ipiaIpsecTransformsEntry 7 }

--
-- IKE identity definition table
--

ipiaIkeIdentityTable OBJECT-TYPE
SYNTAX SEQUENCE OF IpiaIkeIdentityEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "IKEIdentity is used to represent the identities that may be used for an IPProtocolEndpoint (or collection of IPProtocolEndpoints) to identify itself in IKE phase 1 negotiations. The column ikeIdentityName in an ipiaIkeActionEntry together with the spdEndGroupIdentType and the spdEndGroupAddress in the PolicyEndpointToGroupTable specifies the unique identity to use in a negotiation exchange."
::= { ipiaConfigObjects 13 }

ipiaIkeIdentityEntry OBJECT-TYPE
SYNTAX IpiaIkeIdentityEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION "ikeIdentity lists the attributes of an IKE identity."
INDEX { spdEndGroupIdentType, spdEndGroupAddress, ipiaIkeActIdentityType, ipiaIkeActIdentityContext }
::= { ipiaIkeIdentityTable 1 }

IpiaIkeIdentityEntry ::= SEQUENCE {
ipiaIkeIdCredentialName                 SnmpAdminString,
ipiaIkeIdLastChanged                    TimeStamp,
ipiaIkeIdStorageType                    StorageType,
ipiaIkeIdRowStatus                      RowStatus
}

ipiaIkeIdCredentialName OBJECT-TYPE
SYNTAX     SnmpAdminString (SIZE(0..32))
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
"This value is used as an index into the ipiaCredentialTable to look up the actual credential value and other credential information.

For ID’s without associated credential information, this value is left blank.

For ID’s that are address types, this value may be left blank and the associated IPProtocolEndpoint or appropriate member of the Collection of endpoints is used."
::= { ipiaIkeIdentityEntry 1 }

ipiaIkeIdLastChanged OBJECT-TYPE
SYNTAX     TimeStamp
MAX-ACCESS read-only
STATUS      current
DESCRIPTION
"The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaIkeIdentityEntry 2 }

ipiaIkeIdStorageType OBJECT-TYPE
SYNTAX     StorageType
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
"The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaIkeIdentityEntry 3 }

ipiaIkeIdRowStatus OBJECT-TYPE
SYNTAX     RowStatus
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
 "This object indicates the conceptual status of this row.

The value of this object has no effect on whether other objects in this conceptual row can be modified.

If active, this object must remain active if it is referenced by a row in another table."
::= { ipiaIkeIdentityEntry 4 }

--
-- autostart IKE Table

ipiaAutostartIkeTable OBJECT-TYPE
SYNTAX     SEQUENCE OF IpiaAutostartIkeEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
 "The parameters in the autostart IKE Table are used to automatically initiate IKE phases I and II (i.e. IPsec) negotiations on startup. It also will initiate IKE phase I and II negotiations for a row at the time of that row’s creation"
::= { ipiaConfigObjects 14 }

IpiaAutostartIkeEntry OBJECT-TYPE
SYNTAX     IpiaAutostartIkeEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
 "autostart ike provides the set of parameters to automatically start IKE and IPsec SA’s."
INDEX { ipiaAutoIkePriority }
::= { ipiaAutostartIkeTable 1 }

IpiaAutostartIkeEntry ::= SEQUENCE {
     ipiaAutoIkePriority                     Integer32,
     ipiaAutoIkeAction                       VariablePointer,
     ipiaAutoIkeAddressType                  InetAddressType,
     ipiaAutoIkeSourceAddress                InetAddress,
     ipiaAutoIkeSourcePort                   InetPortNumber,
     ipiaAutoIkeDestAddress                  InetAddress,
     ipiaAutoIkeDestPort                     InetPortNumber,
     ipiaAutoIkeProtocol                     Unsigned32,
The MIB module "IPSP IKE Action MIB" contains the following definitions:

```plaintext
ipiaAutoIkePriority  OBJECT-TYPE
SYNTAX       Integer32 (0..65535)
MAX-ACCESS   not-accessible
STATUS       current
DESCRIPTION
   "ipiaAutoIkePriority is an index into the autostartIkeAction
table and can be used to order the autostart IKE actions."
 ::= { ipiaAutostartIkeEntry 1 }

ipiaAutoIkeAction   OBJECT-TYPE
SYNTAX      VariablePointer
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
   "This pointer is used to point to the action or compound
action that should be initiated by this row."
 ::= { ipiaAutostartIkeEntry 2 }

ipiaAutoIkeAddressType OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
   "The property ipiaAutoIkeAddressType specifies the format of
the autoIke source and destination Address values.
Values of unknown, ipv4z, ipv6z and dns are not legal
values for this object."
 ::= { ipiaAutostartIkeEntry 3 }

ipiaAutoIkeSourceAddress OBJECT-TYPE
SYNTAX           InetAddress
MAX-ACCESS       read-create
STATUS           current
DESCRIPTION
   "The property autoIkeSourceAddress specifies Source IP
address for autostarting IKE SA’s, formatted according to
the appropriate convention as defined in the
ipiaAutoIkeAddressType property."
 ::= { ipiaAutostartIkeEntry 4 }
```

The MIB module also includes other definitions such as:

- `ipiaAutoIkeLastChanged` as `TimeStamp`
- `ipiaAutoIkeStorageType` as `StorageType`
- `ipiaAutoIkeRowStatus` as `RowStatus`
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The property ipiaAutoIkeSourcePort specifies the port number for the source port for autostarting IKE SA’s.

The value of 0 for this object is illegal."
::= { ipiaAutostartIkeEntry 5 }

ipiaAutoIkeDestAddress OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The property ipiaAutoIkeDestAddress specifies the Destination IP address for autostarting IKE SA’s, formatted according to the appropriate convention as defined in the ipiaAutoIkeAddressType property."
::= { ipiaAutostartIkeEntry 6 }

ipiaAutoIkeDestPort OBJECT-TYPE
SYNTAX InetPortNumber
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The property ipiaAutoIkeDestPort specifies the port number for the destination port for autostarting IKE SA’s.

The value of 0 for this object is illegal."
::= { ipiaAutostartIkeEntry 7 }

ipiaAutoIkeProtocol OBJECT-TYPE
SYNTAX Unsigned32 (0..255)
MAX-ACCESS read-create
STATUS current
DESCRIPTION "The property Protocol specifies the protocol number used in comparing with policy filter entries and used in any phase 2 negotiations."
::= { ipiaAutostartIkeEntry 8 }

ipiaAutoIkeLastChanged OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION "The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external
::= { ipiaAutostartIkeEntry 9 }

ipiaAutoIkeStorageType OBJECT-TYPE
SYNTAX    StorageType
MAX-ACCESS read-create
STATUS     current
DESCRIPTION "The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaAutostartIkeEntry 10 }

ipiaAutoIkeRowStatus OBJECT-TYPE
SYNTAX    RowStatus
MAX-ACCESS read-create
STATUS     current
DESCRIPTION "This object indicates the conceptual status of this row. The value of this object has no effect on whether other objects in this conceptual row can be modified."
::= { ipiaAutostartIkeEntry 11 }

-- CA Table
--

ipiaIpsecCredMngServiceTable OBJECT-TYPE
SYNTAX    SEQUENCE OF IpiaIpsecCredMngServiceEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION "A table of Credential Management Service values. This table is usually used for credential/certificate values that are used with a management service (e.g. Certificate Authorities)."
::= { ipiaConfigObjects 15 }

ipiaIpsecCredMngServiceEntry OBJECT-TYPE
SYNTAX    IpiaIpsecCredMngServiceEntry
MAX-ACCESS not-accessible
STATUS     current
DESCRIPTION "A row in the ipiaIpsecCredMngServiceTable."
INDEX { ipiaIcmsName }
::= { ipiaIpsecCredMngServiceTable 1 }

IpiaIpsecCredMngServiceEntry ::= SEQUENCE {
ipiaIcmsName                SnmpAdminString,
ipiaIcmsDistinguishedName   OCTET STRING,
ipiaIcmsPolicyStatement     OCTET STRING,
ipiaIcmsMaxChainLength      Integer32,
ipiaIcmsCredentialName      SnmpAdminString,
ipiaIcmsLastChanged         TimeStamp,
ipiaIcmsStorageType         StorageType,
ipiaIcmsRowStatus           RowStatus
}

ipiaIcmsName OBJECT-TYPE
SYNTAX      SnmpAdminString(SIZE(1..32))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
 "This is an administratively assigned string used to index this table."
 ::= { ipiaIpsecCredMngServiceEntry 1 }

ipiaIcmsDistinguishedName OBJECT-TYPE
SYNTAX      OCTET STRING (SIZE(1..256))
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This value represents the Distinguished Name of the Credential Management Service."
 ::= { ipiaIpsecCredMngServiceEntry 2 }

ipiaIcmsPolicyStatement OBJECT-TYPE
SYNTAX      OCTET STRING (SIZE(0..1024))
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
 "This Value represents the Credential Management Service Policy Statement, or a reference describing how to obtain it (e.g., a URL). If one doesn’t exist, this value can be left blank"
 ::= { ipiaIpsecCredMngServiceEntry 3 }

ipiaIcmsMaxChainLength OBJECT-TYPE
SYNTAX      Integer32 (0..255)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION


"This value is the maximum length of the chain allowable from the Credential Management Service to the credential in question."
DEFVAL { 0 }
::= { ipiaIpsecCredMngServiceEntry 4}

ipiaIcmsCredentialName OBJECT-TYPE
SYNTAX         SnmpAdminString (SIZE(0..32))
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION    "This value is used as an index into the ipiaCredentialTable to look up the actual credential value."
::= { ipiaIpsecCredMngServiceEntry 5 }

ipiaIcmsLastChanged OBJECT-TYPE
SYNTAX         TimeStamp
MAX-ACCESS     read-only
STATUS         current
DESCRIPTION    "The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaIpsecCredMngServiceEntry 6 }

ipiaIcmsStorageType OBJECT-TYPE
SYNTAX         StorageType
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION    "The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaIpsecCredMngServiceEntry 7 }

ipiaIcmsRowStatus OBJECT-TYPE
SYNTAX         RowStatus
MAX-ACCESS     read-create
STATUS         current
DESCRIPTION    "This object indicates the conceptual status of this row.

The value of this object has no effect on whether other objects in this conceptual row can be modified.

If active, this object must remain active if it is referenced by a row in another table."
::= { ipiaIpsecCredMngServiceEntry 8 }

--
-- CRL Table
--

ipiaCredMngCRLTable OBJECT-TYPE
SYNTAX      SEQUENCE OF IpiaCredMngCRLEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "A table of the Credential Revocation Lists (CRL) for
credential management services."
::= { ipiaConfigObjects 16 }

ipiaCredMngCRLEntry OBJECT-TYPE
SYNTAX      IpiaCredMngCRLEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "A row in the ipiaCredMngCRLTable."
INDEX   { ipiaIcmsName , ipiaCmcCRLName }
::= { ipiaCredMngCRLTable 1 }

IpiaCredMngCRLEntry ::= SEQUENCE {
    ipiaCmcCRLName             SnmpAdminString,
    ipiaCmcDistributionPoint   OCTET STRING,
    ipiaCmcThisUpdate          OCTET STRING,
    ipiaCmcNextUpdate          OCTET STRING,
    ipiaCmcLastChanged         TimeStamp,
    ipiaCmcStorageType         StorageType,
    ipiaCmcRowStatus           RowStatus
}

ipiaCmcCRLName OBJECT-TYPE
SYNTAX      SnmpAdminString(SIZE(1..32))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
  "This is an administratively assigned string used to index
  this table. It represents a CRL for a given CA from a given
  distribution point."
::= { ipiaCredMngCRLEntry 1 }

ipiaCmcDistributionPoint OBJECT-TYPE
SYNTAX      OCTET STRING (SIZE(0..256))
MAX-ACCESS  read-create
STATUS current
DESCRIPTION
"This Value represents a Distribution Point for a Credential
Revocation List. It can be relative to the Credential
Management Service or a full name (URL, e-mail, etc...)."
::= { ipiaCredMngCRLEntry 2 }

<table>
<thead>
<tr>
<th>ipiaCmcThisUpdate OBJECT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX OCTET STRING (SIZE(0..32))</td>
</tr>
<tr>
<td>MAX-ACCESS read-create</td>
</tr>
<tr>
<td>STATUS current</td>
</tr>
<tr>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>&quot;This value is the issue date of this CRL. This should be in utctime or generalizedtime.&quot;</td>
</tr>
<tr>
<td>::= { ipiaCredMngCRLEntry 3 }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ipiaCmcNextUpdate OBJECT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX OCTET STRING (SIZE(0..32))</td>
</tr>
<tr>
<td>MAX-ACCESS read-create</td>
</tr>
<tr>
<td>STATUS current</td>
</tr>
<tr>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>&quot;This value indicates the date the next version of this CRL will be issued. This should be in utctime or generalizedtime.&quot;</td>
</tr>
<tr>
<td>::= { ipiaCredMngCRLEntry 4 }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ipiaCmcLastChanged OBJECT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX TimeStamp</td>
</tr>
<tr>
<td>MAX-ACCESS read-only</td>
</tr>
<tr>
<td>STATUS current</td>
</tr>
<tr>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>&quot;The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means.&quot;</td>
</tr>
<tr>
<td>::= { ipiaCredMngCRLEntry 5 }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ipiaCmcStorageType OBJECT-TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTAX StorageType</td>
</tr>
<tr>
<td>MAX-ACCESS read-create</td>
</tr>
<tr>
<td>STATUS current</td>
</tr>
<tr>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>&quot;The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent.&quot;</td>
</tr>
<tr>
<td>DEFVAL { nonVolatile }</td>
</tr>
<tr>
<td>::= { ipiaCredMngCRLEntry 6 }</td>
</tr>
</tbody>
</table>

| ipiaCmcRowStatus OBJECT-TYPE |
SYNTAX     RowStatus
MAX-ACCESS read-create
STATUS      current
DESCRIPTION
"This object indicates the conceptual status of this row.

The value of this object has no effect on whether other objects in this conceptual row can be modified.

If active, this object must remain active if it is referenced by a row in another table."
::= { ipiaCredMngCRLEntry 7 }

--
-- Revoked Certificate Table
--
ipiaRevokedCertificateTable OBJECT-TYPE
SYNTAX     SEQUENCE OF IpiaRevokedCertificateEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"A table of Credentials revoked by credential managment services. That is, this table is a table of Certificates that are on CRL's, Credential Revocation Lists."
::= { ipiaConfigObjects 17 }

IpiaRevokedCertificateEntry OBJECT-TYPE
SYNTAX     IpiaRevokedCertificateEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
"A row in the ipiaRevokedCertificateTable."
INDEX     { ipiaCmcCRLName, ipiaRctCertSerialNumber }
::= { ipiaRevokedCertificateTable 1 }

IpiaRevokedCertificateEntry ::= SEQUENCE {
   ipiaRctCertSerialNumber    Unsigned32,
   ipiaRctRevokedDate         OCTET STRING,
   ipiaRctRevokedReason       INTEGER,
   ipiaRctLastChanged         TimeStamp,
   ipiaRctStorageType         StorageType,
   ipiaRctRowStatus           RowStatus
}

ipiaRctCertSerialNumber OBJECT-TYPE
SYNTAX     Unsigned32 (0..4294967295)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"This value is the serial number of the revoked certificate."
::= { ipiaRevokedCertificateEntry 1 }

ipiaRctRevokedDate OBJECT-TYPE
SYNTAX OCTET STRING (SIZE(0..32))
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This value is the revocation date of the certificate. This should be in utctime or generaltime."
::= { ipiaRevokedCertificateEntry 2 }

ipiaRctRevokedReason OBJECT-TYPE
SYNTAX INTEGER { reserved(0), unspecified(1), keyCompromise(2), cACompromise(3), affiliationChanged(4), superseded(5), cessationOfOperation(6), certificateHold(7), removeFromCRL(8) }
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"This value is the reason this certificate was revoked."
DEFVAL { unspecified }
::= { ipiaRevokedCertificateEntry 3 }

ipiaRctLastChanged OBJECT-TYPE
SYNTAX TimeStamp
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The value of sysUpTime when this row was last modified or created either through SNMP SETs or by some other external means."
::= { ipiaRevokedCertificateEntry 4 }

ipiaRctStorageType OBJECT-TYPE
SYNTAX StorageType
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The storage type for this row. Rows in this table which were created through an external process may have a storage type of readOnly or permanent."
DEFVAL { nonVolatile }
::= { ipiaRevokedCertificateEntry 5 }
ipiaRctRowStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current
DESCRIPTION "This object indicates the conceptual status of this row.

The value of this object has no effect on whether other objects in this conceptual row can be modified.

If active, this object must remain active if it is referenced by a row in another table."
 ::= { ipiaRevokedCertificateEntry 6 }

--
-- Notification objects information
--

ipiaNotificationVariables OBJECT IDENTIFIER ::= { ipiaNotificationObjects 1 }

ipiaNotifications OBJECT IDENTIFIER ::= { ipiaNotificationObjects 0 }

--
-- Conformance information
--

ipiaCompliances OBJECT IDENTIFIER ::= { ipiaConformanceObjects 1 }

ipiaGroups OBJECT IDENTIFIER ::= { ipiaConformanceObjects 2 }

--
-- Compliance statements
--
"The compliance statement for SNMP entities that include an
IPsec MIB implementation and supports IKE actions.

MODULE -- This Module
MANDATORY-GROUPS { ipiaIpsecGroup, ipiaIkeGroup,
ipiaStaticActionGroup, ipsaSharedGroup }

OBJECT     ipiaIkeActRowStatus
SYNTAX     RowStatus {
             active(1), createAndGo(4), destroy(6)
}
DESCRIPTION
"Support of the values notInService(2), notReady(3),
and createAndWait(5) is not required."

OBJECT     ipiaIkeActLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object is optional so as not to impose an undue
burden on resource-constrained devices."

OBJECT     ipiaIkeActPropRowStatus
SYNTAX     RowStatus {
             active(1), createAndGo(4), destroy(6)
}
DESCRIPTION
"Support of the values notInService(2), notReady(3),
and createAndWait(5) is not required."

OBJECT     ipiaIkeActPropLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object is optional so as not to impose an undue
burden on resource-constrained devices."

OBJECT     ipiaIkePropRowStatus
SYNTAX     RowStatus {
             active(1), createAndGo(4), destroy(6)
}
DESCRIPTION
"Support of the values notInService(2), notReady(3),
and createAndWait(5) is not required."

OBJECT     ipiaIkePropLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object is optional so as not to impose an undue
burden on resource-constrained devices."

OBJECT     ipiaIpsecActRowStatus
SYNTAX     RowStatus { 
            active(1), createAndGo(4), destroy(6) 
         } 
DESCRIPTION
"Support of the values notInService(2), notReady(3), 
and createAndWait(5) is not required."

OBJECT      ipiaIpsecActLastChanged 
MIN-ACCESS  not-accessible 
DESCRIPTION
"This object is optional so as not to impose an undue 
burden on resource-constrained devices."

SYNTAX      RowStatus { 
            active(1), createAndGo(4), destroy(6) 
         } 
DESCRIPTION
"Support of the values notInService(2), notReady(3), 
and createAndWait(5) is not required."

OBJECT      ipiaIpsecPropRowStatus 
SYNTAX      RowStatus { 
            active(1), createAndGo(4), destroy(6) 
         } 
DESCRIPTION
"Support of the values notInService(2), notReady(3), 
and createAndWait(5) is not required."

OBJECT      ipiaIpsecPropLastChanged 
MIN-ACCESS  not-accessible 
DESCRIPTION
"This object is optional so as not to impose an undue 
burden on resource-constrained devices."

SYNTAX      RowStatus { 
            active(1), createAndGo(4), destroy(6) 
         } 
DESCRIPTION
"Support of the values notInService(2), notReady(3), 
and createAndWait(5) is not required."

OBJECT      ipiaIpsecTranRowStatus 
MIN-ACCESS  not-accessible 
DESCRIPTION
"This object is optional so as not to impose an undue 
burden on resource-constrained devices."

OBJECT      ipiaIpsecTranLastChanged 
MIN-ACCESS  not-accessible 
DESCRIPTION
"This object is optional so as not to impose an undue 
burden on resource-constrained devices."

SYNTAX      RowStatus { 
            active(1), createAndGo(4), destroy(6) 
         } 
DESCRIPTION
"Support of the values notInService(2), notReady(3), 
and createAndWait(5) is not required."

OBJECT      ipiaSaNegParamRowStatus 
MIN-ACCESS  not-accessible 
DESCRIPTION
"This object is optional so as not to impose an undue 
burden on resource-constrained devices."

SYNTAX      RowStatus { 
            active(1), createAndGo(4), destroy(6) 
         } 
DESCRIPTION
"Support of the values notInService(2), notReady(3), 
and createAndWait(5) is not required."
OBJECT ipiaSaNegParamLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object is optional so as not to impose an undue burden on resource-constrained devices."

OBJECT ipiaIkeIdRowStatus
SYNTAX RowStatus {
   active(1), createAndGo(4), destroy(6)
}
DESCRIPTION
"Support of the values notInService(2), notReady(3), and createAndWait(5) is not required."

OBJECT ipiaIkeIdLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object is optional so as not to impose an undue burden on resource-constrained devices."

OBJECT ipiaAutoIkeAddressType
SYNTAX InetAddressType {
   ipv4(1), ipv6(2)
}
DESCRIPTION
"Only the ipv4 and ipv6 values make sense for this object."

OBJECT ipiaAutoIkeRowStatus
SYNTAX RowStatus {
   active(1), createAndGo(4), destroy(6)
}
DESCRIPTION
"Support of the values notInService(2), notReady(3), and createAndWait(5) is not required."

OBJECT ipiaAutoIkeLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object is optional so as not to impose an undue burden on resource-constrained devices."

OBJECT ipiaCmcDistributionPoint
MIN-ACCESS read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT ipiaCmcThisUpdate
MIN-ACCESS  read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT      ipiaCmcNextUpdate
MIN-ACCESS  read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT      ipiaCmcLastChanged
MIN-ACCESS  not-accessible
DESCRIPTION
"This object not required for compliance."

OBJECT      ipiaCmcStorageType
MIN-ACCESS  read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT      ipiaCmcRowStatus
SYNTAX      RowStatus { active(1), createAndGo(4), destroy(6) }
MIN-ACCESS  read-only
DESCRIPTION
"Support of the values notInService(2), notReady(3),
and createAndWait(5) is not required. Only read-only
access is required for compliance."

OBJECT      ipiaRctRevokedDate
MIN-ACCESS  read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT      ipiaRctRevokedReason
MIN-ACCESS  read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT      ipiaRctLastChanged
MIN-ACCESS  not-accessible
DESCRIPTION
"This object not required for compliance."

OBJECT      ipiaRctStorageType
MIN-ACCESS  read-only
DESCRIPTION
"Only read-only access is required for compliance."
OBJECT ipiaRctRowStatus
SYNTAX RowStatus {
    active(1), createAndGo(4), destroy(6)
}
MIN-ACCESS read-only
DESCRIPTION
"Support of the values notInService(2), notReady(3),
and createAndWait(5) is not required. Only read-only
access is required for compliance."

OBJECT ipiaIcmsDistinguishedName
MIN-ACCESS read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT ipiaIcmsPolicyStatement
MIN-ACCESS read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT ipiaIcmsMaxChainLength
MIN-ACCESS read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT ipiaIcmsCredentialName
MIN-ACCESS read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT ipiaIcmsLastChanged
MIN-ACCESS not-accessible
DESCRIPTION
"This object not required for compliance."

OBJECT ipiaIcmsStorageType
MIN-ACCESS read-only
DESCRIPTION
"Only read-only access is required for compliance."

OBJECT ipiaIcmsRowStatus
SYNTAX RowStatus {
    active(1), createAndGo(4), destroy(6)
}
MIN-ACCESS read-only
DESCRIPTION
"Support of the values notInService(2), notReady(3),
and createAndWait(5) is not required. Only read-only
access is required for compliance."

::= { ipiaCompliances 1 }

ipiaRuleFilterCompliance MODULE-COMPLIANCE
  STATUS      current
  DESCRIPTION
    "The compliance statement for SNMP entities that include an
    IKEACTION MIB implementation with IKE filters support."

GROUP ipiaPeerIdFilterGroup
  DESCRIPTION
    "This group is mandatory for IPsec Policy
    implementations which support Peer Identity filters."

OBJECT      ipiaPeerIdFiltRowStatus
  SYNTAX      RowStatus { active(1), createAndGo(4), destroy(6) }
  DESCRIPTION
    "Support of the values notInService(2), notReady(3),
    and createAndWait(5) is not required."

OBJECT      ipiaPeerIdFiltLastChanged
  MIN-ACCESS  not-accessible
  DESCRIPTION
    "This object not required for compliance."

GROUP ipiaCredentialFilterGroup
  DESCRIPTION
    "This group is mandatory for IPsec Policy
    implementations which support IKE Credential filters."

OBJECT      ipiaCredFiltRowStatus
  SYNTAX      RowStatus { active(1), createAndGo(4), destroy(6) }
  DESCRIPTION
    "Support of the values notInService(2), notReady(3),
    and createAndWait(5) is not required."

OBJECT      ipiaCredFiltLastChanged
  MIN-ACCESS  not-accessible
  DESCRIPTION
    "This object not required for compliance."
::= { ipiaCompliances 2 }

--
-- Compliance Groups Definitions
--

-- Compliance Groups
--

ipiaStaticFilterGroup OBJECT-GROUP
  OBJECTS { ipiaIkePhase1Filter, ipiaIkePhase2Filter }
  STATUS current
  DESCRIPTION "The static filter group. Currently this is just a true filter."
  ::= { ipiaGroups 1 }

ipiaCredentialFilterGroup OBJECT-GROUP
  OBJECTS { ipiaCredFiltCredentialType, ipiaCredFiltMatchFieldName, ipiaCredFiltMatchFieldValue, ipiaCredFiltAcceptCredFrom, ipiaCredFiltLastChanged, ipiaCredFiltStorageType, ipiaCredFiltRowStatus, ipiaCmcDistributionPoint, ipiaCmcThisUpdate, ipiaCmcNextUpdate, ipiaCmcLastChanged, ipiaCmcStorageType, ipiaCmcRowStatus, ipiaRctRevokedDate, ipiaRctRevokedReason, ipiaRctLastChanged, ipiaRctStorageType, ipiaRctRowStatus, ipiaIcmsDistinguishedName, ipiaIcmsPolicyStatement, ipiaIcmsMaxChainLength, ipiaIcmsCredentialName, ipiaIcmsLastChanged, ipiaIcmsStorageType, ipiaIcmsRowStatus }
  STATUS current
  DESCRIPTION "The IPsec Policy Credential Filter Table Group."
  ::= { ipiaGroups 2 }

ipiaPeerIdFilterGroup OBJECT-GROUP
  OBJECTS { ipiaPeerIdFiltIdentityType, ipiaPeerIdFiltIdentityValue, ipiaPeerIdFiltLastChanged, ipiaPeerIdFiltStorageType, ipiaPeerIdFiltRowStatus }
The IPsec Policy Peer Identity Filter Table Group.

::= { ipiaGroups 3 }

--
-- action compliance groups
--

ipiaStaticActionGroup OBJECT-GROUP
  OBJECTS {
    ipiaRejectIKEAction,
    ipiaRejectIKEActionLog
  }
  STATUS current
  DESCRIPTION
  "The IPsec Policy Static Actions Group."
  ::= { ipiaGroups 4 }

ipiaIkeGroup OBJECT-GROUP
  OBJECTS {
    ipiaIkeActParametersName, ipiaIkeActThresholdDerivedKeys, 
    ipiaIkeActExchangeMode, ipiaIkeActAggressiveModeGroupId, 
    ipiaIkeActIdentityType, ipiaIkeActIdentityContext, 
    ipiaIkeActPeerName, ipiaIkeActVendorId, ipiaIkeActPropName, 
    ipiaIkeActDoActionLogging, ipiaIkeActDoPacketLogging, 
    ipiaIkeActLastChanged, ipiaIkeActStorageType, 
    ipiaIkeActRowStatus, 
    ipiaIkeActPropLastChanged, ipiaIkeActPropStorageType, 
    ipiaIkeActPropRowStatus, 
    ipiaIkePropLifetimeDerivedKeys, ipiaIkePropCipherAlgorithm, 
    ipiaIkePropCipherKeyLength, ipiaIkePropCipherKeyRounds, 
    ipiaIkePropHashAlgorithm, ipiaIkePropPrfAlgorithm, 
    ipiaIkePropVendorId, ipiaIkePropDhGroup, 
    ipiaIkePropAuthenticationMethod, ipiaIkePropMaxLifetimeSecs, 
    ipiaIkePropMaxLifetimeKB, ipiaIkePropLastChanged, 
    ipiaIkePropStorageType, 
    ipiaIkePropRowStatus, 
    ipiaSaNegParamMinLifetimeSecs, ipiaSaNegParamMinLifetimeKB, 
    ipiaSaNegParamRefreshThresholdSecs, 
    ipiaSaNegParamRefreshThresholdKB, 
    ipiaSaNegParamIdleDurationSecs, ipiaSaNegParamLastChanged, 
    ipiaSaNegParamStorageType, ipiaSaNegParamRowStatus,
ipiaIkeIdCredentialName, ipiaIkeIdLastChanged,
ipiaIkeIdStorageType, ipiaIkeIdRowStatus,

ipiaAutoIkeAction, ipiaAutoIkeAddressType,
ipiaAutoIkeSourceAddress, ipiaAutoIkeSourcePort,
ipiaAutoIkeDestAddress, ipiaAutoIkeDestPort,
ipiaAutoIkeProtocol, ipiaAutoIkeLastChanged,
ipiaAutoIkeStorageType, ipiaAutoIkeRowStatus,

ipiaCmcDistributionPoint, ipiaCmcThisUpdate,
ipiaCmcNextUpdate, ipiaCmcLastChanged, ipiaCmcStorageType,
ipiaCmcRowStatus,

ipiaRctRevokedDate, ipiaRctRevokedReason,
ipiaRctLastChanged, ipiaRctStorageType, ipiaRctRowStatus,

ipiaIcmsDistinguishedName, ipiaIcmsPolicyStatement,
ipiaIcmsMaxChainLength, ipiaIcmsCredentialName,
ipiaIcmsLastChanged, ipiaIcmsStorageType, ipiaIcmsRowStatus
}

STATUS current

DESCRIPTION
"This group is the set of objects that support IKE actions. These objects are from The IPsec Policy IKE Action Table, The IKE Action Proposals Table, The IKE Proposal Table, The autostart IKE Table and The IKE Identity Table, The Peer Identity Table, The Credential Management Service Table, and the shared table Negotiation Parameters Table (from the IPSEC-IPSECACTION-MIB."

::= { ipiaGroups 5 }

ipiaIpsecGroup OBJECT-GROUP

OBJECTS {
  ipiaIpsecActParametersName, ipiaIpsecActProposalsName,
ipiaIpsecActUsePfs, ipiaIpsecActVendorId,
ipiaIpsecActGroupId, ipiaIpsecActPeerGatewayIdName,
ipiaIpsecActUseIkeGroup, ipiaIpsecActGranularity,
ipiaIpsecActMode, ipiaIpsecActDFHandling,
ipiaIpsecActDoActionLogging, ipiaIpsecActDoPacketLogging,
ipiaIpsecActLastChanged, ipiaIpsecActStorageType,
ipiaIpsecActRowStatus,

  ipiaIpsecPropTransformsName, ipiaIpsecPropLastChanged,
ipiaIpsecPropStorageType, ipiaIpsecPropRowStatus,

  ipiaIpsecTranTransformName, ipiaIpsecTranLastChanged,
ipiaIpsecTranStorageType, ipiaIpsecTranRowStatus,
ipiaSaNegParamMinLifetimeSecs, ipiaSaNegParamMinLifetimeKB,
  ipiaSaNegParamRefreshThresholdSecs,
  ipiaSaNegParamRefreshThresholdKB,
  ipiaSaNegIdleDurationSecs, ipiaNegParamLastChanged,
  ipiaSaNegParamStorageType, ipiaSaNegParamRowStatus
  }

END

6. Security Considerations

6.1 Introduction

This document defines a MIB module used to configure IPsec policy services. Since IKE negotiates keys for IPsec and IPsec provides security services, it is important that the IKE configuration data be at least as protected as the IPsec provided security service. There are two threats you need to thwart when configuring IPsec devices.

1. To make sure that only the official administrators are allowed to configure a device, only authenticated administrators should be allowed to do device configuration. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

2. Unfriendly parties should not be able to read configuration data while the data is in network transit. Any knowledge about a device’s IKE policy configuration could help an unfriendly party compromise that device and/or a network it protects. It is thus important to control even GET 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),
even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [RFC3410], section 8), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

Therefore, when configuring data in the IPSEC-IKEACTION-MIB, you SHOULD use SNMP version 3. The rest of this discussion assumes the use of SNMPv3. This is a real strength, because it allows administrators the ability to load new IPsec configuration on a device and keep the conversation private and authenticated under the protection of SNMPv3 before any IPsec protections are available. Once initial establishment of IPsec configuration on a device has been achieved, it would be possible to set up IPsec SAs to then also provide security and integrity services to the configuration conversation. This may seem redundant at first, but will be shown to have a use for added privacy protection below.

### 6.2 Protecting against in-authentic access

The current SNMPv3 User Security Model provides for key based user authentication. Typically, keys are derived from passwords (but are not required to be), and the keys are then used in HMAC algorithms (currently MD5 and SHA-1 HMACs are defined) to authenticate all SNMP data. Each SNMP device keeps a (configured) list of users and keys. Under SNMPv3 user keys may be updated as often as an administrator cares to have users enter new passwords. But Perfect Forward Secrecy for user keys is not yet provided by standards track documents, although RFC2786 defines an experimental method of doing so.

### 6.3 Protecting against involuntary disclosure

While sending IKE configuration data to a PEP, there are a few critical parameters which MUST NOT be observed by third parties. These include IKE Pre-Shared Keys and possibly the private key of a public/private key pair for use in a PKI. Were either of those parameters to be known to a third party, they could then impersonate
your device to other IKE peers. Aside from those critical parameters, policy administrators have an interest in not divulging any of their policy configuration. Any knowledge about a device’s configuration could help an unfriendly party compromise that device. SNMPv3 offers privacy security services, but at the time this document was written, the only standardized encryption algorithm supported by SNMPv3 is the DES encryption algorithm. Support for other (stronger) cryptographic algorithms was in the works and may be done as you read this. Policy administrators SHOULD use a privacy security service to configure their IPsec policy which is at least as strong as the desired IPsec policy. E.G., it is unwise to configure IPsec parameters implementing 3DES algorithms while only protecting that conversation with single DES.

6.4 Bootstrapping your configuration

Hopefully vendors will not ship new products with a default SNMPv3 user/password pair, but it is possible. Most SNMPv3 distributions should hopefully require an out-of-band initialization over a trusted medium, such as a local console connection.

7. Acknowledgments

Many other people contributed thoughts and ideas that influenced this MIB module. Some special thanks are in order the following people:

Lindy Foster     (Sparta, Inc.)
John Gillis      (ADC)
Jamie Jason      (Intel Corporation)
Roger Hartmuller (Sparta, Inc.)
David Partain    (Ericsson)
Lee Rafalow      (IBM)
Jon Saperia      (JDS Consulting)
John Shriver     (Internap Network Services Corporation)
Eric Vyncke      (Cisco Systems)

8. References

8.1 Normative References


8.2 Informative References

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Acknowledgment

Funding for the RFC Editor function is currently provided by the Internet Society.