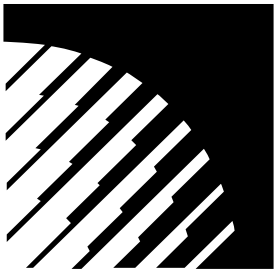

The ATM Forum
Technical Committee

Multiprotocol Over ATM
Version 1.0 MIB

AF-MPOA-0092.000

July, 1998

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1. Introduction

This document defines an experimental portion of the Management Information Base (MIB) for use with network management protocols in the Internet community. In particular, it describes managed objects for the ATM Forum's Multiprotocol Over ATM Version 1.0 as defined in [1].
This document specifies a MIB module in a manner that is both compliant to the SNMPv2 SMI, and semantically identical to the peer SNMPv1 definitions with the exception of the two Counter64 objects which are optional (mpcIngressCahceTxTotalOctets and mpcEgressCacheRxTotalOctets).

1.1. Objectives

- This MIB is intended to meet the functional requirements of ATM Forum s Multiprotocol Over ATM Version 1.0 as defined in [1].
- It must, wherever possible, refer to existing standard MIBs (e.g., draft-ietf-ion-nhrp-mib-04 [3]), rather than containing objects that are similar or identical to those defined elsewhere.
- To the extent that SNMP does not have the required facilities to support a particular requirement or function with regard to [1] that lack will be explicitly noted.

1.2. SNMP Network Management Framework

The SNMP Network Management Framework presently consists of three major components. They are:

- the SMI, described in RFC 1902 [4] - the mechanisms used for describing and naming objects for the purpose of management.
- the MIB-II, STD 17, RFC 1213 [5] - the core set of managed objects for the Internet suite of protocols.
- the protocol, RFC 1157 [6] and/or RFC 1905 [7] - the protocol for accessing managed objects.

The Framework permits new objects to be defined for the purpose of experimentation and evaluation.

This document also makes use of the following additional components of the SNMPv2 Network Management Framework:

- RFC 1903 [12] which defines textual conventions for the specification of managed objects,
- RFC 1904 [9] which defines conformance statements for the specification of managed objects,

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the subset of Abstract Syntax Notation One (ASN.1) defined in the SMI. In particular, each object type is named by an OBJECT IDENTIFIER, an administratively assigned name. The object type together with an object instance serves to uniquely identify a specific instantiation of the object. For human convenience, we often use a textual string, termed the descriptor, to also refer to the object type.

1.3. Related NHRP Specifications and Modules

This document also makes use of the NHRP Specification and NHRP MIB modules from the following documents:

- RFC2332 NBMA Next Hop Resolution Protocol (NHRP), [2], the NHRP Specification
- draft-ietf-ion-nhrp-mib-04.txt, [3], the NHRP MIB

2. Overview

The focus of this section is to provide some background information of why decisions were made by the working group with regard to the MIB. The intention of the working group was to define a minimum set of objects which allows management of MPOA and MPOA entities as specified by [1].

2.1. Interfaces

MPOA does not introduce any new interfaces and the use of ifIndex was seen as unnecessary for the purposes of this MIB. However, this MIB contains sufficient addressing information which allows cross-referencing with the IFMIB, RFC 2233, [8], should this be warranted by an enterprise MIB.
The discontinuity time object semantics was borrowed from RFC 2233, [8], and applied to the statistics tables of the MPC and MPS. This object denotes a discontinuity in an MPC/MPS and gives the Manager a way to detect the discontinuity. For example, in the event of an MPC or MPS re-initialization, the discontinuity timer would obtain a new value, thus indicating to an NMS that a discontinuity in the counters has occurred and the NMS should take appropriate actions.

2.2. Virtual Connection Management

In keeping with the MPOA Specification [1], virtual connections are not explicitly denoted in this MIB. Cache Entries represent shortcuts in various stages of resolution. Management of a virtual connection associated with a specific shortcut is not denoted in this MIB. The working group discussed whether some sort of vpi/vci reference for a shortcut was necessary and concluded that the mapping of VC to a shortcut was not necessary for the purposes of this MIB.

2.3. Connection Management

All sets in this MIB, with the exception of the mpcConfigMode and mpsConfigMode, take place at the time when the set request is processed by the agent, i.e. when it is received by the agent. The mpcConfigMode and mpsConfigMode can be set at any time, but these values are only relevant during initialization (or re-initialization) of the respective MPOA entity. NOTE: re-initialization is discussed in the next section.

The MPOA Client and MPOA Server are able to retrieve their configurations from the LECS during initialization/re-initialization when the mpcConfigMode and mpsConfigMode are set to automatic. However, there could be a reason that a user wants to test out a given value, thus there exists the ability to override the configuration retrieved from the LECS manually. In other words, SNMP sets can override the configuration values retrieved from the LECS. The intention behind this manual override was to allow a user to set valeus to try them out. If the set values proved better, then these values could be set at the LECS.

Also, the user may start the MPOA entity using default or previously configured values. To accomplish this, the user can set the mpc/mps ConfigMode object to manual, and re-initialize the appropriate MPOA entity. Please NOTE: there should be a configured value for the appropriate Protocol Table (mpc or mps), so that MPOA will work as expected. There are NO default values for the Protocol Tables, thus values will need to be configured in the event that the MPOA entity is initialized/re-initialized when the mpcConfigMode/mpsConfigMode have the value of manual.

As stated explicitely in the MIB, certain values need to be save to nonvolatile storage. These values are the mpcIndexes (all of them which are being used), the mpsIndexes (all of these which are being used), depending upon your implementation the mpcNextIndex, and the mpsNextIndex values may need to be stored in nonvolatile memory. Also, configured (and default) values (values for setable objects) need to be stored in nonvolatile memory.

2.4. Re-initialization of an MPC or an MPS

This MIB specifies certain qualities which must remain consistent between re-initializations of an MPC or an MPS, however, this document does not mandate any objects which would cause a re-initialization. The working group believes that specifying objects which would cause a re-initialization to occur would be beyond the scope of this MIB. In other words, re-initialization of an MPC or MPS is left to the specific implementation.

2.5. Counter64

Two objects in this MIB have the data type of Counter64. These objects are both optional. These objects prevent this MIB from being semantically functional to an SNMPv1 version. However, since these objects are optional and since the use of Counter64 is becoming more widespread this is considered to be acceptable by the working group.

2.6. Traps

There are no traps defined in this MIB. No traps were proposed during the development of the MIB.

2.7. Conformance statements

This document includes SNMPv2 conformance statements specifying the required and optional features of the MPOA MIB. There are 3 groups (or categories) which are:

```
Managed Objects which can be supported by either an MPC or MPS

Managed Objects which can be supported by an MPC

Managed Objects which can be supported by an MPS
```

Each of these 3 groups (or categories) are made up of one or more groups which contain a specific bunch of Managed Objects. These are outlined as follows:

```
(1) MPOA Common Groups
   (a) Device Type group
   (b) Device Type Mps Mac group

(2) MPOA Client Groups
   (a) Configuration group
   (b) Actual group
   (c) Data Atm Address group
   (d) Statistics group
   (e) Protocol support group
   (f) LEC -> MPC Mapping group
   (g) MPC s MPS Information group
   (h) MAC Address group
   (i) Ingress Cache Total Packet group
   (j) Ingress Cache Total Octet group
   (k) Ingress Cache group
   (l) Egress Cache Total Packet group
   (m) Egress Cache Total Octet group
   (n) Egress Cache group

(3) MPOA Server groups
   (a) Configuration group
   (b) Actual group
   (c) Statistics group
   (d) Protocol support group
   (e) LEC -> MPS Mapping group
   (f) Ingress Cache group
   (g) Egress Cache group
```

The compliance statements make use of these sub-groupings (the outline above). First, there is a determination of whether the MPOA entity is an MPC or an MPS (or both). The actual compliance statements are based on whether the device is acting as an MPC, an MPS or both (MPC and MPS).

1) MPC
2) MPS
3) Both an MPC and an MPS

2.7.1. MPC Basic Compliance

The minimum group of objects which need be supported by an MPC in order for the MPC to be compliant is given by the compliance statement, “mpoaMpcMibBasicCompliance. These are the mandatory groups of the mpcConfigGroup, the mpcActualGroup, the mpcDataAtmAddressGroup, the mpcStatisticsGroup, the mpcProtocolGroup, the mpcMpsGroup, the mpcMpsMacAddressGroup, the mpcIngressCacheGroup and the mpcEgressCacheGroup. Note that the mpcRowStatus, mpcDataAtmAddressRowStatus and mpcProtocolRowStatus allow rows to be created as read-only. In other words, the Agent is responsible for creating these rows. If a user tries to create a row, the request will result in an error and a row will not be created. For most implementations this will likely be the case. However, the implementor may allow rows to be created by a user through the row-creation process. The reason was to allow the flexibility for the implementor.

The MpcMappingGroup is required when the relationship between an MPOA Client and a LANE Client is NOT one-to-one. In other words, there may be implementations where the mpcIndex has the same value as the LecIndex, for all mpcIndices and all lecIndicies. In this situation, the mpcMappingGroup is not necessary because this group provides a mapping between the mpcIndex and the corresponding lecIndex, if these values are the same then there is no need to support this table.

2.7.2. MPC Advanced Compliance

This group is a superset of the MPC Basic Compliance group. In addition to the MPC Basic Compliance group, this group contains the mpoaDeviceTypeGroup, the mpoaDeviceTypeMpsMacGroup, the mpcIngressCacheTotalPacketGroup and the mpcEgressCacheTotalPacketGroup.

2.7.3. MPC Advanced Plus Octet Compliance

This group is a superset of the MPC Advanced Compliance group. The only difference between this group and the MPC Advanced Compliance group is that this group includes the support of two 64 byte Counters: the mpcIngressCacheTotalOctets, and the mpcEgressCacheTotalOctets. This group was added because of concerns the group had about all implementations supporting these counter, thus in order to be as fair to all implementations as possible the decision was to make these optional.

2.7.4. MPS Basic Compliance

This group represents the mandatory object which need to be supported if the MPS is a compliant implementation. This group is called mpoaMpsMibBasicCompliance and contains the groups: mpsConfigGroup, mpsActualGroup, mpsStatisticsGroup, mpsProtocolGroup, mpsIngressCacheGroup, and mpsEgressCacheGroup. Note that the mpsRowStatus, and mpsProtocolRowStatus allow rows to be created as read-only. In other words, the Agent is responsible for creating these rows. If a user tries to create a row, the request will result in an error and a row will not be created. For most implementations this will likely be the case. However, the implementor may allow rows to be created by a user through the row-creation process. The reason was to allow the flexibility for the implementor.

The MpsMappingGroup is required when the relationship between an MPOA Server and a LANE Client is NOT one-to-one. In other words, there may be implementations where the mpsIndex has the same value as the LecIndex, for all mpsIndices and all lecIndicies. In this situation, the mpsMappingGroup is not necessary because this group provides a mapping between the mpsIndex and the corresponding lecIndex, if these values are the same then there is no need to support this table.

2.7.5. MPS Advanced Compliance

This group is a superset of the MPS Basic Group. In addition to the MPS Basic Compliance group, this group contains the mpoaDeviceTypeGroup and the mpoaDeviceTypeMpsMacGroup.

3. References

[1] AF-MPOA-0087.000, ATM Forum, Fredette, A., Multiprotocol Over ATM Version 1.0 , May 1997.

[2] RFC 2332, NBMA Next Hop Resolution Protocol (NHRP)., Luciani, James V., D. Katz, D. Piscitello, and B. Cole, Bay Networks, cisco Systems, Core Competence, Inc., April, 1998. (Status: PROPOSED STANDARD)

[3] draft-ietf-ion-nhrp-mib-04.txt, Definitions of Managed Objects for the NBMA Next Hop Resolution Protocol (NHRP) , Greene, Maria, J. Cucchiara, J. Luciani, May 1998.

[4] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, Structure of Management Information for Version 2 of the Simple Network Management Protocol (SNMPv2) , RFC1902, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[5] McCloghrie, K., and M. Rose, Editors, Management Information Base for Network Management of TCP/IP-based internets: MIB-II , STD 17, RFC 1213, Hughes LAN Systems, Performance Systems International, March 1991.

[6] Case, J., Fedor, M., Schoffstall, M., and J. Davin, Simple Network Management Protocol , RFC 1157, SNMP Research, Performance Systems International, Performance Systems International, MIT Laboratory for Computer Science, May 1990.

[7] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, Protocol Operations for Version 2 of the Simple Network Management Protocol (SNMPv2) , RFC1905, SNMP Research,Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[8] McCloghrie, K., and F. Kastenholz, The Interfaces Group MIB using SMIv2 , RFC 2233, November 1997.

[9] Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, Conformance Statements for SNMPv2 , RFC 1904, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[10] ATM Forum, UNI Specification, Version 3.1 , September 1994.

[11] Ahmed, M., and K. Tesink, editors, Definitions of Managed Objects for ATM Management Version 8.0 using SNMPv2 , RFC 1695, Bell Communications Research, August 1994.

[12] SNMPv2 Working Group, Case, J., McCloghrie, K., Rose, M., and S. Waldbusser, Textual Conventions for version 2 of the Simple Network Management Protocol (SNMPv2) , RFC 1903, SNMP Research, Inc., Cisco Systems, Inc., Dover Beach Consulting, Inc., International Network Services, January 1996.

[13] AF-LANE-0093, ATM Forum, Newton, T., LAN Emulation Client Management Specification, Version 2.0 , February 1998.

4. Management Information Base (MIB)

```
MPOA-MIB DEFINITIONS ::= BEGIN

        IMPORTS
                MODULE-IDENTITY, OBJECT-TYPE,
                enterprises, Counter32, Counter64, Integer32
                        FROM SNMPv2-SMI
                TEXTUAL-CONVENTION,
                        MacAddress, TimeInterval, TimeStamp, TruthValue, RowStatus
                        FROM SNMPv2-TC
                MODULE-COMPLIANCE, OBJECT-GROUP
                        FROM SNMPv2-CONF
                lecIndex
                        FROM LAN-EMULATION-CLIENT-MIB
                AtmAddr
                        FROM ATM-TC-MIB
                ;

mpoaMIB MODULE-IDENTITY
        LAST-UPDATED "9805220000Z"
        ORGANIZATION "ATM Forum LANE/MPOA Working Group"
        CONTACT-INFO
                "The ATM Forum
                2570 West El Camino Real, Suite 304
                Mountain View, CA  94040-1313
                USA

                Tel: +1-650-949-6700
                Fax: +1-650-949-6705

                Web: http://www.atmforum.com
                E-mail: info@atmforum.com"
        DESCRIPTION
                "This module defines a portion of the management
                information base (MIB) for managing Multiprotocol Over
                ATM clients and servers."

        REVISION "9805220000Z"
        DESCRIPTION
                "Final Ballot Version,  May 22, 1998
                Version of the MIB module MPOA-MIB
                that is in:  AF-MPOA-0092.000."
        REVISION "9802250000Z"
        DESCRIPTION
                "Straw Ballot Revision 1.0,  February 25, 1998
                Version of the MIB module MPOA-MIB
                that is in STR-MPOA-MIB-01.01."
        ::= { atmfMpoa 1 }

        atmForum OBJECT IDENTIFIER  ::= { enterprises 353 }
```

```
  atmForumNetworkManagement OBJECT IDENTIFIER ::= { atmForum 5 }
    atmfMpoa OBJECT IDENTIFIER ::= { atmForumNetworkManagement 8 }



--
--  Textual Conventions
--

LecIndex ::= TEXTUAL-CONVENTION
        STATUS current
        DESCRIPTION
                "The value of this object identifies the LEC
                for which the entry contains management
                information.  The value of this object for
                a particular LAN Emulation Client (LEC) has
                the same value as the lecIndex object, defined
                        in the LAN-EMULATION-CLIENT MIB, for the same LEC."
        SYNTAX  INTEGER (1..2147483647)


AtmConfigAddr ::= TEXTUAL-CONVENTION
        STATUS  current
        DESCRIPTION
                "The ATM address used by the network entity.
                The address types are: NSAP SEL Byte (1 octet)
                E.164 (8 octets), and NSAP (20 octets).
                Note: If the 1 octet NSAP SEL is given, the
                other 19 octets of the NSAP are derived
                from the system either through ILMI or another method.
                Note: The E.164 address is encoded in BCD format."
        SYNTAX   OCTET STRING (SIZE(1|8|20))

InternetworkAddrType ::= TEXTUAL-CONVENTION
        STATUS      current
        DESCRIPTION
                "Internetwork Layer Address Types.
                Values are defined in Assigned Numbers,
                RFC1700. Note: not all of these values make sense in all
                contexts where this type is used in this MIB, but they are
                included for completeness."
        REFERENCE
                "Assigned Numbers, RFC1700, ADDRESS FAMILY NUMBERS"
        SYNTAX      INTEGER {
                                other(0),
                                ipV4(1),
                                ipV6(2),
                                nsap(3),
                                hdlc(4),
                                bbn1822(5),
                                ieee802(6),
                                e163(7),
                                e164(8),
                                f69(9),
                                x121(10),
```

```
                                        ipx(11),
                                        appleTalk(12),
                                        decnetIV(13),
                                        banyanVines(14),
                                        e164WithNsap(15)
                                }


        InternetworkAddr ::= TEXTUAL-CONVENTION
                STATUS      current
                DESCRIPTION
                        "The value of an internetwork layer address."
                SYNTAX      OCTET STRING (SIZE (0..60))


        MpcIndex ::= TEXTUAL-CONVENTION
                STATUS      current
                DESCRIPTION
                        "A unique value, for each MPOA client
                        which this SNMP agent manages.  It is recommended that values
                        are assigned contiguously starting from 1.  The value for
                        each MPOA Client must remain constant, even if the MPOA
                        Client or SNMP agent is re-initialized."
                SYNTAX      Integer32 (1..2147483647)


        MpsIndex ::= TEXTUAL-CONVENTION
                STATUS      current
                DESCRIPTION
                        "A unique value, for each MPOA Server
                        which this SNMP agent manages.  It is recommended that values
                        are assigned contiguously starting from 1.  The value for
                        each MPOA Server must remain constant, even if the MPOA
                        Server or SNMP agent is re-initialized."
                SYNTAX      Integer32 (1..2147483647)

mpoaMIBObjects  OBJECT IDENTIFIER ::= { mpoaMIB 1 }

   -- This MIB module consists of the following groups:
   --
   --  (1) MPOA Common Groups
   --      (a) Device Type group
   --      (b) Device Type Mps Mac group
   --
   --  (2) MPOA Client Groups
   --      (a) Configuration group
   --      (b) Actual group
   --      (c) Data Atm Address group
   --      (d) Statistics group
   --      (e) Protocol support group
   --      (f) LEC -> MPC Mapping group
   --      (g) MPC's MPS Information group
   --      (h) MAC Address group
   --      (i) Ingress Cache Total Packet group
   --      (j) Ingress Cache Total Octet group
   --      (k) Ingress Cache group
```

```
   --      (l) Egress Cache Total Packet group
   --      (m) Egress Cache Total Octet group
   --      (n) Egress Cache group
   --


   --  (3) MPOA Server groups
   --      (a) Configuration group
   --      (b) Actual group
   --      © Statistics group
   --      (d) Protocol support group
   --      (e) LEC -> MPS Mapping group
   --      (f) Ingress Cache group
   --      (g) Egress Cache group
   --

   -- ------------------------------------------------------------ --


mpoaCommonObjects OBJECT IDENTIFIER ::= { mpoaMIBObjects 1 }

deviceTypeTable OBJECT-TYPE
          SYNTAX          SEQUENCE OF DeviceTypeEntry
          MAX-ACCESS   not-accessible
                    STATUS          current
          DESCRIPTION
                    "The device type table
                    represents the mapping of the Lane Data ATM address
                    to the MAC device capability.
                    The unique key is the Lane data ATM address and Lec Index
                    of the LEC associated with the MAC addresses.
                    This table contains information which was
                    gathered from its environment about neighboring
                    machines.
                    This Device type table represents the information of
                    other/remote MPOA devices, discovered/gathered by each MPOA
                    device. This MIB is not the device type of MPS/MPC
                    itself; it is DISCOVERED information."
          REFERENCE
                    "Sections:  5.2.3 Device Type TLV, and 4.2 Device Discovery,
                    MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
          ::= { mpoaCommonObjects 1 }

deviceTypeEntry OBJECT-TYPE
          SYNTAX          DeviceTypeEntry
          MAX-ACCESS   not-accessible
          STATUS          current
          DESCRIPTION
                    "An entry in this table and corresponding entries in the
                    deviceTypeMpsMacAddressTable represent a mapping of a MAC device
                    capability (i.e. the set of MAC addresses from a device) to the
                    LEC ATM Address."
          REFERENCE
                    "Section 5.2.3 Device Type TLV
                    MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
          INDEX           { deviceTypeIndex }
```

```
        ::= { deviceTypeTable 1 }

DeviceTypeEntry ::= SEQUENCE {
        deviceTypeIndex                 INTEGER,
        deviceTypeLecIndex              LecIndex,
        deviceTypeRemoteLecAtmAddress   AtmAddr,
        deviceTypeType                  INTEGER,
        deviceTypeMpsAtmAddress         AtmAddr,
        deviceTypeMpcAtmAddress         AtmAddr
}

deviceTypeIndex OBJECT-TYPE
        SYNTAX          INTEGER (1..2147483647)
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Index into this table and also used as one of the indices for the
                deviceTypeMpsMacAddressTable.  This index has local
                significance within the mpoaDeviceGroup.
                Entries in the 'deviceTypeMpsMacAddressTable' which correspond
                to this index, and have the 'deviceTypeType' value of 'mps' or
                'mpsAndMps' are considered to be MPS MAC addresses."
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeEntry 1 }

deviceTypeLecIndex OBJECT-TYPE
        SYNTAX          LecIndex
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "LecIndex of LEC that supports this
                data ATM address"
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeEntry 2 }

deviceTypeRemoteLecAtmAddress OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The ATM address learned by LE ARP."
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeEntry 3 }

deviceTypeType OBJECT-TYPE
SYNTAX          INTEGER {
                                nonMpoa(1),
                                mps(2),
                                mpc(3),
                                mpsAndMpc(4)
```

```
                        }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "same as the TLV"
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeEntry 4 }

deviceTypeMpsAtmAddress OBJECT-TYPE
        SYNTAX      AtmAddr
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "Associated MPS address, zeros for non-MPOA and mpc"
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeEntry 5 }

deviceTypeMpcAtmAddress OBJECT-TYPE
        SYNTAX      AtmAddr
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "Associated MPC address, zeros for non-MPOA & mps"
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeEntry 6 }


--  The deviceTypeMpsMacAddress Table contains MAC addresses
-- from the device type TLV.  If the deviceTypeType was 'mpsAndMpc'
-- there must be at least one MPS MAC Address (i.e. at least one entry in
-- this table.)  If the deviceTypeType is 'mps', there may be zero or more
-- MPS MAC addresses in this table.  If the deviceTypeType is 'nonMpoa'
-- or 'mpc' then there will be no corresponding entries in this table.
-- See Section 5.2.3 of the MPOA Letter Ballot 1.0

deviceTypeMpsMacAddressTable OBJECT-TYPE
        SYNTAX      SEQUENCE OF DeviceTypeMpsMacAddressEntry
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
                "This table contains MPS MAC Address information gathered from
                the MPOA DeviceTypeTLV."
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { mpoaCommonObjects 2 }

deviceTypeMpsMacAddressEntry OBJECT-TYPE
        SYNTAX      DeviceTypeMpsMacAddressEntry
        MAX-ACCESS  not-accessible
```

```
        STATUS          current
        DESCRIPTION
                "Each entry represents an MPS MAC Address.  Each entry
                corresponds to a deviceTypeIndex value for which the
                deviceTypeType attribute is 'mps' or 'mpsAndMpc'."
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        INDEX           {       deviceTypeIndex,
                                deviceTypeMpsMacAddress
                        }
        ::= { deviceTypeMpsMacAddressTable 1 }

DeviceTypeMpsMacAddressEntry  ::=SEQUENCE {
        deviceTypeMpsMacAddress                 MacAddress
}

deviceTypeMpsMacAddress OBJECT-TYPE
        SYNTAX          MacAddress
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "MPS MAC address contained in the Device Type TLV which
                is identified by the deviceTypeIndex in the deviceTypeTable."
        REFERENCE
                "Section 5.2.3 Device Type TLV
                MPOA Version 1.0 (Letter Ballot) AF-MPOA-0087.000"
        ::= { deviceTypeMpsMacAddressEntry 1 }

   --
   --  MPOA Client Objects
   --

mpcObjects OBJECT IDENTIFIER ::= { mpoaMIBObjects 2 }

   --
   --  MPOA Client configuration group
   --

mpcNextIndex OBJECT-TYPE
        SYNTAX          Integer32 (0..2147483647)
        MAX-ACCESS      read-write
        STATUS          current
        DESCRIPTION
                "This object contains an appropriate value to
                be used for mpcIndex when creating entries in
                the mpcConfigTable.  The value 0 indicates that
                no new rows can be created.  Otherwise, it is
                recommended that values are assigned contiguously,
                starting from 1.

                MPC creation by a Manager:  To obtain the mpcIndex value
                for a new entry, the manager issues a management protocol
                retrieval operation to obtain the current value of this
                object.  If the value retrieved is 0 (zero), the manager
                cannot create a row.
```

After each retrieval of a non-zero value, the manager
should issue a management protocol SET operation using
the value just retrieved. If the SET is successful,
the agent should update the value to the next unassigned
index, or zero if appropriate.

NOTE: the manager may also issue a set on this object
with a value of its own choosing. If the set is successful,
the manager may use this value for the mpcIndex. In this
case, the agent would update the value to the next
unassigned index, or zero if appropriate.
The definition of 'next unassigned index' is any
mpcNextIndex value that has not yet been set by a manager,
or reserved by the agent (see next paragraph), since this
agent was last re-initialized.

MPC creation by an Agent: When a row in the
mpcConfigTable is created by an agent, the agent should
reserve the value of the index by updating the value of
this object to the next unassigned index
or zero if appropriate. Thus, a manager will not
be able to set an index reserved by an agent.

In the situation of an agent re-initialization, all currently
used mpcIndexes must be preserved.
In other words, the Agent should store in non-volatile memory
all of the currently used mpcIndexes (along with all necessary
configuration information from the mpcConfigTable). When the
agent is re-initialized, the mpcNextIndex value is
any valid Integer32 value which is not being used
as an mpcIndex, except 0 which maintains its original
definition of indicating that a row cannot be created."

::= { mpcObjects 1 }

mpcConfigTable OBJECT-TYPE
SYNTAX SEQUENCE OF MpcConfigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The MPOA Client Configuration Table.
This table contains configuration information
for all MPOA Clients which this agent manages."
::= { mpcObjects 2 }

mpcConfigEntry OBJECT-TYPE
SYNTAX MpcConfigEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"MPOA Client Configuration Entry.
Each entry contains configuration information
for one MPOA Client. The configuration information, including
the mpcIndex, must be restored after a re-initialization of an
MPC or a re-initialization of the SNMP agent."

```
        INDEX           { mpcIndex }
        ::= { mpcConfigTable 1 }

MpcConfigEntry ::=SEQUENCE {

        --
        -- Primary config info: Index, mode and control address information
        --
        mpcIndex                MpcIndex,
        mpcRowStatus            RowStatus,
        mpcConfigMode           INTEGER,
        mpcCtrlAtmAddr          AtmConfigAddr,
        --
        -- MPC parameters which may  be obtained from
        -- the LECS.
        --
        mpcSCSetupFrameCount    Integer32,    -- MPC-p1
        mpcSCSetupFrameTime     Integer32,    -- MPC-p2
        -- The Flow-detection Protocols (denoted with MPC-p3)
        -- are represented in the mpcProtocolsTable.
        mpcInitialRetryTime     Integer32,    -- MPC-p4
        mpcRetryTimeMaximum     Integer32,    -- MPC-p5
        mpcHoldDownTime         Integer32     -- MPC-p6
}

mpcIndex OBJECT-TYPE
        SYNTAX          MpcIndex
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A value which uniquely identifies this conceptual
                row in the mpcConfigTable.  The 'mpcNextIndex' object
                needs to be used to determine the value of this object.
                A row cannot be added, unless the mpcCtrlAtmAddress is unique.
                In the event of either an MPC re-initialization or an agent
                re-initialization, the value of this mpcIndex must remain the
                same.  In other words, the row needs to be saved and restored
                in the event of an MPC or SNMP Agent re-initialization."
        ::= { mpcConfigEntry 1 }

mpcRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "This object allows creation and deletion of
                MPOA Clients.

                Within each conceptual mpcConfigTable row, writable objects
                may be modified, regardless of the value of mpcRowStatus.
                It is not necessary to set a row's status to 'notInService' first.

                A row cannot be created, unless the mpcAtmCtrlAddress
                in this table is unique.
                When an MPOA Client is created via this object,
                it will initially have
```

```
                ‘mpcActualState’ = ‘initialState’”
        ::= { mpcConfigEntry 2 }

mpcConfigMode OBJECT-TYPE
        SYNTAX          INTEGER {
                                automatic(1),
                                manual(2)
                        }
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                “Indicates whether this MPC should auto-configure
                the next time it is (re-)initialized.
                During the (re-)initialization of this MPC, if
                the mode is automatic(1), the LECS is contacted and
                requests are made for all MPC-p* parameters.
                Otherwise, if the mode is manual(2), the values of the
                configuration parameters are obtained from the
                mpcConfigTableand the mpcProtocolTable.  In other words, when
                the MPC is first initialized, it can use the default or configured
                values from the mpcConfigTable and mpcProtocolTable.  If the
                mode is manual (2), no further action is required.  If the
                mode is automatic (1), then the LECS should be contacted and
                all available MPC-p1 to MPC-p6 parameters would be retrieved.
                These parameters would then overwrite the existing MPC-p1 to
                MPC-p6 parameters.  The actual values are reflected in the
                mpcActualTable.”
        DEFVAL { automatic }
        ::= { mpcConfigEntry 3 }

mpcCtrlAtmAddr OBJECT-TYPE
        SYNTAX          AtmConfigAddr
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                “The MPC’s Control ATM Address.  There exists one
                Control ATM Address per MPC, therefore, the value
                of this entry is unique within the table.  The control ATM
                Address is the address which is used by the MPC in its requests
                to the MPS.  The value of this object should not change, once
                created.”
        ::= { mpcConfigEntry 4 }

mpcSCSetupFrameCount OBJECT-TYPE
        SYNTAX          Integer32 (1..65535)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                “This represents the MPC-p1 Short-cut setup frame count
                parameter.

                The MPC-p1 value is frames measured over mpcSCFrameTime seconds.
                Flow detection is protocol independent. i.e. all network layers
                mpcProtocolEntries for this MPC share the flow rate specification.
                A value of 1 causes all flows to initiate resolution/shortcut process.”
        DEFVAL { 10 }
```

```
        ::= { mpcConfigEntry 5 }

mpcSCSetupFrameTime OBJECT-TYPE
        SYNTAX          Integer32 (1..60)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPC-p2 Short-cut setup frame time, in seconds."
        DEFVAL { 1 }
        ::= { mpcConfigEntry 6 }

mpcInitialRetryTime OBJECT-TYPE
        SYNTAX          Integer32 (1..300)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPC-p4 is the initial value for the retry time out
                period used for timing out MPOA Resolution Requests
                in seconds.  Retry time consists of this initial
                time-out (MPC-p4) and a retry multiplier (MPC-c1).
                If a response is not received, then another request
                is sent with a timeout of 'retry time' * MPC-c1
                seconds, or until mpcRetryTimeMaximum."
        DEFVAL { 5 }
        ::= { mpcConfigEntry 7 }

mpcRetryTimeMaximum OBJECT-TYPE
        SYNTAX          Integer32 (10..300)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPC-p5 cumulative max value for Retry Time (MPC-p4).
                Retries are attempted at intervals determined by the
                algorithm described in the definition of mpcIntialRetryTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Section 4.3 MPOA Retry Mechanism"
        DEFVAL  { 40 }
        ::= { mpcConfigEntry 8 }

mpcHoldDownTime OBJECT-TYPE
        SYNTAX          Integer32 (30..1200)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPC-p6 Hold Down Time
                Minimum time to wait before reinitiating
                a failed resolution attempt.  Default is
                mpcRetryTimeMaximum * 4."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Section 4.1.2.1 MPC Parameters"
        DEFVAL  { 160 }
        ::= { mpcConfigEntry 9 }

  --
```

```
    --  MPOA Client Actual group
  --

mpcActualTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcActualEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "MPOA Client Actual Table.
                A read-only table which contains state
                information and reflects the actual values which
                these MPOA Clients are using.  The actual
                values may differ from the configured values.
                For example, the mpcConfigMode takes affect
                only during (re-)initialization of the MPC.
                The MPC-p1 to MPC-p6 parameters may differ
                from the configured values because, if the
                MPC was (re-)initialized and the mpcConfigMode
                was set to automatic (1) then some, perhaps all,
                of the MPC-p1 to MPC-p6 parameters were retrieved
                from the LECS and the values from the LECS may
                differ from the configured/default values of the
                mpcConfigTable.  NOTE:  after re-initialization
                a set to an object in the mpcConfigTable which
                changes the value of the object will be reflect
                in this Table, except for a set to the
                mpcConfigMode which takes effect only during
                re-initialization."
        ::= { mpcObjects 3 }

mpcActualEntry OBJECT-TYPE
        SYNTAX          MpcActualEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "An entry in the MPC Actual Table.
                An entry represents a specific MPOA Client's
                state information and the actual values
                which are being used by the MPOA Client.
                For example, the corresponding mpcConfigEntry contains
                default and/or configured parameters, if mpcConfigMode was
                set to manual, then these are the objects values' which are
                reflected for the mpcActualEntry.  However, if the
                mpcConfigMode is automatic, then the mpcActualEntry
                will be all the corresponding mpcConfigEntry's object,
                excluding any objects which were retrieved from the LECS.
                In other words, the objects retrieved from the LECS during
                the (re-)initialization of the MPC overwrite any of the default
                and/or configured values.
                NOTE:  any subsequent 'set' to the configured values, e.g. an SNMP
                set operation, which is successful could result in a change to an
                mpcConfigTable value, and will be reflected in this table as well."
        AUGMENTS  { mpcConfigEntry }
        ::= { mpcActualTable 1 }

MpcActualEntry ::=SEQUENCE {
```

```
        mpcActualState              INTEGER,
        mpcDiscontinuityTime        TimeStamp,
        --
        -- Actual values for the MPCs.
        --
        mpcActualConfigMode         INTEGER,
        mpcActualSCSetupFrameCount  Integer32,   -- MPC-p1
        mpcActualSCSetupFrameTime   Integer32,   -- MPC-p2
        -- The flow-detection protocols for MPC-p3 are represented
        -- in the mpcProtocolTable.  There is no actual counterpart
        -- for them.
        mpcActualInitialRetryTime   Integer32,   -- MPC-p4
        mpcActualRetryTimeMaximum   Integer32,   -- MPC-p5
        mpcActualHoldDownTime               Integer32    -- MPC-p6
}

mpcActualState OBJECT-TYPE
SYNTAX      INTEGER {
                    unknown(1),
                    initialState(2),
                    up(3),
                    down(4)
                }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "This object indicates the actual state
                of the MPOA Client."
        ::= { mpcActualEntry 1 }

mpcDiscontinuityTime 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 MPC's counters
                experienced a discontinuity.  The relevant counters
                are the specific instances associated with this
                MPC.  If discontinuities have not occurred since the
                last re-initialization of the local management subsystem,
                then this object contains a zero value."
        ::= { mpcActualEntry 2 }

mpcActualConfigMode OBJECT-TYPE
        SYNTAX      INTEGER {
                            automatic(1),
                            manual(2)
                    }
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "Indicates whether this MPC auto-configured
                when it was last (re-)initialized."
::= { mpcActualEntry 3 }
```

```
mpcActualSCSetupFrameCount OBJECT-TYPE
        SYNTAX          Integer32 (1..65535)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "MPC-p1 Short-cut setup frame count.
                In frames measured over mpcShortcutFrameTime seconds.
                Flow detection is protocol independent. i.e. all
                network layers mpcProtocolEntry share the flow rate
                specification.
                A value of 1 implies that resolutions for short-cuts
                are attempted for all flows."
        ::= { mpcActualEntry 4 }

mpcActualSCSetupFrameTime OBJECT-TYPE
        SYNTAX          Integer32 (1..60)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Actual MPC-p2 Short-cut setup frame time, in seconds."
::= { mpcActualEntry 5 }

mpcActualInitialRetryTime OBJECT-TYPE
        SYNTAX          Integer32 (1..300)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Actual MPC-p4 is initial value for the
                retry time out."
        ::= { mpcActualEntry 6 }

mpcActualRetryTimeMaximum OBJECT-TYPE
        SYNTAX          Integer32 (30..300)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "MPC-p5 cumulative maximum value for Retry Time (MPC-p4).
                Retries are attempted at intervals determined by the
                algorithm described in the definition of
                mpcActualInitialRetryTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Section 4.3 MPOA Retry Mechanism"
        ::= { mpcActualEntry 7 }

mpcActualHoldDownTime OBJECT-TYPE
        SYNTAX          Integer32 (30..1200)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "MPC-p6 Hold Down Time
                Minimum time to wait before reinitiating a failed
                resolution attempt.  The default value is
                mpcRetryTimeMaximum * 4."
        ::= { mpcActualEntry 8 }
```

```
   --
   --  DataAtmAddresses  -> MPC
   --

mpcDataAtmAddressTable OBJECT-TYPE
          SYNTAX          SEQUENCE OF MpcDataAtmAddressEntry
          MAX-ACCESS   not-accessible
          STATUS          current
          DESCRIPTION
                    "A table which shows all the data ATM addresses
                    associated with  all MPOA Clients."
          ::= { mpcObjects 4 }

mpcDataAtmAddressEntry OBJECT-TYPE
          SYNTAX          MpcDataAtmAddressEntry
          MAX-ACCESS   not-accessible
          STATUS          current
          DESCRIPTION
                    "Each row defines one data ATM address associated with
                    an MPC.  NOTE:  if an MPC has more than one data ATM
                    address then there will be another entry which contains
                    the same mpcIndex subIdentifier, with a different
                    mpcDataAtmAddress."
          INDEX           {         mpcIndex,
                                    mpcDataAtmAddress
                    }
::= { mpcDataAtmAddressTable 1 }

MpcDataAtmAddressEntry  ::= SEQUENCE {
          mpcDataAtmAddress                 AtmAddr,
          mpcDataAtmAddressRowStatus     RowStatus
}

mpcDataAtmAddress OBJECT-TYPE
          SYNTAX          AtmAddr
          MAX-ACCESS   not-accessible
          STATUS          current
          DESCRIPTION
                    "A data ATM Address which is associated with
                    an MPOA Client specified by the mpcIndex."
          ::= { mpcDataAtmAddressEntry 1 }

mpcDataAtmAddressRowStatus OBJECT-TYPE
          SYNTAX          RowStatus
          MAX-ACCESS   read-create
          STATUS          current
          DESCRIPTION
                    "This object allows creation and deletion of
                    an MPOA Client's Data ATM Addresses.  The
                    row can be created/deleted by either an NMS
                    or by the SNMP agent."
          ::= { mpcDataAtmAddressEntry 2 }

--
--  MPOA Client statistics group
--
```

```
mpcStatisticsTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcStatisticsEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A read-only table which contains statistical
                information for all MPOA Clients that
                this agent manages."
        ::= { mpcObjects 5 }

mpcStatisticsEntry OBJECT-TYPE
        SYNTAX          MpcStatisticsEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Each row in this table contains statistics
                for one MPOA Client."
        AUGMENTS  { mpcConfigEntry }
        ::= { mpcStatisticsTable 1 }

MpcStatisticsEntry ::=SEQUENCE {
        mpcStatTxMpoaResolveRequests                        Counter32,
        mpcStatRxMpoaResolveReplyAcks                       Counter32,
        mpcStatRxMpoaResolveReplyInsufECResources           Counter32,
        mpcStatRxMpoaResolveReplyInsufSCResources           Counter32,
        mpcStatRxMpoaResolveReplyInsufEitherResources       Counter32,
        mpcStatRxMpoaResolveReplyUnsupportedInetProt        Counter32,
        mpcStatRxMpoaResolveReplyUnsupportedMacEncaps       Counter32,
        mpcStatRxMpoaResolveReplyUnspecifiedOther           Counter32,
        mpcStatRxMpoaImpRequests                            Counter32,
        mpcStatTxMpoaImpReplyAcks                           Counter32,
        mpcStatTxMpoaImpReplyInsufECResources               Counter32,
        mpcStatTxMpoaImpReplyInsufSCResources               Counter32,
        mpcStatTxMpoaImpReplyInsufEitherResources           Counter32,
        mpcStatTxMpoaImpReplyUnsupportedInetProt            Counter32,
        mpcStatTxMpoaImpReplyUnsupportedMacEncaps           Counter32,
        mpcStatTxMpoaImpReplyUnspecifiedOther               Counter32,
        mpcStatTxMpoaEgressCachePurgeRequests               Counter32,
        mpcStatRxMpoaEgressCachePurgeReplies                Counter32,
        mpcStatRxMpoaKeepAlives                             Counter32,
        mpcStatRxMpoaTriggers                               Counter32,
        mpcStatRxMpoaDataPlanePurges                        Counter32,
        mpcStatTxMpoaDataPlanePurges                        Counter32,
        mpcStatRxNhrpPurgeRequests                          Counter32,
        mpcStatTxNhrpPurgeReplies                           Counter32,

        -- NOTE: since the MPC supersedes the NHC's role,
        -- the following counters should be counted here,
        -- as opposed to the NHC.

        mpcStatRxErrUnrecognizedExtensions                  Counter32,
        mpcStatRxErrLoopDetecteds                           Counter32,
        mpcStatRxErrProtoAddrUnreachables                   Counter32,
        mpcStatRxErrProtoErrors                             Counter32,
        mpcStatRxErrSduSizeExceededs                        Counter32,
```

```
        mpcStatRxErrInvalidExtensions                   Counter32,
        mpcStatRxErrInvalidReplies                      Counter32,
        mpcStatRxErrAuthenticationFailures              Counter32,
        mpcStatRxErrHopCountExceededs                   Counter32

}

mpcStatTxMpoaResolveRequests OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolve Requests transmitted
                by this MPC.

                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 1 }

mpcStatRxMpoaResolveReplyAcks OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of positively acknowledged MPC
                Resolved Replies received by this MPC with an MPOA
                CIE Code of 0x00 (Success).
                Discontinuities in the value of this counter can occur at
                re-initialization of the management system, and/or re-initialization
                of the MPC, and at other times, as indicated by the value of
                mpcDiscontinuityTime."
        REFERENCE  "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 2 }

mpcStatRxMpoaResolveReplyInsufECResources OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolution Replies received with
                an MPOA CIE Code of 0x81, 'Insufficient resources to
                accept egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 3 }

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

```
        DESCRIPTION
                "The number of MPOA Resolution Replies received with
                an MPOA CIE Code of 0x82, 'Insufficient resources to
                accept the shortcut'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 4 }

mpcStatRxMpoaResolveReplyInsufEitherResources   OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolution Replies received with
                an MPOA CIE Code of 0x83, 'Insufficient resources to
                accept either shortcut or egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 5 }

mpcStatRxMpoaResolveReplyUnsupportedInetProt OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolution Replies received with
                an MPOA CIE Code of 0x84, 'Unsupported Internework
                Layer protocol'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 6 }

mpcStatRxMpoaResolveReplyUnsupportedMacEncaps OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolution Replies received with
                an MPOA CIE Code of 0x85, 'Unsupported MAC layer encapsulation'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
```

```
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 7 }

mpcStatRxMpoaResolveReplyUnspecifiedOther OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolution Replies received with
                an MPOA CIE Code of 0x88, 'Unspecified/Other'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 8 }

mpcStatRxMpoaImpRequests OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Requests received
                by this MPC.
                Discontinuities in the value of this counter can occur at re-initialization
                of the management system, and/or re-initialization of the MPC, and at
                other times, as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 9 }

mpcStatTxMpoaImpReplyAcks OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of successful MPOA Cache Imposition replies
                transmitted by this MPC with an MPOA CIE Code of 0x00
                'Success'.
                Discontinuities in the value of this counter can occur at re-initialization
                of the management system, and/or re-initialization of the MPC, and at
                other times, as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 10 }

mpcStatTxMpoaImpReplyInsufECResources OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies transmitted with
                an MPOA CIE Code of 0x81, 'Insufficient resources to
                accept egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
```

```
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 11 }

mpcStatTxMpoaImpReplyInsufSCResources OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Imposition Replies transmitted with
                an MPOA CIE Code of 0x82, 'Insufficient resources to
                accept shortcut'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
::= { mpcStatisticsEntry 12 }

mpcStatTxMpoaImpReplyInsufEitherResources OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Imposition Replies transmitted with
                an MPOA CIE Code of 0x83, 'Insufficient resources to
                accept either shortcut or egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 13 }

mpcStatTxMpoaImpReplyUnsupportedInetProt OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Imposition Replies transmitted with
                an MPOA CIE Code of 0x84, 'Unsupported Internetwork Layer
                protocol'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 14 }

mpcStatTxMpoaImpReplyUnsupportedMacEncaps OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
```

```
        STATUS          current
        DESCRIPTION
                "The number of MPOA Imposition Replies transmitted with
                an MPOA CIE Code of 0x85, 'Unsupported MAC Layer
                encapsulation'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 15 }

mpcStatTxMpoaImpReplyUnspecifiedOther OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Imposition Replies transmitted with
                an MPOA CIE Code of 0x88, 'Unspecified/Other'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.  Page 62."
        ::= { mpcStatisticsEntry 16 }

mpcStatTxMpoaEgressCachePurgeRequests OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Egress Cache Purge Requests transmitted
                by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 17 }

mpcStatRxMpoaEgressCachePurgeReplies OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Egress Cache Purge Replies received by
                this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 18 }

mpcStatRxMpoaKeepAlives OBJECT-TYPE
        SYNTAX          Counter32
```

```
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Keep Alive messages received by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 19 }

mpcStatRxMpoaTriggers OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Trigger messages received by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 20 }

mpcStatRxMpoaDataPlanePurges OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Data Plane Purge messages received
                by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 21 }

mpcStatTxMpoaDataPlanePurges OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Data Plane Purge messages transmitted
                by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 22 }

mpcStatRxNhrpPurgeRequests OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of Purge Requests received by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
```

```
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 23 }

mpcStatTxNhrpPurgeReplies OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of Purge Replies transmitted by this MPC.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 24 }

mpcStatRxErrUnrecognizedExtensions OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'Unrecognized Extension'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 25 }

mpcStatRxErrLoopDetecteds OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'Loop Detected'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 26 }

mpcStatRxErrProtoAddrUnreachables OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of Error Indication packets received by this
                MPC with the error code 'Protocol Address Unreachable'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 27 }

mpcStatRxErrProtoErrors OBJECT-TYPE
```

```
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'Protocol Errors'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 28 }

mpcStatRxErrSduSizeExceededs OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'SDU Size Exceeded'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 29 }

mpcStatRxErrInvalidExtensions OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'Invalid Extensions'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 30 }

mpcStatRxErrInvalidReplies OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'Invalid Reply'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 31 }

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

```
                "The number of Error Indication packets received by
                this MPC with the error code 'Authentication Failure'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 32 }

mpcStatRxErrHopCountExceededs OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of Error Indication packets received by
                this MPC with the error code 'Hop Count Exceeded'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPC, and at other times,
                as indicated by the value of mpcDiscontinuityTime."
        ::= { mpcStatisticsEntry 33 }


--
--  MPOA Client Protocol support group
--

mpcProtocolTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcProtocolEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "List of protocols, per MPC, for which flow
                detection is enabled"
        REFERENCE
                "Multiprotocol Over ATM Version 1.0 (Letter Ballot),
                Section 4.1.2.1 MPC Parameters"
        ::= { mpcObjects 6 }

mpcProtocolEntry OBJECT-TYPE
        SYNTAX          MpcProtocolEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Each row indicates one protocol for which an MPC will
                do flow detection.  If the LECS was contacted for
                configuration information, and the Control Octet of
                the MPC-p3 has the value of 0x01, 'Enable', then protocol
                values retrieved from the LECS are reflected in this
                table and the mpcLECSValue object will be (1) true.
                Also, the user or agent can create rows which
                appropriately correspond to the MPC denoted by mpcIndex,
                and the mpcLECSValue object will be set to (2) false.
                NOTE:  if the LECS does not return information for the
                MPC-p3 parameter, or if in manual mode, the user or
                agent should create at least one entry for the
                corresponding MPC.
```

```
                Both, LECS and user and/or agent created rows may
                exist in this Table."
        INDEX           {       mpcIndex,
                                mpcFlowDetectProtocol
                        }
        ::= {mpcProtocolTable 1 }

MpcProtocolEntry ::= SEQUENCE {
        mpcFlowDetectProtocol   InternetworkAddrType,
        mpcLECSValue            TruthValue,
        mpcProtocolRowStatus    RowStatus
}

mpcFlowDetectProtocol OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "The protocol on which flow detection is performed.
                If this value was obtained from the LECS then this
                value is one of the collection of values returned
                in the MPC-p3 parameter."
        ::= { mpcProtocolEntry 1 }

mpcLECSValue OBJECT-TYPE
        SYNTAX          TruthValue
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This object reflects if the current entry is due to
                a retrieval from the LECS or not.  If this entry is
                due to the LECS, then true(1) is the value for this
                object, otherwise, false (2)."
        ::= { mpcProtocolEntry 2 }

mpcProtocolRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "This object is used by an agent or manager to
                create, delete or modify a row in this table."
        ::= { mpcProtocolEntry 3 }


--
--  LEC -> MPC Mapping group
--

mpcMappingTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcMappingEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A table mapping the 'lecIndex' values of
```

```
                LANE Clients to the 'mpcIndex' values of
                corresponding MPOA Clients."
        ::= { mpcObjects 7 }

mpcMappingEntry OBJECT-TYPE
        SYNTAX          MpcMappingEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Each row defines one lecIndex --> mpcIndex mapping.
                The mpcIndex that a lecIndex maps to is not
                necessarily unique (an MPC can  serve many LECs, however,
                a LEC cannot be served by more than one MPC)."
        REFERENCE
                "Multiprotocol Over ATM Version 1.0 (Letter Ballot),
                Section 4.4."
        INDEX           { lecIndex }
        ::= { mpcMappingTable 1 }

MpcMappingEntry ::=  SEQUENCE {
        mpcMappingRowStatus             RowStatus,
        mpcMappingIndex                 MpcIndex
}

mpcMappingRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "This object is used by an agent or manager to create, delete
                or modify a row in this table."
        ::= { mpcMappingEntry 1 }

mpcMappingIndex OBJECT-TYPE
        SYNTAX          MpcIndex
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "The mpcIndex of the MPOA Client that is performing
                flow detection for the LANE Client represented by
                the lecIndex."
        ::= { mpcMappingEntry 2 }


--
--  MPOA Client MPS information group
--

mpcMpsTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcMpsEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This is a read-only table which contains
                information about the MPSs that these MPCs
                know about."
```

```
        ::= { mpcObjects 8 }

mpcMpsEntry OBJECT-TYPE
        SYNTAX          MpcMpsEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A row created by an MPC.  The MPC learns about
                an MPS and creates a row."
        INDEX           { mpcMpsIndex }
        ::= { mpcMpsTable 1 }

MpcMpsEntry ::= SEQUENCE {
        mpcMpsIndex             MpsIndex,
        mpcMpsAtmAddr           AtmAddr
}

mpcMpsIndex OBJECT-TYPE
        SYNTAX          MpsIndex
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "The MPS's index which is used to identify
                a row in this table."
        ::= { mpcMpsEntry 1 }

mpcMpsAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Control ATM Address of the MPS"
        ::= { mpcMpsEntry 2 }


--
--  MPOA Client's MAC Address group
--

mpcMpsMacAddressTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcMpsMacAddressEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This is a read-only table which contains
                information about all the MPSs' MAC Addresses
                that these MPCs know about."
        ::= { mpcObjects 9 }

mpcMpsMacAddressEntry OBJECT-TYPE
        SYNTAX          MpcMpsMacAddressEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A row is created by an MPC.  The MPC learns about an
                MPS's MAC Address and creates a row."
```

```
        INDEX           {       mpcMpsIndex,
                                mpcLecIndex
                        }
        ::= { mpcMpsMacAddressTable 1 }

MpcMpsMacAddressEntry ::= SEQUENCE {
        mpcLecIndex             LecIndex,
        mpcMpsMacAddress        MacAddress
}

mpcLecIndex OBJECT-TYPE
        SYNTAX          LecIndex
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "The lecIndex which represents the associated LEC."
        ::= { mpcMpsMacAddressEntry 1 }

mpcMpsMacAddress OBJECT-TYPE
        SYNTAX          MacAddress
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The MAC Address of the MPS."
        REFERENCE
                "Multiprotocol Over ATM Version 1.0 (Letter Ballot),
                Section 3.3.3.1"
::= { mpcMpsMacAddressEntry 2 }


--
--  MPOA Client Ingress Cache group
--

mpcIngressCacheTxTotalPackets OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The total number of packets transmitted over MPC Short Cuts."
        ::= { mpcObjects 10 }

mpcIngressCacheTxTotalOctets OBJECT-TYPE
        SYNTAX          Counter64
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The total number of octets transmitted over MPC Short Cuts."
        ::= { mpcObjects 11 }

mpcIngressCacheTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcIngressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This table contains information for MPC Caches for
```

```
                the ingress MPC."
        ::= { mpcObjects 12 }

mpcIngressCacheEntry OBJECT-TYPE
        SYNTAX          MpcIngressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "An entry contains control information
                for a row in a MPC's Ingress Cache."
        INDEX           {       mpcIngressCacheDestInetworkAddrType,
                                mpcIngressCacheDestAddr,
                                mpcIndex,
                                mpcMpsIndex
                        }
        ::= { mpcIngressCacheTable 1 }

MpcIngressCacheEntry ::= SEQUENCE {
        mpcIngressCacheDestInetworkAddrType     InternetworkAddrType,
        mpcIngressCacheDestAddr                 InternetworkAddr,
        mpcIngressCachePrefixLen                Integer32,
        mpcIngressCacheDestAtmAddr              AtmAddr,

        mpcIngressCacheSrcAtmAddr               AtmAddr,
        mpcIngressCacheEntryState               INTEGER,


        mpcIngressCacheEgressCacheTagValid      TruthValue,
        mpcIngressCacheEgressCacheTag           Integer32,

        --
        -- Information for diagnosing problems
        --
        mpcIngressCacheLastNhrpCieCode          INTEGER,
        mpcIngressCacheSigErrCode               Integer32,
        mpcIngressCacheRetries                  Counter32,
        mpcIngressCacheTimeUntilNextResolutionRequest
                                                TimeInterval,
        mpcIngressCacheHoldingTime              TimeInterval,
        mpcIngressCacheServiceCategory          INTEGER

}

mpcIngressCacheDestInetworkAddrType OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The type of the destination internetwork layer address."
        ::= { mpcIngressCacheEntry 1 }

mpcIngressCacheDestAddr OBJECT-TYPE
        SYNTAX          InternetworkAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
```

```
                "The destination internetwork layer address for which
                this entry is defined."
        ::= { mpcIngressCacheEntry 2 }

mpcIngressCachePrefixLen OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Defines an equivalence class of addresses that match
                Prefix Length bit positions of the destination
                internetwork layer address."
        ::= { mpcIngressCacheEntry 3 }

mpcIngressCacheDestAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Destination ATM Address received in the MPOA
                Resolution Reply."
        ::= { mpcIngressCacheEntry 4 }

mpcIngressCacheSrcAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Source ATM Address for the MPOA Resolution Request."
        ::= { mpcIngressCacheEntry 5 }

mpcIngressCacheEntryState OBJECT-TYPE
        SYNTAX          INTEGER {
                                doesNotExist (1),
                                inactive (2),
                                active(3),
                                negative(4)
                        }
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The present state of this MPC ingress cache.
                The states are:
                doesNotExist (1) -- the state is not yet available
                inactive (2)     -- state exists, entry is not yet
                                    active.  For an example, if
                                    using the Finite State Machine
                                    Appendix I.2, then the states
                                    Cached and query are considered
                                    'inactive'.
                active (3)       -- state exists, entry is active.
                                    For an example, if using the
                                    Finite State Machine in Appendix I.2,
                                    then the states resolved and refresh
                                    are considered 'active'.
                negative (4)     -- state exists, entry is negative,
```

```
                        which could mean a NAK response was
                        received, or entry is doing a
                        retry, etc.  For example, if using
                        the Finite State Machine in Appendix
                        I.2, then the state 'hold down' is
                        considered 'negative'."
        REFERENCE
                "Multiprotocol Over ATM, Letter Ballot, Appendix I.2."
        ::= { mpcIngressCacheEntry 6 }

mpcIngressCacheEgressCacheTagValid OBJECT-TYPE
        SYNTAX          TruthValue
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "If the value of this object is true(1), then a valid
                Egress Cache Tag is present and the value of the Egress
                Cache Tag is in mpcIngressCacheEgressCacheTag.  Otherwise,
                if this value is false(2), then there was no Egress Cache
                Tag, and the value of mpcIngressCacheEgressCacheTag is
                undefined."
        ::= { mpcIngressCacheEntry 7 }

mpcIngressCacheEgressCacheTag OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "If a valid Egress Cache Tag is present, then this
                object contains the value of that tag.  To determine
                if this object contains a valid value,
                mpcIngressCacheEgressTagValid should be used."
        REFERENCE
                "Multiprotocol Over ATM Version 1.0  (Letter Ballot),
                Section 4.4.4.1."
        ::= { mpcIngressCacheEntry 8 }

mpcIngressCacheLastNhrpCieCode OBJECT-TYPE
        SYNTAX          INTEGER (0..255)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The last NHRP CIE code received for this entry.  This
                value is valid only during the Hold Down period of the
                cache entry.  This value is undefined otherwise."
        REFERENCE
                "Normative section 4.4.6.1.1 of Multiprotocol Over
                ATM Version 1.0  (Letter Ballot)"
        ::= { mpcIngressCacheEntry 9}

mpcIngressCacheSigErrCode OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Error code or Success of the last sinalling request
```

```
                for this cache entry."
        ::= { mpcIngressCacheEntry 10 }

mpcIngressCacheRetries OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The current number of times this MPC has issued a
                resolution request since it received a valid reply."
::= { mpcIngressCacheEntry 11 }

mpcIngressCacheTimeUntilNextResolutionRequest OBJECT-TYPE
        SYNTAX          TimeInterval
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The amount of time  the MPC
                must wait before issuing the next resolution request."
        ::= { mpcIngressCacheEntry 12 }

mpcIngressCacheHoldingTime OBJECT-TYPE
        SYNTAX          TimeInterval
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The time that this MPC's Ingress Cache Entry will remain
                valid.  If the mpcIngressCacheEntryState is not active
                this value will be zero."
        ::= { mpcIngressCacheEntry 13 }

mpcIngressCacheServiceCategory OBJECT-TYPE
        SYNTAX          INTEGER (0..65535)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The service categories supported for this shortcut."
        REFERENCE
                "Lane V2 LUNI TLVs. AF-LANE-0084 page 122"
        ::= { mpcIngressCacheEntry 14 }


--
--  MPOA Client Egress Cache group
--

mpcEgressCacheRxTotalPackets OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This counts the total number of packets
                received by MPC Short Cuts."
        ::= { mpcObjects 13 }

mpcEgressCacheRxTotalOctets OBJECT-TYPE
```

```
        SYNTAX          Counter64
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This counts the total number of octets
                received by MPC Short Cuts."
        ::= { mpcObjects 14 }

mpcEgressCacheTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpcEgressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This table contains Egress Cache information for
                all the MPCs which this agent manages."
        ::= { mpcObjects 15 }

mpcEgressCacheEntry OBJECT-TYPE
        SYNTAX          MpcEgressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "An entry in the MPOA Client's Egress Cache table."
        INDEX           {       mpcEgressCacheId,
                                mpcIndex,
                                mpcMpsIndex
                        }
        ::= { mpcEgressCacheTable 1 }

MpcEgressCacheEntry ::= SEQUENCE {
        mpcEgressCacheId                        Integer32,
        mpcEgressCacheInetworkAddrType          InternetworkAddrType,
        mpcEgressCacheIDestAddr                 InternetworkAddr,
        mpcEgressCachePrefixLen                 Integer32,
        mpcEgressCacheEntryState                INTEGER,
        mpcEgressCacheEgressCacheTagValid       TruthValue,
        mpcEgressCacheEgressCacheTag            Integer32,
        mpcEgressCacheHoldTime                  TimeInterval,
        mpcEgressCacheDataLinkHeader            OCTET STRING,
        mpcEgressCacheIngressMpcDataAtmAddr     AtmAddr,
        mpcEgressCacheLecIndex                  LecIndex,
        mpcEgressCacheServiceCategory           INTEGER
}

mpcEgressCacheId OBJECT-TYPE
        SYNTAX          Integer32 (1..2147483647)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Cache ID Provided by the MPS in the Cache
                Imposition Request."
        ::= { mpcEgressCacheEntry 1 }

mpcEgressCacheInetworkAddrType OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      read-only
```

```
        STATUS          current
        DESCRIPTION
                "Type of Internetwork Address in this cache entry."
        ::= { mpcEgressCacheEntry 2 }

mpcEgressCacheIDestAddr OBJECT-TYPE
        SYNTAX          InternetworkAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The destination internetwork layer address
                for which this entry is defined."
        ::= { mpcEgressCacheEntry 3 }

mpcEgressCachePrefixLen OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Defines an equivalence class of addresses that match
                Prefix Length bit positions of the destination
                internetwork layer address."
        ::= { mpcEgressCacheEntry 4 }

mpcEgressCacheEntryState OBJECT-TYPE
        SYNTAX          INTEGER {
                                doesNotExist(1),
                                inactive(2),
                                active (3),
                                negative (4)
                        }
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The present state of this MPC egress cache entry.
                The states are:
                        doesNotExist (1) -- the state is not yet available,
                        inactive (2) -- state exists, entry is not yet active,
                        active (3)   -- state exists, entry is active.
                         For example,if using the Finite State
                                Machine in Appendix 1.5,
                                the states active and flooding
                         are 'active' state.
                        negative (4) -- state exists, entry is negative.

                For example,if using the Finite
                State Machine in Appendix 1.5,
                the state purging is 'negative'."
        REFERENCE
                "MPOA Letter Ballot, Appendix I.5."
        ::= { mpcEgressCacheEntry 5 }

mpcEgressCacheEgressCacheTagValid OBJECT-TYPE
        SYNTAX          TruthValue
        MAX-ACCESS      read-only
        STATUS          current
```

```
        DESCRIPTION
                "If the value of this object is true(1), then a valid
                Egress Cache Tag is present and the value of the Egress
                Cache Tag is in mpcEgressCacheEgressCacheTag.  Otherwise,
                if this value is false(2), then there was no Egress
                Cache Tag, and the value of mpcEgressCacheEgressCacheTag
                is undefined."
        ::= { mpcEgressCacheEntry 6 }

mpcEgressCacheEgressCacheTag OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "If a valid Egress Cache Tag is present, then this
                object contains the value of that tag.  To determine
                if this object contains a valid value,
                mpcEgressCacheEgressCacheTagValid should be used."
        ::= { mpcEgressCacheEntry 7 }

mpcEgressCacheHoldTime OBJECT-TYPE
        SYNTAX          TimeInterval
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The remaining time for which this entry is valid."
        ::= { mpcEgressCacheEntry 8 }

mpcEgressCacheDataLinkHeader OBJECT-TYPE
        SYNTAX          OCTET STRING (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The DataLink header that the egress client rebuilds
                the original DataLink packet with."
        ::= { mpcEgressCacheEntry 9 }

mpcEgressCacheIngressMpcDataAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Data ATM Address of the ingress MPC that issued
                the MPOA Resolution request"
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 81."
        ::= { mpcEgressCacheEntry 10 }

mpcEgressCacheLecIndex OBJECT-TYPE
        SYNTAX          LecIndex
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This is the lecIndex of the LANE Client that this flow
                is associated with.  This can be used to get the ELAN
                name as well as other LANE parameters."
```

```
        ::= { mpcEgressCacheEntry 11 }

mpcEgressCacheServiceCategory OBJECT-TYPE
        SYNTAX          INTEGER (0..65535)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This is a bitmap describing the service categories
                supported for this shortcut.  This value represents
                an inclusive OR of the bits:

                bit 1 - if rt-VBR is supported,
                bit 2 - if nrt-VBR is supported,
                bit 4 - if ABR is supported,
                bit 8 - if CBR is supported

                A value of 0 (zero) indicates that UBR is supported."
        REFERENCE
                "Lane V2 LUNI TLVs.  AF-LANE-0084, page 122."
        ::= { mpcEgressCacheEntry 12 }


--
--  MPOA Server Objects
--

mpsObjects OBJECT IDENTIFIER ::= { mpoaMIBObjects 3 }

mpsNextIndex OBJECT-TYPE
        SYNTAX          Integer32 (0..2147483647)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This object contains an appropriate value to
                be used for mpsIndex when creating entries in
                the mpsConfigTable.  The value 0 indicates that
                no new rows can be created.  Otherwise, it is
                recommended that values are assigned contiguously,
                starting from 1.

                MPS creation by a Manager:  To obtain the mpsIndex
                value for a new entry, the manager issues a management
                protocol retrieval operation to obtain the current value
                of this object.  If the value retrieved is 0 (zero), the
                manager cannot create a row.
                After each retrieval of a non-zero value, the manager
                should issue a management protocol SET operation using
                the value just retrieved.  If the SET is successful,
                the agent should update the value to the next
                unassigned index, or zero if appropriate.

                NOTE:  the manager may also issue a set on this object
                with a value of its own choosing.  If the set is successful,
                the manager may use this value for the mpsIndex. In this
                case, the agent would update the value to the next
                unassigned index, or zero if appropriate.
```

```
                The definition of 'next unassigned index' is any
                mpsNextIndex value that has not yet been set by a
                manager, or reserved by the agent (see next paragraph),
                since this agent was last re-initialized.

                MPS creation by an Agent:  When a row in the mpsConfigTable is
                created by an agent, the agent should reserve the value of
                the index by updating the value of this object to
                the next unassigned index or zero if appropriate.  Thus, a manager
                will not be able to set an index reserved by an agent.
                In the situation of an agent re-initialization all currently
                used mpsIndexes must be preserved.  In other words, the Agent
                should store in non-volatile memory  all the currently used
                mpsIndexes (along with all necessary configuration information
                from the mpsConfigTable).  When the agent is re-initialized,
                the mpsNextIndex value is any valid Integer32 which is not
                being used as an mpsIndex, except 0 which maintains its
                original definition of indicating that a row cannot be created."
        ::= { mpsObjects 1 }


--
--  MPOA Server configuration group
--

mpsConfigTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsConfigEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "The MPOA Server Configuration Table.
                This table represents the configuration information for
                all MPOA Servers which this agent manages."
        ::= { mpsObjects 2 }

mpsConfigEntry OBJECT-TYPE
        SYNTAX          MpsConfigEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "MPOA Server Configuration Entry.
                Each entry contains configuration information
                for one MPOA Server."
        INDEX           { mpsIndex }
        ::= { mpsConfigTable 1 }

MpsConfigEntry ::= SEQUENCE {

        ---- Primary config info: Index, mode and address information
        --
        mpsIndex                        MpsIndex,
        mpsRowStatus            RowStatus,
        mpsConfigMode           INTEGER,


        mpsCtrlAtmAddr          AtmConfigAddr,
```

```
        --
        -- MPS parameters that can be obtained from
        -- the LECS.
        --
        mpsKeepAliveTime            Integer32,    -- MPS-p1
        mpsKeepAliveLifeTime    Integer32,    -- MPS-p2
        -- The Flow-detection Protocols (denoted with MPS-p3)
        -- are represented in the mpcProtocolsTable.
        mpsInitialRetryTime     Integer32,    -- MPS-p4
        mpsRetryTimeMaximum     Integer32,    -- MPS-p5
        mpsGiveupTime           Integer32,    -- MPS-p6
        mpsDefaultHoldingTime   Integer32     -- MPS-p7
}

mpsIndex OBJECT-TYPE
        SYNTAX          MpsIndex
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A value which uniquely identifies this conceptual
                row in the mpsConfigTable.  The 'mpsNextIndex' object
                needs to be used to determine the value of this object.
                A row cannot be added, unless the mpsCtrlAtmAddress
                is unique.
                In the event of an MPS re-initialization, the value
                of this mpsIndex must remain the same.  However, in
                the event of an agent re-initialization, this value
                does not need to be preserved."
        ::= { mpsConfigEntry 1 }

mpsRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "This object allows creation and deletion of MPOA Servers.
                Within each conceptual mpsConfigTable row, objects which are
                writable may be modified regardless of the value of
                mpsRowStatus.  It is not necessary to set a row's status
                to 'notInService' first.

                A row cannot be created, unless the mpsAtmCtrlAddress
                in this table is unique. When an MPOA Server is created
                via this object, it will initially have
                        'mpsActualState' = 'initialState'."
        ::= { mpsConfigEntry 2 }

mpsConfigMode OBJECT-TYPE
        SYNTAX          INTEGER {
                                automatic(1),
                                manual(2)
                        }
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
```

```
                "Indicates whether this MPS should auto-configure
                the next time it is (re-)initialized.
                In automatic(1) mode the LECS is contacted and
                requests are made for the MPS-p* parameters.
                In manual(2) mode, the values of the configuration
                parameters are obtained from the mpsConfigTable
                and the mpsProtocolTable."
        DEFVAL { automatic }
        ::= { mpsConfigEntry 3 }

mpsCtrlAtmAddr OBJECT-TYPE
        SYNTAX          AtmConfigAddr
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "The MPS's Control ATM Address.  There exists one
                Control ATM Address per MPS, therefore, the value
                of this entry is unique within the table."
        ::= { mpsConfigEntry 4 }

mpsKeepAliveTime OBJECT-TYPE
        SYNTAX          Integer32 (1..300)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPS-p1 Keep-alive time is max interval between
                the MPS sending MPOA Keep-Alives in seconds."
        DEFVAL { 10 }
        ::= { mpsConfigEntry 5 }

mpsKeepAliveLifeTime OBJECT-TYPE
        SYNTAX          Integer32 (3..1000)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPS-p2 Keep-Alive Lifetime
                The length of time an MPC may consider a Keep-Alive
                valid in seconds.  This value must be at least
                three times the mpsKeepAliveTime (MPS-p1)."
        DEFVAL  { 35 }
        ::= { mpsConfigEntry 6 }

mpsInitialRetryTime OBJECT-TYPE
        SYNTAX          Integer32 (1..300)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPS-p4 is initial value in seconds for the
                MPOA retry mechanism."
        DEFVAL { 5 }
        ::= { mpsConfigEntry 7 }

mpsRetryTimeMaximum OBJECT-TYPE
        SYNTAX          Integer32 (10..300)
        MAX-ACCESS      read-create
        STATUS          current
```

```
        DESCRIPTION
                "MPS-p5 cumulative max value in seconds
                for Retry Time (MPS-p4)."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Section 4.3 MPOA Retry Mechanism"
        DEFVAL  { 40 }
        ::= { mpsConfigEntry 8 }

mpsGiveupTime OBJECT-TYPE
        SYNTAX          Integer32 (5..300)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPS-p6 Give Up Time.
                Minimum time in seconds to wait before giving up on a
                pending resolution request."
        DEFVAL { 40 }
        ::= { mpsConfigEntry 9 }

mpsDefaultHoldingTime OBJECT-TYPE
        SYNTAX          Integer32 (1..120)
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "MPS-p7 Default Holding Time in minutes.
                The default Holding Time used in NHRP
                Resolution Replies.  An egress MPS may use
                local information to determine a more
                appropriate Holding Time."
        DEFVAL { 20 }
        ::= { mpsConfigEntry 10 }

--
-- MPOA Server Actual group
--

mpsActualTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsActualEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A read-only table containing identification, status,
                and operational information about the MPOA
                Servers this agent manages."
        ::= { mpsObjects 3 }

mpsActualEntry OBJECT-TYPE
        SYNTAX          MpsActualEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "An entry in the MPS Actual Table.
                An entry represents a specific MPOA Server's
                status and operation information."
        AUGMENTS { mpsConfigEntry }
```

```
        ::= { mpsActualTable 1 }

MpsActualEntry ::= SEQUENCE {
        mpsActualState              INTEGER,
        mpsDiscontinuityTime        TimeStamp,
        mpsActualConfigMode         INTEGER,

        --
        -- Actual values of parameters
        --
        mpsActualKeepAlive          Integer32,   -- MPS-p1
        mpsActualKeepAliveLifeTime  Integer32,   -- MPS-p2
        -- The Internetwork-layer Protocols for MPS-p3 are
        -- represented in the mpsProtocolTable.
        --
        mpsActualInitialRetryTime   Integer32,   -- MPS-p4
        mpsActualRetryTimeMaximum   Integer32,   -- MPS-p5
        mpsActualGiveupTime         Integer32,   -- MPS-p6
        mpsActualDefaultHoldingTime Integer32    -- MPS-p7

}

mpsActualState OBJECT-TYPE
        SYNTAX          INTEGER {
                                unknown(1),
                                initialState(2),
                                up(3),
                                down(4)
                        }
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This object indicates the current operational
                status of the MPOA Server."
        ::= { mpsActualEntry 1 }

mpsDiscontinuityTime 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 MPS's counters
                experienced a discontinuity.  The relevant counters
                are the specific instances associated with this
                MPS.  If discontinuities have not occurred since the
                last re-initialization of the local management subsystem,
                then this object contains a zero value."
        ::= { mpsActualEntry 2 }

mpsActualConfigMode OBJECT-TYPE
        SYNTAX          INTEGER {
                                automatic(1),
                                manual(2)
                        }
        MAX-ACCESS      read-only
```

```
        STATUS          current
        DESCRIPTION
                "Indicates whether this MPS auto-configured
                when it was last (re-)initialized."
        ::= { mpsActualEntry 3 }

mpsActualKeepAlive OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The maximum amount of time in seconds this MPS waits
                between sending MPOA Keep-Alives."
        ::= { mpsActualEntry 5 }

mpsActualKeepAliveLifeTime OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The length of time in seconds this MPS
                considers a Keep-Alive valid."
        ::= { mpsActualEntry 6 }

mpsActualInitialRetryTime OBJECT-TYPE
        SYNTAX          Integer32 (1..300)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The actual initial value in seconds for the MPOA
                retry mechanism."
        DEFVAL { 5 }
        ::= { mpsActualEntry 7 }

mpsActualRetryTimeMaximum OBJECT-TYPE
        SYNTAX          Integer32 (30..300)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The actual cumulative max value in seconds
                for Retry Time."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Section 4.3 MPOA Retry Mechanism"
        DEFVAL  { 40 }
        ::= { mpsActualEntry 8 }

mpsActualGiveupTime OBJECT-TYPE
        SYNTAX          Integer32 (5..300)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Minimum time in seconds that this MPS waits
                before giving up on a pending resolution request."
        DEFVAL { 40 }
        ::= { mpsActualEntry 9 }
```

```
mpsActualDefaultHoldingTime OBJECT-TYPE
        SYNTAX          Integer32 (1..120)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The actual Holding Time in minutes used in
                NHRP Resolution Replies."
        ::= { mpsActualEntry 10 }


--
--  MPOA Server statistics group
--

mpsStatisticsTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsStatisticsEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This table represents the statistical information
                for the MPSs, which this agent manages."
        ::= { mpsObjects 4 }

mpsStatisticsEntry OBJECT-TYPE
        SYNTAX          MpsStatisticsEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Each row in this table contains statistics
                for one MPOA server."
        AUGMENTS  { mpsConfigEntry }
        ::= { mpsStatisticsTable 1 }

MpsStatisticsEntry ::= SEQUENCE {
        mpsStatRxMpoaResolveRequests                    Counter32,
        mpsStatTxMpoaResolveReplyAcks                   Counter32,
        mpsStatTxMpoaResolveReplyInsufECResources       Counter32,
        mpsStatTxMpoaResolveReplyInsufSCResources       Counter32,
        mpsStatTxMpoaResolveReplyInsufEitherResources   Counter32,
        mpsStatTxMpoaResolveReplyUnsupportedInetProt    Counter32,
        mpsStatTxMpoaResolveReplyUnsupportedMacEncaps   Counter32,
        mpsStatTxMpoaResolveReplyUnspecifiedOther       Counter32,
        mpsStatTxMpoaResolveReplyOther                  Counter32,
        mpsStatGiveupTimeExpireds                       Counter32,

        mpsStatTxMpoaImpRequests                        Counter32,
        mpsStatRxMpoaImpReplyAcks                       Counter32,
        mpsStatRxMpoaImpReplyInsufECResources           Counter32,
        mpsStatRxMpoaImpReplyInsufSCResources           Counter32,
        mpsStatRxMpoaImpReplyInsufEitherResources       Counter32,
        mpsStatRxMpoaImpReplyUnsupportedInetProt        Counter32,
        mpsStatRxMpoaImpReplyUnsupportedMacEncaps       Counter32,
        mpsStatRxMpoaImpReplyUnspecifiedOther           Counter32,
        mpsStatRxMpoaImpReplyOther                      Counter32,
```

```
        mpsStatRxMpoaEgressCachePurgeRequests          Counter32,
        mpsStatTxMpoaEgressCachePurgeReplies           Counter32,
        mpsStatTxMpoaTriggers                          Counter32,
        mpsStatTxNhrpResolveRequests                   Counter32,
        mpsStatRxNhrpResolveReplies                    Counter32,
        mpsStatRxNhrpResolveRequests                   Counter32,
        mpsStatTxNhrpResolveReplies                    Counter32
}

mpsStatRxMpoaResolveRequests OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Resolve Requests received
                by this MPS which are translated to NHRP
                resolve requests.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 1 }

mpsStatTxMpoaResolveReplyAcks OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this
                MPS which contain the MPOA CIE Code of 0x00, 'Success'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 2 }

mpsStatTxMpoaResolveReplyInsufECResources OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this MPS
                which contain the MPOA CIE Code of 0x81, 'Insufficient
                resources to accept egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 3 }

mpsStatTxMpoaResolveReplyInsufSCResources OBJECT-TYPE
        SYNTAX      Counter32
```

```
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this MPS
                which contain the MPOA CIE Code of 0x82,
                'Insufficient resources to accept shortcut'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 4 }

mpsStatTxMpoaResolveReplyInsufEitherResources OBJECT-TYPE
        SYNTAX       Counter32
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this MPS
                which contain the MPOA CIE CODE of 0x83, 'Insufficient
                resources to accept either shortcut or egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
::= { mpsStatisticsEntry 5 }

mpsStatTxMpoaResolveReplyUnsupportedInetProt OBJECT-TYPE
        SYNTAX       Counter32
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this MPS
                which contain the MPOA CIE CODE of 0x84, 'Unsupported Internetwork
                Layer protocol'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 6 }

mpsStatTxMpoaResolveReplyUnsupportedMacEncaps OBJECT-TYPE
        SYNTAX       Counter32
        MAX-ACCESS   read-only
        STATUS       current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this MPS
                which contain the MPOA CIE CODE of 0x85, 'Unsupported MAC
                layer encapsulation'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
```

```
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 7 }

mpsStatTxMpoaResolveReplyUnspecifiedOther OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this MPS
                which contain the MPOA CIE CODE of 0x88, 'Unspecified/Other'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 8 }

mpsStatTxMpoaResolveReplyOther OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Resolve Replies transmitted by this
                MPS which are not counted above.  NOTE:  this would
                include NHRP errors.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 9 }

mpsStatGiveupTimeExpireds OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of times the MPS Give up Time (MPS-p6)
                has expired while waiting for a reply from a
                re-originated MPOA resolution request, i.e. a
                reply for a translated NHRP resolution request.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 10 }

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

```
        DESCRIPTION
                "The number of MPOA Cache Imposition Requests
                transmitted by this MPS.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 11 }

mpsStatRxMpoaImpReplyAcks OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of successful MPOA Cache Imposition Replies
                received by this MPS which contain an MPOA CIE Code of 0x00,
                'Success'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 12 }

mpsStatRxMpoaImpReplyInsufECResources OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which contain the MPOA CIE Code of 0x81,
                'Insufficient resources to accept egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 13 }

mpsStatRxMpoaImpReplyInsufSCResources OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which contain the MPOA CIE Code of 0x82,
                'Insufficient resources to accept shortcut'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 14 }

mpsStatRxMpoaImpReplyInsufEitherResources OBJECT-TYPE
```

```
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which contain the MPOA CIE Code of 0x83,
                'Insufficient resources to accept either shortcut or
                egress cache entry'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 15 }

mpsStatRxMpoaImpReplyUnsupportedInetProt OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which contain the MPOA CIE Code of 0x84,
                'Unsupported Internetwork Layer protocol'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 16 }

mpsStatRxMpoaImpReplyUnsupportedMacEncaps OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which contain the MPOA CIE Code of 0x85,
                'Unsupported MAC layer encapsulation'.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 17 }

mpsStatRxMpoaImpReplyUnspecifiedOther OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which contain the MPOA CIE Code of 0x88,
                'Unspecified/Other'.
```

```
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 18 }

mpsStatRxMpoaImpReplyOther OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Cache Imposition Replies received by
                this MPS which are not counted previously.  NOTE:
                this would include NHRP errors.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM. AF-MPOA-0087.000. Page 62."
        ::= { mpsStatisticsEntry 19 }

mpsStatRxMpoaEgressCachePurgeRequests OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Egress Cache Purges Requests
                received by this MPS.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 20 }

mpsStatTxMpoaEgressCachePurgeReplies OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Egress Cache Purge Replies
                transmitted by this MPS.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 21 }

mpsStatTxMpoaTriggers OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The number of MPOA Trigger messages transmitted by this MPS.
```

```
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Section 4.7.2.1 MPOA Trigger"
        ::= { mpsStatisticsEntry 22 }

mpsStatTxNhrpResolveRequests OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Total count of MPOA Resolution Requests received
                by the Ingress MPS which were translated to NHRP
                Resolution Requests and transmitted to the NHS.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 23 }

mpsStatRxNhrpResolveReplies OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Total count of NHRP Resolution Replies received
                by the Ingress.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 24 }

mpsStatRxNhrpResolveRequests OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Total count of NHRP Resolution Requests received by
                the Egress MPS from the NHS.
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 25 }

mpsStatTxNhrpResolveReplies OBJECT-TYPE
        SYNTAX          Counter32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Total count of NHRP Resolution Replies transmitted
                by the Egress MPS to the NHS.
```

```
                Discontinuities in the value of this counter can occur
                at re-initialization of the management system, and/or
                re-initialization of the MPS, and at other times,
                as indicated by the value of mpsDiscontinuityTime."
        ::= { mpsStatisticsEntry 26 }


--
--  MPOA Server Protocol support group
--

mpsProtocolTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsProtocolEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "List of protocols, per MPS, for which
                MPOA resolution is enabled."
        REFERENCE
                "Multiprotocol Over ATM Version 1.0 (Letter Ballot),
                Section 4.1.1.1 MPS Parameters"
        ::= { mpsObjects 5 }

mpsProtocolEntry OBJECT-TYPE
        SYNTAX          MpsProtocolEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Each row indicates one protocol for which an MPS
                will perform MPOA resolution.
                If the LECS was contacted for configuration
                information, and the MPS-p3's control octet is set to Enable,
                0x01, then protocol values retrieved from the LECS are reflected
                in this table and the mpsLECSValue object will be (1) true.
                Also, the user or agent can create rows which
                appropriately correspond to the MPS denoted by mpsIndex,
                and the mpsLECSValue object will be set to (2) false.
                NOTE:  if the LECS does not return information for
                the MPS-p3 parameter, or if in manual mode, the user or agent
                should create at least one entry for the corresponding MPS.
                Both, LECS and user and/or agent created rows may exist in
                this Table."
        INDEX           {       mpsIndex,
                                mpsInternetworkLayerProtocol
                        }
        ::= {mpsProtocolTable 1 }

MpsProtocolEntry ::= SEQUENCE {
        mpsInternetworkLayerProtocol    InternetworkAddrType,  -- MPS-p3
        mpsLECSValue                    TruthValue,
        mpsProtocolRowStatus            RowStatus
}

mpsInternetworkLayerProtocol OBJECT-TYPE
        SYNTAX InternetworkAddrType
        MAX-ACCESS not-accessible
```

```
        STATUS current
        DESCRIPTION
                "MPS-p3 A protocol on which to perform MPOA resolution."
        ::= { mpsProtocolEntry 1 }

mpsLECSValue OBJECT-TYPE
        SYNTAX          TruthValue
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "This object reflects if the current entry is due to
                a retrieval from the LECS or not.  If this entry is
                due to the LECS, then true(1) is the value for this object,
                otherwise, false (2)."
        ::= { mpsProtocolEntry 2 }

mpsProtocolRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "This object allows network managers to enable
                resolution for the 'mpsInternetworkLayerProtocol'."
        ::= { mpsProtocolEntry 3 }


--
-- MPOA Server LEC Mapping group
--

mpsMappingTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsMappingEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A table mapping the 'lecIndex' values of
                LANE Clients to the 'mpsIndex' values of
                corresponding MPOA Servers."
        ::= { mpsObjects 6 }
mpsMappingEntry OBJECT-TYPE
        SYNTAX          MpsMappingEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "Each row defines one lecIndex --> mpsIndex mapping.
                The mpsIndex that a lecIndex maps to is not
                necessarily unique. In other words, there can be
                multiple LECs associated with one MPS."
        REFERENCE
                "LAN Emulation Client Management Specification.
                af-lane-0044-000."
        INDEX { lecIndex }
        ::= { mpsMappingTable 1 }

MpsMappingEntry ::= SEQUENCE {
        mpsMappingRowStatus     RowStatus,
```

```
        mpsMappingIndex                 MpsIndex
}
mpsMappingRowStatus OBJECT-TYPE
        SYNTAX          RowStatus
        MAX-ACCESS      read-create
        STATUS          current
        DESCRIPTION
                "Allows creation, enabling/disabling of this row."
        ::= { mpsMappingEntry 1 }

mpsMappingIndex OBJECT-TYPE
        SYNTAX          MpsIndex
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The mpsMappingIndex of the MPOA Server that is associated with
                this LEC.  The mpsMappingIndex corresponds to the mpsIndex."
        ::= { mpsMappingEntry 2 }


--
-- MPOA Server MPC Information Group
--

mpsMpcTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsMpcEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This read-only table contains information about the
                MPCs that these MPSs know about."
        ::= { mpsObjects 9 }

mpsMpcEntry OBJECT-TYPE
        SYNTAX          MpsMpcEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A row created by an MPS.  The MPS learns about the MPC and
                creates a row."
        INDEX           {       mpsIndex,
                                mpsMpcIndex
                        }
        ::= { mpsMpcTable 1 }

MpsMpcEntry ::= SEQUENCE {
        mpsMpcIndex                     MpcIndex,
        mpsMpcCtrlAtmAddr               AtmAddr
}

mpsMpcIndex OBJECT-TYPE
        SYNTAX          MpcIndex
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "The local index for the mpc represented by this entry"
```

```
        ::= { mpsMpcEntry 1 }

mpsMpcCtrlAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "MPC control ATM address "
        ::= { mpsMpcEntry 2 }


--
-- MPOA Server Ingress Cache (Address Resolution) group
--

mpsIngressCacheTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsIngressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This table tracks all the Ingress Cache information
                of the MPSs which this agents manages."
        ::= { mpsObjects 7 }

mpsIngressCacheEntry OBJECT-TYPE
        SYNTAX          MpsIngressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "A entry contains parameters and state variables
                for a row in a MPS's Ingress Cache."
        INDEX           {       mpsIngressCacheDestInternetworkAddrType,
                                mpsIngressCacheDestAddr,
                                mpsIndex,
                                mpsMpcIndex
                        }
        ::= { mpsIngressCacheTable 1 }

MpsIngressCacheEntry ::= SEQUENCE {
        mpsIngressCacheDestInternetworkAddrType         InternetworkAddrType,
        mpsIngressCacheDestAddr                         InternetworkAddr,
        mpsIngressCachePrefixLen                        Integer32,
        mpsIngressCacheEntryState                       INTEGER,
        mpsIngressCacheSrcInternetworkAddrType          InternetworkAddrType,
        mpsIngressCacheSrcAddr                          InternetworkAddr,
        mpsIngressCacheSourceMpcCtrlAtmAddr             AtmAddr,
        mpsIngressCacheResolvedAtmAddr                  AtmAddr,
        mpsIngressCacheHoldTime                         TimeInterval,
        mpsIngressCacheMpoaRequestId                    Integer32,
        mpsIngressCacheNhrpRequestId                    Integer32,
        mpsIngressCacheServiceCategory                  INTEGER
}

mpsIngressCacheDestInternetworkAddrType OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      read-only
```

```
        STATUS          current
        DESCRIPTION
                "The type of internetwork layer address of the
                Destination Address."
        ::= { mpsIngressCacheEntry 1 }

mpsIngressCacheDestAddr OBJECT-TYPE
        SYNTAX          InternetworkAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Ingress MPS Destination Internetwork Layer Address."
        ::= { mpsIngressCacheEntry 2 }

mpsIngressCachePrefixLen OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Prefix Length of the mpsIngressCacheDestAddr."
        ::= { mpsIngressCacheEntry 3 }

mpsIngressCacheEntryState OBJECT-TYPE
        SYNTAX          INTEGER {       doesNotExist (1),
                                        inactive(2),
                                        active(3),
                                        negative(4)
                        }
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The state of this MPS Ingress cache.
                The states are:
                        doesNotExist (1) -- the state is not yet available
                        inactive (2) -- state exists, entry is not yet active
                                For example,if using the Finite
                                State Machine in Appendix I.3,
                                the state resolving is 'inactive'.
                        active (3) -- state exists, entry is active.
                                For example,if using the Finite
                                State Machine in Appendix I.3,
                                the state resolved
                                is 'active' state.
                        negative (4) -- state exists, entry is negative.
                                For example,if using the Finite
                                State Machine in Appendix I.3,
                                the state purging is 'negative'."
        REFERENCE
                "Multiprotocol Over ATM, Letter Ballot, Appendix I.3."
        ::= { mpsIngressCacheEntry 4 }

mpsIngressCacheSrcInternetworkAddrType OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
```

```
                "The type of internetwork layer address of the
                Source Address."
        ::= { mpsIngressCacheEntry 5 }

mpsIngressCacheSrcAddr OBJECT-TYPE
        SYNTAX          InternetworkAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Ingress MPS Source Internetwork Layer Address."
        ::= { mpsIngressCacheEntry 6 }

mpsIngressCacheSourceMpcCtrlAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The ATM Address from the source of this MPOA request.
                In other words, the Ingress MPC's Control Atm Address."
        ::= { mpsIngressCacheEntry 7 }

mpsIngressCacheResolvedAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The ATM Address which has been resolved by an Egress MPC."
        ::= { mpsIngressCacheEntry 8 }

mpsIngressCacheHoldTime OBJECT-TYPE
        SYNTAX          TimeInterval
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Time interval that this value is valid."
        ::= { mpsIngressCacheEntry 9 }

mpsIngressCacheMpoaRequestId OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The request ID contained in the MPOA resolution request
                from the local Ingress MPC."
        ::= { mpsIngressCacheEntry 10 }

mpsIngressCacheNhrpRequestId OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The request ID which this MPS generates to identify the
                NHRP resolution request."
        ::= { mpsIngressCacheEntry 11 }

mpsIngressCacheServiceCategory OBJECT-TYPE
```

```
        SYNTAX          INTEGER (0..65535)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The service categories supported for this shortcut."
        REFERENCE
                "Lane V2 LUNI TLVs"
::= { mpsIngressCacheEntry 12 }


--
--  MPOA Server Egress Cache (Impositions) group
--

mpsEgressCacheTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF MpsEgressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "This table contains information regarding the
                Egress MPOA Server Cache Table."
        ::= { mpsObjects 8 }

mpsEgressCacheEntry OBJECT-TYPE
        SYNTAX          MpsEgressCacheEntry
        MAX-ACCESS      not-accessible
        STATUS          current
        DESCRIPTION
                "An entry represents an entry in the MPS's Egress
                cache Table which keeps track of the state of the
                impositions."
        INDEX  {        mpsEgressCacheId,
                        mpsIndex,
                        mpsMpcIndex
                }
        ::= { mpsEgressCacheTable 1 }

MpsEgressCacheEntry ::= SEQUENCE {
        mpsEgressCacheId                        Integer32,
        mpsEgressCacheDestInternetworkAddrType  InternetworkAddrType,
        mpsEgressCacheDestAddr                  InternetworkAddr,
        mpsEgressCachePrefixLen                 INTEGER,
        mpsEgressCacheHoldTime                  TimeInterval,
        mpsEgressCacheEntryState                INTEGER,
        mpsEgressCacheDataLinkHeader            OCTET STRING,
        mpsEgressCacheElanId                    Integer32,
        mpsEgressCacheSourceClientAtmAddr       AtmAddr,
        mpsEgressCacheNhrpRequestId             Integer32,
        mpsEgressCacheMpoaRequestId             Integer32,
        mpsEgressCacheServiceCategory           INTEGER,
        mpsEgressCacheNextHopInternetworkAddrType
                                                InternetworkAddrType,
        mpsEgressCacheNextHopAddr               InternetworkAddr
}

mpsEgressCacheId OBJECT-TYPE
```

```
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The id which identifies this cache entry."
        ::= { mpsEgressCacheEntry 1 }

mpsEgressCacheDestInternetworkAddrType OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The destination protocol address type."
        ::= { mpsEgressCacheEntry 2 }

mpsEgressCacheDestAddr OBJECT-TYPE
        SYNTAX          InternetworkAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The destination protocol address."
        ::= { mpsEgressCacheEntry 3 }

mpsEgressCachePrefixLen OBJECT-TYPE
        SYNTAX          INTEGER (0..255)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The destination prefix length."
        ::= { mpsEgressCacheEntry 4 }

mpsEgressCacheHoldTime OBJECT-TYPE
        SYNTAX          TimeInterval
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Time interval that this value is valid."
        ::= { mpsEgressCacheEntry 5 }

mpsEgressCacheEntryState OBJECT-TYPE
        SYNTAX          INTEGER         {       doesNotExist(1),
                                                inactive(2),
                                                active(3),
                                                negative(4)
                                        }
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The present states of this MPS egress cache entry.
                The states are:
                        doesNotExist (1) -- the state is not yet available
                        inactive (2) -- state exists, entry is not yet active
                                For example,if using the Finite
                                State Machine in Appendix 1.4,
                                the state imposing is 'inactive'.
                        active (3) -- state exists, entry is active.
```

```
                                For example,if using the Finite
                                State Machine in Appendix 1.4,
                                the state imposed
                                is 'active' state.
                        negative (4) -- state exists, entry is negative.
                                For example,if using the Finite
                                State Machine in Appendix 1.4,
                                the states purging and clearing
                                are 'negative'."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Appendix I.4 Egress MPS Control State Machine."
        ::= { mpsEgressCacheEntry 6 }

mpsEgressCacheDataLinkHeader OBJECT-TYPE
        SYNTAX          OCTET STRING  (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "Data-Link Layer Header."
        ::= { mpsEgressCacheEntry 7 }

mpsEgressCacheElanId OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The elan id that this Cache Imposition is sent on."
        ::= { mpsEgressCacheEntry 8 }

mpsEgressCacheSourceClientAtmAddr OBJECT-TYPE
        SYNTAX          AtmAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The Ingress NHC's Atm Address used in the
                original cache imposition."
        REFERENCE
                "Multiprotocol Over ATM.  AF-MPOA-0087.000.
                Page 45."
        ::= { mpsEgressCacheEntry 9 }

mpsEgressCacheNhrpRequestId OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The request id from the original NHRP Resolution Request,
                may be only useful in the Resolving State."
        ::= { mpsEgressCacheEntry 10 }

mpsEgressCacheMpoaRequestId OBJECT-TYPE
        SYNTAX          Integer32
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
```

```
                "The new request id which is generated for this imposition's
                request, may be only useful in the Resolving State."
        ::= { mpsEgressCacheEntry 11 }

mpsEgressCacheServiceCategory OBJECT-TYPE
        SYNTAX          INTEGER (0..65535)
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The service categories supported for this shortcut."
        REFERENCE
                "Lane V2 LUNI TLVs"
        ::= { mpsEgressCacheEntry 12 }

mpsEgressCacheNextHopInternetworkAddrType OBJECT-TYPE
        SYNTAX          InternetworkAddrType
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The NextHop protocol address type."
        ::= { mpsEgressCacheEntry 13 }

mpsEgressCacheNextHopAddr OBJECT-TYPE
        SYNTAX          InternetworkAddr
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION
                "The NextHop protocol address."
        ::= { mpsEgressCacheEntry 14 }


--
-- Conformance Information
--

mpoaMIBConformance OBJECT IDENTIFIER ::= { mpoaMIB 2 }

mpoaMIBGroups
        OBJECT IDENTIFIER ::= { mpoaMIBConformance 1}

mpoaMIBCompliances
        OBJECT IDENTIFIER ::= { mpoaMIBConformance 2}


--
-- Compliance Statements
--

mpoaMpcMibBasicCompliance MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
                "The basic implementation requirements for SNMP entities
                which support MPOA Clients."

        MODULE -- this module
                MANDATORY-GROUPS {          mpcConfigGroup,
```

```
                                        mpcActualGroup,
                                        mpcDataAtmAddressGroup,
                                        mpcStatisticsGroup,
                                        mpcProtocolGroup,
                                        mpcMpsGroup,
                                        mpcMpsMacAddressGroup,
                                        mpcIngressCacheGroup,
                                        mpcEgressCacheGroup
                                }

        OBJECT          mpcRowStatus
                MIN-ACCESS    read-only
                DESCRIPTION
                        "Write access is not required."

        OBJECT          mpcDataAtmAddressRowStatus
                MIN-ACCESS    read-only
                DESCRIPTION
                        "Write access is not required."

        OBJECT          mpcProtocolRowStatus
        MIN-ACCESS    read-only
        DESCRIPTION
                "Write access is not required."

--
-- MPC Mapping Group Compliance
--

        GROUP mpcMappingGroup
        DESCRIPTION
                "This group is mandatory only when there is NOT a one-to-one
                relationship between the MPOA Client and the LANE Client.
                Optionally, a one-to-one relationship between an MPOA Client
                and a LANE Client can be enforced.  To enforce this
                one-to-one relationship the lecIndex for the LANE Client
                and the mpcIndex for the MPOA Client must have the same
                value.
                If this one-to-one mapping is enforced, then the implementation
                of the mpcMappingTable is unnecessary.  (Since the lecIndex and
                the mpcIndex contain the same value, there is no need to provide
                a mapping of mpcIndex value to lecIndex value.)
                The relationship between MPC and LEC is maintained by
                ensuring that the mpcIndex is the same as the lecIndex
                that is associated with it."

        OBJECT          mpcMappingRowStatus
        MIN-ACCESS    read-only
        DESCRIPTION
                "Write access is not required."

        OBJECT          mpcMappingIndex
        MIN-ACCESS    read-only
        DESCRIPTION
                "Write access is not required."
```

```
        ::= { mpoaMIBCompliances 1 }


mpoaMpcMibAdvancedCompliance MODULE-COMPLIANCE
        STATUS current
        DESCRIPTION
                "The advanced implementation requirements for SNMP entities
                which support MPOA Clients."
        MODULE -- this module
                MANDATORY-GROUPS {      mpoaDeviceTypeGroup,
                                        mpoaDeviceTypeMpsMacGroup,
                                        mpcConfigGroup,
                                        mpcActualGroup,
                                        mpcDataAtmAddressGroup,
                                        mpcStatisticsGroup,
                                        mpcProtocolGroup,
                                        mpcMpsGroup,
                                        mpcMpsMacAddressGroup,
                                        mpcIngressCacheTotalPacketGroup,
                                        mpcIngressCacheGroup,
                                        mpcEgressCacheTotalPacketGroup,
                                        mpcEgressCacheGroup
                                }


                OBJECT          mpcRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpcDataAtmAddressRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpcProtocolRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

--
-- MPC Mapping Group Compliance
--

        GROUP mpcMappingGroup
        DESCRIPTION
                "This group is mandatory only when there is NOT a one-to-one
                relationship between the MPOA Client and the LANE Client.
                Optionally, a one-to-one relationship between an MPOA Client
                and a LANE Client can be enforced.  To enforce this
                one-to-one relationship the lecIndex for the LANE Client
                and the mpcIndex for the MPOA Client must have the same
                value.
                If this one-to-one mapping is enforced, then the implementation
                of the mpcMappingTable is unnecessary.  (Since the lecIndex and
```

```
                the mpcIndex contain the same value, there is no need to provide
                a mapping of mpcIndex value to lecIndex value.)
                The relationship between MPC and LEC is maintained by
                ensuring that the mpcIndex is the same as the lecIndex
                that is associated with it."

                OBJECT          mpcMappingRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION     "Write access is not required."

                OBJECT          mpcMappingIndex
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."


        ::= { mpoaMIBCompliances 2 }

mpoaMpcMibAdvancedPlusOctetsCompliance MODULE-COMPLIANCE
        STATUS          current
        DESCRIPTION
                "The AdvancedPlusOctets implementation requirements for SNMP entities
                which support MPOA Clients.  This includes supporting
                the 64 bit octet counters."
        MODULE -- this module
                MANDATORY-GROUPS {      mpoaDeviceTypeGroup,
                                        mpoaDeviceTypeMpsMacGroup,
                                        mpcConfigGroup,
                                        mpcActualGroup,
                                        mpcDataAtmAddressGroup,
                                        mpcStatisticsGroup,
                                        mpcProtocolGroup,
                                        mpcMpsGroup,
                                        mpcMpsMacAddressGroup,
                                        mpcIngressCacheTotalPacketGroup,
                                        mpcIngressCacheTotalOctetGroup,
                                        mpcIngressCacheGroup,
                                        mpcEgressCacheTotalPacketGroup,
                                        mpcEgressCacheTotalOctetGroup,
                                        mpcEgressCacheGroup
                                }

                OBJECT          mpcRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpcDataAtmAddressRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpcProtocolRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."
```

```
--
-- MPC Mapping Group Compliance
--

                GROUP mpcMappingGroup
                DESCRIPTION
                        "This group is mandatory only when there is NOT a one-to-one
                        relationship between the MPOA Client and the LANE Client.
                        Optionally, a one-to-one relationship between an MPOA Client
                        and a LANE Client can be enforced.  To enforce this
                        one-to-one relationship the lecIndex for the LANE Client
                        and the mpcIndex for the MPOA Client must have the same
                        value.
                        If this one-to-one mapping is enforced, then the implementation
                        of the mpcMappingTable is unnecessary.  (Since the lecIndex and
                        the mpcIndex contain the same value, there is no need to provide
                        a mapping of mpcIndex value to lecIndex value.)
                        The relationship between MPC and LEC is maintained by
                        ensuring that the mpcIndex is the same as the lecIndex
                        that is associated with it."

                OBJECT          mpcMappingRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpcMappingIndex
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

        ::= { mpoaMIBCompliances 3 }


mpoaMpsMibBasicCompliance MODULE-COMPLIANCE
        STATUS          current
        DESCRIPTION
                "The implementation requirements for SNMP entities
                which support MPOA Servers."
        MODULE -- this module
                MANDATORY-GROUPS {      mpsConfigGroup,
                                        mpsActualGroup,
                                        mpsStatisticsGroup,
                                        mpsProtocolGroup,
                                        mpsIngressCacheGroup,
                                        mpsEgressCacheGroup
                                }

                OBJECT          mpsRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpsProtocolRowStatus
                MIN-ACCESS      read-only
```

```
                DESCRIPTION
                        "Write access is not required."

--
-- MPS Mapping Group Compliance
--

                GROUP mpsMappingGroup
                DESCRIPTION
                        "This group is mandatory only when there is NOT a one-to-one
                        relationship between the MPOA Server and the LANE Client.
                        Optionally, a one-to-one relationship between an MPOA Server
                        and a LANE Client can be enforced.  To enforce this
                        one-to-one relationship the lecIndex for the LANE Client
                        and the mpcIndex for the MPOA Server must have the same
                        value.
                        If this one-to-one mapping is enforced, then the implementation
                        of the mpsMappingTable is unnecessary.  (Since the lecIndex and
                        the mpsIndex contain the same value, there is no need to provide
                        a mapping of mpsIndex value to lecIndex value.)
                        The relationship between MPS and LEC is maintained by
                        ensuring that the mpsIndex is the same as the lecIndex
                        that is associated with it."

                OBJECT          mpsMappingRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

        ::= { mpoaMIBCompliances 4 }

mpoaMpsMibAdvancedCompliance MODULE-COMPLIANCE
        STATUS          current
        DESCRIPTION
                "The advanced implementation requirements for SNMP entities
                which support MPOA Servers."
        MODULE -- this module
                MANDATORY-GROUPS {      mpoaDeviceTypeGroup,
                                        mpoaDeviceTypeMpsMacGroup,
                                        mpsConfigGroup,
                                        mpsActualGroup,
                                        mpsStatisticsGroup,
                                        mpsProtocolGroup,
                                        mpsIngressCacheGroup,
                                        mpsEgressCacheGroup
                                }

                OBJECT          mpsRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

                OBJECT          mpsProtocolRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."
```

```
--
-- MPS Mapping Group Compliance
--

                GROUP mpsMappingGroup
                DESCRIPTION
                        "This group is mandatory only when there is NOT a one-to-one
                        relationship between the MPOA Server and the LANE Client.
                        Optionally, a one-to-one relationship between an MPOA Server
                        and a LANE Client can be enforced.  To enforce this
                        one-to-one relationship the lecIndex for the LANE Client
                        and the mpcIndex for the MPOA Server must have the same
                        value.
                        If this one-to-one mapping is enforced, then the implementation
                        of the mpsMappingTable is unnecessary.  (Since the lecIndex and
                        the mpsIndex contain the same value, there is no need to provide
                        a mapping of mpsIndex value to lecIndex value.)
                        The relationship between MPS and LEC is maintained by
                        ensuring that the mpsIndex is the same as the lecIndex
                        that is associated with it."

                OBJECT          mpsMappingRowStatus
                MIN-ACCESS      read-only
                DESCRIPTION
                        "Write access is not required."

        ::= { mpoaMIBCompliances 5 }


--
-- Units of Conformance
--


mpoaDeviceTypeGroup OBJECT-GROUP
        OBJECTS         {
                deviceTypeLecIndex,
                deviceTypeRemoteLecAtmAddress,
                deviceTypeType,
                deviceTypeMpsAtmAddress,
                deviceTypeMpcAtmAddress
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which exists when
                the MPOA device learns the MPOA device type and
                MPOA control addresses of neighboring MPOA devices
                using the LANEv2 Device Type TLV."
        ::= { mpoaMIBGroups 1 }

mpoaDeviceTypeMpsMacGroup OBJECT-GROUP
        OBJECTS         { deviceTypeMpsMacAddress }
        STATUS          current
        DESCRIPTION
```

```
                "A collection of objects which is present when the
                MPOA device learns the MPOA device type and MPOA
                control addresses of neighboring MPOA devices using
                the LANEv2 Device Type TLV."
        ::= { mpoaMIBGroups 2 }

mpcConfigGroup OBJECT-GROUP
        OBJECTS         {
                mpcNextIndex,
                mpcRowStatus,
                mpcConfigMode,
                mpcCtrlAtmAddr,
                mpcSCSetupFrameCount,
                mpcSCSetupFrameTime,
                mpcInitialRetryTime,
                mpcRetryTimeMaximum,
                mpcHoldDownTime
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects used for creating and
                configuring MPOA Clients."
        ::= { mpoaMIBGroups 3 }

mpcActualGroup OBJECT-GROUP
        OBJECTS         {
                mpcActualState,
                mpcDiscontinuityTime,
                mpcActualConfigMode,
                mpcActualSCSetupFrameCount,
                mpcActualSCSetupFrameTime,
                mpcActualInitialRetryTime,
                mpcActualRetryTimeMaximum,
                mpcActualHoldDownTime
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects describing the status
                and operational parameters of the managed MPC."
        ::= { mpoaMIBGroups 4 }

mpcDataAtmAddressGroup OBJECT-GROUP
        OBJECTS         {
                mpcDataAtmAddressRowStatus
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which describe the
                set of data ATM addresses for the MPCs."
                ::= { mpoaMIBGroups 5 }

mpcStatisticsGroup OBJECT-GROUP
        OBJECTS         {
                mpcStatTxMpoaResolveRequests,
                mpcStatRxMpoaResolveReplyAcks,
                mpcStatRxMpoaResolveReplyInsufECResources,
```

```
                mpcStatRxMpoaResolveReplyInsufSCResources,
                mpcStatRxMpoaResolveReplyInsufEitherResources,
                mpcStatRxMpoaResolveReplyUnsupportedInetProt,
                mpcStatRxMpoaResolveReplyUnsupportedMacEncaps,
                mpcStatRxMpoaResolveReplyUnspecifiedOther,
                mpcStatRxMpoaImpRequests,
                mpcStatTxMpoaImpReplyAcks,
                mpcStatTxMpoaImpReplyInsufECResources,
                mpcStatTxMpoaImpReplyInsufSCResources,
                mpcStatTxMpoaImpReplyInsufEitherResources,
                mpcStatTxMpoaImpReplyUnsupportedInetProt,
                mpcStatTxMpoaImpReplyUnsupportedMacEncaps,
                mpcStatTxMpoaImpReplyUnspecifiedOther,
                mpcStatTxMpoaEgressCachePurgeRequests,
                mpcStatRxMpoaEgressCachePurgeReplies,
                mpcStatRxMpoaKeepAlives,
                mpcStatRxMpoaTriggers,
                mpcStatRxMpoaDataPlanePurges,
                mpcStatTxMpoaDataPlanePurges,
                mpcStatRxNhrpPurgeRequests,
                mpcStatTxNhrpPurgeReplies,
                mpcStatRxErrUnrecognizedExtensions,
                mpcStatRxErrLoopDetecteds,
                mpcStatRxErrProtoAddrUnreachables,
                mpcStatRxErrProtoErrors,
                mpcStatRxErrSduSizeExceededs,
                mpcStatRxErrInvalidExtensions,
                mpcStatRxErrInvalidReplies,
                mpcStatRxErrAuthenticationFailures,
                mpcStatRxErrHopCountExceededs
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects that provide statistics
                on the MPOA protocol parameters."
        ::= { mpoaMIBGroups 6 }

mpcProtocolGroup OBJECT-GROUP
        OBJECTS         {
                mpcLECSValue,
                mpcProtocolRowStatus
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects to specify which
                parameters this MPC is enabled for."
        ::= { mpoaMIBGroups 7 }

mpcMappingGroup OBJECT-GROUP
        OBJECTS         {
                mpcMappingRowStatus,
                mpcMappingIndex
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects to map from LEC to MPC"
```

```
        ::= { mpoaMIBGroups 8 }

mpcMpsGroup OBJECT-GROUP
        OBJECTS         { mpcMpsAtmAddr }
        STATUS          current
        DESCRIPTION
                "A collection of objects which aid the MPCs to track
                information for all the MPSs which are known by the MPCs."
        ::= { mpoaMIBGroups 9 }

mpcMpsMacAddressGroup OBJECT-GROUP
        OBJECTS         {
                mpcMpsMacAddress
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which aid the MPCs to track
                MAC Address information for all the MPSs which are known
                by the MPCs."
        ::= { mpoaMIBGroups 10 }

mpcIngressCacheTotalPacketGroup OBJECT-GROUP
        OBJECTS         {
                mpcIngressCacheTxTotalPackets
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which count the total
                number of packets transmitted over MPC
                short cuts."
        ::= { mpoaMIBGroups 11 }

mpcIngressCacheTotalOctetGroup OBJECT-GROUP
        OBJECTS         {
                mpcIngressCacheTxTotalOctets
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which count the total
                number of octets transmitted over MPC
                short cuts."
        ::= { mpoaMIBGroups 12 }

mpcIngressCacheGroup OBJECT-GROUP
        OBJECTS         {
                mpcIngressCacheDestInetworkAddrType,
                mpcIngressCacheDestAddr,
                mpcIngressCachePrefixLen,
                mpcIngressCacheDestAtmAddr,
                mpcIngressCacheSrcAtmAddr,
                mpcIngressCacheEntryState,
                mpcIngressCacheEgressCacheTagValid,
                mpcIngressCacheEgressCacheTag,
                mpcIngressCacheLastNhrpCieCode,
                mpcIngressCacheSigErrCode,
                mpcIngressCacheRetries,
```

```
                mpcIngressCacheTimeUntilNextResolutionRequest,
                mpcIngressCacheHoldingTime,
                mpcIngressCacheServiceCategory
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects used to monitor the
                MPOA ingress cache."
        ::= { mpoaMIBGroups 13 }

mpcEgressCacheTotalPacketGroup OBJECT-GROUP
        OBJECTS         {
                mpcEgressCacheRxTotalPackets
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which count the total
                number of packets received by MPC short cuts."
        ::= { mpoaMIBGroups 14 }

mpcEgressCacheTotalOctetGroup OBJECT-GROUP
        OBJECTS         {
                mpcEgressCacheRxTotalOctets
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects which count the total
                number of octets received by MPC short cuts."
        ::= { mpoaMIBGroups 15 }

mpcEgressCacheGroup OBJECT-GROUP
        OBJECTS         {
                mpcEgressCacheId,
                mpcEgressCacheInetworkAddrType,
                mpcEgressCacheIDestAddr,
                mpcEgressCachePrefixLen,
                mpcEgressCacheEntryState,
                mpcEgressCacheEgressCacheTagValid,
                mpcEgressCacheEgressCacheTag,
                mpcEgressCacheHoldTime,
                mpcEgressCacheDataLinkHeader,
                mpcEgressCacheIngressMpcDataAtmAddr,
                mpcEgressCacheLecIndex,
                mpcEgressCacheServiceCategory
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects used to monitor the
                MPOA egress cache."
        ::= { mpoaMIBGroups 16 }

mpsConfigGroup OBJECT-GROUP
        OBJECTS         {
                mpsNextIndex,
                mpsRowStatus,
                mpsConfigMode,
```

```
                mpsCtrlAtmAddr,
                mpsKeepAliveTime,
                mpsKeepAliveLifeTime,
                mpsInitialRetryTime,
                mpsRetryTimeMaximum,
                mpsGiveupTime,
                mpsDefaultHoldingTime
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects used for creating and
                configuring MPOA Servers."
        ::= { mpoaMIBGroups 17 }

mpsActualGroup OBJECT-GROUP
        OBJECTS         {
                mpsActualState,
                mpsDiscontinuityTime,
                mpsActualConfigMode,
                mpsActualKeepAlive,
                mpsActualKeepAliveLifeTime,
                mpsActualInitialRetryTime,
                mpsActualRetryTimeMaximum,
                mpsActualGiveupTime,
                mpsActualDefaultHoldingTime
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects describing the status
                and operational parameters of the managed MPS."
        ::= { mpoaMIBGroups 18 }

mpsStatisticsGroup OBJECT-GROUP
        OBJECTS         {
                mpsStatRxMpoaResolveRequests,
                mpsStatTxMpoaResolveReplyAcks,
                mpsStatTxMpoaResolveReplyInsufECResources,
                mpsStatTxMpoaResolveReplyInsufSCResources,
                mpsStatTxMpoaResolveReplyInsufEitherResources,
                mpsStatTxMpoaResolveReplyUnsupportedInetProt,
                mpsStatTxMpoaResolveReplyUnsupportedMacEncaps,
                mpsStatTxMpoaResolveReplyUnspecifiedOther,
                mpsStatTxMpoaResolveReplyOther,
                mpsStatGiveupTimeExpireds,
                mpsStatTxMpoaImpRequests,
                mpsStatRxMpoaImpReplyAcks,
                mpsStatRxMpoaImpReplyInsufECResources,
                mpsStatRxMpoaImpReplyInsufSCResources,
                mpsStatRxMpoaImpReplyInsufEitherResources,
                mpsStatRxMpoaImpReplyUnsupportedInetProt,
                mpsStatRxMpoaImpReplyUnsupportedMacEncaps,
                mpsStatRxMpoaImpReplyUnspecifiedOther,
                mpsStatRxMpoaImpReplyOther,
                mpsStatRxMpoaEgressCachePurgeRequests,
                mpsStatTxMpoaEgressCachePurgeReplies,
                mpsStatTxMpoaTriggers,
```

```
                mpsStatTxNhrpResolveRequests,
                mpsStatRxNhrpResolveReplies,
                mpsStatRxNhrpResolveRequests,
                mpsStatTxNhrpResolveReplies
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects that provide statistics
                on the MPOA Server protocol parameters."
        ::= { mpoaMIBGroups 19 }

mpsProtocolGroup OBJECT-GROUP
        OBJECTS         {
                mpsLECSValue,
                mpsProtocolRowStatus
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects to specify which
                parameters this MPS is enabled for."
        ::= { mpoaMIBGroups 20 }

mpsMappingGroup OBJECT-GROUP
        OBJECTS         {
                mpsMappingRowStatus,
                mpsMappingIndex
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects to map from MPSs to LECs."
        ::= { mpoaMIBGroups 21 }

mpsMpcGroup OBJECT-GROUP
        OBJECTS         { mpsMpcCtrlAtmAddr }
        STATUS          current
        DESCRIPTION
                "A collection of objects which aid the MPSs to track
                information for all the MPCs which are known by the
                MPSs."
        ::= {mpoaMIBGroups 22 }

mpsIngressCacheGroup OBJECT-GROUP
        OBJECTS         {
                mpsIngressCacheDestInternetworkAddrType,
                mpsIngressCacheDestAddr,
                mpsIngressCachePrefixLen,
                mpsIngressCacheEntryState,
                mpsIngressCacheSrcInternetworkAddrType,
                mpsIngressCacheSrcAddr,
                mpsIngressCacheSourceMpcCtrlAtmAddr,
                mpsIngressCacheResolvedAtmAddr,
                mpsIngressCacheHoldTime,
                mpsIngressCacheMpoaRequestId,
                mpsIngressCacheNhrpRequestId,
                mpsIngressCacheServiceCategory
        }
```

```
        STATUS          current
        DESCRIPTION
                "A collection of objects to monitor the MPS
                ingress cache."
        ::= { mpoaMIBGroups 23 }

mpsEgressCacheGroup OBJECT-GROUP
        OBJECTS         {
                mpsEgressCacheId,
                mpsEgressCacheDestInternetworkAddrType,
                mpsEgressCacheDestAddr,
                mpsEgressCachePrefixLen,
                mpsEgressCacheHoldTime,
                mpsEgressCacheEntryState,
                mpsEgressCacheDataLinkHeader,
                mpsEgressCacheElanId,
                mpsEgressCacheSourceClientAtmAddr,
                mpsEgressCacheNhrpRequestId,
                mpsEgressCacheMpoaRequestId,
                mpsEgressCacheServiceCategory,
                mpsEgressCacheNextHopInternetworkAddrType,
                mpsEgressCacheNextHopAddr
        }
        STATUS          current
        DESCRIPTION
                "A collection of objects to monitor MPS's egress
                cache parameters."
        ::= { mpoaMIBGroups 24 }

END
```