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Mobile IPv6 Management Information Base

Status of This Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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Abstract

This memo defines a portion of the Management Information Base (MIB), the Mobile-IPv6 MIB, for use with network management protocols in the Internet community. In particular, the Mobile-IPv6 MIB will be used to monitor and control the mobile node, home agent, and correspondent node functions of a Mobile IPv6 (MIPv6) entity.

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1. The Internet-Standard Management Framework

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

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP).

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

2. Overview

2.1. The Mobile IPv6 Protocol Entities

Mobile IPv6 (MIPv6) [RFC3775] specifies a protocol that allows nodes to remain reachable while moving around in the IPv6 Internet. An entity that implements the MIPv6 protocol is a MIPv6 entity. There are three types of entities envisaged by the MIPv6 protocol.

mobile node (MN): A node that can change its point of attachment from one link to another, while still being reachable via its home address.

correspondent node (CN): A peer node with which a mobile node is communicating. The correspondent node may be either mobile or stationary. (Note that a correspondent node does not necessarily require MIPv6 support.)

home agent (HA): A router on a mobile node's home link with which the mobile node has registered its current care-of address. While the mobile node is away from home, the home agent intercepts packets on the home link destined to the mobile node's home address, encapsulates them, and routes them to the mobile node's registered care-of address.

This document defines a set of managed objects (MOs) that can be used to monitor and control MIPv6 entities.

2.2. Terminology

The terminology used in this document is consistent with the definitions used in Mobile IPv6 protocol specification [RFC3775].

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14, RFC 2119 [RFC2119].

3. Mobile IPv6 Monitoring and Control Requirements

For managing a MIPv6 entity it is necessary to monitor the following:

- o capabilities of MIPv6 entities
- o traffic due to MIPv6
- o binding-related statistics (at home agent, correspondent node, and mobile node)
- o binding details (at home agent and correspondent node)
- o history of Binding Updates (at home agent, correspondent node, and mobile node)

The MIPv6 protocol document stipulates that several MIPv6-related parameters should be manually configurable. The MIPv6 MIB should define managed objects that can be used to configure the related parameters, for example:

- o the preference value the home agent will use in Router Advertisements;
- o the lifetime value the home agent will use in Router Advertisements;
- o whether a home agent will send ICMP Mobile Prefix Advertisements to mobile nodes;
- o whether a home agent will respond to ICMP Mobile Prefix Solicitation messages from mobile nodes; and
- o whether a home agent will process multicast group membership control messages from mobile nodes.

4. MIB Design

The basic principle has been to keep the MIB as simple as possible and at the same time to make it effective enough so that the essential needs of monitoring and control are met. It is envisaged that wherever possible existing MIBs will be used (e.g., IPsec MIB, Neighbor Discovery MIB, Tunnel MIB [RFC4087]) for monitor and control of MIPv6 entities.

It is assumed that the Mobile IPv6 Management Information Base (MOBILEIPV6-MIB) will always be implemented in conjunction with the IPv6-capable version of the IP-MIB [RFC4293]. The MOBILEIPV6-MIB uses the textual conventions defined in the INET-ADDRESS-MIB [RFC4001].

The Mobile-IPv6 MIB is composed of the following groups of definitions:

- mip6Core: a generic group containing objects that are common to all the Mobile IPv6 entities.
- mip6Ha: this group models the home agent service. It is composed of objects specific to the services and associated advertisement parameters offered by the home agent on each of its links. It also contains objects pertaining to the maintenance of the home agent list on each of the links on which the service is offered.
- mip6Mn: this group models the mobile node service. It is composed of objects specific to the Dynamic Home Agent discovery function and related parameters. It also contains objects that record the movement of the mobile node.
- mip6Cn: models the correspondent node and is primarily scoped to its participation in the Return Routability procedure for achieving Route Optimization triggered by the mobile node.
- mip6Notifications: defines the set of notifications that will be used to asynchronously monitor the Mobile IPv6 entities.

The tables contained in the above groups are as follows:

mip6BindingCacheTable	: models the binding cache on the home agent and correspondent node. It contains details of the Binding Update requests that have been received and accepted.
mip6BindingHistoryTable	: tracks the history of the binding cache.
mip6NodeTrafficTable	: the mobile node-wise traffic counters.

mip6MnHomeAddressTable	: contains all the home addresses pertaining to the mobile node and the corresponding registration status.
mip6MnBLTable	: models the Binding Update List on the mobile node. It contains information about the registration requests sent by the mobile node and the corresponding results.
mip6CnCounterTable	: contains the mobile node-wise registration statistics.
mip6HaConfTable	: contains the configurable advertisement parameters for all the interfaces on which the home agent service is advertised.
mip6HaCounterTable	: contains registration statistics for all mobile nodes registered with the home agent.
mip6HaListTable	: contains the list of all routers that are acting as home agents on each of the interfaces on which the home agent service is offered by this router.
mip6HaGlAddrTable	: contains the global addresses of the home agents.

5. The Mobile-IPv6 MIB.

```
MOBILEIPV6-MIB DEFINITIONS ::= BEGIN
IMPORTS
    MODULE-IDENTITY, mib-2, Unsigned32, Integer32, Counter32,
    Gauge32, Counter64,
    OBJECT-TYPE, NOTIFICATION-TYPE
        FROM SNMPv2-SMI
    TEXTUAL-CONVENTION,
    TruthValue, DateAndTime, TimeStamp
        FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
        FROM SNMPv2-CONF
    InetAddressType, InetAddress
        FROM INET-ADDRESS-MIB
    ipv6InterfaceIfIndex
        FROM IP-MIB
;

mip6MIB MODULE-IDENTITY
    LAST-UPDATED "200602010000Z"           -- 1st February 2006
    ORGANIZATION "IETF mip6 Working Group"
    CONTACT-INFO
        "
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DESCRIPTION

"The MIB module for monitoring Mobile-IPv6 entities.

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"

REVISION "200602010000Z" -- 1st February 2006
 DESCRIPTION "Initial version, published as RFC 4295."

::= { mib-2 133 }

-- The major groups

mip6Notifications	OBJECT IDENTIFIER ::= { mip6MIB 0 }
mip6Objects	OBJECT IDENTIFIER ::= { mip6MIB 1 }
mip6Conformance	OBJECT IDENTIFIER ::= { mip6MIB 2 }
mip6Core	OBJECT IDENTIFIER ::= { mip6Objects 1 }
mip6Mn	OBJECT IDENTIFIER ::= { mip6Objects 2 }
mip6Cn	OBJECT IDENTIFIER ::= { mip6Objects 3 }
mip6Ha	OBJECT IDENTIFIER ::= { mip6Objects 4 }

-- The sub groups

mip6System	OBJECT IDENTIFIER ::= { mip6Core 1 }
mip6Bindings	OBJECT IDENTIFIER ::= { mip6Core 2 }
mip6Stats	OBJECT IDENTIFIER ::= { mip6Core 3 }
mip6MnSystem	OBJECT IDENTIFIER ::= { mip6Mn 1 }
mip6MnConf	OBJECT IDENTIFIER ::= { mip6Mn 2 }
mip6MnRegistration	OBJECT IDENTIFIER ::= { mip6Mn 3 }
mip6CnSystem	OBJECT IDENTIFIER ::= { mip6Cn 1 }

```

mip6CnStats          OBJECT IDENTIFIER ::= { mip6Cn 2 }

mip6HaAdvertisement   OBJECT IDENTIFIER ::= { mip6Ha 1 }
mip6HaStats          OBJECT IDENTIFIER ::= { mip6Ha 2 }

```

-- Textual Conventions

Mip6BURequestRejectionCode ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The value of the status field in the Binding Acknowledgment message when the Binding Update was rejected.

"

REFERENCE

"RFC 3775 : Section 6.1.8"

SYNTAX INTEGER {

```

reasonUnspecified          (1),  --(Code 128)
admProhibited              (2),  --(Code 129)
insufficientResource       (3),  --(Code 130)
homeRegistrationNotSupported (4), --(Code 131)
notHomeSubnet              (5),  --(Code 132)
notHomeAgentForThisMobileNode (6), --(Code 133)
duplicateAddressDetectionFailed (7), --(Code 134)
sequenceNumberOutOfWindow  (8),  --(Code 135)
expiredHomeNonceIndex      (9),  --(Code 136)
expiredCareofNonceIndex    (10), --(Code 137)
expiredNonces              (11), --(Code 138)
registrationTypeChangeDisallowed(12) --(Code 139)
}
```

```

mip6Capabilities OBJECT-TYPE
    SYNTAX      BITS {
        mobileNode          (0),
        homeAgent           (1),
        correspondentNode   (2)
    }
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "This object indicates the Mobile IPv6 functions that
        are supported by this managed entity. Multiple
        Mobile IPv6 functions may be supported by a single
        entity."
    ::= { mip6System 1 }

mip6Status OBJECT-TYPE
    SYNTAX      INTEGER { enabled(1), disabled(2) }
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "This object indicates whether the Mobile IPv6
        function is enabled for the managed entity. If it
        is enabled, the agent discovery and registration
        functions will be operational.
        Changing the status from enabled(1) to disabled(2)
        will terminate the agent discovery and registration
        functions. On the other hand, changing the status
        from disabled(2) to enabled(1) will start the agent
        discovery and registration functions.

        The value of this object SHOULD remain unchanged
        across reboots of the managed entity."
    ::= { mip6System 2 }

-- mip6BindingCache

```

mip6BindingCacheTable OBJECT-TYPE

SYNTAX SEQUENCE OF Mip6BindingCacheEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table models the Binding Cache on the managed entity. The cache is maintained by home agents and correspondent nodes. It contains both correspondent registration entries and home registration entries.

Entries in this table are not required to survive a reboot of the managed entity.

"

REFERENCE

"RFC 3775 : Section 4.5, 9.1, 10.1"

::= { mip6Bindings 1 }

mip6BindingCacheEntry OBJECT-TYPE

SYNTAX Mip6BindingCacheEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This entry represents a conceptual row in the binding cache table. It represents a single Binding Update.

Implementors need to be aware that if the total number of octets in mip6BindingHomeAddress exceeds 113, then OIDs of column instances in this row will have more than 128 sub-identifiers and cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.

"

INDEX { mip6BindingHomeAddressType, mip6BindingHomeAddress }

::= { mip6BindingCacheTable 1 }

```

Mip6BindingCacheEntry ::=
    SEQUENCE {
        mip6BindingHomeAddressType      InetAddressType,
        mip6BindingHomeAddress          InetAddress,
        mip6BindingCOAType              InetAddressType,
        mip6BindingCOA                  InetAddress,
        mip6BindingTimeRegistered       DateAndTime,
        mip6BindingTimeGranted          Gauge32,
        mip6BindingTimeRemaining        Gauge32,
        mip6BindingHomeRegn             TruthValue,
        mip6BindingMaxSeq               Unsigned32,
        mip6BindingUsageTS              DateAndTime,
        mip6BindingUsageCount           Gauge32,
        mip6BindingAdminStatus          INTEGER
    }

```

```

mip6BindingHomeAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The InetAddressType of the mip6BindingHomeAddress
        that follows.
        "
    ::= { mip6BindingCacheEntry 1 }

```

```

mip6BindingHomeAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The home address of the mobile node corresponding
        to the Binding Cache entry. This field is used as
        the key for searching the mobile node's current
        care-of address in the Binding Cache.

        The type of the address represented by this object
        is specified by the corresponding
        mip6BindingHomeAddressType object.
        "
    REFERENCE
        "RFC 3775 : Section 9.1"
    ::= { mip6BindingCacheEntry 2 }

```

```

mip6BindingCOAType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The InetAddressType of the mip6BindingCOA that
        follows.
        "
    ::= { mip6BindingCacheEntry 3 }

mip6BindingCOA OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The care-of address of the mobile node indicated by
        the home address field (mip6BindingHomeAddress) in
        this Binding Cache entry.

        The type of the address represented by this object
        is specified by the corresponding mip6BindingCOAType
        object.
        "
    REFERENCE
        "RFC 3775 : Section 9.1"
    ::= { mip6BindingCacheEntry 4 }

mip6BindingTimeRegistered OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The timestamp when this Binding Cache entry was
        created.
        "
    ::= { mip6BindingCacheEntry 5 }

mip6BindingTimeGranted OBJECT-TYPE
    SYNTAX      Gauge32
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The lifetime in seconds granted to the mobile node
        for this registration.
        "
    ::= { mip6BindingCacheEntry 6 }

```

mip6BindingTimeRemaining OBJECT-TYPE

SYNTAX Gauge32
UNITS "seconds"
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The lifetime in seconds remaining for this registration.
"

REFERENCE

"RFC 3775 : Section 9.1"

::= { mip6BindingCacheEntry 7 }

mip6BindingHomeRegn OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object indicates whether or not this Binding Cache entry is a home registration entry (applicable only on nodes that support home agent functionality).
"

REFERENCE

"RFC 3775 : Section 9.1"

::= { mip6BindingCacheEntry 8 }

mip6BindingMaxSeq OBJECT-TYPE

SYNTAX Unsigned32 (0..65536)
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The maximum value of the Sequence Number field received in previous Binding Updates for this home address (mip6BindingHomeAddress).
"

REFERENCE

"RFC 3775 : Section 9.1, 9.5.1"

::= { mip6BindingCacheEntry 9 }

```
mip6BindingUsageTS OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The timestamp when this entry was last looked up.
        "
    REFERENCE
        "RFC 3775 : Section 9.1"
    ::= { mip6BindingCacheEntry 10 }

mip6BindingUsageCount OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The number of times this entry was looked up.
        "
    REFERENCE
        "RFC 3775 : Section 9.1"
    ::= { mip6BindingCacheEntry 11 }

mip6BindingAdminStatus OBJECT-TYPE
    SYNTAX      INTEGER {
                    active      (1),
                    inactive    (2)
                }
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "This is an administrative object used to control
        the status of a binding cache entry.  By default
        the value will be 'active'(1).
        A value of 'inactive'(2) will indicate that the
        validity of the entry is suspended.  It does not
        exist in the binding cache for all practical
        purposes.
        The state can be changed from 'active' to
        'inactive' by operator intervention.
        Causing the state to change to 'inactive' results
        in the entry being deleted from the cache.
        Attempts to change the status from 'inactive'
        to 'active' will be rejected.
        "
    REFERENCE
        "RFC 3775 : Section 9.1"
    ::= { mip6BindingCacheEntry 12 }
```

```
-- mip6BindingHistory
-- Once the lifetime expires an entry will be removed from the
-- Binding Cache.
-- For monitoring purposes it will be useful to have access to
-- the history of the Binding Cache. BindingHistoryTable serves
-- this purpose. It records the history of the Bindings.
-- The size of the table will be left to implementors.
```

```
mip6BindingHistoryTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mip6BindingHistoryEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing a record of the bindings.
        "
    ::= { mip6Bindings 2 }

mip6BindingHistoryEntry OBJECT-TYPE
    SYNTAX      Mip6BindingHistoryEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The record of a binding.

        Implementors need to be aware that if the total
        number of octets in mip6BindingHstHomeAddress
        exceeds 112, then OIDs of column
        instances in this row will have more than 128
        sub-identifiers and cannot be accessed using
        SNMPv1, SNMPv2c, or SNMPv3.
        "
    INDEX      { mip6BindingHstHomeAddressType,
                  mip6BindingHstHomeAddress ,
                  mip6BindingHstIndex}
    ::= { mip6BindingHistoryTable 1 }
```

Mip6BindingHistoryEntry ::=

```
SEQUENCE {
    mip6BindingHstHomeAddressType      InetAddressType,
    mip6BindingHstHomeAddress          InetAddress,
    mip6BindingHstIndex                Unsigned32,
    mip6BindingHstCOAType              InetAddressType,
    mip6BindingHstCOA                  InetAddress,
    mip6BindingHstTimeRegistered       DateAndTime,
    mip6BindingHstTimeExpired          DateAndTime,
    mip6BindingHstHomeRegn             TruthValue,
    mip6BindingHstUsageTS              DateAndTime,
    mip6BindingHstUsageCount           Gauge32
}
```

mip6BindingHstHomeAddressType OBJECT-TYPE

```
SYNTAX      InetAddressType
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The InetAddressType of the
     mip6BindingHstHomeAddress that follows.
    "
 ::= { mip6BindingHistoryEntry 1 }
```

mip6BindingHstHomeAddress OBJECT-TYPE

```
SYNTAX      InetAddress
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Mobile node's home address.

    The type of the address represented by this object
    is specified by the corresponding
    mip6BindingHstHomeAddressType object.
    "
 ::= { mip6BindingHistoryEntry 2 }
```

mip6BindingHstIndex OBJECT-TYPE

```
SYNTAX      Unsigned32 (1..4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The index to uniquely identify this record along
     with the mobile node's HomeAddress type and
     HomeAddress. It should be monotonically increasing.
     It may wrap after reaching its max value."
 ::= { mip6BindingHistoryEntry 3 }
```

```

mip6BindingHstCOAType    OBJECT-TYPE
    SYNTAX                InetAddressType
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        "The InetAddressType of the mip6BindingHstCOA that
        follows.
        "
    ::= { mip6BindingHistoryEntry 4 }

mip6BindingHstCOA        OBJECT-TYPE
    SYNTAX                InetAddress
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        "Mobile node's care-of address.  One mobile node can
        have multiple bindings with different
        care-of addresses.
        The type of the address represented by this object
        is specified by the corresponding
        mip6BindingHstCOAType object.
        "
    ::= { mip6BindingHistoryEntry 5 }

mip6BindingHstTimeRegistered OBJECT-TYPE
    SYNTAX                DateAndTime
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        "The timestamp when this Binding Cache entry was
        created.
        "
    ::= { mip6BindingHistoryEntry 6 }

mip6BindingHstTimeExpired OBJECT-TYPE
    SYNTAX                DateAndTime
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION
        "The timestamp when this Binding Cache entry expired.
        "
    ::= { mip6BindingHistoryEntry 7 }

```

```

mip6BindingHstHomeRegn OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object indicates whether or not this Binding
        Cache entry is a home registration entry (applicable
        only on nodes that support home agent
        functionality).
        "
    ::= { mip6BindingHistoryEntry 8 }

mip6BindingHstUsageTS OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The timestamp when this entry was last looked up.
        "
    ::= { mip6BindingHistoryEntry 9 }

mip6BindingHstUsageCount OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of times this entry was looked up.
        "
    ::= { mip6BindingHistoryEntry 10 }

-- mip6TrafficCounters

-- MIPv6 Traffic will be characterized by
-- IPv6 datagrams which satisfy at least one of the following
-- conditions
--   - the datagrams are tunneled to the mobile node by the HA
--   - the datagrams are reverse tunneled by the MN to the HA
--   - the datagrams have the Routing header type 2 set.
--   - the datagrams have the Home Address option set in the
--     Destination Option extension header
--   - the datagrams have the mobility header

mip6TotalTraffic OBJECT IDENTIFIER ::= { mip6Stats 1 }
-- REFERENCE
-- "RFC 3775 : Section 4.1, 6.3, 6.4"

```

mip6InOctets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of octets in the MIPv6 datagrams received by the MIPv6 entity. This will include datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), or the type 2 Routing Header. It will also include the IPv6 datagrams that are reverse tunneled to a home agent from a mobile node's home address.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 1 }

mip6HCInOctets OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of octets in the MIPv6 datagrams received by the MIPv6 entity. This will include datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), or the type 2 Routing Header. It will also include the IPv6 datagrams that are reverse tunneled to a home agent from a mobile node's home address.

This object is a 64-bit version of mip6InOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 2 }

```

mip6InPkts      OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of MIPv6 datagrams received by the MIPv6
        entity. This will include datagrams with the
        Mobility Header, the Home Address option in the
        Destination Option extension header (Next Header
        value = 60), or the type 2 Routing Header.
        It will also include the IPv6 datagrams that are
        reverse tunneled to a home agent from a mobile
        node's home address.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
    ::= { mip6TotalTraffic 3 }

mip6HCInPkts     OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of MIPv6 datagrams received by the MIPv6
        entity. This will include datagrams with the
        Mobility Header, the Home Address option in the
        Destination Option extension header (Next Header
        value = 60), or the type 2 Routing Header. It will
        also include the IPv6 datagrams that are reverse
        tunneled to a home agent from a mobile node's home
        address.
        This object is a 64-bit version of mip6InPkts.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
    ::= { mip6TotalTraffic 4 }

```

mip6OutOctets OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The total number of octets in the MIPv6 datagrams sent by the MIPv6 entity. This will include datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), or the type 2 Routing Header. It will also include the IPv6 datagrams that are reverse tunneled to a home agent from a mobile node's home address. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime."
REFERENCE
 "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
 ::= { mip6TotalTraffic 5 }

mip6HCOctets OBJECT-TYPE
SYNTAX Counter64
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The total number of octets in the MIPv6 datagrams sent by the MIPv6 entity. This will include datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), or the type 2 Routing Header. It will also include the IPv6 datagrams that are reverse tunneled to a home agent from a mobile node's home address. This object is a 64-bit version of mip6OutOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime."
REFERENCE
 "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
 ::= { mip6TotalTraffic 6 }

```

mip6OutPkts      OBJECT-TYPE
    SYNTAX        Counter32
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION   "The number of MIPv6 datagrams sent by the MIPv6
        entity.  This will include the datagrams with
        Mobility Header, the Home Address option in the
        Destination Option extension header (Next Header
        value = 60), or the type 2 Routing Header.  It will
        also include the IPv6 datagrams that are reverse
        tunneled to a home agent from a mobile node's home
        address.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE    "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
    ::= { mip6TotalTraffic 7 }

mip6HCOutPkts    OBJECT-TYPE
    SYNTAX        Counter64
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION   "The number of MIPv6 datagrams sent by the MIPv6
        entity.  This will include datagrams with the
        Mobility Header, the Home Address option in the
        Destination Option extension header (Next Header
        value = 60), or the type 2 Routing Header.  It will
        also include the IPv6 datagrams that are reverse
        tunneled to a home agent from a mobile node's home
        address.
        This object is a 64-bit version of mip6OutPkts.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE    "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
    ::= { mip6TotalTraffic 8 }

```

mip6CounterDiscontinuityTime 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 MIPv6 entities global counters, viz., counters with OID prefix 'mip6TotalTraffic' or 'mip6CnGlobalStats' or 'mip6HaGlobalStats' suffered a discontinuity. If no such discontinuities have occurred since the last re-initialization of the local management subsystem, then this object will have a zero value.

"

::= { mip6TotalTraffic 9 }

-- mip6NodeTrafficCounters

mip6NodeTrafficTable OBJECT-TYPE

SYNTAX SEQUENCE OF Mip6NodeTrafficEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing MIPv6 traffic counters per mobile node.

"

::= { mip6Stats 2 }

mip6NodeTrafficEntry OBJECT-TYPE

SYNTAX Mip6NodeTrafficEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The MIPv6 traffic statistics for a mobile node.

Implementors need to be aware that if the total number of octets in mip6BindingHomeAddress exceeds 113, then OIDs of column instances in this row will have more than 128 sub-identifiers and cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.

"

INDEX { mip6BindingHomeAddressType, mip6BindingHomeAddress }

::= { mip6NodeTrafficTable 1 }

```

Mip6NodeTrafficEntry ::=
    SEQUENCE {
        mip6NodeInOctets          Counter32,
        mip6HCNodeInOctets        Counter64,
        mip6NodeInPkts            Counter32,
        mip6HCNodeInPkts          Counter64,
        mip6NodeOutOctets         Counter32,
        mip6HCNodeOutOctets        Counter64,
        mip6NodeOutPkts           Counter32,
        mip6HCNodeOutPkts         Counter64,
        mip6NodeCtrDiscontinuityTime TimeStamp
    }

mip6NodeInOctets OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The total number of octets in the MIPv6 datagrams
        received from the mobile node by the MIPv6 entity.
        This will include datagrams with the Mobility
        Header or the Home Address option in the Destination
        Option extension header (Next Header value = 60).
        It will also include the IPv6 datagrams that are
        reverse tunneled to a home agent from the mobile
        node's home address.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6NodeCtrDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"
    ::= { mip6NodeTrafficEntry 1 }

```

mip6HCNodeInOctets OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of octets in the MIPv6 datagrams received from the mobile node by the MIPv6 entity. This will include datagrams with the Mobility Header or the Home Address option in the Destination Option extension header (Next Header value = 60). It will also include the IPv6 datagrams that are reverse tunneled to a home agent from the mobile node's home address.

This object is a 64-bit version of mip6NodeInOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 2 }

mip6NodeInPkts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of MIPv6 datagrams received from the mobile node by the MIPv6 entity. This will include the datagrams with the Mobility Header or the Home Address option in the Destination Option extension header (Next Header value = 60). It will also include the IPv6 datagrams that are reverse tunneled to a home agent from the mobile node's home address.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 3 }

mip6HCNodeInPkts OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of MIPv6 datagrams received from the mobile node by the MIPv6 entity. This will include datagrams with the Mobility Header or the Home Address option in the Destination Option extension header (Next Header value = 60). It will also include the IPv6 datagrams that are reverse tunneled to a home agent from the mobile node's home address. This object is a 64-bit version of mip6NodeInPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 4 }

mip6NodeOutOctets OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of octets in the MIPv6 datagrams sent to the mobile node by the MIPv6 entity. This will include datagrams with the Mobility Header or the type 2 Routing Header. It will also include the IPv6 datagrams that are tunneled by a home agent to the mobile node.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 5 }

mip6HCNodeOutOctets OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The total number of octets in the MIPv6 datagrams sent to the mobile node by the MIPv6 entity. This will include datagrams with the Mobility Header or the type 2 Routing Header. It will also include the IPv6 datagrams that are tunneled by a home agent to the mobile node.

This object is a 64-bit version of mip6NodeOutOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 6 }

mip6NodeOutPkts OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The number of MIPv6 datagrams sent to the mobile node by the MIPv6 entity. This will include datagrams with the Mobility Header or the type 2 Routing Header. It will also include the IPv6 datagrams that are tunneled by a home agent to the mobile node.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 7 }

mip6HCNodeOutPkts OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The number of MIPv6 datagrams sent to the mobile node by the MIPv6 entity. This will include datagrams with the Mobility Header or the type 2 Routing Header. It will also include the IPv6 datagrams that are tunneled by a home agent to the mobile node.

This object is a 64-bit version of mip6NodeOutOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6NodeCtrDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1, 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 8 }

mip6NodeCtrDiscontinuityTime 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 the counters in this row suffered a discontinuity. The relevant counters are the specific instances of any Counter32 or Counter64 objects in this row.

If no such discontinuities have occurred since the last re-initialization of the local management subsystem, then this object contains a zero value.

"

::= { mip6NodeTrafficEntry 9 }

-- mip6MnSystem Group

mip6MnHomeAddressTable OBJECT-TYPE

SYNTAX SEQUENCE OF Mip6MnHomeAddressEntry
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"A table containing registration status for all the home addresses pertaining to the mobile node.

"

::= { mip6MnSystem 1 }

mip6MnHomeAddressEntry OBJECT-TYPE

SYNTAX Mip6MnHomeAddressEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The registration status for a home address.

Implementors need to be aware that if the total number of octets in mip6MnHomeAddress exceeds 113, then OIDs of column instances in this row will have more than 128 sub-identifiers and cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.

"

INDEX { mip6MnHomeAddressType, mip6MnHomeAddress }

::= { mip6MnHomeAddressTable 1 }

Mip6MnHomeAddressEntry ::=

SEQUENCE {

mip6MnHomeAddressType InetAddressType,

mip6MnHomeAddress InetAddress,

mip6MnHomeAddressState INTEGER

}

mip6MnHomeAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The InetAddressType of the mip6MnHomeAddress that follows.

"

::= { mip6MnHomeAddressEntry 1 }

mip6MnHomeAddress OBJECT-TYPE

SYNTAX InetAddress
 MAX-ACCESS not-accessible
 STATUS current

DESCRIPTION

"A unicast routable address assigned to the mobile node. This is used as the 'permanent address' of the mobile node in the sense that it remains unchanged regardless of the mobile node's current point of attachment. If mobile node doesn't have a home address assigned yet, then this object will take the default 'unspecified' value ::0.

The type of the address represented by this object is specified by the corresponding mip6MnHomeAddressType object.

"

REFERENCE

"RFC 3775 : Section 3.2"
 ::= { mip6MnHomeAddressEntry 2 }

mip6MnHomeAddressState OBJECT-TYPE

SYNTAX INTEGER {
 unknown(1),
 home(2),
 registered(3),
 pending(4),
 isolated(5)
 }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object indicates the state of the mobile node:
 unknown -- The state of the mobile node cannot be determined.
 home -- mobile node is on the home network.
 registered -- mobile node is on a foreign network and is registered with the home agent.
 pending -- mobile node has sent registration request to the home agent and is waiting for the reply.
 isolated -- mobile node is isolated from network, i.e., it is not in its home network, it is not registered, and no registration ack is pending.

"

::= { mip6MnHomeAddressEntry 3 }

-- Mobile Node Discovery and Advertisement Group Counters

mip6MnDiscoveryRequests OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of ICMP Dynamic Home Agent Address
Discovery Requests sent by the mobile node.
Discontinuities in the value of this counter can
occur at re-initialization of the management system,
and at other times as indicated by the value of
mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 10.5, 11.4.1"

::= { mip6MnConf 1 }

mip6MnDiscoveryReplies OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of ICMP Dynamic Home Agent Address
Discovery Replies received by the mobile node.
Discontinuities in the value of this counter can
occur at re-initialization of the management system,
and at other times as indicated by the value of
mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 10.5, 11.4.1"

::= { mip6MnConf 2 }

mip6MnDiscoveryTimeouts OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of ICMP Dynamic Home Agent Address
Discovery Requests that timed out.
Discontinuities in the value of this counter can
occur at re-initialization of the management system,
and at other times as indicated by the value of
mip6CounterDiscontinuityTime.
"

REFERENCE

"RFC 3775 : Section 10.5, 11.4.1, 12"
::= { mip6MnConf 3 }

mip6MnPrefixSolicitationsSent OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of ICMP Mobile Prefix Solicitations
sent by the mobile node.
Discontinuities in the value of this counter can
occur at re-initialization of the management system,
and at other times as indicated by the value of
mip6CounterDiscontinuityTime.
"

REFERENCE

"RFC 3775 : Section 10.5, 11.4.2"
::= { mip6MnConf 4 }

mip6MnPrefixAdvsRecd OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of ICMP Mobile Prefix Advertisements received by the mobile node. This will include the ICMP Mobile Prefix Advertisements that failed the validity checks.
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 10.6, 11.4.3"
::= { mip6MnConf 5 }

mip6MnPrefixAdvsIgnored OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Mobile Prefix Advertisements discarded by the validity check.
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 10.6, 11.4.3"
::= { mip6MnConf 6 }

mip6MnMovedToFN OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of times the mobile node has detected movement to a foreign network from another foreign network or from the home network, has reconstructed its care-of address and has initiated the care-of address registration process. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.5.1"

::= { mip6MnConf 7 }

mip6MnMovedToHN OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of times the mobile node has detected movement from a foreign network to its home network. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.5.4"

::= { mip6MnConf 8 }

-- Mobile Node Registration Group

-- Registration table of mobile node

mip6MnBLTable OBJECT-TYPE

SYNTAX SEQUENCE OF Mip6MnBLEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table corresponds to the Binding Update List (BL) that is maintained by the mobile node. The list holds an item for every binding that the mobile node has established or is trying to establish. Both correspondent and home registrations are included in this table. Entries from the table are deleted as the lifetime of the binding expires.

"

REFERENCE

"RFC 3775 : Section 4.5, 11.1"

::= { mip6MnRegistration 1 }

mip6MnBLEntry OBJECT-TYPE

SYNTAX Mip6MnBLEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Information about a Binding Update sent by the mobile node either to its home agent or to one of its correspondent nodes.

Implementors need to be aware that if the total number of octets in mip6MnHomeAddress and mip6MnBLNodeAddress exceeds 111, then OIDs of column instances in this row will have more than 128 sub-identifiers and cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.

"

INDEX { mip6MnHomeAddressType,
mip6MnHomeAddress,
mip6MnBLNodeAddressType,
mip6MnBLNodeAddress
}

::= { mip6MnBLTable 1 }

```

Mip6MnBLEntry ::= SEQUENCE {
    mip6MnBLNodeAddressType  InetAddressType,
    mip6MnBLNodeAddress      InetAddress,
    mip6MnBLCOAType          InetAddressType,
    mip6MnBLCOA              InetAddress,
    mip6MnBLLifeTimeRequested Unsigned32,
    mip6MnBLLifeTimeGranted  Unsigned32,
    mip6MnBLMaxSeq           Unsigned32,
    mip6MnBLTimeSent         DateAndTime,
    mip6MnBLAccepted         TruthValue,
    mip6MnBLAcceptedTime     DateAndTime,
    mip6MnBLRetransmissions  Gauge32,
    mip6MnBLDontSendBUFlag   TruthValue
}

mip6MnBLNodeAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The InetAddressType of the mip6MnBLNodeAddress
         that follows."
    ::= { mip6MnBLEntry 1 }

mip6MnBLNodeAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The address of the agent as used in the destination
         address of the Binding Update. The agent
         may be a home agent or a correspondent node.

         The type of the address represented by this object
         is specified by the corresponding
         mip6MnBLNodeAddressType object."
    ::= { mip6MnBLEntry 2 }

REFERENCE
    "RFC 3775 : Section 11.1"
    ::= { mip6MnBLEntry 2 }

```

```
mip6MnBLCOAType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The InetAddressType of the mip6MnBLCOA that follows.
        "
    ::= { mip6MnBLEntry 3 }

mip6MnBLCOA OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Care-of address that the mobile node intends to
        register in the Binding Update request.

        The type of the address represented by this object
        is specified by the corresponding mip6MnBLCOAType
        object.
        "
    REFERENCE
        "RFC 3775 : Section 11.1"
    ::= { mip6MnBLEntry 4 }

mip6MnBLLifeTimeRequested OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The lifetime requested by the mobile node (in
        seconds) in the Binding Update.
        "
    REFERENCE
        "RFC 3775 : Section 11.1"
    ::= { mip6MnBLEntry 5 }
```

mip6MnBLLifeTimeGranted OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The lifetime granted to the mobile node for this binding. This field will be inaccessible if the Binding Update request has not been accepted. The lifetime remaining (lR) can be calculated using the current time (cT), mip6MnBLAcceptedTime (aT) and mip6MnBLLifeTimeGranted (lG) as follows:

$$lR = lG - (cT - aT).$$

When lR is zero, this entry will be deleted from the Binding Update List and consequently from this table.

"

::= { mip6MnBLEntry 6 }

mip6MnBLMaxSeq OBJECT-TYPE

SYNTAX Unsigned32 (0..65536)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The maximum value of the Sequence Number field sent in previous Binding Updates to this destination.

"

REFERENCE

"RFC 3775 : Section 11.1"

::= { mip6MnBLEntry 7 }

mip6MnBLTimeSent OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time when the last (re-)transmission occurred."

REFERENCE

"RFC 3775 : Section 11.1"

::= { mip6MnBLEntry 8 }

mip6MnBLAccepted OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"true(1) if the mobile node has received a binding acknowledgment indicating that service has been accepted (status code 0 or 1); false(2) otherwise. false(2) implies that the registration is still pending.

"

::= { mip6MnBLEntry 9 }

mip6MnBLAcceptedTime OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time at which the mobile node receives a binding acknowledgment indicating that Binding Update has been accepted (status code 0 or 1); This object will be inaccessible if the Binding Update request is still pending.

"

::= { mip6MnBLEntry 10 }

mip6MnBLRetransmissions OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of Binding Update retransmissions.

"

REFERENCE

"RFC 3775 : Section 11.1"

::= { mip6MnBLEntry 11 }

mip6MnBLDontSendBUFlag OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"true(1) indicates that future binding updates will not be sent to mip6MnBLNodeAddress.
false(2) implies that binding updates will be sent to mip6MnBLNodeAddress.
The mobile node sets this flag in the when it receives an ICMP Parameter Problem, Code 1, error message in response to a return routability message or Binding Update sent to mip6MnBLNodeAddress.
"

REFERENCE

"RFC 3775 : Section 11.1"

::= { mip6MnBLEntry 12 }

-- Mobile Node Registration Group Counters

mip6MnRegnCounters OBJECT IDENTIFIER ::= { mip6MnRegistration 2 }

mip6MnMobilityMessagesSent OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of mobility messages, i.e., IPv6 datagrams with Mobility Header, sent by the mobile node. There are 3 types of mobility messages, viz., Home Test Init, Care-of Test Init, and Binding Updates, that are sent by mobile nodes.
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.
"

REFERENCE

"RFC 3775 : Section 4.2, 6.1"

::= { mip6MnRegnCounters 1 }

```
mip6MnMobilityMessagesRecd OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The total number of mobility messages, i.e., IPv6
        datagrams with Mobility Header, received by the
        mobile node.  There are 5 types of mobility
        messages, viz., Home Test, Care-of Test, Binding
        Acknowledgment, Binding Refresh Request, and Binding
        Error, that are sent to mobile nodes.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 4.2, 6.1"
    ::= {  mip6MnRegnCounters 2 }

mip6MnBUStoHA OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Updates sent to the mobile
        node's home agent(s).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 11.7.1"
    ::= {  mip6MnRegnCounters 3 }
```

mip6MnBUAcksFromHA OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of valid binding acknowledgments received from the mobile node's home agent(s). Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.7.3"

::= { mip6MnRegnCounters 4 }

mip6MnBUStoCN OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of Binding Updates sent to correspondent nodes by the mobile node. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.7.2"

::= { mip6MnRegnCounters 5 }

mip6MnBUAcksFromCN OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of valid Binding Update acks received from all the correspondent nodes. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.7.3"

::= { mip6MnRegnCounters 6 }

mip6MnBindingErrorsFromCN OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Binding Error messages received by mobile node from CN. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

::= { mip6MnRegnCounters 7 }

mip6MnICMPErrorsRecd OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of ICMP Error messages of type ICMP Parameter Problem, Code 1 or Code 2, received by the mobile node from a correspondent node in response to a return routability procedure, a Binding Update, or a packet with the Home Address option. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.3.5"

::= { mip6MnRegnCounters 8 }

mip6MnBRRequestsRecd OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The total number of Binding Refresh requests received by the mobile node from correspondent nodes.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 11.7.4"

::= { mip6MnRegnCounters 9 }

-- Registration Group counters used for Correspondent Node

mip6CnGlobalStats OBJECT IDENTIFIER ::= { mip6CnStats 1 }

mip6CnHomeTestInitsRecd OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Home Test Init messages received.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 9.4.1"

::= { mip6CnGlobalStats 1 }

```

mip6CnHomeTestsSent      OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Home Test messages sent.  If a Home
        Test Init message is found to be valid, a Home Test
        message will be generated and sent.  Otherwise the
        Home Test message is silently discarded.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime."
    ::= { mip6CnGlobalStats 2 }

REFERENCE
    "RFC 3775 : Section 9.4.3"

mip6CnCareOfTestInitsRecd  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Care-of Test Init messages received."
    ::= { mip6CnGlobalStats 3 }

REFERENCE
    "RFC 3775 : Section 9.4.2"

mip6CnCareOfTestsSent      OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Care-of Test messages sent.  If a
        Care-of Test Init message is found to be valid, a
        Care-of Test message will be generated and sent.
        Otherwise the Care-of Test message is silently
        discarded.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime."
    ::= { mip6CnGlobalStats 4 }

REFERENCE
    "RFC 3775 : Section 9.4.4"

```

mip6CnBUUsRecd OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Total number of Binding Updates received by the
 correspondent node from mobile nodes.
 Discontinuities in the value of this counter can
 occur at re-initialization of the management system,
 and at other times as indicated by the value of
 mip6CounterDiscontinuityTime."
 REFERENCE
 "RFC 3775 : Section 9.5.1"
 ::= { mip6CnGlobalStats 5 }

mip6CnBUAcksSent OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Total number of acknowledgments sent by the
 correspondent node for the Binding Updates received.
 Discontinuities in the value of this counter can
 occur at re-initialization of the management system,
 and at other times as indicated by the value of
 mip6CounterDiscontinuityTime."
 REFERENCE
 "RFC 3775 : Section 9.5.4"
 ::= { mip6CnGlobalStats 6 }

mip6CnBRsSent OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Total number of Binding Refresh Request messages
 sent by the correspondent node.
 Discontinuities in the value of this counter can
 occur at re-initialization of the management system,
 and at other times as indicated by the value of
 mip6CounterDiscontinuityTime."
 REFERENCE
 "RFC 3775 : Section 9.5.5"
 ::= { mip6CnGlobalStats 7 }

mip6CnBindingErrors OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Binding Error messages sent by the correspondent node to the mobile node.
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 9.3.3"
::= { mip6CnGlobalStats 8 }

mip6CnBUAccepted OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Binding Updates accepted by the correspondent node. If a Binding Acknowledgment message is sent for the Binding Update request, the Status code field in the message will have a value less than 128.
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 9.5.1, 9.5.4"
::= { mip6CnGlobalStats 9 }

`mip6CnBUSRejected` OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Binding Update requests rejected by the correspondent node. If a Binding Acknowledgment message has been sent for the Binding Update request, the Status code field in the message will have a value greater than or equal to 128. Otherwise the Binding Update request will be silently discarded.
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 9.5.1, 9.5.4"
 ::= { mip6CnGlobalStats 10 }

`mip6CnReasonUnspecified` OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Binding Update requests rejected by the correspondent node with status code in the Binding Acknowledgment message indicating 'reason unspecified' (Code 128).
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1.8"
 ::= { mip6CnGlobalStats 11 }

```
mip6CnInsufficientResource OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the correspondent node with status code in the
        Binding Acknowledgment message indicating
        'insufficient resources' (Code 130).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 6.1.8"
    ::= { mip6CnGlobalStats 12 }

mip6CnHomeRegnNotSupported OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        correspondent node with status code in the Binding
        Acknowledgment message indicating 'home registration
        not supported' (Code 131).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6CnGlobalStats 13 }
```

mip6CnSeqNumberOutOfWindow OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Total number of Binding Updates rejected by correspondent node with status code in the Binding Acknowledgment message indicating 'sequence number out of window' (Code 135).
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1.8, 9.5.1"
::= { mip6CnGlobalStats 14 }

mip6CnExpiredHomeNonceIndex OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The total number of Binding Updates rejected by correspondent node with status code in the Binding Acknowledgment message indicating 'expired home nonce index' (Code 136).
Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1.8, 9.5.1"
::= { mip6CnGlobalStats 15 }

mip6CnExpiredCareOfNonceIndex OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The total number of Binding Updates rejected by correspondent node with status code in the Binding Acknowledgment message indicating 'expired care-of nonce index' (Code 137). Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1.8, 9.5.1"
::= { mip6CnGlobalStats 16 }

mip6CnExpiredNonce OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The total number of Binding Updates rejected by correspondent node with status code in the Binding Acknowledgment message indicating 'expired nonces' (Code 138), i.e., the correspondent node no longer recognizes the Home Nonce Index value and the Care-of Nonce Index value. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1.8, 9.5.1"
::= { mip6CnGlobalStats 17 }

mip6CnRegTypeChangeDisallowed OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of Binding Updates rejected by correspondent node with status code in the Binding Acknowledgment message indicating 'registration type change disallowed' (Code 139), i.e., a binding already exists for the given home address and the home registration flag has a different value than the Home Registration (H) bit in the Binding Update. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 6.1.8, 9.5.1"

::= { mip6CnGlobalStats 18 }

-- The Correspondent Node statistics by mobile node

mip6CnCounterTable OBJECT-TYPE

SYNTAX SEQUENCE OF Mip6CnCounterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing each mobile ."

::= { mip6CnStats 2 }

```

mip6CnCounterEntry OBJECT-TYPE
    SYNTAX      Mip6CnCounterEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The set of correspondent node counters for a mobile
        node.

        Implementors need to be aware that if the total
        number of octets in mip6BindingHomeAddress
        exceeds 113, then OIDs of column instances in
        this row will have more than 128 sub-identifiers and
        cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.
        "
    INDEX      {      mip6BindingHomeAddressType,
                      mip6BindingHomeAddress
                }
    ::= { mip6CnCounterTable 1 }

Mip6CnCounterEntry ::=
    SEQUENCE {
        mip6CnBURequestsAccepted      Counter32,
        mip6CnBURequestsRejected      Counter32,
        mip6CnBCEntryCreationTime     DateAndTime,
        mip6CnBUAcceptedTime          DateAndTime,
        mip6CnBURejectionTime         DateAndTime,
        mip6CnBURejectionCode         Mip6BURequestRejectionCode,
        mip6CnCtrDiscontinuityTime    TimeStamp
    }

mip6CnBURequestsAccepted OBJECT-TYPE  --(Code 0,1)
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests from the
        mobile node accepted by the correspondent node.
        If Binding Acknowledgment messages are sent, then
        the status code in the message will have a value
        less than 128.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CnCtrDiscontinuityTime.
        "
    ::= { mip6CnCounterEntry 1 }

```

```

mip6CnBURequestsRejected      OBJECT-TYPE
                                -- (Code 128 through Code 159)
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Total number of Binding Update requests from the
        mobile node that have been rejected by the
        correspondent node. This includes the Binding Update
        requests for which a Binding Acknowledgment message
        has been sent with status code value greater than or
        equal to 128 and the Binding Acknowledgment requests
        that have been silently discarded.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CnCtrDiscontinuityTime.
        "
    ::= { mip6CnCounterEntry 2 }

mip6CnBCEntryCreationTime      OBJECT-TYPE
    SYNTAX          DateAndTime
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The time when the current Binding Cache entry was
        created for the mobile node.
        "
    ::= { mip6CnCounterEntry 3 }

mip6CnBUAcceptedTime OBJECT-TYPE
    SYNTAX          DateAndTime
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The time at which the last Binding Update was
        accepted by the correspondent node and the
        corresponding Binding Cache entry was updated.
        "
    ::= { mip6CnCounterEntry 4 }

```

```

mip6CnBURejectionTime OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time at which the last Binding Update message
        was rejected by the correspondent node.
        If there have been no rejections, then this object
        will be inaccessible.
        "
    ::= { mip6CnCounterEntry 5 }

mip6CnBURejectionCode OBJECT-TYPE
    SYNTAX      Mip6BURequestRejectionCode
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "If a Binding Acknowledgment is sent to the mobile
        node, this is the status code (> 128) that is
        returned in the Binding Acknowledgment.
        In case a Binding Acknowledgment is not sent to
        the mobile node, then this will be the value
        of the Status code that corresponds to the reason
        of the rejection. If there have been no
        rejections, then this object will be inaccessible.
        "
    REFERENCE
        "RFC 3775 : Section 6.1.8"
    ::= { mip6CnCounterEntry 6 }

mip6CnCtrDiscontinuityTime 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 counters in this row,
        viz., instances of 'mip6CnBURequestsAccepted' and
        'mip6CnBURequestsRejected', suffered a discontinuity.
        If no such discontinuities have occurred since the
        last re-initialization of the local management
        subsystem, then this object will have a zero value.
        "
    ::= { mip6CnCounterEntry 7 }

-- Home agent group

```

```
mip6HaAdvsRecd OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Total number of valid Router Advertisements
        received with the Home Agent (H) bit set, on
        all the links on which it is serving as a Home
        Agent.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 7"
    ::= { mip6HaAdvertisement 1 }

mip6HaAdvsSent OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Total number of unsolicited multicast Router
        Advertisements sent with the Home Agent (H) bit set,
        on all the links on which the router is serving as
        a Home Agent.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 7"
    ::= { mip6HaAdvertisement 2 }

mip6HaConfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mip6HaConfEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "A table containing configurable advertisement
        parameters for all interfaces on which the
        home agent service is advertised.
        It is RECOMMENDED that the last written values
        of the objects in the conceptual rows of this
```

```

        table will remain unchanged across reboots of
        the managed entity provided that the interfaces
        have not been renumbered after the reboot.
    "
 ::= { mip6HaAdvertisement 3 }

mip6HaConfEntry OBJECT-TYPE
    SYNTAX      Mip6HaConfEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "Advertisement parameters for an interface.
        The instances of the columnar objects in this entry
        pertain to the interface that is uniquely identified
        by the ipv6InterfaceIfIndex of the interface. The
        same ipv6InterfaceIfIndex object is used to uniquely
        identify instances of the columnar objects of this
        conceptual row.
        "
    INDEX       { ipv6InterfaceIfIndex }
 ::= { mip6HaConfTable 1 }

Mip6HaConfEntry      ::= SEQUENCE {
    mip6HaAdvPreference      Integer32,
    mip6HaAdvLifetime        Integer32,
    mip6HaPrefixAdv          INTEGER,
    mip6HaPrefixSolicitation INTEGER,
    mip6HaMCastCtlMsgSupport INTEGER
}

mip6HaAdvPreference OBJECT-TYPE
    SYNTAX      Integer32 (0..65536)
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "The preference value for the home agent to
        be used in the Router Advertisements. Higher
        value denotes greater preference.
        "
    REFERENCE
        "RFC 3775 : Section 7.4, 8.4"
 ::= { mip6HaConfEntry 1 }

```

```
mip6HaAdvLifetime    OBJECT-TYPE
    SYNTAX      Integer32 (1..65535)
    UNITS       "seconds"
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "The lifetime value for the home agent to be
         used in the Router Advertisements.
         "
    REFERENCE
        "RFC 3775 : Section 7.4"
    ::= { mip6HaConfEntry 2 }

mip6HaPrefixAdv      OBJECT-TYPE
    SYNTAX      INTEGER { enabled(1), disabled(2) }
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "Indicates whether the home agent should support
         sending of the ICMP Mobile Prefix Advertisements.
         If it is disabled(2), the home agent will not
         send ICMP Mobile Prefix Advertisements to the
         mobile nodes.
         The state can be changed from enabled(1) to
         disabled(2) and vice versa by operator
         intervention.
         Causing the state to change from enabled(1) to
         disabled(2) will result in the home agent
         disabling the Prefix advertisement function.
         On the other hand, changing the status from
         disabled(2) to enabled(1) will start the prefix
         advertisement function.
         "
    REFERENCE
        "RFC 3775 : Section 8.4"
    ::= { mip6HaConfEntry 3}
```

mip6HaPrefixSolicitation OBJECT-TYPE
SYNTAX INTEGER { enabled(1), disabled(2) }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "Indicates whether the home agent should respond to ICMP Mobile Prefix Solicitation messages it receives from the mobile nodes. By default, the value will be set to enabled(1). If it is disabled(2), the home agent will not respond to any ICMP Mobile Prefix Solicitation messages. The state can be changed from enabled(1) to disabled(2), by operator intervention. Causing the state to change from enabled(1) to disabled(2) will result in the home agent not responding to any ICMP Mobile Prefix Solicitation messages it receives from the mobile nodes."
REFERENCE
 "RFC 3775 : Section 8.4"
 ::= { mip6HaConfEntry 4 }

mip6HaMCastCtlMsgSupport OBJECT-TYPE
SYNTAX INTEGER { enabled(1), disabled(2) }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "Indicates whether the home agent should enable support for the processing of the multicast group membership control messages it receives from the mobile nodes. By default, the value will be set to enabled(1). If it is disabled(2), the home agent will not process any multicast group control messages it receives from the mobile nodes. The state can be changed from enabled(1) to disabled(2), by operator intervention. Causing the state to change from enabled(1) to disabled(2) will result in the home agent disabling the processing of the multicast group control messages it received from the mobile nodes."
REFERENCE
 "RFC 3775 : Section 10.4.3"
 ::= { mip6HaConfEntry 5 }

-- Registration Group counters HA

mip6HaGlobalStats OBJECT IDENTIFIER ::= { mip6HaStats 1 }

mip6HaHomeTestInitsRecd OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of Home Test Init messages received by the home agent. This will include Home Test Init messages that failed the validity checks. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 5.2.5"

::= { mip6HaGlobalStats 1 }

mip6HaHomeTestsSent OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of Home Test messages sent by the home agent. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"RFC 3775 : Section 5.2.5"

::= { mip6HaGlobalStats 2 }

mip6HaBUSRecd OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Total number of Binding Updates received by the
 home agent.
 Discontinuities in the value of this counter can
 occur at re-initialization of the management system,
 and at other times as indicated by the value of
 mip6CounterDiscontinuityTime."
 REFERENCE
 "RFC 3775 : Section 10.3.1"
 ::= { mip6HaGlobalStats 3 }

mip6HaBUAcksSent OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Total number of Binding Acknowledgments sent
 by the home agent.
 Discontinuities in the value of this counter can
 occur at re-initialization of the management system,
 and at other times as indicated by the value of
 mip6CounterDiscontinuityTime."
 REFERENCE
 "RFC 3775 : Section 10.3.1"
 ::= { mip6HaGlobalStats 4 }

mip6HaBRAdviceSent OBJECT-TYPE
 SYNTAX Counter32
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "Total number of Binding Acknowledgments sent
 by the home agent with Binding Refresh Advice
 mobility option included.
 Discontinuities in the value of this counter can
 occur at re-initialization of the management system,
 and at other times as indicated by the value of
 mip6CounterDiscontinuityTime."
 REFERENCE
 "RFC 3775 : Section 10.3.1"
 ::= { mip6HaGlobalStats 5 }

```
mip6HaBUAccepted OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Updates accepted by this HA.
        Binding Acknowledgment with status code of 0 or 1.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 6 }

mip6HaPrefDiscoverReqd OBJECT-TYPE -- (Code 1)
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The total number of Binding Acknowledgments sent by
        the home agent with status code indicating 'accepted
        but prefix discovery necessary' (Code 1).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 7 }
```

```
mip6HaReasonUnspecified OBJECT-TYPE                                -- (Code 128)
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'reason
        unspecified' (Code 128).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 8 }

mip6HaAdmProhibited OBJECT-TYPE
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'administratively
        prohibited' (Code 129).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 9 }
```

```
mip6HaInsufficientResource OBJECT-TYPE                -- (Code 130)
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'insufficient
        resources' (Code 130).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 9.5.2"
    ::= { mip6HaGlobalStats 10 }

mip6HaHomeRegnNotSupported OBJECT-TYPE                -- (Code 131)
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'home
        registration not supported' (Code 131).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 11 }
```

```
mip6HaNotHomeSubnet OBJECT-TYPE                                -- (Code 132)
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'not home subnet'
        (Code 132).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 12 }

mip6HaNotHomeAgentForThisMN OBJECT-TYPE                        -- (Code 133)
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'not home agent
        for this mobile node' (Code 133).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.2"
    ::= { mip6HaGlobalStats 13 }
```

```
mip6HaDupAddrDetectionFailed OBJECT-TYPE          -- (Code 134)
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'Duplicate
        Address Detection failed' (Code 134).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 10.3.1"
    ::= { mip6HaGlobalStats 14 }

mip6HaSeqNumberOutOfWindow OBJECT-TYPE            -- (Code 135)
    SYNTAX      Counter32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'sequence number
        out of window' (Code 135).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 9.5.1"
    ::= { mip6HaGlobalStats 15 }
```

```

mip6HaExpiredHomeNonceIndex OBJECT-TYPE                -- (Code 136)
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'expired home
        nonce index' (Code 136).
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 9.5.1"
    ::= { mip6HaGlobalStats 16 }

mip6HaRegTypeChangeDisallowed OBJECT-TYPE              -- (Code 139)
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Total number of Binding Update requests rejected by
        the home agent with status code in the Binding
        Acknowledgment message indicating 'registration
        type change disallowed' (Code 139), i.e., a binding
        already exists for the given home address and the
        home registration flag has a different value than
        the Home Registration (H) bit in the Binding Update.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6CounterDiscontinuityTime.
        "
    REFERENCE
        "RFC 3775 : Section 9.5.1"
    ::= { mip6HaGlobalStats 17 }

-- Home agent registration Counters per node

```

```

mip6HaCounterTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mip6HaCounterEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table containing registration statistics for all
        mobile nodes registered with the home agent.
        "
    ::= { mip6HaStats 2 }

mip6HaCounterEntry OBJECT-TYPE
    SYNTAX      Mip6HaCounterEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Home agent registration statistics for a mobile
        node.

        Implementors need to be aware that if the total
        number of octets in mip6BindingHomeAddress
        exceeds 113, then OIDs of column instances in
        this row will have more than 128 sub-identifiers and
        cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.
        "
    INDEX      { mip6BindingHomeAddressType,
                 mip6BindingHomeAddress
               }
    ::= { mip6HaCounterTable 1 }

Mip6HaCounterEntry ::= SEQUENCE {
    mip6HaBURequestsAccepted      Counter32,
    mip6HaBURequestsDenied       Counter32,
    mip6HaBCEnterCreationTime     DateAndTime,
    mip6HaBUAcceptedTime          DateAndTime,
    mip6HaBURejectionTime         DateAndTime,
    mip6HaRecentBURejectionCode   Mip6BURequestRejectionCode,
    mip6HaCtrDiscontinuityTime    TimeStamp
}

```

```

mip6HaBURequestsAccepted OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of service requests for the mobile node
        accepted by the home agent.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6HaCtrDiscontinuityTime.
        "
    ::= { mip6HaCounterEntry 1 }

mip6HaBURequestsDenied OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Total number of service requests for the mobile node
        rejected by the home agent.
        Discontinuities in the value of this counter can
        occur at re-initialization of the management system,
        and at other times as indicated by the value of
        mip6HaCtrDiscontinuityTime.
        "
    ::= { mip6HaCounterEntry 2 }

mip6HaBCEntryCreationTime OBJECT-TYPE
    SYNTAX      DateAndTime
    UNITS       "seconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time when the current Binding Cache entry was
        created for the mobile node.
        "
    ::= { mip6HaCounterEntry 3 }

mip6HaBUAcceptedTime OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time at which the last Binding Update was
        accepted by the home agent for this mobile node.
        "
    ::= { mip6HaCounterEntry 4 }

```

mip6HaBURejectionTime OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The time at which the last Binding Update was rejected by the home agent for this mobile node. If there have been no rejections, then this object will be inaccessible.

"

::= { mip6HaCounterEntry 5 }

mip6HaRecentBURejectionCode OBJECT-TYPE

SYNTAX Mip6BURequestRejectionCode

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"If a Binding Acknowledgment is sent to the mobile node, this is the status code (> 128) that is returned in the Binding Acknowledgment. In case a Binding Acknowledgment is not sent to the mobile node, then this will be the value of the status code that corresponds to the reason of the rejection. If there have been no rejections, then this object will be inaccessible.

"

::= { mip6HaCounterEntry 6 }

mip6HaCtrDiscontinuityTime 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 counters in this row, viz., instances of 'mip6HaBURequestsAccepted' and 'mip6HaBURequestsRejected', suffered a discontinuity. If no such discontinuities have occurred since the last re-initialization of the local management subsystem, then this object will have a zero value.

"

::= { mip6HaCounterEntry 7 }

-- Home Agent List Table

```

mip6HaListTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mip6HaListEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This table models the Home Agents List that contains
        the list of all routers that are acting as home
        agents on each of the interfaces on which the home
        agent service is offered by this router.
        "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaAdvertisement 4 }

mip6HaListEntry OBJECT-TYPE
    SYNTAX      Mip6HaListEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "Information about a router that is offering home
        agent service.
        The instances of the columnar objects in this entry
        pertain to an interface for a particular value of
        mip6HaLinkLocalAddressType and
        mip6HaLinkLocalAddress. The interface is uniquely
        identified by its ipv6InterfaceIfIndex. The same
        ipv6InterfaceIfIndex object is used in conjunction
        with the mip6HaLinkLocalAddressType and
        mip6HaLinkLocalAddress to uniquely identify
        instances of the columnar objects of this row.

        Implementors need to be aware that if the total
        number of octets in mip6HaLinkLocalAddress
        exceeds 112, then OIDs of column instances in
        this row will have more than 128 sub-identifiers and
        cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.
        "
    INDEX      { ipv6InterfaceIfIndex, mip6HaLinkLocalAddressType,
                  mip6HaLinkLocalAddress }
    ::= { mip6HaListTable 1 }

Mip6HaListEntry ::= SEQUENCE {
    mip6HaLinkLocalAddressType  InetAddressType,
    mip6HaLinkLocalAddress      InetAddress,
    mip6HaPreference            Integer32,
    mip6HaRecvLifeTime          Gauge32,
    mip6HaRecvTimeStamp         DateAndTime
}

```

```
mip6HaLinkLocalAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The address type for the link-local address
         of the home agent that follows.
         "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaListEntry 1 }

mip6HaLinkLocalAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The link local address of the home agent.

         The type of the address represented by this object
         is specified by the corresponding
         mip6HaLinkLocalAddressType object.
         "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaListEntry 2 }

mip6HaPreference OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The preference value of this home agent.
         Higher values indicate a more preferable home
         agent. The preference value is obtained from
         the preference field of the received Router
         Advertisement.
         "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaListEntry 3 }
```

```
mip6HaRecvLifeTime      OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The lifetime for this home agent.
        "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaListEntry 4 }

mip6HaRecvTimeStamp      OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The time when the home agent advertisement was
        received.
        "
    ::= { mip6HaListEntry 5 }

--
-- The list of global addresses of a home agent in the
-- home agent list
--

mip6HaGglAddrTable      OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mip6HaGglAddrEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "This table contains the global addresses of the home
        agents in the Home Agents List.
        "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaAdvertisement 5 }
```

```

mip6HaGlAddrEntry OBJECT-TYPE
    SYNTAX      Mip6HaGlAddrEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A global address for a home agent in the Home Agents
        List.
        The instances of the columnar objects in this entry
        pertain to an interface for a particular value of
        mip6HaLinkLocalAddressType, mip6HaLinkLocalAddress
        and mip6HaGaAddrSeqNo.
        The mip6HaGaAddrSeqNo object is used to distinguish
        between multiple instances of the home agent global
        addresses on the same interface for the same set of
        mip6HaLinkLocalAddressType, mip6HaLinkLocalAddress,
        values.
        There is no upper-bound on the maximum number of
        global addresses on an interface but, for practical
        purposes, the upper-bound of the value
        mip6HaGaAddrSeqNo is set to 1024.
        The interface is uniquely identified by its
        ipv6InterfaceIfIndex. The same ipv6InterfaceIfIndex
        object is used in conjunction with the
        mip6HaLinkLocalAddressType, mip6HaLinkLocalAddress,
        and mip6HaGaAddrSeqNo to uniquely identify instances
        of the columnar objects of this row.

        Implementors need to be aware that if the total
        number of octets in mip6HaLinkLocalAddress
        exceeds 111, then OIDs of column instances in
        this row will have more than 128 sub-identifiers and
        cannot be accessed using SNMPv1, SNMPv2c, or SNMPv3.
        "
    INDEX      { ipv6InterfaceIfIndex,  mip6HaLinkLocalAddressType,
                  mip6HaLinkLocalAddress, mip6HaGaAddrSeqNo }
    ::= { mip6HaGlAddrTable 1 }

Mip6HaGlAddrEntry      ::= SEQUENCE {
    mip6HaGaAddrSeqNo      Integer32,
    mip6HaGaGlobalAddressType  InetAddressType,
    mip6HaGaGlobalAddress    InetAddress
}

```

```

mip6HaGaAddrSeqNo OBJECT-TYPE
    SYNTAX      Integer32 (1..1024)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The index that along with ipv6InterfaceIfIndex,
        mip6HaLinkLocalAddressType, and
        mip6HaLinkLocalAddress uniquely identifies this row.
        "
    REFERENCE
        "RFC 3775 : Section 10.1"
    ::= { mip6HaGlAddrEntry 1 }

```

```

mip6HaGaGlobalAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The address type for the global address of the
        home agent that follows.
        "
    ::= { mip6HaGlAddrEntry 2 }

```

```

mip6HaGaGlobalAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "A global address of the home agent.

        The type of the address represented by this object
        is specified by the corresponding
        mip6HaGaGlobalAddressType object.
        "
    ::= { mip6HaGlAddrEntry 3 }

```

```

--
-- Notifications
--

```

```
mip6MnRegistered NOTIFICATION-TYPE
  OBJECTS      {
    mip6BindingTimeRegistered,
    mip6BindingCOAType,
    mip6BindingCOA
  }
  STATUS       current
  DESCRIPTION   "This notification is sent by a home agent when
    a mobile node registers with the home agent
    for the first time.
    Notifications will not be sent for subsequent
    updates and/or refreshes.
    The MO instances in the notifications will be
    identified by the mip6BindingHomeAddressType
    and mip6BindingHomeAddress for the mobile node
    in the mip6BindingCacheTable.
    "
  REFERENCE    "RFC 3775 : Section 10.3.1"
  ::= { mip6Notifications 1 }

mip6MnDeRegistered NOTIFICATION-TYPE
  OBJECTS      {
    mip6BindingTimeRegistered,
    mip6BindingCOAType,
    mip6BindingCOA
  }
  STATUS       current
  DESCRIPTION   "This notification is sent by a home agent every
    time a mobile node de-registers with the home
    agent by sending a Binding Update that requests
    the home agent to delete a binding.
    The MO instances in the notifications will be
    identified by the mip6BindingHomeAddressType
    and mip6BindingHomeAddress for the mobile node
    in the mip6BindingCacheTable.
    "
  REFERENCE    "RFC 3775 : Section 10.3.2"
  ::= { mip6Notifications 2 }
```

```

mip6MnCOAChanged NOTIFICATION-TYPE
    OBJECTS      {
        mip6BindingTimeRegistered,
        mip6BindingCOAType,
        mip6BindingCOA
    }
    STATUS        current
    DESCRIPTION   "This notification is sent by a home agent every
        time a mobile node sends a Binding Update with
        a new care-of address (for an existing Binding
        Cache entry).
        Notifications will not be sent for subsequent
        updates and/or refreshes for the same Care-of
        address.
        The registration of a new care-of address may
        indicate that the mobile node has moved or that
        the primary care-of address of the mobile node
        has become deprecated.
        The MO instances in the notifications will be
        identified by the mip6BindingHomeAddressType
        and mip6BindingHomeAddress for the mobile node
        in the mip6BindingCacheTable.
        "
    REFERENCE    "RFC 3775 : Section 11.5.2, 11.7.1"
    ::= { mip6Notifications 3 }

mip6MnBindingExpiredAtHA NOTIFICATION-TYPE
    OBJECTS      {
        mip6BindingTimeRegistered,
        mip6BindingCOAType,
        mip6BindingCOA
    }
    STATUS        current
    DESCRIPTION   "This notification is sent by a home agent when a
        binding for the mobile node at the home agent
        expired (no timely Binding Updates were received).
        The MO instances in the notifications will be
        identified by the mip6BindingHomeAddressType
        and mip6BindingHomeAddress for the mobile node
        in the mip6BindingCacheTable.
        "
    REFERENCE    "RFC 3775 : Section 10.3.2"
    ::= { mip6Notifications 4 }

```

```
mip6MnBindingExpiredAtCN NOTIFICATION-TYPE
  OBJECTS      {
    mip6BindingTimeRegistered,
    mip6BindingCOAType,
    mip6BindingCOA
  }
  STATUS      current
  DESCRIPTION
    "This notification is sent by a correspondent node
    when a binding for the mobile node at the
    correspondent node expired (no timely Binding
    Updates were received).
    The MO instances in the notifications will be
    identified by the mip6BindingHomeAddressType
    and mip6BindingHomeAddress for the mobile node
    in the mip6BindingCacheTable.
    "
 ::= { mip6Notifications 5 }
```

```
-- Conformance information
mip6Groups      OBJECT IDENTIFIER ::= { mip6Conformance 1 }
mip6Compliances OBJECT IDENTIFIER ::= { mip6Conformance 2 }

-- Units of conformance
mip6SystemGroup OBJECT-GROUP
    OBJECTS {
        mip6Capabilities,
        mip6Status
    }
    STATUS current
    DESCRIPTION
        " A collection of objects for basic MIPv6
        monitoring."
    ::= { mip6Groups 1 }

mip6BindingCacheGroup OBJECT-GROUP
    OBJECTS {
        mip6BindingCOAType,
        mip6BindingCOA,
        mip6BindingTimeRegistered,
        mip6BindingTimeGranted,
        mip6BindingTimeRemaining,
        mip6BindingMaxSeq,
        mip6BindingHomeRegn,
        mip6BindingUsageTS,
        mip6BindingUsageCount,
        mip6BindingAdminStatus
    }
    STATUS current
    DESCRIPTION
        " A collection of objects for monitoring the
        Binding Cache.
        "
    ::= { mip6Groups 2 }
```

```
mip6BindingHstGroup      OBJECT-GROUP
  OBJECTS {
    mip6BindingHstCOAType,
    mip6BindingHstCOA,
    mip6BindingHstTimeRegistered,
    mip6BindingHstTimeExpired,
    mip6BindingHstHomeRegn,
    mip6BindingHstUsageTS,
    mip6BindingHstUsageCount
  }
  STATUS      current
  DESCRIPTION
    " A collection of objects for monitoring the
      Binding History. This can be used to monitor
      the movement of the mobile node.
    "
  ::= { mip6Groups 3 }

mip6TotalTrafficGroup     OBJECT-GROUP
  OBJECTS {
    mip6InOctets,
    mip6HCInOctets,
    mip6InPkts,
    mip6HCInPkts,
    mip6OutOctets,
    mip6HCOctets,
    mip6OutPkts,
    mip6HCOutPkts,
    mip6CounterDiscontinuityTime
  }
  STATUS      current
  DESCRIPTION
    " A collection of objects for monitoring the
      total MIPv6 traffic.
    "
  ::= { mip6Groups 4 }
```

```
mip6NodeTrafficGroup      OBJECT-GROUP
    OBJECTS {
        mip6NodeInOctets,
        mip6HCNodeInOctets,
        mip6NodeInPkts,
        mip6HCNodeInPkts,
        mip6NodeOutOctets,
        mip6HCNodeOutOctets,
        mip6NodeOutPkts,
        mip6HCNodeOutPkts,
        mip6NodeCtrDiscontinuityTime
    }
    STATUS      current
    DESCRIPTION
        " A collection of objects for monitoring the
          MIPv6 traffic due to a mobile node.
        "
    ::= { mip6Groups 5 }

mip6MnSystemGroup         OBJECT-GROUP
    OBJECTS {
        mip6MnHomeAddressState
    }
    STATUS      current
    DESCRIPTION
        " A collection of objects for basic monitoring
          of the mobile node.
        "
    ::= { mip6Groups 6 }

mip6MnConfGroup           OBJECT-GROUP
    OBJECTS {
        mip6MnDiscoveryRequests,
        mip6MnDiscoveryReplies,
        mip6MnDiscoveryTimeouts,
        mip6MnPrefixSolicitationsSent,
        mip6MnPrefixAdvsRecd,
        mip6MnPrefixAdvsIgnored,
        mip6MnMovedToFN,
        mip6MnMovedToHN
    }
    STATUS      current
    DESCRIPTION
        " A collection of objects for monitoring
          the advertisement-related info on the
          mobile node.
        "
    ::= { mip6Groups 7 }
```

```
mip6MnRegistrationGroup  OBJECT-GROUP
    OBJECTS {
        mip6MnBLCOAType,
        mip6MnBLCOA,
        mip6MnBLLifeTimeRequested,
        mip6MnBLLifeTimeGranted,
        mip6MnBLMaxSeq,
        mip6MnBLTimeSent,
        mip6MnBLAccepted,
        mip6MnBLAcceptedTime,
        mip6MnBLRetransmissions,
        mip6MnBLDontSendBUFlag,
        --
        -- Binding Update List
        --
        mip6MnMobilityMessagesSent,
        mip6MnMobilityMessagesRecd,
        mip6MnBUStoHA,
        mip6MnBUAcksFromHA,
        mip6MnBUStoCN,
        mip6MnBUAcksFromCN,
        mip6MnBindingErrorsFromCN,
        mip6MnICMPErrorsRecd,
        mip6MnBRRequestsRecd
    }
    STATUS      current
    DESCRIPTION
        " A collection of objects for monitoring
          the registration statistics for the mobile node.
          "
    ::= { mip6Groups 8 }
```

```
mip6CnStatsGroup    OBJECT-GROUP
    OBJECTS {
        mip6CnBURequestsAccepted,
        mip6CnBURequestsRejected,
        mip6CnBCEntryCreationTime,
        mip6CnBUAcceptedTime,
        mip6CnBURejectionTime,
        mip6CnBURejectionCode,
        mip6CnCtrDiscontinuityTime
    }
    STATUS    current
    DESCRIPTION
        " A collection of objects for monitoring
          the control messages and corresponding
          statistics for each mobile node
          communicating with the correspondent
          node.
        "
    ::= { mip6Groups 9 }

mip6HaSystemGroup    OBJECT-GROUP
    OBJECTS {
        mip6HaAdvsRecd,
        mip6HaAdvsSent,
        mip6HaAdvPreference,
        mip6HaAdvLifetime,
        mip6HaPrefixAdv,
        mip6HaPrefixSolicitation,
        mip6HaMCastCtlMsgSupport
    }
    STATUS    current
    DESCRIPTION
        " A collection of objects for monitoring
          the advertisement-related parameters and
          statistics for the home agent.
        "
    ::= { mip6Groups 10 }
```

```
mip6HaListGroup    OBJECT-GROUP
    OBJECTS {
        mip6HaPreference,
        mip6HaRecvLifeTime,
        mip6HaRecvTimeStamp,
        mip6HaGaGlobalAddressType,
        mip6HaGaGlobalAddress
    }
    STATUS    current
    DESCRIPTION
        " A collection of objects for monitoring
          the Home Agent List on the home agent.
        "
    ::= { mip6Groups 11 }

mip6HaStatsGroup    OBJECT-GROUP
    OBJECTS {
        mip6HaBURequestsAccepted,
        mip6HaBURequestsDenied,
        mip6HaBCEntryCreationTime,
        mip6HaBUAcceptedTime,
        mip6HaBURejectionTime,
        mip6HaRecentBURejectionCode,
        mip6HaCtrDiscontinuityTime
    }
    STATUS    current
    DESCRIPTION
        " A collection of objects for monitoring
          registration-related statistics on the home agent.
        "
    ::= { mip6Groups 12 }
```

```
mip6CnGlobalStatsGroup    OBJECT-GROUP
    OBJECTS {
        mip6CnHomeTestInitsRecd,
        mip6CnHomeTestsSent,
        mip6CnCareOfTestInitsRecd,
        mip6CnCareOfTestsSent,
        mip6CnBUsRecd,
        mip6CnBUAcksSent,
        mip6CnBRsSent,
        mip6CnBindingErrors,
        mip6CnBUsAccepted,
        mip6CnBUsRejected,
        mip6CnReasonUnspecified,
        mip6CnInsufficientResource,
        mip6CnHomeRegnNotSupported,
        mip6CnSeqNumberOutOfWindow,
        mip6CnExpiredHomeNonceIndex,
        mip6CnExpiredCareOfNonceIndex,
        mip6CnExpiredNonce,
        mip6CnRegTypeChangeDisallowed
    }
    STATUS      current
    DESCRIPTION
        " A collection of objects for monitoring
          advertisement and registration statistics on
          a correspondent node.
          "
    ::= { mip6Groups 13 }
```

```
mip6HaGlobalStatsGroup    OBJECT-GROUP
    OBJECTS {
        mip6HaHomeTestInitsRecd,
        mip6HaHomeTestsSent,
        mip6HaBUsRecd,
        mip6HaBUAcksSent,
        mip6HaBRAdviceSent,
        mip6HaBUsAccepted,
        mip6HaPrefDiscoverReqd,
        mip6HaReasonUnspecified,
        mip6HaAdmProhibited,
        mip6HaInsufficientResource,
        mip6HaHomeRegnNotSupported,
        mip6HaNotHomeSubnet,
        mip6HaNotHomeAgentForThisMN,
        mip6HaDupAddrDetectionFailed,
        mip6HaSeqNumberOutOfWindow,
        mip6HaExpiredHomeNonceIndex,
        mip6HaRegTypeChangeDisallowed
    }
    STATUS      current
    DESCRIPTION
        " A collection of objects for monitoring
          advertisement and registration statistics on
          a home agent.
        "
    ::= { mip6Groups 14 }

mip6BindingCacheCtlGroup    OBJECT-GROUP
    OBJECTS {
        mip6BindingAdminStatus
    }
    STATUS      current
    DESCRIPTION
        "A collection of objects for controlling the
        Binding Cache.
        "
    ::= { mip6Groups 15 }
```

```
mip6NotificationGroup    NOTIFICATION-GROUP
    NOTIFICATIONS {
        mip6MnRegistered,
        mip6MnDeRegistered,
        mip6MnCOAChanged,
        mip6MnBindingExpiredAtHA,
        mip6MnBindingExpiredAtCN
    }
    STATUS    current
    DESCRIPTION
        "A collection of notifications from a home agent
        or correspondent node to the Manager about the
        status of a mobile node.
        "
    ::= { mip6Groups 16 }
```

```
-- Compliance statements
```

```

mip6CoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB.
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6SystemGroup }

    ::= { mip6Compliances 1 }

mip6Compliance2 MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and support
        monitoring of the Binding Cache and the Total
        Traffic.
        There are a number of INDEX objects that cannot be
        represented in the form of OBJECT clauses in SMIV2,
        but for which there are compliance requirements,
        expressed in OBJECT clause form in this description:
        -- OBJECT      mip6BindingHomeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.
        --
        -- OBJECT      mip6BindingHomeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.
        --
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6SystemGroup,
                           mip6BindingCacheGroup,
                           mip6TotalTrafficGroup
                           }
    ::= { mip6Compliances 2 }

```

mip6Compliance3 MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for SNMP entities that implement the MOBILEIPV6-MIB and support monitoring of the Binding Cache, the Binding History, the total traffic, and the mobile node-wide traffic. There are a number of INDEX objects that cannot be represented in the form of OBJECT clauses in SMIV2, but for which there are compliance requirements, expressed in OBJECT clause form in this description:

```
-- OBJECT      mip6BindingHomeAddressType
-- SYNTAX      InetAddressType { ipv6(2) }
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
--
-- OBJECT      mip6BindingHomeAddress
-- SYNTAX      InetAddress (SIZE(16))
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
--
-- OBJECT      mip6BindingHstHomeAddressType
-- SYNTAX      InetAddressType { ipv6(2) }
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the
--      mip6BindingHstHomeAddress object.
--
-- OBJECT      mip6BindingHstHomeAddress
-- SYNTAX      InetAddress (SIZE(16))
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the
--      mip6BindingHstHomeAddress object.
--
"
```

MODULE -- this module

```
MANDATORY-GROUPS { mip6SystemGroup,
                    mip6BindingCacheGroup,
                    mip6BindingHstGroup,
                    mip6TotalTrafficGroup,
                    mip6NodeTrafficGroup
                    }
```

```
::= { mip6Compliances 3 }
```

```
mip6CoreReadOnlyCompliance MODULE-COMPLIANCE
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The compliance statement for SNMP entities
that implement the MOBILEIPV6-MIB without support
for read-write (i.e., in read-only mode).
"
```

```
MODULE -- this module
```

```
MANDATORY-GROUPS { mip6SystemGroup }
```

```
OBJECT mip6Status
```

```
MIN-ACCESS read-only
```

```
DESCRIPTION
```

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

```
::= { mip6Compliances 4 }
```

```
mip6ReadOnlyCompliance2 MODULE-COMPLIANCE
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The compliance statement for SNMP entities
that implement the MOBILEIPV6-MIB without support
for read-write (i.e., in read-only mode) and
support monitoring of the Binding Cache and Total
Traffic.
```

```
There are a number of INDEX objects that cannot be
represented in the form of OBJECT clauses in SMIV2,
but for which there are compliance requirements,
expressed in OBJECT clause form in this description:
```

```
-- OBJECT mip6BindingHomeAddressType
```

```
-- SYNTAX InetAddressType { ipv6(2) }
```

```
-- DESCRIPTION
```

```
-- This MIB module requires support for global
-- ipv6 addresses for the mip6BindingHomeAddress
-- object.
```

```
--
```

```
-- OBJECT mip6BindingHomeAddress
```

```
-- SYNTAX InetAddress (SIZE(16))
```

```
-- DESCRIPTION
```

```
-- This MIB module requires support for global
-- ipv6 addresses for the mip6BindingHomeAddress
-- object.
```

```
--
```

```
"
```

```
MODULE -- this module
```

```

MANDATORY-GROUPS { mip6SystemGroup,
                    mip6BindingCacheGroup,
                    mip6TotalTrafficGroup
                    }

OBJECT      mip6Status
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      mip6BindingAdminStatus
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."
 ::= { mip6Compliances 5 }

mip6ReadOnlyCompliance3 MODULE-COMPLIANCE
STATUS      current
DESCRIPTION
    "The compliance statement for SNMP entities
    that implement the MOBILEIPV6-MIB without support
    for read-write (i.e., in read-only mode) and support
    monitoring of the Binding Cache, the Binding History,
    the total traffic, and the mobile node-wide traffic.
    There are a number of INDEX objects that cannot be
    represented in the form of OBJECT clauses in SMIV2,
    but for which there are compliance requirements,
    expressed in OBJECT clause form in this description:
    -- OBJECT      mip6BindingHomeAddressType
    -- SYNTAX      InetAddressType { ipv6(2) }
    -- DESCRIPTION
    --      This MIB module requires support for global
    --      ipv6 addresses for the mip6BindingHomeAddress
    --      object.
    --
    -- OBJECT      mip6BindingHomeAddress
    -- SYNTAX      InetAddress (SIZE(16))
    -- DESCRIPTION
    --      This MIB module requires support for global
    --      ipv6 addresses for the mip6BindingHomeAddress
    --      object.
    --
    -- OBJECT      mip6BindingHstHomeAddressType
    -- SYNTAX      InetAddressType { ipv6(2) }
    -- DESCRIPTION
    --      This MIB module requires support for global
    --      ipv6 addresses for the
    --      mip6BindingHstHomeAddress object.
    --

```

```

-- OBJECT      mip6BindingHstHomeAddress
-- SYNTAX      InetAddress (SIZE(16))
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the
--      mip6BindingHstHomeAddress object.
--
"
MODULE -- this module
    MANDATORY-GROUPS { mip6SystemGroup,
                        mip6BindingCacheGroup,
                        mip6BindingHstGroup,
                        mip6TotalTrafficGroup,
                        mip6NodeTrafficGroup
                      }
OBJECT      mip6Status
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      mip6BindingAdminStatus
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."
 ::= { mip6Compliances 6 }

mip6MnCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring of the basic mobile node
        functionality.
        There are a number of INDEX objects that cannot be
        represented in the form of OBJECT clauses in SMIV2,
        but for which there are compliance requirements,
        expressed in OBJECT clause form in this description:
        -- OBJECT      mip6MnHomeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6MnHomeAddress
        --      object.
        --
        -- OBJECT      mip6MnHomeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global

```

```

--      ipv6 addresses for the mip6MnHomeAddress
--      object.
--
"
MODULE -- this module
    MANDATORY-GROUPS { mip6MnSystemGroup
    }
    ::= { mip6Compliances 7 }

mip6MnCompliance2 MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring of the mobile node
        functionality specifically the Discovery- and
        Registration-related statistics,
        There are a number of INDEX objects that cannot be
        represented in the form of OBJECT clauses in SMIV2,
        but for which there are compliance requirements,
        expressed in OBJECT clause form in this description:
        -- OBJECT      mip6MnHomeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6MnHomeAddress
        --      object.
        --
        -- OBJECT      mip6MnHomeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6MnHomeAddress
        --      object.
        --
        -- OBJECT      mip6MnBLNodeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6MnBLNodeAddress
        --      object.
        --
        -- OBJECT      mip6MnBLNodeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6MnBLNodeAddress
        --      object.

```

```

--
"
MODULE -- this module
    MANDATORY-GROUPS { mip6MnSystemGroup,
                        mip6MnConfGroup,
                        mip6MnRegistrationGroup,
                        mip6TotalTrafficGroup
                      }
    ::= { mip6Compliances 8 }

mip6CnCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring of the basic correspondent node
        functionality.
        "
MODULE -- this module
    MANDATORY-GROUPS { mip6CnGlobalStatsGroup,
                        mip6TotalTrafficGroup
                      }
    ::= { mip6Compliances 9 }

mip6CnCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring of the basic correspondent node
        functionality.
        There are a number of INDEX objects that cannot be
        represented in the form of OBJECT clauses in SMIV2,
        but for which there are compliance requirements,
        expressed in OBJECT clause form in this description:
        -- OBJECT      mip6BindingHomeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.
        --
        -- OBJECT      mip6BindingHomeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.

```

```

"
MODULE -- this module
    MANDATORY-GROUPS { mip6CnGlobalStatsGroup,
                        mip6CnStatsGroup,
                        mip6TotalTrafficGroup
                      }
 ::= { mip6Compliances 10 }

mip6HaCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring of the basic home agent
        functionality.
        "
MODULE -- this module
    MANDATORY-GROUPS { mip6HaSystemGroup
                      }
 ::= { mip6Compliances 11 }

mip6HaCompliance2 MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring of the home agent
        functionality specifically the Home Agent List
        and the home-agent-registration-related statistics,
        There are a number of INDEX objects that cannot be
        represented in the form of OBJECT clauses in SMIV2,
        but for which there are compliance requirements,
        expressed in OBJECT clause form in this description:
        -- OBJECT      mip6BindingHomeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.
        --
        -- OBJECT      mip6BindingHomeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.
        --
        -- OBJECT      mip6HaLinkLocalAddressType

```

```

-- SYNTAX      InetAddressType { ipv6z(4) }
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
--
-- OBJECT      mip6HaLinkLocalAddress
-- SYNTAX      InetAddress (SIZE(20))
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
--
"
MODULE -- this module
    MANDATORY-GROUPS { mip6HaSystemGroup,
                        mip6HaListGroup,
                        mip6HaStatsGroup,
                        mip6HaGlobalStatsGroup,
                        mip6TotalTrafficGroup
                      }
    ::= { mip6Compliances 12 }

mip6HaCompliance3 MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB and
        support monitoring and control of the home agent
        functionality specifically the Home Agent List
        and the home-agent-registration-related statistics,

        There are a number of INDEX objects that cannot be
        represented in the form of OBJECT clauses in SMIV2,
        but for which there are compliance requirements,
        expressed in OBJECT clause form in this description:
        -- OBJECT      mip6BindingHomeAddressType
        -- SYNTAX      InetAddressType { ipv6(2) }
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress
        --      object.
        --
        -- OBJECT      mip6BindingHomeAddress
        -- SYNTAX      InetAddress (SIZE(16))
        -- DESCRIPTION
        --      This MIB module requires support for global
        --      ipv6 addresses for the mip6BindingHomeAddress

```

```
--      object.
--
-- OBJECT      mip6HaLinkLocalAddressType
-- SYNTAX      InetAddressType { ipv6z(4) }
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
--
-- OBJECT      mip6HaLinkLocalAddress
-- SYNTAX      InetAddress (SIZE(20))
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
--
"
MODULE -- this module
    MANDATORY-GROUPS { mip6HaSystemGroup,
                        mip6HaListGroup,
                        mip6HaStatsGroup,
                        mip6HaGlobalStatsGroup,
                        mip6BindingCacheCtlGroup,
                        mip6TotalTrafficGroup
                      }
 ::= { mip6Compliances 13 }
```

```

mip6HaCoreReadOnlyCompliance MODULE-COMPLIANCE
    STATUS    current
    DESCRIPTION
        "The compliance statement for SNMP entities
        that implement the MOBILEIPV6-MIB without support
        for read-write (i.e., in read-only mode) and
        support monitoring of the basic home agent
        functionality.
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6HaSystemGroup
                            }
    OBJECT      mip6HaAdvPreference
    MIN-ACCESS   read-only
    DESCRIPTION
        "Write access is not required."

    OBJECT      mip6HaAdvLifetime
    MIN-ACCESS   read-only
    DESCRIPTION
        "Write access is not required."

    OBJECT      mip6HaPrefixAdv
    MIN-ACCESS   read-only
    DESCRIPTION
        "Write access is not required."

    OBJECT      mip6HaPrefixSolicitation
    MIN-ACCESS   read-only
    DESCRIPTION
        "Write access is not required."

    OBJECT      mip6HaMCastCtlMsgSupport
    MIN-ACCESS   read-only
    DESCRIPTION
        "Write access is not required."

    ::= { mip6Compliances 14 }

```

mip6HaReadOnlyCompliance2 MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for SNMP entities that implement the MOBILEIPV6-MIB without support for read-write (i.e., in read-only mode) and support monitoring of the home agent functionality specifically the Home Agent List and the home-agent-registration-related statistics.

There are a number of INDEX objects that cannot be represented in the form of OBJECT clauses in SMIV2, but for which there are compliance requirements, expressed in OBJECT clause form in this description:

```
-- OBJECT      mip6BindingHomeAddressType
-- SYNTAX      InetAddressType { ipv6(2) }
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
```

```
-- OBJECT      mip6BindingHomeAddress
-- SYNTAX      InetAddress (SIZE(16))
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
```

```
-- OBJECT      mip6HaLinkLocalAddressType
-- SYNTAX      InetAddressType { ipv6z(4) }
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
```

```
-- OBJECT      mip6HaLinkLocalAddress
-- SYNTAX      InetAddress (SIZE(20))
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
```

"

MODULE -- this module

```
MANDATORY-GROUPS { mip6HaSystemGroup,
                    mip6HaListGroup,
                    mip6HaStatsGroup,
                    mip6HaGlobalStatsGroup,
```

```
        mip6TotalTrafficGroup
    }

OBJECT      mip6HaAdvPreference
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      mip6HaAdvLifetime
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      mip6HaPrefixAdv
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      mip6HaPrefixSolicitation
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

OBJECT      mip6HaMCastCtlMsgSupport
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

 ::= { mip6Compliances 15 }
```

mip6HaReadOnlyCompliance3 MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for SNMP entities that implement the MOBILEIPV6-MIB without support for read-write (i.e., in read-only mode) and support monitoring and control of the home agent functionality specifically the Home Agent List and the home-agent-registration-related statistics,

There are a number of INDEX objects that cannot be represented in the form of OBJECT clauses in SMIV2, but for which there are compliance requirements, expressed in OBJECT clause form in this description:

```
-- OBJECT      mip6BindingHomeAddressType
-- SYNTAX      InetAddressType { ipv6(2) }
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
```

```
-- OBJECT      mip6BindingHomeAddress
-- SYNTAX      InetAddress (SIZE(16))
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
```

```
-- OBJECT      mip6HaLinkLocalAddressType
-- SYNTAX      InetAddressType { ipv6z(4) }
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
```

```
-- OBJECT      mip6HaLinkLocalAddress
-- SYNTAX      InetAddress (SIZE(20))
-- DESCRIPTION
--      This MIB module requires support for local
--      ipv6 addresses for the mip6HaLinkLocalAddress
--      object.
```

"

MODULE -- this module

```
MANDATORY-GROUPS { mip6HaSystemGroup,
                    mip6HaListGroup,
                    mip6HaStatsGroup,
                    mip6HaGlobalStatsGroup,
```

```

        mip6BindingCacheCtlGroup,
        mip6TotalTrafficGroup
    }

```

```

OBJECT      mip6HaAdvPreference
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

```

```

OBJECT      mip6HaAdvLifetime
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

```

```

OBJECT      mip6HaPrefixAdv
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

```

```

OBJECT      mip6HaPrefixSolicitation
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

```

```

OBJECT      mip6HaMCastCtlMsgSupport
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

```

```

OBJECT      mip6BindingAdminStatus
MIN-ACCESS  read-only
DESCRIPTION
    "Write access is not required."

```

```
 ::= { mip6Compliances 16 }
```

mip6NotificationCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for SNMP entities that implement the MOBILEIPV6-MIB and support Notification from home agent or correspondent node to management stations about the mobile node status. There are a number of INDEX objects that cannot be represented in the form of OBJECT clauses in SMIV2, but for which there are compliance requirements, expressed in OBJECT clause form in this description:

```
-- OBJECT      mip6BindingHomeAddressType
-- SYNTAX      InetAddressType { ipv6(2) }
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
--
-- OBJECT      mip6BindingHomeAddress
-- SYNTAX      InetAddress (SIZE(16))
-- DESCRIPTION
--      This MIB module requires support for global
--      ipv6 addresses for the mip6BindingHomeAddress
--      object.
"
MODULE -- this module
    MANDATORY-GROUPS { mip6NotificationGroup
                        }
    ::= { mip6Compliances 17 }

END
```

6. Security Considerations

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

- mip6Status: The value of this object is used to enable or disable the MIPv6 functionality on a MIPv6 entity. Access to this MO may be abused to disrupt the MIPv6 communication.
- mip6HaAdvPreference: Access to this object may be abused to force MNs into selecting the wrong HA.
- mip6HaAdvLifetime: Access to this object may be abused to set the advertised lifetime to incorrect values. That will have an adverse impact on the MIPv6 communication.
- mip6BindingAdminStatus: The value of this object is used to control the status of a Binding Cache entry. Access to this object may be abused to deny Mobile IPv6 connectivity to a legitimate user or to grant Mobile IPv6 connectivity to an illegal user.
- mip6HaPrefixAdv: The value of this object indicates whether the home agent will send ICMP Mobile Prefix Advertisements to the mobile node. Access to this object may be abused to send unwanted/wrong prefix information or to deny the mobile node from receiving information about the changes in the home prefixes. This may result in disruption of the Mobile IPv6 connectivity.
- mip6HaPrefixSolicitation: The value of this object indicates whether the home agent should respond to ICMP Mobile Prefix Solicitation messages from a mobile node. Access to this object may be abused to deny the mobile node information about its home prefix. This may result in disruption of the Mobile IPv6 connectivity.
- mip6HaMCastCtlMsgSupport: The value of this object decides whether the home agent should process the multicast group membership control messages it receives from mobile nodes. Access to this object may be used to subvert administrative policy on multicasting or to disrupt the multicast communication with the mobile node.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability:

The address-related objects in this MIB may be considered to be particularly sensitive and/or private. The care-of-address-related objects reveal the location and movement of the mobile node. This information may be considered to be private and sensitive and must be carefully handled.

- mip6BindingHstCOAType
- mip6BindingHstCOA
- mip6MnBLCOAType
- mip6MnBLCOA

The mobile node's home-address- and home-agent-related information may be considered to be sensitive too as these may provide clues to a malicious party on ways to disrupt the mobile nodes communication channels.

- mip6BindingHstHomeAddressType,
- mip6BindingHstHomeAddress,
- mip6MnHomeAddressType,
- mip6MnHomeAddress

The correspondent node's address-related MOs will reveal the nodes with whom the mobile node is corresponding. This information may be considered private and sensitive.

- mip6MnBLNodeAddressType,
- mip6MnBLNodeAddress

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

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

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator

responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

7. IANA Considerations

IANA has assigned a base arc in the 'mib-2' (standards track) OID tree for the 'mip6MIB' MODULE-IDENTITY defined in the Mobile-IPv6 MIB. The mib-2 number is 133 for mip6MIB.

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