

Mip6 Working Group  
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**A Management Information Base for Mobile IPv6**  
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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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Appendix: History of Changes

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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) [MIPv6] specifies a protocol which allows nodes to remain reachable while moving around in the IPv6 Internet. An entity which implements the MIPv6 protocol is an 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 the managed objects that will be required to monitor and control MIPv6 entities.

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## **2.2 Terminology.**

**The terminology used in this document is consistent with the definitions used in Mobile IPv6 protocol specification[MIPv6].**

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

## **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 HA, CN, MN )
- o binding details (at HA, CN)
- o history of Binding Updates (at HA, CN, MN)

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 e.g.

- 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.

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#### **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, Neighbour Discovery MIB, Tunnel MIB.) for monitor and control of MIPv6 entities.

The Mobile-IPv6 MIB comprises of following sets of groups

- mip6IP: a generic group containing objects that are common to all the Mobile IPv6 entities.
- mip6Ha: this group models the home agent service. It comprises 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 comprises 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



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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.

mip6HaGlobalAddrTable : contains the global addresses of the home agents.

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## 5. The Mobile-IPv6 MIB.

```
MOBILEIPV6-MIB DEFINITIONS ::= BEGIN
  IMPORTS
    MODULE-IDENTITY, mib-2, Unsigned32, Integer32,
    Gauge32, Counter64,
    OBJECT-TYPE, NOTIFICATION-TYPE
      FROM SNMPv2-SMI
    TEXTUAL-CONVENTION,
    TruthValue, DateAndTime, TimeStamp
      FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP
      FROM SNMPv2-CONF
  -- SnmpAdminString
  --      FROM SNMP-FRAMEWORK-MIB
  InetAddressType, InetAddress
      FROM INET-ADDRESS-MIB
  ipv6IfIndex
      FROM IPV6-MIB
  ;

mip6MIB MODULE-IDENTITY
  LAST-UPDATED "200407190000Z"          -- 19th July, 2004
  ORGANIZATION "IETF mip6 Working Group"
  CONTACT-INFO
    "
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```

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#### DESCRIPTION

" The MIB for monitoring Mobile-IPv6 entities.  
Copyright (C) The Internet Society <year>. The  
initial version of this MIB module was published  
in RFC xxxx; for full legal notices see the RFC  
itself. Supplementary information may be available  
on <http://www.ietf.org/copyrights/ianamib.html>.  
"

-- RFC Ed.: replace xxxx with actual RFC number & remove this note

REVISION "200407190000Z" -- 19th July, 2004  
DESCRIPTION "Initial version, published as RFC yyyy."

-- RFC Ed.: replace yyyy with actual RFC number & remove this note

::= { mib-2 XXX } -- will be assigned by IANA

-- IANA Reg.: Please assign a value for "XXX" under the 'mib-2'  
-- subtree and to record the assignment in the SMI Numbers registry.

-- RFC Ed.: When the above assignment has been made, please  
-- remove the above note  
-- replace "XXX" (here and in the MIB module) with the assigned  
-- value and  
-- remove this note.

-- The major groups

mip6Notifications	OBJECT IDENTIFIER ::= { mip6MIB 0 }
mip6Objects	OBJECT IDENTIFIER ::= { mip6MIB 1 }
mip6Conformance	OBJECT IDENTIFIER ::= { mip6MIB 2 }
mip6Core	OBJECT IDENTIFIER ::= { mip6Objects 1 }

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```

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

Mipv6BURequestRejectionCode ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

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

"

REFERENCE

"[RFC3775](#) : [Section 6.1.8](#)"

SYNTAX BITS {

```

    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



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```
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.
    "
REFERENCE
    "RFC3775 : Section 6.1.8"
::= { mip6System 1 }
```

mip6Status OBJECT-TYPE

```
SYNTAX      INTEGER { enabled(1), disabled(2) }
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "Indicates whether the Mobile IPv6 protocol 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.
    "
::= { mip6System 2 }
```

-- mip6BindingCache

mip6BindingCacheTable OBJECT-TYPE

```
SYNTAX      SEQUENCE OF Mipv6BindingCacheEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A table representing the Binding Cache on the managed
    entity. This cache is maintained by home agents and
    correspondent nodes. The cache contains both
    correspondent registration entries and home registration
    entries.
    "
REFERENCE
    "RFC3775 : Section 4.5, 9.1 , 10.1"
```

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```

 ::= { mip6Bindings 1 }

mip6BindingCacheEntry OBJECT-TYPE
    SYNTAX      Mipv6BindingCacheEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An entry in the binding cache table. It represents a
        single Binding Update.
        "
    INDEX       { mip6BindingHomeAddressType, mip6BindingHomeAddress }
 ::= { mip6BindingCacheTable 1 }

Mipv6BindingCacheEntry ::=
    SEQUENCE {
        mip6BindingHomeAddressType  InetAddressType,
        mip6BindingHomeAddress      InetAddress,
        mip6BindingCOAType          InetAddressType,
        mip6BindingCOA              InetAddress,
        mip6BindingTimeRegistered   DateAndTime,
        mip6BindingTimeGranted      Gauge32,
        mip6BindingTimeRemaining    Gauge32,
        mip6BindingHomeRegn         TruthValue,
        mip6BindingMaxSeq           Unsigned32,
        mip6BindingUsageTS          DateAndTime,
        mip6BindingUsageCount       Counter32,
        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 (SIZE (16|20))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The home address of the mobile node for which this is
        the Binding Cache entry. This field is used as the key
        for searching the Binding Cache for the destination
        address of a packet being sent.

```

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```

"
REFERENCE
    "RFC3775 : 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 for the mobile node indicated by
        the home address field (mip6BindingHomeAddress) in this
        Binding Cache entry. A mobile node can have multiple
        care-of-addresses.
        "
    REFERENCE
        "RFC3775 : 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 }
```

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## mip6BindingTimeRemaining OBJECT-TYPE

SYNTAX Gauge32

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The lifetime in seconds remaining for this registration.

"

REFERENCE

["RFC3775 : 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 which support home agent functionality).

"

REFERENCE

["RFC3775 : Section 9.1"](#)

::= { mip6BindingCacheEntry 8 }

## mip6BindingMaxSeq OBJECT-TYPE

SYNTAX Unsigned32

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).

"

::= { mip6BindingCacheEntry 9 }

## mip6BindingUsageTS OBJECT-TYPE

SYNTAX DateAndTime

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The timestamp when this entry was last looked up.

"

REFERENCE

["RFC3775 : Section 9.1"](#)

::= { mip6BindingCacheEntry 10 }

## mip6BindingUsageCount OBJECT-TYPE



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SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The number of times this entry was looked up."  
REFERENCE  
    "[RFC3775](#) : [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 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(1) to  
    inactive(2) by operator intervention.  
    Causing the state to change to active results  
    in the entry being deleted from the cache.  
    Attempts to change the status from 'inactive'  
    to 'active' will be rejected."  
REFERENCE  
    "[RFC3775](#) : [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

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SYNTAX       SEQUENCE OF Mipv6BindingHistoryEntry  
MAX-ACCESS   not-accessible  
STATUS       current  
DESCRIPTION  
              "A table containing a record of the bindings."  
              "  
::= { mip6Bindings 2 }

mip6BindingHistoryEntry OBJECT-TYPE  
SYNTAX       Mipv6BindingHistoryEntry  
MAX-ACCESS   not-accessible  
STATUS       current  
DESCRIPTION  
              "The record of a binding ."  
INDEX        { mip6BindingHstHomeAddressType,  
              mip6BindingHstHomeAddress ,  
              mip6BindingHstIndex}  
::= { mip6BindingHistoryTable 1 }

Mipv6BindingHistoryEntry ::=

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

mip6BindingHstHomeAddressType OBJECT-TYPE  
SYNTAX       InetAddressType  
MAX-ACCESS   not-accessible  
STATUS       current  
DESCRIPTION  
              "The InetAddressType of the mip6BindingHomeAddress  
              that follows."  
              "  
::= { mip6BindingHistoryEntry 1 }

mip6BindingHstHomeAddress OBJECT-TYPE  
SYNTAX       InetAddress (SIZE (16|20))  
MAX-ACCESS   not-accessible  
STATUS       current  
DESCRIPTION

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```
        "Mobile node's home (IP) address.
        "
 ::= { mip6BindingHistoryEntry 2 }

mip6BindingHstCOAType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The InetAddressType of the mip6BindingCOA that follows.
        "
 ::= { mip6BindingHistoryEntry 3 }

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."
 ::= { mip6BindingHistoryEntry 4 }

mip6BindingHstIndex OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "The index to uniquely identify this record along with
        the Mobile nodes HomeAddress type and HomeAddress. It
        should be monotonically increasing. It may wrap after
        reaching its max value."
 ::= { 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
```

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```

        "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 which 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      Unsigned32
    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 atleast 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 which have the Routing header type 2
--       set.
--     - the datagrams have the Home Address option set in the
--       Destination Option extension header
--     - IPv6 datagrams with the mobility header

mip6TotalTraffic OBJECT IDENTIFIER ::= { mip6Stats 1 }
-- REFERENCE

```



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-- [RFC3775](#) : [Section 4.1](#), 6.3"

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 the datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value =

60),

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

[RFC3775](#) : [Section 6.1](#), 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 1 }

mip6HCInOctets 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 the datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value =

60),

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

[RFC3775](#) : [Section 6.1](#), 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 2 }

mip6InPkts	OBJECT-TYPE
SYNTAX	Counter32
MAX-ACCESS	read-only
STATUS	current

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## DESCRIPTION

"The number of MIPv6 datagrams received by the MIPv6 entity. This will include the datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), 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

"[RFC3775](#) : [Section 6.1](#), 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 3 }

mip6HCInPkts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of MIPv6 datagrams received by the MIPv6 entity. This will include the datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), 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

"[RFC3775](#) : [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 the datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value =

60),

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.

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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

"[RFC3775](#) : [Section 6.1](#), 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 5 }

#### mip6HCOutOctets 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 the datagrams with the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value =

60),

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

"[RFC3775](#) : [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 the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), 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

"[RFC3775](#) : [Section 6.1](#), 6.3, 6.4, 10.4.5"

::= { mip6TotalTraffic 7 }

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mip6HCOutPkts 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 the Mobility Header, the Home Address option in the Destination Option extension header (Next Header value = 60), 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

times

as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"[RFC3775](#) : [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 Mipv6NodeTrafficEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing MIPv6 traffic counters per mobile node.

"



```
::= { mip6Stats 2 }
```

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## mip6NodeTrafficEntry OBJECT-TYPE

SYNTAX Mipv6NodeTrafficEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"The MIPv6 traffic counters for a mobile node."

INDEX { mip6BindingHomeAddressType, mip6BindingHomeAddress }

::= { mip6NodeTrafficTable 1 }

Mipv6NodeTrafficEntry ::=

## 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 the datagrams with the Mobility Header and, 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

"[RFC3775](#) : [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

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from the mobile node by the MIPv6 entity. This will include the datagrams with the Mobility Header and, 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

"[RFC3775](#) : [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 and, 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

"[RFC3775](#) : [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 the datagrams with

the  
Destination  
also  
home  
times

Mobility Header and, the Home Address option in the  
Option extension header (Next Header value = 60). It will  
include the IPv6 datagrams that are reverse tunneled to a  
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

as indicated by the value of mip6NodeCtrDiscontinuityTime.  
"

## REFERENCE

"[RFC3775](#) : [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 the datagrams with the Mobility Header and 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

"[RFC3775](#) : [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 the datagrams with the Mobility Header and 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

"[RFC3775](#) : [Section 6.1](#), 6.3, 6.4, 10.4.5"

::= { mip6NodeTrafficEntry 6 }

## mip6NodeOutPkts OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS	current
DESCRIPTION	

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the  
agent  
times

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

"[RFC3775](#) : [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  
agent  
times

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

"[RFC3775](#) : [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 Mipv6MnHomeAddressEntry
```

```
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      Mipv6MnHomeAddressEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The registration status for a homeaddress."
```

```
INDEX       { mip6MnHomeAddressType, mip6MnHomeAddress }
```

```
 ::= { mip6MnHomeAddressTable 1 }
```

```
Mipv6MnHomeAddressEntry ::=
```

```
    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 (SIZE (16|20))
```

```
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
```

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will take the default 'unspecified' value ::0.

"

#### REFERENCE

"[RFC3775](#) : [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

"Indicates mobile node's state of Mobile IP:

determined	unknown	-- The state of the MN cannot be
	home,	-- MN is connected to home network.
	registered,	-- MN is on a foreign network and is registered with the home agent
the reply	pending,	-- MN has sent registration request to the home agent and is waiting for
is not	isolated,	-- MN is isolated from network i.e. it  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

"[RFC3775](#) : [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

"[RFC3775](#) : [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

"[RFC3775](#) : [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

"[RFC3775](#) : [Section 10.5](#), 11.4.2"

::= { mip6MnConf 4 }

mip6MnPrefixAdvsRecd OBJECT-TYPE  
SYNTAX Counter32

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MAX-ACCESS read-only  
STATUS current  
DESCRIPTION

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

## REFERENCE

"[RFC3775](#) : [Section 10.6](#), 11.4.3"  
::= { mip6MnConf 5 }

mip6MnPrefixAdvsIgnored OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION

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

## REFERENCE

"[RFC3775](#) : [Section 10.6](#), 11.4.3"  
::= { mip6MnConf 6 }

mip6MnMovedToFN OBJECT-TYPE

SYNTAX Counter32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION

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



REFERENCE

"[RFC3775](#) : [Section 11.5.1](#)"  
 ::= { mip6MnConf 7 }

mip6MnMovedToHN OBJECT-TYPE  
SYNTAX Counter32

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```

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
times          re-initialization of the management system, and at other
              as indicated by the value of mip6CounterDiscontinuityTime.
              "
REFERENCE
    "RFC3775 : Section 11.5.4"
    ::= { mip6MnConf 8 }

-- Mobile Node Registration Group

-- Registration table of mobile node

mip6MnBLTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mipv6MnBLEntry
    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
is             for every binding that the mobile node has established or
              trying to establish. Both correspondent and home
registrations  are included in this table. Entries from the table are
              as the lifetime of the binding expires.
deleted        "
    REFERENCE
        "RFC3775 : Section 4.5, 11.1"
        ::= { mip6MnRegistration 1 }

mip6MnBLEntry OBJECT-TYPE
    SYNTAX      Mipv6MnBLEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Information about a Binding Update send by the mobile node
          to a either to its home agent or one of its correspondent
          nodes.
        "
    INDEX { mip6MnBLNodeAddressType,
            mip6MnBLNodeAddress,

```

```
        mip6MnHomeAddressType,  
        mip6MnHomeAddress  
    }  
    ::= { mip6MnBLTable 1 }
```

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```
Mipv6MnBLEntry ::= SEQUENCE {  
    mip6MnBLNodeAddressType  InetAddressType,  
    mip6MnBLNodeAddress      InetAddress,  
    mip6MnBLCOAType          InetAddressType,  
    mip6MnBLCOA              InetAddress,  
    mip6MnBLLifeTimeRequested Unsigned32,  
    mip6MnBLLifeTimeGranted  Unsigned32,  
    mip6MnBLMaxSeq           Unsigned32,  
    mip6MnBLTimeSent         DateAndTime,  
    mip6MnBLAccepted         TruthValue,  
    mip6MnBLAcceptedTime     DateAndTime,  
    mip6MnBLRetransmissions  Integer32  
}
```

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 (SIZE (16|20))

MAX-ACCESS   not-accessible

STATUS       current

DESCRIPTION

    "IP address of the agent as used in the destination  
    IP address of the Binding Update. The agent  
    may be a home agent or a correspondent node."

REFERENCE

    "[RFC3775](#) : [Section 11.1](#)"

::= { mip6MnBLEntry 2 }

mip6MnBLCOAType OBJECT-TYPE

SYNTAX       InetAddressType

MAX-ACCESS   not-accessible

STATUS       current

DESCRIPTION

    "The InetAddressType of the mip6MnBLCOA that follows.

    "

::= { mip6MnBLEntry 3 }

mip6MnBLCOA OBJECT-TYPE

SYNTAX       InetAddress (SIZE (16|20))

MAX-ACCESS   not-accessible

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STATUS       current  
 DESCRIPTION  
       "Care-of address that the mobile node intends to register  
       in the Binding Update request."  
 REFERENCE  
       "[RFC3775](#) : [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  
       "[RFC3775](#) : [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.

current

The lifetime remaining (lR) can be calculated using the

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  
 MAX-ACCESS   read-only  
 STATUS       current  
 DESCRIPTION  
       "The maximum value of the Sequence Number field sent in

previous Binding Updates to this destination.  
"

REFERENCE

"[RFC3775](#) : [Section 11.1](#)"

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```
 ::= { mip6MnBLEntry 7 }

mip6MnBLTimeSent OBJECT-TYPE
    SYNTAX      DateAndTime
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The time when the last (re-)transmission occurred."
    REFERENCE
        "RFC3775 : 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      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of Binding Update retransmissions.
         "
    REFERENCE
        "RFC3775 : Section 11.1"
    ::= { mip6MnBLEntry 11 }
```



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-- 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

"[RFC3775](#) : [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 Acknowledgement, 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

"[RFC3775](#) : [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

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as indicated by the value of mip6CounterDiscontinuityTime.  
"

## REFERENCE

"[RFC3775](#) : [Section 11.7.1](#)"

::= { mip6MnRegnCounters 3 }

## mip6MnBUAcksFromHA OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Total number of valid binding acknowledgements received from the the mobile nodes 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

"[RFC3775](#) : [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

"[RFC3775](#) : [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

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["RFC3775 : 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 CN 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

["RFC3775 : 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 Corresponding 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

"[RFC3775](#) : [Section 11.7.4](#)"

::= { mip6MnRegnCounters 9 }

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-- Registration Group counters used for CN

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

"[RFC3775](#) : [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.

"

REFERENCE

"[RFC3775](#) : [Section 9.4.3](#)"

::= { mip6CnGlobalStats 2 }

mip6CnCareOfTestInitsRecd OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Total number of Care-of Test Init messages received."

REFERENCE

"[RFC3775](#) : [Section 9.4.2](#)"

::= { mip6CnGlobalStats 3 }

mip6CnCareOfTestsSent OBJECT-TYPE



SYNTAX       Counter32  
MAX-ACCESS   read-only

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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

times

as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"[RFC3775](#) : [Section 9.4.4](#)"

::= { mip6CnGlobalStats 4 }

mip6CnBUStats 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

"[RFC3775](#) : [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

"[RFC3775](#) : [Section 9.5.4](#)"

::= { mip6CnGlobalStats 6 }

mip6CnBRsSent	OBJECT-TYPE
SYNTAX	Counter32
MAX-ACCESS	read-only

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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

"[RFC3775](#) : [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

"[RFC3775](#) : [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.

"

::= { mip6CnGlobalStats 9 }

mip6CnBURejected OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS	read-only
STATUS	current
DESCRIPTION	

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"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 has been silently discarded. Discontinuities in the value of this counter can occur at

times

as indicated by the value of mip6CounterDiscontinuityTime.

"

## REFERENCE

"[RFC3775](#) : [Section 9.5.1](#)"

::= { 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

"[RFC3775](#) : [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

"[RFC3775](#) : [Section 6.1.8](#)"  
::= { mip6CnGlobalStats 12 }

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## 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 Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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

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"[RFC3775](#) : [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  
Acknowledgement message indicating 'expired  
care-of nonce index' (Code 137).  
Discontinuities in the value of this counter can occur at

times

as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"[RFC3775](#) : [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  
Acknowledgement 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

"[RFC3775](#) : [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

Acknowledgement message indicating 'registration type  
change disallowed' (Code 139 i.e. a binding already

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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

"[RFC3775](#) : [Section 6.1.8](#) 9.5.1"

::= { mip6CnGlobalStats 18 }

-- The Correspondent Node statistics by mobile node

mip6CnCounterTable OBJECT-TYPE

SYNTAX SEQUENCE OF CnCounterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing each mobile ."

::= { mip6CnStats 2 }

mip6CnCounterEntry OBJECT-TYPE

SYNTAX CnCounterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The set of CN counters for a mobile node."

INDEX { mip6BindingHomeAddressType,  
mip6BindingHomeAddress  
}

::= { mip6CnCounterTable 1 }

CnCounterEntry ::=

SEQUENCE {

mip6CnBURequestsAccepted	Counter32,
mip6CnBURequestsRejected	Counter32,
mip6CnBCEntryCreationTime	DateAndTime,
mip6CnBUAcceptedTime	DateAndTime,
mip6CnBURejectionTime	DateAndTime,
mip6CnBURejectionCode	Mipv6BURequestRejectionCode,
mip6CnCtrDiscontinuityTime	TimeStamp

}

mip6CnBURequestsAccepted OBJECT-TYPE --(Code 0,1)

SYNTAX Counter32

MAX-ACCESS read-only

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```

STATUS      current
DESCRIPTION
    "Total number of Binding Update requests from the mobile
      node accepted by the correspondent node.
      If Binding Acknowledgement 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
times      re-initialization of the management system, and at other
            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 which 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 which have been silently
      discarded.
      Discontinuities in the value of this counter can occur at
times      re-initialization of the management system, and at other
            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

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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 Mipv6BURequestRejectionCode

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 that 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

"[RFC3775](#) : [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.

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```

    "
    ::= { 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."
    "

    REFERENCE
        "RFC3775 : Section 6.1.8 9.5.1"
    ::= { 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."
    "

    REFERENCE
        "RFC3775 : Section 6.1.8 9.5.1"
    ::= { mip6HaAdvertisement 2 }


mip6HaConfTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Mipv6HaConfEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "A table containing configurable advertisement
        parameters for all interfaces on which the
        which the home agent service is advertised."
    "

    ::= { mip6HaAdvertisement 3 }


mip6HaConfEntry OBJECT-TYPE
    SYNTAX      Mipv6HaConfEntry
    MAX-ACCESS   not-accessible
```

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```
STATUS      current
DESCRIPTION
    "Advertisement parameters for one advertisement
    interface.
    "
INDEX      { ipv6IfIndex }
::= { mip6HaConfTable 1 }

Mipv6HaConfEntry ::= 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
        "RFC3775 : 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
        "RFC3775 : 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
```

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sending of the ICMP Mobile Prefix Advertisements.  
If it is disabled, the home agent will not send  
ICMP Mobile Prefix Advertisements to the mobile  
nodes."

## REFERENCE

"[RFC3775](#) : [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 from  
mobile nodes. If it is disabled,  
the home agent will not respond to any ICMP  
Mobile Prefix Solicitation messages it received  
from the mobile node."

## REFERENCE

"[RFC3775](#) : [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 received from the  
mobile nodes. If it is disabled, the home agent will  
silently ignore the multicast group control messages  
it received from the mobile nodes."

## REFERENCE

"[RFC3775](#) : [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

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## 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

"[RFC3775](#) : [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

"[RFC3775](#) : [Section 5.2.5](#)"

::= { mip6HaGlobalStats 2 }

mip6HaBUsRecd OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"Total nubmer 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

"[RFC3775](#) : [Section 10.3.1](#)"

::= { mip6HaGlobalStats 3 }

mip6HaBUAcksSent OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only



STATUS        current

DESCRIPTION

"Total number of Binding Acknowledgements sent

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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

"[RFC3775](#) : [Section 10.3.1](#)"

::= { mip6HaGlobalStats 4 }

#### mip6HaBRAAdviceSent OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"Total number of Binding Acknowledgements 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

"[RFC3775](#) : [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

"[RFC3775](#) : [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 the home agent with Status code indicating 'accepted but prefix discovery necessary' (Code 1).

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times  
Discontinuities in the value of this counter can occur at  
re-initialization of the management system, and at other

as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"[RFC3775](#) : [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  
Acknowledgement message indicating 'reason unspecified'  
(Code 128).

times  
Discontinuities in the value of this counter can occur at  
re-initialization of the management system, and at other

as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"[RFC3775](#) : [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  
Acknowledgement message indicating 'administratively  
prohibited' (Code 129).

times  
Discontinuities in the value of this counter can occur at  
re-initialization of the management system, and at other

as indicated by the value of mip6CounterDiscontinuityTime.

"

REFERENCE

"[RFC3775](#) : [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

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the home agent with status code in the Binding Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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

"[RFC3775](#) : [Section 10.3.1](#)"

::= { mip6HaGlobalStats 12 }

mip6HaNotHomeAgentForThisMN OBJECT-TYPE

-- (Code 133)

SYNTAX Counter32

MAX-ACCESS read-only

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STATUS current

DESCRIPTION

"Total number of Binding Update requests rejected by the home agent with status code in the Binding Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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



"[RFC3775](#) : [Section 9.5.1](#)"  
::= { mip6HaGlobalStats 15 }

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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 Acknowledgement 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

"[RFC3775](#) : [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 Acknowledgement 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

"[RFC3775](#) : [Section 9.5.1](#)"

::= { mip6HaGlobalStats 17 }

-- Home agent registration Counters per node

mip6HaCounterTable OBJECT-TYPE

SYNTAX SEQUENCE OF HaCounterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing registration statistics for all mobile nodes registered with the home agent.

```
"  
::= { mip6HaStats 2 }
```

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mip6HaCounterEntry OBJECT-TYPE

SYNTAX HaCounterEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Home agent registration statistics for a mobile node."

INDEX { mip6BindingHomeAddressType,  
mip6BindingHomeAddress  
}

::= { mip6HaCounterTable 1 }

HaCounterEntry ::= SEQUENCE {

mip6HaBURequestsAccepted Counter32,

mip6HaBURequestsDenied Counter32,

mip6HaBCEntryCreationTime DateAndTime,

mip6HaBUAcceptedTime DateAndTime,

mip6HaBURejectionTime DateAndTime,

mip6HaRecentBURejectionCode Mipv6BURequestRejectionCode,

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

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```
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      Mipv6BURequestRejectionCode
    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 that 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 }
```

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SYNTAX	TimeStamp
MAX-ACCESS	read-only
STATUS	current
DESCRIPTION	

```
 ::= { mip6HaCounterEntry 7 }
```

SYNTAX	SEQUENCE OF MipV6HaListEntry
MAX-ACCESS	not-accessible
STATUS	current
DESCRIPTION	

"[RFC3775](#) : [Section 10.1](#)"

SYNTAX	Mipv6HaListEntry
MAX-ACCESS	not-accessible
STATUS	current
DESCRIPTION	

```

INDEX    { ipv6IfIndex, mip6HaLinkLocalAddressType,
           mip6HaLinkLocalAddressType }
 ::= { mip6HaListTable 1 }

```

```

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

```



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```
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
    "RFC3775 : 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 .
    "
REFERENCE
    "RFC3775 : 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
    "RFC3775 : Section 10.1"
::= { mip6HaListEntry 3 }
```

mip6HaRecvLifeTime OBJECT-TYPE

```
SYNTAX      Gauge32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The lifetime for this home agent.
    "
```

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## REFERENCE

"[RFC3775](#) : [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

--

mip6HaGlAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF Mipv6HaGlAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table contains the global addresses of the home agents in the Home Agents List.

"

REFERENCE

"[RFC3775](#) : [Section 10.1](#)"

::= { mip6HaAdvertisement 5 }

mip6HaGlAddrEntry OBJECT-TYPE

SYNTAX Mipv6HaGlAddrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A global address for a home agent in the Home Agents List.

"

INDEX { ipv6IfIndex, mip6HaLinkLocalAddressType,  
mip6HaLinkLocalAddressType,

mip6HaGaAddrSeqNo }

::= { mip6HaGlAddrTable 1 }

Mipv6HaGlAddrEntry ::= SEQUENCE {

mip6HaGaAddrSeqNo Integer32,

mip6HaGaGlobalAddressType InetAddressType,

mip6HaGaGlobalAddress InetAddress

}

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```
mip6HaGaAddrSeqNo  OBJECT-TYPE
    SYNTAX      Integer32 (1..1024)    -- put the max value GYM
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "The index that along with ipv6IfIndex,
mip6HaLinkLocalAddressType
        and mip6HaLinkLocalAddressType uniquely identifies this
row.
        "
    REFERENCE
        "RFC3775 : 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.
        "
    ::= { mip6HaGlAddrEntry 3 }

--
-- Notifications
--

mip6HaNotifications  OBJECT IDENTIFIER ::= { mip6Notifications 0 }

mip6MnRegistered  NOTIFICATION-TYPE
    OBJECTS      {
        mip6BindingTimeRegistered,
        mip6BindingCOAType,
        mip6BindingCOA
    }
    STATUS      current
    DESCRIPTION
        "This notification is sent every time a mobile node
```

registers with the home agent for the first time.  
Notifications will not be sent for subsequent updates

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and/or refreshes.

The MO instances in the notifications will be identified by the mip6BindingHomeAddressType, mip6BindingHomeAddress for the mobile node in the mip6BindingCacheTable.

"

::= { mip6HaNotifications 1 }

mip6MnDeRegistered NOTIFICATION-TYPE

OBJECTS {  
    mip6BindingTimeRegistered,  
    mip6BindingCOAType,  
    mip6BindingCOA  
}

STATUS current

DESCRIPTION

"This notification is sent every time a mobile node de-registers with the home agent by sending a Notifications will not be sent for subsequent updates and/or refreshes.

The MO instances in the notifications will be identified by the mip6BindingHomeAddressType, mip6BindingHomeAddress for the mobile node in the mip6BindingCacheTable.

"

::= { mip6HaNotifications 2 }

mip6MnMoved NOTIFICATION-TYPE

OBJECTS {  
    mip6BindingTimeRegistered,  
    mip6BindingCOAType,  
    mip6BindingCOA  
}

STATUS current

DESCRIPTION

"This notification is sent every time a mobile node sends a Binding Update with a new Care-of address. Notifications will not be sent for subsequent updates and/or refreshes for the same Care-of address.

The MO instances in the notifications will be identified by the mip6BindingHomeAddressType, mip6BindingHomeAddress for the mobile node in the mip6BindingCacheTable.

"

::= { mip6HaNotifications 3 }

mip6MnBindingExpiredAtHA NOTIFICATION-TYPE

OBJECTS {  
    mip6BindingTimeRegistered,  
    mip6BindingCOAType,  
    mip6BindingCOA  
}



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```
        }
STATUS    current
DESCRIPTION
    "This notification is sent when a binding for the
      mobile node at the home agent expires and no timely
      Binding Updates are received.
      The MO instances in the notifications will be identified
      by the mip6BindingHomeAddressType, mip6BindingHomeAddress
      for the mobile node in the mip6BindingCacheTable.
    "

 ::= { mip6HaNotifications 4 }

mip6MnBindingExpiredAtCN NOTIFICATION-TYPE
OBJECTS   {
    mip6BindingTimeRegistered,
    mip6BindingCOAType,
    mip6BindingCOA
}
STATUS    current
DESCRIPTION
    "This notification is sent when a binding for the
      mobile node at the CN expires and no timely
      Binding Updates are received.
      The MO instances in the notifications will be identified
      by the mip6BindingHomeAddressType, mip6BindingHomeAddress
      for the mobile node in the mip6BindingCacheTable.
    "

 ::= { mip6HaNotifications 5 }
```

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```
-- 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 {
    -- mip6BindingHomeAddressType,
    -- mip6BindingHomeAddress,
    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 {
    -- mip6BindingHstHomeAddressType,
    -- mip6BindingHstHomeAddress,
    mip6BindingHstCOAType,
    mip6BindingHstCOA,
    -- mip6BindingHstIndex,
    mip6BindingHstTimeRegistered,
    mip6BindingHstTimeExpired,
    mip6BindingHstHomeRegn,
```

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```
        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 }
```

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```
mip6MnSystemGroup    OBJECT-GROUP
  OBJECTS {
    -- mip6MnHomeAddressType,
    -- mip6MnHomeAddress,
    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 {
    -- mip6MnBLNodeAddressType,
    -- mip6MnBLNodeAddress,
    -- mip6MnBLCOAType,
    -- mip6MnBLCOA,
    mip6MnBLLifeTimeRequested,
    mip6MnBLLifeTimeGranted,
    mip6MnBLMaxSeq,
    mip6MnBLTimeSent,
    mip6MnBLAccepted,
    mip6MnBLAcceptedTime,
    mip6MnBLRetransmissions,
    --
    -- Binding Update List
    --
```



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```
        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
```

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```
DESCRIPTION
    " A collection of objects for monitoring
      the Advertisement related parameters and
      statistics for the home agent.
    "
    ::= { mip6Groups 10 }

mip6HaListGroup    OBJECT-GROUP
    OBJECTS {
        -- mip6HaLinkLocalAddressType,
        -- mip6HaLinkLocalAddress,
        mip6HaPreference,
        mip6HaRecvLifeTime,
        mip6HaRecvTimeStamp,
        -- mip6HaGaAddrSeqNo,
        mip6HaGaGlobalAddressType,
        mip6HaGaGlobalAddress
    }
    STATUS    current
    DESCRIPTION
        " A collection of objects for monitoring
          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,
```

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```
        mip6CnCareOfTestsSent,
        mip6CnBUUsRecd,
        mip6CnBUAcksSent,
        mip6CnBRsSent,
        mip6CnBindingErrors,
        mip6CnBUUsAccepted,
        mip6CnBUUsRejected,
        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,
        mip6HaBUUsRecd,
        mip6HaBUAcksSent,
        mip6HaBRAdviceSent,
        mip6HaBUUsAccepted,
        mip6HaPrefDiscoverReqd,
        mip6HaReasonUnspecified,
        mip6HaAdmProhibited,
        mip6HaInsufficientResource,
        mip6HaHomeRegnNotSupported,
        mip6HaNotHomeSubnet,
        mip6HaNotHomeAgentForThisMN,
        mip6HaDupAddrDetectionFailed,
        mip6HaSeqNumberOutOfWindow,
        mip6HaExpiredHomeNonceIndex,
        mip6HaRegTypeChangeDisallowed
    }
    STATUS    current
    DESCRIPTION
        " A collection of objects for monitoring
```

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```
        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    OBJECT-GROUP
    OBJECTS {
        mip6MnRegistered,
        mip6MnDeRegistered,
        mip6MnMoved,
        mip6MnBindingExpiredAtHA,
        mip6MnBindingExpiredAtCN
    }
    STATUS    current
    DESCRIPTION
        "A collection of objects for sending 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
        which implement the MOBILEIPV6-MIB."
    MODULE -- this module
        MANDATORY-GROUPS { mip6SystemGroup }
    ::= { mip6Compliances 1 }

mip6Compliance2 MODULE-COMPLIANCE
    STATUS    current
    DESCRIPTION
        "The compliance statement for SNMP entities
```



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```
        which implement the MOBILEIPV6-MIB and support
        monitoring of the BindingCache and the Total Traffic.
    "

MODULE -- this module
    MANDATORY-GROUPS { mip6SystemGroup,
                        mip6BindingCacheGroup,
                        mip6TotalTrafficGroup
                      }
    ::= { mip6Compliances 2 }

mip6Compliance3 MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        which implement the MOBILEIPV6-MIB and
        support monitoring of the BindingCache,
        the Binding History, the total traffic and
        the mobile node-wide traffic.
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6SystemGroup,
                            mip6BindingCacheGroup,
                            mip6BindingHstGroup,
                            mip6TotalTrafficGroup,
                            mip6NodeTrafficGroup
                          }
        ::= { mip6Compliances 3 }

mip6MnCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        which implement the MOBILEIPV6-MIB and
        support monitoring of the basic mobile node
        functionality.
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6MnSystemGroup
                          }
        ::= { mip6Compliances 4 }

mip6MnCompliance2 MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        which implement the MOBILEIPV6-MIB and
        support monitoring of the mobile node
        functionality specifically the Discovery and
```

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```

        Registration related statistics,
        "
MODULE -- this module
    MANDATORY-GROUPS { mip6MnSystemGroup,
                        mip6MnConfGroup,
                        mip6MnRegistrationGroup,
                        mip6TotalTrafficGroup
                      }
    ::= { mip6Compliances 5 }

mip6CnCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        which implement the MOBILEIPV6-MIB and
        support monitoring of the basic correspondent node
        functionality.
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6CnGlobalStatsGroup,
                          mip6TotalTrafficGroup
                        }
        ::= { mip6Compliances 6 }

mip6CnCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        which implement the MOBILEIPV6-MIB and
        support monitoring of the basic correspondent node
        functionality.
        "
    MODULE -- this module
        MANDATORY-GROUPS { mip6CnGlobalStatsGroup,
                          mip6CnStatsGroup,
                          mip6TotalTrafficGroup
                        }
        ::= { mip6Compliances 7 }

mip6HaCoreCompliance MODULE-COMPLIANCE
    STATUS current
    DESCRIPTION
        "The compliance statement for SNMP entities
        which implement the MOBILEIPV6-MIB and
        support monitoring of the basic home agent
        functionality.
        "
    MODULE -- this module
```

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```
MANDATORY-GROUPS { mip6HaSystemGroup
                    }
 ::= { mip6Compliances 8 }

mip6HaCompliance2 MODULE-COMPLIANCE
STATUS    current
DESCRIPTION
    "The compliance statement for SNMP entities
    which implement the MOBILEIPV6-MIB and
    support monitoring of the home agent
    functionality specifically the Home Agent List
    and the home agent registration related statistics,
    "
MODULE -- this module
    MANDATORY-GROUPS { mip6HaSystemGroup,
                        mip6HaListGroup,
                        mip6HaStatsGroup,
                        mip6HaGlobalStatsGroup,
                        mip6TotalTrafficGroup
                        }
 ::= { mip6Compliances 9 }

mip6HaCompliance3 MODULE-COMPLIANCE
STATUS    current
DESCRIPTION
    "The compliance statement for SNMP entities
    which 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,
    "
MODULE -- this module
    MANDATORY-GROUPS { mip6HaSystemGroup,
                        mip6HaListGroup,
                        mip6HaStatsGroup,
                        mip6HaGlobalStatsGroup,
                        mip6BindingCacheCtlGroup,
                        mip6TotalTrafficGroup
                        }
 ::= { mip6Compliances 10 }

mip6NotificationCompliance MODULE-COMPLIANCE
STATUS    current
DESCRIPTION
    "The compliance statement for SNMP entities
    which implement the MOBILEIPV6-MIB and
    support Notification from HA or CN to management
    stations about the mobile node status.
```

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```

"
MODULE  -- this module
    MANDATORY-GROUPS { mip6NotificationGroup
                        }
    ::= { mip6Compliances 11 }
END
```



## 6. Security Considerations

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

mip6Status: This 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.

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 addresses related MOs will reveal the nodes

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

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

## **7. IANA Considerations**

IANA should assign a base arc in the 'mib-2' (standards track) OID tree for the 'mipv6MIB' MODULE-IDENTITY defined in the Mobile-IPv6 MIB.

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## **9. Acknowledgments**

The WIDE-netman group has contributed to this draft with discussions and comments.

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Changes since [draft-ietf-mip6-mipv6-mib-02.txt](#)

- a. Aligned with the new I-D format requirements
  - "Status of this memo" is updated
  - IANA considerations section is added
  - Copyright is included in the MIB MODULE IDENTITY Description
  - Full Copyright Statement updated
- b. Changed the MO name prefix from mipv6 to mip6
- c. Added the instance specifications for MOs included in Notifications
- d. Reference to the base MIP6 document is updated from the I-D to [RFC3775](#)