

Network Working Group
Internet-Draft
Obsoletes: [4008](#) (if approved)
Intended status: Standards Track
Expires: August 2, 2015

S. Perreault
Jive Communications
T. Tsou
Huawei Technologies
S. Sivakumar
Cisco Systems
T. Taylor
PT Taylor Consulting
January 29, 2015

Deprecation of MIB Module NAT-MIB (Managed Objects for Network Address
Translators (NAT))
draft-perrault-behave-deprecate-nat-mib-v1-01

Abstract

This memo deprecates MIB module NAT-MIB, a portion of the Management Information Base (MIB) previously defined in [RFC 4008](#) for devices implementing Network Address Translator (NAT) function. A companion document defines a new version, NAT-MIB-V2, which responds to deficiencies found in module NAT-MIB and adds new capabilities.

This document obsoletes [RFC 4008](#).

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on August 2, 2015.

Copyright Notice

Copyright (c) 2015 IETF Trust and the persons identified as the document authors. All rights reserved.

Internet-Draft

Deprecation of NAT MIB v1

January 2015

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
2.	The Internet-Standard Management Framework	3
3.	Motivation For Deprecating NAT-MIB	3
3.1.	Deprecated Features	3
3.2.	Desirable New Features	4
4.	Definitions	4
5.	Security Considerations	54
6.	IANA Considerations	57
7.	References	57
7.1.	Normative References	57
7.2.	Informative References	58
	Authors' Addresses	59

[1.](#) Introduction

This memo deprecates a portion of the Management Information Base (MIB), MIB module NAT-MIB, for devices implementing the Network Address Translator (NAT) function. New implementations are encouraged to base themselves upon the second version of this MIB module, NAT-MIB-V2, defined in [[I-D.ietf-behave-nat-mib-v2](#)]. NAT types and their characteristics are defined in [[RFC2663](#)]. Traditional NAT function, in particular is defined in [[RFC3022](#)]. Neither NAT-MIB nor NAT-MIB-V2 addresses firewall functions and neither can be used for configuring or monitoring them.

[Section 2](#) provides references to the SNMP management framework, which was used as the basis for the original MIB module definition and its deprecation. [Section 3](#) provides motivation for the deprecation of module NAT-MIB and its replacement by module NAT-MIB-V2. [Section 4](#) has the complete NAT-MIB module definition, with the STATUS of all objects changed to deprecated. [Section 5](#) describes security

considerations relating to NAT-MIB, basically elaborating on the security considerations in [\[RFC4008\]](#).

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and

"OPTIONAL" in this document are to be interpreted as described in [\[RFC2119\]](#).

[2.](#) The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [Section 7 of \[RFC3410\]](#).

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, [\[RFC2578\]](#), STD 58, [\[RFC2579\]](#) and STD 58, [\[RFC2580\]](#).

[3.](#) Motivation For Deprecating NAT-MIB

This section provides the motivation for deprecating the NAT-MIB module and its replacement by a new version.

[3.1.](#) Deprecated Features

All objects defined in [\[RFC4008\]](#) have been marked with "STATUS deprecated" for the following reasons:

Writability: Experience with NAT has shown that implementations vary tremendously. The NAT algorithms and data structures have little in common across devices, and this results in wildly incompatible configuration parameters. Therefore, few implementations were ever able to claim full compliance.

Lesson learned: the MIB should be read-only as much as possible.

Exposing configuration parameters: Even in read-only mode, many

configuration parameters were exposed by [\[RFC4008\]](#) (e.g. timeouts). Since implementations vary wildly in their sets of configuration parameters, few implementations could claim even basic compliance.

Lesson learned: the NAT MIB's purpose is not to expose configuration parameters.

Interfaces: Objects from [\[RFC4008\]](#) tie NAT state with interfaces (e.g. the interface table, the way map entries are grouped by interface). Many NAT implementations either never keep track of the interface or associate a mapping to a set of interfaces.

Since interfaces are at the core of [\[RFC4008\]](#), many NAT devices were unable to have a proper implementation.

Lesson learned: NAT is a logical function that may be independent of interfaces. Do not tie NAT state with interfaces.

NAT service types: [\[RFC4008\]](#) used four categories of NAT service: basicNat, napt, bidirectionalNat, twiceNat. These are ill-defined and many implementations either use different categories or do not use categories at all.

Lesson learned: do not try to categorize NAT types.

Limited transport protocol set: The set of transport protocols was defined as: other, icmp, udp, tcp. Furthermore, the numeric values corresponding to those labels were arbitrary, without relation to the actual standard protocol numbers. This meant that NAT implementations were limited to those protocols and were unable to expose information about DCCP, SCTP, etc.

Lesson learned: use standard transport protocol numbers.

[3.2.](#) Desirable New Features

A number of desirable new features have been identified that are not present in NAT-MIB. See the latter part of [\[I-D.ietf-behave-nat-mib-v2\]](#) [Section 2](#).

[4.](#) Definitions

This MIB module IMPORTs objects from [[RFC2578](#)], [[RFC2579](#)], and [[RFC4001](#)].

NAT-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY,
OBJECT-TYPE,
Integer32,
Unsigned32,
Gauge32,
Counter64,
TimeTicks,
mib-2,
NOTIFICATION-TYPE
FROM SNMPv2-SMI
TEXTUAL-CONVENTION,
DisplayString,

Perreault, et al.

Expires August 2, 2015

[Page 4]

Internet-Draft

Deprecation of NAT MIB v1

January 2015

StorageType,
RowStatus
FROM SNMPv2-TC
MODULE-COMPLIANCE,
NOTIFICATION-GROUP,
OBJECT-GROUP
FROM SNMPv2-CONF
ifIndex,
ifCounterDiscontinuityGroup,
InterfaceIndex
FROM IF-MIB
SnmpAdminString
FROM SNMP-FRAMEWORK-MIB
InetAddressType,
InetAddress,
InetAddressPrefixLength,
InetPortNumber
FROM INET-ADDRESS-MIB
VPNIdOrZero
FROM VPN-TC-STD-MIB;

natMIB MODULE-IDENTITY

LAST-UPDATED "201410180000Z"
-- RFC Ed.: set to publication date
ORGANIZATION
"IETF Behavior Engineering for Hindrance Avoidance
(BEHAVE) Working Group"

CONTACT-INFO

"Working Group Email: behave@ietf.org

Simon Perreault
Viagenie
246 Aberdeen
Quebec, QC G1R 2E1
Canada

Phone: +1 418 656 9254
Email: simon.perreault@viagenie.ca
URI: <http://viagenie.ca>

Tina Tsou
Huawei Technologies (USA)
2330 Central Expressway
Santa Clara, CA 95050
USA

Phone: +1 408 330 4424

Perreault, et al.

Expires August 2, 2015

[Page 5]

Internet-Draft

Deprecation of NAT MIB v1

January 2015

Email: tina.tsou.zouting@huawei.com

Senthil Sivakumar
Cisco Systems
7100-8 Kit Creek Road
Research Triangle Park, North Carolina 27709
USA

Phone: +1 919 392 5158
Email: ssenthil@cisco.com

DESCRIPTION

"This MIB module defines the generic managed objects
for NAT.

```

        Copyright (C) The Internet Society (2014).  This
        version of this MIB module is part of RFC yyyy; see
        the RFC itself for full legal notices."
-- RFC Ed.: replace yyyy with actual RFC number & remove this note"
    REVISION      "201410180000Z"
-- RFC Ed.: set to publication date
    DESCRIPTION
        "Deprecation, published as RFC yyyy."
-- RFC Ed.: replace yyyy with actual RFC number & set date"
    REVISION      "200503210000Z"  -- 21th March 2005
    DESCRIPTION
        "Initial version, published as RFC 4008."
::= { mib-2 123 }

```

```

natMIBObjects OBJECT IDENTIFIER ::= { natMIB 1 }

```

```

NatProtocolType ::= TEXTUAL-CONVENTION
    STATUS      deprecated
    DESCRIPTION
        "A list of protocols that support the network
        address translation.  Inclusion of the values is
        not intended to imply that those protocols
        need to be supported.  Any change in this
        TEXTUAL-CONVENTION should also be reflected in
        the definition of NatProtocolMap, which is a
        BITS representation of this."
    SYNTAX      INTEGER {
        none (1),  -- not specified
        other (2), -- none of the following
        icmp (3),
        udp (4),
        tcp (5)
    }

```

```

NatProtocolMap ::= TEXTUAL-CONVENTION
    STATUS      deprecated
    DESCRIPTION
        "A bitmap of protocol identifiers that support
        the network address translation.  Any change
        in this TEXTUAL-CONVENTION should also be
        reflected in the definition of NatProtocolType."
    SYNTAX      BITS {

```

```
        other (0),
        icmp (1),
        udp (2),
        tcp (3)
    }
```

```
NatAddrMapId ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS deprecated
    DESCRIPTION
        "A unique id that is assigned to each address map
        by a NAT enabled device."
    SYNTAX      Unsigned32 (1..4294967295)
```

```
NatBindIdOrZero ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS deprecated
    DESCRIPTION
        "A unique id that is assigned to each bind by
        a NAT enabled device. The bind id will be zero
        in the case of a Symmetric NAT."
    SYNTAX      Unsigned32 (0..4294967295)
```

```
NatBindId ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS deprecated
    DESCRIPTION
        "A unique id that is assigned to each bind by
        a NAT enabled device."
    SYNTAX      Unsigned32 (1..4294967295)
```

```
NatSessionId ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS deprecated
    DESCRIPTION
        "A unique id that is assigned to each session by
        a NAT enabled device."
    SYNTAX      Unsigned32 (1..4294967295)
```

```
NatBindMode ::= TEXTUAL-CONVENTION
```



```

        DESCRIPTION
            "An indication of whether the bind is
            an address bind or an address port bind."
        SYNTAX    INTEGER {
                    addressBind (1),
                    addressPortBind (2)
                }

NatAssociationType ::= TEXTUAL-CONVENTION
    STATUS deprecated
    DESCRIPTION
        "An indication of whether the association is
        static or dynamic."
    SYNTAX    INTEGER {
                static (1),
                dynamic (2)
            }

NatTranslationEntity ::= TEXTUAL-CONVENTION
    STATUS      deprecated
    DESCRIPTION
        "An indication of a) the direction of a session for
        which an address map entry, address bind or port
        bind is applicable, and b) the entity (source or
        destination) within the session that is subject to
        translation."
    SYNTAX    BITS {
                inboundSrcEndPoint (0),
                outboundDstEndPoint(1),
                inboundDstEndPoint (2),
                outboundSrcEndPoint(3)
            }

--
-- Default Values for the Bind and NAT Protocol Timers
--

natDefTimeouts OBJECT IDENTIFIER ::= { natMIBObjects 1 }

natNotifCtrl OBJECT IDENTIFIER ::= { natMIBObjects 2 }

--
-- Address Bind and Port Bind related NAT configuration
--

natBindDefIdleTimeout OBJECT-TYPE

```

```
SYNTAX      Unsigned32  (0..4294967295)
UNITS       "seconds"
MAX-ACCESS  read-write
STATUS      deprecated
DESCRIPTION
    "The default Bind (Address Bind or Port Bind) idle
    timeout parameter.

    If the agent is capable of storing non-volatile
    configuration, then the value of this object must be
    restored after a re-initialization of the management
    system."
DEFVAL { 0 }
 ::= { natDefTimeouts 1 }

--
-- UDP related NAT configuration
--

natUdpDefIdleTimeout OBJECT-TYPE
    SYNTAX      Unsigned32  (1..4294967295)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      deprecated
    DESCRIPTION
        "The default UDP idle timeout parameter.

        If the agent is capable of storing non-volatile
        configuration, then the value of this object must be
        restored after a re-initialization of the management
        system."
    DEFVAL { 300 }
    ::= { natDefTimeouts 2 }

--
-- ICMP related NAT configuration
--

natIcmpDefIdleTimeout OBJECT-TYPE
    SYNTAX      Unsigned32  (1..4294967295)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      deprecated
    DESCRIPTION
        "The default ICMP idle timeout parameter.
```

If the agent is capable of storing non-volatile configuration, then the value of this object must be

```
        restored after a re-initialization of the management
        system."
    DEFVAL { 300 }
    ::= { natDefTimeouts 3 }

--
-- Other protocol parameters
--

natOtherDefIdleTimeout OBJECT-TYPE
    SYNTAX      Unsigned32  (1..4294967295)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      deprecated
    DESCRIPTION
        "The default idle timeout parameter for protocols
        represented by the value other (2) in
        NatProtocolType.

        If the agent is capable of storing non-volatile
        configuration, then the value of this object must be
        restored after a re-initialization of the management
        system."
    DEFVAL { 60 }
    ::= { natDefTimeouts 4 }

--
-- TCP related NAT Timers
--

natTcpDefIdleTimeout OBJECT-TYPE
    SYNTAX      Unsigned32  (1..4294967295)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      deprecated
    DESCRIPTION
        "The default time interval that a NAT session for an
        established TCP connection is allowed to remain
        valid without any activity on the TCP connection."
```

If the agent is capable of storing non-volatile configuration, then the value of this object must be restored after a re-initialization of the management system."

DEFVAL { 86400 }
::= { natDefTimeouts 5 }

natTcpDefNegTimeout OBJECT-TYPE

Perreault, et al. Expires August 2, 2015 [Page 10]

Internet-Draft Deprecation of NAT MIB v1 January 2015

SYNTAX Unsigned32 (1..4294967295)
UNITS "seconds"
MAX-ACCESS read-write
STATUS deprecated
DESCRIPTION

"The default time interval that a NAT session for a TCP connection that is not in the established state is allowed to remain valid without any activity on the TCP connection.

If the agent is capable of storing non-volatile configuration, then the value of this object must be restored after a re-initialization of the management system."

DEFVAL { 60 }
::= { natDefTimeouts 6 }

natNotifThrottlingInterval OBJECT-TYPE

SYNTAX Integer32 (0 | 5..3600)
UNITS "seconds"
MAX-ACCESS read-write
STATUS deprecated
DESCRIPTION

"This object controls the generation of the natPacketDiscard notification.

If this object has a value of zero, then no natPacketDiscard notifications will be transmitted by the agent.

If this object has a non-zero value, then the agent must not generate more than one natPacketDiscard

'notification-event' in the indicated period, where a 'notification-event' is the generation of a single notification PDU type to a list of notification destinations. If additional NAT packets are discarded within the throttling period, then notification-events for these changes must be suppressed by the agent until the current throttling period expires.

If natNotifThrottlingInterval notification generation is enabled, the suggested default throttling period is 60 seconds, but generation of the natPacketDiscard notification should be disabled by default.

If the agent is capable of storing non-volatile configuration, then the value of this object must be restored after a re-initialization of the management

system.

The actual transmission of notifications is controlled via the MIB modules in [RFC 3413](#)."

```
DEFVAL { 0 }  
::= { natNotifCtrl 1 }
```

--

-- The NAT Interface Table

--

natInterfaceTable OBJECT-TYPE

SYNTAX SEQUENCE OF NatInterfaceEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"This table specifies the attributes for interfaces on a device supporting NAT function."

```
::= { natMIBObjects 3 }
```

natInterfaceEntry OBJECT-TYPE

SYNTAX NatInterfaceEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"Each entry in the natInterfaceTable holds a set of parameters for an interface, instantiated by ifIndex. Therefore, the interface index must have been assigned, according to the applicable procedures, before it can be meaningfully used. Generally, this means that the interface must exist.

When natStorageType is of type nonVolatile, however, this may reflect the configuration for an interface whose ifIndex has been assigned but for which the supporting implementation is not currently present."

INDEX { ifIndex }
 ::= { natInterfaceTable 1 }

NatInterfaceEntry ::= SEQUENCE {
 natInterfaceRealm INTEGER,
 natInterfaceServiceType BITS,
 natInterfaceInTranslates Counter64,
 natInterfaceOutTranslates Counter64,
 natInterfaceDiscards Counter64,
 natInterfaceStorageType StorageType,
 natInterfaceRowStatus RowStatus

}

natInterfaceRealm OBJECT-TYPE

SYNTAX INTEGER {
 private (1),
 public (2)
 }

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object identifies whether this interface is connected to the private or the public realm."

DEFVAL { public }

::= { natInterfaceEntry 1 }

natInterfaceServiceType OBJECT-TYPE

SYNTAX BITS {
 basicNat (0),

```

        napt (1),
        bidirectionalNat (2),
        twiceNat (3)
    }
MAX-ACCESS    read-create
STATUS        deprecated
DESCRIPTION
    "An indication of the direction in which new sessions
     are permitted and the extent of translation done within
     the IP and transport headers."
 ::= { natInterfaceEntry 2 }

```

natInterfaceInTranslates OBJECT-TYPE

```

SYNTAX        Counter64
MAX-ACCESS    read-only
STATUS        deprecated
DESCRIPTION
    "Number of packets received on this interface that
     were translated.
     Discontinuities in the value of this counter can occur
     at reinitialization of the management system and at
     other times as indicated by the value of
     ifCounterDiscontinuityTime on the relevant interface."
 ::= { natInterfaceEntry 3 }

```

natInterfaceOutTranslates OBJECT-TYPE

```

SYNTAX        Counter64
MAX-ACCESS    read-only
STATUS        deprecated
DESCRIPTION

```

```

    "Number of translated packets that were sent out this
     interface.

```

```

     Discontinuities in the value of this counter can occur
     at reinitialization of the management system and at
     other times as indicated by the value of
     ifCounterDiscontinuityTime on the relevant interface."

```

```

 ::= { natInterfaceEntry 4 }

```

natInterfaceDiscards OBJECT-TYPE

```

SYNTAX        Counter64

```

MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"Number of packets that had to be rejected/dropped due to a lack of resources for this interface.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

::= { natInterfaceEntry 5 }

natInterfaceStorageType OBJECT-TYPE

SYNTAX StorageType
MAX-ACCESS read-create
STATUS deprecated
DESCRIPTION

"The storage type for this conceptual row. Conceptual rows having the value 'permanent' need not allow write-access to any columnar objects in the row."

REFERENCE

"Textual Conventions for SMIV2, [Section 2](#)."

DEFVAL { nonVolatile }

::= { natInterfaceEntry 6 }

natInterfaceRowStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create
STATUS deprecated
DESCRIPTION

"The status of this conceptual row.

Until instances of all corresponding columns are appropriately configured, the value of the corresponding instance of the natInterfaceRowStatus column is 'notReady'.

In particular, a newly created row cannot be made active until the corresponding instance of natInterfaceServiceType has been set.


```

        None of the objects in this row may be modified
        while the value of this object is active(1)."
REFERENCE
    "Textual Conventions for SMIV2, Section 2."
::= { natInterfaceEntry 7 }

--
-- The Address Map Table
--

natAddrMapTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF NatAddrMapEntry
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "This table lists address map parameters for NAT."
    ::= { natMIBObjects 4 }

natAddrMapEntry OBJECT-TYPE
    SYNTAX      NatAddrMapEntry
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "This entry represents an address map to be used for
        NAT and contributes to the dynamic and/or static
        address mapping tables of the NAT device."
    INDEX      { ifIndex, natAddrMapIndex }
    ::= { natAddrMapTable 1 }

NatAddrMapEntry ::= SEQUENCE {
    natAddrMapIndex          NatAddrMapId,
    natAddrMapName           SnmpAdminString,
    natAddrMapEntryType      NatAssociationType,
    natAddrMapTranslationEntity NatTranslationEntity,
    natAddrMapLocalAddrType  InetAddressType,
    natAddrMapLocalAddrFrom  InetAddress,
    natAddrMapLocalAddrTo    InetAddress,
    natAddrMapLocalPortFrom  InetPortNumber,
    natAddrMapLocalPortTo    InetPortNumber,
    natAddrMapGlobalAddrType InetAddressType,
    natAddrMapGlobalAddrFrom InetAddress,
    natAddrMapGlobalAddrTo   InetAddress,
    natAddrMapGlobalPortFrom InetPortNumber,
    natAddrMapGlobalPortTo   InetPortNumber,

```

```
    natAddrMapProtocol          NatProtocolMap,
    natAddrMapInTranslates      Counter64,
    natAddrMapOutTranslates     Counter64,
    natAddrMapDiscards          Counter64,
    natAddrMapAddrUsed          Gauge32,
    natAddrMapStorageType       StorageType,
    natAddrMapRowStatus          RowStatus
}

natAddrMapIndex OBJECT-TYPE
    SYNTAX      NatAddrMapId
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "Along with ifIndex, this object uniquely
         identifies an entry in the natAddrMapTable.
         Address map entries are applied in the order
         specified by natAddrMapIndex."
    ::= { natAddrMapEntry 1 }

natAddrMapName OBJECT-TYPE
    SYNTAX      SnmpAdminString (SIZE(1..32))
    MAX-ACCESS  read-create
    STATUS      deprecated
    DESCRIPTION
        "Name identifying all map entries in the table associated
         with the same interface. All map entries with the same
         ifIndex MUST have the same map name."
    ::= { natAddrMapEntry 2 }

natAddrMapEntryType OBJECT-TYPE
    SYNTAX      NatAssociationType
    MAX-ACCESS  read-create
    STATUS      deprecated
    DESCRIPTION
        "This parameter can be used to set up static
         or dynamic address maps."
    ::= { natAddrMapEntry 3 }

natAddrMapTranslationEntity OBJECT-TYPE
    SYNTAX      NatTranslationEntity
    MAX-ACCESS  read-create
    STATUS      deprecated
    DESCRIPTION
        "The end-point entity (source or destination) in
         inbound or outbound sessions (i.e., first packets) that
         may be translated by an address map entry."
```

Internet-Draft

Deprecation of NAT MIB v1

January 2015

Session direction (inbound or outbound) is derived from the direction of the first packet of a session traversing a NAT interface. NAT address (and Transport-ID) maps may be defined to effect inbound or outbound sessions.

Traditionally, address maps for Basic NAT and NAPT are configured on a public interface for outbound sessions, effecting translation of source end-point. The value of this object must be set to outboundSrcEndPoint for those interfaces.

Alternately, if address maps for Basic NAT and NAPT were to be configured on a private interface, the desired value for this object for the map entries would be inboundSrcEndPoint (i.e., effecting translation of source end-point for inbound sessions).

If TwiceNAT were to be configured on a private interface, the desired value for this object for the map entries would be a bitmask of inboundSrcEndPoint and inboundDstEndPoint."

```
::= { natAddrMapEntry 4 }
```

natAddrMapLocalAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies the address type used for natAddrMapLocalAddrFrom and natAddrMapLocalAddrTo."

```
::= { natAddrMapEntry 5 }
```

natAddrMapLocalAddrFrom OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies the first IP address of the range of IP addresses mapped by this translation entry. The

value of this object must be less than or equal to the value of the natAddrMapLocalAddrTo object.

The type of this address is determined by the value of the natAddrMapLocalAddrType object."

::= { natAddrMapEntry 6 }

natAddrMapLocalAddrTo OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies the last IP address of the range of IP addresses mapped by this translation entry. If only a single address is being mapped, the value of this object is equal to the value of natAddrMapLocalAddrFrom. For a static NAT, the number of addresses in the range defined by natAddrMapLocalAddrFrom and natAddrMapLocalAddrTo must be equal to the number of addresses in the range defined by natAddrMapGlobalAddrFrom and natAddrMapGlobalAddrTo. The value of this object must be greater than or equal to the value of the natAddrMapLocalAddrFrom object.

The type of this address is determined by the value of the natAddrMapLocalAddrType object."

::= { natAddrMapEntry 7 }

natAddrMapLocalPortFrom OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"If this conceptual row describes a Basic NAT address mapping, then the value of this object must be zero. If this conceptual row describes NAPT, then the value of this object specifies the first port number in the range of ports being mapped.

The value of this object must be less than or equal to the value of the natAddrMapLocalPortTo object. If the

translation specifies a single port, then the value of this object is equal to the value of natAddrMapLocalPortTo."

DEFVAL { 0 }

::= { natAddrMapEntry 8 }

natAddrMapLocalPortTo OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"If this conceptual row describes a Basic NAT address mapping, then the value of this object must be zero. If this conceptual row describes NAPT, then the value of this object specifies the last port number in the range

of ports being mapped.

The value of this object must be greater than or equal to the value of the natAddrMapLocalPortFrom object. If the translation specifies a single port, then the value of this object is equal to the value of natAddrMapLocalPortFrom."

DEFVAL { 0 }

::= { natAddrMapEntry 9 }

natAddrMapGlobalAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies the address type used for natAddrMapGlobalAddrFrom and natAddrMapGlobalAddrTo."

::= { natAddrMapEntry 10 }

natAddrMapGlobalAddrFrom OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies the first IP address of the range of IP addresses being mapped to. The value of this

object must be less than or equal to the value of the natAddrMapGlobalAddrTo object.

The type of this address is determined by the value of the natAddrMapGlobalAddrType object."

::= { natAddrMapEntry 11 }

natAddrMapGlobalAddrTo OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies the last IP address of the range of IP addresses being mapped to. If only a single address is being mapped to, the value of this object is equal to the value of natAddrMapGlobalAddrFrom. For a static NAT, the number of addresses in the range defined by natAddrMapGlobalAddrFrom and natAddrMapGlobalAddrTo must be equal to the number of addresses in the range defined by natAddrMapLocalAddrFrom and natAddrMapLocalAddrTo. The value of this object must be greater than or equal to the value of the

natAddrMapGlobalAddrFrom object.

The type of this address is determined by the value of the natAddrMapGlobalAddrType object."

::= { natAddrMapEntry 12 }

natAddrMapGlobalPortFrom OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"If this conceptual row describes a Basic NAT address mapping, then the value of this object must be zero. If this conceptual row describes NAPT, then the value of this object specifies the first port number in the range of ports being mapped to.

The value of this object must be less than or equal to

the value of the natAddrMapGlobalPortTo object. If the translation specifies a single port, then the value of this object is equal to the value natAddrMapGlobalPortTo."

DEFVAL { 0 }

::= { natAddrMapEntry 13 }

natAddrMapGlobalPortTo OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"If this conceptual row describes a Basic NAT address mapping, then the value of this object must be zero. If this conceptual row describes NAPT, then the value of this object specifies the last port number in the range of ports being mapped to.

The value of this object must be greater than or equal to the value of the natAddrMapGlobalPortFrom object. If the translation specifies a single port, then the value of this object is equal to the value of natAddrMapGlobalPortFrom."

DEFVAL { 0 }

::= { natAddrMapEntry 14 }

natAddrMapProtocol OBJECT-TYPE

SYNTAX NatProtocolMap

MAX-ACCESS read-create

STATUS deprecated

DESCRIPTION

"This object specifies a bitmap of protocol identifiers."

::= { natAddrMapEntry 15 }

natAddrMapInTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of inbound packets pertaining to this address map entry that were translated.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."
 ::= { natAddrMapEntry 16 }

natAddrMapOutTranslates OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"The number of outbound packets pertaining to this address map entry that were translated.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."
 ::= { natAddrMapEntry 17 }

natAddrMapDiscards OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"The number of packets pertaining to this address map entry that were dropped due to lack of addresses in the address pool identified by this address map. The value of this object must always be zero in case of static address map.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

::= { natAddrMapEntry 18 }

natAddrMapAddrUsed OBJECT-TYPE

SYNTAX Gauge32
MAX-ACCESS read-only


```

STATUS      deprecated
DESCRIPTION
    "The number of addresses pertaining to this address map
    that are currently being used from the NAT pool.
    The value of this object must always be zero in the case
    of a static address map."
::= { natAddrMapEntry 19 }

natAddrMapStorageType OBJECT-TYPE
SYNTAX      StorageType
MAX-ACCESS  read-create
STATUS      deprecated
DESCRIPTION
    "The storage type for this conceptual row.
    Conceptual rows having the value 'permanent'
    need not allow write-access to any columnar objects
    in the row."
REFERENCE
    "Textual Conventions for SMIV2, Section 2."
DEFVAL { nonVolatile }
::= { natAddrMapEntry 20 }

natAddrMapRowStatus OBJECT-TYPE
SYNTAX      RowStatus
MAX-ACCESS  read-create
STATUS      deprecated
DESCRIPTION
    "The status of this conceptual row.

    Until instances of all corresponding columns are
    appropriately configured, the value of the
    corresponding instance of the natAddrMapRowStatus
    column is 'notReady'.

    None of the objects in this row may be modified
    while the value of this object is active(1)."
```

REFERENCE

```

    "Textual Conventions for SMIV2, Section 2."
::= { natAddrMapEntry 21 }

--
-- Address Bind section
--
```

```

natAddrBindNumberOfEntries OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "This object maintains a count of the number of entries
         that currently exist in the natAddrBindTable."
    ::= { natMIBObjects 5 }

--
-- The NAT Address BIND Table
--

natAddrBindTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF NatAddrBindEntry
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "This table holds information about the currently
         active NAT BINDs."
    ::= { natMIBObjects 6 }

natAddrBindEntry OBJECT-TYPE
    SYNTAX      NatAddrBindEntry
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "Each entry in this table holds information about
         an active address BIND.  These entries are lost
         upon agent restart.

        This row has indexing which may create variables with
        more than 128 subidentifiers.  Implementers of this
        table must be careful not to create entries that would
        result in OIDs which exceed the 128 subidentifier limit.
        Otherwise, the information cannot be accessed using
        SNMPv1, SNMPv2c or SNMPv3."

    INDEX      { ifIndex,
                 natAddrBindLocalAddrType,
                 natAddrBindLocalAddr }
    ::= { natAddrBindTable 1 }

NatAddrBindEntry ::= SEQUENCE {
    natAddrBindLocalAddrType      InetAddressType,
    natAddrBindLocalAddr          InetAddress,
    natAddrBindGlobalAddrType     InetAddressType,
    natAddrBindGlobalAddr         InetAddress,

```

Internet-Draft

Deprecation of NAT MIB v1

January 2015

```

    natAddrBindId                NatBindId,
    natAddrBindTranslationEntity  NatTranslationEntity,
    natAddrBindType               NatAssociationType,
    natAddrBindMapIndex           NatAddrMapId,
    natAddrBindSessions           Gauge32,
    natAddrBindMaxIdleTime        TimeTicks,
    natAddrBindCurrentIdleTime    TimeTicks,
    natAddrBindInTranslates       Counter64,
    natAddrBindOutTranslates      Counter64
}

natAddrBindLocalAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   not-accessible
    STATUS      deprecated
    DESCRIPTION
        "This object specifies the address type used for
         natAddrBindLocalAddr."
    ::= { natAddrBindEntry 1 }

natAddrBindLocalAddr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (4|16))
    MAX-ACCESS   not-accessible
    STATUS      deprecated
    DESCRIPTION
        "This object represents the private-realm specific
         network layer address, which maps to the public-realm
         address represented by natAddrBindGlobalAddr.

         The type of this address is determined by the value of
         the natAddrBindLocalAddrType object."
    ::= { natAddrBindEntry 2 }

natAddrBindGlobalAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   read-only
    STATUS      deprecated
    DESCRIPTION
        "This object specifies the address type used for
         natAddrBindGlobalAddr."
    ::= { natAddrBindEntry 3 }
```

natAddrBindGlobalAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object represents the public-realm network layer

Perreault, et al.

Expires August 2, 2015

[Page 24]

Internet-Draft

Deprecation of NAT MIB v1

January 2015

address that maps to the private-realm network layer
address represented by natAddrBindLocalAddr.

The type of this address is determined by the value of
the natAddrBindGlobalAddrType object."

::= { natAddrBindEntry 4 }

natAddrBindId OBJECT-TYPE

SYNTAX NatBindId

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object represents a bind id that is dynamically
assigned to each bind by a NAT enabled device. Each
bind is represented by a bind id that is
unique across both, the natAddrBindTable and the
natAddrPortBindTable."

::= { natAddrBindEntry 5 }

natAddrBindTranslationEntity OBJECT-TYPE

SYNTAX NatTranslationEntity

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object represents the direction of sessions
for which this bind is applicable and the endpoint
entity (source or destination) within the sessions that
is subject to translation using the BIND.

Orientation of the bind can be a superset of
translationEntity of the address map entry which
forms the basis for this bind.

For example, if the translationEntity of an
address map entry is outboundSrcEndPoint, the

translationEntity of a bind derived from this map entry may either be outboundSrcEndPoint or it may be bidirectional (a bitmask of outboundSrcEndPoint and inboundDstEndPoint)."

::= { natAddrBindEntry 6 }

natAddrBindType OBJECT-TYPE
SYNTAX NatAssociationType
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"This object indicates whether the bind is static or dynamic."

::= { natAddrBindEntry 7 }

natAddrBindMapIndex OBJECT-TYPE
SYNTAX NatAddrMapId
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"This object is a pointer to the natAddrMapTable entry (and the parameters of that entry) which was used in creating this BIND. This object, in conjunction with the ifIndex (which identifies a unique addrMapName) points to a unique entry in the natAddrMapTable."

::= { natAddrBindEntry 8 }

natAddrBindSessions OBJECT-TYPE
SYNTAX Gauge32
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"Number of sessions currently using this BIND."

::= { natAddrBindEntry 9 }

natAddrBindMaxIdleTime OBJECT-TYPE
SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION
"This object indicates the maximum time for

which this bind can be idle with no sessions attached to it.

The value of this object is of relevance only for dynamic NAT."

::= { natAddrBindEntry 10 }

natAddrBindCurrentIdleTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"At any given instance, this object indicates the time that this bind has been idle without any sessions attached to it.

The value of this object is of relevance only for dynamic NAT."

::= { natAddrBindEntry 11 }

natAddrBindInTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of inbound packets that were successfully translated by using this bind entry.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

::= { natAddrBindEntry 12 }

natAddrBindOutTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of outbound packets that were successfully translated using this bind entry.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."
 ::= { natAddrBindEntry 13 }

--
--
--

natAddrPortBindNumberOfEntries OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object maintains a count of the number of entries that currently exist in the natAddrPortBindTable."

::= { natMIBObjects 7 }

--
--
--

-- The NAT Address Port Bind Table

natAddrPortBindTable OBJECT-TYPE

SYNTAX SEQUENCE OF NatAddrPortBindEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"This table holds information about the currently active NAPT BINDs."

::= { natMIBObjects 8 }

natAddrPortBindEntry OBJECT-TYPE

SYNTAX NatAddrPortBindEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"Each entry in the this table holds information about a NAPT bind that is currently active. These entries are lost upon agent restart."

This row has indexing which may create variables with more than 128 subidentifiers. Implementers of this table must be careful not to create entries which would result in OIDs that exceed the 128 subidentifier limit. Otherwise, the information cannot be accessed using SNMPv1, SNMPv2c or SNMPv3."

```

INDEX    { ifIndex, natAddrPortBindLocalAddrType,
           natAddrPortBindLocalAddr, natAddrPortBindLocalPort,
           natAddrPortBindProtocol }
 ::= { natAddrPortBindTable 1 }

NatAddrPortBindEntry ::= SEQUENCE {
    natAddrPortBindLocalAddrType      InetAddressType,
    natAddrPortBindLocalAddr          InetAddress,
    natAddrPortBindLocalPort          InetPortNumber,
    natAddrPortBindProtocol           NatProtocolType,
    natAddrPortBindGlobalAddrType     InetAddressType,
    natAddrPortBindGlobalAddr         InetAddress,
    natAddrPortBindGlobalPort         InetPortNumber,
    natAddrPortBindId                 NatBindId,
    natAddrPortBindTranslationEntity  NatTranslationEntity,
    natAddrPortBindType               NatAssociationType,
    natAddrPortBindMapIndex           NatAddrMapId,
    natAddrPortBindSessions           Gauge32,
    natAddrPortBindMaxIdleTime        TimeTicks,
    natAddrPortBindCurrentIdleTime    TimeTicks,
    natAddrPortBindInTranslates       Counter64,
    natAddrPortBindOutTranslates      Counter64
}

```

```

natAddrPortBindLocalAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible

```

STATUS deprecated

DESCRIPTION

"This object specifies the address type used for
natAddrPortBindLocalAddr."

```
 ::= { natAddrPortBindEntry 1 }
```

```

natAddrPortBindLocalAddr OBJECT-TYPE

```


SYNTAX InetAddress (SIZE(4|16))

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"This object represents the private-realm specific network layer address which, in conjunction with natAddrPortBindLocalPort, maps to the public-realm network layer address and transport id represented by natAddrPortBindGlobalAddr and natAddrPortBindGlobalPort respectively.

The type of this address is determined by the value of the natAddrPortBindLocalAddrType object."

::= { natAddrPortBindEntry 2 }

natAddrPortBindLocalPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"For a protocol value TCP or UDP, this object represents the private-realm specific port number. On the other hand, for ICMP a bind is created only for query/response type ICMP messages such as ICMP echo, Timestamp, and Information request messages, and this object represents the private-realm specific identifier in the ICMP message, as defined in [RFC 792](#) for ICMPv4 and in [RFC 2463](#) for ICMPv6.

This object, together with natAddrPortBindProtocol, natAddrPortBindLocalAddrType, and natAddrPortBindLocalAddr, constitutes a session endpoint in the private realm. A bind entry binds a private realm specific endpoint to a public realm specific endpoint, as represented by the tuple of (natAddrPortBindGlobalPort, natAddrPortBindProtocol, natAddrPortBindGlobalAddrType, and natAddrPortBindGlobalAddr)."

::= { natAddrPortBindEntry 3 }

natAddrPortBindProtocol OBJECT-TYPE

SYNTAX NatProtocolType

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"This object specifies a protocol identifier. If the value of this object is none(1), then this bind entry applies to all IP traffic. Any other value of this object specifies the class of IP traffic to which this BIND applies."

::= { natAddrPortBindEntry 4 }

natAddrPortBindGlobalAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object specifies the address type used for natAddrPortBindGlobalAddr."

::= { natAddrPortBindEntry 5 }

natAddrPortBindGlobalAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object represents the public-realm specific network layer address that, in conjunction with natAddrPortBindGlobalPort, maps to the private-realm

network layer address and transport id represented by natAddrPortBindLocalAddr and natAddrPortBindLocalPort, respectively.

The type of this address is determined by the value of the natAddrPortBindGlobalAddrType object."

::= { natAddrPortBindEntry 6 }

natAddrPortBindGlobalPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"For a protocol value TCP or UDP, this object represents the public-realm specific port number. On the other hand, for ICMP a bind is created only for query/response type ICMP messages such as ICMP echo, Timestamp, and Information request messages, and this object represents

Internet-Draft

Deprecation of NAT MIB v1

January 2015

the public-realm specific identifier in the ICMP message, as defined in [RFC 792](#) for ICMPv4 and in [RFC 2463](#) for ICMPv6.

This object, together with natAddrPortBindProtocol, natAddrPortBindGlobalAddrType, and natAddrPortBindGlobalAddr, constitutes a session endpoint in the public realm. A bind entry binds a public realm specific endpoint to a private realm specific endpoint, as represented by the tuple of (natAddrPortBindLocalPort, natAddrPortBindProtocol, natAddrPortBindLocalAddrType, and natAddrPortBindLocalAddr)."

::= { natAddrPortBindEntry 7 }

natAddrPortBindId OBJECT-TYPE

SYNTAX NatBindId

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object represents a bind id that is dynamically assigned to each bind by a NAT enabled device. Each bind is represented by a unique bind id across both the natAddrBindTable and the natAddrPortBindTable."

::= { natAddrPortBindEntry 8 }

natAddrPortBindTranslationEntity OBJECT-TYPE

SYNTAX NatTranslationEntity

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object represents the direction of sessions for which this bind is applicable and the entity (source or destination) within the sessions that is subject to translation with the BIND.

Orientation of the bind can be a superset of the translationEntity of the address map entry that forms the basis for this bind.

For example, if the translationEntity of an address map entry is outboundSrcEndPoint, the translationEntity of a bind derived from this

```
map entry may either be outboundSrcEndPoint or
may be bidirectional (a bitmask of
outboundSrcEndPoint and inboundDstEndPoint)."
::= { natAddrPortBindEntry 9 }
```

```
natAddrPortBindType OBJECT-TYPE
    SYNTAX      NatAssociationType
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "This object indicates whether the bind is static or
        dynamic."
    ::= { natAddrPortBindEntry 10 }

natAddrPortBindMapIndex OBJECT-TYPE
    SYNTAX      NatAddrMapId
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "This object is a pointer to the natAddrMapTable entry
        (and the parameters of that entry) used in
        creating this BIND. This object, in conjunction with
        the ifIndex (which identifies a unique addrMapName),
        points to a unique entry in the natAddrMapTable."
    ::= { natAddrPortBindEntry 11 }

natAddrPortBindSessions OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "Number of sessions currently using this BIND."
    ::= { natAddrPortBindEntry 12 }

natAddrPortBindMaxIdleTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      deprecated

    DESCRIPTION
        "This object indicates the maximum time for
```

which this bind can be idle without any sessions attached to it.
The value of this object is of relevance only for dynamic NAT."

::= { natAddrPortBindEntry 13 }

natAddrPortBindCurrentIdleTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"At any given instance, this object indicates the

time that this bind has been idle without any sessions attached to it.

The value of this object is of relevance only for dynamic NAT."

::= { natAddrPortBindEntry 14 }

natAddrPortBindInTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of inbound packets that were translated as per this bind entry.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

::= { natAddrPortBindEntry 15 }

natAddrPortBindOutTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of outbound packets that were translated as per this bind entry.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

```
::= { natAddrPortBindEntry 16 }
```

--

-- The Session Table

--

natSessionTable OBJECT-TYPE

SYNTAX SEQUENCE OF NatSessionEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"The (conceptual) table containing one entry for each NAT session currently active on this NAT device."

```
::= { natMIBObjects 9 }
```

natSessionEntry OBJECT-TYPE

SYNTAX NatSessionEntry

MAX-ACCESS not-accessible

STATUS deprecated

DESCRIPTION

"An entry (conceptual row) containing information about an active NAT session on this NAT device. These entries are lost upon agent restart."

INDEX { ifIndex, natSessionIndex }

```
::= { natSessionTable 1 }
```

NatSessionEntry ::= SEQUENCE {

natSessionIndex	NatSessionId,
natSessionPrivateSrcEPBindId	NatBindIdOrZero,
natSessionPrivateSrcEPBindMode	NatBindMode,
natSessionPrivateDstEPBindId	NatBindIdOrZero,
natSessionPrivateDstEPBindMode	NatBindMode,
natSessionDirection	INTEGER,
natSessionUpTime	TimeTicks,
natSessionAddrMapIndex	NatAddrMapId,
natSessionProtocolType	NatProtocolType,
natSessionPrivateAddrType	InetAddressType,

```

natSessionPrivateSrcAddr      InetAddress,
natSessionPrivateSrcPort      InetPortNumber,
natSessionPrivateDstAddr      InetAddress,
natSessionPrivateDstPort      InetPortNumber,
natSessionPublicAddrType      InetAddressType,
natSessionPublicSrcAddr       InetAddress,
natSessionPublicSrcPort       InetPortNumber,
natSessionPublicDstAddr       InetAddress,
natSessionPublicDstPort       InetPortNumber,
natSessionMaxIdleTime         TimeTicks,
natSessionCurrentIdleTime     TimeTicks,
natSessionInTranslates        Counter64,
natSessionOutTranslates       Counter64
}

```

```

natSessionIndex OBJECT-TYPE
    SYNTAX      NatSessionId
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "The session ID for this NAT session."
    ::= { natSessionEntry 1 }

```

```

natSessionPrivateSrcEPBindId OBJECT-TYPE
    SYNTAX      NatBindIdOrZero
    MAX-ACCESS  read-only

```

```

STATUS      deprecated
DESCRIPTION
    "The bind id associated between private and public
    source end points. In the case of Symmetric-NAT,
    this should be set to zero."
    ::= { natSessionEntry 2 }

natSessionPrivateSrcEPBindMode OBJECT-TYPE
    SYNTAX      NatBindMode
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "This object indicates whether the bind indicated
        by the object natSessionPrivateSrcEPBindId
        is an address bind or an address port bind."

```

```

 ::= { natSessionEntry 3 }

natSessionPrivateDstEPBindId OBJECT-TYPE
    SYNTAX      NatBindIdOrZero
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "The bind id associated between private and public
         destination end points."
 ::= { natSessionEntry 4 }

natSessionPrivateDstEPBindMode OBJECT-TYPE
    SYNTAX      NatBindMode
    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "This object indicates whether the bind indicated
         by the object natSessionPrivateDstEPBindId
         is an address bind or an address port bind."
 ::= { natSessionEntry 5 }

natSessionDirection OBJECT-TYPE
    SYNTAX      INTEGER {
                    inbound (1),
                    outbound (2)
                }

    MAX-ACCESS  read-only
    STATUS      deprecated
    DESCRIPTION
        "The direction of this session with respect to the
         local network. 'inbound' indicates that this session
         was initiated from the public network into the private

```

```

        network. 'outbound' indicates that this session was
        initiated from the private network into the public
        network."
 ::= { natSessionEntry 6 }

natSessionUpTime OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only

```



```

STATUS      deprecated
DESCRIPTION
    "The up time of this session in one-hundredths of a
    second."
::= { natSessionEntry 7 }

natSessionAddrMapIndex OBJECT-TYPE
SYNTAX      NatAddrMapId
MAX-ACCESS  read-only
STATUS      deprecated
DESCRIPTION
    "This object is a pointer to the natAddrMapTable entry
    (and the parameters of that entry) used in
    creating this session. This object, in conjunction with
    the ifIndex (which identifies a unique addrMapName),
    points to a unique entry in the natAddrMapTable."
::= { natSessionEntry 8 }

natSessionProtocolType OBJECT-TYPE
SYNTAX      NatProtocolType
MAX-ACCESS  read-only
STATUS      deprecated
DESCRIPTION
    "The protocol type of this session."
::= { natSessionEntry 9 }

natSessionPrivateAddrType OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-only
STATUS      deprecated
DESCRIPTION
    "This object specifies the address type used for
    natSessionPrivateSrcAddr and natSessionPrivateDstAddr."
::= { natSessionEntry 10 }

natSessionPrivateSrcAddr OBJECT-TYPE
SYNTAX      InetAddress
MAX-ACCESS  read-only
STATUS      deprecated
DESCRIPTION

```

"The source IP address of the session endpoint that

lies in the private network.

The value of this object must be zero only when the natSessionPrivateSrcEPBindId object has a zero value. When the value of this object is zero, the NAT session lookup will match any IP address to this field.

The type of this address is determined by the value of the natSessionPrivateAddrType object."

::= { natSessionEntry 11 }

natSessionPrivateSrcPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"When the value of protocol is TCP or UDP, this object represents the source port in the first packet of session while in private-realm. On the other hand, when the protocol is ICMP, a NAT session is created only for query/response type ICMP messages such as ICMP echo, Timestamp, and Information request messages, and this object represents the private-realm specific identifier in the ICMP message, as defined in [RFC 792](#) for ICMPv4 and in [RFC 2463](#) for ICMPv6.

The value of this object must be zero when the natSessionPrivateSrcEPBindId object has zero value and value of natSessionPrivateSrcEPBindMode is addressPortBind(2). In such a case, the NAT session lookup will match any port number to this field.

The value of this object must be zero when the object is not a representative field (SrcPort, DstPort, or ICMP identifier) of the session tuple in either the public realm or the private realm."

::= { natSessionEntry 12 }

natSessionPrivateDstAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The destination IP address of the session endpoint that lies in the private network.

The value of this object must be zero when the

natSessionPrivateDstEPBindId object has a zero value. In such a scenario, the NAT session lookup will match any IP address to this field.

The type of this address is determined by the value of the natSessionPrivateAddrType object."

::= { natSessionEntry 13 }

natSessionPrivateDstPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"When the value of protocol is TCP or UDP, this object represents the destination port in the first packet of session while in private-realm. On the other hand, when the protocol is ICMP, this object is not relevant and should be set to zero.

The value of this object must be zero when the natSessionPrivateDstEPBindId object has a zero value and natSessionPrivateDstEPBindMode is set to addressPortBind(2). In such a case, the NAT session lookup will match any port number to this field.

The value of this object must be zero when the object is not a representative field (SrcPort, DstPort, or ICMP identifier) of the session tuple in either the public realm or the private realm."

::= { natSessionEntry 14 }

natSessionPublicAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"This object specifies the address type used for natSessionPublicSrcAddr and natSessionPublicDstAddr."

::= { natSessionEntry 15 }

natSessionPublicSrcAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The source IP address of the session endpoint that

lies in the public network.

Internet-Draft

Deprecation of NAT MIB v1

January 2015

The value of this object must be zero when the natSessionPrivateSrcEPBindId object has a zero value. In such a scenario, the NAT session lookup will match any IP address to this field.

The type of this address is determined by the value of the natSessionPublicAddrType object."

::= { natSessionEntry 16 }

natSessionPublicSrcPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"When the value of protocol is TCP or UDP, this object represents the source port in the first packet of session while in public-realm. On the other hand, when protocol is ICMP, a NAT session is created only for query/response type ICMP messages such as ICMP echo, Timestamp, and Information request messages, and this object represents the public-realm specific identifier in the ICMP message, as defined in [RFC 792](#) for ICMPv4 and in [RFC 2463](#) for ICMPv6.

The value of this object must be zero when the natSessionPrivateSrcEPBindId object has a zero value and natSessionPrivateSrcEPBindMode is set to addressPortBind(2). In such a scenario, the NAT session lookup will match any port number to this field.

The value of this object must be zero when the object is not a representative field (SrcPort, DstPort or ICMP identifier) of the session tuple in either the public realm or the private realm."

::= { natSessionEntry 17 }

natSessionPublicDstAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"The destination IP address of the session endpoint that lies in the public network.

The value of this object must be non-zero when the natSessionPrivateDstEPBindId object has a non-zero value. If the value of this object and the

corresponding natSessionPrivateDstEPBindId object value is zero, then the NAT session lookup will match any IP address to this field.

The type of this address is determined by the value of the natSessionPublicAddrType object."

::= { natSessionEntry 18 }

natSessionPublicDstPort OBJECT-TYPE

SYNTAX InetPortNumber
MAX-ACCESS read-only
STATUS deprecated
DESCRIPTION

"When the value of protocol is TCP or UDP, this object represents the destination port in the first packet of session while in public-realm. On the other hand, when the protocol is ICMP, this object is not relevant for translation and should be zero.

The value of this object must be zero when the natSessionPrivateDstEPBindId object has a zero value and natSessionPrivateDstEPBindMode is addressPortBind(2). In such a scenario, the NAT session lookup will match any port number to this field.

The value of this object must be zero when the object is not a representative field (SrcPort, DstPort, or ICMP identifier) of the session tuple in either the public realm or the private realm."

::= { natSessionEntry 19 }

natSessionMaxIdleTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The max time for which this session can be idle
without detecting a packet."

::= { natSessionEntry 20 }

natSessionCurrentIdleTime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The time since a packet belonging to this session was
last detected."

Perreault, et al.

Expires August 2, 2015

[Page 40]

Internet-Draft

Deprecation of NAT MIB v1

January 2015

::= { natSessionEntry 21 }

natSessionInTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of inbound packets that were translated for
this session.

Discontinuities in the value of this counter can occur
at reinitialization of the management system and at
other times, as indicated by the value of
ifCounterDiscontinuityTime on the relevant interface."

::= { natSessionEntry 22 }

natSessionOutTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of outbound packets that were translated for
this session.

Discontinuities in the value of this counter can occur

```
        at reinitialization of the management system and at
        other times, as indicated by the value of
        ifCounterDiscontinuityTime on the relevant interface."
 ::= { natSessionEntry 23 }
```

```
--
```

```
-- The Protocol table
```

```
--
```

```
natProtocolTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF NatProtocolEntry
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "The (conceptual) table containing per protocol NAT
        statistics."
    ::= { natMIBObjects 10 }
```

```
natProtocolEntry OBJECT-TYPE
    SYNTAX      NatProtocolEntry
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
```

```
        "An entry (conceptual row) containing NAT statistics
        pertaining to a particular protocol."
    INDEX      { natProtocol }
    ::= { natProtocolTable 1 }
```

```
NatProtocolEntry ::= SEQUENCE {
    natProtocol          NatProtocolType,
    natProtocolInTranslates Counter64,
    natProtocolOutTranslates Counter64,
    natProtocolDiscards Counter64
}
```

```
natProtocol      OBJECT-TYPE
    SYNTAX      NatProtocolType
    MAX-ACCESS  not-accessible
    STATUS      deprecated
    DESCRIPTION
        "This object represents the protocol pertaining to which
```

parameters are reported."
 ::= { natProtocolEntry 1 }

natProtocolInTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of inbound packets pertaining to the protocol identified by natProtocol that underwent NAT.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

::= { natProtocolEntry 2 }

natProtocolOutTranslates OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of outbound packets pertaining to the protocol identified by natProtocol that underwent NAT.

Discontinuities in the value of this counter can occur at reinitialization of the management system and at other times, as indicated by the value of ifCounterDiscontinuityTime on the relevant interface."

::= { natProtocolEntry 3 }

natProtocolDiscards OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS deprecated

DESCRIPTION

"The number of packets pertaining to the protocol identified by natProtocol that had to be rejected/dropped due to lack of resources. These rejections could be due to session timeout, resource unavailability, lack of address space, etc.


```

        Discontinuities in the value of this counter can occur
        at reinitialization of the management system and at
        other times, as indicated by the value of
        ifCounterDiscontinuityTime on the relevant interface."
 ::= { natProtocolEntry 4 }

--
-- Notifications section
--

natMIBNotifications OBJECT IDENTIFIER ::= { natMIB 0 }

--
-- Notifications
--

natPacketDiscard NOTIFICATION-TYPE
    OBJECTS { ifIndex }
    STATUS deprecated
    DESCRIPTION
        "This notification is generated when IP packets are
        discarded by the NAT function; e.g., due to lack of
        mapping space when NAT is out of addresses or ports.

        Note that the generation of natPacketDiscard
        notifications is throttled by the agent, as specified
        by the 'natNotifThrottlingInterval' object."
 ::= { natMIBNotifications 1 }

--
-- Conformance information.
--

natMIBConformance OBJECT IDENTIFIER ::= { natMIB 2 }

```

```

natMIBGroups      OBJECT IDENTIFIER ::= { natMIBConformance 1 }
natMIBCompliances OBJECT IDENTIFIER ::= { natMIBConformance 2 }

--

```

-- Units of conformance

--

natConfigGroup OBJECT-GROUP

OBJECTS { natInterfaceRealm,
natInterfaceServiceType,
natInterfaceStorageType,
natInterfaceRowStatus,
natAddrMapName,
natAddrMapEntryType,
natAddrMapTranslationEntity,
natAddrMapLocalAddrType,
natAddrMapLocalAddrFrom,
natAddrMapLocalAddrTo,
natAddrMapLocalPortFrom,
natAddrMapLocalPortTo,
natAddrMapGlobalAddrType,
natAddrMapGlobalAddrFrom,
natAddrMapGlobalAddrTo,
natAddrMapGlobalPortFrom,
natAddrMapGlobalPortTo,
natAddrMapProtocol,
natAddrMapStorageType,
natAddrMapRowStatus,
natBindDefIdleTimeout,
natUdpDefIdleTimeout,
natIcmpDefIdleTimeout,
natOtherDefIdleTimeout,
natTcpDefIdleTimeout,
natTcpDefNegTimeout,
natNotifThrottlingInterval }

STATUS deprecated

DESCRIPTION

"A collection of configuration-related information
required to support management of devices supporting
NAT."

::= { natMIBGroups 1 }

natTranslationGroup OBJECT-GROUP

OBJECTS { natAddrBindNumberOfEntries,
natAddrBindGlobalAddrType,
natAddrBindGlobalAddr,
natAddrBindId,
natAddrBindTranslationEntity,

```
natAddrBindType,  
natAddrBindMapIndex,  
natAddrBindSessions,  
natAddrBindMaxIdleTime,  
natAddrBindCurrentIdleTime,  
natAddrBindInTranslates,  
natAddrBindOutTranslates,  
natAddrPortBindNumberOfEntries,  
natAddrPortBindGlobalAddrType,  
natAddrPortBindGlobalAddr,  
natAddrPortBindGlobalPort,  
natAddrPortBindId,  
natAddrPortBindTranslationEntity,  
natAddrPortBindType,  
natAddrPortBindMapIndex,  
natAddrPortBindSessions,  
natAddrPortBindMaxIdleTime,  
natAddrPortBindCurrentIdleTime,  
natAddrPortBindInTranslates,  
natAddrPortBindOutTranslates,  
natSessionPrivateSrcEPBindId,  
natSessionPrivateSrcEPBindMode,  
natSessionPrivateDstEPBindId,  
natSessionPrivateDstEPBindMode,  
natSessionDirection,  
natSessionUpTime,  
natSessionAddrMapIndex,  
natSessionProtocolType,  
natSessionPrivateAddrType,  
natSessionPrivateSrcAddr,  
natSessionPrivateSrcPort,  
natSessionPrivateDstAddr,  
natSessionPrivateDstPort,  
natSessionPublicAddrType,  
natSessionPublicSrcAddr,  
natSessionPublicSrcPort,  
natSessionPublicDstAddr,  
natSessionPublicDstPort,  
natSessionMaxIdleTime,  
natSessionCurrentIdleTime,  
natSessionInTranslates,  
natSessionOutTranslates }
```

STATUS deprecated

DESCRIPTION

"A collection of BIND-related objects required to support management of devices supporting NAT."

::= { natMIBGroups 2 }

Internet-Draft

Deprecation of NAT MIB v1

January 2015

```
natStatsInterfaceGroup OBJECT-GROUP
    OBJECTS { natInterfaceInTranslates,
               natInterfaceOutTranslates,
               natInterfaceDiscards }
    STATUS deprecated
    DESCRIPTION
        "A collection of NAT statistics associated with the
        interface on which NAT is configured, to aid
        troubleshooting/monitoring of the NAT operation."
    ::= { natMIBGroups 3 }

natStatsProtocolGroup OBJECT-GROUP
    OBJECTS { natProtocolInTranslates,
               natProtocolOutTranslates,
               natProtocolDiscards }
    STATUS deprecated
    DESCRIPTION
        "A collection of protocol specific NAT statistics,
        to aid troubleshooting/monitoring of NAT operation."
    ::= { natMIBGroups 4 }

natStatsAddrMapGroup OBJECT-GROUP
    OBJECTS { natAddrMapInTranslates,
               natAddrMapOutTranslates,
               natAddrMapDiscards,
               natAddrMapAddrUsed }
    STATUS deprecated
    DESCRIPTION
        "A collection of address map specific NAT statistics,
        to aid troubleshooting/monitoring of NAT operation."
    ::= { natMIBGroups 5 }

natMIBNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS { natPacketDiscard }
    STATUS deprecated
    DESCRIPTION
        "A collection of notifications generated by
        devices supporting this MIB."
    ::= { natMIBGroups 6 }
```

```
--  
-- Compliance statements  
--
```

```
natMIBFullCompliance MODULE-COMPLIANCE  
    STATUS deprecated  
    DESCRIPTION
```

Perreault, et al.

Expires August 2, 2015

[Page 46]

Internet-Draft

Deprecation of NAT MIB v1

January 2015

"When this MIB is implemented with support for read-create, then such an implementation can claim full compliance. Such devices can then be both monitored and configured with this MIB.

The following index objects cannot be added as OBJECT clauses but nevertheless have the compliance requirements:

"

```
-- OBJECT  natAddrBindLocalAddrType  
-- SYNTAX  InetAddressType { ipv4(1), ipv6(2) }  
-- DESCRIPTION  
--          "An implementation is required to support  
--          global IPv4 and/or IPv6 addresses, depending  
--          on its support for IPv4 and IPv6."  
  
-- OBJECT  natAddrBindLocalAddr  
-- SYNTAX  InetAddress (SIZE(4|16))  
-- DESCRIPTION  
--          "An implementation is required to support  
--          global IPv4 and/or IPv6 addresses, depending  
--          on its support for IPv4 and IPv6."  
  
-- OBJECT  natAddrPortBindLocalAddrType  
-- SYNTAX  InetAddressType { ipv4(1), ipv6(2) }  
-- DESCRIPTION  
--          "An implementation is required to support  
--          global IPv4 and/or IPv6 addresses, depending  
--          on its support for IPv4 and IPv6."  
  
-- OBJECT  natAddrPortBindLocalAddr  
-- SYNTAX  InetAddress (SIZE(4|16))  
-- DESCRIPTION
```

```

--          "An implementation is required to support
--          global IPv4 and/or IPv6 addresses, depending
--          on its support for IPv4 and IPv6."

MODULE IF-MIB -- The interfaces MIB, RFC2863
MANDATORY-GROUPS {
    ifCounterDiscontinuityGroup
}

MODULE -- this module
MANDATORY-GROUPS { natConfigGroup, natTranslationGroup,
                    natStatsInterfaceGroup }

GROUP          natStatsProtocolGroup
DESCRIPTION

```

Perreault, et al. Expires August 2, 2015 [Page 47]

Internet-Draft Deprecation of NAT MIB v1 January 2015

```

        "This group is optional."
GROUP          natStatsAddrMapGroup
DESCRIPTION
        "This group is optional."
GROUP          natMIBNotificationGroup
DESCRIPTION
        "This group is optional."

OBJECT natAddrMapLocalAddrType
SYNTAX InetAddressType { ipv4(1), ipv6(2) }
DESCRIPTION
        "An implementation is required to support global IPv4
        and/or IPv6 addresses, depending on its support
        for IPv4 and IPv6."

OBJECT natAddrMapLocalAddrFrom
SYNTAX InetAddress (SIZE(4|16))
DESCRIPTION
        "An implementation is required to support global IPv4
        and/or IPv6 addresses, depending on its support
        for IPv4 and IPv6."

OBJECT natAddrMapLocalAddrTo
SYNTAX InetAddress (SIZE(4|16))
DESCRIPTION
        "An implementation is required to support global IPv4

```

and/or IPv6 addresses, depending on its support
for IPv4 and IPv6."

OBJECT natAddrMapGlobalAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4
and/or IPv6 addresses, depending on its support
for IPv4 and IPv6."

OBJECT natAddrMapGlobalAddrFrom

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4
and/or IPv6 addresses, depending on its support
for IPv4 and IPv6."

OBJECT natAddrMapGlobalAddrTo

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4
and/or IPv6 addresses, depending on its support

for IPv4 and IPv6."

OBJECT natAddrBindGlobalAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4
and/or IPv6 addresses, depending on its support
for IPv4 and IPv6."

OBJECT natAddrBindGlobalAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4
and/or IPv6 addresses, depending on its support
for IPv4 and IPv6."

OBJECT natAddrPortBindGlobalAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrPortBindGlobalAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPrivateAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPrivateSrcAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPrivateDstAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPublicAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPublicSrcAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPublicDstAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

::= { natMIBCompliances 1 }

natMIBReadOnlyCompliance MODULE-COMPLIANCE

STATUS deprecated

DESCRIPTION

"When this MIB is implemented without support for read-create (i.e., in read-only mode), then such an implementation can claim read-only compliance. Such a device can then be monitored but cannot be configured with this MIB.

The following index objects cannot be added as OBJECT clauses but nevertheless have the compliance requirements:

"

-- OBJECT natAddrBindLocalAddrType

-- SYNTAX InetAddressType { ipv4(1), ipv6(2) }

-- DESCRIPTION

-- "An implementation is required to support
-- global IPv4 and/or IPv6 addresses, depending
-- on its support for IPv4 and IPv6."

-- OBJECT natAddrBindLocalAddr

-- SYNTAX InetAddress (SIZE(4|16))

-- DESCRIPTION

-- "An implementation is required to support
-- global IPv4 and/or IPv6 addresses, depending

```

--          on its support for IPv4 and IPv6."

-- OBJECT  natAddrPortBindLocalAddrType
-- SYNTAX  InetAddressType { ipv4(1), ipv6(2) }
-- DESCRIPTION
--          "An implementation is required to support
--          global IPv4 and/or IPv6 addresses, depending
--          on its support for IPv4 and IPv6."
-- OBJECT  natAddrPortBindLocalAddr
-- SYNTAX  InetAddress (SIZE(4|16))
-- DESCRIPTION
--          "An implementation is required to support
--          global IPv4 and/or IPv6 addresses, depending
--          on its support for IPv4 and IPv6."

MODULE IF-MIB -- The interfaces MIB, RFC2863
  MANDATORY-GROUPS {
    ifCounterDiscontinuityGroup
  }

MODULE -- this module
  MANDATORY-GROUPS { natConfigGroup, natTranslationGroup,
    natStatsInterfaceGroup }

  GROUP      natStatsProtocolGroup
  DESCRIPTION
    "This group is optional."
  GROUP      natStatsAddrMapGroup
  DESCRIPTION
    "This group is optional."
  GROUP      natMIBNotificationGroup
  DESCRIPTION
    "This group is optional."
  OBJECT natInterfaceRowStatus
  SYNTAX RowStatus { active(1) }
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required, and active is the only
    status that needs to be supported."

  OBJECT natAddrMapLocalAddrType
  SYNTAX  InetAddressType { ipv4(1), ipv6(2) }
  MIN-ACCESS read-only

```

DESCRIPTION

"Write access is not required. An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrMapLocalAddrFrom

SYNTAX InetAddress (SIZE(4|16))

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required. An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrMapLocalAddrTo

SYNTAX InetAddress (SIZE(4|16))

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required. An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrMapGlobalAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required. An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrMapGlobalAddrFrom

SYNTAX InetAddress (SIZE(4|16))

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required. An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrMapGlobalAddrTo

SYNTAX InetAddress (SIZE(4|16))

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required. An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrMapRowStatus

SYNTAX RowStatus { active(1) }

MIN-ACCESS read-only

Internet-Draft

Deprecation of NAT MIB v1

January 2015

DESCRIPTION

"Write access is not required, and active is the only status that needs to be supported."

OBJECT natAddrBindGlobalAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrBindGlobalAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrPortBindGlobalAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natAddrPortBindGlobalAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPrivateAddrType

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPrivateSrcAddr

SYNTAX InetAddress (SIZE(4|16))

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPrivateDstAddr
SYNTAX InetAddress (SIZE(4|16))

Perreault, et al.

Expires August 2, 2015

[Page 53]

Internet-Draft

Deprecation of NAT MIB v1

January 2015

DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPublicAddrType
SYNTAX InetAddressType { ipv4(1), ipv6(2) }
DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPublicSrcAddr
SYNTAX InetAddress (SIZE(4|16))
DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

OBJECT natSessionPublicDstAddr
SYNTAX InetAddress (SIZE(4|16))
DESCRIPTION

"An implementation is required to support global IPv4 and/or IPv6 addresses, depending on its support for IPv4 and IPv6."

::= { natMIBCompliances 2 }

END

[5.](#) Security Considerations

The threats that need to be addressed are described in [Section 1.4 of \[RFC3411\]](#). They include modification of information, masquerade, message stream modification and disclosure. No protection is needed

against denial of service and traffic analysis.

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:

Timers: An attacker setting very low timer values can easily cause a denial-of-service situation. NAT-MIB has the following read-write timers:

- * natBindDefIdleTimeout
- * natUdpDefIdleTimeout
- * natIcmpDefIdleTimeout
- * natOtherDefIdleTimeout
- * natTcpDefIdleTimeout
- * natTcpDefNegTimeout

Notification throttling: An attacker setting a very low throttling interval can cause many useless notifications to be generated. Disabling notifications could be used to hide another attack. Notification throttling is controlled by the object natNotifThrottlingInterval.

Other configuration: The following tables provide write access, at least in part:

- * Rows of the natInterfaceTable are read-create, and the columnar objects indicating realm and service type are read-write. An attacker could deny service by modifying interface configuration, for instance by changing the realm from public to private where the interface is actually on the public side of the NAT.

- * Similarly (to support static mapping), rows of the natAddrMapTable are read-create and thus potentially modifiable by an attacker.

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:

Objects that reveal host identities: Various objects can reveal the identity of private hosts that are engaged in a session with external end nodes. A curious outsider could monitor these to assess the number of private hosts being supported by the NAT device. The outsider could use the information to break into specific private hosts by intercepting the existing sessions or originating new sessions into the host. This applies to the address and port related objects within the following tables:

- * natAddrMapTable
- * natAddrBindTable
- * natAddrPortBindTable
- * natSessionTable

Other objects that reveal NAT state: Other managed objects in this MIB may contain information that may be sensitive from a business perspective, in that they may represent NAT state information. This applies to the following counters:

- * natAddrBindNumberOfEntries
- * natAddrPortBindNumberOfEntries
- * natInterfaceTable: natInterfaceInTranslates, natInterfaceOutTranslates, and natInterfaceDiscards
- * natAddrMapTable: natAddrMapInTranslates,

natAddrMapOutTranslates, natAddrMapDiscards, and
natAddrMapAddrUsed

- * natAddrBindTable: natAddrBindSessions, natAddrBindInTranslates,
natAddrBindOutTranslates
- * natAddrPortBindTable: natAddrPortBindSessions,
natAddrPortBindInTranslates, natAddrPortBindOutTranslates
- * natSessionTable: natSessionInTranslates,
natSessionOutTranslates
- * natProtocolTable: natProtocolInTranslates,
natProtocolOutTranslates, natProtocolDiscards

There are no objects that are sensitive in their own right, such as passwords or monetary amounts.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), 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.

Implementations SHOULD provide the security features described by the SNMPv3 framework (see [RFC3410]), and implementations claiming compliance to the SNMPv3 standard MUST include full support for

authentication and privacy via the User-based Security Model (USM) [RFC3414] with the AES cipher algorithm [RFC3826]. Implementations MAY also provide support for the Transport Security Model (TSM) [RFC5591] in combination with a secure transport such as SSH [RFC5592] or TLS/DTLS [RFC6353].

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.

6. IANA Considerations

IANA has assigned object identifier 123 to the natMIB module, with prefix iso.org.dod.internet.mgmt.mib-2 in the Network Management Parameters registry [[SMI-NUMBERS](#)].

No IANA actions are required by this document.

7. References

7.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.
- [RFC3411] Harrington, D., Presuhn, R., and B. Wijnen, "An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks", STD 62, [RFC 3411](#), December 2002.

- [RFC3414] Blumenthal, U. and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", STD 62, [RFC 3414](#), December 2002.
- [RFC3826] Blumenthal, U., Maino, F., and K. McCloghrie, "The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model", [RFC 3826](#), June 2004.

- [RFC4001] Daniele, M., Haberman, B., Routhier, S., and J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", [RFC 4001](#), February 2005.
- [RFC4787] Audet, F. and C. Jennings, "Network Address Translation (NAT) Behavioral Requirements for Unicast UDP", [BCP 127](#), [RFC 4787](#), January 2007.
- [RFC5591] Harrington, D. and W. Hardaker, "Transport Security Model for the Simple Network Management Protocol (SNMP)", STD 78, [RFC 5591](#), June 2009.
- [RFC5592] Harrington, D., Salowey, J., and W. Hardaker, "Secure Shell Transport Model for the Simple Network Management Protocol (SNMP)", [RFC 5592](#), June 2009.
- [RFC6353] Hardaker, W., "Transport Layer Security (TLS) Transport Model for the Simple Network Management Protocol (SNMP)", STD 78, [RFC 6353](#), July 2011.

[7.2.](#) Informative References

- [I-D.ietf-behave-nat-mib-v2]
Perrault, S., Tsou, T., Sivakumar, S., and T. Taylor,
"Definitions of Managed Objects for Network Address
Translators (NAT), Version 2", October 2014.
- [RFC2663] Srisuresh, P. and M. Holdrege, "IP Network Address
Translator (NAT) Terminology and Considerations", [RFC 2663](#), August 1999.
- [RFC3022] Srisuresh, P. and K. Egevang, "Traditional IP Network
Address Translator (Traditional NAT)", [RFC 3022](#), January
2001.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart,
"Introduction and Applicability Statements for Internet-
Standard Management Framework", [RFC 3410](#), December 2002.

[RFC4008] Rohit, R., Srisuresh, P., Raghunarayan, R., Pai, N., and C. Wang, "Definitions of Managed Objects for Network Address Translators (NAT)", [RFC 4008](#), March 2005.

[SMI-NUMBERS]

"Network Management Parameters registry at IANA",
<<http://www.iana.org/assignments/smi-numbers>>.

Authors' Addresses

Simon Perreault
Jive Communications
Quebec, QC
Canada

Email: sperreault@jive.com

Tina Tsou
Huawei Technologies
Bantian, Longgang District
Shenzhen 518129
PR China

Email: tina.tsou.zouting@huawei.com

Senthil Sivakumar
Cisco Systems
7100-8 Kit Creek Road
Research Triangle Park, North Carolina 27709
USA

Phone: +1 919 392 5158
Email: ssenthil@cisco.com

Tom Taylor
PT Taylor Consulting
Ottawa
Canada

Email: tom.taylor.stds@gmail.com

