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                        IP Forwarding Table MIB

Status of This Memo

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

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Abstract

   This document defines a portion of the Management Information Base
   (MIB) for use with network management protocols in the Internet
   community. In particular, it describes managed objects related to
   the forwarding of Internet Protocol (IP) packets in an IP version-
   independent manner. This document obsoletes RFC 2096.

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1. Introduction

   This document defines a portion of the Management Information Base
   (MIB) for use in managing objects related to the forwarding of
   Internet Protocol (IP) packets in an IP version-independent manner.

   It should be noted that the MIB definition described herein does not
   support multiple instances based on the same address family type.
   However, it does support an instance of the MIB per address family.

2. Conventions Used In This Document

   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 RFC 2119 [RFC2119].

3. 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].

4. Overview

   The MIB consists of one current table and two current global objects.

      1. The object inetCidrRouteNumber indicates the number of current
         routes. This is primarily to avoid having to read the table in
         order to determine this number.

      2. The object inetCidrRouteDiscards counts the number of valid
         routes that were discarded from inetCidrRouteTable for any
         reason. This object replaces the ipRoutingDiscards and
         ipv6DiscardedRoutes objects.

      3. The inetCidrRouteTable provides the ability to display IP
         version-independent multipath CIDR routes.

4.1. Relationship to Other MIBs

   This MIB definition contains several deprecated and obsolete tables
   and objects. The following subsections describe the relationship
   between these objects and other MIB modules.

4.1.1. RFC 1213

   The ipRouteTable object was originally defined in RFC 1213 [RFC1213].
   It was updated by ipForwardTable in RFC 1354 [RFC1354].

4.1.2. RFC 1354

   The ipForwardTable object replaced the ipRouteTable object from RFC
   1213. It was in turn obsoleted by the ipCidrRouteTable defined in
   RFC 2096 [RFC2096].

   In addition, RFC 1354 introduced ipForwardNumber. This object
   reflects the number of entries found in ipForwardTable. It was
   obsoleted by ipCidrRouteNumber, defined in RFC 2096.

4.1.3. RFC 2096

   In RFC 2096, the ipCidrRouteTable and ipCidrRouteNumber were
   introduced. The ipCidrRouteTable object supports multipath IP routes
   having the same network number but differing network masks. The
   number of entries in that table is reflected in ipCidrRouteNumber.
   These objects are deprecated by the definitions contained in this MIB
   definition.

4.1.4. RFC 2011 and 2465

   RFC 2011 [RFC2011] contains the ipRoutingDiscards object, which
   counts the number of valid routes that have been removed from the
   ipCidrRouteTable object. The corresponding ipv6DiscardedRoutes
   object is defined in RFC 2465 [RFC2465]. These objects are
   deprecated in favor of the version-independent object
   inetCidrRouteDiscards defined in this MIB.

5. Definitions

   IP-FORWARD-MIB DEFINITIONS ::= BEGIN

   IMPORTS
       MODULE-IDENTITY, OBJECT-TYPE,
       IpAddress, Integer32, Gauge32,
       Counter32   FROM SNMPv2-SMI
       RowStatus   FROM SNMPv2-TC

```
    MODULE-COMPLIANCE, OBJECT-GROUP     FROM SNMPv2-CONF
    InterfaceIndexOrZero                FROM IF-MIB
    ip                                  FROM IP-MIB
    IANAipRouteProtocol                 FROM IANA-RTPROTO-MIB
    InetAddress, InetAddressType,
    InetAddressPrefixLength,
    InetAutonomousSystemNumber          FROM INET-ADDRESS-MIB;

ipForward MODULE-IDENTITY
    LAST-UPDATED "200602010000Z"
    ORGANIZATION
            "IETF IPv6 Working Group
             http://www.ietf.org/html.charters/ipv6-charter.html"
    CONTACT-INFO
            "Editor:
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             Phone: +1-443-778-1319
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             Send comments to <ipv6@ietf.org>"
    DESCRIPTION
            "The MIB module for the management of CIDR multipath IP
             Routes.

             Copyright (C) The Internet Society (2006).  This version
             of this MIB module is a part of RFC 4292; see the RFC
             itself for full legal notices."

    REVISION       "200602010000Z"
    DESCRIPTION
            "IPv4/v6 version-independent revision.  Minimal changes
             were made to the original RFC 2096 MIB to allow easy
             upgrade of existing IPv4 implementations to the
             version-independent MIB.  These changes include:

             Adding inetCidrRouteDiscards as a replacement for the
             deprecated ipRoutingDiscards and ipv6DiscardedRoutes
             objects.

             Adding a new conformance statement to support the
             implementation of the IP Forwarding MIB in a
             read-only mode.
```

             The inetCidrRouteTable replaces the IPv4-specific
             ipCidrRouteTable, its related objects, and related
             conformance statements.

             Published as RFC 4292."

    REVISION   "199609190000Z"
    DESCRIPTION
            "Revised to support CIDR routes.
             Published as RFC 2096."

    REVISION   "199207022156Z"
    DESCRIPTION
            "Initial version, published as RFC 1354."
    ::= { ip 24 }

inetCidrRouteNumber OBJECT-TYPE
    SYNTAX   Gauge32
    MAX-ACCESS read-only
    STATUS   current
    DESCRIPTION
            "The number of current inetCidrRouteTable entries that
             are not invalid."
::= { ipForward 6 }

inetCidrRouteDiscards OBJECT-TYPE
    SYNTAX   Counter32
    MAX-ACCESS read-only
    STATUS   current
    DESCRIPTION
            "The number of valid route entries discarded from the
             inetCidrRouteTable. Discarded route entries do not
             appear in the inetCidrRouteTable. One possible reason
             for discarding an entry would be to free-up buffer space
             for other route table entries."
    ::= { ipForward 8 }

-- Inet CIDR Route Table

-- The Inet CIDR Route Table deprecates and replaces the
-- ipCidrRoute Table currently in the IP Forwarding Table MIB.
-- It adds IP protocol independence.

inetCidrRouteTable OBJECT-TYPE
    SYNTAX   SEQUENCE OF InetCidrRouteEntry
    MAX-ACCESS not-accessible
    STATUS   current
    DESCRIPTION

```
              "This entity's IP Routing table."
        REFERENCE
              "RFC 1213 Section 6.6, The IP Group"
        ::= { ipForward 7 }

    inetCidrRouteEntry OBJECT-TYPE
        SYNTAX     InetCidrRouteEntry
        MAX-ACCESS not-accessible
        STATUS     current
        DESCRIPTION
              "A particular route to a particular destination, under a
               particular policy (as reflected in the
               inetCidrRoutePolicy object).

               Dynamically created rows will survive an agent reboot.

               Implementers need to be aware that if the total number
               of elements (octets or sub-identifiers) in
               inetCidrRouteDest, inetCidrRoutePolicy, and
               inetCidrRouteNextHop exceeds 111, then OIDs of column
               instances in this table will have more than 128 sub-
               identifiers and cannot be accessed using SNMPv1,
               SNMPv2c, or SNMPv3."
        INDEX {
            inetCidrRouteDestType,
            inetCidrRouteDest,
            inetCidrRoutePfxLen,
            inetCidrRoutePolicy,
            inetCidrRouteNextHopType,
            inetCidrRouteNextHop
            }
        ::= { inetCidrRouteTable 1 }

    InetCidrRouteEntry ::= SEQUENCE {
            inetCidrRouteDestType      InetAddressType,
            inetCidrRouteDest          InetAddress,
            inetCidrRoutePfxLen        InetAddressPrefixLength,
            inetCidrRoutePolicy        OBJECT IDENTIFIER,
            inetCidrRouteNextHopType   InetAddressType,
            inetCidrRouteNextHop       InetAddress,
            inetCidrRouteIfIndex       InterfaceIndexOrZero,
            inetCidrRouteType          INTEGER,
            inetCidrRouteProto         IANAipRouteProtocol,
            inetCidrRouteAge           Gauge32,
            inetCidrRouteNextHopAS     InetAutonomousSystemNumber,
            inetCidrRouteMetric1       Integer32,
            inetCidrRouteMetric2       Integer32,
            inetCidrRouteMetric3       Integer32,
```

```
            inetCidrRouteMetric4        Integer32,
            inetCidrRouteMetric5        Integer32,
            inetCidrRouteStatus         RowStatus
        }
```

    inetCidrRouteDestType OBJECT-TYPE
        SYNTAX   InetAddressType
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
                "The type of the inetCidrRouteDest address, as defined
                 in the InetAddress MIB.

                 Only those address types that may appear in an actual
                 routing table are allowed as values of this object."
        REFERENCE "RFC 4001"
        ::= { inetCidrRouteEntry 1 }

    inetCidrRouteDest OBJECT-TYPE
        SYNTAX   InetAddress
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
                "The destination IP address of this route.

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

                 The values for the index objects inetCidrRouteDest and
                 inetCidrRoutePfxLen must be consistent. When the value
                 of inetCidrRouteDest (excluding the zone index, if one
                 is present) is x, then the bitwise logical-AND
                 of x with the value of the mask formed from the
                 corresponding index object inetCidrRoutePfxLen MUST be
                 equal to x. If not, then the index pair is not
                 consistent and an inconsistentName error must be
                 returned on SET or CREATE requests."

            ::= { inetCidrRouteEntry 2 }

    inetCidrRoutePfxLen OBJECT-TYPE
        SYNTAX   InetAddressPrefixLength
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
                "Indicates the number of leading one bits that form the
                 mask to be logical-ANDed with the destination address
                 before being compared to the value in the

```

                      inetCidrRouteDest field.

                      The values for the index objects inetCidrRouteDest and
                      inetCidrRoutePfxLen must be consistent.  When the value
                      of inetCidrRouteDest (excluding the zone index, if one
                      is present) is x, then the bitwise logical-AND
                      of x with the value of the mask formed from the
                      corresponding index object inetCidrRoutePfxLen MUST be
                      equal to x.  If not, then the index pair is not
                      consistent and an inconsistentName error must be
                      returned on SET or CREATE requests."

            ::= { inetCidrRouteEntry 3 }

        inetCidrRoutePolicy OBJECT-TYPE
            SYNTAX      OBJECT IDENTIFIER
            MAX-ACCESS not-accessible
            STATUS      current
            DESCRIPTION
                    "This object is an opaque object without any defined
                     semantics.  Its purpose is to serve as an additional
                     index that may delineate between multiple entries to
                     the same destination.  The value { 0 0 } shall be used
                     as the default value for this object."
            ::= { inetCidrRouteEntry 4 }

        inetCidrRouteNextHopType OBJECT-TYPE
            SYNTAX      InetAddressType
            MAX-ACCESS not-accessible
            STATUS      current
            DESCRIPTION
                    "The type of the inetCidrRouteNextHop address, as
                     defined in the InetAddress MIB.

                     Value should be set to unknown(0) for non-remote
                     routes.

                     Only those address types that may appear in an actual
                     routing table are allowed as values of this object."
            REFERENCE "RFC 4001"
            ::= { inetCidrRouteEntry 5 }

        inetCidrRouteNextHop OBJECT-TYPE
            SYNTAX      InetAddress
            MAX-ACCESS not-accessible
            STATUS      current
            DESCRIPTION
                    "On remote routes, the address of the next system en

```
            route. For non-remote routes, a zero length string.

            The type of this address is determined by the value of
            the inetCidrRouteNextHopType object."
     ::= { inetCidrRouteEntry 6 }

 inetCidrRouteIfIndex OBJECT-TYPE
     SYNTAX   InterfaceIndexOrZero
     MAX-ACCESS read-create
     STATUS   current
     DESCRIPTION
            "The ifIndex value that identifies the local interface
             through which the next hop of this route should be
             reached. A value of 0 is valid and represents the
             scenario where no interface is specified."
     ::= { inetCidrRouteEntry 7 }

 inetCidrRouteType OBJECT-TYPE
     SYNTAX   INTEGER {
                     other   (1), -- not specified by this MIB
                     reject   (2), -- route that discards traffic and
                                   --   returns ICMP notification
                     local   (3), -- local interface
                     remote   (4), -- remote destination
                     blackhole(5) -- route that discards traffic
                                   --   silently
                  }
     MAX-ACCESS read-create
     STATUS   current
     DESCRIPTION
            "The type of route. Note that local(3) refers to a
             route for which the next hop is the final destination;
             remote(4) refers to a route for which the next hop is
             not the final destination.

             Routes that do not result in traffic forwarding or
             rejection should not be displayed, even if the
             implementation keeps them stored internally.

             reject(2) refers to a route that, if matched, discards
             the message as unreachable and returns a notification
             (e.g., ICMP error) to the message sender. This is used
             in some protocols as a means of correctly aggregating
             routes.

             blackhole(5) refers to a route that, if matched,
             discards the message silently."
     ::= { inetCidrRouteEntry 8 }
```

```
inetCidrRouteProto OBJECT-TYPE
    SYNTAX      IANAipRouteProtocol
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
            "The routing mechanism via which this route was learned.
             Inclusion of values for gateway routing protocols is
             not intended to imply that hosts should support those
             protocols."
    ::= { inetCidrRouteEntry 9 }

inetCidrRouteAge OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
            "The number of seconds since this route was last updated
             or otherwise determined to be correct.  Note that no
             semantics of 'too old' can be implied, except through
             knowledge of the routing protocol by which the route
             was learned."
    ::= { inetCidrRouteEntry 10 }

inetCidrRouteNextHopAS OBJECT-TYPE
    SYNTAX      InetAutonomousSystemNumber
    MAX-ACCESS read-create
    STATUS      current
    DESCRIPTION
            "The Autonomous System Number of the Next Hop.  The
             semantics of this object are determined by the routing-
             protocol specified in the route's inetCidrRouteProto
             value.  When this object is unknown or not relevant, its
             value should be set to zero."
    DEFVAL { 0 }
    ::= { inetCidrRouteEntry 11 }

inetCidrRouteMetric1 OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS read-create
    STATUS      current
    DESCRIPTION
            "The primary routing metric for this route.  The
             semantics of this metric are determined by the routing-
             protocol specified in the route's inetCidrRouteProto
             value.  If this metric is not used, its value should be
             set to -1."
    DEFVAL { -1 }
```

```
        ::= { inetCidrRouteEntry 12 }

    inetCidrRouteMetric2 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
                 protocol specified in the route's inetCidrRouteProto
                 value.  If this metric is not used, its value should be
                 set to -1."
        DEFVAL { -1 }
        ::= { inetCidrRouteEntry 13 }

    inetCidrRouteMetric3 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
                 protocol specified in the route's inetCidrRouteProto
                 value.  If this metric is not used, its value should be
                 set to -1."
        DEFVAL { -1 }
        ::= { inetCidrRouteEntry 14 }

    inetCidrRouteMetric4 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
                 protocol specified in the route's inetCidrRouteProto
                 value.  If this metric is not used, its value should be
                 set to -1."
        DEFVAL { -1 }
        ::= { inetCidrRouteEntry 15 }

    inetCidrRouteMetric5 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
```

```
                    protocol specified in the route's inetCidrRouteProto
                    value.  If this metric is not used, its value should be
                    set to -1."
           DEFVAL { -1 }
           ::= { inetCidrRouteEntry 16 }

       inetCidrRouteStatus OBJECT-TYPE
           SYNTAX     RowStatus
           MAX-ACCESS read-create
           STATUS     current
           DESCRIPTION
                   "The row status variable, used according to row
                    installation and removal conventions.

                    A row entry cannot be modified when the status is
                    marked as active(1)."
           ::= { inetCidrRouteEntry 17 }

       -- Conformance information

       ipForwardConformance
            OBJECT IDENTIFIER ::= { ipForward 5 }

       ipForwardGroups
            OBJECT IDENTIFIER ::= { ipForwardConformance 1 }

       ipForwardCompliances
            OBJECT IDENTIFIER ::= { ipForwardConformance 2 }

       -- Compliance statements

       ipForwardFullCompliance MODULE-COMPLIANCE
           STATUS     current
           DESCRIPTION
                   "When this MIB is implemented for read-create, the
                    implementation can claim full compliance.

                    There are a number of INDEX objects that cannot be
                    represented in the form of OBJECT clauses in SMIv2,
                    but for which there are compliance requirements,
                    expressed in OBJECT clause form in this description:

                    -- OBJECT        inetCidrRouteDestType
                    -- SYNTAX        InetAddressType (ipv4(1), ipv6(2),
                    --                                 ipv4z(3), ipv6z(4))
                    -- DESCRIPTION
                    --     This MIB requires support for global and
                    --     non-global ipv4 and ipv6 addresses.
```

```
             --
             -- OBJECT       inetCidrRouteDest
             -- SYNTAX       InetAddress (SIZE (4 | 8 | 16 | 20))
             -- DESCRIPTION
             --     This MIB requires support for global and
             --     non-global IPv4 and IPv6 addresses.
             --
             -- OBJECT       inetCidrRouteNextHopType
             -- SYNTAX       InetAddressType (unknown(0), ipv4(1),
             --                               ipv6(2), ipv4z(3)
             --                               ipv6z(4))
             -- DESCRIPTION
             --     This MIB requires support for global and
             --     non-global ipv4 and ipv6 addresses.
             --
             -- OBJECT       inetCidrRouteNextHop
             -- SYNTAX       InetAddress (SIZE (0 | 4 | 8 | 16 | 20))
             -- DESCRIPTION
             --     This MIB requires support for global and
             --     non-global IPv4 and IPv6 addresses.
             "

     MODULE -- this module
     MANDATORY-GROUPS { inetForwardCidrRouteGroup }

     OBJECT        inetCidrRouteStatus
     SYNTAX        RowStatus { active(1), notInService (2) }
     WRITE-SYNTAX  RowStatus { active(1), notInService (2),
                              createAndGo(4), destroy(6) }
     DESCRIPTION  "Support for createAndWait is not required."

     ::= { ipForwardCompliances 3 }

   ipForwardReadOnlyCompliance MODULE-COMPLIANCE
     STATUS      current
     DESCRIPTION
            "When this MIB is implemented without support for read-
             create (i.e., in read-only mode), the implementation can
             claim read-only compliance."
     MODULE -- this module
     MANDATORY-GROUPS { inetForwardCidrRouteGroup }

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

     OBJECT       inetCidrRouteType
```

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

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

   OBJECT      inetCidrRouteMetric1
   MIN-ACCESS  read-only
   DESCRIPTION
      "Write access is not required."

   OBJECT      inetCidrRouteMetric2
   MIN-ACCESS  read-only
   DESCRIPTION
      "Write access is not required."

   OBJECT      inetCidrRouteMetric3
   MIN-ACCESS  read-only
   DESCRIPTION
      "Write access is not required."

   OBJECT      inetCidrRouteMetric4
   MIN-ACCESS  read-only
   DESCRIPTION
      "Write access is not required."

   OBJECT      inetCidrRouteMetric5
   MIN-ACCESS  read-only
   DESCRIPTION
      "Write access is not required."

   OBJECT      inetCidrRouteStatus
   SYNTAX      RowStatus { active(1) }
   MIN-ACCESS  read-only
   DESCRIPTION
      "Write access is not required."

   ::= { ipForwardCompliances 4 }

-- units of conformance

inetForwardCidrRouteGroup OBJECT-GROUP
   OBJECTS { inetCidrRouteDiscards,
             inetCidrRouteIfIndex, inetCidrRouteType,
             inetCidrRouteProto, inetCidrRouteAge,
```

```
                 inetCidrRouteNextHopAS, inetCidrRouteMetric1,
                 inetCidrRouteMetric2, inetCidrRouteMetric3,
                 inetCidrRouteMetric4, inetCidrRouteMetric5,
                 inetCidrRouteStatus, inetCidrRouteNumber
          }
      STATUS      current
      DESCRIPTION
            "The IP version-independent CIDR Route Table."
      ::= { ipForwardGroups 4 }

   -- Deprecated Objects

   ipCidrRouteNumber OBJECT-TYPE
      SYNTAX      Gauge32
      MAX-ACCESS read-only
      STATUS      deprecated
      DESCRIPTION
            "The number of current ipCidrRouteTable entries that are
             not invalid.  This object is deprecated in favor of
             inetCidrRouteNumber and the inetCidrRouteTable."
      ::= { ipForward 3 }

   -- IP CIDR Route Table

   -- The IP CIDR Route Table obsoletes and replaces the ipRoute
   -- Table current in MIB-I and MIB-II and the IP Forwarding Table.
   -- It adds knowledge of the autonomous system of the next hop,
   -- multiple next hops, policy routing, and Classless
   -- Inter-Domain Routing.

   ipCidrRouteTable OBJECT-TYPE
      SYNTAX      SEQUENCE OF IpCidrRouteEntry
      MAX-ACCESS not-accessible
      STATUS      deprecated
      DESCRIPTION
            "This entity's IP Routing table.  This table has been
             deprecated in favor of the IP version neutral
             inetCidrRouteTable."
      REFERENCE
            "RFC 1213 Section 6.6, The IP Group"
      ::= { ipForward 4 }

   ipCidrRouteEntry OBJECT-TYPE
      SYNTAX      IpCidrRouteEntry
      MAX-ACCESS not-accessible
      STATUS      deprecated
      DESCRIPTION
            "A particular route to a particular destination, under a
```

```
                   particular policy."
          INDEX {
              ipCidrRouteDest,
              ipCidrRouteMask,
              ipCidrRouteTos,
              ipCidrRouteNextHop
              }
            ::= { ipCidrRouteTable 1 }

   IpCidrRouteEntry ::= SEQUENCE {
            ipCidrRouteDest       IpAddress,
            ipCidrRouteMask       IpAddress,
            ipCidrRouteTos        Integer32,
            ipCidrRouteNextHop    IpAddress,
            ipCidrRouteIfIndex    Integer32,
            ipCidrRouteType       INTEGER,
            ipCidrRouteProto      INTEGER,
            ipCidrRouteAge        Integer32,
            ipCidrRouteInfo       OBJECT IDENTIFIER,
            ipCidrRouteNextHopAS  Integer32,
            ipCidrRouteMetric1    Integer32,
            ipCidrRouteMetric2    Integer32,
            ipCidrRouteMetric3    Integer32,
            ipCidrRouteMetric4    Integer32,
            ipCidrRouteMetric5    Integer32,
            ipCidrRouteStatus     RowStatus
        }

   ipCidrRouteDest OBJECT-TYPE
       SYNTAX      IpAddress
       MAX-ACCESS read-only
       STATUS      deprecated
       DESCRIPTION
             "The destination IP address of this route.

              This object may not take a Multicast (Class D) address
              value.

              Any assignment (implicit or otherwise) of an instance
              of this object to a value x must be rejected if the
              bitwise logical-AND of x with the value of the
              corresponding instance of the ipCidrRouteMask object is
              not equal to x."
        ::= { ipCidrRouteEntry 1 }

   ipCidrRouteMask OBJECT-TYPE
       SYNTAX      IpAddress
       MAX-ACCESS read-only
```

```
        STATUS      deprecated
        DESCRIPTION
              "Indicate the mask to be logical-ANDed with the
               destination address before being compared to the value
               in the ipCidrRouteDest field.  For those systems that
               do not support arbitrary subnet masks, an agent
               constructs the value of the ipCidrRouteMask by
               reference to the IP Address Class.

               Any assignment (implicit or otherwise) of an instance
               of this object to a value x must be rejected if the
               bitwise logical-AND of x with the value of the
               corresponding instance of the ipCidrRouteDest object is
               not equal to ipCidrRouteDest."
        ::= { ipCidrRouteEntry 2 }

   -- The following convention is included for specification
   -- of TOS Field contents.  At this time, the Host Requirements
   -- and the Router Requirements documents disagree on the width
   -- of the TOS field.  This mapping describes the Router
   -- Requirements mapping, and leaves room to widen the TOS field
   -- without impact to fielded systems.

   ipCidrRouteTos OBJECT-TYPE
        SYNTAX      Integer32 (0..2147483647)
        MAX-ACCESS read-only
        STATUS      deprecated
        DESCRIPTION
              "The policy specifier is the IP TOS Field.  The encoding
               of IP TOS is as specified by the following convention.
               Zero indicates the default path if no more specific
               policy applies.

               +-----+-----+-----+-----+-----+-----+-----+-----+
               |     |     |     |     |     |     |     |     |
               |     PRECEDENCE      |   TYPE OF SERVICE   |  0  |
               |     |     |     |     |     |     |     |     |
               +-----+-----+-----+-----+-----+-----+-----+-----+

                          IP TOS                  IP TOS
                   Field       Policy      Field       Policy
                   Contents     Code       Contents     Code
                   0 0 0 0  ==>   0        0 0 0 1  ==>   2
                   0 0 1 0  ==>   4        0 0 1 1  ==>   6
                   0 1 0 0  ==>   8        0 1 0 1  ==>  10
                   0 1 1 0  ==>  12        0 1 1 1  ==>  14
                   1 0 0 0  ==>  16        1 0 0 1  ==>  18
                   1 0 1 0  ==>  20        1 0 1 1  ==>  22
```

```
                        1 1 0 0  ==>  24     1 1 0 1  ==>  26
                        1 1 1 0  ==>  28     1 1 1 1  ==>  30"
         ::= { ipCidrRouteEntry 3 }

     ipCidrRouteNextHop OBJECT-TYPE
         SYNTAX      IpAddress
         MAX-ACCESS  read-only
         STATUS      deprecated
         DESCRIPTION
                 "On remote routes, the address of the next system en
                  route; Otherwise, 0.0.0.0."
         ::= { ipCidrRouteEntry 4 }

     ipCidrRouteIfIndex OBJECT-TYPE
         SYNTAX      Integer32
         MAX-ACCESS  read-create
         STATUS      deprecated
         DESCRIPTION
                 "The ifIndex value that identifies the local interface
                  through which the next hop of this route should be
                  reached."
         DEFVAL { 0 }
         ::= { ipCidrRouteEntry 5 }

     ipCidrRouteType OBJECT-TYPE
         SYNTAX      INTEGER {
                      other   (1), -- not specified by this MIB
                      reject  (2), -- route that discards traffic
                      local   (3), -- local interface
                      remote  (4)  -- remote destination
                    }
         MAX-ACCESS  read-create
         STATUS      deprecated
         DESCRIPTION
                 "The type of route.  Note that local(3) refers to a
                  route for which the next hop is the final destination;
                  remote(4) refers to a route for which the next hop is
                  not the final destination.

                  Routes that do not result in traffic forwarding or
                  rejection should not be displayed, even if the
                  implementation keeps them stored internally.

                  reject (2) refers to a route that, if matched,
                  discards the message as unreachable.  This is used in
                  some protocols as a means of correctly aggregating
                  routes."
         ::= { ipCidrRouteEntry 6 }
```

    ipCidrRouteProto OBJECT-TYPE
        SYNTAX   INTEGER {
                     other   (1), -- not specified
                     local   (2), -- local interface
                     netmgmt   (3), -- static route
                     icmp   (4), -- result of ICMP Redirect

                          -- the following are all dynamic
                          -- routing protocols
                     egp   (5), -- Exterior Gateway Protocol
                     ggp   (6), -- Gateway-Gateway Protocol
                     hello   (7), -- FuzzBall HelloSpeak
                     rip   (8), -- Berkeley RIP or RIP-II
                     isIs   (9), -- Dual IS-IS
                     esIs   (10), -- ISO 9542
                     ciscoIgrp (11), -- Cisco IGRP
                     bbnSpfIgp (12), -- BBN SPF IGP
                     ospf   (13), -- Open Shortest Path First
                     bgp   (14), -- Border Gateway Protocol
                     idpr   (15), -- InterDomain Policy Routing
                     ciscoEigrp (16) -- Cisco EIGRP
                 }
        MAX-ACCESS read-only
        STATUS   deprecated
        DESCRIPTION
               "The routing mechanism via which this route was learned.
                Inclusion of values for gateway routing protocols is
                not intended to imply that hosts should support those
                protocols."
        ::= { ipCidrRouteEntry 7 }

    ipCidrRouteAge OBJECT-TYPE
        SYNTAX   Integer32
        MAX-ACCESS read-only
        STATUS   deprecated
        DESCRIPTION
               "The number of seconds since this route was last updated
                or otherwise determined to be correct. Note that no
                semantics of 'too old' can be implied, except through
                knowledge of the routing protocol by which the route
                was learned."
        DEFVAL { 0 }
        ::= { ipCidrRouteEntry 8 }

    ipCidrRouteInfo OBJECT-TYPE
        SYNTAX   OBJECT IDENTIFIER
        MAX-ACCESS read-create

```
        STATUS      deprecated
        DESCRIPTION
              "A reference to MIB definitions specific to the
               particular routing protocol that is responsible for
               this route, as determined by the value specified in the
               route's ipCidrRouteProto value.  If this information is
               not present, its value should be set to the OBJECT
               IDENTIFIER { 0 0 }, which is a syntactically valid
               object identifier, and any implementation conforming to
               ASN.1 and the Basic Encoding Rules must be able to
               generate and recognize this value."
        ::= { ipCidrRouteEntry 9 }

    ipCidrRouteNextHopAS OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS read-create
        STATUS      deprecated
        DESCRIPTION
              "The Autonomous System Number of the Next Hop.  The
               semantics of this object are determined by the routing-
               protocol specified in the route's ipCidrRouteProto
               value.  When this object is unknown or not relevant, its
               value should be set to zero."
        DEFVAL { 0 }
        ::= { ipCidrRouteEntry 10 }

    ipCidrRouteMetric1 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS read-create
        STATUS      deprecated
        DESCRIPTION
              "The primary routing metric for this route.  The
               semantics of this metric are determined by the routing-
               protocol specified in the route's ipCidrRouteProto
               value.  If this metric is not used, its value should be
               set to -1."
        DEFVAL { -1 }
        ::= { ipCidrRouteEntry 11 }

    ipCidrRouteMetric2 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS read-create
        STATUS      deprecated
        DESCRIPTION
              "An alternate routing metric for this route.  The
               semantics of this metric are determined by the routing-
               protocol specified in the route's ipCidrRouteProto
               value.  If this metric is not used, its value should be
```

```
                     set to -1."
              DEFVAL { -1 }
              ::= { ipCidrRouteEntry 12 }

          ipCidrRouteMetric3 OBJECT-TYPE
              SYNTAX      Integer32
              MAX-ACCESS read-create
              STATUS      deprecated
              DESCRIPTION
                      "An alternate routing metric for this route.  The
                       semantics of this metric are determined by the routing-
                       protocol specified in the route's ipCidrRouteProto
                       value.  If this metric is not used, its value should be
                       set to -1."
              DEFVAL { -1 }
              ::= { ipCidrRouteEntry 13 }

          ipCidrRouteMetric4 OBJECT-TYPE
              SYNTAX      Integer32
              MAX-ACCESS read-create
              STATUS      deprecated
              DESCRIPTION
                      "An alternate routing metric for this route.  The
                       semantics of this metric are determined by the routing-
                       protocol specified in the route's ipCidrRouteProto
                       value.  If this metric is not used, its value should be
                       set to -1."
              DEFVAL { -1 }
              ::= { ipCidrRouteEntry 14 }

          ipCidrRouteMetric5 OBJECT-TYPE
              SYNTAX      Integer32
              MAX-ACCESS read-create
              STATUS      deprecated
              DESCRIPTION
                      "An alternate routing metric for this route.  The
                       semantics of this metric are determined by the routing-
                       protocol specified in the route's ipCidrRouteProto
                       value.  If this metric is not used, its value should be
                       set to -1."
              DEFVAL { -1 }
              ::= { ipCidrRouteEntry 15 }

          ipCidrRouteStatus OBJECT-TYPE
              SYNTAX      RowStatus
              MAX-ACCESS read-create
              STATUS      deprecated
              DESCRIPTION
```

```
             "The row status variable, used according to row
              installation and removal conventions."
         ::= { ipCidrRouteEntry 16 }

    -- compliance statements

    ipForwardCompliance MODULE-COMPLIANCE
        STATUS      deprecated
        DESCRIPTION
               "The compliance statement for SNMPv2 entities that
                implement the ipForward MIB.

                This compliance statement has been deprecated and
                replaced with ipForwardFullCompliance and
                ipForwardReadOnlyCompliance."

        MODULE  -- this module
        MANDATORY-GROUPS { ipForwardCidrRouteGroup }

        ::= { ipForwardCompliances 1 }

    -- units of conformance

    ipForwardCidrRouteGroup OBJECT-GROUP
        OBJECTS { ipCidrRouteNumber,
                  ipCidrRouteDest, ipCidrRouteMask, ipCidrRouteTos,
                  ipCidrRouteNextHop, ipCidrRouteIfIndex,
                  ipCidrRouteType, ipCidrRouteProto, ipCidrRouteAge,
                  ipCidrRouteInfo,ipCidrRouteNextHopAS,
                  ipCidrRouteMetric1, ipCidrRouteMetric2,
                  ipCidrRouteMetric3, ipCidrRouteMetric4,
                  ipCidrRouteMetric5, ipCidrRouteStatus
              }
        STATUS      deprecated
        DESCRIPTION
               "The CIDR Route Table.

                This group has been deprecated and replaced with
                inetForwardCidrRouteGroup."
         ::= { ipForwardGroups 3 }

    -- Obsoleted Definitions - Objects

    ipForwardNumber OBJECT-TYPE
        SYNTAX      Gauge32
        MAX-ACCESS read-only
        STATUS      obsolete
        DESCRIPTION
```

```
                "The number of current ipForwardTable entries that are
                 not invalid."
        ::= { ipForward 1 }

   --  IP Forwarding Table

   --  The IP Forwarding Table obsoletes and replaces the ipRoute
   --  Table current in MIB-I and MIB-II.  It adds knowledge of
   --  the autonomous system of the next hop, multiple next hop
   --  support, and policy routing support.

   ipForwardTable OBJECT-TYPE
       SYNTAX      SEQUENCE OF IpForwardEntry
       MAX-ACCESS not-accessible
       STATUS      obsolete
       DESCRIPTION
               "This entity's IP Routing table."
       REFERENCE
               "RFC 1213 Section 6.6, The IP Group"
       ::= { ipForward 2 }

   ipForwardEntry OBJECT-TYPE
       SYNTAX      IpForwardEntry
       MAX-ACCESS not-accessible
       STATUS      obsolete
       DESCRIPTION
               "A particular route to a particular destination, under a
                particular policy."
       INDEX {
           ipForwardDest,
           ipForwardProto,
           ipForwardPolicy,
           ipForwardNextHop
           }
       ::= { ipForwardTable 1 }

   IpForwardEntry ::= SEQUENCE {
           ipForwardDest       IpAddress,
           ipForwardMask       IpAddress,
           ipForwardPolicy     Integer32,
           ipForwardNextHop    IpAddress,
           ipForwardIfIndex    Integer32,
           ipForwardType       INTEGER,
           ipForwardProto      INTEGER,
           ipForwardAge        Integer32,
           ipForwardInfo       OBJECT IDENTIFIER,
           ipForwardNextHopAS  Integer32,
           ipForwardMetric1    Integer32,
```

```
        ipForwardMetric2    Integer32,
        ipForwardMetric3    Integer32,
        ipForwardMetric4    Integer32,
        ipForwardMetric5    Integer32
    }

ipForwardDest OBJECT-TYPE
    SYNTAX      IpAddress
    MAX-ACCESS  read-only
    STATUS      obsolete
    DESCRIPTION
            "The destination IP address of this route.  An entry
             with a value of 0.0.0.0 is considered a default route.

             This object may not take a Multicast (Class D) address
             value.

             Any assignment (implicit or otherwise) of an instance
             of this object to a value x must be rejected if the
             bitwise logical-AND of x with the value of the
             corresponding instance of the ipForwardMask object is
             not equal to x."
    ::= { ipForwardEntry 1 }

ipForwardMask OBJECT-TYPE
    SYNTAX      IpAddress
    MAX-ACCESS  read-create
    STATUS      obsolete
    DESCRIPTION
            "Indicate the mask to be logical-ANDed with the
             destination address before being compared to the value
             in the ipForwardDest field.  For those systems that do
             not support arbitrary subnet masks, an agent constructs
             the value of the ipForwardMask by reference to the IP
             Address Class.

             Any assignment (implicit or otherwise) of an instance
             of this object to a value x must be rejected if the
             bitwise logical-AND of x with the value of the
             corresponding instance of the ipForwardDest object is
             not equal to ipForwardDest."
    DEFVAL { '00000000'H }      -- 0.0.0.0
    ::= { ipForwardEntry 2 }

-- The following convention is included for specification
-- of TOS Field contents.  At this time, the Host Requirements
-- and the Router Requirements documents disagree on the width
-- of the TOS field.  This mapping describes the Router
```

```
   -- Requirements mapping, and leaves room to widen the TOS field
   -- without impact to fielded systems.

   ipForwardPolicy OBJECT-TYPE
       SYNTAX      Integer32 (0..2147483647)
       MAX-ACCESS  read-only
       STATUS      obsolete
       DESCRIPTION
              "The general set of conditions that would cause
               the selection of one multipath route (set of
               next hops for a given destination) is referred
               to as 'policy'.

               Unless the mechanism indicated by ipForwardProto
               specifies otherwise, the policy specifier is
               the IP TOS Field.  The encoding of IP TOS is as
               specified by the following convention.  Zero
               indicates the default path if no more specific
               policy applies.

               +-----+-----+-----+-----+-----+-----+-----+-----+
               |     |                 |                 |     |
               |   PRECEDENCE    |    TYPE OF SERVICE     |  0  |
               |     |                 |                 |     |
               +-----+-----+-----+-----+-----+-----+-----+-----+


                         IP TOS                       IP TOS
                    Field      Policy        Field      Policy
                    Contents    Code         Contents    Code
                    0 0 0 0  ==>   0         0 0 0 1  ==>   2
                    0 0 1 0  ==>   4         0 0 1 1  ==>   6
                    0 1 0 0  ==>   8         0 1 0 1  ==>  10
                    0 1 1 0  ==>  12         0 1 1 1  ==>  14
                    1 0 0 0  ==>  16         1 0 0 1  ==>  18
                    1 0 1 0  ==>  20         1 0 1 1  ==>  22
                    1 1 0 0  ==>  24         1 1 0 1  ==>  26
                    1 1 1 0  ==>  28         1 1 1 1  ==>  30


               Protocols defining 'policy' otherwise must either
               define a set of values that are valid for
               this object or must implement an integer-instanced
               policy table for which this object's
               value acts as an index."
       ::= { ipForwardEntry 3 }

   ipForwardNextHop OBJECT-TYPE
```

```
        SYNTAX      IpAddress
        MAX-ACCESS  read-only
        STATUS      obsolete
        DESCRIPTION
                "On remote routes, the address of the next system en
                 route; otherwise, 0.0.0.0."
        ::= { ipForwardEntry 4 }

    ipForwardIfIndex OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS  read-create
        STATUS      obsolete
        DESCRIPTION
                "The ifIndex value that identifies the local interface
                 through which the next hop of this route should be
                 reached."
        DEFVAL { 0 }
        ::= { ipForwardEntry 5 }

    ipForwardType OBJECT-TYPE
        SYNTAX      INTEGER {
                    other    (1), -- not specified by this MIB
                    invalid  (2), -- logically deleted
                    local    (3), -- local interface
                    remote   (4)  -- remote destination
                  }
        MAX-ACCESS  read-create
        STATUS      obsolete
        DESCRIPTION
                "The type of route.  Note that local(3) refers to a
                 route for which the next hop is the final destination;
                 remote(4) refers to a route for which the next hop is
                 not the final destination.

                 Setting this object to the value invalid(2) has the
                 effect of invalidating the corresponding entry in the
                 ipForwardTable object.  That is, it effectively
                 disassociates the destination identified with said
                 entry from the route identified with said entry.  It is
                 an implementation-specific matter as to whether the
                 agent removes an invalidated entry from the table.
                 Accordingly, management stations must be prepared to
                 receive tabular information from agents that
                 corresponds to entries not currently in use.  Proper
                 interpretation of such entries requires examination of
                 the relevant ipForwardType object."
        DEFVAL { invalid }
        ::= { ipForwardEntry 6 }
```

    ipForwardProto OBJECT-TYPE
        SYNTAX   INTEGER {
                     other   (1), -- not specified
                     local   (2), -- local interface
                     netmgmt   (3), -- static route
                     icmp   (4), -- result of ICMP Redirect

                           -- the following are all dynamic
                           -- routing protocols
                     egp   (5), -- Exterior Gateway Protocol
                     ggp   (6), -- Gateway-Gateway Protocol
                     hello   (7), -- FuzzBall HelloSpeak
                     rip   (8), -- Berkeley RIP or RIP-II
                     is-is   (9), -- Dual IS-IS
                     es-is   (10), -- ISO 9542
                     ciscoIgrp (11), -- Cisco IGRP
                     bbnSpfIgp (12), -- BBN SPF IGP
                     ospf   (13), -- Open Shortest Path First
                     bgp   (14), -- Border Gateway Protocol
                     idpr   (15) -- InterDomain Policy Routing
                    }
        MAX-ACCESS read-only
        STATUS   obsolete
        DESCRIPTION
               "The routing mechanism via which this route was learned.
                Inclusion of values for gateway routing protocols is
                not intended to imply that hosts should support those
                protocols."
        ::= { ipForwardEntry 7 }

    ipForwardAge OBJECT-TYPE
        SYNTAX   Integer32
        MAX-ACCESS read-only
        STATUS   obsolete
        DESCRIPTION
               "The number of seconds since this route was last updated
                or otherwise determined to be correct. Note that no
                semantics of 'too old' can be implied except through
                knowledge of the routing protocol by which the route
                was learned."
        DEFVAL { 0 }
        ::= { ipForwardEntry 8 }

    ipForwardInfo OBJECT-TYPE
        SYNTAX   OBJECT IDENTIFIER
        MAX-ACCESS read-create
        STATUS   obsolete

         DESCRIPTION
                 "A reference to MIB definitions specific to the
                  particular routing protocol that is responsible for
                  this route, as determined by the value specified in the
                  route's ipForwardProto value. If this information is
                  not present, its value should be set to the OBJECT
                  IDENTIFIER { 0 0 }, which is a syntactically valid
                  object identifier, and any implementation conforming to
                  ASN.1 and the Basic Encoding Rules must be able to
                  generate and recognize this value."
         ::= { ipForwardEntry 9 }

     ipForwardNextHopAS OBJECT-TYPE
         SYNTAX   Integer32
         MAX-ACCESS read-create
         STATUS   obsolete
         DESCRIPTION
                 "The Autonomous System Number of the Next Hop. When
                  this is unknown or not relevant to the protocol
                  indicated by ipForwardProto, zero."
         DEFVAL { 0 }
         ::= { ipForwardEntry 10 }

     ipForwardMetric1 OBJECT-TYPE
         SYNTAX   Integer32
         MAX-ACCESS read-create
         STATUS   obsolete
         DESCRIPTION
                 "The primary routing metric for this route. The
                  semantics of this metric are determined by the routing-
                  protocol specified in the route's ipForwardProto value.
                  If this metric is not used, its value should be set to
                  -1."
         DEFVAL { -1 }
         ::= { ipForwardEntry 11 }

     ipForwardMetric2 OBJECT-TYPE
         SYNTAX   Integer32
         MAX-ACCESS read-create
         STATUS   obsolete
         DESCRIPTION
                 "An alternate routing metric for this route. The
                  semantics of this metric are determined by the routing-
                  protocol specified in the route's ipForwardProto value.
                  If this metric is not used, its value should be set to
                  -1."
         DEFVAL { -1 }
         ::= { ipForwardEntry 12 }

```
    ipForwardMetric3 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS read-create
        STATUS      obsolete
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
                 protocol specified in the route's ipForwardProto value.
                 If this metric is not used, its value should be set to
                 -1."
        DEFVAL { -1 }
        ::= { ipForwardEntry 13 }

    ipForwardMetric4 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS read-create
        STATUS      obsolete
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
                 protocol specified in the route's ipForwardProto value.
                 If this metric is not used, its value should be set to
                 -1."
        DEFVAL { -1 }
        ::= { ipForwardEntry 14 }

    ipForwardMetric5 OBJECT-TYPE
        SYNTAX      Integer32
        MAX-ACCESS read-create
        STATUS      obsolete
        DESCRIPTION
                "An alternate routing metric for this route.  The
                 semantics of this metric are determined by the routing-
                 protocol specified in the route's ipForwardProto value.
                 If this metric is not used, its value should be set to
                 -1."
        DEFVAL { -1 }
        ::= { ipForwardEntry 15 }

    -- Obsoleted Definitions - Groups
    -- compliance statements

    ipForwardOldCompliance MODULE-COMPLIANCE
        STATUS      obsolete
        DESCRIPTION
                "The compliance statement for SNMP entities that
                 implement the ipForward MIB."
```

```
      MODULE  -- this module
      MANDATORY-GROUPS { ipForwardMultiPathGroup }

      ::= { ipForwardCompliances 2 }

   ipForwardMultiPathGroup OBJECT-GROUP
      OBJECTS { ipForwardNumber,
                ipForwardDest, ipForwardMask, ipForwardPolicy,
                ipForwardNextHop, ipForwardIfIndex, ipForwardType,
                ipForwardProto, ipForwardAge, ipForwardInfo,
                ipForwardNextHopAS,
                ipForwardMetric1, ipForwardMetric2, ipForwardMetric3,
                ipForwardMetric4, ipForwardMetric5
          }
      STATUS     obsolete
      DESCRIPTION
            "IP Multipath Route Table."
      ::= { ipForwardGroups 2 }

   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:

      1. The inetCidrRouteTable contains routing and forwarding
         information that is critical to the operation of the network
         node (especially routers). Allowing unauthenticated write
         access to this table can compromise the validity of the
         forwarding information.

   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:

      1. The inetCidrRouteTable contains routing and forwarding
         information that can be used to compromise a network.

Specifically, this table can be used to construct a map of the
network in preparation for a denial-of-service attack on the
network infrastructure.

2. The inetCidrRouteProto object identifies the routing protocols
   in use within a network. This information can be used to
   determine how a denial-of-service attack should be launched.

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. Changes from RFC 2096

This document obsoletes RFC 2096 in the following ways:

1. Replaces ipCidrRouteTable with inetCidrRouteTable. This
   applies to corresponding objects and conformance statements.

2. Utilizes the InetAddress TC to support IP version-independent
   implementations of the forwarding MIB. This gives common
   forwarding MIB support for IPv4 and IPv6.

3. Creates a read-only conformance statement to support
   implementations that only wish to retrieve data.

4. Creates the inetCidrRouteDiscards object to replace the
   deprecated ipRoutingDiscards and ipv6DiscardedRoutes objects.

The inetCidrRouteTable retains the logical structure of the
ipCidrRouteTable in order to allow the easy upgrade of existing IPv4
implementations to the version-independent MIB.

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