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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1. Introduction

This memo defines an update to RFC 1354, "IP Forwarding Table MIB", for Classless Inter-Domain Routing (CIDR). That document was developed by the Router Requirements Working Group as an update to RFC 1213’s ipRouteTable, with the display of multiple routes as a primary objective. The significant difference between this MIB and RFC 1354 is the recognition (explicitly discussed but by consensus left to future work) that CIDR routes may have the same network number but different network masks. Note that this MIB obsoletes a number of objects from RFC 1354. The reader should pay careful attention to the STATUS field.
2. The SNMP Network Management Framework

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

- the SMI, described in RFC 1902 [1], - the mechanisms used for describing and naming objects for the purpose of management.
- the MIB-II, STD 17, RFC 1213 [2], - the core set of managed objects for the Internet suite of protocols.
- the protocol, RFC 1157 [6] and/or RFC 1905 [4], - the protocol for accessing managed information.

Textual conventions are defined in RFC 1903 [3], and conformance statements are defined in RFC 1904 [5].

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

2.1. Object Definitions

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

3. Overview

The MIB consists of two tables and two global objects.

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

(2) The ipForwardTable updates the RFC 1213 ipRouteTable to display multipath IP Routes. This is in turn obsoleted by the ipCidrRouteTable.

(3) The ipCidrRouteTable updates the RFC 1213 ipRouteTable to display multipath IP Routes having the same network number but differing network masks.
4. Definitions

IP-FORWARD-MIB DEFINITIONS ::= BEGIN

IMPORTS
MODULE-IDENTITY, OBJECT-TYPE, IpAddress, Integer32, Gauge32
FROM SNMPv2-SMI
RowStatus
FROM SNMPv2-TC
ip
FROM RFC1213-MIB
MODULE-COMPLIANCE, OBJECT-GROUP
FROM SNMPv2-CONF;

ipForward MODULE-IDENTITY
LAST-UPDATED "9609190000Z"     -- Thu Sep 26 16:34:47 PDT 1996
ORGANIZATION "IETF OSPF Working Group"
CONTACT-INFO
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"
DESCRIPTION
"The MIB module for the display of CIDR multipath IP Routes."
REVISION      "9609190000Z"
DESCRIPTION
"Revisions made by the OSPF WG."
 ::= { ip 24 }

ipCidrRouteNumber OBJECT-TYPE
SYNTAX   Gauge32
MAX-ACCESS read-only
STATUS   current
DESCRIPTION
"The number of current ipCidrRouteTable entries
that are not invalid."
 ::= { 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, and policy routing, and Classless
-- Inter-Domain Routing.

ipCidrRouteTable OBJECT-TYPE
SYNTAX  SEQUENCE OF IpCidrRouteEntry
MAX-ACCESS not-accessible
STATUS   current
DESCRIPTION  "This entity’s IP Routing table."
REFERENCE  "RFC 1213 Section 6.6, The IP Group"
 ::= { ipForward 4 }

ipCidrRouteEntry OBJECT-TYPE
SYNTAX  IpCidrRouteEntry
MAX-ACCESS not-accessible
STATUS   current
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
   }
ipCidrRouteDest OBJECT-TYPE
SYNTAX   IpAddress
MAX-ACCESS read-only
STATUS   current
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   current
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
MAX-ACCESS read-only
STATUS   current
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   current
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 current
DESCRIPTION "The ifIndex value which 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 which discards traffic
  local  (3), -- local interface
  remote (4) -- remote destination
}
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 destina-
tion.

Routes which 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 which, 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
esisis (10), -- ISO 9542
ciscoigrp (11), -- Cisco IGRP
bbnspfigrp (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 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."
::= { ipCidrRouteEntry 7 }

ipCidrRouteAge OBJECT-TYPE
SYNTAX   Integer32
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."
DEFVAL { 0 }
::= { ipCidrRouteEntry 8 }

ipCidrRouteInfo OBJECT-TYPE
SYNTAX   OBJECT IDENTIFIER
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"A reference to MIB definitions specific to the particular routing protocol which 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 0 }, which is a syntactically valid object identif-
ier, 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 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 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 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 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 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 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  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
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  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
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  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
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  current
DESCRIPTION
"The row status variable, used according to
row installation and removal conventions."
::= { ipCidrRouteEntry 16 }

-- conformance information

ipForwardConformance OBJECT IDENTIFIER ::= { ipForward 5 }
ipForwardGroups OBJECT IDENTIFIER ::= { ipForwardConformance 1 }
ipForwardCompliances OBJECT IDENTIFIER ::= { ipForwardConformance 2 }

-- compliance statements

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

  MODULE -- this module
  MANDATORY-GROUPS { ipForwardCidrRouteGroup }

  ::= { ipForwardCompliances 1 }

-- units of conformance

ipForwardCidrRouteGroup OBJECT-GROUP
  OBJECTS { ipCidrRouteNumber, ipCidrRouteDest, ipCidrRouteMask, ipCidrRouteTos,
             ipCidrRouteIfIndex, ipCidrRouteProto, ipCidrRouteAge, ipCidrRouteInfo,
             ipCidrRouteNextHop, ipCidrRouteNextHopAS, ipCidrRouteMetric1,
             ipCidrRouteMetric2, ipCidrRouteMetric3, ipCidrRouteMetric4, ipCidrRouteMetric5, ipCidrRouteStatus
          }
  STATUS current
  DESCRIPTION
    "The CIDR Route Table."
  ::= { 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
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,}
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 Ad-
dress 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 ipForward-
Dest."
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
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 ipForwardPro-
to 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.

<table>
<thead>
<tr>
<th>PRECEDENCE</th>
<th>TYPE OF SERVICE</th>
<th>0</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IP TOS Field Policy</th>
<th>IP TOS Field Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents Code</td>
<td>Contents Code</td>
</tr>
<tr>
<td>0 0 0 0 ==&gt; 0</td>
<td>0 0 0 1 ==&gt; 2</td>
</tr>
<tr>
<td>0 0 1 0 ==&gt; 4</td>
<td>0 0 1 1 ==&gt; 6</td>
</tr>
<tr>
<td>0 1 0 0 ==&gt; 8</td>
<td>0 1 0 1 ==&gt; 10</td>
</tr>
<tr>
<td>0 1 1 0 ==&gt; 12</td>
<td>0 1 1 1 ==&gt; 14</td>
</tr>
<tr>
<td>1 0 0 0 ==&gt; 16</td>
<td>1 0 0 1 ==&gt; 18</td>
</tr>
<tr>
<td>1 0 1 0 ==&gt; 20</td>
<td>1 0 1 1 ==&gt; 22</td>
</tr>
<tr>
<td>1 1 0 0 ==&gt; 24</td>
<td>1 1 0 1 ==&gt; 26</td>
</tr>
<tr>
<td>1 1 1 0 ==&gt; 28</td>
<td>1 1 1 1 ==&gt; 30</td>
</tr>
</tbody>
</table>
Protocols defining 'policy' otherwise must either define a set of values which 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 which 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 iden-
tified 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 ip-ForwardType 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 which 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 }
5. Acknowledgements

This work was originally performed by the Router Requirements Working Group at the request of the OSPF Working Group. This update was performed under the auspices of the OSPF Working Group. John Moy of Proteon Incorporated is the chair.

6. References


7. Security Considerations

Security is an objective not in this MIB view.

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