RFC7184: Definition of Managed Objects for the Optimized Link State Routing Protocol Version 2

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                   Definition of Managed Objects for
           the Optimized Link State Routing Protocol Version 2

Abstract

   This document defines the Management Information Base (MIB) module
   for configuring and managing the Optimized Link State Routing
   Protocol version 2 (OLSRv2). The OLSRv2-MIB module is structured
   into configuration information, state information, performance
   information, and notifications. This additional state and
   performance information is useful for troubleshooting problems and
   performance issues of the routing protocol. Two levels of compliance
   allow this MIB module to be deployed on constrained routers.

Status of This Memo

   This is an Internet Standards Track document.

   This document is a product of the Internet Engineering Task Force
   (IETF). It represents the consensus of the IETF community. It has
   received public review and has been approved for publication by the
   Internet Engineering Steering Group (IESG). Further information on
   Internet Standards is available in Section 2 of RFC 5741.

   Information about the current status of this document, any errata,
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1. Introduction

   This document defines the Management Information Base (MIB) module
   for configuring and managing the Optimized Link State Routing
   Protocol version 2 (OLSRv2). The OLSRv2-MIB module is structured
   into configuration information, state information, performance
   information, and notifications. In addition to configuration, this
   additional state and performance information is useful for
   troubleshooting problems and performance issues of the routing
   protocol. Different levels of compliance allow implementers to use
   smaller subsets of all defined objects, allowing for this MIB module
   to be deployed on more constrained routers.

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 module are defined using the mechanisms defined in
   the Structure of Management Information (SMI). This document
   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. Conventions

   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].

4. Overview

   The Optimized Link State Routing Protocol version 2 (OLSRv2)
   [RFC7181] is a table-driven, proactive routing protocol, i.e., it
   exchanges topology information with other routers in the network
   periodically. OLSRv2 is an optimization of the classical link state
   routing protocol. Its key concept is that of multipoint relays
   (MPRs). Each router selects a set of its neighbor routers (which
   "cover" all of its symmetrically connected 2-hop neighbor routers) as
   MPRs. MPRs are then used to achieve both flooding reduction and
   topology reduction.

   This document provides management and control capabilities of an
   OLSRv2 instance, allowing management applications to monitor the
   state and performance of an OLSRv2 router, as well as to change
   settings of the OLSRv2 instance (e.g., router or interface parameters
   such as message intervals, etc.).

   As OLSRv2 relies on the neighborhood information discovered by the
   "Mobile Ad Hoc Network (MANET) Neighborhood Discovery Protocol
   (NHDP)" [RFC6130], the OLSRv2-MIB module is aligned with the NHDP-MIB
   module [RFC6779] and augments several of the tables and objects in
   the NHDP-MIB. In particular, common indexes for router interfaces
   and discovered neighbors are used, as described in Section 5.2.

4.1. Terms

   The following definitions apply throughout this document:

   o Configuration Objects - switches, tables, and objects that are
      initialized to default settings or set through the management
      interface defined by this MIB module.

   o State Objects - automatically generated values that define the
      current operating state of the OLSRv2 protocol instance in the
      router.

   o Performance Objects - automatically generated values that help an
      administrator or automated tool to assess the performance of the
      OLSRv2 process on the router.

   o Notification Objects - objects that define triggers and associated
      notification messages allowing for asynchronous tracking of
      predefined events on the managed router.

5. Structure of the MIB Module

   This section presents the structure of the OLSRv2-MIB module. The
   objects are arranged into the following structure:

   o olsrv2MIBObjects - defines objects forming the basis for the
      OLSRv2-MIB module. These objects are divided up by function into
      the following groups:

      * Configuration Group - defining objects related to the
         configuration of the OLSRv2 instance on the router.

      * State Group - defining objects that reflect the current state
         of the OLSRv2 instance running on the router.

      * Performance Group - defining objects that are useful to a
         management system when characterizing the performance of OLSRv2
         on the router and in the MANET.

   o olsrv2MIBNotifications - objects defining OLSRv2-MIB module
      notifications.

   o olsrv2MIBConformance - defining the minimal and maximal
      conformance requirements for implementations of this MIB module.

5.1. The Configuration Group

   The OLSRv2 router is configured with a set of controls. The
   authoritative list of configuration controls within the OLSRv2-MIB
   module is found within the MIB module itself. Generally, an attempt
   was made in developing the OLSRv2-MIB module to support all
   configuration objects defined in [RFC7181]. For all of the
   configuration parameters, the same constraints and default values of
   these parameters as defined in [RFC7181] are followed.

5.2. The State Group

   The State Group reports current state information of a router running
   [RFC7181]. The OLSRv2-MIB module State Group tables were designed to
   contain the complete set of state information defined within the
   Information Bases in [RFC7181].

   The OLSRv2-MIB module State Group tables are constructed as
   extensions to the corresponding tables within the State Group of the
   NHDP-MIB module [RFC6779]. Use of the AUGMENTS clause is made, when
   possible, to accomplish these table extensions. Further, the State
   Group tables defined in this MIB module are aligned with the
   corresponding tables in the NHDP-MIB module [RFC6779], as described
   in Section 6.2.

5.3. The Performance Group

   The Performance Group reports values relevant to system performance.
   Frequent changes of sets or frequent recalculation of the Routing Set
   or the MPRs can have a negative influence on the performance of
   OLSRv2. This MIB module defines several objects that can be polled,
   e.g., in order to calculate histories or monitor frequencies of
   changes. This may help the network administrator to determine
   unusual topology changes or other changes that affect stability and
   reliability of the MANET. One such framework is specified in REPORT-
   MIB [REPORT-MIB].

5.4. The Notifications Group

   The Notifications Group contains Control
   (olsrv2NotificationsControl), Objects (olsrv2NotificationsObjects),
   and States (olsrv2NotificationsStates), where the Control contains
   definitions of objects to control the frequency of notifications
   being generated. The Objects define the supported notifications, and
   the State is used to define additional information to be carried
   within the notifications.

The olsrv2NotificationsObjects sub-tree contains the list of
notifications supported within the OLSRv2-MIB module and their
intended purpose or utility.

The same mechanisms for improving the network performance by reducing
the number of notifications apply as defined in Section 5.1 of
[RFC6779]. The following objects are used to define the thresholds
and time windows for specific notifications defined in the NHDP-MIB
module: olsrv2RoutingSetRecalculationCountThreshold,
olsrv2RoutingSetRecalculationCountWindow,
olsrv2MPRSetRecalculationCountThreshold, and
olsrv2MPRSetRecalculationCountWindow.

5.5. Tables and Indexing

The OLSRv2-MIB module's tables are indexed by the following
constructs:

o nhdpIfIndex - the ifIndex of the local router on which NHDP is
   configured. This is defined in the NHDP-MIB.

o nhdpDiscIfIndex - a locally managed index representing a known
   interface on a neighboring router. This is defined in the NHDP-
   MIB.

o nhdpDiscRouterIndex - a locally managed index representing an ID
   of a known neighboring router. This is defined in the NHDP-MIB.

o {olsrv2LibOrigSetIpAddrType, olsrv2LibOrigSetIpAddr} - this index
   (pair) uniquely identifies recently used originator addresses
   found within the olsrv2LibOrigSetTable.

o {olsrv2LibLocAttNetSetIpAddrType, olsrv2LibLocAttNetSetIpAddr,
   olsrv2LibLocAttNetSetIpAddrPrefixLen} - this index (triplet)
   uniquely identifies local attached networks reachable through
   local (non-OLSRv2) interfaces on this router. These are recorded
   in the olsrv2LibLocAttNetSetTable.

o {olsrv2TibAdRemoteRouterSetIpAddrType,
   olsrv2TibAdRemoteRouterSetIpAddr} - this index (pair) uniquely
   identifies each router in the network that transmits Topology
   Control (TC) messages received by this router. These records are
   recorded in the olsrv2TibAdRemoteRouterSetIpAddr.

o {olsrv2TibRouterTopologySetFromOrigIpAddrType,
   olsrv2TibRouterTopologySetFromOrigIpAddr,
   olsrv2TibRouterTopologySetToOrigIpAddrType,
   olsrv2TibRouterTopologySetToOrigIpAddr} - this index (quadruplet)

uniquely identifies discovered links within the network recorded
by this router. Information associated with each link is stored
in the olsrv2TibRouterTopologySetTable.

o {olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType,
   olsrv2TibRoutableAddressTopologySetFromOrigIpAddr,
   olsrv2TibRoutableAddressTopologySetFromDestIpAddrType,
   olsrv2TibRoutableAddressTopologySetFromDestIpAddr} - this index
   (quadruplet) uniquely identifies reachable addresses within the
   network and the router's advertising of these addresses. This
   information is stored in the
   olsrv2TibRoutableAddressTopologySetTable.

o {olsrv2TibAttNetworksSetOrigIpAddrType,
   olsrv2TibAttNetworksSetOrigIpAddr,
   olsrv2TibAttNetworksSetNetIpAddrType,
   olsrv2TibAttNetworksSetNetIpAddr,
   olsrv2TibAttNetworksSetNetIpAddrPrefixLen} - this index
   (quintuplet) uniquely identifies the networks (which may be
   outside the MANET) and the routers through which these networks
   can be reached. This information is stored in the
   olsrv2TibAttNetworksSetTable.

o {olsrv2TibRoutingSetDestIpAddrType, olsrv2TibRoutingSetDestIpAddr,
   olsrv2TibRoutingSetDestIpAddrPrefixLen} - this index (triplet)
   uniquely identifies the address of a reachable destination in the
   network. This indexes the olsrv2TibRoutingSetTable, which
   contains the next-hop information to reach the indexed addresses.

These tables and their indexing are:

o olsrv2InterfaceTable - describes the OLSRv2 status on the NHDP
   interfaces of this router. This table augments nhdpInterfaceEntry
   and, as such, it is indexed by the {nhdpIfIndex} from the NHDP-
   MIB.

o olsrv2IibLinkSetTable - records all links from other routers that
   are, or recently were, 1-hop neighbors. This table augments
   nhdpIibLinkSetEntry and, as such, it is indexed by nhdpIfIndex and
   nhdpDiscIfIndex.

o olsrv2Iib2HopSetTable - records network addresses of symmetric
   2-hop neighbors and the links to the associated 1-hop neighbors.
   This table augments nhdpIib2HopSetEntry and, as such, it is
   indexed by {nhdpIfIndex, nhdpDiscIfIndex,
   nhdpIib2HopSetIpAddressType, nhdpIib2HopSetIpAddress}.

   o olsrv2LibOrigSetTable - records addresses that were recently used
      as originator addresses by this router. This table is indexed by
      {olsrv2LibOrigSetIpAddrType, olsrv2LibOrigSetIpAddr}.

   o olsrv2LibLocAttNetSetTable - records its local non-OLSRv2
      interfaces via which it can act as a gateway to other networks.
      This table is indexed by {olsrv2LibLocAttNetSetIpAddrType,
      olsrv2LibLocAttNetSetIpAddr,
      olsrv2LibLocAttNetSetIpAddrPrefixLen}.

   o olsrv2NibNeighborSetTable - records all network addresses of each
      1-hop neighbor. This table augments nhdpNibNeighborSetEntry and,
      as such, it is indexed by the {nhdpDiscRouterIndex}.

   o olsrv2TibAdRemoteRouterSetTable - records information describing
      each remote router in the network that transmits TC messages.
      This table is indexed by {olsrv2TibAdRemoteRouterSetIpAddrType,
      olsrv2TibAdRemoteRouterSetIpAddr}.

   o olsrv2TibRouterTopologySetTable - records topology information
      about the network. This table is indexed by
      {olsrv2TibRouterTopologySetFromOrigIpAddrType,
      olsrv2TibRouterTopologySetFromOrigIpAddr,
      olsrv2TibRouterTopologySetToOrigIpAddrType,
      olsrv2TibRouterTopologySetToOrigIpAddr}.

   o olsrv2TibRoutableAddressTopologySetTable - records topology
      information about the routable addresses within the MANET and via
      which routers they may be reached. This table is indexed by
      {olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType,
      olsrv2TibRoutableAddressTopologySetFromOrigIpAddr,
      olsrv2TibRoutableAddressTopologySetFromDestIpAddrType,
      olsrv2TibRoutableAddressTopologySetFromDestIpAddr}.

   o olsrv2TibAttNetworksSetTable - records information about networks
      (which may be outside the MANET) attached to other routers and
      their routable addresses. This table is indexed by
      {olsrv2TibAttNetworksSetOrigIpAddrType,
      olsrv2TibAttNetworksSetOrigIpAddr,
      olsrv2TibAttNetworksSetNetIpAddrType,
      olsrv2TibAttNetworksSetNetIpAddr,
      olsrv2TibAttNetworksSetNetIpAddrPrefixLen}.

   o olsrv2TibRoutingSetTable - records the first hop along a selected
      path to each destination for which any such path is known. This
      table is indexed by {olsrv2TibRoutingSetDestIpAddrType,
      olsrv2TibRoutingSetDestIpAddr,
      olsrv2TibRoutingSetDestIpAddrPrefixLen}.

      o olsrv2InterfacePerfTable - records performance counters for each
         active OLSRv2 interface on this device. This table augments
         nhdpInterfacePerfEntry and, as such, it is indexed by
         {nhdpIfIndex} from the NHDP-MIB.

6. Relationship to Other MIB Modules

   This section specifies the relationship of the MIB modules contained
   in this document to other standards, particularly to standards
   containing other MIB modules. MIB modules and specific definitions
   imported from MIB modules that SHOULD be implemented in conjunction
   with the MIB module contained within this document are identified in
   this section.

6.1. Relationship to the SNMPv2-MIB

   The System group in the SNMPv2-MIB module [RFC3418] is defined as
   being mandatory for all systems, and the objects apply to the entity
   as a whole. The System group provides identification of the
   management entity and certain other system-wide data. The OLSRv2-MIB
   module does not duplicate those objects.

6.2. Relationship to the NHDP-MIB

   OLSRv2 depends on the neighborhood information that is discovered by
   [RFC6130]. An instance of OLSRv2 MUST have an associated instance of
   NHDP running on the same device for proper operations of the
   discovery and routing system. In order for the OLSRv2-MIB module to
   correctly populate the objects relating to discovered neighbors, the
   State Group tables of the NHDP-MIB module [RFC6779] are aligned with
   the State Group tables of this MIB module. This is accomplished
   through the use of the AUGMENTS capability of SMIv2 (where
   appropriate). This will allow for cross referencing of information
   between the two MIB modules within a given SNMP context.

6.3. MIB Modules Required for IMPORTS

   The following OLSRv2-MIB module IMPORTS objects from NHDP-MIB
   [RFC6779], SNMPv2-SMI [RFC2578], SNMPv2-TC [RFC2579], SNMPv2-CONF
   [RFC2580], IF-MIB [RFC2863], and INET-ADDRESS-MIB [RFC4001]. The
   OLSRv2-MIB module also IMPORTS objects from the
   IANAolsrv2LinkMetricType-MIB, which is available at <http://
   www.iana.org/assignments/ianaolsrv2linkmetrictype-mib>.

7. Definitions

   This section contains the OLSRv2-MIB module defined by the
   specification.

   OLSRv2-MIB DEFINITIONS ::= BEGIN

   IMPORTS

      MODULE-IDENTITY, OBJECT-TYPE, Counter32, Counter64,
      Integer32, Unsigned32, mib-2, TimeTicks,
      NOTIFICATION-TYPE
              FROM SNMPv2-SMI -- RFC 2578

      TEXTUAL-CONVENTION, TimeStamp, TruthValue
              FROM SNMPv2-TC -- RFC 2579

      MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
              FROM SNMPv2-CONF -- STD 58

      InetAddressType, InetAddress,
      InetAddressPrefixLength
              FROM INET-ADDRESS-MIB -- RFC 4001

      nhdpInterfaceEntry,
      nhdpIibLinkSetEntry, nhdpIib2HopSetEntry,
      nhdpNibNeighborSetEntry, nhdpInterfacePerfEntry
              FROM NHDP-MIB -- RFC 6779

      IANAolsrv2LinkMetricTypeTC
              FROM IANA-OLSRv2-LINK-METRIC-TYPE-MIB
      ;

   manetOlsrv2MIB MODULE-IDENTITY
      LAST-UPDATED "201404090000Z"   -- 09 April 2014
      ORGANIZATION "IETF MANET Working Group"
      CONTACT-INFO
         "WG E-Mail: manet@ietf.org

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          DESCRIPTION
             "This OLSRv2-MIB module is applicable to routers
              implementing the Optimized Link State Routing
              Protocol version 2 (OLSRv2) defined in RFC 7181.

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              (http://trustee.ietf.org/license-info).

              This version of this MIB module is part of RFC 7184; see
              the RFC itself for full legal notices."

          -- Revision History
          REVISION    "201404090000Z"   -- 09 April 2014
          DESCRIPTION
           "Initial version of this MIB module,
            published as RFC 7184."

          ::= { mib-2 219 }
```

```
--
-- TEXTUAL CONVENTIONS
--

Olsrv2MetricValueCompressedFormTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS        current
    DESCRIPTION
       "OLSRv2 Metrics are expressed in terms of a Link Metric
        Compressed Form within the OLSRv2 protocol.  This textual
        convention defines the syntax of the metric objects
        consistent with the definitions of the OLSRv2 Link
        Metric Compressed Form in Section 6.2 of RFC 7181.

        The 12-bit compressed form of a link metric uses a modified
        form of a representation with an 8-bit mantissa (denoted a)
        and a 4-bit exponent (denoted b).  Note that if represented
        as the 12-bit value 256b+a, then the ordering of those 12-bit
        values is identical to the ordering of the represented values.

        The value so represented is (257+a)2^b - 256, where ^ denotes
        exponentiation.  This has a minimum value
        (when a = 0 and b = 0) of MINIMUM_METRIC = 1 and a maximum
        value (when a = 255 and b = 15) of MAXIMUM_METRIC = 2^24 - 256.

        Hence, the metric values so represented range from 1 to
        16776960.  The special value of 0 is reserved for the
        UNKNOWN_METRIC value.

        If a network manager sets the metric value 'm' through the
        MIB module, then the OLSRv2 code can both use this value
        and derive a compressed representation of 'm' (as used in
        messages) as specified in Section 6.2 of RFC7181.
        The value 'm' is persistently stored by the MIB module.
        If the MIB module is pulling this metric's value from some other
        source, e.g., the protocol instance, then this value is stored
        as is."
    SYNTAX  Unsigned32 (0..16776960)

Olsrv2TimeValueCompressedForm32TC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "x"
    STATUS        current
    DESCRIPTION
       "OLSRv2 time values may be expressed in terms of a compressed
        form within the OLSRv2 protocol.  This textual convention
        defines the syntax of the time objects defined in terms of
        an integer number of milliseconds, consistent with the
        definitions of the 8-bit exponent-mantissa compressed form
```

defined in Section 5 of RFC 5497. Time values with this
representation are defined in terms of a constant C, which
is represented in terms of seconds. The constant C
(time granularity) is used as specified in RFC 5497.
It MUST be the same as is used by NHDP (RFC 6130).

The 8-bit compressed form of a time value uses a modified
form of a representation with a 3-bit mantissa (denoted a)
and a 5-bit exponent (denoted b). Note that if represented
as the 8-bit value 8b+a, then the ordering of those 8-bit
values is identical to the ordering of the represented values.

The minimum time value that can be represented in this manner
is C. The maximum time value that can be represented in
this manner is $15 * 2^{28} * C$, 15*268,435,456 * C,
4,026,531,840 * C, or about 45 days if, for example,
C = 1/1024 second.

This TEXTUAL-CONVENTION limits the maximum value of the
time granularity constant C to be no greater than 1/1024
seconds due to its use of the Unsigned32 syntax limiting
the maximum number of milliseconds to no more than
3932160000.

When OLSRv2 uses this 8-bit exponent-mantissa compressed
form, this object value MUST be translated from the
integer form represented in this MIB module into the
exponent-mantissa form for the OLSRv2 protocol to use
according to the algorithm defined in Section 5 of
RFC 5497 for finding the next larger time value within
the exponent-mantissa format.

If a network manager sets the time value 't' through the
MIB module, then the OLSRv2 code can derive
'compressed_t' = T(a,b) according to the algorithm
in RFC 5497 and 'compressed_t' is the value represented
in the OLSRv2 messages. But, the value 't' is persistently
stored by the MIB module. If the MIB module is pulling
this time parameter from some other source that is using
the compressed form, i.e., the protocol instance, then
this value is stored as is, after converting from
number of time constants C into number of milliseconds."
   SYNTAX Unsigned32 (1..3932160000)

Olsrv2StatusTC ::= TEXTUAL-CONVENTION
   STATUS   current
   DESCRIPTION
      "Controls the operation of the OLSRv2

```
           protocol on the device or a specific interface.
           For example, for an interface, 'enabled' indicates
           that OLSRv2 is permitted to operate,
           and 'disabled' indicates that it is not."
      SYNTAX  INTEGER {
         enabled (1),
         disabled (2)
      }

WillingnessTC ::= TEXTUAL-CONVENTION
   DISPLAY-HINT "x"
   STATUS     current
   DESCRIPTION
       "A willingness value that evaluates to the
        device's interest in participating in
        a particular function, process, or behavior.

        The willingness ranges from a low value of
        WILL_NEVER(0) to a high value of
        WILL_ALWAYS(15).  For each parameter x,
        there is an associated willingness value
        W(x) such that WILL_NEVER < W(x) <= WILL_ALWAYS."
   SYNTAX    Unsigned32 (0..15)


--
-- Top-Level Object Identifier Assignments
--

olsrv2MIBNotifications OBJECT IDENTIFIER ::= { manetOlsrv2MIB 0 }
olsrv2MIBObjects       OBJECT IDENTIFIER ::= { manetOlsrv2MIB 1 }
olsrv2MIBConformance   OBJECT IDENTIFIER ::= { manetOlsrv2MIB 2 }


--
-- olsrv2ConfigurationGroup
--


--    Contains the OLSRv2 objects that configure specific
--    options that determine the overall performance and operation
--    of the OLSRv2 routing process.

olsrv2ConfigurationGroup OBJECT IDENTIFIER ::= {olsrv2MIBObjects 1}


   olsrv2AdminStatus  OBJECT-TYPE
      SYNTAX       Olsrv2StatusTC
      MAX-ACCESS   read-write
      STATUS       current
```

        DESCRIPTION
            "The configured status of the OLSRv2 process
             on this device. 'enabled(1)' means that
             OLSRv2 is configured to run on this device.
             'disabled(2)' mean that the OLSRv2 process
             is configured off.

             Operation of the OLSRv2 protocol
             requires the operation of the Neighborhood
             Discovery Protocol (RFC 6130). Hence, this
             object cannot have a status of 'enabled'
             unless at least one interface on the device
             is a MANET interface with NHDP enabled on that
             interface. If a network manager attempts to
             set this object to 'enabled' when no interfaces
             on this device have NHDP enabled, the device
             MUST fail the set with inconsistentValue.
             If all device interfaces running NHDP become
             disabled or removed, then the
             olsrv2AdminStatus MUST be 'disabled'.

             If the network manager, or other means, sets
             this object to 'disabled', then the associated
             interface specific objects, i.e., the
             olsrv2InterfaceAdminStatus objects MUST all
             be 'disabled'.

             This object is persistent, and when written,
             the entity SHOULD save the change to
             non-volatile storage."
        DEFVAL { disabled }
    ::= { olsrv2ConfigurationGroup 1 }

    olsrv2InterfaceTable OBJECT-TYPE
        SYNTAX   SEQUENCE OF Olsrv2InterfaceEntry
        MAX-ACCESS   not-accessible
        STATUS   current
        DESCRIPTION
            "The olsrv2InterfaceTable describes the OLSRv2
             status on the NHDP interfaces of this router.
             As such, this table augments the nhdpInterfaceTable
             defined in the NHDP-MIB (RFC 6779). NHDP interfaces
             are explicitly defined by network management, command
             line interface (CLI) or other means for interfaces on
             the device that are intended to run MANET protocols.
             The olsrv2InterfaceTable contains a single object: the
             olsrv2InterfaceAdminStatus object. This
             object is set by network management, or by

         other means, e.g., CLI.

         A conceptual row in this table exists if and only
         if a corresponding entry in the nhdpInterfaceTable
         exists. If the corresponding entry with nhdpIfIndex
         value is deleted from the nhdpInterfaceTable, then
         the entry in this table is automatically deleted and
         OLSRv2 is disabled on this interface,
         and all configuration and state information
         related to this interface is to be removed
         from memory.

         The olsrv2InterfaceAdminStatus can only be
         'enabled' if the corresponding olsrv2AdminStatus
         object is also set to 'enabled'."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    ::= { olsrv2ConfigurationGroup 2 }

    olsrv2InterfaceEntry OBJECT-TYPE
       SYNTAX   Olsrv2InterfaceEntry
       MAX-ACCESS   not-accessible
       STATUS   current
       DESCRIPTION
          "The olsrv2InterfaceEntry describes one OLSRv2
           local interface configuration as indexed by
           its nhdpIfIndex, as defined in the
           NHDP-MIB (RFC 6779).

           The objects in this table are persistent, and when
           written, the device SHOULD save the change to
           non-volatile storage. For further information
           on the storage behavior for these objects, refer
           to the description for the nhdpIfRowStatus
           object in the NHDP-MIB (RFC6779)."
       REFERENCE
          "RFC 6779 - Definition of Managed Objects for
           the Neighborhood Discovery Protocol,
           Herberg, U., Cole, R.G., and I. Chakeres,
           October 2012"
       AUGMENTS { nhdpInterfaceEntry }
    ::= { olsrv2InterfaceTable 1 }

    Olsrv2InterfaceEntry ::=
       SEQUENCE {
          olsrv2InterfaceAdminStatus

```
        Olsrv2StatusTC
    }

olsrv2InterfaceAdminStatus OBJECT-TYPE
    SYNTAX       Olsrv2StatusTC
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
       "The OLSRv2 interface's administrative status.
        The value 'enabled(1)' denotes that the interface
        is permitted to participate in the OLSRv2 routing
        process.  The value 'disabled(2)' denotes that
        the interface is not permitted to participate
        in the OLSRv2 routing process.

        The configuration objects for the OLSRv2 routing
        process, other than the administrative status objects,
        are common to all interfaces on this device.
        As such, the OLSRv2 configuration objects are globally
        defined for the device and are not contained within
        the olsrv2InterfaceTable."
    DEFVAL { disabled }
::= { olsrv2InterfaceEntry 1 }

olsrv2OrigIpAddrType  OBJECT-TYPE
    SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
       "The type of the olsrv2OrigIpAddr, as defined
        in the InetAddress MIB module (RFC 4001).

        Only the values 'ipv4(1)' and
        'ipv6(2)' are supported."
    REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
::= { olsrv2ConfigurationGroup 3 }

olsrv2OrigIpAddr  OBJECT-TYPE
    SYNTAX       InetAddress (SIZE(4|16))
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
       "The router's originator address.  An address that
        is unique (within the MANET) to this router.
```

```
        This object is persistent, and when written,
        the entity SHOULD save the change to
        non-volatile storage."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
::= { olsrv2ConfigurationGroup 4 }


--
-- Local History Times
--

olsrv2OHoldTime  OBJECT-TYPE
    SYNTAX       Unsigned32
    UNITS        "milliseconds"
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
        "olsrv2OHoldTime corresponds to
        O_HOLD_TIME of OLSRv2, and represents the
        time for which a recently used and replaced
        originator address is used to recognize the router's
        own messages.

        Guidance for setting this object may be found
        in Section 5 of the OLSRv2 specification (RFC 7181),
        which indicates that:
             o  olsrv2OHoldTime > 0

        This object is persistent, and when written,
        the entity SHOULD save the change to
        non-volatile storage."
    REFERENCE
        "Section 5 on Protocol Parameters.
         RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    DEFVAL { 30000 }
  ::= { olsrv2ConfigurationGroup 5 }


--
-- Message intervals
--

olsrv2TcInterval  OBJECT-TYPE
    SYNTAX       Olsrv2TimeValueCompressedForm32TC
```

```
        UNITS        "milliseconds"
        MAX-ACCESS   read-write
        STATUS       current
        DESCRIPTION
           "olsrv2TcInterval corresponds to
           TC_INTERVAL of OLSRv2 and represents the
           maximum time between the transmission of
           two successive TC messages by this router.

           Guidance for setting this object may be found
           in Section 5 of the OLSRv2 specification (RFC 7181),
           which indicates that:

               o olsrv2TcInterval > 0
               o olsrv2TcInterval >= olsrv2TcMinInterval

           This object is persistent, and when written,
           the entity SHOULD save the change to
           non-volatile storage."
        REFERENCE
           "Section 5 on Representing Time.
            RFC 5497 - Representing Multi-Value Time in
            Mobile Ad Hoc Networks (MANETs),
            Clausen, T. and C. Dearlove, March 2009.

            and

            Section 5 on Protocol Parameters.
            RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
        DEFVAL { 5000 }
     ::= { olsrv2ConfigurationGroup 6 }

   olsrv2TcMinInterval  OBJECT-TYPE
        SYNTAX       Olsrv2TimeValueCompressedForm32TC
        UNITS        "milliseconds"
        MAX-ACCESS   read-write
        STATUS       current
        DESCRIPTION
           "olsrv2TcMinInterval corresponds to
           TC_MIN_INTERVAL of OLSRv2 and represents
           the minimum interval between transmission of
           two successive TC messages by this router.

           Guidance for setting this object may be found
           in Section 5 of the OLSRv2 specification (RFC 7181),
           which indicates that:
```

             o olsrv2TcInterval >= olsrv2TcMinInterval

        The OLSRv2 protocol may choose to represent this
        time interval in terms of the 8-bit exponent-mantissa
        form defined in Section 5 of RFC 5497. When this
        is the case, this object value MUST be translated
        from the integer form represented in this
        MIB module into the exponent-mantissa form for the
        OLSRv2 protocol to use according to the algorithm
        defined in Section 5 of RFC 5497 for finding the
        next larger time value within the exponent-mantissa
        format.

        This object is persistent, and when written,
        the entity SHOULD save the change to
        non-volatile storage."
    REFERENCE
        "Section 5 on Representing Time.
         RFC 5497 - Representing Multi-Value Time in
         Mobile Ad Hoc Networks (MANETs),
         Clausen, T. and C. Dearlove, March 2009.

         and

         Section 5 on Protocol Parameters.
         RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    DEFVAL { 1250 }
  ::= { olsrv2ConfigurationGroup 7 }

  --
  -- Advertised information validity times
  --

  olsrv2THoldTime OBJECT-TYPE
      SYNTAX   Olsrv2TimeValueCompressedForm32TC
      UNITS   "milliseconds"
      MAX-ACCESS   read-write
      STATUS   current
      DESCRIPTION
         "olsrv2THoldTime corresponds to
         T_HOLD_TIME of OLSRv2 and is used as the
         minimum value in the TLV with
         Type = VALIDITY_TIME included in all
         TC messages sent by this router.

          Guidance for setting this object may be found
          in Section 5 of the OLSRv2 specification (RFC 7181),
          which indicates that:
              o olsrv2THoldTime >= olsrv2TcInterval
              o If TC messages can be lost, then
                olsrv2THoldTime SHOULD be
                significantly greater than olsrv2TcInterval;
                a value >= 3 x olsrv2TcInterval is RECOMMENDED.

          This object is persistent, and when written,
          the entity SHOULD save the change to
          non-volatile storage."
      REFERENCE
          "Section 5 on Representing Time.
           RFC 5497 - Representing Multi-Value Time in
           Mobile Ad Hoc Networks (MANETs),
           Clausen, T. and C. Dearlove, March 2009.

           and

           Section 5 on Protocol Parameters.
           RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
      DEFVAL { 15000 }
    ::= { olsrv2ConfigurationGroup 8 }

    olsrv2AHoldTime   OBJECT-TYPE
      SYNTAX   Olsrv2TimeValueCompressedForm32TC
      UNITS   "milliseconds"
      MAX-ACCESS   read-write
      STATUS   current
      DESCRIPTION
          "olsrv2AHoldTime corresponds to
          A_HOLD_TIME of OLSRv2 and represents
          the period during which TC messages are sent
          after they no longer have any advertised
          information to report, but are sent in order
          to accelerate outdated information removal by other
          routers.

          Guidance for setting this object may be found
          in Section 5 of the OLSRv2 specification (RFC 7181),
          which indicates that:
              o If TC messages can be lost, then
                olsrv2AHoldTime SHOULD be
                significantly greater than olsrv2TcInterval;
                a value >= 3 x olsrv2TcInterval is

                  RECOMMENDED.

              This object is persistent, and when written,
              the entity SHOULD save the change to
              non-volatile storage."
          REFERENCE
              "Section 5 on Representing Time.
               RFC 5497 - Representing Multi-Value Time in
               Mobile Ad Hoc Networks (MANETs),
               Clausen, T. and C. Dearlove, March 2009.

               and

               Section 5 on Protocol Parameters.
               RFC 7181 - The Optimized Link State Routing Protocol
               Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
               and U. Herberg, April 2014."
          DEFVAL { 15000 }
      ::= { olsrv2ConfigurationGroup 9 }

      --
      -- Received message validity times
      --

      olsrv2RxHoldTime OBJECT-TYPE
          SYNTAX   Unsigned32
          UNITS   "milliseconds"
          MAX-ACCESS   read-write
          STATUS   current
          DESCRIPTION
              "olsrv2RxHoldTime corresponds to
              RX_HOLD_TIME of OLSRv2 and represents the period
              after receipt of a message by the appropriate OLSRv2
              interface of this router for which that information
              is recorded, in order that the message is recognized
              as having been previously received on this OLSRv2
              interface.

              Guidance for setting this object may be found
              in Section 5 of the OLSRv2 specification (RFC 7181),
              which indicates that:
                 o olsrv2RxHoldTime > 0
                 o This parameter SHOULD be greater
                   than the maximum difference in time that a
                   message may take to traverse the MANET,
                   taking into account any message forwarding
                   jitter as well as propagation, queuing,
                   and processing delays.

            This object is persistent, and when written,
            the entity SHOULD save the change to
            non-volatile storage."
        REFERENCE
            "Section 5 on Protocol Parameters.
            RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
        DEFVAL { 30000 }
    ::= { olsrv2ConfigurationGroup 10 }

    olsrv2PHoldTime OBJECT-TYPE
        SYNTAX   Unsigned32
        UNITS   "milliseconds"
        MAX-ACCESS read-write
        STATUS   current
        DESCRIPTION
            "olsrv2PHoldTime corresponds to
            P_HOLD_TIME of OLSRv2 and represents the period
            after receipt of a message that is processed by
            this router for which that information is recorded,
            in order that the message is not processed again
            if received again.

            Guidance for setting this object may be found
            in Section 5 of the OLSRv2 specification (RFC 7181),
            which indicates that:
                o olsrv2PHoldTime > 0
                o This parameter SHOULD be greater
                  than the maximum difference in time that a
                  message may take to traverse the MANET,
                  taking into account any message forwarding
                  jitter as well as propagation, queuing,
                  and processing delays.

            This object is persistent, and when written,
            the entity SHOULD save the change to
            non-volatile storage."
        REFERENCE
            "Section 5 on Protocol Parameters.
            RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
        DEFVAL { 30000 }
    ::= { olsrv2ConfigurationGroup 11 }

    olsrv2FHoldTime OBJECT-TYPE
        SYNTAX   Unsigned32

```
        UNITS       "milliseconds"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "olsrv2FHoldTime corresponds to
             F_HOLD_TIME of OLSRv2 and represents the period
             after receipt of a message that is forwarded by this
             router for which that information is recorded, in order
             that the message is not forwarded again if received again.

             Guidance for setting this object may be found
             in Section 5 of the OLSRv2 specification (RFC 7181),
             which indicates that:
                o olsrv2FHoldTime > 0
                o This parameter SHOULD be greater
                   than the maximum difference in time that a
                   message may take to traverse the MANET,
                   taking into account any message forwarding
                   jitter as well as propagation, queuing,
                   and processing delays.

             This object is persistent, and when written,
             the entity SHOULD save the change to
             non-volatile storage."
        REFERENCE
            "Section 5 on Protocol Parameters.
             RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
        DEFVAL { 30000 }
    ::= { olsrv2ConfigurationGroup 12 }

    --
    -- Jitter times
    --

    olsrv2TpMaxJitter  OBJECT-TYPE
        SYNTAX      Unsigned32
        UNITS       "milliseconds"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
            "olsrv2TpMaxJitter corresponds to
             TP_MAXJITTER of OLSRv2 and represents the value
             of MAXJITTER used in RFC 5148 for periodically
             generated TC messages sent by this router.

             For constraints on these parameters, see RFC 5148.
```

              This object is persistent, and when written,
              the entity SHOULD save the change to
              non-volatile storage."
          REFERENCE
              "Section 5 on Protocol Parameters.
              RFC 7181 - The Optimized Link State Routing Protocol
              Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
              and U. Herberg, April 2014."
          DEFVAL { 500 }
       ::= { olsrv2ConfigurationGroup 13 }

    olsrv2TtMaxJitter OBJECT-TYPE
          SYNTAX   Unsigned32
          UNITS   "milliseconds"
          MAX-ACCESS read-write
          STATUS   current
          DESCRIPTION
              "olsrv2TtMaxJitter corresponds to
              TT_MAXJITTER of OLSRv2 and represents the value
              of MAXJITTER used in RFC 5148 for externally
              triggered TC messages sent by this router.

              For constraints on these parameters, see RFC 5148.

              This object is persistent, and when written,
              the entity SHOULD save the change to
              non-volatile storage."
          REFERENCE
              "Section 5 on Protocol Parameters.
              RFC 7181 - The Optimized Link State Routing Protocol
              Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
              and U. Herberg, April 2014."
          DEFVAL { 500 }
       ::= { olsrv2ConfigurationGroup 14 }

    olsrv2FMaxJitter OBJECT-TYPE
          SYNTAX   Unsigned32
          UNITS   "milliseconds"
          MAX-ACCESS read-write
          STATUS   current
          DESCRIPTION
              "olsrv2FMaxJitter corresponds to
              F_MAXJITTER of OLSRv2 and represents the
              default value of MAXJITTER used in RFC 5148 for
              messages forwarded by this router.

              For constraints on these parameters, see RFC 5148.

            This object is persistent, and when written,
            the entity SHOULD save the change to
            non-volatile storage."
       REFERENCE
          "Section 5 on Protocol Parameters.
           RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
       DEFVAL { 500 }
    ::= { olsrv2ConfigurationGroup 15 }

    --
    -- Hop limits
    --

    olsrv2TcHopLimit OBJECT-TYPE
       SYNTAX   Unsigned32 (0..255)
       UNITS   "hops"
       MAX-ACCESS   read-write
       STATUS   current
       DESCRIPTION
          "olsrv2TcHopLimit corresponds to
           TC_HOP_LIMIT of OLSRv2.

           Guidance for setting this object may be found
           in Section 5 of the OLSRv2 specification (RFC 7181),
           which indicates that:
              o The maximum value of
                olsrv2TcHopLimit >= the network diameter
                in hops, a value of 255 is RECOMMENDED.
              o olsrv2TcHopLimit >= 2.

           This object is persistent, and when written,
           the entity SHOULD save the change to
           non-volatile storage."
        REFERENCE
          "Section 5 on Protocol Parameters.
           RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
        DEFVAL { 255 }
    ::= { olsrv2ConfigurationGroup 16 }

    --
    -- Willingness
    --

    olsrv2WillRouting OBJECT-TYPE

```
        SYNTAX       WillingnessTC
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
         "olsrv2WillRouting corresponds to
          WILL_ROUTING of OLSRv2.

          Guidance for setting this object may be found
          in Section 5 of the OLSRv2 specification (RFC 7181),
          which indicates that:
              o WILL_NEVER (0) <= olsrv2WillRouting <=
                               WILL_ALWAYS (15)

          This object is persistent, and when written,
          the entity SHOULD save the change to
          non-volatile storage."
     REFERENCE
         "Section 5 on Protocol Parameters.
          RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
     DEFVAL { 7 }
   ::= { olsrv2ConfigurationGroup 17 }

 olsrv2WillFlooding     OBJECT-TYPE
     SYNTAX       WillingnessTC
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
         "olsrv2WillFlooding corresponds to
          WILL_FLOODING of OLSRv2.

          Guidance for setting this object may be found
          in Section 5 of the OLSRv2 specification (RFC 7181),
          which indicates that:
              o WILL_NEVER (0) <= olsrv2WillFlooding <=
                               WILL_ALWAYS (15)

          This object is persistent, and when written,
          the entity SHOULD save the change to
          non-volatile storage."
     REFERENCE
         "Section 5 on Protocol Parameters.
          RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
     DEFVAL { 7 }
   ::= { olsrv2ConfigurationGroup 18 }
```

```
   olsrv2LinkMetricType  OBJECT-TYPE
      SYNTAX       IANAolsrv2LinkMetricTypeTC
      MAX-ACCESS   read-write
      STATUS       current
      DESCRIPTION
          "olsrv2LinkMetricType corresponds to
           LINK_METRIC_TYPE of OLSRv2.

           If olsrv2LinkMetricType changes, then all
           link metric information recorded by this router
           is invalid.  The router MUST take the
           actions described in Section 5.5.
           'Parameter Change Constraints' and
           Section 17 'Information Base Changes'
           in RFC 7181.

           This object is persistent, and when written,
           the entity SHOULD save the change to
           non-volatile storage."
      REFERENCE
          "Section 5 on Protocol Parameters.
           RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
      DEFVAL { unknown }
   ::= { olsrv2ConfigurationGroup 19 }

--
-- olsrv2StateGroup
--


--
-- Contains information describing the current state of
-- the OLSRv2 process.
--

olsrv2StateGroup  OBJECT IDENTIFIER ::= { olsrv2MIBObjects 2 }

   --
   -- Interface Information Base (IIB)
   --


   --
   -- Link Set from RFC 6130, extended by L_in_metric,
   -- L_out_metric, and L_mpr_selector entries for each tuple
   --

   olsrv2IibLinkSetTable OBJECT-TYPE
```

```
     SYNTAX       SEQUENCE OF Olsrv2IibLinkSetEntry
     MAX-ACCESS   not-accessible
     STATUS       current
     DESCRIPTION
        "A Link Set of an interface records all links
         from other routers that are, or recently
         were, 1-hop neighbors."
     REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2StateGroup 1 }

  olsrv2IibLinkSetEntry  OBJECT-TYPE
     SYNTAX       Olsrv2IibLinkSetEntry
     MAX-ACCESS   not-accessible
     STATUS       current
     DESCRIPTION
        "A Link Set consists of Link Tuples, each
         representing a single link indexed by the
         local and remote interface pair.  Each Link Set
         from NHDP is extended by OLSRv2 by the following
         fields:

         (L_in_metric (olsrv2IibLinkSetInMetricValue),
          L_out_metric (olsrv2IibLinkSetOutMetricValue),
          L_mpr_selector (olsrv2IibLinkSetMprSelector))"
     REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
     AUGMENTS { nhdpIibLinkSetEntry }
  ::= { olsrv2IibLinkSetTable 1 }

  Olsrv2IibLinkSetEntry ::=
     SEQUENCE {
        olsrv2IibLinkSetInMetricValue
           Olsrv2MetricValueCompressedFormTC,
        olsrv2IibLinkSetOutMetricValue
           Olsrv2MetricValueCompressedFormTC,
        olsrv2IibLinkSetMprSelector
           TruthValue
     }

  olsrv2IibLinkSetInMetricValue  OBJECT-TYPE
     SYNTAX       Olsrv2MetricValueCompressedFormTC
     MAX-ACCESS   read-only
     STATUS       current
```

```
      DESCRIPTION
          "olsrv2IibLinkSetInMetricValue is the metric of the link
           from the OLSRv2 interface with addresses
           L_neighbor_iface_addr_list to this OLSRv2 interface.
           The L_neighbor_iface_addr_list is identified by
           the nhdpDiscIfIndex, which is an index to the
           nhdpIibLinkSetTable, which this table augments."
      REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
    ::= { olsrv2IibLinkSetEntry 1 }

   olsrv2IibLinkSetOutMetricValue  OBJECT-TYPE
      SYNTAX      Olsrv2MetricValueCompressedFormTC
      MAX-ACCESS  read-write
      STATUS      current
      DESCRIPTION
          "olsrv2IibLinkSetOutMetricValue is the metric of the
           link to the OLSRv2 interface with addresses
           L_neighbor_iface_addr_list from this OLSRv2 interface.
           The L_neighbor_iface_addr_list is identified by
           the nhdpDiscIfIndex, which is an index to the
           nhdpIibLinkSetTable, which this table augments."
      REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
    ::= { olsrv2IibLinkSetEntry 2 }

   olsrv2IibLinkSetMprSelector  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
          "olsrv2IibLinkSetMprSelector is a boolean flag,
           recording whether this neighbor has selected this router
           as a flooding MPR, i.e., is a flooding MPR selector
           of this router."
      REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
    ::= { olsrv2IibLinkSetEntry 3 }

   --
   -- 2-Hop Set; from RFC 6130, extended by OLSRv2 by the
   -- following fields: N2_in_metric, N2_out_metric
```

```
     --

     olsrv2Iib2HopSetTable OBJECT-TYPE
         SYNTAX      SEQUENCE OF Olsrv2Iib2HopSetEntry
         MAX-ACCESS  not-accessible
         STATUS      current
         DESCRIPTION
             "A 2-Hop Set of an interface records network
              addresses of symmetric 2-hop neighbors, and
              the symmetric links to symmetric 1-hop neighbors
              through which these symmetric 2-hop neighbors
              can be reached.  It consists of 2-Hop Tuples."
         REFERENCE
             "RFC 7181 - The Optimized Link State Routing Protocol
              Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
              and U. Herberg, April 2014."
     ::= { olsrv2StateGroup 2 }

     olsrv2Iib2HopSetEntry  OBJECT-TYPE
         SYNTAX      Olsrv2Iib2HopSetEntry
         MAX-ACCESS  not-accessible
         STATUS      current
         DESCRIPTION
             "olsrv2Iib2HopSetTable consists of 2-Hop Tuples,
              each representing a single network address of
              a symmetric 2-hop neighbor and a single MANET
              interface of a symmetric 1-hop neighbor.
              Each 2-Hop Set from NHDP is extended by
              OLSRv2 by the following fields:

              (N2_in_metric (olsrv2Iib2HopSetInMetricValue),
               N2_out_metric (olsrv2Iib2HopSetOutMetricValue))"
         REFERENCE
             "RFC 7181 - The Optimized Link State Routing Protocol
              Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
              and U. Herberg, April 2014."
         AUGMENTS { nhdpIib2HopSetEntry }
     ::= { olsrv2Iib2HopSetTable 1 }

     Olsrv2Iib2HopSetEntry ::=
         SEQUENCE {
             olsrv2Iib2HopSetInMetricValue
                 Olsrv2MetricValueCompressedFormTC,
             olsrv2Iib2HopSetOutMetricValue
                 Olsrv2MetricValueCompressedFormTC
         }

     olsrv2Iib2HopSetInMetricValue  OBJECT-TYPE
```

```
       SYNTAX       Olsrv2MetricValueCompressedFormTC
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "olsrv2Iib2HopSetInMetricValue is the neighbor
         metric from the router with address
         N2_2hop_iface_addr to the router
         with OLSRv2 interface addresses
         N2_neighbor_iface_addr_list.

         The N2_2hop_iface_addr is identified by the
         (nhdpIib2HopSetIpAddressType,
         nhdpIib2HopSetIpAddress) pair from the
         nhdpIibLinkSetTable, which this table augments.

         The N2_neighbor_iface_addr_list is defined by
         the nhdpDiscIfIndex, which is an index of the
         nhdpIibLinkSetTable, which this table augments."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014.

         and

         RFC 6779 - Definition of Managed Objects for the
         Neighborhood Discovery Process, Herberg, U.,
         Cole, R., and I. Chakeres, October 2012."
    ::= { olsrv2Iib2HopSetEntry 1 }

olsrv2Iib2HopSetOutMetricValue  OBJECT-TYPE
    SYNTAX       Olsrv2MetricValueCompressedFormTC
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "olsrv2Iib2HopSetOutMetricValue is the neighbor metric
         to the router with address N2_2hop_iface_addr
         from the router with OLSRv2 interface addresses
         N2_neighbor_iface_addr_list.

         The N2_2hop_iface_addr is identified by the
         (nhdpIib2HopSetIpAddressType,
         nhdpIib2HopSetIpAddress) pair from the
         nhdpIibLinkSetTable, which this table augments.

         The N2_neighbor_iface_addr_list is defined by
         the nhdpDiscIfIndex, which is an index of the
         nhdpIibLinkSetTable, which this table augments."
```

```
          REFERENCE
              "RFC 7181 - The Optimized Link State Routing Protocol
               Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
               and U. Herberg, April 2014.

               and

               RFC 6779 - Definition of Managed Objects for the
               Neighborhood Discovery Process, Herberg, U.,
               Cole, R., and I. Chakeres, October 2012."
      ::= { olsrv2Iib2HopSetEntry 2 }

      --
      -- Local Information Base  - as defined in RFC 6130,
      -- extended by the addition of an Originator Set,
      -- defined in Section 6.1 and a Local Attached
      -- Network Set, defined in Section 6.2.
      --


      --
      -- Originator Set
      --

      olsrv2LibOrigSetTable OBJECT-TYPE
          SYNTAX      SEQUENCE OF Olsrv2LibOrigSetEntry
          MAX-ACCESS  not-accessible
          STATUS      current
          DESCRIPTION
              "A router's Originator Set records addresses
               that were recently used as originator addresses
               by this router."
           REFERENCE
              "RFC 7181 - The Optimized Link State Routing Protocol
               Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
               and U. Herberg, April 2014."
      ::= { olsrv2StateGroup 3 }

      olsrv2LibOrigSetEntry  OBJECT-TYPE
          SYNTAX      Olsrv2LibOrigSetEntry
          MAX-ACCESS  not-accessible
          STATUS      current
          DESCRIPTION
              "A router's Originator Set consists of
               Originator Tuples:

               (O_orig_addr (olsrv2LibOrigSetIpAddrType
                and olsrv2LibOrigSetIpAddr),
                O_time (olsrv2LibOrigSetExpireTime))."
```

```
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
         INDEX { olsrv2LibOrigSetIpAddrType,
                 olsrv2LibOrigSetIpAddr }
      ::= { olsrv2LibOrigSetTable 1 }

      Olsrv2LibOrigSetEntry ::=
         SEQUENCE {
            olsrv2LibOrigSetIpAddrType
               InetAddressType,
            olsrv2LibOrigSetIpAddr
               InetAddress,
            olsrv2LibOrigSetExpireTime
               TimeStamp
         }

      olsrv2LibOrigSetIpAddrType  OBJECT-TYPE
         SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
         MAX-ACCESS   not-accessible
         STATUS       current
         DESCRIPTION
            "The type of the olsrv2LibOrigSetIpAddr,
             as defined in the InetAddress MIB (RFC4001).

             Only the values 'ipv4(1)' and
             'ipv6(2)' are supported."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
      ::= { olsrv2LibOrigSetEntry 1 }

      olsrv2LibOrigSetIpAddr  OBJECT-TYPE
         SYNTAX       InetAddress (SIZE(4|16))
         MAX-ACCESS   not-accessible
         STATUS       current
         DESCRIPTION
            "An originator address recently employed
             by this router."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
      ::= { olsrv2LibOrigSetEntry 2 }

      olsrv2LibOrigSetExpireTime  OBJECT-TYPE
```

```
    SYNTAX      TimeStamp
    UNITS       "centiseconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "olsrv2LibOrigSetExpireTime specifies the value
         of sysUptime when this entry SHOULD expire and be
         removed from the olsrv2LibOrigSetTable.  This time
         is determined at the time the entry is added,
         derived from the following expression:

             O_time := current time + O_HOLD_TIME

         where O_time is olsrv2LibOrigSetExpireTime,
         current_time is current sysUptime, and
         O_HOLD_TIME is a parameter of the OLSRv2
         protocol.  In the event that the
         O_HOLD_TIME is changed, the
         olsrv2LibOrigSetExpireTime needs to be
         recomputed for each of the entries in this table."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    ::= { olsrv2LibOrigSetEntry 3 }


 --
 -- Local Attached Network Set
 --

 olsrv2LibLocAttNetSetTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Olsrv2LibLocAttNetSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A router's Local Attached Network Set records
         its local non-OLSRv2 interfaces via which it
         can act as a gateway to other networks."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    ::= { olsrv2StateGroup 4 }

 olsrv2LibLocAttNetSetEntry  OBJECT-TYPE
    SYNTAX      Olsrv2LibLocAttNetSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
```

        DESCRIPTION
            "The entries include the Local Attached
             Network Tuples:

             (AL_net_addr (olsrv2LibLocAttNetSetIpAddr),
              AL_dist (olsrv2LibLocAttNetSetDistance),
              AL_metric (olsrv2LibLocAttNetSetMetricValue)
)

             where:

                AL_net_addr is the network address
                of an attached network that can
                be reached via this router. The
                AL_net_addr is defined in this MIB
                module by the tuple
                (olsrv2LibLocAttNetSetIpAddrType,
                 olsrv2LibLocAttNetSetIpAddr,
                 olsrv2LibLocAttNetSetIpAddrPrefixLen).

                AL_dist is the number of hops to
                the network with address AL_net_addr
                from this router. The AL_dist is
                defined in this MIB module by the
                olsrv2LibLocAttNetSetDistance object.

                AL_metric is the metric of the link to
                the attached network with address
                AL_net_addr from this router. The
                AL_metric is defined in this MIB module
                by the olsrv2LibLocAttNetSetMetricValue
                object.

            OLSRv2 (RFC 7181) defines the rules for managing
            entries within this table, e.g., populating
            and purging entries. Specific instructions for the
            olsrv2LibLocAttNetSetEntry(s) are found in
            Sections 7.2 and 17 of OLSRv2 (RFC 7181)."
        REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
        INDEX { olsrv2LibLocAttNetSetIpAddrType,
                olsrv2LibLocAttNetSetIpAddr,
                olsrv2LibLocAttNetSetIpAddrPrefixLen }
    ::= { olsrv2LibLocAttNetSetTable 1 }

    Olsrv2LibLocAttNetSetEntry ::=

```
      SEQUENCE {
         olsrv2LibLocAttNetSetIpAddrType
             InetAddressType,
         olsrv2LibLocAttNetSetIpAddr
             InetAddress,
         olsrv2LibLocAttNetSetIpAddrPrefixLen
             InetAddressPrefixLength,
         olsrv2LibLocAttNetSetDistance
             Unsigned32,
         olsrv2LibLocAttNetSetMetricValue
             Olsrv2MetricValueCompressedFormTC
      }

   olsrv2LibLocAttNetSetIpAddrType  OBJECT-TYPE
      SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "The type of the olsrv2LibLocAttNetSetIpAddr, as defined
          in the InetAddress MIB (RFC 4001).

          Only the values 'ipv4(1)' and
          'ipv6(2)' are supported."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2LibLocAttNetSetEntry 1 }

   olsrv2LibLocAttNetSetIpAddr  OBJECT-TYPE
      SYNTAX       InetAddress (SIZE(4|16))
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "This is the network address of an attached
          network that can be reached via this router."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2LibLocAttNetSetEntry 2 }

   olsrv2LibLocAttNetSetIpAddrPrefixLen  OBJECT-TYPE
      SYNTAX       InetAddressPrefixLength
      UNITS        "bits"
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
```

```
        "Indicates the number of leading one bits that form the
         mask to be logically ANDed with the destination address
         before being compared to the value in the
         olsrv2LibLocAttNetSetIpAddr field."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2LibLocAttNetSetEntry 3 }

olsrv2LibLocAttNetSetDistance  OBJECT-TYPE
    SYNTAX      Unsigned32 (1..255)
    UNITS       "hops"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object specifies the number of hops
         to the network with address
         olsrv2LibLocAttNetSetIpAddr from this router."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2LibLocAttNetSetEntry 4 }

olsrv2LibLocAttNetSetMetricValue  OBJECT-TYPE
    SYNTAX      Olsrv2MetricValueCompressedFormTC
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object specifies the metric of the
         link to the attached network with
         address AL_net_addr from this router.  The
         AL_net_addr is defined by the tuple
         (olsrv2LibLocAttNetSetIpAddrType,
          olsrv2LibLocAttNetSetIpAddr,
          olsrv2LibLocAttNetSetIpAddrPrefixLen)."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2LibLocAttNetSetEntry 5 }

--
-- Neighbor Information Base
--

--
```

```
   -- Neighbor Set - as defined in RFC 6130,
   -- extended by OLSRv2 by the addition of the following
   -- elements to each Neighbor Tuple:
   --     N_orig_addr (olsrv2NibNeighborSetNOrigIpAddrType,
   --                  olsrv2NibNeighborSetNOrigIpAddr)
   --     N_in_metric (olsrv2NibNeighborSetNInMetricValue)
   --     N_out_metric (olsrv2NibNeighborSetNOutMetricValue)
   --     N_will_flooding (olsrv2NibNeighborSetNWillFlooding)
   --     N_will_routing (olsrv2NibNeighborSetNWillRouting)
   --     N_flooding_mpr (olsrv2NibNeighborSetNFloodingMpr)
   --     N_routing_mpr (olsrv2NibNeighborSetNRoutingMpr)
   --     N_mpr_selector (olsrv2NibNeighborSetNMprSelector)
   --     N_advertised (olsrv2NibNeighborSetNAdvertised)
   --

   olsrv2NibNeighborSetTable OBJECT-TYPE
      SYNTAX       SEQUENCE OF Olsrv2NibNeighborSetEntry
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "A router's Neighbor Set records all network
          addresses of each 1-hop neighbor.  It consists
          of Neighbor Tuples, each representing a single
          1-hop neighbor."
       REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
    ::= { olsrv2StateGroup 5 }

    olsrv2NibNeighborSetEntry  OBJECT-TYPE
      SYNTAX       Olsrv2NibNeighborSetEntry
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "Each Neighbor Tuple in the Neighbor Set, defined
          in RFC 6130, has these additional elements:
              N_orig_addr (olsrv2NibNeighborSetNOrigIpAddrType,
                           olsrv2NibNeighborSetNOrigIpAddr)
              N_in_metric (olsrv2NibNeighborSetNInMetricValue)
              N_out_metric (olsrv2NibNeighborSetNOutMetricValue)
              N_will_flooding (olsrv2NibNeighborSetNWillFlooding)
              N_will_routing (olsrv2NibNeighborSetNWillRouting)
              N_flooding_mpr (olsrv2NibNeighborSetNFloodingMpr)
              N_routing_mpr (olsrv2NibNeighborSetNRoutingMpr)
              N_mpr_selector (olsrv2NibNeighborSetNMprSelector)
              N_advertised (olsrv2NibNeighborSetNAdvertised)
           defined here as extensions."
```

```
      REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
      AUGMENTS { nhdpNibNeighborSetEntry }
   ::= { olsrv2NibNeighborSetTable 1 }

   Olsrv2NibNeighborSetEntry ::=
      SEQUENCE {
         olsrv2NibNeighborSetNOrigIpAddrType
            InetAddressType,
         olsrv2NibNeighborSetNOrigIpAddr
            InetAddress,
         olsrv2NibNeighborSetNInMetricValue
            Olsrv2MetricValueCompressedFormTC,
         olsrv2NibNeighborSetNOutMetricValue
            Olsrv2MetricValueCompressedFormTC,
         olsrv2NibNeighborSetNWillFlooding
            WillingnessTC,
         olsrv2NibNeighborSetNWillRouting
            WillingnessTC,
         olsrv2NibNeighborSetNFloodingMpr
            TruthValue,
         olsrv2NibNeighborSetNRoutingMpr
            TruthValue,
         olsrv2NibNeighborSetNMprSelector
            TruthValue,
         olsrv2NibNeighborSetNAdvertised
            TruthValue
      }

   olsrv2NibNeighborSetNOrigIpAddrType  OBJECT-TYPE
      SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "The type of the olsrv2NibNeighborSetNOrigIpAddr, as defined
          in the InetAddress MIB module (RFC4001).

          Only the values 'ipv4(1)' and
          'ipv6(2)' are supported."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2NibNeighborSetEntry 1 }

   olsrv2NibNeighborSetNOrigIpAddr  OBJECT-TYPE
```

```
   SYNTAX       InetAddress (SIZE(4|16))
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
       "This is the originator IP address of the neighbor
        represented by this table entry."
   REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
 ::= { olsrv2NibNeighborSetEntry 2 }

 olsrv2NibNeighborSetNInMetricValue  OBJECT-TYPE
   SYNTAX       Olsrv2MetricValueCompressedFormTC
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
       "This object is the neighbor metric of any
        link from this neighbor to an OLSRv2 interface
        of this router, i.e., the minimum of all corresponding
        L_in_metric (olsrv2IibLinkSetInMetricValue)
        with L_status = SYMMETRIC and
        L_in_metric (olsrv2IibLinkSetInMetricValue) != UNKNOWN_METRIC,
        UNKNOWN_METRIC if there are no such Link Tuples.
        UNKNOWN_METRIC has a value of 0."
   REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
 ::= { olsrv2NibNeighborSetEntry 3 }

 olsrv2NibNeighborSetNOutMetricValue  OBJECT-TYPE
   SYNTAX       Olsrv2MetricValueCompressedFormTC
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
       "This object is the neighbor metric of any
        link from an OLSRv2 interface of this router
        to this neighbor, i.e., the minimum of all
        corresponding L_out_metric
        (olsrv2IibLinkSetOutMetricValue) with L_status =
        SYMMETRIC and L_out_metric
        (olsrv2IibLinkSetOutMetricValue) != UNKNOWN_METRIC,
        UNKNOWN_METRIC if there are no such Link Tuples.
        UNKNOWN_METRIC has a value of 0."
   REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
```

```
          and U. Herberg, April 2014."
      ::= { olsrv2NibNeighborSetEntry 4 }

   olsrv2NibNeighborSetNWillFlooding  OBJECT-TYPE
      SYNTAX      WillingnessTC
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This object is the neighbor's willingness to be
          selected as a flooding MPR, in the range from
          WILL_NEVER to WILL_ALWAYS, both inclusive, taking
          the value WILL_NEVER if no OLSRv2 specific
          information is received from this neighbor."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
      ::= { olsrv2NibNeighborSetEntry 5 }

   olsrv2NibNeighborSetNWillRouting  OBJECT-TYPE
      SYNTAX      WillingnessTC
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This object is the neighbor's willingness to be
          selected as a routing MPR, in the range from
          WILL_NEVER to WILL_ALWAYS, both inclusive, taking
          the value WILL_NEVER if no OLSRv2 specific
          information is received from this neighbor."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
      ::= { olsrv2NibNeighborSetEntry 6 }

   olsrv2NibNeighborSetNFloodingMpr  OBJECT-TYPE
      SYNTAX      TruthValue
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
         "This object is a boolean flag, recording whether
          this neighbor is selected as a flooding MPR
          by this router."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
      ::= { olsrv2NibNeighborSetEntry 7 }
```

```
olsrv2NibNeighborSetNRoutingMpr  OBJECT-TYPE
   SYNTAX      TruthValue
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
      "This object is a boolean flag, recording whether
       this neighbor is selected as a routing MPR
       by this router."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
 ::= { olsrv2NibNeighborSetEntry 8 }

olsrv2NibNeighborSetNMprSelector  OBJECT-TYPE
   SYNTAX      TruthValue
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
      "This object is a boolean flag,
       recording whether this neighbor has selected this router
       as a routing MPR, i.e., is a routing MPR
       selector of this router.

       When set to 'true', then this router is selected as
       a routing MPR by the neighbor router.
       When set to 'false',
       then this router is not selected by the neighbor
       as a routing MPR."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
 ::= { olsrv2NibNeighborSetEntry 9 }

olsrv2NibNeighborSetNAdvertised  OBJECT-TYPE
   SYNTAX      TruthValue
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
      "This object, N_mpr_selector
       (olsrv2NibNeighborSetNMprSelector), is a boolean flag,
       recording whether this router has elected to
       advertise a link to this neighbor in its TC messages."
    REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
```

```
   ::= { olsrv2NibNeighborSetEntry 10 }

   olsrv2NibNeighborSetTableAnsn OBJECT-TYPE
      SYNTAX       Unsigned32 (0..65535)
      MAX-ACCESS   read-only
      STATUS       current
      DESCRIPTION
         "Advertised Neighbor Sequence Number (ANSN), is
          a variable, whose value is included in TC messages to
          indicate the freshness of the information transmitted."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2StateGroup 6 }

   --
   -- Topology Information Base - this Information
   -- Base is specific to OLSRv2 and is defined in
   -- Section 10 of RFC 7181.
   --


   --
   -- Advertising Remote Router Set
   --

   olsrv2TibAdRemoteRouterSetTable OBJECT-TYPE
      SYNTAX       SEQUENCE OF Olsrv2TibAdRemoteRouterSetEntry
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "A router's Advertising Remote Router Set records
          information describing each remote router in the
          network that transmits TC messages."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2StateGroup 7 }

   olsrv2TibAdRemoteRouterSetEntry  OBJECT-TYPE
      SYNTAX       Olsrv2TibAdRemoteRouterSetEntry
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "A router's Advertised Neighbor Set Table entry
          consists of Advertising Remote Router Tuples:
```

```
        (AR_orig_addr (olsrv2TibAdRemoteRouterSetIpAddrType,
                       olsrv2TibAdRemoteRouterSetIpAddr),
         AR_seq_number (olsrv2TibAdRemoteRouterSetMaxSeqNo),
         AR_time (olsrv2TibAdRemoteRouterSetExpireTime).

        Addresses associated with this router are
        found in the NHDP-MIB module's nhdpDiscIfSetTable.

        OLSRv2 (RFC 7181) defines the rules for managing
        entries within this table, e.g., populating
        and purging entries.  Specific instructions for the
        olsrv2TibAdRemoteRouterSetEntry(s) are found in
        Section 10.1 and Section 17 of OLSRv2 (RFC 7181)."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
    INDEX { olsrv2TibAdRemoteRouterSetIpAddrType,
            olsrv2TibAdRemoteRouterSetIpAddr }
  ::= { olsrv2TibAdRemoteRouterSetTable 1 }

  Olsrv2TibAdRemoteRouterSetEntry ::=
    SEQUENCE {
        olsrv2TibAdRemoteRouterSetIpAddrType
           InetAddressType,
        olsrv2TibAdRemoteRouterSetIpAddr
           InetAddress,
        olsrv2TibAdRemoteRouterSetMaxSeqNo
           Unsigned32,
        olsrv2TibAdRemoteRouterSetExpireTime
           TimeStamp
    }

  olsrv2TibAdRemoteRouterSetIpAddrType  OBJECT-TYPE
    SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The type of the olsrv2TibAdRemoteRouterSetIpAddr,
        as defined in the InetAddress MIB module (RFC4001).

        Only the values 'ipv4(1)' and
        'ipv6(2)' are supported."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
  ::= { olsrv2TibAdRemoteRouterSetEntry 1 }
```

```
olsrv2TibAdRemoteRouterSetIpAddr  OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(4|16))
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "This is the originator address of a received
         TC message."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    ::= { olsrv2TibAdRemoteRouterSetEntry 2 }

olsrv2TibAdRemoteRouterSetMaxSeqNo  OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the greatest Advertised Neighbor Sequence
         Number (ANSN) in any TC message
         received that originated from the router
         with originator address
         olsrv2TibAdRemoteRouterSetIpAddr.

         Sequence numbers are used in the OLSRv2 protocol
         for the purpose of discarding 'old' information,
         i.e., messages received out of order.  However,
         with a limited number of bits for representing
         sequence numbers, wraparound (that the sequence
         number is incremented from the maximum possible
         value to zero) will occur.  To prevent this from
         interfering with the operation of this protocol,
         OLSRv2 implementations observe the following when
         determining the ordering of sequence numbers.

         In OLSRv2, MAXVALUE designates one more than the
         largest possible value for a sequence number.
         For a 16-bit sequence number, MAXVALUE is 65536.

         The sequence number S1 is said to be 'greater than'
         the sequence number S2 if:

             o  S1 > S2 AND S1 - S2 < MAXVALUE/2 OR

             o  S2 > S1 AND S2 - S1 > MAXVALUE/2

         When sequence numbers S1 and S2 differ by MAXVALUE/2,
         their ordering cannot be determined.  In this case,
```

              which should not occur, either ordering may be
              assumed.

              Thus, when comparing two messages, it is possible
              - even in the presence of wraparound - to determine
              which message contains the most recent information."
       REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
    ::= { olsrv2TibAdRemoteRouterSetEntry 3 }

    olsrv2TibAdRemoteRouterSetExpireTime OBJECT-TYPE
       SYNTAX   TimeStamp
       UNITS   "centiseconds"
       MAX-ACCESS read-only
       STATUS   current
       DESCRIPTION
           "olsrv2TibAdRemoteRouterSetExpireTime specifies the value
            of sysUptime when this entry SHOULD expire and be
            removed from the olsrv2TibAdRemoteRouterSetTable."
       REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
    ::= { olsrv2TibAdRemoteRouterSetEntry 4 }

    --
    -- Router Topology Set
    --

    olsrv2TibRouterTopologySetTable OBJECT-TYPE
       SYNTAX   SEQUENCE OF Olsrv2TibRouterTopologySetEntry
       MAX-ACCESS not-accessible
       STATUS   current
       DESCRIPTION
           "A router's Router Topology Set records topology
            information about the network."
       REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
    ::= { olsrv2StateGroup 8 }

    olsrv2TibRouterTopologySetEntry OBJECT-TYPE
       SYNTAX   Olsrv2TibRouterTopologySetEntry
       MAX-ACCESS not-accessible
       STATUS   current

         DESCRIPTION
             "It consists of Router Topology Tuples:

              (TR_from_orig_addr
                 (olsrv2TibRouterTopologySetFromOrigIpAddrType,
                  olsrv2TibRouterTopologySetFromOrigIpAddr),
               TR_to_orig_addr
                 (olsrv2TibRouterTopologySetToOrigIpAddrType,
                  olsrv2TibRouterTopologySetToOrigIpAddr),
               TR_seq_number (olsrv2TibRouterTopologySetSeqNo),
               TR_metric (olsrv2TibRouterTopologySetMetricValue),
               TR_time (olsrv2TibRouterTopologySetExpireTime)).

              OLSRv2 (RFC 7181) defines the rules for managing
              entries within this table, e.g., populating
              and purging entries. Specific instructions for the
              olsrv2TibRouterTopologySetEntry(s) are found in
              Section 10.2 and Section 17 of OLSRv2 (RFC 7181)."
         REFERENCE
             "RFC 7181 - The Optimized Link State Routing Protocol
              Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
              and U. Herberg, April 2014."
         INDEX { olsrv2TibRouterTopologySetFromOrigIpAddrType,
                 olsrv2TibRouterTopologySetFromOrigIpAddr,
                 olsrv2TibRouterTopologySetToOrigIpAddrType,
                 olsrv2TibRouterTopologySetToOrigIpAddr }
     ::= { olsrv2TibRouterTopologySetTable 1 }

     Olsrv2TibRouterTopologySetEntry ::=
         SEQUENCE {
             olsrv2TibRouterTopologySetFromOrigIpAddrType
                 InetAddressType,
             olsrv2TibRouterTopologySetFromOrigIpAddr
                 InetAddress,
             olsrv2TibRouterTopologySetToOrigIpAddrType
                 InetAddressType,
             olsrv2TibRouterTopologySetToOrigIpAddr
                 InetAddress,
             olsrv2TibRouterTopologySetSeqNo
                 Unsigned32,
             olsrv2TibRouterTopologySetMetricValue
                 Olsrv2MetricValueCompressedFormTC,
             olsrv2TibRouterTopologySetExpireTime
                 TimeStamp
         }

    olsrv2TibRouterTopologySetFromOrigIpAddrType OBJECT-TYPE
        SYNTAX   InetAddressType { ipv4(1) , ipv6(2) }

```
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "The type of the olsrv2TibRouterTopologySetFromOrigIpAddr,
            as defined in the InetAddress MIB module (RFC4001).

            Only the values 'ipv4(1)' and
            'ipv6(2)' are supported."
        REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
     ::= { olsrv2TibRouterTopologySetEntry 1 }

     olsrv2TibRouterTopologySetFromOrigIpAddr  OBJECT-TYPE
        SYNTAX      InetAddress (SIZE(4|16))
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "This is the originator address of a router that can
            reach the router with originator address TR_to_orig_addr
            in one hop."
        REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
     ::= { olsrv2TibRouterTopologySetEntry 2 }

     olsrv2TibRouterTopologySetToOrigIpAddrType  OBJECT-TYPE
        SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
        MAX-ACCESS  not-accessible
        STATUS      current
        DESCRIPTION
           "The type of the olsrv2TibRouterTopologySetToOrigIpAddr,
            as defined in the InetAddress MIB module (RFC4001).

            Only the values 'ipv4(1)' and
            'ipv6(2)' are supported."
        REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
     ::= { olsrv2TibRouterTopologySetEntry 3 }

     olsrv2TibRouterTopologySetToOrigIpAddr  OBJECT-TYPE
        SYNTAX      InetAddress (SIZE(4|16))
        MAX-ACCESS  not-accessible
        STATUS      current
```

         DESCRIPTION
            "This is the originator address of a router that can be
             reached by the router with originator address
             TR_to_orig_addr in one hop."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
      ::= { olsrv2TibRouterTopologySetEntry 4 }

   olsrv2TibRouterTopologySetSeqNo OBJECT-TYPE
      SYNTAX   Unsigned32 (0..65535)
      MAX-ACCESS   read-only
      STATUS   current
      DESCRIPTION
         "This is the greatest Advertised Neighbor Sequence
          Number (ANSN) in any TC message
          received that originated from the router
          with originator address TR_from_orig_addr,
          i.e., that contributed to the information
          contained in this Tuple and that is defined by the
          objects:
              (olsrv2TibRouterTopologySetFromOrigIpAddrType,
               olsrv2TibRouterTopologySetFromOrigIpAddr).

          Sequence numbers are used in the OLSRv2 protocol
          for the purpose of discarding 'old' information,
          i.e., messages received out of order. However,
          with a limited number of bits for representing
          sequence numbers, wraparound (that the sequence
          number is incremented from the maximum possible
          value to zero) will occur. To prevent this from
          interfering with the operation of this protocol,
          OLSRv2 implementations observe the following when
          determining the ordering of sequence numbers.

          In OLSRv2, MAXVALUE designates one more than the
          largest possible value for a sequence number.
          For a 16-bit sequence number, MAXVALUE is 65536.

          The sequence number S1 is said to be 'greater than'
          the sequence number S2 if:

              o S1 > S2 AND S1 - S2 < MAXVALUE/2 OR

              o S2 > S1 AND S2 - S1 > MAXVALUE/2

          When sequence numbers S1 and S2 differ by MAXVALUE/2,

          their ordering cannot be determined. In this case,
          which should not occur, either ordering may be
          assumed.

          Thus, when comparing two messages, it is possible
          - even in the presence of wraparound - to determine
          which message contains the most recent information."
     REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibRouterTopologySetEntry 5 }

   olsrv2TibRouterTopologySetMetricValue OBJECT-TYPE
     SYNTAX   Olsrv2MetricValueCompressedFormTC
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
         "This is the neighbor metric from the router
          with originator address TR_from_orig_addr
          (olsrv2TibRouterTopologySetFromOrigIpAddrType,
          olsrv2TibRouterTopologySetFromOrigIpAddr) to
          the router with originator address TR_to_orig_addr
          (olsrv2TibRouterTopologySetToOrigIpAddrType,
          olsrv2TibRouterTopologySetToOrigIpAddr)."
     REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibRouterTopologySetEntry 6 }

   olsrv2TibRouterTopologySetExpireTime OBJECT-TYPE
     SYNTAX   TimeStamp
     UNITS   "centiseconds"
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
         "olsrv2TibRouterTopologySetExpireTime specifies the value
          of sysUptime when this entry SHOULD expire and be
          removed from the olsrv2TibRouterTopologySetTable."
     REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibRouterTopologySetEntry 7 }

   --
   -- Routable Address Topology Set

```
   --

   olsrv2TibRoutableAddressTopologySetTable OBJECT-TYPE
       SYNTAX       SEQUENCE OF Olsrv2TibRoutableAddressTopologySetEntry
       MAX-ACCESS   not-accessible
       STATUS       current
       DESCRIPTION
          "A router's Routable Address Topology Set records topology
           information about the routable addresses within the MANET,
           including via which routers they may be reached."
       REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
       ::= { olsrv2StateGroup 9 }

   olsrv2TibRoutableAddressTopologySetEntry  OBJECT-TYPE
       SYNTAX       Olsrv2TibRoutableAddressTopologySetEntry
       MAX-ACCESS   not-accessible
       STATUS       current
       DESCRIPTION
          "It consists of Router Topology Tuples:

           (TA_from_orig_addr
                (olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType
                 olsrv2TibRoutableAddressTopologySetFromOrigIpAddr),
            TA_dest_addr
                (olsrv2TibRoutableAddressTopologySetFromDestIpAddrType
                 olsrv2TibRoutableAddressTopologySetFromDestIpAddr),
            TA_seq_number (olsrv2TibRoutableAddressTopologySetSeqNo)
            TA_metric (olsrv2TibRoutableAddressTopologySetMetricValue)
            TA_time (olsrv2TibRoutableAddressTopologySetExpireTime)
            )

           OLSRv2 (RFC 7181) defines the rules for managing
           entries within this table, e.g., populating
           and purging entries.  Specific instructions for the
           olsrv2TibRoutableAddressTopologySetEntry(s) are found
           in Section 10.3 and Section 17 of OLSRv2 (RFC 7181)."
       REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
       INDEX { olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType,
               olsrv2TibRoutableAddressTopologySetFromOrigIpAddr,
               olsrv2TibRoutableAddressTopologySetDestIpAddrType,
               olsrv2TibRoutableAddressTopologySetDestIpAddr }
       ::= { olsrv2TibRoutableAddressTopologySetTable 1 }
```

```
   Olsrv2TibRoutableAddressTopologySetEntry ::=
      SEQUENCE {
         olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType
            InetAddressType,
         olsrv2TibRoutableAddressTopologySetFromOrigIpAddr
            InetAddress,
         olsrv2TibRoutableAddressTopologySetDestIpAddrType
            InetAddressType,
         olsrv2TibRoutableAddressTopologySetDestIpAddr
            InetAddress,
         olsrv2TibRoutableAddressTopologySetSeqNo
            Unsigned32,
         olsrv2TibRoutableAddressTopologySetMetricValue
            Olsrv2MetricValueCompressedFormTC,
         olsrv2TibRoutableAddressTopologySetExpireTime
            TimeStamp
       }

   olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType  OBJECT-TYPE
      SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "The type of the
          olsrv2TibRoutableAddressTopologySetFromOrigIpAddr,
          as defined in the InetAddress MIB module (RFC 4001).

          Only the values 'ipv4(1)' and
          'ipv6(2)' are supported."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
    ::= { olsrv2TibRoutableAddressTopologySetEntry 1 }

   olsrv2TibRoutableAddressTopologySetFromOrigIpAddr  OBJECT-TYPE
      SYNTAX       InetAddress (SIZE(4|16))
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "This is the originator address of a router that can
          reach the router with routable address TA_dest_addr
          in one hop."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
    ::= { olsrv2TibRoutableAddressTopologySetEntry 2 }
```

```
olsrv2TibRoutableAddressTopologySetDestIpAddrType  OBJECT-TYPE
   SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
   MAX-ACCESS   not-accessible
   STATUS       current
   DESCRIPTION
      "The type of the olsrv2TibRouterTopologySetToOrigIpAddr,
       as defined in the InetAddress MIB module (RFC 4001).

       Only the values 'ipv4(1)' and
       'ipv6(2)' are supported."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
   ::= { olsrv2TibRoutableAddressTopologySetEntry 3 }

olsrv2TibRoutableAddressTopologySetDestIpAddr  OBJECT-TYPE
   SYNTAX       InetAddress (SIZE(4|16))
   MAX-ACCESS   not-accessible
   STATUS       current
   DESCRIPTION
      "This is a routable address of a router that can be
       reached by the router with originator address
       TA_from_orig_addr in one hop.  The TA_from_orig_addr
       is defined by the tuple
       (olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType
        olsrv2TibRoutableAddressTopologySetFromOrigIpAddr)."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
   ::= { olsrv2TibRoutableAddressTopologySetEntry 4 }

olsrv2TibRoutableAddressTopologySetSeqNo  OBJECT-TYPE
   SYNTAX       Unsigned32 (0..65535)
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
      "This is the greatest Advertised Neighbor Sequence
       Number (ANSN) in any TC message
       received that originated from the router
       with originator address TA_from_orig_addr,
       i.e., that contributed to the information
       contained in this Tuple.  The TA_from_orig_addr
       is defined by the tuple
       (olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType
        olsrv2TibRoutableAddressTopologySetFromOrigIpAddr)."
   REFERENCE
```

```
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
       ::= { olsrv2TibRoutableAddressTopologySetEntry 5 }


   olsrv2TibRoutableAddressTopologySetMetricValue  OBJECT-TYPE
       SYNTAX       Olsrv2MetricValueCompressedFormTC
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "This is the neighbor metric from the router
           with originator address TA_from_orig_addr (defined
           by the tuple
           (olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType
            olsrv2TibRoutableAddressTopologySetFromOrigIpAddr))
           to the router with OLSRv2 interface address TA_dest_addr
           (defined by the tuple
           (olsrv2TibRoutableAddressTopologySetFromDestIpAddrType
            olsrv2TibRoutableAddressTopologySetFromDestIpAddr))."
       REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
       ::= { olsrv2TibRoutableAddressTopologySetEntry 6 }


   olsrv2TibRoutableAddressTopologySetExpireTime  OBJECT-TYPE
       SYNTAX       TimeStamp
       UNITS        "centiseconds"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "olsrv2TibRoutableAddressTopologySetExpireTime
           specifies the value of sysUptime when this entry
           SHOULD expire and be removed from the
           olsrv2TibRoutableAddressTopologySetTable."
       REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
       ::= { olsrv2TibRoutableAddressTopologySetEntry 7 }


   --
   -- Attached Network Set
   --

   olsrv2TibAttNetworksSetTable OBJECT-TYPE
       SYNTAX       SEQUENCE OF Olsrv2TibAttNetworksSetEntry
       MAX-ACCESS   not-accessible
```

```
    STATUS        current
    DESCRIPTION
       "A router's Attached Network Set records information
        about networks (which may be outside the MANET)
        attached to other routers and their routable addresses."
    REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
 ::= { olsrv2StateGroup 10 }

 olsrv2TibAttNetworksSetEntry  OBJECT-TYPE
    SYNTAX        Olsrv2TibAttNetworksSetEntry
    MAX-ACCESS  not-accessible
    STATUS        current
    DESCRIPTION
       "It consists of Attached Network Tuples:

        (AN_orig_addr
           (olsrv2TibAttNetworksSetOrigIpAddrType,
            olsrv2TibAttNetworksSetOrigIpAddr),
         AN_net_addr
           (olsrv2TibAttNetworksSetNetIpAddrType,
            olsrv2TibAttNetworksSetNetIpAddr,
            olsrv2TibAttNetworksSetNetIpAddrPrefixLen),
         AN_seq_number (olsrv2TibAttNetworksSetSeqNo),
         AN_dist (olsrv2TibAttNetworksSetDist),
         AN_metric (olsrv2TibAttNetworksSetMetricValue),
         AN_time (olsrv2TibAttNetworksSetExpireTime)
        )

        OLSRv2 (RFC 7181) defines the rules for managing
        entries within this table, e.g., populating
        and purging entries.  Specific instructions for the
        olsrv2TibRoutableAddressTopologySetEntry(s) are found
        in Section 10.4 and Section 17 of OLSRv2 (RFC 7181)."
    REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
    INDEX { olsrv2TibAttNetworksSetOrigIpAddrType,
            olsrv2TibAttNetworksSetOrigIpAddr,
            olsrv2TibAttNetworksSetNetIpAddrType,
            olsrv2TibAttNetworksSetNetIpAddr,
            olsrv2TibAttNetworksSetNetIpAddrPrefixLen }
 ::= { olsrv2TibAttNetworksSetTable 1 }

 Olsrv2TibAttNetworksSetEntry ::=
```

```
      SEQUENCE {
         olsrv2TibAttNetworksSetOrigIpAddrType
            InetAddressType,
         olsrv2TibAttNetworksSetOrigIpAddr
            InetAddress,
         olsrv2TibAttNetworksSetNetIpAddrType
            InetAddressType,
         olsrv2TibAttNetworksSetNetIpAddr
            InetAddress,
         olsrv2TibAttNetworksSetNetIpAddrPrefixLen
            InetAddressPrefixLength,
         olsrv2TibAttNetworksSetSeqNo
            Unsigned32,
         olsrv2TibAttNetworksSetDist
            Unsigned32,
         olsrv2TibAttNetworksSetMetricValue
            Olsrv2MetricValueCompressedFormTC,
         olsrv2TibAttNetworksSetExpireTime
            TimeStamp
      }

   olsrv2TibAttNetworksSetOrigIpAddrType  OBJECT-TYPE
      SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "The type of the olsrv2TibAttNetworksSetOrigIpAddr,
          as defined in the InetAddress MIB module (RFC4001).

          Only the values 'ipv4(1)' and
          'ipv6(2)' are supported."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibAttNetworksSetEntry 1 }

   olsrv2TibAttNetworksSetOrigIpAddr  OBJECT-TYPE
      SYNTAX       InetAddress (SIZE(4|16))
      MAX-ACCESS   not-accessible
      STATUS       current
      DESCRIPTION
         "This is the originator address, of type
          olsrv2TibAttNetworksSetOrigIpAddrType, of a
          router that can act as gateway to the
          network with address AN_net_addr.  The
          AN_net_addr is defined by the tuple
             (olsrv2TibAttNetworksSetNetIpAddrType,
```

```
            olsrv2TibAttNetworksSetNetIpAddr,
            olsrv2TibAttNetworksSetNetIpAddrPrefixLen)."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2TibAttNetworksSetEntry 2 }

olsrv2TibAttNetworksSetNetIpAddrType  OBJECT-TYPE
    SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The type of the olsrv2TibAttNetworksSetNetIpAddr,
         as defined in the InetAddress MIB module (RFC 4001).

         Only the values 'ipv4(1)' and
         'ipv6(2)' are supported."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2TibAttNetworksSetEntry 3 }

olsrv2TibAttNetworksSetNetIpAddr  OBJECT-TYPE
    SYNTAX       InetAddress (SIZE(4|16))
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "This is the network address, of type
         olsrv2TibAttNetworksSetNetIpAddrType, of an
         attached network, that may be reached via
         the router with originator address AN_orig_addr.
         The AN_orig_addr is defined by the tuple
            (olsrv2TibAttNetworksSetOrigIpAddrType,
             olsrv2TibAttNetworksSetOrigIpAddr)."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
  ::= { olsrv2TibAttNetworksSetEntry 4 }

olsrv2TibAttNetworksSetNetIpAddrPrefixLen  OBJECT-TYPE
    SYNTAX       InetAddressPrefixLength
    UNITS        "bits"
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
```

          "Indicates the number of leading one bits that form the
           mask to be logically ANDed with the destination address
           before being compared to the value in the
           olsrv2TibAttNetworksSetNetIpAddr field."
      REFERENCE
          "RFC 7181 - The Optimized Link State Routing Protocol
           Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
           and U. Herberg, April 2014."
    ::= { olsrv2TibAttNetworksSetEntry 5 }

    olsrv2TibAttNetworksSetSeqNo OBJECT-TYPE
      SYNTAX   Unsigned32 (0..65535)
      MAX-ACCESS   read-only
      STATUS   current
      DESCRIPTION
          "This is the greatest Advertised Neighbor Sequence
           Number (ANSN) in any TC message received
           that originated from the router
           with originator address AN_orig_addr
           (i.e., that contributed to the information
           contained in this Tuple). The AN_orig_addr
           is defined by the tuple
              (olsrv2TibAttNetworksSetOrigIpAddrType,
               olsrv2TibAttNetworksSetOrigIpAddr).

           Sequence numbers are used in the OLSRv2 protocol
           for the purpose of discarding 'old' information,
           i.e., messages received out of order. However,
           with a limited number of bits for representing
           sequence numbers, wraparound (that the sequence
           number is incremented from the maximum possible
           value to zero) will occur. To prevent this from
           interfering with the operation of this protocol,
           the following MUST be observed when determining
           the ordering of sequence numbers.

           The term MAXVALUE designates in the following one
           more than the largest possible value for a sequence
           number. For a 16-bit sequence number (as are those
           defined in this specification), MAXVALUE is 65536.

           The sequence number S1 is said to be 'greater than'
           the sequence number S2 if:

              o S1 > S2 AND S1 - S2 < MAXVALUE/2 OR

              o S2 > S1 AND S2 - S1 > MAXVALUE/2

```
        When sequence numbers S1 and S2 differ by MAXVALUE/2,
        their ordering cannot be determined.  In this case,
        which should not occur, either ordering may be
        assumed.

        Thus, when comparing two messages, it is possible
        - even in the presence of wraparound - to determine
        which message contains the most recent information."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
 ::= { olsrv2TibAttNetworksSetEntry 6 }


olsrv2TibAttNetworksSetDist  OBJECT-TYPE
   SYNTAX      Unsigned32 (0..255)
   UNITS       "hops"
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
      "The number of hops to the network
       with address AN_net_addr from the router with
       originator address AN_orig_addr.
       The AN_orig_addr is defined by the tuple
          (olsrv2TibAttNetworksSetOrigIpAddrType,
           olsrv2TibAttNetworksSetOrigIpAddr)."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
 ::= { olsrv2TibAttNetworksSetEntry 7 }


olsrv2TibAttNetworksSetMetricValue  OBJECT-TYPE
   SYNTAX      Olsrv2MetricValueCompressedFormTC
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
      "The metric of the link from the router with
       originator address AN_orig_addr to the attached
       network with address AN_net_addr.
       The AN_net_addr is defined by the tuple
         (olsrv2TibAttNetworksSetNetIpAddrType,
          olsrv2TibAttNetworksSetNetIpAddr,
          olsrv2TibAttNetworksSetNetIpAddrPrefixLen)."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
```

```
   ::= { olsrv2TibAttNetworksSetEntry 9 }


olsrv2TibAttNetworksSetExpireTime  OBJECT-TYPE
   SYNTAX       TimeStamp
   UNITS        "centiseconds"
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
       "olsrv2TibAttNetworksSetExpireTime
        specifies the value of sysUptime when this
        entry SHOULD expire and be removed from the
        olsrv2TibAttNetworksSetTable."
   REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
   ::= { olsrv2TibAttNetworksSetEntry 10 }


--
-- Routing Set
--

olsrv2TibRoutingSetTable OBJECT-TYPE
   SYNTAX       SEQUENCE OF Olsrv2TibRoutingSetEntry
   MAX-ACCESS   not-accessible
   STATUS       current
   DESCRIPTION
       "A router's Routing Set records the first hop along a
        selected path to each destination for which any such
        path is known."
   REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
   ::= { olsrv2StateGroup 11 }

olsrv2TibRoutingSetEntry  OBJECT-TYPE
   SYNTAX       Olsrv2TibRoutingSetEntry
   MAX-ACCESS   not-accessible
   STATUS       current
   DESCRIPTION
        "It consists of Routing Tuples:

          (R_dest_addr, R_next_iface_addr,
           R_local_iface_addr, R_dist, R_metric)"
   REFERENCE
       "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
```

```
              and U. Herberg, April 2014."
         INDEX { olsrv2TibRoutingSetDestIpAddrType,
                 olsrv2TibRoutingSetDestIpAddr,
                 olsrv2TibRoutingSetDestIpAddrPrefixLen }
      ::= { olsrv2TibRoutingSetTable 1 }

      Olsrv2TibRoutingSetEntry ::=
         SEQUENCE {
            olsrv2TibRoutingSetDestIpAddrType
               InetAddressType,
            olsrv2TibRoutingSetDestIpAddr
               InetAddress,
            olsrv2TibRoutingSetDestIpAddrPrefixLen
               InetAddressPrefixLength,
            olsrv2TibRoutingSetNextIfIpAddrType
               InetAddressType,
            olsrv2TibRoutingSetNextIfIpAddr
               InetAddress,
            olsrv2TibRoutingSetLocalIfIpAddrType
               InetAddressType,
            olsrv2TibRoutingSetLocalIfIpAddr
               InetAddress,
            olsrv2TibRoutingSetDist
               Unsigned32,
            olsrv2TibRoutingSetMetricValue
               Unsigned32
         }

      olsrv2TibRoutingSetDestIpAddrType  OBJECT-TYPE
         SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
         MAX-ACCESS   not-accessible
         STATUS       current
         DESCRIPTION
            "The type of the olsrv2TibRoutingSetDestIpAddr,
             as defined in the InetAddress MIB module (RFC 4001).

             Only the values 'ipv4(1)' and 'ipv6(2)' are
             supported."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
      ::= { olsrv2TibRoutingSetEntry 1 }

      olsrv2TibRoutingSetDestIpAddr  OBJECT-TYPE
         SYNTAX       InetAddress (SIZE(4|16))
         MAX-ACCESS   not-accessible
         STATUS       current
```

        DESCRIPTION
           "This is the address of the destination,
            either the address of an interface of
            a destination router or the network
            address of an attached network."
        REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
      ::= { olsrv2TibRoutingSetEntry 2 }

    olsrv2TibRoutingSetDestIpAddrPrefixLen OBJECT-TYPE
        SYNTAX   InetAddressPrefixLength
        UNITS   "bits"
        MAX-ACCESS not-accessible
        STATUS   current
        DESCRIPTION
           "Indicates the number of leading one bits that form the
            mask to be logically ANDed with the destination address
            before being compared to the value in the
            olsrv2TibRoutingSetDestIpAddr field.

            Note: This definition needs to be consistent
            with the current forwarding table MIB module description.
            Specifically, it SHOULD allow for longest prefix
            matching of network addresses."
        REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
      ::= { olsrv2TibRoutingSetEntry 3 }

    olsrv2TibRoutingSetNextIfIpAddrType OBJECT-TYPE
        SYNTAX   InetAddressType { ipv4(1) , ipv6(2) }
        MAX-ACCESS read-only
        STATUS   current
        DESCRIPTION
           "The type of the olsrv2TibRoutingSetNextIfIpAddr,
            as defined in the InetAddress MIB module (RFC 4001).

            Only the values 'ipv4(1)' and
            'ipv6(2)' are supported."
        REFERENCE
           "RFC 7181 - The Optimized Link State Routing Protocol
            Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
            and U. Herberg, April 2014."
      ::= { olsrv2TibRoutingSetEntry 4 }

```
   olsrv2TibRoutingSetNextIfIpAddr  OBJECT-TYPE
      SYNTAX       InetAddress (SIZE(4|16))
      MAX-ACCESS  read-only
      STATUS       current
      DESCRIPTION
         "This object is the OLSRv2 interface address of the
          next hop on the selected path to the
          destination."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibRoutingSetEntry 5 }

   olsrv2TibRoutingSetLocalIfIpAddrType  OBJECT-TYPE
      SYNTAX       InetAddressType { ipv4(1) , ipv6(2) }
      MAX-ACCESS  read-only
      STATUS       current
      DESCRIPTION
         "The type of the olsrv2TibRoutingSetLocalIfIpAddr
          and olsrv2TibRoutingSetNextIfIpAddr,
          as defined in the InetAddress MIB module (RFC 4001).

          Only the values 'ipv4(1)' and
          'ipv6(2)' are supported."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibRoutingSetEntry 6 }

   olsrv2TibRoutingSetLocalIfIpAddr  OBJECT-TYPE
      SYNTAX       InetAddress (SIZE(4|16))
      MAX-ACCESS  read-only
      STATUS       current
      DESCRIPTION
         "This object is the address of the local OLSRv2
          interface over which a packet must be
          sent to reach the destination by the
          selected path."
      REFERENCE
         "RFC 7181 - The Optimized Link State Routing Protocol
          Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
          and U. Herberg, April 2014."
   ::= { olsrv2TibRoutingSetEntry 7 }

   olsrv2TibRoutingSetDist  OBJECT-TYPE
      SYNTAX       Unsigned32 (0..255)
```

```
    UNITS       "hops"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object is the number of hops on the selected
         path to the destination."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    ::= { olsrv2TibRoutingSetEntry 8 }

olsrv2TibRoutingSetMetricValue  OBJECT-TYPE
    SYNTAX      Unsigned32(0..4294901760)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This object is the metric of the route
         to the destination with address R_dest_addr.
         The maximum value of this object can be
         256 times MAXIMUM_METRIC,
         as represented in Olsrv2MetricValueCompressedFormTC, i.e.,
         4294901760."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
         Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
         and U. Herberg, April 2014."
    ::= { olsrv2TibRoutingSetEntry 9 }

--
-- OLSRv2 Performance Group
--


--
--    Contains objects that help to characterize the
--    performance of the OLSRv2 routing process.
--

olsrv2PerformanceObjGrp  OBJECT IDENTIFIER ::= {olsrv2MIBObjects 3}

    --
    -- Objects per local interface
    --

  olsrv2InterfacePerfTable  OBJECT-TYPE
    SYNTAX      SEQUENCE OF Olsrv2InterfacePerfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
```

         DESCRIPTION
            "This table summarizes performance objects that are
             measured per each active local OLSRv2 interface.
             If the olsrv2InterfaceAdminStatus of the interface
             changes to 'disabled', then the row associated with this
             interface SHOULD be removed from this table."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
     ::= { olsrv2PerformanceObjGrp 1 }

     olsrv2InterfacePerfEntry OBJECT-TYPE
         SYNTAX   Olsrv2InterfacePerfEntry
         MAX-ACCESS not-accessible
         STATUS   current
         DESCRIPTION
            "A single entry contains performance counters for
             each active local OLSRv2 interface."
         AUGMENTS { nhdpInterfacePerfEntry }
     ::= { olsrv2InterfacePerfTable 1 }

     Olsrv2InterfacePerfEntry ::=
         SEQUENCE {
            olsrv2IfTcMessageXmits
               Counter32,
            olsrv2IfTcMessageRecvd
               Counter32,
            olsrv2IfTcMessageXmitAccumulatedSize
               Counter64,
            olsrv2IfTcMessageRecvdAccumulatedSize
               Counter64,
            olsrv2IfTcMessageTriggeredXmits
               Counter32,
            olsrv2IfTcMessagePeriodicXmits
               Counter32,
            olsrv2IfTcMessageForwardedXmits
               Counter32,
            olsrv2IfTcMessageXmitAccumulatedMPRSelectorCount
               Counter32
         }

     olsrv2IfTcMessageXmits OBJECT-TYPE
         SYNTAX   Counter32
         UNITS   "messages"
         MAX-ACCESS read-only
         STATUS   current
         DESCRIPTION

```
           "A counter is incremented each time a TC
            message has been transmitted on that interface."
      ::= { olsrv2InterfacePerfEntry 1 }


      olsrv2IfTcMessageRecvd  OBJECT-TYPE
         SYNTAX       Counter32
         UNITS        "messages"
         MAX-ACCESS   read-only
         STATUS       current
         DESCRIPTION
            "A counter is incremented each time a
             TC message has been received on that interface.
             This excludes all messages that are ignored due to
             OLSRv2 protocol procedures, such as messages
             considered invalid for processing by this router,
             as defined in Section 16.3.1 of OLSRv2 (RFC 7181)."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
      ::= { olsrv2InterfacePerfEntry 2 }


      olsrv2IfTcMessageXmitAccumulatedSize  OBJECT-TYPE
         SYNTAX       Counter64
         UNITS        "octets"
         MAX-ACCESS   read-only
         STATUS       current
         DESCRIPTION
            "A counter is incremented by the number of octets in
             a TC message each time a TC message has been sent."
      ::= { olsrv2InterfacePerfEntry 3 }


      olsrv2IfTcMessageRecvdAccumulatedSize  OBJECT-TYPE
         SYNTAX       Counter64
         UNITS        "octets"
         MAX-ACCESS   read-only
         STATUS       current
         DESCRIPTION
            "A counter is incremented by the number of octets in
             a TC message each time a TC message has been received.
             This excludes all messages that are ignored due to
             OLSRv2 protocol procedures, such as messages
             considered invalid for processing by this router,
             as defined in Section 16.3.1 of OLSRv2 (RFC 7181)."
         REFERENCE
            "RFC 7181 - The Optimized Link State Routing Protocol
             Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
             and U. Herberg, April 2014."
```

```
   ::= { olsrv2InterfacePerfEntry 4 }

   olsrv2IfTcMessageTriggeredXmits  OBJECT-TYPE
      SYNTAX       Counter32
      UNITS        "messages"
      MAX-ACCESS   read-only
      STATUS       current
      DESCRIPTION
         "A counter is incremented each time a triggered
          TC message has been sent."
   ::= { olsrv2InterfacePerfEntry 5 }

   olsrv2IfTcMessagePeriodicXmits  OBJECT-TYPE
      SYNTAX       Counter32
       UNITS       "messages"
      MAX-ACCESS   read-only
      STATUS       current
      DESCRIPTION
         "A counter is incremented each time a periodic
          TC message has been sent."
   ::= { olsrv2InterfacePerfEntry 6 }

   olsrv2IfTcMessageForwardedXmits  OBJECT-TYPE
      SYNTAX       Counter32
      UNITS        "messages"
      MAX-ACCESS   read-only
      STATUS       current
      DESCRIPTION
         "A counter is incremented each time a
          TC message has been forwarded."
   ::= { olsrv2InterfacePerfEntry 7 }

   olsrv2IfTcMessageXmitAccumulatedMPRSelectorCount OBJECT-TYPE
      SYNTAX       Counter32
      UNITS        "advertised MPR selectors"
      MAX-ACCESS   read-only
      STATUS       current
      DESCRIPTION
         "A counter is incremented by the number of advertised
          MPR selectors in a TC each time a TC
          message has been sent."
   ::= { olsrv2InterfacePerfEntry 8 }

   --
   -- Objects concerning the Routing Set
   --

   olsrv2RoutingSetRecalculationCount  OBJECT-TYPE
```

```
       SYNTAX       Counter32
       UNITS        "recalculations"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "This counter increments each time the Routing Set has
           been recalculated."
    ::= { olsrv2PerformanceObjGrp 2 }


    --
    -- Objects concerning the MPR set
    --

    olsrv2MPRSetRecalculationCount  OBJECT-TYPE
       SYNTAX       Counter32
       UNITS        "recalculations"
       MAX-ACCESS   read-only
       STATUS       current
       DESCRIPTION
          "This counter increments each time the MPRs
           of this router have been recalculated for
           any of its interfaces."
    ::= { olsrv2PerformanceObjGrp 3 }

--
-- Notifications
--

olsrv2NotificationsObjects OBJECT IDENTIFIER ::=
                                    { olsrv2MIBNotifications 0 }
olsrv2NotificationsControl OBJECT IDENTIFIER ::=
                                    { olsrv2MIBNotifications 1 }
olsrv2NotificationsStates  OBJECT IDENTIFIER ::=
                                    { olsrv2MIBNotifications 2 }


    -- olsrv2NotificationsObjects

    olsrv2RouterStatusChange NOTIFICATION-TYPE
       OBJECTS { olsrv2OrigIpAddrType, -- The address type of
                                       --   the originator of
                                       --   the notification.
                 olsrv2OrigIpAddr,     -- The originator of
                                       --   the notification.
                 olsrv2AdminStatus     -- The new state.
       }
       STATUS       current
       DESCRIPTION
```

```
           "olsrv2RouterStatusChange is a notification generated
            when the OLSRv2 router changes it status.
            The router status is maintained in the
            olsrv2AdminStatus object."
    ::= { olsrv2NotificationsObjects 1 }


    olsrv2OrigIpAddrChange NOTIFICATION-TYPE
       OBJECTS { olsrv2OrigIpAddrType, -- The address type of
                                       --    the originator of
                                       --    the notification.
                 olsrv2OrigIpAddr,     -- The originator of
                                       --    the notification.
                 olsrv2PreviousOrigIpAddrType, -- The address
                                       -- type of the previous
                                       -- address of
                                       -- the originator of
                                       -- the notification.
                 olsrv2PreviousOrigIpAddr  -- The previous
                                       -- address of the
                                       -- originator of
                                       -- the notification.
       }
       STATUS       current
       DESCRIPTION
          "olsrv2OrigIpAddrChange is a notification generated when
           the OLSRv2 router changes it originator IP address.
           The notification includes the new and the previous
           originator IP address of the OLSRv2 router."
    ::= { olsrv2NotificationsObjects 2 }


    olsrv2RoutingSetRecalculationCountChange NOTIFICATION-TYPE
       OBJECTS { olsrv2OrigIpAddrType, -- The address type of
                                       --    the originator of
                                       --    the notification.
                 olsrv2OrigIpAddr,     -- The originator of
                                       --    the notification.
                 olsrv2RoutingSetRecalculationCount  -- Number
                                           -- of the
                                           -- Routing Set
                                           -- recalculations.
       }
       STATUS       current
       DESCRIPTION
          "The olsrv2RoutingSetRecalculationCountChange
           notification is generated when a significant number of
           Routing Set recalculations have occurred in a short time.
           This notification SHOULD be generated no more than once
           per olsrv2RoutingSetRecalculationCountWindow.
```

```
         The network administrator SHOULD select
         appropriate values for 'significant number of
         Routing Set recalculations' and 'short time' through
         the settings of the
         olsrv2RoutingSetRecalculationCountThreshold
         and olsrv2RoutingSetRecalculationCountWindow objects."
  ::= { olsrv2NotificationsObjects 3 }

  olsrv2MPRSetRecalculationCountChange NOTIFICATION-TYPE
     OBJECTS { olsrv2OrigIpAddrType, -- The address type of
                                     --   the originator of
                                     --   the notification.
              olsrv2OrigIpAddr,      -- The originator of
                                     --   the notification.
              olsrv2MPRSetRecalculationCount  -- Number of
                                     --   MPR set
                                     --   recalculations.
     }
     STATUS        current
     DESCRIPTION
        "The olsrv2MPRSetRecalculationCountChange
         notification is generated when a significant
         number of MPR set recalculations occur in
         a short period of time.  This notification
         SHOULD be generated no more than once
         per olsrv2MPRSetRecalculationCountWindow.
         The network administrator SHOULD select
         appropriate values for 'significant number of
         MPR set recalculations' and 'short period of
         time' through the settings of the
         olsrv2MPRSetRecalculationCountThreshold and
         olsrv2MPRSetRecalculationCountWindow objects."
  ::= { olsrv2NotificationsObjects 4 }

  -- olsrv2NotificationsControl

  olsrv2RoutingSetRecalculationCountThreshold OBJECT-TYPE
     SYNTAX        Integer32 (0..255)
     UNITS         "recalculations"
     MAX-ACCESS    read-write
     STATUS        current
     DESCRIPTION
        "A threshold value for the
         olsrv2RoutingSetRecalculationCount object.
         If the number of occurrences exceeds this
         threshold within the previous
         olsrv2RoutingSetRecalculationCountWindow,
         then the olsrv2RoutingSetRecalculationCountChange
```

          notification is to be generated.

          It is RECOMMENDED that the value of this
          threshold be set to at least 20 and higher
          in dense topologies with frequent expected
          topology changes."
       DEFVAL { 20 }
    ::= { olsrv2NotificationsControl 1 }

    olsrv2RoutingSetRecalculationCountWindow OBJECT-TYPE
       SYNTAX   TimeTicks
       MAX-ACCESS read-write
       STATUS   current
       DESCRIPTION
          "This object is used to determine whether to generate
           an olsrv2RoutingSetRecalculationCountChange notification.
           This object represents an interval from the present moment,
           extending into the past, expressed in hundredths of
           a second. If the change in the value of the
           olsrv2RoutingSetRecalculationCount object during
           this interval has exceeded the value of
           olsrv2RoutingSetRecalculationCountThreshold, then
           an olsrv2RoutingSetRecalculationCountChange notification
           is generated.

           It is RECOMMENDED that the value for this
           window be set to at least 5 times the
           nhdpHelloInterval (whose default value is
           2 seconds."
       DEFVAL { 1000 }
    ::= { olsrv2NotificationsControl 2 }

    olsrv2MPRSetRecalculationCountThreshold OBJECT-TYPE
       SYNTAX   Integer32 (0..255)
       UNITS   "recalculations"
       MAX-ACCESS read-write
       STATUS   current
       DESCRIPTION
          "A threshold value for the
           olsrv2MPRSetRecalculationCount object.
           If the number of occurrences exceeds this
           threshold within the previous
           olsrv2MPRSetRecalculationCountWindow,
           then the
           olsrv2MPRSetRecalculationCountChange
           notification is to be generated.

           It is RECOMMENDED that the value of this

              threshold be set to at least 20 and higher
              in dense topologies with frequent expected
              topology changes."
          DEFVAL { 20 }
      ::= { olsrv2NotificationsControl 3 }

      olsrv2MPRSetRecalculationCountWindow OBJECT-TYPE
          SYNTAX   TimeTicks
          MAX-ACCESS   read-write
          STATUS   current
          DESCRIPTION
              "This object is used to determine whether to generate
              an olsrv2MPRSetRecalculationCountChange notification.
              This object represents an interval from the present moment,
              extending into the past, expressed in hundredths of
              a second. If the change in the value of the
              olsrv2MPRSetRecalculationCount object during
              that interval has exceeded the value of
              olsrv2MPRSetRecalculationCountThreshold, then the
              an olsrv2MPRSetRecalculationCountChange notification
              is generated.

              It is RECOMMENDED that the value for this
              window be set to at least 5 times the
              nhdpHelloInterval."
          DEFVAL { 1000 }
      ::= { olsrv2NotificationsControl 4 }

      olsrv2PreviousOrigIpAddrType OBJECT-TYPE
          SYNTAX   InetAddressType { ipv4(1) , ipv6(2) }
          MAX-ACCESS   read-only
          STATUS   current
          DESCRIPTION
              "The type of the olsrv2PreviousOrigIpAddr,
              as defined in the InetAddress MIB module (RFC 4001).

              Only the values 'ipv4(1)' and
              'ipv6(2)' are supported.

              This object MUST have the same persistence
              characteristics as olsrv2PreviousOrigIpAddr."
          REFERENCE
              "RFC 7181 - The Optimized Link State Routing Protocol
              Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
              and U. Herberg, April 2014."
      ::= { olsrv2NotificationsStates 1 }

      olsrv2PreviousOrigIpAddr OBJECT-TYPE

```
   SYNTAX       InetAddress (SIZE(4|16))
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
      "The previous origination IP address
       of this OLSRv2 router.

       This object SHOULD be updated each time
       the olsrv2OrigIpAddr is modified.

       This object is persistent, and when written,
       the entity SHOULD save the change to
       non-volatile storage."
   REFERENCE
      "RFC 7181 - The Optimized Link State Routing Protocol
       Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
       and U. Herberg, April 2014."
 ::= { olsrv2NotificationsStates 2 }


--
-- Compliance Statements
--

olsrv2Compliances  OBJECT IDENTIFIER ::= { olsrv2MIBConformance 1 }
olsrv2MIBGroups    OBJECT IDENTIFIER ::= { olsrv2MIBConformance 2 }

olsrv2BasicCompliance  MODULE-COMPLIANCE
   STATUS current
   DESCRIPTION
      "The basic implementation requirements for
       managed network entities that implement
       the OLSRv2 routing process."
   MODULE  -- this module
   MANDATORY-GROUPS { olsrv2ConfigObjectsGroup }
 ::= { olsrv2Compliances 1 }

olsrv2FullCompliance MODULE-COMPLIANCE
   STATUS current
   DESCRIPTION
      "The full implementation requirements for
       managed network entities that implement
       the OLSRv2 routing process."
   MODULE  -- this module
   MANDATORY-GROUPS { olsrv2ConfigObjectsGroup,
                      olsrv2StateObjectsGroup,
                      olsrv2PerfObjectsGroup,
                      olsrv2NotificationsObjectsGroup,
                      olsrv2NotificationsGroup }
```

```
::= { olsrv2Compliances 2 }

--
-- Units of Conformance
--

olsrv2ConfigObjectsGroup OBJECT-GROUP
    OBJECTS {
        olsrv2AdminStatus,
        olsrv2InterfaceAdminStatus,
        olsrv2OrigIpAddrType,
        olsrv2OrigIpAddr,
        olsrv2OHoldTime,
        olsrv2TcInterval,
        olsrv2TcMinInterval,
        olsrv2THoldTime,
        olsrv2AHoldTime,
        olsrv2RxHoldTime,
        olsrv2PHoldTime,
        olsrv2FHoldTime,
        olsrv2TpMaxJitter,
        olsrv2TtMaxJitter,
        olsrv2FMaxJitter,
        olsrv2TcHopLimit,
        olsrv2WillFlooding,
        olsrv2WillRouting,
        olsrv2LinkMetricType
    }
    STATUS      current
    DESCRIPTION
        "Objects to permit configuration of OLSRv2.
         All of these SHOULD be backed by non-volatile
         storage."
 ::= { olsrv2MIBGroups 1 }

olsrv2StateObjectsGroup  OBJECT-GROUP
    OBJECTS {
        olsrv2LibOrigSetExpireTime,
        olsrv2LibLocAttNetSetDistance,
        olsrv2LibLocAttNetSetMetricValue,
        olsrv2IibLinkSetInMetricValue,
        olsrv2IibLinkSetOutMetricValue,
        olsrv2IibLinkSetMprSelector,
        olsrv2Iib2HopSetInMetricValue,
        olsrv2Iib2HopSetOutMetricValue,
        olsrv2NibNeighborSetNOrigIpAddrType,
        olsrv2NibNeighborSetNOrigIpAddr,
        olsrv2NibNeighborSetNInMetricValue,
```

```
            olsrv2NibNeighborSetNOutMetricValue,
            olsrv2NibNeighborSetNWillFlooding,
            olsrv2NibNeighborSetNWillRouting,
            olsrv2NibNeighborSetNFloodingMpr,
            olsrv2NibNeighborSetNRoutingMpr,
            olsrv2NibNeighborSetNMprSelector,
            olsrv2NibNeighborSetNAdvertised,
            olsrv2NibNeighborSetTableAnsn,
            olsrv2TibAdRemoteRouterSetMaxSeqNo,
            olsrv2TibAdRemoteRouterSetExpireTime,
            olsrv2TibRouterTopologySetSeqNo,
            olsrv2TibRouterTopologySetMetricValue,
            olsrv2TibRouterTopologySetExpireTime,
            olsrv2TibRoutableAddressTopologySetExpireTime,
            olsrv2TibRoutableAddressTopologySetSeqNo,
            olsrv2TibRoutableAddressTopologySetMetricValue,
            olsrv2TibAttNetworksSetSeqNo,
            olsrv2TibAttNetworksSetDist,
            olsrv2TibAttNetworksSetMetricValue,
            olsrv2TibAttNetworksSetExpireTime,
            olsrv2TibRoutingSetNextIfIpAddrType,
            olsrv2TibRoutingSetNextIfIpAddr,
            olsrv2TibRoutingSetLocalIfIpAddrType,
            olsrv2TibRoutingSetLocalIfIpAddr,
            olsrv2TibRoutingSetDist,
            olsrv2TibRoutingSetMetricValue
        }
        STATUS      current
        DESCRIPTION
            "Objects to permit monitoring of OLSRv2 state."
    ::= { olsrv2MIBGroups 2 }

    olsrv2PerfObjectsGroup  OBJECT-GROUP
        OBJECTS {
            olsrv2IfTcMessageXmits,
            olsrv2IfTcMessageRecvd,
            olsrv2IfTcMessageXmitAccumulatedSize,
            olsrv2IfTcMessageRecvdAccumulatedSize,
            olsrv2IfTcMessageTriggeredXmits,
            olsrv2IfTcMessagePeriodicXmits,
            olsrv2IfTcMessageForwardedXmits,
            olsrv2IfTcMessageXmitAccumulatedMPRSelectorCount,
            olsrv2RoutingSetRecalculationCount,
            olsrv2MPRSetRecalculationCount
        }
        STATUS      current
        DESCRIPTION
            "Objects to support monitoring of OLSRv2 performance."
```

```
   ::= { olsrv2MIBGroups 3 }

olsrv2NotificationsObjectsGroup OBJECT-GROUP
   OBJECTS {
       olsrv2RoutingSetRecalculationCountThreshold,
       olsrv2RoutingSetRecalculationCountWindow,
       olsrv2MPRSetRecalculationCountThreshold,
       olsrv2MPRSetRecalculationCountWindow,
       olsrv2PreviousOrigIpAddrType,
       olsrv2PreviousOrigIpAddr
   }
   STATUS      current
   DESCRIPTION
       "Objects to support the notification types in the
        olsrv2NotificationsGroup.  Some of these appear in
        notification payloads, others serve to control
        notification generation."
::= { olsrv2MIBGroups 4 }


olsrv2NotificationsGroup NOTIFICATION-GROUP
   NOTIFICATIONS {
       olsrv2RouterStatusChange,
       olsrv2OrigIpAddrChange,
       olsrv2RoutingSetRecalculationCountChange,
       olsrv2MPRSetRecalculationCountChange
   }
   STATUS current
   DESCRIPTION
        "Notification types to support management of OLSRv2."
::= { olsrv2MIBGroups 5 }

END
```

8. Security Considerations

   This MIB module defines objects for the configuration, monitoring,
   and notification of the Optimized Link State Routing Protocol version
   2 (OLSRv2) [RFC7181]. OLSRv2 allows routers to acquire topological
   information of the routing domain by exchanging TC messages in order
   to calculate shortest paths to each destination router in the routing
   domain.

   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:

o olsrv2TcInterval, olsrv2TcMinInterval - these writable objects
   control the rate at which TC messages are sent. If set at too
   high a rate, this could represent a form of a DoS attack by
   overloading interface resources. If set too low, OLSRv2 may not
   converge fast enough to provide accurate routes to all
   destinations in the routing domain.

o olsrv2TcHopLimit - defines the hop limit for TC messages. If set
   too low, messages will not be forwarded beyond the defined scope;
   thus, routers further away from the message originator will not be
   able to construct appropriate topology graphs.

o olsrv2OHoldTime, olsrv2THoldTime, olsrv2AHoldTime,
   olsrv2RxHoldTime, olsrv2PHoldTime, olsrv2FHoldTime - define hold
   times for tuples of different Information Bases of OLSRv2. If set
   too low, information will expire quickly, and may this harm a
   correct operation of the routing protocol.

o olsrv2WillFlooding and olsrv2WillRouting - define the willingness
   of this router to become MPR. If this is set to WILL_NEVER (0),
   the managed router will not forward any TC messages, nor accept a
   selection to become MPR by neighboring routers. If set to
   WILL_ALWAYS (15), the router will be preferred by neighbors during
   MPR selection and may thus attract more traffic.

o olsrv2TpMaxJitter, olsrv2TtMaxJitter, olsrv2FMaxJitter - define
   jitter values for TC message transmission and forwarding. If set
   too low, control traffic may get lost when collisions occur.

o olsrv2LinkMetricType - defines the type of the link metric that a
   router uses (e.g., ETX or hop count). Whenever this value
   changes, all link metric information recorded by the router is
   invalid, causing a reset of information acquired from other
   routers in the MANET. Moreover, if olsrv2LinkMetricType on a
   router is set to a value that is not known to other routers in the
   MANET, these routers will not be able to establish routes to that
   router or transiting that router. Existing routes to the router
   with an olsrv2LinkMetricType unknown to other routers in the MANET
   will be removed.

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:

o olsrv2TibRouterTopologySetTable - The contains information on the
   topology of the MANET, specifically the IP address of the routers
   in the MANET (as identified by
   olsrv2TibRouterTopologySetFromOrigIpAddr and
   olsrv2TibRouterTopologySetToOrigIpAddr objects). This information
   provides an adversary broad information on the members of the
   MANET, located within this single table. This information can be
   used to expedite attacks on the other members of the MANET without
   having to go through a laborious discovery process on their own.

Some of the Tables in this MIB module AUGMENT Tables defined in NHDP-
MIB [RFC6779]. Hence, care must be taken in configuring access
control here in order make sure that the permitted permissions
granted for the AUGMENTing Tables here are consistent with the access
controls permitted within the NHDP-MIB. The below list identifies
the AUGMENTing Tables and their NHDP-MIB counterparts. It is
RECOMMENDED that access control policies for these Table pairs are
consistently set.

o The olsrv2InterfaceTable AUGMENTs the nhdpInterfaceTable.

o The olsrv2IibLinkSetTable AUGMENTs the nhdpIibLinkSetTable.

o The olsrv2Iib2HopSetTable AUGMENTs the nhdpIib2HopSetTable.

o The olsrv2NibNeighborSetTable AUGMENTs the
   nhdpNibNeighborSetTable.

o The olsrv2InterfacePerfTable AUGMENTs the nhdpInterfacePerfTable.

MANET technology is often deployed to support communications of
emergency services or military tactical applications. In these
applications, it is imperative to maintain the proper operation of
the communications network and to protect sensitive information
related to its operation. Therefore, when implementing these
capabilities, the full use of SNMPv3 cryptographic mechanisms for
authentication and privacy is RECOMMENDED.

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.

9. Applicability Statement

   This document describes objects for configuring parameters of the
   Optimized Link State Routing Protocol version 2 (OLSRv2) [RFC7181]
   process on a router. This MIB module, denoted OLSRv2-MIB, also
   reports state, performance information, and notifications. The
   OLSRv2 protocol relies upon information gathered via the Neighborhood
   Discovery Protocol [RFC6130] in order to perform its operations.
   NHDP is managed via the NHDP-MIB [RFC6779].

   MANET deployments can greatly differ in aspects of dynamics of the
   topology, capacity, and loss rates of underlying channels, traffic
   flow directions, memory and CPU capacity of routers, etc. SNMP, and
   therefore this MIB module, are only applicable for a subset of MANET
   deployments, in particular deployments:

   o In which routers have enough memory and CPU resources to run SNMP
      and expose the MIB module.

   o Where a Network Management System (NMS) is defined to which
      notifications are generated and from which routers can be managed.

   o Where this NMS is reachable from routers in the MANET most of the
      time (as notifications to the NMS and management information from
      the NMS to the router will be lost when connectivity is
      temporarily lost). This requires that the topology of the MANET
      is only moderately dynamic.

   o Where the underlying wireless channel supports enough bandwidth to
      run SNMP, and where loss rates of the channel are not exhaustive.

Certain MANET deployments such as community networks with non-mobile
routers, dynamic topology because of changing link quality, and a
predefined gateway (that could also serve as NMS), are examples of
networks applicable for this MIB module. Other, more constrained
deployments of MANETs may not be able to run SNMP and require
different management protocols.

Some level of configuration, i.e., read-write objects, is desirable
for OLSRv2 deployments. Topology-related configuration, such as the
ability to enable OLSRv2 on new interfaces or initially configure
OLSRv2 on a router's interfaces through the
olsrv2InterfaceAdminStatus object, is critical to initial system
startup. The OLSRv2 protocol allows for some level of performance
tuning through various protocol parameters, and this MIB module
allows for configuration of those protocol parameters through read-
write objects such as the olsrv2TcHopLimit or the olsrv2FMaxJitter.
Other read-write objects allow for the control of Notification
behavior through this MIB module, e.g., the
olsrv2RoutingSetRecalculationCountThreshold object. A fuller
discussion of MANET network management applicability is to be
provided elsewhere: [MGMT-SNAP] provides a snapshot of OLSRv2-routed
MANET management as currently deployed, while [MANET-MGMT] is
intended to provide specific guidelines on MANET network management
considering the various MIB modules that have been written.

10. IANA Considerations

IANA now maintains the IANAolsrv2LinkMetricType-MIB and keeps it
synchronized with the "LINK_METRIC Address Block TLV Type Extensions"
registry at <http://www.iana.org/assignments/manet-parameters>.

The MIB modules in this document use the following IANA-assigned
OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

        Descriptor   OBJECT IDENTIFIER value
        ----------   -----------------------
        OLSRv2-MIB   { mib-2 219 }
        IANA-OLSRv2-LINK-METRIC-TYPE-MIB   { mib-2 221 }

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12. References

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Appendix A.   IANAolsrv2LinkMetricType-MIB

   This document has set up the IANAolsrv2LinkMetricType-MIB module.
   IANA now maintains the IANAolsrv2LinkMetricType-MIB and keeps it
   synchronized with the "LINK_METRIC Address Block TLV Type Extensions"
   registry at <http://www.iana.org/assignments/manet-parameters>. The
   IANA site is the definitive source this MIB should there be any
   discrepancies (e.g., future updates to the MIB).

   IANA-OLSRv2-LINK-METRIC-TYPE-MIB DEFINITIONS ::= BEGIN

   IMPORTS
       MODULE-IDENTITY, mib-2
                 FROM SNMPv2-SMI
       TEXTUAL-CONVENTION
                 FROM SNMPv2-TC;

   ianaolsrv2LinkMetricType MODULE-IDENTITY
       LAST-UPDATED "201404090000Z" -- 09 April 2014
       ORGANIZATION "IANA"
       CONTACT-INFO "Internet Assigned Numbers Authority

                      Postal: ICANN
                              12025 Waterfront Drive, Suite 300
                              Los Angeles, CA 90094-2536

                      Tel: +1 310 301 5800
                      E-Mail: iana@iana.org"
       DESCRIPTION   "This MIB module defines the
                      IANAolsrv2LinkMetricType Textual
                      Convention, and thus the enumerated values of
                      the olsrv2LinkMetricType object defined in
                      the OLSRv2-MIB."
       REVISION   "201404090000Z" -- 09 April 2014
       DESCRIPTION   "Initial version of this MIB as published in
                       RFC 7184."

        ::= { mib-2 221 }

   IANAolsrv2LinkMetricTypeTC ::= TEXTUAL-CONVENTION
       STATUS   current
       DESCRIPTION
          "This data type is used as the syntax of the
           olsrv2LinkMetricType object in the definition
           of the OLSRv2-MIB module.

           The olsrv2LinkMetricType corresponds to

                LINK_METRIC_TYPE of OLSRv2 (RFC 7181).
                OLSRv2 uses bidirectional additive link metrics
                to determine shortest distance routes (i.e.,
                routes with smallest total of link metric values).

                OLSRv2 has established a registry for the LINK_METRIC_TYPEs
                (denoted 'LINK_METRIC Address Block TLV Type Extensions'):
                        http://www.iana.org/assignments/manet-parameters/

                This is done in Section 24.5 in OLSRv2 (RFC 7181).
                The LINK_METRIC_TYPE (which has as corresponding
                object in the MIB module olsrv2LinkMetricType)
                corresponds to the type extension of
                the LINK_METRIC TLV that is set up in the
                'LINK_METRIC Address Block TLV Type Extensions' registry.
                Whenever new link metric types are added to that registry,
                IANA MUST update this textual convention accordingly.

                The definition of this textual convention with the
                addition of newly assigned values is published
                periodically by the IANA, in either the Assigned
                Numbers RFC, or some derivative of it specific to
                Internet Network Management number assignments. (The
                latest arrangements can be obtained by contacting the
                IANA.)

                Requests for new values should be made to IANA via
                email (iana@iana.org)."
        SYNTAX   INTEGER {
                    unknown(0)   -- Link metric meaning assigned
                                     --   by administrative action
                                     -- 1-223 Unassigned
                                     -- 224-255 Reserved for
                                     --   Experimental Use
        }

        END

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