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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, and how to provide feedback on it may be obtained at <http://www.rfc-editor.org/info/rfc7184>.

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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 `{olsrv2LibOrigSetIpAddressType, olsrv2LibOrigSetIpAddress}` - this index (pair) uniquely identifies recently used originator addresses found within the `olsrv2LibOrigSetTable`.
- o `{olsrv2LibLocAttNetSetIpAddressType, olsrv2LibLocAttNetSetIpAddress, olsrv2LibLocAttNetSetIpAddressPrefixLen}` - this index (triplet) uniquely identifies local attached networks reachable through local (non-OLSRv2) interfaces on this router. These are recorded in the `olsrv2LibLocAttNetSetTable`.
- o `{olsrv2TibAdRemoteRouterSetIpAddressType, olsrv2TibAdRemoteRouterSetIpAddress}` - 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 `olsrv2TibAdRemoteRouterSetIpAddress`.
- o `{olsrv2TibRouterTopologySetFromOrigIpAddressType, olsrv2TibRouterTopologySetFromOrigIpAddress, olsrv2TibRouterTopologySetToOrigIpAddressType, olsrv2TibRouterTopologySetToOrigIpAddress}` - 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 {`olsrv2TibRoutableAddressTopologySetFromOrigIpAddressType`,
`olsrv2TibRoutableAddressTopologySetFromOrigIpAddress`,
`olsrv2TibRoutableAddressTopologySetFromDestIpAddressType`,
`olsrv2TibRoutableAddressTopologySetFromDestIpAddress`} - 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 {`olsrv2TibAttNetworksSetOrigIpAddressType`,
`olsrv2TibAttNetworksSetOrigIpAddress`,
`olsrv2TibAttNetworksSetNetIpAddressType`,
`olsrv2TibAttNetworksSetNetIpAddress`,
`olsrv2TibAttNetworksSetNetIpAddressPrefixLen`} - 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 {`olsrv2TibRoutingSetDestIpAddressType`, `olsrv2TibRoutingSetDestIpAddress`,
`olsrv2TibRoutingSetDestIpAddressPrefixLen`} - 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 `{olsrv2LibOrigSetIpAddressType, olsrv2LibOrigSetIpAddress}`.
- o `olsrv2LibLocAttNetSetTable` - records its local non-OLSRv2 interfaces via which it can act as a gateway to other networks. This table is indexed by `{olsrv2LibLocAttNetSetIpAddressType, olsrv2LibLocAttNetSetIpAddress, olsrv2LibLocAttNetSetIpAddressPrefixLen}`.
- 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 `{olsrv2TibAdRemoteRouterSetIpAddressType, olsrv2TibAdRemoteRouterSetIpAddress}`.
- o `olsrv2TibRouterTopologySetTable` - records topology information about the network. This table is indexed by `{olsrv2TibRouterTopologySetFromOrigIpAddressType, olsrv2TibRouterTopologySetFromOrigIpAddress, olsrv2TibRouterTopologySetToOrigIpAddressType, olsrv2TibRouterTopologySetToOrigIpAddress}`.
- 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 `{olsrv2TibRoutableAddressTopologySetFromOrigIpAddressType, olsrv2TibRoutableAddressTopologySetFromOrigIpAddress, olsrv2TibRoutableAddressTopologySetFromDestIpAddressType, olsrv2TibRoutableAddressTopologySetFromDestIpAddress}`.
- 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 `{olsrv2TibAttNetworksSetOrigIpAddressType, olsrv2TibAttNetworksSetOrigIpAddress, olsrv2TibAttNetworksSetNetIpAddressType, olsrv2TibAttNetworksSetNetIpAddress, olsrv2TibAttNetworksSetNetIpAddressPrefixLen}`.
- 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 `{olsrv2TibRoutingSetDestIpAddressType, olsrv2TibRoutingSetDestIpAddress, olsrv2TibRoutingSetDestIpAddressPrefixLen}`.

- 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

        WG Chairs: sratliff@cisco.com
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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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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 }

--
 --
 --

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 \wedge 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 = 224 - 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` \geq `olsrv2TcInterval`
- o If TC messages can be lost, then `olsrv2THoldTime` SHOULD be significantly greater than `olsrv2TcInterval`; a value $\geq 3 \times$ `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 $\geq 3 \times$ `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 (olsrv2LibOrigSetIpAddressType
        and olsrv2LibOrigSetIpAddress),
        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 (olsrv2LibLocAttNetSetIpAddress),
  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 (olsrv2LibLocAttNetSetIpAddressType, olsrv2LibLocAttNetSetIpAddress, olsrv2LibLocAttNetSetIpAddressPrefixLen).

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 { olsrv2LibLocAttNetSetIpAddressType,
        olsrv2LibLocAttNetSetIpAddress,
        olsrv2LibLocAttNetSetIpAddressPrefixLen }
 ::= { 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 olsrv2LibLocAttNetSetIpAddress 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 olsrv2LibLocAttNetSetIpAddress 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 (olsrv2LibLocAttNetSetIpAddressType, olsrv2LibLocAttNetSetIpAddress, olsrv2LibLocAttNetSetIpAddressPrefixLen)."

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 }
```

```

olsrv2TibAdRemoteRouterSetIpAddress 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
        olsrv2TibAdRemoteRouterSetIpAddress.

```

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
  (olsrv2TibRouterTopologySetFromOrigIpAddressType,
   olsrv2TibRouterTopologySetFromOrigIpAddress),
 TR_to_orig_addr
  (olsrv2TibRouterTopologySetToOrigIpAddressType,
   olsrv2TibRouterTopologySetToOrigIpAddress),
 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 { olsrv2TibRouterTopologySetFromOrigIpAddressType,
        olsrv2TibRouterTopologySetFromOrigIpAddress,
        olsrv2TibRouterTopologySetToOrigIpAddressType,
        olsrv2TibRouterTopologySetToOrigIpAddress }
 ::= { olsrv2TibRouterTopologySetTable 1 }
```

`olsrv2TibRouterTopologySetEntry ::=`

```
SEQUENCE {
  olsrv2TibRouterTopologySetFromOrigIpAddressType
    InetAddressType,
  olsrv2TibRouterTopologySetFromOrigIpAddress
    InetAddress,
  olsrv2TibRouterTopologySetToOrigIpAddressType
    InetAddressType,
  olsrv2TibRouterTopologySetToOrigIpAddress
    InetAddress,
  olsrv2TibRouterTopologySetSeqNo
    Unsigned32,
  olsrv2TibRouterTopologySetMetricValue
    Olsrv2MetricValueCompressedFormTC,
  olsrv2TibRouterTopologySetExpireTime
    TimeStamp
}
```

`olsrv2TibRouterTopologySetFromOrigIpAddressType 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 (olsrv2TibRouterTopologySetFromOrigIpAddressType, olsrv2TibRouterTopologySetFromOrigIpAddress) to the router with originator address TR_to_orig_addr (olsrv2TibRouterTopologySetToOrigIpAddressType, olsrv2TibRouterTopologySetToOrigIpAddress)."

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 }
```

```
--
```

```
-- Rountable 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,

```

```

        olsrv2TibAttNetworksSetNetIpAddress,
        olsrv2TibAttNetworksSetNetIpAddressPrefixLen)."
REFERENCE
    "RFC 7181 - The Optimized Link State Routing Protocol
    Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
    and U. Herberg, April 2014."
 ::= { olsrv2TibAttNetworksSetEntry 2 }

olsrv2TibAttNetworksSetNetIpAddressType OBJECT-TYPE
SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The type of the olsrv2TibAttNetworksSetNetIpAddress,
    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 }

olsrv2TibAttNetworksSetNetIpAddress OBJECT-TYPE
SYNTAX      InetAddress (SIZE(4|16))
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "This is the network address, of type
    olsrv2TibAttNetworksSetNetIpAddressType, 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
    (olsrv2TibAttNetworksSetOrigIpAddressType,
    olsrv2TibAttNetworksSetOrigIpAddress)."
REFERENCE
    "RFC 7181 - The Optimized Link State Routing Protocol
    Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
    and U. Herberg, April 2014."
 ::= { olsrv2TibAttNetworksSetEntry 4 }

olsrv2TibAttNetworksSetNetIpAddressPrefixLen 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 (olsrv2TibAttNetworksSetOrigIpAddressType, olsrv2TibAttNetworksSetOrigIpAddress)."

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 (olsrv2TibAttNetworksSetNetIpAddressType, olsrv2TibAttNetworksSetNetIpAddress, olsrv2TibAttNetworksSetNetIpAddressPrefixLen)."

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 { olsrv2TibRoutingSetDestIpAddressType,
        olsrv2TibRoutingSetDestIpAddress,
        olsrv2TibRoutingSetDestIpAddressPrefixLen }
 ::= { olsrv2TibRoutingSetTable 1 }

Olsrv2TibRoutingSetEntry ::=
SEQUENCE {
    olsrv2TibRoutingSetDestIpAddressType
        InetAddressType,
    olsrv2TibRoutingSetDestIpAddress
        InetAddress,
    olsrv2TibRoutingSetDestIpAddressPrefixLen
        InetAddressPrefixLength,
    olsrv2TibRoutingSetNextIfIpAddressType
        InetAddressType,
    olsrv2TibRoutingSetNextIfIpAddress
        InetAddress,
    olsrv2TibRoutingSetLocalIfIpAddressType
        InetAddressType,
    olsrv2TibRoutingSetLocalIfIpAddress
        InetAddress,
    olsrv2TibRoutingSetDist
        Unsigned32,
    olsrv2TibRoutingSetMetricValue
        Unsigned32
}

olsrv2TibRoutingSetDestIpAddressType OBJECT-TYPE
SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The type of the olsrv2TibRoutingSetDestIpAddress,
    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 }

olsrv2TibRoutingSetDestIpAddress 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 }

olsrv2TibRoutingSetDestIpAddressPrefixLen 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
         olsrv2TibRoutingSetDestIpAddress 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 }

olsrv2TibRoutingSetNextIfIpAddressType OBJECT-TYPE
    SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2TibRoutingSetNextIfIpAddress,
         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 }

```



```
olsrv2TibRoutingSetNextIfIpAddress 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 }

olsrv2TibRoutingSetLocalIfIpAddressType OBJECT-TYPE
    SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2TibRoutingSetLocalIfIpAddress
        and olsrv2TibRoutingSetNextIfIpAddress,
        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 }

olsrv2TibRoutingSetLocalIfIpAddress 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 its 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 its 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 { olsrv2OrigIpAddress, -- The address type of
            -- the originator of
            -- the notification.
            olsrv2OrigIpAddress, -- 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 }

olsrv2PreviousOrigIpAddressType OBJECT-TYPE
    SYNTAX      InetAddressType { ipv4(1) , ipv6(2) }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2PreviousOrigIpAddress,
        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 olsrv2PreviousOrigIpAddress."
    REFERENCE
        "RFC 7181 - The Optimized Link State Routing Protocol
        Version 2, Clausen, T., Dearlove, C., Jacquet, P.,
        and U. Herberg, April 2014."
 ::= { olsrv2NotificationsStates 1 }

olsrv2PreviousOrigIpAddress 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 }

11. Acknowledgements

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12. References

12.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.
- [RFC2863] McCloghrie, K. and F. Kastenholz, "The Interfaces Group MIB", [RFC 2863](#), June 2000.
- [RFC3414] Blumenthal, U. and B. Wijnen, "User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)", STD 62, [RFC 3414](#), December 2002.
- [RFC3418] Presuhn, R., "Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)", STD 62, [RFC 3418](#), December 2002.
- [RFC3826] Blumenthal, U., Maino, F., and K. McCloghrie, "The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model", [RFC 3826](#), June 2004.
- [RFC4001] Daniele, M., Haberman, B., Routhier, S., and J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", [RFC 4001](#), February 2005.
- [RFC5591] Harrington, D. and W. Hardaker, "Transport Security Model for the Simple Network Management Protocol (SNMP)", [RFC 5591](#), June 2009.
- [RFC5592] Harrington, D., Salowey, J., and W. Hardaker, "Secure Shell Transport Model for the Simple Network Management Protocol (SNMP)", [RFC 5592](#), June 2009.

- [RFC6130] Clausen, T., Dearlove, C., and J. Dean, "Mobile Ad Hoc Network (MANET) Neighborhood Discovery Protocol (NHDP)", [RFC 6130](#), April 2011.
- [RFC6353] Hardaker, W., "Transport Layer Security (TLS) Transport Model for the Simple Network Management Protocol (SNMP)", [RFC 6353](#), July 2011.
- [RFC6779] Herberg, U., Cole, R., and I. Chakeres, "Definition of Managed Objects for the Neighborhood Discovery Protocol", [RFC 6779](#), October 2012.
- [RFC7181] Clausen, T., Dearlove, C., Jacquet, P., and U. Herberg, "The Optimized Link State Routing Protocol Version 2", [RFC 7181](#), April 2014.

12.2. Informative References

- [MANET-MGMT] Nguyen, J., Cole, R., Herberg, U., Yi, J., and J. Dean, "Network Management of Mobile Ad hoc Networks (MANET): Architecture, Use Cases, and Applicability", Work in Progress, February 2013.
- [MGMT-SNAP] Clausen, T. and U. Herberg, "Snapshot of OLSRv2-Routed MANET Management", Work in Progress, February 2014.
- [REPORT-MIB] Cole, R., Macker, J., and A. Bierman, "Definition of Managed Objects for Performance Reporting", Work in Progress, November 2012.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", [RFC 3410](#), December 2002.

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 for 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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