

Internet Engineering Task Force
Internet-Draft
Intended status: Standards Track
Expires: January 13, 2011

U. Herberg
LIX, Ecole Polytechnique
R. Cole
US Army CERDEC
T. Clausen
LIX, Ecole Polytechnique
July 12, 2010

Definition of Managed Objects for the Optimized Link State Routing
Protocol version 2
draft-ietf-manet-olsrv2-mib-02

Abstract

This memo defines the Management Information Base (MIB) for configuring and managing the Optimized Link State Routing protocol version 2 (OLSRv2). The Optimized Link State Routing MIB is structured into state information, performance metrics, and notifications. This additional state and performance information is useful to troubleshoot problems and performance issues of the routing protocol. Different levels of compliances allow implementors to use smaller subsets of all defined objects, allowing for this MIB to be deployed on more constrained routers.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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

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

This Internet-Draft will expire on January 13, 2011.

Copyright Notice

Copyright (c) 2010 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal

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

Table of Contents

1. Introduction 3
2. The Internet-Standard Management Framework 3
3. Conventions 3
4. Overview 3
4.1. Terms 4
5. Structure of the MIB Module 4
5.1. The Configuration Group 5
5.2. The State Group 5
5.3. The Performance Group 5
5.3.1. Recalculation Performance Objects 5
5.3.2. Message-related Performance Objects 8
5.4. The Notifications Group 11
6. Relationship to Other MIB Modules 12
6.1. Relationship to the SNMPv2-MIB 12
6.2. Relationship to the NHDP-MIB 12
6.3. Relationship to the REPORT-MIB 12
6.4. MIB modules required for IMPORTS 12
7. Definitions 13
8. Security Considerations 58
9. IANA Considerations 60
10. References 60
10.1. Normative References 60
10.2. Informative References 61
Appendix A. Change Log 61
Appendix B. Open Issues 62
Appendix C. Note to the RFC Editor 63

1. Introduction

This memo defines the Management Information Base (MIB) for configuring and managing the Optimized Link State Routing protocol version 2 (OLSRv2). The Optimized Link State Routing MIB is structured into state information, performance metrics, and notifications. In addition to configuration, this additional state and performance information is useful to troubleshoot problems and performance issues of the routing protocol. Different levels of compliances allow implementors to use smaller subsets of all defined objects, allowing for this MIB 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 are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in [RFC2578], [RFC2579], and [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) [OLSRv2] is a table driven, proactive routing protocol, i.e. it exchanges topology information with other routers in the network regularly. 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 MIB document provides management and control capabilities of an OLSRv2 instance, allowing to monitor the state and performance of an

OLSRV2 router, as well as to change settings of the deployment.

As OLSRv2 relies on the neighborhood information discovered by NHDP [NHDP], the OLSRv2-MIB is aligned with the NHDP-MIB [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, objects which are initialized to default settings or set through the management interface defined by this MIB.
- o State Objects - automatically generated values which define the current operating state of the OLSRv2 protocol process in the router.
- o Performance Objects - automatically generated values which help an administrator or automated tool to assess the performance of the OLSRv2 routing process on the router.
- o Notification Objects - define triggers and associated notification messages allowing for asynchronous tracking of pre-defined 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 `olsrv2Objects` - defines objects forming the basis for the OLSRv2-MIB. 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 which reflect the current state of the OLSRv2 instance running on the router.
 - * Performance Group - defining objects which are useful to a management station when characterizing the performance of OLSRv2 on the router and in the MANET.

- o olsrv2Notifications - objects defining OLSRv2-MIB notifications.
- o olsrv2Conformance - defining the minimal and maximal conformance requirements for implementations of this MIB.

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 are found within the MIB module itself. Generally, an attempt was made in developing the OLSRv2-MIB module to support all configuration objects defined in [OLSRv2]. For all of the configuration parameters, the same constraints and default values of these parameters as defined in [OLSRv2] are followed.

5.2. The State Group

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

The State Group tables defined in this MIB are aligned with the according tables in the NHDP-MIB [NHDP-MIB], as described in Section 6.2.

5.3. The Performance Group

The Performance Group reports values relevant to system performance. This section lists objects for OLSRv2 performance monitoring, some of which explicitly appear in the OLSRv2-MIB and others which are obtainable through a combination of base objects from this MIB and reports available through the REPORT-MIB [REPORT]. Throughout this section, those objects will be pointed out that are intended as base objects which will be explicitly defined within this MIB and those objects which are derived through a combination of the base objects and capabilities afforded by the REPORT-MIB.

The objects in this group can be used to examine stability of the Routing Set, the selected MPRs, as well as message scheduling of this router.

5.3.1. Recalculation Performance Objects

The following objects return statistics to the frequency of Routing Set recalculations.

- o Number of Routing Set recalculations

This object counts each recalculation of the Routing Set.

This is a Base Object.

Object name: olsrv2RoutingSetRecalculationCount

Object type: Counter32

- o Acquire history of Routing Set recalculations

This object returns the history of the exact timestamps of each time the Routing Set has been recalculated.

This is a Derived Object to be pulled from the REPORT-MIB. It is derived from, e.g., the olsrv2RoutingSetRecalculationCount Base Object from the OLSRv2-MIB along with the capabilities derived from the reportHistoryGroup from the REPORT-MIB.

Object type: SEQUENCE OF TimeStamp

- o Histogram of the intervals between Routing Set recalculations

Returns the values that represent a histogram of intervals between Routing Set recalculations.

This is a Derived Object to be pulled from the REPORT-MIB. It can be derived from, e.g., the olsrv2RoutingSetRecalculationCount Base Object from the OLSRv2-MIB along with the capabilities derived from the reportHistoryGroup from the REPORT-MIB. The network management application could convert this information into the desired histogram.

Object type: SEQUENCE OF (TimeTicks, Unsigned32)

- o Changes of the frequency of the Routing Set recalculations

This object will divide the given time interval from t0 to t1 into a given number of equal parts. It then creates a histogram for each part and calculate the distances (using the Bhattacharyya distance) between each two adjacent histograms in time. A higher value between two histograms means more difference between the histograms.

This is a Derived Object to be pulled from the REPORT-MIB, as previously discussed, albeit this is a bit more complex with respect to the management application.

Object type: SEQUENCE OF (TimeStamp, Float32)

The following objects return statistics to the frequency of recalculating the MPRs of this router.

o Number of MPR recalculations

This object counts each recalculation of the MPRs of the router.

This is a Base Object.

Object name: olsrv2MPRSetRecalculationCount

Object type: Counter32

o Acquire history of MPR recalculations

This object returns the history of the exact timestamps of each time the MPRs have been recalculated.

This is a Derived Object to be pulled from the REPORT-MIB. It is derived from, e.g., the olsrv2MPRSetRecalculationCount Base Object from the OLSRv2-MIB along with the capabilities derived from the reportHistoryGroup from the REPORT-MIB.

Object type: SEQUENCE OF TimeStamp

o Histogram of the intervals between MPR recalculations

Returns the values that represent a histogram of intervals between MPR recalculations. The histogram includes all changes that have been made after the given time t0 and before the given time t1.

This is a Derived Object to be pulled from the REPORT-MIB. It can be derived from, e.g., the olsrv2MPRSetRecalculationCount Base Object from the OLSRv2-MIB along with the capabilities derived from the reportHistoryGroup from the REPORT-MIB. The network management application could convert this information into the desired histogram.

Object type: SEQUENCE OF (TimeTicks, Unsigned32)

- o Changes of the frequency of MPR recalculations

This object will divide the given time interval from t0 to t1 into a given number of equal parts. It then creates a histogram for each part and calculate the distances (using the Bhattacharyya distance) between each two adjacent histograms in time. A higher value between two histograms means more difference between the histograms.

This is a Derived Object to be pulled from the REPORT-MIB, as previously discussed, albeit this is a bit more complex with respect to the management application.

Object type: SEQUENCE OF (TimeStamp, Float32)

5.3.2. Message-related Performance Objects

The following objects return some of the statistics related to TC messages:

- o Total number of sent TC messages on an interface

This is a Base Object.

Object name: olsrv2IfTcMessageXmits

Object type: Counter32

- o Total number of received TC messages on an interface

This is a Base Object.

Object name: olsrv2IfTcMessageRecvd

Object type: Counter32

- o Total number of sent periodic TC messages on an interface

This is a Base Object.

Object name: olsrv2IfTcMessagePeriodicXmits

Object type: Counter32

- o Total number of sent triggered TC messages on an interface

This is a Base Object.

Object name: olsrv2IfTcMessageTriggeredXmits

Object type: Counter32

- o Total number of forwarded TC messages on an interface

This is a Base Object.

Object name: olsrv2IfTcMessageForwardedXmits

Object type: Counter32

- o Acquire history of TC message scheduling instance for the given time duration on an interface

This object returns the history of the exact timestamps of each TC message that has been sent as well as the type of the message (triggered or periodical). The list of events starts at the given point of time t0 and ends at the given time t1.

This is a Derived Object to be pulled from the REPORT-MIB. It is derived from, e.g., the olsrv2IfTcMessagePeriodicXmits and olsrv2IfTcMessageTriggeredXmits Base Objects from the OLSRV2-MIB along with the capabilities derived from the reportHistoryGroup from the REPORT-MIB.

Object type: SEQUENCE OF (TimeStamp, olsrv2MessageType)

- o Histogram of the intervals between TC messages on an interface

Returns the values (in a 2-dimensional array) that represent a histogram of intervals between TC messages, separated by periodic and triggered TC. The histogram displays the distribution of intervals between two consecutive TC of the same type (triggered or periodical) using a given bin size. It includes all TC that have been sent after the given time t0 and before the given time t1.

This is a Derived Object to be pulled from the REPORT-MIB. It can be derived from, e.g., the olsrv2IfTcMessagePeriodicXmits and olsrv2IfTcMessageTriggeredXmits Base Objects from the OLSRV2-MIB along with the capabilities derived from the reportHistoryGroup from the REPORT-MIB. The network management application could convert this information into the desired

histogram.

Object type: SEQUENCE OF (olsrv2MessageType, TimeTicks, Unsigned32)

- o Changes of the frequency of the message scheduling on an interface

This object will divide the given time interval from t0 to t1 into a given number of equal parts. It then creates a histogram for each part and calculate the distances (using the Bhattacharyya distance) between each two adjacent histograms in time. A higher value between two histograms means more difference between the histograms. For instance, that could happen if suddenly many triggered TC messages are sent, whereas before there have been only very few such triggered messages.

This is a Derived Object to be pulled from the REPORT-MIB, as previously discussed, albeit this is a bit more complex with respect to the management application.

Object type: SEQUENCE OF (olsrv2MessageType, TimeStamp, Float32)

- o Average number of sent TC messages per second between the given time t0 and t1 on an interface

This is a Derived Object to be pulled from the reportSampledGroup from the REPORT-MIB. It is derived from, e.g., the olsrv2IfTcMessageXmits Base Object.

Object type: Float32

- o Average number of received TC messages per second between the given time t0 and t1 on an interface

This is a Derived Object to be pulled from the REPORT-MIB. See the previous discussion.

Object type: Float32

- o Total accumulated size in octets of sent TC messages on an interface

This is a Base Object.

Object name: olsrv2IfHelloMessageXmitAccumulatedSize

Object type: Counter32

- o Total accumulated size in octets of received TC messages on an interface

This is a Base Object.

Object name: olsrv2IfHelloMessageRecvdAccumulatedSize

Object type: Counter32

- o Average size in octets of sent TC messages per second between the given time t0 and t1 on an interface

This is a Derived Object to be pulled from the REPORT-MIB. See the previous discussion.

Object type: Float32

- o Average size in octets of received TC messages per second between the given time t0 and t1 on an interface

This is a Derived Object to be pulled from the REPORT-MIB. See the previous discussion.

Object type: Float32

- o Total accumulated number of advertized MPR selectors in TC messages on an interface

This is a Base Object.

Object name:

olsrv2IfHelloMessageXmitAccumulatedSymmetricNeighborCount

Object type: Counter32

5.4. The Notifications Group

The Notifications Subtree contains the list of notifications supported within the OLSRv2-MIB and their intended purpose or utility. This group is currently empty.

The same mechanisms for improving the network performance by reducing the number of notifications apply as defined in Section 5.4 of [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. Definitions imported from other MIB modules and other 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 [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 does not duplicate those objects.

6.2. Relationship to the NHDP-MIB

OLSRv2 depends on the neighborhood information that is discovered by [NHDP]. In order access the Objects relating to discovered neighbors, the State Group tables of the NHDP-MIB [NHDP-MIB] are aligned with this MIB. This is accomplished through the definition of two TEXTUAL-CONVENTIONS in the NHDP-MIB: the NeighborInterfaceId and the NeighborRouterId. These object types are used to develop indexes into common NHDP-MIB and routing protocol State Group tables. These objects are locally significant but should be locally common to the NHDP-MIB and the OLSRv2-MIB implemented on a common networked router. This will allow for improved cross referencing of information across the two MIBs.

6.3. Relationship to the REPORT-MIB

This document describes several Performance Management metrics for the management of OLSRv2 routers. However, not all of these metrics are explicitly defined solely within the context of this OLSRv2-MIB. Some of these metrics are obtained through joint interaction between this MIB and the REPORT-MIB [REPORT]. This OLSRv2-MIB defines the minimum necessary objects (often of type COUNTER) which form the underlying basis for more sophisticated Performance Management reporting available in conjunction with the REPORT-MIB. See Section 5.3 for a description of the performance metrics for OLSRv2.

6.4. MIB modules required for IMPORTS

The following OLSRv2-MIB module IMPORTS objects from NHDP-MIB [NHDP-MIB], SNMPv2-SMI [RFC2578], SNMPv2-TC [RFC2579], SNMPv2-CONF [RFC2580], IF-MIB [RFC2863], INET-ADDRESS-MIB [RFC4001], and SMIng

[RFC3781].

7. Definitions

This section contains the MIB module defined by the specification.

```
MANET-OLSRv2-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    Float32
```

```
        FROM SMing --[RFC3781]
```

```
    MODULE-IDENTITY, OBJECT-TYPE, Counter32,  
    Integer32, Unsigned32, mib-2
```

```
        FROM SNMPv2-SMI --[RFC2578]
```

```
    TEXTUAL-CONVENTION, StorageType, TimeStamp,  
    TruthValue, RowStatus
```

```
        FROM SNMPv2-TC --[RFC2579]
```

```
    MODULE-COMPLIANCE, OBJECT-GROUP
```

```
        FROM SNMPv2-CONF --[STD58]
```

```
    InetAddressType, InetAddress,  
    InetAddressPrefixLength
```

```
        FROM INET-ADDRESS-MIB --[RFC3291]
```

```
    InterfaceIndexOrZero
```

```
        FROM IF-MIB --[RFC2863]
```

```
    NeighborRouterId
```

```
        FROM NHDP-MIB -- [draft-ietf-manet-nhdp-mib]
```

```
;
```

```
manetOlsrv2MIB MODULE-IDENTITY
```

```
    LAST-UPDATED "201007121000Z" -- July 12, 2010
```

```
    ORGANIZATION "IETF MANET Working Group"
```

```
    CONTACT-INFO
```

```
        "WG E-Mail: manet@ietf.org"
```

```
        WG Chairs: ian.chakeres@gmail.com  
                  jmacker@nrl.navy.mil
```

```
    Editors:    Ulrich Herberg  
                Ecole Polytechnique  
                LIX  
                91128 Palaiseau Cedex
```

France
+33 1 69 33 41 26
ulrich@herberg.name
<http://www.herberg.name/>

Thomas Heide Clausen
Ecole Polytechnique
LIX
91128 Palaiseau Cedex
France
<http://www.thomasclausen.org/>
T.Clausen@computer.org

Robert G. Cole
US Army CERDEC
Space and Terrestrial Communications
328 Hopkins Road
Bldg 245, Room 16
Aberdeen Proving Ground, MD 21005
USA
+1 410 278-6779
robert.g.cole@us.army.mil
<http://www.cs.jhu.edu/~rgcole/>

DESCRIPTION

"This MIB module contains managed object definitions for the Manet OLSRv2 routing process defined in the Optimized Link State Routing Protocol version 2 defined in [RFCXXXX].

Copyright (C) The IETF Trust (2009). This version of this MIB module is part of RFC xxxx; see the RFC itself for full legal notices."

-- Revision History

REVISION "201007121000Z" -- July 12, 2010

DESCRIPTION

"The fifth version of this MIB module, published as draft-ietf-manet-olsrv2-mib-02.txt. Many editorial changes, Security Considerations, corrected errors in the MIB."

REVISION "200911091000Z" -- Nov 9, 2009

DESCRIPTION

"The fourth version of this MIB module, published as draft-ietf-manet-olsrv2-mib-01.txt. Added Performance objects, and updated to newest OLSRv2 draft."

REVISION "200905031300Z" -- May 3, 2009

DESCRIPTION

"Third draft of this MIB module published as draft-ietf-manet-olsrv2-mib-00.txt. Rev'd as a new MANET WG document. Cleaned up SYNTAX errors and other typos found by 'smilint'."

REVISION "200902151300Z" -- February 15, 2009

DESCRIPTION

"Second draft of this MIB module published as draft-cole-manet-olsrv2-mib-01.txt. Cleaned up table indexing and aligned with the NHDP-MIB draft (draft-cole-manet-nhdp-mib-01.txt)."

REVISION "200810241300Z" -- October 24, 2008

DESCRIPTION

"Initial draft of this MIB module published as draft-cole-manet-olsrv2-mib-00.txt."

-- RFC-Editor assigns XXXX

::= { mib-2 998 } -- to be assigned by IANA

--

-- TEXTUAL CONVENTIONS

--

-- none

--

-- 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}

--

-- 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.

        This object is persistent and when written
        the entity SHOULD save the change to
        non-volatile storage."
    REFERENCE
        "The OLSRv2 draft.
        Section 5 on Protocol Parameters."
    DEFVAL { 30000 }
 ::= { olsrv2ConfigurationGroup 1 }
```

--

-- Message intervals

--

```
olsrv2TcInterval OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "olsrv2TcInterval corresponds to
        TC_INTERVAL of OLSRv2.

        The following constraints apply to this
        parameter:

            olsrv2TcInterval > 0
            olsrv2TcInterval &gt;= olsrv2TcMinInterval

        This object is persistent and when written
        the entity SHOULD save the change to
        non-volatile storage."
    REFERENCE
        "The OLSRv2 draft.
        Section 5 on Protocol Parameters."
    DEFVAL { 5000 }
 ::= { olsrv2ConfigurationGroup 2 }
```

```
olsrv2TcMinInterval OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "olsrv2TcMinInterval corresponds to
        TC_MIN_INTERVAL of OLSRv2.

        The following constraint applies to this
        parameter:

            olsrv2TcInterval >= olsrv2TcMinInterval
```

This object is persistent and when written the entity SHOULD save the change to non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 1250 }

::= { olsrv2ConfigurationGroup 3 }

```
--
-- Advertised information validity times
--
```

```
olsrv2THoldTime OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "milliseconds"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "olsrv2THoldTime corresponds to
        T_HOLD_TIME of OLSRv2.

        The following constraint applies to this
        parameter:

            olsrv2THoldTime >= olsrv2TcInterval
```

If TC messages can be lost, then olsrv2THoldTime SHOULD be significantly greater than olsrv2TcInterval; a value >= 3 x olsrv2TcInterval is RECOMMENDED.

olsrv2THoldTime MUST be representable as described in [timetlv].

This object is persistent and when written the entity SHOULD save the change to non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 15000 }

::= { olsrv2ConfigurationGroup 4 }

olsrv2AHoldTime OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"olsrv2AHoldTime corresponds to
A_HOLD_TIME of OLSRv2.

If TC messages can be lost, then
olsrv2AHoldTime SHOULD be
significantly greater than olsrv2TcInterval;
a value $\geq 3 \times$ olsrv2TcInterval is
RECOMMENDED.

olsrv2AHoldTime MUST be representable as described in [timetlv].

This object is persistent and when written the entity SHOULD save the change to non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 15000 }

::= { olsrv2ConfigurationGroup 5 }

--

-- 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.

The following constraint applies to this
parameter:

olsrv2RxHoldTime > 0

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

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 30000 }

::= { olsrv2ConfigurationGroup 6 }

olsrv2PHoldTime OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"olsrv2PHoldTime corresponds to
P_HOLD_TIME of OLSRv2.

The following constraint applies to this
parameter:

olsrv2PHoldTime > 0

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

"The OLSRv2 draft.

Section 5 on Protocol Parameters."

DEFVAL { 30000 }

::= { olsrv2ConfigurationGroup 7 }

olsrv2FHoldTime OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"olsrv2RxHoldTime corresponds to
RX_HOLD_TIME of OLSRv2.

The following constraint applies to this
parameter:

olsrv2FHoldTime > 0

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

"The OLSRv2 draft.

Section 5 on Protocol Parameters."

DEFVAL { 30000 }

::= { olsrv2ConfigurationGroup 8 }

--

-- Jitter times

--

olsrv2TpMaxJitter OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"olsrv2TpMaxJitter corresponds to
TP_MAXJITTER of OLSRv2.

This object is persistent and when written
the entity SHOULD save the change to
non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 500 }

::= { olsrv2ConfigurationGroup 9 }

olsrv2TtMaxJitter OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"olsrv2TtMaxJitter corresponds to
TT_MAXJITTER of OLSRv2.

This object is persistent and when written
the entity SHOULD save the change to
non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 500 }

::= { olsrv2ConfigurationGroup 10 }

olsrv2FMaxJitter OBJECT-TYPE

SYNTAX Unsigned32

UNITS "milliseconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"olsrv2FMaxJitter corresponds to
F_MAXJITTER of OLSRv2.

This object is persistent and when written
the entity SHOULD save the change to
non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 500 }

::= { olsrv2ConfigurationGroup 11 }

--
-- 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.

The following constraint applies to this
parameter:

The maximum value of
olsrv2TcHopLimit >= the network diameter
in hops, a value of 255 is RECOMMENDED.

All values of olsrv2TcHopLimit >= 2.

This object is persistent and when written
the entity SHOULD save the change to
non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 255 }

::= { olsrv2ConfigurationGroup 12 }

--
-- Willingness
--

olsrv2Willingness OBJECT-TYPE
SYNTAX Unsigned32 (0..255)
MAX-ACCESS read-write
STATUS current

DESCRIPTION

"olsrv2Willingness corresponds to
WILLINGNESS of OLSRv2.

The following constraint applies to this
parameter:

WILL_NEVER (0) <= olsrv2Willingness <=

WILL_ALWAYS (15)

This object is persistent and when written the entity SHOULD save the change to non-volatile storage."

REFERENCE

"The OLSRv2 draft.
Section 5 on Protocol Parameters."

DEFVAL { 7 }

::= { olsrv2ConfigurationGroup 13 }

--

-- olsrv2StateGroup

--

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

olsrv2StateGroup OBJECT IDENTIFIER ::= { olsrv2MIBObjects 2 }

olsrv2RouterStatus OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The current status of the OLSRv2 router
routing process."

::= { olsrv2StateGroup 1 }

--

-- Local Information Base - as defined in [NHDP],
-- 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      obsolete
    DESCRIPTION
        "A router's Originator Set records addresses
        that were recently used as originator addresses
        by this router.  If a router's originator
        address is immutable then this set is always
        empty and MAY be omitted."
    REFERENCE
        "The OLSRV2 draft."
 ::= { olsrv2StateGroup 2 }

olsrv2LibOrigSetEntry  OBJECT-TYPE
    SYNTAX      Olsrv2LibOrigSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A router's Originator Set consists of
        Originator Tuples:
        (O_orig_addr, O_time)."
    REFERENCE
        "The OLSRV2 draft."
    INDEX { olsrv2LibOrigSetIpAddress }
 ::= { olsrv2LibOrigSetTable 1 }

Olsrv2LibOrigSetEntry ::=
    SEQUENCE {
        olsrv2LibOrigSetIpAddressType
            InetAddressType,
        olsrv2LibOrigSetIpAddress
            InetAddress,
        olsrv2LibOrigSetExpireTime
            TimeStamp
    }

olsrv2LibOrigSetIpAddressType  OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2LibOrigSetIpAddress, as defined
        in the InetAddress MIB [RFC 4001]."
```

```
REFERENCE
  "The OLSRv2 draft."
 ::= { olsrv2LibOrigSetEntry 1 }

olsrv2LibOrigSetIpAddress OBJECT-TYPE
  SYNTAX      InetAddress
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "A recently used originator address
     by this router."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2LibOrigSetEntry 2 }

olsrv2LibOrigSetExpireTime OBJECT-TYPE
  SYNTAX      TimeStamp
  UNITS       "milliseconds"
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This object specifies the time at which this
     entry expires and MUST be removed."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2LibOrigSetEntry 3 }

--
-- Local Attached Network Set
--

olsrv2LibLocAttNetSetTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF Olsrv2LibLocAttNetSetEntry
  MAX-ACCESS  not-accessible
  STATUS      obsolete
  DESCRIPTION
    "A router's Local Attached Network Set records
     its local non-OLSRv2 interfaces via which it
     can act as gateways to other networks. The
     Local Attached Network Set is not modified by
     this protocol."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2StateGroup 3 }

olsrv2LibLocAttNetSetEntry OBJECT-TYPE
  SYNTAX      Olsrv2LibLocAttNetSetEntry
```

```

MAX-ACCESS    not-accessible
STATUS        current
DESCRIPTION
  "The entries include the Local Attached
  Network Tuples:

      (AL_net_addr, AL_dist)

  where:

      AL_net_addr is the network address
      of an attached network which can
      be reached via this router.

      AL_dist is the number of hops to
      the network with address AL_net_addr
      from this router."
REFERENCE
  "The OLSRv2 draft."
INDEX { olsrv2LibLocAttNetSetIpAddress,
        olsrv2LibLocAttNetSetIpAddressPrefixLen }
 ::= { olsrv2LibLocAttNetSetTable 1 }

Olsrv2LibLocAttNetSetEntry ::=
SEQUENCE {
  olsrv2LibLocAttNetSetIpAddressType
    InetAddressType,
  olsrv2LibLocAttNetSetIpAddress
    InetAddress,
  olsrv2LibLocAttNetSetIpAddressPrefixLen
    InetAddressPrefixLength,
  olsrv2LibLocAttNetSetDistance
    Unsigned32,
  olsrv2LibLocAttNetSetRowStatus
    RowStatus
}

olsrv2LibLocAttNetSetIpAddressType OBJECT-TYPE
SYNTAX        InetAddressType
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
  "The type of the olsrv2LibLocAttNetSetIpAddress, as defined
  in the InetAddress MIB [RFC 4001]."
REFERENCE
  "The OLSRv2 draft."
 ::= { olsrv2LibLocAttNetSetEntry 1 }

```

```
olsrv2LibLocAttNetSetIpAddress OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the network address of an attached
        network which can be reached via this router."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2LibLocAttNetSetEntry 2 }

olsrv2LibLocAttNetSetIpAddressPrefixLen OBJECT-TYPE
    SYNTAX      InetAddressPrefixLength
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the number of leading one bits that form the
        mask to be logical-ANDed with the destination address
        before being compared to the value in the
        olsrv2LibLocAttNetSetIpAddress field."
    REFERENCE
        "The OLSRv2 draft."
 ::= { 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
        "The OLSRv2 draft."
 ::= { olsrv2LibLocAttNetSetEntry 4 }

olsrv2LibLocAttNetSetRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
        "This object permits management of the table
        by facilitating actions such as row creation,
        construction, and destruction. The value of
        this object has no effect on whether other
        objects in this conceptual row can be
        modified."
```

```
::= { olsrv2LibLocAttNetSetEntry 5 }

--
-- Interface Information Bases - as defined in
-- [nhdp], one Interface Information Base for
-- each OLSRv2 interface.
--

-- Note: The IIB is fully defined in the NHDP
-- specification and its associated MIB.

--

-- Neighbor Information Base - as defined in [NHDP],
-- extended by the addition of five elements to
-- each Neighbor Tuple, as defined in Section 8.
--

--

-- Neighbor Set
--

olsrv2NibNeighborSetTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Olsrv2NibNeighborSetEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete
    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
        "The OLSRv2 draft."
::= { olsrv2StateGroup 4 }

olsrv2NibNeighborSetEntry OBJECT-TYPE
    SYNTAX      Olsrv2NibNeighborSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each Neighbor Tuple in the Neighbor Set, defined
        in [NHDP], has these additional elements:
         N_orig_addr
         N_willingness
         N_mpr"
```

```

        N_mpr_selector
        N_advertised
        defined here as extensions."
REFERENCE
    "The OLSRv2 draft."
INDEX { olsrv2NibNeighborSetRouterId }
 ::= { olsrv2NibNeighborSetTable 1 }

Olsrv2NibNeighborSetEntry ::=
SEQUENCE {
    olsrv2NibNeighborSetRouterId
        NeighborRouterId,
    olsrv2NibNeighborSetNIpAddrType
        InetAddressType,
    olsrv2NibNeighborSetNOrigAddr
        InetAddress,
    olsrv2NibNeighborSetNWilliness
        Unsigned32,
    olsrv2NibNeighborSetNMpr
        TruthValue,
    olsrv2NibNeighborSetNMprSelector
        TruthValue,
    olsrv2NibNeighborSetNAdvertised
        TruthValue
}

olsrv2NibNeighborSetRouterId OBJECT-TYPE
SYNTAX      NeighborRouterId
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The object olsrv2NibNeighborSetRouterId is
    the locally assigned ID of the remote router
    referenced in this row.  The IP addr
    associated with this router is contained
    in the NHDP-MIB's 'nhdpDiscIfSetTable'."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2NibNeighborSetEntry 1 }

olsrv2NibNeighborSetNIpAddrType OBJECT-TYPE
SYNTAX      InetAddressType
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The type of the olsrv2NibNeighborSetNOrigAddr, as defined
    in the InetAddress MIB [RFC 4001]."
```

```
REFERENCE
  "The OLSRv2 draft."
 ::= { olsrv2NibNeighborSetEntry 2 }

olsrv2NibNeighborSetNOrigAddr OBJECT-TYPE
  SYNTAX      InetAddress
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This is the originator IP address of that
    neighbor."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2NibNeighborSetEntry 3 }

olsrv2NibNeighborSetNWilliness OBJECT-TYPE
  SYNTAX      Unsigned32 (1..7)
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This object, N_willingness, is the neighbor
    router's willingness to be selected as an MPR, in
    the range from WILL_NEVER (0) to WILL_ALWAYS
    (15), both inclusive."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2NibNeighborSetEntry 4 }

olsrv2NibNeighborSetNMpr OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This object, N_mpr, is a boolean flag,
    describing if this neighbor is selected as
    an MPR by this router.

    When set to 'true', this neighbor is selected
    as an MPR by this router. When set to 'false',
    it is not selected by this router as an MPR."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2NibNeighborSetEntry 5 }

olsrv2NibNeighborSetNMprSelector OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-only
  STATUS      current
```

DESCRIPTION

"This object, N_mpr_selector, is a boolean flag, describing if this neighbor has selected this router as an MPR, i.e. is an MPR selector of this router.

When set to 'true', then this router is selected as an MPR by the neighbor router. When set to 'false', then this router is not selected by the neighbor as an MPR"

REFERENCE

"The OLSRv2 draft."

```
::= { olsrv2NibNeighborSetEntry 6 }
```

olsrv2NibNeighborSetNAdvertised OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object, N_mpr_selector, is a boolean flag, describing if this router has elected to advertise a link to this neighbor in its TC messages."

REFERENCE

"The OLSRv2 draft."

```
::= { olsrv2NibNeighborSetEntry 7 }
```

olsrv2NibNeighborSetTableAnsn OBJECT-TYPE

SYNTAX Unsigned32

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

"The OLSRv2 draft."

```
::= { olsrv2StateGroup 5 }
```

```
--  
-- Topology Information Base - this Information  
-- Base is specific to OLSRv2, and is defined in  
-- Section 9.  
--
```

```
--
```

```
-- Advertising Remote Router Set
```

```
--
```

```
olsrv2TibAdRemoteRouterSetTable OBJECT-TYPE
```

```
SYNTAX SEQUENCE OF Olsrv2TibAdRemoteRouterSetEntry
```

```
MAX-ACCESS not-accessible
```

```
STATUS obsolete
```

```
DESCRIPTION
```

```
"A router's Advertising Remote Router Set records
information describing each remote router in the
network that transmits TC messages."
```

```
REFERENCE
```

```
"The OLSRv2 draft."
```

```
::= { olsrv2StateGroup 6 }
```

```
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, AR_seq_number, AR_time)
```

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

```
REFERENCE
```

```
"The OLSRv2 draft."
```

```
INDEX { olsrv2TibAdRemoteRouterSetRouterId }
```

```
::= { olsrv2TibAdRemoteRouterSetTable 1 }
```

```
Olsrv2TibAdRemoteRouterSetEntry ::=
```

```
SEQUENCE {
```

```
olsrv2TibAdRemoteRouterSetIpAddressType
```

```
InetAddressType,
```

```
olsrv2TibAdRemoteRouterSetIpAddress
```

```
InetAddress,
```

```
olsrv2TibAdRemoteRouterSetRouterId
```

```
NeighborRouterId,
```

```
olsrv2TibAdRemoteRouterSetMaxSeqNo
```

```
Unsigned32,
```

```
olsrv2TibAdRemoteRouterSetExpireTime
```

```
TimeStamp
```

```
}
```

```
olsrv2TibAdRemoteRouterSetIpAddressType OBJECT-TYPE
```

```
SYNTAX InetAddressType
```

```
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The type of the olsrv2TibAdRemoteRouterSetIpAddress,
    as defined in the InetAddress MIB [RFC 4001]."
```

REFERENCE

```
"The OLSRv2 draft."
 ::= { olsrv2TibAdRemoteRouterSetEntry 1 }
```

```
olsrv2TibAdRemoteRouterSetIpAddress OBJECT-TYPE
SYNTAX InetAddress
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "This is the originator address of a received
    TC message."
```

REFERENCE

```
"The OLSRv2 draft."
 ::= { olsrv2TibAdRemoteRouterSetEntry 2 }
```

```
olsrv2TibAdRemoteRouterSetRouterId OBJECT-TYPE
SYNTAX NeighborRouterId
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This object is an additional index for each
    Remote Router's IfAddr associated with the
    olsrv2TibAdRemoteRouterSetIpAddress."
```

REFERENCE

```
"The OLSRv2 draft."
 ::= { olsrv2TibAdRemoteRouterSetEntry 3 }
```

```
olsrv2TibAdRemoteRouterSetMaxSeqNo OBJECT-TYPE
SYNTAX Unsigned32 (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "This is the greatest ANSN in any TC message
    received which originated from the router
    with originator address
    olsrv2TibAdRemoteRouterSetIpAddress."
```

REFERENCE

```
"The OLSRv2 draft."
 ::= { olsrv2TibAdRemoteRouterSetEntry 4 }
```

```
olsrv2TibAdRemoteRouterSetExpireTime OBJECT-TYPE
SYNTAX TimeStamp
UNITS "milliseconds"
```

```

MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "This is the time at which this
    Tuple expires and MUST be removed."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibAdRemoteRouterSetEntry 5 }

--
-- Router Topology Set
--

olsrv2TibRouterTopologySetTable OBJECT-TYPE
    SYNTAX SEQUENCE OF Olsrv2TibTopologySetEntry
    MAX-ACCESS not-accessible
    STATUS obsolete
    DESCRIPTION
        "A router's Router Topology Set records topology
        information about the network."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2StateGroup 7 }

olsrv2TibRouterTopologySetEntry OBJECT-TYPE
    SYNTAX Olsrv2TibTopologySetEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "It consists of Router Topology Tuples:

            (TR_from_orig_addr, TR_to_orig_addr,
             TR_seq_number, TR_time)"
    REFERENCE
        "The OLSRv2 draft."
    INDEX { olsrv2TibRouterTopologySetFromOrigIpAddress }
 ::= { olsrv2TibRouterTopologySetTable 1 }

Olsrv2TibTopologySetEntry ::=
    SEQUENCE {
        olsrv2TibRouterTopologySetFromOrigIpAddressType
            InetAddressType,
        olsrv2TibRouterTopologySetFromOrigIpAddress
            InetAddress,
        olsrv2TibRouterTopologySetToOrigIpAddressType
            InetAddressType,

```

```
    olsrv2TibRouterTopologySetToOrigIpAddr
      InetAddress,
    olsrv2TibRouterTopologySetSeqNo
      Unsigned32,
    olsrv2TibRouterTopologySetExpireTime
      TimeStamp
  }

olsrv2TibRouterTopologySetFromOrigIpAddrType OBJECT-TYPE
  SYNTAX      InetAddressType
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The type of the olsrv2TibRouterTopologySetFromOrigIpAddr,
     as defined in the InetAddress MIB [RFC 4001]."
```

REFERENCE

```
    "The OLSRv2 draft."
 ::= { olsrv2TibRouterTopologySetEntry 1 }
```

```
olsrv2TibRouterTopologySetFromOrigIpAddr OBJECT-TYPE
  SYNTAX      InetAddress
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This is the originator address of a router which can
     reach the router with originator address TR_to_orig_addr
     in one hop, note that this does not include a prefix length"
```

REFERENCE

```
    "The OLSRv2 draft."
 ::= { olsrv2TibRouterTopologySetEntry 2 }
```

```
olsrv2TibRouterTopologySetToOrigIpAddrType OBJECT-TYPE
  SYNTAX      InetAddressType
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The type of the olsrv2TibRouterTopologySetToOrigIpAddr,
     as defined in the InetAddress MIB [RFC 4001]."
```

REFERENCE

```
    "The OLSRv2 draft."
 ::= { olsrv2TibRouterTopologySetEntry 3 }
```

```
olsrv2TibRouterTopologySetToOrigIpAddr OBJECT-TYPE
  SYNTAX      InetAddress
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This is the originator address of a router which can be
```

reached by the router with originator address TR_to_orig_addr in one hop, note that this does not include a prefix length."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRouterTopologySetEntry 4 }

olsrv2TibRouterTopologySetSeqNo OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the greatest ANSN in any TC message received which originated from the router with originator address TR_from_orig_addr (i.e., which contributed to the information contained in this Tuple)."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRouterTopologySetEntry 5 }

olsrv2TibRouterTopologySetExpireTime OBJECT-TYPE

SYNTAX TimeStamp

UNITS "milliseconds"

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This is the time at which this Tuple expires and MUST be removed."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRouterTopologySetEntry 6 }

--
-- Rutable Address Topology Set
--

olsrv2TibRutableAddressTopologySetTable OBJECT-TYPE

SYNTAX SEQUENCE OF Olsrv2TibRutableAddressTopologySetEntry

MAX-ACCESS not-accessible

STATUS obsolete

DESCRIPTION

"A router's Rutable Address Topology Set records topology information about the rutable addresses within the MANET, and via which routers they may be reached."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2StateGroup 8 }

olsrv2TibRoutableAddressTopologySetEntry OBJECT-TYPE
 SYNTAX Olsrv2TibRoutableAddressTopologySetEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION

"It consists of Router Topology Tuples:

(TA_from_orig_addr, TA_to_orig_addr,
 TA_seq_number, TA_time)"

REFERENCE

"The OLSRv2 draft."

INDEX { olsrv2TibRouterTopologySetFromOrigIpAddress }
 ::= { olsrv2TibRoutableAddressTopologySetTable 1 }

Olsrv2TibRoutableAddressTopologySetEntry ::=

```
SEQUENCE {
  olsrv2TibRoutableAddressTopologySetFromOrigIpAddressType
    InetAddressType,
  olsrv2TibRoutableAddressTopologySetFromOrigIpAddress
    InetAddress,
  olsrv2TibRoutableAddressTopologySetToOrigIpAddressType
    InetAddressType,
  olsrv2TibRoutableAddressTopologySetToOrigIpAddress
    InetAddress,
  olsrv2TibRoutableAddressTopologySetSeqNo
    Unsigned32,
  olsrv2TibRoutableAddressTopologySetExpireTime
    TimeStamp
}
```

olsrv2TibRoutableAddressTopologySetFromOrigIpAddressType OBJECT-TYPE
 SYNTAX InetAddressType
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION

"The type of the
 olsrv2TibRoutableAddressTopologySetFromOrigIpAddress,
 as defined in the InetAddress MIB [RFC 4001]."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRoutableAddressTopologySetEntry 1 }

olsrv2TibRoutableAddressTopologySetFromOrigIpAddress OBJECT-TYPE
 SYNTAX InetAddress

```
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This is the originator address of a router which can
    reach the router with routable address TA_dest_addr
    in one hop."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibRoutableAddressTopologySetEntry 2 }

olsrv2TibRoutableAddressTopologySetToOrigIpAddrType OBJECT-TYPE
SYNTAX        InetAddressType
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "The type of the olsrv2TibRouterTopologySetToOrigIpAddr,
    as defined in the InetAddress MIB [RFC 4001]."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibRoutableAddressTopologySetEntry 3 }

olsrv2TibRoutableAddressTopologySetToOrigIpAddr OBJECT-TYPE
SYNTAX        InetAddress
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This is a routable address of a router which can be
    reached by the router with originator address
    TA_from_orig_addr in one hop."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibRoutableAddressTopologySetEntry 4 }

olsrv2TibRoutableAddressTopologySetSeqNo OBJECT-TYPE
SYNTAX        Unsigned32 (0..65535)
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This is the greatest ANSN in any TC message
    received which originated from the router
    with originator address TA_from_orig_addr
    (i.e., which contributed to the information
    contained in this Tuple)."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibRoutableAddressTopologySetEntry 5 }

olsrv2TibRoutableAddressTopologySetExpireTime OBJECT-TYPE
```

```
SYNTAX      TimeStamp
UNITS       "milliseconds"
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This is the time at which this
    Tuple expires and MUST be removed."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibRoutableAddressTopologySetEntry 6 }

--
-- Attached Network Set
--

olsrv2TibAttNetworksSetTable OBJECT-TYPE
SYNTAX      SEQUENCE OF Olsrv2TibAttNetworksSetEntry
MAX-ACCESS  not-accessible
STATUS      obsolete
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
    "The OLSRv2 draft."
 ::= { olsrv2StateGroup 9 }

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

        (AN_orig_addr, AN_net_addr,
         AN_dist, AN_seq_number, AN_time)"

REFERENCE
    "The OLSRv2 draft."
INDEX { olsrv2TibAttNetworksSetNetIpAddressType,
        olsrv2TibAttNetworksSetNetIpAddress,
        olsrv2TibAttNetworksSetNetIpAddressPrefixLen }
 ::= { olsrv2TibAttNetworksSetTable 1 }

Olsrv2TibAttNetworksSetEntry ::=
SEQUENCE {
```

```

    olsrv2TibAttNetworksSetOrigIpAddr
        InetAddress,
    olsrv2TibAttNetworksSetNetIpAddrType
        InetAddressType,
    olsrv2TibAttNetworksSetNetIpAddr
        InetAddress,
    olsrv2TibAttNetworksSetNetIpAddrPrefixLen
        InetAddressPrefixLength,
    olsrv2TibAttNetworksSetSeqNo
        Unsigned32,
    olsrv2TibAttNetworksSetDist
        Unsigned32,
    olsrv2TibAttNetworksSetExpireTime
        TimeStamp
}

```

olsrv2TibAttNetworksSetOrigIpAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the originator address of a router which can act as gateway to the network with address AN_net_addr, note that this does not include a prefix length."

REFERENCE

"The OLSRv2 draft."

```
::= { olsrv2TibAttNetworksSetEntry 1 }
```

olsrv2TibAttNetworksSetNetIpAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The type of the olsrv2TibAttNetworksSetNetIpAddr, as defined in the InetAddress MIB [RFC 4001]."

REFERENCE

"The OLSRv2 draft."

```
::= { olsrv2TibAttNetworksSetEntry 2 }
```

olsrv2TibAttNetworksSetNetIpAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is is the network address of an attached network, which may be reached via

the router with originator address AN_orig_addr."
REFERENCE
"The OLSRv2 draft."
 ::= { olsrv2TibAttNetworksSetEntry 3 }

olsrv2TibAttNetworksSetNetIpAddressPrefixLen OBJECT-TYPE
SYNTAX InetAddressPrefixLength
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates the number of leading one bits that form the
mask to be logical-ANDed with the destination address
before being compared to the value in the
olsrv2TibAttNetworksSetNetIpAddress field."
REFERENCE
"The OLSRv2 draft."
 ::= { olsrv2TibAttNetworksSetEntry 4 }

olsrv2TibAttNetworksSetSeqNo OBJECT-TYPE
SYNTAX Unsigned32 (0..65535)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The is the greatest ANSN in any TC
message received which originated from the
router with originator address AN_orig_addr
(i.e. which contributed to the information
contained in this Tuple)."
REFERENCE
"The OLSRv2 draft."
 ::= { olsrv2TibAttNetworksSetEntry 5 }

olsrv2TibAttNetworksSetDist OBJECT-TYPE
SYNTAX Unsigned32 (0..255)
UNITS "hops"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The is the number of hops to the network
with address AN_net_addr from the router with
originator address AN_orig_addr."
REFERENCE
"The OLSRv2 draft."
 ::= { olsrv2TibAttNetworksSetEntry 6 }

olsrv2TibAttNetworksSetExpireTime OBJECT-TYPE
SYNTAX TimeStamp
UNITS "milliseconds"

```

MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This is the time at which this
    Tuple expires and MUST be removed."
REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2TibAttNetworksSetEntry 7 }

--
-- Routing Set
--

olsrv2TibRoutingSetTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Olsrv2TibRoutingSetEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete
    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
        "The OLSRv2 draft."
 ::= { olsrv2StateGroup 10 }

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)"
    REFERENCE
        "The OLSRv2 draft."
    INDEX { olsrv2TibRoutingSetDestIpAddressType,
            olsrv2TibRoutingSetDestIpAddress,
            olsrv2TibRoutingSetDestIpAddressPrefLen }
 ::= { olsrv2TibRoutingSetTable 1 }

Olsrv2TibRoutingSetEntry ::=
    SEQUENCE {
        olsrv2TibRoutingSetDestIpAddressType
            InetAddressType,
        olsrv2TibRoutingSetDestIpAddress
    }

```

```
    InetAddress,
    olsrv2TibRoutingSetDestIpAddrPrefLen
    InetAddressPrefixLength,
    olsrv2TibRoutingSetNextIfIpAddr
    InetAddress,
    olsrv2TibRoutingSetLocalIfIpAddr
    InetAddress,
    olsrv2TibRoutingSetDist
    Unsigned32
}
```

```
olsrv2TibRoutingSetDestIpAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2TibRoutingSetDestIpAddr
        and olsrv2TibRoutingSetNextIfIpAddr,
        as defined in the InetAddress MIB [RFC 4001]."
```

REFERENCE

```
    "The OLSRV2 draft."
 ::= { olsrv2TibRoutingSetEntry 1 }
```

```
olsrv2TibRoutingSetDestIpAddr OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    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

```
    "The OLSRV2 draft."
 ::= { olsrv2TibRoutingSetEntry 2 }
```

```
olsrv2TibRoutingSetDestIpAddrPrefLen OBJECT-TYPE
    SYNTAX      InetAddressPrefixLength
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Indicates the number of leading one bits that form the
        mask to be logical-ANDed with the destination address
        before being compared to the value in the
        olsrv2TibRoutingSetDestNetIpAddr field."
```

Note: This definition needs to be consistent with the current forwarding table MIB description.

Specifically, it should allow for longest prefix matching of network addresses."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRoutingSetEntry 3 }

olsrv2TibRoutingSetNextIfIpAddress OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the OLSRv2 interface address of the 'next hop' on the selected path to the destination."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRoutingSetEntry 4 }

olsrv2TibRoutingSetLocalIfIpAddress OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the address of the local OLSRv2 interface over which a packet MUST be sent to reach the destination by the selected path."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRoutingSetEntry 5 }

olsrv2TibRoutingSetDist OBJECT-TYPE

SYNTAX Unsigned32 (0..255)

UNITS "hops"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The is the number of hops on the selected path to the destination."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2TibRoutingSetEntry 6 }

--

-- Received Message Information Base (RMIB) - records information
-- required to ensure that a message is processed at most

```
-- once and is forwarded at most once per OLSRv2 interface
-- of a router, using MPR flooding.
--
```

```
-- Note: Is it appropriate or necessary to put the
-- level of detail found in the Processing and
-- Forwarding Information Base into the OLSRv2-MIB?
```

```
--
-- Received Set
--
```

```
olsrv2RmibReceivedSetTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Olsrv2RmibReceivedSetEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete
    DESCRIPTION
        "A router has a Received Set per OLSRv2 interface.
        Each Received Set records the signatures of messages
        which have been received over that OLSRv2 interface."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2StateGroup 11 }
```

```
olsrv2RmibReceivedSetEntry OBJECT-TYPE
    SYNTAX      Olsrv2RmibReceivedSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each consists of Received Tuples:

        (RX_type, RX_orig_addr, RX_seq_number, RX_time)"
    REFERENCE
        "The OLSRv2 draft."
    INDEX { olsrv2RmibReceivedIfIndex,
            olsrv2RmibReceivedSetOrigAddr,
            olsrv2RmibReceivedSetSeqNo }
 ::= { olsrv2RmibReceivedSetTable 1 }
```

```
Olsrv2RmibReceivedSetEntry ::=
    SEQUENCE {
        olsrv2RmibReceivedIfIndex
            InterfaceIndexOrZero,
        olsrv2RmibReceivedSetMsgType
            Unsigned32,
        olsrv2RmibReceivedSetOrigIpAddressType
            InetAddressType,
        olsrv2RmibReceivedSetOrigAddr
```

```
        InetAddress,
        olsrv2RmibReceivedSetSeqNo
        Unsigned32,
        olsrv2RmibReceivedSetExpireTime
        TimeStamp
    }

olsrv2RmibReceivedIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndexOrZero
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The ID of an interface.  Used for cross
        indexing into other OLSRv2 tables and other
        MIBs."
 ::= { olsrv2RmibReceivedSetEntry 1 }

olsrv2RmibReceivedSetMsgType OBJECT-TYPE
    SYNTAX      Unsigned32 (1..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the received Message Type."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2RmibReceivedSetEntry 2 }

olsrv2RmibReceivedSetOrigIpAddrType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2RmibReceivedSetOrigAddr, as defined
        in the InetAddress MIB [RFC 4001]."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2RmibReceivedSetEntry 3 }

olsrv2RmibReceivedSetOrigAddr OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the originator address of the received
        message, note that this does not include a
        prefix length."
    REFERENCE
        "The OLSRv2 draft."
```

```
::= { olsrv2RmibReceivedSetEntry 4 }

olsrv2RmibReceivedSetSeqNo OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the message sequence number of the received
        message."
    REFERENCE
        "The OLSRv2 draft."
::= { olsrv2RmibReceivedSetEntry 5 }

olsrv2RmibReceivedSetExpireTime OBJECT-TYPE
    SYNTAX      TimeStamp
    UNITS       "milliseconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This specifies the time at which this Tuple
        expires and MUST be removed."
    REFERENCE
        "The OLSRv2 draft."
::= { olsrv2RmibReceivedSetEntry 6 }

--
-- Processed Set
--

olsrv2RmibProcessedSetTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Olsrv2RmibProcessedSetEntry
    MAX-ACCESS  not-accessible
    STATUS      obsolete
    DESCRIPTION
        "A router has a single Processed Set which
        records signatures of messages which have
        been processed by the router."
    REFERENCE
        "The OLSRv2 draft."
::= { olsrv2StateGroup 12 }

olsrv2RmibProcessedSetEntry OBJECT-TYPE
    SYNTAX      Olsrv2RmibProcessedSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
```

"Each consists of Processed Tuples:

(P_type, P_orig_addr, P_seq_number, P_time)"

REFERENCE

"The OLSRv2 draft."

INDEX { olsrv2RmibProcessedSetOrigAddr,
olsrv2RmibProcessedSetSeqNo }

::= { olsrv2RmibProcessedSetTable 1 }

Olsrv2RmibProcessedSetEntry ::=

```
SEQUENCE {  
  olsrv2RmibProcessedSetMsgType  
    Unsigned32,  
  olsrv2RmibProcessedSetOrigIpAddressType  
    InetAddressType,  
  olsrv2RmibProcessedSetOrigAddr  
    InetAddress,  
  olsrv2RmibProcessedSetSeqNo  
    Unsigned32,  
  olsrv2RmibProcessedSetExpireTime  
    TimeStamp  
}
```

olsrv2RmibProcessedSetMsgType OBJECT-TYPE

SYNTAX Unsigned32 (1..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is the processed Message Type."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2RmibProcessedSetEntry 1 }

olsrv2RmibProcessedSetOrigIpAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The type of the olsrv2RmibProcessedSetOrigAddr, as defined
in the InetAddress MIB [RFC 4001]."

REFERENCE

"The OLSRv2 draft."

::= { olsrv2RmibProcessedSetEntry 2 }

olsrv2RmibProcessedSetOrigAddr OBJECT-TYPE

SYNTAX InetAddress

MAX-ACCESS read-only

STATUS current

```
DESCRIPTION
  "This is the originator address of the processed
  message, note that this does not include a
  prefix length."
REFERENCE
  "The OLSRv2 draft."
 ::= { olsrv2RmibProcessedSetEntry 3 }

olsrv2RmibProcessedSetSeqNo OBJECT-TYPE
  SYNTAX      Unsigned32 (0..65535)
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This is the message sequence number of the processed
    message."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2RmibProcessedSetEntry 4 }

olsrv2RmibProcessedSetExpireTime OBJECT-TYPE
  SYNTAX      TimeStamp
  UNITS       "milliseconds"
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "This specifies the time at which this Tuple
    expires and MUST be removed."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2RmibProcessedSetEntry 5 }

--
-- Forwarded Set
--

olsrv2RmibForwardedSetTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF Olsrv2RmibForwardedSetEntry
  MAX-ACCESS  not-accessible
  STATUS      obsolete
  DESCRIPTION
    "A router has a single Forwarded Set which records
    signatures of messages which have been forwarded by
    the router."
  REFERENCE
    "The OLSRv2 draft."
 ::= { olsrv2StateGroup 13 }
```

```
olsrv2RmibForwardedSetEntry OBJECT-TYPE
    SYNTAX      Olsrv2RmibForwardedSetEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Each consists of Forwarded Tuples:

        (F_type, F_orig_addr, F_seq_number, F_time)"
    REFERENCE
        "The OLSRv2 draft."
    INDEX { olsrv2RmibReceivedSetOrigAddr,
            olsrv2RmibReceivedSetSeqNo }
    ::= { olsrv2RmibForwardedSetTable 1 }
```

```
Olsrv2RmibForwardedSetEntry ::=
    SEQUENCE {
        olsrv2RmibForwardedSetMsgType
            Unsigned32,
        olsrv2RmibForwardedSetOrigIpAddressType
            InetAddressType,
        olsrv2RmibForwardedSetOrigAddr
            InetAddress,
        olsrv2RmibForwardedSetSeqNo
            Unsigned32,
        olsrv2RmibForwardedSetExpireTime
            TimeStamp
    }
```

```
olsrv2RmibForwardedSetMsgType OBJECT-TYPE
    SYNTAX      Unsigned32 (1..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the forwarded Message Type."
    REFERENCE
        "The OLSRv2 draft."
    ::= { olsrv2RmibForwardedSetEntry 1 }
```

```
olsrv2RmibForwardedSetOrigIpAddressType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The type of the olsrv2RmibForwardedSetOrigAddr, as defined
        in the InetAddress MIB [RFC 4001]."
    REFERENCE
        "The OLSRv2 draft."
    ::= { olsrv2RmibForwardedSetEntry 2 }
```

```
olsrv2RmibForwardedSetOrigAddr OBJECT-TYPE
    SYNTAX      InetAddress
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the originator address of the forwarded
        message, note that this does not include a
        prefix length."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2RmibForwardedSetEntry 3 }

olsrv2RmibForwardedSetSeqNo OBJECT-TYPE
    SYNTAX      Unsigned32 (0..65535)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This is the message sequence number of the forwarded
        message."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2RmibForwardedSetEntry 4 }

olsrv2RmibForwardedSetExpireTime OBJECT-TYPE
    SYNTAX      TimeStamp
    UNITS       "milliseconds"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This specifies the time at which this Tuple
        expires and MUST be removed."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2RmibForwardedSetEntry 5 }
```

```
--
-- OLSRv2 Performance Group
--
-- Contains objects which 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 local OLSRv2 interface."
    REFERENCE
        "The OLSRv2 draft."
 ::= { olsrv2PerformanceObjGrp 1 }

olsrv2InterfacePerfEntry OBJECT-TYPE
    SYNTAX      Olsrv2InterfacePerfEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A single entry contains performance counters for
         a local OLSRv2 interface."
    INDEX { olsrv2IfPerfIndex }
 ::= { olsrv2InterfacePerfTable 1 }

Olsrv2InterfacePerfEntry ::=
    SEQUENCE {
        olsrv2IfPerfIndex
            InterfaceIndexOrZero,
        olsrv2IfTcMessageXmits
            Counter32,
        olsrv2IfTcMessageRecvd
            Counter32,
        olsrv2IfTcMessageXmitAccumulatedSize
            Counter32,
        olsrv2IfTcMessageRecvdAccumulatedSize
            Counter32,
        olsrv2IfTcMessageTriggeredXmits
            Counter32,
        olsrv2IfTcMessagePeriodicXmits
            Counter32,
        olsrv2IfTcMessageForwardedXmits
            Counter32,
        olsrv2IfTcMessageXmitAccumulatedMPRSelectorCount
            Counter32
    }

olsrv2IfPerfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndexOrZero
```

```
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "The ID of an interface. Used for cross
    indexing into other OLSRv2 tables and other
    MIBs."
 ::= { olsrv2InterfacePerfEntry 1 }

olsrv2IfTcMessageXmits OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A counter is incremented each time a TC
    message has been transmitted on that interface."
 ::= { olsrv2InterfacePerfEntry 2 }

olsrv2IfTcMessageRecvd OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A counter is incremented each time a
    TC message has been received on that interface."
 ::= { olsrv2InterfacePerfEntry 3 }

olsrv2IfTcMessageXmitAccumulatedSize OBJECT-TYPE
SYNTAX Counter32
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 4 }

olsrv2IfTcMessageRecvdAccumulatedSize OBJECT-TYPE
SYNTAX Counter32
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."
 ::= { olsrv2InterfacePerfEntry 5 }

olsrv2IfTcMessageTriggeredXmits OBJECT-TYPE
SYNTAX Counter32
```

```
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A counter is incremented each time a triggered
    TC message has been sent."
 ::= { olsrv2InterfacePerfEntry 6 }

olsrv2IfTcMessagePeriodicXmits OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A counter is incremented each time a periodic
    TC message has been sent."
 ::= { olsrv2InterfacePerfEntry 7 }

olsrv2IfTcMessageForwardedXmits OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A counter is incremented each time a
    TC message has been forwarded."
 ::= { olsrv2InterfacePerfEntry 8 }

olsrv2IfTcMessageXmitAccumulatedMPRSelectorCount OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A counter is incremented by the number of advertized
    MPR selectors in a TC each time a TC
    message has been sent."
 ::= { olsrv2InterfacePerfEntry 9 }

--
-- Objects concerning the Routing set
--

olsrv2RoutingSetRecalculationCount OBJECT-TYPE
SYNTAX Counter32
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
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This counter increments each time the MPRs
        of this router have been recalculated."
 ::= { olsrv2PerformanceObjGrp 3 }

--
-- Notifications
--

-- Note:  What notifications do we want for this MIB?

--
-- 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 }
 ::= { olsrv2Compliances 2 }

--
-- Units of Conformance
--

olsrv2ConfigObjectsGroup OBJECT-GROUP
  OBJECTS {
    olsrv2OHoldTime,
    olsrv2TcInterval,
    olsrv2TcMinInterval,
    olsrv2THoldTime,
    olsrv2AHoldTime,
    olsrv2RxHoldTime,
    olsrv2PHoldTime,
    olsrv2FHoldTime,
    olsrv2TpMaxJitter,
    olsrv2TtMaxJitter,
    olsrv2FMaxJitter,
    olsrv2TcHopLimit,
    olsrv2Willingness
  }
  STATUS current
  DESCRIPTION
    "Set of OLSRv2 configuration objects implemented
    in this module."
 ::= { olsrv2MIBGroups 1 }

olsrv2StateObjectsGroup OBJECT-GROUP
  OBJECTS {
    olsrv2RouterStatus,
    olsrv2LibOrigSetIpAddressType,
    olsrv2LibOrigSetIpAddress,
    olsrv2LibLocAttNetSetIpAddressType,
    olsrv2LibLocAttNetSetIpAddress,
    olsrv2LibLocAttNetSetIpAddressPrefixLen,
    olsrv2LibLocAttNetSetDistance,
    olsrv2LibLocAttNetSetRowStatus,
    olsrv2NibNeighborSetNIpAddressType,
    olsrv2NibNeighborSetNOrigAddr,
    olsrv2NibNeighborSetNWilliness,
    olsrv2NibNeighborSetNMpr,
```

```

    olsrv2NibNeighborSetNMprSelector,
    olsrv2NibNeighborSetNAdvertised,
    olsrv2TibAdRemoteRouterSetIpAddrType,
    olsrv2TibAdRemoteRouterSetIpAddr,
    olsrv2TibAdRemoteRouterSetMaxSeqNo,
    olsrv2TibRouterTopologySetFromOrigIpAddrType,
    olsrv2TibRouterTopologySetFromOrigIpAddr,
    olsrv2TibRouterTopologySetToOrigIpAddrType,
    olsrv2TibRouterTopologySetToOrigIpAddr,
    olsrv2TibRouterTopologySetSeqNo,
    olsrv2TibRoutableAddressTopologySetFromOrigIpAddrType,
    olsrv2TibRoutableAddressTopologySetFromOrigIpAddr,
    olsrv2TibRoutableAddressTopologySetToOrigIpAddrType,
    olsrv2TibRoutableAddressTopologySetToOrigIpAddr,
    olsrv2TibRoutableAddressTopologySetSeqNo,
    olsrv2TibAttNetworksSetOrigIpAddr,
    olsrv2TibAttNetworksSetNetIpAddr,
    olsrv2TibAttNetworksSetNetIpAddrPrefixLen,
    olsrv2TibAttNetworksSetSeqNo,
    olsrv2TibAttNetworksSetDist,
    olsrv2TibRoutingSetDestIpAddr,
    olsrv2TibRoutingSetDestIpAddrPrefLen,
    olsrv2TibRoutingSetNextIfIpAddr,
    olsrv2TibRoutingSetLocalIfIpAddr,
    olsrv2RmibReceivedSetMsgType,
    olsrv2RmibReceivedSetOrigAddr,
    olsrv2RmibReceivedSetSeqNo,
    olsrv2RmibProcessedSetMsgType,
    olsrv2RmibProcessedSetOrigAddr,
    olsrv2RmibProcessedSetSeqNo,
    olsrv2RmibForwardedSetMsgType,
    olsrv2RmibForwardedSetOrigAddr,
    olsrv2RmibForwardedSetSeqNo
}
STATUS current
DESCRIPTION
    "Set of OLSRv2 state objects implemented
    in this module."
 ::= { olsrv2MIBGroups 2 }

```

```

olsrv2PerfObjectsGroup OBJECT-GROUP
OBJECTS {
    olsrv2IfTcMessageXmits,
    olsrv2IfTcMessageRecvd,
    olsrv2IfTcMessageRecvdAccumulatedSize,
    olsrv2IfTcMessageTriggeredXmits,
    olsrv2IfTcMessagePeriodicXmits,
    olsrv2IfTcMessageForwardedXmits,

```

```

        olsrv2IfTcMessageXmitAccumulatedMPRSelectorCount,
        olsrv2RoutingSetRecalculationCount,
        olsrv2MPRSetRecalculationCount
    }
    STATUS current
    DESCRIPTION
        "Set of OLSRv2 performance objects implemented
        in this module by total and per interface."
 ::= { olsrv2MIBGroups 3 }

END

```

8. Security Considerations

This MIB defines objects for the configuration, monitoring and notification of the Optimized Link State Routing protocol version 2 [OLSRv2]. OLSRv2 allows routers to acquire topological information of the routing domain by virtue of exchanging TC message, to calculate shortest paths to each destination router in the routing domain, to select relays for network-wide transmissions etc.

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 DOS attack by overloading interface resources. If set 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, and 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 `olsrv2Willingness` - defines 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 if the channel is lossy.

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. `olsrv2TibRouterTopologySetFromOrigIpAddr` is the index into the table, and has a `MAX-ACCESS` of `'not-accessible'`. However, this information can be exposed using `SNMP` operations.

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.

It is **RECOMMENDED** that implementers consider the security features as provided by the `SNMPv3` framework (see [RFC3410], Section 8, including

full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

9. IANA Considerations

This memo does not include any request to IANA.

10. References

10.1. Normative References

- [RFC2863] McCloghrie, K. and F. Kastenholtz, "The Interfaces Group MIB", RFC 2863, June 2000.
- [RFC3418] Presuhn, R., "Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)", STD 62, RFC 3418, December 2002.
- [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.
- [OLSRv2] Clausen, T., Dearlove, C., and P. Jacquet, "The Optimized Link State Routing Protocol version 2", draft-ietf-manet-olsr-11 (work in progress), April 2010.
- [NHDP] Clausen, T., Dearlove, C., and J. Dean, "Mobile Ad Hoc Network (MANET) Neighborhood Discovery Protocol (NHDP)", draft-ietf-manet-nhdp-13 (work in progress), July 2010.

- [NHDP-MIB] Herberg, U., Cole, R., and I. Chakeres, "Definition of Managed Objects for the Neighborhood Discovery Protocol", draft-ietf-manet-nhdp-mib-04 (work in progress), July 2010.
- [RFC4001] Daniele, M., Haberman, B., Routhier, S., and J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", RFC 4001, February 2005.
- [RFC3781] Strauss, F. and J. Schoenwaelder, "Next Generation Structure of Management Information (SMIng) Mappings to the Simple Network Management Protocol (SNMP)", RFC 3781, May 2004.

10.2. Informative References

- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", RFC 3410, December 2002.
- [REPORT] Cole, R., Macker, J., and A. Morton, "Definition of Managed Objects for Performance Reporting", draft-ietf-manet-report-mib-00 (work in progress), July 2010.

Appendix A. Change Log

This section identifies the changes made during the development of this MIB.

Here we list the changes made in developing draft-ietf-manet-olsrv2-mib-02.

1. Shortened text about the Configuration Group and the State Group.
2. Made coherent with NHDP-MIB.
3. Cleaned up errors.
4. Added Security Considerations section.
5. Updated "Relations to other MIBs" section.
6. Added Notifications section (but no notifications defined yet).
7. Changed type of several objects in the MIB (for timers).

8. Added information identifying objects requiring non-volatile storage within the DESCRIPTION clause of the objects within the OLSRv2-MIB.

Here we list the changes made in developing draft-ietf-manet-olsrv2-mib-01.

1. Added Performance Group objects
2. Updated draft to adhere to the current version of the OLSRv2 draft.
3. Cleaned up errors.
4. Added U. Herberg as new author.

Here we list the changes made in developing draft-ietf-manet-olsrv2-mib-00.

1. Rev'd the draft as a new working group document.
2. Ran 'smilint' against the module and cleaned up syntax errors and other issues discovered by the checker.

Here we list the changes made in developing draft-cole-manet-olsr-mib-01.

1. Completely reworked the entire Configuration Objects group in order to align with the newly developed NHDP-MIB draft.

Appendix B. Open Issues

This section contains the set of open issues related to the development and design of the OLSRv2-MIB. This section will not be present in the final version of the MIB and will be removed once all the open issues have been resolved.

1. Complete notification group.
2. Specify specific SNMP response to the snmp set request, i.e., 'generic error', 'bad value', etc.
3. Run through the MIB checker.

Appendix C. Note to the RFC Editor

```

*****
* Note to the RFC Editor (to be removed prior to publication) *
*
* 1) The reference to RFCXXXX within the DESCRIPTION clauses *
* of the MIB module point to this draft and are to be *
* assigned by the RFC Editor. *
*
* 2) The reference to RFCXXX2 throughout this document point *
* to the current draft-ietf-manet-olsrv2-xx.txt. This *
* need to be replaced with the XXX RFC number. *
*
*****

```

Authors' Addresses

Ulrich Herberg
LIX, Ecole Polytechnique
Palaiseau Cedex, 91128
France

EEmail: ulrich@herberg.name
URI: <http://www.herberg.name/>

Robert G. Cole
US Army CERDEC
328 Hopkins Road, Bldg 245
Aberdeen Proving Ground, Maryland 21005
USA

Phone: +1 410 278 6779
EEmail: robert.g.cole@us.army.mil
URI: <http://www.cs.jhu.edu/~rgcole/>

Thomas Heide Clausen
LIX, Ecole Polytechnique
Palaiseau Cedex, 91128
France

Phone: +33 6 6058 9349
EEmail: T.Clausen@computer.org
URI: <http://www.ThomasClausen.org/>

