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Editors

Dan Joyal
Nortel

Vishwas Manral
IP Infusion

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Management Information Base for OSPFv3
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Revisions from version 11.

- Added standby enumeration to ospfv3IfState object
- Removed units clause from ospfv3IfDemandNbrProbeRetxLimit
- Re-numbered objects in Area Aggregate Table to correct a gap in the numbering
- Removed section on differences from [RFC 1850](#)
- Added stub router support and stub router advertisement objects
- Added discontinuity timer object
- Added link-local LSDB for virtual links
- Added section describing OSPFv3 Notifications
- Added additional values to OSPFv3 Notifications
- Make OSPFv3 Notifications optional
- Removed ospfv3MulticastExtensions and ospfv3IfMulticastForwarding objects because they are deprecated in OSPFv3
- Minor editorial changes

Status of this Memo

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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in IPv6-based internets. In particular, it defines objects for managing the Open Shortest Path First (OSPF) Routing Protocol for IPv6, otherwise known as OSPF version 3 (OSPFv3).

Please send comments to ospf@ietf.org.

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[1. The Internet-Standard Management Framework](#)

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [[RFC3410](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

[2. Overview](#)

This memo defines a portion of the Management Information Base (MIB) for managing the Open Shortest Path First Routing Protocol for IPv6 [[RFC2740](#)], otherwise known as OSPF version 3 (OSPFv3). Though the fundamental mechanisms of OSPF version 2 (OSPFv2) [[RFC2328](#)] remain unchanged in OSPFv3, some changes were necessary due to differences in IP address size and in protocol semantics between IPv4 and IPv6. In many cases, where the protocol operations have not changed from OSPFv2, the specification for OSPFv3 does not restate the details, but instead refers to the relevant sections in the OSPFv2 specification. This MIB follows along the same lines and includes Reference clauses referring to the OSPFv2 specification when applicable.

2.1. IPv6 Interfaces

IPv6 interfaces attach to links [[RFC2460](#)]. A link is roughly defined as the layer below IPv6 (e.g. Ethernet, IPv4 Tunnel). One or more IPv6 prefixes can be associated with an IPv6 interface. IPv6 interfaces and the prefixes associated with those interfaces can be configured via the IP-MIB [[RFC4293](#)]. IPv6 interfaces are configured in the IPv6 Interface Table and IPv6 prefixes are configured in the Internet Address Prefix Table. An IPv6 interface is identified by a unique index value. IPv6 Address Prefix Table entries associated with an IPv6 interface reference the interface's index.

Whereas an interface identifier in OSPFv2 is a local IPv4 address or MIB-2 interface index, an OSPFv3 interface identifier is an IPv6 interface index. For example, the index value of an OSPFv3 Interface

Table entry is the IPv6 interface index of the IPv6 interface over which OSPFv3 is configured to operate.

2.2. Addressing Semantics

Router ID, Area ID and Link State ID remain at the OSPFv2 size of 32 bits. To ensure uniqueness, a router running both IPv4 and IPv6 concurrently can continue to use a local IPv4 host address, represented as an unsigned 32-bit value, as the OSPFv3 Router ID. Otherwise, the Router ID must be selected using another method (e.g. administratively assigned).

Router ID, Area ID and Link State ID do not have addressing semantics in OSPFv3, so their syntax is changed to Unsigned32. The Router ID index component comes before the Link State ID index component in the OSPFv3 MIB because the lack of addressing semantics in Link State IDs make them less unique identifiers than the Router ID. It is more useful to do partial OID lookups extending to the Router ID rather than the Link State ID.

2.3. Authentication

In OSPFv3, authentication has been removed from the protocol itself. MIB objects related to authentication are not carried forward from the OSPFv2 MIB.

2.4. Type of Service

OSPFv2 MIB objects related to Type of Service (ToS) are not carried forward to the OSPFv3 MIB.

2.5. Flooding Scope

Flooding scope for LSAs has been generalized and is now explicitly encoded in the LSA's LS type field. The action to take upon receipt of unknown LSA types is also encoded in the LS type field [[RFC2740](#)]. The OSPFv3 MIB defines three Link State Database tables, one each for Area-scope LSAs, Link-scope LSAs and AS-scope LSAs.

2.6. Virtual Links

Since addressing semantics have been removed from router-LSAs in OSPFv3, Virtual Links now need to be assigned an interface ID for advertisement in Hello packets and in router-LSAs. A read-only object has been added to the Virtual Interface Table entry to view the assigned interface ID.

2.7. Neighbors

The OSPFv3 Neighbor Table is a read-only table that contains information learned from Hellos received from neighbors, including configured neighbors. The OSPFv3 Configured Neighbor Table contains entries for manually configured neighbors for use on NBMA and

Point-to-Multipoint interface types.

2.8. OSPFv3 Counters

This MIB defines several counters, namely:

- ospfv3OriginateNewLsas, ospfv3RxNewLsas in the ospfv3GeneralGroup
- ospfv3AreaSpfRuns, ospfv3AreaNssaTranslatorEvents in the ospfv3AreaTable
- ospfv3IfEvents in the ospfv3IfTable
- ospfv3VirtIfEvents in the ospfv3VirtIfTable
- ospfv3NbrEvents in the ospfv3NbrTable
- ospfv3VirtNbrEvents in the ospfv3VirtNbrTable

As a best practice, a management entity, when reading these counters, should use the discontinuity object, ospfv3DiscontinuityTime, to determine if an event that would invalidate the management entity understanding of the counters has occurred. A restart of the OSPFv3 routing process is a possible example of a discontinuity event.

2.9. Multiple OSPFv3 Instances

SNMPv3 supports "Contexts" that can be used to implement MIB views on multiple OSPFv3 instances on the same system. See [[RFC3411](#)] or its successors for details.

2.10. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

3. OSPFv3 Notification Overview

3.1. Introduction

OSPFv3 is an event-driven routing protocol, where an event can be a change in an OSPFv3 interface's link-level status, the expiration of an OSPFv3 timer, or the reception of an OSPFv3 protocol packet. Many of the actions that OSPFv3 takes as a result of these events will result in a change of the routing topology.

As routing topologies become large and complex, it is often difficult to locate the source of a topology change or unpredicted routing path by polling a large number of routers. Because of the difficulty of polling a large number of devices, a more prudent approach is for devices to notify a network manager

of potentially critical OSPF events using SNMP notifications.

3.2 Ignoring Initial Activity

The majority of critical events occur when OSPFv3 is enabled on a router, at which time the designated router is elected and neighbor adjacencies are formed. During this initial period, a potential flood of notifications is unnecessary since the events are expected. To avoid unnecessary notifications, a router should not originate expected OSPFv3 interface-related notifications until two of that interface's dead timer intervals have elapsed. The expected OSPFv3 interface notifications are `ospfv3IfStateChange`, `ospfv3VirtIfStateChange`, `ospfv3NbrStateChange`, and `ospfv3VirtNbrStateChange`.

3.3 Throttling Notifications

The mechanism for throttling the notifications is similar to the mechanism explained in [RFC 1224](#) [[RFC1224](#)]. The basic premise of the throttling mechanism is that of a sliding window, defined in seconds and an upper bound on the number of notifications that may be generated within this window. Note that unlike [RFC 1224](#), notifications are not sent to inform the network manager that the throttling mechanism has kicked in.

A single window should be used to throttle all OSPFv3 notifications types except for the `ospfv3LsdbOverflow` and the `ospfv3LsdbApproachingOverflow` notifications, which should not be throttled. For example, with a window time of 3, an upper bound of 3, and events to cause notifications 1, 2, 3, and 4 (4 notifications within a 3-second period), the 4th notification should not be generated.

Appropriate values are 7 notifications with a window time of 10 seconds.

3.4 One Notification Per OSPFv3 Event

Several of the notifications defined in this MIB are generated as the result of finding an unusual condition while parsing an OSPFv3 packet or a processing a timer event. There may be more than one unusual condition detected while handling the event. For example, a link state update packet may contain several retransmitted link state advertisements (LSAs), or a retransmitted database description packet may contain several database description entries. To limit the number of notifications and variables, OSPFv3 should generate at most one notification per OSPFv3 event. Only the variables associated with the first unusual condition should be included with the notification. Similarly, if more than one type of unusual condition is encountered while parsing the packet, only the first event will generate a notification.

3.5 Polling Event Counters

Many of the tables in the OSPFv3 MIB contain generalized event counters. By enabling the notifications defined in this document,

a network manager can obtain more specific information about these events. A network manager may want to poll these event counters and enable OSPFv3 notifications when a particular counter starts increasing abnormally.

4. Structure of the OSPFv3 MIB

The MIB is composed of the following sections:

- General Variables
- Area Table
- Area-Scope Link State Database
- Link-Scope Link State Databases (non-virtual and virtual)
- AS-Scope Link State Database
- Host Table
- Interface Table
- Virtual Interface Table
- Neighbor Table
- Configured Neighbor Table
- Virtual Neighbor Table
- Area Aggregate Table
- Notifications

4.1. General Variables

The General Variables are global to the OSPFv3 Process.

4.2. Area Table

The Area Data Structure describes the OSPFv3 Areas that the router participates in.

4.3. Area-Scope, Link-Scope and AS-Scope Link State Database

The Link State Databases are provided primarily to provide detailed information for network debugging. There are separate tables for Link-Scope LSAs received over non-virtual and virtual interfaces.

4.4. Host Table

The Host Table is provided to view configured Host Route information.

4.5. Interface Table

The Interface Table describes the various IPv6 links on which OSPFv3 is configured.

4.6. Virtual Interface Table

The Virtual Interface Table describes virtual OSPFv3 links.

4.7. Neighbor, Configured Neighbor and Virtual Neighbor Tables

The Neighbor Table, the Configured Neighbor Table and the Virtual Neighbor Table describe the neighbors to the OSPFv3 Process.

4.8. Area Aggregate Table

The Area Aggregate Table describes prefixes, which summarize routing information for export outside of an Area.

4.9 Notifications

Notifications are defined for OSPFv3 events. Several objects are defined specifically as variables to be used with notifications.

5. Definitions

```
OSPFV3-MIB DEFINITIONS ::= BEGIN
```

```
IMPORTS
```

```
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, mib-2,
    Counter32, Gauge32, Integer32, Unsigned32
        FROM SNMPv2-SMI
    TEXTUAL-CONVENTION, TruthValue, RowStatus, TimeStamp
        FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
        FROM SNMPv2-CONF
    InterfaceIndex
        FROM IF-MIB
    InetAddressType, InetAddress, InetAddressPrefixLength
        FROM INET-ADDRESS-MIB
    Metric, BigMetric, Status,
    HelloRange, DesignatedRouterPriority
        FROM OSPF-MIB;
```

```
ospfv3MIB MODULE-IDENTITY
```

```
    LAST-UPDATED "200709171200Z"
    ORGANIZATION "IETF OSPF Working Group"
    CONTACT-INFO
        "WG E-Mail: ospf@ietf.org
        WG Chairs: Acee Lindem
        acee@redback.com
```

```
        Abhay Roy
        akr@cisco.com
```

```
    Editors:  Dan Joyal
             Nortel
```

600 Technology Park Drive
Billerica, MA 01821, USA
djoyal@nortel.com

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Vishwas Manral
IP Infusion
Bangalore
India
vishwas@ipinfusion.com"

DESCRIPTION

"The MIB module for OSPF version 3.

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

REVISION "200709171200Z"

DESCRIPTION -- RFC Editor assigns RFC xxxx
"Initial version, published as RFC xxxx"

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

-- Textual conventions

OspfV3UpToRefreshIntervalTc ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d-0"

STATUS current

DESCRIPTION

"The values one might be able to configure for
variables bounded by the Refresh Interval"

SYNTAX Integer32 (1..1800)

OspfV3DeadIntRangeTc ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d-0"

STATUS current

DESCRIPTION

"The range, in seconds, of dead interval value."

SYNTAX Integer32 (1..'FFFF'h)

OspfV3RouterIdTc ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d-0"

STATUS current

DESCRIPTION

"A 32-bit, unsigned integer uniquely identifying the
router in the Autonomous System. To ensure
uniqueness, this may default to the value of one of
the router's IPv4 host addresses if IPv4 is
configured on the router."

SYNTAX Unsigned32 (1..'FFFFFFF'h)

OspfV3AreaIdTc ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d-0"
STATUS current
DESCRIPTION
"An OSPFv3 Area Identifier"

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```
SYNTAX      Unsigned32 (0..'FFFFFFF'h)

OspfV3IfInstIdTc ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d-0"
    STATUS      current
    DESCRIPTION
        "An OSPFv3 interface instance ID"
    SYNTAX      Integer32 (0..255)

-- Top-level structure of MIB
ospfv3Notifications OBJECT IDENTIFIER ::= { ospfv3MIB 0 }
ospfv3Objects        OBJECT IDENTIFIER ::= { ospfv3MIB 1 }
ospfv3Conformance    OBJECT IDENTIFIER ::= { ospfv3MIB 2 }

-- OSPFv3 General Variables

-- These parameters apply globally to the Router's
-- OSPFv3 Process.

ospfv3GeneralGroup OBJECT IDENTIFIER ::= { ospfv3Objects 1 }

ospfv3RouterId OBJECT-TYPE
    SYNTAX      OspfV3RouterIdTc
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "A 32-bit integer uniquely identifying the
        router in the Autonomous System. To ensure
        uniqueness, this may default to the 32-bit
        unsigned integer representation of one of
        the router's IPv4 host addresses (if IPv4
        is configured on the router).

        This object is persistent and when written the
        entity SHOULD save the change to non-volatile
        storage."
    ::= { ospfv3GeneralGroup 1 }

ospfv3AdminStat OBJECT-TYPE
    SYNTAX      Status
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "The administrative status of OSPFv3 in the
        router. The value 'enabled' denotes that the
        OSPFv3 Process is active on at least one
        interface; 'disabled' disables it on all
        interfaces."
```

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

```
::= { ospfv3GeneralGroup 2 }

ospfv3VersionNumber OBJECT-TYPE
    SYNTAX          INTEGER { version3 (3) }
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "The version number of OSPF for IPv6 is 3."
    ::= { ospfv3GeneralGroup 3 }

ospfv3AreaBdrRtrStatus OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "A flag to note whether this router is an area
        border router."
    REFERENCE
        "OSPF Version 2, Section 3 Splitting the AS into
        Areas"
    ::= { ospfv3GeneralGroup 4 }

ospfv3ASBdrRtrStatus OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS       read-write
    STATUS           current
    DESCRIPTION
        "A flag to note whether this router is
        configured as an Autonomous System border router.

        This object is persistent and when written the
        entity SHOULD save the change to non-volatile
        storage."
    REFERENCE
        "OSPF Version 2, Section 3.3 Classification of
        routers"
    ::= { ospfv3GeneralGroup 5 }

ospfv3AsScopeLsaCount OBJECT-TYPE
    SYNTAX          Gauge32
    MAX-ACCESS       read-only
    STATUS           current
    DESCRIPTION
        "The number of AS-Scope (e.g. AS-External) link state
        advertisements in the link state database."
    ::= { ospfv3GeneralGroup 6 }

ospfv3AsScopeLsaChecksumSum OBJECT-TYPE
```

SYNTAX	Integer32
MAX-ACCESS	read-only
STATUS	current
DESCRIPTION	

"The 32-bit unsigned sum of the LS checksums of

the AS-scoped link state advertisements contained in the link state database. This sum can be used to determine if there has been a change in a router's link state database or to compare the link state database of two routers."

::= { ospfv3GeneralGroup 7 }

ospfv3OriginateNewLsas OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of new link-state advertisements that have been originated. This number is incremented each time the router originates a new LSA.

Discontinuities in the value of this counter can occur at re-initialization of the management system and at other times as indicated by the value of ospfv3DiscontinuityTime."

::= { ospfv3GeneralGroup 8 }

ospfv3RxNewLsas OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of link state advertisements received determined to be new instantiations. This number does not include newer instantiations of self-originated link state advertisements.

Discontinuities in the value of this counter can occur at re-initialization of the management system and at other times as indicated by the value of ospfv3DiscontinuityTime."

::= { ospfv3GeneralGroup 9 }

ospfv3ExtLsaCount OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of External(LS type 0x4005) in the link state database"

::= { ospfv3GeneralGroup 10 }

ospfv3ExtAreaLsdbLimit OBJECT-TYPE

SYNTAX Integer32 (-1..'7FFFFFFF'h)

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MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The maximum number of non-default AS-external-LSAs entries that can be stored in the link state database. If the value is -1, then there is no limit.

When the number of non-default AS-external-LSAs in a router's link-state database reaches ospfv3ExtAreaLsdbLimit, the router enters Overflow state. The router never holds more than ospfv3ExtAreaLsdbLimit non-default AS-external-LSAs in its database. ospfv3ExtAreaLsdbLimit MUST be set identically in all routers attached to the OSPFv3 backbone and/or any regular OSPFv3 area. (i.e., OSPFv3 stub areas and NSSAs are excluded).

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

::= { ospfv3GeneralGroup 11 }

ospfv3ExitOverflowInterval OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The number of seconds that, after entering Overflow State, a router will attempt to leave Overflow State. This allows the router to again originate non-default, AS-External-LSAs. When set to 0, the router will not leave Overflow State until restarted.

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

::= { ospfv3GeneralGroup 12 }

ospfv3DemandExtensions OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The router's support for demand circuits.

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

REFERENCE

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"OSPF Version 2, Appendix on Demand Circuits"
 ::= { ospfv3GeneralGroup 13 }

ospfv3ReferenceBandwidth OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Reference bandwidth in kilobits/second for calculating default interface metrics. The default value is 100,000 Kbps (100 MBPS)

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

::= { ospfv3GeneralGroup 14 }

ospfv3RestartSupport OBJECT-TYPE

SYNTAX INTEGER { none (1),
plannedOnly (2),
plannedAndUnplanned (3)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The router's support for OSPF Graceful restart. Options include: no restart support, only planned restarts or both planned and unplanned restarts.

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

::= { ospfv3GeneralGroup 15 }

ospfv3RestartInterval OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Configured OSPF Graceful restart timeout interval.

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

::= { ospfv3GeneralGroup 16 }

ospfv3RestartStrictLsaChecking OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"Indicates if strict LSA checking is enabled for

graceful restart.

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

::= { ospfv3GeneralGroup 17 }

ospfv3RestartStatus OBJECT-TYPE

SYNTAX INTEGER { notRestarting (1),
plannedRestart (2),
unplannedRestart (3)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The current status of OSPF Graceful restart capability."

::= { ospfv3GeneralGroup 18 }

ospfv3RestartAge OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Remaining time in current OSPF Graceful restart interval."

::= { ospfv3GeneralGroup 19 }

ospfv3RestartExitRc OBJECT-TYPE

SYNTAX INTEGER { none (1),
inProgress (2),
completed (3),
timedOut (4),
topologyChanged (5)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Describes the outcome of the last attempt at a Graceful restart.

none:.....no restart has yet been attempted.

inProgress:.....a restart attempt is currently underway.

completed:.....the last restart completed successfully.

timedOut:.....the last restart timed out.

topologyChanged:..the last restart was aborted due to
a topology change."

::= { ospfv3GeneralGroup 20 }

ospfv3NotificationEnable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

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DESCRIPTION

"If this object is set to true(1), then it enables the generation of OSPFv3 Notifications. If it is set to false(2), these notifications are not generated.

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

DEFVAL { true }

::= { ospfv3GeneralGroup 21 }

ospfv3StubRouterSupport OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The router's support for stub router functionality."

REFERENCE

"OSPF Stub Router Advertisement"

::= { ospfv3GeneralGroup 22 }

ospfv3StubRouterAdvertisement OBJECT-TYPE

SYNTAX INTEGER {
doNotAdvertise (1),
advertise(2)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object controls the advertisement of stub LSAs by the router. The value doNotAdvertise will result in the advertisement of standard LSAs and is the default value.

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

::= { ospfv3GeneralGroup 23 }

ospfv3DiscontinuityTime OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of sysUpTime on the most recent occasion at which any one of this MIB's counters suffered a discontinuity.

If no such discontinuities have occurred since the last reinitialization of the local management subsystem, then this object contains a zero value."
::= { ospfv3GeneralGroup 24 }


```
-- The OSPFv3 Area Data Structure contains information
-- regarding the various areas. The interfaces and
-- virtual links are configured as part of these areas.
-- Area 0, by definition, is the Backbone Area
```

ospfv3AreaTable OBJECT-TYPE

```
SYNTAX          SEQUENCE OF Ospfv3AreaEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "Information describing the configured
    parameters and cumulative statistics of the router's
    attached areas. The interfaces and
    virtual links are configured as part of these areas.
    Area 0, by definition, is the Backbone Area."
REFERENCE
    "OSPF Version 2, Section 6, The Area Data
    Structure"
::= { ospfv3Objects 2 }
```

ospfv3AreaEntry OBJECT-TYPE

```
SYNTAX          Ospfv3AreaEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "Information describing the configured
    parameters and cumulative statistics of one of the
    router's attached areas.

    The information in this table is persistent
    and when written the entity SHOULD save the
    change to non-volatile storage."
INDEX           { ospfv3AreaId }
::= { ospfv3AreaTable 1 }
```

```
Ospfv3AreaEntry ::= SEQUENCE {
    ospfv3AreaId
        Ospfv3AreaIdTc,
    ospfv3AreaImportAsExtern
        INTEGER,
    ospfv3AreaSpfRuns
        Counter32,
    ospfv3AreaBdrRtrCount
        Gauge32,
    ospfv3AreaAsBdrRtrCount
        Gauge32,
```

ospfv3AreaScopeLsaCount
 Gauge32,
ospfv3AreaScopeLsaChecksumSum
 Integer32,
ospfv3AreaSummary

```

        INTEGER,
ospfv3AreaStatus
        RowStatus,
ospfv3AreaStubMetric
        BigMetric,
ospfv3AreaNssaTranslatorRole
        INTEGER,
ospfv3AreaNssaTranslatorState
        INTEGER,
ospfv3AreaNssaTranslatorStabInt
        Unsigned32,
ospfv3AreaNssaTranslatorEvents
        Counter32,
ospfv3AreaStubMetricType
        INTEGER
    }

```

ospfv3AreaId OBJECT-TYPE

```

SYNTAX      OspfV3AreaIdTc
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A 32-bit integer uniquely identifying an area.
     Area ID 0 is used for the OSPFv3 backbone."
REFERENCE
    "OSPF Version 2, Appendix C.2 Area parameters"
 ::= { ospfv3AreaEntry 1 }

```

ospfv3AreaImportAsExtern OBJECT-TYPE

```

SYNTAX      INTEGER {
                importExternal(1),  -- normal area
                importNoExternal(2), -- stub area
                importNssa(3)       -- not-so-stubby-area
            }
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Indicates whether an area is a Stub area, NSSA, or
     standard area. AS-scope LSAs are not imported into Stub
     Areas or NSSAs. NSSAs import AS-External data as NSSA
     LSAs which have Area-scope."
REFERENCE
    "OSPF Version 2, Appendix C.2 Area parameters"
DEFVAL { importExternal }
 ::= { ospfv3AreaEntry 2 }

```

ospfv3AreaSpfRuns OBJECT-TYPE

```

SYNTAX      Counter32

```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times that the intra-area route
table has been calculated using this area's

link state database. This is typically done using Dijkstra's algorithm.

Discontinuities in the value of this counter can occur at re-initialization of the management system and at other times as indicated by the value of ospfv3DiscontinuityTime."

::= { ospfv3AreaEntry 3 }

ospfv3AreaBdrRtrCount OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of area border routers reachable within this area. This is initially zero, and is calculated in each Shortest Path First(SPF) pass."

::= { ospfv3AreaEntry 4 }

ospfv3AreaAsBdrRtrCount OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of Autonomous System border routers reachable within this area. This is initially zero, and is calculated in each SPF pass."

::= { ospfv3AreaEntry 5 }

ospfv3AreaScopeLsaCount OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of Area-Scope link state advertisements in this area's link state database."

::= { ospfv3AreaEntry 6 }

ospfv3AreaScopeLsaChecksumSum OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The 32-bit unsigned sum of the Area-Scope link state advertisements' LS checksums contained in this

area's link state database. The sum can be used to determine if there has been a change in a router's link state database or to compare the link-state database of two routers."

::= { ospfv3AreaEntry 7 }

ospfv3AreaSummary OBJECT-TYPE

SYNTAX INTEGER {
 noAreaSummary(1),
 sendAreaSummary(2)
 }

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The variable ospfv3AreaSummary controls the import of Inter-Area LSAs into stub and NSSA areas. It has no effect on other areas.

If it is noAreaSummary, the router will neither originate nor propagate Inter-Area LSAs into the stub or NSSA area. It will only advertise a default route.

If it is sendAreaSummary, the router will both summarize and propagate Inter-Area LSAs."

DEFVAL { sendAreaSummary }

::= { ospfv3AreaEntry 8 }

ospfv3AreaStatus 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."

::= { ospfv3AreaEntry 9 }

ospfv3AreaStubMetric OBJECT-TYPE

SYNTAX BigMetric

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The metric value advertised for the default route into Stub and NSSA areas."

::= { ospfv3AreaEntry 10 }

ospfv3AreaNssaTranslatorRole OBJECT-TYPE

SYNTAX INTEGER { always(1), candidate(2) }

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Indicates an NSSA Border router's policy for
perform NSSA translation of NSSA-LSAs into

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AS-External-LSAs."
DEFVAL { candidate }
::= { ospfv3AreaEntry 11 }

ospfv3AreaNssaTranslatorState OBJECT-TYPE

SYNTAX INTEGER {
enabled(1),
elected(2),
disabled(3)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates if and how an NSSA Border router is
performing NSSA translation of NSSA-LSAs into
AS-External-LSAs. When this object is set to enabled,
the NSSA Border router's ospfv3AreaNssaTranslatorRole
has been set to always. When this object is set to
elected, a candidate NSSA Border router is translating
NSSA-LSAs into AS-External-LSAs. When this object is
set to disabled, a candidate NSSA Border router is NOT
translating NSSA-LSAs into AS-External-LSAs."
::= { ospfv3AreaEntry 12 }

ospfv3AreaNssaTranslatorStabInt OBJECT-TYPE

SYNTAX Unsigned32
UNITS "seconds"
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The stability interval defined as the number of
seconds after an elected translator determines its
services are no longer required that it should
continue to perform its translation duties."
DEFVAL { 40 }
::= { ospfv3AreaEntry 13 }

ospfv3AreaNssaTranslatorEvents OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates the number of Translator State changes
that have occurred since the last start-up of the
OSPFv3 routing process.

Discontinuities in the value of this counter
can occur at re-initialization of the management

system and at other times as indicated by the
value of ospfv3DiscontinuityTime."
::= { ospfv3AreaEntry 14 }

ospfv3AreaStubMetricType OBJECT-TYPE

```

SYNTAX          INTEGER {
                    ospfv3Metric (1),    -- OSPF Metric
                    comparableCost (2),  -- external type 1
                    nonComparable (3)    -- external type 2
                  }
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "This variable assigns the type of metric
    advertised as a default route."
DEFVAL { ospfv3Metric }
::= { ospfv3AreaEntry 15 }

-- OSPFv3 AS-Scope Link State Database

ospfv3AsLsdbTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF OspfV3AsLsdbEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "The OSPFv3 Process's AS-Scope Link State Database
        (LSDB). The LSDB contains the AS-Scope Link State
        Advertisements from throughout the areas that the
        device is attached to."
    ::= { ospfv3Objects 3 }

ospfv3AsLsdbEntry OBJECT-TYPE
    SYNTAX          OspfV3AsLsdbEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "A single AS-Scope Link State Advertisement."
    INDEX
        { ospfv3AsLsdbType,
          ospfv3AsLsdbRouterId,
          ospfv3AsLsdbLsid }
    ::= { ospfv3AsLsdbTable 1 }

OspfV3AsLsdbEntry ::= SEQUENCE {
    ospfv3AsLsdbType
        Unsigned32,
    ospfv3AsLsdbRouterId
        OspfV3RouterIdTc,
    ospfv3AsLsdbLsid
        Unsigned32,
    ospfv3AsLsdbSequence
        Integer32,
    ospfv3AsLsdbAge

```

Integer32,
ospfv3AsLsdbChecksum
Integer32,
ospfv3AsLsdbAdvertisement
OCTET STRING,

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```

ospfv3AsLsdbTypeKnown
    TruthValue
}

```

ospfv3AsLsdbType OBJECT-TYPE

```

SYNTAX      Unsigned32(0..'FFFFFFF'h)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The type of the link state advertisement.
    Each link state type has a separate
    advertisement format. AS-Scope LSAs not recognized
    by the router may be stored in the database."
 ::= { ospfv3AsLsdbEntry 1 }

```

ospfv3AsLsdbRouterId OBJECT-TYPE

```

SYNTAX      OspfV3RouterIdTc
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The 32 bit number that uniquely identifies the
    originating router in the Autonomous System."
REFERENCE
    "OSPF Version 2, Appendix C.1 Global parameters"
 ::= { ospfv3AsLsdbEntry 2 }

```

ospfv3AsLsdbLsid OBJECT-TYPE

```

SYNTAX      Unsigned32
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The Link State ID is an LS Type Specific field
    containing a unique identifier;
    it identifies the piece of the routing domain
    that is being described by the advertisement.
    In contrast to OSPFv2, the LSID has no
    addressing semantics."
 ::= { ospfv3AsLsdbEntry 3 }

```

```

-- Note that the OSPF Sequence Number is a 32 bit signed
-- integer. It starts with the value '80000001'h,
-- or -'7FFFFFFF'h, and increments until '7FFFFFFF'h
-- Thus, a typical sequence number will be very negative.

```

ospfv3AsLsdbSequence OBJECT-TYPE

```

SYNTAX      Integer32
MAX-ACCESS  read-only
STATUS      current

```

DESCRIPTION

"The sequence number field is a signed 32-bit integer. It is used to detect old and duplicate link state advertisements. The space of sequence numbers is linearly ordered. The

larger the sequence number the more recent the advertisement."

REFERENCE

"OSPF Version 2, [Section 12.1.6](#) LS sequence number"

::= { ospfv3AsLsdbEntry 4 }

ospfv3AsLsdbAge OBJECT-TYPE

SYNTAX Integer32 -- Should be 0..MaxAge
-- unless DoNotAge bit is set

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the age of the link state advertisement in seconds."

REFERENCE

"OSPF Version 2, [Section 12.1.1](#) LS age"

::= { ospfv3AsLsdbEntry 5 }

ospfv3AsLsdbChecksum OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the checksum of the complete contents of the advertisement, excepting the age field. The age field is excepted so that an advertisement's age can be incremented without updating the checksum. The checksum used is the same that is used for ISO connectionless datagrams; it is commonly referred to as the Fletcher checksum."

REFERENCE

"OSPF Version 2, [Section 12.1.7](#) LS checksum"

::= { ospfv3AsLsdbEntry 6 }

ospfv3AsLsdbAdvertisement OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1..65535))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The entire Link State Advertisement, including its header."

::= { ospfv3AsLsdbEntry 7 }

ospfv3AsLsdbTypeKnown OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates whether the LSA type is recognized by
this Router."

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```
::= { ospfv3AsLsdbEntry 8 }
```

```
-- OSPFv3 Area-Scope Link State Database
```

```
ospfv3AreaLsdbTable OBJECT-TYPE
```

```
    SYNTAX          SEQUENCE OF OspfV3AreaLsdbEntry
```

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

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        "The OSPFv3 Process's Area-Scope LSDB.
```

```
        The LSDB contains the Area-Scope Link State
```

```
        Advertisements from throughout the area that the
```

```
        device is attached to."
```

```
 ::= { ospfv3Objects 4 }
```

```
ospfv3AreaLsdbEntry OBJECT-TYPE
```

```
    SYNTAX          OspfV3AreaLsdbEntry
```

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

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        "A single Area-Scope Link State Advertisement."
```

```
    INDEX          { ospfv3AreaLsdbAreaId,
                     ospfv3AreaLsdbType,
                     ospfv3AreaLsdbRouterId,
                     ospfv3AreaLsdbLsid }
```

```
 ::= { ospfv3AreaLsdbTable 1 }
```

```
OspfV3AreaLsdbEntry ::= SEQUENCE {
```

```
    ospfv3AreaLsdbAreaId
```

```
        OspfV3AreaIdTc,
```

```
    ospfv3AreaLsdbType
```

```
        Unsigned32,
```

```
    ospfv3AreaLsdbRouterId
```

```
        OspfV3RouterIdTc,
```

```
    ospfv3AreaLsdbLsid
```

```
        Unsigned32,
```

```
    ospfv3AreaLsdbSequence
```

```
        Integer32,
```

```
    ospfv3AreaLsdbAge
```

```
        Integer32,
```

```
    ospfv3AreaLsdbChecksum
```

```
        Integer32,
```

```
    ospfv3AreaLsdbAdvertisement
```

```
        OCTET STRING,
```

```
    ospfv3AreaLsdbTypeKnown
```

```
        TruthValue
```

}

ospfv3AreaLsdbAreaId OBJECT-TYPE

SYNTAX OspfV3AreaIdTc

MAX-ACCESS not-accessible

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STATUS current
DESCRIPTION
"The 32-bit identifier of the Area from which the
LSA was received."
REFERENCE
"OSPF Version 2, [Appendix C.2](#) Area parameters"
::= { ospfv3AreaLsdbEntry 1 }

ospfv3AreaLsdbType OBJECT-TYPE

SYNTAX Unsigned32(0..'FFFFFFFF'h)
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The type of the link state advertisement.
Each link state type has a separate
advertisement format. Area-Scope LSAs unrecognized
by the router are also stored in this database."
::= { ospfv3AreaLsdbEntry 2 }

ospfv3AreaLsdbRouterId OBJECT-TYPE

SYNTAX OspfV3RouterIdTc
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The 32-bit number that uniquely identifies the
originating router in the Autonomous System."
REFERENCE
"OSPF Version 2, [Appendix C.1](#) Global parameters"
::= { ospfv3AreaLsdbEntry 3 }

ospfv3AreaLsdbLsid OBJECT-TYPE

SYNTAX Unsigned32
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The Link State ID is an LS Type Specific field
containing a unique identifier;
it identifies the piece of the routing domain
that is being described by the advertisement.
In contrast to OSPFv2, the LSID has no
addressing semantics."
::= { ospfv3AreaLsdbEntry 4 }

-- Note that the OSPF Sequence Number is a 32 bit signed
-- integer. It starts with the value '80000001'h,
-- or -'7FFFFFFF'h, and increments until '7FFFFFFF'h
-- Thus, a typical sequence number will be very negative.

ospfv3AreaLsdbSequence OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The sequence number field is a signed 32-bit integer. It is used to detect old and duplicate link state advertisements. The space of sequence numbers is linearly ordered. The larger the sequence number the more recent the advertisement."

REFERENCE

"OSPF Version 2, Section 12.1.6 LS sequence number"

::= { ospfv3AreaLsdbEntry 5 }

ospfv3AreaLsdbAge OBJECT-TYPE

SYNTAX Integer32 -- Should be 0..MaxAge
-- unless DoNotAge bit is set

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the age of the link state advertisement in seconds."

REFERENCE

"OSPF Version 2, [Section 12.1.1](#) LS age"

::= { ospfv3AreaLsdbEntry 6 }

ospfv3AreaLsdbChecksum OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the checksum of the complete contents of the advertisement, excepting the age field. The age field is excepted so that an advertisement's age can be incremented without updating the checksum. The checksum used is the same that is used for ISO connectionless datagrams; it is commonly referred to as the Fletcher checksum."

REFERENCE

"OSPF Version 2, [Section 12.1.7](#) LS checksum"

::= { ospfv3AreaLsdbEntry 7 }

ospfv3AreaLsdbAdvertisement OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1..65535))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The entire Link State Advertisement, including its header."

::= { ospfv3AreaLsdbEntry 8 }

ospfv3AreaLsdbTypeKnown OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

```

STATUS          current
DESCRIPTION
    "Indicates whether the LSA type is recognized
    by this Router."
 ::= { ospfv3AreaLsdbEntry 9 }

```

```
-- OSPFv3 Link-Scope Link State Database, for non-virtual interfaces
```

```

ospfv3LinkLsdbTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF OspfV3LinkLsdbEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "The OSPFv3 Process's Link-Scope LSDB for non-virtual
        interfaces. The LSDB contains the Link-Scope Link
        State Advertisements from the interfaces that the
        device is attached to."
    ::= { ospfv3Objects 5 }

```

```

ospfv3LinkLsdbEntry OBJECT-TYPE
    SYNTAX          OspfV3LinkLsdbEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "A single Link-Scope Link State Advertisement."
    INDEX           { ospfv3LinkLsdbIfIndex,
                     ospfv3LinkLsdbIfInstId,
                     ospfv3LinkLsdbType,
                     ospfv3LinkLsdbRouterId,
                     ospfv3LinkLsdbLsid }
    ::= { ospfv3LinkLsdbTable 1 }

```

```

OspfV3LinkLsdbEntry ::= SEQUENCE {
    ospfv3LinkLsdbIfIndex
        InterfaceIndex,
    ospfv3LinkLsdbIfInstId
        OspfV3IfInstIdTc,
    ospfv3LinkLsdbType
        Unsigned32,
    ospfv3LinkLsdbRouterId
        OspfV3RouterIdTc,
    ospfv3LinkLsdbLsid
        Unsigned32,
    ospfv3LinkLsdbSequence
        Integer32,
    ospfv3LinkLsdbAge

```

Integer32,
ospfv3LinkLsdbChecksum
Integer32,
ospfv3LinkLsdbAdvertisement
OCTET STRING,

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```
ospfv3LinkLsdbTypeKnown
    TruthValue
}
```

```
ospfv3LinkLsdbIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The identifier of the link from which the LSA
        was received."
    ::= { ospfv3LinkLsdbEntry 1 }
```

```
ospfv3LinkLsdbIfInstId OBJECT-TYPE
    SYNTAX      OspfV3IfInstIdTc
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The identifier of the interface instance from
        which the LSA was received."
    ::= { ospfv3LinkLsdbEntry 2 }
```

```
ospfv3LinkLsdbType OBJECT-TYPE
    SYNTAX      Unsigned32(0..'FFFFFFF'h)
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The type of the link state advertisement.
        Each link state type has a separate
        advertisement format. Link-Scope LSAs unrecognized
        by the router are also stored in this database."
    ::= { ospfv3LinkLsdbEntry 3 }
```

```
ospfv3LinkLsdbRouterId OBJECT-TYPE
    SYNTAX      OspfV3RouterIdTc
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The 32 bit number that uniquely identifies the
        originating router in the Autonomous System."
    REFERENCE
        "OSPF Version 2, Appendix C.1 Global parameters"
    ::= { ospfv3LinkLsdbEntry 4 }
```

```
ospfv3LinkLsdbLsid OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS   not-accessible
    STATUS       current
```

DESCRIPTION

"The Link State ID is an LS Type Specific field containing a unique identifier; it identifies the piece of the routing domain that is being described by the advertisement.

In contrast to OSPFv2, the LSID has no addressing semantics. However, in OSPFv3 the Link State ID always contains the flooding scope of the LSA."

::= { ospfv3LinkLsdbEntry 5 }

-- Note that the OSPF Sequence Number is a 32 bit signed
 -- integer. It starts with the value '80000001'h,
 -- or -'7FFFFFFF'h, and increments until '7FFFFFFF'h
 -- Thus, a typical sequence number will be very negative.

ospfv3LinkLsdbSequence OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The sequence number field is a signed 32-bit integer. It is used to detect old and duplicate link state advertisements. The space of sequence numbers is linearly ordered. The larger the sequence number the more recent the advertisement."

REFERENCE

"OSPF Version 2, Section 12.1.6 LS sequence number"

::= { ospfv3LinkLsdbEntry 6 }

ospfv3LinkLsdbAge OBJECT-TYPE

SYNTAX Integer32 -- Should be 0..MaxAge
 -- unless DoNotAge bit is set

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the age of the link state advertisement in seconds."

REFERENCE

"OSPF Version 2, [Section 12.1.1](#) LS age"

::= { ospfv3LinkLsdbEntry 7 }

ospfv3LinkLsdbChecksum OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the checksum of the complete contents of the advertisement, excepting the age field. The age field is excepted so that

an advertisement's age can be incremented without updating the checksum. The checksum used is the same that is used for ISO connectionless datagrams; it is commonly referred to as the Fletcher checksum."

REFERENCE

"OSPF Version 2, [Section 12.1.7](#) LS checksum"

::= { ospfv3LinkLsdbEntry 8 }

ospfv3LinkLsdbAdvertisement OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (1..65535))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The entire Link State Advertisement, including its header."

::= { ospfv3LinkLsdbEntry 9 }

ospfv3LinkLsdbTypeKnown OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates whether the LSA type is recognized by this Router."

::= { ospfv3LinkLsdbEntry 10 }

-- OSPF Host Table

ospfv3HostTable OBJECT-TYPE

SYNTAX SEQUENCE OF Ospfv3HostEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The Host/Metric Table indicates what hosts are directly attached to the router and their corresponding metrics."

REFERENCE

"OSPF Version 2, [Appendix C.6](#) Host route parameters"

::= { ospfv3Objects 6 }

ospfv3HostEntry OBJECT-TYPE

SYNTAX Ospfv3HostEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A metric to be advertised when a given host is reachable."

The information in this table is persistent and when written the entity SHOULD save the change

```
        to non-volatile storage."
INDEX      { ospfv3HostAddressType,
            ospfv3HostAddress }
::= { ospfv3HostTable 1 }
```

```
Ospfv3HostEntry ::= SEQUENCE {  
    ospfv3HostAddressType  
        InetAddressType,  
    ospfv3HostAddress  
        InetAddress,  
    ospfv3HostMetric  
        Metric,  
    ospfv3HostStatus  
        RowStatus,  
    ospfv3HostAreaID  
        Ospfv3AreaIdTc  
}
```

ospfv3HostAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of ospfv3HostAddress. Only IPv6
global address type expected."

REFERENCE

"OSPF Version 2, [Appendix C.6](#) Host route
parameters"

::= { ospfv3HostEntry 1 }

ospfv3HostAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (16))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IPv6 Address of the Host. Must be an
IPv6 global address."

REFERENCE

"OSPF Version 2, [Appendix C.6](#) Host route
parameters"

::= { ospfv3HostEntry 2 }

ospfv3HostMetric OBJECT-TYPE

SYNTAX Metric

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The Metric to be advertised."

REFERENCE

"OSPF Version 2, [Appendix C.6](#) Host route
parameters"

::= { ospfv3HostEntry 3 }

ospfv3HostStatus OBJECT-TYPE

SYNTAX	RowStatus
MAX-ACCESS	read-create
STATUS	current

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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."

::= { ospfv3HostEntry 4 }

ospfv3HostAreaID OBJECT-TYPE

SYNTAX OspfV3AreaIdTc

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The Area the Host Entry is to be found within. By default, the area for the subsuming OSPFv3 interface or Area 0 if there is no subsuming interface."

REFERENCE

"OSPF Version 2, [Appendix C.2](#) Area parameters"

::= { ospfv3HostEntry 5 }

-- OSPFv3 Interface Table

ospfv3IfTable OBJECT-TYPE

SYNTAX SEQUENCE OF OspfV3IfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The OSPFv3 Interface Table describes the interfaces from the viewpoint of OSPFv3."

REFERENCE

"OSPF Version 2, [Appendix C.3](#) Router interface parameters"

::= { ospfv3Objects 7 }

ospfv3IfEntry OBJECT-TYPE

SYNTAX OspfV3IfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The OSPFv3 Interface Entry describes one interface from the viewpoint of OSPFv3.

The information in this table is persistent and when written the entity SHOULD save the

```
change to non-volatile storage."
INDEX          { ospfv3IfIndex,
                ospfv3IfInstId }
::= { ospfv3IfTable 1 }
```

```
Ospfv3IfEntry ::= SEQUENCE {
    ospfv3IfIndex
        InterfaceIndex,
    ospfv3IfInstId
        Ospfv3IfInstIdTc,
    ospfv3IfAreaId
        Ospfv3AreaIdTc,
    ospfv3IfType
        INTEGER,
    ospfv3IfAdminStat
        Status,
    ospfv3IfRtrPriority
        DesignatedRouterPriority,
    ospfv3IfTransitDelay
        Ospfv3UpToRefreshIntervalTc,
    ospfv3IfRetransInterval
        Ospfv3UpToRefreshIntervalTc,
    ospfv3IfHelloInterval
        HelloRange,
    ospfv3IfRtrDeadInterval
        Ospfv3DeadIntRangeTc,
    ospfv3IfPollInterval
        Unsigned32,
    ospfv3IfState
        INTEGER,
    ospfv3IfDesignatedRouter
        Ospfv3RouterIdTc,
    ospfv3IfBackupDesignatedRouter
        Ospfv3RouterIdTc,
    ospfv3IfEvents
        Counter32,
    ospfv3IfStatus
        RowStatus,
    ospfv3IfDemand
        TruthValue,
    ospfv3IfMetricValue
        Metric,
    ospfv3IfLinkScopeLsaCount
        Gauge32,
    ospfv3IfLinkLsaCksumSum
        Integer32,
    ospfv3IfDemandNbrProbe
        TruthValue,
    ospfv3IfDemandNbrProbeRetxLimit
        Unsigned32,
    ospfv3IfDemandNbrProbeInterval
        Unsigned32
}
```

}

ospfv3IfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

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STATUS current
DESCRIPTION
"The interface index of this OSPFv3 interface.
It corresponds to the interface index of the
IPv6 interface on which OSPFv3 is configured."
::= { ospfv3IfEntry 1 }

ospfv3IfInstId OBJECT-TYPE
SYNTAX OspfV3IfInstIdTc
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Enables multiple interface instances of OSPFv3
to be run over a single link. Each interface
instance would be assigned a separate ID. This ID
has local link significance only."
::= { ospfv3IfEntry 2 }

ospfv3IfAreaId OBJECT-TYPE
SYNTAX OspfV3AreaIdTc
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"A 32-bit integer uniquely identifying the area
to which the interface connects. Area ID
0 is used for the OSPFv3 backbone."
DEFVAL { 0 }
::= { ospfv3IfEntry 3 }

ospfv3IfType OBJECT-TYPE
SYNTAX INTEGER {
broadcast(1),
nbma(2),
pointToPoint(3),
pointToMultipoint(5)
}
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The OSPFv3 interface type."
::= { ospfv3IfEntry 4 }

ospfv3IfAdminStat OBJECT-TYPE
SYNTAX Status
MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The OSPFv3 interface's administrative status."

The value formed on the interface, and the interface will be advertised as an internal route to some area. The value 'disabled' denotes that the interface is external to OSPFv3."

DEFVAL { enabled }

```
::= { ospfv3IfEntry 5 }
```

ospfv3IfRtrPriority OBJECT-TYPE

SYNTAX DesignatedRouterPriority

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The priority of this interface. Used in multi-access networks, this field is used in the designated router election algorithm. The value 0 signifies that the router is not eligible to become the designated router on this particular network. In the event of a tie in this value, routers will use their Router ID as a tie breaker."

DEFVAL { 1 }

```
::= { ospfv3IfEntry 6 }
```

ospfv3IfTransitDelay OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The estimated number of seconds it takes to transmit a link state update packet over this interface."

DEFVAL { 1 }

```
::= { ospfv3IfEntry 7 }
```

ospfv3IfRetransInterval OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The number of seconds between link state advertisement retransmissions for adjacencies belonging to this interface. This value is also used when retransmitting database description and link state request packets."

DEFVAL { 5 }

```
::= { ospfv3IfEntry 8 }
```

ospfv3IfHelloInterval OBJECT-TYPE

SYNTAX HelloRange

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The length of time, in seconds, between the
Hello packets that the router sends on the
interface. This value must be the same for all

routers attached to a common network."
 DEFVAL { 10 }
 ::= { ospfv3IfEntry 9 }

ospfv3IfRtrDeadInterval OBJECT-TYPE

SYNTAX Ospfv3DeadIntRangeTc
 UNITS "seconds"
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The number of seconds that a router's Hello
 packets have not been seen before its
 neighbors declare the router down on the interface.
 This should be some multiple of the Hello interval.
 This value must be the same for all routers attached
 to a common network."
 DEFVAL { 40 }
 ::= { ospfv3IfEntry 10 }

ospfv3IfPollInterval OBJECT-TYPE

SYNTAX Unsigned32
 UNITS "seconds"
 MAX-ACCESS read-create
 STATUS current
 DESCRIPTION
 "The larger time interval, in seconds, between
 the Hello packets sent to an inactive,
 non-broadcast, multi-access neighbor."
 DEFVAL { 120 }
 ::= { ospfv3IfEntry 11 }

ospfv3IfState OBJECT-TYPE

SYNTAX INTEGER {
 down(1),
 loopback(2),
 waiting(3),
 pointToPoint(4),
 designatedRouter(5),
 backupDesignatedRouter(6),
 otherDesignatedRouter(7),
 standby(8)
 }
 MAX-ACCESS read-only
 STATUS current
 DESCRIPTION
 "The OSPFv3 Interface State. An interface may be
 in standby state if there are multiple interfaces
 on the link and another interface is active."

::= { ospfv3IfEntry 12 }

ospfv3IfDesignatedRouter OBJECT-TYPE

SYNTAX OspfV3RouterIdTc

MAX-ACCESS read-only

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STATUS current
DESCRIPTION
"The Router ID of the Designated Router."
 ::= { ospfv3IfEntry 13 }

ospfv3IfBackupDesignatedRouter OBJECT-TYPE

SYNTAX OspfV3RouterIdTc
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The Router ID of the Backup Designated Router."
 ::= { ospfv3IfEntry 14 }

ospfv3IfEvents OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of times this OSPFv3 interface has changed its state or an error has occurred."

Discontinuities in the value of this counter can occur at re-initialization of the management system and at other times as indicated by the value of ospfv3DiscontinuityTime."
 ::= { ospfv3IfEntry 15 }

ospfv3IfStatus 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."
 ::= { ospfv3IfEntry 16 }

ospfv3IfDemand OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-create
STATUS current
DESCRIPTION

```
"Indicates whether Demand OSPFv3 procedures  
(hello suppression to FULL neighbors and  
setting the DoNotAge flag on propagated LSAs)  
should be performed on this interface."  
DEFVAL { false }
```

```
::= { ospfv3IfEntry 17 }

ospfv3IfMetricValue OBJECT-TYPE
    SYNTAX      Metric
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "The metric assigned to this interface.
        The default value of the Metric is
        Reference Bandwidth / ifSpeed. The value
        of the reference bandwidth can be set
        in the ospfv3ReferenceBandwidth object."
    ::= { ospfv3IfEntry 18 }

ospfv3IfLinkScopeLsaCount OBJECT-TYPE
    SYNTAX      Gauge32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The total number of Link-Scope link state
        advertisements in this link's link state
        database."
    ::= { ospfv3IfEntry 19 }

ospfv3IfLinkLsaCksumSum OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "The 32-bit unsigned sum of the Link-Scope link state
        advertisements' LS checksums contained in this
        link's link state database. The sum can be used
        to determine if there has been a change in a
        router's link state database or to compare the
        link state database of two routers."
    ::= { ospfv3IfEntry 20 }

ospfv3IfDemandNbrProbe OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "Indicates whether or not neighbor probing is
        enabled to determine whether or not the neighbor
        is inactive. Neighbor probing is disabled by
        default."
    DEFVAL { false }
    ::= { ospfv3IfEntry 21 }
```

ospfv3IfDemandNbrProbeRetxLimit OBJECT-TYPE

SYNTAX	Unsigned32
MAX-ACCESS	read-create
STATUS	current

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DESCRIPTION

"The number of consecutive LSA retransmissions before the neighbor is deemed inactive and the neighbor adjacency is brought down."

DEFVAL { 10 }

::= { ospfv3IfEntry 22 }

ospfv3IfDemandNbrProbeInterval OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Defines how often the neighbor will be probed."

DEFVAL { 120 }

::= { ospfv3IfEntry 23 }

-- OSPFv3 Virtual Interface Table

ospfv3VirtIfTable OBJECT-TYPE

SYNTAX SEQUENCE OF OspfV3VirtIfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Information about this router's virtual interfaces that the OSPFv3 Process is configured to carry on."

REFERENCE

"OSPF Version 2, [Appendix C.4](#) Virtual link parameters"

::= { ospfv3Objects 8 }

ospfv3VirtIfEntry OBJECT-TYPE

SYNTAX OspfV3VirtIfEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Information about a single Virtual Interface."

The information in this table is persistent and when written the entity SHOULD save the change to non-volatile storage."

INDEX { ospfv3VirtIfAreaId,
ospfv3VirtIfNeighbor }

::= { ospfv3VirtIfTable 1 }

OspfV3VirtIfEntry ::= SEQUENCE {

```
ospfv3VirtIfAreaId
    ospfv3AreaIdTc,
ospfv3VirtIfNeighbor
    ospfv3RouterIdTc,
```

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```

ospfv3VirtIfIndex
    InterfaceIndex,
ospfv3VirtIfInstId
    Ospf3IfInstIdTc,
ospfv3VirtIfTransitDelay
    Ospf3UpToRefreshIntervalTc,
ospfv3VirtIfRetransInterval
    Ospf3UpToRefreshIntervalTc,
ospfv3VirtIfHelloInterval
    HelloRange,
ospfv3VirtIfRtrDeadInterval
    Ospf3DeadIntRangeTc,
ospfv3VirtIfState
    INTEGER,
ospfv3VirtIfEvents
    Counter32,
ospfv3VirtIfStatus
    RowStatus,
ospfv3VirtIfLinkScopeLsaCount
    Gauge32,
ospfv3VirtIfLinkLsaCksumSum
    Integer32
}

```

ospfv3VirtIfAreaId OBJECT-TYPE

```

SYNTAX      Ospf3AreaIdTc
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The Transit Area that the Virtual Link
    traverses. By definition, this is not
    Area 0."
 ::= { ospfv3VirtIfEntry 1 }

```

ospfv3VirtIfNeighbor OBJECT-TYPE

```

SYNTAX      Ospf3RouterIdTc
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The Router ID of the Virtual Neighbor."
 ::= { ospfv3VirtIfEntry 2 }

```

ospfv3VirtIfIndex OBJECT-TYPE

```

SYNTAX      InterfaceIndex
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The local interface index assigned by the

```

OSPFv3 process to this OSPFv3 virtual interface.
It is advertised in Hello's sent over the virtual
link and in the router's router-LSAs."
::= { ospfv3VirtIfEntry 3 }

ospfv3VirtIfInstId OBJECT-TYPE

SYNTAX OspfV3IfInstIdTc

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The local interface instance ID assigned by the
OSPFv3 process to this OSPFv3 virtual interface."

::= { ospfv3VirtIfEntry 4 }

ospfv3VirtIfTransitDelay OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The estimated number of seconds it takes to
transmit a link state update packet over this
interface."

DEFVAL { 1 }

::= { ospfv3VirtIfEntry 5 }

ospfv3VirtIfRetransInterval OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The number of seconds between link state
advertisement retransmissions for adjacencies
belonging to this interface. This value is
also used when retransmitting database
description and link state request packets. This
value should be well over the expected
round-trip time."

DEFVAL { 5 }

::= { ospfv3VirtIfEntry 6 }

ospfv3VirtIfHelloInterval OBJECT-TYPE

SYNTAX HelloRange

UNITS "seconds"

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The length of time, in seconds, between the
Hello packets that the router sends on the
interface. This value must be the same for the
virtual neighbor."

DEFVAL { 10 }

::= { ospfv3VirtIfEntry 7 }

ospfv3VirtIfRtrDeadInterval OBJECT-TYPE

SYNTAX OspfV3DeadIntRangeTc

UNITS "seconds"

MAX-ACCESS read-create
STATUS current
DESCRIPTION
"The number of seconds that a router's Hello packets have not been seen before its neighbors declare the router down. This should be some multiple of the Hello interval. This value must be the same for the virtual neighbor."

DEFVAL { 60 }
::= { ospfv3VirtIfEntry 8 }

ospfv3VirtIfState OBJECT-TYPE

SYNTAX INTEGER {
down(1),
pointToPoint(4)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"OSPF virtual interface states. The same encoding as the ospfv3IfTable is used."
::= { ospfv3VirtIfEntry 9 }

ospfv3VirtIfEvents OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The number of state changes or error events on this Virtual Link.

Discontinuities in the value of this counter can occur at re-initialization of the management system and at other times as indicated by the value of ospfv3DiscontinuityTime."
::= { ospfv3VirtIfEntry 10 }

ospfv3VirtIfStatus 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."

::= { ospfv3VirtIfEntry 11 }

ospfv3VirtIfLinkScopeLsaCount OBJECT-TYPE

```

SYNTAX          Gauge32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The total number of Link-Scope link state
    advertisements in this virtual link's link state
    database."
 ::= { ospfv3VirtIfEntry 12 }

```

ospfv3VirtIfLinkLsaCksumSum OBJECT-TYPE

```

SYNTAX          Integer32
MAX-ACCESS      read-only
STATUS          current
DESCRIPTION
    "The 32-bit unsigned sum of the Link-Scope link-state
    advertisements' LS checksums contained in this
    virtual link's link-state database. The sum can be used
    to determine if there has been a change in a
    router's link state database or to compare the
    link state database of two routers."
 ::= { ospfv3VirtIfEntry 13 }

```

-- OSPFv3 Neighbor Table

ospfv3NbrTable OBJECT-TYPE

```

SYNTAX          SEQUENCE OF OspfV3NbrEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "A table describing all neighbors in the
    locality of the OSPFv3 router."
REFERENCE
    "OSPF Version 2, Section 10 The Neighbor Data
    Structure"
 ::= { ospfv3Objects 9 }

```

ospfv3NbrEntry OBJECT-TYPE

```

SYNTAX          OspfV3NbrEntry
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The information regarding a single neighbor."
REFERENCE
    "OSPF Version 2, Section 10 The Neighbor Data
    Structure"
INDEX          { ospfv3NbrIfIndex,
                 ospfv3NbrIfInstId,

```

```
ospfv3NbrRtrId }  
::= { ospfv3NbrTable 1 }
```

```
Ospfv3NbrEntry ::= SEQUENCE {  
    ospfv3NbrIfIndex
```



```

        InterfaceIndex,
ospfv3NbrIfInstId
        Ospfv3IfInstIdTc,
ospfv3NbrRtrId
        Ospfv3RouterIdTc,
ospfv3NbrAddressType
        InetAddressType,
ospfv3NbrAddress
        InetAddress,
ospfv3NbrOptions
        Integer32,
ospfv3NbrPriority
        DesignatedRouterPriority,
ospfv3NbrState
        INTEGER,
ospfv3NbrEvents
        Counter32,
ospfv3NbrLsRetransQLen
        Gauge32,
ospfv3NbrHelloSuppressed
        TruthValue,
ospfv3NbrIfId
        InterfaceIndex,
ospfv3NbrRestartHelperStatus
        INTEGER,
ospfv3NbrRestartHelperAge
        Ospfv3UpToRefreshIntervalTc,
ospfv3NbrRestartHelperExitRc
        INTEGER
}

```

ospfv3NbrIfIndex OBJECT-TYPE

```

SYNTAX          InterfaceIndex
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The local link ID of the link over which the
     neighbor can be reached."
 ::= { ospfv3NbrEntry 1 }

```

ospfv3NbrIfInstId OBJECT-TYPE

```

SYNTAX          Ospfv3IfInstIdTc
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "Interface instance over which the neighbor
     can be reached. This ID has local link
     significance only."

```

::= { ospfv3NbrEntry 2 }

ospfv3NbrRtrId OBJECT-TYPE

SYNTAX OspfV3RouterIdTc

MAX-ACCESS not-accessible

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STATUS current

DESCRIPTION

"A 32-bit integer uniquely identifying the neighboring router in the Autonomous System."

::= { ospfv3NbrEntry 3 }

ospfv3NbrAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The address type of ospfv3NbrAddress. Only IPv6 addresses without zone index are expected."

::= { ospfv3NbrEntry 4 }

ospfv3NbrAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (16))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IPv6 address of the neighbor associated with the local link."

::= { ospfv3NbrEntry 5 }

ospfv3NbrOptions OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A Bit Mask corresponding to the neighbor's options field."

REFERENCE

"OSPF Version 3, [Appendix A.2](#) the Options field"

::= { ospfv3NbrEntry 6 }

ospfv3NbrPriority OBJECT-TYPE

SYNTAX DesignatedRouterPriority

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The priority of this neighbor in the designated router election algorithm. The value 0 signifies that the neighbor is not eligible to become the designated router on this particular network."

::= { ospfv3NbrEntry 7 }

ospfv3NbrState OBJECT-TYPE

SYNTAX INTEGER {

```
down(1),  
attempt(2),  
init(3),  
twoWay(4),  
exchangeStart(5),
```

```
        exchange(6),
        loading(7),
        full(8)
    }
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The State of the relationship with this
        Neighbor."
    REFERENCE
        "OSPF Version 2, Section 10.1 Neighbor States"
    ::= { ospfv3NbrEntry 8 }
```

ospfv3NbrEvents OBJECT-TYPE

```
    SYNTAX          Counter32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The number of times this neighbor relationship
        has changed state or an error has occurred.

        Discontinuities in the value of this counter
        can occur at re-initialization of the management
        system and at other times as indicated by the
        value of ospfv3DiscontinuityTime."
    ::= { ospfv3NbrEntry 9 }
```

ospfv3NbrLsRetransQLen OBJECT-TYPE

```
    SYNTAX          Gauge32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The current length of the retransmission
        queue."
    ::= { ospfv3NbrEntry 10 }
```

ospfv3NbrHelloSuppressed OBJECT-TYPE

```
    SYNTAX          TruthValue
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Indicates whether Hellos are being suppressed
        to the neighbor"
    ::= { ospfv3NbrEntry 11 }
```

ospfv3NbrIfId OBJECT-TYPE

```
    SYNTAX          InterfaceIndex
    MAX-ACCESS      read-only
```

STATUS current

DESCRIPTION

"The interface ID that the neighbor advertises
in its Hello Packets on this link, that is, the
neighbor's local interface index."

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```

 ::= { ospfv3NbrEntry 12 }

ospfv3NbrRestartHelperStatus OBJECT-TYPE
    SYNTAX      INTEGER { notHelping (1),
                          helping (2)
    }
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Indicates whether the router is acting
        as a Graceful restart helper for the neighbor."
    ::= { ospfv3NbrEntry 13 }

ospfv3NbrRestartHelperAge OBJECT-TYPE
    SYNTAX      OspfV3UpToRefreshIntervalTc
    UNITS       "seconds"
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Remaining time in current OSPF Graceful restart
        interval, if the router is acting as a restart
        helper for the neighbor."
    ::= { ospfv3NbrEntry 14 }

ospfv3NbrRestartHelperExitRc OBJECT-TYPE
    SYNTAX      INTEGER { none (1),
                          inProgress (2),
                          completed (3),
                          timedOut (4),
                          topologyChanged (5)
    }
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
        "Describes the outcome of the last attempt at acting
        as a Graceful restart helper for the neighbor.

        none:.....no restart has yet been attempted.
        inProgress:.....a restart attempt is currently underway.
        completed:.....the last restart completed successfully.
        timedOut:.....the last restart timed out.
        topologyChanged:..the last restart was aborted due to
                           a topology change."
    ::= { ospfv3NbrEntry 15 }

```

-- OSPFv3 Configured Neighbor Table

ospfv3CfgNbrTable OBJECT-TYPE

SYNTAX	SEQUENCE OF OspfV3CfgNbrEntry
MAX-ACCESS	not-accessible
STATUS	current
DESCRIPTION	

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"A table describing all configured neighbors."

REFERENCE

"OSPF Version 2, [Section 10](#) The Neighbor Data Structure"

::= { ospfv3objects 10 }

ospfv3CfgNbrEntry OBJECT-TYPE

SYNTAX OspfV3CfgNbrEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The information regarding a single configured neighbor."

The information in this table is persistent and when written the entity SHOULD save the change to non-volatile storage."

REFERENCE

"OSPF Version 2, [Section 10](#) The Neighbor Data Structure"

INDEX { ospfv3CfgNbrIfIndex,
ospfv3CfgNbrIfInstId,
ospfv3CfgNbrAddressType,
ospfv3CfgNbrAddress }

::= { ospfv3CfgNbrTable 1 }

OspfV3CfgNbrEntry ::= SEQUENCE {

```
ospfv3CfgNbrIfIndex
    InterfaceIndex,
ospfv3CfgNbrIfInstId
    OspfV3IfInstIdTc,
ospfv3CfgNbrAddressType
    InetAddressType,
ospfv3CfgNbrAddress
    InetAddress,
ospfv3CfgNbrPriority
    DesignatedRouterPriority,
ospfv3CfgNbrStatus
    RowStatus
}
```

ospfv3CfgNbrIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The local link ID of the link over which the neighbor can be reached."

::= { ospfv3CfgNbrEntry 1 }

ospfv3CfgNbrIfInstId OBJECT-TYPE

SYNTAX OspfV3IfInstIdTc

MAX-ACCESS not-accessible

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STATUS current

DESCRIPTION

"Interface instance over which the neighbor
can be reached. This ID has local link
significance only."

::= { ospfv3CfgNbrEntry 2 }

ospfv3CfgNbrAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The address type of ospfv3NbrAddress. Only IPv6
addresses without zone index are expected."

::= { ospfv3CfgNbrEntry 3 }

ospfv3CfgNbrAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (16))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The IPv6 address of the neighbor associated with
the local link."

::= { ospfv3CfgNbrEntry 4 }

ospfv3CfgNbrPriority OBJECT-TYPE

SYNTAX DesignatedRouterPriority

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The priority of this neighbor in the designated
router election algorithm. The value 0 signifies
that the neighbor is not eligible to become the
designated router on this particular network."

DEFVAL { 1 }

::= { ospfv3CfgNbrEntry 5 }

ospfv3CfgNbrStatus 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."  
    ::= { ospfv3CfgNbrEntry 6 }  
  
-- OSPFv3 Virtual Neighbor Table
```

ospfv3VirtNbrTable OBJECT-TYPE

SYNTAX SEQUENCE OF OspfV3VirtNbrEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "A table describing all virtual neighbors."
 REFERENCE
 "OSPF Version 2, [Section 15](#) Virtual Links"
 ::= { ospfv30objects 11 }

ospfv3VirtNbrEntry OBJECT-TYPE

SYNTAX OspfV3VirtNbrEntry
 MAX-ACCESS not-accessible
 STATUS current
 DESCRIPTION
 "Virtual neighbor information."
 INDEX { ospfv3VirtNbrArea,
 ospfv3VirtNbrRtrId }
 ::= { ospfv3VirtNbrTable 1 }

OspfV3VirtNbrEntry ::= SEQUENCE {

ospfv3VirtNbrArea
 OspfV3AreaIdTc,
 ospfv3VirtNbrRtrId
 OspfV3RouterIdTc,
 ospfv3VirtNbrIfIndex
 InterfaceIndex,
 ospfv3VirtNbrIfInstId
 OspfV3IfInstIdTc,
 ospfv3VirtNbrAddressType
 InetAddressType,
 ospfv3VirtNbrAddress
 InetAddress,
 ospfv3VirtNbrOptions
 Integer32,
 ospfv3VirtNbrState
 INTEGER,
 ospfv3VirtNbrEvents
 Counter32,
 ospfv3VirtNbrLsRetransQLen
 Gauge32,
 ospfv3VirtNbrHelloSuppressed
 TruthValue,
 ospfv3VirtNbrIfId
 InterfaceIndex,
 ospfv3VirtNbrRestartHelperStatus
 INTEGER,
 ospfv3VirtNbrRestartHelperAge

```
        OspfV3UpToRefreshIntervalTc,  
ospfv3VirtNbrRestartHelperExitRc  
        INTEGER  
    }
```

ospfv3VirtNbrArea OBJECT-TYPE

SYNTAX Ospfv3AreaIdTc
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The Transit Area Identifier."
 ::= { ospfv3VirtNbrEntry 1 }

ospfv3VirtNbrRtrId OBJECT-TYPE

SYNTAX Ospfv3RouterIdTc
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "A 32-bit integer uniquely identifying the
 neighboring router in the Autonomous System."
 ::= { ospfv3VirtNbrEntry 2 }

ospfv3VirtNbrIfIndex OBJECT-TYPE

SYNTAX InterfaceIndex
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The local interface ID for the virtual link over
 which the neighbor can be reached."
 ::= { ospfv3VirtNbrEntry 3 }

ospfv3VirtNbrIfInstId OBJECT-TYPE

SYNTAX Ospfv3IfInstIdTc
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The interface instance for the virtual link over
 which the neighbor can be reached."
 ::= { ospfv3VirtNbrEntry 4 }

ospfv3VirtNbrAddressType OBJECT-TYPE

SYNTAX InetAddressType
MAX-ACCESS read-only
STATUS current
DESCRIPTION
 "The address type of ospfv3VirtNbrAddress. Only IPv6
 addresses without zone index are expected."
 ::= { ospfv3VirtNbrEntry 5 }

ospfv3VirtNbrAddress OBJECT-TYPE

SYNTAX InetAddress (SIZE (16))
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The IPv6 address advertised by this Virtual Neighbor.
It must be a Global scope address."

::= { ospfv3VirtNbrEntry 6 }

ospfv3VirtNbrOptions OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"A Bit Mask corresponding to the neighbor's options field."

REFERENCE

"OSPF Version 3, [Appendix A.2](#) the Options field"

::= { ospfv3VirtNbrEntry 7 }

ospfv3VirtNbrState OBJECT-TYPE

SYNTAX INTEGER {
down(1),
attempt(2),
init(3),
twoWay(4),
exchangeStart(5),
exchange(6),
loading(7),
full(8)
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The state of the Virtual Neighbor Relationship."

::= { ospfv3VirtNbrEntry 8 }

ospfv3VirtNbrEvents OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times this virtual link has changed its state or an error has occurred."

Discontinuities in the value of this counter can occur at re-initialization of the management system and at other times as indicated by the value of ospfv3DiscontinuityTime."

::= { ospfv3VirtNbrEntry 9 }

ospfv3VirtNbrLsRetransQLen OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The current length of the retransmission

```
queue."  
::= { ospfv3VirtNbrEntry 10 }
```

```
ospfv3VirtNbrHelloSuppressed OBJECT-TYPE  
SYNTAX TruthValue
```

MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates whether Hellos are being suppressed
to the neighbor"
::= { ospfv3VirtNbrEntry 11 }

ospfv3VirtNbrIfId OBJECT-TYPE

SYNTAX InterfaceIndex
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"The interface ID that the neighbor advertises
in its Hello Packets on this virtual link, that is,
the neighbor's local interface ID."
::= { ospfv3VirtNbrEntry 12 }

ospfv3VirtNbrRestartHelperStatus OBJECT-TYPE

SYNTAX INTEGER { notHelping (1),
helping (2)
}
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Indicates whether the router is acting
as a Graceful restart helper for the neighbor."
::= { ospfv3VirtNbrEntry 13 }

ospfv3VirtNbrRestartHelperAge OBJECT-TYPE

SYNTAX OspfV3UpToRefreshIntervalTc
UNITS "seconds"
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Remaining time in current OSPF Graceful restart
interval, if the router is acting as a restart
helper for the neighbor."
::= { ospfv3VirtNbrEntry 14 }

ospfv3VirtNbrRestartHelperExitRc OBJECT-TYPE

SYNTAX INTEGER { none (1),
inProgress (2),
completed (3),
timedOut (4),
topologyChanged (5)
}
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Describes the outcome of the last attempt at acting
as a Graceful restart helper for the neighbor.

none:.....no restart has yet been attempted.

```

    inProgress:.....a restart attempt is currently underway.
    completed:.....the last restart completed successfully.
    timedOut:.....the last restart timed out.
    topologyChanged:.the last restart was aborted due to
                    a topology change."
 ::= { ospfv3VirtNbrEntry 15 }

```

```
--
```

```
-- The OSPFv3 Area Aggregate Table
```

```
--
```

```
ospfv3AreaAggregateTable OBJECT-TYPE
```

```
    SYNTAX          SEQUENCE OF OspfV3AreaAggregateEntry
```

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

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        "The Area Aggregate Table acts as an adjunct
        to the Area Table. It describes those address
        aggregates that are configured to be propagated
        from an area. Its purpose is to reduce the amount
        of information that is known beyond an Area's
        borders.
```

```
        A range of IPv6 prefixes specified by a
        prefix/prefix length pair. Note that if
        ranges are configured such that one range
        subsumes another range the most specific
        match is the preferred one."
```

```
 ::= { ospfv3Objects 12 }
```

```
ospfv3AreaAggregateEntry OBJECT-TYPE
```

```
    SYNTAX          OspfV3AreaAggregateEntry
```

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

```
    STATUS          current
```

```
    DESCRIPTION
```

```
        "A single area aggregate entry.
```

```
        Information in this table is persistent and
        when this object is written the entity SHOULD
        save the change to non-volatile storage."
```

```
    REFERENCE
```

```
        "OSPF Version 2, Appendix C.2 Area parameters"
```

```
    INDEX          { ospfv3AreaAggregateAreaID,
                    ospfv3AreaAggregateAreaLsdbType,
                    ospfv3AreaAggregatePrefixType,
                    ospfv3AreaAggregatePrefix,
                    ospfv3AreaAggregatePrefixLength }
```

::= { ospfv3AreaAggregateTable 1 }

Ospfv3AreaAggregateEntry ::= SEQUENCE {
 ospfv3AreaAggregateAreaID
 ospfv3AreaIdTc,

```

ospfv3AreaAggregateAreaLsdbType
    INTEGER,
ospfv3AreaAggregatePrefixType
    InetAddressType,
ospfv3AreaAggregatePrefix
    InetAddress,
ospfv3AreaAggregatePrefixLength
    InetAddressPrefixLength,
ospfv3AreaAggregateStatus
    RowStatus,
ospfv3AreaAggregateEffect
    INTEGER,
ospfv3AreaAggregateRouteTag
    INTEGER
}

```

```

ospfv3AreaAggregateAreaID OBJECT-TYPE
    SYNTAX      OspfV3AreaIdTc
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The Area the Address Aggregate is to be found
        within."
    REFERENCE
        "OSPF Version 2, Appendix C.2 Area parameters"
    ::= { ospfv3AreaAggregateEntry 1 }

```

```

ospfv3AreaAggregateAreaLsdbType OBJECT-TYPE
    SYNTAX      INTEGER {
                    interAreaPrefixLsa(8195), -- 0x2003
                    nssaExternalLsa(8199)    -- 0x2007
                }
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "The type of the Address Aggregate. This field
        specifies the Area Lsdb type that this Address
        Aggregate applies to."
    REFERENCE
        "OSPF Version 2, Appendix A.4.1 The Link State
        Advertisement header"
    ::= { ospfv3AreaAggregateEntry 2 }

```

```

ospfv3AreaAggregatePrefixType OBJECT-TYPE
    SYNTAX      InetAddressType
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION

```

"The prefix type of ospfv3AreaAggregatePrefix. Only
IPv6 addresses are expected."
::= { ospfv3AreaAggregateEntry 3 }

ospfv3AreaAggregatePrefix OBJECT-TYPE

SYNTAX InetAddress (SIZE (0..16))
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The IPv6 Prefix."
REFERENCE
 "OSPF Version 2, [Appendix C.2](#) Area parameters"
::= { ospfv3AreaAggregateEntry 4 }

ospfv3AreaAggregatePrefixLength OBJECT-TYPE

SYNTAX InetAddressPrefixLength (3..128)
UNITS "bits"
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "The length of the prefix (in bits). A prefix can
 not be shorter than 3 bits."
REFERENCE
 "OSPF Version 2, [Appendix C.2](#) Area parameters"
::= { ospfv3AreaAggregateEntry 5 }

ospfv3AreaAggregateStatus 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."
::= { ospfv3AreaAggregateEntry 6 }

ospfv3AreaAggregateEffect OBJECT-TYPE

SYNTAX INTEGER {
 advertiseMatching(1),
 doNotAdvertiseMatching(2)
 }
MAX-ACCESS read-create
STATUS current
DESCRIPTION
 "Prefixes subsumed by ranges either trigger the
 advertisement of the indicated aggregate
 (advertiseMatching) or will result in the prefix not
 being advertised at all outside the area."
DEFVAL { advertiseMatching }

::= { ospfv3AreaAggregateEntry 7 }

ospfv3AreaAggregateRouteTag OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-create

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```

STATUS          current
DESCRIPTION
    "This tag is advertised only in the summarized
    As-External LSA when summarizing from NSSA-LSAs to
    AS-External-LSAs."
DEFVAL          { 0 }
::= { ospfv3AreaAggregateEntry 8 }

```

```
-- OSPFv3 Link-Scope Link State Database, for virtual interfaces
```

```

ospfv3VirtLinkLsdbTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF OspfV3VirtLinkLsdbEntry
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "The OSPFv3 Process's Link-Scope LSDB for virtual
        interfaces. The LSDB contains the Link-Scope Link
        State Advertisements from virtual interfaces."
    ::= { ospfv3Objects 13 }

```

```

ospfv3VirtLinkLsdbEntry OBJECT-TYPE
    SYNTAX          OspfV3VirtLinkLsdbEntry
    MAX-ACCESS       not-accessible
    STATUS           current
    DESCRIPTION
        "A single Link-Scope Link State Advertisement
        for a virtual interface."
    INDEX            { ospfv3VirtLinkLsdbIfAreaId,
                      ospfv3VirtLinkLsdbIfNeighbor,
                      ospfv3VirtLinkLsdbType,
                      ospfv3VirtLinkLsdbRouterId,
                      ospfv3VirtLinkLsdbLsid }
    ::= { ospfv3VirtLinkLsdbTable 1 }

```

```

OspfV3VirtLinkLsdbEntry ::= SEQUENCE {
    ospfv3VirtLinkLsdbIfAreaId
        OspfV3AreaIdTc,
    ospfv3VirtLinkLsdbIfNeighbor
        OspfV3RouterIdTc,
    ospfv3VirtLinkLsdbType
        Unsigned32,
    ospfv3VirtLinkLsdbRouterId
        OspfV3RouterIdTc,
    ospfv3VirtLinkLsdbLsid
        Unsigned32,
    ospfv3VirtLinkLsdbSequence
        Integer32,

```

ospfv3VirtLinkLsdbAge
Integer32,
ospfv3VirtLinkLsdbChecksum
Integer32,
ospfv3VirtLinkLsdbAdvertisement

```

        OCTET STRING,
ospfv3VirtLinkLsdbTypeKnown
        TruthValue
    }

```

ospfv3VirtLinkLsdbIfAreaId OBJECT-TYPE

```

SYNTAX          OspfV3AreaIdTc
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The Transit Area that the Virtual Link
    traverses. By definition, this is not
    Area 0."
 ::= { ospfv3VirtLinkLsdbEntry 1 }

```

ospfv3VirtLinkLsdbIfNeighbor OBJECT-TYPE

```

SYNTAX          OspfV3RouterIdTc
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The Router ID of the Virtual Neighbor."
 ::= { ospfv3VirtLinkLsdbEntry 2 }

```

ospfv3VirtLinkLsdbType OBJECT-TYPE

```

SYNTAX          Unsigned32(0..'FFFFFFF'h)
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The type of the link state advertisement.
    Each link state type has a separate
    advertisement format. Link-Scope LSAs unrecognized
    by the router are also stored in this database."
 ::= { ospfv3VirtLinkLsdbEntry 3 }

```

ospfv3VirtLinkLsdbRouterId OBJECT-TYPE

```

SYNTAX          OspfV3RouterIdTc
MAX-ACCESS      not-accessible
STATUS          current
DESCRIPTION
    "The 32 bit number that uniquely identifies the
    originating router in the Autonomous System."
REFERENCE
    "OSPF Version 2, Appendix C.1 Global parameters"
 ::= { ospfv3VirtLinkLsdbEntry 4 }

```

ospfv3VirtLinkLsdbLsid OBJECT-TYPE

```

SYNTAX          Unsigned32
MAX-ACCESS      not-accessible

```

STATUS current

DESCRIPTION

"The Link State ID is an LS Type Specific field
containing a unique identifier;
it identifies the piece of the routing domain

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that is being described by the advertisement.
 In contrast to OSPFv2, the LSID has no
 addressing semantics."

::= { ospfv3VirtLinkLsdbEntry 5 }

-- Note that the OSPF Sequence Number is a 32 bit signed
 -- integer. It starts with the value '80000001'h,
 -- or -'7FFFFFFF'h, and increments until '7FFFFFFF'h
 -- Thus, a typical sequence number will be very negative.

ospfv3VirtLinkLsdbSequence OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The sequence number field is a signed 32-bit
 integer. It is used to detect old and duplicate
 link state advertisements. The space of
 sequence numbers is linearly ordered. The
 larger the sequence number the more recent the
 advertisement."

REFERENCE

"OSPF Version 2, Section 12.1.6 LS sequence
 number"

::= { ospfv3VirtLinkLsdbEntry 6 }

ospfv3VirtLinkLsdbAge OBJECT-TYPE

SYNTAX Integer32 -- Should be 0..MaxAge
 -- unless DoNotAge bit is set

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the age of the link state
 advertisement in seconds."

REFERENCE

"OSPF Version 2, [Section 12.1.1](#) LS age"

::= { ospfv3VirtLinkLsdbEntry 7 }

ospfv3VirtLinkLsdbChecksum OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the checksum of the complete
 contents of the advertisement, excepting the
 age field. The age field is excepted so that
 an advertisement's age can be incremented"

without updating the checksum. The checksum used is the same that is used for ISO connectionless datagrams; it is commonly referred to as the Fletcher checksum."

REFERENCE


```

        "OSPF Version 2, Section 12.1.7 LS checksum"
 ::= { ospfv3VirtLinkLsdbEntry 8 }

ospfv3VirtLinkLsdbAdvertisement OBJECT-TYPE
    SYNTAX          OCTET STRING (SIZE (1..65535))
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The entire Link State Advertisement, including
        its header."
 ::= { ospfv3VirtLinkLsdbEntry 9 }

ospfv3VirtLinkLsdbTypeKnown OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "Indicates whether the LSA type is recognized by this
        Router."
 ::= { ospfv3VirtLinkLsdbEntry 10 }

-- The OspfV3 Notification Table

-- The OspfV3 Notification Table records fields that are
-- required for notifications

ospfv3NotificationEntry OBJECT IDENTIFIER
    ::= { ospfv3Objects 14 }

ospfv3ConfigErrorType OBJECT-TYPE
    SYNTAX          INTEGER {
                        badVersion (1),
                        areaMismatch (2),
                        unknownNbmaNbr (3), -- Router is DR eligible
                        unknownVirtualNbr (4),
                        helloIntervalMismatch (5),
                        deadIntervalMismatch (6),
                        optionMismatch (7),
                        mtuMismatch (8),
                        duplicateRouterId (9),
                        noError (10) }
    MAX-ACCESS      accessible-for-notify
    STATUS          current
    DESCRIPTION
        "Potential types of configuration conflicts.
        Used by the ospfv3ConfigError and
        ospfv3ConfigVirtError notifications. When the last value

```

of a notification using this object is needed, but no notifications of that type have been sent, the value pertaining to this object should be returned as noError."

::= { ospfv3NotificationEntry 1 }

```
ospfv3PacketType OBJECT-TYPE
    SYNTAX      INTEGER {
        hello (1),
        dbDescript (2),
        lsReq (3),
        lsUpdate (4),
        lsAck (5),
        nullPacket (6) }
    MAX-ACCESS   accessible-for-notify
    STATUS       current
    DESCRIPTION
        "OSPFv3 packet types. When the last value of a notification
        using this object is needed, but no notifications of
        that type have been sent, the value pertaining
        to this object should be returned as nullPacket."
    ::= { ospfv3NotificationEntry 2 }
```

```
ospfv3PacketSrc      OBJECT-TYPE
    SYNTAX      InetAddress (SIZE (16))
    MAX-ACCESS   accessible-for-notify
    STATUS       current
    DESCRIPTION
        "The IPv6 address of an inbound packet that cannot
        be identified by a neighbor instance. When
        the last value of a notification using this object is
        needed, but no notifications of that type have been sent,
        the value pertaining to this object should
        be returned as 0.

        Only IPv6 addresses without zone index are expected."
    ::= { ospfv3NotificationEntry 3 }
```

-- Notification definitions

```
ospfv3VirtIfStateChange NOTIFICATION-TYPE
    OBJECTS { ospfv3RouterId, -- The originator of the notification
        ospfv3VirtIfState -- The new state
    }
    STATUS       current
    DESCRIPTION
        "An ospfv3VirtIfStateChange notification signifies that
        there has been a change in the state of an OSPFv3 virtual
        interface.

        This notification should be generated when the interface
        state regresses (e.g., goes from Point-to-Point to Down)
```

or progresses to a terminal state (i.e., Point-to-Point)."
 ::= { ospfv3Notifications 1 }

ospfv3NbrStateChange NOTIFICATION-TYPE

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
           ospfv3NbrState  -- The new state
        }
```

```
STATUS      current
```

DESCRIPTION

"An ospfv3NbrStateChange notification signifies that there has been a change in the state of a non-virtual OSPFv3 neighbor. This notification should be generated when the neighbor state regresses (e.g., goes from Attempt or Full to 1-Way or Down) or progresses to a terminal state (e.g., 2-Way or Full). When an neighbor transitions from or to Full on non-broadcast multi-access and broadcast networks, the notification should be generated by the designated router. A designated router transitioning to Down will be noted by ospfIfStateChange."

```
::= { ospfv3Notifications 2 }
```

ospfv3VirtNbrStateChange NOTIFICATION-TYPE

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
           ospfv3VirtNbrState  -- The new state
        }
```

```
STATUS      current
```

DESCRIPTION

"An ospfv3VirtNbrStateChange notification signifies that there has been a change in the state of an OSPFv3 virtual neighbor. This notification should be generated when the neighbor state regresses (e.g., goes from Attempt or Full to 1-Way or Down) or progresses to a terminal state (e.g., Full)."

```
::= { ospfv3Notifications 3 }
```

ospfv3IfConfigError NOTIFICATION-TYPE

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
           ospfv3IfState,   -- State of the interface
           ospfv3PacketSrc, -- IPv6 address of source
           ospfv3ConfigErrorType, -- Type of error
           ospfv3PacketType -- Type of packet
        }
```

```
STATUS      current
```

DESCRIPTION

"An ospfv3IfConfigError notification signifies that a packet has been received on a non-virtual interface from a router whose configuration parameters conflict with this router's configuration parameters. Note that the event optionMismatch should cause a notification only if it

```
prevents an adjacency from forming."  
::= { ospfv3Notifications 4 }
```

```
ospfv3VirtIfConfigError NOTIFICATION-TYPE
```

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
```

```
    ospfv3VirtIfState,      -- State of the interface
    ospfv3ConfigErrorType, -- Type of error
    ospfv3PacketType
  }
STATUS      current
DESCRIPTION
    "An ospfv3VirtIfConfigError notification signifies that a
    packet has been received on a virtual interface
    from a router whose configuration parameters
    conflict with this router's configuration
    parameters. Note that the event optionMismatch
    should cause a notification only if it prevents an
    adjacency from forming."
 ::= { ospfv3Notifications 5 }
```

ospfv3IfRxBadPacket NOTIFICATION-TYPE

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
    ospfv3IfState,        -- State of the interface
    ospfv3PacketSrc,      -- The source IPv6 address
    ospfv3PacketType      -- Type of packet
  }
STATUS      current
DESCRIPTION
    "An ospfv3IfRxBadPacket notification signifies that an
    OSPFv3 packet that cannot be parsed has been received on a
    non-virtual interface."
 ::= { ospfv3Notifications 6 }
```

ospfv3VirtIfRxBadPacket NOTIFICATION-TYPE

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
    ospfv3VirtIfState,    -- State of the interface
    ospfv3PacketType      -- Type of packet
  }
STATUS      current
DESCRIPTION
    "An ospfv3VirtIfRxBadPacket notification signifies
    that an OSPFv3 packet that cannot be parsed has been
    received on a virtual interface."
 ::= { ospfv3Notifications 7 }
```

ospfv3LsdbOverflow NOTIFICATION-TYPE

```
OBJECTS { ospfv3RouterId, -- The originator of the notification
    ospfv3ExtAreaLsdbLimit -- Limit on External LSAs
  }
STATUS      current
DESCRIPTION
```

"An ospfv3LsdbOverflow notification signifies that the number of LSAs in the router's link-state database has exceeded ospfv3ExtAreaLsdbLimit."
::= { ospfv3Notifications 8 }

ospfv3LsdbApproachingOverflow NOTIFICATION-TYPE

OBJECTS { ospfv3RouterId, -- The originator of the notification
ospfv3ExtAreaLsdbLimit
}

STATUS current

DESCRIPTION

"An ospfv3LsdbApproachingOverflow notification signifies that the number of LSAs in the router's link-state database has exceeded ninety percent of ospfv3ExtAreaLsdbLimit."

::= { ospfv3Notifications 9 }

ospfv3IfStateChange NOTIFICATION-TYPE

OBJECTS { ospfv3RouterId, -- The originator of the notification
ospfv3IfState -- The new state
}

STATUS current

DESCRIPTION

"An ospfv3IfStateChange notification signifies that there has been a change in the state of a non-virtual OSPFv3 interface. This notification should be generated when the interface state regresses (e.g., goes from DR to Down) or progresses to a terminal state (i.e., Point-to-Point, DR Other, DR, or Backup)."

::= { ospfv3Notifications 10 }

ospfv3NssaTranslatorStatusChange NOTIFICATION-TYPE

OBJECTS { ospfv3RouterId, -- The originator of the notification
ospfv3AreaNssaTranslatorState -- new state
}

STATUS current

DESCRIPTION

"An ospfv3NssaTranslatorStatusChange notification indicates that there has been a change in the router's ability to translate OSPFv3 NSSA LSAs into OSPFv3 External LSAs. This notification should be generated when the Translator Status transitions from or to any defined status on a per area basis."

::= { ospfv3Notifications 11 }

ospfv3RestartStatusChange NOTIFICATION-TYPE

OBJECTS { ospfv3RouterId, -- The originator of the notification
ospfv3RestartStatus, -- new status
ospfv3RestartInterval,
ospfv3RestartExitRc
}

STATUS current

DESCRIPTION

"An ospfv3RestartStatusChange notification signifies that there has been a change in the graceful restart state for the router. This notification should be generated when the router restart status

```
changes."
 ::= { ospfv3Notifications 12 }

ospfv3NbrRestartHelperStatusChange NOTIFICATION-TYPE
  OBJECTS { ospfv3RouterId, -- The originator of the notification
            ospfv3NbrRestartHelperStatus, -- new status
            ospfv3NbrRestartHelperAge,
            ospfv3NbrRestartHelperExitRc
          }
  STATUS      current
  DESCRIPTION
    "An ospfv3NbrRestartHelperStatusChange notification
    signifies that there has been a change in the
    graceful restart helper state for the neighbor.
    This notification should be generated when the
    neighbor restart helper status transitions for a neighbor."
  ::= { ospfv3Notifications 13 }

ospfv3VirtNbrRestartHelperStatusChange NOTIFICATION-TYPE
  OBJECTS { ospfv3RouterId, -- The originator of the notification
            ospfv3VirtNbrRestartHelperStatus, -- new status
            ospfv3VirtNbrRestartHelperAge,
            ospfv3VirtNbrRestartHelperExitRc
          }
  STATUS      current
  DESCRIPTION
    "An ospfv3VirtNbrRestartHelperStatusChange
    notification signifies that there has been a
    change in the graceful restart helper state for
    the virtual neighbor. This notification should be
    generated when the virtual neighbor restart helper status
    transitions for a virtual neighbor."
  ::= { ospfv3Notifications 14 }

-- conformance information

ospfv3Groups      OBJECT IDENTIFIER ::= { ospfv3Conformance 1 }
ospfv3Compliances OBJECT IDENTIFIER ::= { ospfv3Conformance 2 }

-- compliance statements

ospfv3Compliance MODULE-COMPLIANCE
  STATUS      current
  DESCRIPTION  "The compliance statement"
  MODULE      -- this module
  MANDATORY-GROUPS {
    ospfv3BasicGroup,
```

ospfv3AreaGroup,
ospfv3IfGroup,
ospfv3VirtIfGroup,
ospfv3NbrGroup,

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```
    ospfv3CfgNbrGroup,  
    ospfv3VirtNbrGroup,  
    ospfv3AreaAggregateGroup  
}
```

GROUP ospfv3AsLsdbGroup

DESCRIPTION

"This group is required for OSPFv3 systems that display their AS-scope link state database."

GROUP ospfv3AreaLsdbGroup

DESCRIPTION

"This group is required for OSPFv3 systems that display their Area-scope link state database."

GROUP ospfv3LinkLsdbGroup

DESCRIPTION

"This group is required for OSPFv3 systems that display their Link-scope link state database for non-virtual interfaces."

GROUP ospfv3VirtLinkLsdbGroup

DESCRIPTION

"This group is required for OSPFv3 systems that display their Link-scope link state database for virtual interfaces."

GROUP ospfv3HostGroup

DESCRIPTION

"This group is required for OSPFv3 systems that support attached hosts."

GROUP ospfv3NotificationObjectGroup

DESCRIPTION

"This group is required for OSPFv3 systems that support OSPFv3 notifications."

GROUP ospfv3NotificationGroup

DESCRIPTION

"This group is required for OSPFv3 systems that support OSPFv3 notifications."

OBJECT ospfv3NbrAddressType

SYNTAX InetAddressType { ipv6(2) }

DESCRIPTION

"An implementation is only required to support IPv6 address without zone index."

OBJECT ospfv3VirtNbrAddressType

SYNTAX InetAddressType { ipv6(2) }

DESCRIPTION

"An implementation is only required to support IPv6
address without zone index."

```
::= { ospfv3Compliances 1 }

-- units of conformance

ospfv3BasicGroup OBJECT-GROUP
    OBJECTS
        {
            ospfv3RouterId,
            ospfv3AdminStat,
            ospfv3VersionNumber,
            ospfv3AreaBdrRtrStatus,
            ospfv3ASBdrRtrStatus,
            ospfv3AsScopeLsaCount,
            ospfv3AsScopeLsaCksumSum,
            ospfv3OriginateNewLsas,
            ospfv3RxNewLsas,
            ospfv3ExtLsaCount,
            ospfv3ExtAreaLsdbLimit,
            ospfv3ExitOverflowInterval,
            ospfv3DemandExtensions,
            ospfv3ReferenceBandwidth,
            ospfv3RestartSupport,
            ospfv3RestartInterval,
            ospfv3RestartStrictLsaChecking,
            ospfv3RestartStatus,
            ospfv3RestartAge,
            ospfv3RestartExitRc,
            ospfv3NotificationEnable,
            ospfv3StubRouterSupport,
            ospfv3StubRouterAdvertisement,
            ospfv3DiscontinuityTime
        }
    STATUS
        current
    DESCRIPTION
        "These objects are used for managing/monitoring
        OSPFv3 global parameters."
    ::= { ospfv3Groups 1 }
```

```
ospfv3AreaGroup OBJECT-GROUP
    OBJECTS
        {
            ospfv3AreaImportAsExtern,
            ospfv3AreaSpfRuns,
            ospfv3AreaBdrRtrCount,
            ospfv3AreaAsBdrRtrCount,
            ospfv3AreaScopeLsaCount,
            ospfv3AreaScopeLsaCksumSum,
            ospfv3AreaSummary,
```

ospfv3AreaStatus,
ospfv3AreaStubMetric,
ospfv3AreaNssaTranslatorRole,
ospfv3AreaNssaTranslatorState,
ospfv3AreaNssaTranslatorStabInt,


```
        ospfv3AreaNssaTranslatorEvents,
        ospfv3AreaStubMetricType
    }
```

```
STATUS          current
```

DESCRIPTION

```
    "These objects are used for OSPFv3 systems
    supporting areas."
```

```
::= { ospfv3Groups 2 }
```

ospfv3AsLsdbGroup OBJECT-GROUP

```
OBJECTS          {
        ospfv3AsLsdbSequence,
        ospfv3AsLsdbAge,
        ospfv3AsLsdbChecksum,
        ospfv3AsLsdbAdvertisement,
        ospfv3AsLsdbTypeKnown
    }
```

```
STATUS          current
```

DESCRIPTION

```
    "These objects are used for OSPFv3 systems
    that display their AS-scope link state database."
```

```
::= { ospfv3Groups 3 }
```

ospfv3AreaLsdbGroup OBJECT-GROUP

```
OBJECTS          {
        ospfv3AreaLsdbSequence,
        ospfv3AreaLsdbAge,
        ospfv3AreaLsdbChecksum,
        ospfv3AreaLsdbAdvertisement,
        ospfv3AreaLsdbTypeKnown
    }
```

```
STATUS          current
```

DESCRIPTION

```
    "These objects are used for OSPFv3 systems
    that display their Area-scope link state database."
```

```
::= { ospfv3Groups 4 }
```

ospfv3LinkLsdbGroup OBJECT-GROUP

```
OBJECTS          {
        ospfv3LinkLsdbSequence,
        ospfv3LinkLsdbAge,
        ospfv3LinkLsdbChecksum,
        ospfv3LinkLsdbAdvertisement,
        ospfv3LinkLsdbTypeKnown
    }
```

```
STATUS          current
```

DESCRIPTION

```
    "These objects are used for OSPFv3 systems
```

```
        that display their Link-scope link state database
        for non-virtual interfaces."
    ::= { ospfv3Groups 5 }
```

ospfv3HostGroup OBJECT-GROUP

```
OBJECTS      {
              ospfv3HostMetric,
              ospfv3HostStatus,
              ospfv3HostAreaID
            }
STATUS       current
DESCRIPTION  "These objects are used for OSPFv3 systems
              that support attached hosts."
 ::= { ospfv3Groups 6 }
```

ospfv3IfGroup OBJECT-GROUP

```
OBJECTS      {
              ospfv3IfAreaId,
              ospfv3IfType,
              ospfv3IfAdminStat,
              ospfv3IfRtrPriority,
              ospfv3IfTransitDelay,
              ospfv3IfRetransInterval,
              ospfv3IfHelloInterval,
              ospfv3IfRtrDeadInterval,
              ospfv3IfPollInterval,
              ospfv3IfState,
              ospfv3IfDesignatedRouter,
              ospfv3IfBackupDesignatedRouter,
              ospfv3IfEvents,
              ospfv3IfStatus,
              ospfv3IfDemand,
              ospfv3IfMetricValue,
              ospfv3IfLinkScopeLsaCount,
              ospfv3IfLinkLsaCksumSum,
              ospfv3IfDemandNbrProbe,
              ospfv3IfDemandNbrProbeRetxLimit,
              ospfv3IfDemandNbrProbeInterval
            }
STATUS       current
DESCRIPTION  "These interface objects used for
              managing/monitoring OSPFv3 interfaces."
 ::= { ospfv3Groups 7 }
```

ospfv3VirtIfGroup OBJECT-GROUP

```
OBJECTS      {
              ospfv3VirtIfIndex,
              ospfv3VirtIfInstId,
              ospfv3VirtIfTransitDelay,
              ospfv3VirtIfRetransInterval,
              ospfv3VirtIfHelloInterval,
```

ospfv3VirtIfRtrDeadInterval,
ospfv3VirtIfState,
ospfv3VirtIfEvents,
ospfv3VirtIfStatus,
ospfv3VirtIfLinkScopeLsaCount,

```

        ospfv3VirtIfLinkLsaCksumSum
    }
STATUS      current
DESCRIPTION
    "These virtual interface objects are used for
    managing/monitoring OSPFv3 virtual interfaces."
 ::= { ospfv3Groups 8 }

ospfv3NbrGroup OBJECT-GROUP
OBJECTS      {
    ospfv3NbrAddressType,
    ospfv3NbrAddress,
    ospfv3NbrOptions,
    ospfv3NbrPriority,
    ospfv3NbrState,
    ospfv3NbrEvents,
    ospfv3NbrLsRetransQLen,
    ospfv3NbrHelloSuppressed,
    ospfv3NbrIfId,
    ospfv3NbrRestartHelperStatus,
    ospfv3NbrRestartHelperAge,
    ospfv3NbrRestartHelperExitRc
}
STATUS      current
DESCRIPTION
    "These neighbor objects are used for
    managing/monitoring OSPFv3 neighbors."
 ::= { ospfv3Groups 9 }

ospfv3CfgNbrGroup OBJECT-GROUP
OBJECTS      {
    ospfv3CfgNbrPriority,
    ospfv3CfgNbrStatus
}
STATUS      current
DESCRIPTION
    "These configured neighbor objects are used for
    managing/monitoring OSPFv3 configured neighbors."
 ::= { ospfv3Groups 10 }

ospfv3VirtNbrGroup OBJECT-GROUP
OBJECTS      {
    ospfv3VirtNbrIfIndex,
    ospfv3VirtNbrIfInstId,
    ospfv3VirtNbrAddressType,
    ospfv3VirtNbrAddress,
    ospfv3VirtNbrOptions,
    ospfv3VirtNbrState,
```

ospfv3VirtNbrEvents,
ospfv3VirtNbrLsRetransQLen,
ospfv3VirtNbrHelloSuppressed,
ospfv3VirtNbrIfId,
ospfv3VirtNbrRestartHelperStatus,

```
        ospfv3VirtNbrRestartHelperAge,
        ospfv3VirtNbrRestartHelperExitRc
    }
    STATUS          current
    DESCRIPTION
        "These virtual neighbor objects are used for
        managing/monitoring OSPFv3 virtual neighbors."
    ::= { ospfv3Groups 11 }
```

ospfv3AreaAggregateGroup OBJECT-GROUP

```
    OBJECTS        {
        ospfv3AreaAggregateStatus,
        ospfv3AreaAggregateEffect,
        ospfv3AreaAggregateRouteTag
    }
    STATUS          current
    DESCRIPTION
        "These area aggregate objects used required for
        aggregating OSPFv3 prefixes for summarization
        across areas."
    ::= { ospfv3Groups 12 }
```

ospfv3VirtLinkLsdbGroup OBJECT-GROUP

```
    OBJECTS        {
        ospfv3VirtLinkLsdbSequence,
        ospfv3VirtLinkLsdbAge,
        ospfv3VirtLinkLsdbChecksum,
        ospfv3VirtLinkLsdbAdvertisement,
        ospfv3VirtLinkLsdbTypeKnown
    }
    STATUS          current
    DESCRIPTION
        "These objects are used for OSPFv3 systems
        that display their Link-scope link state database
        for virtual interfaces."
    ::= { ospfv3Groups 13 }
```

ospfv3NotificationObjectGroup OBJECT-GROUP

```
    OBJECTS        {
        ospfv3ConfigErrorType,
        ospfv3PacketType,
        ospfv3PacketSrc
    }
    STATUS          current
    DESCRIPTION
        "These objects are used to record notification
        parameters"
    ::= { ospfv3Groups 14 }
```

```
ospfv3NotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS {
        ospfv3VirtIfStateChange,
        ospfv3NbrStateChange,
```

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```
        ospfv3VirtNbrStateChange,
        ospfv3IfConfigError,
        ospfv3VirtIfConfigError,
        ospfv3IfRxBadPacket,
        ospfv3VirtIfRxBadPacket,
        ospfv3LsdbOverflow,
        ospfv3LsdbApproachingOverflow,
        ospfv3IfStateChange,
        ospfv3NssaTranslatorStatusChange,
        ospfv3RestartStatusChange,
        ospfv3NbrRestartHelperStatusChange,
        ospfv3VirtNbrRestartHelperStatusChange
    }
    STATUS          current
    DESCRIPTION
        "This group is used for OSPFv3 notifications"
    ::= { ospfv3Groups 15 }

END
```

6. Security Considerations

There are a number of management objects defined in this MIB that have 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.

It is recommended that attention be specifically given to implementing the MAX-ACCESS clause in objects in scenarios that DO NOT use SNMPv3 strong security (i.e. authentication and encryption). Extreme caution must be used to minimize the risk of cascading security vulnerabilities when SNMPv3 strong security is not used. When SNMPv3 strong security is not used, these objects should have access of read-only, not read-create.

SNMPv1 by itself is not a secure environment. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB.

It is recommended that the implementers consider the security features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC 3414](#) [[RFC3414](#)] and the View-based Access Control Model [RFC 3415](#) [[RFC3415](#)] is recommended.

It is then a customer/user responsibility to ensure that the SNMP

entity giving access to an instance of this MIB, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

7. IANA Considerations

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

Descriptor	OBJECT IDENTIFIER value
-----	-----
ospfv3MIB	{ mib-2 XXX }

[Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for "XXX" under the 'mib-2' subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace "XXX" (here and in the MIB module) with the assigned value and to remove this note.]

8. Acknowledgements

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11. Contributors' Addresses

Jacek Kwiatkowski
Intel Technology Poland
ul. Slowackiego 173
80-298 Gdansk, Poland
Email: jacek.kwiatkowski@intel.com

Sebastian Zwolinski
Intel Technology Poland
ul. Slowackiego 173
80-298 Gdansk, Poland
Email: sebastian.zwolinski@intel.com

[12.](#) **Editors' Addresses**

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Dan Joyal
Nortel
600 Technology Park Drive
Billerica, MA 01821
Email: djoyal@nortel.com

Vishwas Manral
IP Infusion
Bangalore
India
Email: vishwas@ipinfusion.com

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