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Management Information Base for OSPFv3  
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it for publication as an RFC or to translate it into languages other than English.

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](mailto: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 [[RFC5340](#)], 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 [[RFC5340](#)]. 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. Notifications

Notifications define a set of notifications, objects, and mechanisms to enhance the ability to manage IP internetworks that use OSPFv3 as their Interior Gateway Protocol (IGP).

## 2.11 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

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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

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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,
```

InetAddressIPv6  
FROM INET-ADDRESS-MIB  
Metric, BigMetric, Status,  
HelloRange, DesignatedRouterPriority  
FROM OSPF-MIB;

ospfv3MIB MODULE-IDENTITY  
LAST-UPDATED "200907161200Z"  
ORGANIZATION "IETF OSPF Working Group"  
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#### DESCRIPTION

"The MIB module for OSPF version 3.

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

REVISION "200907161200Z"

DESCRIPTION -- RFC Editor assigns RFC xxxx

"Initial version, published as RFC xxxx"

-- RFC Ed.: replace xxxx with actual RFC number & remove this note

::= { mib-2 YYY }

-- RFC Ed.: replace YYY with IANA-assigned number & remove this note

-- Textual conventions

OspfV3UpToRefreshIntervalTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

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

REFERENCE

"OSPF Version 2, Section B. Architectural Constants"

SYNTAX Unsigned32 (1..1800)

OspfV3DeadIntervalRangeTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

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

REFERENCE

"OSPF Version 3, Section C.3 Router interface  
parameters"

SYNTAX Unsigned32 (1..'FFFF'h)

OspfV3RouterIdTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

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."

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REFERENCE

"OSPF Version 3, Section C.1 Global parameters"

SYNTAX Unsigned32 (1..'FFFFFFFF'h)

OspfV3LsIdTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"A unique 32-bit identifier of the piece of the  
routing domain that is being described by a Link

State advertisement. In contrast to OSPFv2, the LSID has no addressing semantics."  
REFERENCE  
"OSPF Version 2, [Section 2.1.4](#) Link State ID"  
SYNTAX Unsigned32 (1..'FFFFFFFF'h)

OspfV3AreaIdTC ::= TEXTUAL-CONVENTION  
DISPLAY-HINT "d"  
STATUS current  
DESCRIPTION  
"An OSPFv3 Area Identifier. A value of zero identifies the backbone area."  
REFERENCE  
"OSPF Version 3, Section C.3 Router interface parameters"  
SYNTAX Unsigned32 (0..'FFFFFFFF'h)

OspfV3IfInstIdTC ::= TEXTUAL-CONVENTION  
DISPLAY-HINT "d"  
STATUS current  
DESCRIPTION  
"An OSPFv3 interface instance ID"  
REFERENCE  
"OSPF Version 3, Section C.3 Router interface parameters"  
SYNTAX Unsigned32 (0..255)

OspfV3LsaSequenceTC ::= TEXTUAL-CONVENTION  
DISPLAY-HINT "d"  
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."  
SYNTAX Integer32

OspfV3LsaAgeTC ::= TEXTUAL-CONVENTION

```

DISPLAY-HINT "d"
STATUS      current
DESCRIPTION
    "The age of the link state advertisement in
    seconds. The high order bit of the LS age
    field is considered the DoNotAge bit for
    support of on-demand circuits."
REFERENCE
    "OSPF Version 2, Section 12.1.1, LS age and
    Extending OSPF to Support Demand Circuits,
    Section 2.2, The LS age field."
SYNTAX      Unsigned32 (0..3600 | 32768..36368)

```

```

-- 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 unsigned 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 interface 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."
    REFERENCE
        "OSPF Version 3, Section C.1 Global parameters"
    ::= { ospfv3GeneralGroup 1 }

ospfv3AdminStatus 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

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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 denote whether this router is an area border router. The value of this object is true(1) when the 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 }

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ospfv3AsScopeLsaCksumSum OBJECT-TYPE

SYNTAX Unsigned32  
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

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

::= { ospfv3GeneralGroup 10 }

ospfv3ExtAreaLsdbLimit OBJECT-TYPE

SYNTAX Integer32 (-1..'7FFFFFFF'h)  
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. The value of this object is true(1) when demand circuits are supported.

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

##### REFERENCE

"OSPF Version 2, Appendix on Demand Circuits"

::= { ospfv3GeneralGroup 13 }

ospfv3ReferenceBandwidth OBJECT-TYPE

SYNTAX Unsigned32  
UNITS "kilobits per second"  
MAX-ACCESS read-write  
STATUS current

DESCRIPTION

"Reference bandwidth in kilobits per 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."

REFERENCE

"OSPF Version 2, Section C.3 Router interface parameters"

DEFVAL { 100000 }

::= { 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."

REFERENCE "Graceful OSPF Restart, [Appendix B.1](#) Global Parameters"

::= { ospfv3GeneralGroup 15 }

ospfv3RestartInterval OBJECT-TYPE

SYNTAX Ospfv3UpToRefreshIntervalTC  
UNITS "seconds"

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."

REFERENCE "Graceful OSPF Restart, [Appendix B.1](#) Global Parameters (Minimum subset)"

DEFVAL { 120 }  
::= { ospfv3GeneralGroup 16 }

ospfv3RestartStrictLsaChecking OBJECT-TYPE

SYNTAX TruthValue  
MAX-ACCESS read-write  
STATUS current

DESCRIPTION

"Indicates if strict LSA checking is enabled for graceful restart. A value of true(1) indicates that strict LSA checking is enabled.

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

REFERENCE "Graceful OSPF Restart, [Appendix B.2](#) Global Parameters (Optional)"

DEFVAL { true }  
::= { 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 }

ospfv3RestartExitReason OBJECT-TYPE

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```

                                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
    DESCRIPTION
        "This object provides a coarse level of control
        over the generation of OSPFv3 notifications.
        Fine grain control can be accomplished by utilizing
        the objects defined in RFC 3413 [RFC3413]
        specifically, those described in section 6.

        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."
 ::= { ospfv3GeneralGroup 21 }

ospfv3StubRouterSupport OBJECT-TYPE
    SYNTAX      TruthValue

```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The router's support for stub router functionality. An object value of true(1) indicates that stub router functionality is supported."

REFERENCE

"OSPF Stub Router Advertisement"

::= { ospfv3GeneralGroup 22 }

ospfv3StubRouterAdvertisement OBJECT-TYPE

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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(1) 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."

REFERENCE

"OSPF Stub Router Advertisement, [Section 2](#). Proposed Solution"

DEFVAL { doNotAdvertise }

::= { 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 }

ospfv3RestartTime OBJECT-TYPE

SYNTAX TimeStamp

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of sysUpTime on the most recent occasion  
at which the ospfv3RestartExitReason was updated."

::= { ospfv3GeneralGroup 25 }

-- 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

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---

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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,
    ospfv3AreaScopeLsaCksumSum
        Unsigned32,
    ospfv3AreaSummary
        INTEGER,
    ospfv3AreaRowStatus
        RowStatus,
    ospfv3AreaStubMetric
        BigMetric,
    ospfv3AreaNssaTranslatorRole
        INTEGER,
    ospfv3AreaNssaTranslatorState
        INTEGER,
    ospfv3AreaNssaTranslatorStabInterval
        Unsigned32,

```

```

    ospfv3AreaNssaTranslatorEvents
        Counter32,
    ospfv3AreaStubMetricType
        INTEGER,
    ospfv3AreaTEEnabled
        TruthValue
}

```

```

ospfv3AreaId OBJECT-TYPE
    SYNTAX          Ospfv3AreaIdTC
    MAX-ACCESS      not-accessible
    STATUS           current

```

DESCRIPTION

"A 32-bit unsigned 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





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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 }

## ospfv3AreaRowStatus 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. By default, this equals the least metric among the interfaces to other 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  
     AS-External-LSAs."  
 DEFVAL { candidate }  
 ::= { ospfv3AreaEntry 11 }

ospfv3AreaNssaTranslatorState OBJECT-TYPE

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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 }

ospfv3AreaNssaTranslatorStabInterval 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
                }

```

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```

MAX-ACCESS      read-create
STATUS          current
DESCRIPTION
    "This variable assigns the type of metric
    advertised as a default route."
DEFVAL { ospfv3Metric }
 ::= { ospfv3AreaEntry 15 }

```

ospfv3AreaTEEnabled OBJECT-TYPE

```

SYNTAX          TruthValue
MAX-ACCESS      read-create
STATUS          current
DESCRIPTION

```

```

    "Indicates whether or not traffic engineering
    is enabled in the area. The object is set
    to the value true(1) to enable traffic engineering.
    Traffic engineering is disabled by default."
DEFVAL { false }
 ::= { ospfv3AreaEntry 16 }

```

-- 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
        OspfV3LsidTC,

```

```

ospfv3AsLsdbSequence
    OspfV3LsaSequenceTC,
ospfv3AsLsdbAge
    OspfV3LsaAgeTC,
ospfv3AsLsdbChecksum
    Integer32,
ospfv3AsLsdbAdvertisement
    OCTET STRING,
ospfv3AsLsdbTypeKnown
    TruthValue
}

```

```

ospfv3AsLsdbType 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. 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           Ospfv3LsIdTC  
 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           Ospfv3LsaSequenceTC  
 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

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

#### DESCRIPTION

"This field is the age of the link state advertisement in seconds. The high order bit of the LS age field is considered the DoNotAge bit for support of on-demand circuits."

#### REFERENCE

"OSPF Version 2, [Section 12.1.1](#), LS age and Extending OSPF to Support Demand Circuits, [Section 2.2](#), The LS age field."

::= { 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

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```
        "The entire Link State Advertisement, including
        its header."
 ::= { ospfv3AsLsdbEntry 7 }
```

```
ospfv3AsLsdbTypeKnown OBJECT-TYPE
    SYNTAX          TruthValue
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION
        "The value true(1) indicates that the LSA type
        is recognized by this Router."
 ::= { 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
    OspfV3LsIdTC,
ospfv3AreaLsdbSequence
    OspfV3LsaSequenceTC,
ospfv3AreaLsdbAge
    OspfV3LsaAgeTC,
```

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---

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```
ospfv3AreaLsdbChecksum
    Integer32,
ospfv3AreaLsdbAdvertisement
    OCTET STRING,
ospfv3AreaLsdbTypeKnown
    TruthValue
}
```

ospfv3AreaLsdbAreaId OBJECT-TYPE

```
SYNTAX      OspfV3AreaIdTC
MAX-ACCESS  not-accessible
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 OspfV3LsIdTC

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 OspfV3LsaSequenceTC

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           Ospfv3LsaAgeTC  
 UNITS            "seconds"  
 MAX-ACCESS       read-only  
 STATUS           current  
 DESCRIPTION  
     "This field is the age of the link state advertisement in seconds. The high order bit of the LS age field is considered the DoNotAge bit for support of on-demand circuits."  
 REFERENCE  
     "OSPF Version 2, [Section 12.1.1](#), LS age and Extending OSPF to Support Demand Circuits, [Section 2.2](#), The LS age field."  
 ::= { 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
    "The value true(1) indicates that 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
        OspfV3LsIdTC,
ospfv3LinkLsdbSequence
        OspfV3LsaSequenceTC,
ospfv3LinkLsdbAge
        OspfV3LsaAgeTC,
ospfv3LinkLsdbChecksum
        Integer32,
ospfv3LinkLsdbAdvertisement
        OCTET STRING,
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..'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. 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

```

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originating router in the Autonomous System."  
REFERENCE  
"OSPF Version 2, [Appendix C.1](#) Global parameters"  
 ::= { ospfv3LinkLsdbEntry 4 }

## ospfv3LinkLsdbLsid OBJECT-TYPE

SYNTAX           Ospfv3LsIdTC  
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           Ospfv3LsaSequenceTC  
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           Ospfv3LsaAgeTC

UNITS "seconds"  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
 "This field is the age of the link state advertisement in seconds. The high order bit of the LS age field is considered the DoNotAge bit for support of on-demand circuits."  
 REFERENCE  
 "OSPF Version 2, [Section 12.1.1](#), LS age and

Extending OSPF to Support Demand Circuits,  
[Section 2.2](#), The LS age field."  
 ::= { 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
    "The value true(1) indicates that 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"

```

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```

 ::= { 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,
ospfv3HostRowStatus
        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
    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 }

```

ospfv3HostRowStatus 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."

::= { 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 for IPv6, [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,  
    ospfv3IfAdminStatus  
        Status,  
    ospfv3IfRtrPriority  
        DesignatedRouterPriority,  
    ospfv3IfTransitDelay  
        Ospfv3UpToRefreshIntervalTC,  
    ospfv3IfRetransInterval  
        Ospfv3UpToRefreshIntervalTC,  
    ospfv3IfHelloInterval  
        HelloRange,  
    ospfv3IfRtrDeadInterval  
        Ospfv3DeadIntervalRangeTC,  
    ospfv3IfPollInterval  
        Unsigned32,  
    ospfv3IfState  
        INTEGER,  
    ospfv3IfDesignatedRouter  
        Ospfv3RouterIdTC,  
    ospfv3IfBackupDesignatedRouter  
        Ospfv3RouterIdTC,  
    ospfv3IfEvents  
        Counter32,  
    ospfv3IfRowStatus  
        RowStatus,  
    ospfv3IfDemand  
        TruthValue,

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```
ospfv3IfMetricValue
    Metric,
ospfv3IfLinkScopeLsaCount
    Gauge32,
ospfv3IfLinkLsaCksumSum
    Unsigned32,
ospfv3IfDemandNbrProbe
    TruthValue,
ospfv3IfDemandNbrProbeRetransLimit
    Unsigned32,
ospfv3IfDemandNbrProbeInterval
    Unsigned32,
ospfv3IfTEDisabled
    TruthValue,
ospfv3IfLinkLSASuppression
    TruthValue
}
```

## ospfv3IfIndex OBJECT-TYPE

```
SYNTAX      InterfaceIndex
MAX-ACCESS  not-accessible
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),

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---

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nbma(2),  
pointToPoint(3),  
pointToMultipoint(5)  
}

MAX-ACCESS read-create  
STATUS current

DESCRIPTION

"The OSPFv3 interface type."

::= { ospfv3IfEntry 4 }

ospfv3IfAdminStatus 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.

Note that a value of 'disabled' for the object ospfv3AdminStatus will override a value of 'enabled' for the interface."

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. LSAs contained in the update packet must have their age incremented by this amount before transmission. This

value should take into account the transmission and propagation delays of the interface."

REFERENCE

"OSPF for IPv6, [Appendix C.3](#) Router interface parameters."

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 OspfV3DeadIntervalRangeTC  
 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. The
        interface may be in down state if the underlying
        IPv6 interface is down or if the admin status is
        'disabled' either globally or for the interface."
    ::= { ospfv3IfEntry 12 }

```

```

ospfv3IfDesignatedRouter OBJECT-TYPE
    SYNTAX          OspfV3RouterIdTC
    MAX-ACCESS      read-only
    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 }

ospfv3IfRowStatus 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

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

::= { ospfv3IfEntry 19 }

ospfv3IfLinkLsaCksumSum OBJECT-TYPE

SYNTAX Unsigned32

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 }

ospfv3IfDemandNbrProbeRetransLimit OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-create

STATUS current

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 }

```

ospfv3IfTEDisabled OBJECT-TYPE

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```

SYNTAX      TruthValue
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Indicates whether or not traffic engineering
    is disabled on the interface when traffic
    engineering is enabled in the area where the
    interface is attached. The object is set
    to the value true(1) to disable traffic engineering
    on the interface. Traffic engineering is enabled
    by default on the interface when traffic engineering
    is enabled in the area where the interface is
    attached."
DEFVAL { false }
 ::= { ospfv3IfEntry 24 }

```

ospfv3IfLinkLSASuppression OBJECT-TYPE

```

SYNTAX      TruthValue
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "Specifies whether or not Link LSA origination needs
    to be suppressed for non-Broadcast or NBMA. The object
    is set to value true (1) to suppress the origination."
REFERENCE
    "OSPF Version 3, Appendix C.3."
DEFVAL { false }
 ::= { ospfv3IfEntry 25 }

```

-- 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 3, [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

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    and when written the entity SHOULD save the  
 change to non-volatile storage."  
 INDEX                   { ospfv3VirtIfAreaId,  
                           ospfv3VirtIfNeighbor }  
 ::= { ospfv3VirtIfTable 1 }

OspfV3VirtIfEntry ::= SEQUENCE {  
     ospfv3VirtIfAreaId  
         OspfV3AreaIdTC,  
     ospfv3VirtIfNeighbor  
         OspfV3RouterIdTC,  
     ospfv3VirtIfIndex  
         InterfaceIndex,  
     ospfv3VirtIfInstId  
         OspfV3IfInstIdTC,  
     ospfv3VirtIfTransitDelay  
         OspfV3UpToRefreshIntervalTC,  
     ospfv3VirtIfRetransInterval  
         OspfV3UpToRefreshIntervalTC,  
     ospfv3VirtIfHelloInterval  
         HelloRange,  
     ospfv3VirtIfRtrDeadInterval  
         OspfV3DeadIntervalRangeTC,

```

ospfv3VirtIfState
    INTEGER,
ospfv3VirtIfEvents
    Counter32,
ospfv3VirtIfRowStatus
    RowStatus,
ospfv3VirtIfLinkScopeLsaCount
    Gauge32,
ospfv3VirtIfLinkLsaCksumSum
    Unsigned32
}

```

```

ospfv3VirtIfAreaId 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."
    ::= { ospfv3VirtIfEntry 1 }

```

```

ospfv3VirtIfNeighbor OBJECT-TYPE
    SYNTAX          OspfV3RouterIdTC
    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 OspfV3DeadIntervalRangeTC  
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 }

ospfv3VirtIfRowStatus 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."

::= { 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 }

ospfv3VirtIfLinkLsaChecksumSum OBJECT-TYPE

SYNTAX Unsigned32

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

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"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
        Ospf3UpToRefreshIntervalTC,
ospfv3NbrRestartHelperExitReason
        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          Ospf3IfInstIdTC

```

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```

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          Ospf3RouterIdTC
MAX-ACCESS      not-accessible
STATUS          current

```

DESCRIPTION

"A 32-bit unsigned 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  
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."

::= { 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 }

ospfv3NbrRestartHelperExitReason 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

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```

                                a topology change."
 ::= { ospfv3NbrEntry 15 }

-- OSPFv3 Configured Neighbor Table

ospfv3CfgNbrTable OBJECT-TYPE
    SYNTAX          SEQUENCE OF OspfV3CfgNbrEntry
    MAX-ACCESS      not-accessible
    STATUS          current
    DESCRIPTION
        "A table describing all configured neighbors.

        The configured neighbors table just gives
        OSPFv3 information for sending OSPFv3 packets
        to potential neighbors and is typically used
        on nbma and point-to-multipoint networks.
        Once a hello is received from a neighbor in
        the configured neighbor table, an entry for
        that neighbor is created in the neighbor table
        and adjacency state is maintained there.
        Neighbors on multi-access or point-to-point
        networks can use multicast addressing, so only
        neighbor table entries are created for them."
    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

```

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```

    Ospfv3IfInstIdTC,
ospfv3CfgNbrAddressType
    InetAddressType,
ospfv3CfgNbrAddress
    InetAddress,
ospfv3CfgNbrPriority
    DesignatedRouterPriority,
ospfv3CfgNbrRowStatus
    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
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."  
 ::= { ospfv3CfgrEntry 3 }

ospfv3CfgrNbrAddress OBJECT-TYPE  
 SYNTAX InetAddress  
 MAX-ACCESS not-accessible  
 STATUS current  
 DESCRIPTION  
 "The IPv6 address of the neighbor associated with the local link."  
 ::= { ospfv3CfgrEntry 4 }

ospfv3CfgrNbrPriority 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 }  
 ::= { ospfv3CfgrEntry 5 }

ospfv3CfgrNbrRowStatus 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."  
 ::= { ospfv3CfgrEntry 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"
    ::= { ospfv3Objects 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,
ospfv3VirtNbrRestartHelperExitReason
    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
    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

```

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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

```

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---

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```

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 }

```

```

ospfv3VirtNbrRestartHelperExitReason 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 }

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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,
ospfv3AreaAggregateRowStatus
    RowStatus,
ospfv3AreaAggregateEffect
    INTEGER,
ospfv3AreaAggregateRouteTag
    Unsigned32
}

```

```

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 }

ospfv3AreaAggregateRowStatus 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          Unsigned32
```

```
MAX-ACCESS      read-create
```

```
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,
```

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```
        ospfv3VirtLinkLsdbType,  
        ospfv3VirtLinkLsdbRouterId,  
        ospfv3VirtLinkLsdbLsid }  
 ::= { ospfv3VirtLinkLsdbTable 1 }
```

```
Ospfv3VirtLinkLsdbEntry ::= SEQUENCE {  
    ospfv3VirtLinkLsdbIfAreaId  
        OspfV3AreaIdTC,  
    ospfv3VirtLinkLsdbIfNeighbor  
        OspfV3RouterIdTC,  
    ospfv3VirtLinkLsdbType  
        Unsigned32,  
    ospfv3VirtLinkLsdbRouterId  
        OspfV3RouterIdTC,  
    ospfv3VirtLinkLsdbLsid  
        OspfV3LsIdTC,  
    ospfv3VirtLinkLsdbSequence  
        OspfV3LsaSequenceTC,  
    ospfv3VirtLinkLsdbAge  
        OspfV3LsaAgeTC,  
    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..'FFFFFFFF'h)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "The type of the link state advertisement.
        Each link state type has a separate
```

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```
        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      OspfV3LsIdTC
    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."
 ::= { 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 OspfV3LsaSequenceTC

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 OspfV3LsaAgeTC

UNITS "seconds"

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This field is the age of the link state advertisement in seconds. The high order bit of the LS age field is considered the DoNotAge bit for support of on-demand circuits."

REFERENCE

"OSPF Version 2, [Section 12.1.1](#), LS age and Extending OSPF to Support Demand Circuits, [Section 2.2](#), The LS age field."

::= { 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  
"The value true(1) indicates that 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."
::= { 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."
    ::= { ospfv3NotificationEntry 2 }

ospfv3PacketSrc OBJECT-TYPE
    SYNTAX      InetAddressIPv6
    MAX-ACCESS    accessible-for-notify
    STATUS        current
    DESCRIPTION
        "The IPv6 address of an inbound packet that cannot
        be identified by a neighbor instance.

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

-- Notification definitions

-- The notifications need to be throttled so as to not overwhelm the
-- management agent, in case of rapid changes to the OSPFv3 module.

```

```

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

```

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```
    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

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#### 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
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```

        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,
               ospfv3RestartExitReason
            }
    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,
        ospfv3NbrRestartHelperExitReason
    }
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,
        ospfv3VirtNbrRestartHelperExitReason
    }
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

```

ospfv3FullCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION  "The compliance statement"
    MODULE      -- this module
    MANDATORY-GROUPS {

```

```
ospfv3BasicGroup,  
ospfv3AreaGroup,  
ospfv3IfGroup,  
ospfv3VirtIfGroup,  
ospfv3NbrGroup,  
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 ospfv3NbrAddress

SYNTAX InetAddress (SIZE (16))

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."

OBJECT ospfv3VirtNbrAddress

SYNTAX InetAddress (SIZE (16))

DESCRIPTION

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

::= { ospfv3Compliances 1 }

ospfv3ReadOnlyCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"When this MIB is implemented without support for read-create (i.e., in read-only mode), the implementation can claim read-only compliance. Such a device can then be monitored, but cannot be configured with this MIB."

MODULE -- this module

MANDATORY-GROUPS {

ospfv3BasicGroup,  
ospfv3AreaGroup,  
ospfv3IfGroup,  
ospfv3VirtIfGroup,  
ospfv3NbrGroup,  
ospfv3CfgrGroup,  
ospfv3VirtNbrGroup,  
ospfv3AreaAggregateGroup

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}

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 ospfv3RouterId

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AdminStatus  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3ExtAreaLsdbLimit  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

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OBJECT ospfv3ExitOverflowInterval  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3DemandExtensions  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3ReferenceBandwidth  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3RestartSupport  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3RestartInterval  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3RestartStrictLsaChecking  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3NotificationEnable  
MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3StubRouterAdvertisement

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaImportAsExtern

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaSummary

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaStubMetric

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaNssaTranslatorRole

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaNssaTranslatorStabInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3AreaStubMetricType

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."



OBJECT ospfv3AreaTEEnabled  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3HostMetric  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3HostRowStatus  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3HostAreaID  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfAreaId  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfType  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfAdminStatus  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfRtrPriority  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfTransitDelay  
MIN-ACCESS read-only  
DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfRetransInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfHelloInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfRtrDeadInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfPollInterval

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfDemand

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfMetricValue

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfDemandNbrProbe

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT ospfv3IfDemandNbrProbeRetransLimit

MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfDemandNbrProbeInterval  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfTEDisabled  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3IfLinkLSASuppression  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3VirtIfTransitDelay  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3VirtIfRetransInterval  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3VirtIfHelloInterval  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3VirtIfRtrDeadInterval  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3VirtIfRowStatus  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3CfgNbrPriority  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT ospfv3CfgNbrRowStatus

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```
MIN-ACCESS read-only
DESCRIPTION
    "Write access is not required."
```

```
OBJECT ospfv3AreaAggregateRowStatus
MIN-ACCESS read-only
DESCRIPTION
    "Write access is not required."
```

```
OBJECT ospfv3AreaAggregateEffect
MIN-ACCESS read-only
DESCRIPTION
    "Write access is not required."
```

```
OBJECT ospfv3AreaAggregateRouteTag
MIN-ACCESS read-only
DESCRIPTION
    "Write access is not required."
```

```
::= { ospfv3Compliances 2 }
```

```
-- units of conformance
```

```
ospfv3BasicGroup OBJECT-GROUP
    OBJECTS
        {
            ospfv3RouterId,
            ospfv3AdminStatus,
            ospfv3VersionNumber,
            ospfv3AreaBdrRtrStatus,
            ospfv3ASBdrRtrStatus,
            ospfv3AsScopeLsaCount,
            ospfv3AsScopeLsaCksumSum,
            ospfv3OriginateNewLsas,
            ospfv3RxNewLsas,
            ospfv3ExtLsaCount,
            ospfv3ExtAreaLsdbLimit,
            ospfv3ExitOverflowInterval,
            ospfv3DemandExtensions,
            ospfv3ReferenceBandwidth,
            ospfv3RestartSupport,
            ospfv3RestartInterval,
            ospfv3RestartStrictLsaChecking,
            ospfv3RestartStatus,
```

```

        ospfv3RestartAge,
        ospfv3RestartExitReason,
        ospfv3NotificationEnable,
        ospfv3StubRouterSupport,
        ospfv3StubRouterAdvertisement,
        ospfv3DiscontinuityTime,
        ospfv3RestartTime
    }
    STATUS      current
    DESCRIPTION

```

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```

    "These objects are used for managing/monitoring
    OSPFv3 global parameters."
 ::= { ospfv3Groups 1 }

```

ospfv3AreaGroup OBJECT-GROUP

```

    OBJECTS      {
        ospfv3AreaImportAsExtern,
        ospfv3AreaSpfRuns,
        ospfv3AreaBdrRtrCount,
        ospfv3AreaAsBdrRtrCount,
        ospfv3AreaScopeLsaCount,
        ospfv3AreaScopeLsaCksumSum,
        ospfv3AreaSummary,
        ospfv3AreaRowStatus,
        ospfv3AreaStubMetric,
        ospfv3AreaNssaTranslatorRole,
        ospfv3AreaNssaTranslatorState,
        ospfv3AreaNssaTranslatorStabInterval,
        ospfv3AreaNssaTranslatorEvents,
        ospfv3AreaStubMetricType,
        ospfv3AreaTEEnabled
    }
    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,
        ospfv3HostRowStatus,

```

```

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

```

#### ospfv3IfGroup OBJECT-GROUP

```

    OBJECTS
    {
        ospfv3IfAreaId,
        ospfv3IfType,
        ospfv3IfAdminStatus,
        ospfv3IfRtrPriority,
        ospfv3IfTransitDelay,
        ospfv3IfRetransInterval,
        ospfv3IfHelloInterval,
        ospfv3IfRtrDeadInterval,
        ospfv3IfPollInterval,
        ospfv3IfState,
        ospfv3IfDesignatedRouter,
        ospfv3IfBackupDesignatedRouter,
        ospfv3IfEvents,
        ospfv3IfRowStatus,
        ospfv3IfDemand,
        ospfv3IfMetricValue,
        ospfv3IfLinkScopeLsaCount,
        ospfv3IfLinkLsaCksumSum,
        ospfv3IfDemandNbrProbe,
        ospfv3IfDemandNbrProbeRetransLimit,

```

```

        ospfv3IfDemandNbrProbeInterval,
        ospfv3IfTedisabled,
        ospfv3IfLinkLSASuppression
    }
    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,
        ospfv3VirtIfRowStatus,
        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,
            ospfv3NbrRestartHelperExitReason
        }
    STATUS          current
    DESCRIPTION
        "These neighbor objects are used for
        managing/monitoring OSPFv3 neighbors."
    ::= { ospfv3Groups 9 }

ospfv3CfgNbrGroup OBJECT-GROUP
    OBJECTS
        {

```

```

        ospfv3CfgNbrPriority,
        ospfv3CfgNbrRowStatus
    }

```



```

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,
    ospfv3VirtNbrRestartHelperExitReason
}
STATUS          current
DESCRIPTION
    "These virtual neighbor objects are used for
    managing/monitoring OSPFv3 virtual neighbors."
::= { ospfv3Groups 11 }

```

#### ospfv3AreaAggregateGroup OBJECT-GROUP

```

OBJECTS          {
    ospfv3AreaAggregateRowStatus,
    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

```

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## 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,  
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 module with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. Improper manipulation of the objects represented by this MIB module may result in disruption of network connectivity by administratively disabling the entire OSPFv3 entity or individual

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interfaces, by deleting configured neighbors, by reducing the limit on External LSAs, by changing ASBR status, by manipulating route aggregation, by manipulating interface and route metrics, by changing hello interval or dead interval, or by changing interface type. Remote monitoring can be defeated by disabling of SNMP notifications. Performance can be impacted by increasing the limit on External LSAs or changing DR/BDR priority.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. Unauthorized access to readable objects in this MIB module allows the discovery of the network topology and operating parameters which can be used to target further attacks on the network or to gain a competitive business advantage.

SNMP versions prior to SNMPv3 did not include adequate security. 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 module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [\[RFC3410\]](#), [section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an

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

## [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 YYY }

[Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for "YYY" 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 "YYY" (here and in the MIB module) with the assigned value and to remove this note.]

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