# OSPF MIB

Everything you never wanted to know and were too afraid to ask

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## SNMP Changes

- PositiveInteger : 1..'7FFFFFFF'h
- TOSType RFC 1354/1716 TOS values
- Format Changes
  - Closer attention to obscure naming conventions
  - Dave Perkins' SMIC MIB Compiler
  - ospfIfMetricMetric was renamed ospfIfMetricValue
- The MIB is converted to SNMP Version 2.

## New Objects

- Row Status Variables:
  - ospfAreaStatus
  - ospfIfStatus.
- ospfNbmaNbrPermanence: dynamically learned and configured neighbors.
- ospfNbrIpAddr clarified w.r.t. unnumbered links
- OSPF External Link State Database was added.
  - The OSPF Link State Database displays non-external LSAs
- LSDB Overllow Management
  - ospfExtLsdbLimit detects LSDB overflow.
- ospfAreaAuthType supports cryptographic authentication.
- ospfIfIntfType supports pointToMultipoint.

## Classless InterDomain Routing

- IP CIDR Route Table.
- ospfAreaRangeTable obsoleted
- ospfAreaAggregateTable has CIDR indexes
- Route Filtering - ospfAreaAggregateEffect

## Multicast OSPF

- ospfLsdbType: multicastLink (Group-membership LSA)
- ospfMulticastExtensions indeicates MOSPF capability
- ospfIfMulticastForwarding enables MOSPF on interfaces

## Not So Stubby Areas

- ospfLsdbType: nssaExternalLink (NSSA LSA).
- ospfAreaSummary added to control summary LSA import into stub areas.
- ospfStubMetricType
  - ospf NSSA internal
  - type 1 external
  - type 2 external

## ospfGeneralGroup

- ospfRouterId
- ospfAdminStat
- ospfVersionNumber
- ospfAreaBdrRtrStatus
- ospfASBdrRtrStatus
- ospfExternLsaCount
- ospfExternLsaCksumSum
- ospfTOSSupport
- ospfOriginateNewLsas
- ospfRxNewLsas
- ospfExtLsdbLimit
- ospfMulticastExtensions

## Area Architecture

- ospfStubAreaTable
  - INDEX { ospfStubAreaId, ospfStubTOS }
  - OspfStubAreaEntry :=
    - ospfStubAreaId
    - ospfStubTOS
    - ospfStubMetric
    - ospfStubStatus
    - ospfStubMetricType
- ospfAreaTable
  - INDEX { ospfAreaId }
  - OspfAreaEntry :=
    - ospfAreaId
    - ospfAuthType
    - ospfImportAsExtern
    - ospfSpfRuns
    - ospfAreaBdrRtrCount
    - ospfAsBdrRtrCount
    - ospfAreaLsaCount
    - ospfAreaLsaCksumSum
    - ospfAreaSummary
    - ospfAreaStatus

## Inter-Area Summarization

- ospfAreaRangeTable  Deprecated
- ospfAreaAggregateTable
  - INDEX { ospfAreaAggregateAreaID, ospfAreaAggregateLsdbType, ospfAreaAggregateNet, ospfAreaAggregateMask }
  - OspfAreaAggregateEntry :=
    - ospfAreaAggregateAreaID
    - ospfAreaAggregateLsdbType
    - ospfAreaAggregateNet
    - ospfAreaAggregateMask
    - ospfAreaAggregateStatus
    - ospfAreaAggregateEffect

## Link State Database General

- ospfLsdbTable
- INDEX { ospfLsdbAreaId, ospfLsdbType, ospfLsdbLsid, ospfLsdbRouterId }
- OspfLsdbEntry :=
  - ospfLsdbAreaId
  - ospfLsdbType
  - ospfLsdbLsid
  - ospfLsdbRouterId
  - ospfLsdbSequence
  - ospfLsdbAge
  - ospfLsdbChecksum
  - ospfLsdbAdvertisement

## Link State Database - External

- ospfExtLsdbTable
- INDEX { ospfExtLsdbType, ospfExtLsdbLsid, ospfExtLsdbRouterId }
- OspfExtLsdbEntry :=
  - ospfExtLsdbType
  - ospfExtLsdbLsid
  - ospfExtLsdbRouterId
  - ospfExtLsdbSequence
  - ospfExtLsdbAge
  - ospfExtLsdbChecksum
  - ospfExtLsdbAdvertisement

## Host Routes

- ospfHostTable
  - INDEX { ospfHostIpAddress, ospfHostTOS }
  - OspfHostEntry :=
    - ospfHostIpAddress
    - ospfHostTOS
    - ospfHostMetric
    - ospfHostStatus
    - ospfHostAreaID

## Interface Management

- INDEX { ospfIfIpAddress, ospfAddressLessIf }
- OspfIfEntry :=
  - ospfIfIpAddress
  - ospfAddressLessIf
  - ospfIfAreaId
  - ospfIfType
  - ospfIfAdminStat
  - ospfIfRtrPriority
  - ospfIfTransitDelay
  - ospfIfRetransInterval
  - ospfIfHelloInterval
  - ospfIfRtrDeadInterval
  - ospfIfPollInterval
  - ospfIfState
  - ospfIfDesignatedRouter
  - ospfIfBackupDesignatedRouter
  - ospfIfEvents
  - ospfIfAuthKey
  - ospfIfStatus
  - ospfIfMulticastForwarding

## Interface Metric Management

- INDEX { ospfIfMetricIpAddress, ospfIfMetricAddressLessIf, ospfIfMetricTOS }
- OspfIfMetricEntry :=
  - ospfIfMetricIpAddress
  - ospfIfMetricAddressLessIf
  - ospfIfMetricTOS
  - ospfIfMetricValue
  - ospfIfMetricStatus

## Interface Neighbors

- ospfNbrTable
  - INDEX { ospfNbrIpAddr, ospfNbrAddressLessIndex }
  - OspfNbrEntry :=
    - ospfNbrIpAddr
    - ospfNbrAddressLessIndex
    - ospfNbrRtrId
    - ospfNbrOptions
    - ospfNbrPriority
    - ospfNbrState
    - ospfNbrEvents
    - ospfNbrLsRetransQLen
    - ospfNbmaNbrStatus
    - ospfNbmaNbrPermanence

## Virtual Links

- ospfVirtNbrTable
  - INDEX { ospfVirtNbrArea, ospfVirtNbrRtrId }
    - ospfVirtNbrArea
    - ospfVirtNbrRtrId
    - ospfVirtNbrIpAddr
    - ospfVirtNbrOptions
    - ospfVirtNbrState
    - ospfVirtNbrEvents
    - ospfVirtNbrLsRetransQLen
- ospfVirtIfTable
  - INDEX { ospfVirtIfAreaId, ospfVirtIfNeighbor }
  - OspfVirtIfEntry :=
    - ospfVirtIfAreaId
    - ospfVirtIfNeighbor
    - ospfVirtIfTransitDelay
    - ospfVirtIfRetransInterval
    - ospfVirtIfHelloInterval
    - ospfVirtIfRtrDeadInterval
    - ospfVirtIfState

## -- OSPF Use of the CIDR Route Table

- ipCidrRouteProto = ospf (13).
- ipCidrRouteAge: time since route first calculated,
- ipCidrRouteInfo: OBJECT IDENTIFIER indicating
  - ospfIntraArea
  - ospfInterArea
  - ospfExternalType1
  - ospfExternalType2
- ipCidrRouteMetric1: primary routing metric
  - external metric or OSPF metric
- ipCidrRouteMetric2: secondary routing
  - OSPF metric for external routes

## MANDATORY GROUPS

- ospfBasicGroup
- ospfAreaGroup
- ospfStubAreaGroup
- ospfIfGroup
- ospfIfMetricGroup
- ospfVirtIfGroup
- ospfNbrGroup
- ospfVirtNbrGroup
- ospfAreaAggregateGroup

## 6. OSPF Notification Management

- ospfSetTrap
- ospfConfigErrorType
- ospfPacketType
- ospfPacketSrc

## Interface State Change Notifications

- ospfIfStateChange
  - ospfRouterId, -- The originator of the trap
  - ospfIfIpAddress,
  - ospfAddressLessIf,
  - ospfIfState -- The new state
- ospfVirtIfStateChange
  - ospfRouterId, -- The originator of the trap
  - ospfVirtIfAreaId,
  - ospfVirtIfNeighbor,
  - ospfVirtIfState -- The new state

## Neighbor State Change Notifications

- ospfNbrStateChange
  - ospfRouterId, -- The originator of the trap
  - ospfNbrIpAddr,
  - ospfNbrAddressLessIndex,
  - ospfNbrRtrId,
  - ospfNbrState -- The new state
- ospfVirtNbrStateChange
  - ospfRouterId, -- The originator of the trap
  - ospfVirtNbrArea,
  - ospfVirtNbrRtrId,
  - ospfVirtNbrState -- The new state

## Configuration Debug Notifications

- ospfIfConfigError
  - ospfRouterId, -- The originator of the trap
  - ospfIfIpAddress,
  - ospfAddressLessIf,
  - ospfPacketSrc, -- The source IP address
  - ospfConfigErrorType, -- Type of error
  - ospfPacketType
- ospfVirtIfConfigError
  - ospfRouterId, -- The originator of the trap
  - ospfVirtIfAreaId,
  - ospfVirtIfNeighbor,
  - ospfConfigErrorType, -- Type of error
  - ospfPacketType

## Authentication (or lack of it) Notifications

- ospfIfAuthFailure
  - ospfRouterId, -- The originator of the trap
  - ospfIfIpAddress,
  - ospfAddressLessIf,
  - ospfPacketSrc, -- The source IP address
  - ospfConfigErrorType, -- authTypeMismatch or authFailure
  - ospfPacketType
- ospfVirtIfAuthFailure
  - ospfRouterId, -- The originator of the trap
  - ospfVirtIfAreaId,
  - ospfVirtIfNeighbor,
  - ospfConfigErrorType, -- authTypeMismatch or authFailure
  - ospfPacketType

## Bad Condition Detectors

- ospfIfRxBadPacket
  - ospfRouterId, -- The originator of the trap
  - ospfIfIpAddress,
  - ospfAddressLessIf,
  - ospfPacketSrc, -- The source IP address
  - ospfPacketType
- ospfVirtIfRxBadPacket
  - ospfRouterId, -- The originator of the trap
  - ospfVirtIfAreaId,
  - ospfVirtIfNeighbor,
  - ospfPacketType

## Retransmission Problems

- ospfTxRetransmit
  - ospfRouterId, -- The originator of the trap
  - ospfIfIpAddress,
  - ospfAddressLessIf,
  - ospfNbrRtrId, -- Destination
  - ospfPacketType,
  - ospfLsdbType,
  - ospfLsdbLsid,
  - ospfLsdbRouterId
- ospfVirtIfTxRetransmit
  - ospfRouterId, -- The originator of the trap
  - ospfVirtIfAreaId,
  - ospfVirtIfNeighbor,
  - ospfPacketType,
  - ospfLsdbType,
  - ospfLsdbLsid,
  - ospfLsdbRouterId

## LSA Database Management

- ospfOriginateLsa
  - ospfRouterId, -- The originator of the trap
  - ospfLsdbAreaId, -- 0.0.0.0 for AS Externals
  - ospfLsdbType,
  - ospfLsdbLsid,
  - ospfLsdbRouterId
- ospfMaxAgeLsa
  - ospfRouterId, -- The originator of the trap
  - ospfLsdbAreaId, -- 0.0.0.0 for AS Externals
  - ospfLsdbType,
  - ospfLsdbLsid,
  - ospfLsdbRouterId

## LSA Database Overflow

- ospfLsdbOverflow
  - ospfRouterId, -- The originator of the trap
  - ospfExtLsdbLimit
- ospfLsdbApproachingOverflow
  - ospfRouterId, -- The originator of the trap
  - ospfExtLsdbLimit