Show Commands

This chapter describes the Cisco NX-OS Open Shortest Path First (OSPF) **show** commands.

show ip ospf

To display general information about Open Shortest Path First (OSPF) routing instances, use the **show ip ospf** command.

show ip ospf [*instance-tag*] [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Use this tag to display OSPF information about a specific OSPF instance. The *instance-tag* argument can be any alphanumeric string of 20 characters.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default” and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf** command to display information about one or more OSPF instances.

This command requires the LAN Base Services license.

Examples

This example shows how to display information all about OSPF instances:

```
switch# show ip ospf
Routing Process 201 with ID 192.0.2.1 VRF default
 Stateful High Availability enabled
 Graceful-restart is configured
   Grace period: 60 state: Inactive
   Last graceful restart exit status: None
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 This router is an autonomous system boundary
 Redistributing External Routes from
   bgp-1
   Maximum limit: 1000 (warning-only)
   Threshold: message 750
   Current count: 0
 Administrative distance 110
 Reference Bandwidth is 40000 Mbps
 Initial SPF schedule delay 3000.000 msecs,
   minimum inter SPF delay of 2000.000 msecs,
   maximum inter SPF delay of 4000.000 msecs
```

```
 Initial LSA generation delay 3000.000 msecs,
   minimum inter LSA delay of 6000.000 msecs,
   maximum inter LSA delay of 6000.000 msecs
 Minimum LSA arrival 2000.000 msec
 Maximum paths to destination 3
 Originating router LSA with maximum metric
   Condition: Always
 Number of external LSAs 0, checksum sum 0
 Number of opaque AS LSAs 0, checksum sum 0
 Number of areas is 3, 3 normal, 0 stub, 0 nssa
 Number of active areas is 0, 0 normal, 0 stub, 0 nssa
   Area BACKBONE(0.0.0.0) (Inactive)
        Area has existed for 00:22:49
        Interfaces in this area: 1 Active interfaces: 0
        Passive interfaces: 0  Loopback interfaces: 0
        No authentication available
        SPF calculation has run 3 times
         Last SPF ran for 0.000036s
        Area ranges are
        Number of LSAs: 0, checksum sum 0
   Area (0.0.0.10) (Inactive)
        Area has existed for 00:41:30
        Interfaces in this area: 0 Active interfaces: 0
        Passive interfaces: 0  Loopback interfaces: 0
        Summarization is disabled
        Simple password authentication
        SPF calculation has run 8 times
         Last SPF ran for 0.000150s
        Area ranges are
          10.3.0.0/16 Passive (Num nets: 0) Advertise
        Area-filter in 'FilterLSAs'
        Number of LSAs: 0, checksum sum 0
   Area (0.0.0.15) (Inactive)
        Area has existed for 00:49:30
        Interfaces in this area: 1 Active interfaces: 0
        Passive interfaces: 1  Loopback interfaces: 0
        No authentication available
        SPF calculation has run 8 times
         Last SPF ran for 0.000021s
        Area ranges are
        Number of LSAs: 0, checksum sum 0
switch#
```

This example shows how to display information about one specific OSPF instance:

```
switch# show ip ospf 201
Routing Process 201 with ID 192.0.2.1 VRF default
 Stateful High Availability enabled
 Graceful-restart is configured
   Grace period: 60 state: Inactive
   Last graceful restart exit status: None
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 Administrative distance 110
 Reference Bandwidth is 40000 Mbps
 Initial SPF schedule delay 200.000 msecs,
   minimum inter SPF delay of 1000.000 msecs,
   maximum inter SPF delay of 5000.000 msecs
 Initial LSA generation delay 0.000 msecs,
   minimum inter LSA delay of 5000.000 msecs,
   maximum inter LSA delay of 5000.000 msecs
 Minimum LSA arrival 1000.000 msec
 Maximum paths to destination 3
 Number of external LSAs 0, checksum sum 0
```

```
 Number of opaque AS LSAs 0, checksum sum 0
 Number of areas is 2, 1 normal, 1 stub, 0 nssa
 Number of active areas is 0, 0 normal, 0 stub, 0 nssa
   Area (0.0.0.10) (Inactive)
        Area has existed for 00:12:18
        Interfaces in this area: 0 Active interfaces: 0
        Passive interfaces: 0  Loopback interfaces: 0
        This area is a STUB area
        Generates stub default route with cost 25
        Simple password authentication
        SPF calculation has run 1 times
         Last SPF ran for 0.000122s
        Area ranges are
        Area-filter in 'FilterLSAs'
        Number of LSAs: 0, checksum sum 0
   Area (0.0.0.15) (Inactive)
        Area has existed for 00:20:18
        Interfaces in this area: 1 Active interfaces: 0
        Passive interfaces: 1  Loopback interfaces: 0
        No authentication available
        SPF calculation has run 1 times
         Last SPF ran for 0.000020s
        Area ranges are
        Number of LSAs: 0, checksum sum 0
switch#
```

Table 1 describes the significant fields shown in the display.

Table 1 show ip ospf Field Descriptions

Field	Description
Routing Process...	OSPF instance tag and OSPF router ID.
Stateful High Availability	Status of stateful restart capability.
Supports...	Number of types of service supported (Type 0 only).
Administrative distance	Administrative distance for the OSPFv2 instance.
Reference Bandwidth	Bandwidth used for cost calculation.
Initial SPF schedule delay	Delay time of SPF calculations.
Initial LSA generation delay	Delay time of LSA generations.
Minimum LSA arrival	Minimum interval between link-state advertisements.
Maximum paths to destination	Maximum paths to the neighbor.
Number of...	Number and type of link-state advertisements that have been received.
Number of areas is...	Number and type of areas configured for the router.
Number of active areas is	Number and type of active areas configured on the router.

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf border-routers

To display the Open Shortest Path First (OSPF) routing table entries to an Area Border Router (ABR) and Autonomous System Boundary Router (ASBR), use the **show ip ospf border-routers** command.

show ip ospf [*instance-tag*] **border-routers** [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Use this tag to display OSPF information about a specific OSPF instance. The *instance-tag* argument can be a maximum of 20 alphanumeric characters.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default” and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf border-routers** command to display information on ABRs. and ASBRs.

This command requires the LAN Base Services license.

Examples

This example shows how to display information about border routers:

```
switch# show ip ospf border-routers
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf database

To display the Open Shortest Path First (OSPF) database for a specific router, use the **show ip ospf database** command.

show ip ospf [*instance-tag*] **database** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database asbr-summary** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database database-summary** [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database external** [**ext_tag** *value*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database network** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database nssa-external** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database opaque-area** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database opaque-as** [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database opaque-link** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database router** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

show ip ospf [*instance-tag*] **database summary** [*area-id*] [*link-state-id*] [**adv-router** *ip-address* | **self-originated**] [**detail**] [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. The name can be a maximum of 20 alphanumeric characters.
area-id	(Optional) Area number used to define the particular area. Specify as either an IP address or a number from 0 to 4294967295.
link-state-id	(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's link-state type. Specify in the form of an IP address.
adv-router *ip-address*	(Optional) Displays all the link-state advertisements (LSAs) of the specified router.
self-originate	(Optional) Displays self-originated LSAs (from the local router).
asbr-summary	(Optional) Displays information about the autonomous system boundary router summary LSAs.
database-summary	(Optional) Displays each type of LSA for each area in the database, and the total number of LSAs.

external	(Optional) Displays information about the external LSAs.
ext_tag *value*	(Optional) Displays information based on an external tag. The range is from 1 to 4294967295.
network	(Optional) Displays information about the network LSAs.
nssa-external	(Optional) Displays information about the not-so-stubby area (NSSA) external LSAs.
opaque-area	(Optional) Displays information about the opaque area LSAs.
opaque-as	(Optional) Displays information about the opaque AS LSAs.
opaque-link	(Optional) Displays information about the opaque link-local LSAs.
router	(Optional) Displays information about the router LSAs.
summary	(Optional) Displays information about the summary LSAs.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default” and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **ip ospf database** command to display information about different OSPF LSAs.

When the link state advertisement is describing a network, the *link-state-id* argument can take one of two forms:

- The network’s IP address (such as Type 3 summary link advertisements and autonomous system external link advertisements).
- A derived address obtained from the link state ID. (Note that masking a network links advertisement’s link state ID with the network’s subnet mask yields the network’s IP address.)
- When the link state advertisement is describing a router, the link state ID is always the described router’s OSPF router ID.
- When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).

This command requires the LAN Base Services license.

Examples

This example shows how to display the OSPF database:

```
switch# show ip ospf database
```

This example shows how to display a summary of autonomous system border routers:

```
switch# show ip ospf database asbr-summary
```

This example shows how to display information about external links:

```
switch# show ip ospf database external
```

This example shows how to display a summary of the OSPF database:

```
switch# show ip ospf database database-summary
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf interface

To display Open Shortest Path First (OSPF)-related interface information, use the **show ip ospf interface** command.

show ip ospf interface [*instance-tag*] [{**ethernet** *slot*/[*QSFP-module*/]*port* | **loopback** *if_number* | **port-channel** *number*}] [**brief**] [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. The name can be a maximum of 20 alphanumeric characetrs.
ethernet *slot*/[*QSFP-module*/]*port*	(Optional) Specifies the Ethernet interface. The *slot* number is from 1 to 255. The *QSFP-module* number is from 1 to 4. The *port* number is from 1 to 128. **Note** The *QSFP-module* number applies only to the QSFP+ Generic Expansion Module (GEM).
loopback *if_number*	(Optional) Specifies the loopback interface. The loopback interface number is from 0 to 1023.
port-channel *number*	(Optional) Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.
brief	(Optional) Displays brief overview information for OSPF interfaces, states, addresses, masks, and areas on the router.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default” and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
6.0(2)N1(2)	Support for the QSFP+ GEM was added.
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf interface** command to display the OSPF status for the interface.

This command requires the LAN Base Services license.

Examples

This example shows how to display OSPF information for Ethernet interface 1/5:

```
switch# show ip ospf interface ethernet 1/5
Ethernet1/5 is up, line protocol is down
```

```
    IP address 192.0.2.1, Process ID 201 VRF RemoteOfficeVRF, area 0.0.0.10
    Enabled by interface configuration
    State DOWN, Network type BROADCAST, cost 4
    Index 1, Transmit delay 1 sec, Router Priority 1
    No designated router on this network
    No backup designated router on this network
    0 Neighbors, flooding to 0, adjacent with 0
    Timer intervals: Hello 10, Dead 40, Wait 40, Retransmit 5
    No authentication
    Number of opaque link LSAs: 0, checksum sum 0
switch#
```

Table 2 describes the significant fields shown in the display.

Table 2 show ip ospf interface Field Descriptions

Field	Description
Ethernet	Status of physical link and operational status of protocol.
IP Address	Interface IP address, subnet mask, and area address.
VRF	Virtual routing and forwarding (VRF) instance.
Transmit Delay	Transmit delay, interface state, and router priority.
designated router	Designated router ID and interface IP address.
backup designated router	Backup designated router ID and interface IP address.
Timer intervals	Configuration information of timer intervals.
Hello	Number of seconds until next hello packet is sent out this interface.

This example shows how to display OSPF information for all VRFs:

```
switch# show ip ospf interface vrf all
VL1-0.0.0.10-10.1.2.3 is down, line protocol is down
    IP address 0.0.0.0, Process ID 201 VRF default, area 0.0.0.0
    State DOWN, Network type P2P, cost 65535
    Index 2, Transmit delay 2 sec
    0 Neighbors, flooding to 0, adjacent with 0
    Timer intervals: Hello 25, Dead 50, Wait 50, Retransmit 50
    Message-digest authentication, using key id 21
    Number of opaque link LSAs: 0, checksum sum 0

switch#
```

This example shows how to display OSPF information in a brief format:

```
switch# show ip ospf interface brief
 OSPF Process ID 201 VRF default
 Total number of interface: 1
 Interface               ID     Area            Cost   State    Neighbors Status
 VL1                     2      0.0.0.0         65535  DOWN     0         down

switch#
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf lsa-content-changed-list

To display a list of all link-state advertisements (LSAs) with changed content, use the **show ip ospf lsa-content-changed-list** command.

show ip ospf lsa-content-changed-list *neighbor-id* {**ethernet** *slot*/[*QSFP-module*/]*port* | **loopback** *if_number* | **port-channel** *number*}

Syntax Description

neighbor id	Router ID for the neighbor in the format *A.B.C.D*.
ethernet *slot/[QSFP-module/]port*	Specifies the Ethernet interface and the slot number and port number. The *slot* number is from 1 to 255. The *QSFP-module* number is from 1 to 4. The *port* number is from 1 to 128. **Note** The *QSFP-module* number applies only to the QSFP+ Generic Expansion Module (GEM).
loopback *if_number*	Specifies the loopback interface. The loopback interface number is from 0 to 1023.
port-channel *number*	Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
6.0(2)N1(2)	Support for the QSFP+ GEM was added.
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

This command requires the LAN Base Services license.

Examples

This example shows how to display a list of LSAs that changed for Ethernet 2/1:

```
switch# show ip ospf lsa-content-changed-list 192.0.2.2 ethernet 2/1
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf neighbors

To display Open Shortest Path First (OSPF)-neighbor information on a per-interface basis, use the **show ip ospf neighbors** command.

show ip ospf [*instance-tag*] **neighbors** [{**ethernet** *slot/[QSFP-module/]port* | **loopback** *if_number* | **port-channel** *number*}] [*neighbor-id*] [**detail**] [**summary**] [**vrf** {*vrf-name* | **all** | **default** | **management**}]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Specify as an alphanumeric string of 20 characters.
ethernet *slot/[QSFP-module/]port*	(Optional) Specifies the Ethernet interface and the slot number and port number. The *slot* number is from 1 to 255. The *QSFP-module* number is from 1 to 4. The *port* number is from 1 to 128. **Note** The *QSFP-module* number applies only to the QSFP+ Generic Expansion Module (GEM).
loopback *if_number*	(Optional) Specifies the loopback interface. The loopback interface number is from 0 to 1023.
port-channel *number*	(Optional) Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.
neighbor-id	(Optional) Router ID of the neighbor. Specify as an IP address.
detail	(Optional) Displays all neighbors given in detail (lists all neighbors).
summary	(Optional) Displays a summary of the neighbors.
vrf	(Optional) Specifies a virtual routing and forwarding (VRF) instance.
vrf-name	VRF name. The name can be a maximum of 32 alphanumeric characters and is case sensitive.
all	Specifies all VRF entries.
default	Specifies the default VRF.
management	Specifies the management VRF.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
6.0(2)N1(2)	Support for the QSFP+ GEM was added.
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf neighbors** command to display information about all or some of the neighbors for this OSPF instance.

This command requires the LAN Base Services license.

Examples

This example shows how to display the summary information about the neighbor that matches the neighbor ID:

```
switch# show ip ospf neighbors 10.199.199.137
```

This example shows how to display the neighbors that match the neighbor ID on an interface:

```
switch# show ip ospf neighbors ethernet 2/1 10.199.199.137
```

This example shows how to display detailed information about OSPF neighbors:

```
switch# show ip ospf neighbors detail
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf policy statistics area

To display Open Shortest Path First (OSPF) policy statistics for an area, use the **show ip ospf policy statistics area** command.

show ip ospf [*instance-tag*] **policy statistics area** *area-id* **filter-list** {**in** | **out**} [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Specify as an alphanumeric string.
area *area-id*	Specifies the area number used to define the particular area. The area ID can be an IP address or a number from 0 to 4294967295.
filter-list	Filters prefixes between OSPF areas.
in	Displays policy statistics for incoming routes.
out	Displays policy statistics for outgoing routes.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default”, “management”, and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf policy statistics area** command to display information about the filter lists applied to an area.

This command requires the LAN Base Services license.

Examples

This example shows how to display policy statistics for OSPF:

```
switch# show ip ospf policy statistics area 201 filter-list in
```

Related Commands

Command	Description
area filter-list (OSPF)	Filters incoming or outgoing Network Summary (type 3) link-state advertisements (LSAs) on an Area Border Router (ABR).

Command	Description
copy running-config startup-config	Saves the configuration changes to the startup configuration file.
show running-config ospf	Displays the OSPF running configuration.

show ip ospf policy statistics redistribute

To display Open Shortest Path First (OSPF) policy statistics, use the **show ip ospf policy statistics redistribute** command.

show ip ospf [*instance-tag*] **policy statistics redistribute** {**bgp** *id* | **direct** | **eigrp** *id* | **ospf** *id* | **rip** *id* | **static**} [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Specify as an alphanumeric string.
bgp	Displays policy statistics for the Border Gateway Protocol (BGP).
direct	Displays policy statistics for directly connected routes only.
eigrp	Displays policy statistics for the Enhanced Interior Gateway Routing Protocol (EIGRP).
ospf	Displays policy statistics for OSPF.
rip	Displays policy statistics for the Routing Information Protocol (RIP).
static	Displays policy statistics for IP static routes.
id	For the **bgp** keyword, an autonomous system number. The range for 2-byte numbers is from 1 to 65535. For the **eigrp** keyword, an autonomous system number. The range is from 1 to 65535. For the **ospf** and **rip** keywords, an instance name from which routes are to be redistributed. The value takes the form of a string. You can enter a decimal number, but Cisco Nexus 5500 stores it internally as a string.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default”, “management”, and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf policy statistics redistribute** command to display redistribution statistics.

This command requires the LAN Base Services license.

Examples

This example shows how to display policy statistics for redistributed routes:

```
switch# show ip ospf policy statistics redistribute
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf request-list

To display a list of all link-state advertisements (LSAs) requested by a router, use the **show ip ospf request-list** command.

show ip ospf request-list *neighbor-id* {**ethernet** *slot/[QSFP-module/]port* | **loopback** *if_number* | **port-channel** *number*}

Syntax Description

neighbor-id	Router ID of the neighbor. Specify as an IP address.
ethernet *slot/[QSFP-module/]port*	(Optional) Specifies the Ethernet interface and the slot number and port number. The *slot* number is from 1 to 255. The *QSFP-module* number is from 1 to 4. The *port* number is from 1 to 128. **Note** The *QSFP-module* number applies only to the QSFP+ Generic Expansion Module (GEM).
loopback *if_number*	(Optional) Specifies the loopback interface. The loopback interface number is from 0 to 1023.
port-channel *number*	(Optional) Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
6.0(2)N1(2)	Support for the QSFP+ GEM was added.
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf request-list** command to troubleshoot Open Shortest Path First (OSPF) routing operations.

This command requires the LAN Base Services license.

Examples

This example shows how to display a list of all LSAs requested by a router:

```
switch# show ip ospf request-list 40.40.40 ethernet 2/1
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf retransmission-list

To display a list of all link-state advertisements (LSAs) waiting to be resent to neighbors, use the **show ip ospf retransmission-list** command.

show ip ospf retransmission-list *neighbor-id* {**ethernet** *slot/[QSFP-module/]port* | **loopback** *if_number* | **port-channel** *number*}

Syntax Description

neighbor-id	Router ID of the neighbor. Specify as an IP address.
ethernet *slot/[QSFP-module/]port*	(Optional) Specifies the Ethernet interface and the slot number and port number. The *slot* number is from 1 to 255. The *QSFP-module* number is from 1 to 4. The *port* number is from 1 to 128. **Note** The *QSFP-module* number applies only to the QSFP+ Generic Expansion Module (GEM).
loopback *if_number*	(Optional) Specifies the loopback interface. The loopback interface number is from 0 to 1023.
port-channel *number*	(Optional) Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
6.0(2)N1(2)	Support for the QSFP+ GEM was added.
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf retransmission-list** command to troubleshoot Open Shortest Path First (OSPF) routing operations.

This command requires the LAN Base Services license.

Examples

This example shows how to display all LSAs waiting to be resent to neighbors:

```
switch# show ip ospf retransmission-list 192.0.2.11 ethernet 2/1
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf route

To display the Open Shortest Path First (OSPF) topology table, use the **show ip ospf routes** command.

show ip ospf [*instance-tag*] **routes** [*prefix/length* | **summary**} [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Specify as an alphanumeric string of 20 characters.
prefix/length	(Optional) IP prefix, which limits output to a specific route. Indicate the length as a slash (/) and number from 1 to 31. For example, /8 indicates that the first eight bits in the IP prefix are network bits.
summary	(Optional) Displays a summary of all routes.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default”, “management”, and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ospf routes** command to display the OSPF private routing table (which contains only routes that are calculated by OSPF). If something is wrong with a route in the routing information base (RIB), then you should check the OSPF copy of the route to determine if it matches the RIB contents. If it does not match, a synchronization problem exists between OSPF and the RIB.

This command requires the LAN Base Services license.

Examples

This example shows how to display OSPF routes:

```
switch# show ip ospf route
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf statistics

To display Open Shortest Path First (OSPF) shortest path first (SPF) calculation statistics, use the **show ip ospf statistics** command.

show ip ospf [*instance-tag*] **statistics** [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. Specify as an alphanumeric string up to 20 characters.
vrf *vrf-name*	(Optional) Name of the VRF. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default”, “management”, and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf statistics** command to display information about link-state advertisements (LSAs). This information can be useful for both OSPF network maintenance and troubleshooting. For example, we recommend that you use the **show ip ospf statistics** command as the first troubleshooting step for LSA flapping.

This command requires the LAN Base Services license.

Examples

This example shows how to display information about the SPF calculations:

```
switch# show ip ospf statistics
 OSPF Process ID 201 VRF default, Event statistics (cleared 00:10:45 ago)
  Router ID changes: 1
  DR elections: 0
  Older LSAs received: 0
  Neighbor state changes: 0
  Neighbor dead postponed: 0
  Neighbor dead interval expirations: 0
  Neighbor bad lsreqs: 0
  Neighbor sequence number mismatches: 0
  SPF computations:  2 full, 0 summary, 0 external

        LSA Type Generated Refreshed   Flushed  Aged out
          Router         0         0         0         0
         Network         0         0         0         0
     Summary Net         0         0         0         0
    Summary ASBR         0         0         0         0
     AS External         0         0         0         0
```

```
    Opaque Link          0          0          0          0
    Opaque Area          0          0          0          0
      Opaque AS          0          0          0          0

  Following counters can not be reset:

  LSA deletions: 0 pending, 0 hwm, 0 deleted, 0 revived, 0 runs
  Hello queue: 0/200, hwm 0, drops 0
  Flood queue: 0/350, hwm 0, drops 0
  LSDB additions failed: 0

        Buffers:    in use       hwm permanent     alloc      free
     128 bytes           0         0         0         0         0
     512 bytes           0         0         0         0         0
    1520 bytes           0         0         0         0         0
    4500 bytes           0         0         0         0         0
          huge           0         0         0         0         0

switch#
```

Table 3 describes the significant fields shown in the display.

Table 3 show ip ospf statistics Field Descriptions

Field	Description
OSPF process	Unique value assigned to the OSPF instance in the configuration.
VRF	Virtual routing and forwarding (VRF) for this OSPF instance.
DR elections	Number of times that a new designated router was elected.
Neighbor...	Details about neighbors.
LSA Type	Number of each type of LSA sent.
Hello queue	Queue of hello packets to be processed: • current number in queue/maximum number allowed in queue. • hwm—high water mark. The maximum number of packets ever stored in the queue. • drops—The number of packets dropped because the queue was full.
Flood queue	Queue of flood packets to be processed.
Buffers	Chunks of memory used to store packets.

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf summary-address

To display a list of all summary address redistribution information configured in an Open Shortest Path First (OSPF) instance, use the **show ip ospf summary-address** command.

show ip ospf [*instance-tag*] **summary-address** [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. The name can be a maximum of 20 alphanumeric characters.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default”, “management”, and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

This command requires the LAN Base Services license.

Examples

This example shows how to display information about summary addresses:

```
switch# show ip ospf summary-address
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip ospf traffic

To display Open Shortest Path First (OSPF) traffic statistics, use the **show ip ospf traffic** command.

show ip ospf [*instance-tag*] **traffic** [**ethernet** *slot/[QSFP-module/]port* | **loopback** *if_number* | **port-channel** *number*] [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Name of the OSPF instance. The name can be a maximum of 20 alphanumeric characters.
ethernet *slot/[QSFP-module/]port*	(Optional) Specifies the Ethernet interface and the slot number and port number. The *slot* number is from 1 to 255. The *QSFP-module* number is from 1 to 4. The *port* number is from 1 to 128. **Note** The *QSFP-module* number applies only to the QSFP+ Generic Expansion Module (GEM).
loopback *if_number*	(Optional) Specifies the loopback interface. The loopback interface number is from 0 to 1023.
port-channel *number*	(Optional) Specifies the EtherChannel interface and EtherChannel number. The range is from 1 to 4096.
vrf *vrf-name*	(Optional) Specifies the name of the virtual routing and forwarding (VRF) instance. The *vrf-name* argument can be specified as any case-sensitive, alphanumeric string up to 32 characters. The strings “default”, “management”, and “all” are reserved VRF names.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
6.0(2)N1(2)	Support for the QSFP+ GEM was added.
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf traffic** command to display traffic statistics for one or more OSPF instances.

This command requires the LAN Base Services license.

Examples

This example shows how to display OSPF traffic statistics for interface 1/5:

```
switch# show ip ospf traffic ethernet 1/5
 OSPF Process ID 201 VRF RemoteOfficeVRF, Packet Counters (cleared 00:26:04 ago)
 Interface Ethernet1/5, Area 0.0.0.0
  Total: 0 in, 0 out
  LSU transmissions: first 0, rxmit 0, for req 0, nbr xmit 0
  Flooding packets output throttled (IP/tokens): 0 (0/0)
```

```
  Ignored LSAs: 0, LSAs dropped during SPF: 0
  LSAs dropped during graceful restart: 0
  Errors: drops in        0, drops out       0, errors in       0,
          errors out      0, hellos in       0, dbds in         0,
          lsreq in        0, lsu in          0, lsacks in       0,
          unknown in      0, unknown out     0, no ospf         0,
          bad version     0, bad crc         0, dup rid         0,
          dup src         0, invalid src     0, invalid dst     0,
          no nbr          0, passive         0, wrong area      0,
          pkt length      0, nbr changed rid/ip addr            0
          bad auth        0

           hellos       dbds     lsreqs       lsus       acks
   In:          0          0          0          0          0
  Out:          0          0          0          0          0

switch#
```

Table 4 describes the significant fields shown in the display.

Table 4 show ospf traffic Field Descriptions

Field	Description
OSPF Process	OSPF instance tag for these traffic statistics.
VRF	Virtual routing and forwarding (VRF) for this OSPF instance.
Interface ...	Interface information.
Errors	
drops	Number of packets dropped.
bad version	Number of packets received with bad version.
dup src	Number of packets with a duplicate source address.
no nbr	Number of packets from a router that is not a full neighbor.
nbr changed rid/ip addr	Number of packets with router-id/ip address pair not matching our neighbor's values.
lsreq	Number of packets of type LSREQ (LSA required).
acks	Number of packets of type LSACK (LSA acknowledged).

Related Commands

Command	Description
clear ip ospf traffic	Clears OSPF traffic statistics.
show running-config ospf	Displays the OSPF running configuration information.

show ip ospf virtual-links

To display parameters and the current state of Open Shortest Path First (OSPF) virtual links, use the **show ip ospf virtual-links** command.

show ip ospf [*instance-tag*] **virtual-links** [**brief**] [**vrf** *vrf-name*]

Syntax Description

instance-tag	(Optional) Instance tag. The name can be a maximum of 20 alphanumeric characters.
brief	(Optional) Displays a summary of the configured virtual links.
vrf *vrf-name*	(Optional) Name of the OSPF VRF. The *vrf-name* argument can be specified as an arbitrary string of 32 alphanumeric characters. The strings “default”, “management”, and “all” are reserved *vrf-names*.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

Use the **show ip ospf virtual-links** command to display information about configured virtual links.

This command requires the LAN Base Services license.

Examples

This example shows how to display information about virtual links:

```
switch# show ip ospf virtual-links
 Virtual link VL1 to router 10.1.2.3 is down
    Transit area 0.0.0.10, via interface (null), remote addr 0.0.0.0
    IP address 0.0.0.0, Process ID 201 VRF default, area 0.0.0.0
    State DOWN, Network type P2P, cost 65535
    Index 2, Transmit delay 2 sec
    0 Neighbors, flooding to 0, adjacent with 0
    Timer intervals: Hello 25, Dead 50, Wait 50, Retransmit 50
    Message-digest authentication, using key id 21
    Number of opaque link LSAs: 0, checksum sum 0
    Adjacency Information

switch#
```

Table 5 describes the significant fields shown in the display.

Table 5 show ip ospf virtual-links Field Descriptions

Field	Description
Virtual Link	OSPF neighbor and whether the link to that neighbor is up or down.
VRF	Virtual routing and forwarding (VRF) for this OSPF instance.
Transit area...	Transit area through which the virtual link is formed.
via interface...	Interface through which the virtual link is formed.
cost	Cost of reaching the OSPF neighbor through the virtual link.
Transmit delay	Transmit delay (in seconds) on the virtual link.
Timer intervals...	Various timer intervals configured for the link.
Hello	Time when the next hello is expected from the neighbor.

This example shows how to display information about virtual links in brief format:

```
switch# show ip ospf virtual-links brief
 OSPF Process ID 201 VRF default
 Total number of vlinks: 1
 Remote Router    ID     Transit Area    Cost    Status
 10.1.2.3         1      0.0.0.10        65535   down

switch#
```

Related Commands

Command	Description
show running-config ospf	Displays the OSPF running configuration.

show ip traffic

To display IP traffic information, use the **show ip traffic** command.

show ip traffic

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Release	Modification
5.2(1)N1(1)	This command was introduced.

Examples

This example shows how to display the IP traffic information:

```
switch(config)# show ip traffic

IP Software Processed Traffic Statistics
----------------------------------------
Transmission and reception:
  Packets received: 103598, sent: 32093, consumed: 2,
  Forwarded, unicast: 0, multicast: 0, Label: 0
Opts:
  end: 0, nop: 0, basic security: 0, loose source route: 0
  timestamp: 0, record route: 0
  strict source route: 0, alert: 0,
  other: 0
Errors:
  Bad checksum: 0, packet too small: 0, bad version: 0,
  Bad header length: 0, bad packet length: 0, bad destination: 0,
  Bad ttl: 0, could not forward: 990, no buffer dropped: 0,
  Bad encapsulation: 2, no route: 0, non-existent protocol: 0
  Stateful Restart Recovery: 0
  MBUF pull up fail: 0
Fragmentation/reassembly:
  Fragments received: 0, fragments sent: 0, fragments created: 0,
  Fragments dropped: 0, packets with DF: 0, packets reassembled: 0,
  Fragments timed out: 0

ICMP Software Processed Traffic Statistics
------------------------------------------
Transmission:
  Redirect: 2, unreachable: 0, echo request: 0, echo reply: 0,
  Mask request: 0, mask reply: 0, info request: 0, info reply: 0,
  Parameter problem: 0, source quench: 0, timestamp: 0,
  Timestamp response: 0, time exceeded: 0,
  Irdp solicitation: 0, irdp advertisement: 0
Reception:
  Redirect: 2, unreachable: 22048, echo request: 0, echo reply: 0,
  Mask request: 0, mask reply: 0, info request: 0, info reply: 0,
```

```
  Parameter problem: 0, source quench: 0, timestamp: 0,
  Timestamp response: 0, time exceeded: 0,
  Irdp solicitation: 0, irdp advertisement: 0,
  Format error: 0, checksum error: 0

Statistics last reset: never

switch(config)#
```

Related Commands

Command	Description
show ip process	Displays information about the IP process.

show running-config ospf

To display the running configuration for Open Shortest Path First version 2 (OSPFv2) for IPv4 networks, use the **show running-config ospf** command.

show running-config ospf

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to display the running configuration for OSPF:

```
switch# show running-config ospf

!Command: show running-config ospf
!Time: Tue Apr 15 09:09:15 2008

version 5.2(1)N1(1)
feature ospf

router ospf 201
  router-id 192.0.2.1
  default-information originate route-map DefaultRouteFilter
  area 0.0.0.10 virtual-link 192.0.2.3
    authentication message-digest
    authentication-key 3 15e76ee89406ccbf
    message-digest-key 21 md5 3 15e76ee89406ccbf
    dead-interval 50
    hello-interval 25
    retransmit-interval 50
    transmit-delay 2
  redistribute bgp 1 route-map FilterExtBGP
  redistribute maximum-prefix 1000 75 warning-only
  area 0.0.0.10 authentication
  area 0.0.0.10 default-cost 25
  area 0.0.0.10 filter-list route-map FilterLSAs in
  log-adjacency-changes
  maximum-paths 3
  default-metric 25
```

```
interface Ethernet1/5
  ip ospf authentication key-chain Test1
  ip ospf authentication-key 3 15e76ee89406ccbf
  ip ospf message-digest-key 21 md5 3 15e76ee89406ccbf
  ip ospf cost 25
  ip ospf dead-interval 50
  ip ospf hello-interval 25
  ip ospf passive-interface
  ip ospf priority 25
  ip ospf mtu-ignore
  ip router ospf 201 area 0.0.0.15

switch#
```

Related Commands

Command	Description
router ospf	Creates an OSPF instance.

show vrf

To display the virtual routing and forwarding (VRF) instances, use the **show vrf** command.

show vrf

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to display the VRF instances configured on the switch:

```
switch# show vrf
VRF-Name                           VRF-ID State   Reason
default                                 1 Up      --
management                              2 Up      --
switch#
```

Related Commands

Command	Description
vrf	Configures a VRF instance.
vrf context	Creates a VRF instance.
vrf member	Adds an interface to a VRF.

show vrf detail

To display the detailed information of virtual routing and forwarding (VRF) instances, use the **show vrf detail** command.

show vrf detail

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

By default, this command displays the detailed information of the default VRF and management VRF.

This command does not require a license.

Examples

This example shows how to display the detailed information of VRF instances configured on the switch:

```
switch# show vrf detail
VRF-Name: default, VRF-ID: 1, State: Up
    Table-ID: 0x80000001, AF: IPv6, Fwd-ID: 0x80000001, State: Up
    Table-ID: 0x00000001, AF: IPv4, Fwd-ID: 0x00000001, State: Up

VRF-Name: management, VRF-ID: 2, State: Up
    Table-ID: 0x80000002, AF: IPv6, Fwd-ID: 0x80000002, State: Up
    Table-ID: 0x00000002, AF: IPv4, Fwd-ID: 0x00000002, State: Up

switch#
```

Related Commands

Command	Description
vrf	Configures a VRF instance.
vrf context	Creates a VRF instance.
vrf member	Adds an interface to a VRF.

show vrf interface

To display the virtual routing and forwarding (VRF) information for interfaces, use the **show vrf interface** command.

show vrf interface [**mgmt** *mgmt-number* | **vlan** *vlan-ID*]

Syntax Description

mgmt *mgmt-number*	(Optional) Displays the management interfaces that are added to a VRF. The management interface number is 0.
vlan *vlan-ID*	(Optional) Displays the VLAN interfaces that are added to a VRF. The VLAN interface range is from 1 to 4094.

Command Default

All interfaces

Command Modes

EXEC mode

Command History

Release	Modification
5.2(1)N1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to display the VRF information for all configured interfaces:

```
switch# show vrf interface
Interface                  VRF-Name                        VRF-ID
Vlan1                      default                              1
Vlan5                      default                              1
loopback1                  default                              1
mgmt0                      management                           2
switch#
```

This example shows how to display the VRF information for management interfaces:

```
switch# show vrf interface mgmt 0
Interface                  VRF-Name                        VRF-ID
mgmt0                      management                           2
switch#
```

This example shows how to display the VRF information for VLAN interfaces:

```
switch# show vrf interface vlan 1
Interface                  VRF-Name                        VRF-ID
Vlan1                      default                              1
switch#
```

Related Commands

Command	Description
vrf member	Adds an interface to a VRF.