

## Chapter 13

# OSPF Version 3 for IPv6

OSPF version 2, introduced as RFC 2328 in 1998, has been one of the most widely deployed interior gateway protocols (IGPs) for intradomain routing. The protocol is extended in version 3 (RFC 2740) to support OSPF in IPv6 networks. Most of the functionality of OSPFv2 carries over into OSPFv3, but there are some significant changes to explore.

This feature guide covers the following topics:

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## Overview

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OSPFv3 adds support for IPv6 in the Open Shortest Path First (OSPF) routing protocol, as detailed in RFC 2740. Most configuration and operational commands function essentially the same as in OSPFv2:

- All OSPFv3 operational and configuration commands include the identifier `ospf3` in place of the familiar `ospf` option. For example, `show ospf database` in OSPFv2 becomes `show ospf3 database` in OSPFv3.
- OSPFv3 Router IDs, Area IDs, and LSA link-state IDs remain at the OSPFv2 IPv4 size of 32 bits.
- All the optional capabilities in OSPFv2 for IPv4, such as not-so-stubby-areas (NSSA), are supported in OSPFv3 for IPv6.

However, there are many significant changes to note about OSPFv3 for IPv6:

- Router link-state advertisements (LSAs) and Network LSAs no longer carry prefix information. In OSPFv3, these LSAs only carry topology information.



**NOTE:** Because addressing information in the LSA header, Router LSA, and Network LSA (Type 2) has been removed, the OSPFv3 protocol is designed to be network protocol independent.

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- New and modified LSAs have been created to handle the flow of IPv6 addresses and prefixes in an OSPFv3 network. As a result, some `show` command output appears in a different format for OSPFv3. The LSAs that have been modified are:

- Interarea-Prefix LSA—This replaces the Network Summary or Type 3 LSA.
- Interarea Router LSA—This replaces the Autonomous System Boundary Router (ASBR) Summary or Type 4 LSA.

New LSAs introduced in OSPFv3 are:

- Link LSA—This LSA has local scope and does not extend beyond the link it is associated with. The purpose of a link LSA is to provide the router's IPv6 link-local address to neighbors, inform other routers of the associated IPv6 prefixes available on the link, and provide information to the Network LSA. On all OSPF interfaces except virtual links, OSPF packets are sent using the interface's link-local address as the source address.



**NOTE:** A link-local address is an IPv6 address that starts with the first 10 bits set to 1111111010. This is often displayed in hexadecimal as `fe80`.

Juniper Networks M-series, MX-series, and T-series routing platforms automatically generate link-local addresses when IPv6 is enabled. The routing platform selects one interface MAC address (derived from the available interfaces) and appends this to the `fe80` prefix with some additional bit stuffing. For more information about link-local addresses, see RFC 2373.

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- Intra-Area-Prefix LSA—This carries all IPv6 prefix information to all OSPFv3 routers within an area (this information in IPv4 is carried by the Router and Network LSAs).
- OSPFv3 now runs on a per-link basis, instead of on a per-IP-subnet basis.
- IPv6 link-local addresses are used for OSPFv3 neighbor exchanges (except over virtual links).

- The flooding scope for LSAs has been generalized into three categories for OSPFv3:
  - Link-local scope—The OSPFv3 packet is flooded to the members of a link.
  - Area scope—The OSPFv3 packet is flooded to all members of an OSPFv3 area.
  - AS scope—The OSPFv3 packet is flooded to all members of an AS.
- Authentication has been removed from the OSPFv3 protocol itself and relies on the authentication header (AH) and Encapsulating Security Payload (ESP) portions of the IP Security (IPSec) protocol for all authentication tasks in IPv6. For more information about configuring IPSec, see “Configuring IPSec” on page 672.
- Label-switched paths (LSPs) and traffic engineering are not supported in OSPFv3.
- Neighboring routers are always identified by the 32-bit router ID in OSPFv3.

## System Requirements

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To implement OSPFv3 for IPv6, your system must meet these minimum requirements:

- JUNOS Release 8.2 or later for MX-series routing platforms
- JUNOS Release 7.2 or later for J-series Services Routers
- JUNOS Release 5.5 or later for M-series and T-series routing platforms
- Two Juniper Networks J-series, M-series, MX-series, or T-series routing platforms

## Terms and Acronyms

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- **Open Shortest Path First (OSPF)**—A link-state IGP that makes routing decisions based on the shortest-path-first (SPF) algorithm (also referred to as the *Dijkstra algorithm*).
- **OSPFv3**—The IPv6-enabled version of the OSPF protocol.
- **link-state advertisement (LSA)**—A multi-tiered message format for OSPFv2 and OSPFv3 that carries information about the OSPF network to OSPF-enabled routers. The collection of LSAs forms the link-state database used by the routers to select optimum paths. Different LSA levels limit the scope of OSPF protocol message delivery to links, areas, or autonomous systems (ASs).

## Configuring OSPFv3 for IPv6

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To implement OSPFv3 for IPv6, you must configure the following:

- Configuring OSPFv3 as the Routing Protocol on page 512
- Configuring Interfaces in OSPFv3 Areas on page 512
- Configuring Virtual Links for OSPFv3 on page 513

To apply your knowledge, see the following sections:

- Example: OSPFv3 for IPv6 Configuration on page 513
- Checking Your Work on page 520

### Configuring OSPFv3 as the Routing Protocol

You enable OSPFv3 almost the same way you enable OSPFv2. The only difference is that you use the statement `ospf3` in place of `ospf` at the `[edit protocols]` hierarchy level.

```
[edit]
  protocols {
    ospf3 {
      ...
    }
  }
```

### Configuring Interfaces in OSPFv3 Areas

To place selected interfaces in an OSPFv3 area, use the `interface` statement at the `[edit protocols ospf3 area area-number]` hierarchy level.

```
[edit]
  protocols {
    ospf3 {
      area 0 {
        interface at-0/0/0.0;
        interface fe-1/1/1;
      }
    }
  }
```

## Configuring Virtual Links for OSPFv3

Virtual links can connect discontinuous sections of the OSPF backbone Area 0 or extend backbone access to areas not directly adjacent to Area 0 (a requirement of the OSPF protocol). To configure a virtual link, configure the `virtual-link` statement at the `[edit protocols ospf3 area 0]` hierarchy level. In the statement, specify the router ID of your neighbor (often the loopback interface IP address) and the OSPFv3 area that the virtual link travels across to reach Area 0.

```
[edit]
protocols {
  ospf3 {
    area 0.0.0.0 {
      virtual-link neighbor-id neighbor-router-id transit-area area;
    }
  }
}
```

## Example: OSPFv3 for IPv6 Configuration

Figure 37: OSPFv3 for IPv6 Topology Diagram

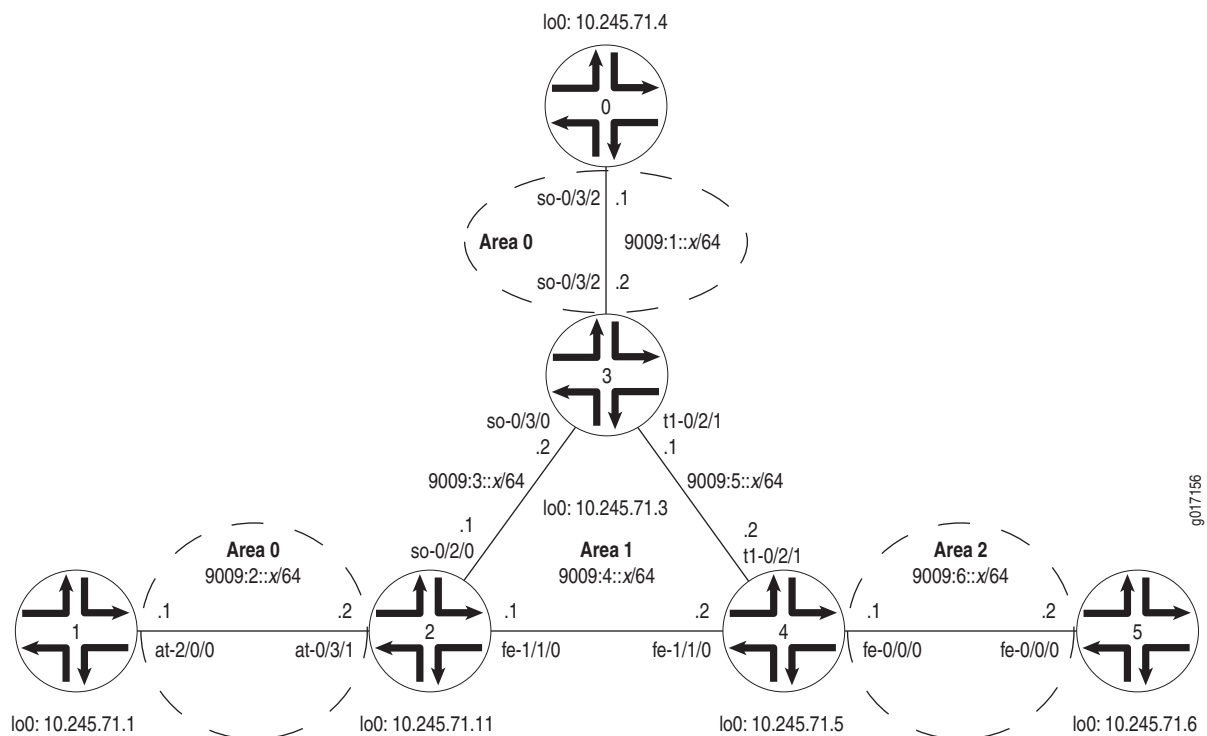


Figure 37 shows an OSPFv3 topology. Routers 0, 1, 2, and 3 are connected to the OSPFv3 backbone Area 0; Routers 2, 3, and 4 connect to each other across Area 1; and Area 2 is located between Routers 4 and 5. Because Router 5 does not have a direct adjacency to Area 0, a virtual link is required across Area 1 between Routers 3 and 4. Similarly, because Routers 0 and 1 have two separate Area 0 backbone sections, you need to configure a second virtual link across Area 1 between Routers 2 and 3.

On Router 0, add the so-0/3/2 interface into Area 0 of the OSPFv3 process.

```

Router 0 [edit]
interfaces {
  so-0/3/2 {
    unit 0 {
      family inet {
        address 10.19.1.1/24;
      }
      family inet6 {
        address 9009:1::1/64;
      }
    }
  }
  lo0 {
    unit 0 {
      family inet {
        address 10.245.71.4/32;
      }
      family inet6 {
        address feee::10:255:71:4/128;
      }
    }
  }
}
protocols {
  ospf3 {
    area 0.0.0.0 {
      interface so-0/3/2.0;
      interface lo0.0 {
        passive;
      }
    }
  }
}

```

On Router 1, add the at-2/0/0 interface into Area 0 of the OSPFv3 process:

```

Router 1 [edit]
interfaces {
  at-2/0/0 {
    atm-options {
      vpi 0;
    }
    unit 0 {
      vci 0.77;
      family inet {
        address 10.19.2.1/24;
      }
      family inet6 {
        address 9009:2::1/64;
      }
    }
  }
}

```

```

lo0 {
  unit 0 {
    family inet {
      address 10.245.71.1/32;
    }
    family inet6 {
      address feee::10:255:71:1/128;
    }
  }
}
}
protocols {
  ospf3 {
    area 0.0.0.0 {
      interface at-2/0/0.0;
      interface lo0.0 {
        passive;
      }
    }
  }
}
}

```

On Router 2, add the interfaces connected to Routers 1, 3, and 4 into the OSPFv3 process. You must also complete the virtual link to Router 3 through Area 1 so that Router 1 can access the discontinuous portion of the OSPF backbone found on Router 0.

```

Router 2 [edit]
interfaces {
  so-0/2/0 {
    unit 0 {
      family inet {
        address 10.19.3.1/24;
      }
      family inet6 {
        address 9009:3::1/64;
      }
    }
  }
  at-0/3/1 {
    atm-options {
      vpi 0 {
        maximum-vcs 1200;
      }
    }
    unit 0 {
      vci 0.77;
      family inet {
        address 10.19.2.2/24;
      }
      family inet6 {
        address 9009:2::2/64;
      }
    }
  }
}

```

```

fe-1/1/0 {
  unit 0 {
    family inet {
      address 10.19.4.1/24;
    }
    family inet6 {
      address 9009:4::1/64;
    }
  }
}
lo0 {
  unit 0 {
    family inet {
      address 10.245.71.11/32;
    }
    family inet6 {
      address feee::10:255:71:11/128;
    }
  }
}
}
protocols {
  ospf3 {
    area 0.0.0.0 {
      virtual-link neighbor-id 10.245.71.3 transit-area 0.0.0.1;
      interface at-0/3/1.0;
    }
    area 0.0.0.1 {
      interface so-0/2/0.0 {
        metric 1;
      }
      interface fe-1/1/0.0 {
        metric 10;
      }
      interface lo0.0 {
        passive;
      }
    }
  }
}
}

```

For the OSPFv3 process on Router 3, configure the interfaces connected to Routers 2 and 4 into Area 1 and the interface connected to Router 0 into Area 0. You must also configure two virtual links through Area 1—one connecting to Router 2 and the second connecting to Router 4. The virtual links allow Router 5 to access the OSPF backbone, and connect the discontinuous sections of Area 0 located at Routers 0 and 1.

```

Router 3 [edit]
interfaces {
  t1-0/2/1 {
    unit 0 {
      family inet {
        address 10.19.5.1/24;
      }
      family inet6 {
        address 9009:5::1/64;
      }
    }
  }
  so-0/3/0 {
    unit 0 {
      family inet {
        address 10.19.3.2/24;
      }
      family inet6 {
        address 9009:3::2/64;
      }
    }
  }
  so-0/3/2 {
    unit 0 {
      family inet {
        address 10.19.1.2/24;
      }
      family inet6 {
        address 9009:1::2/64;
      }
    }
  }
  lo0 {
    unit 0 {
      family inet {
        address 10.245.71.3/32;
      }
      family inet6 {
        address feee::10:255:71:3/128;
      }
    }
  }
}

```

```

protocols {
  ospf3 {
    area 0.0.0.0 {
      virtual-link neighbor-id 10.245.71.11 transit-area 0.0.0.1;
      virtual-link neighbor-id 10.245.71.5 transit-area 0.0.0.1;
      interface so-0/3/2.0;
    }
    area 0.0.0.1 {
      interface so-0/3/0.0 {
        metric 1;
      }
      interface t1-0/2/1.0 {
        metric 1;
      }
      interface lo0.0 {
        passive;
      }
    }
  }
}

```

On Router 4, add the connected interfaces into the OSPFv3 process. You must also complete the virtual link to Router 3 through Area 1 so that Router 5 can access the OSPF backbone.

```

Router 4 [edit]
interfaces {
  fe-0/0/0 {
    unit 0 {
      family inet {
        address 10.19.6.1/24;
      }
      family inet6 {
        address 9009:6::1/64;
      }
    }
  }
  t1-0/2/1 {
    unit 0 {
      family inet {
        address 10.19.5.2/24;
      }
      family inet6 {
        address 9009:5::2/64;
      }
    }
  }
  fe-1/1/0 {
    unit 0 {
      family inet {
        address 10.19.4.2/24;
      }
      family inet6 {
        address 9009:4::2/64;
      }
    }
  }
}

```

```

lo0 {
  unit 0 {
    family inet {
      address 10.245.71.5/32;
    }
    family inet6 {
      address feee::10:255:71:5/128;
    }
  }
}
}
protocols {
  ospf3 {
    area 0.0.0.1 {
      interface fe-1/1/0.0 {
        metric 10;
      }
      interface t1-0/2/1.0 {
        metric 1;
      }
      interface lo0.0 {
        passive;
      }
    }
    area 0.0.0.0 {
      virtual-link neighbor-id 10.245.71.3 transit-area 0.0.0.1;
    }
    area 0.0.0.2 {
      interface fe-0/0/0.0;
    }
  }
}
}

```

On Router 5, add the fe-0/0/0 interface into the OSPFv3 process to complete this example:

```

Router 5 [edit]
interfaces {
  fe-0/0/0 {
    unit 0 {
      family inet {
        address 10.19.6.2/24;
      }
      family inet6 {
        address 9009:6::2/64;
      }
    }
  }
}

```

```

lo0 {
  unit 0 {
    family inet {
      address 10.245.71.6/32;
    }
    family inet6 {
      address feee::10:255:71:6/128;
    }
  }
}
}
protocols {
  ospf3 {
    area 0.0.0.2 {
      interface fe-0/0/0.0;
      interface lo0.0 {
        passive;
      }
    }
  }
}
}

```

### Checking Your Work

To verify proper operation of OSPFv3 for IPv6, use the following commands:

- `show ospf3 interface`
- `show ospf3 neighbor`
- `show ospf3 database`
- `show ospf3 route`
- `show interfaces terse` (to see the IPv6 link local address assigned to the lo0 interface)



**NOTE:** To view prefix information, you must use the **extensive** option with the `show ospf3 database` command.

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The following sections show the output of these commands used with the configuration example:

- Router 0 Status on page 521
- Router 1 Status on page 523
- Router 2 Status on page 526
- Router 3 Status on page 530
- Router 4 Status on page 535
- Router 5 Status on page 539

**Router 0 Status**

user@router0&gt; show ospf3 database

```

    OSPF link state database, area 0.0.0.0
  Type      ID          Adv Rtr      Seq      Age  Cksum  Len
Router     0.0.0.1      10.245.71.1 0x80000005 764  0x89ce  40
Router     0.0.0.1      10.245.71.3 0x80000006 1360 0x2357  72
Router     *0.0.0.1     10.245.71.4 0x80000004 758  0xc09c  40
Router     0.0.0.1      10.245.71.5 0x80000003 1891 0xf774  40
Router     0.0.0.1      10.245.71.11 0x80000005 1393 0x7f6b  56
InterArPfx 0.0.0.1      10.245.71.3 0x80000003 758  0x9f52  36
InterArPfx 0.0.0.2      10.245.71.3 0x80000003 616  0xb13d  36
InterArPfx 0.0.0.3      10.245.71.3 0x80000003 473  0x1da2  36
InterArPfx 0.0.0.4      10.245.71.3 0x80000003 458  0x99f0  44
InterArPfx 0.0.0.5      10.245.71.3 0x80000004 1058 0xbf22  36
InterArPfx 0.0.0.6      10.245.71.3 0x80000002 1958 0x5c67  36
InterArPfx 0.0.0.7      10.245.71.3 0x80000002 1816 0xf088  44
InterArPfx 0.0.0.8      10.245.71.3 0x80000002 1673 0xd3d6  36
InterArPfx 0.0.0.9      10.245.71.3 0x80000002 1658 0xa3df  44
InterArPfx 0.0.0.1      10.245.71.5 0x80000004 479  0xd50f  36
InterArPfx 0.0.0.2      10.245.71.5 0x80000003 310  0xa547  36
InterArPfx 0.0.0.3      10.245.71.5 0x80000003 913  0x1cbb  36
InterArPfx 0.0.0.5      10.245.71.5 0x80000003 163  0xddcd  36
InterArPfx 0.0.0.6      10.245.71.5 0x80000003 13  0xadd6  44
InterArPfx 0.0.0.7      10.245.71.5 0x80000002 2633 0x5f8a  36
InterArPfx 0.0.0.8      10.245.71.5 0x80000002 2488 0x427c  36
InterArPfx 0.0.0.9      10.245.71.5 0x80000002 2338 0xdcda  36
InterArPfx 0.0.0.10     10.245.71.5 0x80000002 2188 0x5929  44
InterArPfx 0.0.0.11     10.245.71.5 0x80000002 2038 0xc2af  44
InterArPfx 0.0.0.12     10.245.71.5 0x80000002 763  0x664  44
InterArPfx 0.0.0.1      10.245.71.11 0x80000003 463  0x6f7a  36
InterArPfx 0.0.0.2      10.245.71.11 0x80000003 328  0xa935  36
InterArPfx 0.0.0.3      10.245.71.11 0x80000003 193  0x427c  36
InterArPfx 0.0.0.4      10.245.71.11 0x80000003 163  0xd69d  44
InterArPfx 0.0.0.5      10.245.71.11 0x80000002 1993 0x6b78  36
InterArPfx 0.0.0.6      10.245.71.11 0x80000002 1963 0xd6dd  36
InterArPfx 0.0.0.7      10.245.71.11 0x80000002 1828 0x532c  44
InterArPfx 0.0.0.8      10.245.71.11 0x80000002 1663 0xa9f7  36
InterArPfx 0.0.0.9      10.245.71.11 0x80000002 1528 0x7901  44
InterArRtr 0.0.0.1      10.245.71.5 0x80000002 620  0xc69c  32
IntraArPfx 0.0.0.1      10.245.71.1 0x80000005 464  0x3f8  76
IntraArPfx 0.0.0.1      10.245.71.3 0x80000005 1509 0x5cc1  64
IntraArPfx *0.0.0.1     10.245.71.4 0x80000004 458  0xba44  64
IntraArPfx 0.0.0.1      10.245.71.11 0x80000003 1693 0xd835  64

    OSPF AS SCOPE link state database
  Type      ID          Adv Rtr      Seq      Age  Cksum  Len
Extern     *0.0.0.1     10.245.71.4 0x80000003 1058 0x8449  36
Extern     0.0.0.1      10.245.71.6 0x80000003 1064 0xdc9e  36

    OSPF Link-Local link state database, interface so-0/3/2.0
  Type      ID          Adv Rtr      Seq      Age  Cksum  Len
Link       0.0.0.6     10.245.71.3 0x80000004 158  0xae30  56
Link       *0.0.0.2     10.245.71.4 0x80000004 158  0x9e80  56

user@router0> show ospf3 interface
Interface      State      Area          DR-ID          BDR-ID
Nbrs
lo0.0          DROther   0.0.0.0      0.0.0.0        0.0.0.0
0
so-0/3/2.0    PtToPt    0.0.0.0      0.0.0.0        0.0.0.0
1

```

```

user@router0> show ospf3 neighbor
ID          Interface          State    Pri    Dead
10.245.71.3 so-0/3/2.0        Full    128    34
Neighbor-address fe80::201:afff:fe00:86ca
    
```

```

user@router0> show ospf3 route
Prefix
10.245.71.1
  NH-interface so-0/3/2.0
10.245.71.3
  NH-interface so-0/3/2.0
10.245.71.5
  NH-interface so-0/3/2.0
10.245.71.6
  NH-interface so-0/3/2.0
10.245.71.11
  NH-interface so-0/3/2.0
9009:1::/64
  NH-interface so-0/3/2.0
9009:1::2/128
  NH-interface so-0/3/2.0
9009:2::/64
  NH-interface so-0/3/2.0
9009:2::2/128
  NH-interface so-0/3/2.0
9009:3::/64
  NH-interface so-0/3/2.0
9009:4::/64
  NH-interface so-0/3/2.0
9009:5::/64
  NH-interface so-0/3/2.0
9009:6::/64
  NH-interface so-0/3/2.0
9009:110::/64
  NH-interface so-0/3/2.0
9009:120::/64
  NH-interface so-0/3/2.0
9009:130::/64
  NH-interface so-0/3/2.0
9009:140::/64
  NH-interface so-0/3/2.0
9009:150::/64
  NH-interface so-0/3/2.0
fee::10:255:71:1/128
  NH-interface so-0/3/2.0
fee::10:255:71:3/128
  NH-interface so-0/3/2.0
fee::10:255:71:4/128
  NH-interface lo0.0
fee::10:255:71:5/128
  NH-interface so-0/3/2.0
fee::10:255:71:6/128
  NH-interface so-0/3/2.0
fee::10:255:71:11/128
  NH-interface so-0/3/2.0
    
```

Prefix	Path type	Route type	NH type	Metric
10.245.71.1	Intra	Router	IP	25
10.245.71.3	Intra	Area BR	IP	12
10.245.71.5	Intra	Area BR	IP	13
10.245.71.6	Inter	AS BR	IP	33
10.245.71.11	Intra	Area BR	IP	13
9009:1::/64	Intra	Network	IP	12
9009:1::2/128	Intra	Network	IP	12
9009:2::/64	Intra	Network	IP	25
9009:2::2/128	Intra	Network	IP	13
9009:3::/64	Inter	Network	IP	13
9009:4::/64	Inter	Network	IP	23
9009:5::/64	Inter	Network	IP	13
9009:6::/64	Inter	Network	IP	33
9009:110::/64	Intra	Network	IP	27
9009:120::/64	Inter	Network	IP	25
9009:130::/64	Inter	Network	IP	15
9009:140::/64	Inter	Network	IP	16
9009:150::/64	Ext2	Network	IP	0
fee::10:255:71:1/128	Intra	Network	IP	25
fee::10:255:71:3/128	Inter	Network	IP	12
fee::10:255:71:4/128	Intra	Network	IP	0
fee::10:255:71:5/128	Inter	Network	IP	13
fee::10:255:71:6/128	Inter	Network	IP	33
fee::10:255:71:11/128	Inter	Network	IP	13

```

user@router0> show interfaces terse
Interface      Admin Link Proto Local                               Remote
...
so-0/3/2      up    up
so-0/3/2.0    up    up    inet 10.19.1.1/24
                                     inet6 9009:1::1/64
                                     fe80::201:afff:fe03:6fa1/64
...
lo0           up    up
lo0.0        up    up    inet 10.245.71.4          --> 0/0
                                     127.0.0.1             --> 0/0
                                     inet6 fe80::201:afff:fe03:6fa1
                                     feee::10:255:71:4
...

```

To provide a comparison between OSPFv3 show commands and legacy OSPFv2 show commands, the following is some sample output of the OSPFv2 connection between Routers 0 and 3:

```

user@router0> show ospf interface
Interface      State      Area          DR ID          BDR ID
Nbrs
lo0.0          DROther   0.0.0.0       0.0.0.0       0.0.0.0
0
lo0.0          DROther   0.0.0.0       0.0.0.0       0.0.0.0
0
so-0/3/2.0     PtToPt    0.0.0.0       0.0.0.0       0.0.0.0
1

user@router0> show ospf neighbor
Address        Interface    State      ID            Pri  Dead
10.19.1.2      so-0/3/2.0 Full        10.245.71.3  128  35

user@router0> show ospf database

OSPF link state database, area 0.0.0.0
Type      ID            Adv Rtr      Seq          Age  Opt  Cksum  Len
Router    10.245.71.3   10.245.71.3  0x80000002   636  0x2  0x5c45  60
Router    *10.245.71.4  10.245.71.4  0x80000002   640  0x2  0x267a  60

user@router0> show ospf route
Prefix        Path  Route      NH  Metric  NextHop      Nexthop
              Type  Type       Type
10.245.71.3   Intra Router    IP   1       so-0/3/2.0
10.19.1.0/24  Intra Network IP   1       so-0/3/2.0
10.245.71.3/32 Intra Network IP   1       so-0/3/2.0
10.245.71.4/32 Intra Network IP   0       lo0.0

```

### Router 1 Status

```

user@router1> show ospf3 interface
Interface      State      Area          DR-ID          BDR-ID
Nbrs
at-2/0/0.0     PtToPt    0.0.0.0       0.0.0.0       0.0.0.0
1
ge-1/1/0.0     DROther   0.0.0.0       0.0.0.0       0.0.0.0
0
lo0.0          DROther   0.0.0.0       0.0.0.0       0.0.0.0
0

```

```

user@router1> show ospf3 neighbor
ID          Interface          State    Pri  Dead
10.245.71.11 at-2/0/0.0        Full    128  36
Neighbor-address fe80::2a0:a5ff:fe3d:56
    
```

```

user@router1> show ospf3 database
    
```

```

        OSPF link state database, area 0.0.0.0
Type      ID          Adv Rtr          Seq      Age  Cksum  Len
Router    *0.0.0.1    10.245.71.1     0x80000005  574  0x89ce  40
Router    0.0.0.1     10.245.71.3     0x80000006  1174 0x2357  72
Router    0.0.0.1     10.245.71.4     0x80000004  574  0xc09c  40
Router    0.0.0.1     10.245.71.5     0x80000003  1706 0xf774  40
Router    0.0.0.1     10.245.71.11    0x80000005  1205 0x7f6b  56
InterArPfx 0.0.0.1    10.245.71.3     0x80000003  572  0x9f52  36
InterArPfx 0.0.0.2    10.245.71.3     0x80000003  430  0xb13d  36
InterArPfx 0.0.0.3    10.245.71.3     0x80000003  288  0x1da2  36
InterArPfx 0.0.0.4    10.245.71.3     0x80000003  273  0x99f0  44
InterArPfx 0.0.0.5    10.245.71.3     0x80000004  873  0xbf22  36
InterArPfx 0.0.0.6    10.245.71.3     0x80000002  1773 0x5c67  36
InterArPfx 0.0.0.7    10.245.71.3     0x80000002  1630 0xf088  44
InterArPfx 0.0.0.8    10.245.71.3     0x80000002  1488 0xd3d6  36
InterArPfx 0.0.0.9    10.245.71.3     0x80000002  1473 0xa3df  44
InterArPfx 0.0.0.1    10.245.71.5     0x80000004  293  0xd50f  36
InterArPfx 0.0.0.2    10.245.71.5     0x80000003  124  0xa547  36
InterArPfx 0.0.0.3    10.245.71.5     0x80000003  727  0x1cbb  36
InterArPfx 0.0.0.5    10.245.71.5     0x80000002  2695 0xdfcc  36
InterArPfx 0.0.0.6    10.245.71.5     0x80000002  2601 0xafd5  44
InterArPfx 0.0.0.7    10.245.71.5     0x80000002  2448 0x5f8a  36
InterArPfx 0.0.0.8    10.245.71.5     0x80000002  2302 0x427c  36
InterArPfx 0.0.0.9    10.245.71.5     0x80000002  2152 0xdcda  36
InterArPfx 0.0.0.10   10.245.71.5     0x80000002  2002 0x5929  44
InterArPfx 0.0.0.11   10.245.71.5     0x80000002  1852 0xc2af  44
InterArPfx 0.0.0.12   10.245.71.5     0x80000002  577  0x664  44
InterArPfx 0.0.0.1    10.245.71.11    0x80000003  275  0x6f7a  36
InterArPfx 0.0.0.2    10.245.71.11    0x80000003  140  0xa935  36
InterArPfx 0.0.0.3    10.245.71.11    0x80000003  5  0x427c  36
InterArPfx 0.0.0.4    10.245.71.11    0x80000002  2105 0xd89c  44
InterArPfx 0.0.0.5    10.245.71.11    0x80000002  1805 0x6b78  36
InterArPfx 0.0.0.6    10.245.71.11    0x80000002  1775 0xd6dd  36
InterArPfx 0.0.0.7    10.245.71.11    0x80000002  1640 0x532c  44
InterArPfx 0.0.0.8    10.245.71.11    0x80000002  1475 0xa9f7  36
InterArPfx 0.0.0.9    10.245.71.11    0x80000002  1340 0x7901  44
InterArRtr 0.0.0.1    10.245.71.5     0x80000002  434  0xc69c  32
IntraArPfx *0.0.0.1    10.245.71.1     0x80000005  274  0x3f8  76
IntraArPfx 0.0.0.1    10.245.71.3     0x80000005  1323 0x5cc1  64
IntraArPfx 0.0.0.1    10.245.71.4     0x80000004  275  0xba44  64
IntraArPfx 0.0.0.1    10.245.71.11    0x80000003  1505 0xd835  64

        OSPF AS SCOPE link state database
Type      ID          Adv Rtr          Seq      Age  Cksum  Len
Extern    0.0.0.1    10.245.71.4     0x80000003  874  0x8449  36
Extern    0.0.0.1    10.245.71.6     0x80000003  877  0xdc9e  36

        OSPF Link-Local link state database, interface at-2/0/0.0
Type      ID          Adv Rtr          Seq      Age  Cksum  Len
Link      *0.0.0.3    10.245.71.1     0x80000004  874  0x296b  56
Link      0.0.0.6    10.245.71.11    0x80000003  605  0xaf4f  56
    
```

```

user@router1> show ospf3 route
Prefix
10.245.71.3
  NH-interface at-2/0/0.0
10.245.71.4
  NH-interface at-2/0/0.0
10.245.71.5
  NH-interface at-2/0/0.0
10.245.71.6
  NH-interface at-2/0/0.0
10.245.71.11
  NH-interface at-2/0/0.0
9009:1::/64
  NH-interface at-2/0/0.0
9009:1::2/128
  NH-interface at-2/0/0.0
9009:2::/64
  NH-interface at-2/0/0.0
9009:2::2/128
  NH-interface at-2/0/0.0
9009:3::/64
  NH-interface at-2/0/0.0
9009:4::/64
  NH-interface at-2/0/0.0
9009:5::/64
  NH-interface at-2/0/0.0
9009:6::/64
  NH-interface at-2/0/0.0
9009:100::/64
  NH-interface at-2/0/0.0
9009:110::/64
  NH-interface ge-1/1/0.0
9009:120::/64
  NH-interface at-2/0/0.0
9009:130::/64
  NH-interface at-2/0/0.0
9009:140::/64
  NH-interface at-2/0/0.0
9009:150::/64
  NH-interface at-2/0/0.0
fee::10:255:71:1/128
  NH-interface lo0.0
fee::10:255:71:3/128
  NH-interface at-2/0/0.0
fee::10:255:71:4/128
  NH-interface at-2/0/0.0
fee::10:255:71:5/128
  NH-interface at-2/0/0.0
fee::10:255:71:6/128
  NH-interface at-2/0/0.0
fee::10:255:71:11/128
  NH-interface at-2/0/0.0

```

Prefix	Path type	Route type	NH type	Metric
10.245.71.3	Intra	Area BR	IP	13
10.245.71.4	Intra	AS BR	IP	25
10.245.71.5	Intra	Area BR	IP	14
10.245.71.6	Inter	AS BR	IP	34
10.245.71.11	Intra	Area BR	IP	12
9009:1::/64	Intra	Network	IP	25
9009:1::2/128	Intra	Network	IP	13
9009:2::/64	Intra	Network	IP	12
9009:2::2/128	Intra	Network	IP	12
9009:3::/64	Inter	Network	IP	13
9009:4::/64	Inter	Network	IP	22
9009:5::/64	Inter	Network	IP	14
9009:6::/64	Inter	Network	IP	34
9009:100::/64	Ext2	Network	IP	0
9009:110::/64	Intra	Network	IP	2
9009:120::/64	Inter	Network	IP	24
9009:130::/64	Inter	Network	IP	16
9009:140::/64	Inter	Network	IP	17
9009:150::/64	Ext2	Network	IP	0
fee::10:255:71:1/128	Intra	Network	IP	0
fee::10:255:71:3/128	Inter	Network	IP	13
fee::10:255:71:4/128	Intra	Network	IP	25
fee::10:255:71:5/128	Inter	Network	IP	14
fee::10:255:71:6/128	Inter	Network	IP	34
fee::10:255:71:11/128	Inter	Network	IP	12

```

user@router1> show interfaces terse
Interface      Admin Link Proto Local                               Remote
...
at-2/0/0       up    up
at-2/0/0.0     up    up    inet  10.19.2.1/24
                                   inet6 9009:2::1/64
                                   fe80::2a0:a5ff:fe3d:dbf/64
...
lo0            up    up
lo0.0          up    up    inet  10.245.71.1      --> 0/0
                                   127.0.0.1        --> 0/0
                                   inet6 fe80::2a0:a5ff:fe3d:dbf
                                   feee::10:255:71:1
...

```

### Router 2 Status

```

user@router2> show ospf3 interface
Interface      State      Area          DR-ID          BDR-ID
Nbrs
at-0/3/1.0     PtToPt    0.0.0.0       0.0.0.0        0.0.0.0
1
v1-10.245.71.3 PtToPt    0.0.0.0       0.0.0.0        0.0.0.0
1
at-0/3/0.0     PtToPt    0.0.0.1       0.0.0.0        0.0.0.0
0
fe-1/1/0.0    DR         0.0.0.1       10.245.71.11   10.245.71.5
1
lo0.0          DRother   0.0.0.1       0.0.0.0        0.0.0.0
0
so-0/2/0.0    PtToPt    0.0.0.1       0.0.0.0        0.0.0.0
1

user@router2> show ospf3 neighbor
ID             Interface      State      Pri  Dead
10.245.71.1    at-0/3/1.0     Full      128  36
  Neighbor-address fe80::2a0:a5ff:fe3d:dbf
10.245.71.3    v1-10.245.71.3 Full      0    33
  Neighbor-address 9009:3::2
10.245.71.5    fe-1/1/0.0     Full      128  36
  Neighbor-address fe80::290:69ff:fe98:909d
10.245.71.3    so-0/2/0.0     Full      128  33
  Neighbor-address fe80::201:afff:fe00:86ca

```

```
user@router2> show ospf3 database
```

```

      OSPF link state database, area 0.0.0.0
Type      ID                Adv Rtr          Seq      Age  Cksum  Len
Router    0.0.0.1            10.245.71.1    0x80000005  277  0x89ce  40
Router    0.0.0.1            10.245.71.3    0x80000006  875  0x2357  72
Router    0.0.0.1            10.245.71.4    0x80000004  275  0xc09c  40
Router    0.0.0.1            10.245.71.5    0x80000003  1407 0xf774  40
Router    *0.0.0.1          10.245.71.11   0x80000005  906  0x7f6b  56
InterArPfx 0.0.0.1          10.245.71.3    0x80000003  273  0x9f52  36
InterArPfx 0.0.0.2          10.245.71.3    0x80000003  131  0xb13d  36
InterArPfx 0.0.0.3          10.245.71.3    0x80000002  2225 0x1fa1  36
InterArPfx 0.0.0.4          10.245.71.3    0x80000002  2076 0x9bef  44
InterArPfx 0.0.0.5          10.245.71.3    0x80000004  574  0xbf22  36
InterArPfx 0.0.0.6          10.245.71.3    0x80000002  1474 0x5c67  36
InterArPfx 0.0.0.7          10.245.71.3    0x80000002  1331 0xf088  44
InterArPfx 0.0.0.8          10.245.71.3    0x80000002  1189 0xd3d6  36
InterArPfx 0.0.0.9          10.245.71.3    0x80000002  1174 0xa3df  44
InterArPfx 0.0.0.1          10.245.71.5    0x80000003  2923 0xd70e  36
InterArPfx 0.0.0.2          10.245.71.5    0x80000002  2537 0xa746  36
InterArPfx 0.0.0.3          10.245.71.5    0x80000003  428  0x1cbb  36
InterArPfx 0.0.0.5          10.245.71.5    0x80000002  2396 0xdfcc  36
InterArPfx 0.0.0.6          10.245.71.5    0x80000002  2302 0xafd5  44
InterArPfx 0.0.0.7          10.245.71.5    0x80000002  2149 0x5f8a  36
InterArPfx 0.0.0.8          10.245.71.5    0x80000002  2003 0x427c  36
InterArPfx 0.0.0.9          10.245.71.5    0x80000002  1853 0xdcda  36
InterArPfx 0.0.0.10         10.245.71.5    0x80000002  1703 0x5929  44
InterArPfx 0.0.0.11         10.245.71.5    0x80000002  1553 0xc2af  44
InterArPfx 0.0.0.12         10.245.71.5    0x80000002  278  0x664   44
InterArPfx *0.0.0.1          10.245.71.11   0x80000002  2108 0x7179  36
InterArPfx *0.0.0.2          10.245.71.11   0x80000002  2076 0xab34  36
InterArPfx *0.0.0.3          10.245.71.11   0x80000002  1941 0x447b  36
InterArPfx *0.0.0.4          10.245.71.11   0x80000002  1806 0xd89c  44
InterArPfx *0.0.0.5          10.245.71.11   0x80000002  1506 0x6b78  36
InterArPfx *0.0.0.6          10.245.71.11   0x80000002  1476 0xd6dd  36
InterArPfx *0.0.0.7          10.245.71.11   0x80000002  1341 0x532c  44
InterArPfx *0.0.0.8          10.245.71.11   0x80000002  1176 0xa9f7  36
InterArPfx *0.0.0.9          10.245.71.11   0x80000002  1041 0x7901  44
InterArRtr 0.0.0.1          10.245.71.5    0x80000002  135  0xc69c  32
IntraArPfx 0.0.0.1          10.245.71.1    0x80000004  877  0x5f7   76
IntraArPfx 0.0.0.1          10.245.71.3    0x80000005  1024 0x5cc1  64
IntraArPfx 0.0.0.1          10.245.71.4    0x80000003  1176 0xbc43  64
IntraArPfx *0.0.0.1          10.245.71.11   0x80000003  1206 0xd835  64

```

```

    OSPF link state database, area 0.0.0.1
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Router     0.0.0.1          10.245.71.3 0x80000006   574 0xad3f 56
Router     0.0.0.1          10.245.71.5 0x80000006   577 0xde02 56
Router     *0.0.0.1          10.245.71.11 0x80000007   576 0x8853 56
Network    *0.0.0.4          10.245.71.11 0x80000003   606 0xfd16 32
InterArPfx 0.0.0.1          10.245.71.3 0x80000002   1774 0xc722 36
InterArPfx 0.0.0.2          10.245.71.3 0x80000002   1624 0x7b2f 44
InterArPfx 0.0.0.3          10.245.71.3 0x80000002   874 0x877 44
InterArPfx 0.0.0.1          10.245.71.5 0x80000003   352 0x30a9 36
InterArPfx 0.0.0.3          10.245.71.5 0x80000002   205 0x6013 44
InterArPfx *0.0.0.1          10.245.71.11 0x80000003   141 0xa33c 36
InterArPfx *0.0.0.2          10.245.71.11 0x80000003    6 0x5749 44
InterArPfx *0.0.0.3          10.245.71.11 0x80000002   1776 0x6f5e 36
InterArPfx *0.0.0.4          10.245.71.11 0x80000002   1641 0x7ff9 44
InterArRtr 0.0.0.1          10.245.71.3 0x80000002   724 0x6609 32
InterArRtr 0.0.0.1          10.245.71.5 0x80000002    64 0xc69c 32
IntraArPfx 0.0.0.1          10.245.71.3 0x80000004   424 0x4a98 88
IntraArPfx 0.0.0.1          10.245.71.5 0x80000004   502 0x3691 76
IntraArPfx *0.0.0.1          10.245.71.11 0x80000005   441 0x2c5 76
IntraArPfx *0.0.0.5          10.245.71.11 0x80000003   741 0xfa59 44
  OSPF AS SCOPE link state database
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Extern     0.0.0.1          10.245.71.4 0x80000003   575 0x8449 36
Extern     0.0.0.1          10.245.71.6 0x80000003   578 0xdc9e 36

  OSPF Link-Local link state database, interface at-0/3/1.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       0.0.0.3          10.245.71.1 0x80000004   577 0x296b 56
Link       *0.0.0.6          10.245.71.11 0x80000003   306 0xaf4f 56

  OSPF Link-Local link state database, interface fe-1/1/0.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       0.0.0.5          10.245.71.5 0x80000003   727 0x40dc 56
Link       *0.0.0.4          10.245.71.11 0x80000004   876 0x73ab 56

  OSPF Link-Local link state database, interface so-0/2/0.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       0.0.0.4          10.245.71.3 0x80000003   2074 0x9d6 56
Link       *0.0.0.3          10.245.71.11 0x80000004   276 0xed12 56

```

```
user@router2> show ospf3 route
```

Prefix	Path type	Route type	NH type	Metric
10.245.71.1 NH-interface at-0/3/1.0	Intra	Router	IP	12
10.245.71.3 NH-interface so-0/2/0.0	Intra	Area BR	IP	1
10.245.71.4 NH-interface so-0/2/0.0	Intra	AS BR	IP	13
10.245.71.5 NH-interface so-0/2/0.0	Intra	Area BR	IP	2
10.245.71.6 NH-interface so-0/2/0.0	Inter	AS BR	IP	22
10.245.71.11;0.0.0.4 NH-interface fe-1/1/0.0	Intra	Transit	IP	10
9009:1::/64 NH-interface so-0/2/0.0	Intra	Network	IP	13
9009:1::2/128 NH-interface so-0/2/0.0	Intra	Network	IP	1
9009:2::/64 NH-interface at-0/3/1.0	Intra	Network	IP	12
9009:2::2/128 NH-interface at-0/3/1.0	Intra	Network	IP	0
9009:3::/64 NH-interface so-0/2/0.0	Intra	Network	IP	1
9009:4::/64 NH-interface fe-1/1/0.0	Intra	Network	IP	10
9009:5::/64 NH-interface so-0/2/0.0	Intra	Network	IP	2
9009:6::/64 NH-interface so-0/2/0.0	Inter	Network	IP	22
9009:100::/64 NH-interface so-0/2/0.0	Ext2	Network	IP	0
9009:110::/64 NH-interface at-0/3/1.0	Intra	Network	IP	14
9009:120::/64 NH-interface at-0/3/0.0	Intra	Network	IP	12
9009:130::/64 NH-interface so-0/2/0.0	Intra	Network	IP	4
9009:140::/64 NH-interface so-0/2/0.0	Intra	Network	IP	5
9009:150::/64 NH-interface so-0/2/0.0	Ext2	Network	IP	0
fee::10:255:71:1/128 NH-interface at-0/3/1.0	Intra	Network	IP	12
fee::10:255:71:3/128 NH-interface so-0/2/0.0	Intra	Network	IP	1
fee::10:255:71:4/128 NH-interface so-0/2/0.0	Intra	Network	IP	13
fee::10:255:71:5/128 NH-interface so-0/2/0.0	Intra	Network	IP	2
fee::10:255:71:6/128 NH-interface so-0/2/0.0	Inter	Network	IP	22
fee::10:255:71:11/128 NH-interface lo0.0	Intra	Network	IP	0

```

user@router2> show interfaces terse
Interface      Admin Link Proto Local                               Remote
...
so-0/2/0       up    up
so-0/2/0.0     up    up    inet  10.19.3.1/24
                               inet6 9009:3::1/64
                               fe80::2a0:a5ff:fe3d:56/64
...
at-0/3/1       up    up
at-0/3/1.0     up    up    inet  10.19.2.2/24
                               inet6 9009:2::2/64
                               fe80::2a0:a5ff:fe3d:56/64
...
fe-1/1/0       up    up
fe-1/1/0.0     up    up    inet  10.19.4.1/24
                               inet6 9009:4::1/64
                               fe80::290:69ff:fea0:809d/64
...
lo0            up    up
lo0.0          up    up    inet  10.245.71.11    --> 0/0
                               127.0.0.1       --> 0/0
                               inet6 fe80::2a0:a5ff:fe3d:56
                               feee::10:255:71:11
...

```

### Router 3 Status

```

user@router3> show ospf3 interface
Interface      State      Area          DR-ID          BDR-ID
Nbrs
so-0/3/2.0     PtToPt    0.0.0.0       0.0.0.0       0.0.0.0
1
v1-10.245.71.11 PtToPt    0.0.0.0       0.0.0.0       0.0.0.0
1
v1-10.245.71.5 PtToPt    0.0.0.0       0.0.0.0       0.0.0.0
1
at-1/2/0.0     PtToPt    0.0.0.1       0.0.0.0       0.0.0.0
0
lo0.0          DRother   0.0.0.1       0.0.0.0       0.0.0.0
0
so-0/3/0.0     PtToPt    0.0.0.1       0.0.0.0       0.0.0.0
1
t1-0/2/1.0     PtToPt    0.0.0.1       0.0.0.0       0.0.0.0
1

```

```

user@router3> show ospf3 neighbor
ID             Interface      State  Pri  Dead
10.245.71.4    so-0/3/2.0    Full   128  38
  Neighbor-address fe80::201:a5ff:fe03:6fa1
10.245.71.11  v1-10.245.71.11 Full    0   36
  Neighbor-address 9009:3::1
10.245.71.5    v1-10.245.71.5 Full    0   35
  Neighbor-address 9009:5::2
10.245.71.11  so-0/3/0.0    Full   128  37
  Neighbor-address fe80::2a0:a5ff:fe3d:56
10.245.71.5    t1-0/2/1.0    Full   128  39
  Neighbor-address fe80::2a0:a5ff:fe3d:b63

```

```
user@router3> show ospf3 database
```

```

      OSPF link state database, area 0.0.0.0
Type      ID                Adv Rtr          Seq      Age  Cksum  Len
Router    0.0.0.1             10.245.71.1     0x80000005  94  0x89ce  40
Router    *0.0.0.1            10.245.71.3     0x80000006  690 0x2357  72
Router    0.0.0.1             10.245.71.4     0x80000004  90  0xc09c  40
Router    0.0.0.1             10.245.71.5     0x80000003  1222 0xf774  40
Router    0.0.0.1             10.245.71.11    0x80000005  723  0x7f6b  56
InterArPfx *0.0.0.1            10.245.71.3     0x80000003  88  0x9f52  36
InterArPfx *0.0.0.2            10.245.71.3     0x80000002  2188 0xb33c  36
InterArPfx *0.0.0.3            10.245.71.3     0x80000002  2040 0x1fa1  36
InterArPfx *0.0.0.4            10.245.71.3     0x80000002  1891 0x9bef  44
InterArPfx *0.0.0.5            10.245.71.3     0x80000004  388  0xbf22  36
InterArPfx *0.0.0.6            10.245.71.3     0x80000002  1288 0x5c67  36
InterArPfx *0.0.0.7            10.245.71.3     0x80000002  1146 0xf088  44
InterArPfx *0.0.0.8            10.245.71.3     0x80000002  1003 0xd3d6  36
InterArPfx *0.0.0.9            10.245.71.3     0x80000002  988  0xa3df  44
InterArPfx 0.0.0.1             10.245.71.5     0x80000003  2738 0xd70e  36
InterArPfx 0.0.0.2             10.245.71.5     0x80000002  2352 0xa746  36
InterArPfx 0.0.0.3             10.245.71.5     0x80000003  243  0x1cbb  36
InterArPfx 0.0.0.5             10.245.71.5     0x80000002  2211 0xdfcc  36
InterArPfx 0.0.0.6             10.245.71.5     0x80000002  2117 0xafd5  44
InterArPfx 0.0.0.7             10.245.71.5     0x80000002  1964 0x5f8a  36
InterArPfx 0.0.0.8             10.245.71.5     0x80000002  1818 0x427c  36
InterArPfx 0.0.0.9             10.245.71.5     0x80000002  1668 0xdcda  36
InterArPfx 0.0.0.10            10.245.71.5     0x80000002  1518 0x5929  44
InterArPfx 0.0.0.11            10.245.71.5     0x80000002  1368 0xc2af  44
InterArPfx 0.0.0.12            10.245.71.5     0x80000002  93  0x664  44
InterArPfx 0.0.0.1             10.245.71.11    0x80000002  1925 0x7179  36
InterArPfx 0.0.0.2             10.245.71.11    0x80000002  1893 0xab34  36
InterArPfx 0.0.0.3             10.245.71.11    0x80000002  1758 0x447b  36
InterArPfx 0.0.0.4             10.245.71.11    0x80000002  1623 0xd89c  44
InterArPfx 0.0.0.5             10.245.71.11    0x80000002  1323 0x6b78  36
InterArPfx 0.0.0.6             10.245.71.11    0x80000002  1293 0xd6dd  36
InterArPfx 0.0.0.7             10.245.71.11    0x80000002  1158 0x532c  44
InterArPfx 0.0.0.8             10.245.71.11    0x80000002  993  0xa9f7  36
InterArPfx 0.0.0.9             10.245.71.11    0x80000002  858  0x7901  44
InterArRtr 0.0.0.1             10.245.71.5     0x80000001  2743 0xc89b  32
IntraArPfx 0.0.0.1             10.245.71.1     0x80000004  694  0x5f7  76
IntraArPfx *0.0.0.1            10.245.71.3     0x80000005  839  0x5cc1  64
IntraArPfx 0.0.0.1             10.245.71.4     0x80000003  990  0xbc43  64
IntraArPfx 0.0.0.1             10.245.71.11    0x80000003  1023 0xd835  64

```

```

    OSPF link state database, area 0.0.0.1
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Router     *0.0.0.1        10.245.71.3 0x80000006   389 0xad3f 56
Router     0.0.0.1          10.245.71.5 0x80000006   393 0xde02 56
Router     0.0.0.1          10.245.71.11 0x80000007   393 0x8853 56
Network    0.0.0.4          10.245.71.11 0x80000003   423 0xfd16 32
InterArPfx *0.0.0.1        10.245.71.3 0x80000002   1588 0xc722 36
InterArPfx *0.0.0.2        10.245.71.3 0x80000002   1438 0x7b2f 44
InterArPfx *0.0.0.3        10.245.71.3 0x80000002   688 0x877 44
InterArPfx 0.0.0.1          10.245.71.5 0x80000003   168 0x30a9 36
InterArPfx 0.0.0.3        10.245.71.5 0x80000002   21 0x6013 44
InterArPfx 0.0.0.1        10.245.71.11 0x80000002   2193 0xa53b 36
InterArPfx 0.0.0.2        10.245.71.11 0x80000002   2059 0x5948 44
InterArPfx 0.0.0.3        10.245.71.11 0x80000002   1593 0x6f5e 36
InterArPfx 0.0.0.4        10.245.71.11 0x80000002   1458 0x7ff9 44
InterArRtr *0.0.0.1        10.245.71.3 0x80000002   538 0x6609 32
InterArRtr 0.0.0.1          10.245.71.5 0x80000001   2743 0xc89b 32
IntraArPfx *0.0.0.1        10.245.71.3 0x80000004   238 0x4a98 88
IntraArPfx 0.0.0.1          10.245.71.5 0x80000004   318 0x3691 76
IntraArPfx 0.0.0.1        10.245.71.11 0x80000005   258 0x2c5 76
IntraArPfx 0.0.0.5        10.245.71.11 0x80000003   558 0xfa59 44
  OSPF AS SCOPE link state database
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Extern     0.0.0.1        10.245.71.4 0x80000003   390 0x8449 36
Extern     0.0.0.1        10.245.71.6 0x80000003   394 0xdc9e 36

    OSPF Link-Local link state database, interface so-0/3/0.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       *0.0.0.4        10.245.71.3 0x80000003   1888 0x9d6 56
Link       0.0.0.3        10.245.71.11 0x80000004   93 0xed12 56

    OSPF Link-Local link state database, interface so-0/3/2.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       *0.0.0.6        10.245.71.3 0x80000003   1589 0xb02f 56
Link       0.0.0.2        10.245.71.4 0x80000003   690 0xa07f 56

    OSPF Link-Local link state database, interface t1-0/2/1.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       *0.0.0.5        10.245.71.3 0x80000003   1738 0x4399 56
Link       0.0.0.3        10.245.71.5 0x80000002   2423 0x618c 56

```

```

user@router3> show ospf3 route
Prefix
10.245.71.1
  NH-interface (null), NH-addr feee::10:255:71:11
10.245.71.4
  NH-interface so-0/3/2.0
10.245.71.5
  NH-interface t1-0/2/1.0
10.245.71.6
  NH-interface t1-0/2/1.0
10.245.71.11
  NH-interface so-0/3/0.0
10.245.71.11;0.0.0.4
  NH-interface so-0/3/0.0
  NH-interface t1-0/2/1.0
9009:1::/64
  NH-interface so-0/3/2.0
9009:1::2/128
  NH-interface so-0/3/2.0
9009:2::/64
  NH-interface so-0/3/0.0
9009:2::2/128
  NH-interface so-0/3/0.0
9009:3::/64
  NH-interface so-0/3/0.0
9009:4::/64
  NH-interface so-0/3/0.0
  NH-interface t1-0/2/1.0
9009:5::/64
  NH-interface t1-0/2/1.0
9009:6::/64
  NH-interface t1-0/2/1.0
9009:100::/64
  NH-interface so-0/3/2.0
9009:110::/64
  NH-interface so-0/3/0.0
9009:120::/64
  NH-interface so-0/3/0.0
9009:130::/64
  NH-interface at-1/2/0.0
9009:140::/64
  NH-interface t1-0/2/1.0
9009:150::/64
  NH-interface t1-0/2/1.0
feee::10:255:71:1/128
  NH-interface so-0/3/0.0
feee::10:255:71:3/128
  NH-interface lo0.0
feee::10:255:71:4/128
  NH-interface so-0/3/2.0
feee::10:255:71:5/128
  NH-interface t1-0/2/1.0
feee::10:255:71:6/128
  NH-interface t1-0/2/1.0
feee::10:255:71:11/128
  NH-interface so-0/3/0.0

```

Prefix	Path type	Route type	NH type	Metric
10.245.71.1	Intra	Router	IP	13
10.245.71.4	Intra	AS BR	IP	12
10.245.71.5	Intra	Area BR	IP	1
10.245.71.6	Inter	AS BR	IP	21
10.245.71.11	Intra	Area BR	IP	1
10.245.71.11;0.0.0.4	Intra	Transit	IP	11
9009:1::/64	Intra	Network	IP	12
9009:1::2/128	Intra	Network	IP	0
9009:2::/64	Intra	Network	IP	13
9009:2::2/128	Intra	Network	IP	1
9009:3::/64	Intra	Network	IP	1
9009:4::/64	Intra	Network	IP	11
9009:5::/64	Intra	Network	IP	1
9009:6::/64	Inter	Network	IP	21
9009:100::/64	Ext2	Network	IP	0
9009:110::/64	Intra	Network	IP	15
9009:120::/64	Intra	Network	IP	13
9009:130::/64	Intra	Network	IP	3
9009:140::/64	Intra	Network	IP	4
9009:150::/64	Ext2	Network	IP	0
feee::10:255:71:1/128	Intra	Network	IP	13
feee::10:255:71:3/128	Intra	Network	IP	0
feee::10:255:71:4/128	Intra	Network	IP	12
feee::10:255:71:5/128	Intra	Network	IP	1
feee::10:255:71:6/128	Inter	Network	IP	21
feee::10:255:71:11/128	Intra	Network	IP	1

```

user@router3> show interfaces terse
Interface      Admin Link Proto Local                               Remote
...
t1-0/2/1.0    up    up    inet 10.19.5.1/24
              inet6 9009:5::1/64
              fe80::201:afff:fe00:86ca/64
...
so-0/3/0      up    up
so-0/3/0.0    up    up    inet 10.19.3.2/24
              inet6 9009:3::2/64
              fe80::201:afff:fe00:86ca/64
so-0/3/1      up    up
so-0/3/2      up    up
so-0/3/2.0    up    up    inet 10.19.1.2/24
              inet6 9009:1::2/64
              fe80::201:afff:fe00:86ca/64
...
lo0           up    up
lo0.0        up    up    inet 10.245.71.3      --> 0/0
              127.0.0.1           --> 0/0
              inet6 fe80::201:afff:fe00:86ca
              feee::10:255:71:3
...

```

To provide a comparison between OSPFv3 show commands and legacy OSPFv2 show commands, the following is some sample output of the OSPFv2 connection between Routers 0 and 3:

```

user@router3> show ospf interface
Interface      State      Area          DR ID          BDR ID
Nbrs
lo0.0          DRother   0.0.0.0       0.0.0.0       0.0.0.0
0
lo0.0          DRother   0.0.0.0       0.0.0.0       0.0.0.0
0
so-0/3/2.0    PtToPt    0.0.0.0       0.0.0.0       0.0.0.0
1

user@router3> show ospf neighbor
Address        Interface      State      ID          Pri  Dead
10.19.1.1      so-0/3/2.0    Full      10.245.71.4 128  38

user@router3> show ospf database

OSPF link state database, area 0.0.0.0
Type  ID          Adv Rtr      Seq          Age  Opt  Cksum  Len
Router *10.245.71.3  10.245.71.3  0x80000002  67  0x2  0x5c45  60
Router  10.245.71.4  10.245.71.4  0x80000002  74  0x2  0x267a  60

user@router3> show ospf route
Prefix          Path  Route      NH  Metric  NextHop      Nexthop
                Type  Type       Type
10.245.71.4     Intra Router    IP  1       so-0/3/2.0
10.19.1.0/24    Intra Network IP  1       so-0/3/2.0
10.245.71.3/32  Intra Network IP  0       lo0.0
10.245.71.4/32  Intra Network IP  1       so-0/3/2.0

```

**Router 4 Status**

```
user@router4> show ospf3 interface
```

Interface	State	Area	DR-ID	BDR-ID
Nbrs				
v1-10.245.71.3	PtToPt	0.0.0.0	0.0.0.0	0.0.0.0
1				
at-0/3/0.0	PtToPt	0.0.0.1	0.0.0.0	0.0.0.0
0				
fe-1/1/0.0	BDR	0.0.0.1	10.245.71.11	10.245.71.5
1				
lo0.0	DRother	0.0.0.1	0.0.0.0	0.0.0.0
0				
t1-0/2/1.0	PtToPt	0.0.0.1	0.0.0.0	0.0.0.0
1				
fe-0/0/0.0	BDR	0.0.0.2	10.245.71.6	10.245.71.5
1				

```
user@router4> show ospf3 neighbor
```

ID	Interface	State	Pri	Dead
10.245.71.3	v1-10.245.71.3	Full	0	32
Neighbor-address 9009:5::1				
10.245.71.11	fe-1/1/0.0	Full	128	37
Neighbor-address fe80::290:69ff:fea0:809d				
10.245.71.3	t1-0/2/1.0	Full	128	32
Neighbor-address fe80::201:afff:fe00:86ca				
10.245.71.6	fe-0/0/0.0	Full	128	35
Neighbor-address fe80::290:69ff:fe94:c400				

```
user@router4> show ospf3 database
```

```

      OSPF link state database, area 0.0.0.0
Type      ID          Adv Rtr      Seq      Age  Cksum  Len
Router    0.0.0.1      10.245.71.1 0x80000004 894  0x8bcd  40
Router    0.0.0.1      10.245.71.3 0x80000006 590  0x2357  72
Router    0.0.0.1      10.245.71.4 0x80000003 1190 0xc29b  40
Router    *0.0.0.1     10.245.71.5 0x80000003 1120 0xf774  40
Router    0.0.0.1      10.245.71.11 0x80000005 623  0x7f6b  56
InterArPfx 0.0.0.1     10.245.71.3 0x80000002 2114 0xa151  36
InterArPfx 0.0.0.2     10.245.71.3 0x80000002 2089 0xb33c  36
InterArPfx 0.0.0.3     10.245.71.3 0x80000002 1940 0x1fa1  36
InterArPfx 0.0.0.4     10.245.71.3 0x80000002 1791 0x9bef  44
InterArPfx 0.0.0.5     10.245.71.3 0x80000004 289  0xbf22  36
InterArPfx 0.0.0.6     10.245.71.3 0x80000002 1188 0x5c67  36
InterArPfx 0.0.0.7     10.245.71.3 0x80000002 1046 0xf088  44
InterArPfx 0.0.0.8     10.245.71.3 0x80000002 904  0xd3d6  36
InterArPfx 0.0.0.9     10.245.71.3 0x80000002 888  0xa3df  44
InterArPfx *0.0.0.1     10.245.71.5 0x80000003 2636 0xd70e  36
InterArPfx *0.0.0.2     10.245.71.5 0x80000002 2250 0xa746  36
InterArPfx *0.0.0.3     10.245.71.5 0x80000003 141  0x1cbb  36
InterArPfx *0.0.0.5     10.245.71.5 0x80000002 2109 0xdfcc  36
InterArPfx *0.0.0.6     10.245.71.5 0x80000002 2015 0xafd5  44
InterArPfx *0.0.0.7     10.245.71.5 0x80000002 1862 0x5f8a  36
InterArPfx *0.0.0.8     10.245.71.5 0x80000002 1716 0x427c  36
InterArPfx *0.0.0.9     10.245.71.5 0x80000002 1566 0xdcda  36
InterArPfx *0.0.0.10    10.245.71.5 0x80000002 1416 0x5929  44
InterArPfx *0.0.0.11    10.245.71.5 0x80000002 1266 0xc2af  44
InterArPfx *0.0.0.12    10.245.71.5 0x80000001 2641 0x863  44
InterArPfx 0.0.0.1     10.245.71.11 0x80000002 1825 0x7179  36
InterArPfx 0.0.0.2     10.245.71.11 0x80000002 1793 0xab34  36
InterArPfx 0.0.0.3     10.245.71.11 0x80000002 1658 0x447b  36
InterArPfx 0.0.0.4     10.245.71.11 0x80000002 1523 0xd89c  44
InterArPfx 0.0.0.5     10.245.71.11 0x80000002 1223 0x6b78  36
InterArPfx 0.0.0.6     10.245.71.11 0x80000002 1193 0xd6dd  36
InterArPfx 0.0.0.7     10.245.71.11 0x80000002 1058 0x532c  44
InterArPfx 0.0.0.8     10.245.71.11 0x80000002 893  0xa9f7  36
InterArPfx 0.0.0.9     10.245.71.11 0x80000002 758  0x7901  44
InterArRtr *0.0.0.1     10.245.71.5 0x80000001 2641 0xc89b  32
IntraArPfx 0.0.0.1     10.245.71.1 0x80000004 594  0x5f7  76
IntraArPfx 0.0.0.1     10.245.71.3 0x80000005 739  0x5cc1  64
IntraArPfx 0.0.0.1     10.245.71.4 0x80000003 890  0xbc43  64
IntraArPfx 0.0.0.1     10.245.71.11 0x80000003 923  0xd835  64

```

```

      OSPF link state database, area 0.0.0.1
Type      ID          Adv Rtr      Seq      Age  Cksum  Len
Router    0.0.0.1      10.245.71.3 0x80000006 289  0xad3f  56
Router    *0.0.0.1     10.245.71.5 0x80000006 291  0xde02  56
Router    0.0.0.1      10.245.71.11 0x80000007 292  0x8853  56
Network  0.0.0.4     10.245.71.11 0x80000003 322  0xfd16  32

```

InterArPfx	0.0.0.1	10.245.71.3	0x80000002	1488	0xc722	36
InterArPfx	0.0.0.2	10.245.71.3	0x80000002	1339	0x7b2f	44
InterArPfx	0.0.0.3	10.245.71.3	0x80000002	589	0x877	44
InterArPfx	*0.0.0.1	10.245.71.5	0x80000003	66	0x30a9	36
InterArPfx	*0.0.0.3	10.245.71.5	0x80000001	2641	0x6212	44
InterArPfx	0.0.0.1	10.245.71.11	0x80000002	2092	0xa53b	36
InterArPfx	0.0.0.2	10.245.71.11	0x80000002	1958	0x5948	44
InterArPfx	0.0.0.3	10.245.71.11	0x80000002	1492	0x6f5e	36
InterArPfx	0.0.0.4	10.245.71.11	0x80000002	1357	0x7ff9	44
InterArRtr	0.0.0.1	10.245.71.3	0x80000002	439	0x6609	32
InterArRtr	*0.0.0.1	10.245.71.5	0x80000001	2641	0xc89b	32
IntraArPfx	0.0.0.1	10.245.71.3	0x80000004	139	0x4a98	88
IntraArPfx	*0.0.0.1	10.245.71.5	0x80000004	216	0x3691	76
IntraArPfx	0.0.0.1	10.245.71.11	0x80000005	157	0x2c5	76
IntraArPfx	0.0.0.5	10.245.71.11	0x80000003	457	0xfa59	44

## OSPF link state database, area 0.0.0.2

Type	ID	Adv Rtr	Seq	Age	Cksum	Len
Router	*0.0.0.1	10.245.71.5	0x80000004	366	0x252e	40
Router	0.0.0.1	10.245.71.6	0x80000004	1492	0x64d	40
Network	0.0.0.2	10.245.71.6	0x80000003	892	0xfd22	32
InterArPfx	*0.0.0.1	10.245.71.5	0x80000003	2636	0xd70e	36
InterArPfx	*0.0.0.2	10.245.71.5	0x80000002	2179	0xa746	36
InterArPfx	*0.0.0.3	10.245.71.5	0x80000002	2091	0xf3ba	36
InterArPfx	*0.0.0.4	10.245.71.5	0x80000002	1938	0xc3c3	44
InterArPfx	*0.0.0.5	10.245.71.5	0x80000002	1791	0x7378	36
InterArPfx	*0.0.0.6	10.245.71.5	0x80000002	1641	0x566a	36
InterArPfx	*0.0.0.7	10.245.71.5	0x80000002	1491	0xf0c8	36
InterArPfx	*0.0.0.8	10.245.71.5	0x80000002	1341	0x6d17	44
InterArPfx	*0.0.0.9	10.245.71.5	0x80000002	1191	0xd69d	44
InterArPfx	*0.0.0.10	10.245.71.5	0x80000002	1049	0x6776	36
InterArPfx	*0.0.0.11	10.245.71.5	0x80000002	979	0x1b83	44
InterArPfx	*0.0.0.12	10.245.71.5	0x80000002	908	0x6772	36
InterArPfx	*0.0.0.13	10.245.71.5	0x80000002	891	0x1b7f	44
InterArPfx	*0.0.0.14	10.245.71.5	0x80000002	815	0x3195	36
InterArPfx	*0.0.0.15	10.245.71.5	0x80000002	738	0x4131	44
InterArPfx	*0.0.0.16	10.245.71.5	0x80000002	662	0x7fef	44
InterArRtr	*0.0.0.1	10.245.71.5	0x80000002	591	0x6408	32
IntraArPfx	0.0.0.1	10.245.71.6	0x80000005	1192	0x42b9	52
IntraArPfx	0.0.0.3	10.245.71.6	0x80000003	592	0xfe61	44

## OSPF AS SCOPE link state database

Type	ID	Adv Rtr	Seq	Age	Cksum	Len
Extern	0.0.0.1	10.245.71.4	0x80000003	290	0x8449	36
Extern	0.0.0.1	10.245.71.6	0x80000003	292	0xdc9e	36

## OSPF Link-Local link state database, interface fe-0/0/0.0

Type	ID	Adv Rtr	Seq	Age	Cksum	Len
Link	*0.0.0.4	10.245.71.5	0x80000003	516	0x3b6	56
Link	0.0.0.2	10.245.71.6	0x80000004	1792	0x782	56

## OSPF Link-Local link state database, interface fe-1/1/0.0

Type	ID	Adv Rtr	Seq	Age	Cksum	Len
Link	*0.0.0.5	10.245.71.5	0x80000003	441	0x40dc	56
Link	0.0.0.4	10.245.71.11	0x80000004	592	0x73ab	56

## OSPF Link-Local link state database, interface t1-0/2/1.0

Type	ID	Adv Rtr	Seq	Age	Cksum	Len
Link	0.0.0.5	10.245.71.3	0x80000003	1639	0x4399	56
Link	*0.0.0.3	10.245.71.5	0x80000002	2321	0x618c	56

```

user@router4> show ospf3 route
Prefix
10.245.71.1
  NH-interface (null), NH-addr feee::10:255:71:3
10.245.71.3
  NH-interface t1-0/2/1.0
10.245.71.4
  NH-interface t1-0/2/1.0
10.245.71.6
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe94:c400
10.245.71.6;0.0.0.2
  NH-interface fe-0/0/0.0
10.245.71.11
  NH-interface t1-0/2/1.0
10.245.71.11;0.0.0.4
  NH-interface fe-1/1/0.0
9009:1::/64
  NH-interface t1-0/2/1.0
9009:1::2/128
  NH-interface t1-0/2/1.0
9009:2::/64
  NH-interface t1-0/2/1.0
9009:2::2/128
  NH-interface t1-0/2/1.0
9009:3::/64
  NH-interface t1-0/2/1.0
9009:4::/64
  NH-interface fe-1/1/0.0
9009:5::/64
  NH-interface t1-0/2/1.0
9009:6::/64
  NH-interface fe-0/0/0.0
9009:100::/64
  NH-interface t1-0/2/1.0
9009:110::/64
  NH-interface t1-0/2/1.0
9009:120::/64
  NH-interface t1-0/2/1.0
9009:130::/64
  NH-interface t1-0/2/1.0
9009:140::/64
  NH-interface at-0/3/0.0
9009:150::/64
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe94:c400
feee::10:255:71:1/128
  NH-interface t1-0/2/1.0
feee::10:255:71:3/128
  NH-interface t1-0/2/1.0
feee::10:255:71:4/128
  NH-interface t1-0/2/1.0
feee::10:255:71:5/128
  NH-interface lo0.0
feee::10:255:71:6/128
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe94:c400
feee::10:255:71:11/128
  NH-interface t1-0/2/1.0

```

Prefix	Path type	Route type	NH type	Metric
10.245.71.1	Intra	Router	IP	14
10.245.71.3	Intra	Area BR	IP	1
10.245.71.4	Intra	AS BR	IP	13
10.245.71.6	Intra	AS BR	IP	20
10.245.71.6;0.0.0.2	Intra	Transit	IP	20
10.245.71.11	Intra	Area BR	IP	2
10.245.71.11;0.0.0.4	Intra	Transit	IP	10
9009:1::/64	Intra	Network	IP	13
9009:1::2/128	Intra	Network	IP	1
9009:2::/64	Intra	Network	IP	14
9009:2::2/128	Intra	Network	IP	2
9009:3::/64	Intra	Network	IP	2
9009:4::/64	Intra	Network	IP	10
9009:5::/64	Intra	Network	IP	1
9009:6::/64	Intra	Network	IP	20
9009:100::/64	Ext2	Network	IP	0
9009:110::/64	Intra	Network	IP	16
9009:120::/64	Intra	Network	IP	14
9009:130::/64	Intra	Network	IP	4
9009:140::/64	Intra	Network	IP	3
9009:150::/64	Ext2	Network	IP	0
feee::10:255:71:1/128	Intra	Network	IP	14
feee::10:255:71:3/128	Intra	Network	IP	1
feee::10:255:71:4/128	Intra	Network	IP	13
feee::10:255:71:5/128	Intra	Network	IP	0
feee::10:255:71:6/128	Intra	Network	IP	20
feee::10:255:71:11/128	Intra	Network	IP	2

```

user@router4> show interfaces terse
Interface      Admin Link Proto Local                               Remote
fe-0/0/0       up    up
fe-0/0/0.0     up    up    inet 10.19.6.1/24
                                   inet6 9009:6::1/64
                                   fe80::290:69ff:fe98:9000/64
...
t1-0/2/1       up    up
t1-0/2/1.0     up    up    inet 10.19.5.2/24
                                   inet6 9009:5::2/64
                                   fe80::2a0:a5ff:fe3d:b63/64
...
fe-1/1/0       up    up
fe-1/1/0.0     up    up    inet 10.19.4.2/24
                                   inet6 9009:4::2/64
                                   fe80::290:69ff:fe98:909d/64
...
lo0            up    up
lo0.0          up    up    inet 10.245.71.5      --> 0/0
                                   127.0.0.1          --> 0/0
                                   inet6 fe80::2a0:a5ff:fe3d:b63
                                   feee::10:255:71:5
...

```

### Router 5 Status

```

user@router5> show ospf3 interface
Interface      State      Area          DR-ID          BDR-ID
Nbrs
fe-0/0/0.0     DR         0.0.0.2       10.245.71.6   10.245.71.5
1
lo0.0         DRother   0.0.0.2       0.0.0.0       0.0.0.0
0

user@router5> show ospf3 neighbor
ID             Interface          State      Pri  Dead
10.245.71.5   fe-0/0/0.0        Full      128  33
Neighbor-address fe80::290:69ff:fe98:9000

```

```
user@router5> show ospf3 database
```

```

    OSPF link state database, area 0.0.0.2
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Router     0.0.0.1       10.245.71.5 0x80000003   2237 0x272d  40
Router     *0.0.0.1      10.245.71.6 0x80000004   1082 0x64d   40
Network    *0.0.0.2      10.245.71.6 0x80000003   482  0xfd22  32
InterArPfx 0.0.0.1       10.245.71.5 0x80000003   2228 0xd70e  36
InterArPfx 0.0.0.2       10.245.71.5 0x80000002   1771 0xa746  36
InterArPfx 0.0.0.3       10.245.71.5 0x80000002   1683 0xf3ba  36
InterArPfx 0.0.0.4       10.245.71.5 0x80000002   1530 0xc3c3  44
InterArPfx 0.0.0.5       10.245.71.5 0x80000002   1383 0x7378  36
InterArPfx 0.0.0.6       10.245.71.5 0x80000002   1233 0x566a  36
InterArPfx 0.0.0.7       10.245.71.5 0x80000002   1083 0xf0c8  36
InterArPfx 0.0.0.8       10.245.71.5 0x80000002   933  0x6d17  44
InterArPfx 0.0.0.9       10.245.71.5 0x80000002   783  0xd69d  44
InterArPfx 0.0.0.10      10.245.71.5 0x80000002   641  0x6776  36
InterArPfx 0.0.0.11      10.245.71.5 0x80000002   570  0x1b83  44
InterArPfx 0.0.0.12      10.245.71.5 0x80000002   500  0x6772  36
InterArPfx 0.0.0.13      10.245.71.5 0x80000002   483  0x1b7f  44
InterArPfx 0.0.0.14      10.245.71.5 0x80000002   406  0x3195  36
InterArPfx 0.0.0.15      10.245.71.5 0x80000002   330  0x4131  44
InterArPfx 0.0.0.16      10.245.71.5 0x80000002   253  0x7fef  44
InterArRtr 0.0.0.1       10.245.71.5 0x80000002   183  0x6408  32
IntraArPfx *0.0.0.1      10.245.71.6 0x80000005   782  0x42b9  52
IntraArPfx *0.0.0.3      10.245.71.6 0x80000003   182  0xfe61  44

    OSPF AS SCOPE link state database
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Extern     0.0.0.1     10.245.71.4 0x80000002   1082 0x8648  36
Extern     *0.0.0.1    10.245.71.6 0x80000002   1682 0xde9d  36

    OSPF Link-Local link state database, interface fe-0/0/0.0
  Type      ID          Adv Rtr      Seq          Age  Cksum  Len
Link       0.0.0.4     10.245.71.5 0x80000003   108  0x3b6   56
Link       *0.0.0.2    10.245.71.6 0x80000004   1382 0x782   56

```

```

user@router5> show ospf3 route
Prefix                                     Path      Route      NH      Metric
                                     type     type      type
10.245.71.4                               Inter    AS BR      IP      33
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
10.245.71.5                               Intra    Area BR    IP      20
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
10.245.71.6;0.0.0.2                       Intra    Transit   IP      20
  NH-interface fe-0/0/0.0
9009:1::/64                               Inter    Network   IP      33
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:1::2/128                             Inter    Network   IP      21
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:2::/64                               Inter    Network   IP      34
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:2::2/128                             Inter    Network   IP      22
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:3::/64                               Inter    Network   IP      22
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:4::/64                               Inter    Network   IP      30
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:5::/64                               Inter    Network   IP      21
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:6::/64                               Intra    Network   IP      20
  NH-interface fe-0/0/0.0
9009:100::/64                             Ext2     Network   IP      0
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:110::/64                             Inter    Network   IP      36
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:120::/64                             Inter    Network   IP      34
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:130::/64                             Inter    Network   IP      24
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
9009:140::/64                             Inter    Network   IP      23
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
feee::10:255:71:1/128                    Inter    Network   IP      34
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
feee::10:255:71:3/128                    Inter    Network   IP      21
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
feee::10:255:71:4/128                    Inter    Network   IP      33
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
feee::10:255:71:5/128                    Inter    Network   IP      20
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000
feee::10:255:71:6/128                    Intra    Network   IP      0
  NH-interface lo0.0
feee::10:255:71:11/128                   Inter    Network   IP      22
  NH-interface fe-0/0/0.0, NH-addr fe80::290:69ff:fe98:9000

```

```

user@router5> show interfaces terse
Interface      Admin Link Proto Local                               Remote
...
fe-0/0/0       up    up
fe-0/0/0.0     up    up    inet 10.19.6.2/24
                                     inet6 9009:6::2/64
                                     fe80::290:69ff:fe94:c400/64
...
lo0            up    up
lo0.0          up    up    inet 10.245.71.6          --> 0/0
                                     127.0.0.1          --> 0/0
                                     inet6 fe80::2a0:a5ff:fe12:33a2
                                     feee::10:255:71:6
...

```

## For More Information

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For additional information about OSPFv3 for IPv6, see the following resources:

- *JUNOS Routing Protocols Configuration Guide*
- RFC 2328, *OSPF Version 2*
- RFC 2460, *Internet Protocol, Version 6 (IPv6) Specification*
- RFC 2740, *OSPF for IPv6*
- RFC 3513, *IP Version 6 Addressing Architecture*

## Revision History

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12 January 2007—Added support for MX960 Ethernet Services Routers. 8.2R1 Release. Fawn Damitio.

15 September 2006—8.1R1 Release. Richard Hendricks.

29 June 2006—8.0R1 Release. Richard Hendricks.

27 March 2006—7.6R1 Release. Richard Hendricks.

9 January 2006—7.5R1 Release. Richard Hendricks.

14 September 2005—7.4R1 Release. Richard Hendricks.

13 June 2005—7.3R1 Release. Richard Hendricks.

5 April 2005—Added support for the J-series Services Routers and included a cross-reference to the IPSec chapter, 7.2R1 Release. Richard Hendricks.

2 February 2005—7.1R1 Release. Richard Hendricks.

6 October 2004—7.0R1 Release. Richard Hendricks.

6 July 2004—6.4R1 Release. Richard Hendricks.

5 April 2004—6.3R1 Release. Richard Hendricks.

22 December 2003—6.2R1 Release. Richard Hendricks.

22 September 2003—6.1R1 Release. Richard Hendricks.

30 June 2003—6.0R1 Release. Richard Hendricks.

2 April 2003—5.7R1 Release. Richard Hendricks.

27 December 2002—5.6R1 Release. Richard Hendricks.

30 September 2002—5.5R1 Release. Richard Hendricks.

27 August 2002—Initial document written. Richard Hendricks.

