

Configuring OSPFv3 for IPv6



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OSPFv3 is defined in
RFC 5340.

OSPFv2 vs. OSPFv3

OSPFv2

Runs over IPv4

Advertises IPv4 prefixes

OSPFv3

Runs over IPv6

Advertises IPv6 prefixes

OSPFv2 and OSPFv3 Similarities

RID is in
IPv4 format

Virtual links are
created using
the RID

Timers, network
types, and
neighbor states

OSPFv2 and OSPFv3 Similarities

You must enable IPv6
unicast routing

```
ipv6 unicast-routing
```

What's New in OSPFv3?

What's New in OSPFv3?

Type 1 and 2 LSAs do not
carry prefix information

Two new LSA types

No network command or
wildcard masks

Type 3 and 4 LSAs
are renamed

Type 8 — Link LSA



Advertises IPv6 link-local addresses

Type 9 — Intra-area Prefix LSA



Carries prefix information no longer carried by type 1 router and type 2 network LSAs

Renamed Type 3 and 4 LSAs

OSPFv2

Type 3 summary LSA

Type 4 ASBR summary LSA

OSPFv3

Type 3 inter-area prefix LSA

Type 4 inter-area router LSA

OSPFv3 Multicast Addresses



FF02::5—all OSPF routers

FF02::6—all designated routers

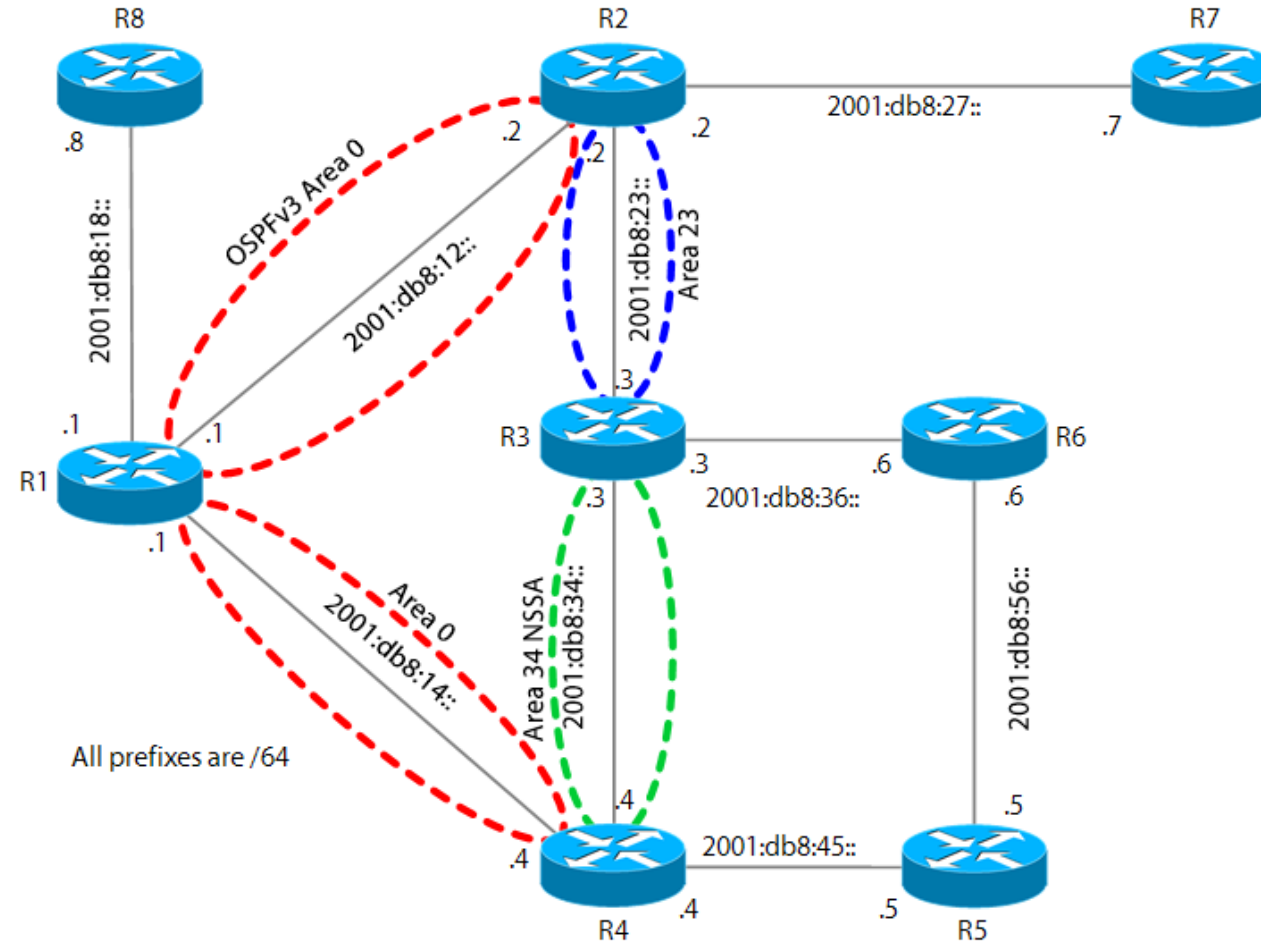
Authentication in OSPFv3

OSPFv3 doesn't
provide
authentication



Uses IPv6
IPsec instead

OSPF IPv6 Topology



Enabling OSPFv3

Enabling OSPFv3

**No network
command**

**No wildcard
masks**

**Enabled in
interface
configuration
mode**

Customer Request

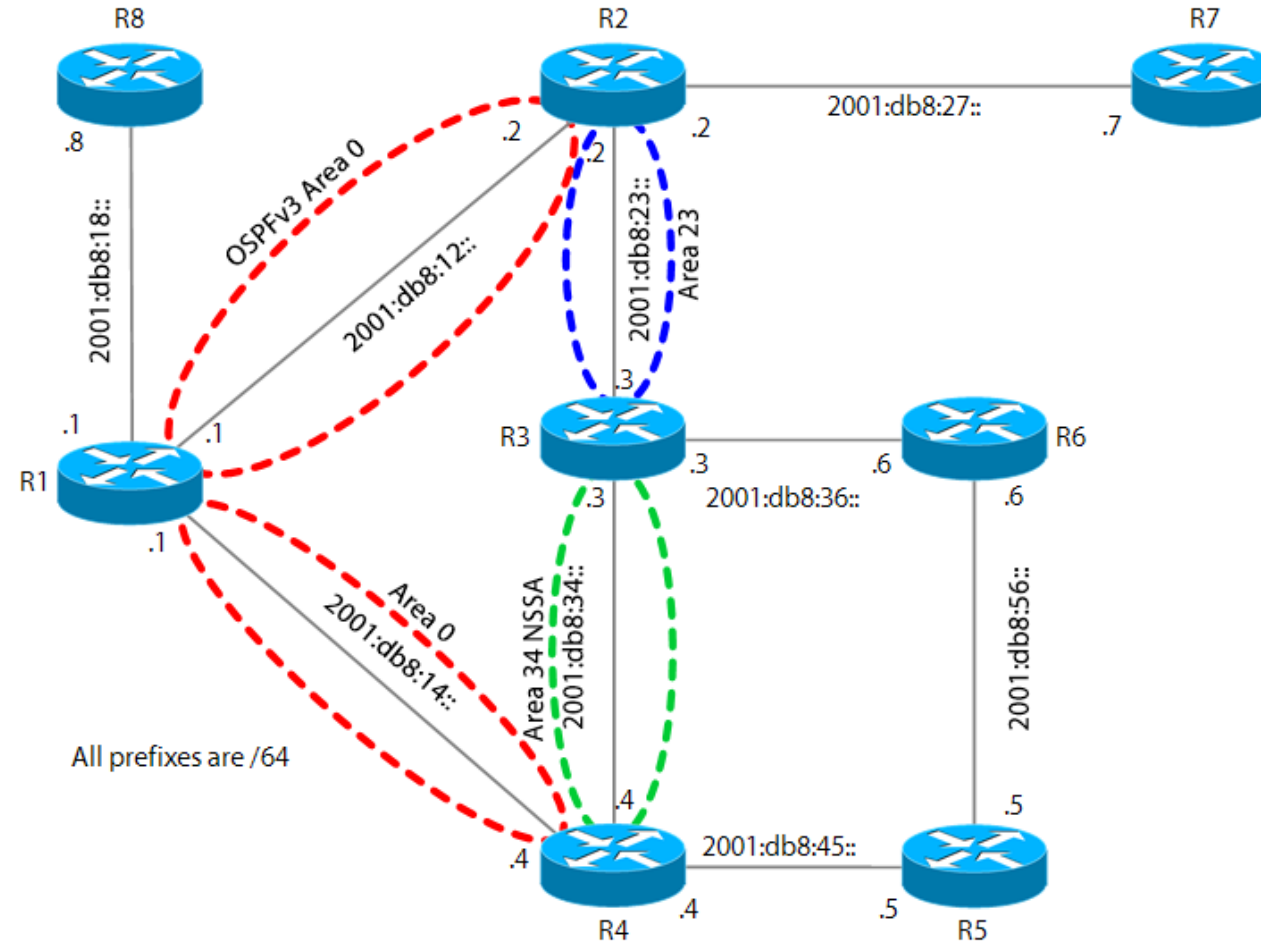
Configure the OSPFv3 backbone area on the interfaces

- between R1 and R2
- between R1 and R4

Configure OSPFv3 standard area 23 between R2 and R3

Configure area 34 as an NSSA between R3 and R4

OSPF IPv6 Topology



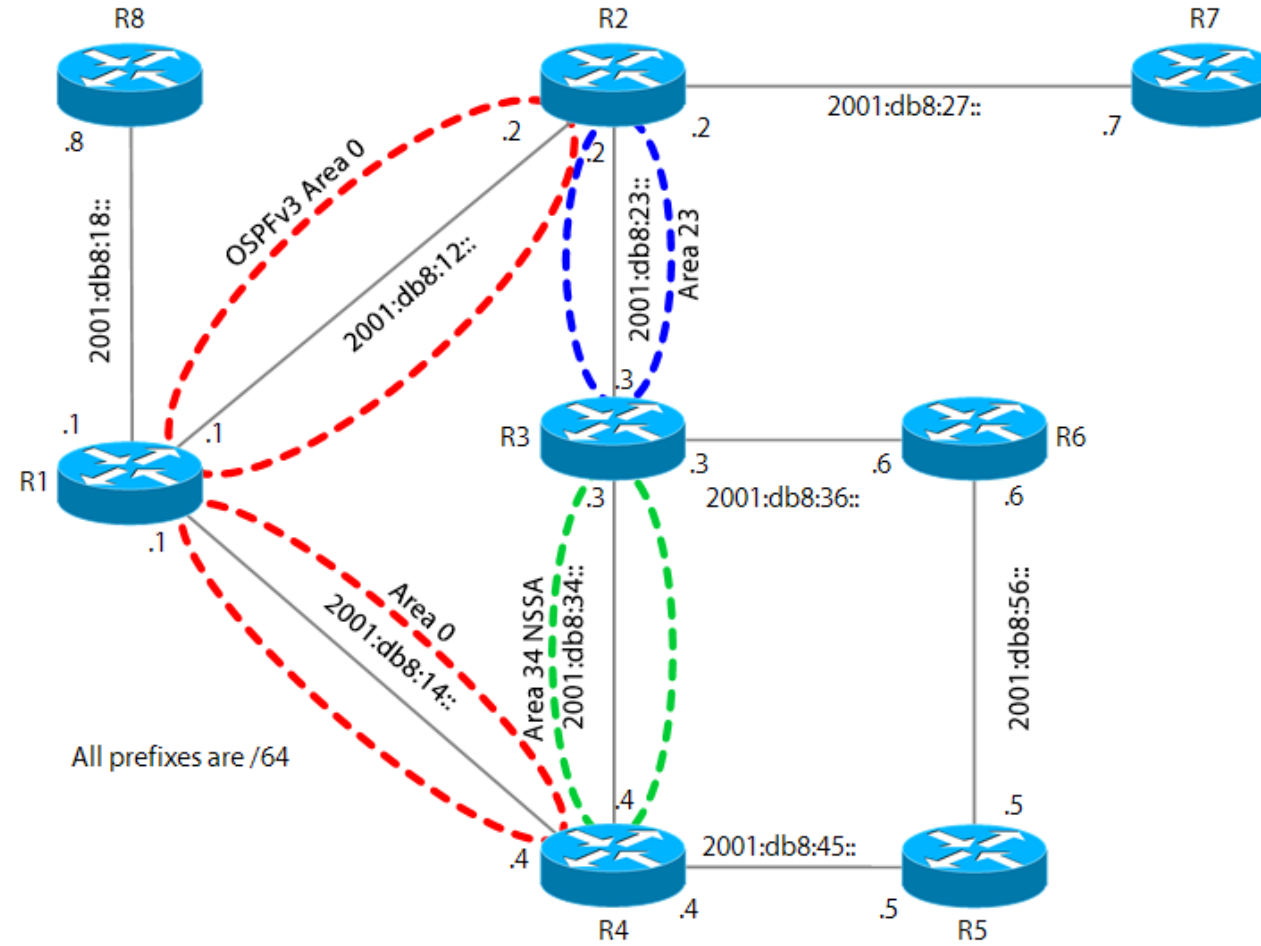
IPv6 Route Redistribution

Customer Request

Configure R4's loopback0 interface with the address 2001:db8::4/128

Redistribute loopback0's IPv6 address into OSPFv3 area 34

OSPF IPv6 Topology



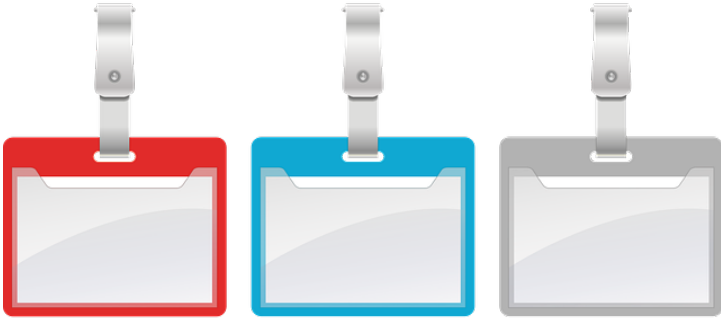
Summary

Summary



OSPFv3 is designed for IPv6 but operates mostly the same as OSPFv2

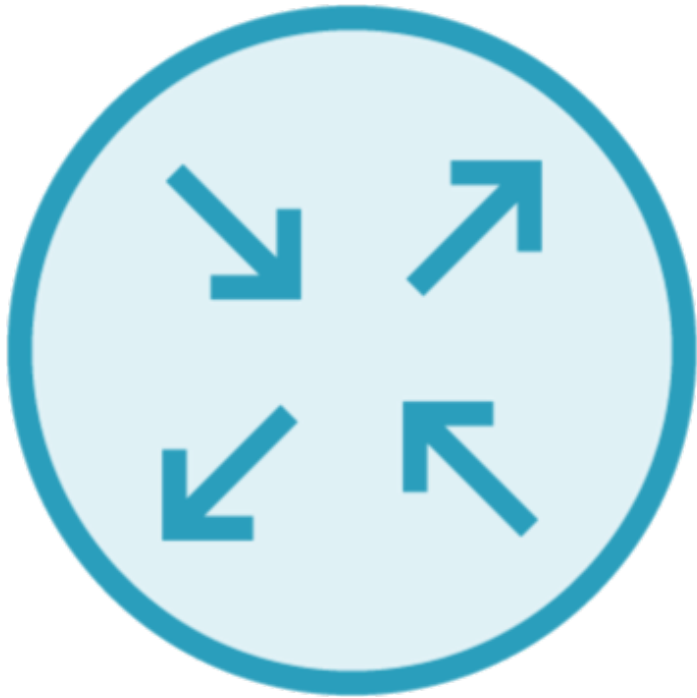
Summary



OSPFv3 RIDs use the IPv4 format

A RID must be manually configured if there are no IPv4 addresses

Summary



Instead of using the network command, OSPFv3 is enabled explicitly on each interface

Summary



The `ipv6 router ospf global` command is optional for enabling the OSPFv3 process

Summary



OSPFv3 introduces two new LSA types:

Type 8 – Link LSA

Type 9 – Intra-area prefix LSA

Summary



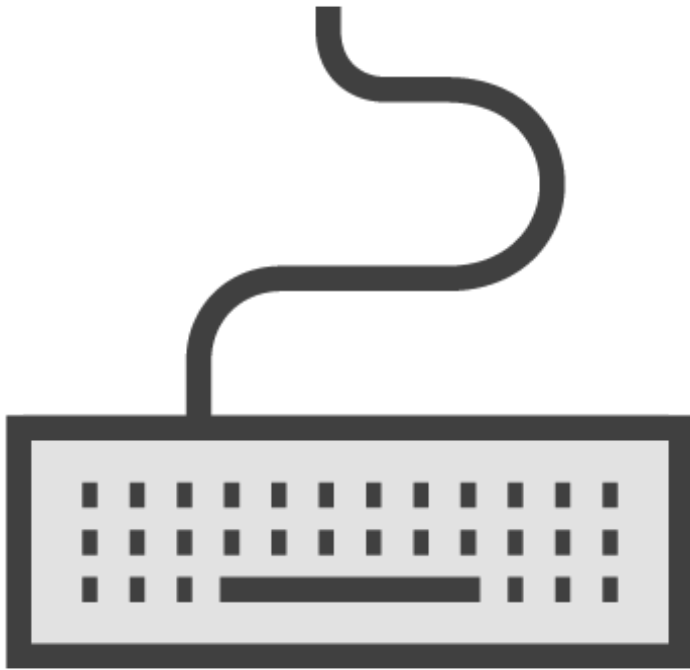
**ABR with the highest RID translates
between type 7 and type 5 LSAs**

Summary



OSPFv3 utilizes IPsec for authentication

Summary



The commands for summarization are almost identical to those in OSPFv2

Course Summary

Course Summary



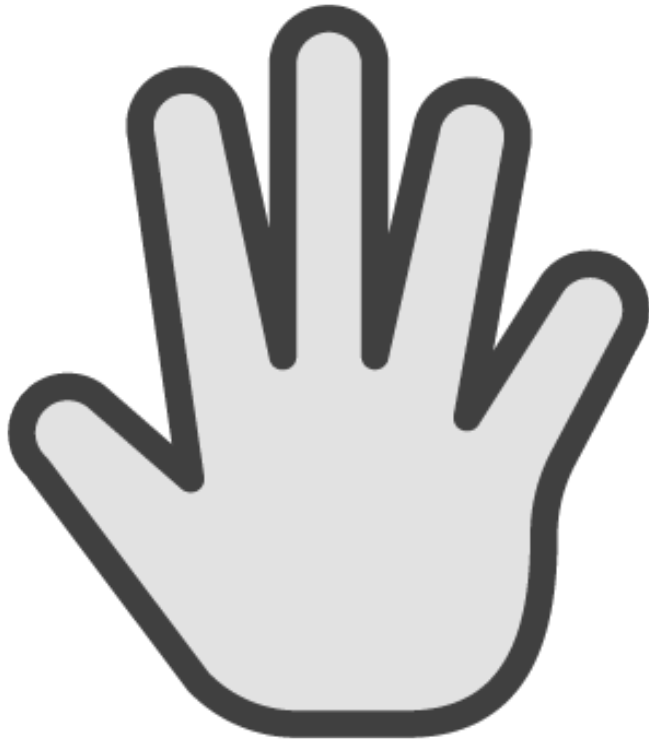
OSPF is the most complex of all the interior gateway routing protocols

Course Summary



Each router in an area has an identical copy of the LSDB

Course Summary



There are 5 area types

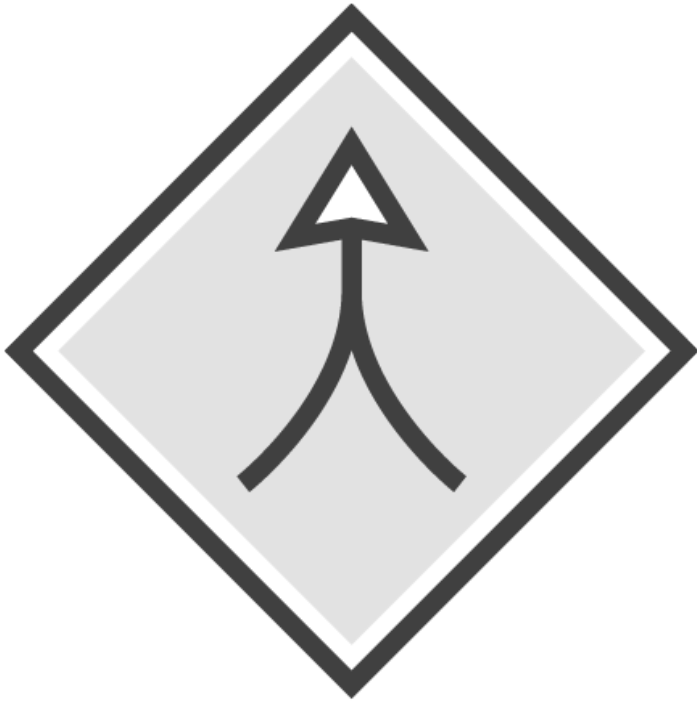
- Normal
- Stub
- Totally stubby
- NSSA
- Totally NSSA

Course Summary



On a broadcast network, OSPF routers elect a DR which is influenced by interface priority

Course Summary



OSPF can summarize inter-area routes at an ABR and external routes at an ASBR

Course Summary



**Redistributing routes makes a router
an ASBR**

Book Recommendation



OSPF: Anatomy of an Internet Routing Protocol by John T. Moy

<http://bit.ly/ospfbook>

Thanks for Watching!



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