

Advanced Services' Cisco IOS XR IPv6 Routing for Service Providers (XIPV6R) Version 4.0.1



This course provides technical training to Cisco service provider customers so that they can successfully deploy IPv6 on routers running Cisco IOS® XR Software Release 4.0 in an existing IPV4/Multiprotocol Label Switching (MPLS) environment. We review fundamental IPv6 behavior, IPv6-supported routing protocols, and mechanisms for tunneling of IPv6 over IPv4/MPLS. In addition, this course provides extensive hands-on lab exercises involving two service provider core networks and multiple customer sites connected into a multiautonomous system Internet.

Duration

Five days.

Target Audience

This course is for technical professionals who design, implement, and operate IPv6 routing protocols in a service provider network of routers running Cisco IOS XR Software.

The following are considered the primary audience for this course:

- Network operations center (NOC) engineers
- Network and senior engineers
- Support engineers

Course Objectives

Upon completion of this course, you should be able to:

- Characterize the types of IPv6 addresses, changes made to IP packet headers, and how neighbor discovery takes place
- Describe the various integration technologies that can be employed in implementing IPv6
- Describe the changes made to IPv4 routing protocols to support IPv6
- Configure IPv6 routing protocols on Cisco IOS XR Software routers and verify operation
- Configure and verify operation of IPv6 multicast

- Implement IPv6 provider edge (6PE) in an IPv4/MPLS environment
- Implement IPv6 VPN provider edge (6VPE) in an IPv4/MPLS environment

Course Prerequisites

Following are the prerequisites for this course:

- Students should have knowledge of the Cisco IOS XR Software configuration syntax to the extent covered in the Cisco CRS-1 Essentials, Cisco XR12000 Series Essentials, Cisco ASR 9000 Series Essentials, or Cisco IOS XR Fundamentals course.
- Students attending this class should be able to establish, without assistance, a configuration for Open Shortest Path First Version 2 (OSPFv2), Intermediate System-to-Intermediate System (IS-IS), and Border Gateway Protocol (BGP) with Routing Policy Language (RPL) policies as accomplished in the Cisco IOS XR IPv4 Routing course labs.
- Students must have a basic understanding of MPLS configuration as covered in any of the platform-specific Essentials courses or the Cisco IOS XR Fundamentals course.
- Students must have a basic understanding of IPv6 concepts as covered in the IPv6 Fundamentals (IPVSF) course.

To locate Cisco® courses that cover the listed prerequisites, go to the Cisco Training and Events webpage at www.cisco.com/web/learning/index.html.

Course Outline

The course outline is as follows:

- IPv6 Foundations Review (Addressing, Packet Header)
- IPv6 Operation (Router Advertisements, Neighbor Discovery) and Configuration
- OSPFv3 Routing
- IS-IS Routing for IPv6
- MP-BGP Routing for IPv6
- Other IPv6 Routing Protocols (EIGRP, RIPng)
- IPv6 Provider Edge (6PE)
- IPv6 VPN Provider Edge (6VPE)
- IPv6 Multicast

Lab Outline

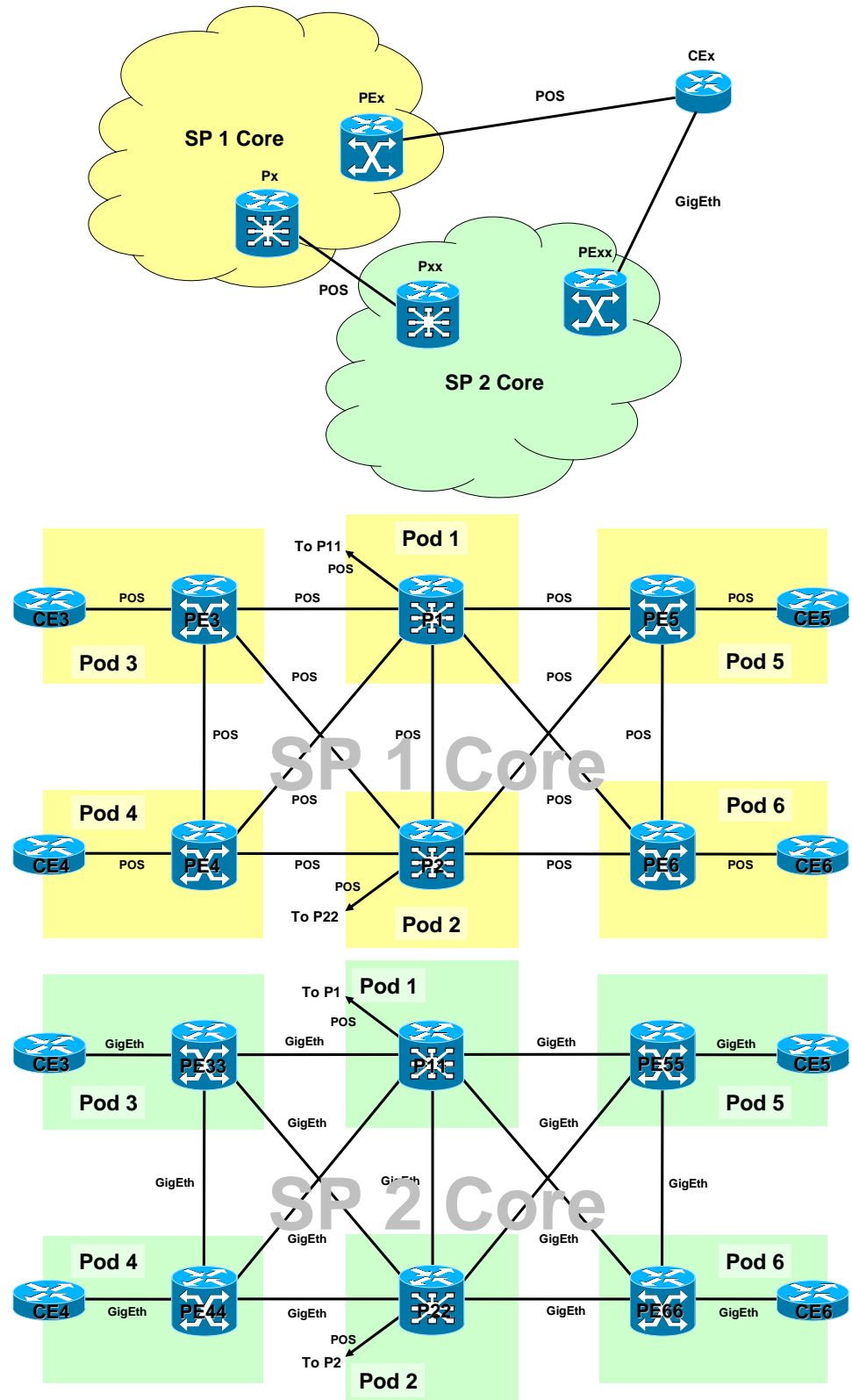
The lab outline is as follows:

- Enabling IPv6 on Cisco IOS XR Software and implementing static IPv6 routing
- Implementing OSPFv3 routing
- Implementing IS-IS routing for IPv6 integrated with existing IPv4
- Implementing MP-BGP routing for IPv6 over existing IPv4 peerings and IPv6 peerings
- Implementing 6PE on existing provider edge routers using route reflectors and existing IPv4-signalled MPLS paths
- Implementing 6VPE on IPv4-signalled MPLS L3 VPN baseline
- Implementing IPv6 multicast using PIM with static rendezvous points, bootstrap routers, and embedded rendezvous points

Lab Topology

Figure 1 shows the lab topology that is used in this course.

Figure 1. Lab Topology of Cisco IOS XR Software IPv6 Routing for Service Providers



Registration Information

For more information about schedules and registration for this course, contact aeskt_registration@cisco.com.

For More Information

For more information about Advanced Services Education course offerings, including custom training options, as well as Advanced Services Curriculum Planning Services and the Advanced Services Technical Knowledge Library (TKL), refer to the Advanced Services Education website at www.cisco.com/go/ase.



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