Advanced Services' Cisco 7600 Series Essentials (7600) v2

This five-day class provides you with the information required to optimally deploy a network of Cisco® 7600 Series Routers. You will learn the primary points of the system architecture and features so you can use the correct features for your network. Hands-on lab sessions enable you to practice the skills needed to deploy a Cisco 7600 Series Router. You will learn to apply quality of service (QoS) techniques, deploy Multiprotocol Label Switching (MPLS) Layer 3 VPNs in addition to Layer 2 Ethernet over MPLS (EoMPLS) and Virtual Private LAN Services (VPLS) VPNs, and utilize Stateful Switchover (SSO) and Nonstop Forwarding (NSF). You will also explore Cisco 7600 Series packet-forwarding techniques and the supported Cisco supervisor engines, line cards, shared port adapters (SPAs), and SPA interface processors (SIPs) to help improve the system's performance. You will gain the knowledge and skills to use the high-availability features of the Cisco 7600 Series to make sure your network benefits the most.

Course Duration

Five days.

Target Audience

This course is intended for network professionals who implement and support large enterprises or service providers that have a need to deploy and maintain Cisco 7600 Series Routers.

Course Objectives

Upon completion of this course, you should be able to perform the following tasks:

- Describe the power management features of Cisco 7600 Series Routers
- Configure the high-availability features of the Cisco 7600 Series: SSO and NSF
- Characterize the architecture of the Cisco Catalyst® 6500 Series Supervisor Engine 720 and Cisco Catalyst 6500 Supervisor Engine 32, including the forwarding engine and switch fabric
- Describe the packet flow in the Cisco 7600 Series for unicast and multicast
- Deploy software resiliency features
- Implement QoS features on Cisco Catalyst LAN ports, Optical Services Module (OSM) WAN

ports, FlexWAN ports, and SIP/SPA ports

- Deploy Layer 3 MPLS VPNs on the Cisco 7600 Series
- Describe MPLS QoS differentiated service modes in the Cisco 7600 Series
- Deploy basic Layer 2 EoMPLS and VPLS VPNs on the Cisco 7600 Series
- Describe packet flow and packet recirculation
- Characterize the line-card architecture of the Cisco 7600 Series
- Identify different switching modes in the Cisco 7600 Series
- Learn about the available methods to protect the Supervisor Engine 720 from denial-of-service attacks

Course Prerequisites

Following are the prerequisites for this course.

- Experience using Cisco IOS® Software for configuration of IP, MPLS VPN, Metro Ethernet, Open Shortest Path First (OSPF), BPPBorder Gateway Protocol (BGP), and Intermediate System-to-Intermediate System (IS-IS).
- Basic understanding of QoS Operations

To locate Cisco courses that cover the listed prerequisites, go to the Cisco Training & Events web page found at http://www.cisco.com/web/learning/index.html.

Course Outline

- Module 1: Cisco 7600 Series Router System Overview
  - Router Functions
  - Chassis Configurations
  - Router Interface Breadth
  - System Images
- Module 2: Cisco 7600 Series Router Hardware Overview
  - Chassis Components
  - Supervisor Engine 720 and 32 Overview
  - Monitoring Traffic
  - Line-Card Architecture
  - SPA Interface Processors
- Module 3: Detailed Supervisor Engine Architecture
  - Supervisor Engine 720 Hardware and Architecture
  - Supervisor Engine 32 Hardware and Architecture
  - Forwarding Architecture
  - Bus Switching Modes
  - Router Boot Process
- Module 4: Packet Flows in the Cisco 7600 Series
  - Packet Forwarding

- Unicast and Multicast Packet Forwarding
- Forwarding Decision Process
- Control Plane Forwarding, Policing, and Rate Limiting

- Module 5: High Availability
  - Redundancy and High-Availability Features
  - SSO Operation
  - Cisco 7600 Series Nonstop Forwarding
  - Cisco 7600 Series Software Resiliency Features
- Module 6: Cisco 7600 Series Router QoS
  - QoS Architecture
  - QoS Command Sets
  - QoS Functions and Concepts
  - Prioritizing Traffic
  - Implicit Marking
  - QoS Modes
  - Output Policies
  - Policing and Marking
- Module 7: MPLS on Cisco 7600 Series Routers
  - MPLS Functionality
  - MPLS Packet-Processing
  - MPLS QoS Differentiated Service Modes
  - MPLS Packet Recirculation
- Module 8: Layer 2 EoMPLS and VPLS VPNs on Cisco 7600 Series Routers
  - What Are EoMPLS and VPLS?
  - EoMPLS and VPLS Functionality and Components
  - Configuration Basics for EoMPLS and VPLS
  - Options Specific to the Cisco 7600 Series
  - Layer 2 and Layer 3 VPN Comparison

Lab Outline

- Lab 1: System Familiarization

  Explore the classroom lab hardware and configurations. Verify that the hardware is configured according to the lab diagram, including active interfaces and remote neighbors.
- Lab 2: Boot Process and File Systems

  Use commands to determine the running image and file system configuration. Review the Cisco 7600 Series boot process and the Cisco IOS Software commands used to manage the file systems.

- Lab 3: Packet Flows

  Track packet flows through the Cisco 7600 Series system and observe the effects of packet flow on CPU utilization. Configure and verify the operation of control plane policing and hardware rate limiting.

- Lab 4: Stateful Switchover and Nonstop Forwarding

  Explore a practical application of the capabilities of SSO and NSF using redundant supervisor engines (Cisco Catalyst 6500 Series/7600 Series Supervisor Engine 720-3BXL). Configure Router Processor Redundancy Plus (RPR+) and NSF/SSO redundancy operating modes and verify their functionality by comparing packet loss during switchovers in the two modes.

- Lab 5: QoS Part 1: Policing and Marking

  Create and apply access lists, class maps, and traffic policing to mark traffic received on an interface. Configure and verify policing and marking on LAN and SIP/SPA ports.

- Lab 6: QoS Part 2: Service Provider Scenario

  Configure a service provider QoS scenario and use a traffic generator to verify the effectiveness of the network deployment.

- Lab 7: MPLS VPN

  Create an MPLS VPN and monitor and verify its correct operation.

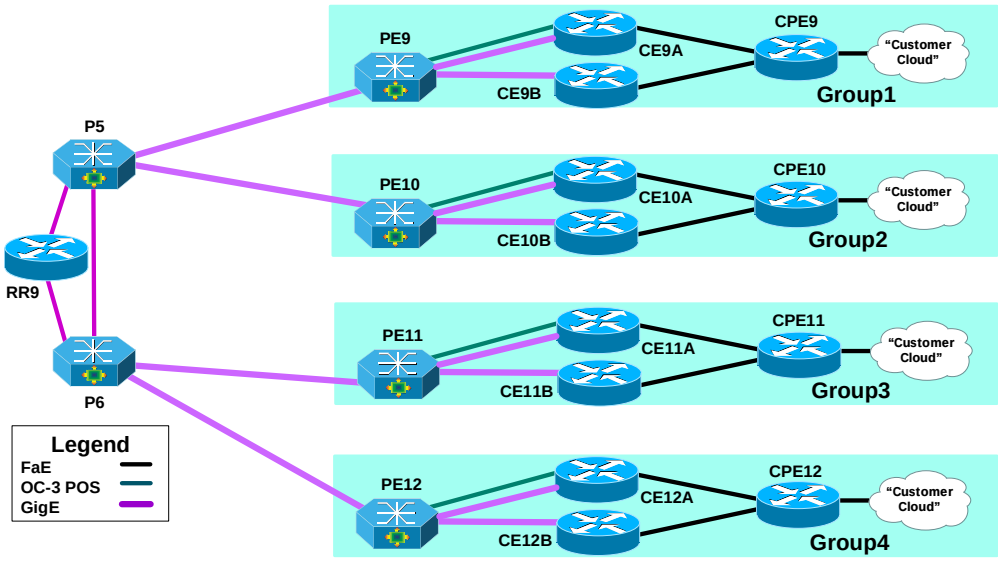
- Lab 8: Layer 2 VPNs: EoMPLS and VPLS

  Create both EoMPLS and VPLS Layer 2 VPNs, then monitor and verify their correct operation.

Lab Topology

The training lab topology (Figure 1) is designed to simulate a real-world network.

Figure 1 Training Lab Topology



Registration Information

For more information about schedules and registration for this course, please 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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