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# Cisco 8000 Series Routers Essentials (SP8KE)

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# Cisco 8000 Series Routers Essentials (SP8KE)

## Course Duration

5 days

## Course Price

$4,195.00
42 CLCs

## Methods of Delivery

In-Person ILT
Virtual ILT
Onsite ILT

## About this Class

The Cisco 8000 Series Routers Essentials (SP8KE) v1.0 course introduces you to the features and functions of the Cisco® 8000 Series router platforms. Through a combination of lectures and labs, you will gain an understanding of all major aspects of the platform, including hardware, software, Layer 2 and Layer 3 services, Quality of Service (QoS) features, network virtualization, and programmability.

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## How you will benefit

This class will help you:

- Increase your experience with the Cisco 8000 Series system
- Describe and implement the Cisco 8000 Series system and its components
- Gain hands-on experience with the Cisco 8000 Series system in a lab setting

## Why Attend with Current Technologies CLC

- Our Instructors are the top 10% rated by Cisco
- Our Lab has a dedicated 1 Gig Fiber Connection for our Labs
- Our Labs run up to Date Code for all our courses

## Who Should Attend

The job roles best suited to the material in this course are:

- System engineers
- Technical support personnel
- Channel partners and resellers

## Prerequisites

Before taking this course, you should have:

- Basic knowledge of router installation and some experience with installation tools
- Routing protocol configuration experience with Border Gateway Protocol (BGP), Intermediate System-to- Intermediate System (IS-IS), and Open Shortest Path First (OSPF)
- Knowledge of Layer 2 IEEE switching and related protocols
- Strong knowledge of MPLS configuration experience
- Experience troubleshooting Cisco routers in a large network environment

# Cisco 8000 Series Routers Essentials (SP8KE)

## Objectives

After taking this course, you should be able to:

- Describe the various Cisco 8000 Series hardware components
- Explain the system architecture of the Cisco 8000 Series systems
- Describe the packet flows through the Cisco 8000 Series Router and Command-Line Interface (CLI) commands for verifying packet flows through various Cisco 8000 Series router components
- Describe how the QoS features are implemented within the Cisco 8000 Series router, how to examine the Virtual Output Queueing (VOQ) QoS architecture, and describe how to implement modular VOQ, including congestion avoidance, priority flow control, and congestion management
- Describe the Software for Open Networking in the Cloud (SONiC) Operating System
- Describe Cisco Internetwork Operating System (Cisco IOS®) XR Software architecture
- Explain how to install Cisco IOS XR software packages
- Describe how to provision network devices by using Zero Touch Provisioning (ZTP)
- Implement and configure Multiprotocol Label Switching (MPLS) and describe MPLS label propagation in service provider networks
- Describe the main factors leading to the development and deployment of segment routing, describe the various types of segments that are used in segment routing, describe the Segment Routing Global Block (SRGB), and configure and verify IS-IS and OSPF segment routing operation
- Describe how to implement and verify Topology Independent Loop-Free Alternate (TI-LFA) in a segment routing environment, the benefits of Segment Routing for Traffic Engineering (SR-TE), and briefly describe the tools required for enabling it

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## Cont. Objectives

After taking this course, you should be able to:

- Describe the fundamentals of Ethernet VPN (EVPN), how to configure and verify EVPN Native, and how to configure and verify EVPN Virtual Private Wire Service (VPWS)
- Describe the operation and data flow of the Layer 3 VPN control plane, describe different Layer 3 MPLS VPN models, and describe how to configure and verify a basic Layer 3 VPN by using Cisco IOS XR 64-bit software
- Implement and configure advanced SR-TE features
- Implement and configure Segment Routing over IPv6 (SRv6)
- Implement and configure model-driven telemetry
- Describe programmable features of Cisco IOS XR software
- Describe the application hosting architecture and how to deploy a third-party application on a Cisco IOS XR router

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## Course Outline

Module 1: Cisco 8000 Series Hardware Fundamentals

Module 2: Cisco 8000 System Architecture

Module 3: Packet Flow Through the Cisco 8000 Series Router

Module 4: Traffic Management and QoS on Cisco 8000 Routers

Module 5: SONiC Basics

Module 6: Cisco IOS XR Software Architecture

Module 7: Cisco IOS XR Software Installation

Module 8: Automatic Provisioning

Module 9: Cisco IOS XR MPLS

Module 10: Introducing Segment Routing

Module 11: Segment Routing TI-LFA and Traffic Engineering

Module 12: EVPN Layer 2 Basics

Module 13: Layer 3 VPNs

Module 14: Advanced SR-TE Features

Module 15: SRv6

Module 16: Telemetry

Module 17: Cisco IOS XR Programmability

Module 18: Application Hosting Overview

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## Lab Outline

Lab 1: Investigate and Monitor Cisco 8000 Series Hardware

Lab 2: Troubleshoot Traffic Through the Cisco 8000 Router

Lab 3: Cisco IOS XR Software Installation

Lab 4: Configure and Verify Zero Touch Provisioning (ZTP)

Lab 5: Configure and Verify Multiprotocol Label Switching

Lab 6: Configure and Verify Segment Routing (SR)

Lab 7: Configure and Verify SR TI-LFA Using IS-IS

Lab 8: Configure and Verify SR TI-LFA Using OSPF

Lab 9: Configure and Verify SR-TE Using IS-IS

Lab 10: Configure and Verify SR-TE Using OSPF

Lab 11: Configure and Verify Basic EVPN

Lab 12: Configure and Verify Layer 3 VPN

Lab 13: Configure and Verify On-Demand Next-Hop (ODN) and Flexible Algorithm

Lab 14: Configure and Verify Segment Routing over IPv6 (SRv6)

Lab 15: Configure and Verify Model-Driven Telemetry

Lab 16: Configure and Verify Devices by Using Model-Driven Programmability

Lab 17: Configure and Verify Application Hosting Within a Docker Container