

Cisco Aggregation Services Router 9000 Series Essentials (ASR9KE) v6.0

The Cisco Aggregation Services Router 9000 Series Essentials (ASR9KE) v6.0 course introduces you to the features and functions of the Cisco® Aggregation Services Router (ASR) 9000 Series platforms. Through a combination of lecture and hands-on labs, you will gain an understanding of all major aspects of the platform, including hardware, Layer 2 and Layer 3 services, routing protocols including Segment Routing, Layer 2 and Layer 3 multicast, Quality of Service (QoS) features, and network virtualization. The course investigates Cisco Internetworking Operating System (IOS) XR 64-Bit Linux-based feature parity in the environment, as well as how to install Cisco IOS® XR 64-Bit software packages.

Prerequisites

The knowledge and skills that a learner should have before attending this course are as follows:

- Basic knowledge of router installation and some experience with installation tools
- Routing protocol configuration experience with 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 or multicast configuration experience
- Experience troubleshooting Cisco routers in a large network environment

Course Objectives

Upon completing this course, the learner will be able to meet these overall objectives:

- List and describe the major features and benefits of a Cisco ASR 9000 Series router
- List and describe the major features and benefits of the Cisco IOS XR Software operating system
- Understand data flow through the Cisco ASR 9000 Series router
- Configure the Cisco ASR 9000, back out of configuration changes, and restore older versions of the configuration
- Install the Cisco IOS XR operating system, package information envelopes (PIEs), and software maintenance updates (SMUs)
- Enable multicast routing on a Cisco ASR 9000 Series router
- Configure Multiprotocol Label Switch-Traffic Engineering (MPLS-TE) on a Cisco ASR 9000 Series router
- Configure Layer 3 VPN services
- Configure Ethernet link bundles
- Configure local E-Line L2VPN
- Configure Ethernet over MPLS E-Line L2VPN
- Configure EoMPLS with pseudowire backup
- Configure local E-LAN L2VPN
- Configure link-based Ethernet operations, administration, and maintenance (E-OAM)

- Configure virtual private LAN service (VPLS) L2VPN
- Configure VPLS with Border Gateway Protocol (BGP) autodiscovery
- Configure service-based connectivity fault management (CFM)
- Describe Multiple Spanning Tree-Access Gateway (MST-AG)
- Configure Layer 2 multicast features
- Describe basic QoS implementation
- Describe how to configure and verify network virtualization (nV) on the ASR 9000 series

Course Outline

- Module 1: Introduction to the Cisco ASR 9000 Aggregation Series
- Module 2: Cisco ASR 9000 Hardware
- Module 3: Cisco IOS XR Software Overview
- Module 4: Cisco IOS XR Software Basics
- Module 5: Cisco IOS XR Software Software Installation
- Module 6: Cisco IOS XR Software Operations
- Module 7: Cisco IOS XR Routing Protocols
- Module 8: Layer 3 Multicast
- Module 9: Cisco IOS XR MPLS
- Module 10: Cisco IOS XR Layer 3 VPN
- Module 11: Cisco ASR 9000 Layer 2 Architecture
- Module 12: Cisco ASR 9000 Point-to-Point Layer 2 Services
- Module 13: Cisco ASR 9000 Multipoint Layer 2 Services
- Module 14: Cisco ASR 9000 Operations, Administration, and Maintenance
- Module 15: Cisco ASR 9000 Layer 2 Multicast
- Module 16: Cisco ASR 9000 QoS
- Module 17: Cisco ASR 9000 Network Virtualization

Lab Outline

- Lab 1: Hardware Discovery and Initial Configuration
- Lab 2: Cisco IOS XR Software Installation
- Lab 3: Cisco IOS XR Operations
- Lab 4: OSPF Routing Configuration
- Lab 5: IS-IS Routing Configuration
- Lab 6: BGP Routing Configuration
- Lab 7: Layer 3 Multicast
- Lab 8: MPLS
- Lab 9: Layer 3 VPN
- Lab 10: Local E-Line
- Lab 11: EoMPLS E-Line (Only representation for this hands-on activity. No actual lab)
- Lab 12: Local E-LAN
- Lab 13: VPLS (Only representation for this hands-on activity. No actual lab)
- Lab 14: OAM (Only representation for this hands-on activity. No actual lab)
- Lab 15: Layer 2 Multicast