

# ASR9KE (CISCO AGGREGATION SERVICES ROUTER 9000 SERIES ESSENTIALS (ASR9KE) V6.0) 6.0

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## Objetivo

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 64-Bit IOS XR operating system  
Understand data flow through the Cisco ASR 9000 Series router  
Configure Cisco ASR 9000, back out of configuration changes, and restore older versions of the configuration  
Install the Cisco IOS XR 64-Bit Software operating system, package information envelopes, and software maintenance updates  
Enable multicast routing on a Cisco ASR 9900 Series router  
Configure Layer 3 VPN services  
Configure Ethernet link bundles  
Configure local Ethernet Line (E-Line) Layer 2 VPN (L2VPN)  
Configure Ethernet over Multiprotocol Label Switching (EoMPLS) E-Line L2VPN  
Configure EoMPLS with pseudowire backup  
Configure local Ethernet LAN(E-LAN) L2VPN  
Describe Virtual Private LAN Service (VPLS) L2VPN  
Describe VPLS with Border Gateway Protocol (BGP) autodiscovery  
Configure service-based Connectivity Fault Management (CFM)  
Configure Layer 2 multicast features  
Describe basic QoS implementation  
Describe how to configure and verify network Virtualization (nV) on the ASR 9000 series

## Público Alvo

System engineers  
Technical support personnel  
Channel partners, resellers

## Pré-Requisitos

Basic IOS XR 64-Bit Software configuration commands  
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

## Carga Horária

4 horas (1 dias).

## Conteúdo Programático

### Cisco ASR 9000 Series Hardware

- Examining the Cisco ASR 9000 Series Chassis
- Examining the Cisco ASR 9000 Series Architecture
- Examining the Route Switch Processor/ Route Processor (RSP/RP) Functions and Fabric Architecture
- Examining the Cisco ASR 9000 Series Line Card
- Examining the Cisco ASR 9000 Power Subsystems

### **Cisco IOS XR 64-Bit Software Architecture and Linux Fundamentals**

Cisco IOS XR 64-Bit Software Fundamentals  
Cisco ASR 9000 IOS XR 64-Bit vs. 32-Bit  
Exploring Linux Fundamentals

### **Cisco IOS XR 64-Bit Software Installation**

Examining Resource Allocations and Media Mappings  
Migrating to Cisco IOS XR 64-Bit Software  
Performing Disaster Recovery  
Installing Software Packages

### **Cisco IOS XR 64-Bit Software Configuration Basics**

Configuring Cisco IOS XR 64-Bit Basic Operations  
Cisco IOS XR 64-Bit Initial Configuration  
Reviewing the Configuration

### **Cisco IOS XR 64-Bit Software Routing Protocols**

Exploring Intermediate System to Intermediate System (IS-IS)  
Exploring OSPF  
Exploring BGP  
Exploring Routing Protocol for LLN

### **Multicast Routing**

Exploring Multicast Routing  
Exploring Protocol Independent Multicast (PIM)

### **Cisco Multiprotocol Label Switching**

Examining the MPLS Forwarding Infrastructure  
Implementing the MPLS Label Distribution Protocol (LDP)

### **Cisco IOS XR 64-Bit Segment Routing**

Segment Routing Concepts  
Interior Gateway Protocol Segment Routing (IGP SR) Control Plane Overview  
Prefix and Adjacency Segment IDs (SIDs)  
SR IS-IS Multi-Level and OSPF Multi-Area  
IS-IS SR Configuration and Verification  
OSPF SR Configuration and Verification

### **Layer 3 VPNs**

Examining L3VPNs  
Exploring L3VPN Control and Data Flow  
Configuring L3VPNs  
Verifying the L3VPN Operation

### **Cisco ASR 9000 Layer 2 Architecture**

Examining Carrier Ethernet and Flexible Ethernet Edge  
Comparing Layer 2 and Layer 3 VPNs  
Examining the ASR 9000 Layer 2 Infrastructure and Ethernet Flow Points (EFPs)

Layers 2 and 3 Coexistence and VLAN Tag Manipulation  
Exploring the Layer 2 Network Infrastructure

### **Point-to-Point Layer 2 Services**

Point-to-Point Alternating Current-Alternating Current (AC-AC) and Attachment Circuit Redundancy  
Point-to-Point AC-Pseudowire (PW) Cross-Connect  
Examining Pseudowire Redundancy and Resiliency

### **Layer 2 Multicast**

Examining the Cisco ASR 9000 Series Multicast  
Implementing Multicast

### **Quality of Service**

QoS Basics and the Modular QoS CLI (MQC) Mode  
Layer 2 QoS Example

### **Lab outline**

ASR 9904 Hardware Discovery Lab  
Device Discovery and Initial Configuration  
Installing Cisco IOS XR 64-Bit Software  
Cisco IOS XR 64-Bit Software Operations  
Configuring IS-IS Routing  
Configuring OSPF Routing  
Configuring Internal BGP (iBGP) Routing  
IPv4 Multicast Configuration  
Configuring Multiprotocol Label Switching  
Configuring and Verifying IGP Segment Routing  
Configuring Layer 3 Virtual Private Network  
Local E-Line Service  
EoMPLS Service