

# CLDCSR (DEPLOYING CLOUD CONNECT SOLUTIONS WITH CISCO CLOUD SERVICES ROUTER 1000V) 1.0

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## Objetivo

After taking this course, you should be able to:

- Describe items to be aware of before installing a Cisco CSR 1000V, including virtual machine requirements for installing Cisco CSR 1000V, licensing options that are available with Cisco CSR 1000V, supported Cisco IOS XE technologies, and management options for Cisco CSR 1000V;
- Prepare for installation of Cisco CSR 1000V Series routers;
- Explain common Cisco IOS XE Command-Line Interface (CLI) commands and conventions that can make it easier to work in the CLI, and describe how you can get help with command syntax and command options;
- Describe the options you can use to activate the license for Cisco CSR 1000V and activate the license for each option. Troubleshoot issues with Cisco CSR 1000V licenses;
- Upgrade the Cisco IOS XE software for an existing Cisco CSR 1000V installation;
- Describe the Call Home feature and its benefits, configure the feature on the Cisco CSR 1000V, including the anonymous reporting option, and display the Call Home configuration. List the different Call Home events that trigger alerts and commands that are executed as a result of the alert;
- Troubleshoot Cisco CSR 1000V Virtual Machine (VM) issues;
- Rehost a Cisco CSR 1000V license to a new VM, whether the current Cisco CSR 1000V router is accessible or not;
- Describe the Virtual Extensible LAN (VXLAN) Layer 2 gateway feature and configure this feature on the Cisco CSR 1000V router;
- Deploy the Cisco CSR 1000V in a virtual private cloud using Microsoft Azure or Amazon Web Services (AWS);
- Describe common network operations that the Cisco CSR 1000V supports;
- Explore programmability support on Cisco CSR 1000V, including APIs, shells, and data models.

## Público Alvo

Data Center Professionals interested in knowing and implementing CSR 1000V to provide comprehensive WAN gateway and network services functions including connectivity, routing, and security into virtual and cloud environments.

## Pré-Requisitos

To fully benefit from this course, you should have the following knowledge:

- CCNA (or equivalent knowledge);
- Cloud Virtualization/VMware competency;
- IP Network Security and VPN (IPSec). The following course can help you meet these prerequisites: Implementing and Administering Cisco Solutions (CCNA).

## Carga Horária

32 horas (4 dias).

## Conteúdo Programático

### Course Introduction

Course Outline

## Course Goals & Objectives

### **Introducing Cisco CSR Product Overview**

- Cloud Adoption and Cisco CSR 1000V Overview
- Virtual Machine Requirements
- Cisco Software Licensing
- Cisco Smart Software Licensing
- Differences Between Cisco CSR 1000V Series and Cisco ASR 1000 Series
- Supported Cisco IOS XE Technologies
- Management Support
- Compatibility with Cisco Unified Computing System™ (Cisco UCS®)

### **Preparing for Installation**

- Obtaining the Cisco CSR 1000V Virtual Machine Image
- Cisco CSR 1000V Installation Files
- Cisco CSR 1000V Installation Options
- Guidelines and Limitations
- ROM Monitor (ROMMON) and Cisco CSR 1000V

### **Installing Cisco CSR 1000V in VMware Elastic Sky X (ESXi) Environments**

- Supported VMware Features and Operations
- VMware Requirements—Cisco IOS XE Fuji 16.9
- Virtual Machine Requirements for Different Cisco IOS XE Versions
- Deploying the Cisco CSR 1000V Open Virtualization Archive (OVA) to the Virtual Machine
- Manually Create the Virtual Machine and Install Cisco CSR 1000V Software with the .iso File (VMware ESXi)
- Increasing Performance on VMware ESXi Configurations

### **Booting Cisco CSR 1000V and Accessing the Console**

- Booting the Cisco CSR 1000V Virtual Machine
- Configuring Access to the Cisco CSR 1000V Console

### **Using Cisco IOS XE Software**

- Use Cisco IOS XE Software
- Find Command Options
- Non-Volatile Random Access Memory (NVRAM) File Security

### **Managing Cisco CSR 1000V Licenses**

- Methods to Activate Cisco CSR 1000V Licenses
- Cisco Software Licensing
- Cisco Smart Software Licensing
- Smart Licenses Regular Operations
- Smart Licenses Advanced Operations
- Troubleshooting Cisco Smart License Issues

### **Upgrading the Cisco IOS XE Software**

- Prerequisites for the Software Upgrade Process
- Save Backup Copies of Your Old System Image and Configuration
- Use Trivial File Transfer Protocol (TFTP) or Remote Copy Protocol (RCP) to Copy the System Image into Bootflash

## Memory

Load the New System Image from Cisco IOS XE Software

Load the New System Image from GRand Unified Bootloader (GRUB) Mode

Save Backup Copies of Your New System Image and Configuration and Reboot Cisco CSR 1000V

## Mapping Cisco CSR 1000V Network Interfaces to Virtual Machine Network Interfaces

Mapping Cisco CSR 1000V Network Interfaces with vSwitch Interfaces

## Using GRUB Mode (Bootstrap Program)

GRUB Mode and the Configuration Register Overview

Access GRUB Mode and Use the Menu

Modify the Configuration Register (confreg)

Change the Configuration Register Settings

## Configuring Call Home for Cisco CSR 1000V

Call Home Overview

Obtain Smart Call Home Services

Anonymous Reporting

How to Configure Call Home

Configuring Diagnostic Signatures

Display Call Home Configuration Information

Alert Group Trigger Events and Commands

Message Contents

## Configuring Virtual CPU (vCPU) Distribution Across Data, Control, and Service Planes

Information About vCPU Allocation and Distribution

How to Boot Cisco CSR 1000V with an OVA Image

How to Configure vCPU Distribution Across Data, Control, and Service Planes

## Troubleshooting Cisco CSR 1000V Virtual Machine Issues

Verify the Cisco CSR 1000V Hardware and Virtual Machine Requirements

Troubleshoot Network Connectivity Issues

Troubleshoot Virtual Machine Performance Issues

## Rehosting the Cisco CSR 1000V License

Rehosting a Classical License

Rehosting a Smart License

## Supporting the Cisco CSR 1000V Virtual Extensible LAN (VXLAN) Feature

Prerequisites for Cisco CSR 1000V VXLAN Support

Configure Cisco CSR 1000V as a VXLAN Layer 2 Gateway

Examples to Configure Cisco CSR 1000V as a VXLAN Layer 2 Gateway

## Deploying Cisco CSR 1000V in a Virtual Private Cloud

Introduction to Virtual Port Channel (VPC)

Cisco CSR 1000V in Microsoft Azure

Cisco CSR 1000V in AWS

Cisco CSR 1000V on Google Cloud Platform

### **Exploring Cisco CSR 1000V Operations**

Cisco CSR 1000V as Highly Secure VPN Gateway  
Cisco CSR 1000V as an Multiprotocol Label Switching (MPLS) WAN Endpoint  
Cisco CSR 1000V as a Layer 2 or Layer 3 Extension  
Cisco CSR 1000V as a Traffic Control Point  
Cisco CSR 1000V as a VXLAN Gateway  
Cisco CSR 1000V as a Virtual Route Reflector  
Cisco CSR 1000V as a Wireline or Fixed Wireless Gateway  
Cisco CSR 1000V in Software-Defined Wide Area Network (SD-WAN) Deployments

### **Exploring Programmability on Cisco CSR 1000V**

Introduction to Programmability  
Provisioning on Cisco CSR 1000V  
Shells and Scripting on Cisco CSR 1000V  
Model-Driven Programmability on Cisco CSR 1000V

### **Lab outline**

Lab 1: Deploy or Install Cisco CSR 1000V in a VMware ESXi Environment  
Lab 2: Boot Cisco CSR 1000V and Access the Console  
Lab 3: Explore Cisco IOS XE with CLI and Web User Interface  
Lab 4: Install, Activate, and Verify License in Cisco CSR 1000V  
Lab 5: Upgrade Cisco IOS XE Software on Cisco CSR 1000V  
Lab 6: Map Cisco CSR 1000V Virtual Interfaces  
Lab 7: Access and Use GRUB Mode  
Lab 8: Configure Call Home on a Cisco CSR 1000V  
Lab 9: Modify Templates for vCPU Distribution in Cisco CSR 1000V  
Lab 10: Troubleshoot Cisco CSR 1000V Virtual Machine Issues  
Lab 11: Rehost a Cisco CSR 1000V License  
Lab 12: Configure VXLAN on Cisco CSR 1000V  
Lab 13: Deploy Cisco CSR 1000V in AWS  
Lab 14: Cisco CSR 1000V Operations  
Lab 15: Enable Guest Shell, Python, and Cisco Embedded Event Manager (Cisco EEM) on Cisco CSR 1000V  
Lab 16: Configure Yet Another Next Generation (YANG) in Cisco CSR 1000V