

## Learning@Cisco

# Cisco IOS XR Basic Troubleshooting



The Cisco IOS<sup>®</sup> XR Basic Troubleshooting<sup>1</sup> (IOSXR201) course is an Instructor-Led (ILT), lab-based, hands-on course offered by Learning@Cisco. It is also available as a Virtual-Instructor-Led (VILT) course. The course provides the knowledge and skill sets required to perform various basic troubleshooting duties using Cisco IOS XR Software in a typical network environment.

The course teaches the fundamental concepts on which the operating system is based to understand how to troubleshoot problems relating to process failures, stuck processes, high CPU consumption processes, and Interprocess Communication (IPC) functions. In this course, you learn to interpret log messages and configure exception reporting and logging. Using system commands, you also learn how to monitor interfaces and controllers, and troubleshoot traffic flow issues through both Cisco Carrier Routing System (CRS-1) routers and the Cisco XR 12000 Series Router.

### Duration

Instructor-Led Training (ILT): 1 day

Virtual Instructor-Led Training (VILT): 2 days

### Target Audience

This course is intended for network professionals (including designers, implementers), Network Operations Center (NOC) personnel, and support staff who are involved with the deployment and troubleshooting of Cisco routers that run the Cisco IOS XR Software operating system.

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<sup>1</sup> Course content is dynamic and subject to change without notice.

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## Course Prerequisites

You should have the following knowledge and skills before attending this course:

- Completion of the Introduction to Cisco IOS XR (IOSXR100) Training course or equivalent hands-on experience configuring and supporting Cisco IOS XR-based routers
- Basic knowledge of the architecture and operations of the Cisco Carrier Routing System (CRS-1), Cisco IOS XR 12000 Series Router, or Cisco ASR 9000 Series Routers
- Fundamental knowledge of Cisco IOS XR configuration and operation
- Basic knowledge of problem determination techniques and experience troubleshooting Cisco IOS XR routers in a large network environment

## Recommended Prerequisites

Cisco recommends that you have the following prerequisite knowledge and skills:

- Knowledge of general routing concepts
- Experience working with Command-Line Interface (CLI)-based network devices

## Course Outline

- Module 1: Cisco IOS XR Software Operations
  - Examining Operation Basics
  - Examining Configuration Operations
  - Examining Configuration Rollback and Recovery
  - Examining Process Management
- Module 2: Monitoring Processes
  - Processes, Threads, and Dynamic Link Libraries
  - Mandatory Processes
  - CPU Hog Condition
  - Process Crashes
  - Stuck Processes
  - Useful Commands for Debugging Processes
  - Restart of Processes
  - Process Monitoring
  - Identifying Memory Problems
  - Memory Depletion
- Module 3: Error Messages and Core Dumps
  - System Error Messages
  - Logging System Messages
  - Cisco IOS XR Core Dumps

- Module 4: Cisco Traffic Flow Troubleshooting
  - Troubleshooting Cisco IOS XR Line Card Data Packet Flow
  - Troubleshooting Cisco IOS XR Switch Fabric

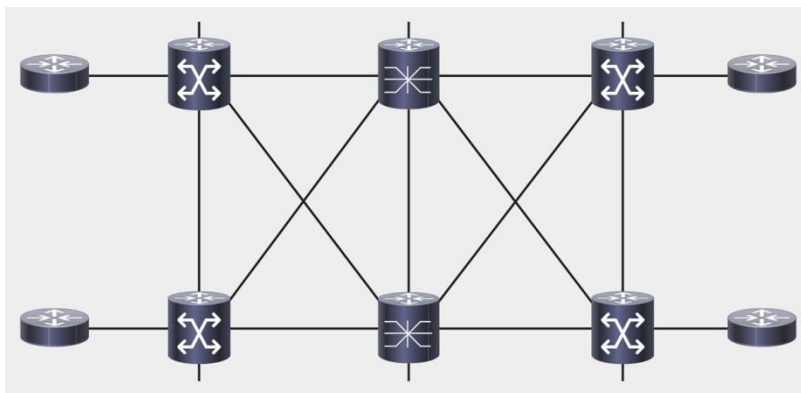
## Lab Outline

- Lab 1: Making and Testing Configuration Changes
  - Task 1: Making Configuration Changes
- Lab 2: Configuration Commit and Rollback
  - Task 1: Commit and Rollback Features
- Lab 3: Process Management
  - Task 1: Process Restartability
- Lab 4: Monitoring Processes
  - Task 1: Monitoring Processes
- Lab 5: Monitoring a Routing Protocol Process Restart
  - Task 1: Monitoring a Routing Protocol Process Restart
- Lab 6: Monitoring Memory
  - Task 1: Monitoring Memory
- Lab 7: Working with System Log Messages
  - Task 1: Working with System Log Messages
- Lab 8: Core Dumps
  - Task 1: Working with Core Dumps
- Lab 9: Tracing Packets on the Line Card
  - Task 1: Tracing Packets on the Line Card
- Lab 10: Tracing Cell Flow
  - Task 1: Tracing Cell Flow

## Lab Topology

Figure 1 shows the lab topology used in this course.

**Figure 1.** Lab Topology for Cisco IOS XR Basic Troubleshooting Training



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## Registration Email

For more information about schedules and registration for this course, contact [aeskt\\_registration@cisco.com](mailto:aeskt_registration@cisco.com).

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## Website Addresses for More Information

For more information, visit the following websites:

- Cisco Learning Services for Cisco products and technologies: <https://www.cisco.com/go/cls>
- Security training: <https://www.cisco.com/c/en/us/training-events/resources/learning-services/technology/security.html>
- Data center training: <https://www.cisco.com/c/en/us/training-events/resources/learning-services/technology/data-center.html>
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- Service provider mobility training: <https://www.cisco.com/c/en/us/training-events/resources/learning-services/technology/mobile.html>
- Routing training for service providers: <https://www.cisco.com/c/en/us/training-events/resources/learning-services/technology/service-provider-routing.html>
- Broadband video training for service providers: <https://www.cisco.com/c/en/us/>




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