

# Cisco 360 Learning Program for CCIE Routing and Switching: Troubleshooting Assessment Labs

Troubleshooting Assessments measure the student's ability to complete routing and switching over Cisco Certified Internetwork Expert (CCIE) level troubleshooting tasks. The Troubleshooting labs give learners the best approximation of the CCIE lab exam experience in terms of environment, complexity, and incident wording, yet provide thorough feedback that aids with learning and exam preparation. Students are able to learn to troubleshoot complex network topologies, to understand and solve minimally described CCIE problems, and to get used to the virtual lab environment so that time on the exam is used wisely.

The Cisco 360 Learning Program for CCIE<sup>®</sup> Routing and Switching program offers nine Troubleshooting Assessment labs, each consisting of 10 or 11 troubleshooting incidents. The Troubleshooting lab topology includes between 28 and 30 devices. Labs are delivered in the IOS software on Unix (IOU) environment that includes Layer 2 switching functionality.

## Duration: Troubleshooting session is two hours

Learners can schedule a Cisco 360 Troubleshooting Assessment lab using the scheduling tool on the Cisco 360 personal web portal.

## Target Audience

The Troubleshooting Assessment labs are intermediate to advanced level labs that should be attempted only by learners who are comfortable with their skills or who have taken other less-intensive graded labs in the Cisco 360 Learning Program for CCIE Routing and Switching.

## Performance Assessment Objectives

Upon completion of a Troubleshooting Assessment lab, learners should:

- Be able to read through a full-length Cisco CCIE troubleshooting lab and identify the tasks that they can easily perform
- After performing all of the easy tasks in a given Cisco CCIE troubleshooting lab, be able to list, prioritize, and perform the remaining tasks
- Be able to develop well-defined sets of rigorous troubleshooting and verification methods of specific and interrelated technologies
- Have a better understanding of the effectiveness of their problem-solving, troubleshooting, and verification methods

---

## Performance Assessment Prerequisites

Before performing Troubleshooting Assessment labs, learners should possess a solid mastery of the core foundational Cisco CCIE topics. These topics include Data Link Layer technologies, Interior Gateway Protocol (IGP), Route Redistribution, and Border Gateway Protocol (BGP).

## Recommended Order of Completion

Since Troubleshooting Assessment labs are designed to be taken once, it is recommended to take them in the order of difficulty. However, depending on the student's background and experience, the perceived complexity of the labs might vary.

### **Troubleshooting Assessments - Intermediate to Advanced (in recommended order)**

- Cisco 360 CCIE R&S Troubleshooting Lab 1 (CIERS1-TU-LAB02)
- Cisco 360 CCIE R&S Troubleshooting Lab 2 (CIERS2-TU-LAB02)
- Cisco 360 CCIE R&S Troubleshooting Lab 3 (CIERS2-TU-LAB04)

### **Troubleshooting Assessments - Advanced (in recommended order)**

- Cisco 360 CCIE R&S Troubleshooting Lab 4 (CIERS-TU-LAB01)
- Cisco 360 CCIE R&S Troubleshooting Lab 5 (CIERS-TU-LAB02)
- Cisco 360 CCIE R&S Troubleshooting Lab 6 (CIERS-TU-LAB03)
- Cisco 360 CCIE R&S Troubleshooting Lab 7 (CIERS-TU-LAB04)
- Cisco 360 CCIE R&S Troubleshooting Lab 8 (CIERS-TU-LAB05)
- Cisco 360 CCIE R&S Troubleshooting Lab 9 (CIERS-TU-LAB06)

## Performance Assessment Outline

Troubleshooting Assessment labs comprise 10 or 11 troubleshooting incidents of 20 or 22 points each. For technology topics please refer to the lab descriptions below.

Cisco 360 Troubleshooting Assessment Lab 1 (CIERS1-TU-LAB02) includes the following technology topics:

Incident 1: Layer 2 - Frame Relay

Incident 2: Layer 2 - PPP Multilink

Incident 3: Layer 3 - MPLS Core

Incident 4: Layer 3 - OSPF

Incident 5: Layer 3 - EIGRP

Incident 6: Layer 3 - IPv6 OSPF Routing

Incident 7: Layer 3 - BGP

Incident 8: Layer 3 - Multicast

Incident 9: Application - QoS

Incident 10: Services - NTP

Incident 11: Security - MPPE Encryption

---

Cisco 360 Troubleshooting Assessment Lab 2 (CIERS2-TU-LAB02) includes the following technology topics:

- Incident 1: Layer 2 - Frame Relay
- Incident 2: Layer 2 - PPP over Frame Relay
- Incident 3: Layer 3 - OSPF
- Incident 4: Layer 3 - EIGRP
- Incident 5: Layer 3 - RIP
- Incident 6: Layer 3 - BGP
- Incident 7: Layer 3 - PBR
- Incident 8: Application - QOS RSVP
- Incident 9: Services - GLBP
- Incident 10: Security - SSH

Cisco 360 Troubleshooting Assessment Lab 3 (CIERS2-TU-LAB04) includes the following technology topics:

- Incident 1: Layer 2 - Frame Relay
- Incident 2: Layer 3 - OSPF
- Incident 3: Layer 3 - EIGRP
- Incident 4: Layer 3 - MPLS
- Incident 5: Layer 3 - BGP
- Incident 6: Layer 3 - IPv6
- Incident 7: Layer 3 - Multicast
- Incident 8: Application - Accounting
- Incident 9: Services - NTP
- Incident 10: Security - BGP Security

Cisco 360 Troubleshooting Assessment Lab 4 (CIERS-TU-LAB01) includes the following technology topics:

- Incident 1: Layer 2 - Frame Relay
- Incident 2: Layer 2 - Serial Link PPP
- Incident 3: Layer 3 - MPLS Core
- Incident 4: Layer 3 - OSPF
- Incident 5: Layer 3 - RIP
- Incident 6: Layer 3 - EIGRP
- Incident 7: Layer 3 - BGP
- Incident 8: Services - DHCP
- Incident 9: Application - MQC
- Incident 10: Security - Dynamic Access Lists
- Incident 11: Layer 3 - PfR/OER

---

Cisco 360 Troubleshooting Assessment Lab 5 (CIERS-TU-LAB02) includes the following technology topics:

- Incident 1: Layer 2 - Frame Relay
- Incident 2: Layer 3 - OSPF
- Incident 3: Layer 3 - RIP
- Incident 4: Layer 3 - EIGRP
- Incident 5: Services - EIGRP Instability
- Incident 6: Layer 3 - BGP
- Incident 7: Layer 3 - IPv6
- Incident 8: Services - VRRP
- Incident 9: Application - Shaping
- Incident 10: Security - OSPF Authentication

Cisco 360 Troubleshooting Assessment Lab 6 (CIERS-TU-LAB03) includes the following technology topics:

- Incident 1: Layer 3 - EIGRP
- Incident 2: Layer 3 - BGP
- Incident 3: Layer 3 - OSPF
- Incident 4: Layer 3 - RIP
- Incident 5: Services - Control Interface instability
- Incident 6: Layer 3 - IPv6
- Incident 7: Services - HSRP
- Incident 8: Application - Frame Relay PVC Interface Priority
- Incident 9: Security - DoS protection
- Incident 10: Layer 2 - Frame Relay

Cisco 360 Troubleshooting Assessment Lab 7 (CIERS-TU-LAB04) includes the following technology topics:

- Incident 1: Layer 3 - EIGRP
- Incident 2: Layer 3 - BGP
- Incident 3: Layer 3 - OSPF
- Incident 4: Layer 3 - IPv4 Redistribution
- Incident 5: Services - EEM
- Incident 6: Layer 3 - MPLS VPN Internet
- Incident 7: Services - Control Plane
- Incident 8: Application - Frame Relay DE bit
- Incident 9: Security - IP Options
- Incident 10: Layer 2 - Frame Relay

---

Cisco 360 Troubleshooting Assessment Lab 8 (CIERS-TU-LAB05) includes the following technology topics:

Incident 1: Layer 3 - IP PIM SSM

Incident 2: Layer 3 - OSPF

Incident 3: Layer 2 - Ethernet Switching

Incident 4: Layer 3 - MBGP VPNv4 Redistribution

Incident 5: Layer 3 - Route Targets Export and Import

Incident 6: Layer 3 - IPv6 Routing

Incident 7: Layer3 - BGP

Incident 8: Security - Frame Relay PPP CHAP Authentication

Incident 9: Services - HSRP

Incident 10: Security - Zone Based Firewall

Cisco 360 Troubleshooting Assessment Lab 9 (CIERS-TU-LAB06) includes the following technology topics:

Incident 1: Layer 3 - BGP

Incident 2: Layer 3 - RIP

Incident 3: Layer 3 - BGP IGP Redistribution

Incident 4: Layer 3 - OSPF

Incident 5: Layer 2/3 - EIGRP and Ethernet Switching

Incident 6: Layer 3 - IPv6 Routing

Incident 7: Layer3 - Multicast

Incident 8: Services - Reliable Static Route

Incident 9: Services - TFTP

Incident 10: Management - EEM

## Lab Topologies

The Troubleshooting lab topology includes between 28 and 30 devices. It is delivered in the IOU environment that includes Layer 2 switching functionality. For example, figures 1 and 2 show the topologies used in Troubleshooting Assessment Lab 1 (CIERS1-TU-LAB02).

Figure 1. Troubleshooting Assessment Lab 1 Topology

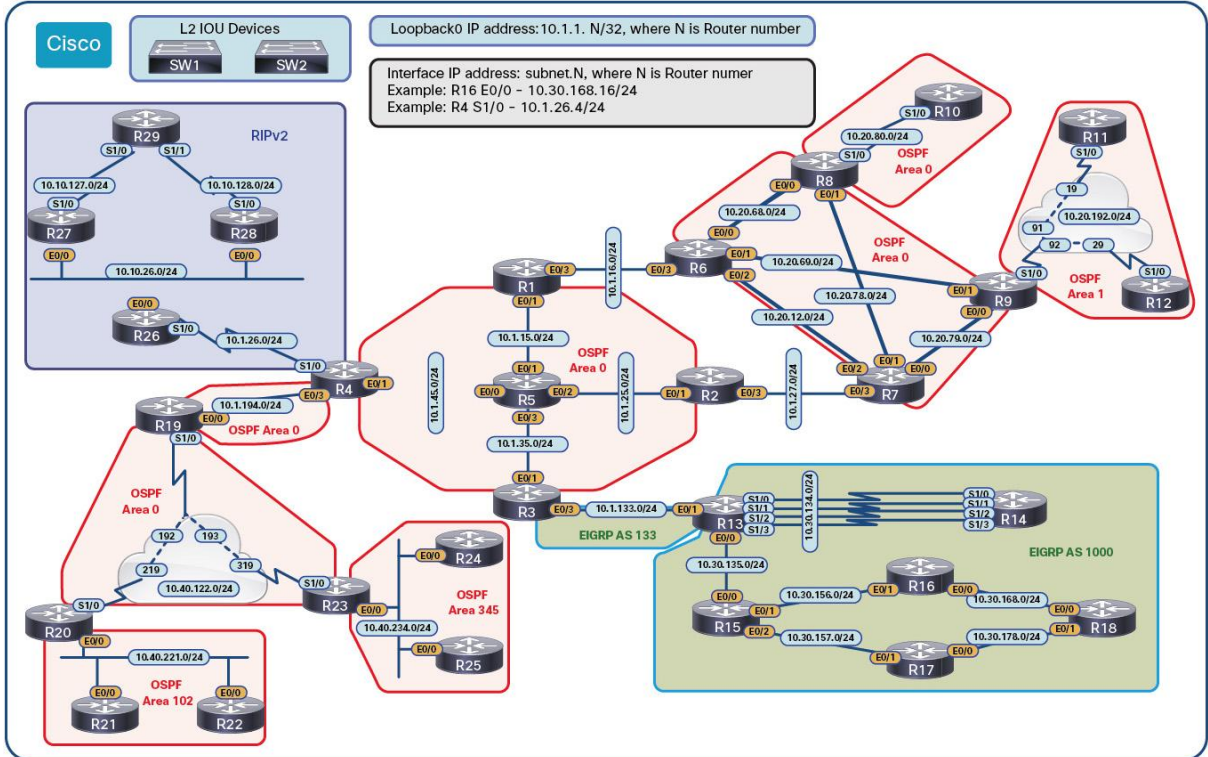
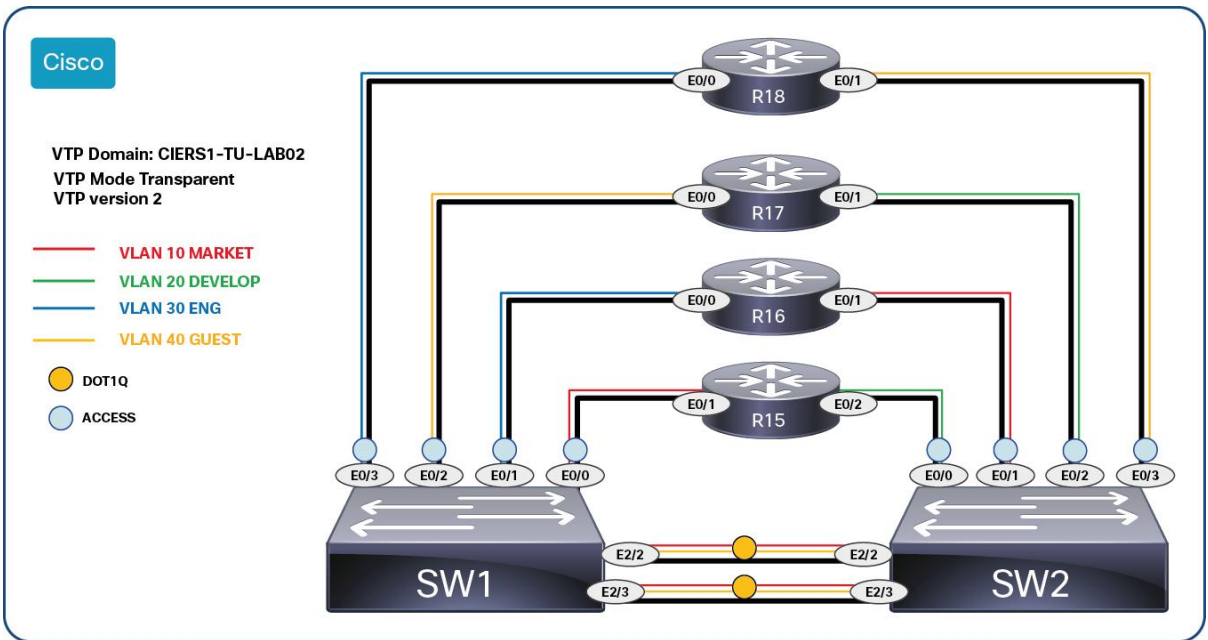


Figure 2. Ethernet Switching Cabling, VTP, and VLANs



---

## For More Information

For more information about Cisco 360 Learning Program for CCIE Routing and Switching, go to <http://www.cisco.com/go/360>.

The Cisco 360 Learning Program for CCIE Routing and Switching learning portal is available at <http://cisco360.cisco.com>.




---

Americas Headquarters  
Cisco Systems, Inc.  
San Jose, CA

Asia Pacific Headquarters  
Cisco Systems (USA) Pte. Ltd.  
Singapore

Europe Headquarters  
Cisco Systems International BV Amsterdam,  
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

 Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)