

Hands-On

# TSHOOT Troubleshooting and Maintaining Cisco IP Networks

CCNP Course 3



## Course Description

Revised CCNP Curriculum and Exams

Cisco has redesigned the CCNP courses and exams to reflect the evolving job tasks of global network professionals.

Course 1 ROUTE v1.0 Implementing Cisco IP Routing is a five-day instructor-led course in which network professionals learn to plan, configure, and verify the implementation of complex enterprise LAN and WAN routing solutions, using a range of routing protocols. ROUTE v1.0 also covers configuration of secure routing solutions to support branch offices and mobile workers. The course includes more than seven hours of e-learning lessons and demos that students can absorb at their own pace.

Course 2 SWITCH v1.0 Implementing Cisco IP Switched Networks is a five-day instructor-led course in which network professionals will learn to plan, configure, and verify the implementation of complex enterprise switching solutions, using Cisco Enterprise Campus Architecture. SWITCH v1.0 also covers secure integration of VLANs, WLANs, voice, and video into campus networks.

Course 3 TSHOOT v1.0 Troubleshooting and Maintaining Cisco IP Networks is a five-day instructor-led course in which network professionals learn to (1) plan and perform regular maintenance on complex enterprise routed and switched networks, and (2) use technology-based practices and a systematic ITIL-compliant approach to perform network troubleshooting. Extensive labs provide Hands-On learning and reinforce troubleshooting skills. Learn the advanced routing skills you need to provide scalability for Cisco routers that are connected to LANs and WANs as part of a medium-to-large network site. You will learn how to dramatically increase the number of routers and sites using EIGRP and OSPF techniques, instead of redesigning the network when additional sites or configurations are added.

This Course 3 TSHOOT - Troubleshooting and Maintaining Cisco IP Networks prepares you for the Cisco TSHOOT exam (642-832), you will gain the skills needed to maintain your complex network environments and diagnose and resolve network problems quickly and effectively. You will learn to troubleshoot and maintain particular technologies, and you will learn procedural and organizational aspects of the troubleshooting and maintenance processes.

You will practice skills and reinforce concepts by putting them to use in a controlled environment. In fact, you'll spend half the course performing hands-on work with trouble tickets. By the end of the course, you will have developed a set of tools and best practices that you can take back to your organization and many study aides and materials to pass your exam.

## Students Will Learn

- **Plan and document the most commonly performed maintenance functions in complex enterprise networks**
- **Develop a troubleshooting process to identify and resolve problems in complex enterprise networks**

- **Select tools that best support specific troubleshooting and maintenance processes in large, complex enterprise networks**
- **Maintenance procedures and fault resolution in switching- and routing-based environments**
- **Maintenance procedures and fault resolution in a secure infrastructure**
- **Troubleshoot and maintain integrated, complex enterprise networks**

## Target Audience

Network engineers

Network operations center (NOC) technical support personnel

Help desk technicians

Anyone who wants to improve their skills maintaining and troubleshooting complex Cisco IP networks

## Prerequisites

CCNA certification

OR

Familiarity with internetworking technologies and the ability to perform basic configuration of Cisco routers, including practical experience installing, operating, and maintaining Cisco routers and switches in an enterprise environment

## Course Outline

### 1. Maintenance Planning

- Maintenance Methodologies
  - Models
  - Procedures
  - Supporting Tools
- Maintenance Processes and Procedures
  - Essential Network Maintenance Tasks
  - Maintenance Planning
  - Change Control
  - Documentation
  - Disaster Recovery
  - Network Monitoring and Performance Measurement
- Tools, Applications, and Resources
  - Fundamental Tools
  - Documentation Tools
  - Disaster Recovery Tools

- Network Monitoring Tools
- Performance Measurement Tools

## 2. Planning Troubleshooting Processes

- Troubleshooting Methodologies
  - Troubleshooting Principles
  - Structured Network Troubleshooting
  - Common Troubleshooting Approaches
- Planning and Implementing Troubleshooting Procedures
  - Network Troubleshooting Procedures
  - Reporting, Defining, and Assigning Problems
  - Gathering Relevant Information
  - Analyzing Gathered Information
  - Proposing and Eliminating Problem Causes
  - Proposing Hypotheses
  - Testing and Verifying a Proposed Hypothesis
  - Wrapping Up the Process
- Integrating Troubleshooting into the Network Maintenance Process
  - Documentation
  - Creating a Baseline
  - Communication
  - Change Control

## 3. Maintenance and Troubleshooting Tools and Applications

- Assembling a Basic Diagnostic Toolkit
  - Selecting and Filtering Information
  - Connection Testing
  - Hardware Diagnostics
- Specialized Tools
  - Troubleshooting and Supporting Tools
  - Traffic Capturing
  - Statistics Gathering and Traffic Accounting
  - Notification

## 4. Troubleshooting Campus Switching-Based Solutions

- VLANs
  - LAN Switching Operation
  - Switch Data Structures
- Spanning Tree and Rapid Spanning Tree
  - Analyzing the Topology
  - Spanning Tree Failures
  - EtherChannel Operation
- Switched Virtual Interfaces and Inter-VLAN Routing
  - Inter-VLAN Routing and Multilayer Switching
  - Switched Virtual Interfaces and Routed Ports
- FHRPs
  - Using HSRP for First-Hop Redundancy
  - Verifying HSRP Operation

- Using VRRP and GLBP as Alternatives to HSRP
- Switch Performance Problems
  - Physical and Data Link Layer Problems
  - TCAM Problems
  - High CPU Load on Switches
- Additional Campus Switching Technologies (via E-Learning)

## 5. Troubleshooting Routing-Based Solutions

- Network Layer Connectivity
  - Layer 3 Connectivity Overview
  - Layer 3 Data Structures
  - Layer 3 to Layer 2 Mapping
- EIGRP
  - Data Structures
  - Information Flow
  - Cisco IOS EIGRP Commands
- OSPF
  - Data Structures
  - Information Flow Inside an Area
  - Information Flow from Area to Area
- Route Redistribution
  - Process
  - Verifying Redistribution
- BGP
  - Data Structures
  - Routing Information Flow
  - Cisco IOS Commands
- Router Performance Problems
  - High CPU
  - Cisco IOS Switching Paths
  - Router Memory Issues
- Troubleshooting NAT and DHCP (via E-Learning)

## 6. Network Security Solutions

- Troubleshooting Security Features
  - Network and Device Security
- Security Features Review
  - Troubleshooting Transport Layer Problems
  - Cisco IOS Firewall
  - Authentication, Authorization, and Accounting
- Additional Security Troubleshooting (via E-Learning)

## 7. Integrated, Complex Enterprise Networks

### Delivery Method

Instructor-Led with numerous Hands-On labs and exercises.

### **Equipment Requirements**

**(This apply's to our hands-on courses only)**

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

### **Course Length**

5 Days