

# TSHOOT (TROUBLESHOOTING AND MAINTAINING CISCO IP NETWORKS) 2.0

## Objetivo

O treinamento TSHOOT (Troubleshooting and Maintaining Cisco IP Networks) v2.0 apresenta teoria focada e intensivo uso de laboratório, este treinamento tem como objetivo ensinar aos profissionais que trabalham em ambientes de rede complexas as competências necessárias para manter suas redes em pleno funcionamento, diagnosticando e resolvendo problemas de forma rápida e eficaz. Serão abordadas as técnicas de troubleshooting para diferentes tecnologias, bem como os aspectos processuais e organizacionais do processo de manutenção e resolução de problemas. Após concluir este treinamento, o aluno será capaz de:

- Planejar e documentar as operações de manutenção em redes complexas
- Desenvolver um processo de resolução de problemas para identificar e resolver de maneira eficiente os problemas em redes complexas
- Selecionar as ferramentas adequadas para os processos de manutenção em redes convergentes
- Identificar os procedimentos de manutenção e resolução de falhas em roteadores e switches
- Identificar os procedimentos de manutenção e resolução de falhas em uma infra-estrutura segura
- Diagnosticar e solucionar problemas em redes convergentes

## Público Alvo

Este treinamento é recomendado aos profissionais de rede que atuam no diagnóstico e resolução de problemas em ambientes de rede convergentes, bem como aos parceiros e revendas Cisco. É recomendado também aos candidatos para a certificação CCNP Routing e Switching. Esse curso prepara o aluno para o exame de certificação 300-135 (TSHOOT).

## Pré-Requisitos

Para maior aproveitamento é recomendado que o aluno possua a certificação Cisco CCNA ou conhecimento e experiência equivalentes. Estes conhecimentos podem ser adquiridos com os treinamentos ICND (Interconnecting Cisco Network Devices) partes 1 e 2. É recomendado também que o aluno tenha participado dos treinamentos ROUTE e SWITCH.

## Carga Horária

40 horas (5 dias).

## Conteúdo Programático

- Course Introduction
  - Overview
  - Course Goal and Objectives
  - Course Flow

- Additional References
- Your Training Curriculum

## Describing Troubleshooting Methodologies

- What Is Troubleshooting?
- Diagnostic Principles
- Troubleshooting Methods
- Structured Network Troubleshooting
- Common Troubleshooting Approaches
- Top-Down Method
- Bottom-Up Method
- Divide-and-Conquer Method
- Following the Traffic Path
- Spot the Differences
- Swapping Components
- Case Study: Troubleshooting Approaches

## Using Troubleshooting Procedures

- Network Troubleshooting Procedures
- Defining the Problem
- Gathering Information
- Analyzing the Gathered Information
- Proposing and Eliminating Potential Problem Causes
- Proposing a Hypothesis
- Testing and Verifying a Hypothesis
- Solving and Documenting the Problem
- Case Study: Troubleshooting Procedures

## Following Recommended Practices During Routine Network Maintenance

- Common Maintenance Tasks
  - Troubleshooting as Part of Maintenance
  - Maintenance Planning
  - Change Control
  - Saving Configurations
  - Restoring Configurations
  - Archiving Configurations
  - Maintaining and Documenting a Network
  - Labeling Interfaces and Cables
  - Documentation
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- Implementing Time Services

- Implementing Logging Services
- Creating a Baseline
- Communication

## Using Basic Cisco IOS Troubleshooting Tools

- Layer 2 Switching Process
- Layer 3 Routing Process
- Filtering show Commands
- Filtering show Command Output Using Regular Expressions
- Redirecting show Command Output to a File
- Troubleshooting Connectivity
- Basic Hardware Diagnostics
- Debug Commands

## Using Specialized Troubleshooting Tools

- Troubleshooting Tools
- Categories of Troubleshooting Tools
- Case Study: Syslog
- Case Study: Troubleshooting with SPAN
- Case Study: Troubleshooting with SNMP
- Case Study: NetFlow
- Introducing the Cisco IOS Embedded Event Manager
- EEM Example: Logging when Configuration Mode Is Entered
- EEM Example: Bring Up a Disabled Interface

## Debrief of the First Troubleshooting at SECHNIK Networking Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: PC1 Unable to Access Data on the Server
- Troubleshooting Trunks
- Example of Troubleshooting Flow: PC2 Unable to Access the Internet
- Troubleshooting NAT
- Example of Troubleshooting Flow: PC3 Unable to Use SSH to Connect to the Server
- Troubleshooting Interfaces
- Example of Troubleshooting Flow: PC4 Unable to Access the Internet Through IPv6
- Troubleshooting IPv6 Address Assignment on Clients

## Debrief of the Second Troubleshooting at SECHNIK Networking Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: PC1 Unable to Access the Internet Host
- Troubleshooting Network Layer Connectivity
- Example of Troubleshooting Flow: PC2 Cannot Use SSH to Connect to the Internal Server
- TCP Handshake Example of Troubleshooting Flow: PC4 Does Not Acquire an IP Address via DHCP After Port Security Is Implemented
- Troubleshooting an Error-Disabled Port

## Debrief of the Third Troubleshooting at SECHNIK Networking Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: PC1 and PC2 Cannot Ping the Internet Host
- Troubleshooting DHCP
- Passive Interfaces with Different Routing Protocols
- Example of Troubleshooting Flow: PC3 Cannot Connect to the Internet
- IPv6 Review

## Debrief of the First Troubleshooting at TINC Garbage Disposal Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: GW2 Does Not Serve as the Backup to the Internet
- Troubleshooting BGP Neighbor Relationships
- Example of Troubleshooting Flow: PC1 and PC2 Do Not Have Internet Connectivity
- Troubleshooting Port Security
- Example of Troubleshooting Flow: Classroom PC2 Does Not Have Internet Connectivity
- Troubleshooting VLANs
- Troubleshooting a Native VLAN

## Debrief of the Second Troubleshooting at TINC Garbage Disposal Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: GW1 Only Has OSPF Adjacency with GW2
- Troubleshooting OSPF Adjacency
- Example of Troubleshooting Flow: R2 Is Not Accessible Via SSH v2
- Troubleshooting Management Access
- Example of Troubleshooting Flow: Duplicate IP Addresses on Routers R1 and R2
- Troubleshooting HSRP

## Debrief of the Third Troubleshooting at TINC Garbage Disposal Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Sporadic Access to Internet
- Troubleshooting Problems with Routing Sources
- Example of Troubleshooting Flow: Multiple Masters in a VRRP Group
- Troubleshooting VRRP
- Example of Troubleshooting Flow: Nonfunctional EtherChannel
- Troubleshooting EtherChannel

## Debrief of the Fourth Troubleshooting at TINC Garbage Disposal Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Occasional Lack of Network Connectivity for PCs 1 and 2
- Troubleshooting GLBP
- Troubleshooting FHRPs
- Example of Troubleshooting Flow: Sporadic Loss of Connectivity on PC4
- DHCP Snooping
- Cisco TAC
- Example of Troubleshooting Flow: No SSH Connectivity to GW2 From PC4

## Debrief of the First Troubleshooting at PILE Forensic Accounting Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Branch Without Internet Connectivity
- Troubleshooting EIGRP Adjacency
- Example of Troubleshooting Flow: ISP2 Not Serving as a Backup

## Debrief of the Second Troubleshooting at PILE Forensic Accounting Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: PC3 Unable to Remotely Access the Branch Router
- Example of Troubleshooting Flow: No Internet Connectivity
- BGP Filtering
- BGP Transit Area
- Troubleshooting BGP
- Example of Troubleshooting Flow: HQ1 Does Not Synchronize with the Primary NTP Server
- Troubleshooting NTP

## Debrief of the Third Troubleshooting at PILE Forensic Accounting Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Connectivity Issue After Disaster
- Disaster Recovery
- Troubleshooting Inter-VLAN Routing
- Example of Troubleshooting Flow: Connectivity Issue When Using Domain Names
- Troubleshooting DNS
- Remote Device Management Challenges

## Debrief of the Fourth Troubleshooting at PILE Forensic Accounting Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: EIGRP Reconfiguration Issue
- EIGRP Named Configuration
- Troubleshooting the EIGRP Stub
- Example of Troubleshooting Flow: Lack of Management Access
- Providing the Default Route on Layer 2 and Multilayer Devices

## Debrief of the Fifth Troubleshooting at PILE Forensic Accounting Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: Internet Access via Router HQ0 Does Not Work
- Troubleshooting BGP Route Selection
- Example of Troubleshooting Flow: PC3 Is Able to Use Telnet to Connect to Router BR
- Securing the Management Plane

## Debrief of the First Troubleshooting at Bank of POLONA Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Lack of Connectivity
- Troubleshooting Redistribution
- Example of Troubleshooting Flow: Suboptimal Routing
- Troubleshooting FHRP Tracking
- Example of Troubleshooting Flow: IP SLA Does Not Start
- Troubleshooting IP SLA

## Debrief of the Second Troubleshooting at Bank of POLONA Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Incorrect EIGRP Summarization
- Troubleshooting EIGRP Summarization
- Example of Troubleshooting Flow: IPv4 and IPv6 Internet Access Issue
- Troubleshooting Basic RIPng
- Example of Troubleshooting Flow: Internet Connectivity Lost
- Troubleshooting Access Lists

## Debrief of the Third Troubleshooting at Bank of POLONA Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: Branch 1 Cannot Reach the Headquarters
- Troubleshooting GRE Tunnels
- Example of Troubleshooting Flow: Route Summarization from Branch 3 Does Not Work
- • Troubleshooting OSPF Summarization
- Example of Troubleshooting Flow: AAA Does Not Work on Router BR1
- Troubleshooting AAA

## Debrief of the Fourth Troubleshooting at Bank of POLONA Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: PC0 Does Not Have Connectivity to IPv6 Internet Sites
- Troubleshooting OSPF for IPv6
- Example of Troubleshooting Flow: Totally Stubby Area on the Branch Is Not Working
- Troubleshooting OSPF Stubby Areas

## Debrief of the First Troubleshooting at RADULKO Transport Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: A Layer 2 Loop in the Network
- Troubleshooting STP
- Example of Troubleshooting Flow: Configuring a Route Map Causes a Local Connectivity Issue
- Troubleshooting PBR
- Example of Troubleshooting Flow: Cisco Discovery Protocol Neighboring Issue
- Troubleshooting Cisco Discovery Protocol and LLDP

## Debrief of the Second Troubleshooting at RADULKO Transport Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: PC1 and PC2 Do Not Have Connectivity to the Internet
- Troubleshooting VTP
- Example of Troubleshooting Flow: BR Does Not Have Connectivity to the Internet Via IPv6
- Troubleshooting EIGRP for IPv6
- Example of Troubleshooting Flow: IPv6 BGP Is Not Established to ISP2
- Troubleshooting MP-BGP

## Debrief of the Third Troubleshooting at RADULKO Transport Ltd.

- Trouble Ticket Overview
- Example of Troubleshooting Flow: Lack of Connectivity
- Troubleshooting the OSPFv3 Address Families Feature
- Example of Troubleshooting Flow: Authentication Problem

## Debrief of the Fourth Troubleshooting at RADULKO Transport Ltd.

- Trouble Tickets Overview
- Example of Troubleshooting Flow: External OSPF Routes on Router DST
- Example of Troubleshooting Flow: PC1 and PC2 Cannot Access the Internet via IPv6

## Labs:

- Discovery 1: Maintaining and Documenting a Network
- Discovery 2: Troubleshooting Connectivity
- Challenge 1: First Troubleshooting at SECHNIK Networking Ltd.
- Challenge 2: Second Troubleshooting at SECHNIK Networking Ltd.
- Challenge 3: Third Troubleshooting at SECHNIK Networking Ltd.
- Challenge 4: First Troubleshooting at TINC Garbage Disposal Ltd.
- Challenge 5: Second Troubleshooting at TINC Garbage Disposal Ltd.
- Challenge 6: Third Troubleshooting at TINC Garbage Disposal Ltd.
- Challenge 7: Fourth Troubleshooting at TINC Garbage Disposal Ltd.
- Challenge 8: First Troubleshooting at PILE Forensic Accounting Ltd.
- Challenge 9: Second Troubleshooting at PILE Forensic Accounting Ltd.
- Challenge 10: Third Troubleshooting at PILE Forensic Accounting Ltd.
- Challenge 11: Fourth Troubleshooting at PILE Forensic Accounting Ltd.
- Challenge 12: Fifth Troubleshooting at PILE Forensic Accounting Ltd.
- Challenge 13: First Troubleshooting at Bank of POLONA Ltd.
- Challenge 14: Second Troubleshooting at Bank of POLONA Ltd.



- Challenge 15: Third Troubleshooting at Bank of POLONA Ltd.
- Challenge 16: Fourth Troubleshooting at Bank of POLONA Ltd.
- Challenge 17: First Troubleshooting at RADULKO Transport Ltd.
- Challenge 18: Second Troubleshooting at RADULKO Transport Ltd.
- Challenge 19: Third Troubleshooting at RADULKO Transport Ltd.
- Challenge 20: Fourth Troubleshooting at RADULKO Transport Ltd.