

# IP, Volume II: CCIE Professional Development: 2

## **Troubleshooting IP Routing Protocols (CCIE Professional Development Series)**

The comprehensive, hands-on guide for resolving IP routing problems Understand and overcome common routing problems associated with BGP, IGRP, EIGRP, OSPF, IS-IS, multicasting, and RIP, such as route installation, route advertisement, route redistribution, route summarization, route flap, and neighbor relationships Solve complex IP routing problems through methodical, easy-to-follow flowcharts and step-by-step scenario instructions for troubleshooting Obtain essential troubleshooting skills from detailed case studies by experienced Cisco TAC team members Examine numerous protocol-specific debugging tricks that speed up problem resolution Gain valuable insight into the minds of CCIE engineers as you prepare for the challenging CCIE exams As the Internet continues to grow exponentially, the need for network engineers to build, maintain, and troubleshoot the growing number of component networks has also increased significantly. IP routing is at the core of Internet technology and expedient troubleshooting of IP routing failures is key to reducing network downtime and crucial for sustaining mission-critical applications carried over the Internet. Though troubleshooting skills are in great demand, few networking professionals possess the knowledge to identify and rectify networking problems quickly and efficiently. Troubleshooting IP Routing Protocols provides working solutions necessary for networking engineers who are pressured to acquire expert-level skills at a moment's notice. This book also serves as an additional study aid for CCIE candidates. Authored by Cisco Systems engineers in the Cisco Technical Assistance Center (TAC) and the Internet Support Engineering Team who troubleshoot IP routing protocols on a daily basis, Troubleshooting IP Routing Protocols goes through a step-by-step process to solving real-world problems. Based on the authors' combined years of experience, this complete reference alternates between chapters that cover the key aspects of a given routing protocol and chapters that concentrate on the troubleshooting steps an engineer would take to resolve the most common routing problems related to a variety of routing protocols. The book provides extensive, practical coverage of BGP, IGRP, EIGRP, OSPF, IS-IS, multicasting, and RIP as run on Cisco IOS Software network devices. Troubleshooting IP Routing Protocols offers you a full understanding of invaluable troubleshooting techniques that help keep your network operating at peak performance. Whether you are looking to hone your support skills or to prepare for the challenging CCIE exams, this essential reference shows you how to isolate and resolve common network failures and to sustain optimal network operation. This book is part of the Cisco CCIE Professional Development Series, which offers expert-level instruction on network design, deployment, and support methodologies to help networking professionals manage complex networks and prepare for CCIE exams.

## **Cisco LAN Switching (CCIE Professional Development series)**

This is the eBook version of the printed book. If the print book includes a CD-ROM, this content is not included within the eBook version. The most complete guide to Cisco Catalyst(r) switch network design, operation, and configuration Master key foundation topics such as high-speed LAN technologies, LAN segmentation, bridging, the Catalyst command-line environment, and VLANs Improve the performance of your campus network by utilizing effective Cisco Catalyst design, configuration, and troubleshooting techniques Benefit from the most comprehensive coverage of Spanning-Tree Protocol, including invaluable information on troubleshooting common Spanning Tree problems Master trunking concepts and applications, including ISL, 802.1Q, LANE, and MPOA Understand when and how to utilize Layer 3 switching techniques for maximum effect Understand Layer 2 and Layer 3 switching configuration with the Catalyst 6000 family, including coverage of the powerful MSFC Native IOS Mode Cisco LAN Switching provides the most comprehensive coverage of the best methods for designing, utilizing, and deploying LAN switching devices and technologies in a modern campus network. Divided into six parts, this book takes you beyond basic switching concepts by providing an array of proven design models, practical implementation solutions,

and troubleshooting strategies. Part I discusses important foundation issues that provide a context for the rest of the book, including Fast and Gigabit Ethernet, routing versus switching, the types of Layer 2 switching, the Catalyst command-line environment, and VLANs. Part II presents the most detailed discussion of Spanning-Tree Protocol in print, including common problems, troubleshooting, and enhancements, such as PortFast, UplinkFast, BackboneFast, and PVST+. Part III examines the critical issue of trunk connections, the links used to carry multiple VLANs through campus networks. Entire chapters are dedicated to LANE and MPOA. Part IV addresses advanced features, such as Layer 3 switching, VTP, and CGMP and IGMP. Part V covers real-world campus design and implementation issues, allowing you to benefit from the collective advice of many LAN switching experts. Part VI discusses issues specific to the Catalyst 6000/6500 family of switches, including the powerful Native IOS Mode of Layer 3 switching. Several features in Cisco LAN Switching are designed to reinforce concepts covered in the book and to help you prepare for the CCIE exam. In addition to the practical discussion of advanced switching issues, this book also contains case studies that highlight real-world design, implementation, and management issues, as well as chapter-ending review questions and exercises. This book is part of the Cisco CCIE Professional Development Series from Cisco Press, which offers expert-level instruction on network design, deployment, and support methodologies to help networking professionals manage complex networks and prepare for CCIE exams.

## **Network Security Technologies And Solutions (Ccie Professional Development Series)**

Praised in its first edition for its approachable style and wealth of information, this new edition provides readers a deep understanding of IP routing protocols, teaches how to implement these protocols using Cisco routers, and brings readers up to date protocol and implementation enhancements. Routing TCP/IP, Volume 1, Second Edition, includes protocol changes and Cisco features that enhance routing integrity, secure routers from attacks initiated through routing protocols, and provide greater control over the propagation of routing information for all the IP interior routing protocols.

### **Routing Tcp/Ip, Volume 1, 2/E**

Explores the functions, attributes, and applications of BGP-4 (Border Gateway Protocol Version 4), the de facto interdomain routing protocol, through practical scenarios and configuration examples.

## **Internet Routing Architectures**

Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. This book, combined with CCNA 200-301 Official Cert Guide, Volume 1, covers all the exam topics on the CCNA 200-301 exam. Master Cisco CCNA 200-301 exam topics Assess your knowledge with chapter-opening quizzes Review key concepts with exam preparation tasks This is the eBook edition of CCNA 200-301 Official Cert Guide, Volume 2. This eBook does not include access to the Pearson Test Prep practice exams that comes with the print edition. CCNA 200-301 Official Cert Guide, Volume 2 presents you with an organized test preparation routine through the use of proven series elements and techniques. “Do I Know This Already?” quizzes open each chapter and enable you to decide how much time you need to spend on each section. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly. CCNA 200-301 Official Cert Guide, Volume 2 from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Best-selling author Wendell Odom shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This complete study package includes A test-preparation routine proven to help you pass the exams Do I Know This Already? quizzes, which enable you to decide how much time you need to spend on each section Chapter-ending Key Topic tables, which help you drill on key concepts you must know thoroughly A free copy of the CCNA 200-301 Network Simulator, Volume 2 Lite software, complete with meaningful lab exercises that help you hone your hands-on skills with the command-

line interface for routers and switches Links to a series of hands-on config labs developed by the author Online interactive practice exercises that help you enhance your knowledge More than 50 minutes of video mentoring from the author An online interactive Flash Cards application to help you drill on Key Terms by chapter A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies Study plan suggestions and templates to help you organize and optimize your study time Well regarded for its level of detail, study plans, assessment features, hands-on labs, and challenging review questions and exercises, this official study guide helps you master the concepts and techniques that ensure your exam success. CCNA 200-301 Official Cert Guide, Volume 2, combined with CCNA 200-301 Official Cert Guide, Volume 1, walk you through all the exam topics found in the Cisco 200-301 exam. Topics covered in Volume 2 include IP access control lists Security services IP services Network architecture Network automation Companion Website: The companion website contains CCNA Network Simulator Lite software, practice exercises, 50 minutes of video training, and other study resources. See the Where Are the Companion Files on the last page of your eBook file for instructions on how to access. In addition to the wealth of content, this new edition includes a series of free hands-on exercises to help you master several real-world configuration activities. These exercises can be performed on the CCNA 200-301 Network Simulator Lite, Volume 2 software included for free on the companion website that accompanies this book.

## **CCNA 200-301 Official Cert Guide, Volume 2**

An essential guide to scaling and maintaining large networks. Understand critical scalability issues and the parameters to plan for future network growth Examine detailed migration plans with sample scenarios and working Cisco configuration examples Learn the pros and cons of each major routing protocol and how to choose the right one for your environment Understand the operations and scalability features of Protocol Independent Multicast (PIM) Implement effective quality of service and network management techniques Benefit from extensive large-scale network design and configuration case studies Large-Scale IP Network Solutions provides practical advice for network engineers as IP networks grow and become more complex. With in-depth discussions of the major IP protocols--including RIP, Enhanced IGRP, OSPF, IS-IS, and BGP--this book evaluates the strengths and weaknesses of each protocol. In addition to specific large and medium network protocol deployment issues, this guide contains special sections on more general topics such as network management, core and distribution networks, multicasting, and quality of service features. Router configuration examples, network case studies, and sample scenarios all help you put the book's information to use and become an effective Cisco Certified Internetwork Expert (CCIE). In addition, this title offers unique elements to help you prepare for the exam, including: case studies that highlight real-world design, implementation, management, and troubleshooting issues; configuration examples from actual network input and output; scenarios that help you put solutions to use; and review questions and exercises.

### **Large-scale IP Network Solutions**

This is the eBook version of the printed book. Note that this eBook does not contain the practice test software that accompanies the print book. Trust the best selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. Master CCIE Routing and Switching 4.0 blueprint exam topics Assess your knowledge with chapter-opening quizzes Review key concepts with Exam Preparation Tasks CCIE Routing and Switching Certification Guide, Fourth Edition, is a best-of-breed Cisco® exam study guide that focuses specifically on the objectives for the CCIE® Routing and Switching written exam. Well-respected networking professionals Wendell Odom, Rus Healy, and Denise Donohue share preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. CCIE Routing and Switching Certification Guide, Fourth Edition, presents you with an organized test preparation routine through the use of proven series elements and techniques. “Do I Know This Already?” quizzes open each chapter and allow

you to decide how much time you need to spend on each section. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks sections help drill you on key concepts you must know thoroughly. Well regarded for its level of detail, assessment features, and challenging review questions and exercises, this official study guide helps you master the concepts and techniques that will enable you to succeed on the exam the first time. CCIE Routing and Switching Certification Guide, Fourth Edition, is part of a recommended learning path from Cisco that includes simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction offered by authorized Cisco Learning Partners worldwide, please visit [www.cisco.com/go/authorizedtraining](http://www.cisco.com/go/authorizedtraining). The official study guide helps you master all the topics on the CCIE Routing and Switching written exam, including: Bridging and LAN switching IP addressing, IP services, TCP, UDP, and application protocol details Layer 3 forwarding concepts EIGRP, OSPF, and BGP routing protocols Quality of service Frame Relay MPLS IP multicast IPv6 Router and switch security Troubleshooting This volume is part of the Certification Guide Series from Cisco Press®. Books in this series provide officially developed exam preparation materials that offer assessment, review, and practice to help Cisco Career Certification candidates identify weaknesses, concentrate their study efforts, and enhance their confidence as exam day nears.

## **CCIE Routing and Switching Certification Guide**

The essential reference for security pros and CCIE Security candidates: identity, context sharing, encryption, secure connectivity and virtualization Integrated Security Technologies and Solutions – Volume II brings together more expert-level instruction in security design, deployment, integration, and support. It will help experienced security and network professionals manage complex solutions, succeed in their day-to-day jobs, and prepare for their CCIE Security written and lab exams. Volume II focuses on the Cisco Identity Services Engine, Context Sharing, TrustSec, Application Programming Interfaces (APIs), Secure Connectivity with VPNs, and the virtualization and automation sections of the CCIE v5 blueprint. Like Volume I, its strong focus on interproduct integration will help you combine formerly disparate systems into seamless, coherent, next-generation security solutions. Part of the Cisco CCIE Professional Development Series from Cisco Press, it is authored by a team of CCIEs who are world-class experts in their Cisco security disciplines, including co-creators of the CCIE Security v5 blueprint. Each chapter starts with relevant theory, presents configuration examples and applications, and concludes with practical troubleshooting. Review the essentials of Authentication, Authorization, and Accounting (AAA) Explore the RADIUS and TACACS+ AAA protocols, and administer devices with them Enforce basic network access control with the Cisco Identity Services Engine (ISE) Implement sophisticated ISE profiling, EzConnect, and Passive Identity features Extend network access with BYOD support, MDM integration, Posture Validation, and Guest Services Safely share context with ISE, and implement pxGrid and Rapid Threat Containment Integrate ISE with Cisco FMC, WSA, and other devices Leverage Cisco Security APIs to increase control and flexibility Review Virtual Private Network (VPN) concepts and types Understand and deploy Infrastructure VPNs and Remote Access VPNs Virtualize leading Cisco Security products Make the most of Virtual Security Gateway (VSG), Network Function Virtualization (NFV), and microsegmentation

## **Integrated Security Technologies and Solutions - Volume II**

This work examines the topic of routing, and provides detailed coverage of the routing protocol, OSPF (Open Shortest Path First) which was developed by the author. Part One defines Internet routing in general and discusses a variety of protocols in addition to OSPF. Part Two then delves into the details of the OSPF protocol, explaining why it was developed and how it improves network efficiency. Exercises are provided.

## **Routing TCP/IP, Volume 2 (CCIE Professional Development), 2/e (Cisco Press)**

An Essential Guide to Understanding and Implementing IP Routing Protocols Cisco's authoritative single-source guide to IP routing protocols for enterprise and service provider environments Service providers and

large enterprises are converging on a common IP infrastructure that supports rapid deployment of high-value services. Demand is soaring for highly skilled IP network engineers who can implement and run these infrastructures. Now, one source combines reliable knowledge about contemporary IP routing protocols and expert hands-on guidance for using them with Cisco IOS, IOS XE, and IOS XR operating systems. After concisely reviewing the basics, three Cisco experts fully explain static routing, EIGRP, OSPF, IS-IS, and BGP routing protocols. Next, they introduce advanced routing with policies and redistribution, sophisticated BGP-based traffic engineering, and multicast. They present comprehensive coverage of IPv6, from its multicast implementation to its completely revamped address structure. Finally, they discuss advanced high availability techniques, including fast routing convergence. IP Routing on Cisco IOS, IOS XE, and IOS XR presents each protocol conceptually, with intuitive illustrations, realistic configurations, and appropriate output. To help IOS users master IOS XE and IOS XR, differences in operating systems are explicitly identified, and side-by-side feature command references are presented. All content fully aligns with Learning@Cisco, providing efficient self-study for multiple Cisco Career Certifications, including CCNA®/CCNP®/CCIE® Service Provider, CCIE Routing & Switching, Cisco IOS XR Specialist Certification, and the routing components of several additional Cisco Certifications. Brad Edgeworth, CCIE No. 31574 (R&S & SP) has been with Cisco since 2011 as Systems Engineer and Technical Leader. Formerly a network architect and consultant for various Fortune® 500 companies, his 18 years of IT experience includes extensive architectural and operational work in enterprise and service provider environments. He is a Cisco Live distinguished speaker presenting on IOS XR. Aaron Foss, CCIE No. 18761 (R&S & SP), a High Touch Engineer with the Cisco Focused Technical Support (FTS) organization, works with large service providers to troubleshoot MPLS, QoS, and IP routing issues. He has more than 15 years of experience designing, deploying, and troubleshooting IP networks. Ramiro Garza Rios, CCIE No. 15469 (R&S, SP, and Security), Senior Network Consulting Engineer with Cisco Advanced Services, plans, designs, implements, and optimizes next-generation service provider networks. Before joining Cisco in 2005, he was Network Consulting and Presales Engineer for a Cisco Gold Partner in Mexico, where he planned and deployed both enterprise and service provider networks. Foreword by Norm Dunn, Senior Product Manager, Learning@Cisco Global Product Management, Service Provider Portfolio Understand how IOS®, IOS XE, and IOS XR operating systems compare Master IPv4 concepts, addressing structure, and subnetting Learn how routers and routing protocols work, and how connected networks and static routes behave from the router's perspective Work with EIGRP and distance vector routing Deploy basic and advanced OSPF, including powerful techniques for organizing routing domains, path selection, and optimization Compare IS-IS with OSPF, and implement advanced IS-IS multilevel routing, optimization, and path selection Make the most of BGP and route manipulation, including IOS/IOS XE route maps and IOS XR's highly scalable Route Policy Language Use advanced policy-based route manipulation and filtering Implement route redistribution: rules, potential problems, and solutions Leverage BGP communities, summaries, and other router conservation techniques Discover how IPv6 changes IP address and command structure Establish highly efficient multicast routing in IPv4 and IPv6 environments Systematically improve network availability and operational uptime through event driven detection and fast routing convergence

## OSPF

The definitive guide to designing and deploying Cisco IP multicast networks Clear explanations of the concepts and underlying mechanisms of IP multicasting, from the fundamentals to advanced design techniques Concepts and techniques are reinforced through real-world network examples, each clearly illustrated in a step-by-step manner with detailed drawings Detailed coverage of PIM State Rules that govern Cisco router behavior In-depth information on IP multicast addressing, distribution trees, and multicast routing protocols Discussions of the common multimedia applications and how to deploy them Developing IP Multicast Networks, Volume I, covers an area of networking that is rapidly being deployed in many enterprise and service provider networks to support applications such as audio and videoconferencing, distance learning, and data replication. The concepts used in IP multicasting are unlike any other network protocol, making this book a critical tool for networking professionals who are implementing this technology. This book provides a solid foundation of basic IP multicast concepts, as well as the information

needed to actually design and deploy IP multicast networks. Using examples of common network topologies, author Beau Williamson discusses the issues that network engineers face when trying to manage traffic flow. *Developing IP Multicast Networks, Volume I*, includes an in-depth discussion of the PIM protocol used in Cisco routers and detailed coverage of the rules that control the creation and maintenance of Cisco mroute state entries. The result is a comprehensive guide to the development and deployment of IP multicast networks using Cisco routers and switches.

## **IP Routing on Cisco IOS, IOS XE, and IOS XR**

Trust the best selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. --Master Cisco CCIE R&S v5.0 exam topics, including BGP, QoS, WANs, IP multicast, security, and MPLS --Assess your knowledge with chapter-opening quizzes --Review key concepts with exam preparation tasks This is the eBook edition of the CCIE Routing and Switching v5.0 Official Cert Guide, Volume 2, Fifth Edition. This eBook does not include the companion CD-ROM with practice exam that comes with the print edition. CCIE Routing and Switching v5.0 Official Cert Guide, Volume 2, Fifth Edition from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Expert instructors Narbik Kocharians and Terry Vinson share preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This second of two volumes covers IP BGP routing, quality of service (QoS), wide area networks, IP multicast, network security, and Multiprotocol Label Switching (MPLS) topics. This complete study package includes --A test-preparation routine proven to help you pass the exams --\"Do I Know This Already?\" quizzes, which enable you to decide how much time you need to spend on each section --Chapter-ending exercises, which help you drill on key concepts you must know thoroughly --The powerful Pearson IT Certification Practice Test software, complete with hundreds of well-reviewed, exam-realistic questions, customization options, and detailed performance reports --A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies --Study plan suggestions and templates to help you organize and optimize your study time Well regarded for its level of detail, study plans, assessment features, challenging review questions and exercises, this official study guide helps you master the concepts and techniques that ensure your exam success. CCIE Routing and Switching v5.0 Official Cert Guide, Volume 2, Fifth Edition is part of a recommended learning path from Cisco that includes simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction offered by authorized Cisco Learning Partners worldwide, please visit [www.cisco.com/go/authorizedtraining](http://www.cisco.com/go/authorizedtraining). The official study guide helps you master topics on the CCIE Routing and Switching v5.0 exams, including: --BGP operations and routing policies --QoS --WANs --IP Multicast --Device and network security and tunneling technologies --MPLS

## **Developing IP Multicast Networks**

\"Cisco OSPF Command and Configuration Handbook is a clear, concise, and complete source of documentation for all Cisco IOS Software OSPF commands. The way you use this book will depend on your objectives. If you are preparing for the CCIE written and lab exams, then this book can be used as a laboratory guide to learn the purpose and proper use of every OSPF command. If you are a network designer, then this book can be used as a ready reference for any OSPF command. Author Bill Parkhurst provides concise snapshots of every command with regard to command purpose, usage, syntax explanation, initial introduction in Cisco IOS Software, and cross references to related commands also covered in the book. This book covers many OSPF topic areas, including interface configuration, OSPF area configuration, route filtering, OSPF process configuration, route cost, default route generation, redistribution, administrative distance, OSPF neighbor relationships, route summarization, and show, debug, and clear commands\"--Resource description page.

## **CCIE Routing and Switching v5.0 Official Cert Guide, Volume 2**

This reference guide to the commands contained with BGP-4 explains the intended use and function and how to properly configure each command. Scenarios are presented to demonstrate every facet of the command and its use.

### **Cisco OSPF Command and Configuration Handbook**

Pick up where certification exams leave off. With this practical, in-depth guide to the entire network infrastructure, you'll learn how to deal with real Cisco networks, rather than the hypothetical situations presented on exams like the CCNA. Network Warrior takes you step by step through the world of routers, switches, firewalls, and other technologies based on the author's extensive field experience. You'll find new content for MPLS, IPv6, VoIP, and wireless in this completely revised second edition, along with examples of Cisco Nexus 5000 and 7000 switches throughout. Topics include: An in-depth view of routers and routing Switching, using Cisco Catalyst and Nexus switches as examples SOHO VoIP and SOHO wireless access point design and configuration Introduction to IPv6 with configuration examples Telecom technologies in the data-networking world, including T1, DS3, frame relay, and MPLS Security, firewall theory, and configuration, as well as ACL and authentication Quality of Service (QoS), with an emphasis on low-latency queuing (LLQ) IP address allocation, Network Time Protocol (NTP), and device failures

### **Cisco BGP-4 Command and Configuration Handbook**

A detailed examination of exterior routing protocols and advanced IP routing issues Routing TCP/IP, Volume II, enables you to: Master the operational components, configuration, and troubleshooting of BGP-4-the de facto interdomain routing protocol Understand the operation, configuration, and troubleshooting of NAT Learn how to deploy, configure, and troubleshoot IP multicast routing through an array of case studies and exercises Familiarize yourself with the design goals and current state of IPv6, the new generation of the IP protocol Implement router management through a diverse range of expert-tested methods Test and validate your knowledge with practical, comprehensive review questions, configuration exercises, and troubleshooting exercises Further your CCIE preparation while mastering advanced TCP/IP concepts The complexities of exterior gateway protocols, including TCP connections, message states, path attributes, interior routing protocol interoperation, and setting up neighbor connections, require a comprehensive understanding of router operations in order to manage network growth. Routing TCP/IP, Volume II, provides you with the expertise necessary to understand and implement Border Gateway Protocol Version 4 (BGP-4), multicast routing, Network Address Translation (NAT), IPv6, and effective router management techniques. Jeff Doyle's practical approach, easy-to-read format, and comprehensive topic coverage make this book an instant classic and a must-have addition to any network professional's library. Routing TCP/IP, Volume II, expands upon the central theme of Volume I: scalability and management of network growth. Volume II moves beyond the interior gateway protocols covered in Volume I to examine both inter-autonomous system routing and more exotic routing issues such as multicasting and IPv6. This second volume follows the same informational structure used effectively in Volume I: discussing the topic fundamentals, following up with a series of configuration examples designed to show the concept in a real-world environment, and relying on tested troubleshooting measures to resolve any problems that might arise. This book helps you accomplish more than earning the highly valued CCIE number after your name; it also helps you develop the knowledge and skills that are essential to perform your job at an expert level. Whether you are pursuing CCIE certification, need to review for your CCIE recertification exam, or are just looking for expert-level advice on advanced routing issues, Routing TCP/IP, Volume II, helps you understand foundation concepts and apply best practice techniques for effective network growth and management.

### **Network Warrior**

IP Multicast Volume I: Cisco IP Multicast Networking Design, deploy, and operate modern Cisco IP

multicast networks IP Multicast, Volume I thoroughly covers basic IP multicast principles and routing techniques for building and operating enterprise and service provider networks to support applications ranging from videoconferencing to data replication. After briefly reviewing data communication in IP networks, the authors thoroughly explain network access, Layer 2 and Layer 3 multicast, and protocol independent multicast (PIM). Building on these essentials, they introduce multicast scoping, explain IPv6 multicast, and offer practical guidance for IP multicast design, operation, and troubleshooting. Key concepts and techniques are illuminated through real-world network examples and detailed diagrams. Reflecting extensive experience working with Cisco customers, the authors offer pragmatic discussions of common features, design approaches, deployment models, and field practices. You'll find everything from specific commands to start-to-finish methodologies: all you need to deliver and optimize any IP multicast solution. IP Multicast, Volume I is a valuable resource for network engineers, architects, operations technicians, consultants, security professionals, and collaboration specialists. Network managers and administrators will find the implementation case study and feature explanations especially useful.

- Review IP multicasting applications and what makes multicast unique
- Understand IP multicast at the access layer, from layered encapsulation to switching multicast frames
- Work with Layer 2 switching domains, IPv4 group addresses, and MAC address maps
- Utilize Layer 3 multicast hosts and understand each PIM mode
- Implement basic forwarding trees and rendezvous points
- Compare multicast forwarding modes: ASM, SSM, and PIM Bidir
- Plan and properly scope basic multicast networks
- Choose your best approach to forwarding replication
- Apply best practices for security and resiliency
- Understand unique IPv6 deployment issues
- Efficiently administer and troubleshoot your IP multicast network

This book is part of the Networking Technology Series from Cisco Press®, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers. Category: Networking Covers: IP Multicast

## **Routing TCP/IP, Volume II (CCIE Professional Development)**

Modernize and optimize network management with APIs and automation Legacy network management approaches don't scale adequately and can't be automated well. This guide will help meet tomorrow's challenges by adopting network programmability based on Application Programming Interfaces (APIs). Using these techniques, you can improve efficiency, reliability, and flexibility; simplify implementation of high-value technologies; automate routine administrative and security tasks; and deploy services far more rapidly. Four expert authors help you transition from a legacy mindset to one based on solving problems with software. They explore today's emerging network programmability and automation ecosystem; introduce each leading programmable interface; and review the protocols, tools, techniques, and technologies that underlie network programmability. You'll master key concepts through hands-on examples you can run using Linux, Python, Cisco DevNet sandboxes, and other easily accessible tools. This guide is for all network architects, engineers, operations, and software professionals who want to integrate programmability into their networks. It offers valuable background for Cisco DevNet certification—and skills you can use with any platform, whether you have software development experience or not. Master core concepts and explore the network programmability stack

- Manage network software and run automation scripts in Linux environments
- Solve real problems with Python and its Napalm and Nornir automation frameworks
- Make the most of the HTTP protocol, REST architectural framework, and SSH
- Encode your data with XML, JSON, or YAML
- Understand and build data models using YANG that offer a foundation for model-based network programming
- Leverage modern network management protocols, from gRPC and gNMI to NETCONF and RESTCONF
- Meet stringent service provider KPIs in large-scale, fast-changing networks
- Program Cisco devices running IOS XE, IOS XR, and NX-OS as well as Meraki, DNA Center, and Webex platforms
- Program non-Cisco platforms such as Cumulus Linux and Arista EOS
- Go from “zero to hero” with Ansible network automation
- Plan your next steps with more advanced tools and technologies

## **IP Multicast**

Master the basics of data centers to build server farms that enhance your Web site performance Learn design



guidelines that show how to deploy server farms in highly available and scalable environments Plan site performance capacity with discussions of server farm architectures and their real-life applications to determine your system needs Today's market demands that businesses have an Internet presence through which they can perform e-commerce and customer support, and establish a presence that can attract and increase their customer base. Underestimated hit ratios, compromised credit card records, perceived slow Web site access, or the infamous \"Object Not Found\" alerts make the difference between a successful online presence and one that is bound to fail. These challenges can be solved in part with the use of data center technology. Data centers switch traffic based on information at the Network, Transport, or Application layers. Content switches perform the \"best server\" selection process to direct users' requests for a specific service to a server in a server farm. The best server selection process takes into account both server load and availability, and the existence and consistency of the requested content. Data Center Fundamentals helps you understand the basic concepts behind the design and scaling of server farms using data center and content switching technologies. It addresses the principles and concepts needed to take on the most common challenges encountered during planning, implementing, and managing Internet and intranet IP-based server farms. An in-depth analysis of the data center technology with real-life scenarios make Data Center Fundamentals an ideal reference for understanding, planning, and designing Web hosting and e-commerce environments.

## **Network Programmability and Automation Fundamentals**

Annotation \"CCIE Security Practice Labs provides a series of complete practice labs that mirror the difficult hands-on lab exam. Written by a CCIE Security engineer and Cisco Systems CCIE proctor, this book lays out seven end-to-end scenarios that are both complex and realistic, providing you with the practice needed to prepare for your lab examination and develop critical-thinking skills that are essential for resolving complex, real-world security problems. While many engineers are able to configure single technologies in standalone environments, most will struggle when dealing with integrated technologies in heterogeneous environments.\" \"CCIE Security Practice Labs consists of seven full-blown labs. The book does not waste time covering conceptual knowledge found in other security manuals, but focuses exclusively on these complex scenarios. The structure of each chapter is the same, covering a broad range of security topics. Each chapter starts with an overview, equipment list, and general guidelines and instructions on setting up the lab topology, including cabling instructions, and concludes with verification, hints, and troubleshooting tips, which highlight show and debug commands. The companion CD-ROM contains solutions for all of the labs, including configurations and common show command output from all the devices in the topology.\"--BOOK JACKET. Title Summary field provided by Blackwell North America, Inc. All Rights Reserved.

## **Data Center Fundamentals**

Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for the CCNP and CCIE Data Center Core DCCOR 350-601 exam. Well regarded for its level of detail, study plans, assessment features, and challenging review questions and exercises, CCNP and CCIE Data Center Core DCCOR 350-601 Official Cert Guide, Second Edition helps you master the concepts and techniques that ensure your exam success and is the only self-study resource approved by Cisco. Data center networking experts Somit Maloo, Iskren Nikolov, and Firas Ahmed share preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This complete study package includes A test-preparation routine proven to help you pass the exam Do I Know This Already? quizzes, which let you decide how much time you need to spend on each section Exam Topic lists that make referencing easy Chapter-ending exercises, which help you drill on key concepts you must know thoroughly A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies Study plan suggestions and templates to help you organize and optimize your study time Content Update Program: This fully updated second edition includes the latest topics and additional information covering changes to the latest CCNP and CCIE Data Center Core DCCOR 350-601 exam. Visit [ciscopress.com/newcerts](http://ciscopress.com/newcerts) for information on annual digital updates for this book that

align to Cisco exam blueprint version changes. This official study guide helps you master all the topics on the CCNP and CCIE Data Center Core DCCOR 350-601 exam, including Network Compute Storage network Automation Security Also available from Cisco Press is the CCNP and CCIE Data Center Core DCCOR 350-601 Official Cert Guide Premium Edition eBook and Practice Test, Second Edition. This digital-only certification preparation product combines an eBook with enhanced Pearson Test Prep Practice Test. This integrated learning package Enables you to focus on individual topic areas or take complete, timed exams Includes direct links from each question to detailed tutorials to help you understand the concepts behind the questions Provides unique sets of exam-realistic practice questions Tracks your performance and provides feedback on a module-by-module basis, laying out a complete assessment of your knowledge to help you focus your study where it is needed most

## **CCIE Security Practice Labs**

This Cisco-authorized, self-paced foundation learning tool helps you prepare for both the 200-101 ICND2 and 200-120 CCNA exams. It delivers the higher level of foundational knowledge you need to prepare for the ICND2 exam (and the ICND2 components in the CCNA Composite exam), and to succeed in a wide range of Cisco networking job roles. This book teaches with numerous examples, illustrations, and real-world scenarios, helping you rapidly gain both expertise and confidence. Its coverage ranges from internetworking essentials to advanced diagnostic and debugging techniques that are needed by virtually all Cisco professionals. The book teaches you the technology and theory for building and troubleshooting medium to large scale internetworks, including an in-depth study of VLANs as well as redundancy technologies such as HSRP, STP, and EtherChannel. Additional topics include: implementing scalable mid-sized networks; troubleshooting basic connectivity; implementing EIGRP solutions and OSPF-based scalable multiarea networks; understanding WAN technologies; managing network devices; and advanced troubleshooting. This edition has been fully updated to reflect Cisco's latest exam blueprints. Content has been reorganized, simplified, and expanded to help you learn even more efficiently. The book presents you with information applicable to the CCNA that can't be found in any other CCNA text, including an overview and primer of MPLS, real-world examples, and real-world information on how to more effectively work with the Cisco TAC and diagnose software defects. The book also shows you how to use the Cisco 'Debug' command to learn how protocols work. Interconnecting Cisco Network Devices, Part 2 (ICND2) Foundation Learning Guide, Fourth Edition is part of a recommended learning path from Cisco that includes simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction from authorized Cisco Learning Partners worldwide, please visit [www.cisco.com/go/authorizedtraining](http://www.cisco.com/go/authorizedtraining). VLANs, Spanning Tree Protocol (STP), Hot Standby Routing Protocol (HSRP), and EtherChannel Troubleshooting basic connectivity in IPv4, IPv6, and virtualized network environments EIGRP theory, operation, and troubleshooting (IPv4 and IPv6) OSPF terminology, operation, configuration, and troubleshooting (IPv4 and IPv6) WAN technologies, terminology, theory, configuration, and troubleshooting VPNs and WANs: comparisons and integration Device management with SNMP, SYSLOG, and Cisco Flexible NetFlow Cisco Integrated Service Routers: architecture, configuration management, Cisco IOS software images, and licensing Advanced diagnostics, Cisco IOS software bugs, and debugging

## **CCNP and CCIE Data Center Core DCCOR 350-601 Official Cert Guide**

Trust the best selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. --Master Cisco CCNA Security 210-260 Official Cert Guide exam topics --Assess your knowledge with chapter-opening quizzes --Review key concepts with exam preparation tasks This is the eBook edition of the CCNA Security 210-260 Official Cert Guide. This eBook does not include the companion CD-ROM with practice exam that comes with the print edition. CCNA Security 210-260 Official Cert Guide presents you with an organized test-preparation routine through the use of proven series elements and techniques. "Do I Know This Already?" quizzes open each chapter and enable

you to decide how much time you need to spend on each section. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly. CCNA Security 210-260 Official Cert Guide focuses specifically on the objectives for the Cisco CCNA Security exam. Networking Security experts Omar Santos and John Stuppi share preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. Well regarded for its level of detail, assessment features, comprehensive design scenarios, and challenging review questions and exercises, this official study guide helps you master the concepts and techniques that will enable you to succeed on the exam the first time. The official study guide helps you master all the topics on the CCNA Security exam, including --Networking security concepts --Common security threats --Implementing AAA using IOS and ISE --Bring Your Own Device (BYOD) --Fundamentals of VPN technology and cryptography --Fundamentals of IP security --Implementing IPsec site-to-site VPNs --Implementing SSL remote-access VPNs using Cisco ASA --Securing Layer 2 technologies --Network Foundation Protection (NFP) --Securing the management plane on Cisco IOS devices --Securing the data plane --Securing routing protocols and the control plane --Understanding firewall fundamentals --Implementing Cisco IOS zone-based firewalls --Configuring basic firewall policies on Cisco ASA --Cisco IPS fundamentals --Mitigation technologies for e-mail- and web-based threats --Mitigation technologies for endpoint threats CCNA Security 210-260 Official Cert Guide is part of a recommended learning path from Cisco that includes simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction offered by authorized Cisco Learning Partners worldwide, please visit <http://www.cisco.com/web/learning/index.html>.

## **Interconnecting Cisco Network Devices, Part 2 (ICND2) Foundation Learning Guide**

CCIE-level Cisco routing and switching guide for every CCNP Preparing for the CCIE Routing and Switching lab exam typically involves deep and lengthy study. But if you already possess the Cisco CCNP Routing and Switching certification, you already know much of what you'll need to succeed on CCIE's labs. This book will help you quickly bridge your remaining knowledge gaps and make the most of everything you already know. CCIE Routing and Switching v5.1 Foundations addresses every segment of the CCIE R&S Version 5 blueprint, helping you focus your study where it will do the most good: intense hands-on practice to deepen your current knowledge and thorough explanations of theoretical topics you haven't yet encountered. Based on the author's industry-recognized CCIE prep classes, it includes 40+ detailed labs for real gear and platform emulators; structured illustrations of protocol and feature operation; and topic-specific labs to drive the theory home. It includes a full lab walkthrough of a complex configuration reflective of the actual CCIE—ensuring that you thoroughly understand the technologies and interactions you're reading about. Discover the physical topology for any network deployment Master Spanning Tree Protocol (STP) foundations and advanced features Deploy and optimize PPP and use its full set of capabilities Implement Dynamic Multipoint VPNs (DMVPNs) from start to finish Use IP Prefix lists in prefix filtration, packet filtering, and other applications Handle any RIPv2 deployment scenario n Implement EIGRP, including classical and named operation modes and interoperation Use advanced OSPF techniques, including route filtration, LSA operation, stub configurations, and update filtering Understand what happens when you perform redistribution, and manage problematic scenarios Manage complex BGP capabilities, including Adjacency State Machine Operate IPv6 in complex network environments, including DMVPN Focus on QoS mechanisms that CCIE still covers, including traffic marking, classification, policing, and shaping Deploy IPsec VPN solutions including GRE/IPsec tunnel mode, multi-site VPN technologies, and their encryption Implement multicasting in environments requiring end-to-end IPv4 and IPv6 transport Address operational and deployment issues involving MPLS VPNv4 tunnels

## **CCNA Security 210-260 Official Cert Guide**

Annotation Understand the tools, commands, and methodologies that enable reliable performance for remote

access services in an enterprise environment. Expert advice on supporting remote access networks with detailed descriptions of Cisco's troubleshooting tools. Structured troubleshooting methodologies for enterprise remote access technologies including Dial, ISDN, Frame Relay, and VPNs. Examination of network symptoms, show commands, line-by-line explanations of debug output, and overviews of remote access management. Troubleshooting Remote Access Enterprise Networks helps you understand underlying technologies and gain insight into the challenges, issues, and best practices for supporting remote access networks. Covering fundamental concepts, design issues, provisioning, DSL and Cable connectivity options, central office operations, authentication techniques, and troubleshooting, this book serves as a comprehensive tool to resolving remote access issues. In-depth analysis of essential remote access technologies provides greater insight into Dial, ISDN, Frame Relay, and VPNs. With a focus specifically on the more popular enterprise applications of these technologies, each major section discusses troubleshooting methodology and scenarios. The methodology walks readers through the process of identifying, isolating, and correcting common failures. This structured approach helps limit the inclination to attack network failures in a more random fashion, which is not nearly as efficient. Explanations of typical symptoms, problems, show commands, and debug information are also extensive. Plamen Nedeltchev is a Technical Solutions Consultant in the Remote Access Services group at Cisco Systems. He is the author of over 30 publications and the recipient of numerous awards for his technical and troubleshooting skills. Plamen holds a Ph.D. in Computer Science from the Bulgarian Academy of Science and a Master's degree in Computer Science from Saint Petersburg Electrotechnical University.

## **CCIE Routing and Switching v5.1 Foundations**

Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. Master Cisco CCNP SWITCH 300-115 exam topics Assess your knowledge with chapter-opening quizzes Review key concepts with exam preparation tasks This is the eBook edition of the CCNP Routing and Switching SWITCH 300-115 Official Cert Guide. This eBook does not include the companion CD-ROM with practice exam that comes with the print edition. CCNP Routing and Switching SWITCH 300-115 Official Cert Guide from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Expert engineer David Hucaby shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This complete, official study package includes A test-preparation routine proven to help you pass the exam Do I Know This Already? quizzes, which enable you to decide how much time you need to spend on each section Chapter-ending exercises, which help you drill on key concepts you must know thoroughly The powerful Pearson IT Certification Practice Test software, complete with hundreds of well-reviewed, exam-realistic questions, customization options, and detailed performance reports More than 60 minutes of personal video mentoring from the author on important exam topics A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies Study plan suggestions and templates to help you organize and optimize your study time Well regarded for its level of detail, study plans, assessment features, challenging review questions and exercises, this official study guide helps you master the concepts and techniques that ensure your exam success. CCNP Routing and Switching SWITCH 300-115 Official Cert Guide is part of a recommended learning path from Cisco that includes simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction offered by authorized Cisco Learning Partners worldwide, please visit [www.cisco.com](http://www.cisco.com). The official study guide helps you master topics on the CCNP R&S SWITCH 300-115 exam, including: Enterprise campus design Switch operation Switch port configuration VLANs, Trunks, and VLAN Trunking Protocol (VTP) Spanning Tree Protocol (STP), RSTP, and MSTP Protecting the STP topology Aggregating switch links Multilayer switching Configuring DHCP Logging switch activity and managing switches with SNMP Monitoring performance and traffic High availability Securing switched networks

## Troubleshooting Remote Access Networks

Expert solutions for securing network infrastructures and VPNs built; Build security into the network by defining zones, implementing secure routing protocol designs, and building safe LAN switching environments Understand the inner workings of the Cisco PIX Firewall and analyze in-depth Cisco PIX Firewall and Cisco IOS Firewall features and concepts Understand what VPNs are and how they are implemented with protocols such as GRE, L2TP, and IPSec Gain a packet-level understanding of the IPSec suite of protocols, its associated encryption and hashing functions, and authentication techniques Learn how network attacks can be categorized and how the Cisco IDS is designed and can be set up to protect against them Control network access by learning how AAA fits into the Cisco security model and by implementing RADIUS and TACACS+ protocols Provision service provider security using ACLs, NBAR, and CAR to identify and control attacks Identify and resolve common implementation failures by evaluating real-world troubleshooting scenarios As organizations increase their dependence on networks for core business processes and increase access to remote sites and mobile workers via virtual private networks (VPNs), network security becomes more and more critical. In today's networked era, information is an organization's most valuable resource. Lack of customer, partner, and employee access to e-commerce and data servers can impact both revenue and productivity. Even so, most networks do not have the proper degree of security. Network Security Principles and Practices provides an in-depth understanding of the policies, products, and expertise that brings organization to this extremely complex topic and boosts your confidence in the performance and integrity of your network systems and services. Written by a CCIE engineer who participated in the development of the CCIE Security exams, Network Security Principles and Practices is the first book that provides a comprehensive review of topics important to achieving CCIE Security certification. Network Security Principles and Practices is a comprehensive guide to network security threats and the policies and tools developed specifically to combat those threats. Taking a practical, applied approach to building security into networks, the book shows you how to build secure network architectures from the ground up. Security aspects of routing protocols, Layer 2 threats, and switch security features are all analyzed. A comprehensive treatment of VPNs and IPSec is presented in extensive packet-by-packet detail. The book takes a behind-the-scenes look at how the Cisco PIX(r) Firewall actually works, presenting many difficult-to-understand and new Cisco PIX Firewall and Cisco IOSreg; Firewall concepts. The book launches into a discussion of intrusion detection systems (IDS) by analyzing and breaking down modern-day network attacks, describing how an IDS deals with those threats in general, and elaborating on the Cisco implementation of IDS. The book also discusses AAA, RADIUS, and TACACS+ and their usage with some of the newer security implementations such as VPNs and proxy authentication. A complete section devoted to service provider techniques for enhancing customer security and providing support in the event of an attack is also included. Finally, the book concludes with a section dedicated to discussing tried-and-tested troubleshooting tools and techniques that are not only invaluable to candidates working toward their CCIE Security lab exam but also to the security network administrator running the operations of a network on a daily basis.

## CCNP Routing and Switching SWITCH 300-115 Official Cert Guide

An essential guide to understanding the Cisco IOS architecture In-depth coverage of Cisco's IOS Software architecture provides crucial information to: Prevent network problems and optimize performance through more efficient design and configuration Isolate and resolve network problems more quickly and easily Apply the appropriate packet switching method, such as process switching, fast switching, optimum switching, or Cisco Express Forwarding (CEF) Understand the hardware architecture, packet buffering, and packet switching processes for shared memory routers (Cisco 1600, 2500, 3600, 4000, 4500, and 4700 series) Understand the hardware architecture, packet buffering, and packet switching processes for the Cisco 7200 series routers Understand the hardware architecture, packet buffering, and packet switching processes for the Cisco 7500 series routers Understand the hardware architecture, packet buffering, and packet switching processes for the Cisco GSR 12000 series routers Further your knowledge of how IOS Software implements Quality of Service (QoS) Inside Cisco IOS Software Architecture offers crucial and hard-to-find information on Cisco's Internetwork Operating System (IOS) Software. IOS Software provides the means by which

networking professionals configure and manage Cisco networking devices. Beyond understanding the Cisco IOS command set, comprehending what happens inside Cisco routers will help you as a network designer or engineer to perform your job more effectively. By understanding the internal operations of IOS Software, you will be able to take architectural considerations into account when designing networks and isolate problems more easily when troubleshooting networks. Inside Cisco IOS Software Architecture provides essential information on the internal aspects of IOS Software at this level, and it is an invaluable resource for better understanding the intricacies of IOS Software and how it affects your network. Inside Cisco IOS Software Architecture begins with an overview of operating system concepts and the IOS Software infrastructure, including processes, memory management, CPU scheduling, packet buffers, and device drivers, as well as a discussion of packet switching architecture with detailed coverage of the various platform-independent switching methods, including process switching, fast switching, optimum switching, and Cisco Express Forwarding (CEF). The book then delves into the intricate details of the design and operation of platform-specific features, including the 1600, 2500, 4x00, 3600, 7200, 7500, and GSR Cisco routers. Finally, an overview of IOS Quality of Service (QoS) is provided, including descriptions of several QoS methods, such as priority queuing, custom queuing, weighted fair queuing, and modified deficit round robin.

## **Network Security Principles and Practices**

Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. Master Cisco CCNP TSHOOT 300-135 exam topics Assess your knowledge with chapter-opening quizzes Review key concepts with exam preparation tasks This is the eBook edition of the CCNP Routing and Switching TSHOOT 300-135 Official Cert Guide. This eBook does not include the companion CD-ROM with practice exam that comes with the print edition. CCNP Routing and Switching TSHOOT 300-115 Official Cert Guide from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Expert instructor Raymond Lacoste shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This complete, official study package includes A test-preparation routine proven to help you pass the exam Do I Know This Already? quizzes, which enable you to decide how much time you need to spend on each section Chapter-ending exercises, which help you drill on key concepts you must know thoroughly A trouble ticket chapter that explores 10 additional network failures and the approaches you can take to resolve the issues presented A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies Study plan suggestions and templates to help you organize and optimize your study time Well regarded for its level of detail, study plans, assessment features, challenging review questions and exercises, this official study guide helps you master the concepts and techniques that ensure your exam success. CCNP Routing and Switching TSHOOT 300-115 Official Cert Guide is part of a recommended learning path from Cisco that includes simulation and hands-on training from authorized Cisco Learning Partners and self-study products from Cisco Press. To find out more about instructor-led training, e-learning, and hands-on instruction offered by authorized Cisco Learning Partners worldwide, please visit [www.cisco.com](http://www.cisco.com). The official study guide helps you master topics on the CCNP R&S TSHOOT 300-135 exam, including how to troubleshoot: Device performance VLANs, Trunks, and VTP STP and Layer 2 Etherchannel Inter-VLAN routing and Layer 3 Etherchannel Switch security HSRP, VRRP, GLBP IPv4 and IPv6 addressing IPv4/IPv6 routing and GRE tunnels RIPv2, RIPv6, EIGRP, and OSPF Route maps, policy-based routing, and route redistribution BGP Management protocols, tools, and access

## **Inside Cisco IOS Software Architecture**

Annotation A practical guide to understanding, designing, and deploying MPLS and MPLS-enabled VPNs In-depth analysis of the Multiprotocol Label Switching (MPLS) architecture Detailed discussion of the mechanisms and features that constitute the architecture Learn how MPLS scales to support tens of thousands

of VPNs Extensive case studies guide you through the design and deployment of real-world MPLS/VPN networks Configuration examples and guidelines assist in configuring MPLS on Cisco® devices Design and implementation options help you build various VPN topologies Multiprotocol Label Switching (MPLS) is an innovative technique for high-performance packet forwarding. There are many uses for this new technology, both within a service-provider environment and within the enterprise network, and the most widely deployed usage today is the enabling of Virtual Private Networks (VPNs). With the introduction of MPLS-enabled VPNs, network designers are able to better scale their networks than with the methods available in the past. Network engineers and administrators need quick, effective education on this technology to efficiently deploy MPLS-enabled VPNs within their networks. With that goal in mind, MPLS and VPN Architectures provides an in-depth discussion particular to Cisco's MPLS architecture. This book covers MPLS theory and configuration, network design issues, and case studies as well as one major MPLS application: MPLS-based VPNs. The MPLS/VPN architecture and all its mechanisms are explained with configuration examples, suggested design and deployment guidelines, and extensive case studies. MPLS and VPN Architectures is your practical guide to understanding, designing, and deploying MPLS and MPLS-based VPNs.

## **CCNP Routing and Switching TSHOOT 300-135 Official Cert Guide**

Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. · Master Cisco CCNA 200-301 exam topics · Assess your knowledge with chapter-opening quizzes · Review key concepts with exam preparation tasks This is the eBook edition of the CCNA 200-301 Official Cert Guide, Volume 1. This eBook, combined with the CCNA 200-301 Official Cert Guide Volume 2, cover all of exam topics on the CCNA 200-301 exam. This eBook does not include the practice exams that comes with the print edition. CCNA 200-301 Official Cert Guide, Volume 1 presents you with an organized test-preparation routine using proven series elements and techniques. “Do I Know This Already?” quizzes open each chapter and enable you to decide how much time you need to spend on each section. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly. CCNA 200-301 Official Cert Guide, Volume 1 from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Best-selling author and expert instructor Wendell Odom shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills. This complete study package includes · A test-preparation routine proven to help you pass the exams · Do I Know This Already? quizzes, which enable you to decide how much time you need to spend on each section · Chapter-ending and part-ending exercises, which help you drill on key concepts you must know thoroughly · A free copy of the CCNA 200-301 Volume 1 Network Simulator Lite software, complete with meaningful lab exercises that help you hone your hands-on skills with the command-line interface for routers and switches · Links to a series of hands-on config labs developed by the author · Online, interactive practice exercises that help you hone your knowledge · More than 90 minutes of video mentoring from the author · A final preparation chapter, which guides you through tools and resources to help you craft your review and test-taking strategies · Study plan suggestions and templates to help you organize and optimize your study time Well regarded for its level of detail, study plans, assessment features, challenging review questions and exercises, video instruction, and hands-on labs, this official study guide helps you master the concepts and techniques that ensure your exam success. The CCNA 200-301 Official Cert Guide, Volume 1, combined with CCNA 200-301 Official Cert Guide, Volume 2, walk you through all the exam topics found in the Cisco 200-301 exam. Topics covered in Volume 1 include: · Networking fundamentals · Implementing Ethernet LANs · Implementing VLANs and STP · IPv4 addressing · IPv4 routing · OSPF · IPv6 · Wireless LANs Companion Website: The companion website contains the CCNA Network Simulator Lite software, online practice exercises, study resources, and 90 minutes of video training. In addition to the wealth of updated content, this new edition includes a series of free hands-on exercises to help you master several real-world configuration and troubleshooting activities. These exercises can be performed on the CCNA 200-301 Network Simulator Lite, Volume 1 software included for free on the

companion website that accompanies this book. This software, which simulates the experience of working on actual Cisco routers and switches, contains the following 21 free lab exercises, covering topics in Part II and Part III, the first hands-on configuration sections of the book: 1. Configuring Local Usernames 2. Configuring Hostnames 3. Interface Status I 4. Interface Status II 5. Interface Status III 6. Interface Status IV 7. Configuring Switch IP Settings 8. Switch IP Address 9. Switch IP Connectivity I 10. Switch CLI Configuration Process I 11. Switch CLI Configuration Process II 12. Switch CLI Exec Mode 13. Setting Switch Passwords 14. Interface Settings I 15. Interface Settings II 16. Interface Settings III 17. Switch Forwarding I 18. Switch Security I 19. Switch Interfaces and Forwarding Configuration Scenario 20. Configuring VLANs Configuration Scenario 21. VLAN Troubleshooting

## **MPLS and VPN Architectures**

The definitive guide to troubleshooting today's complex BGP networks This is today's best single source for the techniques you need to troubleshoot BGP issues in modern Cisco IOS, IOS XR, and NxOS environments. BGP has expanded from being an Internet routing protocol and provides a scalable control plane for a variety of technologies, including MPLS VPNs and VXLAN. Bringing together content previously spread across multiple sources, Troubleshooting BGP describes BGP functions in today's blended service provider and enterprise environments. Two expert authors emphasize the BGP-related issues you're most likely to encounter in real-world deployments, including problems that have caused massive network outages. They fully address convergence and scalability, as well as common concerns such as BGP slow peer, RT constraint filtering, and missing BGP routes. For each issue, key concepts are presented, along with basic configuration, detailed troubleshooting methods, and clear illustrations. Wherever appropriate, OS-specific behaviors are described and analyzed. Troubleshooting BGP is an indispensable technical resource for all consultants, system/support engineers, and operations professionals working with BGP in even the largest, most complex environments. - Quickly review the BGP protocol, configuration, and commonly used features - Master generic troubleshooting methodologies that are relevant to BGP networks - Troubleshoot BGP peering issues, flapping peers, and dynamic BGP peering - Resolve issues related to BGP route installation, path selection, or route policies - Avoid and fix convergence problems - Address platform issues such as high CPU or memory usage - Scale BGP using route reflectors, diverse paths, and other advanced features - Solve problems with BGP edge architectures, multihoming, and load balancing - Secure BGP inter-domain routing with RPKI - Mitigate DDoS attacks with RTBH and BGP Flowspec - Understand common BGP problems with MPLS Layer 3 or Layer 2 VPN services - Troubleshoot IPv6 BGP for service providers, including 6PE and 6VPE - Overcome problems with VXLAN BGP EVPN data center deployments - Fully leverage BGP High Availability features, including GR, NSR, and BFD - Use new BGP enhancements for link-state distribution or tunnel setup This book is part of the Networking Technology Series from Cisco Press, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

## **CCNA 200-301 Official Cert Guide, Volume 1**

CCNA ICND2 200-101 Official Cert Guide, Academic Edition, is a comprehensive textbook and study package for an intermediate-level networking course. This book has been completely revised to align to Cisco's new CCNA 200-101 ICND2 exam. Material is presented in a concise manner, focusing on increasing student's retention and recall of exam topics. The book is printed in four color, allowing students to benefit from carefully crafted figures that utilize color to convey concepts. Students will organize their study through the use of the consistent features in these chapters, including: Foundation Topics -- These sections make up the majority of the page count, explaining concepts, configurations, with emphasis on the theory and concepts, and with linking the theory to the meaning of the configuration commands. Key Topics -- Inside the Foundation Topics sections, every figure, table, or list that should absolutely be understood and remembered for the exam is noted with the words \"Key Topic\" in the margin. This tool allows the reader to quickly review the most important details in each chapter. Chapter-ending Summaries -- These bulleted lists provide a quick and concise review of the key topics covered in each chapter. Chapter-ending Review



Questions -- Each chapter provides a set of multiple choice questions that help student's test their knowledge of the chapter concepts, including answers and full explanations. Chapter-ending Exercises -- Each chapter concludes with a series of exercises designed to help students increase their retention of the chapter content including key term reviews, key topic tables, command review exercises, and memory table exercises. Part Reviews -- This new edition includes a new part review feature that helps students consolidate their knowledge of concepts presented across multiple chapters. A new mind mapping exercise helps students build strong mental maps of concepts. A new exam bank of part review questions helps students test themselves with scenario-based questions that span multiple topics. In addition to these powerful chapter learning, review, and practice features, this book also contains several other features that make it a truly effective and comprehensive study package, including: A Getting Started chapter at the beginning of the book offer terrific advice for how to use the book features and build an effective study plan. The DVD contains over 60 minutes of video mentoring from the author on challenging topics such as OSPF, EIGRP, EIGRP Metrics, PPP, and CHAP. The book comes complete with the CCNA ICND2 Network Simulator Lite software, providing students with the opportunity to practice their hands-on command line interface skills with Cisco routers and switches. The 13 labs included for free with this product cover a range of EIGRP configuration and troubleshooting exercises. The Pearson IT Certification Practice Test software that comes with the book includes 4 full ICND2 exams and 4 full CCNA exams, providing tons of opportunities to assess and practice. Including the book review questions and part review questions, the exam bank includes more than 500 unique practice questions. A Final Preparation Chapter helps students review for final exams and prepare to take the official Cisco CCNA exams, if they want to achieve that certification. A Study Plan Template is included on the DVD to help students organize their study time.

## **Troubleshooting BGP**

CCIE Security v4.0 Practice Labs The material covered in CCIE Security v4.0 Practice Labs is designed to help candidates prepare for the CCIE Security exam by providing a complex topology and two practice labs that force problem solving, troubleshooting, and policy design using topics and equipment that are detailed in the official exam documents. Each solution is explained in detail to help reinforce a concept and topic. Tech Notes present other deployment options or enhancements and provide additional practical implementation tips. Initial and Final configuration files that can be cut and pasted onto lab devices for further testing and verification are also included. These labs serve as a practice tool for prospective CCIE Security exam candidates and, through the use of a real-world lab topology and in-depth solutions and technical notes, are also a useful reference for any security professional involved with practical customer deployments that use Cisco products and solutions.

## **Internetworking with TCP/IP**

The complete resource for understanding and deploying IP quality of service for Cisco networks Learn to deliver and deploy IP QoS and MPLS-based traffic engineering by understanding: QoS fundamentals and the need for IP QoS The Differentiated Services QoS architecture and its enabling QoS functionality The Integrated Services QoS model and its enabling QoS functions ATM, Frame Relay, and IEEE 802.1p/802.1Q QoS technologies and how they work with IP QoS MPLS and MPLS VPN QoS and how they work with IP QoS MPLS traffic engineering Routing policies, general IP QoS functions, and other miscellaneous QoS information Quality-of-service (QoS) technologies provide networks with greater reliability in delivering applications, as well as control over access, delay, loss, content quality, and bandwidth. IP QoS functions are crucial in today's scalable IP networks. These networks are designed to deliver reliable and differentiated Internet services by enabling network operators to control network resources and use. Network planners, designers, and engineers need a thorough understanding of QoS concepts and features to enable their networks to run at maximum efficiency and to deliver the new generation of time-critical multimedia and voice applications. "IP Quality of Service" serves as an essential resource and design guide for anyone planning to deploy QoS services in Cisco networks. Author Srinivas Vegesna provides complete coverage of Cisco IP QoS features and functions, including case studies and configuration examples. The emphasis is on

real-world application-going beyond conceptual explanations to teach actual deployment. \"IP Quality of Service\" is written for internetworking professionals who are responsible for designing and maintaining IP services for corporate intranets and for service provider network infrastructures. If you are a network engineer, architect, manager, planner, or operator who has a rudimentary knowledge of QoS technologies, this book will provide you with practical insights on what you need to consider when designing and implementing various degrees of QoS in the network. Because incorporating some measure of QoS is an integral part of any network design process, \"IP Quality of Service\" applies to all IP networks-corporate intranets, service provider networks, and the Internet.

## Cisco CCNA Routing and Switching ICND 200-101

Day One Routing the Internet Protocol

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