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# Optimal Routing Design Cisco Press Networking Technology

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Routing  
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**NOEMI LOZANO**

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*Top-down Network*

*Design Cisco Systems  
Master CCIE Routing  
and Switching 4.0  
blueprint exam topics  
Assess your knowledge  
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concepts with Exam Preparation Tasks Practice with realistic exam questions on the CD-ROM 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. The companion CD-ROM contains a powerful testing engine that allows you to focus on individual topic areas or take complete, timed exams. The assessment engine also tracks your

performance and provides feedback on a module-by-module basis, presenting question-by-question remediation to the text and laying out a complete study plan for review. 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 Companion CD-ROM The CD-ROM contains 200 practice questions

for the exam. 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.

Category: Cisco Press-Cisco Certification

Covers: CCIE Routing and Switching written exam 350-001 v4.0

*Foundation Learning Guide* Cisco Press

Techniques for optimizing large-scale IP routing operation and managing network growth Understand the goals of scalable network design,

including tradeoffs between network scaling, convergence speed, and resiliency

Learn basic techniques applicable to any network design, including hierarchy, addressing, summarization, and information hiding

Examine the deployment and operation of EIGRP, OSPF, and IS-IS protocols on large-scale networks

Understand when and how to use a BGP core in a large-scale network and how to use BGP to connect to external networks

Apply high availability and fast convergence to achieve 99.999 percent, or “five 9s” network uptime

Secure routing systems with the latest routing protocol security best practices

Understand

the various techniques used for carrying routing information through a VPN. Optimal Routing Design provides the tools and techniques, learned through years of experience with network design and deployment, to build a large-scale or scalable IP-routed network. The book takes an easy-to-read approach that is accessible to novice network designers while presenting invaluable, hard-to-find insight that appeals to more advanced-level professionals as well. Written by experts in the design and deployment of routing protocols, Optimal Routing Design leverages the authors' extensive experience with thousands of customer cases and network designs.

Boiling down years of experience into best practices for building scalable networks, this book presents valuable information on the most common problems network operators face when seeking to turn best effort IP networks into networks that can support Public Switched Telephone Network (PSTN)-type availability and reliability. Beginning with an overview of design fundamentals, the authors discuss the tradeoffs between various competing points of network design, the concepts of hierarchical network design, redistribution, and addressing and summarization. This first part provides specific techniques, usable in all routing protocols, to work

around real-world problems. The next part of the book details specific information on deploying each interior gateway protocol (IGP)—including EIGRP, OSPF, and IS-IS—in real-world network environments. Part III covers advanced topics in network design, including border gateway protocol (BGP), high-availability, routing protocol security, and virtual private networks (VPN). Appendixes cover the fundamentals of each routing protocol discussed in the book; include a checklist of questions and design goals that provides network engineers with a useful tool when evaluating a network design; and compare routing protocols strengths and weaknesses to help

you decide when to choose one protocol over another or when to switch between protocols. “The complexity associated with overlaying voice and video onto an IP network involves thinking through latency, jitter, availability, and recovery issues. This text offers keen insights into the fundamentals of network architecture for these converged environments.” —John Cavanaugh, Distinguished Services Engineer, Cisco Systems® 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.

*Practical BGP* Pearson Education  
Intended for organisations needing to build an efficient and reliable enterprise network linked to the Internet, this second edition explains the current Internet architecture and shows how to evaluate service providers dealing with connection issues.

Designing for Cisco Internetwork Solutions (DESGN) Cisco Press  
Design, configure, and manage MPLS TE to optimize network performance Almost every busy network backbone has some congested links while others remain underutilized. That's because shortest-path routing protocols send

traffic down the path that is shortest without considering other network parameters, such as utilization and traffic demands. Using Traffic Engineering (TE), network operators can redistribute packet flows to attain more uniform distribution across all links. Forcing traffic onto specific pathways allows you to get the most out of your existing network capacity while making it easier to deliver consistent service levels to customers at the same time. Cisco(r) Multiprotocol Label Switching (MPLS) lends efficiency to very large networks, and is the most effective way to implement TE. MPLS TE routes traffic flows across the network by aligning resources required by a given flow with actual

backbone capacity and topology. This constraint-based routing approach feeds the network route traffic down one or more pathways, preventing unexpected congestion and enabling recovery from link or node failures. Traffic Engineering with MPLS provides you with information on how to use MPLS TE and associated features to maximize network bandwidth. This book focuses on real-world applications, from design scenarios to feature configurations to tools that can be used in managing and troubleshooting MPLS TE. Assuming some familiarity with basic label operations, this guide focuses mainly on the operational aspects of MPLS TE-

how the various pieces work and how to configure and troubleshoot them. Additionally, this book addresses design and scalability issues along with extensive deployment tips to help you roll out MPLS TE on your own network. Understand the background of TE and MPLS, and brush up on MPLS forwarding basics Learn about router information distribution and how to bring up MPLS TE tunnels in a network Understand MPLS TE's Constrained Shortest Path First (CSPF) and mechanisms you can use to influence CSPF's path calculation Use the Resource Reservation Protocol (RSVP) to implement Label-Switched Path setup Use various mechanisms to forward



traffic down a tunnel  
Integrate MPLS into the  
IP quality of service  
(QoS) spectrum of  
services Utilize Fast  
Reroute (FRR) to  
mitigate packet loss  
associated with link  
and node failures  
Understand Simple  
Network Management  
Protocol (SNMP)-based  
measurement and  
accounting services  
that are available for  
MPLS Evaluate design  
scenarios for scalable  
MPLS TE deployments  
Manage MPLS TE  
networks by examining  
common configuration  
mistakes and utilizing  
tools for  
troubleshooting MPLS  
TE problems "Eric and  
Ajay work in the  
development group at  
Cisco that built Traffic  
Engineering. They are  
among those with the  
greatest hands-on  
experience with this

application. This book  
is the product of their  
experience." -George  
Swallow, Cisco  
Systems, Architect for  
Traffic Engineering Co-  
Chair, IETF MPLS  
Working Group Eric  
Osborne, CCIE(r)  
#4122, has been doing  
Internet engineering of  
one sort or another  
since 1995. He joined  
Cisco in 1998 to work  
in the Cisco Technical  
Assistance Center  
(TAC), moved from  
there to the ISP Expert  
team and then to the  
MPLS Deployment  
team. He has been  
involved in MPLS since  
the Cisco IOS(r)  
Software Release  
11.1CT days. Ajay  
Simha, CCIE #2970,  
joined the Cisco TAC in  
1996. He then went on  
to support tier 1 and 2  
ISPs as part of Cisco's  
ISP Expert team. Ajay  
has been working as an

MPLS deployment engineer since October 1999, and he has first-hand experience in *Next-Generation Data Center Architectures* Cisco Press

For preparation for the CCNP Routing exam, this set contains lab exercises that give readers the benefit of hands-on experience to apply in their exam studies. The tutorial helps CCNP candidates and newly minted CCNPs apply their newly gained theoretical knowledge into working experience.

*Optimal Routing*

*Design* Cisco Press

A complete resource for assessing, auditing, analyzing, and evaluating any network environment With "Network Consultants Handbook, you will Learn from network

audit and evaluation guidelines that aid in data gathering and analysis of network environments Work with tables and calculations that help provide near-real-time answers to internetworking issues and challenges Learn network diagramming tips that aid consultants and engineers in preparing consistent drawings for in-house documentation Discover how specific internetworking technologies fit into a design to create a networking solution for your customer Network consultants and engineers in today's industry continually face the challenge of assessing, auditing, and reviewing existing networks. Documenting,

reviewing, and analyzing these changes in a customer's network is more challenging today than in the past, partly because of the explosive growth of converged applications and the Internet. Consultants and engineers often reinvent the wheel to gather and analyze relevant network information, particularly when examining a client's network while having little or no background information. "Network Consultants Handbook is a complete resource for assessing, auditing, analyzing, and evaluating any network environment. Intended for anyone who designs, manages, sells, administrates, or desires to understand various

internetworking technologies, "Network Consultants Handbook demonstrates where and how to gather relevant information and how to analyze and document this information. Technology overviews peel away each layer of the network to provide a complete assessment. This book prepares you with form templates to completeduring a network audit, necessary device commands to aid in obtaining necessary information, and consistent forms to aid in documentation. Networks are like snowflakes: No two are alike. This is the challenge that network consultants, engineers, managers, designers, and anyone else involved with networks

must face every day. Network Consultants Handbook provides the resources you need to evaluate and design networks, either as a desktop reference resource or in the field where the tables and calculations help provide near-real-time answers to internetworking issues and challenges. Companion Web Site The companion Web site for the book contains fully downloadable versions of the data gathering and analysis templates. These templates offer an easy-to-complete solution to gathering the data you need to complete your analysis of network environments. This book is part of the Cisco Press Networking Technologies Series,

which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

### **Cisco Software-Defined Access**

Pearson Education  
Optimal Routing Design  
Cisco Press  
EIGRP Network Design Solutions Cisco Systems  
Direct from Cisco, this comprehensive book guides networking professionals through all aspects of planning, implementing, and operating Cisco Software Defined Access, helping them use intent-based networking, SD-Access, Cisco ISE, and Cisco DNA Center to harden campus network

security and simplify its management. Drawing on their unsurpassed experience architecting SD-Access solutions and training technical professionals inside and outside Cisco, the authors cover all facets of the product: its relevance, value, and use cases; its components and inner workings; planning and deployment; and day-to-day administration, support, and troubleshooting. Case studies demonstrate the use of Cisco SD-Access components to address Secure Segmentation, Plug and Play, Software Image Management (SWIM), Host Mobility, and more. Building on core concepts and techniques, the authors present full chapters on advanced

SD-Access and Cisco DNA Center topics, as well as detailed coverage of fabric assurance.

The Art of Network Architecture Cisco Press

The author's name Sangli Srihari is listed as Srihari Sangli on cover.

### **Troubleshooting IP Routing Protocols**

Cisco Press

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.

**Ccdp Arch 300-320**

Pearson Education Annotation "EIGRP Network Design Solutions uses case studies and real-world configuration examples to help you gain an in-depth understanding of the issues involved in designing, deploying, and managing EIGRP-based networks. It details proper designs that can be used to build large and scalable EIGRP-based networks and documents possible ways each EIGRP feature can be used in

network design, implementation, troubleshooting, and monitoring."--BOOK JACKET. Title Summary field provided by Blackwell North America, Inc. All Rights Reserved.

*Intent-based Networking for the Enterprise* Cisco Press Organizations are increasingly transitioning to IPv6, the next generation protocol for defining how devices of all kinds communicate over networks. Now fully updated, IPv6 Fundamentals offers a thorough, friendly, and easy-to-understand introduction to the knowledge and skills you need to deploy and operate IPv6 networks. Leading networking instructor Rick Graziani explains all the basics simply and clearly,

step-by-step, providing all the details you'll need to succeed. You'll learn why IPv6 is necessary, how it was created, how it works, and how it has become the protocol of choice in environments ranging from cloud to mobile and IoT. Graziani thoroughly introduces IPv6 addressing, configuration options, and routing protocols, including EIGRP for IPv6, and OSPFv3 (traditional configuration and with address families). Building on this coverage, he then includes more in-depth information involving these protocols and processes. This edition contains a completely revamped discussion of deploying IPv6 in your network, including IPv6/IPv4 integration,

dynamic address allocation, and understanding IPv6 from the perspective of the network and host. You'll also find improved coverage of key topics such as Stateless Address Autoconfiguration (SLAAC), DHCPv6, and the advantages of the solicited node multicast address. Throughout, Graziani presents command syntax for Cisco IOS, Windows, Linux, and Mac OS, as well as many examples, diagrams, configuration tips, and updated links to white papers and official RFCs for even deeper understanding. Learn how IPv6 supports modern networks encompassing the cloud, mobile, IoT, and gaming devices. Compare IPv6 with IPv4



to see what has changed and what hasn't Understand and represent IPv6 addresses for unicast, multicast, and anycast environments Master all facets of dynamic IPv6 address allocation with SLAAC, stateless DHCPv6, and stateful DHCPv6 Understand all the features of deploying IPv6 addresses in the network including temporary addresses and the privacy extension Improve operations by leveraging major enhancements built into ICMPv6 and ICMPv6 Neighbor Discovery Protocol Configure IPv6 addressing and Access Control Lists using a common topology Implement routing of IPv6 packets via static routing, EIGRP for IPv6,

and OSPFv3 Walk step-by-step through deploying IPv6 in existing networks, and coexisting with or transitioning from IPv4 TOP-DOWN NET DES c3 Cisco Press A systems analysis approach to enterprise network design Master techniques for checking the health of an existing network to develop a baseline for measuring performance of a new network design Explore solutions for meeting QoS requirements, including ATM traffic management, IETF controlled-load and guaranteed services, IP multicast, and advanced switching, queuing, and routing algorithms Develop network designs that provide the high bandwidth and low delay required for real-

time applications such as multimedia, distance learning, and videoconferencing. Identify the advantages and disadvantages of various switching and routing protocols, including transparent bridging, Inter-Switch Link (ISL), IEEE 802.1Q, IGRP, EIGRP, OSPF, and BGP4. Effectively incorporate new technologies into enterprise network designs, including VPNs, wireless networking, and IP Telephony. *Top-Down Network Design, Second Edition*, is a practical and comprehensive guide to designing enterprise networks that are reliable, secure, and manageable. Using illustrations and real-world examples, it teaches a systematic

method for network design that can be applied to campus LANs, remote-access networks, WAN links, and large-scale internetworks. You will learn to analyze business and technical requirements, examine traffic flow and QoS requirements, and select protocols and technologies based on performance goals. You will also develop an understanding of network performance factors such as network utilization, throughput, accuracy, efficiency, delay, and jitter. Several charts and job aids will help you apply a top-down approach to network design. This Second Edition has been revised to include new and updated material on wireless networks, virtual private

networks (VPNs), network security, network redundancy, modularity in network designs, dynamic addressing for IPv4 and IPv6, new network design and management tools, Ethernet scalability options (including 10-Gbps Ethernet, Metro Ethernet, and Long-Reach Ethernet), and networks that carry voice and data traffic. Top-Down Network Design, Second Edition, has a companion website at <http://www.topdownbook.com>, which includes updates to the book, links to white papers, and supplemental information about design resources. 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. *Connecting Networks Companion Guide* Pearson Education Best-practice QoS designs for protecting voice, video, and critical data while mitigating network denial-of-service attacks Understand the service-level requirements of voice, video, and data applications Examine strategic QoS best practices, including Scavenger-class QoS tactics for DoS/worm mitigation Learn about QoS tools and the various interdependencies and caveats of these tools that can impact design

considerations Learn how to protect voice, video, and data traffic using various QoS mechanisms Evaluate design recommendations for protecting voice, video, and multiple classes of data while mitigating DoS/worm attacks for the following network infrastructure architectures: campus LAN, private WAN, MPLS VPN, and IPSec VPN Quality of Service (QoS) has already proven itself as the enabling technology for the convergence of voice, video, and data networks. As business needs evolve, so do the demands for QoS. The need to protect critical applications via QoS mechanisms in business networks has escalated over the past few years, primarily due to the increased

frequency and sophistication of denial-of-service (DoS) and worm attacks. End-to-End QoS Network Design is a detailed handbook for planning and deploying QoS solutions to address current business needs. This book goes beyond discussing available QoS technologies and considers detailed design examples that illustrate where, when, and how to deploy various QoS features to provide validated and tested solutions for voice, video, and critical data over the LAN, WAN, and VPN. The book starts with a brief background of network infrastructure evolution and the subsequent need for QoS. It then goes on to cover the various QoS features and tools

currently available and comments on their evolution and direction. The QoS requirements of voice, interactive and streaming video, and multiple classes of data applications are presented, along with an overview of the nature and effects of various types of DoS and worm attacks. QoS best-practice design principles are introduced to show how QoS mechanisms can be strategically deployed end-to-end to address application requirements while mitigating network attacks. The next section focuses on how these strategic design principles are applied to campus LAN QoS design. Considerations and detailed design recommendations specific to the access, distribution, and core

layers of an enterprise campus network are presented. Private WAN QoS design is discussed in the following section, where WAN-specific considerations and detailed QoS designs are presented for leased-lines, Frame Relay, ATM, ATM-to-FR Service Interworking, and ISDN networks. Branch-specific designs include Cisco® SAFE recommendations for using Network-Based Application Recognition (NBAR) for known-worm identification and policing. The final section covers Layer 3 VPN QoS design-for both MPLS and IPSec VPNs. As businesses are migrating to VPNs to meet their wide-area networking needs at lower costs, considerations specific to these topologies are

required to be reflected in their customer-edge QoS designs. MPLS VPN QoS design is examined from both the enterprise and service provider's perspectives.

Additionally, IPsec VPN QoS designs cover site-to-site and teleworker contexts. Whether you are looking for an introduction to QoS principles and practices or a QoS planning and deployment guide, this book provides you with the expert advice you need to design and implement comprehensive QoS solutions.

Designing for Cisco Network Service Architectures Cisco Systems

bull; Gain a comprehensive view of network security issues

and concepts, then master specific implementations based on your network needs bull; Learn how to use new and legacy Cisco Systems equipment to secure your networks bull; Understand how to design and build security services while also learning the legal and network accessibility impact of those services

*CCDA Self-study* Cisco Systems

Cisco® Nexus switches and the new NX-OS operating system are rapidly becoming the new de facto standards for data center distribution/aggregation layer networking. NX-OS builds on Cisco IOS to provide advanced features that will be increasingly crucial to efficient data center operations. NX-OS and Cisco Nexus Switching

is the definitive guide to utilizing these powerful new capabilities in enterprise environments. In this book, three Cisco consultants cover every facet of deploying, configuring, operating, and troubleshooting NX-OS in the data center. They review the key NX-OS enhancements for high availability, virtualization, In-Service Software Upgrades (ISSU), and security. In this book, you will discover support and configuration best practices for working with Layer 2 and Layer 3 protocols and networks, implementing multicasting, maximizing serviceability, providing consistent

network and storage services, and much more. The authors present multiple command-line interface (CLI) commands, screen captures, realistic configurations, and troubleshooting tips—all based on their extensive experience working with customers who have successfully deployed Nexus switches in their data centers. Learn how Cisco NX-OS builds on and differs from IOS Work with NX-OS user modes, management interfaces, and system files Configure Layer 2 networking: VLANs/private VLANs, STP, virtual port channels, and unidirectional link detection Configure Layer 3 EIGRP, OSPF, BGP, and First Hop Redundancy Protocols

(FHRPs) Set up IP multicasting with PIM, IGMP, and MSDP Secure NX-OS with SSH, Cisco TrustSec, ACLs, port security, DHCP snooping, Dynamic ARP inspection, IP Source Guard, keychains, Traffic Storm Control, and more Build high availability networks using process modularity and restart, stateful switchover, nonstop forwarding, and in-service software upgrades Utilize NX-OS embedded serviceability, including Switched Port Analyzer (SPAN), Smart Call Home, Configuration Checkpoint/Rollback, and NetFlow Use the NX-OS Unified Fabric to simplify infrastructure and provide ubiquitous network and storage services Run NX-OS on Nexus 1000V server-

based software switches 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.

Cisco Press This is the eBook version of the print title. Note that the eBook does not provide access to 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. Assess your knowledge with chapter-opening quizzes Review key concepts with Exam Preparation Tasks CCNP ROUTE 642-902 Official Certification Guide is a best of breed Cisco® exam study guide that focuses specifically on the objectives for the CCNP® ROUTE exam. Senior instructor and 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. Material is presented in a concise manner, focusing on increasing your understanding and retention of exam topics. CCNP ROUTE

642-902 Official Certification 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 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. CCNP ROUTE 642-902 Official Certification 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/go/authorizedtraining](http://www.cisco.com/go/authorizedtraining)

Wendell Odom, CCIE® No. 1624, is a 28-year veteran of the networking industry. He currently works as an independent author of Cisco certification resources and occasional instructor of Cisco authorized training for Skyline

ATS. He has worked as a network engineer, consultant, systems engineer, instructor, and course developer. He is the author of several best-selling Cisco certification titles. He maintains lists of current titles, links to Wendell's blogs, and other certification resources at [www.TheCertZone.com](http://www.TheCertZone.com). This official study guide helps you master all the topics on the CCNP ROUTE exam, including: Network design, implementation, and verification plans EIGRP OSPF IGP Redistribution Policy-based routing and IP service-level agreement (IP SLA) BGP IPv6 IPv4 and IPv6 coexistence Routing over branch Internet connections This

volume is part of the Official 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.

#### IPv6 Fundamentals

Cisco Press

A comprehensive guide to the best common practices for Internet service providers Learn the best common practices for configuring routers on the Internet from experts who helped build the Internet Gain specific advice through comprehensive

coverage of all Cisco routers and current versions of Cisco IOS Software Understand the Cisco IOS tools essential to building and maintaining reliable networks Increase your knowledge of network security Learn how to prevent problems and improve performance through detailed configuration examples and diagrams Cisco IOS Software documentation is extensive and detailed and is often too hard for many Internet service providers (ISPs) who simply want to switch on and get going. Cisco ISP Essentials highlights many of the key Cisco IOS features in everyday use in the major ISP backbones of the world to help new network engineers gain

understanding of the power of Cisco IOS Software and the richness of features available specifically for them. Cisco ISP Essentials also provides a detailed technical reference for the expert ISP engineer, with descriptions of the various knobs and special features that have been specifically designed for ISPs. The configuration examples and diagrams describe many scenarios, ranging from good operational practices to network security. Finally a whole appendix is dedicated to using the best principles to cover the configuration detail of each router in a small ISP Point of Presence.

Cisco Firewalls Cisco Press  
The complete guide to

transforming enterprise networks with Cisco DNA As networks become more complex and dynamic, organizations need better ways to manage and secure them. With the Cisco Digital Network Architecture, network operators can run entire network fabrics as a single, programmable system by defining rules that span their devices and move with their users. Using Cisco intent-based networking, you spend less time programming devices, managing configurations, and troubleshooting problems so you have more time for driving value from your network, your applications, and most of all, your users. This guide systematically introduces Cisco DNA,

highlighting its business value propositions, design philosophy, tenets, blueprints, components, and solutions. Combining insider information with content previously scattered through multiple technical documents, it provides a single source for evaluation, planning, implementation, and operation. The authors bring together authoritative insights for multiple business and technical audiences. Senior executives will learn how DNA can help them drive digital transformation for competitive advantage. Technical decision-makers will discover powerful emerging solutions for their specific needs. Architects will find

essential recommendations, interdependencies, and caveats for planning deployments. Finally, network operators will learn how to use DNA Center's modern interface to streamline, automate, and improve virtually any network management task. · Accelerate the digital transformation of your business by adopting an intent-based network architecture that is open, extensible, and programmable · Integrate virtualization, automation, analytics, and cloud services to streamline operations and create new business opportunities · Dive deep into hardware, software, and protocol innovations that lay the programmable infrastructure

foundation for DNA · Virtualize advanced network functions for fast, easy, and flexible deployments · Translate business intent into device configurations and simplify, scale, and automate network operations using controllers · Use analytics to tune performance, plan capacity, prevent threats, and simplify troubleshooting · Learn how Software-Defined Access improves network flexibility, security, mobility, visibility, and performance · Use DNA Assurance to track the health of clients, network devices, and applications to reveal hundreds of actionable insights · See how DNA Application Policy supports granular application recognition

and end-to-end treatment, for even encrypted applications · Identify malware, ransomware, and other threats in encrypted traffic

*MPLS and VPN Architectures* Cisco Press

The definitive IS-IS reference and design guide Extensive coverage of both underlying concepts and practical applications of the IS-IS protocol Detailed explanation of how the IS-IS database works and relevant insights into the operation of the shortest path first (SPF) algorithm Comprehensive tutorial on configuring and troubleshooting IS-IS on Cisco routers Advanced information on IP network design and performance optimization strategies

using IS-IS Network design case studies provide a practical perspective of various design strategies Comprehensive overview of routing and packet-switching mechanisms on modern routers A collection of IS-IS packet formats and analyzer decodes useful for mastering the nuts and bolts of the IS-IS protocol and troubleshooting complex problems Interior gateway protocols such as Intermediate System-to-Intermediate System (IS-IS) are used in conjunction with the Border Gateway Protocol (BGP) to provide robust, resilient performance and intelligent routing capabilities required in large-scale and complex

internetworking environments. Despite the popularity of the IS-IS protocol, however, networking professionals have depended on router configuration manuals, protocol specifications, IETF RFCs, and drafts. Mastering IS-IS, regardless of its simplicity, has been a daunting task for many. IS-IS Network Design Solutions provides the first comprehensive coverage available on the IS-IS protocol. Networking professionals of all levels now have a single source for all the information needed to become true experts on the IS-IS protocol, particularly for IP routing applications. You will learn about the origins of the IS-IS protocol and the

fundamental underlying concepts and then move to complex protocol mechanisms involving building, maintaining, and dissemination of the information found in the IS-IS database on a router.

Subsequent discussions on IP network design issues include configuration and troubleshooting techniques, as well as case studies with practical design scenarios.