

Cisco Ccie Fundamentals Network Design Case Studies

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.

CCIE Professional Development: Advanced IP Network Design provides the solutions network engineers and managers need to grow and stabilize large IP networks. Technology advancements and corporate growth inevitably lead to the necessity for network expansion. This book presents design concepts and techniques that enable networks to evolve into supporting larger, more complex applications while maintaining critical stability. CCIE Professional Development: Advanced IP Network Design provides you with a basic foundation to understand and implement the most efficient network design around the network core, distribution and access layers, and the common and edge network services. After establishing an efficient hierarchical network design, you will learn to apply OSPF, IS-IS, EIGRP, BGP, NHRP, and MPLS. Case studies support each protocol to provide you with valuable solutions to common stumbling blocks encountered when implementing an IGP- or EGP-based network.

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

Objectives The purpose of Top-Down Network Design, Third Edition, is to help you design networks that meet a customer's business and technical goals. Whether your customer is another department within your own company or an external client, this book provides you with tested processes and tools to help you understand traffic flow, protocol behavior, and internetworking technologies. After completing this book, you will be equipped to design enterprise networks that meet a customer's requirements for

functionality, capacity, performance, availability, scalability, affordability, security, and manageability. Audience This book is for you if you are an internetworking professional responsible for designing and maintaining medium- to large-sized enterprise networks. If you are a network engineer, architect, or technician who has a working knowledge of network protocols and technologies, this book will provide you with practical advice on applying your knowledge to internetwork design. This book also includes useful information for consultants, systems engineers, and sales engineers who design corporate networks for clients. In the fast-paced presales environment of many systems engineers, it often is difficult to slow down and insist on a top-down, structured systems analysis approach. Wherever possible, this book includes shortcuts and assumptions that can be made to speed up the network design process. Finally, this book is useful for undergraduate and graduate students in computer science and information technology disciplines. Students who have taken one or two courses in networking theory will find *Top-Down Network Design, Third Edition*, an approachable introduction to the engineering and business issues related to developing real-world networks that solve typical business problems. Changes for the Third Edition Networks have changed in many ways since the second edition was published. Many legacy technologies have disappeared and are no longer covered in the book. In addition, modern networks have become multifaceted, providing support for numerous bandwidth-hungry applications and a variety of devices, ranging from smart phones to tablet PCs to high-end servers. Modern users expect the network to be available all the time, from any device, and to let them securely collaborate with coworkers, friends, and family. Networks today support voice, video, high-definition TV, desktop sharing, virtual meetings, online training, virtual reality, and applications that we can't even imagine that brilliant college students are busily creating in their dorm rooms. As applications rapidly change and put more demand on networks, the need to teach a systematic approach to network design is even more important than ever. With that need in mind, the third edition has been retooled to make it an ideal textbook for college students. The third edition features review questions and design scenarios at the end of each chapter to help students learn top-down network design. To address new demands on modern networks, the third edition of *Top-Down Network Design* also has updated material on the following topics: *Network redundancy* *Modularity in network designs* *The Cisco SAFE security reference architecture* *The Rapid Spanning Tree Protocol (RSTP)* *Internet Protocol version 6 (IPv6)* *Ethernet scalability options, including 10-Gbps Ethernet and Metro Ethernet* *Network design and management tools*

Top-down Network Design

TOP-DOWN NET DES _c3

Computer Systems

End-to-end Qos Network Design

Delivering business-grade cloud applications and services

A comprehensive introduction to all facets of MPLS theory and practice Helps networking professionals choose the suitable MPLS application and design for their network Provides MPLS theory and relates to basic IOS configuration examples The Fundamentals Series from Cisco Press launches the basis to readers for understanding the purpose, application, and management of technologies MPLS has emerged as the new networking layer for service providers throughout the world. For many service providers and enterprises MPLS is a way of delivering new applications on their IP networks, while consolidating data and voice networks. MPLS has grown to be the new default network layer for service providers and is finding its way into enterprise networks as well. This book focuses on the building blocks of MPLS (architecture, forwarding packets, LDP, MPLS and QoS, CEF, etc.). This book also reviews the different MPLS applications (MPLS VPN, MPLS Traffic Engineering, Carrying IPv6 over MPLS, AToM, VPLS, MPLS OAM etc.). You will get a comprehensive overview of all the aspects of MPLS, including the building blocks, its applications, troubleshooting and a perspective on the future of MPLS.

Cisco IOS 12.0 Bridging and IBM Network Solutions contains configuration scenarios and command reference information that demonstrate bridging and IBM networking options. Written for network administrators, this guide explores transparent and source-route transparent bridging, Source-Route Bridging (SRB), data link switching plus (DLSw+), serial tunnel and block serial tunnel, SDLC and LLC2 parameters, and advanced peer-to-peer networking. Revised and updated with the latest data in the field, Fundamentals of Information Systems Security, Third Edition provides a comprehensive overview of the essential concepts readers must know as they pursue careers in information systems security. The text opens with a discussion of the new risks, threats, and vulnerabilities associated with the transition to a digital world. Part 2 presents a high level overview of the Security+ Exam and provides students with information as they move toward this certification.

Cisco IOS 12.0 Switching Services is a comprehensive guide detailing available Cisco IOS switching alternatives. Cisco switching services range from fast switching and Netflow switching to LAN Emulation. This book describes how to configure routing between virtual LANs (VLANs) and teach how to effectively configure and implement VLANs on switches.

Link-State and Path-Vector Routing Protocols

Cisco TelePresence Fundamentals

IS-IS Network Design Solutions

IP Routing Protocols

Connecting Networks Companion Guide

bull; Review topics in the CCDA 640-861 DESGN exam for comprehensive exam readiness bull; Prepare with proven study to

foundation summaries, and pre- and postchapter quizzes to ensure mastery of the subject matter bull; Get into test-taking m ROM testing engine containing over 200 questions that measure testing readiness and provide feedback on areas requiring f This book discusses link-state routing protocols (OSPF and IS-IS), and the path-vector routing protocol (BGP). It covers their identifying characteristics, operations, and the databases they maintain. Material is presented from a practicing engineer's pe linking theory and fundamental concepts to common practices and real-world examples. Every aspect of the book is written current best practices using real-world examples. The book begins with a detailed description of the OSPF area types and hier routing, and the different types of routers used in an OSPF autonomous system. The author goes on to describe in detail the packet types, and inbound and outbound processing of OSPF link-state advertisements (LSAs). Next, the book gives an overvi features of IS-IS. The author then discusses the two-level routing hierarchy for controlling the distribution of intra-domain (L inter-domain (Level 2) routing information within an IS-IS routing domain. He then describes in detail IS-IS network address f IS routing metrics, IS-IS packet types, IS-IS network types and adjacency formation, IS-IS LSDB and synchronization, and IS-IS authentication. The book then reviews the main concepts of path-vector routing protocols, and describes BGP packet types, states and Finite State Machine, BGP path attributes types, and BGP Autonomous System Numbers (ASNs). Focuses solely on routing protocols (OSPF and IS-IS), and the only path-vector routing protocol in use today (BGP). Reviews the basic concepts the design of IS-IS and provides a detailed description of IS-IS area types and hierarchical routing, and the different types of by IS-IS. Discusses the two-level routing hierarchy for controlling the distribution of intra-domain (Level 1) and inter-domain routing information within an IS-IS routing domain. Describes in detail BGP packet types, BGP session states and Finite State BGP path attributes types, and BGP ASNs, includes a high-level view of the typical BGP router and its components, and inbou outbound message processing. James Aweya, PhD, is a chief research scientist at the Etisalat British Telecom Innovation Cen Khalifa University, Abu Dhabi, UAE. He has authored four books including this book and is a senior member of the Institute of and Electronics Engineers (IEEE).

Master the basics of data centers to build server farms that enhance your Web site performance Learn design guidelines tha deploy server farms in highly available and scalable environments Plan site performance capacity with discussions of server f architectures and their real-life applications to determine your system needs Today's market demands that businesses have a presence through which they can perform e-commerce and customer support, and establish a presence that can attract and customer base. Underestimated hit ratios, compromised credit card records, perceived slow Web site access, or the infamous "Found" alerts make the difference between a successful online presence and one that is bound to fail. These challenges can l part with the use of data center technology. Data centers switch traffic based on information at the Network, Transport, or layers. Content switches perform the "best server" selection process to direct users' requests for a specific service to a ser farm. The best server selection process takes into account both server load and availability, and the existence and consisten requested content. Data Center Fundamentals helps you understand the basic concepts behind the design and scaling of ser data center and content switching technologies. It addresses the principles and concepts needed to take on the most comm encountered during planning, implementing, and managing Internet and intranet IP-based server farms. An in-depth analysis of center technology with real-life scenarios make Data Center Fundamentals an ideal reference for understanding, planning, and Web hosting and e-commerce environments.

Provides candidates for Cisco Certified Internetwork Expert certification with up-to-date, accurate information on the techn fundamentals covered in the CCIE program, including guidelines for planning internetworks and Cisco Systems software featu (Intermediate).

CCDA Exam Certification Guide

Optimal Routing Design

Cisco CCIE Fundamentals

Cisco IOS XR Fundamentals

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.

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.

"This course discusses the WAN technologies and network services required by converged applications in a complex network. The course allows you to understand the selection criteria of network devices and WAN technologies to meet network requirements. You will learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. You will also develop the knowledge and skills needed to implement IPsec and virtual private network (VPN) operations in a complex network."--Back cover.

PLEASE PROVIDE COURSE INFORMATION PLEASE PROVIDE

Advanced IP Network Design

CCIE Routing and Switching Exam Certification Guide

Cisco IOS Switching Services

Quality of Service for Rich-Media & Cloud Networks

Planning, Design, Implementation, Operation, and Optimization (paperback)

This textbook covers digital design, fundamentals of computer architecture, and assembly language. The book starts by introducing basic number systems, character coding, basic knowledge in digital design, and components of a computer. The goes on to discuss information representation in computing; Boolean algebra and logic gates; sequential logic; input/output; CPU performance. The author also covers ARM architecture, ARM instructions and ARM assembly language which is used in variety of devices such as cell phones, digital TV, automobiles, routers, and switches. The book contains a set of laboratory experiments related to digital design using Logisim software; in addition, each chapter features objectives, summaries, key t review questions and problems. The book is targeted to students majoring Computer Science, Information System and IT and follows the ACM/IEEE 2013 guidelines. • Comprehensive textbook covering digital design, computer architecture, and ARM architecture and assembly • Covers basic number system and coding, basic knowledge in digital design, and components of a computer • Features laboratory exercises in addition to objectives, summaries, key terms, review questions, and problems in chapter

A guide to successful deployment of the Cisco IP Telephony solution Real-world case studies from the Cisco design consulting engineers who developed the PDIOO process provide practical advice on all stages of successful IPT deployment Concise understanding of the PDIOO phases enables architects and engineers to successfully deploy the Cisco IPT solution Division of process into PDIOO phases provides a logical and defined guide for network engineers and architects as they proceed through each of the phases in deploying the Cisco IPT solution Includes detailed questionnaires for each phase of deployment in the PDIOO cycle—a great aid in understanding customer networks and requirements Network infrastructure design, call process infrastructure design and applications, and voice-mail system design are covered in depth Cisco® IP Telephony (IPT) solution being deployed at an accelerated rate, and network architects and engineers need to understand the various phases involve successful deployment: planning, design, implementation, operation, and optimization (PDIOO). On the road to that understanding, those involved need to collect information for each phase of deployment, and then follow through with the b architecture, deployment model, and implementation based on the data collected. Cisco IP Telephony: Planning, Design, Implementation, Operation, and Optimization is a guide for network architects and engineers as they deploy the Cisco IPT solution. With this book, you will master the PDIOO phases of the IPT solution, beginning with the requirements necessary for effective planning of a large-scale IPT network. From there, you'll follow a step-by-step approach to choose the right architecture and deployment model. Real-world examples and explanations with technical details, design tips, network illustrations, and s configurations illustrate each step in the process of planning, designing, implementing, operating, and optimizing a chosen architecture based on information you have collected. In-depth instruction on each PDIOO phase provides specific details about the tasks involved and best practices for successful implementation of the IPT solution. This book also contains predesigned questionnaires and PDIOO assistance tools that help you determine the requirements of each phase of the PDIOO cycle. Author Ramesh Kaza and Salman Asadullah have been involved with Cisco IPT solutions from the beginning and have planned, designed, and implemented major IPT networks using the guidelines found here. Cisco IP Telephony: Planning, Design,

Implementation, Operation, and Optimization provides the step-by-step explanations, details, and best practices acquired by authors while working with the top Cisco IPT customers. 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.

An essential reference for deploying IPv6 in broadband networks With the exponential growth of the Internet and increasing number of end users, service providers are increasingly looking for ways to expand their networks to meet the scalability requirements of the growing number of Internet-ready appliances or "always-on" devices. This book bridges a gap in the literature by providing coverage of Internet Protocol Version 6 (IPv6), specifically in broadband access networks. The authors, who are Cisco Certified Internetworking Experts (CCIE), provide comprehensive and first-rate coverage of: IPv6 drivers in broadband networks IPv6 deployment in Cable, DSL, ETTH, and Wireless networks Configuring and troubleshooting IPv6 gateway routers and host Configuring and troubleshooting IPv6 edge routers Configuring and troubleshooting IPv6 provisioning servers The authors also discuss challenges faced by service providers and how IPv6 addresses these issues. Additionally, the book is complemented with examples throughout to further facilitate readers' comprehension and a real large-scale IPv6 BB SP case study is presented. Deploying IPv6 in Broadband Access Networks is essential reading for network operators, network design engineers and consultants, network architects, and members of the networking community.

The demand for certified networking professionals that have experience with Cisco® products and Cisco-based networks has never been higher. Written in conjunction with CCprep.com, the premier Cisco certification training Website, DCN: Designing Cisco® Networks gives you full, curriculum-based coverage to help you study for the CCDA exam and succeed as a Cisco professional. Comprehensive, thorough, and reliable, this is the only book you'll need for both preparing for the CCDA exam, as well as a helpful on-the-job desk reference.

Data Center Fundamentals

Cisco IP Telephony

IoT Fundamentals

Networking Technologies, Protocols, and Use Cases for the Internet of Things

CCIE Fundamentals

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.

End-to-End QoS Network Design Quality of Service for Rich-Media & Cloud Networks Second Edition New best practices, technical strategies, and proven designs for maximizing QoS in complex networks This authoritative guide to deploying, managing, and optimizing QoS with Cisco technologies has been thoroughly revamped to reflect the newest applications, best practices, hardware, software, and tools for modern networks. This new edition focuses on complex traffic

mixes with increased usage of mobile devices, wireless network access, advanced communications, and video. It reflects the growing heterogeneity of video traffic, including passive streaming video, interactive video, and immersive videoconferences. It also addresses shifting bandwidth constraints and congestion points; improved hardware, software, and tools; and emerging QoS applications in network security. The authors first introduce QoS technologies in high-to-mid-level technical detail, including protocols, tools, and relevant standards. They examine new QoS demands and requirements, identify reasons to reevaluate current QoS designs, and present new strategic design recommendations. Next, drawing on extensive experience, they offer deep technical detail on campus wired and wireless QoS design; next-generation wiring closets; QoS design for data centers, Internet edge, WAN edge, and branches; QoS for IPsec VPNs, and more.

Tim Szigeti, CCIE No. 9794 is a Senior Technical Leader in the Cisco System Design Unit. He has specialized in QoS for the past 15 years and authored Cisco TelePresence Fundamentals. Robert Barton, CCIE No. 6660 (R&S and Security), CCDE No. 2013::6 is a Senior Systems Engineer in the Cisco Canada Public Sector Operation. A registered Professional Engineer (P. Eng), he has 15 years of IT experience and is primarily focused on wireless and security architectures. Christina Hattingh spent 13 years as Senior Member of Technical Staff in Unified Communications (UC) in Cisco's Services Routing Technology Group (SRTG). There, she spoke at Cisco conferences, trained sales staff and partners, authored books, and advised customers. Kenneth Briley, Jr., CCIE No. 9754, is a Technical Lead in the Cisco Network Operating Systems Technology Group. With more than a decade of QoS design/implementation experience, he is currently focused on converging wired and wireless QoS.

n Master a proven, step-by-step best-practice approach to successful QoS deployment
 n Implement Cisco-validated designs related to new and emerging applications
 n Apply best practices for classification, marking, policing, shaping, markdown, and congestion management/avoidance
 n Leverage the new Cisco Application Visibility and Control feature-set to perform deep-packet inspection to recognize more than 1000 different applications
 n Use Medianet architecture elements specific to QoS configuration, monitoring, and control
 n Optimize QoS in rich-media campus networks using the Cisco Catalyst 3750, Catalyst 4500, and Catalyst 6500
 n Design wireless networks to support voice and video using a Cisco centralized or converged access WLAN
 n Achieve zero packet loss in GE/10GE/40GE/100GE data center networks
 n Implement QoS virtual access data center designs with the Cisco Nexus 1000V
 n Optimize QoS at the enterprise customer edge
 n Achieve extraordinary levels of QoS in service provider edge networks
 n Utilize new industry standards and QoS technologies, including IETF RFC 4594, IEEE 802.1Q-2005, HQF, and NBAR2

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.

Today, billions of devices are Internet-connected, IoT standards and protocols are stabilizing, and technical professionals must increasingly solve real problems with IoT technologies. Now, five leading Cisco IoT experts present the first comprehensive, practical reference for making IoT work. IoT Fundamentals brings together knowledge previously available only in white papers, standards documents, and other hard-to-find sources—or nowhere at all. The authors begin with a high-level overview of IoT and introduce key concepts needed to successfully design IoT solutions. Next, they walk through each key technology, protocol, and technical building block that combine into complete IoT solutions. Building on these essentials, they present several detailed use cases, including manufacturing, energy, utilities, smart+connected cities, transportation, mining, and public safety. Whatever your role or existing infrastructure, you'll gain deep insight what IoT applications can do, and what it takes to deliver them. Fully covers the principles and components of next-generation wireless networks built with Cisco IOT solutions such as IEEE 802.11 (Wi-Fi), IEEE 802.15.4-2015 (Mesh), and LoRaWAN Brings together real-world tips, insights, and best practices for designing and implementing next-generation wireless networks Presents start-to-finish configuration examples for common deployment scenarios Reflects the extensive first-hand experience of Cisco experts

Master the design and deployment of small and medium-sized business networks.

Cisco LAN Switching (CCIE Professional Development series)

Enhanced IP Services for Cisco Networks

DCN: Designing Cisco Networks

End-to-End QoS Network Design

Cisco IOS 12.0 Bridging and IBM Network Solutions

bull; Understand how Cisco Unity supports both IP telephony and traditional telephony systems bull; Master the support of Cisco Unity features for CallManager, Contact Centre, and Personal Assistant bull; Review Case Studies for design recommendations and troubleshooting suggestions bull; Learn about the common pitfalls of existing systems integration and how to avoid downtime

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

Data Center Virtualization Fundamentals For many IT organizations, today's greatest challenge is to drive more value, efficiency, and utilization from data centers. Virtualization is the best way to meet this challenge. Data

Center Virtualization Fundamentals brings together the comprehensive knowledge Cisco professionals need to apply virtualization throughout their data center environments. Leading data center expert Gustavo A. A. Santana thoroughly explores all components of an end-to-end data center virtualization solution, including networking, storage, servers, operating systems, application optimization, and security. Rather than focusing on a single product or technology, he explores product capabilities as interoperable design tools that can be combined and integrated with other solutions, including VMware vSphere. With the author's guidance, you'll learn how to define and implement highly-efficient architectures for new, expanded, or retrofit data center projects. By doing so, you can deliver agile application provisioning without purchasing unnecessary infrastructure, and establish a strong foundation for new cloud computing and IT-as-a-service initiatives. Throughout, Santana illuminates key theoretical concepts through realistic use cases, real-world designs, illustrative configuration examples, and verification outputs. Appendixes provide valuable reference information, including relevant Cisco data center products and CLI principles for IOS and NX-OS. With this approach, Data Center Virtualization Fundamentals will be an indispensable resource for anyone preparing for the CCNA Data Center, CCNP Data Center, or CCIE Data Center certification exams. Gustavo A. A. Santana, CCIE No. 8806, is a Cisco Technical Solutions Architect working in enterprise and service provider data center projects that require deep integration across technology areas such as networking, application optimization, storage, and servers. He has more than 15 years of data center experience, and has led and coordinated a team of specialized Cisco engineers in Brazil. He holds two CCIE certifications (Routing & Switching and Storage Networking), and is a VMware Certified Professional (VCP) and SNIA Certified Storage Networking Expert (SCSN-E). A frequent speaker at Cisco and data center industry events, he blogs on data center virtualization at gustavoasantana.net. Learn how virtualization can transform and improve traditional data center network topologies Understand the key characteristics and value of each data center virtualization technology Walk through key decisions, and transform choices into architecture Smoothly migrate existing data centers toward greater virtualization Burst silos that have traditionally made data centers inefficient Master foundational technologies such as VLANs, VRF, and virtual contexts Use virtual PortChannel and FabricPath to overcome the limits of STP Optimize cabling and network management with fabric extender (FEX) virtualized chassis Extend Layer 2 domains to distant data center sites using MPLS and Overlay Transport Virtualization (OTV) Use VSANs to overcome Fibre Channel fabric challenges Improve SAN data protection, environment isolation, and scalability Consolidate I/O through Data Center Bridging and FCoE Use virtualization to radically simplify server environments Create server profiles that streamline "bare metal" server provisioning "Transcend the rack" through virtualized networking based on Nexus 1000V and VM-FEX Leverage opportunities to deploy virtual network services more efficiently Evolve data center virtualization toward full-fledged private clouds -Reviews - "The variety of material that Gustavo covers in this work would appeal to anyone responsible for Data Centers today. His grasp of virtualization technologies and ability to relate it in both technical and non-technical terms makes for compelling reading. This is not your ordinary tech manual. Through use of relatable visual cues, Gustavo provides information that is easily recalled on the subject of virtualization, reaching across Subject Matter Expertise domains. Whether you consider yourself well-versed or a novice on the topic, working in large or small environments, this work will provide a clear understanding of the diverse subject of virtualization." -- Bill Dufresne, CCIE 4375, Distinguished Systems Engineer, Cisco (Americas) "..this book is an essential reference and will be valuable asset for potential candidates pursuing their Cisco Data Center certifications. I am confident that in reading this book, individuals will inevitably gain extensive knowledge and hands-on experience during their certification preparations. If you're looking for a truly comprehensive guide to virtualization, this is the one!" -- Yusuf Bhaiji, Senior Manager, Expert Certifications (CCIE, CCDE, CCAr), Learning@Cisco "When one first looks at those classic Cisco Data Center blueprints, it is very common to become distracted with the overwhelming number of pieces and linkages. By creating a solid theoretical foundation and providing rich sets of companion examples to illustrate each concept, Gustavo's book brings hope back to IT Professionals from different areas of expertise. Apparently complex topics are demystified and the insertion of products, mechanisms, protocols and technologies in the overall Data Center Architecture is clearly explained, thus enabling you to achieve robust designs and successful deployments. A must read... Definitely!" -- Alexandre M. S. P. Moraes, Consulting Systems Engineer -- Author of "Cisco Firewalls"

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.

Data Center Virtualization Fundamentals

Cisco Network Design Solutions for Small-medium Businesses

IPv6 Fundamentals

CCDA Self-study

IP Quality of Service

This is the only official Cisco Systems-endorsed study guide for the CCIE Routing and Switching exam. The CD-ROM customizable test engine contains unique practice questions and a full electronic version of the text.

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.

Learn how to manage and deploy the latest IP services in Cisco-centric networks. Understand VPN security concepts: confidentiality, integrity, origin authentication, non-repudiation, anti-replay, perfect forward secrecy Deploy quality of service technologies to protect your mission-critical applications Find out how IPsec technology works and how to configure it in IOS Learn how to set up a router as a firewall and intrusion detection system Gain efficient use of your IP address space with NAT, VLSM, IP unnumbered Solve real-world routing problems with redistribution, route filtering, summarization, policy routing Enable authentication, authorization, and accounting (AAA) security services with RADIUS and TACACS+ servers Enhanced IP Services for Cisco Networks is a guide to the new enabling and advanced IOS services that build more scalable, intelligent, and secure networks. You will learn the technical details necessary to deploy quality of service and VPN technologies, as well as improved security and advanced routing features. These services will allow you to securely extend the network to new

frontiers, protect your network from attacks, and enhance network transport with application-level prioritization. This book offers a practical guide to implementing IPsec, the IOS Firewall, and IOS Intrusion Detection System. Also included are advanced routing principles and quality of service features that focus on improving the capability of your network. A good briefing on cryptography fully explains the science that makes VPNs possible. Rather than being another routing book, this is a guide to improving your network's capabilities by understanding and using the sophisticated features available to you in Cisco's IOS software

Cisco TelePresence™ Systems (CTS) create live, face-to-face meeting experiences, providing a breakthrough virtual conferencing and collaboration experience that transcends anything previously achievable by videoconferencing. Although the business case for deploying CTS is compelling, implementing it requires advanced knowledge of the latest networking technologies, an attention to detail, and thorough planning. In this book, four leading CTS technical experts cover everything you need to know to successfully design and deploy CTS in your environment. The authors cover every element of a working CTS solution: video, audio, signaling protocols and call processing, LAN and WAN design, multipoint, security, inter-company connectivity, and much more. They deliver start-to-finish coverage of CTS design for superior availability, QoS support, and security in converged networks. They also present the first chapter-length design guide of its kind detailing the room requirements and recommendations for lighting, acoustics, and ambience within various types of TelePresence rooms. Cisco Telepresence Fundamentals is an indispensable resource for all technical professionals tasked with deploying CTS, including netadmins, sysadmins, audio/video specialists, VoIP specialists, and operations staff. This is the only book that:

- Introduces every component of a complete CTS solution and shows how they work together
- Walks through connecting CTS in real-world environments
- Demonstrates how to secure virtual meetings using Cisco firewalls and security protocols
- Includes a full chapter on effective TelePresence room design
- Walks through every aspect of SIP call signaling design, including both single-cluster and intercluster examples for use in a TelePresence environment
- Provides prequalification, room, and network path assessment considerations to help you anticipate and avoid problems

Tim Szigeti, CCIE® No. 9794, technical leader within the Cisco® Enterprise Systems Engineering team, is responsible for defining Cisco TelePresence network deployment best practices. He also coauthored the Cisco Press book End-to-End QoS Network Design. Kevin McMenamy, senior manager of technical marketing in the Cisco TelePresence Systems Business Unit, has spent the past nine years at Cisco supporting IP videoconferencing, video telephony, and unified communications. Roland Saville, technical leader for the Cisco Enterprise Systems Engineering team, tests and develops best-practice design guides for Cisco TelePresence enterprise deployments. Alan Glowacki is a Cisco technical marketing engineer responsible for supporting Cisco TelePresence customers and sales teams. Use Cisco TelePresence Systems (CTS) to enhance global teamwork and collaboration, both within your own enterprise and with your customers, partners, and vendors Understand how the various components of the Cisco TelePresence Solution connect and work together Integrate CTS into existing LAN, enterprise, and service provider networks Successfully design and deploy a global TelePresence network Understand the importance of room dimensions, acoustics, lighting, and ambience and how to properly design the physical room environment Provide the high levels of network availability CTS requires Leverage the Cisco quality of service (QoS) tools most relevant to CTS network provisioning and deployment Systematically secure CTS using TLS, dTLS, sRTP, SSH, and Cisco firewalls This book is part of the Cisco Press® Fundamentals Series. Books in this series introduce networking professionals to new networking technologies, covering network topologies, sample deployment concepts, protocols, and management techniques. Category: IP Communications Covers: Cisco TelePresence Systems

CCIE Fundamentals Network Design and Case Studies, Second

Designing Network Security

Cisco Unity Fundamentals

A Straightforward Approach to Understanding IPv6

Digital Design, Fundamentals of Computer Architecture and Assembly Language

CCIE Fundamentals Network Design and Case Studies Cisco CCIE Fundamentals Network Design and Case Studies Cisco Systems

A comprehensive introduction to deploying, configuring, and maintaining Cisco Unity Discover the various Cisco Unity integration and deployment solutions, as well as the environmental differences between PBX and IP telephony-based telephone systems Learn the pitfalls of existing systems integration and how to avoid downtime Maintain a Cisco unified messaging solution by using the book's examples, including setups, additions, message sourcing applications, and error reporting Perform the proper installation, upgrade, and back up of Cisco Unity systems Monitor performance and troubleshoot a Cisco Unity system using the proper tools and utilities that help you ensure high availability Choose the proper Cisco Unity networking features to deliver messages to other voice-messaging systems Cisco Unity is the official unified messaging solution for the Cisco Architecture for Voice, Video, and Integrated Data (AVVID) and complements the full range of Cisco IP-based voice solutions, including Cisco CallManager and Cisco Personal Assistant. Cisco Unity Fundamentals provides design and administration goals for migrating from

PBX to Cisco IP Telephony, as well as working in a mixed PBX/Cisco IP Telephony environment. You will learn about the transition from the traditional model, with separate architectures for voice-mail and e-mail systems, to supporting unified messaging: e-mail, voice, and fax messages delivered to a single inbox. You will also discover common troubleshooting solutions, such as performance monitoring and the importance of data collection for predicting future system requirements. Cisco Unity Fundamentals begins by introducing the engineering aspects of Cisco Unity and then moves quickly into the hardware and software platforms. Part I focuses on the administration of Cisco Unity, describing the features, general setup, and global settings. Part II describes installation and discusses various types of integration with Cisco CallManager and other telephone systems, including Session Initiation Protocol (SIP) proxy. Part II also delves into networking with other voice-messaging systems. After reading Cisco Unity Fundamentals, you will understand the system, configuration, and on-going maintenance issues associated with a successful Cisco Unity deployment. This book is part of the Cisco Press Fundamentals Series. Books in this series introduce networking professionals to new networking technologies, covering network topologies, example deployment concepts, protocols, and management techniques.

Designing Networks and Services for the Cloud Delivering business-grade cloud applications and services A rapid, easy-to-understand approach to delivering a secure, resilient, easy-to-manage, SLA-driven cloud experience Designing Networks and Services for the Cloud helps you understand the design and architecture of networks and network services that enable the delivery of business-grade cloud services. Drawing on more than 40 years of experience in network and cloud design, validation, and deployment, the authors demonstrate how networks spanning from the Enterprise branch/HQ and the service provider Next-Generation Networks (NGN) to the data center fabric play a key role in addressing the primary inhibitors to cloud adoption—security, performance, and management complexity. The authors first review how virtualized infrastructure lays the foundation for the delivery of cloud services before delving into a primer on clouds, including the management of cloud services. Next, they explore key factors that inhibit enterprises from moving their core workloads to the cloud, and how advanced networks and network services can help businesses migrate to the cloud with confidence. You'll find an in-depth look at data center networks, including virtualization-aware networks, virtual network services, and service overlays. The elements of security in this virtual, fluid environment are discussed, along with techniques for optimizing and accelerating the service delivery. The book dives deeply into cloud-aware service provider NGNs and their role in flexibly connecting distributed cloud resources, ensuring the security of provider and tenant resources, and enabling the optimal placement of cloud services. The role of Enterprise networks as a critical control point for securely and cost-effectively connecting to high-performance cloud services is explored in detail before various parts of the network finally come together in the definition and delivery of end-to-end cloud SLAs. At the end of the journey, you preview the exciting future of clouds and network services, along with the major upcoming trends. If you are a technical professional or manager who must design, implement, or operate cloud or NGN solutions in enterprise or service-provider environments, this guide will be an indispensable resource.

- * Understand how virtualized data-center infrastructure lays the groundwork for cloud-based services
- * Move from distributed virtualization to "IT-as-a-service" via automated self-service portals
- * Classify cloud services and deployment models, and understand the actors in the cloud ecosystem
- * Review the elements, requirements, challenges, and opportunities associated with network services in the cloud
- * Optimize data centers via network segmentation, virtualization-aware networks, virtual network services, and service overlays
- * Systematically secure cloud services
- * Optimize service and application performance
- * Plan and implement NGN infrastructure to support and accelerate cloud services
- * Successfully connect enterprises to the cloud
- * Define and deliver on end-to-end cloud SLAs
- * Preview the future of cloud and network services

The indispensable official reference to the next-generation Cisco Internet operating system, IOS-XR. • •A must-have book for every network professional who must design, implement, or troubleshoot networks containing IOS-XR supported routers. •Illuminates IOS-XR's architecture, offering insights for leveraging its full potential. •The only book on the market on the new Cisco IOS-XR. Cisco IOS-XR Reference Guide is a systematic, authoritative guide to configuring routers with Cisco's next-generation flagship Internet Operating system, IOS-XR. By providing quick, authoritative example-rich references to the commands most frequently used to configure and troubleshoot IOS-XRbased routers, this book will help network professionals successfully design, implement, or support network containing Cisco IOS-XR-supported routers. The authors walk readers through the details of IOS-XR's new architecture, comparing it with the traditional IOS CLI, and mapping legacy IOS CLI to the new IOS-XR CLI wherever required. They offer extensive information for simplifying migration and helping network professionals take full advantage of IOS-XR's power. For example, the authors introduce and illuminate important new features such as Logical Routers and Hitless Upgrades: features that can be used to minimize hardware requirements, downtime, and cost. The book contains concise explanations of internetworking theory, backed by detailed, tested configuration examples that network professionals can apply in their own networks. Sample configurations are included for: interface, IP addresses and services, MPLS, multicast, system management, system security, and routing (BGP, IS-IS, OSPF and static routing).

Fundamentals of Information Systems Security

Top-Down Network Design

MPLS Fundamentals

Network Design and Case Studies

Deploying IPv6 in Broadband Access Networks

A practical guide to creating a secure network infrastructure Understand basic cryptography and security technologies Identify the threats and common attacks to a network infrastructure Learn how to create a security policy Find out how to recover from a security breach Study specific implementation scenarios for securing your network environment Learn about advances in security technologies *Designing Network Security, Second Edition, is a practical guide designed to help you understand the fundamentals of securing your corporate network infrastructure. This book takes a comprehensive look at underlying security technologies, the process of creating a security policy, and the practical requirements necessary to implement a corporate security policy. You will gain a thorough understanding of basic cryptography, the most widely deployed security technologies, and key emerging security technologies. You will be able to guide the architecture and implementation of a security policy for a corporate environment by knowing possible threats and vulnerabilities and understanding the steps required to perform a risk management assessment. Through the use of specific configuration examples, you will learn about the features required in network infrastructure equipment to implement the given security policy, including securing the internal corporate infrastructure, Internet access, and the remote access environment. This new edition includes coverage of new security features including SSH on routers, switches, and the PIX(r) Firewall; enhancements to L2TP and IPSec; Cisco(r) LEAP for wireless networks; digital certificates; advanced AAA functionality; and Cisco Intrusion Detection System features and products. Additional practical examples include current security trends using VPN, wireless, and VoIP networking examples. This book is part of the Networking Technology Series from Cisco Press(r), which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.*

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.*

Developing IP Multicast Networks

Designing Networks and Services for the Cloud