Mpls Enabled Applications Emerging Developments And New Technologies By Ina Minei Julian Lucek Published By Wiley Blackwell 2005

“Here at last is a single, all-encompassing resource where the myriad applications sharpen into a comprehensible text.” Kireeti Kompella, Juniper Fellow, Juniper Networks. The authoritative guide to MPLS, now in its second edition, fully updated with brand new material! Multiprotocol Label Switching (MPLS) is now considered the networking technology for carrying all types of network traffic, including voice telephony, real-time video, and data traffic. In MPLS-Enabled Applications, the Second Edition, the authors methodically show how MPLS holds the key to network convergence by allowing operators to offer more services over a single physical infrastructure. The Second Edition contains more than 150 illustrations, new chapters, and more coverage, guiding the reader from the basics of the technology, including signaling protocols, traffic engineering and fast reroute, though all its major applications. MPLS Enabled-Applications, Second Edition, contains comprehensive up-to-date coverage of: the current status and the future potential of all major MPLS applications, including L3VPNs (Layer 3 Virtual Private Networks), L2VPNs (Layer 2 Virtual Private Networks), pseudowires and VPLS . (Virtual Private LAN Service). extensive discussion of multicast support over MPLS, including a new chapter dedicated to multicast in VPNs, explaining both the PIM/GRE (Protocol Independent Multicast / Generic Routing Encapsulation) and the next generation BGP/MPLS solutions, new material on support of multicast in VPLS, a much-expanded chapter on MPLS multicast and a section perations and management (OAM) tools for point-to-multipoint LSPs. a new chapter on MPLS in access networks, as well as coverage of the use of MPLS in mobile and data communication networks. interoperation of LDP(Label Distribution Protocol) and BGP (Border Gateway Protocol) based VPLS. comprehensive coverage of the base technology, as well as the latest IETF drafts With a foreword by Yakov Rekhter Multiprotocol Label Switching (MPLS) is a data plane and control technology that is used in packet (that is Internet Protocol) networks. Now over ten years old, it has taken root firmly as a fundamental tool in many service provider networks. The last ten years have seen a considerable consolidation of MPLS techniques and protocols. This has resulted in the abandoning of some of the original features of MPLS, and the development of other new features. MPLS has moved from a prospective solution, to a grown-up technology. Now that MPLS has reached this level of maturity, these new tools and features allow more sophisticated services to the users of the network. These tools and features are discussed within various contexts throughout several networking-related books published by MK and this presents us with a unique publishing opportunity. The proposed book is a best-of-the-best collection of existing content from several books MK has published in recent years on MPLS technology (multi-label protocol switching). Individual chapters on MPLS technology are derived from a handful of MK books and are combined in one new volume in a way that makes sense as a reference work for those interested in new and developing aspects of this technology, i.e., network operators and designers who need to determine which aspects of their networks would benefit from MPLS technology and applications. It also serves as a definitive reference for engineers implementing MPLS-based products. This book represents a quick and efficient way to bring valuable content together from leading experts in the field while creating a one-stop-shopping opportunity for customers to receive the information they would otherwise need to round up from separate sources. Suitable and current content will be collected from the following titles: Evans, Deploying IP and MPLS QoS (2006); Farrel, GMPLS (2005); Ash, Traffic Engineering (2006); Vasseur, Network Recovery (2005); Farrel, The Internet and Its Protocols (2004); Nadeau, MPLS Management (2003); and Davie, MPLS

Technology and Applications (2000). These chapters will be updated where necessary and two new chapters will be added at the beginning and the end of the book to bring the content into focus and discuss next generation developments. Coverage of major applications of MPLS such as traffic engineering, VPNs, IP integration, GMPLS, and QoS written by leading experts in the field contributes to your practical knowledge of this key technology Shows you how to implement various MPLS applications that will result in saving your organization time and money Shows you how you can evaluate MPLS applications and techniques in relation to one another so you can develop an optimum network design

Written by experts in the field, this book describes the Personal Network architecture and its various components This book focuses on networking and security aspects of Personal Networks (PNs). Given a single user, the authors propose an architecture for PNs in which devices are divided into one of two types of nodes: personal nodes and foreign nodes. Furthermore, the authors demonstrate the ways in which PNs can be formed in a self-organized and secure way, how they can be interconnected using infrastructure networks, how multiple PNs can be connected, and how their services and resources can be shared. In addition, the book shows how security and ease-of-use can be achieved through automatic configuration and how mobility can be supported through adaptability and self-organization. The motivations for the PN concept, the PN architecture, its functionalities and features, as well as future challenges are covered in depth. Finally, the authors consider the potential applications for PNs and briefly discuss additional support systems for PN applications. The latter includes service discovery and context information management among others. Key Features: Describes the PN network architecture and its various components in-depth Written by experts who developed this concept Discusses the newer topic of federations of PNs Considers potential PN applications, and demonstrates how applications support systems, such as service discovery and context management, can assist the applications Provides an insight into the challenges of future personal networking, architectures for PNs, potential and important solutions, and their implications This book will serve as an invaluable reference for researchers, developers, and standardization experts in mobile and wireless communication systems and services. It will also be of interest to postgraduate students in the field of telecommunications.

Whether your network is a complex carrier or just a few machines supporting a small enterprise, JUNOS High Availability will help you build reliable and resilient networks that include Juniper Networks devices. With this book's valuable advice on software upgrades, scalability, remote network monitoring and management, high-availability protocols such as VRRP, and more, you'll have your network uptime at the five, six, or even seven nines -- or 99.99999% of the time. Rather than focus on "greenfield" designs, the authors explain how to intelligently modify multi-vendor networks. You'll learn to adapt new devices to existing protocols and platforms, and deploy continuous systems even when reporting scheduled downtime. JUNOS High Availability will help you save time and money. Manage network equipment with Best Common Practices Enhance scalability by adjusting network designs and protocols Combine the IGP and BGP networks of two merging companies Perform network audits Identify JUNOScripting techniques to maintain high availability Secure network equipment against breaches, and contain DoS attacks Automate network configuration through specific strategies and tools This book is a core part of the Juniper Networks Technical Library™.

“Within the set of many identifier-locator separation designs for the Internet, HIP has progressed further than anything else we have so far. It is time to see what HIP can do in larger scale in the real world. In order to make that happen, the world needs a HIP book, and now we have it.” - Jari Arkko, Internet Area Director, IETF One of the challenges facing the current Internet architecture is the incorporation of mobile and multi-homed terminals (hosts),

and an overall lack of protection against Denial-of-Service attacks and identity spoofing. The Host Identity Protocol (HIP) is being developed by the Internet Engineering Task Force (IETF) as an integrated solution to these problems. The book presents a well-structured, readable and compact overview of the core protocol with relevant extensions to the Internet architecture and infrastructure. The covered topics include the Bound End-to-End Tunnel Mode for IPsec, Overlay Routable Cryptographic Hash Identifiers, extensions to the Domain Name System, IPv4 and IPv6 interoperability, integration with SIP, and support for legacy applications. Unique features of the book: All-in-one source for HIP specifications Complete coverage of HIP architecture and protocols Base exchange, mobility and multihoming extensions Practical snapshots of protocol operation IP security on lightweight devices Traversal of middleboxes, such as NATs and firewalls Name resolution infrastructure Micromobility, multicast, privacy extensions Chapter on applications, including HIP pilot deployment in a Boeing factory HOWTO for HIP on Linux (HIPL) implementation An important compliment to the official IETF specifications, this book will be a valuable reference for practicing engineers in equipment manufacturing companies and telecom operators, as well as network managers, network engineers, network operators and telecom engineers. Advanced students and academics, IT managers, professionals and operating system specialists will also find this book of interest.

??????????????????,?????????LAN?????????,????????????????????????????

Many argue that telecommunications network infrastructure is the most impressive and important technology ever developed. Analyzing the telecom market’s constantly evolving trends, research directions, infrastructure, and vital needs, Telecommunication Networks responds with revolutionized engineering strategies to optimize network construction. Omnipresent in society, telecom networks integrate a wide range of technologies. These include quantum field theory for the study of optical amplifiers, software architectures for network control, abstract algebra required to design error correction codes, and network, thermal, and mechanical modeling for equipment platform design. Illustrating how and why network developers make technical decisions, this book takes a practical engineering approach to systematically assess the network as a whole—from transmission to switching. Emphasizing a uniform bibliography and description of standards, it explores existing technical developments and the potential for projected alternative architectural paths, based on current market indicators. The author characterizes new device and equipment advances not just as quality improvements, but as specific responses to particular technical market necessities. Analyzing design problems to identify potential links and commonalities between different parts of the system, the book addresses interdependence of these elements and their individual influence on network evolution. It also considers power consumption and real estate, which sometimes outweigh engineering performance data in determining a product’s success. To clarify the potential and limitations of each presented technology and system analysis, the book includes quantitative data inspired by real products and prototypes. Whenever possible, it applies mathematical modeling to present measured data, enabling the reader to apply demonstrated concepts in real-world situations. Covering everything from high-level architectural elements to more basic component physics, its focus is to solve a problem from different perspectives, and bridge descriptions of well-consolidated solutions with newer research trends.

This authoritative volume presents a comprehensive guide to the evaluation and design of networked systems with improved disaster resilience. The text offers enlightening perspectives on issues relating to all major failure scenarios, including natural disasters, disruptions caused by adverse weather conditions, massive technology-related failures, and malicious human activities. Topics and features: describes methods and models for the analysis and evaluation of disaster-resilient communication networks; examines techniques for the design and enhancement of disaster-resilient systems; provides a range of schemes and algorithms for

resilient systems; reviews various advanced topics relating to resilient communication systems; presents insights from an international selection of more than 100 expert researchers working across the academic, industrial, and governmental sectors. This practically-focused monograph, providing invaluable support on topics of resilient networking equipment and software, is an essential reference for network professionals including network and networked systems operators, networking equipment vendors, providers of essential services, and regulators. The work can also serve as a supplementary textbook for graduate and PhD courses on networked systems resilience.

Explore the potential of mobile P2P networks Mobile Peer to Peer (P2P): A Tutorial Guide discusses the potential of wireless communication among mobile devices forming mobile peer to peer networks. This book provides the basic programming skills required to set up wireless communication links between mobile devices, offering a guide to the development process of mobile peer to peer networks. Divided into three sections, Part I briefly introduces the basics of wireless technologies, mobile architectures, and communication protocols. Detailed descriptions of Bluetooth, IEEE802.11, and cellular communication link are given and applied to potential communication architectures. Part II focuses on programming for individual wireless technologies, and gives an understanding of the programming environment for individual wireless technologies. In addition, Part III provides advanced examples for mobile peer to peer networks. Introduces the basics of short-range/wireless technologies (such as Bluetooth and IEEE 802.11 Wireless LAN), mobile architectures, and communication protocols Explains the basic programming environment and the basic wireless communication technologies such as Bluetooth, WiFi (IEEE802.11), and cellular communication examples Discusses the advancements in meshed networks, mobile social networks and cooperative networks Provides detailed examples of mobile peer to peer communication including, social mobile networking, cooperative wireless networking, network coding, and mobile gaming Includes an accompanying website containing programming examples as source code Mobile Peer to Peer (P2P): A Tutorial Guideis an invaluable reference for advanced students on wireless/mobile communications courses, and researchers in various areas of mobile communications (mashups, social mobile networks, network coding, etc.) Undergraduate students and practitioners wishing to learn how to build mobile peer to peer networks will also find this book of interest.

IP in Wireless Networksis the first network professional's guide to integrating IP in 2G, 2.5G, and 3G wireless networks. It delivers systematic, expert implementation guidance for every leading wireless network, including 802.11, Bluetooth, GSM/GPRS, W-CDMA, cdma2000, and i-mode. In-depth coverage encompasses architecture, technical challenges, deployment and operation strategies, mobility models, routing, and applications. The book presents future evolution of the Wireless IP Networks with emerging applications and the role of standardization bodies.

MPLS-enabled networks are enjoying tremendous growth, but practical information on managing MPLS-enabled networks has remained hard to find. Until now. MPLS Network Management: MIBs, Tools, and Techniques is the first and only book that will help you master MPLS management technologies and techniques, as they apply to classic MPLS networks, traffic-engineered networks, and VPNs. Written by the co-author of most current MPLS management standards, it provides detailed, authoritative coverage of official MIBs, examining key topics ranging from syntax to access levels to object interaction. It also offers extensive consideration of third-party management interfaces, including tools for metering traffic and predicting traffic growth and behavior. If you're a network operator, network device engineer, or MPLS application developer, you need this book to get all you can out of all of MPLS's many capabilities. * The only book devoted entirely to the tools and techniques for controlling, monitoring, debugging, and optimizing MPLS-enabled networks. * Authoritative information

from the co-author of most IETF MIBs relating to MPLS and GMPLS, PWE3, and PPVPN. * Covers both standards-based and proprietary management technologies. * Includes interviews with seminal figures in the development of MPLS. * Via a companion web site, provides information on late-breaking developments in MPLS management and links to additional resources. * To be followed by a second volume presenting best-practice case studies dealing with how real companies approach the management of their MPLS networks.

This volume provides solutions for common network management problems such as scalability and increased technology mix. The book explores the use of MPLS in network management, which is used to improve the overall quality of service.

Written by two experts in the field who deal with QOS predicaments every day and now in this 2nd edition give special attention to the realm of Data Centers, em style="mso-bidi-font-style: normal;"QoS Enabled Networks:Tools and Foundations, 2nd Edition provides a lucid understanding of modern QOS theory mechanisms in packet networks and how to apply them in practice. This book is focuses on the tools and foundations of QoS providing the knowledge to understand what benefits QOS offers and what can be built on top of it.

An introduction to Multi-Protocol Label Switching (MPLS) and related technologies for the network administrator. It provides the key definitions and terminology relating to MPLS and explains the technologies that have come together to create MPLS.

???640-910

With a foreword by Yakov Rekhter "Here at last is a single, all encompassing resource where the myriad applications sharpen into a comprehensible text that first explains the whys and whats of each application before going on to the technical detail of the hows." —Kireeti Kompella, CTO Junos, Juniper Networks The authoritative guide to MPLS, now in its Third edition, fully updated with brand new material! MPLS is now considered the networking technology for carrying all types of network traffic, including voice telephony, real-time video, and data traffic. In MPLS-Enabled Applications, Third Edition, the authors methodically show how MPLS holds the key to network convergence by allowing operators to offer more services over a single physical infrastructure. The Third Edition contains more than 170 illustrations, new chapters, and more coverage, guiding the reader from the basics of the technology, though all its major VPN applications. MPLS Enabled-Applications contains up-to-date coverage of: The current status and future potential of all major MPLS applications, including L2VPN, L3VPN, pseudowires and VPLS. A new chapter with up to date coverage of the MPLS transport profile, MPLS-TP. MPLS in access networks and Seamless MPLS, the new architecture for extending MPLS into the access, discussed in depth for both the unicast and the multicast case. Extensive coverage of multicast support in L3VPNs (mVPNs), explaining and comparing both the PIM/GRE and the next generation BGP/MPLS solutions, and including a new chapter on advanced topics in next generation multicast VPNs. A new chapter on advanced protection techniques, including detailed discussion of 50 ms end-to-end service restoration. Comprehensive coverage of the base technology, as well as the latest IETF drafts, including topics such as pseudowire redundancy, VPLS multihoming, IRB and P2MP pseudowires. MPLS-Enabled Applications will provide those involved in the design and deployment of MPLS systems, as well as those researching the area of MPLS networks, with a thoroughly modern view of how MPLS is transforming the networking world. "Essential new material for those trying to understand the next steps in MPLS." —Adrian Farrel, IETF Routing Area Director "MPLS-Enabled Applications takes a unique and creative approach in explaining MPLS concepts and how they are applied in practice to meet the needs of Enterprise and Service Provider networks. I consistently recommend this book to colleagues in the engineering, education and business community." —Dave Cooper, Chief IP Technologist, Global Crossing Ltd

Network traffic has fractal properties such as impulsiveness, selfsimilarity, and long-range

dependence over several time scales, from milliseconds to minutes. These features have motivated the development of new traffic models and traffic control algorithms. This book presents a new statespace model for Internet traffic, which is based on a finite-dimensional representation of the Autoregressive Fractionally Integrated Moving Average (ARFIMA) random process. The modeling via Autoregressive (AR) processes is also investigated. Content: Introduction, The Fractal Nature of Network Traffic, Modeling of Long- Range Dependent Teletraffic, State-Space Modeling, Modeling of Internet Traffic

Find out everything you need to know about how current networks will have to evolve to provide for future broadband services In this book, the authors provide an overview of the status, challenges, architectures, and technological solutions for core and metropolitan networks. Furthermore, the book describes the current state of core and metropolitan telecommunication networks, as well as the drivers and motives behind the current paradigm shift in the telecommunications industry. Moreover, the authors elaborate system design guidelines for both point-to-point and multi-hop optical networks taking into consideration the analogue nature of the transmission channel. Key Features: Provides coverage of all aspects of core and metro networks supporting future broadband services, and a detailed description of the state-of-the-art Presents a clear path for migrating from point-to-point to data-centric, dynamic, multi-hop optical networks Shows how current systems will need to evolve over the coming years, summarizing challenges and issues to be investigated in future research Covers a wide range of topics from network architectures, to control plane, to key optical and optoelectronic devices, and best practice in transmission and system design Provides results, best practices and guidelines for various technical problems, including numerous hands-on examples Written by authors from cutting-edge companies such as Alcatel-Lucent, Siemens, Lucent, France Telecom, BT, and Telefonica Optical Core and Metro Networks will be of interest to researchers in industry and academia, and advanced (final year undergraduate) and postgraduate students undertaking communications, networking and optics courses.

Existing books on MPLS are concerned with the description and behavior of the protocols that make up MPLS; this book focuses instead on the specific tools or approaches available for managing MPLS-enabled networks.

Modeling, Simulation, Design and Engineering of WDM Systems and Networks provides readers with the basic skills, concepts, and design techniques used to begin design and engineering of optical communication systems and networks at various layers. The latest semi-analytical system simulation techniques are applied to optical WDM systems and networks, and a review of the various current areas of optical communications is presented. Simulation is mixed with experimental verification and engineering to present the industry as well as state-of-the-art research. This contributed volume is divided into three parts, accommodating different readers interested in various types of networks and applications. The first part of the book presents modeling approaches and simulation tools mainly for the physical layer including transmission effects, devices, subsystems, and systems), whereas the second part features more engineering/design issues for various types of optical systems including ULH, access, and in-building systems. The third part of the book covers networking issues related to the design of provisioning and survivability algorithms for impairment-aware and multi-domain networks. Intended for professional scientists, company engineers, and university researchers, the text demonstrates the effectiveness of computer-aided design when it comes to network engineering and prototyping.

Find out how IAX can complement SIP to overcome complications encountered in current SIP-based communications Written by an expert in the field of telecommunications, this book describes the Inter-Asterisk Exchange protocol (IAX) and its operations, discussing the main characteristics of the protocol including NAT traversal, security, IPv6 support, interworking between IPv4 and IPv6, interworking with SIP and many others. The author presents the ways

in which IAX can be activated so as to avoid complications such as NAT and the presence of intermediary boxes in operational architectures. This book analytically demonstrates the added values of IAX protocol compared to existing ones, while proposing viable deployment scenarios that assess the behavior of the protocol in operational networks. Key Features: Promotes a viable alternative protocol to ease deployment of multimedia services Analyses the capabilities of the IAX protocol and its ability to meet VoIP service provider requirements, and provides scenarios of introducing IAX within operational architectures Addresses the advantages and disadvantages of SIP, and Details the features of IAX that can help, in junction with SIP, to overcome various disadvantages of SIP Explores the added values of IAX protocol compared to existing protocols Discusses the compatibility of new adopted architectures and associated protocols This book will be a valuable reference for service providers, protocol designers, vendors and service implementers. Lecturers and advanced students computer science, electrical engineering and telecoms courses will also find this book of interest.
Networking technologies are playing a pivotal role in networking our world. Among the networking technologies that are relevant today, ATM is one of the most popular and pervasive as it seamlessly integrates local area networks and wide area networks. Further, as it provides a single platform for voice, video and data, it facilitates convergence.ATM Networks: Concepts and Protocols is a single-stop reference on this technology. The revised edition of this book covers the relevant concepts, the three layers of ATM protocol reference model, core concepts of ATM networks (including signaling, routing and traffic management), interworking aspects and the application of ATM networks.
Deploying Next Generation Multicast-Enabled Applications: Label Switched Multicast for MPLS VPNs, VPLS, and Wholesale Ethernet provides a comprehensive discussion of Multicast and MVPN standards—next-generation Multicast-based standards, Multicast Applications, and case studies with detailed configurations. Focusing on three vendors—Juniper, Cisco, and Alcatel-Lucent—the text features illustrations that contain configurations of JUNOS, TiMOS (Alcatel's OS), or Cisco IOS, and each configuration is explained in great detail. Multiple- rather than single-vendor configurations were selected for the sake of diversity as well as to highlight the direction in which the overall industry is going rather than that of a specific vendor. Beginning with a discussion of the building blocks or basics of IP Multicast, the book then details applications and emerging trends, including vendor adoptions, as well as the future of Multicast. The book is written for engineers, technical managers, and visionaries engaged in the development of next-generation IP Multicast infrastructures. Offers contextualized case studies for illustrating deployment of the Next Generation Multicast technology Provides the background necessary to understand current generation multi-play applications and their service requirements Includes practical tips on various migration options available for moving to the Next Generation framework from the legacy
Mobility Models for Next Generation Wireless Networks: Ad Hoc, Vehicular and Mesh Networks provides the reader with an overview of mobility modelling, encompassing both theoretical and practical aspects related to the challenging mobility modelling task. It also: Provides up-to-date coverage of mobility models for next generation wireless networks Offers an in-depth discussion of the most representative mobility models for major next generation wireless network application scenarios, including WLAN/mesh networks, vehicular networks, wireless sensor networks, and opportunistic networks Demonstrates the practices for designing effective protocol/applications for next generation wireless networks Includes case studies showcasing the importance of properly understanding fundamental mobility model properties in wireless network performance evaluation
This book constitutes, together with its compagnion LNCS 2093,the refereed proceedings of the First International Conference of Networking, ICN 2001, held in Colmar, France, June 2001. The 168 papers presentedn were carefully reviewed and selected from around 300

submissions. The proceedings offers topical sections on third and fourth generation, Internet, traffic control, mobile and wireless IP, differentiated services, GPRS and cellular networks, WDM and optical networks, differentiated and integrated services, wirless ATM multicast, real-time traffic, wireless, routing, traffic modeling and simulation, user applications, mobility management, TCP analysis, QoS, ad hoc networks, security, MPLS, switches, COBRA, mobile agents, ATM networks, voice over IP, active networks, video communiccations, and modelization.

MPLS is many things to many people. If you're moving IP voice traffic, it may mean performance gains for you. Daniel Minoli's Voice Over MPLS gives you the technical and business lowdown on innovative new solutions for packet-based voice. What does it take to build flexible, high-performance networks with enhanced quality of service? Maybe not as much as you think. RELIABLE VOICE SERVICES THAT CUSTOMERS CAN AFFORD With VoMPLS, you can deliver the quality associated with VoIP over ATM links without the cost in either bandwidth or equipment. Based on label-switching standards from the IETF and the work of a number of leading companies, Voice over MPLS lets you packetize voice without the added overhead of IP encapsulation. It also suppresses periods of silence, freeing up bandwidth for other uses. From one of the most experienced names in telecom technology, Voice Over MPLS shows you how to— * Provide multiple, high-quality services without costly leased lines * Deliver low-bandwidth voice over ATM, Frame Relay, or IP * Add phone "lines" without adding equipment * Solve scaling issues for small- and medium-sized users * Obtain consistent call quality without crunching bandwidth * Discover ways to protect revenues during deployment * Evaluate the potential role of VoMPLS in big-picture convergence * Evaluate VoMPLS's impact on public networks Find the engineering details you need for Label Switched Paths (LSPs), layers, signaling, CoS (Classes of Service), QoS (Quality of Service), VoMPLS in VPNs (Virtual Private Networks), implementation options, deployment, and more.

How can you make multivendor services work smoothly on today's complex networks? This practical book shows you how to deploy a large portfolio of multivendor Multiprotocol Label Switching (MPLS) services on networks, down to the configuration level. You'll learn where Juniper Network's Junos, Cisco's IOS XR, and OpenContrail, interoperate and where they don't. Two network and cloud professionals from Juniper describe how MPLS technologies and applications have rapidly evolved through services and architectures such as Ethernet VPNs, Network Function Virtualization, Seamless MPLS, Egress Protection, External Path Computation, and more. This book contains no vendor bias or corporate messages, just solid information on how to get a multivendor network to function optimally. Topics include: Introduction to MPLS and Software-Defined Networking (SDN) The four MPLS Builders (LDP, RSVP-TE, IGP SPRING, and BGP) Layer 3 unicast and multicast MPLS services, Layer 2 VPN, VPLS, and Ethernet VPN Inter-domain MPLS Services Underlay and overlay architectures: data centers, NVO, and NFV Centralized Traffic Engineering and TE bandwidth reservations Scaling MPLS transport and services Transit fast restoration based on the IGP and RSVP-TE FIB optimization and egress service for fast restoration

Whereas unicast routing determines a path from one source node to one destination node, multicast routing determines a path from one source to many destinations, or from many sources to many destinations. We survey multicast routing methods for when the set of destinations is static, and for when it is dynamic. While most of the methods we review are tree based, some non-tree methods are also discussed. We survey results on the shape of multicast trees, delay constrained multicast routing, aggregation of multicast traffic, inter-domain multicast, and multicast virtual private networks. We focus on basic algorithmic principles, and mathematical models, rather than implementation level protocol details. Many historically important methods, even if not currently used, are reviewed to give perspective on the evolution of multicast routing.

Master optical First Mile technologies with this end-to-end solutions guide that incorporates the most current advances and features Understand the range of First Mile technologies available in the marketplace and the policies and technologies impacting future trends Review step-by-step guides to building end-to-end solutions for optical networking Master Free Space Optics, EPON, and PON design and concepts Learn technology options with coverage of the latest optical switching systems Named by an IEEE task force, the first mile refers to the connections between business/residential subscribers and the public networks central office or point of presence. This task force, of which Cisco is a member, is developing standards and products that use Ethernet as the Layer 2 protocol of choice for the economical and efficient delivery of broadband related services. "First Mile Advanced Access Technologies" reviews the standards, policies, products, features and services related to the growing delivery of broadband services. It provides an overview of all the protocols currently bringing services to the first mile, including DSL, cable modems, ISDN, satellite, and broadband wireless. The book then moves forward detailing the advancements and capabilities of optical networking. The book also provides end-to-end solution designs, incorporating the latest advancements in the technologies and reviewing the capabilities of some of the newest optical switching systems. A specific review of scalability keeps current design guides in tune with potential future needs. "First Mile Advanced Access Technologies" offers readers step-by-step, basic to advanced coverage of an end-to-end solution foroptical networking. Ashwin Gumaste is currently completing a PhD in Optical Networking and is also part of the Photonics Networking Laboratory with Fujitsu. He is the author of DWDM Network Design and Engineering Solutions from Cisco Press. , b>Tony Anthony, CCNP, CCIP, is a Technical Marketing Engineer with the Optical Networking Group at Cisco Systems. He is the author of DWDM Network Design and Engineering Solutions from Cisco Press.

"Provides detailed information on existing Multicast and MVPN standards, referred to as Next-Generation Multicast based standards, Multicast Applications, and case studies with detailed configurations"--Provided by publisher.

This book describes the concept of a Software Defined Mobile Network (SDMN), which will impact the network architecture of current LTE (3GPP) networks. SDN will also open up new opportunities for traffic, resource and mobility management, as well as impose new challenges on network security. Therefore, the book addresses the main affected areas such as traffic, resource and mobility management, virtualized traffics transportation, network management, network security and techno economic concepts. Moreover, a complete introduction to SDN and SDMN concepts. Furthermore, the reader will be introduced to cutting-edge knowledge in areas such as network virtualization, as well as SDN concepts relevant to next generation mobile networks. Finally, by the end of the book the reader will be familiar with the feasibility and opportunities of SDMN concepts, and will be able to evaluate the limits of performance and scalability of

these new technologies while applying them to mobile broadb and networks.
?????:????
This book constitutes the proceedings of the 6th International ICST Conference, TridentCom 2010, held in Berlin, Germany, in May 2010. Out of more than 100 submitted contributions the Program Committee finally selected 15 full papers, 26 practices papers, and 22 posters. They focus on topics as Internet testbeds, future Internet research, wireless sensors, media and mobility, and monitoring in large scale testbeds.
?????????,??????????????????,???????????,?????????????????????????????
?????????,?????????.
The last two years have seen significant developments in the standardization of GMPLS and its implementation in optical and other networks. GMPLS: Architecture and Applications brings you completely up to date, providing the practical information you need to put the growing set of GMPLS-supported services to work and manage them effectively. This book begins by defining GMPLS's place in a transport network, leveraging your knowledge of MPLS to give you an understanding of this radically new control plane technology. An overview of GMPLS protocols follows, but the real focus is on what comes afterwards: in-depth examinations of the architectures underpinning GMPLS in real-world network environments and current and emerging GMPLS applications. This one-of-a-kind resource delivers immensely useful information for software architects, designers and programmers, hardware developers, system testers, and network operators--and also for managers and other decision-makers. Written by two industry researchers at the forefront of the development of GMPLS. Provides a practical look at GMPLS protocols for signaling, routing, link and resource management, and traffic engineering. Delves deep into the world of GMPLS applications, including traffic engineering, path computation, layer one VPNs, point-to-multipoint connectivity, service management, and resource protection. Explores three distinct GMPLS control plane architectures: peer, overlay, and hybrid, and explains the GMPLS UNI and NNIs. Explains how provisioning challenges can be met in multi-region networks and details the provisioning systems and tools relied on by the GMPLS control plane, along with the standard MIB modules used to manage a GMPLS system.