Network Performance Engineering A Handbook On Convergent Multi Service Networks And Next Generation Internet Lecture Notes In Computer Science Networks And Telecommunications

Computer Performance Modeling Handbook
"The Traffic Engineering Handbook is a comprehensive practice-oriented reference that presents the fundamental concepts of traffic engineering, commensurate with the state of the practice"--
This handbook is an authoritative, comprehensive reference on optical networks, the backbone of today's communication and information society. The book reviews the many underlying technologies that enable the global optical communications infrastructure, but also explains current research trends targeted towards continued capacity scaling and enhanced networking flexibility in support of an unabated traffic growth fueled by ever-emerging new applications. The book is divided into four parts: Optical Subsystems for Transmission and Switching, Core Networks, Datacenter and Super-Computer Networking, and Optical Access and Wireless Networks. Each chapter is written by world-renown experts that represent academia, industry, and international government and regulatory agencies. Every chapter provides a complete picture of its field, from entry-level information to a snapshot of the respective state-of-the-art technologies to emerging research trends, providing something useful for the novice who wants to get familiar with the field to the expert who wants to get a concise view of future trends.
The Most Complete and Up-to-Date Account of Advanced Sensor Networking TechnologiesHandbook of Sensor Networking: Advanced Technologies and Applications provides a complete professional reference and practitioner's guide to today's advanced sensor networking technologies. The handbook focuses on both established and recent sensor networking theory,
A relative newcomer to the field of wireless communications, ad hoc networking is growing quickly, both in its importance and its applications. With rapid advances in hardware, software, and protocols, ad hoc networks are now coming of age, and the time has come to bring together into one reference their principles, technologies, and techniques. The Handbook of Ad Hoc Wireless Networks does exactly that. Experts from around the world have joined forces to create the definitive reference for the field. From the basic concepts, techniques, systems, and protocols of wireless communication to the particulars of ad hoc network routing methods, power, connections, traffic management, and security, this handbook covers virtually every aspect of ad hoc wireless networking. It includes a section that explores several routing methods and protocols directly related to implementing ad hoc networks in a variety of applications. The benefits of ad hoc wireless networks are many, but several challenges remain. Organized for easy reference, The Handbook of Ad Hoc Wireless Networks is your opportunity to gain quick familiarity with the state of the art, have at your disposal the only complete reference on the subject available, and prepare to meet the technological and implementation challenges you'll encounter in practice.
By using computer simulations in research and development, computational science and engineering (CSE) allows empirical inquiry where traditional experimentation and methods of inquiry are difficult, inefficient, or prohibitively expensive. The Handbook of Research on Computational Science and Engineering: Theory and Practice is a reference for interested researchers and decision-makers who want a timely introduction to the possibilities in CSE to advance their ongoing research and applications or to discover new resources and cutting edge developments. Rather than reporting results obtained using CSE models, this comprehensive survey captures the architecture of the cross-disciplinary field, explores the long term implications of technology choices, alerts readers to the hurdles facing CSE, and identifies trends in future development.
Dependability and cost effectiveness are primarily seen as instruments for conducting international trade in the free market environment. These factors cannot be considered in isolation of each other. This handbook considers all aspects of performability engineering. The book provides a holistic view of the entire life cycle of activities of the product, along with the associated cost of environmental preservation at each stage, while maximizing the performance.
Today's enterprise cannot effectively function without a network, and today's enterprise network is almost always based on LAN technology. In a few short years, LANs have become an essential element of today's business environment. This time in the spotlight, while well deserved, has not come without a price. Businesses now insist that LANs deliver vast and ever-increasing quantities of business-critical information and that they do it efficiently, flawlessly, without fail, and most of all, securely. Today's network managers must consistently deliver this level of performance, and must do so while keeping up with ever changing, ever increasing demands without missing a beat. At the same time, today's IT managers must deliver business-critical information systems in an environment that has undergone radical paradigm shifts in such widely varied fields as computer architecture, operating systems, application development, and security. The Local Area Networks Handbook focuses on this collective environment, in which networking and information technology work together to create LAN-based enterprise networks. Topics have been selected and organized with this in mind, providing both depth and breadth of coverage. The handbook will provide you not only an understanding of how LANs work and how to go about selecting and implementing LAN products, but also of how to leverage LAN capabilities for the benefit of your enterprise.
Sniffer Network Optimization and Troubleshooting Handbook introduces the reader to the vast functionality of the suite of Sniffer Solutions from Network Associates but ultimately focuses on the affordable and most widely used Sniffer Product - Sniffer Pro LAN Network Analyzer. This book begins with the basic features of Sniffer Pro LAN and then moves

the reader through the impressive tips and tools available for gathering data, analyzing, troubleshooting, resolving and securing problems on their network. Sniffer from Network Associates is a suite of tools including Sniffer Portable Analysis Suite, Sniffer Distributed Analysis Suite, Sniffer Reporting, Sniffer Optical, and Sniffer Wireless. With a clear market leadership, Sniffer Solutions are employed in over 80% of the enterprise networks of the Fortune 100. Sniffer has also received wide industry acclaim from the experts and its everyday users. In 2000 Sniffer was named one of the 10 most computer products of the decade by Network Computing Magazine. It also received the "Editor's Choice" award from PC Magazine during the second quarter of 2001. Over 60,000 individuals have taken advantage of the educational services offered by Sniffer Technologies - aptly named Sniffer University. Coupled with the introduction of the Sniffer Certified Professional Program (SCPP) as a replacement for the popular CNX (Certified Network Expert) certification, an aptitude with Sniffer Solutions is a "must-have" for system administrators. Offers comprehensive coverage of Sniffer Pro LAN Supplemental study materials for the SCPP certification track. As of April 2001, the CNX certifications track became inactive. Current CNXs looking to update their certifications to the new SCPP track are going to need to bring themselves up to speed on the new offerings from the Sniffer family of products before desertification Up to the Minute Web-based Support. Once the reader understands the concepts of network hardware, configuration, and implementation, they can receive up-to-the minute links, white papers, and analysis for one year at solutions@syngress.com

ICT technologies have contributed to the advances in wireless systems, which provide seamless connectivity for worldwide communication. The growth of interconnected devices and the need to store, manage, and process the data from them has led to increased research on the intersection of the internet of things and cloud computing. The Handbook of Research on the IoT, Cloud Computing, and Wireless Network Optimization is a pivotal reference source that provides the latest research findings and solutions for the design and augmentation of wireless systems and cloud computing. The content within this publication examines data mining, machine learning, and software engineering, and is designed for IT specialists, software engineers, researchers, academicians, industry professionals, and students.

As digital communications networks grow in use and size throughout the world, the need for accurate, reliable test and measurement procedures has increased tremendously. This unique handbook provides the only comprehensive coverage of all the methodologies, data, and reference material necessary to master network instrumentation. In this single encyclopedic resource, engineers will discover how to apply all the test, measurement, and monitoring tools critical to network performance. The success of this richly illustrated handbook is further assured by its authorship--Clyde Coombs is the preeminent editor of electronics handbooks, with a 30 year track record of best sellers.

A comprehensive reference that addresses the need for solid understanding of the operation of IP networks, plus optimization and management techniques to keep those networks running at peak performance Uniquely distinguished from other books on IP networks, as it focuses on operation and management support, and is not just another treatise on protocol theory Includes many practical case studies as further illustration of the concepts discussed

This handbook serves as a complement to the Handbook on Data Envelopment Analysis (eds, W.W. Cooper, L.M. Seiford and J, Zhu, 2011, Springer) in an effort to extend the frontier of DEA research. It provides a comprehensive source for the state-of-the art DEA modeling on internal structures and network DEA. Chapter 1 provides a survey on two-stage network performance decomposition and modeling techniques. Chapter 2 discusses the pitfalls in network DEA modeling. Chapter 3 discusses efficiency decompositions in network DEA under three types of structures, namely series, parallel and dynamic. Chapter 4 studies the determination of the network DEA frontier. In chapter 5 additive efficiency decomposition in network DEA is discussed. An approach in scale efficiency measurement in two-stage networks is presented in chapter 6. Chapter 7 further discusses the scale efficiency decomposition in two stage networks. Chapter 8 offers a bargaining game approach to modeling two-stage networks. Chapter 9 studies shared resources and efficiency decomposition in two-stage networks. Chapter 10 introduces an approach to computing the technical efficiency scores for a dynamic production network and its sub-processes. Chapter 11 presents a slacks-based network DEA. Chapter 12 discusses a DEA modeling technique for a two-stage network process where the inputs of the second stage include both the outputs from the first stage and additional inputs to the second stage. Chapter 13 presents an efficiency measurement methodology for multi-stage production systems. Chapter 14 discusses network DEA models, both static and dynamic. The discussion also explores various useful objective functions that can be applied to the models to find the optimal allocation of resources for processes within the black box, that are normally invisible to DEA. Chapter 15 provides a comprehensive review of various type network DEA modeling techniques. Chapter 16 presents shared resources models for deriving aggregate measures of bank-branch performance, with accompanying component measures that make up that aggregate value. Chapter 17 examines a set of manufacturing plants operating under a single umbrella, with the objective being to use the component or function measures to decide what might be considered as each plant's core business. Chapter 18 considers problem settings where there may be clusters or groups of DMUs that form a hierarchy. The specific case of a set off electric power plants is examined in this context. Chapter 19 models bad outputs in two-stage network DEA. Chapter 20 presents an application of network DEA to performance measurement of Major League Baseball (MLB) teams. Chapter 21 presents an application of a two-stage network DEA model for examining the performance of 30 U.S. airline companies. Chapter 22 then presents two distinct network efficiency models that are applied to engineering systems.

This handbook consists of six core chapters: (1) systems engineering fundamentals discussion, (2) the NASA program/project life cycles, (3) systems engineering processes to get from a concept to a design, (4) systems engineeringprocesses to get from a design to a final product, (5) crosscutting management processes in systems engineering, and

(6) special topics relative to systems engineering. These core chapters are supplemented by appendices that provide outlines, examples, and further information to illustrate topics in the core chapters. The handbook makes extensive use of boxes and figures to define, refine, illustrate, and extend concepts in the core chapters without diverting the reader from the main information. The handbook provides top-level guidelines for good systems engineering practices; it is not intended in any way to be a directive. NASA/SP-2007-6105 Rev1 supersedes SP-6105, dated June 1995

"This book highlights and discusses the underlying QoS issues that arise in the delivery of real-time multimedia services over wireless networks"--Provided by publisher.

This book explores various aspects of data engineering and information processing. In this second volume, the authors assess the challenges and opportunities involved in doing business with information. Their contributions on business information processing and management reflect diverse viewpoints – not only technological, but also business and social. As the global marketplace grows more and more complex due to the increasing availability of data, the information business is steadily gaining popularity and has a huge impact on modern society. Thus, there is a growing need for consensus on how business information can be created, accessed, used and managed.

This third edition of the SME Mining Engineering Handbook reaffirms its international reputation as "the handbook of choice" for today's practicing mining engineer. It distills the body of knowledge that characterizes mining engineering as a disciplinary field and has subsequently helped to inspire and inform generations of mining professionals.Virtually all of the information is original content, representing the latest information from more than 250 internationally recognized mining industry experts. Within the handbook's 115 thought-provoking chapters are current topics relevant to today's mining professional: Analyzing how the mining and minerals industry will develop over the medium and long term--why such changes are inevitable, what this will mean in terms of challenges, and how they could be managed Explaining the mechanics associated with the multifaceted world of mine and mineral economics, from the decisions associated with how best to finance a single piece of high-value equipment to the long-term cash-flow issues associated with mine planning at a mature operation Describing the recent and ongoing technical initiatives and engineering developments in relation to robotics, automation, acid rock drainage, block caving optimization, or process dewatering methods Examining in detail the methods and equipment available to achieve efficient, predictable, and safe rock breaking, whether employing a tunnel boring machine for development work, mineral extraction using a mobile miner, or cast blasting at a surface coal operation Identifying the salient points that dictate which is the safest, most efficient, and most versatile extraction method to employ, as well as describing in detail how each alternative is engineered Discussing the impacts that social and environmental issues have on mining from the pre-exploration phase to end-of-mine issues and beyond, and how to manage these two increasingly important factors to the benefit of both the mining companies and other stakeholders

The Mobile Ad Hoc Network (MANET) has emerged as the next frontier for wireless communications networking in both the military and commercial arena. Handbook of Mobile Ad Hoc Networks for Mobility Models introduces 40 different major mobility models along with numerous associate mobility models to be used in a variety of MANET networking environments in the ground, air, space, and/or under water mobile vehicles and/or handheld devices. These vehicles include cars, armors, ships, under-sea vehicles, manned and unmanned airborne vehicles, spacecrafts and more. This handbook also describes how each mobility pattern affects the MANET performance from physical to application layer; such as throughput capacity, delay, jitter, packet loss and packet delivery ratio, longevity of route, route overhead, reliability, and survivability. Case studies, examples, and exercises are provided throughout the book. Handbook of Mobile Ad Hoc Networks for Mobility Models is for advanced-level students and researchers concentrating on electrical engineering and computer science within wireless technology. Industry professionals working in the areas of mobile ad hoc networks, communications engineering, military establishments engaged in communications engineering, equipment manufacturers who are designing radios, mobile wireless routers, wireless local area networks, and mobile ad hoc network equipment will find this book useful as well.

Wireless communications have become invaluable in the modern world. The market is going through a revolutionary transformation as new technologies and standards endeavor to keep up with demand for integrated and low-cost mobile and wireless devices. Due to their ubiquity, there is also a need for a simplification of the design of wireless systems and networks. The Handbook of Research on Advanced Trends in Microwave and Communication Engineering showcases the current trends and approaches in the design and analysis of reconfigurable microwave devices, antennas for wireless applications, and wireless communication technologies. Outlining both theoretical and experimental approaches, this publication brings to light the unique design issues of this emerging research, making it an ideal reference source for engineers, researchers, graduate students, and IT professionals.

During recent years a great deal of progress has been made in performance modelling and evaluation of the Internet, towards the convergence of multi-service networks of diverging technologies, supported by internetworking and the evolution of diverse access and switching technologies. The 44 chapters presented in this handbook are revised invited works drawn from PhD courses held at recent HETNETs International Working Conferences on Performance Modelling and Evaluation of Heterogeneous Networks. They constitute essential introductory material preparing the reader for further research and development in the field of performance modelling, analysis and engineering of heterogeneous networks and of next and future generation Internets. The handbook aims to unify relevant material already known but dispersed in the literature, introduce the readers to unfamiliar and unexposed research areas and, generally, illustrate the diversity of research found in the high growth field of convergent heterogeneous networks and the Internet. The chapters have been broadly classified into 12 parts covering the following topics: Measurement Techniques; Traffic Modelling and Engineering; Queueing Systems and Networks; Analytic Methodologies; Simulation Techniques; Performance Evaluation Studies; Mobile, Wireless and Ad Hoc Networks, Optical Networks; QoS Metrics and Algorithms; All IP Convergence and Networking; Network Management and Services; and Overlay Networks.

This practical new resource gives you a comprehensive understanding of the design and deployment of transmission networks for wireless applications. From principles and design, to equipment procurement, project management, testing, and operation, it's a practical, hands-on engineering guide with numerous real-life examples of turn-key operations in the wireless networking industry. This book, written for both technical and non-technical professionals, helps you deal with the costs and difficulties involved in setting up the local access with technologies

that are still in the evolutionary stage. Issues involved in the deployment of various transmission technologies, and their impact on the overall wireless network topology are discussed. Strategy and approach to transmission network planning, design and deployment are explored. The book offers practical guidelines and advice derived from the author's own experience on projects worldwide. You gain a solid grounding in third generation wireless networks with increased capacity requirements, while learning all about packet data architecture, and how it will impact future transmission network design and deployment.

Handbook of Probabilistic Models carefully examines the application of advanced probabilistic models in conventional engineering fields. In this comprehensive handbook, practitioners, researchers and scientists will find detailed explanations of technical concepts, applications of the proposed methods, and the respective scientific approaches needed to solve the problem. This book provides an interdisciplinary approach that creates advanced probabilistic models for engineering fields, ranging from conventional fields of mechanical engineering and civil engineering, to electronics, electrical, earth sciences, climate, agriculture, water resource, mathematical sciences and computer sciences. Specific topics covered include minimax probability machine regression, stochastic finite element method, relevance vector machine, logistic regression, Monte Carlo simulations, random matrix, Gaussian process regression, Kalman filter, stochastic optimization, maximum likelihood, Bayesian inference, Bayesian update, kriging, copula-statistical models, and more. Explains the application of advanced probabilistic models encompassing multidisciplinary research Applies probabilistic modeling to emerging areas in engineering Provides an interdisciplinary approach to probabilistic models and their applications, thus solving a wide range of practical problems

The implementation of wireless sensor networks has wide-ranging applications for monitoring various physical and environmental settings. However, certain limitations with these technologies must be addressed in order to effectively utilize them. The Handbook of Research on Advanced Wireless Sensor Network Applications, Protocols, and Architectures is a pivotal reference source for the latest research on recent innovations and developments in the field of wireless sensors. Examining the advantages and challenges presented by the application of these networks in various areas, this book is ideally designed for academics, researchers, students, and IT developers.

The most comprehensive book on the shelf about a family of technologies that are cornering the market in enhanced telecommunications services.

The NAB Engineering Handbook is the definitive resource for broadcast engineers. It provides in-depth information about each aspect of the broadcast chain from audio and video contribution through an entire broadcast facility all the way to the antenna. New topics include Ultra High Definition Television, Internet Radio Interfacing and Streaming, ATSC 3.0, Digital Audio Compression Techniques, Digital Television Audio Loudness Management, and Video Format and Standards Conversion. Important updates have been made to incumbent topics such as AM, Shortwave, FM and Television Transmitting Systems, Studio Lighting, Cameras, and Principles of Acoustics. The big-picture, comprehensive nature of the NAB Engineering Handbook will appeal to all broadcast engineers—everyone from broadcast chief engineers, who need expanded knowledge of all the specialized areas they encounter in the field, to technologists in specialized fields like IT and RF who are interested in learning about unfamiliar topics. Chapters are written to be accessible and easy to understand by all levels of engineers and technicians. A wide range of related topics that engineers and technical managers need to understand are covered, including broadcast documentation, FCC practices, technical standards, security, safety, disaster planning, facility planning, project management, and engineering management.

As wireless networks take ever-bigger bites out of the USD 350 billion dollar telephone market, they create their own performance problems. International customers require global networks; more customers mean bigger networks; new services create more complicated networks. Then there's changing out the network; each time a provider introduces a new technology or capability, it has to do so without interrupting service delivery to existing customers. Here is realistic advice on metrics, troubleshooting methods, design guidelines, revenue assurance and more, from a team that has performed the same services for AT&T Wireless, Nextel and Verizon.

The Network Designer's Handbook will help anyone trapped between limited bandwidth, fault-intolerant computer buses and expensive, over-engineered telecommunications technology. It will help anyone looking for new cost-effective ways to build LAN switches, RAID systems, multimedia servers or multiprocessors. It will help the small company looking for an edge to break into the market, and the large one looking for ways to improve its margins and boost its market share. This handbook, the result of over six man-years of effort at the PACT Research Institute, provides solid engineering data for the computer systems professional. Four cpu-months of system simulation are summarised in an easy-to-read form, allowing the consequences of different design decisions to be simply compared. The Network Designer's Handbook explains the principles of the new generation of small-scale low-buffer serial interconnects. Using the specific example of IEEE 1355-1995 links and the STC104 high-valency switch chip it shows how this technology can provide modular, fault-tolerant and scalable interconnect. The picture is rounded out with descriptions of network topologies, case studies and many practical tips.

Over 140 experts, 14 countries, and 89 chapters are represented in the second edition of The Bridge Engineering Handbook. This extensive collection highlights bridge engineering specimens from around the world, contains detailed information on bridge engineering, and thoroughly explains the concepts and practical applications surrounding the subject. Published in five books: Fundamentals, Superstructure Design, Substructure Design, Seismic Design, and Construction and Maintenance, this new edition provides numerous worked-out examples that give readers step-by-step design procedures, includes contributions by leading experts from around the world in their respective areas of bridge engineering, contains 26 completely new chapters, and updates most other chapters. It offers design concepts, specifications, and practice, as well as the various types of bridges. The text includes over 2,500 tables, charts, illustrations and photos. The book covers new, innovative, and traditional methods and practices, explores rehabilitation, retrofit, and maintenance, and examines seismic design, and building materials. The first book, Fundamentals contains 22 chapters, and covers aesthetics, planning, design

specifications, structural modeling, fatigue and fracture. What's New in the Second Edition: • Covers the basic concepts, theory and special topics of bridge engineering • Includes seven new chapters: Finite Element Method, High Speed Railway Bridges, Concrete Design, Steel Design, Structural Performance Indicators for Bridges, High Performance Steel, and Design and Damage Evaluation Methods for Reinforced Concrete Beams under Impact Loading • Provides substantial updates to existing chapters, including Conceptual Design, Bridge Aesthetics: Achieving Structural Art in Bridge Design, and Application of Fiber Reinforced Polymers in Bridges This text is an ideal reference for practicing bridge engineers and consultants (design, construction, maintenance), and can also be used as a reference for students in bridge engineering courses.

From fundamental concepts and theories to implementation protocols and cutting-edge applications, the Handbook of Mobile Systems Applications and Services supplies a complete examination of the evolution of mobile services technologies. It examines service-oriented architecture (SOA) and explains why SOA and service oriented computing (SOC) will pl

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A comprehensive resource containing the operating principles and key insights of LTE networks performance optimization LTE Optimization Engineering Handbook is a comprehensive reference that describes the most current technologies and optimization principles for LTE networks. The text offers an introduction to the basics of LTE architecture, services and technologies and includes details on the key principles and methods of LTE optimization and its parameters. In addition, the author clarifies different optimization aspects such as wireless channel optimization, data optimization, CSFB, VoLTE, and video optimization. With the ubiquitous usage and increased development of mobile networks and smart devices, LTE is the 4G network that will be the only mainstream technology in the current mobile communication system and in the near future. Designed for use by researchers, engineers and operators working in the field of mobile communications and written by a noted engineer and experienced researcher, the LTE Optimization Engineering Handbook provides an essential guide that: Discusses the latest optimization engineering technologies of LTE networks and explores their implementation Features the latest and most industrially relevant applications, such as VoLTE and HetNets Includes a wealth of detailed scenarios and optimization real-world case studies Professionals in the field will find the LTE Optimization Engineering Handbook to be their go-to reference that includes a thorough and complete examination of LTE networks, their operating principles, and the most current information to performance optimization.

This book constitutes the proceedings of the 17th International Conference on Information Technologies and Mathematical Modelling, ITMM 2018, named after A.F. Terpugov, and the 12th Workshop on Retrial Queues and Related Topics, held in Tomsk, Russia, in September 2018. The 30 papers presented in this volume were carefully reviewed and selected from 84 submissions. The conference covers various aspects of information technologies, focusing on queueing theory, stochastic processes, Markov processes, renewal theory, network performance equation and network protocols.

Non-reciprocal series-fed microstrip patch antenna array based on graphene-black phosphorus for THz applications using the iterative method / Aymen Hlali, University of Carthage, Tunesia, Hassen Zairi, University of Carthage, Tunisia.

This comprehensive handbook serves as a professional reference as well as a practitioner's guide to today's most complete and concise view of nanoscale networking and communications. It offers in-depth coverage of theory, technology, and practice as they relate to established technologies and recent advancements. It explores practical solutions to a wide range of nanoscale networking and communications issues. Individual chapters, authored by leading experts in the field, address the immediate and long-term challenges in the authors' respective areas of expertise.

2011 Updated Reprint. Updated Annually. Global Telecom Industry Handbook Regulations and Contacts Volume 2

The overwhelming majority of a software system's lifespan is spent in use, not in design or implementation. So, why does conventional wisdom insist that software engineers focus primarily on the design and development of large-scale computing systems? In this collection of essays and articles, key members of Google's Site Reliability Team explain how and why their commitment to the entire lifecycle has enabled the company to successfully build, deploy, monitor, and maintain some of the largest software systems in the world. You'll learn the principles and practices that enable Google engineers to make systems more scalable, reliable, and efficient—lessons directly applicable to your organization. This book is divided into four sections: Introduction—Learn what site reliability engineering is and why it differs from conventional IT industry practices Principles—Examine the patterns, behaviors, and areas of concern that influence the work of a site reliability engineer (SRE) Practices—Understand the theory and practice of an SRE's day-to-day work: building and operating large distributed computing systems Management—Explore Google's best practices for training, communication, and meetings that your organization can use

Over 140 experts, 14 countries, and 89 chapters are represented in the second edition of the Bridge Engineering Handbook. This extensive collection highlights bridge engineering specimens from around the world, contains detailed information on bridge engineering, and thoroughly explains the concepts and practical applications surrounding the subjec

Peer-to-peer networking is a disruptive technology for large scale distributed app- cations that has recently gained wide interest due to the successes of peer-to-peer (P2P) content sharing, media streaming, and telephony applications. There are a large range of other applications under development or being proposed. The - derlying architectures

share features such as decentralizaton, sharing of end system resources, autonomy, virtualization, and self-organization. These features constitute the P2P paradigm. This handbook broadly addresses a large cross-section of c- rent research and state-of-the-art reports on the nature of this paradigm from a large number of experts in the ?eld. Several trends in information and network technology such as increased perf- mance and deployment of broadband networking, wireless networking, and mobile devices are synergistic with and reinforcing the capabilities of the P2P paradigm. There is general expectation in the technical community that P2P networking will continue to be an important tool for networked applications and impact the evo- tion of the Internet. A large amount of research activity has resulted in a relatively short time, and a growing community of researchers has developed. The Handbook of Peer-to-Peer Networking is dedicated to discussions on P2P networks and their applications. This is a comprehensive book on P2P computing.